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1980

MICRO PHOTO DIVISION

BELL & HOWELL

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Vol. 996 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 1, 1980



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UNITED STATES PATENT and TRADEMARK OFFICE

July 1, 1980 Volume 996 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Jan. 28, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,739,944, Re. S.N. 129,394, Filed Mar. 11, 1980, Cl. 241/74, APPARATUS FOR PRODUCING DE-BONED MEAT PRODUCTS, Archie Rae McFarland, Owner of Record: *Beehive Machinery Inc., Salt Lake City, Utah,* Attorney or Agent: Philip A. Mallinckrodt, et al., Ex. Gp.: 322

3,757,818, Re. S.N. 082,599, Filed Oct. 9, 1979, Cl. 137/596.16, SAFETY CONTROL VALVE SYSTEM FOR FLUID ACTUATED DEVICES, Roger L. Sweet, Owner of Record: *Ross Operating Valve Company, Detroit, Mich.,* Attorney or Agent: Cyrus G. Minkler, et al., Ex. Gp.: 341

4,088,543, Re. S.N. 145,403, Filed May 1, 1980, Cl. 204/1 T, TECHNIQUE FOR PROTECTING SENSING ELECTRODES IN SULFIDING ENVIRONMENTS, Roswell J. Ruka, Owner of Record: *Westinghouse Electric Corporation, Pittsburgh, Pa.,* Attorney or Agent: C. F. Renz, et al., Ex. Gp.: 114

4,089,366, Re. S.N. 116,545, Filed Mar. 12, 1980, Cl. 165/1, MEANS AND METHODS FOR SENDING HEAT DOWNWARDLY, Edward J. O'Hanlon, Owner of Record: *Inventor,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 345

4,109,716, Re. S.N. 141,069, Filed Apr. 17, 1980, Cl. 166/191, SEAL, Carlos R. Canalizo, Owner of Record: *Otis Engineering Corporation, Dallas, Tex.,* Attorney or Agent: Joe E. Edwards, et al., Ex. Gp.: 354

4,128,686, Re. S.N. 123,426, Filed Feb. 21, 1980, Cl. 428/219, MANAGEMENT OF INCONTINENCE, William Kyle, et al., Owner of Record: *Nicholas Proprietary Limited, Victoria, Australia,* Attorney or Agent: James R. Longacre, Ex. Gp.: 164

4,142,880, Re. S.N. 125,609, Filed Feb. 28, 1980, Cl. 65/29, METHOD AND APPARATUS FOR FEEDING A GLASS MELTING FURNACE, Alojzy Wenda, et al., Owner of Record: *Johns-Manville Corporation, Jefferson, Colo.,* Attorney or Agent: Robert M. Krone, et al., Ex. Gp.: 173

4,145,633, Re. S.N. 141,070, Filed Apr. 17, 1980, Cl. 313/422, MODULAR GUIDED BEAM FLAT DISPLAY DEVICE, Kenneth Donald Peters, et al., Owner of Record: *RCA Corporation, Princeton, N.J.,* Attorney or Agent: Eugene M. Whitacre, et al., Ex. Gp.: 256

4,153,485, Re. S.N. 141,619, Filed Apr. 18, 1980, Cl. 148/126, PROCESS FOR HEATING STEEL POWDER COMPACT, Kazuo Ogata, et al., Owner of Record: *Kobe Steel, Ltd., Kobe, Japan,* Attorney or Agent: Norman F. Oblon, et al., Ex. Gp.: 223

PATENT NOTICES

Certificates of Correction for the Week of July 1, 1980

Re. 30,177	4,175,394	4,187,509	4,194,437
Re. 30,186	4,175,557	4,187,594	4,195,056
Re. 30,193	4,176,062	4,187,827	4,195,185
3,960,347	4,176,717	4,188,409	4,195,609
3,971,988	4,176,923	4,188,566	4,195,665
3,980,660	4,178,511	4,188,586	4,195,742
3,984,473	4,178,657	4,188,601	4,195,937
4,020,085	4,178,712	4,188,755	4,196,226
4,045,228	4,179,224	4,188,871	4,196,278
4,056,862	4,179,415	4,189,260	4,196,469
4,101,609	4,179,442	4,189,279	4,196,630
4,105,034	4,180,123	4,189,469	4,197,305
4,111,865	4,180,463	4,189,606	4,197,593
4,120,582	4,180,692	4,189,804	4,197,866
4,140,440	4,180,998	4,189,929	4,198,453
4,141,572	4,181,002	4,189,973	4,198,743
4,146,721	4,181,504	4,190,013	4,199,373
4,153,572	4,181,747	4,190,175	4,199,487
4,155,347	4,181,800	4,190,290	4,199,578
4,155,708	4,181,850	4,190,316	4,199,661
4,156,931	4,182,628	4,190,550	4,199,695
4,157,929	4,183,672	4,190,760	4,199,800
4,158,231	4,183,742	4,190,786	4,199,918
4,159,286	4,183,790	4,191,074	4,200,037
4,162,261	4,183,811	4,191,462	4,200,205
4,162,298	4,183,900	4,191,560	4,200,212
4,163,652	4,183,901	4,191,945	4,200,231
4,164,501	4,184,230	4,192,346	4,200,266
4,167,609	4,185,319	4,192,879	4,200,455
4,168,755	4,185,643	4,193,233	4,200,517
4,171,445	4,186,199	4,193,301	4,200,695
4,172,569	4,186,397	4,193,350	4,200,760
4,173,673	4,187,016	4,193,818	4,201,259
4,174,216	4,187,107	4,194,051	4,201,481
4,174,940	4,187,204	4,194,099	4,201,724

Disclaimers

4,059,504.—*William V. Bauer,* New York, N.Y. HYDROTREATING OF PYROLYSIS GASOLINE. Patent dated Nov. 22, 1977. Disclaimer filed May 12, 1980, by the assignee, *The Lummus Company.*

Hereby enters this disclaimer to the remaining term of said patent.

3,960,315.—*Thomas Edward Dobbins,* Neenah, Wis. CARTON WITH INSPECTION FLAP AND BLANK THEREFOR. Patent dated June 1, 1976. Disclaimer filed May 19, 1980, by the assignee, *American Can Company.*

Hereby enters this disclaimer to claims 1, 2, 5, 6, 7, 10 and 11 of said patent.

3,172,956.—*Hiroshi Inose,* Tokyo, Japan and *John P. Runyon,* Mendham, N.J. TIME DIVISION SWITCHING SYSTEM FOR TELEPHONE SYSTEM UTILIZING TIME-SLOT INTERCHANGE. Patent dated Mar. 9, 1965. Disclaimer filed May 5, 1980, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to all claims of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification. Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
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Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library. Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 17, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-18-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-3-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-25-80
*SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-1-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-31-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-2-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-25-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	4-2-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-23-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-16-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-21-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,088,114 to 3,091,767, inclusive
Plant Patents ..... Numbers 2,258 to 2,261, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 1, 1980

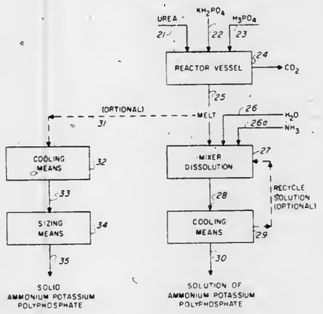
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T996,001
PRODUCTION OF AMMONIUM POTASSIUM POLYPHOSPHATES

Richard C. Sheridan, Sheffield; John F. McCullough, Florence, and Leland L. Frederick, Florence, all of Ala., assignors to Tennessee Valley Authority, Washington, D.C.

Filed Sep. 17, 1979, Ser. No. 76,007
Int. Cl.³ C05B *7/00*
U.S. Cl. 71—36
2 Sheets Drawing. 17 Pages Specification



Embodiment No. 1. Urea phosphate prepared from wet-process phosphoric acid is heated with monopotassium orthophosphate in a mole ratio of 0.25 to 4.0 at 130° to 200° C. to form an ammonium potassium polyphosphate having an average chain length between 1.2 and 2.5. The ammonium potassium polyphosphate is dissolved in aqueous ammonia to yield concentrated fertilizer solutions containing the three major nutrients and over 50 percent total plant food.

Embodiment No. 2. Phosphoric acid containing 54 to 76 percent P_2O_5 is heated with urea (urea:H_3PO_4 mole ratio 0.5 to 2.0) and monopotassium orthophosphate (urea:KH_2PO_4 mole ratio 0.25 to 4.0) at 130° to 200° C. to form an ammonium potassium polyphosphate having an average chain length between 1.2 and 2.5. The ammonium potassium polyphosphate is dissolved in aqueous ammonia to yield concentrated fertilizer solutions containing the three major nutrients and over 50 percent total plant food.

T996,002
RECORDING MATERIALS

John C. Kwok, Sarnia, Canada, assignor to Bexford Limited, London, England

Filed Oct. 23, 1979, Ser. No. 87,566
Claims priority, application United Kingdom, Jun. 26, 1978, 27843/78
Int. Cl.³ G03C *1/54, 5/00, 1/78*
U.S. Cl. 430—152
No Drawing. 28 Pages Specification

Vesicular recording materials are described which include a sensitized layer comprising a polyeric vehicle for the sensitizing agent which is an acrylonitrile/substituted or unsubstituted styrene copolymer with at least 55 mole % of acrylonitrile and preferably less than 85 mole %. The copolymer is usually homogeneous and preferably derived from acrylonitrile and the styrene comonomer along and most preferably contains from 65 to 82 mole % of acrylonitrile. The copolymer is softenable on heating to permit the gas released by the sensitizing agent in the light struck areas to form light-scattering or reflecting vesicles therein.

A surfactant in an amount of at least 1% by weight, based on the weight of the copolymer, essential to vesiculation and anionic surfactants are especially effective in providing a wide tonal range and good speed rating, amounts up to 20% by weight being preferred. Generally, amounts of the surfactant in the range 2 to 5% by weight provide a satisfactory combination of vasiculating properties. The sensitized layer is preferably applied as a coating to a carrier sheet support such as a polyethylene terephthalate film. These recording materials have excellent vesiculating properties, particularly tonal range and speed rating.

REISSUES

JULY 1, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,316

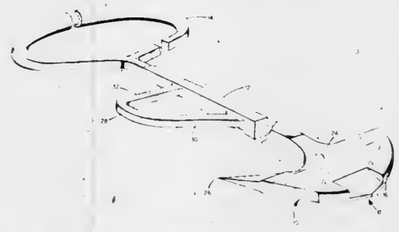
LUMBERING TOOL

Victor A. Dushku, Rackarbergsgatan 34, 2 TR., 752 32 Uppsala, Sweden

Original No. 3,945,065, dated Mar. 23, 1976, Ser. No. 591,412, Jun. 30, 1975. Application for reissue Mar. 16, 1978, Ser. No. 887,465

Int. Cl.[2] **B25F** *1/00;* **B66F** *15/00*

U.S. Cl. 7—161 **24 Claims**



1. A unitary portable, multi-function lumbering tool comprising:

an elongated shaft;

a head integrally disposed on one end of said shaft and having a wedge-shaped cross section tapering longitudinally from said shaft to a leading edge to facilitate its insertion into a saw track of a partially cut tree and to prevent a saw from binding therein, said head including a flared section extending in the plane of said head in a direction transverse to said shaft to provide a larger bearing surface for the head against a tree trunk;

at least one pointed edge projecting from a portion of said leading edge of said head for biting into a tree;

one or more rearwardly facing barbs disposed on one surface of said head for preventing said head from being pressed out of said saw track under the weight of the tree;

a handle integrally disposed at the other end of and cooperative with said shaft to provide a lever for tipping the tree about a fulcrum provided by the thicker end of said head; and

a hook disposed with respect to said head and cooperative with a surface of said tool to provide canting functions.

Re. 30,317

METHOD AND APPARATUS FOR DETERMINING THE PERFUSION EFFICIENCY FACTOR OF ANIMAL TISSUE

Dietrich W. Lübbers, Dortmund, and Albert Hüch, Marbach, both of Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

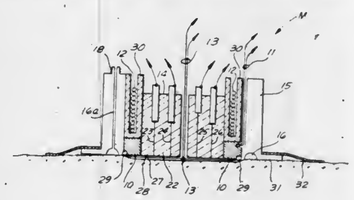
Original No. 3,918,434, dated Nov. 11, 1975, Ser. No. 415,803, Nov. 14, 1973. Application for reissue Nov. 11, 1977, Ser. No. 850,770

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1972, 2255879

Int. Cl.[2] **A61B** *5/02, 6/00*

U.S. Cl. 128—635 **17 Claims**

1. A method of determining the perfusion efficiency factor of animal tissue having blood vessels containing indicator substances therein, comprising the first step of percutaneously measuring the perfusion rate in animal tissue at a specific locus, said first step including heating a first member adapted to be placed against the tissue to be measured, measuring a first temperature of said first member, measuring a second temperature of a second member located centrally of said first member, comparing said first and second temperatures and forming a first differential signal which is proportional to the perfusion rate of the tissue; the second step of simultaneously percutaneously measuring the concentration of the indicator substances in the blood vessels in the tissue at the same locus and generating a second signal which is proportional to the concentration of the indicator substances in the blood vessels; and the third step of processing said first and second signals for generating a third signal which is indicative of the perfusion efficiency factor.



Re. 30,318

METHOD OF AND APPARATUS FOR PREPARING A WEFT SUPPLY IN A MAGAZINE FOR WEFT INSERTION IN SHUTTLELESS LOOMS

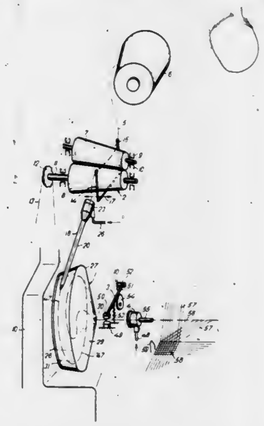
Ladislav Klinecky, and Stanislav Krmela, both of Sumperk, Czechoslovakia, assignors to Zbrojovak Vsetin, narodni podnik, Vsetin and Vyzkumny ustav lykovych vlaken, Sumperk, both of, Czechoslovakia

Original No. 3,799,211, dated Mar. 26, 1974, Ser. No. 278,630, Aug. 7, 1972. Application for reissue Mar. 23, 1976, Ser. No. 669,724

Claims priority, application Czechoslovakia, Aug. 5, 1971, 5692-71

Int. Cl.[2] **D03D** *47/36*

U.S. Cl. 139—452 **25 Claims**



25. In a method of preparing a length of weft yarn in a magazine for weft insertion in a shuttleless loom, the step of creating a helical air flow in said magazine which causes an intermittent prolongation of the path of the weft yarn in the shape of a helix as it passes through said magazine, and the step of ejecting the weft yarn from the magazine in a substantially axial direction relative to said helical air flow.

Re. 30,319

TABLETTING MACHINES

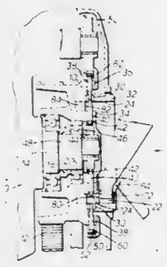
Jack Crossley, and David H. Wilson, both of Liverpool, England, assignors to Manesty Machines, Ltd., Liverpool, England

Original No. 3,918,873, dated Nov. 11, 1975, Ser. No. 523,143, Nov. 12, 1974. Application for reissue Nov. 13, 1978, Ser. No. 960,299

Claims priority, application United Kingdom, Nov. 17, 1973, 53494/73

Int. Cl.[2] B30B *11/08*

U.S. Cl. 425—345 **19 Claims**



1. In a tabletting machine in which the powdered or granulated material to be tabletted is fed from a feed frame onto the surface of a rotating die table so as to fill dies in the die table and be compressed into a tablet in each die, between a pair of punches individual to the die, and which enter the die from opposite ends, one of the punches being subsequently withdrawn from the die and the other punch being pushed through the die to eject the tablet from the die, [the improvement wherein:] *and in which*

[a.] the punches are arranged for movement relative to the die table, radially with respect to the axis of the die table, *the improvement comprising:*

[b.] a flexible hoop [is provided] which rotates with the die table and which is constrained and guided by abutments so as to assume a non-circular shape, and

[c.] means [is provided] *coupled to said punches* for moving corresponding ones of each pair of punches under the control of radial deflections of said flexible hoop,

one at least of said abutments being adjustable radially with respect to the axis of rotation of the die table thereby to adjust the movement of said corresponding ones of said punches.

Re. 30,320

CORONA REACTION METHOD AND APPARATUS

Frank E. Lowther, Severna Park, Md., assignor to Union Carbide Corporation, New York, N.Y.

Original No. 4,016,060, dated Apr. 5, 1977, Ser. No. 558,046, Mar. 13, 1975. Application for reissue Apr. 4, 1979, Ser. No. 27,060

Int. Cl.[2] C01B *13/11*

U.S. Cl. 204—176 **18 Claims**

1. A process for conducting corona discharge reactions between spaced electrodes comprising the steps of:

a. passing a reactant gas through a corona discharge gap formed between said spaced electrodes;

b. periodically establishing a corona discharge by dissipating narrow pulse electrical power of high voltage in said gap with the width of each narrow pulse being a relatively small fraction of the pulse period as well as being less than *substantially about* the gas ion transit time across said gap and greater than the electron transit time; and

c. maintaining a low voltage bias potential across said gap during the interval between said narrow pulses of a predetermined minimum magnitude sufficient to remove a substantial number of gas ions from said gap [being] *before* the termination of each pulse period.

Re. 30,321

MINERAL OIL EXTENDED POLYURETHANE SYSTEM CONTAINING A COUPLING AGENT FOR DECONTAMINATING AND SEALING THE INTERIOR SPACES OF AN INSULATED ELECTRICAL DEVICE

Melvin Brauer, East Brunswick, and Thaddeus F. Kroplinski, Bound Brook, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Original No. 4,008,197, dated Feb. 15, 1977, Ser. No. 632,180, Nov. 17, 1975. Continuation-in-part of Ser. No. 432,479, Jan. 11, 1974, abandoned. Application for reissue Apr. 3, 1978, Ser. No. 893,315

Int. Cl.[2] C08K *5/01, 5/07, 5/10*

U.S. Cl. 260—18 TN **25 Claims**

1. A *cured, cross-linked,* mineral oil extended polyurethane [system] comprising the reaction product of an isocyanate terminated prepolymer with a polyol *selected from the group consisting of castor oil, polyether polyols, hydroxyl bearing homopolymers of butadiene, hydroxyl bearing copolymers of butadiene and styrene, and combinations thereof,* in the presence of a mineral *oil* and a liquid coupling agent for compatibilizing said mineral oil with said polyurethane, said *mineral oil extended* polyurethane [system] containing from about 8 to about 20 parts of [said urethane polymer] *polyurethane*, from about 60 to about 75 parts mineral oil and from about 10 to about 25 parts of [coupler] *coupling agent*, all parts expressed on a weight basis, said liquid coupling agent being miscible in all proportions with said mineral oil, said coupling agent *being* selected from the group consisting of a ketone and an ester [of an organic compound selected from the group consisting of a diol and a diacid], said agent having a boiling temperature above 220° F., a solubility parameter between 7.0 and 9.5 and a hydrogen bonding index number in the range from [8.2 to 8.8] *6.0 to 12.0, and said agent being non-reactive with the prepolymer and the polyol,* said isocyanate terminated prepolymer *being prepared by reacting a polyisocyanate* selected from the group consisting of cycloaliphatic diisocyanate, aliphatic diisocyanate and aromatic diisocyanate [; said] *with a* polyol selected from the group consisting of castor oil, [and] polyether *polyols, hydroxyl bearing homopolymers of butadiene, hydroxy bearing copolymers of butadiene and styrene, and combinations thereof* wherein at least [one of said urethane forming reactants include a hydroxy bearing polybutadiene constituent] *a portion of the polyol used in the preparation of the polyurethane is selected from the group consisting of hydroxyl bearing homopolymers of butadiene and hydroxyl bearing copolymers of butadiene and styrene,* the mineral oil extended polyurethane when cured retaining the mineral oil within its structure, thereby preventing the oil from spewing and exuding from said cured composition[, said composition possessing a gel-like consistency].

23. A cured, cross-linked, mineral oil extended polyurethane which is non-spewing comprising from about 8 to about 45 parts of polyurethane, from about 25 to about 75 parts of mineral oil and from about 10 to about 35 parts of coupling agent, all parts expressed on a weight basis, wherein the cured, cross-linked polyurethane is characterized by the presence of a polybutadiene moiety in the polyurethane structure and is prepared from a mineral oil extended polyurethane precursor in admixture with the coupling agent, said coupling agent being characterized by:

(a) possessing a solubility parameter between 7.0 and 9.5;

(b) having a hydrogen bonding index number in the range of 6.0 to 12.0;

(c) being miscible in all proportions with said mineral oil; and

(d) being non-reactive with said polyurethane precursor.

Re. 30,322

NOVEL ELASTOMERIC GRAFT COPOLYMERS

Clarence F. Hammer, Wilmington, Del., and Harold K. Sinclair, Louisville, Ky., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 4,017,557, dated Apr. 12, 1977, Ser. No. 523,465, Nov. 13, 1974. Application for reissue Dec. 15, 1978, Ser. No. 969,935

The portion of the term of this patent subsequent to Aug. 3, 1993, has been disclaimed.

Int. Cl.[2] C08L *77/00*

U.S. Cl. 525—183 **15 Claims**

1. An elastomeric, thermoplastic graft copolymer consisting essentially of

A. an elastomeric trunk copolymer derived from at least two monomers, at least one of said monomers providing amine-reactive sites selected from the class consisting of an anhydride group, a vicinal pair of carboxylic groups, and a carboxylic group adjacent to an alkoxy-, phenoxy-, napthoxy-, substituted phenoxy-, or substituted naphthoxycarbonyl group, where the alkyl of the alkoxycarbonyl group has 1-10 carbon atoms, and the substituents of substituted phenoxycarbonyl and naphthoxycarbonyl groups can be a C_1-C_{10} alkyl, halogen, or a C_1-C_{10} alkoxy group; at least one of said monomers containing no amine-reactive sites and none of said monomers containing hydroxyl or amino groups; and

B. a side chain polymer derived from a short chain polyamide represented by the formula

$$H_2N-(CH_2)_m-\overset{O}{\overset{\|}{C}}+NH(CH_2)_m-\overset{O}{\overset{\|}{C}}\rightarrow_{x-1}Z,$$

where Z is



R^1 and R^2 being independently selected from hydrogen, a C_1-C_{18} alkyl, benzyl, and C_5-C_6 cycloalkyl; or taken together, being $-(CH_2)_4-$, $-(CH_2)_5-$, $-(CH_2)_2-O-(CH_2)_2-$, or

$$-(CH_2)_2-\underset{\displaystyle R^3}{\underset{|}{N}}-(CH_2)_2-,$$

where R^3 is a C_1-C_6 alkyl; with the proviso that only one of R^1 or R^2 can be hydrogen;

m is 5 and 11; and

x is a positive number having an average value of 5-60;

said side chain polymer being attached to said trunk copolymer through amide or imide linkages resulting from a reaction of the terminal primary amino group of said short chain polyamide with the amine-reactive sites of said trunk copolymer; the proportion of said elastomeric trunk copolymer in the graft copolymer being about 45-85 weight percent.

Re. 30,323

SMOKE DETECTOR ADAPTED TO A SMOKE SENSING APPARATUS

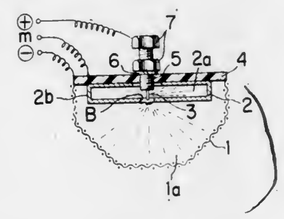
Yukio Tomioka, Sagamihara, Japan, assignor to Hochiki Kabushiki Kaisha, Japan

Original No. 3,935,466, dated Jan. 27, 1976, Ser. No. 440,521, Jun. 18, 1971. Continuation of Ser. No. 860,357, Sep. 23, 1969, abandoned. Application for reissue Sep. 5, 1978, Ser. No. 940,156

Claims priority, application Japan, Sep. 26, 1968, 43-69696; Mar. 11, 1969, 44-18458

Int. Cl.[2] G01T *1/18*

U.S. Cl. 250—385 **6 Claims**



1. An ionization-type smoke detector *having only a single radioactive source,* comprising: an inner electrode provided with [a] *said single* radioactive source; an intermediate electrode having at least one throughhole; and an outer electrode having openings through which smoke can enter; *an insulating support member supporting said inner electrode, said intermediate electrode and said outer electrode; and an annular wall means projecting from said support member at a position inwardly of the outer circumference of said support member,* said inner electrode and said intermediate electrode forming an inner ionization chamber in which said radiation source is arranged, said intermediate electrode and said outer electrode forming an outer ionization chamber, said inner ionization chamber being [arranged inside] *located in a topmost portion of* said outer ionization chamber *which surrounds the inner ionization chamber, said intermediate electrode being secured to said annular wall means such that the surfaces thereof define said inner ionization chamber,* and wherein a necessary quantity of radioactive rays emitted from said radioactive source is introduced directly into said outer ionization chamber through said holes.

PLANT PATENTS

GRANTED JULY 1, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,558

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91761

Continuation of Ser. No. 845,240, Oct. 25, 1977, abandoned.
This application Jan. 15, 1979, Ser. No. 3,816
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a distinctly orangey-pink coloring of mature blooms which change to reddish orange as the blooms age, a white overlay appearing as the blooms age, a shorter fuller bud than the present "First Prize", the flowers being larger and more formal with medium length, strong stems, relatively few thorns and heavy, waxy foliage.

4,559

RED ROSE SEEDLING NAMED HILTACO

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed Feb. 28, 1979, Ser. No. 24,581
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct rose plant cultivar, substantially as herein shown and described, characterized by its abundant and continuous production of lustrous red flowers, its very free growth habit with good winter productivity, and its resistance to mildew and the occurrence of blind wood.

4,560

MYOPORUM PLANT

George C. Smith, 436 Greenwood, Arroyo Grande, Calif. 93420

Filed Mar. 15, 1979, Ser. No. 20,878
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of Myoporum plant discovered in a cultivated area, substantially as shown and described, characterized particularly by a distinctive woody plant prostrate in form attaining a height of 12 to 18-inches and a spread of 12 to 15-feet, leaves ½ to ¾-inches wide and 2 to 3-inches long and dense growing ability making it especially useful for erosion and traffic control and of tolerance for pruning and shaping in any season.

4,561

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 9, 1979, Ser. No. 10,853
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Charisma and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; dark lavender pink ray floret color; diameter across face of capitulum ranging from 70 to 90 mm. at maturity; uniform nine week photoperiodic flowering response to short days; tall plant height when grown as a single stem cut spray; medium penduncle length and minimal pollen production.

4,562

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 9, 1979, Ser. No. 10,851
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Capri and particularly characterized as to uniqueness by the combined characteristics of semi-incurved capitulum form; decorative capitulum type; dark lavender pink ray floret color, with minimal color oxidation; diameter across face of capitulum ranging from 100 to 120 mm. at maturity; uniform nine week flowering response; medium plant height, and semi-spreading branching pattern.

4,563

YELLOW CHRYSANTHEMUM NAMED MEDALIST

Leonard H. Shoesmith, Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Mar. 5, 1979, Ser. No. 17,407
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct chrysanthemum cultivar, substantially as herein shown and described, characterized by its bright yellow composite flowers which have green florets at the center of the disc, by its compact plant habit, and by its freedom from heat delay.

PATENTS

GRANTED JUL. 1, 1980

ERRATA

For CLASS	See PATENT NO.
433-177	4,209,904
433-189	4,209,905
433-011	4,209,906
433-033	4,209,907
433-078	4,209,908
433-057	4,209,909
368-273	4,209,968
368-250	4,209,969
368-076	4,209,970
368-076	4,209,971
366-071	4,209,972
368-084	4,209,973
368-084	4,209,974
368-186	4,209,975
368-187	4,209,976
368-010	4,209,977
430-126	4,210,448
430-183	4,210,449
430-567	4,210,450
525-006	4,210,556
525-088	4,210,579
548-251	4,210,587
556-436	4,210,596
568-385	4,210,606
568-385	4,210,607
568-451	4,210,608
568-947	4,210,609
525-204	4,210,612
427-088	4,210,689
375-120	4,210,776
375-117	4,210,777
370-080	4,210,780
455-610	4,210,803
455-095	4,210,870
455-137	4,210,871
367-106	4,210,897
363-124	4,210,958

PATENTS

GRANTED JULY 1, 1980

GENERAL AND MECHANICAL

4,209,857

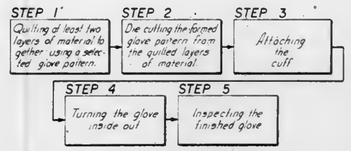
PROCESS FOR MANUFACTURING WORK GLOVES

L. Jack Clark, Jr., 2110 Hollywood Rd., Atlanta, Ga. 30318, and David L. Clark, 174 Confederate St., Dallas, Ga. 30132

Filed Mar. 5, 1979, Ser. No. 17,361

Int. Cl.[2] A41D *19/02*

U.S. Cl. 2—169 **8 Claims**



1. In a method of manufacturing gloves, the steps of quilting superposed layers of material together with lines of stitching forming the outlines of multiple glove bodies connected integrally with said material, and die cutting the quilted material on cutting lines slightly outside of said lines of stitching and following the lines of stitching to separate pre-sewn glove bodies from said quilted material.

4,209,858

SAFETY HELMET

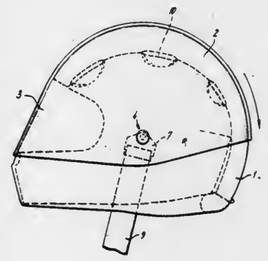
Michel J. Coenen, Rijswijk, Netherlands, assignor to Coenen Benelux B. V., The Hague, Netherlands

Filed Feb. 2, 1978, Ser. No. 874,676

Claims priority, application Netherlands, Apr. 25, 1977, 7704517

Int. Cl.[2] A42B *3/02;* **A61F** *9/06*

U.S. Cl. 2—412 **4 Claims**



1. A motorcyclist's crash helmet comprising an inner shell of shock-absorbing material, a protective outer shell made of a hard plastic material, said outer shell fittingly surrounding the greater part of the inner shell in the lowered position and having a visor portion wherein said outer shell and said visor are formed of a single piece of transparent plastic, said outer shell being connected to said inner shell by at least one hinge transverse to the side portion of the helmet.

4,209,859

LIGAMENT AND TENDON PROSTHESIS OF POLYETHYLENE TEREPHTHALATE AND METHOD OF PREPARING SAME

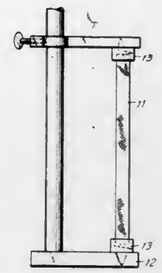
Harmon L. Hoffman, Wyckoff, N.J., assignor to Meadox Medicals, Inc., Oakland, N.J.

Filed Mar. 29, 1978, Ser. No. 891,433

Int. Cl.[2] A61F *1/24, 1/00*

U.S. Cl. 3—1 **17 Claims**

13. A prosthesis suitable for repair of a damaged ligament or tendon, comprising a polyethylene terephthalate fabric strip of reduced extensibility in the longitudinal direction, the term "fabric " being taken to include woven, circularly-knit and warp-knit goods, the extensibility of said ligament or tendon



being characteristic of a strip which has been treated with a shrinking agent under conditions such as to reduce the extensibility thereof by at least about 50%.

4,209,860

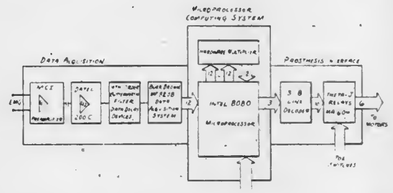
SYSTEM AND METHOD FOR MULTIFUNCTIONAL CONTROL OF UPER LIMB PROSTHESIS VIA EMG SIGNAL IDENTIFICATION

Daniel Graupe, Fort Collins, Colo., assignor to The United States of America as represented by the Administrator of Veterans' Affairs, Washington, D.C.

Filed Feb. 13, 1978, Ser. No. 877,379

Int. Cl.[2] A61F *1/00, 1/06*

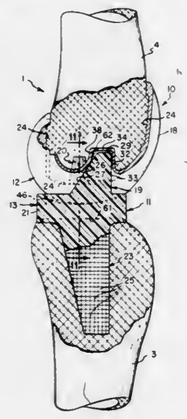
U.S. Cl. 3—1.1 **13 Claims**



13. In a system for controlling the operation of an electrically powered prosthetic appliance that replaces an amputee's missing limb, which system has been precalibrated by calibration steps of picking up electomyographic (EMG) signals from the stump of or from at least one muscle close to point of amputation of the missing limb, processing the signals thus collected so as to reduce same to a near minimum number of linear time series model parameters effective to differentiate between each of the several functions performed by the missing limb from each other function thereof, and collecting historical data representative of each of the functions of the prosthesis appliance to be controlled for use as background data, the improvement comprising means for storing the parameters and the background data of each of the functions to be performed by the prosthetic appliance on the person of the amputee; means for collecting current EMG signals from the stump of the amputee or from at least one muscle close to the point of amputation; a plurality of networks having a common input coupled to receive the collected current EMG signals, each said network having been adjusted by the stored time series parameters relating to respective different limb functions as obtained during calibration; comparing means for comparing the current EMG signals collected with respective outputs

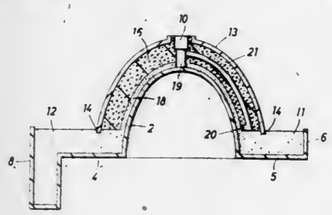
of said networks; and means responsive to output from said comparing means for initiating a response in the prosthetic appliance corresponding to that network whose output over a predetermined time interval is closest to the collected EMG signals over the same interval.

4,209,861
JOINT PROSTHESIS
Peter S. Walker, Ridgewood, and Rocco Borzone, Emerson, both of N.J., assignors to Howmedica, Inc., New York, N.Y.
Filed Feb. 22, 1978, Ser. No. 880,057
Int. Cl.[2] A61F 1/24
U.S. Cl. 3—1.911 **17 Claims**



1. A joint prosthesis articulatable between extended and flexed positions comprising a first component, a second component, a bearing portion in each of said components, the bearing portions of said components being in non-linked articulatable mutual contact over a contact area when in use, a guiding surface on each of said components, the guiding surfaces of said components being in mutual contact during at least a major portion of the flexion of said joint from the extended to the flexed position, said guiding surfaces interacting during at least a major portion of the flexion of said joint to effect a corresponding controlled, predetermined, and positive movement of said contact area, and said guiding surfaces being substantially non-load bearing.

4,209,862
BATHROOM FIXTURES AND PROCESS OF MANUFACTURE
Rodrigo Cortes-Garza, Avenue Madero 2473 Ote., Monterrey, Nuevo Leon, Mexico
Continuation-in-part of Ser. No. 913,676, Jun. 8, 1978, abandoned. This application Mar. 22, 1979, Ser. No. 22,941
Claims priority, application Mexico, May 11, 1978, 173456
Int. Cl.[2] E03C 1/18; B29D 27/04
U.S. Cl. 4—187 R **9 Claims**



1. A composite stock material comprising a first layer of marble, a second layer of polyurethane foam, and a third reinforcing layer of fiberglass reinforced resin having a portion thereof embedded in said marble and a portion overlying and in contact with said foam.

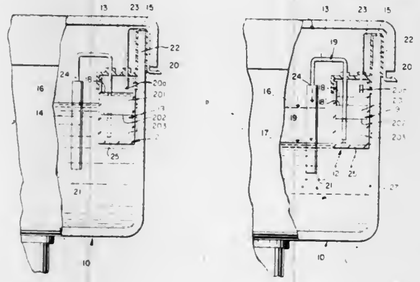
6. A method of manufacturing a bathroom fixture and the like comprising:

forming over a male mold a basin of a thin layer of a marble mix having thick peripheral areas of the marble mix,

embedding prior to curing the mix a rigid reinforcing sheet in the thick areas of the mix with a portion of the sheet spaced from the thin marble mix layer, and

injecting foam resin material into the space between the sheet and mix and permitting it to set.

4,209,863
PROCESS FOR AROMATIZING AND/OR DEODORIZING THE ENVIRONMENT SURROUNDING THE FLUSH TANK OF A TOILET
Jerome Lindauer, Hillsdale, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.
Continuation-in-part of Ser. No. 958,492, Nov. 7, 1978, Pat. No. 4,168,550. This application Apr. 30, 1979, Ser. No. 34,503
Int. Cl.[2] E03D 9/02
U.S. Cl. 4—228 **14 Claims**

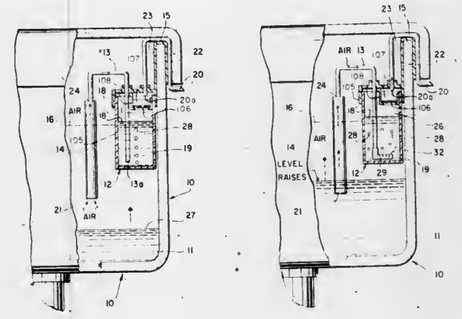


1. A process comprising the step of simultaneously causing (i) a first liquid which is a cleansing and/or sanitizing and/or deodorizing and/or aromatizing liquid initially retained in a separate phase of a two immiscible liquid phase containing container means to flow from said fixed container means into the water of a toilet flush tank in order to cleanse and/or sanitize and/or deodorize and/or aromatize the water of said toilet flush tank and a (ii) aromatizing and/or deodorizing emission of fixed duration evolving from said fixed container means to aromatize and/or deodorize the air in the vicinity of the toilet flush tank by using:

(i) the lowering level of water in the said toilet flush tank during the first phase of flushing in order to cause in order to cause said first liquid which is a cleansing and/or sanitizing and/or deodorizing and/or aromatizing liquid to be emitted from said fixed container means into said water; and

(ii) the rising level of water in the said toilet flush tank during said second phase of flushing to cause aromatizing and/or deodorizing vapor to diffuse from a second aromatizing and/or deodorizing liquid initially retained in a separate phase of a two immiscible liquid phase containing container means separate from said first liquid, into air bubbles produced within said container means as a result of said rising level of water, said air bubbles rising to the upper surface of the upper phase of the aromatizing and/or deodorizing liquid in said container means, the air contained within the air bubbles then being conveyed into the atmosphere proximately surrounding said flush tank.

4,209,864
CLEANSER AND/OR SANITIZER AND AROMA EMITTING ATTACHMENT FOR TOILETS AND PROCESS FOR USING SAME
Jerome Lindauer, Hillsdale, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.
Continuation-in-part of Ser. No. 958,492, Nov. 7, 1978, Pat. No. 4,168,550. This application May 21, 1979, Ser. No. 40,920
Int. Cl.[2] E03D 9/02
U.S. Cl. 4—228 **16 Claims**



1. In an apparatus located within the flush tank of a toilet for dispensing a measured amount of odorant or deodorant vapor into the atmosphere surrounding the toilet and for dispensing a measured amount of one or more solutions selected from the group consisting of a cleanser solution, a sanitizer solution, an aromatizer solution and a deodorizer solution into the liquid stored in the flush tank, said flush tank being of the type which retains a flushing liquid which lowers and rises between a first upper level and a second lower level during flushing, and including:

(i) container means for retaining the additive liquids in solution;

(ii) first conduit means having outlet opening means and inlet opening means, said first conduit means communicating between said container means and an inlet opening means positionable in said flush tank intermediate said first and second levels of the flushing liquid to admit air into the first conduit means when the flushing liquid lowers below the inlet opening means, said inlet opening means being positionable sufficiently below said first level for the flushing liquid to force air through the first conduit means into the container means as the flushing liquid level rises above the inlet opening means towards said first level; said first conduit means also communicating between said additive liquid in the container means and said outlet opening means positionable in said tank for passage of additive liquid into the flushing liquid whereby the level of said outlet opening means is substantially below the bottom level of said solution in said dispensing apparatus, the improvement comprising, in combination:

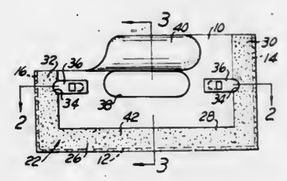
a. Said first conduit means which communicates between said container means and said inlet opening means consisting essentially of a first tube having a first inside diameter and a second tube having a second inside diameter, said first tube being positioned from a point in proximity to the bottom of said container means and passing through the top of said container means above the level of said additive liquid solution and then in a downward direction to a point which is at substantially a level identical to the level of the bottom of said container means which retains said additive liquid solution, the end of said first tube having said first inside diameter being said outlet opening means for said conduit means for passage of additive liquid into the flushing liquid, said outlet of said first tube being fixedly connected in a sealed manner to said second tube having said second inside diameter, said second tube having said second inside diameter passing from said outlet means of said first tube to said inlet opening means positionable in said tank intermediate said first and second levels of the flushing liquid to admit air into the first conduit means when the flushing liquid lowers below the inlet opening means, and

b. a second conduit means communicating from a level above the highest level of the additive liquid solution retained in said container means into the air surrounding said flush tank; and

c. the ratio of said second inside diameter to said first inside diameter being in the range of from about 2:1 up to about 5:1; and

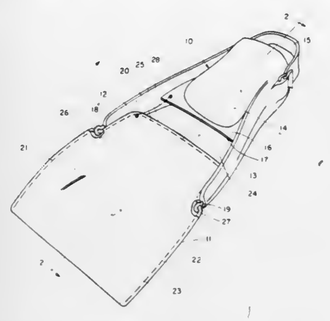
d. a fixedly positioned holding means having a substantially resilient structure and capable of supporting a solid or gelled deodorizing and/or aromatizing composition of matter thereon, located in between (i) said inlet opening means of said first conduit means and (ii) said second conduit; whereby during the flushing, during the first cycle thereof, when the flushing liquid lowers from the first upper level to the second lower level, additive liquid is siphoned from said container means into said flushing liquid and during the second phase of the flushing cycle, when the flushing liquid rises from said second lower level to said first upper level, air forced into said second tube of said first conduit means is transmitted through said first tube of said first conduit means and into said container means in the form of air bubbles which travel to the upper level of said additive liquid solution held within said container means and whereby aromatizing or deodorizing substance contained in said additive liquid solution is diffused into said travelling air bubbles so that when the air bubbles reach the upper surface of said additive liquid solution held in said container means the gaseous phase is a mixture of air and aromatizing or deodorizing substance and the mixture of air and aromatizing or deodorizing substance then travels through said second conduit means into the atmosphere surrounding said flush tank.

4,209,865
WALLPAPER HAND TOOL WITH INTERCHANGEABLE BLADES
Robert L. Kozlowski, 4981 Burnley, Bloomfield Hills, Mich. 48013
Filed May 4, 1978, Ser. No. 902,792
Int. Cl.[2] E04F 21/28
U.S. Cl. 7—105 **7 Claims**



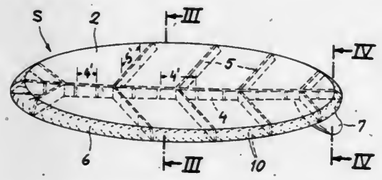
1. A hand tool consisting of a holder plate and a plurality of interchangeable removable working edge frames, said holder plate comprising a handle and a peripheral portion provided with at least one straight edge and each of said working edge frames comprising a channel member removably fitted over said straight edge of said holder plate, and said holder plate and each of said working edge frames having co-operating complementary means for removably holding and locking one of said working edge frames on said holder plate peripheral portion wherein each of said working edge frames comprises three integral channel members for mounting over three peripheral consecutive edges of said holder plate as a unit.

4,209,866
SWIM FIN
Herbert H. Loeffler, Arlington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.
Filed Oct. 2, 1978, Ser. No. 947,459
Int. Cl.[2] A63B *31/10*
U.S. Cl. 9—304 **6 Claims**



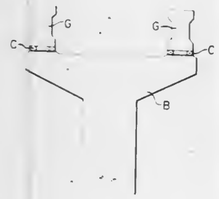
1. A swim fin, comprising in combination
(a) a foot section adapted to receive a swimmer's foot and having a toe portion defining a trailing edge and a heel portion;
(b) oppositely disposed rigid pivot support members affixed to and extending aft of said trailing edge of said toe portion;
(c) a blade comprising a rigid frame defining a leading edge and opposite side edges and a flexible membrane having a small streamlining reversible camber mounted on said frame, said blade being pivotally mounted between said pivot support members along a pivot line essentially parallel to said leading edge of said blade and being located a distance equivalent to between about 20% and about 30% of the length of said blade aft of said leading edge of said blade and positioned to define an open passage extending across the distance between said pivot support members and between said leading edge of said blade and said trailing edge of said toe section; and
(d) pivot limiting means arranged to limit the angle of blade pivot in either direction to no greater than about 30°.

4,209,867
FLEXIBLE SURFBOARD
Henry H. Abrams, III, 15 Community Rd., Bay Shore, N.Y. 11706
Filed Mar. 20, 1978, Ser. No. 888,492
Int. Cl.[2] A63C *15/00*
U.S. Cl. 9—310 E **6 Claims**



1. A surfboard comprising:
an elongated substantially oval deck structure having upper and lower broad surfaces and composed at least in part of balsa wood having the grain perpendicular to said broad surfaces and enclosed in a hardened layer of fiberglass-containing synthetic resin; and
a generally flat stabilizer extending downwardly from said lower broad surface at one end of said deck structure and secured thereto, said stabilizer comprising two mirror symmetrical halves formed from sheet balsa having the grain perpendicular to a broad surface of each of said halves and parallel to said lower broad surface, said halves being joined at the broad surfaces thereof by a coating of synthetic resin laminated therebetween.

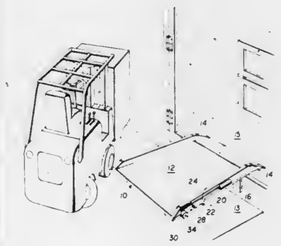
4,209,868
FIXED SUPPORT STRUCTURE
Hiroshi Tada, Yokohama, and Toshiro Nozu, Tokyo, both of Japan, assignors to Oiles Industry Co. Ltd., Tokyo, Japan
Filed Aug. 21, 1978, Ser. No. 935,670
Claims priority, application Japan, Aug. 29, 1977, 52-103438; Jun. 7, 1978, 53-67832
Int. Cl.[2] E01D *19/06*
U.S. Cl. 14—16.1 **3 Claims**



3. In a fixed support structure made up of a pair of support units (**101**), each unit including a retainer (**129**), a housing (**103**) and a ball stud, said ball stud having a ball portion (**108**) disposed in said housing (**103**) and a threaded shank portion (**109**), said shank portion (**109**) extending downward from said housing (**103**), said housing (**103**) being fixed to an upper structure such as a bridge girder (G) in spaced relation, and said shank portion (**109**) being threadedly fixed to said retainer (**129**), said retainer (**129**) including a base plate (**124**) which in turn is fixed to a lower structure (B) such as a bridge base, in combination:
(a) an aperture (**130**) at the center of said retainer (**129**) a pin (**125**) extending upward of the center of said base plate (**124**), through said aperture, a first eccentric disc (**127**) rotatably disposed around said pin (**125**) in sliding contact therewith, a second eccentric disc (**128**) rotatably disposed around said first eccentric disc (**127**) in sliding contact therewith;
(b) lock bolts (**121**) coupling said retainer to said lower structure (B) on diagonally opposite sides of said aperture (**130**) disposed transverse to the longitudinal direction of the upper structure to which said support structure is fixed;
(c) an anchor plate embedded in said lower structure (B), parallel to said base plate (**124**), corresponding apertures in said base plate (**124**) and said anchor plate (**120**) with protective cylinders (**139**) extending between said base plate (**124**) and said anchor plate (**120**), said lock bolts (**121**) passing through said protective cylinders (**139**), the inner diameter of said protective cylinders (**139**) being larger than the outer diameter of said lock bolts (**121**); and,
(d) upper and lower washer means (**138**) disposed above said base plate (**124**) and below said anchor plate (**120**), said washer means each having spherical concave and convex surfaces facing each other.

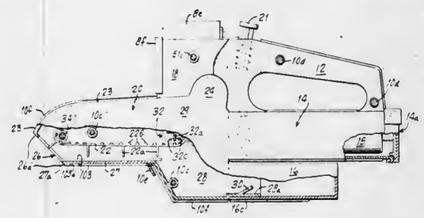
4,209,869
LIFTING APPARATUS FOR DOCKBOARD
Ralph D. Trine; Robert L. Le Clear, both of Albion, Mich., and T & S Equipment Company, Albion, Mich.
Filed Dec. 18, 1978, Ser. No. 970,392
Int. Cl.[2] E01D *1/00*
U.S. Cl. 14—69.5 **9 Claims**

4. Apparatus for lifting one end of a dockboard or the like having side portions and adapted to be positioned on and between a loading dock and the floor of a carrier vehicle or the like, said lifting apparatus comprising:
a lift lever pivotally mounted on one side portion of the dockboard and having an end portion,
a lifting arm movably mounted on said one side portion beneath said lift lever and having an end portion engageable with the loading dock,
said lever end portion being slidably engageable with said lifting arm to move its end portion into engagement with the loading dock to lift the adjacent end of the dockboard above the loading dock when said lift lever is moved to an operative position,



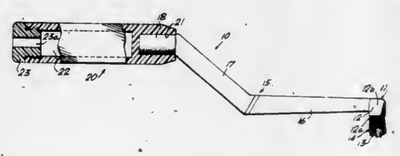
the pivotal point of said lift lever being so positioned that said lever end portion is in an over-center position relative to said pivotal point when said lift lever is in said operative position, and
stop means on said side portion for limiting movement of said lift lever in one direction to said operative position,
whereby said lift lever is maintained in said operative position by said stop means and by the weight of said dockboard owing to the overcenter position of said lever end portion.

4,209,870
HAND-HELD CLEANING DEVICE WITH SNOUT-LIKE SWEEP TUNNEL
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Jan. 11, 1979, Ser. No. 2,786
Int. Cl.[2] A47L *11/00*
U.S. Cl. 15—97 R **22 Claims**



1. A hand-held cleaning device comprising:
a housing having,
forwardly-extending hollow tunnel means with a forwardly-inclined intake opening at its forward end for engaging a surface to be cleaned and taking in dust and debris from said surface;
handle means disposed rearwardly of said tunnel means for accommodating the hand of a user;
means defining a chamber disposed at the opposite end of said tunnel means from said intake opening for receiving dust and debris taken in through said intake opening; and
debris cup means removably disposed in communication with said chamber for collecting dust and debris received therein;
sweeping means in said tunnel means for picking up dust and debris at said intake opening and delivering it to said chamber and comprising:
an elongated endless belt extending between said ends of said tunnel means, and having a series of ribs on its inner surface and spaced flexible upstanding blade means on its outer surface for engaging dust and debris at said intake opening; and
means for mounting said endless belt in said tunnel means including gear means for engaging said ribs to drive said belt whereby said blade means moves through said tunnel means and past said intake opening;
motor means in said housing for producing a rotational output; and
drive means operatively connecting said motor means to said gear means, for rotating said gear means to drive said belt.

4,209,871
TOOTHBRUSH WITH IMPROVED INTERPROXIMAL AND FREE GINGIVAL MARGIN ACCESSIBILITY
Raymond Ernest, 170 SE. 14th St., Miami, Fla. 33131, and Jack Nestor, Miami Beach, Fla., assignors to Raymond Ernest, Miami, Fla.
Filed May 30, 1978, Ser. No. 910,870
Int. Cl.[3] A46B *9/04*
U.S. Cl. 15—167 R **5 Claims**

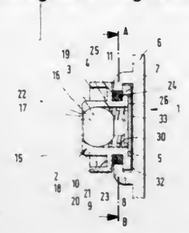


1. A toothbrush construction having the capability for simultaneously penetrating the interproximal spaces and under the free gingival margins of the teeth of both the maxillary and mandibular arches comprising, a stem extending from a handle, a leading end section of said stem having a longitudinal axis, said leading end section terminating in an elongated bristle bearing head having a major axis extending between opposite ends of said head and perpendicular to said longitudinal axis, said bristle bearing head comprising a back having a substantially flat surface, a plurality of bristles projecting from said flat surface in a predetermined arrangement bilaterally symmetrical with respect to a minor axis of said head, said stem longitudinal axis being coaxial with said minor axis, said predetermined bristle arrangement including a wedge-like configuration having an apex located adjacent each of said opposite ends, the length of said head between said apices being on the order of 24 mm such as to position each apex at the gingival margin of each of said arches when the mouth is in an open position and said handle disposes said stem longitudinal axis in the occlusal plane.

4,209,872
CLEANING IMPLEMENT
Siegfried Maier, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Düpro AG, Romanshorn, Switzerland
Filed Jun. 28, 1978, Ser. No. 919,941
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2728992
Int. Cl.[2] A46B *15/00*; **F16C** *35/00*
U.S. Cl. 15—179 **22 Claims**

2. A cleaning implement which includes: a rotatable shaft provided with bristles and having each of its ends provided with a flange projecting in the axial direction of said shaft and defining a recess, said shaft having each end thereof provided

with an axle stub coaxial with said shaft and extending through the pertaining recess and projecting therefrom, bearing means each including a bearing housing having an outer surface and being at least partially nexted in the pertaining recess and journalling the respective adjacent axle stub, supporting means respectively supporting said bearing means, and shock absorb-



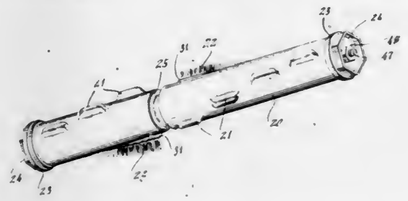
ing means respectively interposed between each bearing housing and the pertaining supporting means, the outer surface of the bearing housing at each end of said shaft being provided with a first groove having at least the major portion of the respective adjacent shaft flange located therein, said bearing housing having its outer surface provided with an additional groove and a shock absorber located in said additional groove.

4,209,873

BRUSH-BEATER FOR A VACUUM CLEANER AND METHOD FOR MAKING THE SAME

Harold W. Schaefer, Bloomington, Ill., assignor to National Union Electric Corporation, Greenwich, Conn.

Filed Jun. 2, 1978, Ser. No. 911,978
Int. Cl.[2] A46B *7/10;* **A47L** *5/30*
U.S. Cl. 15—182 **18 Claims**



1. In a beater-brush assembly for a vacuum cleaner, wherein an elongated rotary member has spaced apart brush means and beater means; the improvement wherein said rotary member comprises an elongated hollow cylinder of substantially circular cross-section, said beater means comprising radially outwardly extending projections formed in the material of said cylinder, said cylinder having a helically extending slot with edges directed circumferentially, said brush means being held in said slot and comprising an elongated plastic base member having a pair of grooves extending longitudinally along opposite sides thereof and engaging the sides of the slot of the cylinder, and radially outwardly extending brushes having their bases embedded in said base member.

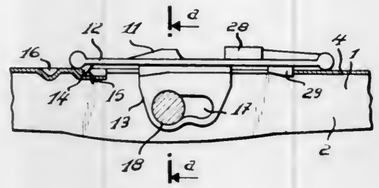
4,209,874

WINDSCREEN-WIPER BLADE

Theodore Hancu, Chene-Bougeries, Switzerland, assignor to Societe d'Exploitation de Brevets J. B., Fribourg, Switzerland

Filed Feb. 9, 1979, Ser. No. 10,779
Claims priority, application Switzerland, Feb. 17, 1978, 1755/78
Int. Cl.[2] B60S *1/40*
U.S. Cl. 15—250.32 **3 Claims**

1. A wiper assembly comprising:
(a) a support channel having a longitudinal wall and two lateral wings through each of which a hole passes, the two holes being aligned on an axis perpendicular to the said wings,
(b) collars extending from the wings towards each other respectively from the marginal regions of said holes,
(c) a locking piece carried by said support sliding longitudinally between the wings while remaining opposite to the two holes, said locking piece having a first transverse opening in communication with a second transverse opening of greater height, said locking piece being capable of



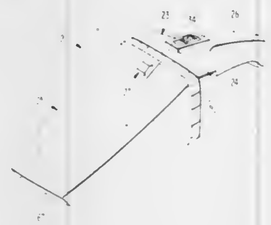
occupying two stable positions in which each of the openings is respectively opposite to the two holes of the support,
(d) two slots provided in said longitudinal wall opposite to the collars respectively, and
(e) an intermediate piece having a pair of wings each carrying a cut-away portion of circular arc form capable of introduction into the slots respectively to bring the cut-away portions of circular arc form to press respectively upon the said collars.

4,209,875

CORDLESS VACUUM CLEANER BOWL AND FILTER SYSTEM

Timothy G. Pugh, Baltimore, and Omer L. Shifflett, Jr., Lutherville, both of Md., assignors to Black & Decker, Inc., Newark, Del.

Filed Aug. 11, 1978, Ser. No. 932,762
Int. Cl.[3] A47L *5/24*
U.S. Cl. 15—344 **4 Claims**



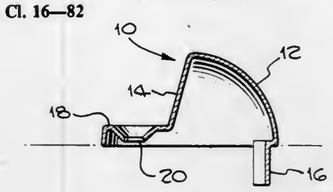
1. A hand-held electric vacuum cleaner comprising first and second separable units interconnected by releasable latch means, said first unit including a housing enclosing a motor and fan and having switch means for operating said motor, venturi means carried by said housing and extending forwardly of said fan, said venturi means having an opening therethrough communicated with and narrowing toward said fan and operable to increase the velocity of inlet air entering said fan, said second unit including a hollow bowl having an open end receiving said venturi means, a ring removably fitted in said bowl and carrying a filter bag, means limiting the inward movement of said ring relative to said bowl, said venturi means engaging said ring and pressing it in place within said bowl, said releasable latch means including cooperable means on said venturi means and bowl and manually releasable to permit separation of said first and second units, said ring and filter bag being removable from said bowl upon separation of said first and second units.

4,209,876

DOOR STOP

Herbert Wilzig, 606 N. 55th St., Montebello, Calif. 90640, and Charles J. Schuessler, 1340 E. Ruddock, Covina, Calif. 91722

Filed Apr. 6, 1979, Ser. No. 27,763
Int. Cl.[2] E05F *5/02*
U.S. Cl. 16—82 **4 Claims**



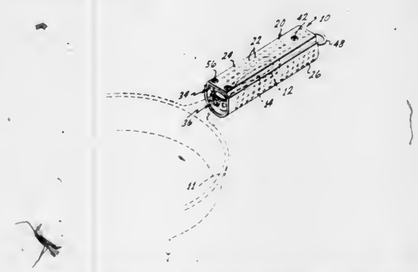
1. A floor mountable door stop having a quarter-spherical backstop portion with a substantially vertical backstop face, an integral tongue mounting portion extending away from the bottom of the backstop face, and an integral anchor member extending downwardly from the bottom end of the quarter-spherical backstop portion, wherein the improvement comprises:
said door stop being constructed from sheet metal less than about 0.060 inches in thickness.

4,209,877

INSULATED SUPPLEMENTAL HANDLE HOUSING CAST IRON UTENSIL HANDLE

Julius R. Colasent, 123 Farland Pl., Escondido, Calif. 92025

Filed Dec. 1, 1978, Ser. No. 965,574
Int. Cl.[2] A47J *45/08*
U.S. Cl. 16—116 R **8 Claims**



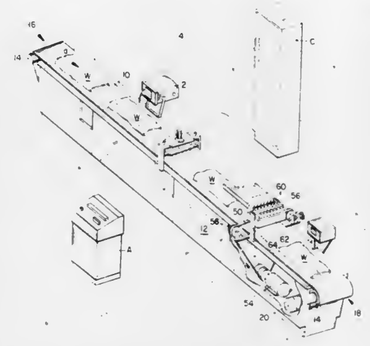
1. The combination with a cast iron cooking utensil of the type having cast integrally therewith a handle extending radially outwardly therefrom, said handle being of the type having extending vertically therethrough an opening, of means to insulate said handle for manual handling, comprising:
(a) a hollow housing receiving at least the outboard portion of said handle and housing the same, said housing being formed of low heat transferring material,
(b) an upright key disposed in said hollow housing and secured thereto and said key being disposed in said opening and engaging the sides of said opening, said key being formed of sheet material and being planar and lying in an upright plane extending laterally of said handle and said key extending vertically from above said opening to below said opening, and
(c) a pair of locking members secured in the inboard portion of said housing and having opposed jaws engaging opposite portions of said handle, and means tensing said jaws to grip said handle, whereby the one portion of said housing is secured to said handle by said key and an inboard portion of said housing is secured to said handle by said locking members.

4,209,878

AUTOMATIC MEAT INSPECTING AND TRIMMING MACHINE AND METHOD

Howard C. Albert, 30 Plymouth Rd., Longmeadow, Mass. 01106

Filed Mar. 20, 1978, Ser. No. 888,006
Int. Cl.[3] A22C *17/00*
U.S. Cl. 17—52 **2 Claims**



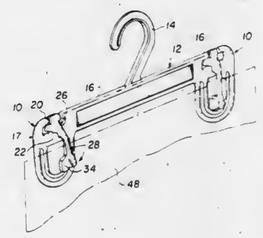
1. A method of trimming the fat layer from a meat cut comprising the steps of:
measuring the local values of the depth of the fat layer by probing the meat cut in a plurality of sites as the meat cut is conveyed past a first measuring station, generating a plurality of signals representing the depth measurements at the respective sites, storing the generated values in a memory as representative of the fat profile,
conveying the meat cut past a second trimming station,
moving an endless band saw blade in a path transverse to the direction of movement of and around the meat cut with the run of the blade above the meat cut being laterally and vertically displaced along the transverse path from its normal reference position according to the generated fat profile by a profile sensing member activated by and responsive to the values stored in the memory.

4,209,879

CLAMP

Erkki Paajanen, 1308 NE. First Ave., Ft. Lauderdale, Fla. 33304

Filed Jun. 22, 1978, Ser. No. 918,099
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—248 R **10 Claims**



1. A clamp adapted to grip articles, comprising: a first jaw and a second jaw; said first jaw having, adjacent one end thereof, a slot and the other end having resilient article receiving means; said second jaw comprising an elongated arm having, on one end, means engaging one side of said slot providing a pivot means for said arm and indexing means engaging an

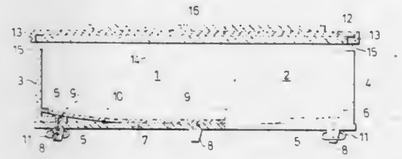
opposite side of said slot from a fully opened position to a closed gripping position, said indexing means comprising a series of corrugations disposed in an arc of a circle about said pivot means to provide a resilient step-by-step motion to said pivoted arm; and means on the other end of said arm, cooperating with said resilient article receiving means, to grip an article between them.

4,209,880

COFFIN

Sven-Olof Lidholm, Rosbacken 41, S-162 40 Vällingby, Sweden

Filed Jan. 4, 1979, Ser. No. 949
Claims priority, application Sweden, Jan. 19, 1978, 7800695
Int. Cl.² A61G *17/00*
U.S. Cl. 27—2 **7 Claims**



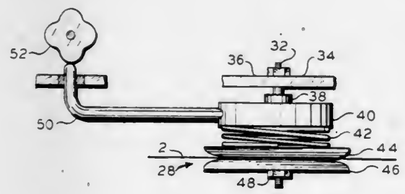
1. A coffin comprising substantially pairs of mutually opposing side walls, a bottom and a lid, characterised in that at least the side walls (**1–4**) comprise a robust corrugated paper material having inwardly folded bottom flaps (**5,6,5'**) which are fixed between an outer bottom plate (**7**) and an inner bottom plate (**10,27**), the edges of which abut the inner surfaces of the side walls (**1–4**), attachment means (**9**) of a type which can be readily applied for securing foot supports (**8,17,20**) to the undersurface of the outer bottom plate (**7**) being arranged to extend through at least the outer bottom plate (**7**) and the bottom flaps (**5,6,5'**).

4,209,881

KNITTING INTERMITTENTLY DRAWN YARNS

James H. Blore, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1978, Ser. No. 888,727
Int. Cl.² D02J *1/06*; D04B *15/44*
U.S. Cl. 28—243 **3 Claims**



1. A device for intermittently tensioning a yarn that is passed therethrough comprising:

(1) a fixed shaft;

(2) a tension train mounted on said shaft so that each element of the train encircles the shaft said train comprising elements arranged in the order of:

(a) a stop,

(b) a base plate,

(c) a helical spring,

(d) a pair of tension discs, and

(e) an adjusting means to provide tension on the base plate, spring, and tension discs mounted between the stop and the adjusting means, said adjusting means set to provide sufficient clearance between said tension discs to permit passage of yarn therebetween without stretching said yarn;

(3) a lever arm attached to said base plate, and

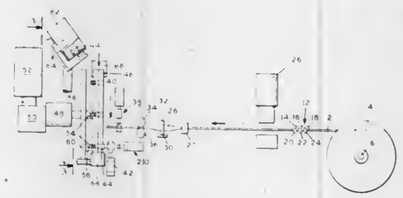
(4) a motor driven cam aligned to act on said lever arm intermittently to apply sufficient pressure to one side of said spring to cause sufficient pressure on yarn that is passed between said tension discs to stretch said yarn while the pressure is applied.

4,209,882

LIGHT CELL AUTO SLEEVER

John J. Strickland, Alachua, and Thomas H. Hoover, Gainesville, both of Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Sep. 19, 1978, Ser. No. 943,753
Int. Cl.² B23P *19/04*
U.S. Cl. 29—33.52 **17 Claims**



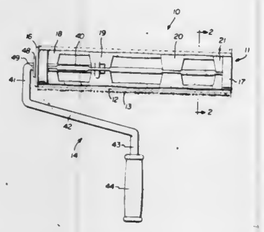
1. An aparatus for applying and affixing a heat shrinkable dielectric sleeve to a galvanic cell said apparatus including cell feeding carrousel means, means for feeding tubular sleeve material from a supply spool and for cutting sleeve length sections from the fed end of said material, means for gripping and opening each sleeve length section as said section is cut, battery test means on said carrousel, means on said test means for rejecting from said carrousel cells found defective by said test means, means for aligning said gripped and opened sleeve section with a cell on said carrousel which has passed said test means and is to be sleeved, means for pushing said cut section from said gripping means onto said cell and heater means for heating and shrinking said cut section of said sleeve material on said cell.

4,209,883

PAINT APPLICATOR ROLLER CONSTRUCTION

Gary D. Hawk, Iola, Kans., assignor to Harding Development Company, Clearwater, Fla.

Filed May 5, 1978, Ser. No. 903,142
Int. Cl.² B21B *13/02*
U.S. Cl. 29—116 R **2 Claims**



1. A molded plastic paint applicator cage for rotatable mounting upon the axle of an applicator handle frame and for insertion within an elongated tubular applicator core, said cage comprising:

a circular disk-like end member having a central bore for receiving the frame axle;

a journal bearing member axially spaced apart from the end member for location within the core at a distance from the end member and including a journal socket for rotatably receiving the free end of the frame axle, and having radially outwardly extending strip portions interconnecting the end member with the bearing member, said strip portions having outer edge portions for closely fitting within the wall defining the interior of the tubular core, said strip outer edges being bowed outwardly relative to the axis of said cage to provide outwardly bowed spaced apart side edge engagement portions with the core;

the end member and bearing member each being split into two parts along a diametric plane, and means for releasably interconnecting the two parts to form the cage rotatably mounted upon the frame axle;

said means for releasabiy interconnecting including an integral hinge portion interconnecting said two parts for hinging the parts either open, i.e., side by side, or closed, i.e., into bearing forming alignment for engagement with said axle;

the distance between the end member and the bearing member being less than one-half of the length of the tubular core, wherein the frame axle correspondingly extends within the core a distance less than one-half of the length of said core;

an outer plug member for closing the end of the tubular core opposite to the end closed by said end member, and said member, plug and bearing member all being interconnected as one integral molding, including the integral hinge portion;

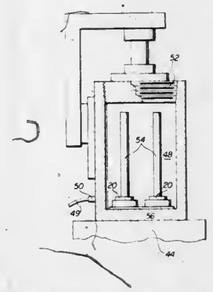
and said end member including a pair of semi-circular bore halves which together form a first bearing, said journal bearing member including a pair of annular socket halves which together form a second bearing, first and second disk-like fastening means being mounted to said frame axle at spaced apart locations, said first and second disk-like fastening means encased by said bore halfs and said annular socket halves, respectively, when said hinged parts are brought into bearing forming alignment for engagment with said axle to maintain said axle against longitudinal movement relative to said cage.

4,209,884

METHOD OF FORMING VALVE SEATS

Eulas R. Atkinson, Conroe, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jan. 2, 1979, Ser. No. 212
Int. Cl.² B23P *15/00, 11/02*
U.S. Cl. 29—157.1 R **6 Claims**



1. A method of forming a valve seat comprising the steps of:

forming in a seating surface of the valve seat a serrated annular groove having a bottom surface and opposite sides each presenting a plurality of serrations;

inserting a resilient insert into said groove with a portion of the insert protruding out of the groove beyond said seating surface;

pressing said insert toward the bottom surface of the groove with sufficient force to effect cold flowing of the insert into said serrations;

inserting the entire valve seat into an enclosed hydraulic fluid pressure chamber with the insert in said groove of the valve seat;

applying hydraulic fluid pressure to said pressure chamber for a time period between around ten (10) to fifty (50) minutes at a level of at least approximately one and one half times the maximum working pressure of the valve in which said valve seat is to be used to bottom said insert against the bottom surface of the groove along the entire length of the groove; and

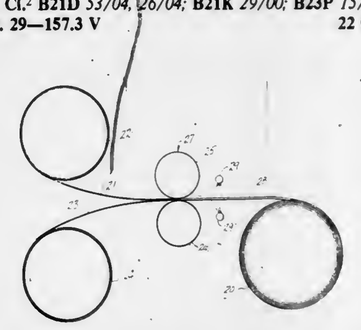
machining the protruding portion of said insert to provide a sealing surface thereon after completion of the fluid application step.

4,209,885

PROCESS AND APPARATUS FOR MAKING COMPOSITE SHEET AND HEAT EXCHANGER PANELS THEREFROM

Joseph Winter, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.,

Filed Aug. 28, 1978, Ser. No. 937,118
Int. Cl.² B21D *53/04, 26/04*; B21K *29/00*; B23P *15/26*
U.S. Cl. 29—157.3 V **22 Claims**



11. A process for producing a metal composite adapted for use in heat exchanger panels comprising:

providing at least two sheets of metal;

cold rolling said sheets of metal together to a desired reduction in thickness to form a green bond therebetween; and

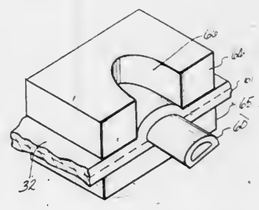
immediately after said cold rolling, quickly cooling said green bonded sheets to a temperature at which bond enhancement due to a temperature increase in said sheets during said cold rolling will not occur.

4,209,886

PROCESS AND APPARATUS FOR MAKING HEAT EXCHANGER PANELS

Joseph Winter, New Haven; John F. Breedis, Trumbull, and Brian Mravic, North Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Aug. 28, 1978, Ser. No. 937,336
Int. Cl.² B23P *15/26*
U.S. Cl. 29—157.3 V **10 Claims**



9. In a process for forming a heat exchanger having a desired pattern of inflated tubular passageways from an as-rolled com-

posite metal panel in the absence of a stop weld pattern defining said tubular passageways, said panel comprising at least two sheets of metal having a bond therebetween which can be broken by inflation; said process comprising:

inserting an inflation needle into said composite metal panel between said sheets;

and following the insertion of said inflation needle placing said panel with said inflation needle inserted therein into an inflation press including at least one die having a cavity defining said tubular passageways, and inflating said desired pattern of tubular passageways in said panel; the improvement wherein:

said step of inserting said inflation needle into said composite metal panel comprises:

preventing excessive peeling-apart of said sheets of said composite metal panel upon insertion of said inflation needle, said step of preventing excessive peeling-apart of said sheets, comprising the steps of:

providing a first clamping member and a second clamping member arranged to clamp said composite metal panel therebetween at an edge thereof wherein said inflation needle is to be inserted, at least one of said clamping members including a slot defining an opening immediately adjacent to said panel of limited extent and extending inwardly said panel from said edge thereof;

and inserting said inflation needle between said sheets of said panel in alignment with said slot;

whereby the sheet of said panel which engages said at least one of said clamping members expands only in an area defined by said slot.

4,209,887

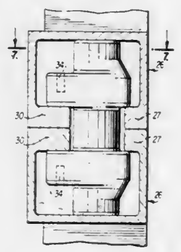
SECTIONAL MULTI-PURPOSE CARGO CONTAINER

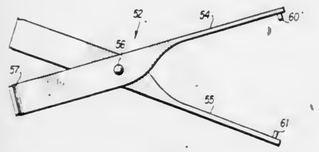
George D. Saunders, P.O. Box 70026, Ambassador Station, Los Angeles, Calif. 90070

Division of Ser. No. 771,113, Feb. 23, 1977, Pat. No. 4,144,984. This application Mar. 9, 1978, Ser. No. 885,017

Int. Cl.² B23P *19/04*

U.S. Cl. 29—240 **6 Claims**





1. A device for fastening two opened topped shipping containers together in an opposed facing relationship at their corners which comprises in combination two hollow cuboid members which are each affixed to a corner of a separate said shipping container whereby when such shipping containers are secured togther the outward faces of said two cuboid members are in engagement, matching openings in each said cuboid member, a removable elongated locking member received in both said cuboid members which extends through said openings and is received in the hollow interiors of said engaging cuboid members whereby opposite ends of said locking member are both in engagement with interior surfaces of said cuboid members opposite their respective said openings, each said cuboid member including shoulder means adjacent its respective opening, a pair of dogs extending normally from said locking member adapted upon being turned about the longitudinal axis of the locking member to be brought into engagement with said shoulders thereby clamping and securing said cuboid members together in said engagement, and means provided on said locking member for turning said locking member when said cuboid members are in said agreement, said turning means comprising apertures having a common longitudinal axis in said dogs, a tool in combination with the device having protrusions adapted to be received in said apertures, said protrusions extending towards each other from connecting supporting members, elongated means being provided for moving said supporting members relative to each other whereby the distance separating said protrusions can be increased and decreased within predetermined limits, and handle means extending normally from said elongated means opposite said protrusions.

4,209,888

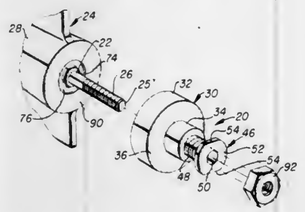
SHAFT PULLER

Theodore E. Glasscock, Sr., 908 Daniel, Cedar Hill, Tex. 75104

Filed Nov. 21, 1977, Ser. No. 853,517

Int. Cl.² B23P *19/04*

U.S. Cl. 29—263 **9 Claims**



1. A shaft puller for extracting a shaft from a surround structure, said shaft having a threaded exposed end normally receiving a nut thereon, said puller comprises:

a one piece sleeve structure having an internally threaded bore therethrough, the threads being of an opposite hand from the threads of said shaft,

a spindle member having external threads thereon for threadable engagement within the bore of said sleeve structure and an unthreaded bore therethrough to permit engagement of said spindle member on said shaft without engagement of said shaft, said spindle member having an end surface to facilitate rotation of said spindle member relative to said sleeve structure, and

a nut for engagement on said shaft with said sleeve member and spindle member mounted between said nut and the surround structure whereby turning said spindle member in the direction to advance said nut on the shaft withdraws the spindle member from said sleeve structure to pull the shaft from the surround structure.

4,209,889

CORROSION RESISTANT FASTENING SYSTEM AND METHOD

Joseph W. Silva, Northford, Conn., and Albert J. Duffield, Johnson City, Tenn., assignors to Olin Corporation, New Haven, Conn.

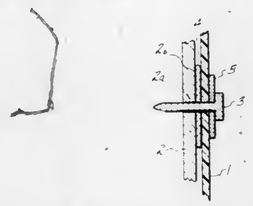
Filed Feb. 27, 1978, Ser. No. 881,320

Int. Cl.² B23P *11/00;* **A43B** *23/20;* **E01B** *9/06;* **F16B** *15/00*

U.S. Cl. 29—432 **10 Claims**

1. A fastening system for use with a metallic target in a corrosive aqueous environment comprising a metal fastener formed of a corrosion-resistant allow and adapted to be driven by a powder actuated tool, and at least one metal coupon, through which said fastener is driven, said coupon being formed of an alloy which is no more noble, in the galvanic series of metals and alloys, than the alloy of said fastener, but more noble than the alloy of the target.

9. A method for obtaining a corrosion-resistant fastening in a metallic target exposed to a corrosive aqueous environment, comprising the steps of:



a. providing at least one planar metal coupon of a corrosion-resistant alloy, said alloy being more noble, in the galvanic series of metals and alloys, than the target;

b. providing a metal fastener of a corrosion-resistant alloy, said alloy being at least as noble as the alloy of said coupon, said fastener being adapted to be driven by a powder-actuated tool; and

c. driving said fastener through said coupon and into the target, said coupon thereby being held in intimate, juxtaposed contact with the target surface.

4,209,890

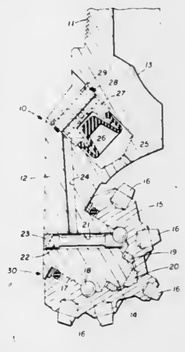
METHOD OF MAKING A ROTARY ROCK BIT WITH SEAL RECESS WASHER

Earl T. Koskie, Jr., Casper, Wyo., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 19, 1979, Ser. No. 4,778

Int. Cl.² E21B *9/10*

U.S. Cl. 29—450 **2 Claims**



1. A method of constructing a rotary rock bit for operating in a drilling fluid containing abrasive particles, comprising the steps of:

providing a rock bit body having at least one depending arm with a bearing pin projecting from said arm;

providing a rolling cone cutter adapted to be mounted on said bearing pin, said rolling cone cutter having a base that will be located abutting said arm and a concave cavity projecting from a cone mouth with said cavity and cone mouth adapted to be positioned over said bearing pin;

a gap being produced between said base of said rolling cone cutter and said arm when said rolling cone cutter is mounted on said bearing pin, said gap being outside of said cavity;

producing a groove in the base of said rolling cone cutter around said cone mouth;

determining the size of the gap that will be produced when said rolling cone cutter is mounted on said bearing pin;

providing a multiplicity of washers of varying thickness;

selecting a washer from said multiplicity of washers with a thickness substantially the size necessary to allow the gap to be narrowed to a size which will not allow passage of most of the abrasive particles found in the drilling fluid;

providing an elastomer seal ring;

positioning said elastomer seal ring between said bearing pin and said rolling cone cutter in said concave cavity proximate said cone mouth;

positioning said washer in said groove; and

mounting said rolling cone cutter on said bearing pin with said washer substantially closing the gap between the base of said rolling cone cutter and said arm to prevent passage of most of the abrasive particles found in the drilling fluid.

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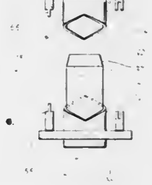
APPARATUS AND METHOD FOR POSITIONING ONE PART RELATIVE TO ANOTHER PART

Raymond K. Lamb; Richard E. Weathers; Lacey C. Coffey, and Stephen J. Walker, all of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,515

Int. Cl.² E21B *43/01, 33/035*

U.S. Cl. 29—466 **25 Claims**



1. An alignment apparatus for rotationally positioning a second part relative to a first part comprising:

a first cylindrical guide adapted to be affixed to said first part, said first guide defining at an end thereof a first curvilinear surface; and

a second cylindrical guide adapted to be mounted on said second part, said second guide defining at an end thereof a second surface substantially identical to said first surface,

said first and said second surfaces each being adapted to engage one with the other in a complete mating contact only when said surfaces occupy one rotational position relative to each other;

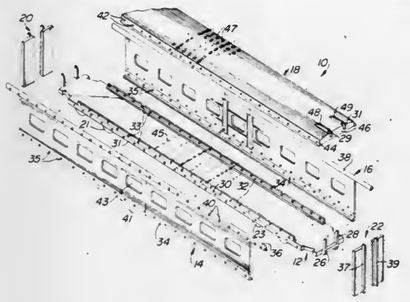
said first and said second surfaces each being arranged such that when said guides are axially aligned and a longitudinal force is applied to bring said first and second surfaces together, a torque will be applied to said second guide relative to said first guide, said apparatus thereby being adapted to rotate said second part relative to said first part.

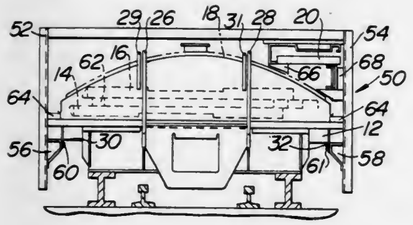
4,209,892

METHOD OF MANUFACTURING, PACKAGING AND ASSEMBLING A RAILWAY CAR

Gerard F. Hofstaedter, Glenside, and Lionel Sherrow, Huntingdon Valley, both of Pa., assignors to The Budd Company, Troy, Mich.

Filed Aug. 18, 1978, Ser. No. 934,686
Int. Cl.[2] B23P *21/00*
U.S. Cl. 29—469 **5 Claims**





1. A method of manufacturing, packaging and assembling a railway car comprising the steps of:
fabricating a plurality of components including floor, sideframes, roof and end frames for a railway car, said components having areas dimensioned to receive weld joints or bolt openings,
packing said other components on said floor component in an open bottom container,
transporting said packaged components to a desired location,
disassembling said container from said components,
connecting said sideframes to said floor,
connecting said end frames to said floor,
connecting said roof to said sideframes and said end frames.

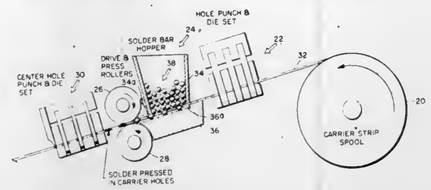
4,209,893

SOLDER PACK AND METHOD OF MANUFACTURE THEREOF

John W. Dyce, Sidney, and Ronald F. Buczak, Poughkeepsie, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 24, 1978, Ser. No. 954,267
Int. Cl.[3] B23P *11/02*
U.S. Cl. 29—522 R **2 Claims**

1. The method of manufacturing a solder pack comprising:
providing a continuous strip of heat resistant material;
advancing the strip and simultaneously providing a predetermined pattern of through holes in the material;
dropping a preform of solder material into each hole, the volume of each preform being slightly in excess of the volume of the hole in which dropped;
compressively deforming the preform of solder material in each hole so that the preform is forced against the sides of each hole to form a solder disc, each disc being coextensive with the top and bottom surfaces of the strip and held snugly in each hole;
advancing the strip and simultaneously providing an aperture in a central portion of each solder disc; and



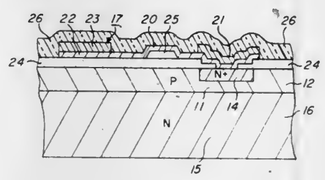
advancing the strip and simultaneously cutting the strip into the solder pack.

4,209,894

FUSIBLE-LINK SEMICONDUCTOR MEMORY

Ralph S. Keen, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 27, 1978, Ser. No. 900,550
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—577 R **5 Claims**



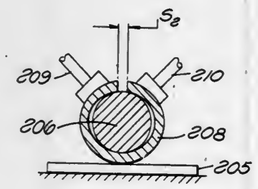
1. A method of making a semiconductor device including the steps of applying a coating of photoresist to define a plurality of small segments, depositing a thin film of conductive material on said face and over the small segments, patterning the film to leave elongated strips extending across the segments of photoresist and exposing parts of the segments, thereafter removing the segments of photoresist to leave raised portions in the elongated strips and selectively applying excess current to some of the elongated strips to fuse the raised portions.

4,209,895

METHOD OF MAKING A SOCKET CONTACT

Lloyd J. Powell, Newmarket, Canada, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 824,343, Aug. 15, 1977, Pat. No. 4,133,599, which is a continuation of Ser. No. 704,120, Jul. 12, 1976, abandoned. This application Oct. 10, 1978, Ser. No. 949,412
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—874 **3 Claims**



1. The method of making an electrical socket contact comprising the steps of:

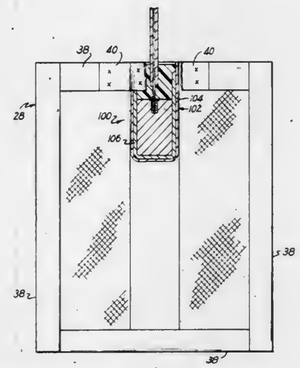
forming a conductive cylinder of a uniform inside diameter with a slot extending completely therethrough in a radial direction and over the complete length thereof and at one angular position therearound;
providing a non-deformable cylindrical rod having an outside diameter less than the inside diameter of said cylinder;
placing said rod coaxially inside said cylinder;
permanently deforming said cylinder by pressing the slotted side thereof toward said rod until portions of said cylinder between said slotted side and the side opposite thereto bend beyond their elastic limits to make said cylinder somewhat elliptical, a first inside diameter of said deformed cylinder extending between said slotted and opposite sides being less than that of a second inside diameter thereof perpendicular thereto; and
removing said rod from said deformed cylinder.

4,209,896

METHOD OF ASSEMBLY OF AN ANTI-CORROSION ANODE CONNECTOR SYSTEM

Robert Baboian, Johnston, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 673,177, Apr. 2, 1976, Pat. No. 4,098,663. This application Feb. 21, 1978, Ser. No. 879,040
Int. Cl.[2] H01R *43/00*; C23F *13/00*
U.S. Cl. 29—855 **3 Claims**



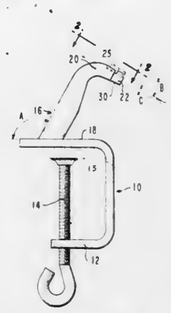
1. A method of assembling an anode connector for connecting a current carrying conductor cable to a permanent anode comprising:
providing a ductile, chemically inert metal;
forming the metal into a cup-shaped housing member having a closed end formed by a bottom wall and having a side wall depending therefrom, the side wall having a free end portion forming an open end, the bottom and side wall having a thickness which is essentially uniform throughout;
inserting an electrically conductive plug member in said housing having one end adjacent said closed end and having a second end facing toward said open end while being substantially removed from the open end;
electrically connecting said conductor cable to said plug member to provide a low resistance connection;
inserting a chemically insulating material in said housing for surrounding said electrical connection and filling said cup-shaped housing to provide a tight, leak-proof seal;
attaching said anode connector to an anode.

4,209,897

FIXTURE FOR HOLDING ZIPPER SLIDERS

Evan E. Davies, Condell Park, Australia, assignor to Textron Inc., Providence, R.I.

Filed Jun. 21, 1979, Ser. No. 51,362
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—768 **7 Claims**



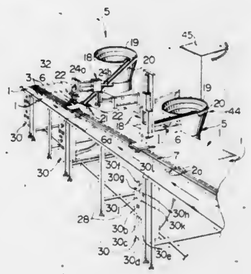
1. A fixture for holding zipper sliders while assembling zipper stringers therethrough comprising:
a clamp having an open end for attachment to a work surface;
a standard attached to the upper surface of said clamp;
a slot in the upper edge of said standard adapted to receive a zipper slider, said slot having two sides and a plane bottom surface; and
a tip terminating the upper end of said standard, said tip having an upper surface coplanar with the bottom surface of said slot, and having two transversely rabbetted sides coplanar with the respective sides of said slot.

4,209,898

ASSEMBLY LINE FOR PARTS OF ELECTRONIC AND OTHER EQUIPMENTS

Jun Aoki, Katsuta; Takashi Hayashida, Mito; Shigesabroh Komatu, Katsuta; Seii Miyakawa, and Naoki Takahasi, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 7, 1978, Ser. No. 940,353
Claims priority, application Japan, Sep. 12, 1977, 52-108840
Int. Cl.[2] B23P *21/00*
U.S. Cl. 29—783 **8 Claims**



1. An assembly line for parts of electronic and other equipment having a plurality of assembling stations for carrying out a plurality of production steps, said assembly line comprising:
a table assigned to each one of said plurality of assembling stations and each table having mounted thereon:
(a) endless conveyor means mounted on an upper surface of the table across thereof and movable from one end to the other end of the table;
(b) a drive source for driving said endless conveyor means;
(c) stopping means comprising a stop lever for engaging an

article conveyed by said endless conveyor means to stop the article in an operating position;

(d) positioning means comprising a positioning pin for insertion in a hole formed in said article stopped by said stopping means in the operating station so as to thereby engage the article and correctly position the same in the operating position; and

(e) operating means for performing an operation with the article positioned in the operating position in accordance with a predetermined schedule; and

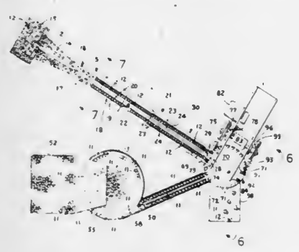
a sequence controller provided for each of said assembling stations for effecting sequence control of a series of operations performed by various elements in each station including actuating said stopping means and said positioning means to stop and position in said operating position an article supplied by said endless conveyor means across said table, actuating said operating means to perform a predetermined operation with said article, and releasing said positioning means to convey the article again by said endless conveyor means upon completion of the performance of the operation; said tables and said sequence controllers in said plurality of assembling stations capable of being arranged in any combination as desired to provide an assembly line suitable for performing a plurality of different assembling operations.

4,209,899

MEDICINE DROPPER CAP AND BULB ASSEMBLY APPARATUS

Peter Dragotta, 4 Bodie Rd., Wayne, N.J. 07470

Filed Jan. 11, 1979, Ser. No. 2,680
Int. Cl.³ B23P *19/00, 21/00*
U.S. Cl. 29—783 **10 Claims**



1. In an apparatus for assembling medicine dropper caps and elastomeric dropper bulbs, said apparatus including means for feeding said bulbs to a downstream partial assembly station comprising,

(a) a conduit for conveying said elastomeric dropper bulbs having a radial flange at an open end,

(b) a pair of tilted, rotatably mounted rods in spaced relation to each other,

(c) the space between the rods defining a place for the elastomeric bulb to fall into,

(d) the space between the rods further defining a space insufficient for radial flange at the open end of the bulb to pass through, and

(e) a means to contra-rotate the rods with their opposite surfaces moving upwardly and outwardly whereby the flange on the bulbs ride on the rods thereby moving the bulbs on the rods in the direction of the tilt,

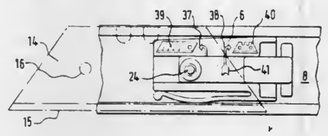
(f) wherein said conduit has a bulb discharge end positioned over an upper end of the tilted rods to discharge dropper bulbs on to the rods to fall therethrough up to the radial flange thereon for subsequent movement thereon to said downstream partial assembly station.

4,209,900

RETRACTABLE BLADE KNIFE

Richard Gilbert, Sheffield, England, assignor to Stanley Tools Limited, United Kingdom

Filed Jan. 5, 1979, Ser. No. 1,387
Claims priority, application United Kingdom, Jan. 25, 1978, 3088/78
Int. Cl.² B26B *1/08, 5/00*
U.S. Cl. 30—162 **6 Claims**



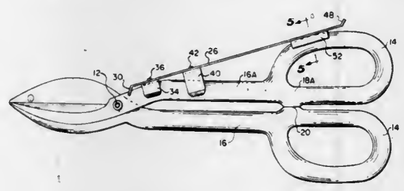
1. A retractable blade knife comprising an elongated casing and a blade carrier which is longitudinally movable in the casing for advancing and retracting a blade, the casing having a channel therein, the blade carrier including first and second parts, the first part being longitudinally slidably guided in the channel in the casing and carrying the second part, the second part of the blade carrier including first detent means, the casing including second detent means, said first detent means being resiliently biased into engagement with said second detent means for holding the blade carrier releasably in different positions along the casing, the blade carrier including a relatively large diameter boss for locating in a relatively large diameter hole in one type of blade, the blade carrier also having a relatively small diameter boss for locating in a relatively small diameter hole in another type of blade, the small diameter boss projecting from one end of the large diameter boss, the other end of the large diameter boss being mounted on said second part of the blade carrier, said second part being a rigid member which is pivotable relative to the first part about an axis in the region of the two bosses for engagement and disengagement of said first and second detent means, the blade carrier including means for setting the two bosses to either selected one of two alternative predetermined positions relative to said first part according to which type of blade is to be used.

4,209,901

SHEARGUARD

Joseph M. Hemingway, 14932 Avelon, Dolton, Ill. 60419

Filed Apr. 13, 1979, Ser. No. 29,662
Int. Cl.² B26B *13/00*
U.S. Cl. 30—233 **5 Claims**



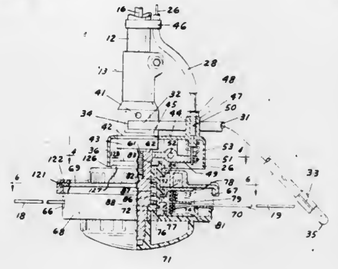
1. The combination of a pair of pivotally mounted elongated sheet metal cutting shear members having coplanar loop handles at one end and a sheet metal hand guard comprising a flat member supported normal to said planar loop handles resting against the outer edge of one of the loop handles and including clamp members intermediate its ends engaging said one of said members in the plane of its pivotal movement against relative lateral movement.

4,209,902

APPARATUS FOR CUTTING VEGETATION

James L. Moore, and Lenoard G. Ewing, both of Houston, Tex., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 19, 1977, Ser. No. 861,788
Int. Cl.² A01D *35/26;* **A01G** *3/06*
U.S. Cl. 30—276 **4 Claims**



1. In an apparatus for cutting vegetation having a prime mover, a rotatable cutting head, a tubular extension interconnecting the prime mover and a cutting head with an enclosed power transmitting cable, and an accessory handle for supporting the apparatus adjacent the prime mover, the improvement comprising:

(a) a housing mounted on the tubular extension adjacent said cutting head, said housing having a lower circular bearing skirt, a superimposed planar shoulder, transverse guard support means and bolt means:

(b) an actuator housing carrying upstanding ears adapted to be secured by said be bolt means to said housing, said actuator housing having a central opening received about the circular bearing skirt with an upper abutment surface engaging said planar shoulder and said actuator housing carrying internal stop members for limiting upward movement of an actuator lever in response to a biasing member connected at one end of said actuator lever;

(c) mechanical line feeding means carried on said cutting head and adapted to feed upon a mechanical signal a predetermined length of cutting line from said cutting head outwardly into a cutting plane which resides substantially perpendicular to the rotational axis of said cutting head and said mechanical line feeder means including in said cutting head in axially movable gear forming an escapement;

(d) an actuator lever pivoted within said actuator housing and carrying at one end a fulcrum to apply the mechanical signal to said mechanical line feeding means and at the other end a connection to a control cable and said actuator level reciprocating said gear for feeding the predetermined length of said cutting line from the said cutting head into said cutting plane; and

(e) a control lever pivotally mounted on the accessory handle and adapted to move said control cable to operate said actuator level.

4,209,903

SPRINKLER HEAD TRIMMING DEVICE

Warner R. Owens, 1205 Valhalla Dr., Clearfield, Utah 84015

Filed Feb. 21, 1978, Ser. No. 879,159
Int. Cl.² A01G *3/06;* **B26B** *3/04*
U.S. Cl. 30—302 **11 Claims**

1. A cutting tool for clearing debris, grass and soil from a ground located sprinkler head while preserving a clean cut exterior grass line, comprising:

(a) a surpporting shaft which defines an axis of rotation;

(b) a handle means attached near one end of said shaft and projecting outward therefrom for enabling application of rotational force thereto; and

(c) a tubular cutting member attached at the other end of said shaft in substantial coaxial orientation therewith, said tubular member having a lead cutting edge generally in a plane substantially normal to said axis for cutting a circumscribing path around the sprinkler head to obtain a properly trimmed grass line and further comprising at least one blade projecting in an inward direction only from a lower section of the inner surface of said tubular



member and terminating at an unobstructed free end and having a maximum length sufficient to allow passage of said tubular member around said sprinkler head during insertion of said tubular member into the ground, said inward projecting blade having its forward cutting edge pitched at a downward slant relative to its rearward edge.

4,209,904

RIDER CLIP WITH OFFSET RETENTION FLAPS AND RETENTION BAR FOR DENTURE

Peter E. Staubli, 677 Bounty Dr., Foster City, Calif. 94404

Filed Oct. 23, 1978, Ser. No. 953,372
Int. Cl.² A61C *13/00*
U.S. Cl. 433—177 **10 Claims**



1. A prosthetic denture rider clip adapted to be secured to a bridge piece and operative to removably couple onto a retention bar having an arcuate transverse cross-section and secured to an abutment in a jaw, said clip comprising an open tubular segment of a resilient, substantially corrosion-resistant material, said segment being of a longitudinal extent not substantially exceeding the breadth of a tooth, and comprising a dorsal wall section, first and second inwardly arched side wall sections integral with said dorsal wall section and disposed opposing one another at a minimum separation of less than the diameter of the retention bar, first and second retention flaps protruding outwardly from said opposing ends on opposing sides of a dorsal plane substantially bisecting said dorsal wall section, and first and second grooves parallel with said dorsal plane and disposed on the outer surfaces of said tubular segment at boundaries of said side wall sections with said dorsal wall section, wherein said dorsal wall section and said flaps are adapted to be secured within a casting of said bridge piece and said side wall sections are adapted to be free of said casting

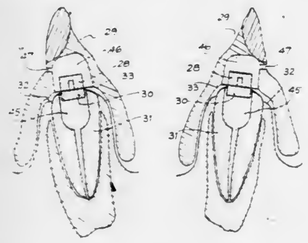
such that lateral flexure of said side walls is concentrated at said flexure grooves.

4,209,905

DENTURE RETENTION

Barrie R. D. Gillings, Sydney, Australia, assignor to University of Sydney, Sydney, Australia

Filed May 10, 1978, Ser. No. 904,421
Claims priority, application Australia, May 13, 1977, PD0090
Int. Cl.[2] A61C *13/00*
U.S. Cl. 433—189 **18 Claims**



1. A method of retaining a denture in place, the method comprising:

mounting a first magnet element to a support associated with a person's jawbone, the first magnet element having a generally horizontal surface portion thereof exposed adjacent the gingival margin of the person's gum,

locating a second magnet element in a denture to be worn by the person, the second magnet element having a generally horizontal surface portion thereof exposed to contact the exposed surface portion of the first magnet element when the denture is fitted to the person and the surface portions of the two magnet elements being magnetically attractive, and

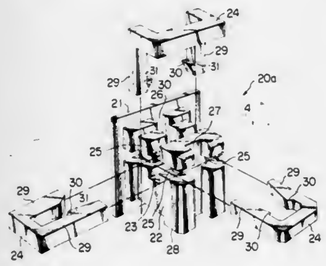
locating the denture in the person's mouth in a position such that the second magnet element is located to align substantially vertically with the first magnet element and such that said surface portions of the first and second magnet elements abut when the denture is fitted to the person.

4,209,906

ORTHODONTIC APPLIANCE (BRACKET AND LOCK PIN)

Kinya Fujita, 326 Nagasawa, Yokosuka-shi, Kanagawa-ken, Japan

Filed Nov. 21, 1977, Ser. No. 853,481
Claims priority, application Japan, Dec. 23, 1976, 51-155429
Int. Cl.[2] A61C *7/00*
U.S. Cl. 433—11 **13 Claims**



1. An orthodontic bracket adapted for connection to an orthodontic arch wire, comprising: a flange having a surface shaped to conform to the shape of a portion of the lingual surface of the crown of a tooth; a tip portion projecting from the opposite surface of said flange and having an occlusal side at the top thereof, a gingival side at the bottom thereof, opposite lateral sides and a lingual side at the end thereof remote from said flange, said tip portion having a vertical groove located between said flange and said lingual side of said tip portion and opening to said occlusal side for receiving the orthodontic arch wire, said vertical groove extending between the opposite lateral sides of said tip portion and having a greater vertical depth than the thickness of the orthodontic arch wire and having a bottom wall on which the orthodontic arch wire can rest so that it extends generally parallel with the lingual surface of the tooth, said tip portion having horizontal groove means opening to said lingual side for receiving fastening means for retaining the orthodontic arch wire in the bottom of said vertical groove, said horizontal groove means intersecting said vertical groove at a location thereon vertically upwardly spaced from said bottom wall such that the orthodontic arch wire can be disposed entirely below said horizontal groove means.

4,209,907

DENTAL TREATMENT CHAIR ASSEMBLY

Naonobu Tsukada, Joyou, and Katsuyoshi Nishimura, Kyoto, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Feb. 1, 1978, Ser. No. 874,197
Claims priority, application Japan, Feb. 1, 1977, 52-10450
Int. Cl.[2] A61C *19/00*
U.S. Cl. 433—33 **6 Claims**



1. A dental treatment chair assembly comprising:

a dental treatment chair, a backrest forming part of said chair, a shoulder part on said backrest, flexible connecting pipes extending from said shoulder part of said backrest;

instruments on said flexible pipes, the improvement comprising:

a plurality of first cartridge boxes, each of said boxes containing a flexible pipe and means for permitting extension and causing retraction of its flexible pipe therein, each said flexible connecting pipe having a fixed end position inside its first cartridge box, each said fixed end being detachably connected by a detachable pipe joint so that each first cartridge box can be removed, an instrument mounted on each said connecting pipe so that said dental treatment instrument can be extended and retracted to retract the corresponding dental treatment instrument, said cartridge boxes being positioned so that said instruments are positioned to extend over the top of the shoulder part of the backrest; and

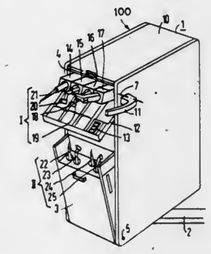
a plurality of second cartridge boxes, each of said second cartridge boxes being removably attached to a selected one of said first cartridge boxes to be associated therewith, each said second cartridge boxes comprising a controller to control the function of its associated first cartridge boxes, said second cartridge boxes being positioned in said dental treatment chair backrest.

4,209,908

MOBILE DENTAL UNIT

Ernst O. Fleer, Bensheim-Auerbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 25, 1978, Ser. No. 899,988
Claims priority, application Fed. Rep. of Germany, May 3, 1977, 2719715
Int. Cl.[2] A61C *19/02*
U.S. Cl. 433—78 **17 Claims**



1. In a mobile dental unit comprising a housing of a tabletop height and having a width, which is less than half the heights, said housing on a narrow side being provided with a plurality of side-by-side storage receptacles for dental handpieces, each of said dental handpieces having a supply hose extending through the receptacle to a supply source with means for taking up the supply hose, the improvements comprising the receptacles for the handpieces being arranged in two separate rows with a first row of receptacles containing receptacles for primary dental handpieces and a second row of receptacles containing receptacles for the secondarily used handpieces, means for supporting each of the rows in the housing for movement relative to each other and for movement of each row between a storage position within the housing to a working position with the receptacles extending from the housing to enable removal of the handpieces from the respective receptacle with the second row being disposed beneath the first row, said means for supporting also supporting a guide pulley for each receptacle of the first row adjacent the receptacle and immediately below the top of the housing, said means for supporting positioning the receptacles in varied relation to each other to improve access to the handpieces received therein, and said means for taking up the supply hoses for the first row of receptacles including means for retracting the supply hoses into the housing when the handpieces are not in use.

4,209,909

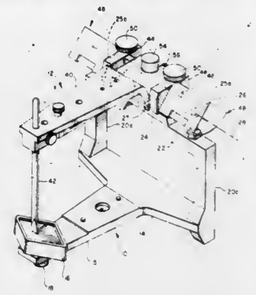
DENTAL APPARATUS

Robert L. Lee, 22937 Grand Terrace, Colton, Calif. 92324

Continuation-in-part of Ser. No. 581,208, May 27, 1975, Pat. No. 4,034,475, which is a continuation-in-part of Ser. No. 485,158, Jul. 1, 1974, Pat. No. 4,034,474. This application Jul. 11, 1977, Ser. No. 814,815
Int. Cl.[2] A61C *11/00*
U.S. Cl. 433—57 **4 Claims**

1. In dental apparatus for simulating human jaw movements comprising a first frame having a pair of styluses defining a hinge axis; a second frame having means cooperating with said first frame for guiding movement of said frames relative to each other in a controlled three-dimensional guide path including transverse, protrusive and vertical directions from a centric position wherein the frames are transversely centered on each other and said second frame is in the rearwardmost position relative to said first frame, characterized by:

said guiding means including a pair of guide members each attached to a pin rotatably mounted on said second frame on an axis concentric with said hinge axis when the frames are in said centric position, said guide members having wall means defining pathways for receiving said styluses, said pathways including a curved upper wall, a rear wall and a medial wall having a curved portion adjacent the rear wall, said walls guiding movement of one side of said second frame medially, protrusively and vertically in a curved three-dimensional path while the other side of said second frame moves only laterally;



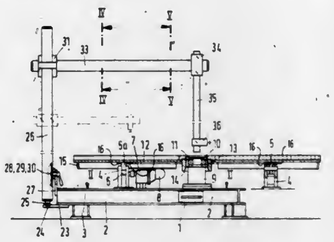
said wall means defining said pathways further including a forward wall and a lateral wall connected to said medial and said back wall to form an integral side wall unit, separate from but adjacent to said upper wall, which is removeably mounted on said guide members, and which is selected from a group of units that provide different amounts of immediate side shift of said styluses, and said medial wall curved portion being an arc size that is proportional to the magnitude of side shift provided.

4,209,910

AUXILIARY DEVICE FOR VERTICAL TURNING AND BORING MACHINE TOOLS

Gunther Rathsack, and Reinhard Hendel, both of Hamburg, Fed. Rep. of Germany, assignors to Gunther Rathsack Ingenieurtechnik, Hamburg, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,467
Int. Cl.[2] B27G *23/00*
U.S. Cl. 33—185 R **13 Claims**



1. An auxiliary device for use with vertical turning and boring machine tools having rotary work surfaces comprising:

(a) a generally circular-shape pallet having:

(1) centering means for centering the pallet on a rotary work surface of a vertical turning and boring machine tool, and

(2) means for securing a workpiece in a desired position on the pallet; and

(b) support means for supporting said pallet comprising:

(1) a frame,

(2) pillow block support means carried by said frame and cooperating with said centering means for supporting said pallet for rotation with respect to said frame, and

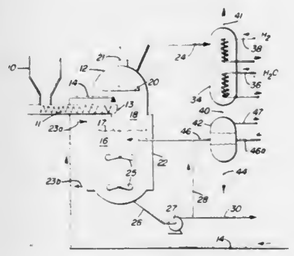
(3) means for adjustably mounting carrying devices for measuring devices and auxiliary adjusting devices.

4,209,911

METHOD AND APPARATUS FOR DRYING A MOISTURE-CONTAINING PARTICULATE MATERIAL

Carl L. Weber, Pipersville, Pa., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Sep. 22, 1978, Ser. No. 945,026
Int. Cl.² F26B 3/00
U.S. Cl. 34—9 **20 Claims**



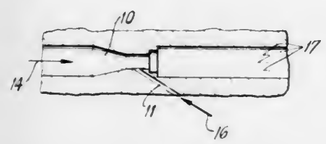
18. An apparatus for drying moisture-containing particulates comprising; a cylindrical vessel with two closed ends and having a vapor outlet near the top end thereof, a liquid outlet near the bottom end thereof, and an inlet for a particulate material, an inlet for a hot hydrocarbon liquid having a carbon liquid, all of the inlets being intermediate the vapor outlet and the liquid outlet, and a plurality of agitator means mounted on a cylindrical shaft which is connected to a rotary driving means, one of the agitator means being mounted in the top portion of the vessel and above the particulate feed.

4,209,912

PROCESS AND APPARATUS FOR THE DRYING OF RESINOUS MATERIALS

Henry P. Barker, Lock Haven, Pa., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 16, 1978, Ser. No. 869,527
Int. Cl.² F26B 3/08
U.S. Cl. 34—10 **9 Claims**



1. A process for drying resinous materials which comprises:
(a) forming a superheated solution of the resinous material and
(b) spraying the superheated solution through one or more venturi shaped nozzles at high pressure.

4,209,913

METHOD AND DEVICE FOR DRYING GLOVES

Lloyd A. Wallin, 1200 Red Oak Ct. North, Burnsville, Minn. 55337, and David E. Filkins, Big Leach Resort, Walker, Minn. 56484

Filed Dec. 27, 1977, Ser. No. 864,695
Int. Cl.² F26B 7/00
U.S. Cl. 34—21 **1 Claim**

1. A method for drying a golf glove, which comprises:
(a) providing a three dimensional drying member which substantially resembles a human hand;
(b) applying a conditioning agent for the golf glove onto the drying member before the golf glove is placed thereon, whereby the conditioning agent is imparted to the golf glove as the golf glove dries on the drying member;
(c) placing the golf glove onto the drying member such that



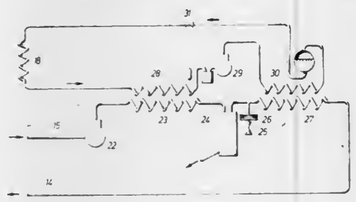
the golf glove is maintained thereon in an open orientation similar to that in which the glove may be worn on a human hand;
(d) allowing the golf glove to remain on the drying member for a period of time which is sufficient to dry the golf glove; and
(e) removing the golf glove from the drying member after the glove is dry.

4,209,914

METHOD AND DEVICE FOR DRYING MACHINE PARTS

Berth U. Gustafsson, Österskär, Sweden, assignor to Projectus Industriprodukter Aktiebolag, Bromma, Sweden

Filed Dec. 9, 1977, Ser. No. 859,140
Claims priority, application Sweden, Dec. 10, 1976, 7613929
Int. Cl.² F26B 3/04
U.S. Cl. 34—27 **14 Claims**



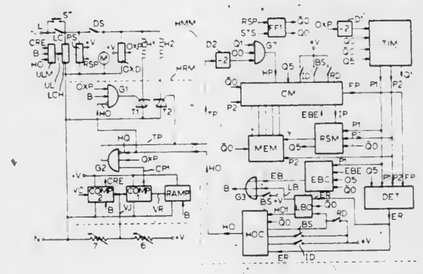
1. An improved method for drying machine parts which have been washed with a washing liquid containing a solvent, comprising the steps of feeding the wet machine parts into a chamber, injecting dry, hot gas into the chamber and evacuating humid gas therefrom, the evacuated, humid gas being recirculated in a circuit and, upon being compressed and cooled, freed from its solvent contents in a liquid separator, and heated before re-injection into the chamber, the improvement comprising reducing the total gas pressure in the chamber by controlling the gas flow in said recirculation circuit, and reducing the partial pressure of the solvent in the chamber by cooling the gas in said chamber.

4,209,915

CONTROL ARRANGEMENTS FOR CLOTHES DRIERS AND CLOTHES DRIERS INCLUDING SUCH CONTROL ARRANGEMENTS

Alexander H. F. Keuleman, Horley, and David R. Hyde, South Croydon, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,864
Claims priority, application United Kingdom, Apr. 5, 1977, 14312/77
Int. Cl.² F26B 21/10
U.S. Cl. 34—48 **12 Claims**



1. A control arrangement for a clothes drier having a drying chamber, means for passing air through the chamber from an inlet to an outlet, and heating means for heating air adjacent said inlet; the control arrangement comprising a temperature sensor for location adjacent said outlet, heat regulating means for regulating the heat output of the heating means and responsive to said temperature sensor, and means for monitoring said heat output to switch off the heating means comprising means for producing electrical pulses such that the number of said pulses occuring in a given time interval is a predetermined function of the total said heat output in that time interval, means for counting said pulses, means responsive to said counting means for selecting the commencement of a reference time interval of predetermined duration, means responsive to said counting means for storing a digital value which is a predetermined function of the number of said pulses occuring in said selected reference time interval, said number of pulses occuring in said reference time interval being a reference value, and detection means responsive to the stored digital value and responsive to the counting means for detecting when a drypoint time interval of predetermined duration occurs during which the number of said pulses is less than a predetermined proportion of said reference value, said predetermined proportion corresponding to a predetermined degree of dryness of the clothes.

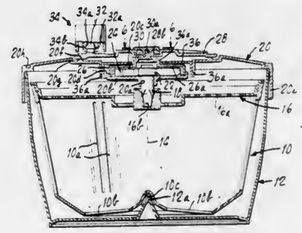
4,209,916

HAND-OPERATED KITCHEN APPLIANCE FOR DRYING VEGETABLES AND THE LIKE

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Sep. 25, 1978, Ser. No. 945,301
Int. Cl.² F26B 17/30
U.S. Cl. 34—58 **3 Claims**

1. A hand-operated kitchen appliance for drying vegetables and the like comprising:
an open-top bowl and an open-top strainer supported by the bowl for rotation therein about a vertical axis, said strainer having a cover which closes the strainer by fitting frictionally at the open top thereof and is manually removable therefrom and has a centrally located keyhole, and said bowl having a cover closing the bowl by fitting over the open top thereof and enclosing the strainer and strainer cover,
a pair of cover-retaining latches secured to the outer side of the bowl near the top thereof and spaced from each other around the circumference of the bowl, said bowl cover having a groove extending around the exposed top periphery thereof and each of said cover-retaining latches having a hook extending toward the bowl cover and fitting within the groove thereof when the cover is in position to close the bowl, said cover-retaining latches being resilient and biased to urge said hooks toward and into the groove, said latches being deformable manually to move the hooks thereof away from the groove and the bowl cover to thereby release the bowl cover and permit manual removal thereof from the bowl,
means for driving the strainer bowl, said driving means being secured to the bowl cover and comprising a vertical strainer-driving pin journaled at the center of the bowl cover and having a shaped lower end extending toward the strainer and receivable in the keyhole of the strainer cover when the bowl cover is in position to close the bowl, said pin fitting in the strainer cover in a fit preventing relative rotation therebetween but permitting manual withdrawal of the pin from the strainer cover, a turning



cover rotatably mounted centrally on the bowl cover and having an offset crank handle and a step-up transmission connecting the turning cover to the driving pin to cause the pin to rotate at a given speed when the cover is rotated at a lower speed by means of the crank handle, said rotation at a given speed being imparted to the strainer cover through the pin and to the strainer through the frictional fit between the strainer cover and the strainer,
said appliance being made of molded plastic components fitted frictionally or by snap-in connections to form the appliance,
wherein the entire appliance may be picked up by holding only the bowl cover when the cover-retaining latches are in a position to hold the bowl cover, and wherein the strainer cover remains on the strainer when the bowl cover is picked up from the bowl, and the strainer can be picked up from the bowl or loaded into the bowl with the strainer cover on it.

4,209,917

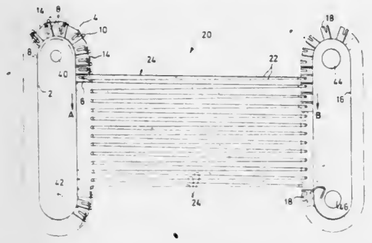
APPARATUS FOR SUPPORTING ARTICLES DURING EXPOSURE TO A GASEOUS OR VAPOROUS MEDIUM

Ian L. Johnson, Melton Mowbray, England, assignor to Abaline Limited, Frog Island, England

Filed Jun. 13, 1978, Ser. No. 915,281
Claims priority, application United Kingdom, Jun. 15, 1977, 24987/77
Int. Cl.² F26B 13/10
U.S. Cl. 34—149 **13 Claims**

1. Conveying apparatus for supporting sheets during exposure to a gaseous medium, said apparatus comprising a first endless conveyor having an upstanding run, a second endless conveyor having an upstanding run substantially parallel to said first endless conveyor upstanding run, each of said endless conveyors including a pair of endless drive members carrying brackets with the brackets of each pair of drive members being aligned, the aligned brackets of said first endless conveyor being joined by fixed support bars extending therebetween and connected thereto, movable support bars, each of said brackets of said first endless conveyor further having carrier means for

said movable support bars disposed between said fixed support bars, said brackets of said second endless conveyor having carrier means for said movable support bars, an endless supporting web associated with said first endless conveyor and generally disposed between paths of movement of said fixed support bars and said movable support bars, drive means for driving said endless conveyors in unison, feed means extending between upper portions of said runs for sequential engagement with said movable support bars carried by said first endless conveyor brackets and moving each movable support bar between adjacent ones of said fixed supports across the space



between said runs and depositing each movable support in one of second endless conveyor brackets while pulling a generally horizontal loop of said endless supporting web, retaining means for retaining said movable support bars in said second endless conveyor brackets, and return means extending between lower portions of said runs for returning said movable supports to said first endless conveyor and retraction of said loops.

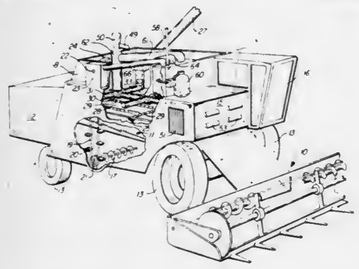
7. The apparatus of claim 1 together with gaseous medium supply means associated with said second endless conveyor for supplying a gaseous medium into said loops.

4,209,918

COMBINE GRAIN DRYING APPARATUS

Darrel J. Klein, R.R. 2, Box 10, Breckenridge, Minn. 56520

Filed May 29, 1979, Ser. No. 43,127
Int. Cl.[2] F26B *17/22*
U.S. Cl. 34—182 12 Claims



1. A grain harvesting machine having a grain threshing mechanism, a storage hopper into which grain from said threshing mechanism is transported for temporary storage, and an apparatus for drying the grain while in said storage hopper, wherein said apparatus comprises:

A. a grain collecting system mounted substantially horizontally in said storage hopper proximate to the bottom thereof, said system having an outlet and conduit means extending from perimeter portions of said storage hopper to said outlet, said conduit means having inlet openings along the upper portions thereof for entry of grain thereinto by gravity and having grain transport means therewithin for moving grain therethrough to said outlet,

B. a grain drying column mounted at said outlet of said collecting system and extending upwardly from said outlet, said column having an elevated exit port for discharge of grain therefrom and having therewithin a grain transport means for elevating grain from said outlet of said collecting system to said exit port of said column, and

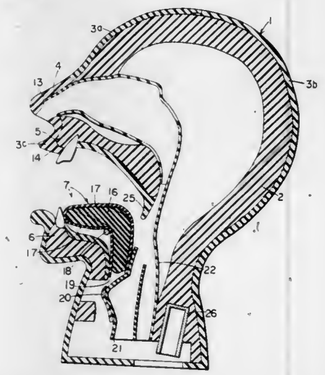
C. plenum means for feeding heated air into said drying column, to thereby subject grain passing through said drying column to the removal of moisture therefrom by said heated air.

4,209,919

MODEL OF LIVING BODY

Ichiro Kirikae, Mitaka, and Taichiro Akiyama, 2-19-23, Shimoochiai, Shinjuku-ku, Tokyo, both of Japan, assignors to Taichiro Akiyama, Tokyo, Japan

Filed Jul. 17, 1978, Ser. No. 925,280
Claims priority, application Japan, Jul. 23, 1977, 52/98566
Int. Cl.[2] G09B *23/34*
U.S. Cl. 35—17 5 Claims



1. In an anatomical model including a main body comprising a hollow cranium portion, a mouth opening, a lower jaw portion, and a tongue portion located within said cranium portion inside of a mouth portion of said main body, the inner end of said tongue portion being attached to said lower jaw portion, the improvement wherein said tongue portion comprises a yieldable outer layer of silicone rubber and a yieldable inner body of silicone gel covered with said outer layer, a transversely extending guide rod attached to said cranium portion adjacent said lower jaw, said tongue portion extending upwardly from said lower jaw and outwardly over said guide rod toward said mouth opening whereby when an external force is applied to said tongue portion by grasping the outer end of said tongue, said tongue portion is yieldably deformed to reduce its cross section and is slideably guided by said guide rod, whereby said tongue portion and interior cranium portions can be observed from the exterior of said cranium portion.

4,209,920

OYSTER DREDGING APPARATUS

Harold J. Hebert, P.O. Box 31, Erath, La. 70533

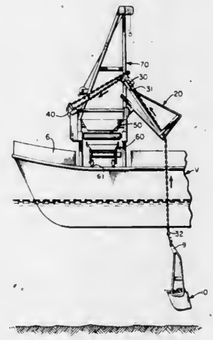
Filed Jun. 29, 1978, Ser. No. 920,449
Int. Cl.[2] E02F *5/00*
U.S. Cl. 37—55 10 Claims

1. Apparatus for mounting on the deck of a motor vessel, useful for dredging oysters and other marine animals from water bottoms, which is comprised of

a dredge characterized as a container, permanently open at the front and provided with a forward draw member by virtue of which it can be attached to a chain, dragged along a water bottom by the motor vessel with open end forward, and filled with oysters scooped up from the water bottom,

a tilt frame with an open cage, and floor plate with a pulley box mounted thereon, said pulley box being operatively communicated with a windlass having a barrel on which one end of a chain can be wound and the other of which can be passed through said pulley box and attached to the draw member of said dredge so that the dredge, when filled, can be raised from the water bottom and pulled into said cage and onto the floor plate of said tilt frame by operation of the windlass,

a conveyor mounted on the deck of the vessel below said tilt frame such that, as the chain moves the dredge to a rear-



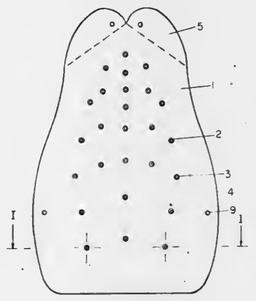
ward position of rest on the floor plate of the cage, the tilt frame can be pivoted rearwardly by the weight of the filled dredge, and pull on the chain to discharge the oyster contents of the dredge onto the conveyor so that the oysters can be transported to a location on the deck of the vessel for separation, assortment, grading and collection, and after discharge of the oysters the pull on the chain can be relaxed to allow retilting of the tilt frame to its original position and return of the dredge to the water bottom for refilling with oysters.

4,209,921

FLAT IRON FOIL

Josef Kochauf, Berg Am Laimstrasse 89, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 756,444, Apr. 21, 1977, abandoned. This application Feb. 10, 1978, Ser. No. 876,624
Claims priority, application Canada, Dec. 31, 1976, 269050
Int. Cl.[2] D06F *75/20, 75/38*
U.S. Cl. 38—97 10 Claims



1. In a cover to be mounted on the underside of a steam iron having a sole, a nose and sides extending from the sole to provide the steam iron with improved characteristics for ironing heat-sensitive materials and being composed of any of the usual covering materials for said sole of the steam iron, the cover comprising:

a sheet boot material formed of one piece having a base portion and two peripheral side portions connected with said base portion, said base portion being coextensive with the sole and said side portions being adapted to cover a portion of the sides of the iron;

at least two first raised portions formed on opposite sides of the base portion of the material normally facing the sole of the iron to which the cover is to be attached to form at least one steam conduit with the sole of the iron when the cover is secured to the iron;

a first group of perforations formed in said material between said first raised portions;

second raised portions forming a partial ridge on said base portion facing the sole of the iron and forming additional steam conduits with said first raised portions;

said two peripheral side portions being of sufficient extent to be folded upwardly about the iron to which the cover is to be secured thereby to form rippled or wave-shaped sides which partially encase the edge of the iron joining the sides thereof to the sole;

the material from which said cover is formed having an enlarged front portion operable to form a front holding part adapted to be overlapped over the nose of the iron and secured together thereby forming a pocket for the use of the iron from the same material as said base portion;

said conduits being effective to keep the steam emitted from the steam iron on wanted places on the undersides of the cover; and,

a spring operable to be secured to portions of the material and extend across the top of the iron whereby the material is secured to the iron;

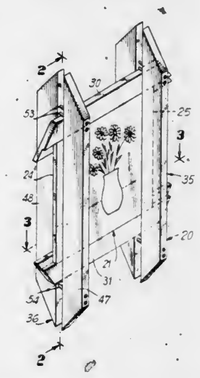
said spring providing tension in the material whereby heat expansion of the material is compensated to provide for an even distribution of steam from the sole of the iron through said perforations for passage through said sheet boot material.

4,209,922

ADJUSTABLE AND KNOCK-DOWN PICTURE FRAME CONSTRUCTION

Arthur J. Porreca, 233 Cuba Hill Rd., Huntington, N.Y. 11743

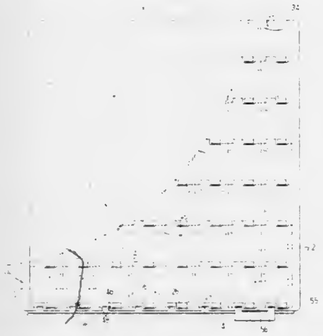
Filed Jun. 14, 1978, Ser. No. 915,318
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—155 9 Claims



1. A picture frame comprising a pair of edge engaging members for engaging along opposite edges of a picture, and a pair of clamping assemblies each extending between said pair of edge engaging members in clamping engagement therewith to hold said members in said edge engagement; said edge engaging members each having a recess for receiving the adjacent picture edge, and said recesses each opening laterally of the associated edge engaging member and being of a depth less than the picture thickness, for picture projection beyond the

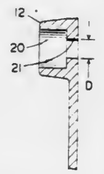
edge engaging member into clamped engagement with a clamping assembly.

4,209,923
SLIDE HOLDER TRAY
David W. Wendt, 5202 Schofield, Madison, Wis. 53716
Filed Jul. 31, 1978, Ser. No. 929,354
Int. Cl.² G09F *1/10*
U.S. Cl. 40—158 B **20 Claims**



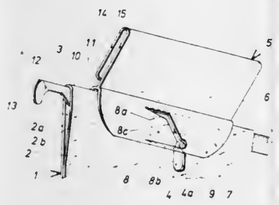
1. In a slide holder tray including a plurality of slide holder cells each of which is adapted to receive therein a flat article having four edges such as a photographic slide, a slide holder cell comprising:
a. a pair of spaced parallel ribs defining two opposite sides of the slide holder cell;
b. a support shelf extending inwardly into the slide holder cell from each of the ribs and adapted to support opposite edges of the article;
c. a cross-member extending between the ribs to define the bottom of the slide holder cell;
d. a raised retainer extending upward from the cross-member to retain the bottom edge of the article; and
e. a flexible retaining spring formed extending between the ribs at the top of the slide holder cell, the retaining spring being manually operable between two stable positions, only one of which overlies the top edge of the article so that the article may be freely removed from the slide holder cell when the retaining spring is in its stable position not overlying the top edge of the article.

4,209,924
MARKING TAG
D. David Fearing, Mahtomedi, Minn., assignor to Fearing Manufacturing Co., Inc., South St. Paul, Minn.
Filed Jul. 26, 1978, Ser. No. 927,990
Int. Cl.² A01K *11/00*; G09F *3/06*
U.S. Cl. 40—301 **14 Claims**



1. An animal identification tag comprising:
a first portion comprised of a flexible material and including an area for an animal identification indicia;
a second portion comprised of a flexible material and including an area for an animal identification indicia, attachment means on said second portion for connecting said second portion to an animal's ear;
said attachment means includes a flanged impaler for fastening said animal identification tag to the animal's ear;
said flanged impaler comprising two materials, a first softer material for fastening through the animal's ear and a second harder material for penetrating the animal's ear; and
a neck connecting said first portion to said second portion with said neck having a region sufficiently weakened so that in the event an animal snags said first portion said first portion separates from said second portion without pulling said second portion from the animal's ear.

4,209,925
LABELING TAB FOR HANGING FOLDERS
Dirk A. Brügmann, Derkmannsstück 27, Ergste, Fed. Rep. of Germany (5843)
Filed Jan. 24, 1978, Ser. No. 871,939
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1977, 2751683
Int. Cl.² B42F *21/00*
U.S. Cl. 40—359 **6 Claims**

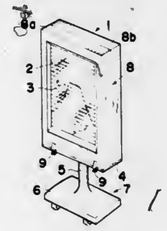


1. A plastic tab for a hanging folder with an upper edge and at least one slot in a flap of the hanging folder, comprising:
a label carrying means for labeling the hanging folder and adapted to project beyond the upper edge of the folder;
a flap portion attached to said label carrying means for slidably contacting a face of the hanging folder, said flap portion having an inside face and extending along a given plane;
a single tongue stamped out of said flap portion and integral therewith, said tongue extending away from said inside face, out of said given plane of said flap portion for inserting into a slot in a hanging folder, such that when said tongue is inserted into the slot in the hanging folder said tongue extends toward and through the slot, said tab and the hanging folder are locked together and the hanging folder can be handcarried by grasping said tab, wherein said single tongue has an upper edge, a leading edge and a bottom edge, said upper edge when the tab is in place being parallel to the upper edge of the hanging folder, said leading edge being disposed from said upper edge such than an obtuse angle is formed therebetween, said leading edge being diposed from said bottom edge such that an acute angle is formed therebetween.

4,209,926
DISPLAY DEVICE OF LOUVRE ARRANGEMENT
Tetsuro Ueki, Tokyo; Hajime Ogino, Kamakura, and Shigeru Yaguchi, Kashiwa, all of Japan, assignors to Jyoban Jyuki Kensetsu Kabushiki Kaisha, Matsudo, Japan
Filed Sep. 21, 1978, Ser. No. 944,355
Claims priority, application Japan, Jul. 4, 1978, 53/81327
Int. Cl.² G09F *11/00*
U.S. Cl. 40—437 **6 Claims**

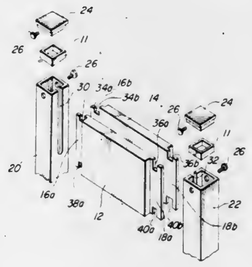
1. A display device wherein a plurality of groups of strips are arranged in overlapping relation and the groups are moved through one another to expose one group at a time for viewing comprising:
(a) a display housing;

(b) groups of interleaved strips arranged in overlapping relation in the manner of louvre-like construction in said display housing;
(c) a driving mechanism disposed in said display housing; said driving mechanism comprising at least a pair of cam arrangements, driving means for driving said pair of cam arrangements, and vertical guide grooves positioned above said pair of cam arrangements, said cam arrangements having a cam element for each group of said interleaved strips, a first end plate and a second end plate, said cam elements each having concave portions on one side thereof at constant intervals and convex portions on the other side at the constant intervals, said first end plates having protrusions and said second end plates having holes, said cam elements being associated with each other by means of concavo-convex engagement and secured by said first and second end plates;



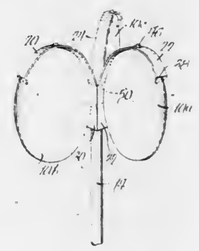
(d) a plurality of cam followers each having an arm at the upper portion thereof; said cam followers each being vertically slidable along said guide grooves of the driving mechanism;
(e) a frame structure releasably engaged with the driving mechanism;
(f) a plurality of elongated rigid elements which are movably supported by said frame structure; said elongated rigid elements each having an engaging member which contacts said arm of the cam follower to shift said rigid element in cooperation with a vertical movement of said cam follower;
(g) a plurality of cross arms for connecting said elongated rigid elements in a pair-fashion; and
(h) a plurality of tabs for suspending the strips from the elongated rigid elements.

4,209,927
KNOCKDOWN SIGN TUBULAR INTERLOCKING DEVICE
Leo P. Donatelle, Chicago, Ill., assignor to Spanjer Brothers, Inc., Chicago, Ill.
Filed Jul. 10, 1978, Ser. No. 923,064
Int. Cl.² G09F *7/18*
U.S. Cl. 40—607 **1 Claim**



1. In a knockdown sign having tubular posts spaced a predetermined distance apart and a signboard with winged extensions on each end supported therebetween, the improvement in lockup of said extensions with said posts comprising:
(a) a signboard lockup and support slot means in the bottom of each winged extension in cooperative support and interlocking relation with a slot in the adjacent wall of each post;
(b) a signboard lockup slot means in the top of each winged extension extending through the slot in the adjacent wall of each post within the same; and
(c) a tubular signboard interlocking means operationally cooperating with the slot in the top of each winged extension within each of said posts and with the interior walls of the same, said tubular signboard interlocking means comprises an upward-facing slot in the top of the winged extension within said post adjacent to the interior wall of the same, and a tubular ring having the same outer peripheral shape as but slightly smaller size than the interior of said tubular post and a wall thickness equal to slightly less than that of the width of the upward-facing slot in the top of said winged extension in interlocking engagement with the upward-facing slot in the top of said winged extension and the interior walls of the post.

4,209,928
DISPLAY DEVICE
Allan G. Kraayvanger, Mundelein, Ill., assignor to Perrigraphics, Inc., Waukesha, Wis.
Filed Jun. 23, 1978, Ser. No. 918,402
Int. Cl.² G09F *7/18*
U.S. Cl. 40—610 **6 Claims**



1. A display device made up from pieces of flexible material, said device comprising at least one sign having a perimeter and support means for said sign, said sign support means comprising a base, a strip of material secured from said base and having a free end arching around a portion of the sign, said strip and perimeter being in substantial contact throughout the extent of said strip from said base to said free end, means for securing said sign and strip near said free end, and means for securing said sign near said base, such that the sign and the strip interact in a mutually supportive relationship.

4,209,929
LANCE FOR SPEAR FISHING
Robert K. Mishima, 576-B Kukuau St., Hilo, Hi. 96720
Filed Oct. 30, 1978, Ser. No. 956,259
Int. Cl.² A01K *81/04*
U.S. Cl. 43—6 **9 Claims**



1. A lance for spear fishing comprising: an elongated hollow tubular body; a section of elastomeric tubing material having one end attached to said tubular body and having a free end

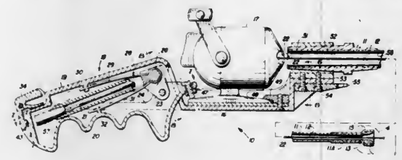
thereof extending away from said body; an elongated spearhead member having a transverse dimension slightly greater than the inner diameter of said elastomeric tubing material, said spearhead being insertable into said tubing material and being frictionally held therein; and an insert securely connected to the interior of said tubular body and having a longitudinally extending socket beginning at one end of said insert and extending to a position spaced from the opposite end of said insert with the socket having cross-sectional dimensions similar to but slightly greater than the cross-sectional dimensions of said spearhead to produce a snug fit therebetween, the spearhead being insertable through said elastomeric tubing and into said socket, thereby forming an airtight engagement between said spearhead, elastomeric tubing and socket, thereby holding said spearhead in said aperture by a suction engagement formed upon an attempted removal of said spearhead from said socket.

4,209,930
FISH ALERT
Greg Boynton, 1641 Camelot La., Minneapolis, Minn. 55432
Filed Jul. 27, 1978, Ser. No. 928,598
Int. Cl.[2] A01K *97/01*
U.S. Cl. 43—17 **11 Claims**



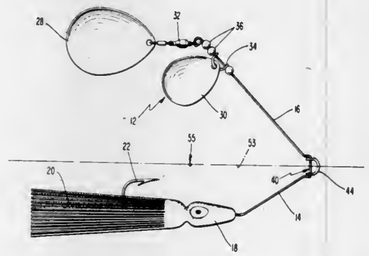
1. A portable fish alert signaling device for attaching to a fishing line to provide an alarm indication when a fish exerts a pull on the line, said signaling device comprising:
a. A substantially watertight housing;
b. A source of power disposed within said housing;
c. A fishing line engaging switch secured to the exterior of said housing, said switch comprising an electrically conducting surface affixed to the exterior surface of said housing and an electrically conducting finger-like resilient movable contact member overlying said conducting surface, said movable contact member overlying said conducting surface, said movable contact being normally urged into electrical contact with said conducting surface, said conducting surface and said movable contact being configured to accept therebetween a filament-like line to bring said surface and said movable contact out of electrical contact;
d. Indicating means positioned within said housing and connected in series with said source of power, said contact surface and said movable contact, said indicating means producing an alarm signal when said line is removed from between said surface and said movable contact, said indicating means comprising a visually sensible indicator disposed within said housing, and a selection switch mounted to said housing for selectably connecting either of said visually or audibly sensible indicators in said series connection, said switch having an actuating handle positioned exterior of said housing, said switch mounting a thin elongated printed circuit board interior of said housing, said board mounting said visually sensible indicator such that said visually sensible indicator is perceptible exterior to said housing.

4,209,931
EYELESS FISHING ROD EMPLOYING NOVEL HAND AND REEL GRIPPING MEANS
John E. Vance, 11030 N. 85th Pl., Scottsdale, Ariz. 85260
Filed Feb. 2, 1979, Ser. No. 9,113
Int. Cl.[2] A01K *87/06*
U.S. Cl. 43—22 **15 Claims**



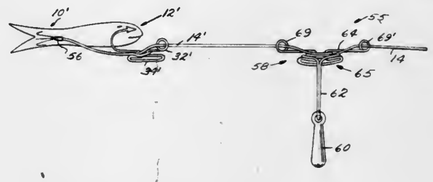
1. A fishing rod comprising:
an elongated rod portion,
a holder portion,
a hollow elongated handle means comprising two hingedly mounted parts, and
means for securing one end of said rod portion to said holder portion,
said holder portion comprising clamping means along a portion thereof for securing at one end thereof a reel to said fishing rod and forming at the other free end thereof a first part of said handle means,
the second part of said handle means being hingedly connected to said first part and biased to move relative thereto when released from said first part,
said second part cooperating with said holder portion to adjustably hold a reel in position on said holder portion in said clamping means when it is latched to said first part.

4,209,932
SPINNER BAIT FISHING LURE
Fred L. Pate, 3513 Talladega Hwy., Sylacauga, Ala. 35150
Filed Jun. 2, 1978, Ser. No. 911,757
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.11 **9 Claims**



1. In a fishing lure of the type including a pair of diverging arms, a hook connected to one of said arms, spinner means connected to the other of said arms and means for connection to a fishing line located near the intersection of said diverging arms, the improvement wherein:
said connection means includes rotatable means comprising a clevis for connecting a fishing line to said pair of arms, said rotatable means being freely rotatable a full 360° relative to said arms about an axis substantially perpendicular to the fishing line and further wherein said rotatable means is spatially fixed with respect to the lure to fix the point of attachment of the fishing line to the lure so that the fishing line defines a line which passes through the center of mass of the lure and the hydrodynamic forces on either side of said defined line are balanced when the fishing line is pulled taut.

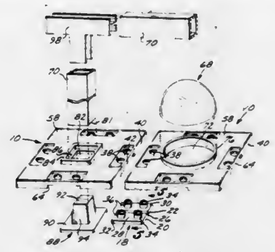
4,209,933
FISHING RIG ASSEMBLY
Joseph T. Manno, Star Rte., Kane, Pa. 16735
Continuation-in-part of Ser. No. 779,547, Mar. 21, 1977, Pat. No. 4,107,866. This application Aug. 14, 1978, Ser. No. 933,503
Int. Cl.[2] A01K *91/04*
U.S. Cl. 43—43.15 **9 Claims**



1. A fishing rig assembly comprising
a hook,
a first line,
means formed on said hook for operative connection of said first line thereto, an end of said first line connected to said means,
a sinker attachment means for operatively attaching a sinker to said first line for adjustment along said first line, said sinker attachment means consisting of an intergral body including a T-shaped projection; said generally T-shaped projection consisting of a first portion operatively connected to said body portion, a second, enlarged portion spaced from said body portion, and a third portion interconnecting said second enlarged portion to said body portion; first and second surface manifestations formed on either side of said generally T-shaped projection, and generally in-line with each other and said generally T-shaped projection, said surface manifestations and said projection being spaced a fixed predetermined distance apart,
a sinker,
a second line operatively connected to said sinker at one end thereof and looped at the other end thereof, said looped end disposed wrapped around said generally T-shaped projection, and
said first line received by said first and second surface manifestations, and wrapped around said generally T-shaped projection; and wherein said third portion of said generally T-shaped projection is relatively short compared to the thickness of said first and second lines, so that said first line and said second line looped end will together be operatively tightly frictionally engaged by both said first and second portions when the lines are wrapped around said generally T-shaped projection.

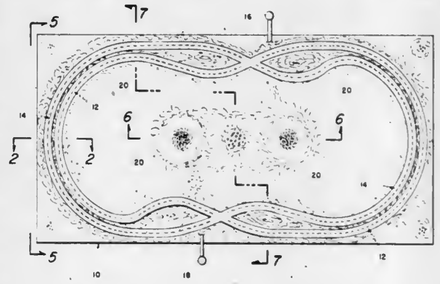
4,209,934
MODULAR TOY BUILDING UNITS
Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Jul. 10, 1978, Ser. No. 923,253
Int. Cl.[2] A63H *33/10*
U.S. Cl. 46—31 **19 Claims**

1. A modular mountable toy assembly comprising:
a plurality of panel members, each panel member having side edges and at least two apertures located substantially adjacent to each of at least two of its side edges,
and a plurality of connecting members, each connecting member having two portions and having two posts fixedly attached to each portion, the posts spatially forming a square configuration, the sides of the square configuration being equal in length to a distance between the two apertures adjacent to the side edges of the panel members, the two posts capable of being press fitted and removably held within the two apertures, each connecting member further including a thin flexible strip interconnecting the two portions and forming an axis of rotation therebetween, whereby a user has the option of interconnecting at least two panel members in a variable, angular configuration by press-fitting the pair of posts located on either portion of



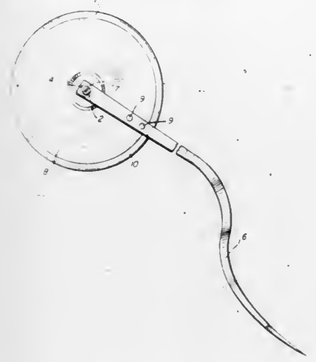
the connecting member respectively into the apertures located in one panel member and another panel member, and also option of interconnecting at least two panel members in a relatively rigid, planar configuration by press-fitting two posts, one of each being located on the two different portions of the connecting member respectively into the apertures located in one panel member and another panel member.

4,209,935
APPARATUS FOR ROCKET SLED GAME
Herman Parker, P.O. Box 1071, McAlester, Okla. 74501
Filed Jan. 23, 1978, Ser. No. 871,172
Int. Cl.[2] A63H *18/14, 29/10*
U.S. Cl. 46—44 **5 Claims**



1. An apparatus for a rocket sled game comprising:
(a) a base compartment, at least one elongated substantially enclosed passageway in the interior of the base compartment, at least one elongated grooved track provided in the upper outside surface of the base compartment, each track being in communication with a separate passageway through a plurality of spaced bores along the upper surface of the passageway;
(b) a projectile sled adapted for slidably fitting in each said grooved track for travelling in a single direction along said track;
(c) each bore of said plurality of bores being inclined from the vertical, the upper ends of each bore being directed toward the direction of travel of said projectile sled; and
(d) separate means for selectively introducing a flow of air into one end of each passageway in a direction opposite to the direction of travel of the projectile, to thereby force each projectile sled along its grooved track by the flow of air passing from each passageway through the bores.

4,209,936
FLYING SAUCER APPENDAGE
Paul R. Sklar, 860 Fifth Ave., New York, N.Y. 10021
Filed Nov. 10, 1977, Ser. No. 850,478
Int. Cl.[2] A63H *27/00*
U.S. Cl. 46—74 D **4 Claims**



1. An aerial toy comprising a flying saucer disc, a flexible tail, and pivot means for attaching one end of said flexible tail to said disc at the central vertical axis to allow the disc to rotate about the axis relative to said one end of the flexible tail, such that when the flying saucer disc is rotating in flight the flexible tail trails the disc in the direction opposite to the direction of flight, said pivot means including a first aperture in said tail adjacent said one end and a connector receivable in said aperture, said tail having means for securing it in folded or rolled condition, said latter means including other apertures longitudinally spaced from said first aperture, said connector being receivable in said other apertures to secure the tail in folded or rolled condition.

4,209,937
TOY AIRCRAFT
Earl L. Witte, Rte. 6, Clinton Rd., Paducah, Ky. 42001
Filed Mar. 31, 1978, Ser. No. 892,254
Int. Cl.[2] A63H *27/14*
U.S. Cl. 46—81 **10 Claims**



1. A toy aircraft adapted to be projected into flight by air pressure, comprising:
- a tubular support member having a front end and a rear end;
- a cover member adapted to be mounted on said tubular support member and shaped to form an aircraft body;
- means for sealing said front end of said tubular support member against air leakage;
- a blowpipe insertable into said rear end of said tubular support member for supplying air pressure to the interior thereof to propel the aircraft; and
- flexible gripping means formed on said tubular support member and spaced rearwardly from said front end thereof for engaging said blowpipe upon its insertion therein to provide an airtight seal and sliding resistance between said tubular support member and said blowpipe, said flexible gripping means comprises an annular section formed on said tubular support member projecting inwardly into the interior thereof for engagement with said blowpipe.

4,209,938
APPENDAGE OPERATED TOYS
Henry Orenstein, Verona, N.J., assignor to Toy Builders, Union, N.J.
Filed Jan. 6, 1978, Ser. No. 867,219
Int. Cl.[2] A63H *13/00*
U.S. Cl. 46—116 **10 Claims**



1. A toy comprising a figure having a moveable appendage and an accessory activated by the figure;
- means with said figure responsive to the movement of said appendage for storing energy therein;
- means responsive to the energy storing means for applying energy at an extremity of said figure;
- said accessory being powered by a gear train which engages the energy applying means at an extremity of said figure; and
- said accessory being a reciprocable figure operated by a lever which is in turn operated by a strip that forms a cam element powered by said gear train.

4,209,939
DOLL USING CIRCULATING FLUID TO SIMULATE BODY TEMPERATURE
John Pittala, 214 Asharoken Ave., Northport, N.Y. 11768
Continuation-in-part of Ser. No. 725,831, Sep. 23, 1976, abandoned. This application Jul. 7, 1978, Ser. No. 922,631
Int. Cl.[2] A63H *3/36*
U.S. Cl. 46—116 **8 Claims**



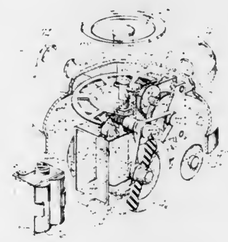
1. A creature representation such as a doll, flexible figure toy, robot or the like comprising:
- a body having a trunk, head and limbs simulating an animate creature;
- said trunk having a surface structure comprising an outer skin, an inner supporting sheet structure spaced from said outer skin, and a plurality of studs serving as an intermediate layer between said outer skin and said inner sheet structure and bonded thereto; and
- said studs in said intermediate layer being constructed to form passageways in said intermediate layer between the studs, said trunk having an external, closable filler opening communicating with said passageways for admitting to said trunk surface structure for circulation in said passageways a heated fluid to impart warmth to the outer skin.

4,209,940
TOY EJECTOR APPARATUS
Burton C. Meyer, Downers Grove; Leonid Kripak, Villa Park, and Fritz Fauser, Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 27, 1978, Ser. No. 873,016
Int. Cl.[2] A63H *13/16*
U.S. Cl. 46—145 **17 Claims**



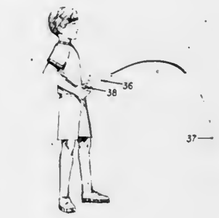
1. A toy apparatus, comprising:
- a base structure having a pair of spaced apart, upstanding hollow bodies mounted thereon, each of said hollow bodies having an open end for receiving and containing a projectile;
- a movable cover pivotally mounted to close the open end of said body, said covers being movable to an open position to permit said projectile to pass into and out of said body;
- a projectile ejector for each of said bodies for propelling a projectile out of said open top, through the air toward the open top of another body; and
- manually operable means interconnecting the projectile ejector for each body for sequentially actuating the projectile ejector in a timed sequence to propel said projectile back and forth therebetween.

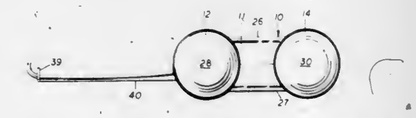
4,209,941
GROUNDED FLYING SAUCER TOYS
Edmond A. Bourque, 24 Rose La., Cumberland, R.I. 02864
Filed Jul. 10, 1978, Ser. No. 923,143
Int. Cl.[2] A63H *33/26*
U.S. Cl. 46—230 **6 Claims**



5. A toy simulating a grounded flying saucer comprising a prime mover, a set of wheels on which the toy is adapted to being propelled along a generally horizontal surface, at least one of the wheels being a driving wheel, a speed reducer interposed between the prime mover and the driving wheel, a vertical shaft also coupled to the prime mover, a dome covering the interior parts of the toy and rotated by the vertical shaft as the toy is propelled along the surface, a battery powering the prime mover, at least one electric lamp on the interior of the dome connected to the battery, a flasher switch interconnected between the battery and the lamp and a filter disc fitted with a plurality of different colored light transmitting filters, mounted on the vertical shaft and rotated thereby, the dome having at least one translucent window through which varicolored flashing light is emitted from the flashing lamp and through the filters.

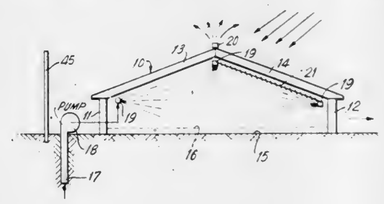
4,209,942
REMOTE CONTROL CAR
Raymond J. Lohr, 5043 Sterrettania Rd., Erie, Pa. 16506
Filed May 30, 1978, Ser. No. 910,510
Int. Cl.[2] A63H *30/00*
U.S. Cl. 46—253 **12 Claims**





1. A car (**10**) having a body (**11**) and four wheels (**12**, **13**, **14**, **15**),
- a front axle (**16**) and a rear axle (**17**) supporting said wheels on said body,
- a motor (**18**) on said body,
- a first gear (**19**) on said front axle and the second gear (**20**) on said rear axle,
- a sprocket (**21**) on said motor (**18**),
- a first idler gear (**22**) connected between said sprocket (**21**) and said first gear (**19**),
- a second idler (**23**) connected between said second gear (**20**) and said sprocket (**21**) whereby said wheels are driven in a first direction when said motor drives in a first direction and said wheels are driven in a second direction when said motor drives in a second direction.

4,209,943
PROCESS AND APPARATUS FOR COMMERCIAL FARMING OF MARINE AND FRESHWATER HYDROPHYTES
Henry W. Moeller, 45 St. Andrews Rd., Southampton, N.Y. 11968, and James P. Hunt, 200 Lexington Ave., Lyster Bay, N.Y. 11771
Filed Sep. 2, 1977, Ser. No. 830,163
Int. Cl.[2] A01G *31/02, 9/18*
U.S. Cl. 47—1.4 **25 Claims**



1. The method of cultivating freshwater and marine macro-

phytes of the type naturally growing in water comprising the steps of:

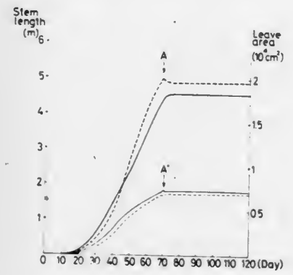
(a) providing a controlled atmospheric environment;
(b) exposing said environment to light sufficient to support growth of said macrophytes;
(c) placing live macrophytes in said environment in a position exposed to said light; and
(d) wetting said macrophytes with water of the type in which they naturally grow to maintain only a film of water on said macrophytes substantially throughout their growth period.

4,209,944

METHOD OF HYDROPONIC CULTURE

Shigeo Nozawa, Hyogo, Japan, assignor to Kyowa Kagakukogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1978, Ser. No. 947,842
Claims priority, application Japan, Dec. 16, 1977, 52-152231
Int. Cl.[2] A01G *31/02*
U.S. Cl. 47—59 **7 Claims**



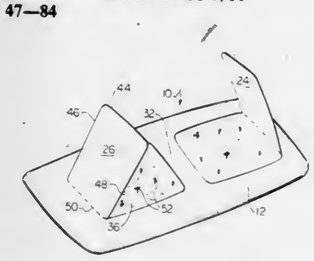
1. A method of hydroponic culture in which plants are cultured while a nutrient solution is continuously circulated within a culture tank, said method being characterized by determining a scheduled growth curve for a plant to be cultured, programing the flow rate increase and liquid level drop of the nutrient solution by approximate correspondence with said scheduled growth curve, and supplying the nutrient solution under control in accordance with said program.

4,209,945

PLANT GROWTH PACKAGE

Enid-Mary Dent, London, England, and Arthur A. Anderson, New York, N.Y., assignors to Capability Brown Limited, New York, N.Y.

Continuation-in-part of Ser. No. 913,309, Jun. 7, 1978, abandoned. This application Sep. 11, 1978, Ser. No. 940,886
Int. Cl.[2] A01G *9/10*
U.S. Cl. 47—84 **12 Claims**



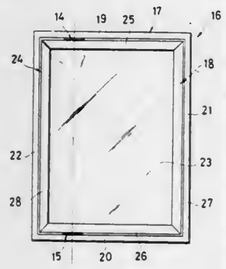
1. A package comprising an elongated flexible outer container and a flowable filling material, said container having opposed top and bottom walls, opposed side walls, and opposed end walls, said top wall containing indicia denoting a pair of cut-outs longitudinally spaced apart on either side of the transverse axis of said top wall, and spanning the major portion thereof, and an integral carrying handle positioned between said cut-outs and extending along said transverse axis, the material forming said cut-outs being adapted to be hinged open along one side thereof.

4,209,946

PIVOT MECHANISM FOR PIVOTED WINDOWS

Tsutomu Akai, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,910
Claims priority, application Japan, Aug. 5, 1977, 52-105446[U]; Aug. 5, 1977, 52-105447[U]
Int. Cl.[2] E06B *3/40*
U.S. Cl. 49—390 **4 Claims**



1. A pivot mechanism for use between a window frame member and a window sash edge which is pivotally movable relatively to the window frame member, said pivot mechanism comprising:

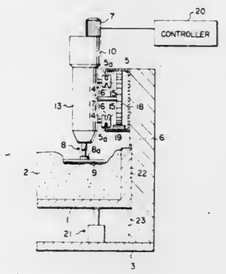
(a) a stationary base adapted to be secured to the window frame member;
(b) a slide base slidably mounted on said stationary base for pivotal engagement with the window sash edge;
(c) a threaded element threadedly extending through one of said bases substantially along the longitudinal direction of the window frame member;
(d) means coupling said threaded element with the other base while allowing rotation of said threaded element about its axis, whereby said slide base is movable relative to said stationary base in the longitudinal direction of the window frame member by turning said threaded element;
(e) means limiting the movement of said slide base relative to said stationary base and securing said slide base to said stationary base;
(f) a pivot shaft adapted to be mounted on the window sash edge and project toward the window frame member, said slide base being movable into a position in which said stationary and slide bases jointly provide bearing means for the pivot shaft;
(g) said bearing means comprising a curved wall on said slide base defining a substantially semicircular recess receiving said pivot shaft, and a flat surface on said stationary base, said flat surface closing said semicircular recess when said slide base is in said position, whereby said pivot shaft can be retained in said recess;
(h) said slide base including an elongated indentation extending in the direction in which the slide base is movable, said substantially semicircular recess opening toward said elongate indentation, and said flat surface on said stationary base being disposed in said elongate indentation.

4,209,947

GRINDING METHOD AND APPARATUS

Tetatsu Ohno, 1-2, 1-chome, Kasuya, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 813,978, Jul. 8, 1977, abandoned. This application Nov. 29, 1978, Ser. No. 964,656
Claims priority, application Japan, Jul. 13, 1976, 51-83102
Int. Cl.[2] B24B *31/00*
U.S. Cl. 51—7 **3 Claims**



1. Grinding apparatus wherein a workpiece follows a path in a longitudinally shaped grinding tank defined by a guide rail positioned alongside the tank, comprising in combination, a working piece to be ground, a longidutinally shaped grinding tank having a path defined therein for moving said working piece along the grinding tank, a charge of grinding material located in said path for contact with said working piece, a guide rail provided alongside said grinding tank path, work control means movable along said guide rail for moving the workpiece along the path, a rotatable chuck movable with said control means having means securing the workpiece to its lower end, means for rotating the chuck and the workpiece as the workpiece is moved along the path in said grinding material, vertically moving means for relatively moving the chuck holding the workpiece vertically relative to the guide rail to contact the grinding material in the tank path operable while the workpiece is being rotated, a driving shaft and gear projecting from said chuck together with a rack on the guide rail meshing with said gear for moving the work control means along said rail, guide rail structure presenting a C-shaped cross-section alongside said chuck with a free edge at each cross-sectional end, and a pair of rollers with grooves therein each rotatably fitted to said chuck and rollably engaging with its respective groove a respective one of the free edges of the guide rail as the chuck moves about said path.

4,209,948

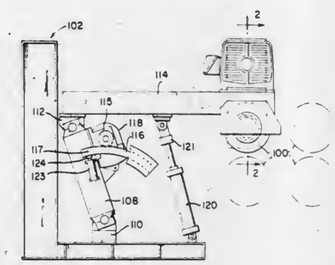
WORKPIECE CONDITIONING GRINDER SYSTEM

Robert F. Obear, Everett, Wash., assignor to Western Gear Corporation, Everett, Wash.

Division of Ser. No. 748,293, Dec. 7, 1976, Pat. No. 4,100,700. This application Jun. 27, 1977, Ser. No. 810,520
Int. Cl.[2] B24B *7/02*
U.S. Cl. 51—92 R **9 Claims**

1. A high production grinding machine for conditioning an exposed surface of an elongated workpiece having a longitudinal axis and an exposed surface while limiting grinding wheel vibration during grinding contact with the workpiece, comprising:

a grinding station;
means for providing relative movement between the workpiece and grinding station along the longitudinal axis of the workpiece;
a stationary, structurally massive, rigid frame positioned at the grinding station;
a first grinding wheel support mounted at the grinding station and movable in a transverse direction generally perpendicular to the longitudinal axis of the workpiece and generally parallel to the exposed surface of the workpiece;
a second grinding wheel support carried by said first grinding wheel support, said second grinding wheel support being movable in a direction generally perpendicular to the exposed surface of the workpiece;
a powered rotary grinding wheel mounted on the second grinding wheel support such that said grinding wheel is transversely movable across the exposed surface of the workpiece by the first grinding wheel support and is movable toward and away from the exposed surface of the workpiece by the second grinding wheel support; and
clamping means for releasably clamping the first support to the rigid frame at one or more points after each transverse positioning of the grinding wheel relative to the workpiece to immobilize the transverse motion of the first support and grinding wheel and thereby minimize grinding wheel vibration.

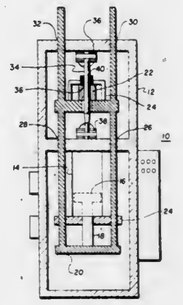


4,209,949

METHOD AND APPARATUS FOR HIGH PRECISION LAPPING MACHINES

Clyde Staats, Irwin, and John J. Pilewski, Greensburg, both of Pa., assignors to Staats & Staats, Inc., Irwin, Pa.

Filed Jan. 4, 1978, Ser. No. 866,850
Int. Cl.[2] B24B *37/02*
U.S. Cl. 51—151 **10 Claims**



1. A lapping machine comprising:

a frame having motive means attached thereto, said motive means having a pneumatic cylinder for accepting a gas under pressure;
means connected to said motive means for providing relative motion between a lap and a workpiece by imparting a motion to said lap corresponding to motion of said pneumatic cylinder;
means for sensing a pneumatic pressure representative of a pneumatic pressure in said pneumatic cylinder, so that said sensed penumatic pressure has a correspondence to a predetermined force between said lap and said workpiece;
said sensing means including means for stopping said motive

means upon the sensing of a predetermined pressure at a position corresponding to said predetermined force between said lap and said workpiece;

first means for energizing said motive means connected thereto provide a relative disengaging motion between said lap and sais workpiece, said disengaging motion have a substantially constant predetermined amplitude from said position of said predetermined pneumatic pressure corresponding to a predetermined force between said lap and said workpiece; and

second means for energizing said motive means toward an engaging position between said lap and said workpiece.

4,209,950

GRINDING MACHINE

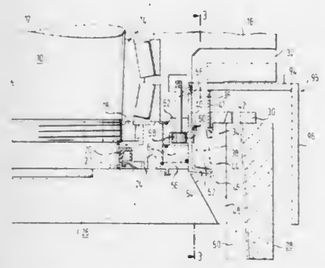
Hans Sielemann, Winkelstrasse 32-34, 4980 Bünde, Fed. Rep. of Germany

Filed Nov. 7, 1977, Ser. No. 849,332

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651879

Int. Cl.² B24B *55/02*

U.S. Cl. 51—267 **23 Claims**



1. A grinding machine having a rotatable grinding head comprising a plurality of grinding segments arranged in a generally circular alignment around the periphery of the grinding head, said grinding head having an annular chamber therein for receiving a liquid coolant and having a plurality of water channels extending obliquely downward and outward from said annular chamber to the inner side of the grinding segments; and a blocking member comprising at least one barrier diaphragm having the shape of a circular segment for covering the water channels in a region of the grinding head not in contact with a workpiece whereby coolant flow into said region is interrupted.

4,209,951

PISTON RING HONING

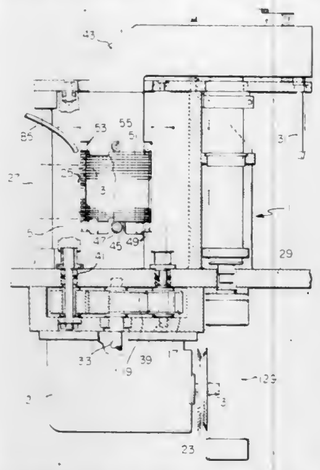
Robert H. Gillette, Angola, Ind., assignor to Brammall, Inc., Angola, Ind.

Division of Ser. No. 880,810, Feb. 24, 1978, which is a continuation of Ser. No. 741,501, Nov. 12, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,340

Int. Cl.² B24B *1/00*

U.S. Cl. 51—290 **2 Claims**

1. The method of finishing a plurality of piston ring faces comprising the steps of, supporting a plurality of stacked piston rings so that they have a common center axis by engaging their outer surfaces with a plurality of rollers mounted parallel to the center axis and equally spaced about the outer surfaces of said piston rings, driving at least one of said plurality of rollers so as to rotate said piston rings, engaging the outer surfaces of said piston rings with a first tool between two of said plurality of rollers and moving said first tool parallel to said center axis to hone the outer surfaces of said rings, and engaging the outer surfaces of said piston rings with a second tool on the sides opposite to the sides engaged by said first tool and moving said



second tool parallel to said center axis to hone the outer surfaces of said rings.

4,209,952

UNDERWATER JET BLASTING APPARATUS

David J. H. Odds, Horley, England, assignor to F. A. Hughes and Company Limited, Epsom, England

Filed Sep. 8, 1978, Ser. No. 940,666

Claims priority, application United Kingdom, Sep. 12, 1977, 37975/77

Int. Cl.² B24C *7/00, 5/02*

U.S. Cl. 51—415 **4 Claims**



1. Apparatus for use in high pressure underwater abrasive-laden water jetting, such apparatus comprising in combination a gun; a jetting nozzle, an abrasive inductor, and a water valve in said gun; a high pressure water pump to which said gun is connected, said pump being pressurised on opening of said water valve; an air pump; a container for abrasive connected via an air control valve to said air pump to be pressurised thereby; an air line between said container and said abrasive inductor on said gun at which, in use, abrasive and air are mixed with water; an air by-pass to connect said air line with said air pump; means connecting said air control valve to said water pump whereby said air control valve is responsive to pressure conditions at said water pump to direct air from said air pump to said container, and thus to supply abrasive-laden air to said inductor, when said water valve is open and said water pump is pressurised; said air control valve being adapted to direct air from said air pump along the by-pass in response to the water valve being closed and said water pump being depressurised.

4,209,953

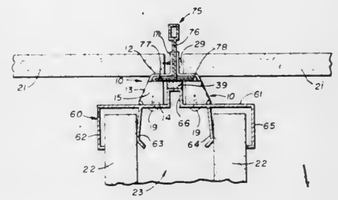
CEILING RUNNER ATTACHMENT SYSTEM AND CLIP THEREFOR

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 824,756, Aug. 15, 1977, Pat. No. 4,154,035. This application Apr. 9, 1979, Ser. No. 28,031

Int. Cl.² E04B *2/76*

U.S. Cl. 52—241 **13 Claims**



1. A ceiling runner system comprising:

an inverted-T runner ceiling grid;

a plurality of attachment clips secured to the web of an inverted-T runner by fastener means and supportingly engaged by the arms of the inverted-T runners;

at least one ceiling panel having an edge supportingly resting upon the arm of an inverted-T runner;

at least one ceiling runner located either parallel or perpendicular to an inverted-T runner comprising a top plate and depending flange members wherein the top plate is attached by fastening means to at least one attachment clip;

at least one wall panel having a top edge engaged to a flange member of the ceiling runner.

4,209,954

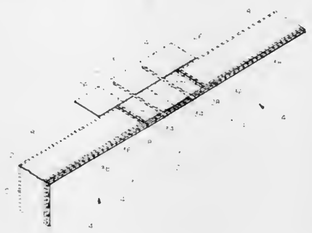
PANEL CONSTRUCTION HAVING LATERAL EDGE MEMBERS

Lloyd J. Scheid, 4404 Grimes Pl., Encino, Calif. 91316

Filed Dec. 5, 1977, Ser. No. 857,126

Int. Cl.² E04C *2/04*

U.S. Cl. 52—601 **1 Claim**



1. A panel construction for interior walls comprising a gypsum core having opposed lateral edges intended for about vertical disposition to form a portion of an interior wall, said core member having opposed planar surfaces, one of said surfaces being adapted to be aesthetically and exteriorly finished, the other being unfinished; an elongate, wood, edge member secured in adjacent relationship to each of the opposed lateral edges with a hot melt adhesive layer and extending about the extent thereof and having one surface having about planar continuity with said unfinished surface, the other surface being planar and angularly flaring outwardly and exteriorly of the plane of said surface adapted to be aesthetically and exteriorly finished, said member being of sufficient width to accommodate securement means therethrough; and a layer of filler extending from the edge of said elongate edge member and feathered to fill in and provide continuity between said one of said surfaces adapted to be aesthetically and exteriorly finished and said other surface facing outwardly and exteriorly of said elongate edge member, said surfaces and lateral edges of said gypsum core member having a paper covering thereon.

4,209,955

DEVICE FOR FEEDING AND CHECKING LAYERS OF CIGARETTES IN CIGARETTE PACKAGING MACHINES

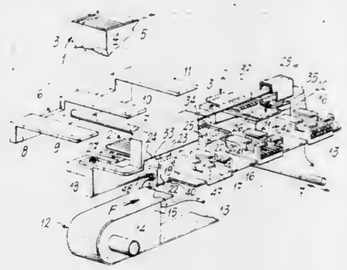
Enzo Seragnoli, Bologna, Italy, assignor to G.D Societa per Aziconhi, Bologna, Italy

Filed May 8, 1979, Ser. No. 36,982

Claims priority, application Italy, Jan. 6, 1978, 3459 A/78

Int. Cl.² B65B *57/14*

U.S. Cl. 53—54 **5 Claims**



1. A device to be associated to a cigarette packaging machine for forming bundles constituted by a plurality of superimposed individual layers of adjacent cigarettes and for checking the faultless conditions of said individual layers during the formation of said bundles comprising:

a hopper having discharging ports for forming and dispensing said individual layers;

side-by-side disposed stations each for successively receiving a layer from the respective discharging port;

compartments for containing said bundles mounted on means intermittently moving traversely to and in front of said stations;

means disposed between each of said stations and said compartments for supporting and guiding said individual layers, said means delimiting a passage formed by side guiding members and by an upper and a lower light-transparent guiding plate and having a width substantially equal to the width of a layer and a height substantially equal to the diameter of a cigarette;

a first fixed screen means external to said passage associated to and disposed above said upper light-transparent guiding plate, said first screen means being in the form of a slot developing in the direction of the transverse dimension of said passage;

a pusher means reciprocatingly moving in line with the cigarette axes for transferring said individual layers from said stations, through said passages into said compartments;

a light source disposed above said slot;

a mounting external to said passage on the side thereof opposite said light source associated to and disposed below said lower light transparent guiding plate and having a number of built-in seats each housing a photosensitive element, each aligned with a cigarette of a layer and all facing said slot;

a second fixed screen means each associated to each of said seats, said second screen means being in a tubular form with axis directed perpendicularly towards said slot;

ejection means for ejecting bundles containing defective layers; and

cyclic means associated with said photosensitive elements for controlling said ejection means.

4,209,956

FORMING OVERLAPPED WRAPPERS

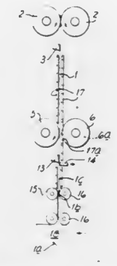
Arthur J. Clayson, and Austin L. Fox, both of London, England, assignors to Molins Limited, London, England

Filed Jun. 13, 1978, Ser. No. 915,092

Claims priority, application United Kingdom, Jun. 21, 1977, 25974/77

Int. Cl.[2] B65B *41/16*

U.S. Cl. 53—396 13 Claims



1. A method of forming pairs of overlapped wrappers for wrapping articles such as groups of cigarettes, comprising the steps of feeding a web of wrapping material at a constant feed speed towards a conveyor movable at a first speed, said constant feed speed being higher than said first speed, cutting the web upstream of the conveyor at intervals corresponding to the length of the first wrapper of said pair, so that the newly cut end of the web overtakes the trailing end of the cut piece and forms an overlap therewith, and making a further cut in said web downstream of the conveyor at a desired position behind said overlap to cut a second wrapper of said pair to thereby form a pair of overlapped wrappers, said conveyor conveying said first wrapper only during the period between the cutting of the web upstream of the conveyor and the newly cut end of the web reaching said conveyor.

4,209,957

ARRANGEMENT AND PROCESS FOR ACTIVATING AND ARRESTING THE OPERATION OF A HEAT-FORMING MACHINE

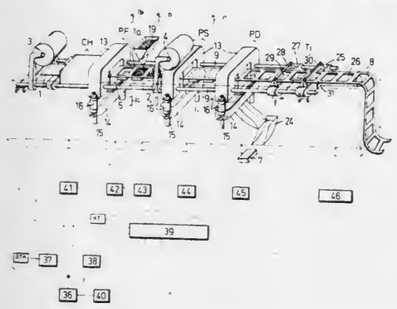
René Utzmann, Falaise, France, assignor to Ste d'Application Plastique, Mecanique et Electronique Plastique-Mecanique S.A., Falaise, France

Filed Oct. 10, 1978, Ser. No. 949,579

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745422

Int. Cl.[2] B65B *1/02, 3/02, 5/02*

U.S. Cl. 53—453 16 Claims



1. An improved process for actuating and arresting a heat-forming machine for producing deep drawn containers made of thermoplastic foil band material, wherein said foil band material is paid out in stepwise fashion from at least one storage roller operatively mounted in the heat-forming machine, and is guidingly fed in stepwise fashion in a feeding direction successively along a processing path along which there are disposed a heating arrangement, a molding arrangement, a filling arrangement, a cover foil band sealing arrangement and a stamping arrangement, said heat-forming machine include heating elements operatively mounted above and below said processing path, and further including screening plates slidably movably mounted along a path parallel to said processing path and disposed between said heating element and said processing path; the improvement comprising the steps of

first slidably moving said screening plates in a stepwise fashion in a direction opposite to the feeding direction out of said heating arrangement;

thereafter exposing said foil band material to heating in said heating arrangement until a forming temperature for a predetermined portion of the thermoplastic foil band material has been reached;

thereafter advancing said predetermined portion of foil band material into said molding arrangement;

thereafter actuating said molding arrangement; and continuing the aforerecited steps until said heat-forming machine is to be selectively arrested, whereupon

first said slidably moving screening plates are moved in the same direction as the feeding direction into said heating arrangement;

thereafter arresting said molding arrangement; and

thereafter arresting said feeding of said foil band material; slidably moving said screening plates in and out of said heating arrangement by at least two steps, the length of said steps corresponding to the length of the steps of said feeding of said foil band material; and adjusting the time during which said screening plates remain stationary so that a portion of the foil band material which is most proximate to the molding arrangement is selectively heated to the required forming temperature.

4,209,958

ARTICLE STRAPPING

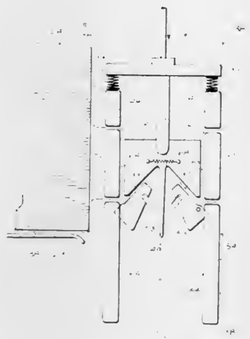
Peter E. Bailey, 6, Broadwater Dr., Saratoga, New South Wales, Australia

Filed Sep. 26, 1978, Ser. No. 946,001

Claims priority, application Australia, Oct. 10, 1977, 1997/77

Int. Cl.[2] B65B *9/02, 11/08*

U.S. Cl. 53—553 10 Claims



1. An apparatus for strapping an article with heat sealable plastics material strap, the apparatus comprising:

(a) spaced-apart first and second strap stations arranged to support opposite ends of the strap, one at least of said stations being a strap feed station,

(b) support means for receiving and supporting the article to be strapped and disposed such that, in operation of the apparatus, the strap embraces a portion of the periphery of the article when supported upon the support means with first and second limbs of the strap extending toward the first and second stations respectively, and

(c) first and second heads and means for driving said heads toward and away from one another, the first head comprising spaced-apart clamp elements, heater bars located between the clamp elements and a severing means located intermediate the heater bars, means for driving the heater bars and the severing means in a direction parallel to the direction of movement of the first head and relative to the clamp elements, the second head also comprising a plurality of clamp elements including a first set of spaced-apart clamp elements which are arrayed with the clamp elements of the first head and which are co-operable with the clamp elements of the first head to clamp the first limb of the strap at spaced apart zones, and a second set of spaced apart clamp elements which are arrayed and cooperable with the first set of clamp elements of said second head to clamp the second limb of the strap at spaced-apart zones, the severing means being actuable in operation of the apparatus to sever both the first and the second limbs of the strap at a region between said spaced-apart zones, and the second head further comprising means for displacing end portions of the second limb when severed into contact with the heater bars and thereafter into overlapping heat sealing contact with corresponding end portions of the severed first limb.

4,209,959

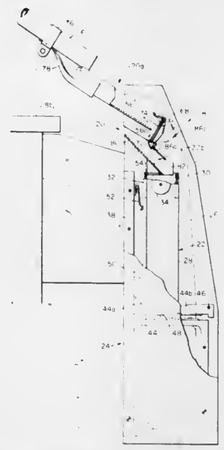
MAGNETIC STORAGE SYSTEM AND METHOD FOR AN AXIAL LEAD SORTER

Walter S. Bachman, Acton, and Nicholas J. Cedrone, Wellesley Hills, both of Mass., assignors to Daymarc Corporation, Waltham, Mass.

Filed Jun. 1, 1978, Ser. No. 911,694

Int. Cl.[2] B65B *19/34*

U.S. Cl. 53—475 14 Claims



1. A system for storing in a cassette electronic devices with magnetically permeable axial leads comprising, in combination,

chute means that receives said devices advancing in an axial mode,

means for replaceably holding said cassette generally below said chute means and adapted to receive and store said devices in a horizontal orientation, and

magnet means for producing a magnetic field extending across said cassette and said chute means in a generally horizontal direction and increasing in intensity in a vertically downward direction,

said chute means being structured to produce, in combination with said magnetic field, a controlled reorientation of said devices from said axial mode of advance to a lateral mode of advance.

4,209,960

APPARATUS FOR MAINTAINING CONSTANT THE WEIGHT OF ARTICLE STACKS

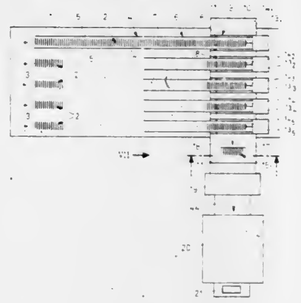
Gert Deutschländer; August Rebsamen, both of Neuhausen am Rheinfall, and René Fluck, Schleitheim, all of Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Nov. 16, 1978, Ser. No. 961,255

Claims priority, application Switzerland, Aug. 22, 1978, 8873/78

Int. Cl.[2] B65B *57/00, 57/20*

U.S. Cl. 53—502 11 Claims



1. In an article packing system including a first conveyor means for advancing a series of flat articles; at least two stack-forming devices for consecutively forming stacks of variable length from the articles received from the first conveyor means; a second conveyor means extending from the stack-forming devices for carrying away the stacks formed in the stack-forming devices; a packing machine for packaging the article stacks received from the second conveyor means and a scale for weighing the stacks of articles; the improvement wherein said scale is in the conveying path of said second conveyor means and is located downstream of said stack-forming devices and upstream of said packing machine as viewed in the direction of article advance on said second conveyor means; said second conveyor means including a mechanism for successively advancing the article stacks from said stack-forming devices towards said scale in a direction parallel to the plane of the flat articles and sequentially introducing the article stacks into said scale and subsequently advancing them from said scale to said packing machine; further comprising means operatively connecting said scale with said stack-forming devices for varying the length of the stacks in said stack-forming devices as a function of the stack weight measured by said scale.

4,209,961

GUIDE MECHANISM FOR SELF-GUIDING STRETCH-WRAP MACHINE

James R. Donnelley, Los Angeles, Calif., assignor to Stevenson Industries, Northridge, Calif.

Filed Oct. 11, 1978, Ser. No. 950,601

Int. Cl.[2] B65B *13/10*

U.S. Cl. 53—588 18 Claims

1. A guide ski assembly for attachment to the feeler arm of a self-guiding stretch-wrap machine for guiding the stretch-wrap machine around material packages so that stretch-wrap

material can be wrapped around the material packages to bind them into a material unit, said guide ski assembly comprising:

a curved guide ski for contact with material packages, said guide ski having a front end and being curved to simultaneously engage a plurality of said packages to avoid engagement of said front end of said guide ski in spaces between material packages to be wrapped;



means for pivotably mounted said guide ski on the feeler arm so that the guide ski can continuously pivot on the feeler arm in accordance with the shape of said guide ski and the shape of the material packages; and

a spring attached between said guide ski assembly and the feeler arm to resiliently urge rotation of said guide ski assembly on the feeler arm on its pivot in a direction to move said front end of said guide ski away from the material packages to be wrapped.

4,209,962

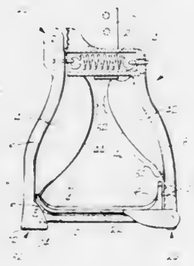
SAFETY STIRRUP HAVING A SWINGAWAY FOOTREST RELEASED BY TOE-ACTUATED DEFLECTOR PLATES

Roger C. Forest, 9880 Meridian South, Puyallup, Wash. 98371

Filed Sep. 18, 1978, Ser. No. 943,115

Int. Cl.² B68C *3/02*

U.S. Cl. 54—49 **11 Claims**



7. In a safety stirrup of the type having an upper, strap supported hanger means, and a pair of laterally spaced apart side bars depending downwardly from said hanger means in which at least a first of said side bars is swingably connected to said hanger means for lateral and outward swinging movement of a lower end of said first side bar relative to said second side bar, and a releasable footrest bar normally bridging the lower ends of said side bars and having a first end pivotally connected for swinging downwardly and away to the lower end of one of said side bars so that the second end of the footrest bar is released from the lower end of the other of said side bars when the lower end of said first side bar is swung laterally and outwardly relative to said second side bar, the improvement comprising first and second deflector plates supportively and fixedly attached along said first and second side bars respectively, said deflector plates projecting inwardly and forwardly from said side bars and being oppositely contoured in a forwardly and upwardly convergent configuration so as to react to excessive upward tilting and/or sideways turning of the forward part of a rider's boot and deflect said first side bar laterally and outwardly relative to said second side bar thereby releasing said footrest bar to swing downwardly and away releasing the rider's boot.

4,209,963

SELF-PROPELLED SWATHER

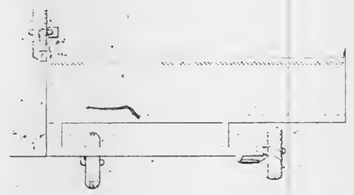
Orville Linn, Box 188,, Lang, Saskatchewan, Canada

Continuation-in-part of Ser. No. 830,693, Sep. 6, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,601

Claims priority, application Canada, Sep. 10, 1976, 260985

Int. Cl.² A01D *41/02, 57/00*

U.S. Cl. 56—10.8 **25 Claims**



1. A self-propelled swather comprising in combination a transverse main frame, a swather unit operatively mounted and supported within said main frame, a front drive wheel assembly on one end of said main frame, a rear drive wheel assembly adjacent the other end of said main frame, a castoring support wheel assembly on said main frame situated between said front and rear drive wheel assemblies, as hydraulic motor operatively connected to each of said drive wheel assemblies and means on said swather operatively connected to said front drive wheel assembly to steer said front drive wheel assembly.

4,209,964

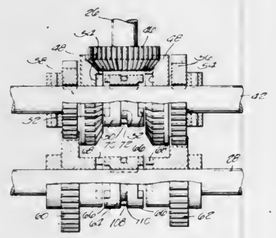
TWO-SPEED FORWARD AND REVERSE SELF-PROPEL SYSTEM FOR WALK-BEHIND MOWERS

William Fuelling, Jr., Galesburg, and Richard A. Heismann, Knoxville, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 30, 1978, Ser. No. 910,573

Int. Cl.² A01D *69/06, 69/08*

U.S. Cl. 56—11.2 **21 Claims**



1. A self-propelled lawn mower comprising a blade housing, a plurality of wheels for supporting said blade housing, a blade mounted for rotation within said blade housing, a prime mover supported on said housing, a drive shaft mounted for rotation relative to said housing and adapted for connection to one of said wheels for driving thereof, transmission means mounted on said housing and including a rotatable input shaft drivingly connected to said prime mover, a pair of gears mounted co-axially with said drive shaft, means for connecting said input shaft to said pair of gears so as to drive one of said gears at a first speed and so as to drive the other gear at a second speed, and means for alternatively and selectively connecting said gears to said drive shaft for driving said drive shaft, said means including a shiftable element drivingly mounted on said drive shaft between said pair of gears and selectively and alternatively connectable to said gears.

4,209,965

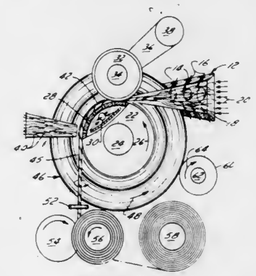
UNIVERSAL SPINNING SYSTEM

Emilian Bobkowicz, 400 Kensington, Westmount, Quebec, Canada

Continuation of Ser. No. 752,901, Dec. 21, 1976, abandoned. This application May 3, 1978, Ser. No. 902,385

Int. Cl.² D01H *1/12, 13/30;* **D02G** *3/40*

U.S. Cl. 57—5 **19 Claims**



1. A method suitable for manufacturing a yarn product comprising the steps of supplying first fibers, aerodynamically forcing said fibers to assume a vortex configuration to thereby impart a pre-twist to said first fibers to form a strand, passing said strand between first and second pinch points and while said strand is between said first and second pinch points, juxtaposing second fibers with said strand to form a yarn product.

4,209,966

TERMINABLE COMMUNICATION CABLE WITH CONDUCTOR PAIRS COMBINED IN GROUPS

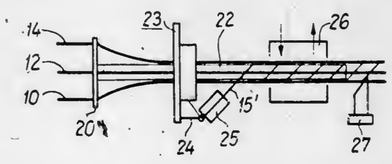
Norbert Sutor, Neustadt, and Dieter Vogelsberg, Coburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 14, 1978, Ser. No. 942,317

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2742368

Int. Cl.² H01B *13/02, 13/26*

U.S. Cl. 57—6 **5 Claims**



1. The method for manufacturing a communication cable which includes a cable core, surrounded by a cable sheath, which consists of several conductor groups which in turn consists of several twisted conductor pairs, the conductor pairs of each conductor group connected to each other by means of flexible holding elements arranged at regular intervals transversely to the longitudinal direction of the conductors and form a flat cable comprising:

(a) first arranging the conductor pairs temporarily along the generatrix of a cylinder;

(b) temporarily fixing said pairs in this configuration by means of a holding helix by securing the holding helix to the surface of the conductor pairs;

(c) subsequently cutting open the holding helix between two conductor pairs associated with adjacent generatrices in the same operation;

(d) removing the several conductor pairs from this configuration to obtain a flat cable in which the conductor pairs have crosswise connection to each other by means of the cut opened holding helix; and

(e) combining the conductor pairs in the flat cable into a conductor group.

4,209,967

RESILIENT COUPLING DEVICE FOR TEXTILE TWISTING APPARATUS

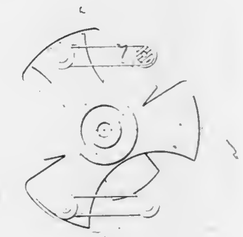
Jean P. Guerton, Maisons Alfort; Jean Waleckx, Villebon sur Yvette, and Jean M. Monville, Paris, all of France, assignors to SKF Compagnie d'Applications Mechaniques, Clamart, France

Continuation-in-part of Ser. No. 882,513, Mar. 1, 1978, Pat. No. 4,158,282. This application Apr. 2, 1979, Ser. No. 26,630

Claims priority, application France, Apr. 18, 1978, 78 11424

Int. Cl.² D01H *7/86*

U.S. Cl. 57—58.72 **10 Claims**



1. A resilient coupling device for a double-twist twisting mechanism, comprising, a centered assembly rotatable about a first axis and an off-centered assembly which rotates about a second axis which is adjacent to but not concentric with the first axis, each of said assemblies having at least two fastening means spaced from their respective axes, and a pair of oppositely-acting connecting means which each connect a fastening means on one assembly with a fastening means on the other assembly whereby rotation of one assembly will produce rotation of the other assembly, each connecting means including a substantially unstretchable flexible traction element and a compressibly deformable resilient element located between the traction element and a said fastening means.

4,209,968

CLOCK CHIME WITH SHUTOFF

Dionizas V. Remys, Clarendon Hills, and Donald R. Scott, Lombard, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

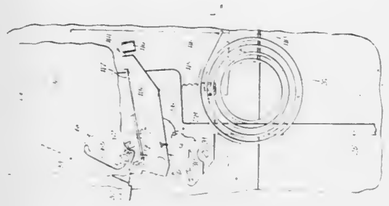
Filed Jul. 1, 1977, Ser. No. 812,219

Int. Cl.² G04B *21/10*

U.S. Cl. 368—273 **3 Claims**

1. In a clock having a movement and chime sounding mechanism including a chime and a hammer assembly mounted for pivotal chime striking movement, said hammer assembly including a pivotal lever arm for supporting a chime clapper, said movement and mechanism being contained in a housing having a removable cover member for providing access to said movement and mechanism, the improvement consisting of a chime shutoff means comprising a pin carried on said cover member for preselected movement between first and second positions, said lever arm including a follower portion, a rotating wheel driven by said movement and positioned to be engaged by said follower portion, means biasing said lever arm into engagement with said wheel, said pin permitting said

follower portion of said lever arm to be biased into generally continuous slideable engagement with said rotating wheel when in said first position and preventing pivotal movement of said hammer assembly by supporting said lever arm against



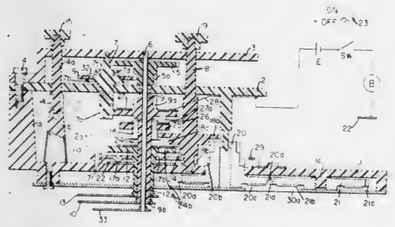
said engagement when in said second position, said wheel having a notched portion comprising a generally radially extending drop surface for permitting abrupt displacement of said follower and limited pivotal movement of said hammer assembly.

4,209,969

ALARM CLOCK

Kiyoshi Kitai; Masuo Ogihara; Kozo Chimura, and Nobuo Shinozaki, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1978, Ser. No. 877,824
Claims priority, application Japan, Mar. 25, 1977, 52-33583; Mar. 25, 1977, 52-33584; Mar. 25, 1977, 52-36850[U]
Int. Cl.² G04C *21/16, 21/00*
U.S. Cl. 368—250 **8 Claims**



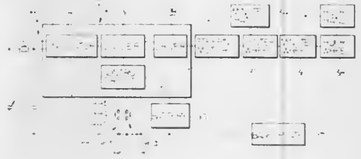
1. In a timepiece having a case, an alarm signaling device for generating an alarm by detecting the phase of two sets of gears and at least a minute hand and an hour hand for indicating the time at which the alarm signaling device is effected to generate the alarm, the improvement wherein the two sets of gears are concentrically mounted for rotation and one set of gears comprises an hour hand gear and an hour detecting gear and the other set comprises a minute hand gear and a minute detecting gear positioned between the minute gear and the one set of gears and having means in sliding contact with the minute gear, and further comprising an alarm signaling time setting device comprising an alarm signaling time setting wheel having an axis of rotation parallel to that of the two sets of gears and a first gear and a second gear engaging with said minute detecting gear and said hour detecting gear respectively.

4,209,970

ELECTRONIC TIMEPIECE

Kazunari Kume; Minoru Watanabe, both of Tokorozawa; Hideshi Oono, Sayama, and Munetaka Tamaru, Tokyo, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Division of Ser. No. 661,577, Feb. 26, 1976, Pat. No. 4,092,820.
This application Apr. 3, 1978, Ser. No. 892,812
Claims priority, application Japan, Mar. 25, 1975, 50-035795; May 30, 1975, 50-064172
The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.
Int. Cl.² G04C *3/00, 13/06;* **G04B** *27/00*
U.S. Cl. 368—76 **1 Claim**



1. An electronic timepiece comprising, in combination:
a frequency standard providing a relatively high frequency signal;
a frequency converter dividing down the relatively high frequency signal to provide a first low frequency signal, a second low frequency signal lower in frequency than said first low frequency signal, and a third low frequency signal lower in frequency than said second low frequency signal;
manually operable switch means;
a control circuit including first means for generating first and second outputs when said manually operable switch means is actuated, second means responsive to said first output for generating a first output signal, and third means for generating a second output signal in response to said second output;
a driver circuit normally providing first driving current pulses in response to said third low frequency signal and responsive to said first and second output signals from said control circuit to provide second and third driving current pulses at frequencies higher than said first driving current pulses; and
an electro-mechanical transducer normally driven by said first driving current pulses to advance rotatable time-representing members stepwise once per every one unit time and responsive to said second and third driving current pulses to rapidly advance said time-representing members at first and second speeds higher than a normal rotational speed in which said electro-mechanical transducer is driven by said first driving current pulses, whereby time correction can be performed at different speeds.

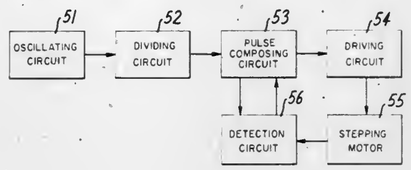
4,209,971

ELECTRONIC TIMEPIECE

Makoto Ueda; Masaharu Shida; and Akira Torisawa, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Apr. 20, 1978, Ser. No. 898,535
Claims priority, application Japan, Apr. 23, 1977, 52-47093
Int. Cl.² G04C *3/00*
U.S. Cl. 368—76 **4 Claims**

1. An electronic timepiece comprising: a stepping motor having a rotor and a coil; a detection circuit having a resistance element for discriminating between rotation and non-rotation of the stepping motor by variation of the coil inductance; a dividing circuit receptive of a time base signal for dividing the same down; a pulse composing circuit for generating a normal driving pulse for the stepping motor sufficient to drive the same under normal loading and insufficient to drive the same under worst case loading, a correction driving pulse sufficient to drive the motor under worst case loading and a detection pulse applied to said detection circuit; a stepping motor driving



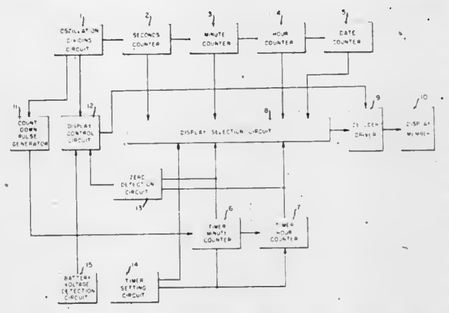
circuit receptive of the normal driving pulse and the correction driving pulse; and means connecting said resistance element directly across the coil output of the stepping motor such that said detection circuit controls the driving circuit to supply the correction pulse to the coil when the non-rotating condition is detected.

4,209,972

DIGITAL ELECTRONIC TIMEPIECE HAVING AN ALARM DISPLAY

Takuro Fukuichi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,178
Claims priority, application Japan, Jun. 17, 1977, 52-72576
Int. Cl.² G04F *10/00;* **G04C** *19/02*
U.S. Cl. 368—71 **4 Claims**



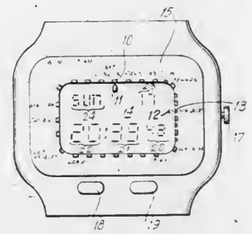
1. A digital electronic timepiece comprising: a power source; a time base signal generator; a divider receptive of the time base signal for generating a plurality of time signals; at least one time counter receptive of one time signal for counting time; at least one settable timer counter for storing a count corresponding to a desired time period and receptive of a time signal for decrementing the count thereof to zero; a multi-digit digital display for displaying the time count in the counter; means for generating a zero count signal when the timer count is zero; means for generating a plurality of display driving signals each corresponding to one digit of the display, wherein the display driving signals of successive digits are phase delayed with respect to each other and the frequency thereof is sufficiently low to produce visible flickering of the display; and means for normally applying a given time signal to the display to produce a non-flickering time display and responsive to a zero count signal in the timer counter for applying the display driving signals to the display to produce a sequential flickering of the digits of the time display to provide a visual indication of the lapse of said desired time period.

4,209,973

ELECTRONIC TIMEPIECE TIME ZONE DISPLAY

Shuzi Maezawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 31, 1977, Ser. No. 829,545
Claims priority, application Japan, Sep. 1, 1976, 51-104685
Int. Cl.² G04B *19/30*
U.S. Cl. 368—84 **13 Claims**



1. In a digital display for an electronic timepiece including a plurality of numerical display digits for displaying time information and a plurality of first visual indication display segments peripherally disposed about said numerical display digits, at least one of said first visual indication display segments being adapted to be selectively rendered visually distinguishable from the remaining plurality of first visual indication display segments for selectively indicating a predetermined integral time zone corresponding to the time displayed by said numerical display digits, a bezel surrounding said plurality of first visual indication display segments and having a plurality of first distinct indication means disposed therearound, each said first indication means being disposed proximate to the position of a first visual indication display segment for identifying the predetermined integral time zones selectively indicated by the first visual indication display segments being rendered visually distinguishable, the improvement comprising at least one second indication means disposed on said bezel, each said second indication means being positioned intermediate a pair of said first indication means, and at least one second visual indication display segment disposed proximate to said second indication means for being selectively rendered visually distinguishable with respect to each of said first visual indication display segments for discriminating between a predetermined integral time zone indicated by said at least one of said first visual indication display segments that is rendered visually distinguishable from the remaining plurality of first visual indication display segments and a further time zone indicated by the second visual indication display segments being rendered visually distinguishable and second indication means that is non-integrally related to the time zones indicated by the first visual indication display segments.

4,209,974

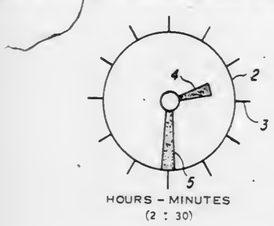
ELECTRONIC TIMEPIECE CIRCUITS

Robert T. Noble, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 13, 1978, Ser. No. 877,192
Int. Cl.² G04B *19/30, 19/07*
U.S. Cl. 368—84 **12 Claims**

1. In combination, an electro-optic display having a first layer of display elements disposed in configuration radiating from near the central point of the display and defining radial bars, a second layer of elements disposed in cooperative relationship with said first layer, said second layer of elements being disposed in a plurality of annular concentric groups operatively associated with said radial bars, a first plurality of individually separate electrical paths interconnecting said elements of said first layer into predetermined serially connected groups, each group containing at least two of said radial bars, a second plurality of electrical conductors separately

connected to the elements of said second layer and providing means for individually applying electrical potentials thereto, electronic circuitry for driving said display elements comprising a source of electrical signals having predetermined repetition rates, countdown means connected to said source for producing a first plurality of electrical signals varying with time at predetermined rates and representing seconds, minutes and hours, decoding means having a plurality of outputs lesser in number than the number of electrical quantities representing the state of time, said outputs being arranged in predetermined matrix order and connected to combinations of said display elements to provide to said display other electrical signals representing in different combinations analog representations



of time, a plurality of conductors interconnecting said countdown means with said decoding means thereby to conduct said first plurality of electrical signals in time shared sequences, and control means connected to said countdown means and effective in response to one predetermined electrical condition for conditioning said other signals to represent one indication of time and in response to another predetermined electrical condition said other signals to represent a different indication of time, said other signals comprising a first subset of signals each having 3 discrete levels and a second subset of signals each having two discrete levels, said first and second subsets being variably applied to said combinations of said display elements to condition said display elements to display analog representations of time.

4,209,975
TIME ADJUSTING MEANS FOR ELECTRONIC TIMEPIECE

Nakanobu Moritani; Toshibide Samejima; Toshio Matsumura; Hajime Oda, and Masanori Fujita, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Japan

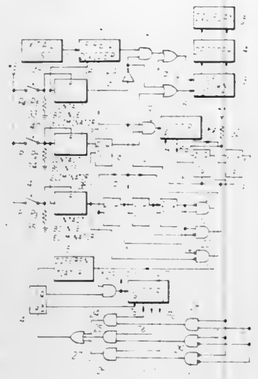
Filed May 8, 1978, Ser. No. 903,476
Claims priority, application Japan, May 11, 1977, 52-54124; May 26, 1977, 52-61349; Apr. 10, 1978, 53-41943
Int. Cl.[2] G04B *27/00;* **G04C** *3/00*
U.S. Cl. 368—186 **7 Claims**

1. A time adjusting circuit for an electronic timepiece, comprising:

first pulse generation means for generating electrical pulses at a manually selectable frequency;

detection means responsive to the electrical pulses from said first pulse generation means for detecting variation of the frequency of the electrical pulses and for developing an output signal having values to indicate when the frequency of the electrical pulses is within predetermined ranges;

second pulse generation means responsive to the output signal from said detection means for generating a different predetermined number of output electrical pulse according to the value range within which the detection means output signal lies; and

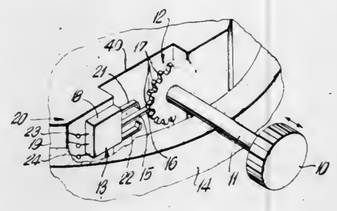


means for applying the output electrical pulses from said second pulse generation means as a time correction signal.

4,209,976
MEANS OF SETTING A SOLID STATE WATCH

Paul T. Flumm, Oakville, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Aug. 11, 1978, Ser. No. 932,973
Int. Cl.[2] G04C *9/00*
U.S. Cl. 368—187 **2 Claims**



1. A setting mechanism for an electronic watch having an electrooptical digital display for presenting time and a case with an opening for access to the interior thereof which comprises:

a module having a recess portion therein;

a shaft mounted in said opening for rotational and axial movement and having an interior end portion having affixed thereto a single toothed wheel having plurality of teeth spaced on its peripheral surface, said toothed wheel being aligned and dimensioned for being disposed within the recess portion of the module with the shaft being in a first axial position;

switch means having a single cantilevered flexible conductive spring switch blade having an end portion which is disposed for being engaged by the teeth of said toothed wheel with the shaft being in a second axial position and a time incrementing and a time decrementing switch contact each disposed on either side of the switch blade and aligned therewith such that electrical contact is made between the switch blade and either the time incrementing or time decrementing switch contact with upward or downward deflection of the switch blade by the teeth selectively with clockwise and counterclockwise rotation of the shaft; and

circuit means responsive to each switch blade contact with the time incrementing switch contact for incrementing the displayed time and to each contact with the time decrementing switch contact for decrementing the displayed time, whereby manual control of the rate of time correction either incrementing or decrementing is effected with fast or slow manual rotation selectively clockwise and counterclockwise of the shaft.

4,209,977
LIGHTER WITH A WATCH

Sadao Yoshinaga, Tokyo, Japan, assignor to Prince Industrial Development Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,339
Claims priority, application Japan, Apr. 20, 1978, 53-52650; Apr. 20, 1978, 52651
Int. Cl.[2] G04B *27/00, 37/12;* **A23L** *1/22*
U.S. Cl. 368—10 **4 Claims**



1. A lighter with a watch in which a watch module is fitted to be inserted into a plastic holder together with a battery, underneath a fuel tank within a lighter case, a display portion of the watch module faces to a window formed in the side of the lighter, a stop plate provided with a plurality of through-holes and a threaded hole is fitted in a lower portion internally of the lighter case so that earth plates are placed under pressure thereon, a select terminal and a set terminal of the watch module are respectively positioned in said through-holes, and a bottom lid is mounted on said stop plate so that a select button and a reading set button extending through the bottom lid are positioned movably towards and away from the respective terminals.

4,209,978
METHOD OF BENDING A LINK BLANK INTO A CHAIN LINK AND A BENDING MACHINE FOR CARRYING OUT THE METHOD

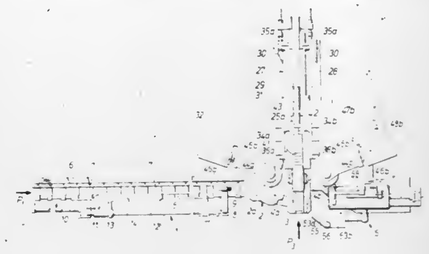
Sigge Johansson, and Rolf Bergström, both of Ramnäs, Sweden, assignors to Bulten-Kanthal AB, Hallstahammar, Sweden

Filed Jun. 12, 1978, Ser. No. 914,820
Claims priority, application Sweden, Jun. 17, 1977, 7707080
Int. Cl.[2] B21L *1/02*
U.S. Cl. 59—27 **23 Claims**

1. A method of bending a rod-shaped link blank (L) into a substantially closed chain link, including the steps of

(a) bringing said link blank (L) into a first receiving position (FIG. 5) with one of its end portions located between, on the one hand, two rotatable abutment rollers (4*a*,4*b*) disposed at a distance from each other and, on the other hand, a bending tool (3) reciprocable transversely between said abutment rollers;

(b) moving said bending tool to a position between said two rollers so as to bend said one end portion of said link blank (FIG. 6); (c) moving said link blank out from the abutment rollers (FIG. 7) and into a second receiving position (FIG. 9) with its other end portion located between, on the one hand, the abutment rollers and, on the other hand, the bending tool; and (d) returning said bending tool to a

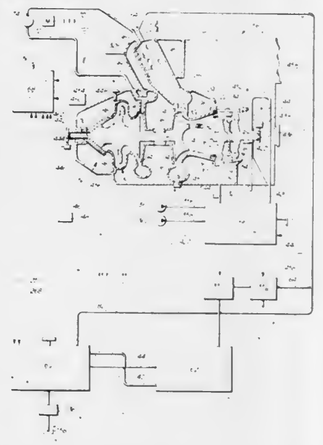


position between said rollers so as to bend said other end portion of said link blank (FIG. 10, 11).

4,209,979
GAS TURBINE ENGINE BRAKING AND METHOD

Geoffrey D. Woodhouse, and George B. Mattson, both of Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 22, 1977, Ser. No. 863,361
Int. Cl.[2] F02C *9/02, 9/04*
U.S. Cl. 60—39.04 **37 Claims**



1. A method of decelerating a ground vehicle driven by a gas turbine engine having a gas generator section and a free turbine output power section driven by a gas flow from the gas generator section, comprising the steps of:

altering the incidence of gas flow from the gas generator section onto the free turbine section whereby said gas flow opposes rotation of the free turbine section;

increasing gas generator section speed; and

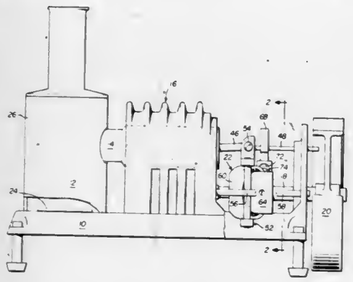
subsequent to said altering and increasing steps, selectively mechanically interconnecting said gas generator and free turbine sections whereby the rotational inertia of the gas generator section tends to decelerate the free turbine section.

4,209,980

WOBBLE PLATE ENGINE

Jacques O. Pronovost, and Harry A. Derderian, both of Guelph, Canada, assignors to ECO Motor Industries Ltd., Guelph, Canada

Filed May 11, 1979, Ser. No. 38,132
Int. Cl.² F02G *1/04*
U.S. Cl. 60—517 **8 Claims**



1. In a conventional Stirling cycle engine of the type characterized by an elongated cylinder having a closed end and an open end, means for applying heat to the exterior of the cylinder to heat gas in the interior of the cylinder at the closed end thereof, a displacer piston mounted for a reciprocation within the closed end of the cylinder and a power piston axially aligned with the displacer piston and mounted for coaxial reciprocation between the displacer piston and the open end of the cylinder, the reciprocation of the displacer piston leading the corresponding stroke of the power piston by a predetermined phase angle, the improved means for properly phasing the reciprocation of the two pistons and for converting the reciprocation of the power piston into rotation of an output shaft which is parallel to the axis of reciprocation comprising:

a supporting frame;

an output shaft mounted on said frame for rotation about a first axis which is parallel to the axis of reciprocation of the two pistons, said shaft having an inclined cylindrical bearing surface the axis of which intersects said first axis at an acute angle;

gimbal means pivotally mounted on said supporting frame for oscillation about a second axis perpendicular to and intersecting first axis;

a wobble plate pivotally mounted on a third axis within said gimbal means for oscillation with said gimbal means and for further oscillation about said third axis which is mutually perpendicular to and intersecting said first and second axes, said wobble plate being rotatably mounted on said inclined cylindrical bearing surface in a plane which is perpendicular to said axis of said bearing surface whereby said output shaft can rotate about said first axis as said wobble plate oscillates about said second and third axes;

a power piston rod connected at one end to said power piston for reciprocation therewith and extending out of the open end of the cylinder for connection at its other end to said gimbal means, whereby reciprocation of said power piston causes said gimbal means to oscillate about said second axis;

a displacer piston rod connected at a first end to said displacer piston for reciprocation therewith and extending out of the open end of the cylinder for connection to a slider member which is mounted for reciprocating movement along an axis supported by said frame and parallel to said first axis;

connecting means between said slider member and said wobble plate for causing said slider member and said displacer piston rod and displacer piston to reciprocate in response to the oscillation of said wobble plate;

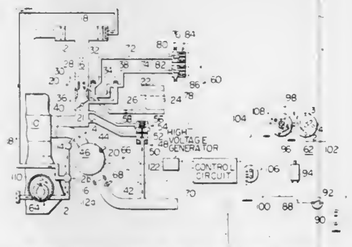
reciprocation of said power piston causing said gimbal means and said wobble plate to oscillate about said second axis, which motion causes said output shaft to rotate due to the mounting of the wobble plate thereon, the resulting oscillation of said wobble plate about said third axis causing said slider member and said displacer piston to reciprocate in predetermined phased relationship with the reciprocation of said power piston, thereby to establish the proper sequence of relative motion between the two pistons to permit the engine to operate according to the Stirling cycle when a gas within the cylinder is heated.

4,209,981

METHOD AND AN APPARATUS TO CONTROL THE TEMPERATURE OF AN ENGINE EXHAUST GAS PURIFYING DEVICE

Yukio Miyamori, and Kenji Masaki, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 683,825, May 6, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 929,025
Claims priority, application Japan, May 16, 1975, 50/58908
Int. Cl.² F01N *3/14*
U.S. Cl. 60—274 **3 Claims**



1. In an internal combustion engine having an induction system including an air-fuel mixture forming means, a combustion chamber, an exhaust system including an exhaust purifying device and an exhaust gas recirculation system interconneeting said induction and exhaust systems, a method of rapidly raising and lowering the temperature in said purifying device between a predetermined upper temperature and a predetermined lower temperature comprising the steps of:

recirculating exhaust gas from said exhaust system to said induction system for lowering the peak combustion temperature in said combustion chamber;

sensing the temperature prevailing in said purifying device;

generating a first command signal when said temperature in said purifying device is sensed at or below said lower temperature and continuing to generate said command signal until said temperature in said purifying device rises to said upper temperature;

generating a second command signal when said temperature in said purifying device is sensed at or above said upper temperature and continuing to generate said second command signal until said temperature in said purifying device decreases to said lower temperature;

raising the temperature in said purifying device in response to said first command signal by:

enriching the air-fuel mixture produced by said air-fuel mixture forming means;

retarding the ignition timing of the ignition of said enriched air-fuel mixture in said combustion chamber;

supplying secondary air into said exhaust system upstream of said purifying device; and

producing sparking in said purifying device so as to positively ignite the large amount of combustible matter issuing from said combustion chamber due to said retarded ignition and enriched air-fuel mixture in the presence of said secondary air thus negating th effect of the lowering of the peak combustion temperature by said recirculation of exhaust gas; and

lowering the temperature in said purifying device in response to said second command signal by

leaning said air-fuel mixture produced by said air-fuel mixture forming means;

advancing the ignition timing of the ignition of said leaned air-fuel mixture in said combustion chamber so as to efficiently combust said mixture thus reducing the amount of combustible matter subsequently exhausted into said exhaust system;

terminating the supply of said secondary air; and

terminating the production of said sparking, so that exhaust gases having a relatively low temperature due to the suppression of said peak combustion temperature by said exhaust gas recirculation and which contain relatively little combustible matter are fed into said purifying device permitting the temperature thereof to tend toward said lower temperature.

4,209,982

LOW TEMPERATURE FLUID ENERGY CONVERSION SYSTEM

Clyde T. Pitts, Sierra Vista, Ariz., assignors to Arthur W. Fisher, III, Tampa, Fla.

Filed Apr. 6, 1978, Ser. No. 894,136
Claims priority, application United Kingdom, Apr. 7, 1977, 14910/77
Int. Cl.² F03G *7/06*
U.S. Cl. 60—325 **7 Claims**

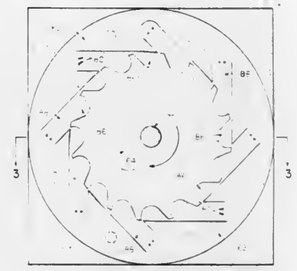
1. A low temperature fluid energy conversion system comprising a primary circuit including a first and second cylinder for containing a working fluid, a heat exchange means coupled through a working fluid supply means to said first and second cylinder alternately to receive said working fluid from said first and second cylinder to heat said working fluid, a motor means operatively coupled to said heat exchange means to receive said working fluid therefrom to generate mechanical energy thereby, and a working fluid return means coupled between said motor means and said first and second cylinders alternately to return said working fluid to said first and second cylinder, a secondary circuit including a liquid expansion agent supply means coupled to said first and second cylinders to supply said liquid expansion agent to said first and second cylinder such that, as said liquid expansion agent is alternately supplied to said first and second cylinder, the heat from said working fluid within said first and second cylinder vaporizes said liquid expansion agent forcing said working fluid from said first and second cylinder to said heat exchange means, a vapor expansion agent return means coupled between said first and second cylinders and said liquid expansion agent supply means alternately to return said vapor expansion agent to said liquid expansion agent supply means.

4,209,983

INTERNAL ELECTRIC EXPLOSION ENGINE

Benjamin Sokol, 24 Hiawatha Blvd., Oakland, N.J. 07436

Filed Mar. 26, 1979, Ser. No. 23,562
Int. Cl.² F15B *1/02, 15/18*
U.S. Cl. 60—325 **3 Claims**



1. An internal electric explosion engine, comprising;

a vessel having a plurality of interior spaces with inlet and outlet means for respectively introducing a fluid into said spaces at relatively low pressure and removing said fluid from said spaces at relatively high pressure, said spaces serving as explosion chambers;

electric discharge explosion in situ means comprising spaced electric discharge elements disposed in each of said explosion chambers, said discharge means further including means for applying electrical potential of opposite polarities to said discharge elements;

a fluid;

storage means for holding said fluid under pressure;

conduit means for circulating said fluid between said vessel and said storage means;

drive means adapted to be driven by said pressurized fluid so as to do work;

said vessel, said explosion means, said storage means and said conduit means forming a closed loop fluidic pressure system;

wherein said discharge means is adapted to explode in said fluid within said vessel said exploded fluid expanding in volume to increase the internal pressure in said system providing said pressurized fluid whereby said drive means is driven.

4,209,984

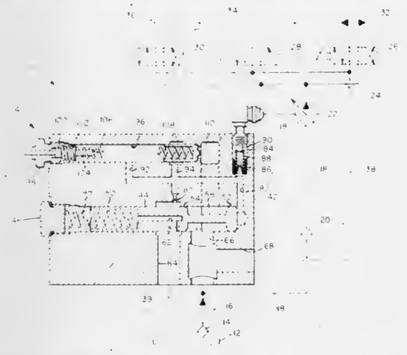
HYDRAULIC SYSTEM WITH UNLOADING VALVE ASSEMBLY

Carl E. Kittle, and Richard A. Wittren, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 23, 1978, Ser. No. 953,579
Int. Cl.² F15B *11/16, 21/04*
U.S. Cl. 60—328 **6 Claims**

1. A hydraulic system comprising: a fluid reservoir; a charge pump having an inlet connected to said reservoir and an outlet for providing pressurized fluid; a charge passage connected to the outlet of said charge pump; a supply pump having an inlet connected to said charge passage and an outlet for providing high pressure fluid; a supply passage connected to the outlet of said supply pump; fluid function means having an inlet connected to said supply passage for using the high pressure fluid from said supply passage and having an outlet for exhausting low pressure fluid therefrom; a return passage connected to the outlet of said fluid function means; a valve body having an unloading valve bore provided therein with a first end connected to said charge passage proximate the inlet of said supply pump, said valve body having a main passageway provided therein connected directly to said charge and return passages and intersecting said unloading valve bore proximate said first end; said valve body having a reservoir passageway provided therein connected to said reservoir and intersecting said un-

loading valve bore distal from said first end; said valve body having orifice means provided therein connecting the first end of said unloading valve bore to said reservoir passageway; and an unloading valve spool disposed in said unloading valve bore and biased towards the first end thereof to block the first end from said main passageway and said main passageway from said reservoir passageway, said unloading valve spool slidable from the first end of said unloading valve bore in response to a predetermined pressure level of pressurized fluid in said charge passage, said unloading valve spool having land and groove means provided therein for selectively and meteringly block-



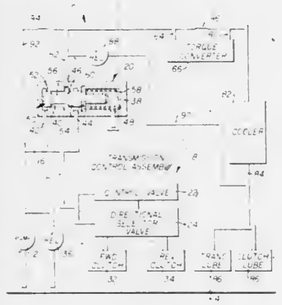
ing and connecting said main passageway from and to said reservoir passageway as said unloading valve spool slides away from the first end of said unloading valve bore whereby said unloading valve spool connects the pressurized fluid from said charge pump and the low pressure fluid from said fluid function to said reservoir when the pressurized fluid is above the predetermined pressure level and disconnects the pressurized and low pressure fluid from said reservoir when the pressurized fluid is below the predetermined pressure level to cause the low pressure fluid to add to the pressurized fluid to said supply pump.

4,209,985

TRANSMISSION CONTROL SYSTEM

Ralph E. Master, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 11, 1978, Ser. No. 973,047
Int. Cl.² F16D *33/00*
U.S. Cl. 60—337 **5 Claims**



1. In a transmission control system (**10**) for a transmission including a torque converter (**66**), and of the type having fluid inlet and outlet passages (**64,80**) leading respectively to and from the torque converter (**66**), a source of fluid pressure (**16**), and a pressure regulating valve (**20**) for relieving fluid from the source (**16**) at a preselected pressure to the fluid inlet passage (**64**), the improvement comprising:

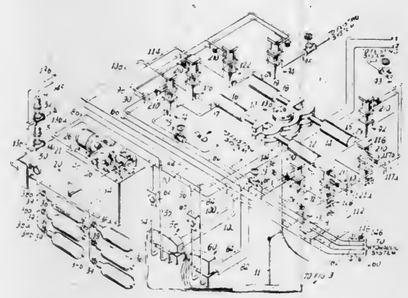
a flow limiting passage (**96**) directly connecting said fluid inlet and outlet passages (**64,80**) to said torque converter (**66**).

4,209,986

METHOD OF AND APPARATUS FOR AUXILIARY CONTROL OF FLUID OPERATED STEERING APPARATUS FOR SHIPS, BOATS AND THE LIKE

Robert F. Cunningham, 3 Willow Crest Dr., Katonah, N.Y. 10536

Filed Apr. 17, 1978, Ser. No. 897,146
Int. Cl.² F15B *20/00*
U.S. Cl. 60—403 **37 Claims**



26. A method for enabling control of fluid operated steering apparatus in ships, boats and the like in the event the main steering control system has been rendered defective, comprising the steps of:

providing a quantity of fluid under pressure independently of the main steering control system;

directing flow of the fluid under pressure into and out of the steering apparatus by one of two auxiliary control actuation means which are independent of the main steering control system, and causing thereby directional actuation of the steering apparatus.

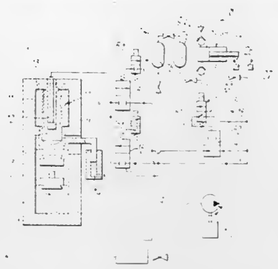
4,209,987

HYDRAULIC SCREW PRESS DRIVE

Ivan V. Kononov, ulitsa Torpedo, 40, kv. 4; Mikhail P. Makushin, ulitsa Oleka Dundicha, 7, kv. 15; Dmitry I. Polukhin, ulitsa Geroev Sibiryakov, 23, kv. 59; Vyacheslav E. Popov, ulitsa Peshestreletskaya, 125, kv. 76; Viktor P. Salov, ulitsa Zhelyabova, 17, kv. 123, all of Voronezh; Jury A. Bocharov, 15 Parkovaya, 18/1, kv. 109, Moscow; Vasily Y. Golovin, ulitsa Mashinostroitelei, 38, kv. 15, Voronezh; Natalya M. Mirskaya, ulitsa Voroshilova, 9ª, kv. 46, Chelyabinsk; Stanislav I. Cherny, ulitsa F. Engelsa, 46, kv. 13, and Ivan F. Yakovenko, ulitsa Plekhanovskaya, 41, kv. 21, both of Voronezh, all of U.S.S.R.

Filed Jul. 18, 1978, Ser. No. 925,758
Int. Cl.² F15B *1/02;* **B30B** *1/08*
U.S. Cl. 60—413 **4 Claims**

1. A drive of a hydraulic screw press comprising: a source of pressure; a low-pressure hydraulic line; a pneumatic line; a power cylinder whose movable member is connected with a press slide of the screw press; a pneudraulic accumulator comprising a hydraulic chamber communicating with said pressure source and a pneumatic chamber; an inlet valve; the power cylinder having a chamber communicating with the hydraulic chamber of said pneudraulic accumulator through said inlet valve; a discharge valve through which said chamber of the power cylinder communicates with said low-pressure hydraulic line; means for charging the pneumatic chamber of said pneudraulic accumulator comprising a pneudraulic cylinder with a piston, a distributor, and nonreturn valves; the pneudraulic cylinder of said means for charging the pneumatic chamber of said pneudraulic accumulator comprises a hydraulic under-piston chamber communicated alternately through the distributor with said pressure source and said low-pressure hydraulic line, and an above-piston pneumatic chamber com-



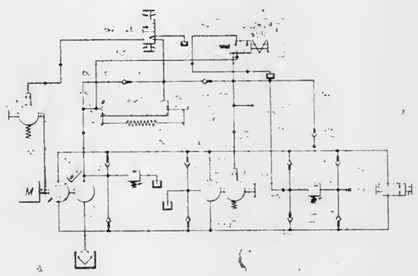
municated alternately through the nonreturn valves respectively with said pneumatic line and the pneumatic chamber of the pneudraulic accumulator.

4,209,988

SAFETY CONTROL SYSTEM FOR SELF-PROPELLED ROAD ROLLERS

Colin G. Langworthy, Bristol, and Ralph G. Jefferies, Bitton Nr. Bristol, both of England, assignors to Stothert & Pitt Limited, Bath

Filed Dec. 11, 1978, Ser. No. 967,921
Claims priority, application United Kingdom, Feb. 9, 1978, 5250/78
Int. Cl.² F15B *15/18*
U.S. Cl. 60—431 **8 Claims**



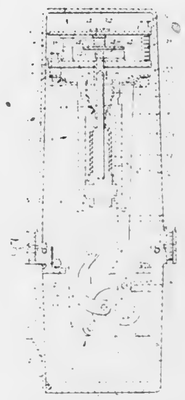
1. A safety control system for a self-propelled road roller with a hydrostatic transmission, including a prime mover; an hydraulic pump drivable by the prime mover and included in a main hydraulic circuit incorporating a motor with a power-off brake device, a check valve bridge with a ventable relief valve and a main control valve; and means for selecting automatically a predetermined operating speed for said prime mover; wherein said speed selecting means comprise a secondary hydraulic circuit incorporating means operatively connectible with said prime mover speed control means and controllable by said ventable relief valve in accordance with the operation of said main control valve.

4,209,989

SERVO MOTOR OPERATED BY A HEATABLE EXPANSIBLE SUBSTANCES

Jens N. Andresen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Apr. 20, 1978, Ser. No. 898,099
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717467
Int. Cl.² F03G *7/06*
U.S. Cl. 60—527 **6 Claims**



1. A servomotor assembly, comprising, a housing, first and second piston and cylinder motor parts with an expansible substance and a heating element in said cylinder part, abutment means providing limiting higher and lower pressure positions for said cylinder corresponding to predetermined higher and lower pressures of said substance, said substance exerting an over pressure higher than said predetermined pressure when subjected to continued heating at said higher pressure position, said substance exerting an under pressure lower than said predetermined lower pressure when subjected to continued cooling at said lower pressure position, a return spring cooperable with said cylinder motor part, over pressure and under pressure limiting switch means operable by said position motor part, over pressure and under pressure spring means for said switch means which are respectively stronger and weaker than said return spring and respectively oppose and assist the movement of said second motor part, at least one of said springs being in the force transmitting path of said piston motor part.

4,209,990

GRAVITY FLOW HYDRAULIC DEVICE

Garland T. Shelton, Jr., Hodgenville, Ky., assignor to Shelton and Ostrowski Incorporated, Hodgenville, Ky.

Filed Apr. 18, 1978, Ser. No. 897,266
Int. Cl.² F03G *3/00*
U.S. Cl. 60—640 **9 Claims**

1. An improved hydraulic device for use with fluid flowing by the force of gravity, of the type having a base, an upstanding support member affixed to said base, a balance beam pivotally mounted on said support member, counterweight means mounted on one end of said balance beam, a fluid container connected to the other end of said balance beam and arranged to receive said fluid flowing by the force of gravity; the improvement comprising:

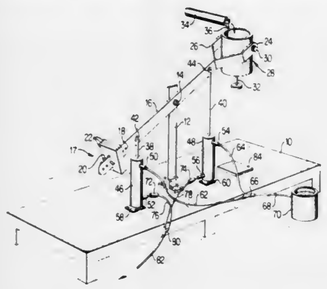
fluid release means having a valve plate arrange for vertical movement within said fluid container and dimensioned to form substantially the entire bottom of said fluid container, said fluid release means having an actuation member attached to said valve plate and arranged to vertically displace said valve plate to release quickly substantially all of the fluid in said fluid container upon said actuation

member contacting said base and having alignment means located inside and fluid container for preventing misalignment of said valve plate and said container when said valve plate is vertically displaced by said actuation member;

two drive rods each having a first end pivotally connected to said balance beam in spaced apart relationship from the point where said balance beam is pivotally mounted to said support member and having a second end for providing a vertical reciprocating motive drive;

two rack and pinion gear means each having a respective rack connected to one of said second ends of said drive rods;

two ratchet means each respectively operably engaged with said pinion gears and each having an output shaft rigidly



attached thereto, said two ratchet means being arranged to transfer the rotary motion of said pinion gears to cause said output shafts to rotate in the same direction; and

transmission means operably connected to said output shafts of said ratchet means and having an output shaft for producing a continuous unidirectional rotary driving force,

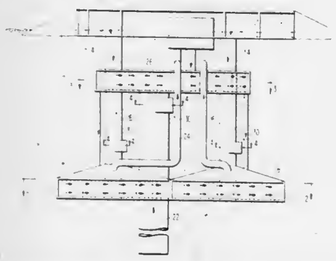
whereby said fluid flowing into said container causes said container to overcome the weight of said counterweight and causes said balance beam to pivot, thereby moving one of said drive rods in a first direction and bringing said actuation member in contact with said base and instantaneously releasing substantially all of said fluid from said container, and thereby causing the weight of said counterweight to pivot the balance beam and move the other of said drive rods in said first direction.

4,209,991

DYNAMIC POSITIONING OF SEA THERMAL POWER PLANTS BY JET PROPULSION

James H. Anderson, York, Pa., assignor to Sea Solar Power, York, Pa.

Filed Sep. 19, 1978, Ser. No. 943,712
Int. Cl.[2] F03G *7/04*
U.S. Cl. 60—641 **8 Claims**



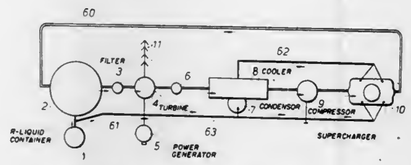
1. In a sea thermal power plant having depending inlet pipes terminating in heat exchangers having adjustable deflectors with a pump in said pipes for forcing water through said pipes and heat exchangers to produce thrust directed by said deflectors in any desired direction for moving the plant over the water surface, means provided in said pipes downstream of said pumps for directing the greater portion of the water flowing through said pipes into the sea under the action of said pumps to produce higher thrust than that obtainable through the heat exchangers.

4,209,992

POWER GENERATING METHOD AND APPARATUS

Shao Chih-Kang, No. 82, Chien Kuo South Rd., Taipei, Taiwan

Filed Nov. 4, 1977, Ser. No. 848,726
Int. Cl.[2] F01K *25/10*
U.S. Cl. 60—651 **3 Claims**



1. A method of power generation comprising performing a working cycle on a refrigerant used as a working medium and utilizing said refrigerant to drive a turbine operating a power generator, said cycle including the steps of:

Providing a source of refrigerant in a compressed liquid phase;

Heating said source by immersion in a tank of relatively hot liquid to provide high pressure vaporized refrigerant;

Passing said high pressure vaporized refrigerant through the turbine to drive the turbine, passage of the vaporized refrigerant through the turbine reducing the pressure of the vaporized refrigerant;

Exhausting the reduced pressure vaporized refrigerant from the turbine;

Cooling the reduced pressure vaporized refrigerant;

Compressing the cooled vaporized refrigerant in a compressor arrangement having supplies of hot and cold liquid respectively to convert the refrigerant to its liquid phase at a pressure higher than the source pressure; and

Returning the compressed liquid refrigerant to said source, wherein said supply of cold liquid is derived from a condensor circuit through which the cold liquid flows in heat transfer relation with liquid used for cooling the reduced pressure refrigerant and said supply of hot liquid is derived from said tank.

4,209,993

EFFICIENCY AIR CYCLE ENVIRONMENTAL CONTROL SYSTEM

George C. Rannenberg, Canton, Conn., assignor to United Technologies Corp., Hartford, Conn.

Continuation-in-part of Ser. No. 884,295, Mar. 6, 1978, abandoned. This application Oct. 10, 1978, Ser. No. 949,605
Int. Cl.[2] F25D *21/00*; B60H *3/04*
U.S. Cl. 62—80 **20 Claims**

1. In an air cycle refrigeration system for aircraft receiving pressurized air and supplying refrigerated air to an enclosure;

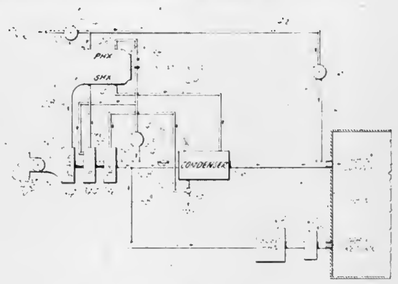
a turbine having an inlet and an outlet, said inlet receiving said pressurized air and said turbine expanding and cooling said air through said outlet;

means for recirculating air at a temperature above freezing from said enclosure to a junction downstream from the outlet of said turbine whereby said recirculated air is mixed with the cool air from said turbine to melt ice present in said turbine outlet and to provide cooling to said recirculated enclosure air;

a regenerative condenser connecting, through heat transfer surfaces within said condenser, the pressurized air upstream of said turbine inlet with the cooled air mixture downstream of said junction, said cooled air mixture absorbing heat from said pressurized air and cooling said pressurized air below its dewpoint so that moisture in said pressurized air condenses on said heat transfer surfaces and is made available for removal;

and means for supplying said cooled air mixture from said regenerative condenser to said enclosure, the quantity of airflow supplied to said enclosure being equal to the sum of the pressurized air and the recirculated air.

18. A method for cooling an aircraft enclosure from a source of pressurized air comprising the steps of:



removing moisture from said pressurized air by heat exchange in a regenerative condenser between said pressurized air and a coolant fluid;

expanding said pressurized air, after removal of moisture therefrom, through a turbine to cool said air;

mixing air recirculated from said enclosure with said cooled air at the outlet of said turbine so that the resultant air mixture prevents ice in said turbine and cools said recirculated air;

passing said air mixture through said regenerative condenser as said coolant fluid;

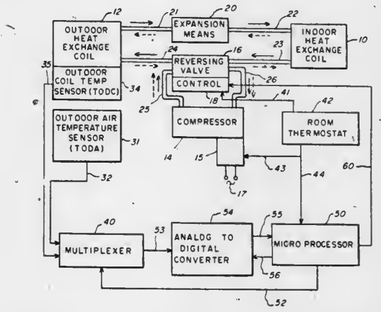
and supplying said air mixture from said regenerative condenser to said enclosure, said air mixture being equal to the sum of said pressurized air and said recirculated air.

4,209,994

HEAT PUMP SYSTEM DEFROST CONTROL

Dale A. Mueller, St. Paul, and Stephen L. Serber, New Hope, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 24, 1978, Ser. No. 954,141
Int. Cl.[2] F25D *21/06*; F25B *41/00*
U.S. Cl. 62—155 **11 Claims**



1. An outdoor coil defrost control system (hereinafter "defrost control system") for a reverse cycle refrigeration system (hereinafter "system") for heating and cooling a building wherein said system comprises refrigerant compression means, an indoor coil, an outdoor coil, and refrigerant conduit means connecting said compression means and said coils, said defrost control system comprising:

outdoor air temperature sensing means (hereinafter "TODA") having an output indicative of outdoor air temperature;

outdoor coil temperature sensing means (hereinafter "TODC") having an output indicative of the temperature of said outdoor coil;

means (hereinafter "COM") operatively associated with said compression means and adapted to have an output indicative of the operation of said compression means; and

controller means having operative connections to said TODA, TODC, and COM so as to receive the outputs thereof, said controller having a timing function which is initiated upon (i) the outdoor coil temperature as sensed by TODC being at or below a preselected value and (ii) said compression means being operated,

the duration of said timing function being determined on a substantially continuous basis by the magnitude of the outdoor air temperature as sensed by TODA, and

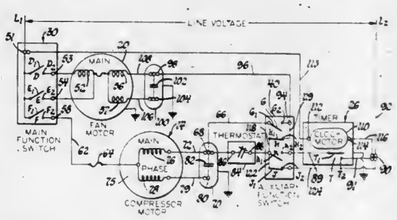
said controller means having an operative connection to said system and being adapted, upon completion of said timing function, to place said system into an outdoor coil defrost mode of operation.

4,209,995

CONTROLS FOR ROOM AIR CONDITIONER WITH TIMER AND POWER SAVER

Donald C. Ferdelman, Kettering, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jan. 23, 1979, Ser. No. 5,862
Int. Cl.[2] F25D *17/06*
U.S. Cl. 62—157 **1 Claim**



1. In a self-contained room air conditioner unit including a housing enclosing a compressor driven by a motor, a condenser, an evaporator connected in a refrigeration circuit and a fan driven by a fan motor for circulating room air to be cooled at high and low speeds into heat exchange relation with said evaporator; and in which said housing has a room-side section with a control area thereon; an electric timer located at said control area, said timer including a timer switch having contacts adapted to be opened and closed and a timer motor electrically connected in a control circuit between first and second supply conductors whereby to run continuously with said unit, thermostat switch means operative to cycle the compressor motor in response to the temperature of said circulating air; the improvement wherein main function manually actuable switch means located at said control area and connected in said circuit having four interlocked switches for alternatively selecting a unit first off position, a second position operative to connect a first terminal of said fan motor to said first supply conductor for a low speed fan only function, a third position operative to connect said first terminal of said fan motor and one side of said compressor motor to said first supply conductor for a low fan speed cooling function and a fourth position operative to connect a second terminal of said fan motor and said one side of said compressor motor to said first supply conductor for a high fan speed cooling function; auxiliary function manually actuable switch means located at said control area in juxtaposed relation to said main function switch means and connected in said circuit providing a first

pair of interlocked switches and a second pair of interlocked switches, said thermostat switch means having one side connected to a first common terminal and its other side connected to one side of the second switch of said second pair of switches which in turn has its other side connected to one side of said timer switch, said timer switch other side connected to the other side of said power source, said first common terminal connected by an external shunt to one side of the first switch of said first pair of switches while the other side of said first switch is in turn connected to a third terminal of said fan motor, said timer motor having one side connected to said first supply conductor and its other side connected to the other side of said power source, the second switch of said first pair of switches having one side connected to said one side of said second switch of said second pair of switches and its other side connected to said other side of said first switch of said first pair of switches, the first switch of said second pair of switches having its one side connected to said one side of said second switch of said second pair of switches and its other side connected to the other side of said power source, said compressor motor having its other side connected to said first terminal, whereby upon the opening of said first switch of said first pair of switches closes its interlocked second switch such that said fan motor is energized for a continuous operation, and whereby upon the opening of said second switch of said first pair of switches closes its interlocked first switch completing an electrical path through said external shunt and said thermostat to said one side of said second switch of said second pair of switches such that said fan motor is cycled on-and-off by said thermostat, and whereby upon the closing of said second switch of said second pair of switches opens its interlocked first switch causing said timer contacts to be electrically inserted in said control circuit for timed operation thereof, and whereby upon the closing of said first switch of said second pair of switches opens its interlocked second switch causing said timer switch to be electrically removed from said circuit, whereby said control circuit permits the operator to manually select one of said second, third or fourth main switches in conjunction with the selection of one switch of the first and second pair of said auxiliary switches so as to selectively operate said unit in any one of its second, third or fourth main functions together with one of said four auxiliary functions such that twelve different combinations of functions are achieved by said juxtaposed main and auxiliary switch means.

4,209,996

RECIPROCATING COMPRESSOR REFRIGERATION SYSTEM USING STEP EXPANSION AND AUTO STAGING

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn,

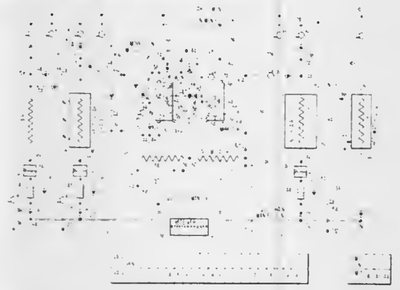
Continuation-in-part of Ser. No. 924,015, Jul. 11, 1978, which is a continuation-in-part of Ser. No. 882,729, Mar. 2, 1978, which is a continuation-in-part of Ser. No. 806,407, Jun. 14, 1977, Pat. No. 4,148,436, which is a continuation-in-part of Ser. No. 782,675, Mar. 30, 1977, Pat. No. 4,086,072, which is a continuation-in-part of Ser. No. 653,586, Jan. 29, 1976, Pat. No. 4,058,988. This application Oct. 12, 1978, Ser. No. 950,905

Int. Cl.[2] F25B *7/00*

U.S. Cl. 62—175 **18 Claims**

1. A refrigeration system for conditioning a confined space, said system comprising:
- a first, inside heat exchanger coil within said space,
- a second, outside heat exchange coil exterior of said space,
- a third heat exchange coil exterior of said space and functioning to supply heat to the system or to store heat derived therefrom,
- a fourth heat exchange coil functioning as a system high temperature condenser for supplying a high temperature heating load,
- a compressor,
- conduit means carrying refrigerant and connecting said coils and said compressor in a closed refrigeration loop circuit and including means for selectively causing said coils to function as evaporators or condensers, with said coils functioning dependent upon temperature parameters as high pressure condenser, intermediate pressure condenser, low pressure evaporator and intermediate pressure evaporator,
- a subcooler within said circuit,
- said subcooler including a subcooling heat exchange coil for subcooling condensed refrigerant from any of said first, second, third and fourth coils functioning as a condenser,

the improvement comprising:
- said compressor comprising a first and a second cylinder head, and first, second, third and fourth cylinders,
- said first cylinder head including said first and said second cylinders,
- said second cylinder head including said third and said fourth cylinders,
- said first cylinder head including first manifold means separating said first and said second cylinders and defining low pressure and high pressure sides for said respective cylinders,
- said second cylinder head comprising second manifold means defining commonly, low and high pressure sides for both said third and said fourth cylinders,
- said first cylinder head including a first inlet to the low pressure side of said first cylinder and a second inlet to the low pressure side of said second cylinder,
- said second cylinder head comprising a third inlet, said third inlet being common to the low pressure side of said third and said fourth cylinders,



- said first cylinder head comprising a first outlet for said first cylinder and a second outlet for said second cylinder,
- said second cylinder head comprising a third outlet, said third outlet being common to said third and said fourth cylinders,
- said conduit means further including:
  - a common outlet manifold,
  - means connecting said first outlet to said common outlet manifold and means connecting said third outlet to said common outlet manifold,
  - means including a first flow control valve for selectively connecting said common outlet manifold to said second inlet,
  - means for connecting said second outlet to one of said coils functioning as the system high pressure condenser,
  - means for connecting said common outlet manifold to said coil functioning as said system high pressure condenser in parallel with said second outlet connecting means and including first check valve means for preventing flow from said second outlet back to said common outlet manifold, and
  - second check valve means between said common outlet manifold and said third outlet, such that said coil functioning as the system high pressure condenser may receive first stage compressor discharge from all four cylinders through said first, second and third outlets; from said first and second outlets alone with said third and fourth cylinders supplying refrigerant to one of said coils functioning as the system intermediate pressure condenser; from said first and second outlets alone with said third outlet connected to said second inlet upon opening of said flow control valve with said first and second cylinders discharging in second stage, and from said second outlet alone with said first, third and fourth cylinders functioning in first stage compression and feeding to the second inlet through said flow control valve.

4,209,997

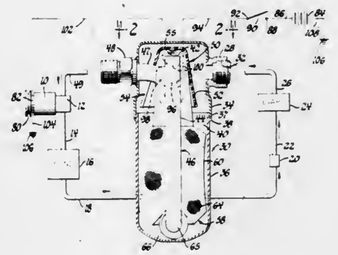
ACCUMULATOR CYCLING SWITCH

Frank W. Hodits, Jr., Kettering, and Richard K. Fryman, Miamisburg, both of Ohio

Filed Nov. 13, 1978, Ser. No. 960,458

Int. Cl.[2] F25B *1/00*

U.S. Cl. 62—226 **1 Claim**



1. A combination accumulator housing and cycling switch assembly for an air conditioning system to control the operation of an electrically controlled compressor for the purpose of regulating refrigerant pressure within an evaporator which is located upstream and connected to the housing, thus preventing evaporator temperature from decreasing below a frost-accumulation level, the housing being a hollow member with walls having an inlet adapted to be connected to the output of the evaporator for receiving into said chamber compressed refrigerant and an outlet adapted to be connected to the inlet of a compressor for supplying refrigerant to said compressor, aperture means in a planar wall portion of said housing, a switch support member joined to said wall portion encircling said aperture means, an electrical switch supported by said switch support member, including a projecting movable portion, a washer member secured within said support member with its inner face defining a planar diaphragm seat, an annular resilient diaphragm within said support member mounted on said seat in overlying spaced concentric relation with said aperture means, the periphery of said diaphragm contacting said seat thereby establishing a normally planar position of said diaphragm substantially parallel to said wall portion, a resilient sealing ring positioned between the wallside of said diaphragm periphery and said wall portion to provide a seal, whereby said resilient diaphragm is effective to close said aperture means to thereby close off communication between the interior of said housing and the ambient air, an axial bore through said washer member aligned with said housing aperture means including a counterbore on said inner face defining a stepped seat, the central portion of the diaphragm extending over said counterbored portion being resiliently deformable so as to be movable in an outward direction from its planar seated position in response to pressure differences between said housing interior and the ambient air, an actuator button for said switch means having a stem portion positioned in slidable relation within said axial bore and an enlarged rounded head portion positioned in engagement with said diaphragm central portion for axial travel in said counterbore, said counterbore outer peripheral edge being radiused substantially complementary to said rounded head defining a cuspidal-like sectioned annular gap between said head portion and said counterbore whereby said diaphragm central portion partially conforms to said annular gap upon a relative pressure increase within said housing, the underside of said head portion defining shoulder means operative to contact said stepped seat for limiting movement of said button in an outward direction for transmitting movements of said diaphragm to said switch movable portion by means of said actuator button, whereby upon removal of said electrical switch said actuator button shoulder means contacts said stepped seat thereby limiting said diaphragm to a predetermined maximum outwardly bowed position obviating the need to discharge said air conditioning system of its refrigerant charge during the removal of said switch means.

4,209,998

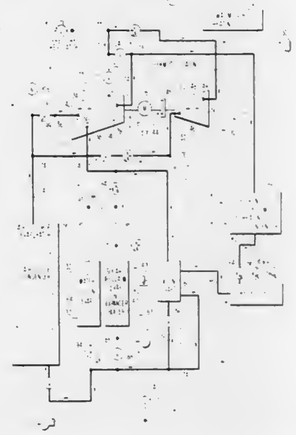
AIR SOURCE HEAT PUMP WITH DISPLACEMENT DOUBLING THROUGH MULTIPLE SLIDE ROTARY SCREW COMPRESSOR/EXPANDER UNIT

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Dec. 21, 1978, Ser. No. 972,151

Int. Cl.[2] F25B *9/00;* **F04B** *9/14*

U.S. Cl. 62—324 **2 Claims**



1. In a closed loop refrigeration system including:
- a helical screw rotary compressor including a suction port and a discharge port,
- a helical screw rotary expander including a feed port and a discharge port,
- means for mechanically connecting said expander to said compressor,
- motor means for driving said compressor and said expander,
- a first heat exchange coil for conditioning a space and the like,
- a second heat exchange coil,
- said compressor comprising a plurality of axially adjustable compressor slide valves including at least a capacity control slide valve for unloading the compressor,
- conduit means carrying refrigerant and forming a primary closed loop refrigeration circuit for connecting said screw compressor and said first and second coils in series, in that order,
- a third heat exchange coil connected intermediate of said first and second coils to receive condensed refrigerant from the coil functioning as the system condenser and having its outlet side connected to the inlet of said expander, and
- means for connecting the outlet port of said expander to the coil functioning as the system condenser to permit expansion of working fluid within said expander and to thereby

drive said compressor absent energization of said drive motor,

the improvement comprising:

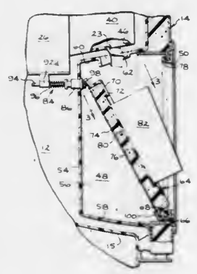
an auxiliary supply line connecting the outlet of said coil functioning as the system evaporator when in heat pick up mode to said expander inlet port and including selectively operable valve means such that upon energization of said drive motor and opening of said selectively operable valve means, said coil functioning as the system evaporator feeds vaporized refrigerant at low pressure both to said compressor and simultaneously to said expander for compression to essentially double the displacement of said system and increase the acceptable heat transfer load of the coil functioning as system condenser.

4,209,999

HOUSEHOLD REFRIGERATOR WITH THROUGH-THE-DOOR ICE SERVICE

Donald G. Falk, Taylorsville, and William J. Armstrong, Jeffersontown, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jun. 12, 1978, Ser. No. 914,634
Int. Cl.[2] F25C *5/18*
U.S. Cl. 62—344 **10 Claims**



1. A refrigerator having a freezing compartment with a primary door and an automatic motor driven ice dispenser within the freezing compartment actuated by a switch, the automatic ice dispenser comprising an ice mold, means for ejecting ice pieces from the mold, a receptacle for receiving the ice pieces from the mold, and a rotatable dispensing means positioned within the receptacle for moving the ice pieces through the receptacle and discharging the ice pieces from an opening in the receptacle;

the primary door includes a passage therethrough for receiving the ice pieces from the receptacle outlet when the primary door is closed and a recess in communication with the passage and having an opening in the exterior surface of the primary door;

the recess has a secondary door hingedly secured to the primary door that seals the opening on the exterior surface of the primary door;

the switch is located remote from the freezer door; and

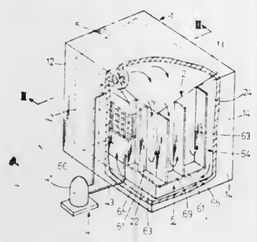
actuating means cooperating with the secondary door to actuate the switch and energize the dispenser during the opening of the secondary door whereupon ice pieces are delivered through the receptacle outlet, the primary door passage, and into the recess.

4,210,000

REFRIGERATING APPARATUS

Doo S. Lee, 11-10 Miyakojimanakadori 3-chome, Miyakojimaku, Osaka, Japan

Filed Jan. 5, 1978, Ser. No. 867,279
Claims priority, application Japan, Mar. 9, 1977, 52-26543; Dec. 8, 1977, 52-148534
Int. Cl.[2] F25D *17/04, 17/06;* A47F *3/04*
U.S. Cl. 62—417 **8 Claims**



1. A refrigerating apparatus in which air is passed through the cooler of a freezer in contact therewith to cool the air, said apparatus comprising:

an airtight chamber having an inner wall defining a storage compartment, an outer wall slightly spaced apart from the inner wall, ribs provided within the airtight chamber and closing plates provided between the ribs wherein air retaining spaces and air circulation channels are formed in the airtight chamber;

cooling means disposed within the airtight chamber for cooling the air enclosed in the airtight chamber; and

a blower provided within the airtight chamber,

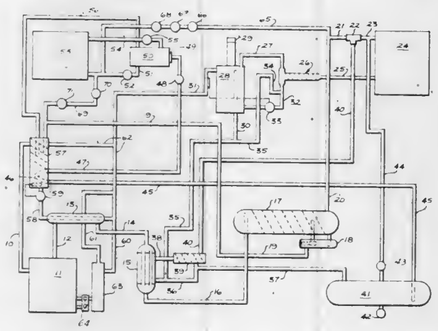
wherein the airtight chamber is isolated from outside and wherein a portion of the cooling air flowing out from the cooling means stagnates in the air retaining spaces and remaining cooling air passes through the circulation channels to refrigerate the storage compartment through the inner wall and returns to the cooling means.

4,210,001

REFRIGERATION SYSTEM HAVING IMPROVED HEAT TRANSFER AND REDUCE POWER REQUIREMENT FOR VARIOUS EVAPORATIVE REFRIGERANTS

Bruce D. Miller, Sr., 3303 Chickadee Rd., Louisville, Ky. 40213

Filed Jul. 31, 1978, Ser. No. 929,852
Int. Cl.[2] F25B *43/02*
U.S. Cl. 62—468 **21 Claims**



1. In an improved refrigerating system of the type which includes

(A) an evaporator for circulating a fluid refrigerant therethrough to absorb heat from a refrigerating medium,

whereby said medium is cooled and said refrigerant is converted from a liquid to a gas,

(B) an oil lubricated compressor connected in receiving relation to said evaporator for compressing and superheating said gas,

(C) a condenser connected in receiving relation to said compressor for condensing said compressed gas to form a liquid, and

(D) a receiver connected in liquid receiving relation to said condenser for storing said liquid and connected in liquid supplying relation to said evaporator,

the improvement comprising

(E) heat exchanger means having a liquid refrigerant confining shell and a heat exchanger tube disposed in said shell, an inlet end of said tube being connected in receiving relation to said compressor for receiving said compressed, superheated gas therein, said shell having an inlet port connected in receiving relation to an outlet port of said condenser for circulating a portion of the liquid refrigerant condensed in said condenser about said tube to partially desuperheat said compressed gas, and

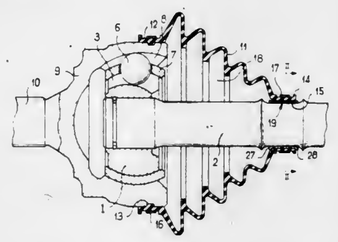
(F) an impurity removing oil-mist separator/collector unit connected in receiving relation to an outlet end of said tube for removing impurities, including oil, from said partially desuperheated gas, said unit being connected in supplying relation to said condenser for supplying cleaned, partially desuperheated gas to said condenser.

4,210,002

TRANSMISSION JOINT WITH BELLOWS DUST-GUARD

Jacques P. Dore, Colombes, France, assignor to Societe Anonyme Automobiles Citroen and Automobiles Peugeot, both of Paris, France

Filed Jan. 3, 1979, Ser. No. 664
Claims priority, application France, Jan. 4, 1978, 78 00174
Int. Cl.[2] F16D *3/84*
U.S. Cl. 64—32 F **5 Claims**



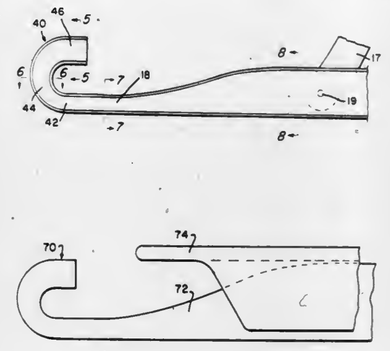
1. A transmission joint with a bellows-type dust-guard of elastomer, the joint comprising an inner element rigid with a first shaft and drivingly engaging for rotation an outer element rigid with a second shaft, said bellows dust-guard comprising end collars fastened by clamping means; the one to said outer element and the other to said first joint shaft, means being provided for connecting the inner space of the joint and dust-guard assembly to the surrounding atmosphere, said connecting means comprising a split resilient ring interposed between said first shaft and the corresponding end collar, and so shaped as to provide a free air passage along said shaft when the collar is clamped in position.

4,210,003

KNITTING NEEDLE WITH REINFORCED HOOK

John J. Sqrillo, New Hartford, and Richard W. Shepard, Torrington, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Jun. 7, 1978, Ser. No. 913,341
Int. Cl.[2] D04B *35/04, 35/06*
U.S. Cl. 66—116 **3 Claims**



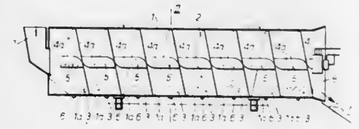
1. In a machine knitting needle with a tapered portion connecting the needle blade to the hook section, the improvement comprising: a hook integral with said tapered portion, said hook having a shank portion extending from the tapered portion of the needle, a curved portion having its entire outer surface curved and its entire inner surface curved and a portion overlapping the shank, said overlapping portion directly connected to the curved portion, at least a major longitudinal part of the overlapping portion having cross-sectional areas greater than the cross-sectional areas of the remainder of the hook, the outer surface and the inner surface of said major longitudinal part being substantially parallel, the width of the overlapping portion is at least as great as the width of the remainder of the hook, and the height of the overlapping portion is at least 1.20 times the median height of the shank portion of the hook.

4,210,004

BATCH WASHING MACHINES

Karl-Heinz A. Stoll, Dreieich, and Heinz Miessler, Pattensen, both of Fed. Rep. of Germany, assignors to Vosswerke GmbH, Sarstedt, Fed. Rep. of Germany

Filed Oct. 11, 1978, Ser. No. 950,263
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745787
Int. Cl.[2] D06F *21/02, 37/08*
U.S. Cl. 68—27 **4 Claims**



1. In a batch washing machine of the type comprising an imperforate drum open at both ends and mounted for rotation about a substantially horizontal axis, a conveyor worm having a helical surface, said worm being rigidly mounted in the interior of the drum to divide same into a plurality of individual chambers, and a pipe disposed on the central axis of the drum for carrying washing media, said pipe being sub-divided into individual pipe portions by the helical surface of the conveyor worm, each said pipe portion including at least one outlet aperture, wherein the improvement comprises means

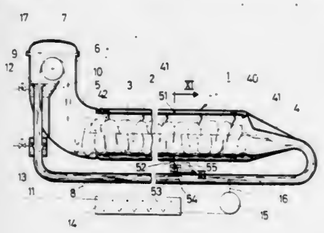
defining an imperforate worm surface and means defining at least one emptying aperture in the drum for each chamber and through which washing media can be discharged from the chamber, the washing media in each said chamber being isolated from the washing media in each other chamber, whereby mixing of washing media from one chamber with washing media in another chamber is prevented, the arrangement being such that washing is effected by partly rotating the drum with an alternating motion, and that transfer of washing from one chamber to a subsequent chamber is effected by rotation of the drum through 360°, said drum having a stop position at which the emptying apertures are located stationary at the bottom portion of the drum to permit draining of the washing media from the chambers prior to transfer of the washing from one chamber to a subsequent chamber.

4,210,005

APPARATUS FOR THE WET PROCESSING OF TEXTILE FABRICS IN ROPE FORM

Isidro F. Trullas, Tarrasa, Spain, assignor to Argelich, Termes y Cia., S.A., Tarrasa, Spain

Filed Apr. 12, 1979, Ser. No. 29,504
Claims priority, application Spain, Apr. 28, 1978, 469.262
Int. Cl.² D06B *3/24, 3/28*
U.S. Cl. 68—148 **9 Claims**



1. An apparatus for the wet processing of a textile fabric in endless rope form, said apparatus including means defining a closed circuit path for such a fabric and a portion of a processing bath absorbed and carried thereby, comprising a storage chamber and a transport conduit, the storage chamber defining a return portion of said path through which said fabric circulates at a relatively slow rate of travel and wherein a major portion of said fabric resides at any given time, and the transport conduit defining an outgoing portion of said path through which said fabric circulates at a relatively high rate of travel, hydraulic means for propelling the fabric along the transport conduit, mechanical means for removing the fabric from the storage chamber and feeding it to the hydraulic means, and a fluid handling circuit for pumping, conditioning and distributing the processing bath, characterized by:

(a) the storage chamber comprising a tubular body having two open ends and mounted for rotation about a longitudinal axis thereof,

(b) means for rotating said tubular body,

(c) the ends of said tubular body being disposed, respectively, proximate a leading end and a trailing end of said transport conduit, and

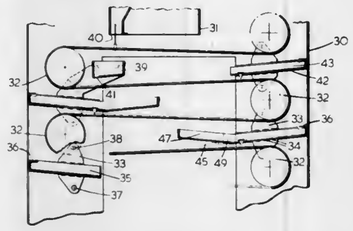
(d) means associated with said tubular body for advancing the fabric longitudinally therethrough in response to the rotation of said tubular body.

4,210,006

WASHING MACHINES FOR USE IN THE TEXTILE INDUSTRY

Alfred Thorpe, Bramhall, England, assignor to Sir James Farmer Norton & Co. Limited, Manchester, England

Filed Mar. 15, 1979, Ser. No. 20,691
Claims priority, application United Kingdom, May 25, 1978, 22568/78
Int. Cl.² D06B *1/06*
U.S. Cl. 68—205 R **11 Claims**



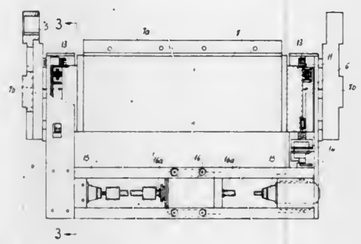
1. A washing machine including a pair of rows of vertically-spaced rotatable rollers adapted to constrain a web of fabric to be washed to follow a horizontally sinuous path, wash water supply means above the rollers for delivering wash water down onto the fabric, and perforated trays under certain rollers so that a roller and the perforated tray immediately therebeneath is separated during a washing operation by a run of fabric, characterised by: the perforated trays being compartmentalised at at least one transverse end thereof with the bottom of each compartment being perforated, the bottom perforation of each compartment being spaced inwardly from said one end of the tray relative to the bottom perforation of a corresponding compartment of a tray immediately thereabove, whereby water passing through each compartment, where there is no intervening fabric, flows inwardly in a stepwise manner from said one ends during its fall until it contacts fabric.

4,210,007

BENDING MACHINE

Alain J. Michel, Tassin la Demi Lune, France, assignor to Picot S.A., Tassin la Demi Lune, France

Filed Oct. 25, 1978, Ser. No. 954,599
Claims priority, application France, Oct. 28, 1977, 77 33340
Int. Cl.² B21D *11/04*
U.S. Cl. 72—8 **7 Claims**



1. A bending machine for bending a metal plate and the like, said bending machine including a frame having two lateral support posts, a horizontal table for supporting the plate to be bent mounted between said support posts, a plate clamping mechanism attached to said frame for clamping and immobilizing a plate to be bent on said horizontal support table, the front edge of said plate clamping mechanism serving to define the radius of curvature of the bend imparted to said metal plate,

two support arms, each of which is mounted pivotably on one of said support posts, said support arms holding between them a bending apron, and wherein the improvement comprises:

means for providing linear motion to said bending apron within said support arms;

first control means for controlling the direction and extent of the linear motion of said bending apron during the pivotal motion thereof in the course of bending said metal plate; and

second control means for synchronizing and equalizing the linear motion of opposite transverse ends of said bending apron;

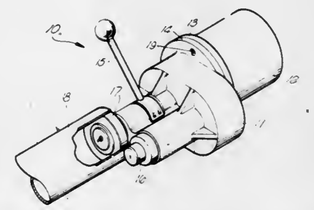
wherein said means for providing linear motion to said bending apron includes a lead screw mounted rotatably within each of said support arms, an internally threaded carrier moving on said lead screw and attached fixedly to one lateral extremity of said apron, and an electric motor for providing rotary motion to said lead screws; whereby, when said motor is turning, the lead screws are caused to rotate in synchronism, thereby providing axial motions to said carriers and thereby supplying linear motion to said bending apron while said second control means assure the synchronization of linear displacement of said carriers.

4,210,008

MACHINE FOR PINCH ROLLING, DEBURRING AND THE LIKE

Orville J. Birkestrand, 129A Casuda Canyon Dr., Monterey Park, Calif. 91754

Filed Jul. 3, 1978, Ser. No. 921,345
Int. Cl.² B21D *19/04*
U.S. Cl. 72—105 **5 Claims**



1. A machine for performing deburring, pinch rolling and like operations, particularly on tubular stock, comprising:

first means including a first elongated shaft supported with rotational freedom at least by bearings adjacent its two ends, said first means further including a first roller affixed to an end of said first shaft and drive means for rotating said first shaft and first roller;

second means including a second elongated shaft supported with rotational freedom at least by bearings adjacent its two ends, said second means further including third means for rotating said second shaft over a predetermined angle under control of an operator;

support and housing means for mounting said first and second shaft members in generally parallel relationship;

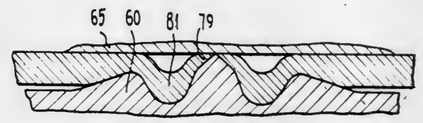
and fourth means including a third shaft rigidly affixed to the end of said second shaft adjacent said first roller and a second roller rotationally mounted on said third shaft, the axes of said second and third shafts being offset such that rotation of said shaft causes the clearance between the perimeters of said first and second rollers to be varied as said second shaft is rotated in response to operation of said third means.

4,210,009

REINFORCEMENT FIBRES

James D. Farfor, Brighton, and Huba Gall, Camberwell, both of Australia, assignors to Rocla Concrete Pipes Limited, Melbourne, Australia

Filed Mar. 16, 1978, Ser. No. 887,339
Claims priority, application Australia, Mar. 22, 1977, PC9514
Int. Cl.² B21D *28//06*
U.S. Cl. 72—186 **9 Claims**



1. A method of forming discontinuous fibres of material suitable for reinforcing concrete or other castable substance, comprising:

feeding a strip of said material having a thickness of about 0.025 inches or less longitudinally between a pair of slitting rollers having circumferentially extending intermeshing tongue and groove formations of rectangular configuration whereby to slit the strip longitudinally into strip segments each of segment width less than 0.10 inches, said strip segments moving from the slitting rollers as a pair of bands of strip segments defined by mutual lateral displacement between alternate strip segments across the strip and the intermediate strip segments due to penetration of the tongue formations into the groove formations;

feeding the bands of strip segments moving from the slitting rollers to a pair of severing devices while the strip segments of the band are still integrally attached to the feed strip; and

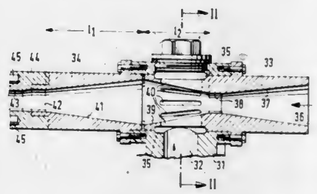
operating each severing device to transversely sever all of the strip segments of the respective band at regular intervals along the band whereby to divide them into discontinuous fibres and also simultaneously to deform the strip segments in the regions where they are severed in such a way that the discontinuous fibres have ends which are flattened and widened at their extremities and are longitudinally curved adjacent those extremities.

4,210,010

COOLING ARRANGEMENT

Constantin Vlad, Nordassel, and Hans Paulitsch, Bad Reichenhall, both of Fed. Rep. of Germany, assignors to Stahlwerke Peine-Salzgitter Aktiengesellschaft, Peine, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,890
Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822582
Int. Cl.² B21B *43/00, 45/02*
U.S. Cl. 72—201 **5 Claims**



1. In a cooling arrangement, particularly for cooling rolled stock including wires, rods and the like, having at least one unit comprising a first end member and a second end member which are longitudinally spaced from one another and which have respective axially aligned passages, a plurality of bars

connecting said end members and angularly spaced about the axis of alignment of said passages, said bars having first ends connected to said first end member on a first circle surrounding the passage of said first end member and also having second ends connected to said second end member on a smaller-diameter second circle surrounding the passage of said second end member, so that the space bounded by said bars converges from said first towards said second end member, and admitting means for admitting cooling fluid into contact with a workpiece travelling through said passages, and means for allowing the cooling fluid to escape between said bars subsequent to such contact, an improvement wherein said admitting means comprises an admitting element upstream of said first end member and formed with a convergent-divergent guide passage of substantially conical cross-section for the workpiece, as considered in the direction of travel of the same, the divergent part of said guide passage being located upstream of the convergent part thereof; and said fluid inlet means communicating with said guide passage and comprising a first wall bounding said passage and provided at said divergent part with a plurality of circumferentially spaced slot-shaped openings communicating with said divergent part and extending toward said convergent part, and a second wall surrounding said first wall and bounding therewith an annular fluid chamber communicating with said slot-shaped openings.

4,210,011

ROLLING MILL

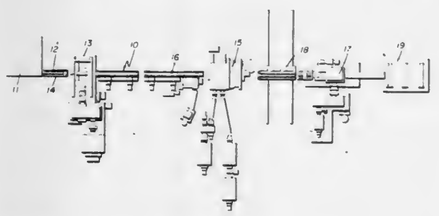
Erich Bretschneider, Meerbusch; Hermann Leitner, Langenfeld, and Friedhelm Böhmer, Neuss, all of Fed. Rep. of Germany, assignors to Schloemann-Siemag AG., Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 866,795, Jan. 5, 1978, abandoned, which is a continuation of Ser. No. 796,312, May 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 675,478, Apr. 9, 1976, abandoned, which is a continuation of Ser. No. 567,607, Apr. 14, 1975, abandoned. This application Feb. 1, 1979, Ser. No. 8,285

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1974, 2418453

Int. Cl.² B21B *13/12*

U.S. Cl. 72—234 **4 Claims**



1. Rolling mill, comprising:

(a) a furnace for heating billets having a square cross-sectional shape,

(b) a primary stand located adjacent the furnace for receiving a billet on-the-corner, the primary stand having a first pair of rolls with horizontal axes and having a second pair of rolls with vertical axes, at least one of said pair of rolls being rotatably driven, the peripheries of all four rolls being grouped to form a roll pass that converts the billet from its square cross-sectional shape to an octagonal cross-sectional shape, the rolls of the primary stand being in the form of discs with narrow peripheries, each periphery being formed with a V-shaped groove having an angle of 135°, the edges of all rolls being beveled to provide a narrow slot-like space between adjacent, 90°-related rolls, and

(c) a secondary stand located in line with the primary stand, the secondary stand consisting of a planetary diagonal rolling mill including rolls which are driven independently of the driven rolls of said primary stand for converting the billet from the octagonal cross-sectional shape to a circular cross-sectional shape.

4,210,012

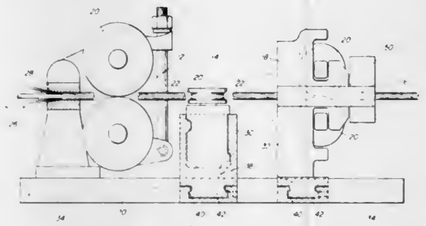
ROLL COMPACTING OF STRANDED CONDUCTOR

H. Clifford Dameron, Jr.; Guy E. Martin, both of Ross Township, Allegheny County, and Nicholaas L. Brouwer, Washington Township, Fayette County, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 21, 1979, Ser. No. 13,307

Int. Cl.² H01B *13/00;* **B21B** *1/18*

U.S. Cl. 72—235 **2 Claims**



1. Apparatus for making compacted, helically stranded cable having a generally circular configuration in cross-section, the cable tending to rotate about its axis during the compacting process, the apparatus comprising:

a first set of rollers having peripheral concave surfaces providing a generally circular opening when the concave surfaces are disposed together, the contour of the concave surfaces being such that the opening is provided with a major and a minor axis perpendicular to each other across the cross-section of the opening, the concave surfaces of the rollers being effective to compact at least a portion of outside strands of cable passing through the opening but in varying degrees such that in proceeding peripherally from the minor axis to the major axis the compaction effected decreases from a maximum to a minimum amount, and

a second set of rollers located downstream from the first set of rollers and having peripheral concave surfaces providing a second, generally circular opening in line with the first opening when the surfaces are placed together, and a relief along an axis across the opening that is located in the approximate plane of the minor axis of the first opening,

the location of the second opening and its axis of relief downstream from the first opening being such that the outside strands of cable leaving the first opening in the vicinity of the minor axis thereof will enter adjacent the axis of relief in the second opening, the second set of rollers being effective to complete the compacting of the outer strands in a manner that provides a circular cable having a residual stress pattern that is substantially uniform throughout the cross-section of the cable.

4,210,013

PRESS WITH LOAD TRANSFER MECHANISM

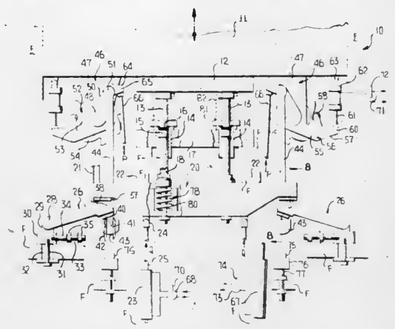
Donald E. Miller, Mt. Prospect, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,117

Int. Cl.² B21D *22/20*

U.S. Cl. 72—347 **24 Claims**

1. For use in combination with a press of the type including a movable ram, a punch carried by said ram for movement therewith, and a die cooperable with said punch; a load transfer system for transferring a working load to said ram as a working force; said load transfer system comprising a load beam movable between a first position and a second position, a pad carried by said beam and movable within said die in cooperation with said punch, at least one lever at each end of said load beam pivotally mounted for swinging about a fixed pivot axis in response to movement of said load beam, and a load



transferring linkage operatively connected to each lever and having means for connection to said ram to move said ram in response to movement of said load beam by said pad.

4,210,014

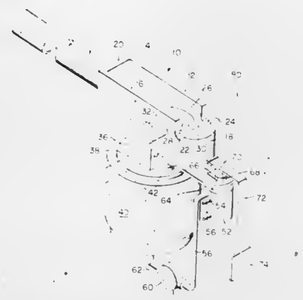
CABLE STRAIGHTENER

Robert K. Taylor, 1621 Moores Garden Rd., Mt. Vernon, Wash. 98273

Filed Nov. 6, 1978, Ser. No. 957,875

Int. Cl.² B21D *7/06*

U.S. Cl. 72—389 **8 Claims**



1. A cable straightener comprising:

cable support means including spaced cable receiving members for supporting a hand held bent portion of cable;

jaw means pivotally supported by said cable support means for pivotal movement to and from a position in which it bears against a bent portion of cable supported by said cable receiving members;

power actuation means mounted by said cable support means for causing pivotal movement of the jaw means; and

control means mounted on said cable support means for selectively controlling said power actuation means by operator contact while said cable is hand held on said receiving members and including contact means connected thereto for operating said control means by application of body pressure thereto;

whereby straightening force to be applied to a bent portion of cable may be controlled by an operator while the bent portion of cable is hand held.

4,210,015

DEVICE FOR FOLLOWING THE VARIATIONS IN THE COMPOSITION OF A FLOWING HETEROGENEOUS LIQUID MIXTURE

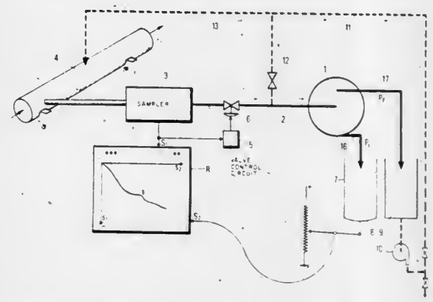
Jean-Paul Euzen, Ecully, and Patrick Scemama, Paris, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Societe Anonyme Pipe Line Service, Puteaux, both of, France

Filed Dec. 18, 1978, Ser. No. 970,306

Claims priority, application France, Dec. 19, 1977, 77 38561

Int. Cl.² G01N *11/00*

U.S. Cl. 73—61.1 R **13 Claims**



1. A device for following the variations in the composition of a flowing heterogeneous mixture of at least two liquid phases incompletely miscible with each other, the device comprising:

(a) means for sampling an adjustably selected amount of the flowing mixture to provide a sample thereof,

(b) means for measuring the amount of said sample,

(c) means connected to said sampling means, for separating at least one liquid phase from said sample of the mixture,

(d) means for measuring the amount of the so-separated liquid phase,

(e) means for displaying the measured values of the amounts of said sample of mixture and of said separated liquid phase, said displaying means being connected to both of said amount measuring means, and, means for recycling at least one liquid phase issuing from said separating means, said recycling means being connected to said separating means and to the flow of heterogeneous mixture downstream of the point where said sampling means is connected to said flow.

4,210,016

FLOW RATE METER WITH TEMPERATURE-DEPENDENT RESISTOR

Cornelius Peter, Stuttgart, and Berr i Kraus, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 18, 1978, Ser. No. 935,056

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1977, 2749575

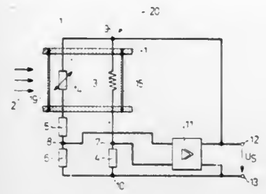
Int. Cl.² G01F *1/68*

U.S. Cl. 73—116 **5 Claims**

1. A flow rate measuring device for measuring the flow of induced air in the induction tube of an internal combustion engine including at least one temperature-dependent sensor in said induction tube, the resistance of which is related to the flow rate to be measured, and wherein the improvement comprises:

a first grating, disposed in said induction tube downstream of said at least one temperature-dependent sensor, said first grating being substantially plate-like, the plane of said grating being substantially transverse to the direction of flow of said induced air and the structure of said first

grating being such as to permit substantially unimpeded flow of said induced air therethrough and to reduce the



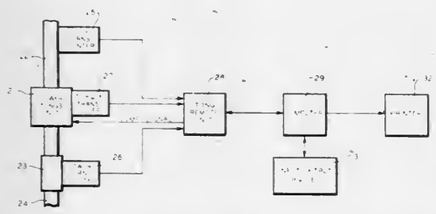
temperature of a flame front occurring during backfiring thereby preventing destruction of said at least one temperature-dependent sensor.

4,210,017

METHOD AND APPARATUS FOR GENERATING AN ACTUAL TORQUE SIGNAL DURING THE MAKE-UP OF THREADED JOINTS

James V. Motsinger, Austin, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Sep. 12, 1978, Ser. No. 941,895
Int. Cl.³ F16B *31/02*
U.S. Cl. 73—139 **7 Claims**



6. A method of generating a signal representing the actual torque applied to the rotated member of a pair of cooperatively threaded members during the making of a threaded joint comprising the following steps: (a) generating a signal having a magnitude representing the applied torque; (b) generating an offset applied torque signal representing the sum of the magnitude of said applied torque signal and an offset signal having a magnitude of a predetermined value; (c) storing the magnitude of said offset applied torque signal representing zero applied torque; and (d) generating the actual torque signal with a magnitude representing the magnitude of the difference between the magnitude of said offset applied torque signal and the magnitude of said stored signal.

4,210,018

FORMATION TESTERS

Emmet F. Brieger, Nogal, N. Mex., assignor to Gearhart-Owen Industries, Inc., Fort Worth, Tex.

Filed May 22, 1978, Ser. No. 908,579
Int. Cl.² E21B *49/00*
U.S. Cl. 73—155 **17 Claims**

1. A method for use in obtaining multiple pressure tests of an earth formation traversed by a well bore by use of a sidewall fluid sampler well tool which has a fluid pressure sampling chamber in the well tool in open fluid communication with a pad sealing means, compromising the steps of:

for one selected level in a well bore, moving a pad sealing means on the well tool into engagement with the wall of a well bore and isolating a wall segment of the earth formation;

after the pad sealing means engages the wall segment of the earth formation, generating a hydraulic pressure in the well tool and applying said hydraulic pressure to said fluid pressure sampling chamber for increasing the volume of said fluid pressure sampling chamber thereby to draw a fluid sample from the earth formation engaged by the pad sealing means into the fluid pressure sampling chamber,

sensing the pressure of said fluid sample as it is drawn into the fluid pressure sampling chamber while the volume of the sampling chamber is being increased,

relieving the hydraulic pressure in the well tool with respect to said fluid pressure sampling chamber for decreasing the



volume of said fluid pressure sampling chamber thereby to contract the sampling chamber to discharge the fluid sample through the pad sealing means;

retracting the sealing pad means and, after retraction of sealing pad means from engagement from the wall of the well bore, moving the well tool to a second location at another level in the well bore and,

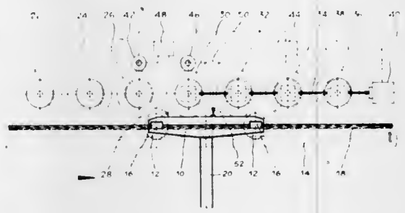
at the second location, repeating the steps of the method performed at the one selected level for obtaining another fluid sample and pressure sensing at said second location.

4,210,019

OVERHEAD CABLE TRANSPORT TESTING

Roger Laurent, Chambery, France, assignor to Pomagalski S.A., Fontaine, France

Filed Apr. 27, 1979, Ser. No. 34,026
Claims priority, application France, May 2, 1978, 78 13032
Int. Cl.² G01M *19/00*
U.S. Cl. 73—158 **7 Claims**



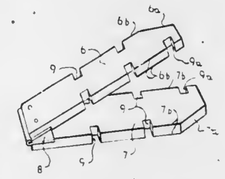
1. An overhead cable transport installation, including at least one detachable grip carriage for coupling a gondola on to the cable, a device to accelerate and synchronize the said carriage prior to its coupling on the cable having at least one synchronizing wheel engaging the said carriage by friction in the area above the coupling point, and rotated at a tangential speed synchronous with that of the cable and a device for testing the clamping of the said grip below the said coupling point able to exert on the said carriage coupled on the cable a braking or accelerating force, the said device for testing the clamping including at least one test wheel able to engage the said carriage by friction, a means of rotating the said test wheel to drive it at a speed synchronous with that of the cable before the engagement of the said carriage on the said wheel, and of exerting on the said test wheel an opposing force tending to impose on the test wheel a speed different from that of the cable during the said engagement, and a detector of the differential speed between the said test wheel and the said cable.

4,210,020

PASTA TESTING DEVICE

Ronald J. Wasik, 2880 E. Cedarwood Dr., Ottawa, Ontario, Canada

Filed Apr. 24, 1978, Ser. No. 899,492
Int. Cl.² G01N *33/10*
U.S. Cl. 73—169 **6 Claims**



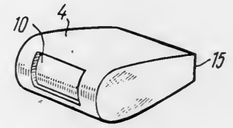
1. A pasta testing device comprising a pair of flat elongate transparent plates wherein opposite sides of said plates stand normal to the flat surfaces and have edges that are sufficiently clean and sharp to impinge the softened hydrated surface of a transversely disposed strand of pasta to deter the longitudinal movement of such strand and wherein the sides of said plates are notched to provide accommodating seats for the depending and reaches of a transversely disposed strand of softened hydrated pasta to deter the unwanted sliding of the strand longitudinally off the plates.

4,210,021

METHOD AND DEVICE FOR DETECTING ICING OF OBJECTS FOUND IN AIR FLOW

Nikolai A. Vykhodtsev; Tatyana P. Vykhodtseva, Leninsky prospekt, 70/11 kv. 293; Viktor I. Bantsekin, Snezhnaya ulitsa, 7, kv. 8; Boris K. Borisov, Dmitrovskoe shosse, 89, korpus 1, kv. 66, and Oleg P. Grishin, Yasny proezd, 30, korpus 1, kv. 45, all of Moscow, U.S.S.R.

Filed Jul. 6, 1978, Ser. No. 922,586
Int. Cl.² G01W *1/00*
U.S. Cl. 73—170 R **5 Claims**



1. A method for detecting icing of objects found in an air flow containing supercooled droplets of water, which method comprises the following operations:

producing a zone of precipitation of supercooled droplets of water in the air flow;

simultaneously producing a zone in said air flow, which is protected from precipitation of supercooled droplets of water and in which natural turbulization of said air flow takes place;

decelerating said air flow in said zone of precipitation of supercooled droplets of water with working surfaces having a predetermined configuration including a recess in a first end surface cooperating with an identical rear end surface having also a recess;

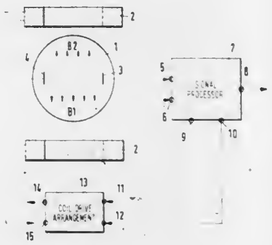
measuring the difference of temperatures in said zones, which difference is indicative of the icing conditions, said measuring step being independent of altitude and speed of the air flow.

4,210,022

METHOD FOR THE INDUCTIVE MEASUREMENT OF FLUID FLOW

Jurg A. Boss, Arlesheim, Switzerland, assignor to Flowtec AG, Reinach, Switzerland

Filed Sep. 20, 1978, Ser. No. 944,030
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744845
Int. Cl.² G01F *1/58*
U.S. Cl. 73—861.17 **1 Claim**



1. A method for inductive flow measurement by generating a magnetic field in a direction perpendicular to the flow and measuring the signal voltage induced by the flow across a pair of electrodes, comprising the steps of generating a periodically reversed magnetic field comprising field impulses of opposite polarity separated by magnetic field intervals in which the magnetic field has zero value, generating during a compensation time interval within each of said magnetic field intervals a compensating voltage of a magnitude and polarity adapted to compensate the disturbance voltage existing across said electrodes during said compensation time interval to zero value, storing said compensating voltage until the next compensation time interval and employing said stored compensating voltage for compensating the disturbance voltage contained in said signal voltage, sampling said signal voltage at a sampling time interval within each of said magnetic field impulses, each of said sampling time intervals having the same time distance from the preceding compensation time interval, and forming the difference of the signal voltage values sampled at successive sampling time intervals.

4,210,023

METHOD AND APPARATUS FOR MEASURING SLAG FOAMING USING MICROWAVE LEVER METER

Yoshiyasu Sakamoto, Kaizuka; Sumio Kobayashi, Yamato Kohriyama, and Akio Hatono, Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 14, 1978, Ser. No. 886,573
Claims priority, application Japan, Mar. 25, 1977, 52/32835
Int. Cl.² G01F *23/00*
U.S. Cl. 73—290 R **18 Claims**

1. A method for measuring the slag foaming level within a converter during a blowing operation, said method comprising the steps of:

generating frequency modulated microwaves having a predetermined frequency change rate;

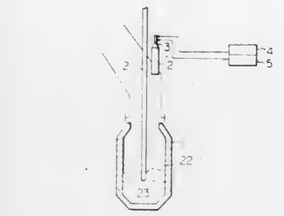
emitting said microwaves toward a slag foaming surface within a converter;

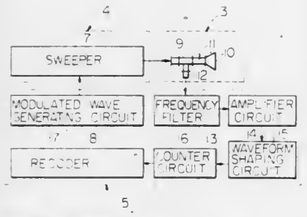
providing a reference reflector in the path of said emitted microwaves at a position a predetermined distance from the point of emission of said microwaves;

reflecting a first portion of said microwaves from said reference reflector;

reflecting a second portion of said microwaves from the slag foaming surface;

receiving and mixing said first portion of microwaves reflected from said reference reflector and said second portion of said microwaves reflected from the slag foaming surface, thereby producing a beat signal;





detecting said beat signal;

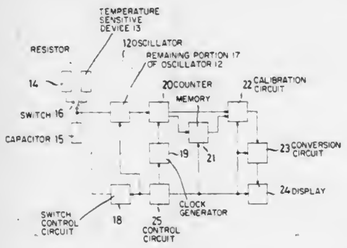
determining a distance between the slag foaming surface and said reference reflector from said detected beat signal, thereby providing a measure of the slag foaming level.

4,210,024

TEMPERATURE MEASUREMENT APPARATUS

Hiromasa Ishiwatari, Ikoma, and Yoshinori Yamada, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 29, 1978, Ser. No. 964,520
Claims priority, application Japan, Dec. 5, 1977, 52/146295
Int. Cl.² G01K *1/20*
U.S. Cl. 73—362.5 **3 Claims**



1. A temperature measurement apparatus comprising:

a temperature sensitive device;

an electric circuit for producing output signals responding to electrical states of said temperature sensitive device;

a reference resistor of a known temperature coefficient which is connected in said electric circuit to produce a reference output signal at a predetermined reference environmental temperature and at a reference voltage of a power source;

a memory for memorizing said reference output signal;

a control circuit for alternatively switching to produce output signals for said temperature sensitive device and for said reference resistor; and

a calibration circuit for calibrating a measurement error due to variation from said environmental temperature and a power source voltage by use of said memorized reference output signal and said output signals for said temperature sensitive device and said reference resistor,

said calibration circuit for performing an arithmetic calculation

$$Vm \cdot \frac{Vc_0}{Vc} \cdot \frac{1}{1+f(T)}$$

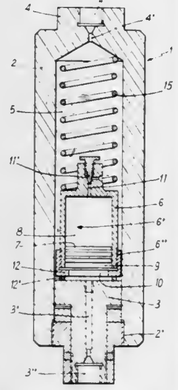
where Vc_O is said reference output signal, Vc and Vm are said output signals for said reference resistor and said temperature sensitive device, respectively, and $1+f(T)$ represents a function representing thermal characteristics of said temperature sensitive device at a temperature T normalized with respect to said reference temperature.

4,210,025

PNEUMATIC COMPENSATOR FOR A FLUID SAMPLING CELL

Jean-Pierre Bimond; Flavien Lazarre, both of Pau, and André Puyau, Lescar, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed Jan. 3, 1979, Ser. No. 662
Claims priority, application France, Jan. 4, 1978, 78 00122
Int. Cl.² G01N *1/12*
U.S. Cl. 73—421 R **6 Claims**



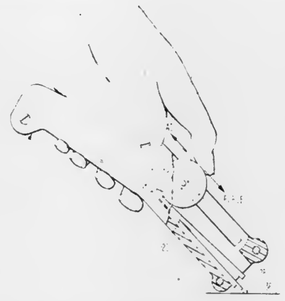
1. A device for limiting during handling the pressure of a fluid sample occupying a volume in a space within a cell, comprising an enclosure with an auxiliary volume, variable between a zero volume and a maximum volume, located in the inner space of the cell, said auxiliary volume being complementary to the volume occupied by the fluid sample, said auxiliary volume containing a gas under pressure, selected from the group of the gases the critical temperature of which is lower than the lowest possible temperature likely to occur during the handling, the value of the auxiliary volume, occupied by said gas under given temperature and pressure conditions, being selected in such a way that, for various temperature values, the sample pressure is always higher than the bubble or dew pressure of said sample, and the gas under pressure is a tracer gas which is not present in the samples likely to be stored in the cell.

4,210,026

BLOOD SAMPLE COLLECTING MEANS

Lynn G. Amos, Painted Post; Charles M. Beechey, Pine City, and Charles H. Rogers, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 29, 1978, Ser. No. 386
Int. Cl.² B01L *3/02*
U.S. Cl. 73—425.6 **12 Claims**



1. Means for collecting a blood sample for subsequent treatment or analysis, comprising:

a housing adapted to be gripped in the hand of a user and defining a support surface therein;

pinching means hingedly disposed within said housing and extending generally parallel to said support surface;

a resilient envelope removably disposed between said pinching means and said support surface; and

a rotatable wheel movably retained within said housing adjacent said pinching means and manually translatable along said pinching means for advancing said pinching means toward said support surface thereby compressing said resilient envelope and for retreating along said pinching means whereby said envelope is decompressed.

4,210,027

METHOD FOR DETERMINATION AND GRADING OF PRECIOUS MINERALS

James A. Patterson, Los Altos, Calif., assignor to Specific Volume Systems, Inc., Mountain View, Calif.

Filed Nov. 13, 1978, Ser. No. 959,673
Int. Cl.² G01N *33/20*
U.S. Cl. 73—432 R **1 Claim**

1. A method of determining the amount of gold in a nugget comprising:

a. measuring the weight and volume of the nugget;

b. determining the weight and volume of quartz in the nugget by calculating the approximate percentage of surface area of quartz on the surface of the nugget and multiplying this percentage by the volume of the nugget wherein the surface area of the quartz to the surface area of the entire nugget is determined by:

1. placing the nugget face down on a piece of carbon paper overlaying a square-ruled paper;

2. tracing the outline of the nugget face onto carbon paper which forms an outline of the face of the nugget on the square-ruled paper;

3. tracing the outline of the quartz area on the nugget face using substantially transparent tracing paper;

4. transferring the outline on the tracing paper to the square-ruled paper through the carbon paper;

5. comparing the area of the nugget surface with the area of the quartz; and

6. repeating steps 1–5 for each face of the nugget and averaging the calculated values;

c. subtracting the volume and weight of the quartz from the volume and weight of the total nugget to yield the specific gravity of gold alloy within the nugget;

d. estimating the percentage of copper, silver and nickel alloyed with the gold in the nugget; and

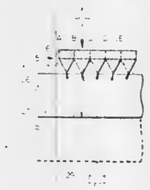
e. comparing the specific gravity of the alloy with the percentage of copper, silver and nickel to yield the total amount of gold.

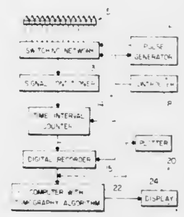
4,210,028

METHOD AND APPARATUS FOR ULTRASONICALLY MEASURING CONCENTRATIONS OF STRESS

B. Percy Hildebrand, Richland, Wash., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 30, 1978, Ser. No. 910,788
Int. Cl.² G01N *29/04*
U.S. Cl. 73—598 **10 Claims**





9. An apparatus for ultrasonically measuring stress concentrations in an object of interest, comprising:

(a) an ultrasonic transducer array for propagating acoustic waves in an object of interest along a plurality of determinable directions and from a plurality of determinable positions;

(b) means for measuring the time of flight of the acoustic waves within the object of interest along the determinable directions and from the determinable positions; and

(c) means for determining from said time of flight measurements any variations in the acoustic velocity of the acoustic waves within the object of interest and for converting said variations in velocity into a map of stress concentrations in the object of interest, said means for determining dividing the object of interest into a plurality of cells and solving the following set of equations for V_j, the acoustic velocity within each cell:

$$\{T_i\} = \sum_j \frac{L_{ij}}{V_j} + \frac{1}{V_\omega}\left(L - \sum_j L_{ij}\right)$$

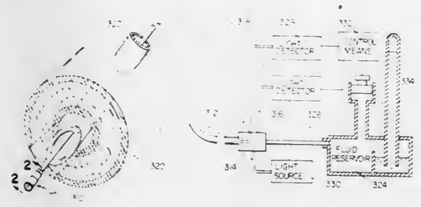
where T_i = total time of flight along i^{th} ray
V_j = velocity in j^{th} cell
V_ω = velocity in coupling medium
L = total geometric path length
L_{ij} = path length of the i^{th} ray in the j^{th} cell

4,210,029

DIFFERENTIAL FIBER OPTIC DIFFERENTIAL PRESSURE SENSOR

John H. Porter, Colchester Point, Vt., assignor to Lad Research Industries, Inc., Burlington, Vt.

Filed May 4, 1979, Ser. No. 36,246
Int. Cl.² G01L 7/08, 9/00
U.S. Cl. 73—705 4 Claims



1. In apparatus for monitoring ambient pressure within a confined sapce wherein an envelope having a flexible wall is so placed that said wall will move in response to pressure change within such space, the interior of said envelope being in communication through a fluid line with differential pressure control and display apparatus, and wherein one input light guide and two output light guides are introduced through said line and have their internal ends within said envelope, the input guide having its external end facing a light source and the output guides having their external ends facing light detectors, and means associated with the flexible wall for selectively reflecting light from the inner end of the input guide to the inner ends of the output guides in accordance with movements of said wall in response to changes in relative pressure between that in the envelope and that in the confined space, the improvement wherein

said envelope comprises a rigid, generally cylindrical wall closed at one end by a generally circular, flexible end wall movable in an axial direction responsive to changes in said relative pressure,

said light guides are positioned within said envelope with their internal ends facing said end wall, and

said end wall carries a reflective surface facing said internal ends and movable with said end wall toward and away from said internal ends,

said internal ends being so disposed and arranged with respect to said reflective surface that when said surface is close to said internal ends a greater intensity of light from the input guide will be reflected by the surface to one of said output guides for sensing by its light detector, when said surface is remote from said internal ends, a greater intensity of said light will be reflected by said surface to the other of said output guides for sensing by its light detector, and, when said surface is in a position between said close and remote positions the reflected light will be equally intense, for correspondingly actuating said differential control and display apparatus.

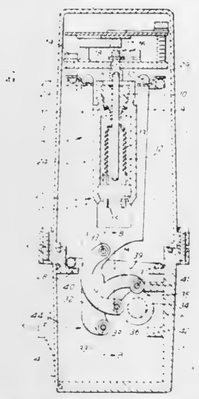
4,210,030

SERVO MOTOR

Jens N. Andresen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Apr. 20, 1978, Ser. No. 898,100
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717468
Int. Cl.² F16H 21/18; F01B 29/10; F02G 1/04
U.S. Cl. 74—43 4 Claims

1. A servo motor assembly, comprising, a frame, two relatively movable motor parts with a movable part thereof having movement along a straight line parallel to a reference line which is fixed relative to said frame, a rotatable member rotatably mounted relative to said frame about an axis on one side of said reference line, said rotatable member having two angularly displaced pivots at equal radii from said axis of said rotatable member, said reference line being a distance from said axis greater than said radii, said movable part having two pivots spaced from each other and equally spaced from said reference



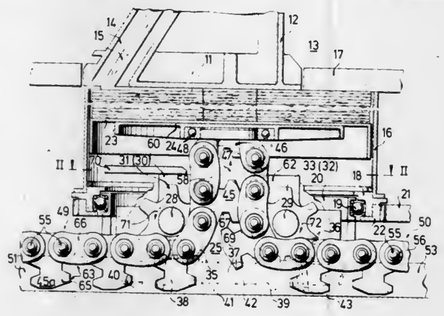
line on the side thereof opposite from said rotatable member pivots, and two links intersectingly connected respectively between the pivots of said motor movable part and said pivots of said rotatable member.

4,210,031

LIFTING OR PRESSING DEVICE

Reinhold Schmid, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 7, 1978, Ser. No. 884,117
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710194
Int. Cl.² F16G 13/02
U.S. Cl. 74—89.21 8 Claims



1. Lifting or pressing device comprising means for transmitting thrust, and a compressive force-transmitting radially stationary push rod shiftable by said thrust transmitting means, said push rod being formed of individual elements form-lockingly clampable one to another, said individual elements being fittable with a pressure-proof, bending-proof and buckling-proof fit into one another in direction of thrust by said thrust transmitting means, and being releasable only in a direction opposite the direction of thrust and being divertable out of the direction of thrust, said individual elements being connected articulatingly to one another into at least two chains, respectively, two chains feedable from different directions being divertable by said thrust transmitting means into the direction of thrust, said chains having clamping members alternatingly clampable one to the other for fitting said individual elements into one another, said individual elements of said chains having

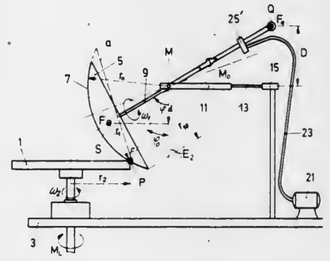
at least part of an outer strap covering the respective clamping members.

4,210,032

TORQUE CONVERTER ESPECIALLY FOR THE USE IN ELECTRO MOBILS

Heinz Lampert, Fuchsbühelstrasse 50, CH-9470Buchs, Switzerland

Filed Jun. 28, 1978, Ser. No. 919,767
Claims priority, application Switzerland, Jun. 29, 1977, 8017/70
Int. Cl.² F16H 15/26, 15/00, 13/00
U.S. Cl. 74—198 58 Claims



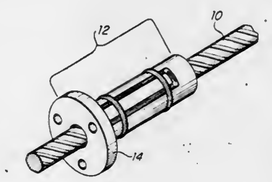
1. A torque converter for automatically adjusting its step down ratio according to load variations, comprising; a first and a second friction wheel in contact with each other, the first wheel being a ruled surface wheel with axially varying radius, the rotational axis of both wheels being suspended so as to be tiltable relative to each other in two directions, a first direction in a plane formed by the two axes to alter the step down ratio by altering the friction radius of the first wheel, a second direction at least partly in direction of the circumferential speed of the wheels at their frictional area to bring said two axes out of in-plane alignment, force generating means acting on one of said two axes to prevent tilting in said second direction by the transmitted friction force, said force generating means being of spring characteristic and including a force converter to control the generated force in dependency of the tilting position in said first direction to thus meet the friction force at different step down ratios.

4,210,033

ANTI-BACKLASH NUT

Kenneth W. Erikson, Merrimack, and Keith W. Erikson, Nashua, both of N.H., assignors to Kerk Motion Products, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 816,983, Jul. 19, 1977, abandoned. This application May 19, 1978, Ser. No. 907,518
Int. Cl.² F16H 55/18
U.S. Cl. 74—424.8 A 8 Claims



1. An anti-backlash nut designed to undergo translational movement along a screw having an external thread thereon in response to relative rotational movement between the anti-backlash nut and screw, said nut having a hollow cylindrical bore with an internal thread complementary to the external thread on the screw and said nut comprising, in combination:

a. a continuous portion extending longitudinally from one end of said nut to the other and thereof;

b. oppositely-directed longitudinal flexure members, said flexure members having one end fixed to said anti-backlash nut and their other end free-floating; and,

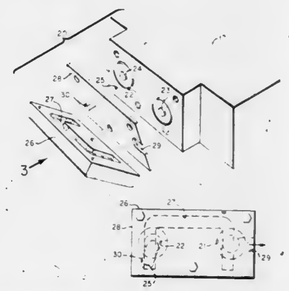
c. means for biasing said oppositely-directed longitudinal flexure members towards the external thread of said screw.

4,210,034

CHANNEL PLATE FOR AUTOMATIC TRANSMISSIONS

Gilbert W. Younger, 2621 Merced Ave., El Monte, Calif. 91733

Filed Aug. 15, 1977, Ser. No. 824,331
Int. Cl.² F16H 57/02
U.S. Cl. 74—606 R 2 Claims



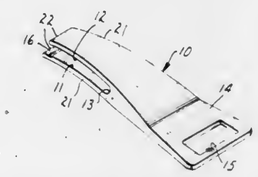
1. In an automatic transmission for shifting gears, a channel plate for blocking transmission oil flow between two shift valves normally provided to effect automatic sequential shifting with changes in the pressure of said transmission oil so that the gears in said transmission can only be shifted manually, said two shift valves being receivable in side-by-side valve bores in the valve body for said automatic transmission, said bores normally being covered by a valve cover having an internal passage placing said bores in communication with each other and with the transmission oil, said channel plate comprising a thin metal member insertable between said valve cover and entrances to said bores to eclipse said passage so that oil flow through said passage is blocked, said metal member further including a side notch placing one of said bores in communication with the exterior of said valve body and an elongated opening placing the other of said bores in communication with said transmission oil.

4,210,035

BOOT BUCKLING AID

Carl A. White, 41 Woodland Dr., Fargo, N. Dak. 58102

Filed Nov. 9, 1978, Ser. No. 959,291
Int. Cl.² B25B 27/00
U.S. Cl. 81—3 R 5 Claims



1. A device for aiding the opening and closing of boot buckles, wherein said boot buckles comprise a tensioning lever having a curve therein to conform to the surface of said boot

when said buckle is closed, said tensioning lever pivotally attached to one instep portion of said boot and a clamping loop engageable with said lever attached to the other instep portion of said boot, said device comprising an elongated member having a handle end for grasping said member and a bifurcated gripping end having rigid, spaced upper and lower segments, said upper and lower segments being curved to engage a substantial portion of said tensioning lever to facilitate operation of said clamping loop.

4,210,036

TIRE-CHAIN HANDLING TOOLS

Kunii Nakata, Naganoshi, Japan, assignor to Nakata Giken Co., Ltd., Naganoken, Japan

Filed Jan. 12, 1978, Ser. No. 868,915

Claims priority, application Japan, Oct. 15, 1977, 52/138303[U]; Dec. 8, 1977, 52/164788[U]

Int. Cl.[2] B60C *25/14*

U.S. Cl. 81—15.8 **6 Claims**



1. A tire-chain handling tool comprising:
a rod including two portions connected together by a hinge including two members which are rotatably secured relative to each other;
a hook member including a pulling hook and a pushing hook connected to one outer end of said rod; and
a handle member connected to the other outer end of said rod.

4,210,037

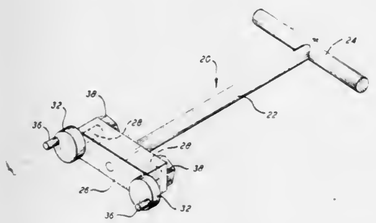
SPANNER WRENCH

Alfred Taylor, 508 Budd St., Elmira, N.Y. 14904

Filed Aug. 28, 1978, Ser. No. 937,551

Int. Cl.[2] B25B *13/48*

U.S. Cl. 81—90 C **4 Claims**



1. A spanner wrench, comprising:
a handle having attached thereto at one end thereof a support bar; said support bar having first and second holes therein near respective ends of said support bar; and
an adjustable drive pin carrier having a base plate and a mounting bolt on one face of said base plate said mounting bolt being adapted to pass through one of said holes in said support bar, said adjustable drive pin carrier having a drive pin mounted on a second base of said base plate near an edge of said base plate opposite a point where said mounting bolt is affixed, to achieve a greatest possible span adjustment.

4,210,038

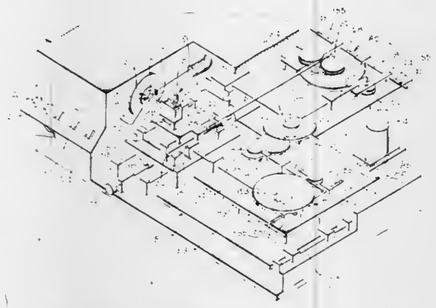
LATHE HAVING A GUIDED MOVABLE CUTTER

Edward G. Hill, San Diego, Calif., assignor to Continuance Curve Contact Lenses, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 812,768, Jul. 5, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,165

Int. Cl.[2] B23B *3/28, 5/40*

U.S. Cl. 82—11 **17 Claims**



1. A lathe having a guided movable cutter for surfacing contact lenses, comprising:
base means;
a motor secured to said base means;
collet means driven by said motor and adapted to releasably retain a cylindrical lens blank for rotation therewith;
a first stage supported on said base means for movement thereon parallel to the axis of rotation of said collet means
a second stage mounted to said first stage for movement thereon perpendicular to the axis of rotation of said collet means;
a cutting tool mounted to said second stage;
radius-generating drive means comprising,
first and second coaxial drive wheels mounted to said base for rotation in concert thereon;
first and second idler wheels adjacent to and substantially coplanar with said first and second drive wheels, respectively;
means for mounting said first and second idler wheels to said base and urging them radially toward said first and second drive wheels, respectively;
first rod means mounted to said base means for reciprocating axial movement, passing between said first drive wheel and said first idler wheel and held therebetween by said first idler wheel;
second rod means mounted to said base means essentially parallel to the axis of said lens blank for reciprocating axial movement, passing between said second drive wheel and said second idler wheel and held therebetween by said second idler wheel, and engaging said first stage in driving relationship;
first substantially nonextensible and noncompressible band means passing between said first rod means and said first drive wheel and connected at one end to said first rod means and at the other end to the periphery of said first drive wheel, such that slippage between said first rod means and said first drive wheel is eliminated and the axial movement of said first rod means is transformed into corresponding rotational movement of said first drive wheel;
second substantially nonextensible and noncompressible band means passing between said second rod means and said second drive wheel and connected at one end to said second rod means and at the other end to the periphery of said second drive wheel such that slippage between said second drive wheel and said second rod means is eliminated and the rotational movement of said second drive wheel is transformed into corresponding axial movement of said second rod means;

means for imparting a desired pattern of axial motion to said first rod means;
whereby said axial motion of said first rod means is accurately transferred through said first drive wheel, said first and second band means, said second drive wheel and said second rod means, to said first stage, effectively driving said first stage axially with respect to said lens blank;
cross-feed drive means comprising,
third and fourth coaxial drive wheels mounted to said base for rotation in concert thereon;
third and fourth idler wheels adjacent to and substantially coplanar with said third and fourth drive wheels, respectively;
means for mounting said third and fourth idler wheels to said base and urging them radially toward said third and fourth drive wheels, respectively;
third rod means mounted to said base means for reciprocating axial movement, passing between said third drive wheel and said third idler wheel and held therebetween by said third idler wheel;
fourth rod means mounted to said base means essentially perpendicular to the axis of said lens blank for reciprocating axial movement, passing between said fourth drive wheel and said fourth idler wheel and held therebetween by said fourth idler wheel, and engaging said second stage in driving relationship;
third substantially nonextensible and noncompressible band means passing between said third rod means and said third drive wheel and at the other end to the periphery of said third drive wheel, such that slippage between said third rod means and said third drive wheel is eliminated and the axial movement of said third rod means is transformed into corresponding rotational movement of said third drive wheel;
fourth substantially nonextensible and noncompressible band means passing between said fourth rod means and said fourth drive wheel and connected at one end to said fourth rod means and at the other end to the periphery of said fourth drive wheel such that slippage between said fourth drive wheel and said fourth rod means is eliminated and the rotational movement of said fourth drive wheel is transformed into corresponding axial movement of said fourth rod means;
means for imparting a desired pattern of axial motion to said third rod means;
whereby said axial motion of said third rod means is accurately transferred through said third drive wheel, said third and fourth band means, said fourth drive wheel and said fourth rod means, to said third stage, effectively driving said second stage axially with respect to said lens blank and
motor means associated with, and effectively synchronously driving said radius-generating drive means and said cross-feed drive means.

4,210,039

APPARATUS FOR FORMING NON-CIRCULAR WORKPIECES

Paul Willemin, Bassecourt, Switzerland, assignor to Willemin Machines S.A., Canton of Berne, Switzerland

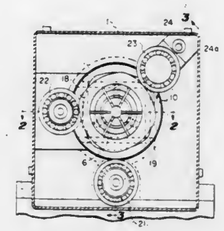
Continuation-in-part of Ser. No. 776,440, Mar. 11, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,508

Claims priority, application Switzerland, Mar. 11, 1976, 3025/76

Int. Cl.[2] B23B *3/28;* B24B *5/00, 7/00*

U.S. Cl. 82—18 **5 Claims**

1. An apparatus for forming a non-circular workpiece surface comprising:
a workpiece;
workpiece cutting means;
a rotatable workpiece carrying element, said workpiece mounted on said carrying element, and said carrying element and workpiece being laterally displaceable as said carrying element rotates;
said workpiece carrying element including at least a first cam surface thereon bearing against a fixed roller bearing as said carrying element rotates;
said carrying element further including shaping cam means; and



biasing means for biasing said shaping cam means against a fixed point as said carrying element rotates to guide said workpiece against said cutting means and laterally shift said workpiece and carrying element as they rotate to form a non-circular surface on said workpiece.

4,210,040

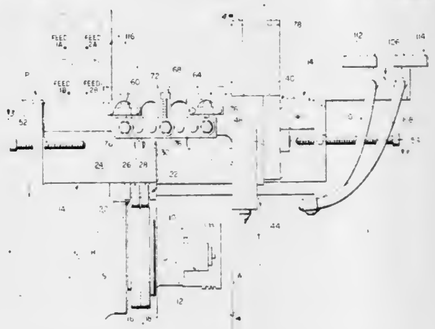
APPARATUS FOR TURNING MACHINES AND THE LIKE FOR SIMULTANEOUS AXIAL AND RADIAL PROFILING OF WORK

Ivan R. Brown, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,001

Int. Cl.[2] B23B *3/28*

U.S. Cl. 82—19 **35 Claims**



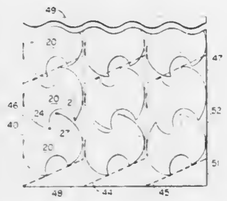
1. In a turning machine having a tool for simultaneous axial and radial profiling of work:
(a) a rotatable spindle having a forward end and having work support means on said forward end;
(b) circumferential profiling means rotatably mounted on said spindle;
(c) a carriage support mounted on said machine adjacent said spindle;
(d) a movable tool support carrier on said carriage support movable in a direction generally parallel to said spindle axis;
(e) a tool holder mounted in said tool support carrier for movement parallel to and radially of said spindle axis;
(f) said tool holder including longitudinal profiling means;
(g) tracking means mounted between said circumferential profiling means and said longitudinal profiling means and simultaneously tracking both of said profiling means.

4,210,041

METHOD FOR CUTTING A PLURALITY OF IDENTICAL, IRREGULAR, NON-POLYGONAL PIECES FROM MATERIAL WITH MINIMUM WASTE

Enrique Mitman, Brookline, and Isaac Sadovnik, Cambridge, both of Mass., assignors to Enrique Mitman, Brookline, Mass.

Filed Feb. 8, 1979, Ser. No. 10,366
Int. Cl.[2] B26F *1/38*
U.S. Cl. 83—32 **6 Claims**



3. A method of simultaneously cutting a plurality of identical irregular shaped objects of rounded outline from advancing sheet or web, stock having opposite parallel side edges to reduce stock waste comprising the steps of:

creating a multiple repeat gang cutter pattern by marking a plurality of salient points around each of the sides of at least one of said objects of rounded outline and drawing a straight line joining each adjacent pair of said points to box said object into a closed geometrical, straight-sided, polygonal figure including a triangle, parallelogram or trapezoid;

combining a pair of said closed polygonal figures into a parallelogram with a side of one figure, having at least one said salient point forming a projection, positioned opposite a side of the other figure of the pair having at least two salient points forming a recess therebetween,

reducing the area of said parallelogram by nesting the projection on one said figure in the recess in the other said figure so that there is only a predetermined minimum space therebetween,

then arranging a plurality of said parallelograms each containing a pair of said nested figures, in side by side relationship with one pair of parallel sides thereof parallel to said parallel side edges of said sheet or web stock to form a die cutting pattern

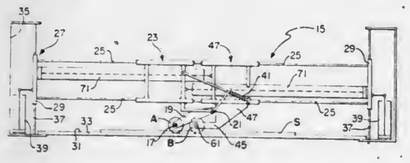
and then simultaneously die cutting said pattern out of said stock repeatedly in succession as said stock advances.

4,210,042

METHOD FOR PARTING PLY STOCK BETWEEN SIDE-BY-SIDE CORDS OR WIRES

Gilbert A. Felten, Kehlen, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 855,098, Nov. 25, 1977, Pat. No. 4,156,378. This application Jan. 24, 1979, Ser. No. 6,057
Int. Cl.[2] B26D *11/00*
U.S. Cl. 83—49 **3 Claims**



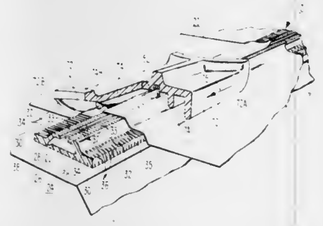
1. A method of cutting tire making material which has parallel closely spaced cords or wires embedded in uncured rubbery gum, the method comprising supporting said material on an uninterrupted plane hard surface, selecting a rotatable unheated disc cutter having a blunt circular edge, moving said cutter first in a direction normal to said surface to cause the cutter to penetrate said gum between a side-by-side pair of cords or wires and to engage said surface, then while maintaining the blunt edge of said cutter in contact with said surface rolling said cutter in a direction parallel to said surface in a path determined by said pair of cords or wires so as to sever said gum between said pair without baring either and without overheating said gum.

4,210,043

CUTTING ASSEMBLY

Kenard E. Urion, Woodbury, N.J., and Douglas R. Cleminshaw, Tully, N.Y., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Nov. 9, 1978, Ser. No. 959,853
Int. Cl.[2] B26D *7/14*
U.S. Cl. 83—175 **16 Claims**



2. A cutting assembly of the type usable for severing a sheet into discrete elements, said assembly including:

an elongate track member having upper wall segments terminating in spaced-apart inner surfaces that define an elongate slot between them;

a cutter slide movable in said slot and including a cutting element having a cutting edge for engaging and severing the sheet when said sheet is positioned over the slot in a taut condition, the improvement wherein the cutter slide includes:

a top wall overlying the cutting element;

first means directed downwardly from the top wall for forcing sections of the sheet against the track on opposite sides of the slot as the cutter slide is moved to locally immobilize said sheet;

second means directed downwardly from the top wall for engaging immobilized sections of the sheet on opposite sides of the slot as the cutter slide is moved to tension said sections into a taut condition over the slot;

said first and second downwardly directed means being aligned with the cutting edge for maintaining the sections of the sheet immobilized and tensioned prior to and during the severing of said sections.

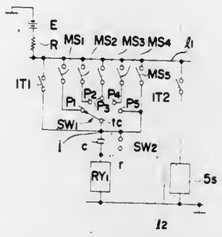
4,210,044

ROLL PAPER CUTTING ARRANGEMENT

Keiji Nakatani, Machida, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 19, 1979, Ser. No. 5,013
Claims priority, application Japan, Feb. 3, 1978, 53-11827
Int. Cl.[2] B26D *5/26*
U.S. Cl. 83—241 **8 Claims**

1. A roll paper cutting arrangement for use in mechanical equipment employing a roll of paper to be cut into predetermined length for use, said roll paper cutting arrangement comprising means for transporting the paper which draws out a leading end of the paper from the roll for transportation, means for cutting the paper to the predetermined length on the passage of transportation of the paper, power source for actuating said cutting means, a first switching means for connecting said power source with said cutting means, a plurality of second switching means in association with functioning of said transporting means at predetermined relation with respect to feeding amount of the paper, means for selecting one of said plurality of second switching means, and means



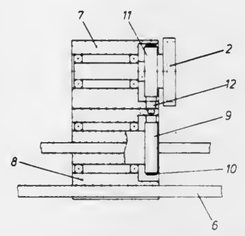
for memorizing the function of the selected one of said plurality of second switching means, said memorizing means being connected to said second switching means through said selecting means, said first switching means being so arranged as to be actuated following the memorizing function of said memorizing means.

4,210,045

SLITTER HAVING ADJUSTABLE CIRCULAR KNIVES

Dieter Osburg, Neuss-Weckhoven, Fed. Rep. of Germany, assignor to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,301
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741559
Int. Cl.[2] B26D *1/24*
U.S. Cl. 83—497 **1 Claim**



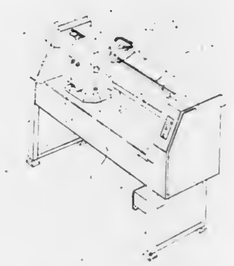
1. Slitter for web material such as paper and cardstock webs and the like, comprising a plurality of pairs of rotatable circular knives disposed side by side each comprising a lower cup knife and an upper disk knife which plunges into the web material during use, means mounting each upper disk knife on a rail with its axis perpendicular to the line of movement of the web of goods to run freely and for adjustable movement perpendicular to the line of movement of the web, means mounting each lower cup knife on a rail with its axis at a selected angle to the line of movement of the web of goods for adjustable movement perpendicular to the line of movement of the web and for pivotal movement on a support to obtain the selected angle and means for driving each lower knife comprising a belt pulley mounted in the support and a pivotable belt drive mounted in the support.

4,210,046

CROSS BEAM PRESS AND CONTROL

Frederick A. Pretty, Alveston, England, assignor to USM Corporation, Farmington, Conn.

Filed Dec. 14, 1977, Ser. No. 860,318
Claims priority, application United Kingdom, Dec. 18, 1976, 52982/76
Int. Cl.[2] B26D *5/12, 7/26*
U.S. Cl. 83—525 **8 Claims**



1. A travelling head press comprising:

a lower platen;

a cross-beam extending across the width of the lower platen and positioned rearwardly thereof, said cross-beam having a flat front face with an upper rail and a lower rail extending outwardly from the flat front face;

a carriage mounted on the upper and lower rails extending outwardly from the flat front face of the cross-beam so as to allow slidable movement therealong at a short distance from the front face;

an upper platen suspended from said carriage; and

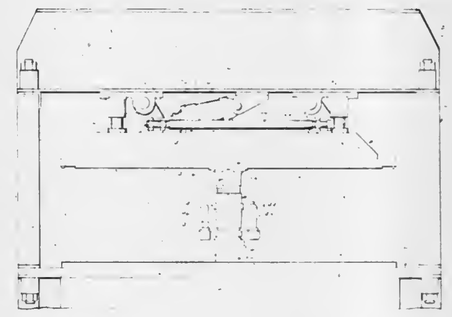
means for effecting relative movement between said upper platen and said lower platen so as to effect an operating stroke of said press.

4,210,047

DIE CUTTING MACHINE WITH MAGNETIC HOLDER FOR ACCURATE DIE POSITIONING

Edgar Haas, Fort Lee, N.J., and Edward Kottsieper, Dresden Mills, Me., assignors to Herman Schwabe, Inc., Brooklyn, N.Y.

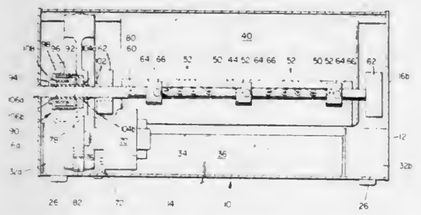
Filed Jul. 3, 1978, Ser. No. 921,477
Int. Cl.[2] B26F *1/40;* **B21D** *28/04*
U.S. Cl. 83—530 **23 Claims**



1. A die cutting apparatus or the like comprising a support, a cutting surface mounted on said support, a pressure head mounted on said support above said surface, means for moving said head toward and away from said surface, a die, means, interposed between said head and said surface, for holding said die, and means for mounting said die holding means to said pressure head for movement therewith, said holding means

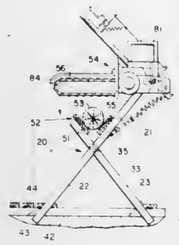
comprising: a base section connected to said mounting means, a die carrying section comprising means for magnetically retaining said die and means for permitting movement of said die carrying section relative to said base section in the direction of head movement so as to facilitate accurate positioning of said die, said movement permitting means comprising; a spring operably connected between said sections to permit linear displacement therebetween and means for permitting relative rotation between said sections, said relative rotation permitting means comprising a rotatable bracket connecting said spring to said die carrying section.

4,210,048
AUTOMATIC PUNCH
Edmond U. Cohler, 85 Bloomfield St., Lexington, Mass. 02173, and Ernest L. Weil, 3 Hillside Ave., Winchester, Mass. 01890
Filed Sep. 25, 1978, Ser. No. 945,232
Int. Cl.[2] B26D *7/16*
U.S. Cl. 83—572 **11 Claims**



1. An automatic punch for punching at least one hole through one or more sheets of material, said punch comprising:
A. at least one punch head movable between a rest position and a punching position;
B. a cam shaft adapted for rotation about an axis transverse to the direction of movement of said punch head and including an eccentric cam rotatable with said shaft and positioned to move said punch head to its punching position when said shaft is rotated;
C. a flywheel rotatable about said cam shaft axis;
D. means for imparting rotary motion to said flywheel;
E. means normally rotatively decoupling said flywheel from said cam shaft to permit rotation of said flywheel independently of said cam shaft and actuable for rotatively coupling said flywheel to said cam shaft for a predetermined limited displacement of said flywheel, said coupling means comprising a wrap-spring clutch mounted co-axially with said flywheel and said cam shaft, said wrap-spring clutch including an input drum secured for rotation with said flywheel, an output drum secured for rotation with said cam shaft, a sleeve encircling said drums and a multiple turn coiled clutch spring encircling said drums and within said sleeve, a first end of said clutch spring being secured to said output drum and a second, opposite end of said clutch spring being secured to said clutch sleeve, said clutch spring contracting to frictionally grip said input drum and thereby rotatively couple said input drum to said output drum when said sleeve is released; and
F. means for actuating said coupling means to couple the rotary motion of said flywheel to said camshaft thereby to drive said punch head to its punching position, said actuating means comprising an escapement that is movable between a first position in which it engages said clutch sleeve to restrain said sleeve from moving with said input drum and a second position in which it disengages said clutch sleeve to release said sleeve for rotation with said input drum, whereby said clutch is actuated when said escapement means releases said clutch sleeve.

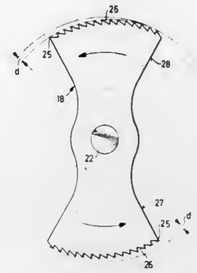
4,210,049
TUBULAR FRAME SUPPORTED, CANTILEVERED CHAIN SAW
R. Raymond Gauthier, 9 Chiswick Rd., Hudson, N.H. 03051
Filed Dec. 21, 1978, Ser. No. 971,802
Int. Cl.[2] B27B *17/02*; **B27G** *19/00*
U.S. Cl. 83—796 **10 Claims**



1. A chain saw support comprising:
a generally U shaped frame having a pair of elongated legs, each with a sleeve at one end rotatably supporting an elongated shaft therewithin at about shoulder level above ground level, and each with an opposite lower end having means for anchoring the same to the ground,
log trough means supported at about waist height above ground level on said U shaped frame and extending in parallelism with said shaft to slidably support a log therein, with the end to be cut extending beyond said trough and outside one said leg;
a power chain saw, cantilever-supported on one end of said shaft outside said one leg, and having the cutting chain thereof positioned to move in a vertical plane passing through the desired cut line of the log;
a lever arm handle detachably affixed to said shaft for movement therewith and extending outwardly and upwardly from said shaft in the same direction as said cutting chain of said saw but at a location inwardly of said one leg to a free terminal end;
and throttle control means at said free end of said arm connected to the throttle of said chain saw;
whereby an operator may stand in front of said lever arm handle out of the path of said cutting chain, and lower said handle, while actuating said throttle control means, to oscillate said chain saw downwardly from the horizontal on the axis of said shaft, to cut off successive ends of a log in said trough means.

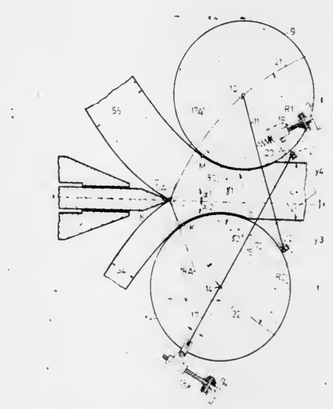
4,210,050
CUTTING DEVICE WITH ROTATING CUTTERS
Helmut Paulus, Herzogenrath, Fed. Rep. of Germany, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France
Division of Ser. No. 778,259, Mar. 16, 1977, Pat. No. 4,114,493. This application Aug. 21, 1978, Ser. No. 935,739
Int. Cl.[2] B27B *33/02*
U.S. Cl. 83—848 **2 Claims**

1. A cutting tool comprising a body portion having two substantially planar, equiangularly spaced, substantially sector-shaped, substantially coplanar segments joined apex to apex, the body portion being shaped to provide a pair of continuous, opposed, sector-shaped cut-out portions, each cut-out portion extending between the trailing edge of one segment and the leading edge of the other segment, the angular extent of each cut-out portion being greater than that of either of the body segments, cutting edges on an outer peripheral surface of each of the segments, means defining a center of the body portion, the distance of each cutting edge from the center continuously



increasing from the leading edge of each segment to the trailing edge of each segment.

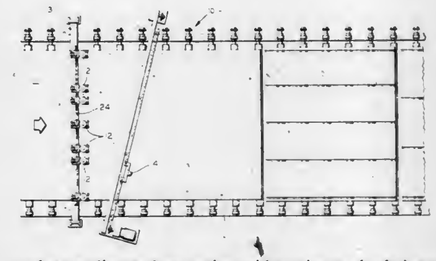
4,210,051
BAND KNIFE SPLITTING MACHINE FEED ROLL ARRANGEMENT
Karl Fingerle, Korb, and Gerd Lotzwik, Stuttgart, both of Fed. Rep. of Germany, assignors to Fortuna-Werke Maschinenfabrik GmbH, Stuttgart-Bad Canstatt, Fed. Rep. of Germany
Filed Sep. 28, 1978, Ser. No. 947,167
Int. Cl.[2] B26D *1/46*
U.S. Cl. 83—871 **7 Claims**



1. A band knife splitting machine with two superposed feed rolls and an endless moving band knife, characterized in that the two feed rolls are respectively journalled at the ends of two intersecting pivoting levers and the end of the lever for the lower feed roll is pivoted above the plane of cutting while the end of the lever for the upper feed roll is pivoted below the cutting plane.

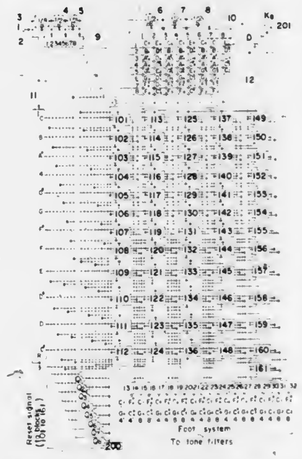
4,210,052
SCORING MECHANISM
Arnold R. Fisher, Laurinburg, N.C., assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Continuation of Ser. No. 795,069, May 9, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,480
Int. Cl.[2] B26D *3/08*
U.S. Cl. 83—881 **5 Claims**

1. In a scoring mechanism of the type mounted over a moving sheet of material and having an arm movable along a path lying in a plane extending normal to the surface and longitudinally along the path of the sheet material, the arm including a pair of axially aligned gauge wheels rotatably mounted thereon, the improvement comprising:
a. means connected to said arm for moving and maintaining said gauge wheels in continuous rolling engagement with the moving sheet of material;
b. a scoring tool mounted on said arm between said gauge wheels for movement relative thereto;
c. means mounted on said arm and connected to said scoring



tool, extending and retracting said scoring tool relative to said gauge wheels while the gauge wheels are maintained in continuous rolling engagement with the moving sheet of material whereby intermittent uniform score lines are precisely located and quickly produced in the moving sheet of material; and
d. means connected between said scoring tool and said extending and retracting means for adjusting the extension of said scoring tool relative to said gauge wheels.

4,210,053
ELECTRONIC MUSICAL INSTRUMENT
Takeji Kimura, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 3, 1979, Ser. No. 35,900
Claims priority, application Japan, May 4, 1978, 53-53331
Int. Cl.[2] G10H *1/00*
U.S. Cl. 84—1.01 **8 Claims**



1. In an electronic musical instrument of the type in which information of the actuation of keys is detected by scanning switch blocks for the keys so as to memorize and hold said information of actuation of the keys in electrical capacitances for developing output musical tones corresponding to said memorized information of the actuation of the keys, an improvement of said electronic musical instrument which comprises a first group of electrical capacitances which hold ana-

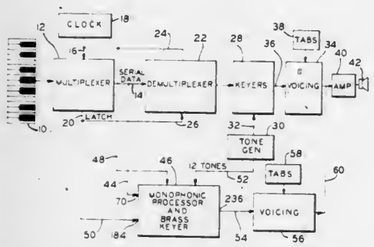
log values corresponding to the amplitudes of musical tones during the scanning period of said switch blocks for the keys, and a second group of electrical capacitances which memorize said analog values for a period sufficiently longer than the scanning period of said switch blocks of the keys after releasing depression of the keys so as to control musical tone envelopes by said second group of the electrical capacitances.

4,210,054

HIGH NOTE PRIORITY MONOPHONIC BRASS KEYER SYSTEM

Stephen L. Howell, Jasper, and Gary R. Fritz, Ferdinand, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed May 14, 1979, Ser. No. 38,388
Int. Cl.² G10H *1/02, 5/12*
U.S. Cl. 84—1.19 **31 Claims**



1. An electronic musical instrument comprising:
a keyboard,
multiplex means for scanning said keyboard and developing a polyphonic serial data stream containing keydown signals pertaining to depressed keys of the keyboard,
tone generator means capable of producing tones corresponding in pitch to the keys of the keyboard,
data processing means connected between said multiplex means and said tone generator means for receiving said polyphonic serial data stream and producing a monophonic data signal corresponding to a predetermined single one of the depressed keys of the keyboard regardless of the number of keys which are depressed,
said tone generator means being responsive to said monophonic data signal for developing on an output terminal a tone corresponding to said predetermined single key, and
control means connected to said tone generator means and responsive to the actuation of the predetermined single key for causing the amplitude and brilliance of the tone developed on the output terminal to increase with time so as to produce a brass tone.

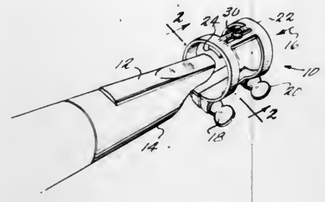
4,210,055

ADJUSTABLE LIGATURE FOR MUSICAL INSTRUMENT

Vito Platamone, Jr., 3504 49th St., Metairie, La. 70001

Filed Oct. 3, 1978, Ser. No. 948,294
Int. Cl.² G10D *9/02*
U.S. Cl. 84—383 R **13 Claims**

1. An adjustable ligature for mounting a reed on the mouthpiece of a woodwind instrument, said ligature comprising:
an adjustable clamp having a first manually adjustable member adapted to encircle and clamp together both said mouthpiece and said reed with an adjustable clamping pressure, said reed having a curved surface disposed outwardly towards said clamp and a flat surface disposed on a flat table portion of the mouthpiece;
a contact member having a plurality of spaced apart contact edges disposed within said clamp for contacting said curved surface of the reed at a plurality of contact points with adjustable pressure according to the adjustment of said clamp;
means having a second manually adjustable member adjustably connecting said contact member to said clamp and including a two-dimensional slot permitting two-dimensional relative movement between said clamp and said



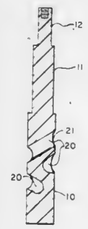
contact member and a locking member including said second manually adjustable member for positively maintaining any desired relative position of the clamp and contact member.

4,210,056

VALVE CONSTRUCTION FOR BRASS WIND INSTRUMENT

Ronald R. Ciccarelli, 5730 Howe St., Pittsburgh, Pa. 15232

Filed Jul. 11, 1978, Ser. No. 923,540
Int. Cl.² G10D *9/04*
U.S. Cl. 84—392 **8 Claims**



1. A piston valve for a valved wind instrument such as a trumpet, cornet or the like comprising a piston valve having portions of varying diameter including a ported lower piston portion having generally superposed transverse passages in sliding contact in a valve casing of said instrument and a piston rod portion fixed to said lower piston portion, said lower piston portion comprising a non-metallic lubrous, hydrophobic, non-swelling polymeric composition selected from the group consisting of thermoplastic and thermosetting polymeric compositions.

4,210,057

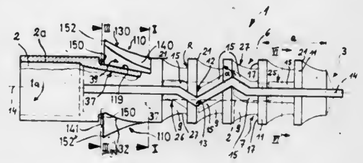
ANCHORING DOWEL WITH DETENT LUGS

Hermann Göring, Riegel; Hansjörg List, Waldkirch; Klaus Brunswig, and Winfried Labatzke, both of Emmendingen, all of Fed. Rep. of Germany, assignors to Upat GmbH & Co., Emmendingen, Fed. Rep. of Germany

Filed Oct. 5, 1977, Ser. No. 839,588
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2644963; Oct. 8, 1976, 2645432
Int. Cl.² F16B *13/02*
U.S. Cl. 85—83 **14 Claims**

1. An anchoring dowel comprising, in combination, an elongated body portion having a leading end, a trailing end and an outer circumferential surface which is curved in cross-section, said body portion also having substantially longitudinally extending slots at said leading end, which subdivide the latter into at least two spreading sections having respective projections and recesses of triangular configurations forming respective tips, said projections and recesses bounding said slots so

that the projections of one of said spreading sections extend into the respective recesses of the other of said spreading sections to give said slots zig-zagged configurations at least along a portion of the elongation of said slots, said leading end being provided with annular retaining collars having opposite circumferential edges, and intermediate portions therebetween, said projections and recesses being so located relative to the respective intermediate portions between said retaining collars that said respective tips are located on said circumferential edges of the respective annular collars; and at least one detent lug elastically yieldably connected to said body portion at a merger region and projecting outwardly beyond said outer



circumferential surface of said body portion at least in a relaxed condition, said lug having an outer concave face of a substantially saddle-shaped configuration which merges with said outer circumferential surface of said body portion at said merger region, an elongated side face commencing at and generally merging into a generatrix of said outer circumferential surface at its end which is closer to said leading end and having a concave configuration, and an arcuate end face extending from said merger region generally in a circumferential direction of said body porton and being curved in the same manner as said outer circumferential surface of said body portion.

4,210,058

BALANCED GATLING GUN

Robert E. Chiabrandy, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Sep. 25, 1978, Ser. No. 945,656
Int. Cl.² F41D *7/04*
U.S. Cl. 89—12 **9 Claims**



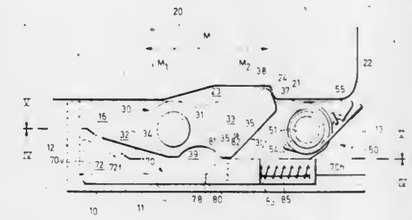
1. A gun having a longitudinal axis and including:
a gun housing,
a rotor journaled for rotation relative to said housing about said longitudinal axis and having a first plurality of gun barrels and a like plurality of gun bolts;
each of said gun bolts journaled to said rotor for longitudinal reciprocation relative to a respective gun barrel, a cycle of operation of each of said gun bolts including a full cycle of reciprocation, forwardly and aftwardly;
a main cam journaled for rotation relative to said rotor about said longitudinal axis and coupled to each of said gun bolts for driving each of said gun bolts through full cycles of reciprocation;
said main cam having a configuration such that a full cycle of reciprocation of each of said first plurality of gun bolts requires a second plurality of revolutions of said main cam.

4,210,059

SERVO-RELEASE MECHANISM

Gerhard Munn, Meerbusch, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,643
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742241
Int. Cl.² F41D *11/02*
U.S. Cl. 89—132 **6 Claims**



1. In an automatic firearm having a reciprocally movably mounted breech body with a catch surface, an improved servo-release mechanism, comprising in combination,
a catch lever rockably mounted in said firearm and having a first arm adapted to be selectively moved to a first catch position and a second firing position,
mechanical control means including an adjusting member slidably movably mounted in said firearm between first and second end positions and kinetic energy absorption means for receiving and storing a portion of the recoil kinetic energy of said breech body and imparting at least a portion of said stored kinetic energy to said adjusting member; said kinetic energy absorption means including an energy storing coil spring means and means associated with said coil spring means for selectively locking said coil spring means after said portion of said kinetic energy had been stored therein and selectively releasing said coil spring means to impart it onto said adjusting member;
said breech body having a first contact surface adapted to coact with said first arm of said catch lever and said adjusting member having second and third contact surfaces adapted to coact respectively with said first and second arms of said catch lever, said coaction between said second contact surface of said adjusting member and said first arm positioning said first arm in the catch position when the adjusting member is in the proximity of its first end position and the coaction between said third contact surface of said adjusting member and said second arm positioning said first arm in the firing position when the adjusting member is in the proximity of its second end position;
said energy absorption means having a second member adapted to coact with the recoiling breech body and a first member adapted to transmit the energy received from the recoiling breech body to said adjusting member.

4,210,060

GAS OPERATED AUTOMATIC WEAPON

John S. Donovan, 16503 Santa Rosa, Detroit, Mich. 48221

Continuation-in-part of Ser. No. 829,716, Sep. 1, 1977, abandoned. This application Feb. 1, 1978, Ser. No. 874,114
Int. Cl.² F41D *5/04*
U.S. Cl. 89—192 **11 Claims**

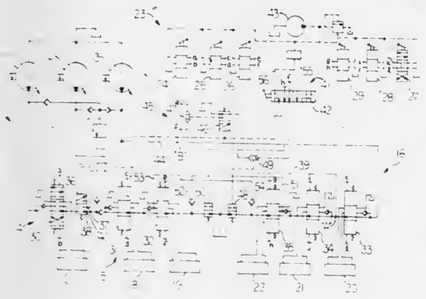
6. In an automatic weapon of the type having a bolt aseembly reciprocable within a receiver frame to extract and ram successive cartridges fed into a weapon barrel chamber, and further including a bolt locking mechanism adapted to lock said bolt assembly in position with a cartridge in said chamber,

said bolt assembly being operated by gas pressure developed in said weapon barrel bore and exerted on the bolt extraction spring compressed during firing of the automatic weapon with a subsequent bolt extraction by the extension of the bolt extraction spring, the improvement comprising:



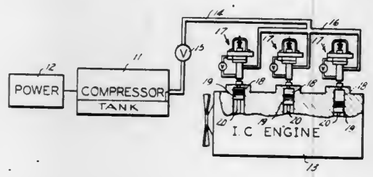
means for momentarily releasing the spring pressure exerted on said bolt assembly immediately after firing of said ammunition round so as to reduce the pressure exerted on said bolt locking means during bolt unlocking.

4,210,061
THREE-CIRCUIT FLUID SYSTEM HAVING CONTROLLED FLUID COMBINING
Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 746,978, Dec. 2, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 956,169
Int. Cl.[2] F01B *25/02*
U.S. Cl. 91—6 **13 Claims**



1. In a fluid system having at least one pressurized fluid source serving a first, second, and third fluid circuit, said first circuit having a work element and each of said second and third circuits each having a plurality of work elements and control means connected to each respective work element for selectively, controllably passing fluid to and from said work element, said control means of each of said second and third circuits being connected in interruptible series with the control means of the same circuit, the improvement comprising:
delivering means for delivering excess fluid from the third circuit to a preselected work element of the second circuit in response to actuation of said control means connected to said preselected work element; and
diverting means movable between a first position at which excess fluid delivered from the fluid source to the first circuit is delivered to the second and third circuits and a second position at which excess fluid delivered to the first circuit is diverted to only preselected work elements of the third circuit and said delivering means in a preselected order.

4,210,062
AIR CONVERSION FOR INTERNAL COMBUSTION ENGINES
Edward J. Plesko, 8362 Ransom Rd., Ashley, Mich. 48806
Continuation of Ser. No. 704,397, Jul. 12, 1976, abandoned. This application Aug. 14, 1978, Ser. No. 933,870
Int. Cl.[2] F01B *29/04*
U.S. Cl. 91—54 **6 Claims**



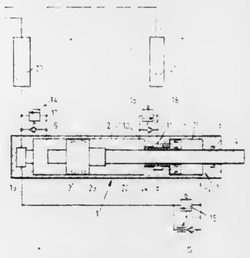
1. A conversion unit replacing spark plugs of a piston engine for operating the engine on pressurized gas, the engine having a plurality of pistons reciprocable in a compression stroke and an exhaust stroke in respective cylinders, the unit comprising:
a source of compressed gas;
a housing having a flow passage therethrough;
an inlet port connected to said source and communicating pressurized gas from said source of pressurized gas into said housing;
a drive valve in said housing opening and closing to flow of said pressurized gas through said housing;
a sensor responsive to pressure down-stream of said drive valve and operably connected to said drive valve; and
an outlet from said housing connected into the cylinder of a piston engine, above the piston, said outlet in communication with said sensor and said pressurized gas when said drive valve is open, said sensor causing said drive valve to open on the compression stroke of the pistons and to close on the exhaust stroke of said piston whereby the flow of said compressed gas is automatically timed.

4,210,063
FLUID POWER DEVICE
William C. Grossman, 4274 Briarwood Way, Palo Alto, Calif. 94303
Filed Jan. 10, 1979, Ser. No. 2,428
Int. Cl.[2] F01B *15/00*
U.S. Cl. 91—196 **10 Claims**



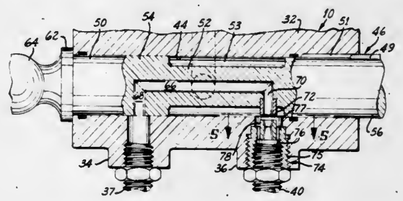
1. A fluid actuated power device comprising: a tubular shaft; a tubular cylinder shiftably mounted on the shaft for reciprocation along the length thereof; means coupled with the shaft and the cylinder for dividing the cylinder into two chambers which vary in volume as a function of the movement of the cylinder relative to the shaft; means coupled with the cylinder for rotating the same only in one direction about the shaft as the cylinder reciprocates relative thereto; means coupled with the shaft for admitting a fluid under pressure alternately into the chambers to cause the cylinder to reciprocate relative to the shaft; and means coupled with the cylinder for converting the reciprocal motion of the cylinder to rotational motion.

4,210,064
METHOD AND DEVICE FOR BRAKING THE SPEED OF MOVEMENT OF THE PISTON OF A PLUNGER-CYLINDER DEVICE
Josephus J. Beerens, Liempde, Netherlands, assignor to Hydraudyne B.V., Boxtel, Netherlands
Filed Jan. 10, 1978, Ser. No. 868,316
Claims priority, application Netherlands, Jan. 10, 1977, 7700188
Int. Cl.[2] F15B *15/22;* F01B *11/02*
U.S. Cl. 91—394 **7 Claims**



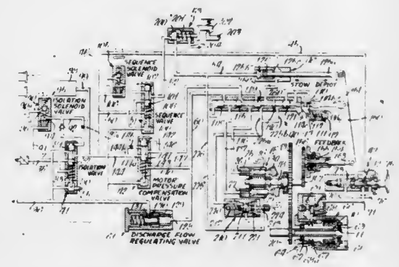
1. The method of braking the speed of movement of the piston of a plunger/cylinder device upon the approach of the end of the stroke of said piston, which comprises the steps of:
(a) trapping fluid ahead of said piston as the end of stroke is approached whereby predetermined pressure build-up of fluid occurs ahead of said piston thereby to brake movement of the piston; and
(b) during step (a), commencing drive movement of a second piston in a separate piston/cylinder device by intercepting the movement of the first piston and compressing fluid ahead of the second piston in the separate piston/cylinder device whereby the braking force on the first piston is divided between the fluid pressures being built up within both devices so that the cylinder of neither device is subjected to excessive fluid pressure.

4,210,065
VALVE FOR CONTROLLING A FLUID PRESSURE OPERATED DEVICE
Ralph E. Switzer, 44 E. Roanoke #8, Phoenix, Ariz. 85004
Filed Sep. 27, 1978, Ser. No. 946,381
Int. Cl.[2] F15B *13/04*
U.S. Cl. 91—469 **10 Claims**



1. A two position slide valve for handling a fluid under pressure comprising:
(a) a housing having a bore formed therethrough with a fluid inlet port, a fluid outlet port and a working port communicating with that bore;
(b) a venturi in the fluid outlet port of said housing, said venturi being of smaller diameter than the fluid outlet port to provide a venturi portion and an evacuation portion therein;
(c) a slide pin axially movable in the bore of said housing and configured to provide a fluid chamber in that bore, said slide pin having a fluid passage formed therein;
(d) said slide pin movable to a first position which locates the fluid chamber provided thereby in communication with the fluid inlet and the working ports of said housing so that when the fluid under pressure is supplied to the fluid inlet port of said housing that fluid will flow through the fluid chamber provided by said slide pin; and
(e) said slide pin movable to a second position which locates the fluid chamber provided thereby in communcation with the working port and the fluid outlet port of said housing and locates the fluid passage of said slide pin so that it aligns with and extends between the fluid inlet and the fluid outlet ports of said housing so that when the fluid under pressure is supplied to the fluid inlet port of said housing that fluid will flow through the fluid passage of said slide pin and will flow through said venturi causing a reduction in static pressure proximate the fluid outlet port of said housing to evacuate the fluid chamber provided by said slide pin.

4,210,066
POWER DRIVE UNIT
Allyn M. Aldrich, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Apr. 26, 1978, Ser. No. 900,312
Int. Cl.[2] F01B *13/04;* F04B *1/30*
U.S. Cl. 91—506 **15 Claims**

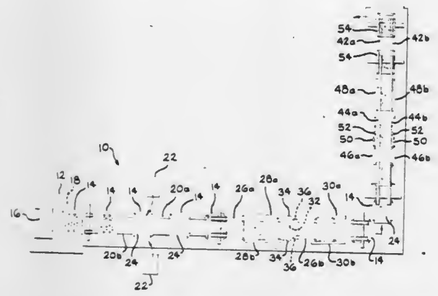


1. A power drive unit for imparting two-directional drive to a thrust reverser mechanism with different torque demands in different cycles of operation including low torque and high speed in a deploy cycle and high torque and low speed in a stow cycle comprising, a two-direction variable displacement hydraulic motor with a displacement-varying means, a control cylinder having a piston connected to said displacement-varying means, a first circuit connected to said motor and including a valve for controlling the direction and volume of hydraulic flow to the motor and providing the same full rate of flow to said motor at the beginning of each of said cycles, and a second circuit connected to said control cylinder and including valve means operable independently of said valve for establishing the position of the piston in the cylinder at the beginning of each cycle to control the position of said displacement-varying means and have a minimal motor displacement for starting the deploy cycle and a maximum displacement for starting the stow cycle.

4,210,067
METHOD OF AND APPARATUS FOR MAKING AIR FILTERS
Alton Evans, Jr., Utica, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Oct. 2, 1978, Ser. No. 947,385
Int. Cl.[2] B31B *1/26;* B01D *46/10*
U.S. Cl. 93—1 F **2 Claims**

2. A method of making an air filter comprising placing an air filter mat on a paperboard filter frame blank, doubly folding

each of a first pair of opposite edge portions of the blank upwardly to provide a pair of upper and lower inner folded portions between an upper outer folded portion and the unfolded portion of the blank, gluing the inner end portion of the lower inner folded portion to the mat at each of a first pair of opposite edge portions of the mat, gluing the outer end portions of the upper outer folded portions of the doubly folded first pair of opposite edge portions directly to the unfolded portion of the blank respectively adjacent their junctures



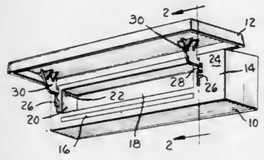
therewith, doubly folding each of a second pair of opposite edge portions of the blank upwardly to provide a pair of upper and lower inner folded portions between an upper outer folded portion and the unfolded portion of the blank, gluing the inner end portion of the lower inner folded portion to the mat at each of a second pair of opposite edge portions of the mat, and gluing the outer end portions of the upper outer folded portions of the doubly folded second pair of opposite edge portions directly to the unfolded portion of the blank respectively adjacent their junctures therewith.

4,210,068

BAG SEALER LID ASSEMBLY

Fred E. Baker, Asheboro, N.C., assignor to General Electric Company, New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,025
Int. Cl.² B31B *1/64*; E05D *11/10*
U.S. Cl. 93—8 R **3 Claims**



1. In a home bag sealer of an integral molded elongated box housing with an opening for supporting a roll of bag material and a rear pivoted lid on the housing to close the opening, a heater along the opening operative on lid closing to seal a bag, the improvement in the lid assembly comprising,

a wall at each end of the opening,

a bearing aperture in each wall adjacent the opening at the pivot axis,

a flat front wall enclosing the upper surface of the housing around the opening,

an elongated slot in the flat wall adjacent and parallel to each end wall opposite the opening,

sized means on an end wall projecting away from the opening and offset of said apertures,

a pair of axially flexible spaced bellcranks connected to the lid with a free arm directed to the rear thereof and spaced for said arms to snugly enter said slots, and

a pivot on each arm end directed towards and received in said apertures to pivot the lid,

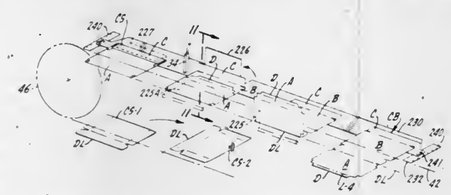
whereby the cranks are biased apart to enter the slots and apertures to block the lid open by the sized projection means contacting an arm preventing pivoting, the lid being closed by rotation, temporarily spreading the cranks axially to ride over the projecting means as the arms enter the slots.

4,210,069

FOLDING AND GLUING A SCORED CARTON BLANK

George L. Meyers, Ashland, Ohio; Frederick C. Seiden, Holmes Beach, and Lonnie J. Waller, Sarasota, both of Fla., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 25, 1978, Ser. No. 954,402
Int. Cl.² B31B *1/26*
U.S. Cl. 93—36 M **10 Claims**



1. A method of forming a folded, glued carton shell from a flat blank and locating the shell in a pre-break station in position to be fed to the supply magazine of a cartoner machine in which the shells, after being erected, are filled while moving along a predetermined filling path, comprising the steps of:

A. stacking the flat blanks at a carton blank supply station, each blank having a pair of panels separated by a pair of score lines located between the panels and also having two spaced apart side seam glue flaps each joined by a score line to a respective one of the panels;

B. separating the lower-most one of the carton blanks in the stack by vacuum draw down, releasing the vacuum and picking up the carton blank by an articulated clamp fastened to an endless chain which moves the carton blank along a folding path parallel to the filling path of the cartoner machine;

C. progressively folding the blank, as it is moved along the folding path, along selected of the score lines to present the two panels in opposed juxtaposition and to overlap the side seam panels while gluing them to one another, thereby completing the carton shell;

D. inverting the chain flight to invert the glued shell and thereafter pivoting a part of the articulated clamp to turn the shell about a horizontal plane into a pre-break station where a datum line of the shell is oriented to a datum line of the cartoner;

E. releasing the glued shell from the clamp at the pre-break station and then squeezing the shell to break it at two remaining score lines;

F. and delivering the broken shell from the pre-break station along a path the projection of which coincides with the carton supply magazine of the cartoner machine.

4,210,070

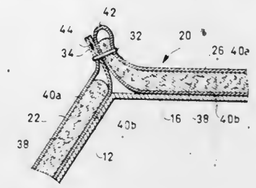
CEILING FIXTURE WITH THERMAL PROTECTION

James R. Tatum, 20 Winterton Dr., Islington, Ontario, and Barry R. Dayus, 2021 Ardleigh Rd., Oakville, Ontario, both of Canada

Filed Mar. 6, 1978, Ser. No. 883,952
Int. Cl.² F24F *7/00*
U.S. Cl. 98—40 D **10 Claims**

1. A thermal barrier material for the on-side fabrication of a

thermal shield in a ceiling structure over a fixture therein and which material is formed of a plurality of separate layers in surface to surface contact, the surface of each layer being unbonded to the surface of the next adjacent layer, and comprising an intermediate layer formed of a non-woven felt-woven flexible pad of non-flammable and frangible batting of fibrous ceramic material and two outer sleeve layers of panels



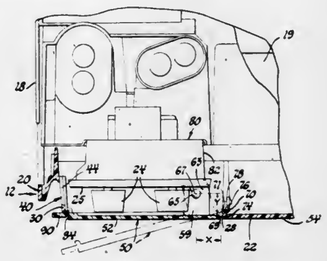
of a flexible, structurally durable synthetic fibrous woven non-flammable material, to form a protective flexible sleeve around said batting and means fastening said sleeve layers together at spaced intervals, and securing said batting layer in surface to surface contact therebetween but said surfaces being unbonded to one another to provide a flexible material adapted to drape over a said fixture and conform thereto.

4,210,071

MOUNTING FOR ROOM AIR CONDITIONER ACCESS DOOR

John H. Loos, Dayton, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Dec. 4, 1978, Ser. No. 965,902
Int. Cl.² E06B *7/02*; F25D *23/12*
U.S. Cl. 98—94 AC **2 Claims**



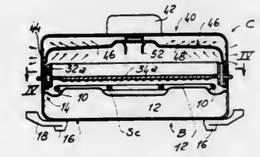
1. A self-contained room air conditioner unit including an outer shell having a room side section with a control area thereon enclosed by housing means, a front cover assembly having a peripheral rectangular frame connected on said shell room side, a generally flat flexible baffle panel vertically disposed on said frame having a decorative outer face, said baffle panel having one free side edge spaced from one vertical side portion of said frame defining with opposed top and bottom frame portions an opening providing access to said control area, a door having a decorative outer face conforming with said panel face normally closing said access opening, wherein said door decorative outer face is positioned in substantially co-planar relation with said panel outer face; hinge means pivotally mounting said door on said opposed top and bottom frame portions, means for maintaining said door in its closed position, said hinge means aligned on a vertical pivotal axis spaced a predetermined distance from a vertical edge of said door, whereby upon said door being opened its decorative face is pivoted rearwardly to a location normally resulting in contact with said panel free edge, an L-shaped angle extension formed at said vertical door edge substantially coextensive therewith and disposed with a first leg of said L-shaped angle extension defining a recessed shoulder positioned sufficiently offset from the outer face of said door so as to underlie said panel free edge when the door and panel are in said co-planar relation to limit inward flexing of said panel while concealing from view said L-shaped angle extension, the second leg of said L-shaped angle extending rearwardly from said first leg, whereby upon the opening of said door said L-shaped angle extension second leg being movable into engagement with a portion of said control area housing means to positively limit the pivotal location of said door to a predetermined location short of said normal location thereby obviating contact of said door outer decorative surface with said panel free edge.

4,210,072

PORTABLE COOKING APPARATUS SUITABLE AS AN OVEN OR AS A GRILL

Ivano Pedrini, Via dei Mille, 22-S Giuliano Milarese (Milano), Italy

Filed Jul. 14, 1978, Ser. No. 924,845
Claims priority, application Italy, Feb. 2, 1978, 19925 A/78; Apr. 3, 1978, 21936 A/78
Int. Cl.² A47J *37/06*
U.S. Cl. 99—340 **8 Claims**



1. A portable cooking apparatus comprising a base, horizontal heating means located in said base, a cooking plate adapted to be heated by said horizontal heating means, said apparatus being used in a first position of said cooking plate as an oven and in a second position of said cooking plate as a grill, cover means adapted to cover said plate so as to leave a gap above said plate, said plate having raised edges, which project vertically to engage said cover means, said cover means having means for the escape of the vapors, said plate being provided perimetrically in said raised edges with conduit means, said plate having a first essentially flat surface and a second ribbed surface, said conduit means having a shape which allows direct circulation of hot air from said heating means to the food placed on the flat surface of the plate when the plate is used in said first position, said plate being invertible and being selectively used in said first position as an oven and in said second position as a grill, the food being placed on said ribbed surface of the plate when the apparatus is used in said second position, heat being transmitted by radiation and conduction through said plate in said first position and the hot air being inhibited from rising through said conduit means in said second position.

4,210,073

PORTABLE ENVIRONMENTAL CHAMBER

Margaret R. Weiss, 1508 Greenbrier Dr., Elkhart, Ind. 46514

Continuation of Ser. No. 793,597, May 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 616,175, Sep. 24, 1975, abandoned. This application Dec. 26, 1978, Ser. No. 972,826
Int. Cl.² A21C *13/00*; A21D *8/02*
U.S. Cl. 99—483 **5 Claims**

1. A portable environmental chamber for home food preparation and processing uses comprising

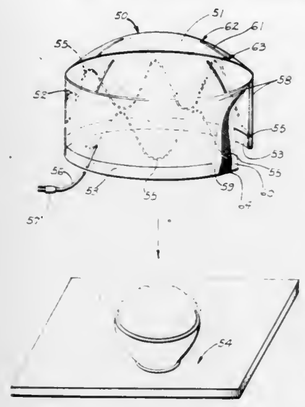
(a) a continuous, upstanding wall member consisting of a laminate having an outer and inner layer of plastic foil with a scrim held between said layers;

(b) a cover member associated with said wall member to

define, in combination, a closure having a single, planar opening,

said closure, when disposed on a flat supporting surface, forming with said surface a totally enclosed chamber,

said wall and cover members being composed of flexible material whereby said closure is collapsible; and



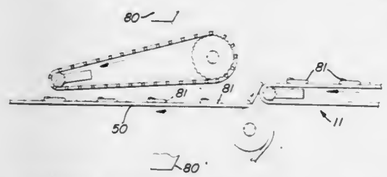
(c) an electrical resistance wire heating means attached to said scrim in said wall member in a substantially evenly distributed pattern for providing a substantially uniform controlled radiation of heat into said enclosed chamber whereby a constant predetermined temperature can be attained within said chamber.

4,210,074

CONDIMENT APPLYING APPARATUS ANDMETHOD

Clyde R. Laughman, Blittner Ave. & W. Chestnut St., Hanover, Pa. 17331

Filed Feb. 27, 1978, Ser. No. 881,376
Int. Cl.² A21C *9/04*
U.S. Cl. 99—494 **5 Claims**



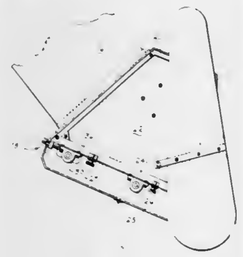
1. Condiment applying apparatus comprising a first conveyor for feeding articles to be condimented, a condiment dispenser downstream of said first conveyor for gravitationally dispensing condiment, a second conveyor downstream of said first conveyor beneath said condiment dispenser positioned with its upstream end adjacent to the discharge end of said first conveyor for receiving articles directly without inversion from said first conveyor and conveying the articles without inversion beneath said dispenser for application of condiment to the upper side of the articles and collection of condiment on said second conveyor, a third conveyor interposed beneath said dispenser and over said second conveyor and of an open-work construction for direct gravitational falling therethrough of the condiment onto said second conveyor, and mounting means mounting said second and third conveyors for movement shifting said third conveyor to a position with its upstream end adjacent to the discharge end of said first conveyor for receiving articles directly without inversion from said first conveyor with the articles receiving condiment directly from said condiment dispenser on their upper side said condiment passing from said articles and said dispenser through said third conveyor to be collected on said second conveyor and said second conveyor being shifted to a position directly receiving the articles from the third conveyor without inversion said articles having condiment applied to its underside from said condiment collected on said conveyor, so that condiment is selectively applied to one or both sides of the articles.

4,210,075

BOTTOM FOR LINT FEEDER HOUSING

Richard E. Jackson; Robert C. Schwartz, and John E. Sparks, all of Lubbock, Tex., assignors to Horn and Gladden Lint Cleaner Company, Inc., Lubbock, Tex.

Filed Nov. 20, 1978, Ser. No. 962,137
Int. Cl.² B30B *15/30*
U.S. Cl. 100—35 **3 Claims**



3. In a plant for processing fibrous material having

a. a condenser to condense fiber into a batt,

b. a batt chute to move the batt from the condenser to

c. a feeder having:

(i) a pair of main structural members extending forward and down,

(iii) at least two axles journalled to

(iii) bearings,

(iv) said axles extending through rollers,

(v) a belt trained around said rollers, and

d. a press receiving batt from the feeder, the method of replacing said belt when worn comprising the steps of:

e. lowering a bottom from said main structural members,

f. dropping the rollers, axles and bearings as a unit from the main structure member, then

g. removing the worn belt,

h. installing a new belt,

j. raising the rollers, axles and bearings back up to the bottom of the frame of the main structural members, then

k. raising the bottom to the main structural members.

4,210,076

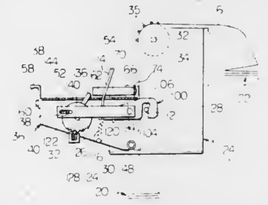
PRINTING APPARATUS

Takahiro Yamamoto, and Kazuo Sugano, both of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed May 24, 1978, Ser. No. 909,106
Claims priority, application Japan, May 25, 1977, 52/61667
Int. Cl.² B41J *1/20*
U.S. Cl. 101—111 **12 Claims**

1. A printing apparatus having lateral and fore-and-aft dimensions and including a stationary structure, a plurality of printing hammers arranged in a row within said stationary structure in a direction substantially parallel with the lateral dimension of the apparatus, a tiltable structure positioned in front of said stationary structure and rotatable about an axis of rotation which is substantially parallel with said lateral dimension and which is fixed with respect to said stationary structure, and a type carrier movable on said tiltable structure and having a substantially straight travelling path located in front of said row of printing hammers and substantially parallel with said lateral dimension, wherein the improvement comprises

position retaining means constantly engaging both said stationary structure and said tiltable structure and operable for retaining said tiltable structure in an operative position having said travelling path of said type carrier located adjacent to said row of printing hammers for forming an elongated clearance between and in parallel with said travelling path and said row of printing hammers and an inoperative position downwardly inclined about said axis of rotation away from said stationary structure, cam means engaging said stationary structure through said position retaining means and rotatable relative to said tiltable structure about an axis of rotation which is fixed with respect to said tiltable structure and which is substantially parallel with said axis of rotation of said tiltable structure, said position retaining means rotatable about an axis substantially parallel and movable with respect to said axis of rotation of said cam means between a first angular position engaging said



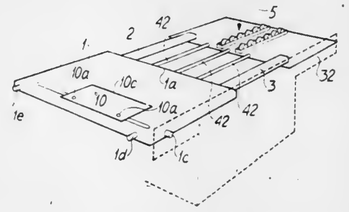
stationary structure through one portion of said position retaining means and holding said tiltable structure in said operative position thereof and a second angular position engaging said stationary structure through another portion of said position retaining means and allowing said tiltable structure to move into said inoperative position thereof, and clearance adjusting means mounted on said tiltable structure and securely connected to said cam means for rotation about said axis of rotation of said cam means, said clearance adjusting means being manually operated for driving said cam means to produce rotation thereof, the engagement between said cam means and said position retaining means being such that when said cam means is turned about its said axis of rotation said cam means is operative to urge said position retaining means to move relative to said tiltable structure in a direction substantially parallel with said fore-and-aft dimension when said position retaining means is in said first angular position.

4,210,077

PRINTING MACHINE

Nils A. E. Lindström, Rönninge, Sweden, assignor to Svecia Silkcreen Maskiner AB, Sweden

Filed Jan. 18, 1978, Ser. No. 870,587
Int. Cl.² B05C *17/08*
U.S. Cl. 101—126 **12 Claims**



1. A printing machine of the type having a stencil and a squeegee associated therewith which is intended to press printing ink from said stencil upon a material to be printed, said printing machine comprising:

a frame;

a reciprocatingly movable printing table supported by said frame which is movable between a first position wherein said material to be printed is placed on said table and a second position wherein said material is printed upon;

registering means in said movable printing table which coacts with corresponding registering means in the material to be printed to position said material relative to said printing table;

means to lift the leading edge of the material to be printed from the printing table during movement of said table from said second position to said first position to disengage the material from the registering means in said table;

means to discharge said material from said printing table; and

stop means spaced from said table and fixedly attached to said frame and arranged to engage the leading edge of the material to be printed after said leading edge is lifted from the table, said stop means stopping the movement of said material upon engagement with said leading edge while continued movement of said printing table from said second position to said first position causes the table to move from beneath the material so as to remove the material from said printing table and causing the material to be brought into cooperative engagement with said discharge means.

4,210,078

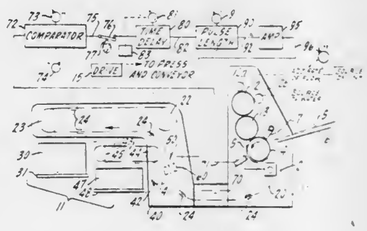
APPARATUS FOR USE ON PRINTING PRESSES TO INSURE OPTIMUM COLOR DENSITY AND TO ASSIST IN MAKING CORRECTIVE ADJUSTMENT

Harry Greiner, Offenbach, and Friedrich Preuss, Sprendlingen, both of Fed. Rep. of Germany, assignors to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 856,271, Dec. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 608,190, Aug. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 589,948, Jun. 24, 1975, abandoned. This application Feb. 27, 1979, Ser. No. 16,324

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1974, 2430212

Int. Cl.² B41F *21/08*
U.S. Cl. 101—136 **1 Claim**



1. In an apparatus for use on printing presses having means for varying rate of ink flow to insure optimum color density and to assist in making corrective adjustment, the combination comprising means for continuously feeding sheets from a press, means defining a main delivery pile and an auxiliary delivery pile, means including a main conveyor having grippers thereon and a feed side for normally conveying the sheets along the feed side from the source to the main delivery pile for depositing thereon, the main conveyor having a transfer station at the feed side, means including an auxiliary conveyor having grippers thereon for conveying sheets from the transfer station to the auxiliary delivery pile for depositing thereon, a transfer mechanism at the transfer station for operating the grippers at the transfer station in (1) a normal mode in which a sheet is delivered to the main delivery pile and (2) a transfer mode in which the grippers at the transfer station transfer the sheet to the auxiliary conveyor for depositing on the auxiliary delivery pile, a power actuator for shifting the transfer mechanism from

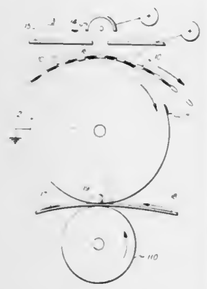
the normal mode to the transfer mode, means including a scanning device arranged upstream from the transfer station for scanning the printed image on each passing sheet and for producing a color density output signal which varies in accordance with the color density of the printed image on the sheet, a comparator having an input terminal connected to the scanning device and having an output terminal, the comparator having upper and lower reference devices coupled to the input terminal and having unlike reference settings to define between them a tolerance range, the comparator having means for (a) producing a control signal on the output terminal when the color density signal at the input terminal is above that for which the upper reference device is set thereby to identify a sub-quality sheet and for (b) producing a control signal on the output terminal when the color density signal at the input terminal is below that for which the lower reference device is set thereby to identify a sub-quality sheet while producing a null signal at the output terminal when the color density signal is within the tolerance range, the output terminal of the comparator being coupled to the actuator for triggering the same by the control signal, a time delay device effectively in series with the comparator for delaying the control signal thereby to delay the triggering of the power actuator until just prior to the arrival of the sub-quality sheet at the transfer station so that the sub-quality sheet is transferred to the auxiliary conveyor for deposit upon the auxiliary delivery pile, and means for adjusting the signal level of the reference devices in the comparator to vary the range of tolerance of the acceptable copies which are deposited upon the main delivery pile while copies both above and below this range are deposited together on the auxiliary delivery pile, the density condition and rate of deposit of sheets on the auxiliary pile giving constant instruction to the pressman as to the direction and degree of any corrective change required in rate of ink flow.

4,210,079
ADVANCING CYLINDER FOR USE IN A PRINTING MACHINE
Karl Raes, Kantstr. 4, D-6201 Eppstein-Bremthal, Fed. Rep. of Germany
Filed May 1, 1978, Ser. No. 902,097
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719404
Int. Cl.[2] B41F *21/04;* **B65H** *5/12, 5/14*
U.S. Cl. 101—242 **24 Claims**



1. In an offset printing machine, a combination comprising a support; means for guiding a leading edge of a respective sheet to be advanced through and printed upon in the printing machine to a predetermined location of said support; an advancing cylinder mounted on said support for rotation in a given direction about a rotary axis and having a periphery which moves past said location during the rotation of said advancing cylinder, and a hollow interior which opens onto said periphery; and means for transferring the respective sheet to a predetermined position on said periphery, including a rocking component having a first gripping surface rigidly connected thereto, means for mounting said rocking component in said hollow interior for pivoting in and opposite to said direction relative to said advancing cylinder about a pivot axis offset toward said periphery from and parallel to said rotary axis, in a range between a first terminal position in which said first gripping surface is substantially flush with said periphery, through an intermediate position in which said first gripping surface is above said periphery, and a second terminal position in which said first gripping surface is below said periphery, means for pivoting said rocking component in said range, including a cam track which is stationary with respect to said support and extends about said rotary axis, and a cam follower on said rocking component which follows said cam track and pivots said rocking component in said range in dependence on the configuration of said cam track, a gripping component having a second gripping surface and mounted on said rocking component for tilting relative thereto about a tilting axis to and from a gripping position in which said first and second gripping surfaces grip the respective sheet between themselves, and means for tilting said gripping component as a function of the pivoting movement of said rocking component in said range relative to said advancing cylinder.

4,210,080
IMAGING METHOD AND APPARATUS
Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 30, 1978, Ser. No. 873,296
Int. Cl.[2] G01D *5/44*
U.S. Cl. 101—426 **23 Claims**

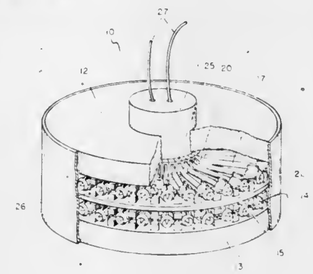


1. A method for marking a conductive imaging surface with a liquid ink, the method comprising:
(a) providing an electrically insulating screen;
(b) loading the openings in the screen with a liquid ink in a meniscus configuration;
(c) positioning the screen adjacent a conductive imaging surface;
(d) delivering charge to the ink held in selected openings so that the charged ink is drawn into marking contact with the conducting imaging surface by the attractive forces therebetween.

4,210,081
PLANOGRAPHIC PRINTING PLATE AND PROCESS FOR MAKING THE SAME
John H. Croker, Broxbourne, England, assignor to Gastetner Limited, London, England
Filed May 10, 1978, Ser. No. 904,930
Claims priority, application United Kingdom, May 12, 1977, 20041/77
Int. Cl.[2] B41N *3/00;* **G03F** *7/10*
U.S. Cl. 101—465 **13 Claims**

1. A process for the production of a planographic printing plate which comprises the steps of
(1) depositing on a support sheet a layer of an aqueous mixture having a pH of 2 to 5.5 consisting, in solution, a hydroxyl group-containing polymer free from acid groups, an insolubilising agent, and a synthetic organic polymer containing free acid groups, and thereafter
(2) evaporating the water from the deposited layer.

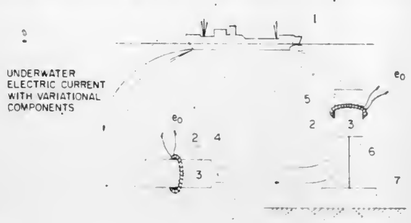
4,210,082
SUB PROJECTILE OR FLECHETTE LAUNCH SYSTEM
Jack Brothers, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jul. 30, 1971, Ser. No. 168,504
Int. Cl.[2] F42B *23/00*
U.S. Cl. 102—8 **3 Claims**



1. An explosive launcher for and including sub-projectiles which comprises:
means for explosively generating a radially directed explosive plane wave including selective initiating means,
a plurality of spaced apart plate members extending radially from and coaxial with said generating means;
said sub-projectiles disposed and sandwiched intermediate adjacent of said plates and oriented for releasable radial flight,
means for supporting said plates and said sub-projectiles, and
pusher means intermediate said sub-projectiles and said generator means for transmitting the thrust forces generated to said sub-projectiles and thereby launching the same,
wherein said sub-projectiles are flechettes each having a slender cylindrical body portion terminating at one end in a point and at the opposite end in a rearwardly divergent flattened portion, and a fin-assembly coaxially disposed about said body for sliding movement thereabout, said flechettes supported for and directed in an outward radial direction with said fin assembly disposed proximate said one end.

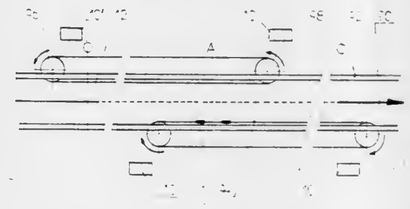
4,210,083
UNDERWATER ELECTRIC CURRENT AND ALTERNATING MAGNETIC FIELD DETECTOR
Donald F. Ream, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Division of Ser. No. 295,142, Jun. 23, 1952. This application Jul. 6, 1960, Ser. No. 45,616
Int. Cl.[2] F42B *21/38, 21/48*
U.S. Cl. 102—18 M **5 Claims**

1. A device for detecting underwater electrical currents comprising a member having a cylindrical body portion and electrical conducting end caps secured thereto, an elongated electrical conducting member electrically joining said end caps, toroidal detector coil means inductively coupled to said conducting member for inducing voltage in said coil means by electrical current in said conducting member, annular laminated core means for said coil means for supporting said coil means in encircling relationship to said conducting member, means for concentrating in said conducting member varying magnitude underwater direct electrical currents generated from a vessel by interrupted galvanic action of its propeller and conducted by water means from the vessel to said conducting member, and a firing circuit electrically connected to said coil



means for detonating an explosive upon electrical activation of said firing circuit by the induced voltage in said coil means upon concentration in said conducting member of the currents produced by the vessel.

4,210,084
ANTI-COLLISION DEVICE FOR PASSIVE VEHICLES
Patrick Peltie, Grenoble, France, assignor to Poma 2000 S.A., Grenoble, France
Filed Jul. 18, 1978, Ser. No. 925,823
Claims priority, application France, Aug. 4, 1977, 77 24153
Int. Cl.[2] B61B *7/00*
U.S. Cl. 104—178 **6 Claims**



1. An anti-collision device for a transport installation with passive vehicles running on a track equipped with a means of propulsion of the vehicles from the track, the latter being subdivided into sections, an upper section and a lower section, each equipped with an individual means of propulsion controlling the travel of a vehicle engaged on the section, an upper section being followed by a lower section, the terms upper and lower being defined in relation to the direction of circulation of the vehilces, comprising means equipping an upper section of the track for measuring and for the elaboration of continuous signals representing the position X_2 and speed V_2 of the vehicle engaged on the section and means equipping the lower section adjacent to the said upper section for measuring and for the elaboration of a continuous signal of the position X_1 of the vehicle engaged on the lower section, and a processing and signalling unit receiving the said signals X_2 V_2 X_1 having means to indicate parameters of the installation influencing the catching up of the vehicles comprising means to indicate the length L of a vehicle and means to indicate the deceleration Γ capacity of a vehicle, the said processing and signalling constituting means to signal a risk of collision when the spacing between the vehicles $X_1 - X_2 - L$ is equal to or smaller than the emergency braking capacity of the upper vehicle at a velocity V_2.

4,210,085

FOLDING ARTICLE OF FURNITURE

Robert C. McLravy, II, 505 Richard Ave., Lansing, Mich. 48917, and Michael F. Zakowski, 906 Miner, Ann Arbor, Mich. 48103

Filed Jun. 14, 1977, Ser. No. 791,999
Int. Cl.[2] A47B *3/00*
U.S. Cl. 108—35 **9 Claims**



1. A collapsible table comprising:

(a) a rigid table top comprising a plurality of rigid, elongate panels, a uniformly distributed connecting means holding said panels to each other, and said panels being of equal length and thickness and having widths dimensioned so that said panels fold to form a rectangular enclosure;

(b) at least one crossbar member being of one-piece construction and pivotally mounted to the bottom surface of one of said panels, said crossbar member being movable from a closed position in parallel contiguous subjacent relation to said panels to an open position in transverse contiguous subjacent relation to said panels to rigidify said panels into a table top unit; and

(c) supporting means detachably connected to said table top for supporting said table top in a horizontal plane and including:

(1) two sets of four element leg units, each of said leg units disposed at opposing ends of said supporting means, and each of said leg units being collapsible from an open supporting position to a closed parallel position,

(2) longitudinal members extending between said leg units and hinged to said leg units for permitting said leg units to fold to a position parallel to said longitudinal members, and

(3) two center hinge plates each pivotally connected to one of said leg units so that each of said leg units radiate outward therefrom in a single plane,

whereby said crossbar engages said longitudinal members in an oblique abutting relation by which said longitudinal members support said crossbar when said crossbar is in said open position.

4,210,086

COVER FOR SOAKING PITS AND THE LIKE

Homer Smith, Jr., Homewood, Ill.; Richard L. Pruitt, Valparaiso, Ind.; Edward F. Barnum, Gary, Ind., and Robert P. Knerr, Jr., Griffith, Ind., assignors to Inland Steel Company, Chicago, Ill.

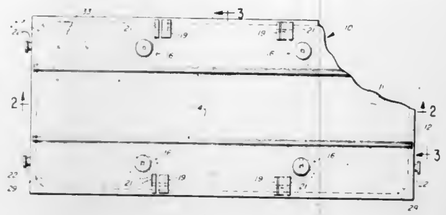
Filed May 11, 1978, Ser. No. 904,795
Int. Cl.[2] F23M *7/00*
U.S. Cl. 110—173 A **12 Claims**

1. A cover construction for a furnace, such as a soaking pit or the like, which is subject to repeated stress during handling, said cover construction comprising:

an integral one-piece cast body of ferrous metal, said body having a plate portion and a peripheral depending skirt portion defining an enlarged recess at one side of said body;

anchor means comprising a plurality of anchor devices secured in spaced relation to the surface of said plate portion at the base of said recess; and

a monolithic insulating refractory lining disposed in and substantially filling said recess and mechanically interlocked with said anchor means, said lining comprising a



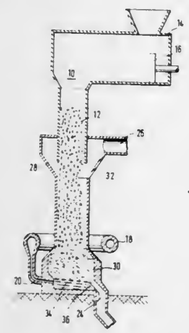
monolithic layer of light weight refractory having a bulk density not greater than about 80 lb/ft^3 (1280 kg/m^3).

4,210,087

METHOD OF OPERATION FOR A REFUSE INCINERATING FURNACE

Corneille Melan, 43, bld. Ch. Simonis, Luxembourg, and Rene Weiwers, 106, rue Mertens, Bettembourg, both of Luxembourg

Filed Jun. 26, 1978, Ser. No. 919,126
Claims priority, application Luxembourg, Jul. 1, 1977, 77677
Int. Cl.[2] F23G *5/00*
U.S. Cl. 110—346 **5 Claims**



1. In a method of operating a pyrolysis furnace of the descending column type for incinerating refuse, notably household refuse, commercial and industrial rubbish, of the type comprising a charging zone, a drying zone, a pyrolysis zone and a combustion and melting zone, having at least one orifice for extracting volatile products from the drying zone, at least one orifice for extracting melted slag from the combustion and melting zone, and one or more tuyeres for injecting combustion gases under pressure into the combustion and melting zone, the improvement comprising injecting the combustion gases into the liquid mass of molten slag thereby controlling and diminishing the energy liberated at the level of the combustion and melting zone by the injection of said gases under pressure so as to prevent channel formation.

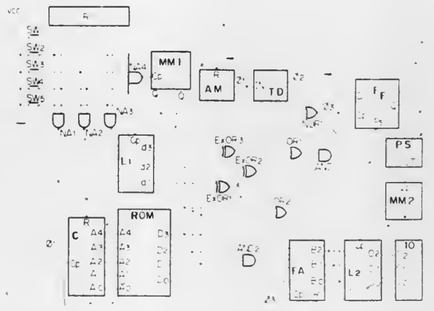
4,210,088

SEWING MACHINE WITH AN ELECTRONIC PATTERN STITCH CONTROL SYSTEM

Hideaki Takenoya, Hachioji, and Hachiro Makabe, Fussa, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jun. 12, 1978, Ser. No. 914,940
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 E **3 Claims**

1. A sewing machine having pattern forming instrumentalities forming stitches by changing the relative positions of the needle and the sewn material, comprising pattern selecting means selectively operated to produce specific signals pertaining the selected pattern to be stitched; static memory means storing control signals; free-running pulse generator means producing free-running pulses for reading out the control signals from the static memory means; means comparing the



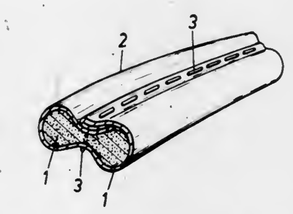
pattern selecting signals and the control signals read out of the static memory means, thereby to stop the operation of the free-running pulse generator means; counter means operated in accordance to the control signals of the static memory to produce counting signals; and pulse generator means operated in synchronism with the pattern forming instrumentalities to produce signals to make effective the counting signals to the pattern forming instrumentalities.

4,210,089

ROUNDSLING

Bengt E. Lindahl, Göthenburg, Sweden, assignor to Svensk Lasthantering Bengt Lindahl AG, Torslanda, Sweden

Continuation of Ser. No. 832,726, Sep. 12, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,806
Int. Cl.[2] D05B *93/00*
U.S. Cl. 112—417 **1 Claim**



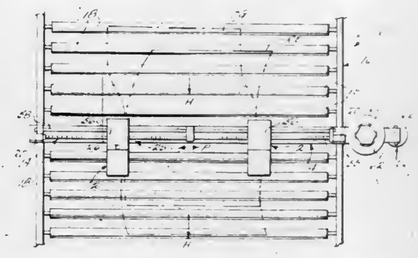
1. A lifting sling comprising a core consisting of first and second spaced longitudinally extending sections of substantially equal size interconnected by an intermediate longitudinally extending section of lesser dimension, said core being formed from a plurality of longitudinally extending parallel segments, a protective cover enclosing said core and defining an overlapping section, said overlapping section being juxtaposed to the interconnecting section intermediate section of lesser dimension of said core, and a seam extending through said interconnecting intermediate section of lesser dimension and diametrically through the overlapping portion of said cover for securing said cover and said core together, the transverse extent of said seam being substantially less than the corresponding dimension of said first and second core sections so that said seam will not engage a load when said sling bears thereagainst.

4,210,090

FORMATION OF RADIUS ELBOWS AND O.G. SETS

James H. Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Filed Sep. 1, 1978, Ser. No. 938,902
Int. Cl.[2] B21D *39/02*
U.S. Cl. 113—54 R **15 Claims**



1. A machine for automatically assemblying radius elbow and/or O.G. set ducts, comprising

(a) four edge deformation effecting components for interlocking edge configurations of the ducts to be formed,

(b) first mounting means for mounting said edge deformation effecting components so that they define the corners of a vertical quadrate opening,

(c) pivotal movement mounting means for mounting said components so that they are pivotal about parallel vertical axes with respect to said first mounting means, and

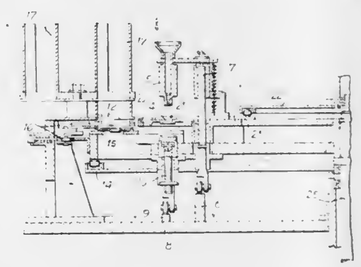
(d) means for moving said components with respect to each other so that the horizontal and vertical spacings therebetween may be modified.

4,210,091

AUTOMATIC MACHINE FOR CONTINUOUSLY PRODUCING TINNED STRAP CAPS FITTED WITH OPENING DEVICES AND DEVICES THEREFOR

Mario Erba, Via Monfalcone 14, Monza (Milano), Italy

Filed Apr. 12, 1978, Ser. No. 896,019
Claims priority, application Italy, Sep. 28, 1977, 28039 A/77; Jul. 17, 1978, 20486/78[U]; Jan. 17, 1978, 19306 A/78
Int. Cl.[2] B21D *43/00*
U.S. Cl. 113—113 D **6 Claims**



1. An automatic machine for continuously producing tinned strap caps fitted with a tear opening device, characterized by comprising a disc rotating about its axis at a constant speed, including a central portion and an outer circular crown, the latter being provided with a first plurality of supporting elements or lower slides, only radially movable to receive the caps supplied by a shaped double blade magazine, and a second plurality of supporting elements or upper slides, also only radially movable, to receive the tear opening devices supplied by a second double blade magazine, said crown being also provided with a plurality of passage holes, through which each

of the tear elements are positioned on the corresponding cap, the central portion carrying a plurality of joining members only vertically movable, further characterized in that the radial movement for the lower slides adjacent the cap dispenser or magazine is controlled by a flat metal cam-shaped guide, during the movement of the rotable disc, drive rollers connected to said lower slides sliding therein, that the radial movement for the upper slides adjacent the tear element dispenser is controlled by a central cam integral with the axis of rotation for the ritable disc, that the vertical movement for the joining members is controlled by a circular metal guide of varying height, in which feeler rollers slide following the profile thereof and transferring such a movement to the joining members by connection stems, further characterized in that a further circular metal guide of varying height controls the lifting and lowering of a plurality of abutting pistons raising with the underside of the caps and by providing an extractor or puller for the finished pieces located adjacent the dispensers or magazines, but upstream thereof.

4,210,092

BOAT ANCHOR

Horace V. Battersby, Star Rte. #5 Box 361 H, Dunnellon, Fla. 32630

Filed Oct. 30, 1978, Ser. No. 955,654
Int. Cl.² B63B *21/46*
U.S. Cl. 114—299 **13 Claims**



1. An anchor comprising a fluke unit defining a plane, a pocket shank, means forming an articulation joint between said fluke unit and pocket shank and defining an axis, a pair of crown plates positioned one on each side of the fluke unit and hingedly connected in free-swinging relation to each other and to said fluke unit on the axis of the means forming the articulation joint of the anchor, said crown plates swinging in a common plane substantially at right angles to the plane of the fluke unit and a stop element on each free-swinging crown plate engageable with the fluke unit to limit the swinging path of movement of the respective crown plate between a first position at one side of the fluke unit and a second position away from the fluke unit, said second position of each crown plate being defined by an included angle between the fluke unit and crown plate substantially greater than ninety degrees.

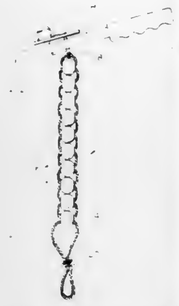
4,210,093

COUNTING DEVICE

Richard A. Baker, 788 Woods La., Grosse Pointe Woods, Mich. 48236

Filed Oct. 23, 1978, Ser. No. 953,483
Int. Cl.² G06C *1/00*
U.S. Cl. 116—222 **3 Claims**

1. A counting device comprising a pair of flexible linear elements, a series of beads strung on said linear elements, each bead having a hole therethrough, each linear element passing through the holes in said beads in sequence, one linear element entering the hole in each bead from one end thereof and the other linear element entering such hole from the other end thereof, each linear element passing through the holes in said beads alternately in one direction and the other, said linear



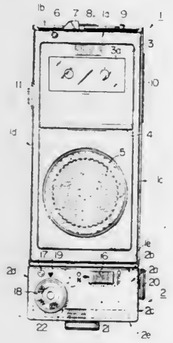
elements together frictionally retaining said beads in any given position along the length thereof.

4,210,094

RADIO TUNER FOR COUPLING WITH CASSETTE TAPE RECORDER

Shiro Kondo, Tama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 741,156, Nov. 11, 1976. This application Jun. 5, 1978, Ser. No. 912,072
Claims priority, application Japan, Apr. 30, 1976, 51-55416; Apr. 30, 1976, 51-55417
Int. Cl.² G11B *31/00*; H03J *1/02*
U.S. Cl. 116—255 **1 Claim**



1. A radio frequency tuning device for use in a radio tuner which is adapted to be detachably coupled with a cassette tape recorder, the device comprising a radio frequency selecting dial rotatably disposed adjacent a surface of a tuner casing, a pulley disposed within the tuner casing and having the dial fixedly mounted thereon, a dial operating shaft rotatably mounted on a mounting plate which is fixedly mounted within said tuner casing and extending in a direction perpendicular to a sidewall of said tuner casing which is at right angles to said surface thereof, the free end of said shaft being exposed externally of the sidewall, a dial operating knob secured to the free end of said dial operating shaft, a diverting member fixedly disposed within the casing on the mounting plate in a right-angled corner of said casing defined by said surface and said sidewall of the tuner casing and having a pair of discrete string engaging portions, and a fastening string for coupling said pulley to said dial operating shaft, said fastening string passing around the respective string engaging portions of said diverting member to extend in mutually different directions on the opposite sides thereof, said diverting member comprising:

a rectangular body having a recess formed therein, said recess being defined by two parallel walls separated by a pillar portion extending therebetween along a direction perpendicular to said two parallel walls, said pillar portion including an arcuate, smooth surface defining one of said pair of string engaging portions; and

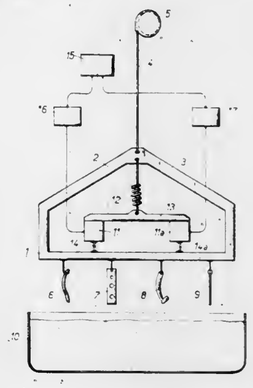
a metal rod extending between said two parallel walls along a line perpendicular thereto and spaced from said arcuate, smooth surface, said metal rod defining the other of said pair of string engaging portions.

4,210,095

MACHINE FOR DRAINING PARTS EMERGING FROM HOT GALVANIZING BATHS

Georges Rouquie, Fontenay le Fleury, France, assignor to Bertin & Cie, Plaisir, France

Division of Ser. No. 785,790, Apr. 8, 1977, Pat. No. 4,129,668. This application Dec. 11, 1978, Ser. No. 968,182
Claims priority, application France, Apr. 12, 1976, 76 10648
Int. Cl.² C23C *1/02*
U.S. Cl. 118—57 **5 Claims**



1. A machine for draining parts emerging from a hot galvanizing bath comprising a support structure including an elastically suspended lifting-beam; means on said beam to rigidly link a plurality of parts to be drained; vibrator means constructed and arranged with said beam to vibrate said plurality of parts; energizer means for said vibrator means including means for controlling the vibrations of said plurality of parts within a frequency range of narrow-band "white noise," the said frequency range covering the natural fundamental frequencies of said parts.

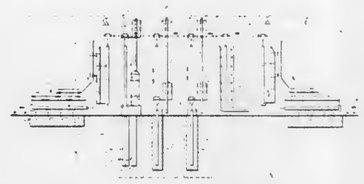
4,210,096

APPARATUS FOR CONTINUOUS ENAMELLING OF TUBES

Alexandr A. Sirotinsky, Fergansky proezd, 13, korpus 1, kv. 15; Vladimir I. Prokofiev, ulitsa 14 Parkovaya, 3, kv. 33; Vitaly I. Timonin, Leningradskoe shosse, 7/3, korpus 2, kv. 42, all of Moscow; Nikolai V. Smolnikov, 2 Mikroraion, 73, kv. 15, Shevchenko Mangyshlaxkoi oblasti; Vladimir P. Karyaev, 6 Mikroraion, 3, kv. 42, Shevchenko Mangyshlaxkoi oblasti; Alexei P. Streltsov, 5 Mikroraion, 41, kv. 28, Shevchenko Mangyshlaxkoi oblasti; Jury N. Belov, 5 Mikroraion, 4, kv. 16, Shevchenko Mangyshlaxkoi oblasti; Valentin P. Saveliev, 4 Mikroraion, 9, kv. 20, Shevchenko Mangyshlaxkoi oblasti, and Boris G. Yazikov, 4 Mikroraion, 9, kv. 89, Shevchenko Mangyshlaxkoi oblasti, all of U.S.S.R.

Filed Dec. 5, 1978, Ser. No. 967,259
Int. Cl.² B65G *47/04*; B05C *3/10*
U.S. Cl. 118—58 **3 Claims**

1. An apparatus for the continuous enamelling of tubes comprising: a conveyor for feeding the tubes, an upender in the form of a boom with grippers which serve to receive the tubes from said conveyor and transfer them from the horizontal position into a vertical one, and is installed with provision for displacement; guides placed whereby said boom of said upender are in vertical parallel planes, having at least one guide in every plane and consisting each of more than one portion; a first of said portions running essentially horizontally; a second portion contiguous with the first one and extending at an angle to the horizontal, a third portion running essentially



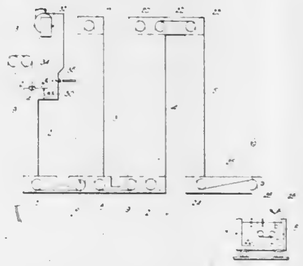
vertically so that the tube is transferred from the horizontal position into the vertical one, a trolley for receiving the vertically arranged tube which rests on a monorail made up of immovable and movable sections, said movable sections of said monorail, displacing vertically and integral with the tube in carrying out the process of enamelling, means for applying the enamelling slip to at least one side of the tube, and means for heating to dry and fuse the enamelling slip.

4,210,097

MEANS FOR MAINTAINING A NON-OXIDIZING ATMOSPHERE AT POSITIVE PRESSURE WITHIN THE METALLIC STRIP PREPARATION FURNACE OF A METALLIC COATING LINE DURING LINE STOPS

Fred Byrd, Lebanon, and James A. Fisher, Middletown, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Division of Ser. No. 768,033, Feb. 14, 1977, Pat. No. 4,148,946. This application Jan. 29, 1979, Ser. No. 7,659
Int. Cl.² F27B *9/28*; C23C *1/00*
U.S. Cl. 118—65 **5 Claims**



1. In a coating line for coating a ferrous base metal strip with a molten coating metal, said coating line being of the type having a strip preparation furnace comprising a direct fired furnace with an exhaust system for products of combustion comprising a duct leading from said direct fired furnace to an exhaust fan, a controlled atmosphere heating furnace, at least one cooling chamber and a snout extending beneath the surface of a bath of said molten coating metal, all connected serially in sealed relationship, the improvement comprising an air dilution opening in said duct in the form of a gap in said duct to cool and dilute said products of combustion ahead of said fan, heat resistant door means shiftable between an open position out of said gap and a closed position within said gap to seal said direct fired furnace from said exhaust fan and said air dilution opening, means to shift said door means from said open position to said closed position at the time of a line stop, said door means being thinner than said gap so that said exhaust fan draws ambient air through the upper portion of said gap and over said door means when said door means is in said closed position to

cool said door means, and means at the time of a line stop to introduce a non-oxidizing atmosphere at a positive pressure into said strip preparation furnace to purge said strip preparation furnace and to prevent oxygen from the ambient atmosphere from entering said strip preparation furnace.

4,210,098

APPARATUS FOR TREATING INTERNAL SURFACES OF WALLS OF A TANK

David V. Harrison, Mold, Wales; Roy Weaver, Highland Stockport, and Henry G. E. Wilson, Chester, both of England, assignors to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

Filed Sep. 28, 1978, Ser. No. 946,776

Claims priority, application United Kingdom, Oct. 12, 1977, 42467/77

Int. Cl.[2] B05C *5/00, 7/02*

U.S. Cl. 118—317 **9 Claims**



1. An apparatus for treating internal surfaces of the walls of a tank, by spraying an insulating material onto the tank walls or the like, including at least two flat wall parts interconnected by a curved wall part, which apparatus comprises: a trolley for carrying a treating tool; a first straight guide rail for said trolley arranged parallel to and spaced apart from one of the two flat wall parts; a second straight guide rail for said trolley arranged parallel to and spaced apart from the other of the two flat wall parts; a traverser carrying a straight guide rail for the trolley; and means for locking said trolley to said traverser; said traverser being mounted between said first and second guide rails for rotational movement around an axis which coincides with the axis of curvature of the curved wall part; said traverser further being rotatable from a first position wherein said guide rail on said traverser is in line with said first guide rail to a second position wherein said guide rail on said traverser is in line with said second guide rail; and driving means for displacing said trolley along said first guide rail and along said guide rail on said traverser, and further for rotating said traverser from said first position to said second position while said trolley is locked on said traverser and for displacing said trolley along said second guide rail.

4,210,099

FLOATING RECEPTACLE FOR COLLECTING HISTOLOGIC MATERIAL

Peter J. Tsaknis, Mt. Airy, Md., and Virginia J. Lux, Dover, Del., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 900,389, Apr. 26, 1978, Pat. No. 4,158,709. This application Jan. 19, 1979, Ser. No. 4,783

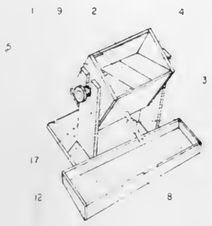
Int. Cl.[2] G01N *1/28*

U.S. Cl. 118—402 **5 Claims**

1. A receptacle for retaining liquid for collecting on a slide histologic material floating on the liquid comprising:

a. Closure means having first and second sides parallelly connected by first and second ends and a bottom;

b. Valve means attached to said container for allowing the release of the liquid in said container; and



c. Means for supporting the slide between said first and second sides on a diagonal whereby histologic material floating on the liquid is collected on the slide by releasing the liquid through said valve means;

d. means for rotatably supporting said container; and

e. slide.

4,210,100

BIRD CAGE

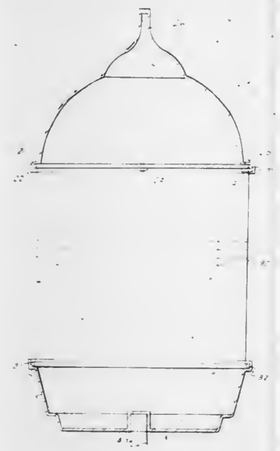
Josef Voss, Haus Dreizehneichen, 5760 Arnsberg 1, Fed. Rep. of Germany, assignor to Josef Voss, Arnsberg, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,866

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805866

Int. Cl.[2] A01K *31/06, 31/08*

U.S. Cl. 119—17 **17 Claims**



1. A collapsible bird-container of the cage type, comprising an elongated barrel of a predetermined height, having a wall bounding the interior of said barrel, an upper open end and a lower open end, a first discrete end closure detachably mounted on said barrel for closing said upper end, said closure being formed with a first bent portion having a tip and being directed upwardly when said closure is installed on said barrel in operative position to increase the interior volume of the container and said closure being adapted to be inverted with said first bent portion and tip directed down and inwardly into said interior when said container is to be collapsed for storage or transport, a second discrete end closure detachably mounted on said barrel for closing said lower end, said second closure also being formed with a second bent portion directed downwardly when said second closure is installed on said barrel in operative position to further increase the interior volume of the container and said second closure also being adapted to be inverted with said second bent portion directed up and inwardly into said interior when said container is to be collapsed for storage or transport, said lower closure also being provided with a recess for receiving a support when the lower closure is installed on said barrel in the operative position, and for receiving said tip when both closures are in said collapsed position; and means for preventing displacement of said closures relative to the barrel and for insuring a stable position of said closures when the latter are inverted and said bent portions extend inwardly into said interior of said barrel, so that the overall height of the container in such a collapsed position is substantially equal to the predetermined height of the barrel.

4,210,101

HEAT EXCHANGE DEVICES FOR COOLING THE WALL AND REFRACTORY OF A BLAST FURNACE

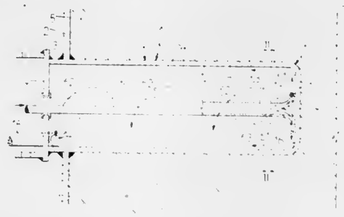
François Touze, Chateau de Logne, 57310 Guenange, France

Filed May 15, 1978, Ser. No. 906,210

Claims priority, application France, May 25, 1977, 77 15939

Int. Cl.[2] F22B *33/00*

U.S. Cl. 122—20 B **6 Claims**



1. a heat exchange device for cooling the wall and the refractory of a blast furnace, comprising:

a closed enclosure, elongated and having a shape of revolution or substantially of revolution, this enclosure comprising an outer end and an inner end,

an axial chamber defining with said enclosure an annular chamber, this axial chamber comprising an outer end and an inner end,

a supply orifice for feeding a cooling liquid into the axial chamber through its outer end,

and a discharge orifice for discharging the cooling liquid from the annular chamber through the outer end of the enclosed enclosure,

deflector means provided between the inner end of the axial chamber and the inner end of the enclosed enclosure, these deflector means being arranged so as to impart to the whole of the flow of the cooling liquid:

an axial component, directed towards the inner end of the enclosed enclosure, for cooling the central part of the inner end of this enclosure,

a radial component for cooling the rest of the inner end of the enclosed enclosure,

an axial component directed towards the outer end of the closed enclosure for causing the return of the cooling liquid,

and a tangential component for cooling the part of revolution of the closed enclosure.

4,210,102

SPACE HEATER HEAT RECOVERY SYSTEM

Joseph B. Dosmann, 116 North Hill St., South Bend, Ind. 46601

Filed Nov. 17, 1978, Ser. No. 961,613

Int. Cl.[2] F22B *33/00;* **F24D** *3/08, 9/02*

U.S. Cl. 122—20 B **8 Claims**



1. In a space heating system having a hot air, fuel fired furnace with a cold air inlet passage and a hot air outlet passage, a heat recovery system: comprising an exhaust pipe for connecting the furnace to a flue, a damper in said exhaust pipe, a heat exchanger unit having a chamber and a set of water coils therein, said heat exchanger unit being located at least in part below said exhaust pipe, a pipe connected to said exhaust pipe on the anterior side of said damper and extending downwardly to the lower portion of said chamber, a pipe connecting the upper part of said chamber with said exhaust pipe on the posterior side of said damper, a water holding tank, upper and lower conduits connecting said tank with said set of coils, a bank of coils in one of said passages of the furnace, a fan for forcing the furnace exhaust gases through said downwardly extending pipe and the chamber in said heat exchanger unit and returning the gases to said exhaust pipe and water supply and return conduits connecting said holding tanks with said bank of coils for heating the air flowing to the space to be heated.

4,210,103

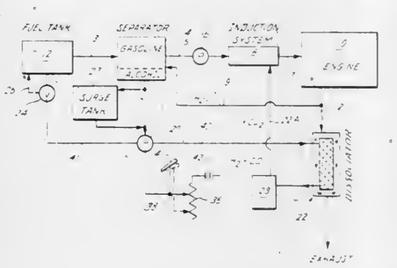
FUEL SYSTEM FOR AND A METHOD OF OPERATING A SPARK-IGNITED INTERNAL COMBUSTION ENGINE

Edward Dimitroff, and John A. Vitkovits, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 4, 1977, Ser. No. 784,414

Int. Cl.[2] F02B *47/04*

U.S. Cl. 123—1 A **34 Claims**



1. In a fuel system for a spark-ignited internal combustion engine having an induction system in which gasoline may be atomized, an exhaust, and means for supplying gasoline to a carburetor in the induction system for atomization; the improvement comprising a thermal pyrolysis chamber in heat exchange relation with the exhaust gases, means for circulating a liquid hydrocarbon alcohol of from 1 to 3 carbon atoms through the chamber in order to dissociate said alcohol into

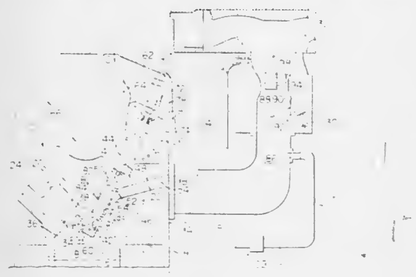
vapors including hydrogen, carbon monoxide and carbon dioxide in the absence of compressed air and solely in response to such heat and without need for catalysts, and then supplying the vapors to the induction system for mixing with the atomized gasoline to provide a fuel for the engine.

4,210,104

INTERNAL COMBUSTION ENGINE

Hirokazu Nakamura, Saganosaganodan; Tsuneo Ohinouye, Kyoto; Kenji Hori; Yuhiko Kiyota, both of Nagaokakyo; Tatsuro Nakagami, Kyoto; Yutaka Tsukamoto, Johyoh, and Katsuo Akishino, Kameoka, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1976, Ser. No. 742,244
Claims priority, application Japan, May 19, 1976, 51-57595
Int. Cl.[2] F02B *75/02*
U.S. Cl. 123—259 **13 Claims**



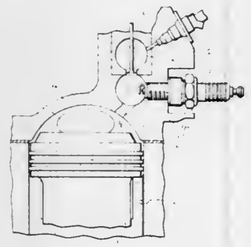
1. An internal combustion engine comprising a cylinder, a cylinder head for said cylinder providing a combustion chamber having inlet and exhaust ports, a main inlet passage for supplying an air-fuel mixture formed by a mixture forming means to said inlet port, a throttle valve provided in said main inlet passage, a spark plug threadedly fixed in said cylinder head and having a spark gap disposed at a predetermined position in said combustion chamber, an injection chamber provided in the cylinder head close to said spark gap, an injection port providing communication between said combustion chamber and said injection chamber, said injection port being disposed near to said spark gap and being directed at said spark gap and transversely of the axis of said cylinder, a secondary inlet passage means communicating with said injection chamber, a secondary inlet valve positioned in advance of said injection chamber for opening and closing the secondary inlet passage means, and an operating mechanism for opening and closing said secondary inlet valve, said mechanism being operated so that said secondary inlet valve is open during substantially the entire suction stroke of the engine, said injection port being positioned to discharge gas in said injection chamber substantially toward said spark gap so that gas is strongly injected toward or around said spark gap due to high negative pressure produced in said combustion chamber during a suction stroke of the engine, the discharge of gas from said port creating turbulence in said combustion chamber and scavenging previously formed exhaust gases from the region of said gap.

4,210,105

INTERNAL COMBUSTION ENGINE INJECTED ACCUMULATION CHAMBER

Hidetaka Nohira, Mishima; Sumio Ito, Susono, and Hisashi Oki, Numazu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 11, 1978, Ser. No. 905,016
Claims priority, application Japan, Jan. 17, 1978, 53-2676
Int. Cl.[2] F02B *3/00;* **F02D** *39/02*
U.S. Cl. 123—277 **8 Claims**



1. An internal combustion engine having an intake passage and an exhaust passage, comprising:
a cylinder block having a cylinder bore therein;
a cylinder head mounted on said cylinder block and having a fixed-volume, non-cooled cavity therein;
a piston reciprocally movable in said cylinder bore;
a combustion chamber formed between said cylinder head and said piston, said cavity having a port connected to said combustion chamber;
an intake valve movably mounted on said cylinder head for leading a suction gas from the intake passage into said combustion chamber;
an exhaust valve movably mounted on said cylinder head for discharging an exhaust gas into the atmosphere;
means for feeding fuel into said cavity to create a combustible mixture therein, said feeding means comprising a fuel injector;
a spark plug having a spark gap located in said combustion chamber;
valve means for opening said port of the cavity once per cycle during the compression stroke to spout out a jet of the combustible mixture under pressure into said combustion chamber from said cavity during the first half of the compression stroke and permit the inflow of the suction gas into said cavity from said combustion chamber during the latter half of the compression stroke for temporarily accumulating the suction gas under pressure after said port is closed; and
a fuel injection control device for starting the injecting operation of said fuel injector immediately after said valve means is closed.

4,210,106

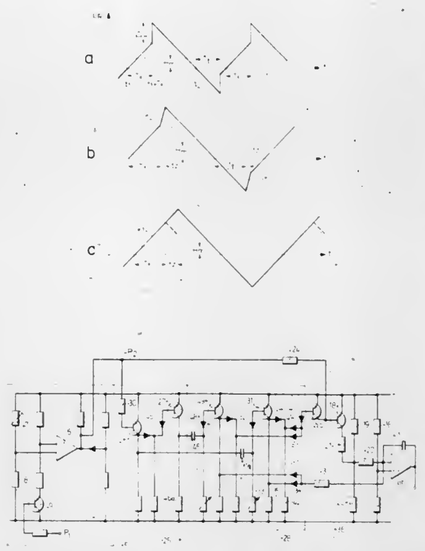
METHOD AND APPARATUS FOR REGULATING A COMBUSTIBLE MIXTURE

Wolf Wessel, Oberriexingen, and Wilfried Sautter, Ditzingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 732,124, Oct. 13, 1976, abandoned. This application May 30, 1978, Ser. No. 910,916
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1975, 2545759
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—489 **6 Claims**

6. In a method for regulating the fuel-air mixture of an internal combustion engine which includes the steps of:
sensing the oxygen content of the exhaust gases of the engine and providing a first signal;

feeding said first signal to an integrating controller to generate a second signal which is used to regulate the fuel quantity delivered to the engine;
the improvement comprising the steps of:
delaying the arrival time of said first signal to said integrating controller to alter said second signal by permitting said controller to continue to operate in its previous direction



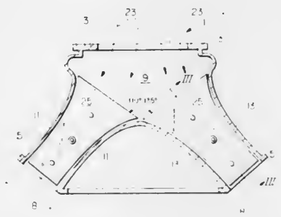
for a predetermined period of time after said first signal has undergone polarity reversal thereby simulating a different control point value of said first signal, wherein said second signal is so altered that during a predetermined period of time said second signal is abruptly increased in slope and in the direction of attaining said average regulated fuel-air ratio which is different from that obtained without altering said second signal.

4,210,107

TUNEABLE INTAKE MANIFOLD

Donald J. Shaffer, Box 88, Upper Strasburg, Pa. 17265

Continuation of Ser. No. 760,402, Jan. 18, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,930
Int. Cl.[2] F02B *17/18*
U.S. Cl. 123—52 M **12 Claims**



1. An intake manifold for a reciprocating piston internal combustion engine having at least two combustion cylinders arranged in a V-shape with respect to a cross-section perpendicular to a crank shaft, comprising:
a planar intake mounting for at least one air-fuel mixture device;
opposed planar mountings for the intake valve ports of said cylinders;
a plenum chamber adjacent said air-fuel mixture intake mounting to directly receive the air-fuel mixture from said air-fuel mixture device;
at least two intake runners each having a straight central axis and forming an air-fuel passageway opening at one end into said plenum chamber and opening at its opposite end into the respective one of the mountings for the intake ports;
said plenum chamber being triangular shaped in said cross-section taken perpendicular to the crank shaft orientation with said intake mounting extending generally horizontally and the openings of said intake runners at said one end extending in respective planes intersecting each other at an obtuse angle within the range of 110° to 135°;
said plenum chamber being defined by two planar, solid, triangular end walls parallel to each other and perpendicular to the crank shaft orientation, two opposed, planar, rectangular side walls joined to each other along a common side edge and having their opposite end edges joined to respective ones of said triangular end walls, and a planar, rectangular, horizontal top wall joined at its edges respectively to said side wall and end wall remaining edges;
said side walls having therein said openings of said intake runners and said top wall having therein said intake mounting;
the planes of said side walls intersecting each other at an obtuse angle within the range of 110° to 135°;
a central generally horizontal plate rigidly interconnecting said mountings for the intake valve ports so that they are generally parallel to respective ones of said side walls;
the cross-sectional shape of each of said intake runners taken perpendicular to its central axis being substantially rectangular throughout its length; and
said passageway central axes extending generally perpendicular to the plane of their plenum chamber openings at the one end and generally perpendicular to the plane of their intake port openings at the opposite end, respectively.

2. An intake manifold for an engine having at least two working cylinders with respective valve intake ports, comprising:
an inlet coupling at one end of the manifold for connection to a source of working fluid and at least two outlet couplings at an opposite end for connection to the intake port of the engine;
a plenum chamber adjacent said inlet coupling to directly receive the working fluid from said source;
at least two intake runners each forming a passageway opening at one end directly into said plenum chamber and opening at its opposite end into the respective one of the intake ports;
each of said intake runners being defined by and having side walls forming an inlet passageway having a central axis extending along the path of air flow from the passageway;
at least a portion of one of said walls of each said passageways being mounted for movement towards and away from said central axis of its passageway to effectively decrease and increase the through flow cross-sectional area as measured in a plane perpendicular to said axis, respectively; and
means for maintaining said movable wall in an adjusted position.

4,210,108

STEPPED PISTON TWO-STROKE ENGINES

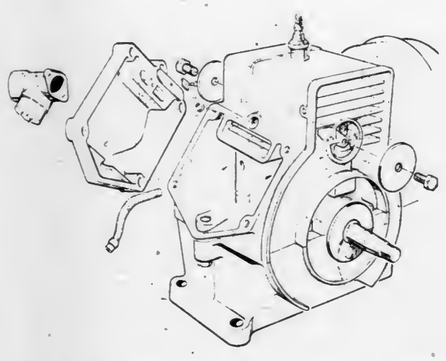
Bernard Hooper, Maybank House, Hope St., Wordsley, Stourbridge, W. Midlands, England

Filed Sep. 21, 1978, Ser. No. 944,566

Claims priority, application United Kingdom, Sep. 22, 1977, 39510/77

Int. Cl.² F02B *75/02*

U.S. Cl. 123—65 S **13 Claims**



1. A two-stroke internal combustion engine comprising a cylinder casting, a bore formed in said casting to provide a cylinder containing a stepped piston, the cylinder and piston having a pumping part of larger diameter and a working part of smaller diameter, exhaust port means in said working part, and opposed transfer port means on opposite sides of said working part disposed symmetrically about a plane passing through the longitudinal axis of the cylinder and the centre of the exhaust port means, the transfer port means extending to the exterior of the casting and opening into respective first recesses to form receiver volumes, the transfer port means and first recesses being of a form to be produced in the casting process by non-separate cores introduced linearly towards said plane, said receiver volume being arranged to receive, in use, through said transfer port means a charge from the pumping part of the cylinder and to deliver through said transfer port means the charge to the working part of the cylinder, the piston being provided with recess means which co-operate with the transfer port means to allow and control entry of the charge into said receiver volumes, the piston also co-operating with the transfer port means to allow and control entry of charge from said receiver volumes to the working part of the cylinder.

4,210,109

MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Yasuo Nakajima, Yokosuka; Michio Onoda, Yokohama; Kunihiko Sugihara, Takasho, and Shinichi Nagumo, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

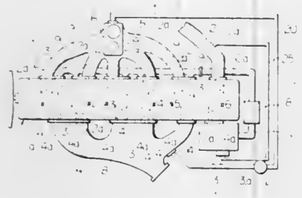
Filed Dec. 1, 1977, Ser. No. 856,533

Claims priority, application Japan, Dec. 2, 1976, 51/145126

Int. Cl.² F02D *33/02*

U.S. Cl. 123—76 **17 Claims**

1. A multi-cylinder internal combustion engine comprising:
- a cylinder block having a plurality of cylinders consisting of a first group of cylinders and at least one second cylinder;
- a cylinder head secured to said cylinder block to close said cylinders;
- a plurality of pistons slidably disposed in said plurality of cylinders, respectively, for reciprocal movement therein;
- a first intake means for inducting air/fuel mixture into said first group of said cylinders;
- an exhaust means for discharging exhaust gas from said first group of said cylinders;
- a second intake means for inducting ambient air into said second cylinder;
- a third intake means for admitting air discharged from said second cylinder into said first group of said cylinders, so as to scavenge hot residual exhaust gases from said first group of said cylinders;
- an intake valve in said second intake means to control the induction of ambient air into each of said second cylinder(s);



- a discharge valve in said third intake means to control the discharge of air from each of said second cylinders; and
- EGR means for recirculating a cooled portion of exhaust gases discharged from said first group of cylinders to said first intake means, said third intake means including a surge tank disposed downstream of said discharge valve to receive air from said discharge valve, and a relief valve and conduit means for admitting air relieved from said surge tank through said relief valve to said second intake means.

4,210,110

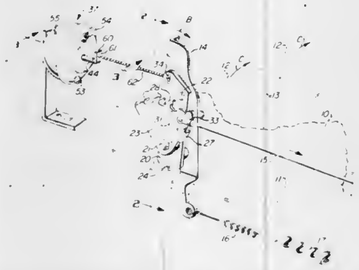
CARBURETOR CONTROL DEVICE

Lawrence J. Krebaum, 4501 W. Gardenia, Glendale, Ariz. 85301, and Gerald E. Krebaum, 12666 N. Columbine Dr., Phoenix, Ariz. 85029

Continuation-in-part of Ser. No. 700,456, Jun. 28, 1976, abandoned. This application Aug. 8, 1977, Ser. No. 822,896

Int. Cl.² F02D *11/08*

U.S. Cl. 123—319 **2 Claims**



1. In a carburetor for controlling the air/fuel mixture available to an internal combustion engine, which carburetor includes,
- a throttle body,
- a throttle valve carried by said throttle body,
- a throttle lever for controlling the movement of said throttle valve between a closed position and an open position,
- a linkage for operatively moving said throttle lever, and
- biasing means normally urging said throttle to the closed position,

an improved device for modulating the rate of opening of said throttle valve during opening movements of said linkage and for dampening rapid or erratic opening movements of said linkage, said improved device comprising:
- (a) a resiliently deformable member for receiving and storing energy in response to opening movement of said linkage and for transmitting said energy to said throttle lever for opening said throttle valve;
- (b) pneumatic restrictor means opposing the movement of said throttle lever and regulating the speed at which said throttle valve opens, said restrictor including:
  - (i) a hollow housing;
  - (ii) a flexible diaphragm hermetically sealed to said housing to form an airtight chamber therein, said diaphragm being movable in a first direction to increase the volumetric capacity of said chamber and movable in a second direction to decrease the volumetric capacity of said chamber;
  - (iii) biasing means normally urging said diaphragm in said first direction;
  - (iv) one-way check valve means for the introduction of ambient air into said chamber as said diaphragm moves in said first direction; and
  - (v) air bleed means for controlling the rate of discharge of air from said chamber as said diaphragm moves in said second direction.
- (c) coupling means extending between said flexible diaphragm and said throttle lever, said coupling means operatively interconnecting said flexible diaphragm and said throttle lever when said throttle lever is moved toward an open position, to oppose and modulate the opening of said throttle, said coupling means disconnecting said flexible diaphragm and said lever when said throttle means is moved toward a closed position whereby said throttle lever is free to move to said closed position independent of said pneumatic restrictor.

4,210,111

ELECTRONIC IGNITION CONTROL METHOD AND APPARATUS

Tadashi Hattori, Okazaki; Mamoru Kobashi, Aichi; Toru Kawase, Toyota, and Yoshiki Ueno, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jan. 27, 1978, Ser. No. 872,778

Claims priority, application Japan, Feb. 1, 1977, 52/10385

Int. Cl.² F02D *5/04*

U.S. Cl. 123—414 **8 Claims**



1. An electronic ignition control apparatus for an internal combustion engine having an output shaft rotated by a piston, an ignition coil adapted to generate a spark voltage upon deenergization of the primary winding thereof and a spark plug activated by the spark voltage to ignite the air-fuel mixture metered into a combustion chamber of said engine so as to operate said piston, the control apparatus comprising:
- a reference signal generator for producing a reference signal corresponding to the top dead center position of said piston;
- first means for producing a first digital output signal indicative of the amount of air sucked into said combustion chamber;
- second means for producing a second digital output signal indicative of a predetermined period of time necessary for generating the spark voltage in said ignition coil;
- third means for producing a third digital output signal indicative of a cycle time of said reference signal in response to a following reference signal;
- memory means for storing a data indicating an optimum period of time for spark advance in relation to the amount of sucked air, said memory means being responsive to said reference signal for producinhg a fourth digital output signal indicative of an optimum period of time for spark advance relative to said first output signal;
- a calculation circuit for subtracting the period of times defined by said second and fourth output signals from the cycle time defined by said third output signal to produce a fifth digital output signal indicative of a period of time corresponding to a subtracted-resultant value;
- fourth means responsive to said reference signal for producing a timing signal in accordance with said fifth output signal; and
- fifth means responsive to said timing signal for maintaining electric power supply from a source of electricity to the primary winding of said ignition coil within the predetermined period of time defined by said second output signal.

4,210,112

ELECTRONICALLY CONTROLLED EXHAUST GAS RECIRCULATION SYSTEM IN INTERNAL COMBUSTION ENGINE

Koyo Nakamura, and Hastuo Nagaishi, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 20, 1978, Ser. No. 971,493

Claims priority, application Japan, Dec. 28, 1977, 52-159577

Int. Cl.² F02M *25/06*

U.S. Cl. 123—571 **7 Claims**



1. A system for recirculation of exhaust gas in an internal combustion engine provided with an intake passage and an exhaust passage, the system comprising:
- means for defining a recirculation passage interconnecting said exhaust passage to said induction passage to recirculate a portion of the engine exhaust gas;
- a metering orifice of a fixed area formed in said recirculation passage;
- vacuum operated valve means for controlling an effective cross-sectional area of said recirculation passage at a section downstream of said metering orifice;
- pressure modulation means for modulating a vacuum produced in said induction passage with air based on a comparison between a signal negative pressure and an exhaust gas pressure in a control section of said recirculation passage between said metering orifice and said valve means thereby to produce a control negative pressure to operate said valve means;
- a conduit which connects said induction passage to said

pressure modulation means to transmit said vacuum and has an air admission port opening into the atmosphere, said signal negative pressure being produced by modulation of a negative pressure in said conduit with atmospheric air admitted into said conduit through said air admission port;

an electromagnetic valve provided to said conduit at a section between said induction passage and said air admission port so as to vary the magnitude of a negative pressure at said air admission port of said conduit thereby to vary the magnitude of said signal negative pressure;

a plurality of sensors each for sensing a parameter of engine operating conditions and producing an electrical signal representing the sensed parameter; and

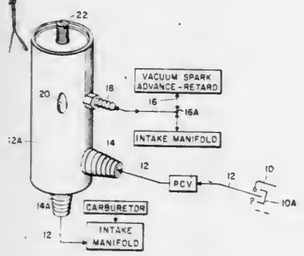
electronic control means for providing a control signal to said electromagnetic valve to control the magnitude of said signal negative pressure and hence the magnitude of said control negative pressure such that said exhaust gas pressure is regulated to a value corresponding to an optimum rate of exhaust gas recirculation under an engine operating condition indicated by the signals produced by said sensors, said optimum rate of exhaust gas recirculation being prescribed in an exhaust gas recirculation rate control pattern memorized in said control means.

4,210,113

VACUUM VALVE FOR INTRODUCTION OF CONTROLLED AMOUNTS OF AIR INTO ENGINE SYSTEMS

Patrick M. Heffernan, Scottsdale, Ariz., assignor to Sumari Engineering, Inc., Phoenix, Ariz.

Filed Feb. 23, 1979, Ser. No. 14,624
Int. Cl.[2] F02M *25/00*
U.S. Cl. 123—574 **26 Claims**



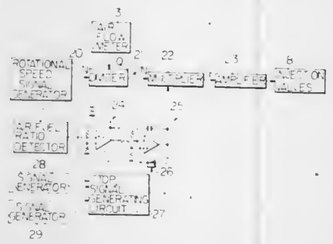
1. An air valve especially adapted for use with internal combustion engines having a carburetor, a crankcase ventilation system, and an intake manifold comprising, in combination, a valve body, movable plunger valve means located within said valve body for closing off air to the intake manifold during engine idling conditions and for controlling air into the intake manifold for engine operations above idle, first vacuum line means connected to the interior of said valve body from said intake manifold, conduit means connected to the interior of said valve body for communication between said first vacuum line means and the crankcase ventilation system, an air inlet means connected to the interior of said valve body for supplying air into said intake manifold through said first vacuum line means, and second vacuum line means connected to the interior of said valve body for operating said movable plunger valve means to close off air supplied by said air inlet means to the intake manifold during engine idling conditions and for controlling air into the intake manifold for engine operations above idle.

4,210,114

AIR-FUEL RATIO CONTROL APPARATUS FOR AN INTERNAL COMBUSTION

Haruo Watanabe, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 3, 1978, Ser. No. 866,800
Claims priority, application Japan, Mar. 7, 1977, 52/026214[U]
Int. Cl.[2] F02B *33/00*
U.S. Cl. 123—489 **4 Claims**



1. An air-fuel ratio control apparatus for an internal combustion engine having an air intake system, an exhaust system, and at least one fuel injection valve in said air intake system, said apparatus comprising:

an air-fuel ratio detector in said exhaust system of said engine for detecting the air-fuel ratio of the exhaust gas;

a feedback circuit for generating a correction signal in accordance with said detected signal of said air-fuel ratio detector, said feedback circuit comprising a comparator for comparing a voltage of said detected signal of said air-fuel ratio detector with a reference voltage, and an integrator for integrating an output signal of said comparator;

an air flow meter in said air intake system for generating an air flow amount signal indicating an intake air flow amount which is smaller than the acutal intake air flow amount of the engine when the actual air flow amount is smaller than a predetermined amount, and for generating an air flow amount signal indicating an intake flow amount which is larger than the actual intake air flow amount of the engine when the actual air flow amount is larger than said predetermined amount;

a rotational speed detector for generating a speed signal indicating the rotational speed of said engine;

a circuit for stopping the feedback operation of said feedback circuit so as to maintain the level of said correction signal at a predetermined level when the speed signal indicates that the rotational speed of the engine exceeds a predetermined value, said stopping circuit comprising a switch means in said integrator which is actuated when the speed signal indicates that the rotational speed of the engine exceeds a predetermined value so that an integration operation is stopped and the correction signal having said predetermined level is generated from said feedback circuit; and

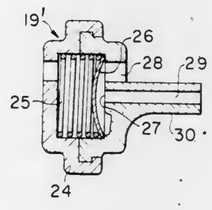
a control circuit for calculating an amount of fuel to be injected from said injection valve into said engine by using said air flow amount signal, said speed signal, and said correction signal, and for controlling the injection operation of said injection valve in accordance with said calculated amount of fuel.

4,210,115

WARM AIR INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kengi Nishibori, Nagoya; Fumio Hayashi, Toyata, and Tadashi Ogawa, Kariya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 20, 1978, Ser. No. 917,243
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—122 D **2 Claims**



1. A warm air intake system for an internal combustion engine, comprising:

(a) an air intake passage;

(b) a change-over valve having a damper element being movable between a first shift position for connecting the air intake passage substantially exclusively to a cold air source and a second shift position for connecting the air intake passage substantially exclusively to a warm air source;

(c) a diaphragm means having a diaphragm chamber for shifting said damper element between said first and second shift positions, the position of said damper element depending on whether intake vacuum of the engine or atmospheric pressure is supplied to said diaphragm chamber;

(d) a vacuum passage conducting intake vacuum of said engine to said diaphragm chamber; and

(e) a thermostat valve responsive to the temperature of the air flowing through said air intake passage, having a port passage which connects said vacuum passage to the atmosphere, and a temperature- sensitive valve element which shifts between one position fully opening said port passage and another position fully closing said port passage, said valve element comprising a disc element the shape of which depends on said air temperature in such a manner that when said air temperature increases the temperature of said disc element above a first predetermined value, the disc has a curved shape and when said air temperature decreases the temperature of the disc element below a second predetermined value, which is substantially lower than the first predetermined value, the disc has a flattened shape.

4,210,116

ELECTROMAGNETICALLY ACTUATED PUMPS

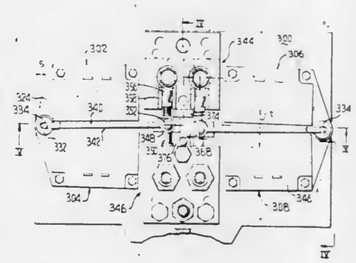
Willem Brinkman, Velp, Netherlands, assignor to Holec N.V., Hengelo, Netherlands

Division of Ser. No. 560,771, Mar. 21, 1975, Pat. No. 4,022,174, and Ser. No. 416,852, Nov. 19, 1973, Pat. No. 4,044,745, and a continuation-in-part of Ser. No. 452,549, Mar. 19, 1974, Pat. No. 3,994,272, and Ser. No. 452,619, Mar. 19, 1974, Pat. No. 3,943,892. This application Feb. 7, 1977, Ser. No. 766,549
Claims priority, application Netherlands, Mar. 22, 1974, 7403913; Mar. 22, 1974, 7403914; Mar. 22, 1974, 7403915; Mar. 22, 1974, 7403916; Mar. 22, 1974, 7403917; Mar. 22, 1974, 7403918; Jul. 11, 1974, 7409428; Aug. 13, 1974, 7410855
Int. Cl.[2] F02M *51/04*
U.S. Cl. 123—504 **42 Claims**

1. An injector system for delivering fuel to a combustion engine, comprising in combination:

a pair of fuel pumps and connecting means for maintaining said pumps in spaced, fixed relation to each other, said pumps presenting mutually opposed and aligned bores;

a double-ended piston assembly having displacer bodies at its opposite ends received respectively in said bores and a coupling member connecting said displacer bodies, said bores having inlet means and outlet means for inducting and discharging fuel in response to reciprocation of said piston assembly;



means operating in the space between said pumps for reciprocating said piston assembly; and

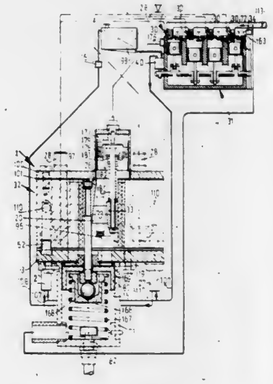
control means for controlling the stroke of said piston assembly, said control means comprising a pair of stop members disposed in the path of said piston assembly and delineating the stroke thereof, at least one of said stop members being movable to vary said stroke.

4,210,117

DEVICE FOR SUPPLYING FUEL TO A COMBUSTION ENGINE AND METHOD OF MANUFACTURING SAID DEVICE

Willem Brinkman, Velp, Netherlands, assignor to Holec, N.V., Helgelo, Netherlands

Division of Ser. No. 760,718, Jan. 19, 1977, Pat. No. 4,164,920. This application Jun. 15, 1978, Ser. No. 915,792
Claims priority, application Netherlands, Jun. 28, 1976, 7607080
Int. Cl.[2] F02M *39/00*; F04B *17/04*
U.S. Cl. 123—504 **15 Claims**



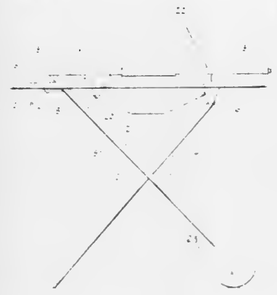
1. A device for delivering fuel to at least one atomizer of a combustion engine, in which the pump chamber in a pump housing of at least one fuel pump has a displacement volume adjustable by actuating means, is communicating through an inlet valve with a fuel supply and through an outlet valve with a fuel delivery part to be connected with the atomizer of the combustion engine and is limited by at least one displacer body reciprocated by driving means, said actuating means being coupled with a barometer bellows, characterized in that the

barometer bellows have an internal pressure substantially lower than the atmospheric pressure.

4,210,118
COLLAPSIBLE BARBECUES

Frederick C. Davis, and Richard L. Beer, both of Box Hill, Australia, assignors to Companion Pty. Limited, Box Hill, Australia

Filed Jul. 28, 1978, Ser. No. 928,892
Claims priority, application Australia, Jul. 29, 1977, 1044/77
Int. Cl.² H47I *37/00*
U.S. Cl. 126—25 R **3 Claims**



1. A portable cooking appliance comprising means for cooking food thereon including a metal grill and support frame for said grill, pivotable legs supporting the frame, said legs being pivotably joined together to move with a scissor like action, the legs being pivotably connected to said support frame an over-centre link to form a four bar linkage, the arrangement being such that the legs are movable between a folded and unfolded position, said legs being held in unfolded position by releasable latching means.

4,210,119
SHEET METAL FIREPLACE STOVE WITH IMPROVED DRAFT

Duane P. Kincaid, Rte. 1, Box 471, Sandpoint, Id. 83864

Filed Jul. 7, 1977, Ser. No. 813,580
Int. Cl.² F24C *1/14*
U.S. Cl. 126—61 **8 Claims**



1. An improved fireplace stove for heating a building or the like comprising:

a sheet metal fire box, said fire box comprising laterally spaced, vertically extending sheet metal end walls, said end walls being of polygonal shape, and vertically spaced top and bottom walls extending horizontally between said end walls, a vertical rear wall extending between said end walls, front and rear lower inclined sidewalls extending between said end walls and being inclined upwardly and outwardly from respective edges of said horizontal bottom wall, said rear lower inclined sidewall being joined to the lower edge of said vertical rear wall, a rear upper inclined sidewall extending between said end walls and being inclined downwardly and rearwardly from the edge of said top wall and being joined thereto to the upper edge of the rear wall,

fire brick lining the inner surface of said bottom wall and at least portions of adjacent inclined lower sidewalls,

a flue stack fixed to said sheet metal fire box, being open to the fire box interior at the bottom thereof and extending vertically above said top wall at the rear of said stove,

a metal backsplash plate fixedly mounted to the rear of said sheet metal fire box and spaced therefrom and extending vertically upwardly above said fire box top wall and including an inclined portion facing the lower rear inclined sidewall and forming on the exterior of said sheet metal fire box a heated air flow path for air flow upwardly and away from said backsplash plate to convect heat toward the front of the stove and the flow of relatively cool air beneath the sheet metal fire box to maintain the bottom of the fire box cool,

fan means for forcing air between said sheet metal fire box and said metal backsplash plate and for forcibly causing air to flow upwardly and away from the back splash plate and downwardly beneath said sheet metal fire box,

means for introducing combustion air flow into the interior of the sheet metal fire box at said lower front inclined sidewall to further cool the bottom of the sheet metal fire box during operation of said stove, and

door means carried by said sheet metal fire box permitting access to the interior and placing of solid fuel onto said fire box for maintaining a fire therein.

4,210,120
FURNACE PEEP SIGHT

Branco Ritopecki, 959 Mohawk Rd., E., Hamilton, Ontario, Canada (L8T 2R9)

Filed Aug. 15, 1978, Ser. No. 933,740
Int. Cl.² F23M *7/00*
U.S. Cl. 126—200 **7 Claims**

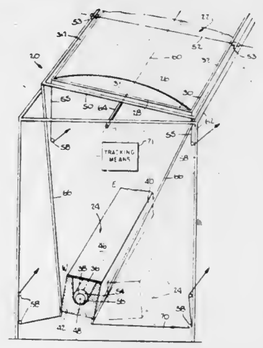


1. A furnace peep sight comprising a body having an upper surface, a lower surface, a surface of revolution, said upper surface and said lower surface being disposed in spaced apart relationship, said surface of revolution located intermediate said upper surface and said lower surface, said body having a longitudinal axis extending between said upper surface and said lower surface, a passageway, said passageway communicating between the ends thereof along a straight line, said ends of said passageway located in said surface of revolution, said body being journaled for rotation to a wall of a furnace along a longitudinal axis of said body, said longitudinal axis to said body passing through said upper surface and said lower surface, said furnace having another passageway therein, whereby said passageway may be coaxially aligned to said passageway of said furnace, said body having a pair of passageways therein communicating only to said upper surface, said pair of passageways each having a lining, said lining comprises a thermally insulating material, said lining defining an inner passageway therein, said lining having a pair of opposed openings therein, said pair of opposed openings juxtaposed with said passageway of said body, a cover plate, said cover plate removably affixed to said upper surface, said cover plate being disposed covering an opening to at least one of said pair of passageways of said body when said cover plate is affixed to said upper surface, said lining of each of said pair of passageways having a sight glass being disposed therein, whereby said pair of passageways of said body are disposed in spaced apart parallel relationship, and whereby said passageway of said body may be rotated having the longitudinal axis thereof out of coaxially alignment with said passageway of said furnace.

4,210,121
SOLAR ENERGY COLLECTION

Virgil Stark, 936 Fifth Ave., New York, N.Y. 10021

Filed Jun. 15, 1977, Ser. No. 806,291
Int. Cl.² F24J *3/02*; G02B *1/06*
U.S. Cl. 126—424 **19 Claims**



1. A lens system for concentrating solar energy comprising at least three lenses, a first of said lenses being an elongated lens located centrally of the others of said lenses and having an elongated focus, the others of said lenses being elongated Fresnel-type lenses having longitudinal microprisims, and elongated foci, said Fresnel-type lenses being positioned and said microprisims being arranged so that the foci of said Fresnel-type lenses are substantially coextensive with said focus of said lens, and means for interconnecting said lenses for tracking movement, whereby the foci of said lenses remain substantially coextensive during tracking of the sun.

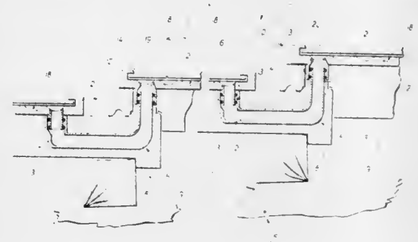
4. Apparatus for collecting and concentrating solar energy comprising in combination collector means characterized by elongated conduit means comprising a plurality of conduits each containing a fluid therein, said conduits being arranged such that at least two fluids in the conduits are contiguous, and fluid lens means for concentrating the solar energy along an elongated focus at said collector means located substantially in or on and substantially along at least one of the conduits, said fluid lens means comprising a solar-energy transmitting lens fluid and opposed solar energy transmitting plates enclosing said lens fluid, said lens plates being spaced and said lens fluid being chosen to absorb a minimum amount of infrared solar energy, said lens fluid being chosen from the group consisting of solvents, hydrocarbons, and salt and water solutions, said lens fluid having an index of refraction of greater than about 1.35, and said lens means further selectively comprising means for protecting lens plates otherwise corroded by said lens fluid.

5. Apparatus for collecting and concentrating solar energy comprising in combination collector means characterized by elongated conduit means comprising a plurality of conduits each containing a fluid therein, said conduits being arranged such that at least two fluids in the conduits are contiguous, and fluid lens means for concentrating the solar energy along an elongated focus at said collector means located substantially in or on and substantially along at least one of the conduits, said fluid lens means comprising a solar-energy transmitting lens fluid and opposed solar energy transmitting plates enclosing said lens fluid, said lens plates being spaced and said lens fluid being chosen to absorb a minimum amount of infrared solar energy, said lens fluid being chosen from the group consisting of solvents and hydrocarbons including trichlorethylene and toluene, said lens means further selectively comprising means for protecting lens plates otherwise corroded by said lens fluid.

4,210,122
ENERGY CONVERSION APPARATUS

Wolfgang Artweger, Windischgarsten, Austria, assignor to Artweger-Industrie-gesellschaft m.b.H., Windischgarsten, Austria

Filed Aug. 10, 1977, Ser. No. 823,497
Claims priority, application Austria, Aug. 11, 1976, 5982/76; Aug. 11, 1976, 5983/76; Aug. 11, 1976, 5984/76
Int. Cl.² F24J *3/02*
U.S. Cl. 126—432 **26 Claims**



1. A modular energy conversion apparatus for converting solar into thermal energy, comprising a plurality of detachably interconnected modules, each module comprising

(a) an energy conversion unit arranged for exposure to solar radiation and defining a cavity capable of receiving a heat carrier fluid, the unit including

(1) an inlet and an outlet for the fluid in communication with the cavity, and

(2) the inlet and the outlet each having a coupling part, and

(b) a mounting element carrying the energy conversion unit and including

(1) a conduit portion embedded therein, and having an inlet and an outlet end,

(2) the inlet and outlet ends of the conduit portion each having a coupling part,

(3) the inlet end coupling part and the outlet coupling part, on the one hand, and the outlet end coupling part and the inlet coupling part, on the other hand, being matched for detachable assembly to form detachable joints between respectively registering pairs of the coupling parts for detachably assembling the energy conversion unit and the mounting element, and

(4) one of the detachable joints detachably assembling adjacent ones of the mounting elements, registering ones of the coupling parts forming the one detachable joint, the conduit portions detachably joined to the cavities forming a conduit system for the heat carrier fluid to and from the cavities.

4,210,123

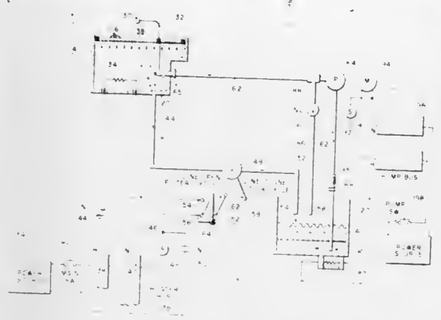
FILTER SYSTEM FOR FRYING APPARATUS

L. Frank Moore, and George M. Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Division of Ser. No. 753,936, Dec. 23, 1976. This application Oct. 20, 1978, Ser. No. 953,080

Int. Cl.² A47J 27/00

U.S. Cl. 126—374 **1 Claim**



1. Frying apparatus comprising:
a fry pot for containing cooking oil;
means for heating the oil;
a conduit connected to drain oil from the fry pot;
a valve connected for opening and closing the conduit;
first control means cooperatively associated with the valve for enabling the heating means when the valve is closed and for disabling the heating means when the valve is open;
second control means for selectively enabling or disabling the first control means in response to a manual command by an operator; and,
third control means cooperatively associated with the first control means for automatically sustaining the disabled condition of the heating means independently of subsequent operation of the valve until the first control means is disabled in response to a manual command by an operator.

4,210,124

DISH FOR HOLDING FOOD TO BE HEATED IN A MICROWAVE COOKING CHAMBER

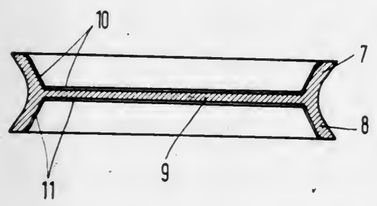
Julius Husslein, Vachendorf, and Wilhelm Hertel, Traunreut, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 746,335, Dec. 1, 1976, Pat. No. 4,143,647. This application Dec. 22, 1978, Ser. No. 972,250

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1975, 2555344

Int. Cl.² A47J 27/00

U.S. Cl. 126—390 **2 Claims**



1. A dish for holding food to be heated in a microwave cooking chamber comprising a dish bowl, a base extending down from said dish bowl, said base forming the side wall of a second dish bowl arranged substantially mirror-symmetrically to said first dish bowl, said first dish having its inner surface covered with a high-frequency radiation coating, and said second dish bowl having its inner surface covered with a high-frequency radiation-reflecting coating.

4,210,125

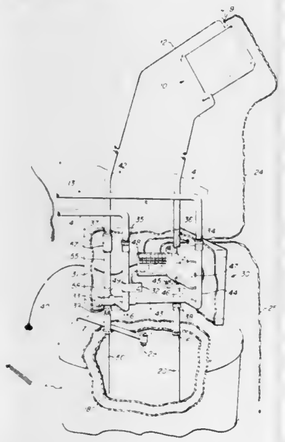
WATER FLOW CONTROLLER DEVICE

William H. Fender, San Diego, Calif., assignor to Solardyne, Inc., San Diego, Calif.

Filed Aug. 14, 1978, Ser. No. 933,514

Int. Cl.² F24J 3/02

U.S. Cl. 126—437 **9 Claims**



1. A Water Flow Controller Device of the type used for connecting a solar collecting device to conventional facility plumbing and a water reservoir, which comprises:
(a) a cold water source connector;
(b) a hot water feed connector;
(c) a collector supply connector;
(d) a collector return connector;
(e) a cold water inlet connector;
(f) a bifurcated hot water outlet connector having a collector return channel and a hot water feed channel;
(g) cold water line means connecting said cold water source connector to said cold water inlet connector;
(h) collector supply line means connecting said collector supply connector to said cold water lines means;
(i) hot water line means connecting said hot water feed channel of said bifurcated hot water outlet connector to said hot water feed connector;
(j) collector line means connecting said collector return channel of said bifurcated hot water outlet connector to said collector return connector;
(k) means for circulating water connected within said collector supply line means;
(l) means for controlling said circulating means electrically connected to said circulating means; and
(m) whereby said cold water source connector may be connected to a cold water source line of said facility plumbing; said hot water feed connector may be connected to a hot water feed line of said facility plumbing; said collector supply connector may be connected to a supply of said solar collecting devise; said collector return connector may be connected to a return line from said solar collecting device; said cold water inlet connector may be connected to a cold water inlet of said water reservoir; and said bifurcated hot water connector may be connected to a hot water outlet of said water reservoir.

4,210,126

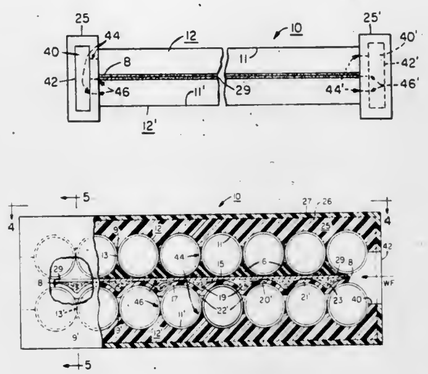
SOLAR ENERGY COLLECTOR

Howard E. Kellberg, and Arthur H. Wilder, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 9, 1978, Ser. No. 884,896

Int. Cl.² F24J 3/02

U.S. Cl. 126—443 **10 Claims**



1. A solar energy collector structure comprising:
a plurality of partially evacuated tubular members substantially transparent to incident solar radiation, said tubular members having opposed lateral ends being arranged in a first and second group and lying adjacent one another in parallel axial alignment, means for joining each tubular member next to each adjacent tubular member of the group to form a first and second respective tube sheet structure;
said tube sheets arranged adjacent each other in tandem to form at least one flow channel therebetween in a self-supporting structure;
an absorber member disposed within said flow channel for intercepting and absorbing solar energy; and
an insulating film having deposited thereon a radiation reflecting substance located behind said absorber member disposed over and conforming closely to a surface of said second tube sheet for forming an insulating space between the insulating film and the second tube sheet to thereby suppress radiation, conduction and convection from said absorber in a direction out of the interior of the flow channel.

4,210,127

HEAT EXCHANGER PANEL HAVING REFERENCE INDICIA AND IMPROVED FLOW DISTRIBUTION

Charles A. Kleine, Florissant, Mo., and Verne L. Middleton, East Alton, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 22, 1978, Ser. No. 917,815

Int. Cl.² F24J 3/02

U.S. Cl. 126—444 **12 Claims**

1. In a heat exchanger panel for use in a solar energy collector system, said panel comprising a plurality of spaced parallel individual tubular passageways connecting opposed headers defined by numerous island-like bonded portions connected by a plurality of tubular channels passing therebetween, the boundaries of said headers defining a generally triangular shape with at least one of said boundaries being inclined with respect to an edge of said panel, said headers including entry and exit portions to said panel, said entry and exit portions being laterally displaced from the center of said panel to permit a heat exchange medium to flow into said panel and across said headers so that said medium flows through each of the plurality of spaced parallel individual tubular passageways connecting said headers; and said parallel individual tubular passageways being interconnected by further tubular interconnecting portions spaced from said headers the improvement wherein



said tubular interconnecting portions are arranged across said panel at an inclination generally corresponding to the inclination of said at least one boundary.

4,210,128

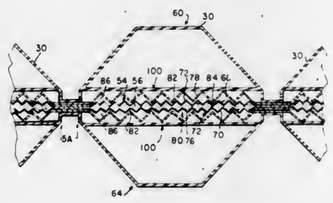
BLACK LIQUID ABSORBING SOLAR COLLECTOR

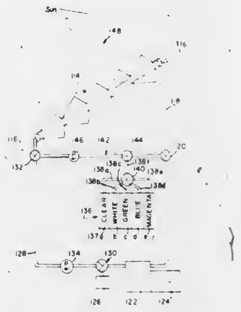
John P. Mattson, Duxbury, Mass., assignor to Solarspan, Inc., Duxbury, Mass.

Continuation-in-part of Ser. No. 914,388, Jun. 12, 1978. This application Aug. 30, 1978, Ser. No. 938,026

Int. Cl.² F24J 3/02; F28F 7/00

U.S. Cl. 126—444 **10 Claims**

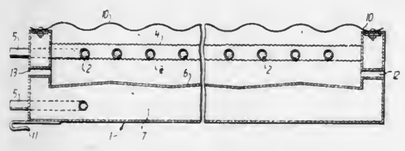




10. A solar to thermal energy converter for use in solar energy collector systems comprising an upper and lower surfaces transparent to solar energy and defining a plurality of elongate channel means therebetween for exposing a solar energy absorber heat transfer fluid to solar radiation, a solar energy absorber heat transfer fluid comprising a black liquid absorber for converting solar energy to thermal energy and

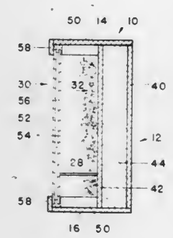
absorbing said thermal energy upon exposure to solar radiation, inlet means for introducing said black liquid absorber to said channel means, means for passing said black liquid absorber through said channel means, outlet means for conveying said black liquid absorber and absorbed thermal energy away from said channel means, said upper and lower channel means surface being sufficiently flexible to accommodate thermal expansion, and means disposed in said upper and lower surfaces defining conduit means transverse to said channel means and communicating with said channel means for adjusting the pressure and flow of said black liquid absorber along said channel means.

4,210,129
SOLAR HEAT COLLECTOR
Edward J. O'Hanlon, Assembly Point, Lake George, N.Y. 12845
Filed May 30, 1978, Ser. No. 911,051
Int. Cl.[2] F24J *3/02*; **F28F** *13/00*
U.S. Cl. 126—447 **11 Claims**



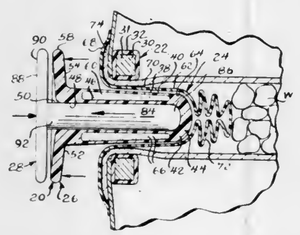
1. A solar heat collecting assembly comprising:
a thin-walled, hollow container including a plurality of attached, metallic side walls and a metallic bottom wall extending between end portions of each of said side walls for partially defining a solar heat collecting space therebetween;
a substantially rigid layer of high density plastic foam completely covering surface portions of said side walls and said bottom wall facing said solar heat collecting space for preventing the transfer of heat through said side walls and said bottom wall, respectively;
a layer of highly reflective material mounted on all surface portions of said plastic foam facing said heat collecting space;
a sheet of heat transmitting material completely covering said heat collecting space and having end portions fixedly attached to confronting end surfaces of said high density plastic foam;
a pair of parallel extending screen assemblies positioned within said solar heat collecting space and extending substantially parallel to said bottom wall of said hollow container, each screen assembly having end portions attached to said layer of highly reflective material and each screen assembly having openings sufficient to allow the passage of low micron heat waves therethrough;
tube means positioned between said parallel extending screen assemblies, with said tube means having opposite end portions each extending through a separate opening in a wall of said hollow container for providing a liquid flow passageway through said heat collecting space and between said screen assemblies, whereby heat captured by said tube means and said screen assemblies is transferred to the liquid flowing through said tube means.

4,210,130
SOLAR COLLECTOR WITH MULTI-TURN COLLECTING STRIPS
Nancy K. Boodley, Townline-Iradell Rd., and Frank Hanshaw, Spruce La., both of Ithaca, N.Y. 14850
Continuation of Ser. No. 760,230, Jan. 17, 1977, abandoned. This application Jan. 20, 1978, Ser. No. 871,064
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—449 **3 Claims**



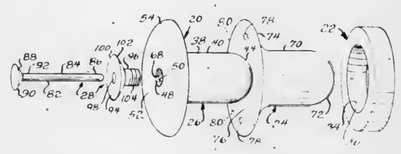
1. A solar collector for collecting energy from the sun and transferring the energy to a transfer fluid, said solar collector comprising:
a collecting box, said box having inlet and outlet means for said transfer fluid and including an insulated bottom, side walls extending upwardly from said bottom, and a light transmissive cover, said bottom, sides and cover defining an air tight space, inner surfaces of said bottom and side walls being collecting surfaces;
a plurality of multi-turn helical collecting strips secured to said inner surface of said bottom of said collecting box, each of said helical collecting strips having a strip width of between about ¼ and ¾ inch and a strip length of between about 2 and 12 inches and forming an infinite number of parabolic surfaces, each of said parabolic surfaces absorbing a portion of the rays from the sun striking it, rays reflected from said parabolic surfaces being collected and concentrated at the focal length of said parabolic surfaces to form areas of elevated temperature; and
means for causing flow of said transfer fluid through said collecting box whereby heat collected in said box by said inner surfaces of said walls and bottom, said multi-turn collecting strips, and concentrated at the focal length of said parabolic surfaces is transferred to said transfer fluid and is removed from said solar collector.

4,210,131
ARTIFICIAL SPHINCTER WITH COLLECTION BAG
Alfred R. Perlin, Highland Park, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Jul. 26, 1978, Ser. No. 928,043
Int. Cl.[2] A61B *19/00*
U.S. Cl. 128—1 R **9 Claims**



1. An artificial sphincter for closure of a channel in a patient's body communicating with an opening adjacent the outside of the patient's body, comprising:
a generally annular member containing a first material for placement at least partially around the channel of the patient's body;
a plug having an elongated outer wall of an elastic material for placement within said annular member in the body channel with the plug outer wall facing the walls of said channel in a closure position of the plug, said plug containing a particulate second material positioned in a region within the annular member when said plug is located in said closure position, with at least one of said first and second materials comprising a permanent magnetic material, and with the other of said first and second materials comprising a material substantially susceptible to said one magnetic material; and
a collection bag of flexible material having a first surface, a second opposed surface, a proximal portion extending peripherally around said opening, means for releasably attaching the first surface of proximal portion to the patient's body peripherally around said opening, an elongated annular central portion for covering said outer plug wall in said closure position with the first surface of the central portion facing outwardly toward said body channel, and with the second surface of the central portion facing toward the plug outer wall, and said bag having a distal portion extending distally from said central portion in the body channel, with said distal bag portion being folded into a configuration of reduced dimensions, said bag being capable of assuming an inverted configuration when the plug is removed from the body channel with the central and distal bag portions located outside the patient's body, with said distal bag portion being expanded to a configuration of enlarged dimensions, and with the first surface of the inverted bag defining a cavity to receive materials passing from the body channel.

4,210,132
ARTIFICIAL SPHINCTER
Alfred R. Perlin, Highland Park, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Jul. 26, 1978, Ser. No. 928,203
Int. Cl.[2] A61B *19/00*
U.S. Cl. 128—1 R **36 Claims**



1. An artificial sphincter for closure of a channel in a patient's body communicating with an opening adjacent the outside of the patient's body, comprising:
a generally annular member containing a first material for placement at least partially around the channel of the patient's body;
a plug having elongated flexible sidewalls of an elastic material for placement within said annular member in the body channel with the plug sidewalls flexing toward walls of said channel in a closure position of the plug, said plug containing a particulate second material positioned in a region within the annular member when said plug is located in said closure position, at least one of said first and second materials comprising a permanent magnetic material, and the other of said first and second materials comprising a material substantially susceptible to said one magnetic material; and
applicator means for selectively placing said plug in said closure position and for selectively removing the plug from the body channel comprising means for modifying the transverse dimensions of the plug sidewalls relative to the body channel.

4,210,133
VAGINAL MICROSCOPE
Jimeno O. Castaneda, Colonia Lindavista, Mexico, assignor to Consejo Nacional de Ciencia y Tecnologia, Mexico, Mexico
Filed Oct. 20, 1976, Ser. No. 734,098
Claims priority, application Mexico, Oct. 21, 1975, 89285
Int. Cl.[2] A61B *1/00, 1/06, 1/30*
U.S. Cl. 128—6 **15 Claims**



1. An instrument for microscopic examination through the vagina comprising:
guide-tube means including means for attaching said guide-tube within a speculum and microscope means adjustably positioned inside said guide-tube means.

4,210,134
PILLOW FOR MANUAL THERAPEUTICS
Yasukichi Okazaki, and Tatsuo Okazaki, both of Kamifukuoka, Japan, assignors to Kabushikigaisha OMCO, Saitama, Japan
Filed Aug. 10, 1978, Ser. No. 932,485
Claims priority, application Japan, Mar. 30, 1978, 53-29859[U]; Jul. 12, 1978, 53-95799[U]
Int. Cl.[2] A61H *29/00*
U.S. Cl. 128—24.1 **21 Claims**



1. A pillow for manual therapeutics comprising:
a hollow body (**1**) including an upper body member (**1***a*) having a surface portion for receiving and supporting at least a part of a human body, and a lower body member (**1***b*) connected to said upper body member (**1***a*);
at least one protrusion (**2**) detachably mounted on said receiving and supporting surface portion of said upper body member (**1***a*);
said upper body member comprising at least one aperture, said at least one aperture being equal in number to the number of said at least one detachable protrusion, said at least one detachable protrusion (**2**) comprising a head portion (**2***a*) and a leg portion (**2***b*) connected to said head portion, said leg portion being introducable into said at least one aperture; and
said at least one aperture further comprising a guide slit (**3***a*)

and said detachable protrusion (2) further comprising a lock protrusion (2*c*) extending from said leg portion (2*b*) of said at least one protrusion (2), said lock protrusion being passable through said guide slit when in alignment therewith, such that said detachable protrusion (2) is detachable from said hollow body (1) only when said lock protrusion (2*c*) is aligned with said guide slit (3*a*);

whereby when a human head or body part is supported on said hollow body, said at least one protrusion exerts pressure on at least a portion of the supported part of said head , or body.

4,210,135

MASSAGING DEVICE

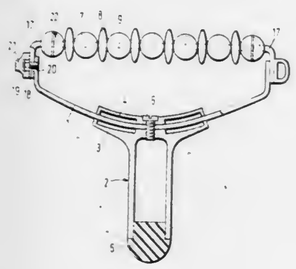
Erich Deuser, Grupellostrasse 24, 4000 Dusseldorf, Fed. Rep. of Germany

Filed Aug. 22, 1978, Ser. No. 935,896

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738060

Int. Cl.² A61H *7/00*

U.S. Cl. 128—57 **25 Claims**



1. A massaging device comprising:

(a) a flexible shaft;

(b) bow means for holding the ends of said flexible shaft;

(c) a handle attached to said bow means;

(d) a plurality of massaging members on said flexible shaft;

(e) spacer means for spacing at least some of said massaging members apart from each other;

(f) first fixing means for fixing said massaging members to said flexible shaft to prevent substantial rotation therebetween;

(g) second fixing means for fixing said flexible shaft to said bow means to prevent substantial rotation therebetween;

(h) said spacer means being rolling members arranged on said flexible shaft between the massaging members, the radius of said rolling members being smaller than the radius of adjacent massaging members from the center line of the flexible shaft; and

(i) said rolling members having a spherical shape.

4,210,136

APPARATUS FOR AUTOMATIC VENTILATION OF THE LUNGS

Wayne R. Apple, P.O. Box 3370, Boulder, Colo. 80303

Division of Ser. No. 815,659, Jul. 14, 1977, Pat. No. 4,141,355. This application Sep. 25, 1978, Ser. No. 945,644

Int. Cl.² A62B *7/00;* **A61M** *15/00*

U.S. Cl. 128—204.21 **4 Claims**

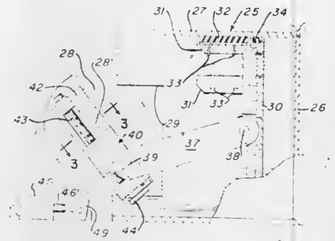
1. In a respiratory machine of the variable stroke, piston type having a piston reciprocable in a cylinder and a variable length connecting rod between the piston and the shaft of a motor, the improvement of

(a) said variable length connecting rod including an elongated housing means mounted with its longitudinal axis perpendicular to the axis of the motor shaft and mounted axially and laterally off-center, thereof,

(b) jack screw means rotatably mounted in said housing,

(c) bar means threadedly mounted on said jack screw and arranged to be moved generally from end to end of said jack screw,

(d) connecting pin means mounted on and depending from said bar interconnecting said bar means and the connecting rod,



(e) axial extending means operably connected to said jack screw means extending beyond said housing means for turning said jack screw means, and

(f) turning means inclusive of individually activated contact means positioned to contact said extending means for a short arc of each revolution of said housing means to turn said jack screw means in one direction a portion of a revolution to change the position of said bar means in said housing means.

4,210,137

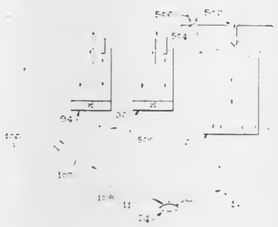
ALTITUDE CONDITIONING METHOD AND APPARATUS

Melvyn L. Henkin, 5011 Donna Ave., Tarzana, Calif. 91356

Continuation-in-part of Ser. No. 646,424, Jan. 5, 1976, Pat. No. 4,086,923. This application May 1, 1978, Ser. No. 901,621

Int. Cl.² A61M *16/00*

U.S. Cl. 128—200.24 **17 Claims**



1. Apparatus for supplying air, for inspiration by a user, having a lower oxygen concentration than the ambient air, said apparatus comprising:

inspiratory path means having open first and second ends and including means therein for permitting air flow only in the direction from said second to said first end;

expiratory path means having open first and second ends and including means therein for permitting air flow only in the direction from said first to said second end;

air reservoir means;

means coupling said expiratory path means second end to said reservoir means for supplying air thereto;

means coupling said inspiratory path means second end to said ambient air and said reservoir means for drawing air therefrom comprising a selected ratio of ambient air and air from said reservoir means; and

means for removing CO_2 from air flowing between said expiratory path means first end and said inspiratory path means first end, said CO_2 removing means including adjustable means for selectively varying the amount of CO_2 removed.

4,210,138

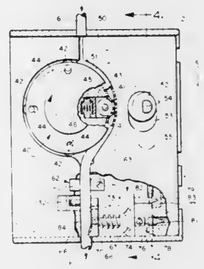
METERING APPARATUS FOR A FLUID INFUSION SYSTEM WITH FLOW CONTROL STATION

Thurman S. Jess, Mundelein, and Nicholas Zissimopoulos, Schaumburg, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 2, 1977, Ser. No. 856,926

Int. Cl.² A61M *5/00*

U.S. Cl. 128—214 E **6 Claims**



1. Fluid metering apparatus for controlling the flow of fluid through the tubing of a fluid administration set, comprising:

a housing;

a rotor mounted on said housing for rotation about a fixed axis, said rotor including a plurality of pressure rollers disposed about the circumference thereof;

a platen assembly slidably mounted to said housing and having a pressure plate having an open position displaced from the circumference of said rotor whereby said tubing can be inserted therebetween, and having a closed position adjacent said rotor circumference whereby a segment of said tubing is positioned in compressive engagement with said pressure rollers and fluid is caused to flow along the tubing with rotation of said rotor;

flow restriction means including a plunger slidably mounted on said housing for occluding said tubing at a predetermined location downline of said tubing segment for increasing the pressure of said fluid in said tubing segment, said plunger having an open position removed from said tubing and a operating position compressively engaging said tubing;

means carried on said housing for biasing said plunger to said operating position even if said platen assembly is accidently moved to said open position; and

user-actuable latching means operable only when said platen assembly is in said open position for latching said plunger in said open position, said latching means automatically releasing said plunger to allow said plunger to move to said operating position upon actuation of said pressure plate to said closed position.

4;210,139

OSMOTIC DEVICE WITH COMPARTMENT FOR GOVERNING CONCENTRATION OF AGENT DISPENSED FROM DEVICE

Takeru Higuchi, Lawrence, Kans., assignor to Alza Corporation, Palo Alto, Calif.

Filed Jan. 17, 1979, Ser. No. 4,180

Int. Cl.² A61M *7/00*

U.S. Cl. 128—260 **6 Claims**

1. An osmotic device for the controlled delivery of a beneficial drug to a biological environment of use, comprising:

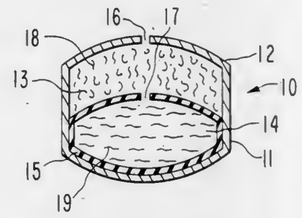
(a) an exterior wall formed of a semipermeable material permeable to the passage of an external fluid present in the environment and substantially impermeable to the passage of drugs and osmotically effective solutes, the exterior wall surrounding and forming;

(b) a first compartment containing an osmotically effective solute that exhibits an osmotic pressure gradient across the wall against the exterior fluid;

(c) a second compartment surrounded by an interior wall formed of a semipermeable material permeable to the passage of external fluid at a lower rate than through the exterior wall and substantially impermeable to the passage of drugs and osmotically effective solute, said compartment containing a drug;

(d) a passageway in the exterior wall communicating the first compartment containing the osmotically effective solute with the exterior of the device;

(e) a passageway in the interior wall communicating the second compartment containing drug with the first compartment containing the solute; and,



(f) wherein, in operation when the device is in the fluid environment of use, fluid from the environment is imbibed through the wall into the first compartment and through the walls into the second compartment and (1) into the first compartment containing the solute in a tendency towards osmotic equilibrium at a rate determined by the permeability of the exterior wall and the osmotic pressure gradient across the wall thereby forming a solute solution, and into (2) the second compartment containing drug in a tendency towards osmotic equilibrium at a rate determined by the permeability of the interior and exterior walls and the osmotic pressure gradient across the wall thereby forming a drug solution, with drug solution osmotically delivered through the passageway from the second to the first compartment and diluted therein and osmotically delivered through the passageway from the first compartment to the exterior of the device.

4,210,140

DEVICE FOR DISPENSING MEDICAMENTS

Michael James, Pirton; Paul K. Rand, Hitchin, and Gerald W. Hallworth, Ware, all of England, assignors to Allen & Hanburys Limited, London, England

Filed Feb. 7, 1978, Ser. No. 875,884

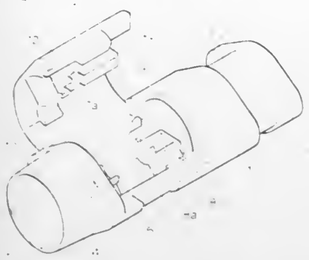
Claims priority, application United Kingdom, Feb. 10, 1977, 5486/77; Feb. 10, 1977, 5489/77; Apr. 29, 1977, 18058/77

Int. Cl.² A61M *15/00*

U.S. Cl. 128—266 **12 Claims**

1. An inhaler device for administering medicaments contained in capsules of the kind including a capsule body portion fitted with a capsule cap portion, the said device comprising a body shell provided with an internal chamber, at least one air inlet opening leading into the chamber, an outlet nozzle through which air can be aspirated from the chamber, a capsule receptacle mounted entirely inside the chamber, the said receptacle including means for retaining one of said portions of a capsule therein, and capsule opening means arranged to engage the other said portion of the capsule retained in the capsule receptacle, the receptacle and the opening means being movable with respect to one another to separate the two said

capsule portions from each other whereby powdered medicament can exit from the said capsule portions and be entrained



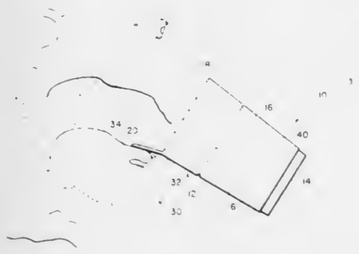
in air flowing through the chamber when air is aspirated through the nozzle.

4,210,141

HICCOUGH TREATMENT APPLIANCE

Raymond G. Brockman, Cleveland Heights, Ohio, and William C. Nadeau, 2623 Queenston Rd., Cleveland Heights, Ohio 44118, assignors to William C. Nadeau, University Heights, Ohio

Filed Dec. 8, 1977, Ser. No. 858,793
Int. Cl.[2] A61J *1/00*
U.S. Cl. 128—272 **6 Claims**



1. A hiccough treatment appliance, comprising:

(a) structure defining an upwardly opening container having a bottom portion configured to be supported atop a flat horizontal surface and a rim portion extending perimetrically about the top of the container when the bottom portion is supported atop a flat horizontal surface;

(b) a relatively flat, thin, tab-like projection means extending predominantly upwardly when the appliance is positioned with the bottom portion supported atop a flat horizontal surface:

(i) for insertion a short distance into the mouth of a person in overlying relationship with the frontal tip portion of the person's tongue as the rim portion is brought toward a position of engagement with the person's lower lip;

(ii) for engaging in overlying relationship the frontal tip portion of the person's tongue as the rim portion is brought into firm seating engagement with the person's lower lip;

(iii) for firmly depressing the frontal tip portion of the person's tongue as the appliance is tipped while in seating engagement with the person's lower lip to dispense liquid from the container into the forward part of the person's mouth; and

(iv) for continuing to depress the frontal tip portion of the person's tongue and to thereby restrain tongue movement as such liquid is swallowed;

(c) the structure and the projection means being formed as a single, one piece, integral member;

(d) the tab-like projection means consisting of a tab-like structure which extends upwardly from a part of the perimetrically extending rim, the tab-like structure having a width, as measured along the rim part, which is relatively narrow in comparison with the perimeter of the rim, the tab-like structure being relatively short in length to effect engagement and depression of only the frontal tip portion of the person's tongue when the appliance is tipped to dispense liquid into the person's mouth;

(e) the tab-like structure extending upwardly from the rim at an angle of inclination relative to the plane of an adjacent side wall part, the angle of inclination being within the range of about two to twenty-five degrees;

(f) the container side wall being provided with indicia means for indicating an appropriate level of liquid in the container means to be utilized in hiccough treatment, the container holding approximately four to six ounces of liquid when being supported atop a flat horizontal surface and being filled to the level of the indicia means; and

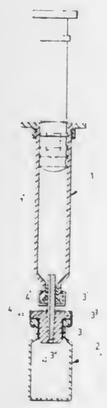
(g) the indicia means being located at a sufficient distance below the rim to permit the container to be tipped while in engagement with a person's lower lip and to permit the tongue depression means to be brought into overlying engagement with the frontal tip portion of the person's tongue before liquid is dispensed from the container into the person's mouth.

4,210,142

TWIN CHAMBER INJECTION SYRINGE

Hans Wörder, 27, Lange Wand, D-4980 Bünde 1, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 953,340
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 7732670
Int. Cl.[2] A61J *1/00*
U.S. Cl. 128—272.1 **10 Claims**



1. In a twin-chamber syringe for medical purposes, having a cylindrical syringe body with a conical shoulder on the front end, a peripheral rotating locking ring for firmly mounting a sealing cap or subsequently a tubule, a piston that can be displaced by means of a plunger and that seals the syringe body at the rear, and a separate container to be connected to the syringe, as the second chamber, and which has a sealing cap with a flanged cap incorporated in it, the improvement that said container serving as the second chamber, and which contains the mixing component, has an elastic locking cap with a centrically arranged weak point in the form of a diaphragm, and that said flanged cap sealing the locking cap on the outside, is provided with a centering device covering the same area as the weak point of the locking cap and receiving the conical shoulder, so that when container is fitted the centering device of the flanged cap and the peripheral locking ring of the conical

shoulder snap into each other so that they can be subsequently detached.

4,210,143

DISPOSABLE NAPPY FOR A BABY

Raphaël De Jonckheere, Bondues, France, assignor to Societe Anonyme dite: Consortium General Textile, Nord, France

Filed Jul. 26, 1978, Ser. No. 927,977
Claims priority, application France, May 8, 1978, 78 14350
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—287 **5 Claims**



1. A disposable nappy for a baby, comprising a sheet of flexible impermeable material having two longitudinal side edges intended to define opening for the legs of a baby and two transverse end edges intended to define a waist portion, an absorbent pad superimposed on a central region of said impermeable sheet with longitudinal side edges of said pad spaced inwardly from longitudinal side edges of said impermeable sheet, the longitudinal side edges of said impermeable sheet being folded inwardly on themselves and secured to said impermeable sheet along longitudinal junction lines at a distance from the folds to form longitudinally extending tubular sheaths at opposite sides of said nappy, said pad being disposed only on a central region of said impermeable sheet between said longitudinal junction lines, a flexible longitudinal tie located inside each of said sheaths and able to slide therein, said nappy being folded over on itself along longitudinal lines to form a central portion, opposite side portions extending inwardly from first fold lines toward a longitudinal center line of said nappy, and opposite edge portions extending outwardly from second fold lines, said edge portions comprising said sheaths, and means providing access to at least one end of each of said longitudinal ties in order to make it possible to grip the latter manually and tension them to reduce the effective length of said sheaths and thereby press the latter around the baby's legs to give the nappy the shape of a trough between said sheaths.

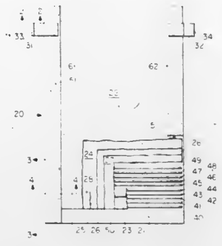
4,210,144

DISPOSABLE DIAPER HAVING REFASTENABLE TAPE SYSTEM

Henry D. Sarge III, Okeana, and Alan R. Spector, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 18, 1978, Ser. No. 943,595
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—287 **19 Claims**

1. In an improved disposable diaper of the type having an absorbent pad assembly secured to a substantially moisture impervious backsheet of relatively thin material having a relatively high elongation to tensile force property, and having peelable adhesive coated tape-tab fasteners wherein at least one of said tape-tab fasteners has a nonadhesive coated distal end portion to provide a mother's grasping portion for facilitating removal of said diaper from a user, the improvement comprising a coating disposed on an inwardly facing surface of a mother's bond region of said backsheet, said coating comprising a self-adhering coating material having a relatively high



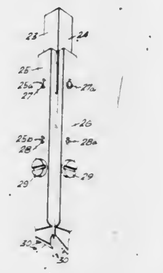
tensile strength and a low elongation to tensile force property relative to said backsheet.

4,210,145

SURGICAL HOLE CUTTER FOR SQUARE HAIR TRANSPLANT PLUGS

Jack Nestor, Miami Beach, and John W. Devine, Jr., Miami, both of Fla., assignors to Nestor Engineering Associates, Inc., Miami, Fla.

Filed Apr. 5, 1978, Ser. No. 893,626
Int. Cl.[2] A61B *17/32*
U.S. Cl. 128—305 **9 Claims**



1. An instrument for cutting a hole in the scalp for receiving a hair transplant donor plug of square surface area comprising a handle having a longitudinal axis, said handle terminating at one end in a coaxially mounted square knife having four identical sides, each side being formed with a bottom edge sharpened for cutting and inclined inwardly from a point located at one corner of the square to a cutback at the adjacent corner of the square, each point having an adjacent edge extending parallel to said longitudinal axis sharpened for cutting and extending inwardly along a corner of the square and being exposed by said cutback, the interior of the square knife being recessed a predetermined distance inwardly of said points and of said cutbacks as a depth of cut limiting means, said inclined sharpened edges cutting a square incision on axial pressure of said handle to said depth of cut and said sharpened adjacent edges cutting a circular incision at the bottom of said square incision upon rotation of said handle.

4,210,146

SURGICAL INSTRUMENT WITH FLEXIBLE BLADE

Anton Banko, 1496 Mayflower Ave., Bronx, N.Y. 10461

Filed Jun. 1, 1978, Ser. No. 911,677
Int. Cl.[2] A61B *17/32*
U.S. Cl. 128—305 **9 Claims**

1. A surgical instrument comprising:

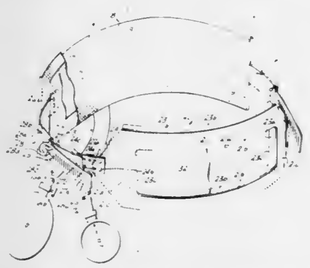
a hollow tubular member having a tip portion which tapers to a smaller diameter than the major part of the member, said tapered tip having an opening formed therein,

a shaft within said tubular member,
means for reciprocating said shaft toward and away from said tapered tip of said tubular member,
a blade mounted on said shaft and having a first portion adapted to move within the tapered tip of said tubular member, said blade formed to deform by engaging the



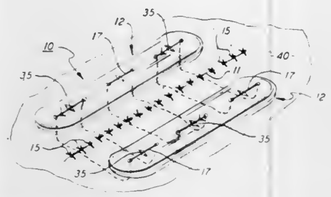
tubular member and to conform to the tapered shape of the tip as the blade is moved further into said tip so that the blade makes a shearing cut of material in the tip opening in cooperation with the wall of the tubular member surrounding the opening as the blade sweeps across the opening.

4,210,147
HEAD TOURNIQUET HAVING INCISION CLOSING CAPABILITY
Jack Nestor, 1496 Mayflower Ave., 10461, and John W. Devine, Jr., both of Miami, Fla., assignors to Nestor Engineering Associates, Inc., Miami, Fla.
Filed Jun. 19, 1978, Ser. No. 917,089
Int. Cl.[2] A61B *17/12*
U.S. Cl. 128—327 **7 Claims**



1. A tourniquet for controlling hemostasis in a predetermined area of the scalp formed as a head encircling band comprising two flexible non-fabric plate members, each having a firmness for maintaining a predetermined substantially configuration, said plate members being arranged opposite each other and interconnected at opposite ends thereof by a pair of circumference size-adjusting means, a first of said plate members forming a backing and support for an air bladder having an air pressure gauge and valved, hand operated air pump bulb, the second of said plate members being formed as a frame having a large center opening, and a firm flexible and resilient rubber pad liner having a center opening conforming to said frame center opening, said liner being attached to the interior side of said frame with said frame and liner openings in register to provide a window exposing said predetermined scalp area, said plate member flexibility and firmness enabling said frame and liner to conform to the contour of the head for applying a substantially uniform hemostatic pressure to the periphery of said scalp area by pressure exerted by said air bladder.

4,210,148
RETENTION SUTURE SYSTEM
Oscar G. Stivala, 10 Whited St., Little Falls, N.Y. 13365
Filed Nov. 3, 1978, Ser. No. 954,221
Int. Cl.[2] A61B *17/04*
U.S. Cl. 128—335 **5 Claims**



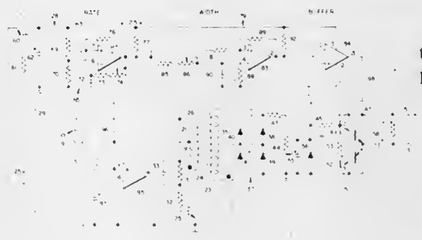
1. A retaining bar for use in a retention system for safeguarding a surgical incision that includes
an elongated plate formed of a relatively rigid material that is capable of flexing without breaking,
a pad securely affixed to the bottom surface of the plate for contacting the skin adjacent the incision, said pad being formed of a resilient open-celled material that is capable of conforming to the contour of the skin while, at the same time, permitting air to contact the skin,
said cojoined plate and pad having at least one suture hole pair passing downwardly therethrough with the holes being located upon the longitudinal axis of the plate and being spaced apart at a distance substantially equal to the width of said plate, and
said plate further including laterally extended notches recessed into the top surface thereof that span the lateral axis of the plate midway between each of the holes in the hole pair, and the entire lower edge of the plate containing a gently rolled corner to prevent damaging the skin as the bar is drawn thereagainst.

4,210,149
IMPLANTABLE CARDIOVERTER WITH PATIENT COMMUNICATION
Marlin S. Heilman, Gibsonia, and Alois A. Langer, Pittsburgh, both of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.
Filed Apr. 17, 1978, Ser. No. 896,518
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—419 D **19 Claims**



1. A patient communication system for use in a cardioverter encased in a housing implanted in a patient, the cardioverter including a detector for detecting the onset of fibrillation, a discharge device operative at the expiration of a first time interval subsequent to the detection of said fibrillation for discharging defibrillating energy in the form of a defibrillating shock through the heart of the patient, and a charging device made active subsequent to the detection of said fibrillation for charging the discharge device with sufficient energy to effect defibrillation, said patient communication system comprising:
implanted communication means for issuing a communication signal capable of detection by the patient, said communication means including a pair of implanted electrodes arranged to deliver a mild shock to the patient, at least one of said electrodes being disposed on an exterior surface of said implanted housing; and implanted triggering means for actuating said communication means in response to a given condition of the implanted cardioverter.

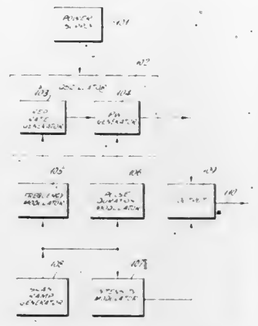
4,210,150
MINIATURIZED TRANSCUTANEOUS NERVE STIMULATING DEVICE
Donald N. James, Estes Park, Colo., assignor to Staodynamics, Inc., Longmont, Colo.
Filed Jun. 27, 1977, Ser. No. 810,126
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—421 **7 Claims**



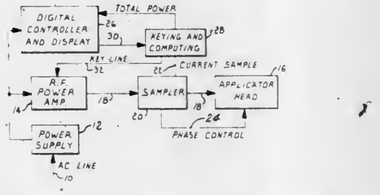
1. In a transcutaneous nerve stimulating device having electrodes for applying electrical energy to a subject, an electrical unit comprising:
switching means;
pulse producing means for generating pulses having predetermined widths and at a predetermined rate, said pulse producing means being connected with said switching means for coupling said generated pulses thereto;
rectifier means connected with said switching means;
a very low voltage source of below two volts;
electrical power means including a step-up transformer the primary winding of which is connected with said very low voltage source and directly connected with said pulse producing means to supply power thereto, and the secondary winding of which is connected with said rectifier means; and
output terminals connected with said switching means and through which pulses may be coupled to the electrodes of said device for application to a subject.

4,210,151
ELECTRONIC PAIN CONTROL WITH SCANNED OUTPUT PARAMETERS
John W. Keller, Jr., Miami, Fla., assignor to Stimtech, Inc., Minneapolis, Minn.
Filed Sep. 26, 1978, Ser. No. 945,974
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—421 **9 Claims**

1. A transcutaneous electrical nerve stimulator for pain control comprising: means for generating a pulse signal; respective means for continuous, automatic variation, through respective predetermined ranges, of the pulse signal parameters of output pulse width, and output pulse amplitude; and means, responsive to said respective means, for intermittently producing, for a given set of nerves, an output stimulation signal employing a signal amplitude—pulse width combination, and duration of that combination, which is adequate to produce requisite pain control effect.



4,210,152
METHOD AND APPARATUS FOR MEASURING AND CONTROLLING THE OUTPUT POWER OF A SHORTWAVE THERAPY APPARATUS
Fred M. Berry, Johnson County, Kans., assignor to International Medical Electronics Ltd., Kansas City, Mo.
Filed May 1, 1978, Ser. No. 901,854
Int. Cl.[2] A61N *1/40*
U.S. Cl. 128—422 **36 Claims**



1. A method for controlling the amount of power being absorbed by a load within the irradiating region of an applicator head of a shortwave diathermy apparatus, said method comprising the steps of
selecting a power setting,
periodically establishing a duty cycle of variable duration,
generating a radio frequency electric signal during said duty cycle said radio frequency electric signal having a current component and a voltage component,
providing said radio frequency electric signal to said applicator head to thereby produce electrostatic and electromagnetic energy in said applicator head,
applying said electrostatic and electromagnetic energy to said load by means of said applicator head,
ascertaining the level of power being absorbed by said load during the duty cycle to obtain a first power measurement,
deriving from said first power measurement and the duration of the duty cycle a power figure representative of the amount of power being absorbed by said load,
comparing said power figure with said power setting, and
varying the duration of the duty cycle so as to reduce the difference between said power setting and said power figure.

4,210,153

MEDICAL DIAGNOSTIC DEVICE FOR DETERMINING BLEEDING TIMES AND BEHAVIOR OF BLEEDINGS FROM A STANDARDIZED WOUND

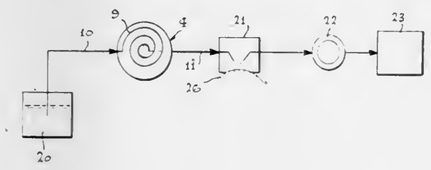
Robert Fehlau; Peter Schlussel, and Matthias Schneider, all of Freiburg, Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,261

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1978, 2808473

Int. Cl.² A61B *5/00*

U.S. Cl. 128—637 **10 Claims**



1. A medical diagnostic device for determining bleeding times and behavior of bleedings from a standardized wound, comprising

means for establishing a flow of a rinsing liquid past the wound thereby to contact the wound;

means for determining a characteristic of the rinsing liquid which is representative of the blood contents in the rinsing liquid having contacted the wound; and

means for controlling the temperature of the rinsing liquid; wherein the temperature control means comprise a first heat exchanger for receiving the flow of the rinsing liquid therethrough, a second heat exchanger for receiving the flow of a second, auxiliary liquid therethrough, a temperature control element in thermal contact with the first and second heat exchangers, and means for controlling energization of the Peltier element as a function of the temperature of the rinsing liquid.

4,210,154

SLEEVE WITH ARMBAND

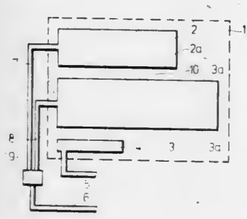
Johann Klein, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 6, 1977, Ser. No. 857,963

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657519

Int. Cl.² A61B *5/02*

U.S. Cl. 128—685 **4 Claims**



1. A sleeve with an armband for measuring blood pressure of the type which is wound and fixed round a part of the patient's body during use, the sleeve comprising a first inflatable longitudinal pressure chamber windable along its longitudinal axis about body parts having a first range of circumferential extent, a separate second inflatable longitudinal pressure chamber having a substantially greater length than the first windable along its longitudinal axis about body parts having a second range of circumferential extent different from the first, wherein the two chambers extend longitudinally superposed one upon the other, and pneumatic swtich-over means for swtiching a supply of compressed air alternatively to the first chamber when a body part having a circumferential extent in the first range is to be wound around or the second chamber when a body part having a circumferential extent in the second range is to be wound around to effect the inflation of only one of the two chambers while maintaining the other chamber in the deflated state.

4,210,155

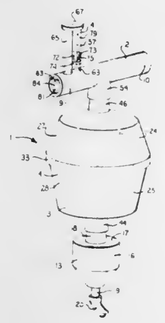
INSPIRATIONAL INHALATION SPIROMETER APPARATUS

Jerry Grimes, 1798 N. Garey Ave., Pomona, Calif. 91767

Filed Aug. 3, 1978, Ser. No. 930,553

Int. Cl.² A61M *16/00*

U.S. Cl. 128—727 **5 Claims**



1. A disposable inhalation spirometer apparatus for prophylactic respiratory maneuver and intended for single patient use, said spirometer apparatus comprising:

(a) a tube member having an interior respiratory passage and opposite end portions, one of said end portions having means for breathing use by a patient;

(b) an enlarged, enclosed mist accumulation chamber of substantially greater cross-sectional diameter than said tube member and of a size to contain a volume of air on the order of an entire inhalation by the patient and having a rigid wall and inlet means and an outlet means connected closely adjacent to said tube member interior passage intermediate said opposite end portions;

(c) a bleed port extended through said wall and open to the atmosphere exterior of said accumulation chamber;

(d) a medicant mist dispensing nebulizer having outlet means connected to said accumulation chamber inlet means whereby an entire inhalation of air and medicant is collected in said accumulation chamber and having a nebulizer inlet means communicating with a pressurized gas supply source for introducing a flow of pressurized gas in said spirometer apparatus;

(e) check valve means positioned between said chamber and said tube member and operative to close automatically upon expiration and open upon inhalation;

(f) a visual meter indicating relative inhalational ability and including a tube having a transparent portion and defining a meter chamber connected to and extended upwardly from said tube member and positioned closer to the other end portion of said tube member relative to said accumulation chamber, said meter chamber having a substantially closed bottom and a top communicating with a passage to said tube member and directing respiratory pressure differentials thereto;

(g) a piston responsive to said respiratory pressure differentials slidably mounted in said meter chamber and moving upwardly therein upon inhalation and moving downwardly therein upon exhalation by said patient; and

(h) check valve means at the other end portion of said tube member and operative to close automatically upon inhalation and open upon exhalation, said visual meter positioned between said check valve means at the other end portion and said accumulation chamber outlet means.

4,210,156

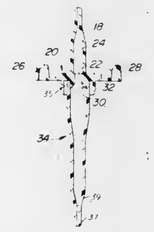
FINGER STICK BLOOD COLLECTION APPARATUS

Elmer T. Bennett, 2018 Dickinson St., Philadelphia, Pa. 19046

Filed Apr. 24, 1978, Ser. No. 899,150

Int. Cl.² A61B *5/14*

U.S. Cl. 128—763 **9 Claims**



1. Finger stick blood collection apparatus comprising a collection vessel for collecting blood from a finger stick and having a capacity of less than two millimeters, said vessel having first and second open ends, said first end of said vessel having larger transverse dimensions than said second end, the smallest transverse dimension of said vessel being at said second end, said vessel having a portion adjacent said second end which is tapered toward said second end, said second end being the inlet end to said vessel, a cap having transverse dimensions greater than that of said first vessel end, means releasably coupling said first end of said vessel to one side of said cap, a hollow adapter connected at one end to and integral with the other side of said cap, the other end of said adapter being free and having means for a facilitating connection of the adapter to a source of suction, said cap having a flow passage therethrough for providing direct communication with the interior of said adapter and the interior of said vessel, separate means for temporarily closing said collection vessel, said vessel being expendable after a single use, a shipping container for said vessel, said container being open at one end, said vessel with its second end temporarily closed being disposed within said container, means on said cap radially outwardly of said first end of said vessel releasably coupling said cap to close said container.

4,210,157

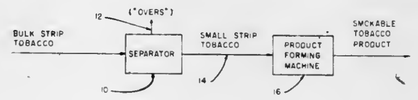
SMOKABLE TOBACCO PRODUCTS

Earl E. Kohnhorst, Louisville; Thomas W. Summers, Fern Creek, and David L. Gordon, Louisville, all of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 721,138, Sep. 9, 1976, abandoned. This application Jan. 16, 1978, Ser. No. 869,736

Int. Cl.² A24D *1/00*; A24B *3/14, 1/02*

U.S. Cl. 131—8 R **5 Claims**



1. An improved smokable tobacco product comprised of tobacco surrounded by a cylindrical wrapper in which said tobacco portion consists essentially of tobacco particles having a mean ratio of area to perimeter squared of at least about 0.049, a short dimension not in excess of 0.5 inch, and an arithmetic mean size of at least 1.93 mm, said particles being of a substantially normal particle size distribution.

4,210,158

5-ISOPROPYL-3-NONENE-2,8-DIONE AS FLAVORANT AND AS A FLAVOR ENHANCER IN CONJUNCTION WITH SMOKING TOBACCO AND SMOKING TOBACCO ARTICLES

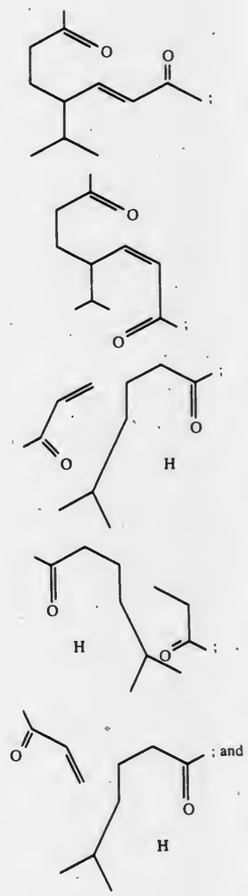
Joaquin F. Vinals, Red Bank, N.J.; Jacob Kiwala, Brooklyn, N.Y.; Richard A. Wilson, Westfield, and Braja D. Mookherjee, Holmdel, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,398

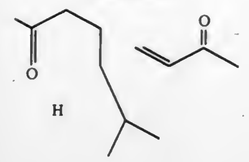
Int. Cl.² A24B *3/12*

U.S. Cl. 131—10 R **6 Claims**

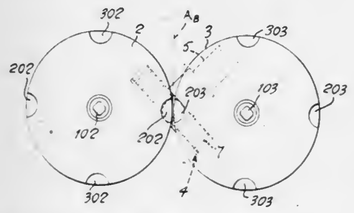
3. A smoking tobacco article comprising smoking tobacco and wrapped around said smoking tobacco a wrapper and in intimate contact with said wrapper and said smoking tobacco a cis or trans isomer of 5-isopropyl-3-nonene-2,8-dione or stereo isomer thereof having the structure selected from the group consisting of:



-continued



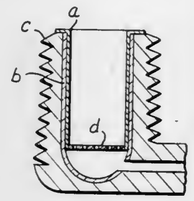
4,210,159
TOBACCO TRIMMING DEVICE
Rodolfo Quarenghi, Bologna, Italy, assignor to CIR - S.p.A. - Divisione Sasib, Bologna, Italy
Filed Jul. 20, 1978, Ser. No. 926,231
Claims priority, application Italy, Jul. 25, 1977, 12708 A/77
Int. Cl.[2] A24C *5/18*
U.S. Cl. 131—21 D **1 Claim**



1. In a cigarette making machine, a tobacco trimming device for the formation and trimming of a continuous tobacco braid which presents a greater density of tobacco at individual points corresponding to the cigarette ends, said device comprising means for conveying the tobacco braid along its longitudinal axis, a pair of counterrotating disks mounted substantially coplanar and substantially tagent to each other according to the said longitudinal axis of the tobacco braid, and a trimming paddle wheel, rotating in synchronism with the said disks and arranged to cooperate with the said disks in such a manner as to trim away from the tobacco braid the excess of tobacco projecting beyond the disks at their point of tangency, the paddles of the said trimming paddle wheel being arranged inclined with respect to the longitudinal rotational axis of the paddle wheel itself, said device futher comprising on each one of the two counterrotating disks at least a pair of peripheral notches of which one notch presents a height, with respect to the tobacco braid, which is different from the height of the immediately consecutive notch on the same disk, the two disks being arranged to rotate in timed relationship so that the notches of equal hieght will meet each other at the point of tangency of the two disks, while the trimming paddle wheel presents at least two sectors in which the radial length of the paddles is reduced correspondingly to the height of the notches in the disks, each sector of the paddle wheel cooperating with the corresponding equal height notches of the disks at their point of tangency, whereby the thus trimmed tobacco braid presents consecutive points having an alternatively differentiated density of tobacco.

4,210,160
ANTI-POLLUTION COMBUSTION DEVICE
Anton E. Wunsche, 656 W. 162 St., New York, N.Y. 10032
Continuation-in-part of Ser. No. 764,852, Feb. 3, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,062
Int. Cl.[2] A24F *1/08, 1/06, 1/32, 3/02*
U.S. Cl. 131—194 **9 Claims**

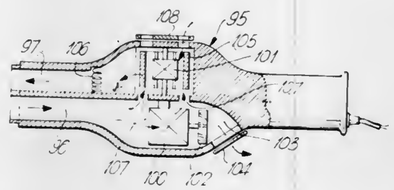
1. Anti-pollution combustion device, comprising a bowl having a tobacco chamber and an outside formed with a plurality of cooling ribs; a stem having a smoke passage communicating with said tobacco chamber and having a filter chamber interposed in said smoke passage for accommodation of a filter therein, said stem having a rear end provided with a mouthpiece; a liquid trap in said stem and communicating with said smoke passage intermediate said filter and said mouthpiece; a perforated disc lodged in said tobacco chamber of said pipe bowl above the point of communication of said tobacco chamber with said smoke passage and adapted to keep a charge of tobacco positioned upwardly of said point so as to prevent tobacco from contacting liquids collecting in said chamber below said disc; a ceramic compound coating lining said bowl; and a tubular metal insert mounted in said bowl surrounded by said compound, said disc being located at a lower end of said tubular insert.



4,210,161
CREME RINSES WITH HAIR HOLDING PROPERTIES
Julius Wagman, Chicago, Ill., assignor to Helene Curtis Industries, Inc., Chicago, Ill.
Filed Jul. 3, 1978, Ser. No. 921,555
Int. Cl.[2] A45D *7/00;* **A61K** *7/08*
U.S. Cl. 132—7 **15 Claims**

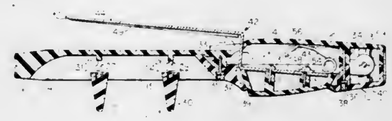
15. In the method of dressing hair wherein towel-dried hair is wetted with a creme rinse composition and thereafter rinsed, combed, set and dried, the improvement wherein said creme rinse composition is an aqueous composition containing from about 0.02 to about 2 weight percent of an anionic polymer and from about 0.1 to about 5 weight percent of a cationic surfactant capable of forming and having formed a water insoluble reaction product with said anionic polymer, said reaction product being suspended in said composition.

4,210,162
HAIR STYLING DEVICE
Bernard F. Dreyer, 742 Ludgate Ct., and Paul F. Paglericcio, 220 Cowley Dr., both of Ottawa, Ontario, Canada
Filed Mar. 27, 1978, Ser. No. 890,690
Claims priority, application Canada, Jun. 30, 1977, 281833
Int. Cl.[2] A45D *20/00*
U.S. Cl. 132—9 **15 Claims**



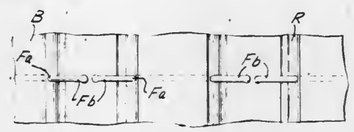
1. A hand held hair styling device comprising a first housing section forming a suction area for drawing a lock of hair into said area, said housing defining an outlet from said area and a conduit extending from said outlet, said housing including passage means with supplemental air outlets disposed adjacent said area for supplying supplemental air to said suction area and into contact with said lock of hair, a second housing section releasably attached to said first housing section and containing a fan means for withdrawal of air from said conduit and providing pressurized air to said passage means, means for directing at least a portion of the air from said conduit back into said passage means, and conditioning means including a heating element located in the flow of air from said fan means to said passage means.

4,210,163
HAIR ROLLER DEVICE
Paul F. Savage, Plymouth, Mass., and Michael R. Pye, Cambridge, England, assignors to The Gillette Company, Boston, Mass.
Filed Dec. 18, 1978, Ser. No. 970,746
Int. Cl.[2] A45D *2/06*
U.S. Cl. 132—33 R **10 Claims**



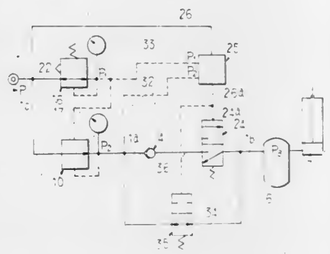
1. In combination with a plurality of generally cylindrical conductive interchangeable rollers of different inside diameters for making curls, a non-electric hair roller device including, a handle portion for gripping the device and a non-conductive rod portion coupled to said handle portion, normally biased clip means coupled to the device for frictionally holding a roller mounted on said rod portion, clip button means coupled to the device for releasing tension of said clip means on the roller, and compressible support leg means pivotably connected to said rod means for retaining the roller on the device when said clip button means is activated thereby releasing tension on the roller, said support leg means including a spring member connecting a non-conductive peg to said rod portion, the stack-up height of said support leg means and said rod being greater than the inside diameter of the roller.

4,210,164
SELF-HOLDING HAIR ROLLERS
Abraham Sidelman, Manchester, Ga., assignor to H. Goodman & Sons, Inc., Kearny, N.J.
Filed Feb. 23, 1978, Ser. No. 880,626
Int. Cl.[2] A45D *2/00*
U.S. Cl. 132—40 **7 Claims**



1. A hair roller including a cylindrical wall of solid plastic material and numerous pairs of hair detents, each said hair detent being a resilient monofilament having an end portion embedded securely in the cylindrical wall, each said monofilament detent being divided by a bend into an upstanding leg projecting from said cylindrical wall and an overhang extending from said upstanding leg to a free end, end portions of the hair detents of each pair emerging from the cylindrical wall at sites spaced apart by a distance approximately equal to the combined lengths of their overhangs and each pair of said overhangs extending from the legs thereof generally toward each other but being spaced apart, the spaces generally bounded by each pair of legs and the overhangs extending therefrom and the portion of the cylindrical wall between said pair of legs being free of elements projecting from the cylindrical wall.

4,210,165
PRESSURE REGULATING EQUIPMENT FOR AIR CUSHION
Kentaro Kitsugi, Kasukabe, Japan, assignor to Tokyo Automatic Control Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 19, 1978, Ser. No. 897,847
Claims priority, application Japan, Apr. 20, 1977, 52-48874
Int. Cl.[2] G05D *16/06*
U.S. Cl. 137—102 **5 Claims**



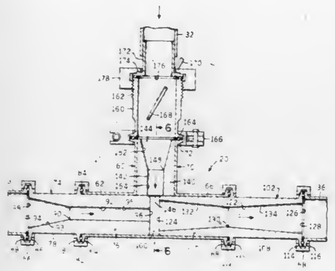
1. Pressure regulating equipment for a large capacity air cushion, comprising:
- a pilot operated pressure regulator including a downstream side and a pilot air receiving port;
- a pilot pressure regulator being settable for a desired pilot pressure at its downstream side, said downstream side of said pilot pressure regulator being connected to said pilot air receiving port, said pilot operated pressure regulator being adapted to equalize the air pressure at said downstream side with the air pressure from said pilot pressure regulator at said pilot air receiving port;
- a check valve, said check valve including an inlet connected to said downstream side of said pilot operated pressure regulator and an outlet;
- a three way valve including a passage operable by an air pressure signal and connecting said outlet of said check valve with said air cushion; and
- a differential pressure operating valve having a first inlet communicating with said downstream side of said pilot operated pressure regulator and a second inlet communicating with said downstream side of said pilot pressure regulator, said differential pressure operating valve adapted to supply an air pressure signal at an outlet thereof by a pressure differential between said inlet ports, said outlet connected to said three way valve and said air pressure signal opening said passage.

4,210,166
MIXING APPARATUS
Julius C. Munie, 73 Wayside Dr., Ferguson, Mo. 63135
Filed Sep. 14, 1977, Ser. No. 833,233
Int. Cl.[2] B01F *15/04*
U.S. Cl. 137—271 **12 Claims**

1. A mixing device for incorporating base material into a carrier material, the device comprising:
- (a) a substantially hollow section including a first arm, a second arm and a third arm, said second arm being disposed intermediate and communicating with said first and third arms, said first and third arms being coaxially cylindrical and having a smooth inner surface,
- (b) a carrier material intake insert having a smooth cylindrical outer surface slidingly received within said first arm said insert having a substantially unrestricted passage extending therethrough and providing an inlet orifice receiving carrier material and an outlet orifice communicating with the interior of the hollow section,
- (c) a base material intake insert received within said second arm said insert having a passage extending therethrough and providing an inlet orifice receiving base material and

an outlet orifice communicating with the interior of the hollow section, and

(d) a discharge insert having a smooth cylindrical outer surface slidingly received within said third arm said insert having a passage extending therethrough and providing an inlet orifice, communicating with the interior of the



hollow section and disposed in spaced relation from the outlet orifice of the carrier material insert and the outlet orifice of the base material insert, and an outlet orifice, said discharge insert and said carrier material insert having stop means engageable with the receiving arms to define a fixed, axially spaced gap between said inserts.

4,210,167

EMISSION-FREE VALVE

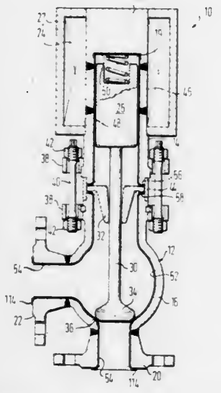
Werner Koppe, Weinstadt, and Rolf Prümmer, Kornwestheim, both of Fed. Rep. of Germany, assignors to Herion-Werke AG, Fellbach, Fed. Rep. of Germany

Filed Jun. 20, 1978, Ser. No. 917,396

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729522

Int. Cl.[2] **F16K** *27/10;* **B23K** *21/00*

U.S. Cl. 137—375 **3 Claims**



2. An emission-free valve, particularly a magnetically operated valve, for use in controlling the flow of fluids, especially poisonous, radioactive, aggressive and otherwise dangerous gases and fluids, comprising a housing including a housing member which has substantially spherical configuration and an internal surface surrounding a compartment for the respective fluid, said housing further including an annular valve seat member; a valve member movably mounted in said compartment and cooperating with said valve seat member to control the flow of the fluid through said compartment; and a plating layer of a corrosion-resistant material covering said internal surface of said housing member and also having a substantially spherical configuration corresponding to that of said housing member, said housing member and said plating layer obtaining their respective configurations during an explosion which not only simultaneously deforms initially cylindrical tubular and coaxially arranged housing member and plating layer preforms, but also welds said plating layer preform to said housing member preform so that said plating layer is explosion-welded to said housing member.

4,210,168

PRESSURE-RESPONSIVE VALVE UNIT FOR A FLUID CONTAINER

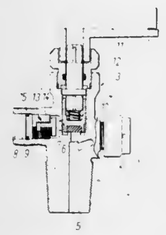
Keitaro Yonezawa, Kobe, Japan, assignor to Kabushiki Kaisha Neriki, Amagasakishi, Japan

Filed Oct. 12, 1978, Ser. No. 950,682

Claims priority, application Japan, Oct. 17, 1977, 52-139645; Aug. 28, 1978, 53-118137

Int. Cl.[2] **F16K** *15/02*

U.S. Cl. 137—454.5 **9 Claims**



1. A valve assembly for attachment to a fluid container, comprising:

a valve casing having a cavity therein, the outer end of said cavity being open, and the inner end thereof being connected to receive fluid from said container; and

a pressure-responsive valve unit received within said cavity, said valve unit including:

a sleeve-like main body removably secured within said cavity, said main body having a chamber in the inner end portion thereof opening to the inner end of said cavity, outlet bore means extending from the outer end of said main body to said chamber, and a valve seat disposed about the inner end of said outlet bore means within said chamber;

a cup-shaped adjuster plug removably secured within the open end of said chamber, and including a cylindrical side wall and an end wall;

a check valve body received within said chamber and said cylindrical side wall of said adjuster plug, and slidable into and out of engagement with said valve seat, said check valve body having a central bore therethrough communicating the front end thereof with the region between said check valve body and said end wall of said adjuster plug, and including an abutment face on the front portion thereof adapted to engage said valve seat, and radial wall means spaced rearwardly from said abutment face;

the portion of said check valve body disposed rearwardly of said radial wall means forming a sealed, sliding fit with said cylindrical side wall of said adjuster plug, said check valve body being in sealed engagement with said main body when said abutment face is in engagement with said valve seat, and said inner portion of said main body being provided with passage means for transmitting fluid from the inner end of said cavity to the region of said chamber forwardly of said radial wall means; and

spring means positioned between said adjuster plug end wall and said check valve body, arranged to urge said abutment face into engagement with said valve seat, said adjuster plug being adjustable axially of said main body to adjust the pressure exerted by said spring means on said check valve body,

whereby said check valve body will normally be in engagement with said valve seat to maintain said valve unit in a closed condition, said check valve body will move toward said adjuster plug end wall against the force of said spring means to open said valve unit when fluid pressure having a greater value than the setting of said spring means is admitted through said passage means and acts on said radial wall means, and said check valve body will be again seated by said spring means to close said valve unit when the value of said fluid pressure falls below the setting of said spring means.

4,210,169

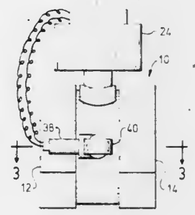
SPRINKLER CONTROL VALVE

Florencio N. Palma, 263 Keele St., Toronto, Ontario, Canada

Filed Aug. 18, 1978, Ser. No. 934,882

Int. Cl.[2] **F16K** *31/04*

U.S. Cl. 137—487.5 **4 Claims**



1. Control valve for producing cyclically increasing and decreasing water supply, comprising:

a valve body,

a port in said body for connection to a water supply line,

a port in said body for connection to a water output line,

means defining a passage in said body between said ports,

a rotary member rotatable to control the aperture size in said passage,

a controllable, reversible means for progressively continually rotating the rotary member,

pressure sensing means located to sense water pressure on the downstream side of said aperture designed to provide an output signal when said water pressure rises above a predetermined value,

control means for controlling said controllable reversible means, responsive to said output signal to reverse the direction of rotation of said valve member,

said rotating means and said control means being connected and designed so that said rotating means continues to rotate the rotary member in the same direction between said output signals.

4,210,170

ANTI-CAVITATION AND OVERLOAD RELIEF VALVE FOR A HYDRAULIC SYSTEM

Sutton, Kalamazoo, Mich., assignor to General Signal Corporation, Stamford, Conn.

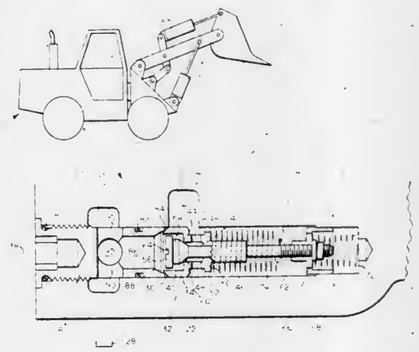
Filed Feb. 17, 1978, Ser. No. 879,026

Int. Cl.[2] **F16K** *17/18*

U.S. Cl. 137—493.4 **4 Claims**

1. In a hydraulic overload relief and anti-cavitation protection system for hydraulic equipment having a hydraulic cylinder; a hydraulic valve having a housing; a first chamber within said housing in fluid communication with one end of said hydraulic cylinder; a second chamber within said housing in fluid communication with a fluid reservoir; a fluid passageway within said housing connecting said first and second chambers; a movable valve assembly positioned within said fluid passageway for operating in a first mode to block fluid flow between said first and second chambers, for operating in a second mode to permit fluid flow from said first chamber to said second chamber only when the pressure in said first chamber exceeds the pressure in said second chamber by a first predetermined amount, and for operating in a third mode to permit fluid flow from said second chamber only when the pressure in second chamber exceeds the pressure in said first chamber by a second predetermined amount; and said valve having a stationary portion positioned within said fluid passageway between said first and second chambers, said stationary portion including a valve seat; said movable valve assembly including a movable valve element having a sealing portion for engaging said valve seat of said stationary portion when said movable valve assembly is operating in said first and second modes, said movable valve assembly further having a valve seat, and a poppet mechanism including a poppet for sealingly engaging said valve seat of said movable valve element when said movable valve assembly is operating in said first and third modes;

wherein said movable valve element further includes a hollow interior which is symmetrical about an axis, said interior having a first portion axially adjacent said sealing



portion, a second portion axially adjacent said first portion and having a second diameter smaller than said first diameter, and a valve seat of said movable valve element being defined by the joint between said first and second interior portions,

said poppet mechanism includes a poppet which is substantially solid in cross-section and is substantially symmetrical disposed about an axis, said poppet having a head located at one end thereof, a body portion adjacent said head having a diameter smaller than the diameter of said head, a tapered sealing portion adjacent said body portion for sealingly engaging said valve seat of said movable valve element, and a stem adjacent said tapered sealing portion,

said stationary portion further includes a reduced diameter portion for engaging the head of the poppet in order to limit the travel thereof, and

means for maintaining fluid communication between said first and second chamber when the poppet engages the reduced diameter portion.

4,210,171

AUTOMATIC CONTROLLING VALVE FOR MAINTAINING THE RATE OF FLUID FLOW AT A CONSTANT VALUE

Sotokazu Rikuta, 24-7, 2-chome, Koun-cho, Maebasni-she, Gunma-ken, Japan (371)

Filed Jan. 23, 1978, Ser. No. 871,565

Claims priority, application Japan, Nov. 17, 1977, 52-138354

Int. Cl.[2] **G05D** *7/01*

U.S. Cl. 137—501 **2 Claims**

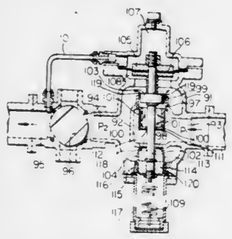
1. An automatic fluid control valve for maintaining a substantially constant fluid flow rate comprising:

a valve casing having an inlet for the introduction of fluid thereinto and an outlet for discharge of fluid therefrom;

a partition wall within said casing between said fluid inlet and fluid outlet, said partition wall subdividing said valve casing into an inlet chamber and an outlet chamber, said partition wall having a lower horizontally extending portion in which a valve port is formed, said valve port establishing communication between said fluid inlet and said fluid outlet, said partition wall also having an upper horizontally extending portion having an opening therethrough in vertical alignment with said valve port;

a valve steam movable linearly within said casing and being slidable within said valve port and said opening, said valve stem having valve means thereon cooperable with said valve port to regulate the flow of fluids therethrough in response to changes in fluid pressure differential, the lower portion of said valve stem carrying thereon an inner valve member comprising a cylindrical valve plug which is cooperable with said valve port and the uper portion of said valve stem carrying thereon a slide member, a guide bushing being positioned within the opening in said upper horizontally extending portion of said partition wall and said slide member being slidable on the inner peripheral surface of said guide bushing, a strainer positioned beneath said guide bushing coaxial with said valve stem and having an axial opening dimensioned to permit movement of said valve stem therethrough;

diaphragm means operatively connected to the upper end of said valve stem and separating a region within said valve



casing into a pair of pressure-differential chambers, said diaphragm defining together with an upper portion of said valve casing one of said pressure-differential chambers;

a fluids passageway of variable cross-sectional area settable to establish a predetermined fluid flow rate through the control valve located intermediate said fluid inlet and said outlet and thereby establishing first and second fluid pressures respectively on the upstream and downstream sides of said fluidspassageway; said fluids passageway being positioned in the outlet of said valve casing; and

conduit means communicating said valve casing outlet downstream of said fluids passageway with said one pressure-differential chamber, said inner valve member having a lower portion of lesser diameter than that of the valve plug and comprising a mounting member for mounting the inner valve member on said valve stem, said valve casing having a bottom plate in which there is formed an opening, a tube member positioned in said bottom plate opening and the outer peripheral surface of said mounting member being slidable on the inner peripheral surface of said tube member, said other pressure-differential chamber being located beneath said diaphragm external of said partition wall, said other pressure-differential chamber being in open communication with the upstream side of said fluids passageway, said strainer being exposed to the fluids entering the inlet of said valve casing to permit the passage of a portion of said fluids therethrough and through a clearance opening between said slide member and said guide bushing for introduction into said other pressure-differential chamber.

4,210,172

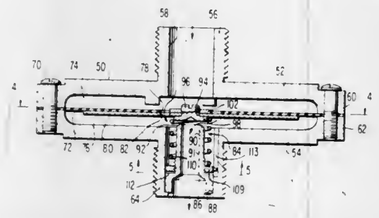
APPARATUS FOR DISPENSING FLUID UNDER PRESSURE

Merton R. Fallon, Thousand Oaks, Calif., and Thomas W. Clements, Ambler, Pa., assignors to Draft Systems, Inc., Northridge, Calif.

Division of Ser. No. 668,648, Mar. 19, 1976, Pat. No. 4,135,641. This application Sep. 22, 1978, Ser. No. 944,963

Int. Cl.² G05D *7/01*

U.S. Cl. 137—504 **3 Claims**



1. An automatic variable restrictor for delivering fluid under pressure through a faucet at a predetermined flow rate comprising:

a housing defining a chamber and having a fluid inlet and a fluid outlet in communication with said chamber;

a diaphragm carried by said housing segregating said chamber such that said fluid inlet and said fluid outlet lie on respective opposite sides of said diaphragm;

a valve carried by said housing including a valve seat defining a valve opening and a valve element spaced from said seat and carried by said diaphragm for movement toward and away from said seat, means carried by said housing for adjusting the spacing between said valve seat and said valve element, means engaging said diaphragm and biasing said valve element in a direction away from said valve seat said biasing means including a spring engaging said diaphragm at one end thereof, an annular element carried by said housing for axial movement toward and away from said diaphragm and providing a seat for the opposite end of said spring, and means carried by said housing for axially displacing said spring; said annular element being internally threaded, said outlet including an annular member having an externally threaded portion in threaded engagement with said annular element and carried by said housing for rotational movement, and means coupled between said housiing and said annular element for preventing rotational movement thereof;

said diaphragm having at least one aperture therethrough for delivery of fluid flowing through said inlet under pressure into said housing on one side of said diaphragm to the opposite side of said diaphragm and responsive to a pressure in excess of a predetermined pressure acting on the one side of said diaphragm to move said valve element toward said valve seat against the bias of said biasing means to induce an increased pressure drop across the valve opening and thereby maintain a predetermined rate of flow through said outlet.

4,210,173

SYRINGE PUMPING SYSTEM WITH VALVES

Pradip V. Choksi, Northridge, and Donald L. Johnston, Arcadia, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

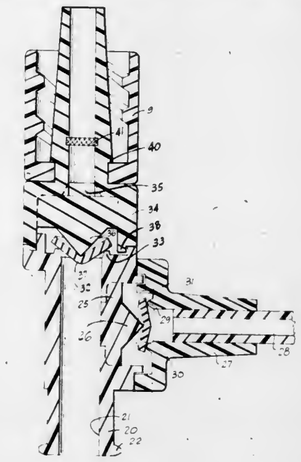
Continuation of Ser. No. 747,415, Dec. 6, 1976, abandoned. This application Sep. 6, 1978, Ser. No. 940,060

Int. Cl.² F16K *15/14*

U.S. Cl. 137—512.3 **7 Claims**

1. A pumping system for medical fluids with a hypodermic syringe means connected to inlet and outlet check valves, wherein the improvement comprises: a valved body with an

inlet passage from which pumped fluid is supplied, a syringe connecting passage, and an outlet passage, said passages being in fluid flow communication within said valved body; an inlet valve seat in the inlet passage facing downstream of inlet fluid flow; an outlet valve seat in the outlet passage facing downstream of outlet fluid flow; a flexible imperforate disk valve member fitted against each of the inlet and outlet valve seats; a pair of upstream facing posts internal of the valve body and connected to the valve body for respectively urging each disk valve member against its respective valve seat; one of said



posts biasing its valve member so as to require a substantially greater opening pressure in the range equivalent to a water head of 10 to 100 inches, while the other post is positioned to require the other disk valve to open at a pressure in the range equivalent to a water head of 0.1 to 10 inches; and a flexible conduit connected to the inlet passage and which conduit is adapted to attach to a medical liquid source, whereby fluid can flow from a fluid supply source through the inlet passage into the syringe on an intake stroke of the syringe and be pumped out through the outlet passage while fluid flow out through the inlet passage is blocked.

4,210,174

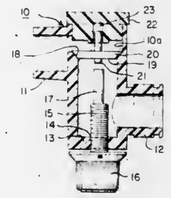
POSITIVE PRESSURE VALVES

Bela Eross, Bradfordwoods, Pa., assignor to Instrumentation Industries, Inc., Pittsburgh, Pa.

Filed May 30, 1978, Ser. No. 910,741

Int. Cl.² F16K *15/06*

U.S. Cl. 137—528 **6 Claims**



1. A positive pressure valve for inhalation therapy devices comprising a generally cylindrical air tight housing, spaced apart inlet and outlet ports in said housing, an elongate magnet member in said housing extending generally axially thereof, a valve seat in said housing between said inlet and outlet ports generally coaxially of said housing, a valve member movable coaxially of said seat and housing, a magnetically attracted member in said valve member coaxial with the magnet member and adjusting means on the housing acting to adjustably position the valve member relative to the magnet member whereby the distance between the magnet member and the magnetically attracted member are selectively varied, said inlet and outlet ports being side arms extending radially from said housing adjacent opposite ends of said housing, the ends of said housing being closed by caps, one of said caps having an axially movable carrier carrying the rod-shaped magnet, the other of said caps having guide means acting on the magnetically attracted material to maintain it generally axially of the housing.

4,210,175

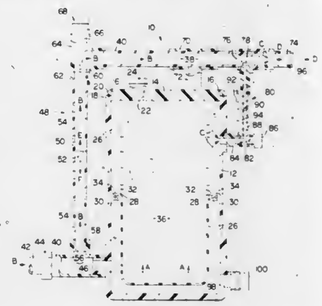
CHEMICAL INJECTION ASSEMBLY

Raymond R. Daniels, and Norman W. Scheid, both of 12745 49th St., North, Clearwater, Fla. 33520

Continuation-in-part of Ser. No. 748,237, Dec. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 669,333, Mar. 22, 1976, abandoned. This application Jan. 16, 1978, Ser. No. 870,009

Int. Cl.² E03B *7/07*

U.S. Cl. 137—564.5 **8 Claims**



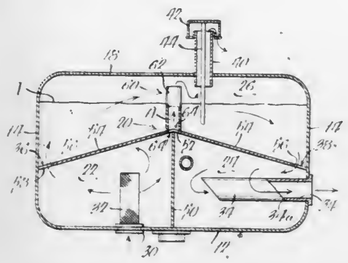
1. A fluid injection assembly of the type primarily designed to add predetermined amounts of fluid comprising a liquid to a flowing stream of liquid, said fluid injection assembly comprising: casing means; conduit means configured to define the path of travel of the liquid, said conduit means comprising a liquid inlet disposed in liquid-communicating relation to the interior of said casing means and further comprising liquid flow rate metering means operatively disposed along said conduit means, said liquid flow rate metering means comprising a transparent, tapered conduit section and a flow rate indicator movably disposed therein whereby displacement of said flow rate indicator within said conduit section is indicative of the quantity of liquid defining said flow stream; fluid supply means mounted on the interior of said casing means and at least partially surrounded by the liquid within said interior of said casing means; dispensing means mounted in fluid-communicating relation between said fluid supply means and the liquid flowing within said conduit means downstream of said liquid flow rate metering means, said dispensing means comprising adjustable valve means mounted in flow-regulating relation to fluid exiting said fluid supply means and fluid injection metering means comprising a transparent, tapered tube portion and a fluid injection indicator movably disposed therein operatively disposed in fluid-communicating relation between said adjustable valve means and said conduit means downstream of said liquid flow rate metering means, whereby displacement of said fluid injection indicator within said tube portion is indicative of the rate of fluid injection into said flowing stream; and chamber means connected to the outlet of said conduit means in receiving relation to said flowing stream and to the fluid from said fluid supply means, said chamber means being dimensioned and configured to provide mixing of fluid from said fluid supply means and liquid of said flowing stream.

4,210,176

HYDRAULIC LIQUID RESERVOIR WITH INTERNAL BAFFLE

Joseph L. Emming, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Sep. 14, 1978, Ser. No. 942,325
Int. Cl.² F16K *24/00*
U.S. Cl. 137—573 **12 Claims**



1. A hydraulic liquid reservoir comprising a tank having a substantially flat bottom wall, sidewalls and a top wall with a baffle structure within said tank, said baffle structure including a divider member extending vertically from said bottom wall and terminating at its upper edge spaced from said top wall, first and second baffle members extending downwardly from said upper edge toward adjacent sides of said bottom wall of said tank to divide a lower portion of said tank into first and second substantially closed compartments, a respective inlet and outlet in one of said compartments, opening means in each baffle member defining a hydraulic liquid flow path joining said compartments and an upper portion of the tank whereby hydraulic fluid traversing said reservoir follows a path including horizontal and vertical direction changes, and vent means extending from the upper portion of each compartment to a location adjacent said top wall, said vent means being spaced a greater distance from said bottom wall than said opening means and in communication with both of said compartments so that air in either of said compartments will be vented to the top of said tank without entering the liquid in said upper portion of said tank.

4,210,177

POSITIVE RESET SAFETY CONTROL SYSTEM FOR FRYING APPARATUS

L. Frank Moore, and George M. Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Division of Ser. No. 753,936, Dec. 23, 1976. This application Oct. 20, 1978, Ser. No. 953,078
Int. Cl.² F16K *35/00*
U.S. Cl. 137—613 **1 Claim**

1. A system for controlling the flow of gas from a gas source to a gas burner, the system comprising, in combination:

a normally closed gas valve having an electrical solenoid assembly connected to open the valve in response to the flow of electrical current through the solenoid;

a normally open gas valve having an electrical solenoid assembly connected to close the valve in response to the flow of electrical current through the solenoid assembly, the solenoid assembly including a pair of normally open electrical contacts coupled to the solenoid assembly to form a closed electrical circuit in response to the flow of electrical current through the solenoid;

the normally closed gas valve being connected in series fluid circuit relation with the normally open gas valve;

the series connected combination of the normally closed gas valve and the normally open gas valve being connected in series fluid circuit relation with the gas burner, the series connected combination having an inlet port disposed upstream of the valves to admit the flow of gas from the gas source;

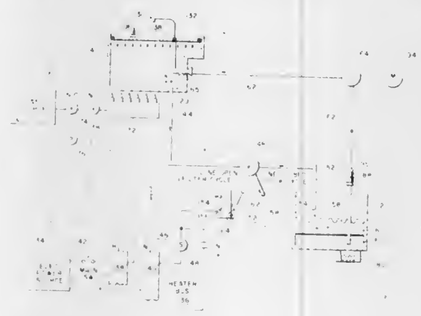
a first electrical bus for conducting electrical current;

an on-off switch connected to permit manual control of the application of electrical current from an external power source to the first electrical bus;

a second electrical bus for returning electrical current conducted through the first electrical bus to the external power source;

the electrical solenoid of the normally closed gas valve being electrically connected to conduct current from the first electrical bus to the second electrical bus;

a switch having a pair of electrical contacts and an actuator operatively coupled thereto for opening and closing the contacts;



the electrical contacts of the switch being connected in series electrical relation between the first electrical bus and the solenoid connected to the normally open gas valve;

the solenoid of the normally open gas valve being connected in series electrical relation between the switch and the second electrical bus; and,

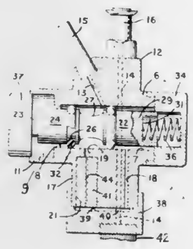
the normally open electrical contacts of the solenoid connected to the normally open gas valve being electrically connected in parallel circuit relation with the electrical contacts of the switch wherein the actuation of said normally open valve is non responsive to the opening and closing of the contacts after said contacts are first closed.

4,210,178

PERPETUAL BY-PASS FLUSHING DEVICE

Phillip H. Morse, 310 Ridge St.; Louis O. Noce, 78 Grant St., both of Glens Falls, N.Y. 12801, and Michael I. Basta, R.D., Diamond Point, N.Y. 12824

Filed Aug. 10, 1977, Ser. No. 823,212
Int. Cl.² F16K *11/07*; A61M *5/00*
U.S. Cl. 137—625.5 **7 Claims**



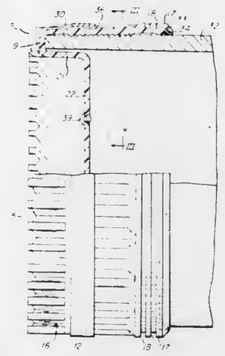
1. An animal or human infusion flushing device comprising a body having at least a primary passage therethrough, an intermediate portion of said passage being divided into a restricted channel and a flushing channel spaced from each other, liquid directing means comprising valve means movably mounted in said body and movable transversely to said liquid flow through said liquid passage, a pair of sealing means on said valve means defining a space between said sealing means, biasing means for biasing said directing means toward a normal resting position in which said restricted channel is open and said flushing channel is closed, said device being sized to be held in one hand and an extension at one end of said directing means extending outside of said body for exposure to a finger of said holding hand to move said directing means against said biasing means from said resting position to said flushing position in which said flushing channel is open and said restricted channel is closed, said primary liquid passage always communicating with said space, said restricted and flushing channels communicating with said space only when said directing means is in said resting and said flushing position respectively, said body has a secondary liquid passage therethrough generally parallel to said primary passage but independent of said liquid directing means, said secondary passage communicates with said primary passage downstream of said channels.

4,210,179

PIPE-THREAD PROTECTOR

Herbert W. Galer, Newnan, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 21, 1978, Ser. No. 971,978
Int. Cl.² B65D *59/00*
U.S. Cl. 138—96 T **11 Claims**



1. In a protector for pipe threads, which protector includes a plastic body and a metal band encircling said body, the improvement in which said body comprises:

an outer circumferential wall having corrugations extending along both its outside and inside surfaces;

a cylindrical inner wall concentric with said outer wall and spaced therefrom;

means at one end of said outer and inner walls joining said walls;

the space between said outer and inner walls forming an annular pocket for receiving the end portion of a pipe; and

means forming internal screw threads in said outer wall, at least certain of said threads being engageable with external threads on the pipe;

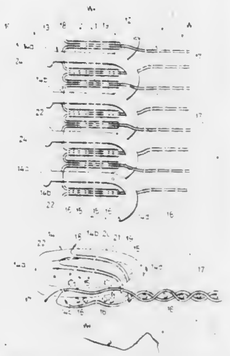
the corrugations in said outer wall enabling the walls to yield as the protector is placed on a pipe, and also enabling the plastic body to expand differentially with respect to the pipe.

4,210,180

WOVEN FASTENER STRINGER

Noritaka Tsubata, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,268
Claims priority, application Japan, Dec. 29, 1977, 53-85; Dec. 29, 1977, 53-86
Int. Cl.² A44B *19/10*
U.S. Cl. 139—384 B **6 Claims**



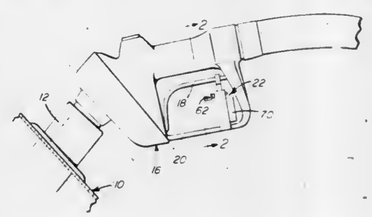
1. A woven fastener stringer comprising a woven tape formed with foundation warp and weft threads and consisting of a web section defining a major dimension of said tape and a woven filament section defining a longitudinal edge portion of said tape; a row of successively interconnected elongated loops woven into said filament section, each of said loops having a coupling head at one end thereof, an upper leg and a lower leg extending from said head in a common direction, and a heel portion at the opposite end remote from said head connected to a next adjacent one of said successive loops; a plurality of reinforcing cores extending longitudinally through said row of elongated loops; and a combination of a first group of binding warp threads extending along a relatively deep undulation path over said upper legs and alternatively overlying and underlying said foundation weft thread, a second group of binding warp threads extending along a relatively shallow undulation path over said upper legs in parallel relation to said first group of binding warp threads, and a binding weft thread interlaced with said first and second groups of binding warp threads substantially in a common plane defined by the upper surfaces of said upper legs and looping around said foundation weft at a position interiorly of said heel portion.

4,210,181

ADJUSTABLE PUMP NOZZLE LEVER PROP

Charles E. Clevenger, P.O. Box 151, Pensacola, Fla. 32504

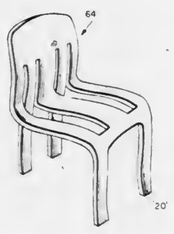
Filed Apr. 25, 1978, Ser. No. 900,472
Int. Cl.² B65B *3/04*; G05G *5/06*
U.S. Cl. 141—392 **5 Claims**



5. In combination with a service station fuel supply hose nozzle of the type including a trigger lever and a trigger guard generally paralleling said lever, a prop for disposition between said lever and guard, said prop including first and second

elongated members including pairs of remote and adjacent ends, said adjacent ends of said members being supported relative to each other for relative longitudinal shifting of said members between lengthwise extended and retracted positions of said remote ends, means operative to releasably secure said members in adjusted shifted positions, means defining endwise outwardly opening and transversely extending generally parallel notches in said remote ends for embracingly receiving said lever and guard when said prop is interposed therebetween, one of said adjacent ends defining an endwise outwardly opening recess in which the other adjacent end is telescopingly engaged, said other adjacent end including a longitudinal slot, said one adjacent end having an elongated latch pin supported therefrom for lengthwise shifting between first and second latching and unlatching positions and extending transversely through said recess and slidably received in said slot, means connected between said pin and one adjacent end yieldingly biasing said pin toward said first position, said pin and other adjacent end including coacting portions locking said first and second members in predetermined relatively extended positions when said pin is in said first position and inoperative to lock said first and second members in adjusted relatively extended position when said pin is in said second position, said pin extending transversely through said recess and being slidably received in said slot when said pin is in said first and second positions and all intermediate positions therebetween.

4,210,182
METHOD OF MAKING A CHAIR
Peter J. Danko, 408 Gibbon St., Alexandria, Va. 22314
Filed Jun. 8, 1976, Ser. No. 693,837
Int. Cl.[2] B27D *1/08;* **A47C** *5/00*
U.S. Cl. 144—317 **7 Claims**



4. A method of making a chair from a flat blank of material including the steps of:

cutting at least one internal slot in the blank to form a rear leg portion having a free unattached terminal end;

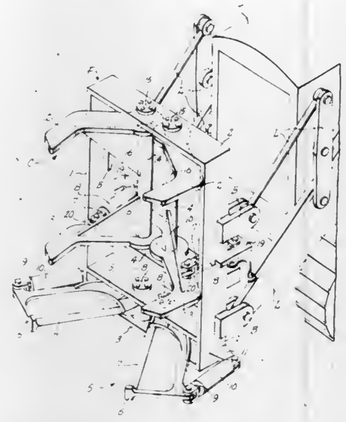
bending the cut blank into a continuous curvature under a predetermined bending pressure to form a front leg portion, a seat portion and a back portion into which the slot extends from the seat portion;

displacing the rear leg portion relative to the seat portion during said bending for extension of the rear leg portion from the back portion leaving a gap in the seat portion; and

placing a seat pad on the seat portion bridging said gap.

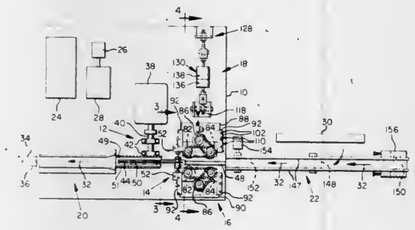
4,210,183
TREE CLAMP AND SHEAR SUPPORT STRUCTURE
Christopher Nilsen, 1101 W. Birch St., Shelton, Wash. 98584
Filed Nov. 20, 1978, Ser. No. 962,377
Int. Cl.[2] A01G *23/08*
U.S. Cl. 144—34 E **11 Claims**

1. In support structure for mounting on a tractor grapple means for clamping a tree and blade means for shearing the tree, the improvement comprising a box frame having horizontally spaced normally upright side members and several cross members spaced lengthwise of, extending between and rigidly connecting said side members, means mounting the grapple means on at least two of said cross members between said side



members, and means mounting said blade means on at least two of said cross members between said side members.

4,210,184
CIRCULAR RESAW APPARATUS AND METHOD
Douglas H. McGriff, Portland, Oreg., assignor to Producto Machinery Corporation, Portland, Oreg.
Filed Jan. 30, 1978, Ser. No. 873,711
Int. Cl.[2] B27B *1/00, 31/00;* **E05F** *13/00*
U.S. Cl. 144—312 **10 Claims**



1. A resaw apparatus for longitudinally cutting an elongate wood cant, comprising:

(a) a circular saw for cutting said cant, said saw including a vertically-oriented circular saw blade and means for rotating said blade, said blade having two laterally-facing sides, a center axis of rotation, and a cutting edge, a portion of said cutting edge passing through a forward position for cutting said cant as said blade is rotated;

(b) table means disposed adjacent said blade for supporting said cant as it is cut by said saw, said table means having a flat horizontally-oriented supporting plate;

(c) guide means disposed adjacent said sides of said saw blade between the respective horizontal locations of said center axis and said forward position for keeping lateral movement of said blade within a predetermined tolerance;

(d) two sets of cylindrical rollers disposed on opposite sides of a predetermined path and defining a space therebetween for urging said cant longitudinally along said predetermined path against said saw blade at said forward position such that said cant is cut longitudinally along a predetermined line, each set having two such rollers whose axes are oriented substantially perpendicular to said supporting plate;

(e) pressure means connected to said two sets of rollers for urging said sets toward one another such that they pinch said cant therebetween;

(f) drive means connected to said rollers for rotating said rollers about their respective axes to urge said cant along said path;

(g) two movable carriages for supporting said two sets of rollers respectively, and slide means connected to said table means for supporting said carriages and permitting movement thereof laterally while constraining movement longitudinally with respect to said cant path; and

(h) a rocker arm pivotally attached to said table means at a center rocker-arm axis, a first adjustable linkage connected between said rocker-arm on one side of said rocker-arm axis and said table means for adjusting the pivotal position of said rocker arm with respect to said table means, a second linkage connected to said rocker arm on a first side of said rocker-arm axis and to a first said carriage, and a third linkage connected to a side of said rocker arm opposite said first side and to a second said carriage.

9. A method for cutting an elongate wood cant with a thin-kerfed circular saw blade having a central axis of rotation and a cutting edge with a plurality of gullets therein, comprising the steps of:

(a) rotating said saw blade through a forward cutting position;

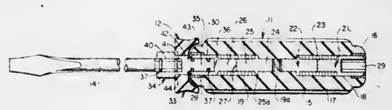
(b) restraining said saw blade to within a predetermined tolerance of lateral movement by positioning a pair of guides on opposite sides of said blade at a position ahead of said axis of rotation;

(c) inserting said cant between two sets of at least two parallel rollers each, said two sets being laterally spaced from one another with respect to said cant;

(d) rotating at least one roller of each said set, rollers in one said set being rotated in the opposite direction as rollers in the other said set; and

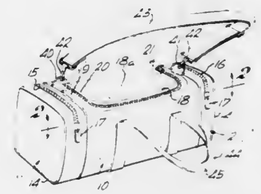
(e) pinching said cant between said two sets of rollers by applying lateral force to said rollers substantially halfway between the ends of said rollers, thereby urging said cant against said saw blade.

4,210,185
TOOL HANDLE ASSEMBLY WITH FREELY-REVERSIBLE SOCKET MEMBER
Ignacio Acevedo, 4066 Fenwick Rd., Columbus, Ohio 43220
Filed Nov. 22, 1978, Ser. No. 962,906
Int. Cl.[2] B25B *15/00*
U.S. Cl. 145—76 **9 Claims**



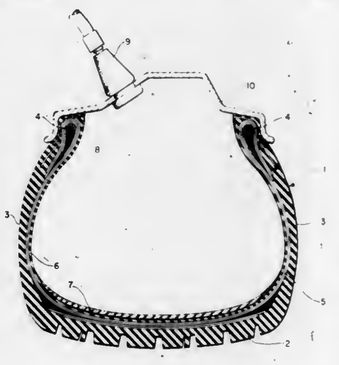
1. A handle assembly for receiving and applying torque to a tool element comprising a hand-grip assembly and a tool adapter assembly; said hand grip assembly and tool adapter assembly being mounted for rotation relative to one another; said hand grip assembly comprising a hand grip body, socket member rotatably mounted in said body and having an outwardly-opening adapter-receiving socket, a spring clutch mounted in said hand grip body in cooperation with said socket member to prevent relative rotation in one direction but permit relative rotation in a reverse direction; said tool adapter assembly having a finger-grip collar non-rotatably mounted thereon and having an inwardly extending shank portion adapted to removably fit in said adapter-receiving socket and an outwardly extending socket portion with an outwardly-opening tool-receiving socket for receiving the shank of a tool element, said adapter shank contacting the adapter-receiving socket member to provide a space between said hand grip body and said collar to permit said relative rotation at all times.

4,210,186
CAMERA BAG
Mark I. Belenson, 4799 E. Tenth La., Hialeah, Fla. 33013
Filed Aug. 2, 1979, Ser. No. 62,994
Int. Cl.[2] A45C *11/38*
U.S. Cl. 150—52 J **8 Claims**



1. A camera bag comprising, in combination, a main bag portion of flexible material, said main bag portion having upper end opening means, a substantially rectangular camera bag insert member removably receivable within the said main bag portion through said upper end opening means, said bag insert member comprising peripheral side walls and end walls all of which walls are fabricated of a soft, pliable and flexible material serving as padding for contained articles, a plurality of interior partition wall members sub-dividing said bag insert member into a plurality of insert compartments, said partition walls also being fabricated of a soft, pliable and flexible material serving as padding for contained articles, a comparatively thick, resilient bottom wall member, means for removably securing said bottom wall member at the lower end of said bag insert member, carrying strap means attached to said main bag portion for carrying the camera bag, said main bag portion, said bag insert member and said interior partition wall members being of such flexibility and resilience as to permit flexure of the camera bag assemblage to comply with the shape of the body portion against which the camera bag rests while being carried.

4,210,187
PNEUMATIC TIRE HAVING SELF-SEALING FEATURE
William E. Egan, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Arkon, Ohio
Filed Jun. 14, 1978, Ser. No. 915,423
Int. Cl.[2] B60C *5/14, 17/00*
U.S. Cl. 152—347 **12 Claims**



1. A self-sealing pneumatic tire which comprises a pneumatic cured rubber tire having an integral, thin gauge, covul-

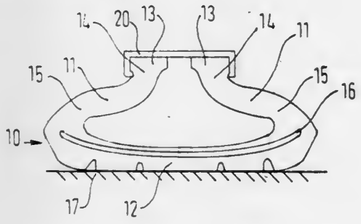
canized, resilient, rubber, closed cell structure, said closed cells containing a gas, disposed as its inside surface, in which the vulcanized rubber of said closed cell structure originally contains about 2 to about 60 phr compounded rubber processing oil and which has been, in its vulcanized state, subsequently oil treated to adsorb an additional 25 to 150 phr of a non-volatile oil compatible therewith.

4,210,188

PNEUMATIC TIRES FOR MOTOR VEHICLES HAVING COMPRESSION-STRESSED SIDEWALLS

Carlo Banchieri, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Apr. 10, 1978, Ser. No. 895,067
Claims priority, application Italy, May 4, 1977, 23148 A/77
Int. Cl.[2] B60C *13/00*
U.S. Cl. 152—353 C **7 Claims**



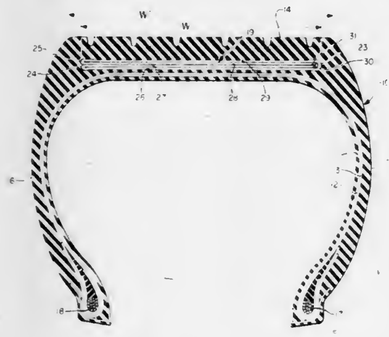
1. A pneumatic tire for motor vehicles comprising a top portion provided with a substantially inextensible annular reinforcement member and sidewalls which are subjected to compression stresses and are substantially non-reinforced, wherein said sidewalls are formed at least partially by an elastomeric composition selected from the group consisting of elastomeric compositions having a compressive dynamic elasticity modulus of absolute value between 8 and 13 MPa and wherein the tangent of the corresponding loss angle is between 0.03 and 0.15.

4,210,189

TIRE WITH A FOLDED ANNULAR REINFORCEMENT

Jack E. Brown, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 782,270, Mar. 28, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 953,812
Int. Cl.[2] B60C *9/22*
U.S. Cl. 152—361 FP **9 Claims**



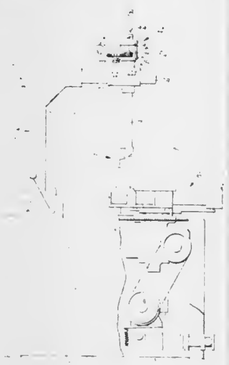
1. A pneumatic tire comprising:
(a) an innerliner;
(b) a plurality of carcass plies reinforced with cords and covering the innerliner;
(c) a tread and pair of sidewalls surrounding the carcass plies and terminating at a pair of annular, inextensible beads;
(d) an annular reinforcement disposed between the tread and radially outermost carcass ply, the reinforcement being a single ply of cord-reinforced rubber material which is folded so that the finally folded structure consists of three folded edges, two free ends and four superimposed interconnected plies, each of said plies having substantially the same width and being narrower than the single ply when unfolded, said free ends of the folded plies are covered over by a pair of connecting plies.

4,210,190

DEVICES FOR FITTING AND REMOVING TIRES

Eleutheer A. Hessels, Sint Niklaas, Belgium, assignor to Manta, Naamioze Venncotschap, Waasmunster, Belgium

Filed Apr. 4, 1977, Ser. No. 784,434
Claims priority, application Belgium, Apr. 7, 1976, 840441; Mar. 21, 1977, 255756
Int. Cl.[2] B60C *25/06*
U.S. Cl. 157—1.24 **9 Claims**



1. In a tire fitting and removing apparatus having a base, a wheel holder, an upstanding support on said base and a horizontal beam extending from said support over said wheel holder, the improvement comprising:
a tire engaging tool mounted at the lower end of a vertical rod (7), a body (10, 11) with a vertical passage (9) in which said vertical rod (7) is slidably mounted and with a horizontal passage (12) through which said horizontal beam (13) extends and on which beam said body (10, 11) is slidably mounted, first (19, 20, 17) and second (19, 20, 21, 22) operating means (19, 20, 21, 22, 17), first clamping means (18) controlled by and coupled with said first operating means for clamping said horizontal beam (13) in said horizontal passage (12), second clamping means (24–33) controlled by and coupled with said second operating means for clamping said vertical rod (7), said first and second operating means having common control means (19, 20) and third means (35) forming part of said second clamping means for lifting said vertical rod a predetermined height relative to said beam when said second clamping means is operated.

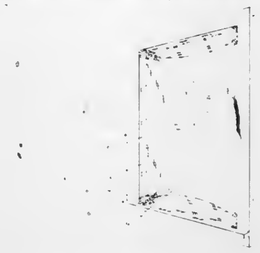
4,210,191

FILM-TYPE STORM WINDOW

Yao T. Li, Huckleberry Hill, Lincoln, Mass. 01773

Filed Jun. 30, 1978, Ser. No. 920,782
Int. Cl.[2] A47H *23/00*
U.S. Cl. 160—354 **5 Claims**

1. A protective flexible membrane structure installed in a framed opening with corners comprising a peripheral tension element, said tension element being attached to said membrane in curved relationship to said framed opening, said tensioning element lying in the plane of said membrane, the segments of said peripheral tension element at each side of said opening lying along segments of a circle, each of said segments lying alongside a side of said frame opening and in the plane of said



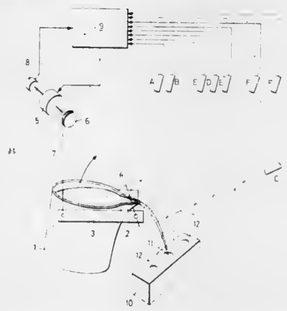
membrane and corner tensioning means in the corners of said framed opening to apply force to said tension element whereby each of said segments of said peripheral tension element hold a side of said membrane in plane relationship within said opening and adjacent to the corresponding side of said framed opening.

4,210,192

AUTOMATICALLY CONTROLLED POURING METHOD AND APPARATUS FOR METAL CASTING

Gérard A. Lavanchy, Prilly-Lausanne, and Marc-Henri Rossier, Epalinges, both of Switzerland, assignors to Maschinenfabrik & Eisengiesserei Ed. Mezger, Kallnach, Switzerland

Filed Mar. 17, 1977, Ser. No. 778,588
Claims priority, application Switzerland, Mar. 22, 1976, 3540/76
Int. Cl.[2] B22D *1/02*
U.S. Cl. 164—4 **5 Claims**



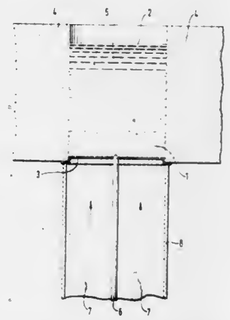
1. In an apparatus for automatically controlling the pouring of molten metal into a series of closed casting molds, said apparatus including a lip-pour, or bottom-pour, casting ladle, a vertically extending pouring gate for each casting mold arranged so that said molten metal flows in a stream from the lip-pour, or bottom-pour, casting ladle into the pouring gate at the top of a mold and forms a free surface in said gate, the improvement comprising:
a radiation sensitive sensor for continuously sensing radiation emitted by said free surface of molten metal in the pouring gate, the sensor being arranged with respect to the geometry of the pouring gate such that it senses a quantity of emitted radiation from said free surface which varies directly with the height of said free surface in the pouring gate, said sensor including means for generating a signal in response to said sensing, so that said signal is a function of the height of said free surface in the pouring gate, control means for controlling the rate of flow of said stream in response to said signal, said control means being arranged for keeping said signal substantially constant during casting by maintaining the height of the free surface at a constant value by variation of the rate of flow to achieve more uniform casting performance, a second radiation sensor for continuously sensing the radiation emitted by a predetermined portion of the stream of metal flowing from the ladle, and for generating a second signal in response to said stream sensing, said second signal being a function of the rate of flow of said stream, and said control means being arranged for receiving both said signals and for keeping said first-mentioned signal substantially constant during pouring.

4,210,193

METHOD OF PRODUCING AN ALUMINUM-SILICON CASTING

Martin Rühle, Stuttgart, Fed. Rep. of Germany, assignor to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,329
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1977, 2728048
Int. Cl.[2] B22D *27/20, 15/00*
U.S. Cl. 164—4 **5 Claims**



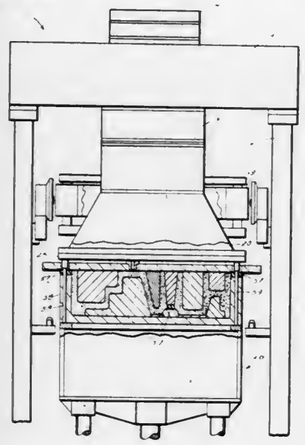
1. A method of producing an aluminum-silicon casting having at least one localized fine-grain region comprising:
(a) providing a mold to receive the molten metal, said mold having an opening at a region where a fine-grain is required in the casting,
(a) providing a hollow member to contain a coolant, said member being open at one end,
(c) providing at least one thin metal sheet adjacent the region of the resulting casting where fine-grain is required, so as to close said opening, the inner surface of said sheet defining with the mold walls the shape of the resulting casting, the thickness of the sheet having been predetermined to ensure against complete distintegration of the latter due to the melt, said sheet having its mold surface made of a metal which will bond with aluminum-silicon, said sheet being separate from said hollow member,
(d) clamping said sheet against the mold by said hollow member,
(e) pouring molten aluminum-silicon metal into the mold whereby the metal effects a bond with the thin sheet,
(f) applying a cooling medium in said hollow member to the outer surface of said sheet,
(g) allowing solidification, and thereafter
(h) removing the sheet from the casting by destruction of the sheet.

4,210,194

AUTOMATIC METHOD FOR PRODUCING MOLDS USING CHEMICALLY BONDED SANDS

Ronald A. Cina, and Albert D. Kluge, both of Lansing, Mich., assignors to Roberts Corporation, Lansing, Mich.

Division of Ser. No. 763,813, Jan. 31, 1977, Pat. No. 4,074,744.
This application Oct. 17, 1977, Ser. No. 842,724
Int. Cl.² B22C *9/12, 15/02*
U.S. Cl. 164—16 **1 Claim**



1. In a method for producing cured sand molds using chemically bonded sand, the steps which include:
(a) blow filling a selectively compressible mold assembly having an enclosed mold cavity with chemically bonded sand of the external catalyst type;
(b) controllably squeeze compressing said blow filled mold assembly a predetermined amount to selectively decrease the internal volumetric area thereof so as to compress said chemically bonded sand contained therein;
(c) continuously maintaining squeeze compression of the said blow filled mold assembly while introducing a gas catalyst into said squeeze compressed blow filled mold assembly so as to cure said chemically bonded sand; and
(d) removing the cured sand mold from said selectively compressible mold assembly.

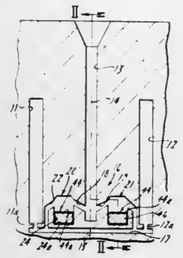
4,210,195

METHOD OF TREATING CAST IRON USING PACKAGED GRANULAR MOLTEN METAL TREATMENT MOLD INSERTS

James C. McPherson, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 13, 1978, Ser. No. 968,945
Int. Cl.² B22D *23/00, 25/00, 27/20*
U.S. Cl. 164—57 **6 Claims**

1. A method of treatng molten cast iron with a highly reactive and volatile treating agent, comprising:
(a) forming a mold having a casting cavity and a gating system, said gating system having side and bottom walls extending from one location of said gating system to define a treating chamber, the gating system providing an entrance to and an exit from said chamber each adjacent the upper portion of the chamber;
(b) folding a flat thin-guaged fiberboard blank into a module having a configuration effective to form a total enclosure and to fit snuggly within the lower portion of said treating chamber with no air gap between the side and bottom walls thereof;
(c) fully filling the interior of said module with a selected granular highly reactive and volatile treating agent;
(d) placing said filled module into snug fitting reltionship with at least the lower portion of said treating chamber including side walls and bottom wall; and
(e) introducing a predetermined quantity of molten cast iron into said gating system and thereby into said treating chamber, whereby the agent is preheated by metal which



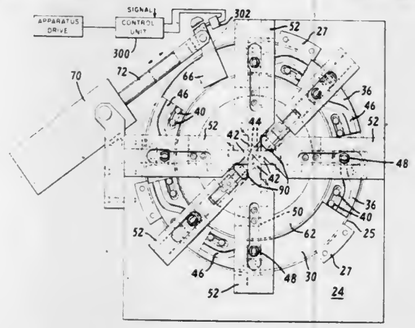
displaces, by disintegration, the side walls of said module and the exposed upper section of said fiberboard module is caused to disintegrate and be displaced by molten metal, which molten metal in turn reacts progressively with the treating agent from the top to the bottom of the module.

4,210,196

DIE CASTING APPARATUS

Lewis Weiner, 87-08 Santiago St., Holliswood, N.Y. 11423

Filed Jun. 1, 1978, Ser. No. 911,384
Int. Cl.² B22D *17/16, 17/24, 17/26*
U.S. Cl. 164—152 **26 Claims**



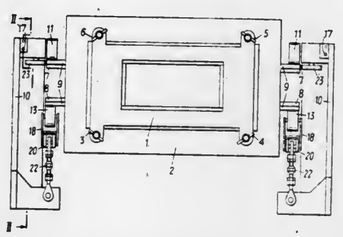
1. Apparatus for die casting shaped articles comprising
a molten metal supply means provided with an outlet for feeding metal from said supply means to a mold,
a mounting frame disposed adjacent said outlet, said molten metal supply means being movable toward and away from said mounting frame,
a ring member carried rotatably in said mounting frame for rotation about a fixed axis,
a plurality of die members and a plurality of core members mounted on said frame for sliding movement radially of said fixed axis between open and closed positions, said die members and said core members being provided with complementary configured surfaces which define said mold when said members are closed corresponding to the shape of the article to be cast,
means associated with said die members for sliding said die members between their open and closed positions, such means including camming blocks carried on said ring member and having camming surfaces thereon, and cam followers connected with said die members, said cam followers engaging said camming surfaces to effect sliding movement of said die members responsive to relative rotation between said mounting frame and said ring member, and
means associated with said core members for sliding said core members between their open and closed positions, the sliding means associated with at least one of said core members including a camming block carried on said ring member and having a camming surface thereon, and a cam follower connected with said one core member, said cam follower engaging said camming surface to effect sliding movement of said one core member responsive to relative rotation between said mounting frame and said ring member,
said ring member being provided with a plurality of openings therethrough, said openings extending in encircling courses about said ring member, said camming blocks being secured to said ring member with fasteners received in said openings, the positioning of said camming blocks on said ring member relative to the others being selectively changeable by receiving said fasteners in selected ones of said openings thereby to control the timing sequence with which said die members and any core members slid by oscillation of said ring member open and close during each oscillation of said ring member,
the mold surfaces of said die members and core members communicating with said molten metal supply means when said die members and core members are in closed position and said molten metal supply means is moved toward said mounting frame to bring the outlet therefrom into engagement with said mold.

4,210,197

LIFTING-TABLE-GUIDE ARRANGEMENT

Reinhard Hargassner; Günter Holleis, and Rudolf Hoscher, all of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Mar. 8, 1979, Ser. No. 18,771
Claims priority, application Austria, Mar. 14, 1978, 1805/78
Int. Cl.² B22D *11/04*
U.S. Cl. 164—416 **4 Claims**



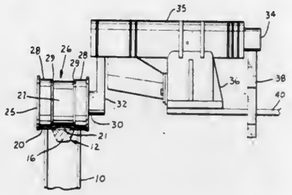
1. In a lifting-table-guide arrangement of a continuous casting plant, of the type including a mould lifting-table, a stand for guiding said mould lifting-table, a first and a second pair of vertical guide elements arranged opposite each other on opposing sides of said mould lifting-table, two pairs of rollers mounted on said opposing sides the rollers of each pair being positioned one above the other in said stand for supporting one element of the first pair of vertical guide elements, and a pair of counter bearing means provided on said opposing sides supporting the second pair of vertical guide elements, the improvement wherein each said counter bearing means comprises a rocker, two further rollers mounted in said rocker at a distance from each other for supporting one element of the second pair of vertical guide elements, and a bearing provided for mounting said rocker on said stand.

4,210,198

WHEEL-BAND TYPE CONTINUOUS CASTING APPARATUS

Joseph I. Cole, Staten Island, N.Y., assignor to Nassau Recycle Corporation, Staten Island, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,542
Int. Cl.² B22D *11/06*
U.S. Cl. 164—433 **4 Claims**



1. A continuous casting apparatus having a rotatable casting wheel formed with an annular groove in the wheel rim, an endless metallic band mounted for movement along an endless path passing over and in contact with a portion of the casting wheel rim, means for introducing molten metal into the casting wheel groove under the endless band, and a band hold-down roller biasing the band firmly against the casting wheel rim overlaying the casting wheel groove and with said band hold-down roller having two cylindrical shoulders upon which said band is directly supported and an intermediate cylindrical roller section of reduced diameter relative to the diameters of said two cylindrical shoulders defining an annular roller groove straddled by said two shoulders forming a continuous gap between said shoulders of said hold-down roller into which gap an arched portion of the endless metallic band may intrude upon being heated by molten metal introduced into the casting wheel groove and thermally expanding.

4,210,199

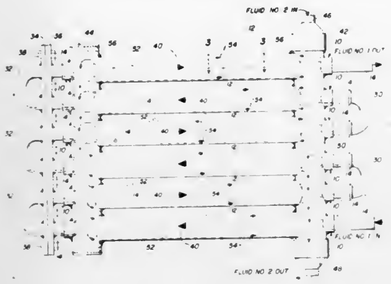
HEAT EXCHANGE SYSTEM

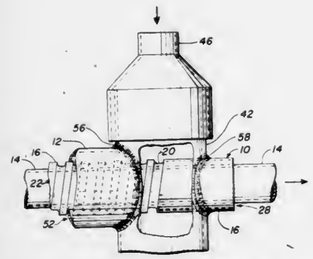
Edward I. Doucette, York, and Samuel P. Shelley, Shrewsbury, both of Pa., assignors to Doucette Industries, Inc., York, Pa.

Filed Jun. 14, 1978, Ser. No. 915,308
Int. Cl.² F28F *9/26*
U.S. Cl. 165—70 **6 Claims**

1. A heat exchange system comprising in combination,
(a) a first tube system comprising a plurality of substantially parallel similar tubes, and
(b) return members connecting similar ends of adjacent tubes to form a first fluid passage having inlet and outlet means adjacent opposite ends thereof,
(c) a second tube system comprising a plurality of similar tubes of larger diameter than the tubes of said first system and respectively surrounding at least portions of the same between opposite ends thereof, and
(d) additional connecting means positioned inwardly from the outer ends of the tubes of said first tube system and connected between similar ends of adjacent tubes of said second tube system for intercommunication therebetween to form a second fluid passage having fluid inlet and outlet means surrounding the tubes of said first tube system;
(e) the improvement comprising leak-conducting means substantially coaxial and coextensive with said tubes of said first tube system and comprising supplemental tubular wall means surrounding said tubes of the first system in spaced relationship thereto and having outer ends extending beyond the ends of the tubes of said second tube system, said supplemental tubular wall means having a continuous spiral groove roll formed therein to compress the bottom of said groove into firm thermal contact with said tubes of the first system without substantial decrease of the wall thickness of said supplemental tubular wall means to provide a spiral passage around the tubes of said first

tube system for discharge of leaking fluid to atmosphere at opposite ends of said leak-conducting means to prevent contamination of fluids respectively in said first and sec-





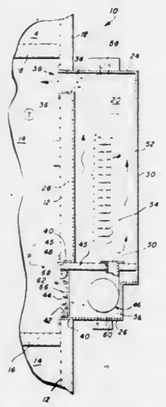
ond tube systems in the event of leakage openings occurring in any of the tubes on the interior of said second tube system.

4,210,200

ENERGY SAVING DEVICE FOR HABITABLE BUILDING ENCLOSURES HAVING A HEAT CHANGING SYSTEM

Robert F. Vary, Round Lake, Ill., assignor to Anthony C. Mamo, Arlington Heights, Ill.

Division of Ser. No. 717,177, Aug. 24, 1976, Pat. No. 4,108,238.
This application Jun. 29, 1978, Ser. No. 920,623
Int. Cl.[2] F24H *9/20;* **F28F** *27/00*
U.S. Cl. 165—98 **2 Claims**



1. In a building construction embodying a habitable enclosure, the combination of

a temperature varying system for maintaining a predetermined temperature in said enclosure,

a housing for said temperature varying system which housing is disposed as to be subject to outdoor temperature influences,

an upper register constituting an opening for passage of air between the upper portions of said habitable enclosure and said housing, and

a lower register constituting an opening for passage of air between the lower portions of said habitable enclosure and said housing,

a mechanical shutter arrangement interposed in at least one of said registers and being operable to block passage of air between the habitable enclosure and the interior of said housing,

a solenoid device for actuating said mechanical shutter between open and closed positions, and

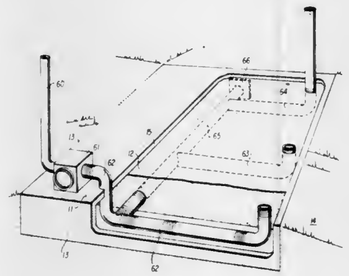
means for actuating said solenoid device upon operation of said temperature varying system.

4,210,201

LOW COST HEAT STORAGE TANK AND HEAT EXCHANGER

Edward J. O'Hanlon, Lake Georgia, Assembly Point, N.Y. 12845

Filed Feb. 28, 1978, Ser. No. 882,049
Int. Cl.[2] F28D *21/00*
U.S. Cl. 165—104 S **8 Claims**



1. An assembly for storing a quantity of heat in a heat storage means and later retrieving a substantial portion of said heat as required, and comprising:

a waterproofed tank-like enclosure formed of heavily insulated material and including at least one inlet and one outlet aperture, each extending through said enclosure;

pipe means extending through said enclosure between said inlet and outlet apertures for providing an air flow passageway through said enclosure and having means for allowing condensation to pass between the airstream within the pipe and said heat storage means;

blower means in fluid communication with said inlet for introducing a stream of air into said pipe means; and,

heat storage means comprising a mixture of solids and water surrounding said pipe means for receiving heat from the air flowing through said pipe means, for storing said heat within said enclosure over an extended period of time and for returning a substantial portion of said heat to the stream of air flowing through said pipe means.

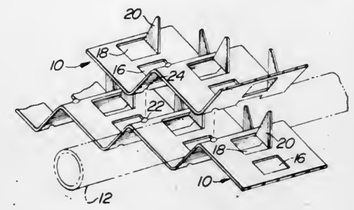
4,210,202

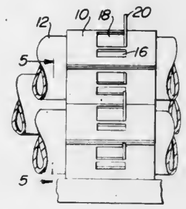
SUPPORT FOR HEAT EXCHANGE TUBES

Robert C. Boyer, Catasauqua, and George J. Williams, Chalfont, both of Pa., assignors to Ecolaire Incorporated, Lehigh Valley, Pa.

Filed Mar. 30, 1978, Ser. No. 891,677
Int. Cl.[2] F28F *1/32*
U.S. Cl. 165—162 **14 Claims**

1. Apparatus for providing heat exchange between the first and second fluids comprising a shell supporting a tube bundle having a plurality of rows of parallel tubes in said shell, means defining a fluid inlet for one end of said tubes and for defining a fluid outlet for the other end of said tubes so that said first fluid may flow through said tubes, said shell having an inlet and an outlet for a second fluid to be in surface contact with the outer periphery of said tubes, at spaced points along the





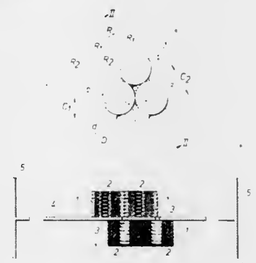
lengths of said tubes the tubes being supported by discrete tube support strips disposed between rows of the tubes, each support strip having a plurality of V-shaped members interconnected end to end with each leg of each V-shaped member having a generally triangular tab bendable out of the plane of its associated leg for selective control of flow of said second fluid in a direction longitudinal of said tubes.

4,210,203

HEAT EXCHANGER APPARATUS

Peter H. E. Margen, and Rolf P. Näslund, both of Nyköping, Sweden, assignors to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Oct. 12, 1977, Ser. No. 841,473
Claims priority, application Sweden, Oct. 21, 1976, 7611720
Int. Cl.[2] F28D *7/10*
U.S. Cl. 165—163 **13 Claims**



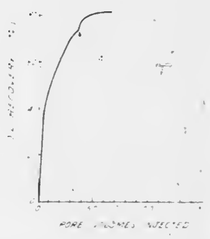
1. In a heat exchanger apparatus comprising a plurality of heat exchanging units each consisting of a sparsely wound, hollow, substantially circular pipe coil, closed at one end, every coil having a substantially identical outside diameter (D) and inside diameter (d), said coil being placed with its open end on a plate provided with a plurality of orifices, said plate screening off a flow passage for a first fluid, and each orifice being substantially axially aligned with a coil, the improvement that said coils are provided on both sides of the plate, that the coils on one side of the plate are arranged with equal centre-to-centre distances (C_2) in parallel first rows (R_1), that the coils on the other side of the plate are arranged with said centre-to-centre distances (C_2) in parallel second rows (R_2), that the first rows (R_1) and the second rows (R_2) are parallel and alternating, that the coils of the first row (R_1) are displaced substantially half the said centre-to-centre distance (C_2) in the direction of the row relative to those in the second row, and that adjacent opposing coils overlap each other substantially without covering the orifice in the plate of one of the opposing coils on the other side of the plate, a portion of the first fluid flowing radially into the interiors of the coils on a first side of the plate and out through the orifices substantially axially aligned with said coils to a second side of the plate, and another portion of the first fluid flowing into the orifices substantially axially aligned with the coils on the second side of the plate and radially out through the coils on the second side of the plate.

4,210,204

METHOD FOR PLUGGING HIGH PERMEABILITY ZONES IN SUBTERRANEAN RESERVOIRS

Charles A. Christopher, Jr., Broken Arrow, Okla., and Alvin O. Clauset, Jr., Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 7, 1979, Ser. No. 10,182
Int. Cl.[2] E21B *33/138, 43/22*
U.S. Cl. 166—270 **13 Claims**



1. A method for plugging high permeability areas within a subterranean reservoir penetrated by at least one injection well and at least one production well, said wells being in fluid communication with each other, comprising injecting through at least one of said wells an effective amount of an aqueous solution comprising fresh water and a pectic substance selected from the group consisting pectins, pectates, polygalacturonic acids and mixtures thereof into said high permeability areas wherein the aqueous solution contacts a brine which causes the pectic substance to form a gel thereby effectively plugging the high permeability areas within the reservoir.

4,210,205

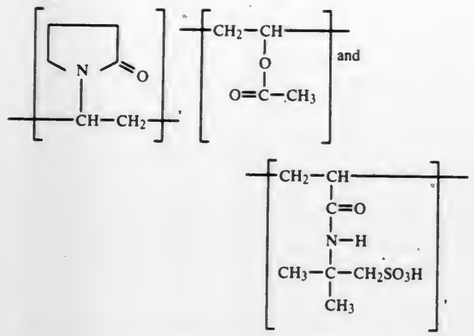
SECONDARY RECOVERY PROCESS

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

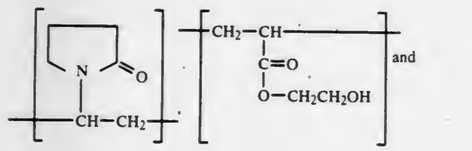
Filed May 22, 1978, Ser. No. 908,172
Int. Cl.[2] E21B *43/27*
U.S. Cl. 166—271 **9 Claims**

1. A process for recovering hydrocarbons from a hydrocarbon-bearing formation containing acid-soluble components having at least one injection well and at least one production well penetrating the said formation and in fluid communication therewith, which comprises displacing through the formation a composition comprising an acidic aqueous polymer solution and recovering hydrocarbons through the production well, the said acidic aqueous polymer solution comprising a material selected from the group consisting of:

(I) Terpolymer A consisting of repeating units of:



(II) Terpolymer B consisting of repeating units of



(III) Terpolymer I or II alkoxylated with about 2 to about 100 weight percent of a substance selected from the group consisting of ethylene oxide and a mixture of ethylene oxide and propylene oxide wherein in the said mixture the weight percent of ethylene oxide ranges from about 60 to about 95, the said material being dissolved in an aqueous solution of a non-oxidizing mineral acid, wherein in Terpolymer A the weight percent of vinylpyrrolidone units will vary from about 65 to about 80, the weight percent of vinyl acetate units from about 8 to about 15 with the balance being 2-acrylamido-2-methylpropanesulfonic acid, wherein in Terpolymer B the weight percent of vinylpyrrolidone units will vary from about 65 to about 80, the weight percent of hydroxyethyl acrylate units from about 8 to about 15 with the balance being 2-acrylamido-2-methylpropanesulfonic acid, wherein the said terpolymer is present in the said acidic aqueous polymer solution in a concentration of from about 0.1 to about 10 weight percent and wherein the number average molecular weight of the said terpolymer is from about 10,000 to about 2,000,000.

4,210,206
HIGH TEMPERATURE WELL TREATING WITH CROSSLINKED GELLED SOLUTIONS
John W. Ely, and John M. Tinsley, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Continuation-in-part of Ser. No. 840,347, Oct. 7, 1977, abandoned. This application Oct. 11, 1978, Ser. No. 950,495
Int. Cl.[2] E21B *43/26, 33/138*
U.S. Cl. 166—294 **10 Claims**

1. A method of treating a well formation existing at a temperature in the range of from about 120° F. to about 350° F. with a temporary blocking agent comprising the steps of:

preparing a temporary blocking agent composition which forms a highly viscous crosslinked gel at the temperature of said well formation, said composition being comprised of water, a gelling agent present in the range of from about 0.1 to about 13 parts by weight per 100 parts by weight of said water and selected from the group consisting of water soluble polysaccharides having a molecular weight of at least about 100,000, said water soluble polysaccharides crosslinked with a compound selected from the group consisting of dialdehydes having the general formula:

$$OHC(CH_2)_nCHO,$$

wherein

n is an integer within the range of 0 to about 3,

2-hydroxyadipaldehyde, dimethylol urea, water soluble urea formaldehyde resins, water soluble melamine formaldehyde resins, and mixtures thereof,

water soluble polyacrylamides and mixtures thereof, and hexamethoxymethylmelamine present in the range of from about 0.05 to about 5 parts by weight per 100 parts by weight of said water; and

introducing said composition into said well formation whereby said composition is heated to a temperature in the range of from about 120° F. to about 350° F. and formed into a highly viscous crosslinked gel in said formation.

4,210,207
VALVE APPARATUS
David M. McStravick, Houston, and William M. Roberts, Deer Park, both of Tex., assignors to Baker International Corporation, Orange, Calif.
Filed Mar. 14, 1979, Ser. No. 20,307
Int. Cl.[2] E21B *43/12*
U.S. Cl. 166—330 **8 Claims**



1. A valve apparatus for use in a subterranean well and carriable on a fluid transmission conduit insertable therein, comprising: ball valve head means having camway slot means defined exteriorly thereon; valve seat means having camway ball means secured thereto and carriable in said camway slot means to pivot said valve head means on said seat means to shift said apparatus between open and closed positions in response to manipulation of said fluid transmission conduit.

4,210,208
SUBSEA CHOKE AND RISER PRESSURE EQUALIZATION SYSTEM
Forrest E. Shanks, DeSota, Tex., assignor to Sedco, Inc., Dallas, Tex.
Filed Dec. 4, 1978, Ser. No. 966,091
Int. Cl.[2] E21B *7/12*
U.S. Cl. 166—352 **16 Claims**



1. A subsea choke and riser pressure equalization system comprising, in combination:

a section of riser pipe;

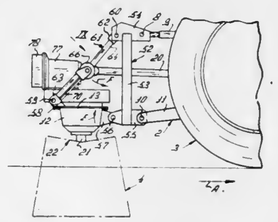
a choke conduit line mechanically supported by said riser pipe;

a variable choke valve having an inlet port and a discharge port;

a gate valve having an inlet port connected in fluid communiction with the choke line and an output port connected in fluid communication with the inlet port of the variable choke for permitting diversion of fluid from the choke line to the variable choke; and,

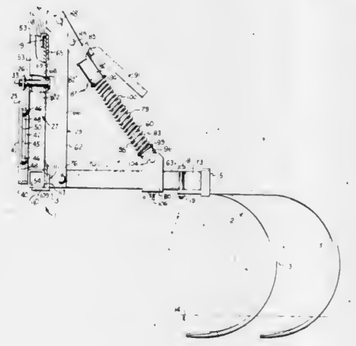
means connecting the discharge port of the variable choke in fluid communication with the interior of the riser section, said means including a discharge conduit extending from said choke valve in inclined relation with respect to the axis of said riser, whereby fluid diverted from said choke conduit is discharged into said riser in counterflow relation with respect to the upward flow of drilling fluid through said riser.

4,210,209
AGRICULTURAL IMPLEMENT
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland
Filed Feb. 22, 1978, Ser. No. 880,091
Claims priority, application Netherlands, Feb. 22, 1977, 7701856
Int. Cl.[2] A01B *61/04*
U.S. Cl. 172—47 **10 Claims**



1. An agricultural implement attachment comprising frame means, coupling means on said frame means connectable to the three point hitch of a tractor, said coupling means comprising an upwardly extending multiple point trestle that is pivotably connected to said frame means with lower pivot means and an upper strut that normally prevents pivoting of the frame means relative to said trestle, said strut including two elongated arm parts that are pivoted to one another about a pivot axis at a junction, one of said arm parts being pivotably connected to said trestle and the other of said arm parts being pivotably connected to said frame means, an element normally fixing said arm parts in general longitudinal alignment to one another at said junction until overload, said element being an elongated multiple shearable pin that extends generally parallel to said strut through respective openings in said arm parts adjacent said junction, said pin extending in a direction transverse to said pivot axis.

4,210,210
QUICK MOUNTING MECHANISM FOR AGRICULTURAL IMPLEMENT
Dale E. Ankenman, Rte. 1, Almena, Kans. 67622
Filed Apr. 17, 1978, Ser. No. 897,114
Int. Cl.[2] A01B *63/26, 37/00*
U.S. Cl. 172—272 **11 Claims**



1. A quick mounting mechanism for mounting a detachable tool support member on mobile agricultural equipment comprising:

(a) a frame member adapted for connection to said agricultural equipment;

(b) said frame member and said tool support member having a tool mounted orientation with respect to each other, wherein each has a surface in facing relationship to one another;

(c) at least one hooking assembly having a first part and a second part; said first part being attached to said frame member and said second part being attached to said tool support member, said first and second parts being engaged when said frame member and said tool support member are in said tool mounted orientation;

(d) a locking assembly having a first locking portion and a plurality of second locking portions; one of said second locking portions being associated with said frame member and spaced from said hooking assembly first part at a specified distance; another of said second locking portions being attached to said tool support member and spaced at a distance equal to said specified distance from said second hooking assembly part; said hooking assembly first and second parts being aligned and said locking assembly second portions being aligned when said frame member and said tool support member are in said tool mounted orientation; said hooking assembly parts and said locking assembly portions cooperating, each with one another upon placing said frame member and said tool support

member in said tool mounted orientation, whereby said locking assembly first portion locks together said locking assembly second portions and cooperates with said hooking assembly to secure said tool support member to said frame member; and

(e) securing means attached to and interbetween said agricultural equipment and said frame member, and wherein:

(1) said securing means comprises a member attached by one side thereof to said agricultural equipment and having a second side thereof with a vertically extending channel contained therein; said channel having a plurality of bolts slidably mounted therein and outwardly extending therefrom in a horizontal attitude; and

(2) said frame member having a receiver thereon for each of said bolts; each said bolt being received in said receiver respectively whereby a selected height position is determined by sliding said bolts in said channel whereupon a fastener for each said bolt is used to lock each said bolt in said selected position; whereby gross height adjustment of said tool support member is provided.

4,210,211

TURNROW PLOW

Mikel G. Chandler, and Von Chandler, both of P.O. Box 550, Tahoka, Tex. 79373

Filed Jun. 12, 1978, Ser. No. 914,538
Int. Cl.[2] A01B *35/14, 63/102*
U.S. Cl. 172—451 **3 Claims**



1. A turnrow plow adapted to be drawn by a farm tractor comprising:

a. a rigid frame,

b. a three-point hitch rigidly attached on the frame for attaching the frame to the tractor,

c. a V-shaped blade having

(i) two wings attached at

(ii) a forward apex,

d. an apex shank fixed to the frame and welded to the blade at the apex,

e. two wing shanks each fixed to the frame and to an end of the wings

f. each of the three shanks having a forward edge,

g. a knife edge on each of the forward edges,

h. said wings having

(i) a plow angle of about 12°,

(ii) a drag angle of about 25°,

j. said frame including a V-shaped frame member vertically over the V-shaped blade with a forward apex of the frame,

k. a back member connecting the rear of the V-shaped frame member, forming a triangle,

m. a hitch beam parallel to the back member and normal to the direction of draft attached to the apex of the V-shaped frame member,

n. the hitch beam attached by welded joint to the apex and attached by struts extending aligned with the direction of draft from each end of the hitch beam to the V-shaped member, and

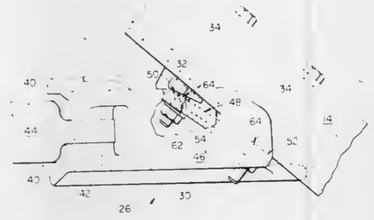
o. three connection points attached to said hitch beam thus forming said three-point connection.

4,210,212

TOOL MOUNTING WITH MEMBER LOCATABLE IN FIRST AND SECOND POSITION BETWEEN STANDARD AND FRAME

William W. Jackson, Bettendorf; James G. Steinbach, Davenport, both of Iowa, and Lon R. Geiger, Rock Island, Ill., assignors to Deere & Company, Moline, Ill.

Filed Jul. 5, 1978, Ser. No. 922,046
Int. Cl.[2] A01B *15/00, 65/02*
U.S. Cl. 172—645 **20 Claims**



1. In an earthworking implement having a longitudinally extending frame member, at least two tool-carrying standards spaced along the frame member and extending therebelow, and an improved means for attaching the standards to the frame member comprising: a standard supporting bracket member; mounting structure between the bracket member and frame member including an upright surface on one member and upright first, second and third faces on the other member, said second and third faces adjoining respective sides of the first face and meeting said first face at such an angle as to form respective acute angles with the plane of the first face, each of said respective angles being substantially less than 90 degrees; means releasably fastening the bracket member to the frame member; and a spacer member locatable in a first and second position between the upright surface and the second or third faces respectively, said spacer member when in a first position between the upright surface and the second face acting to separate the first and second face from the upright surface and causing said surface and third face to abut and when in the second position between the upright surface and the third face acting to separate the first and second faces from the upright surface and causing the upright surface and second face to abut.

4,210,213

KELLY BUSHING GUARD

Huey P. Louviere, 1811 Donna Dr., Franklin, La. 70538

Filed Mar. 20, 1978, Ser. No. 890,642
Int. Cl.[2] E21B *41/00*
U.S. Cl. 175—195 **13 Claims**

1. A drilling rig kelly bushing and rotary table safety guard apparatus

Comprising:

a. A circular rotary drive table;

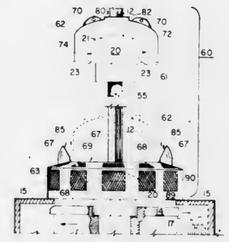
b. A kelly bushing associated with said rotary drive table and adapted for driving engagement therewith;

c. A drive kelly slideably engaged during drilling operation with said kelly bushing;

d. an outer shell adapted to coverably attach to said kelly bushing, said shell comprising,

an upper shell section mountable on said kelly bushing, an opening being provided through said upper shell allowing the passage said kelly therethrough, said upper shell section having inner surface means for attaching said outer shell to said kelly bushing with said outer shell rising with the kelly bushing when it ascends from said rotary table during drilling operations;

a lower shell section integrally attached to said upper shell section and having an internal diameter greater than the internal diameter of said upper shell section, said lower shell providing an enlarged diameter greater than the diameter of the rotary table to be guarded and being



capable of registering with and guarding said rotary table during drilling operations when said kelly busing and said rotary table are engaged; and

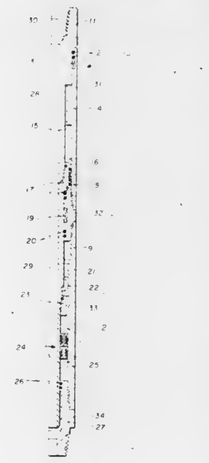
e. a free space area adjacent said lower shell section and said cushioned means, said free space providing an area in which said kelly bushing with which said shell is operating, can freely rotate without contact with said shell while said shell assumes a non operative resting position about the rig rotary table.

4,210,214

TEMPERATURE COMPENSATING HYDRAULIC JARRING TOOL

James R. Blanton, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 6, 1978, Ser. No. 949,350
Int. Cl.[2] E21B *31/00*
U.S. Cl. 175—297 **2 Claims**



1. A hydraulic jarring tool, comprising:

an outer member;

an inner member, said outer member and said inner member being telescopically arranged;

spline means between said outer member and said inner member for transmitting torque;

an anvil and hammer means for providing a jarring effect;

an operating fluid chamber between said inner member and said outer member containing operating fluid;

detent means for actuating said anvil and hammer means; and

seal means between said outer member and said inner member for providing a fluid seal to contain said operating fluid, said seal means including a seal and thermal relief valve assembly mounted for axial travel between said inner member and said outer member, said assembly comprising an annular seal body with a pair of inner seal rings mounted between said inner member and said annular seal body defining an inner chamber and a pair of outer seal rings mounted between said annular seal body and said outer member defining an outer chamber with a passage means extending from said operating fluid chamber to said inner chamber and said outer chamber and thermal relief valve means in said passage means for providing pressure equalization, said thermal relief valve means actuated at a preselected pressure and operating to allow limited flow of operating fluid out of said operating fluid chamber into said inner chamber and outer chamber and blocking flow into said operating fluid chamber.

4,210,215

ROCK DRILL WITH HELICAL DUST CONVEYING GROOVE

Wolfgang Peetz, Blitzenreute, and Siefgried Klaissle, Unterankenreute, both of Fed. Rep. of Germany, assignors to Hawera Probst GmbH & Co., Ravensburg, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,268
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1977, 2735227
Int. Cl.[2] E21B *9/04*
U.S. Cl. 175—394 **12 Claims**



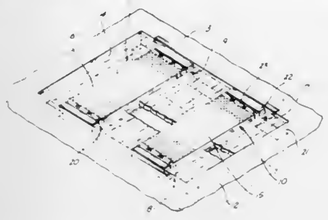
1. A rock drill, especially for rotary blow machines and drifters and stopers, with drilling cutting edges, which includes at least one drilling dust conveying groove. web means extending around the axis of said drill and confining at least one drilling dust conveying groove in axial direction, said web means comprising a back surface and a lateral surface forming a drilling dust supporting surface merging with the bottom of said at least one drilling dust conveying groove, said bottom of said at least one drilling dust conveying groove extending from said drilling dust supporting surface at an acute angle with regard to the axis of said drill rectilinearly up to said back surface of said web means, the ratio of the width of said at least one drilling dust conveying groove measured in the axial direction of said drill to the width of the back surface of said web means being in excess of 5:1, the wedge angle between said groove bottom and said drilling dust supporting surface amounting to from 70° to 80°.

4,210,216

HEATED PLATFORM SCALE

Glenn S. Godden, Lynnwood, Wash., assignor to Eldec Corporation, Lynnwood, Wash.

Filed Jan. 16, 1979, Ser. No. 3,865
Int. Cl.[2] G01G *19/02, 3/14, 23/00*
U.S. Cl. 177—134 **12 Claims**



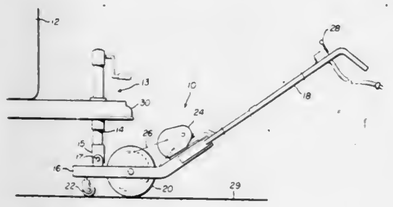
1. A vehicle platform scale comprising:
a platform whereupon may be positioned at least one wheel of a vehicle;
at least one load cell, said load cell supporting said platform, said load cell deflecting in response to weight bearing upon said platform, said load cell having at least one strain gauge attached thereto, said load cell being enclosed in a load cell enclosure, said load cell enclosure having side walls and a floor, said load cell being spaced above said floor of said enclosure; and
a heating means for preventing accumulation of ice or snow underneath said load cell, said heating means operating to maintain said floor of said load cell enclosure within a range of temperatures above 0° Celsius.

4,210,217

SELF-PROPELLED STEERING DEVICE FOR TRAILERS

Eugene Lachowicz, 20129 Rogge, Detroit, Mich. 48234

Filed Nov. 16, 1978, Ser. No. 961,406
Int. Cl.[2] B62D *51/04*
U.S. Cl. 180—13 **4 Claims**



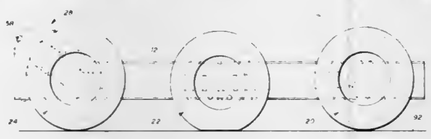
1. An apparatus for attaching to and maneuvering a trailer having a telescopic jack support mounted on the tongue of the trailer comprising:
frame means;
a single driving wheel;
drive means operatively connected to said driving wheel for selectively causing said wheel to rotate;
a handle mounted on said frame means in tandem relationship with said driving wheel;
a single caster wheel located on the opposite side of said driving wheel from said handle and adapted to carry part of the weight of a trailer when the apparatus is attached thereto;
socket means located on said frame means between said drive wheel and said caster wheel, said socket means being pivotally mounted on said frame means for pivotal movement in a vertical plane about an axis parallel to the rotational axis of said drive wheel while being restricted against lateral movement in the vertical plane parallel to said drive wheel axis.

4,210,218

UNDERCARRIAGE FOR ADVERSE TERRAIN VEHICLE

Norman D. Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Company, Inc., Dallas, Tex.

Continuation of Ser. No. 799,328, May 23, 1977, abandoned. This application Feb. 13, 1979, Ser. No. 11,857
Int. Cl.[2] B62D *21/00*
U.S. Cl. 180—24.12 **30 Claims**



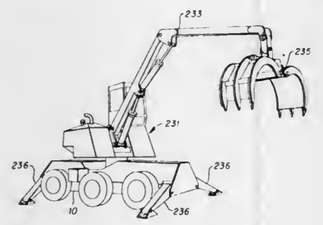
1. An undercarriage assembly for supporting and propelling a mechanism, comprising:
an elongate hollow load-bearing frame adapted for connection to the mechanism;
at least three axle members each having a wheel receiving member at one end thereof;
at least three wheel members each mounted on and secured to the wheel receiving end of one of the axle members;
means rotatably supporting the axle members at longitudinally spaced points along the frame with each of the axle members extending through the frame and being rotatably supported in opposite sides of the frame;
the middle wheel member extending below a plane lying tangent to the bottoms of the endmost wheel members to facilitate skid steering of the mechanism;
transmission means including sprockets and chains positioned within the frame and drivingly interconnecting at least two of the axle members; and
drive means including a motor mounted on the frame and operably connected to the transmission means for actuation thereof whereby the drive means and the transmission means cause concurrent rotation of the interconnected axle members.

4,210,219

UNDERCARRIAGE FOR ADVERSE TERRAIN VEHICLE

Norman D. Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Co., Incorporated, Dallas, Tex.

Division of Ser. No. 835,726, Sep. 22, 1977, abandoned. This application Feb. 15, 1979, Ser. No. 12,292
Int. Cl.[2] B62D *21/00*
U.S. Cl. 180—24.12 **9 Claims**



1. A power loader vehicle, comprising:
(a) a pair of undercarriage assemblies each including:
an elongate hollow load bearing frame,

at least three axle members each having a wheel receiving member at one end thereof,
at least three wheel members each mounted on and secured to the wheel receiving end of one of the axle members,
means rotatably supporting the axle members at longitudinally spaced points along the frame with each of the axle members extending through and rotatably supported in opposite sides of,
the middle wheel member extending below a plane lying tangent to the bottoms of the endmost wheel members,
a plurality of sprocket means each positioned within the frame and each mounted on and secured to one of the axle members,
drive means comprising motor means and transmission means mounted on the frame between one endmost axle member and the middle axle member,
first drive sprocket means having two sets of teeth thereon positioned with the frame and mounted for rotation by the drive means,
second drive sprocket means mounted on the middle axle member,
first drive chain means constrained around the first drive sprocket means on one set of teeth and the sprocket means on the endmost axle member adjacent the drive means,
second drive chain means constrained around the first drive sprocket means on the other set of teeth and the sprocket means on the middle axle member, and
third drive chain means constrained around the second drive sprocket means and the sprocket means on the other endmost axle member,
the first and second drive chain means drivingly connecting the endmost axle member adjacent the drive means and the middle axle member to the output of the drive means for rotation under the action thereof;
(b) a crane frame;
(c) means supporting the crane frame on the elongate hollow load bearing frames of the undercarriage assemblies for pivotal movement with respect thereto about a normally vertically extending axis;
(d) a knuckle boom crane comprising an articulated arm mounted on the crane frame at one end thereof;
(e) a clamp mounted at the opposite end of the articulated arm for receiving, lifting and carrying materials therein;
(f) hydraulic cylinder means for extending and retracting the knuckle boom crane and for actuating the mechanical clamp;
(g) an operator's compartment mounted on the crane frame; and
(h) an engine mounted on the crane frame.

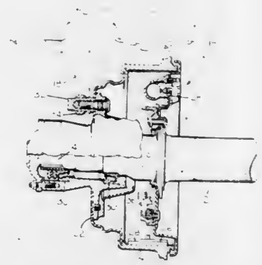
4,210,220

AXLE ASSEMBLY

Jack S. Balter, Troy, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 789,748, Apr. 21, 1977, abandoned, which is a continuation of Ser. No. 679,433, Apr. 22, 1976, abandoned. This application Nov. 16, 1978, Ser. No. 961,330
Int. Cl.[2] B60K *23/00;* **F16J** *15/10*
U.S. Cl. 180—70 R **1 Claim**

1. A drive axle assembly for vehicles having an axle shaft rotatably mounted within a housing, said axle shaft having an annular head formed on its end, fastening means to fasten said head to a hub, said hub being rotatably mounted on the outer surface of said housing and rotatably driven by said axle shaft, the improvement comprising said hub having a central bore having a cylindrical inner wall, having a radially extending face at an outer end of said hub and having an annular beveled portion between said wall and said face, said annular head having formed thereon a cylindrical annular lip disposed inwardly and projecting into the central bore of said hub, a radially extending portion of said head having a radially extending face facing in the same direction as the annular lip projects, the annular lip having a cylindrical outer surface spaced inward from said cylindrical inner wall of said hub, an annular groove provided in the axial outer end of the outer surface of said annular lip between the cylindrical outer surface and the radially extending face to accept an "O" ring sealing member, said fastening means comprise a series of threaded studs threadedly fastened in an end of said hub and extending outward from said radially extending face of said hub and in registration with a plurality of holes in said radially extending portion of said head and a locking nut threadedly disposed on each of said threaded studs to capture and fasten said head at said hub and to hold said faces in metal-to-metal contact, said annular lip extending longitudinally within and in spaced relation to said central bore of said hub and said annular lip being integral with said head, there being one "O" ring sealing member engaging said annular beveled portion provided at the end of said central bore of said hub inward of said threaded studs, said sealing member disposed in said annular groove, said "O" ring sealing member intimately contacting said beveled portion and said annular groove and captured thereby, said "O" ring sealing member in its captured substantially elliptical cross sectional form with a wedge-shaped outer portion between said radially extending wall of said annular head and said annular beveled portion of said hub and with a rounded portion extending inward in said annular groove filling substantially the entire volume of said annular groove and forming a liquid seal between said annular groove and said hub and said head, the portion of the outer surface of said annular lip being cylindrical in shape and having an outer diameter slightly less than the inner diameter of the central bore of said hub, such that lubricant stored in a reservoir formed at the end of the axle assembly within the central bore of the hub which lubricates bearings between the axle shaft and housing may flow through a passage formed between the outer surface of the annular lip and the central bore of the hub, whereby lubricant if under increased pressure would tend to push the round portion of the "O" ring and thereby push the "O" ring toward its wedge shaped outer portion between the radially extending wall of the axle head and the beveled portion of the hub.



4,210,221

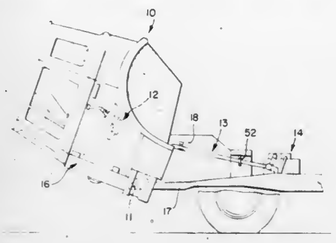
TRANSMISSION REMOTE SHIFT SYSTEM OF THE DISCONNECT TYPE FOR A CAB-OVER CHASSIS

Russell G. McMillen, and Noel E. Leitzman, both of Fort Wayne, Ind., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 20, 1978, Ser. No. 962,439
Int. Cl.[2] B60K *20/04*
U.S. Cl. 180—77 TC **4 Claims**

1. A break-away gear shift lever assembly for use in combination with a tilt cab pivotally mounted along a forward transverse axis to a chassis of a motor truck, comprising:
a three part coupling means having one part carried on a depending end of a gear shift lever, the one part engageable with an upwardly projecting second part carried on

an axially and angularly movable elongated control rod, the control rod extending underneath the tilt cab and having a free end, and a third part carried underneath the tilt cab and engageable with the free end of the control rod;



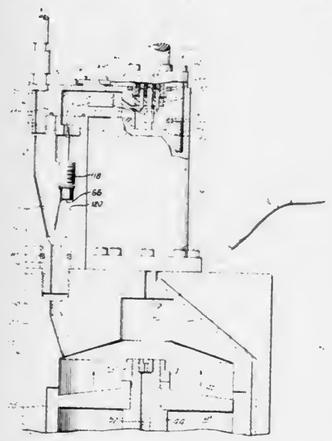
the one part disengageable from the second part and the free end of the control rod disengageable from the third part upon tilting of the tilt cab about the forward transverse axis.

4,210,222

AIR GUN MONITORING METHOD AND APPARATUS

Paul Chelminski, Norwalk, and Stephen V. Chelminski, West Redding, both of Conn., assignors to Bolt Associates, Inc., Norwalk, Conn.

Filed Jun. 22, 1978, Ser. No. 917,792
Int. Cl.[2] G01V *1/38*
U.S. Cl. 181—107 **8 Claims**



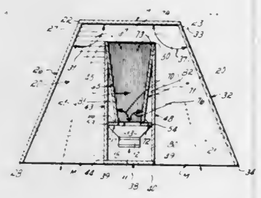
1. In a method for monitoring the firing of an air gun for determining the instant of firing, said air gun including a shuttle rapidly movable within an operating chamber to abruptly release pressurized gas from a pressurized gas charge chamber, such rapid shuttle movement causing fluid to be trapped within a portion of said operating chamber in front of the fast-moving shuttle to decelerate said shuttle, the invention comprising:
monitoring the fluid pressure within said portion of said operating chamber, and
signalling the abrupt rise in that pressure which occurs when the fluid is trapped in front of the fast-moving shuttle for indicating the instant of firing of the air gun.

4,210,223

LOW FREQUENCY FOLDED EXPONENTIAL HORN LOUDSPEAKER APPARATUS WITH BIFURCATED SOUND PATH

Gary C. Gillum, and Paul W. Klipsch, both of Hope, Ark., assignors to Klipsch and Associates, Inc., Hope, Ark.

Filed Jan. 25, 1978, Ser. No. 872,256
Int. Cl.[2] H05K *5/00*
U.S. Cl. 181—152 **19 Claims**



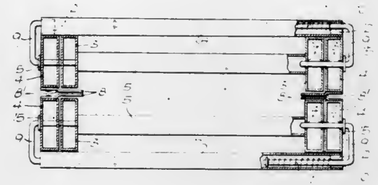
1. A loudspeaker apparatus for operating in a low frequency range comprising:
a driver board having at least one aperture;
a back air chamber;
at least one electroacoustic transducer means for converting low frequency electrical signals into low frequency acoustic signals, said at least one electroacoustic transducer means being mounted to said driver board and immersed in said back air chamber; and
a folded exponential horn comprising structure defining a region, said structure including:
first and second divergent walls, each of said first and second divergent walls connecting to said driver board near said at least one aperture, and extending rearwardly away from said driver board at a first obtuse angle, said divergent walls terminating in an intermediate plane, said at least one aperture forming a throat for said horn;
first and second interior walls, each of said first and second interior walls connecting to said driver board and extending perpendicularly away from said driver board, said first interior wall converging with said first divergent wall and said second interior wall converging with said second divergent wall in said intermediate plane;
a rear wall opposite and spaced rearwardly from said intermediate plane;
first and second side walls, each of said first and second side walls connecting to said rear wall and extending forwardly away from said rear wall at a second obtuse angle, said side walls terminating in a frontal plane, said first side wall spaced opposite said first interior wall, said second side wall spaced opposite said second interior wall;
said divergent walls and interior walls being oriented with respect to said rear wall and side walls such that the distance therebetween increases from said throat at an exponential rate to a bifurcated mouth in said frontal plane;
a top wall connecting to said driver board, divergent walls, interior walls, rear wall and side walls; and
a bottom wall connecting to said driver board, divergent walls, interior walls, rear wall and side walls;
said top and bottom walls together with said divergent walls, interior walls, rear wall and side walls connecting said throat and said mouth and defining said region, said region forming a bifurcated sound path.

4,210,224

LONGITUDINALLY VARIABLE LADDER

Walter Kummerlin, In den Fressäckern, D-7120 Bietigheim-Bissingen, and Nikolaus A. Kummerlin, Humboldstrasse 26, D-7220 Schwenningen, both of Fed. Rep. of Germany

Filed Jan. 5, 1979, Ser. No. 1,338
Int. Cl.[2] E06C *1/22, 7/06*
U.S. Cl. 182—207 **9 Claims**



1. A longitudinally variable ladder with at least two ladder parts which are displaceable relative to one another in their longitudinal direction, comprising
ladder parts each including two longitudinal struts and rungs connected therebetween, a first of said ladder parts with first of said two longitudinal struts thereof forms a guide for second of said struts of a second of said ladder parts, said second struts constituting inner struts engaging between said first struts, and first of said rungs of said first ladder part being connected with said first struts on a front side of said first struts, the latter constituting outer struts and being disposed outside of said second struts,
second of said rungs of said second ladder part being connected with said inner struts and lying between two planes, said two planes being defined by a front side and a rear side of said inner struts, respectively,
guide rails being operatively connected to said outer struts,
said struts of all said ladder parts have the same box-shaped profile,
said inner struts being guided between at least two of said first rungs of said outer struts and said guide rails,
said at least two first rungs being fastened on an upper end section of said outer struts, said second ladder part being withdrawable from said upper end section,
said guide rails being limited to the end section carrying the two rungs,
said guide rails at least indirectly engage on the rear side of said outer struts in said end section.

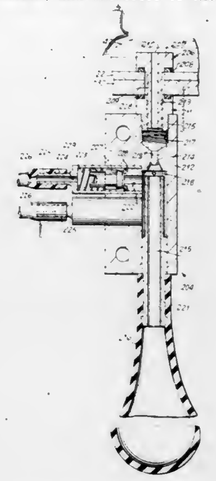
4,210,225

LIQUID OIL FEEDERS

John Baumann, Medford; Abraham Abrams, Roslyn Heights, and Marvin Broitman, Melville, all of N.Y., assignors to Uniwave, Inc., Farmingdale, N.Y.

Division of Ser. No. 769,132, Feb. 16, 1977, Pat. No. 4,159,047.
This application Oct. 20, 1978, Ser. No. 953,724
Int. Cl.[2] F16N *13/08*
U.S. Cl. 184—28 **5 Claims**

1. A liquid oil feeder comprising tank means for holding a supply of oil; and flusher means connected to a lower region of said tank means for receiving oil from said supply of oil by force of gravity and selectively transmitting said received oil in a stream, said flusher means including manifold means having a manifold chamber operatively coupled to the interior of said tank means and flexible chamber means operatively coupled to said manifold chamber, said manifold chamber and said flexible chamber means together defining an oil storage chamber, said manifold means including first normally open valve means communicating between said manifold chamber and the interior of said tank means so that said oil storage chamber is normally filled by gravity with oil from said tank means, and second normally closed valve means coupled to said manifold chamber and through which said stream of oil is to be delivered, said flexible chamber means being positioned to permit the selective manual application of pressure to said flexible chamber means, and therefore to the oil in said oil storage



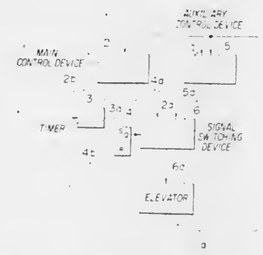
chamber to close said first valve means and open said second valve means for the forcing of at least a portion of the oil in said oil storage chamber in a stream out of said oil storage chamber through said second valve means.

4,210,226

ELEVATOR CONTROL APPARATUS

Youichi Ichioka, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1978, Ser. No. 916,580
Claims priority, application Japan, Jun. 20, 1977, 52-72963
Int. Cl.[2] B66B *5/02*
U.S. Cl. 187—29 R **2 Claims**



1. An elevator control apparatus which comprises:
main control means coupled to an elevator for producing a plurality of first elevator control signals and for periodically producing a reset signal, said main control means including a first special purpose computer device for generating said first elevator control signals and said reset signal, said first special purpose computer device including a stored elevator main control program;
auxiliary control means coupled to said elevator for producing a plurality of second elevator control signals, said auxiliary control means including a second special purpose computer device for generating said second elevator control signals, said second special purpose computer device including a stored elevator auxiliary control program;
timer means coupled to said main control means for repeatedly measuring a predetermined time period starting from

the occurrence of said reset signal produced by said main control means and for generating an auxiliary control command signal upon the failure of said reset signal to reoccur prior to the end of said predetermined time period; and

signal switching means interposed between the output of said main control means, the output of said auxiliary control means, and the control input of said elevator for alternatively coupling said first and said second elevator control signals to the control input of said elevator, said signal switching means being controlled by said auxiliary control command signal from said timer means.

4,210,227

APPARATUS FOR SELECTING A STOREY CALL AT AN ELEVATOR SYSTEM

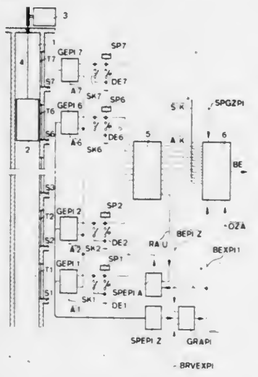
Stephan Zeindler, Gunzwil, and Hans G. Süss, Udligenswil, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Dec. 26, 1978, Ser. No. 972,890

Claims priority, application Switzerland, Jan. 17, 1978, 450/78

Int. Cl.[2] B66B *1/18*

U.S. Cl. 187—29 R **1 Claim**



1. In an apparatus for selecting a storey call at an elevator system, comprising:

storage elements for storing the storey calls;

storey call transmitters for controlling the storage elements;

a scanner device for successively continuously scanning the storage elements from the lowermost storey to the uppermost storey and from the uppermost storey to the lowermost storey;

said scanner device producing a signal sequence corresponding to the stored storey calls;

at least one selector means for signalling the position of at least one elevator cabin;

upon coincidence of the scanner position and the elevator position-signal there being produced a coincidence signal;

the improvement comprising;

a first NOR-element having a first input, a second input and an output;

a storage composed of two NOR-elements;

said storage having a first input, a second input and an output;

the first input of the first NOR-element being capable of carrying the coincidence signals;

the output of the first NOR-element being connected with the first input of the storage;

the second inputs of the first NOR-element and the storage being connected with one another and carrying an information signal characterizing the operating state of the elevator cabin and the doors;

a second NOR-element having a first input, a second input, a third input and an output;

the output of the storage being connected with the first input of the second NOR-element;

the second input of the second NOR-element carrying a signal train which has been placed in order in acccordance with the timewise sequence of the storey call inputs for servicing released storey calls;

the third input of the second NOR-element receiving a signal train produced by a square wave generator;

the storey calls still to be serviced and which have been ordered in accordance with the timewise sequence of their input first being freed for servicing after a continuous signal which signals the completion of all preceding storey calls appears at the second input of the second NOR-gate and extends between two successive signals produced by the scanner device in each case upon scanning the lowermost storey in the UP-direction;

said continuous signal appearing at the second input of the second NOR-gate as the storey call signal;

a control signal appearing at the output of the second NOR-element after simultaneous occurrence of the information signal and the coincidence signal at the inputs of the first NOR-gate and which information signal signals the standstill of the elevator cabin with closed doors; and

said control signal corresponding to the storey call signal situated closest to the coincidence signal in the direction of travel of the scanner device.

4,210,228

CONTROL METHOD

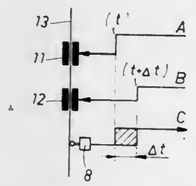
Harri Vaarala, 33720 Tampere 72, Finland

Filed Jun. 16, 1978, Ser. No. 915,999

Claims priority, application Finland, Jun. 28, 1977, 772005

Int. Cl.[2] B66B *5/16*

U.S. Cl. 187—73 **7 Claims**



1. In a control system for a load carrying output member driven by a command signal, the combination comprising;

(a) a first means having an engaged position to prevent movement of said output member, said first means disengaging said output member in response to said command signal,

(b) second means having an engaged position to prevent movement of said output member, said second means disengaging said output member in response to said command signal after a predetermined time delay, and

(c) detecting means for sensing and signalling the movement of output member during said time delay.

4,210,229

DISC BRAKE ASSEMBLIES

John R. Rees, Halesowen, England, assignor to Girling Limited, Birmingham, England

Filed May 26, 1977, Ser. No. 800,887

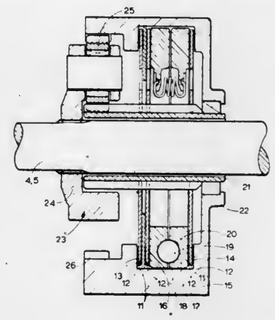
Claims priority, application United Kingdom, May 26, 1976, 21757/76; Dec. 11, 1976, 51787/76

Int. Cl.[2] B60T *1/06;* **F16D** *55/02, 55/14*

U.S. Cl. 188—18 A **11 Claims**

1. A disc brake assembly comprising a stationary housing, a stationary surface in said housing, a shaft assembly having a

first shaft portion and a second shaft portion surrounding and rotatable relative to said first shaft portion, said second shaft portion being rotatable in response to rotation of said first shaft portion, at least one rotatable friction disc having friction linings and slidably keyed to said second shaft portion, actuating means for moving said friction disc axially into frictional engagement with said stationary surface to brake said shaft assembly to slow or stop the same, said first shaft portion



comprising means for transmitting a driving torque directly from a differential unit to a wheel, and a reduction gear train through which said second shaft portion is driven by said first shaft portion without magnifying said driving torque and comprising means whereby said second shaft portion will rotate at a greater speed than said first shaft portion is, and when the brake is applied, said first shaft portion is braked proportionately in response to braking of said second shaft portion to brake said shaft assembly.

4,210,230

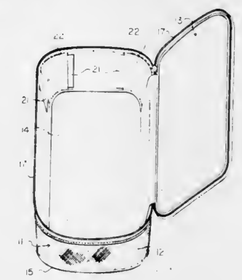
FLAT-PACK LUGGAGE CASE

Jay H. Weiner, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.

Filed Apr. 26, 1979, Ser. No. 33,463

Int. Cl.[2] A45C *7/00*

U.S. Cl. 190—43 **7 Claims**



1. A flat-pack luggage case having a body and a lid hinged thereto wherein the body and lid have flexible walls and are collapsible to a flat position, the improvement comprising a plurality of short relatively thin flexible sheets having an edgewise rigidity optionally installable separately in certain fixed positions respectively in the case to support the flexible walls of said body and impart a structured appearance thereto, and removable therefrom to flat non-fixed positions in the case for imparting alternatively thereto a flat-pack appearance.

4,210,231

POWER WHEEL FOR FOLDING DOORS

Robert F. Seitz, Mentor, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Oct. 27, 1978, Ser. No. 955,159

Int. Cl.[2] F16D *67/00*

U.S. Cl. 192—8 R **7 Claims**



1. A source of rotational power which includes in combination:

a shaft to be driven,

a housing drivingly connected to said shaft and enclosing a portion thereof within a housing cavity,

at least one opening in said housing wall oriented generally transversely to said shaft communicating said cavity with the exterior,

an elongated member having an enlarged portion adjacent a first end thereof,

said cavity including an enlarged portion adjacent the inner end of said opening to receive said enlarged portion of said elongated member,

a second end of said elongated member opposite said first end extending exteriorly of said housing with an elongated portion of said elongated member connecting said first and second ends,

said elongated portion extending through said opening,

said opening being of such size and shape that said enlarged portion of said elongated member is retained in the enlarged portion of said cavity and is prohibited from passing through said opening and said elongated portion of said elongated member is free to move within said opening from a position at which it is substantially parallel to said shaft to a position at which it is substantially transverse to said shaft.

4,210,232

CLUTCH MECHANISMS WITH TWO CLUTCH PLATES

Carlo Beccaris, Santena, Italy, assignor to Société Anonyme Francaise Du Ferodo, Paris, France

Filed Dec. 15, 1977, Ser. No. 860,846

Claims priority, application France, Dec. 16, 1976, 76 37871

Int. Cl.[2] F16D *21/06*

U.S. Cl. 192—48.8 **10 Claims**

1. A clutch mechanism of the kind comprising two clutch assemblies, each said clutch assembly having a first plate adapted to be fixed for rotation with one shaft, a clutch plate mounted for axial movement with respect to said first plate and adapted to be fixed for rotation with another shaft, a second plate mounted for axial movement with respect to said first plate and fixed for rotation therewith, resilient means for urging said second plate to an engagement or clutching position in which said clutch plate is clamped between said first and second plates;

wherein the improvement comprises said resilient means

including at least two Belleville type spring washers in nested relation and converging in the same general direction;

two spacer ring members interposed between said spring washers, one said spacer ring member being disposed proximate to the inner peripheries of said spring washers, and the other said spacer ring member being disposed



proximate to the outer peripheries of said spring washers, said two spacer ring members being the sole means of interconnection between said spring washers;

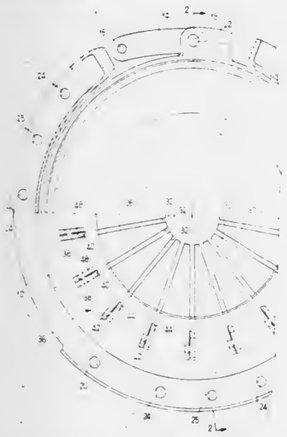
said spring washers coacting with each other and being disposed axially between said second plate of one said clutch assembly and said second plate of the other said clutch assembly.

4,210,233

CLUTCH ASSEMBLY

Pierre Courbot, Villiers le Bel, France, assignor to Société Anonyme DBA, Paris, France

Filed Apr. 17, 1978, Ser. No, 896,839
Claims priority, application France, May 10, 1977, 77 14231
Int. Cl.[2] F16D *13/50*
U.S. Cl. 192—89 B **8 Claims**



1. A clutch assembly comprising a cover-forming member rotationally connected to a pressure plate and axially movable relative thereto, and a resilient annular member comprising an outer peripheral portion axially connected to the pressure plate and a central portion adapted to be engaged by operating means, fulcrum means being provided between the resilient member and the cover-forming member, said resilient member being adapted to pivot around said fulcrum means to axially shift the pressure plate relative to the cover-forming member in a clutch actuating direction on actuation of the operating means, the fulcrum means comprising tabs extending axially from a first one of said members through corresponding apertures in the second member, wherein a free end of each tab is bent radially before assembly of said members to define an axial gap adapted to receive at least one portion of the second member after assembly, each aperture in the second member comprising at least one first portion permitting axial introduction of the corresponding tab, at least one locking element being provided to prevent the tabs from escaping through said apertures after their introduction, the respective dimensions of said axial gap and of said portion of the second member before assembly being such that said portion of the second member is prestressed in said gap after assembly, each aperture further comprising a second portion permitting relative rotation of said members in a first direction after the tabs have been introduced in the first portions of said apertures, the dimensions of said second portion of each aperture being adapted to prevent the tabs from escaping axially, said locking element being adapted to prevent said members from rotating in a direction opposite said first direction.

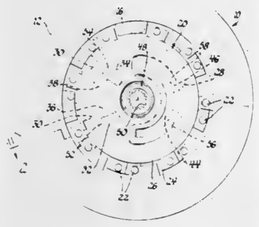
4,210,234

TORSIONAL VIBRATION DAMPER

Milford F. Jones, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1978, Ser. No. 932,117
Int. Cl.[2] F16D *3/14*; F16F *15/10*
U.S. Cl. 192—106.1 **3 Claims**

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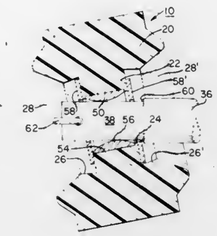
3. A torque transmitting clutch and damper assembly comprising; an annular friction disc; an annular retainer member having an outer diameter secured to said friction disc, an inner diameter, and a pair of axially offset radially extending circumferentially spaced drive tangs disposed between the inner and outer diameters; an output hub coaxial with said retainer having a pair of radially extending circumferentially spaced driven tangs each being parallel to and axially displaced from one or the other of said drive tangs respectively when said clutch and damper assembly is not transmitting torque; and preloaded torsion spring means having a pair of circumferentially spaced ends with each end having a surface extending radially inward and engageable with one or the other sets of said drive and driven tangs respectively to maintain a predetermined circumferential space between said respective sets of drive and driven tangs when no torque is being transmitted by said clutch and damper assembly and for permitting relative angular movement between said retainer member and said output hub while transmitting torque therebetween and maintaining contact with one of the drive or driven tangs during torque transmission, and each spring means having an arcuate recess adjacent said radially inward extending surface to accommodate the drive or driven tang not in contact with the spring means during torque transmission, said spring ends being urged into abutting relation after a predetermined amount of relative angular movement occurs to prevent further relative angular movement between said retainer member and said output hub.

4,210,235

BOAT SUPPORT ROLLER

Lawrence N. Johnson, 120 West High Dr., Spokane, Wash. 99203

Continuation of Ser. No. 796,803, May 13, 1977, abandoned.
This application Jan. 15, 1979, Ser. No. 3,106
Int. Cl.[2] B60P *3/10*
U.S. Cl. 193—37 **8 Claims**



3. A roller structure for supporting a boat on a trailer or the like comprising

shaft forming means for carrying a boat supporting roller for rotational movement relative thereto,

a roller body carried by said shaft forming means in a position to engage the hull of a boat when the boat is moved into supportive contact thereupon,

said roller body having a circumferential face extending in an axial direction relative to said shaft forming means and a hub formation with an axial bore for receiving shaft mounting means which has a substantial axial dimension with opposite ends spaced an axial distance less than the corresponding dimension of said circumferential face,

said roller body having oppositely disposed end faces with a protruding rib formation projecting outboard of said end faces,

said roller body being formed of a material having substantial resiliency with said circumferential face having a series of circumferentially spaced axially extending, radially projecting rib formations for engaging the surface of the boat,

said hub formation having outwardly opening inner and outer recesses formed at opposite ends of said axial bore, said inner recesses having a diameter larger than the diameter of said axial bore and terminating at the inner most ends of said outer recesses which outer recesses extend with an outward and radial taper to said protruding rib formations on said oppositely disposed end faces with said protruding rib formations projecting outboard of said outer recesses,

shaft mounting means including a bearing forming means disposed in part in said axial bore and in part in said outwardly opening inner recesses with shaft contacting portions disposed in said bore and between said inner recesses so as to mount said roller body onto said shaft forming means for rotational movement relative thereto, and

said bearing forming means includes a bushing seated in said bore which has a radially inwardly curved inner surface to provide a gimbal effect when mounted on said shaft forming means.

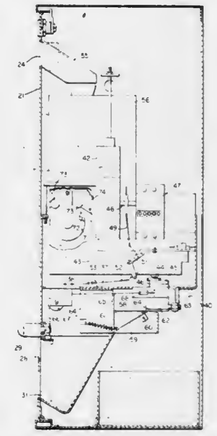
4,210,236

STAMP BOOK VENDING MACHINE

Fred J. Criscitelli, Hawthorne, N.J., assignor to United States Postage Corporation, Wayne, N.J.

Filed Feb. 22, 1978, Ser. No. 880,715
Int. Cl.[2] G07F *9/04*
U.S. Cl. 194—1 D **9 Claims**

1. In a machine for vending stamp books, means providing a vertical stack of horizontally disposed separate stamp books and disposing the bottom book of the stack in a space having a dimension longitudinally of the stack approximately equal to the thickness of one book, means providing a horizontally slidable stamp book ejector plate reciprocable in a plane aligned with and parallel to said bottom book, means for reciprocating said ejector plate to displace the bottom book out of the stack comprising an electric motor driven cam operably connected to said plate, coin controlled means for actuating said ejector plate comprising means whereby upon deposit of a coin or coins of predetermined value said motor will be actuated to operate said cam through a single complete cycle during which said plate moves through said space to eject the



bottom book and then returns to initial position, said stack then lowering to dispose the lowermost book in said space, and a coin receiving compartment for accepting said deposit of a coin or coins sufficient to effect a cycle of operation of said motor cam and ejector plate, a movably mounted normally closed coin release door for said compartment, a coin collection box below said compartment, and means movable with said ejector plate and adapted for operative connection to said release door whereby book ejection movement of the slide plate opens said door to transfer coins from said compartment into said collection box.

4,210,237

SYSTEM FOR TRANSFERRING ARTICLES FROM A CONTINUOUSLY MOVING FEEDING CONVEYOR TO A RECEIVING CONVEYOR

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed Aug. 28, 1978, Ser. No. 937,588
Claims priority, application Denmark, Sep. 1, 1977, 3892/77
Int. Cl.[2] B65G *47/31*
U.S. Cl. 198—425 **3 Claims**



1. Method of transferring articles from a continuously moved feeding conveyor and to a receiving conveyor whereby a reversing roller device, positioned at the delivery end of the

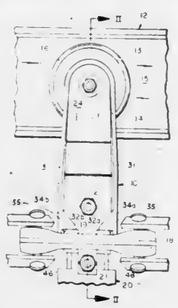
feeding conveyor, is reciprocable with respect to the receiving end of the receiving conveyor, and whereby the forward movement of the reversing roller device is carried out at a velocity which is at least as great as the velocity of the feeding conveyor in such a way that the delivery of articles from the feeding conveyor is interrupted during a period of time and whereby the velocity of the receiving conveyor is changeable, characterized by driving the receiving conveyor during a period of time with a first velocity adjusted in such a way with respect to the velocity of the feeding conveyor that the articles are delivered to the receiving conveyor with a predetermined mutual distance whereafter the velocity of the receiving conveyor is increased approximately simultaneously with the initiation of the forward movement of the reversing roller device, said increased velocity of the receiving conveyor being so much higher than said first velocity, that the receiving conveyor, during the period of time wherein delivery of articles from the feeding conveyor is interrupted, is moved a distance which is greater than the total distance of forward movement carried out by the reversing roller device, said increased velocity simultaneously being higher than the velocity of the forward movement of the reversing roller device; reducing the velocity of the receiving conveyor to said first velocity after the termination of the period of time during which delivery of articles is interrupted and returning the reversing roller device to the starting position of said device before the next acceleration of the receiving conveyor is carried out.

4,210,238

CHAIN BRACKET WITH STRENGTHENED CHAIN SUPPORTS

Charles C. Frost; Gerald W. Gurney, both of Ada, and Frederick R. Sytsma, Grand Rapids, all of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Jan. 25, 1978, Ser. No. 872,245
Int. Cl.[2] B65G *17/30, 17/80*
U.S. Cl. 198—687 **34 Claims**



1. A trolley bracket assembly for use in overhead conveyors comprising a trolley bracket having a first end portion including means for supporting a trolley wheel thereon, a second end portion opposite said first end, and an intermediate portion connecting said first and second end portions, said bracket being elongaed along a line extending between said first and second end portions; a bracket attachment for spacing a pair of said brackets apart when assembled in an overhead conveyor; one of said trolley bracket and bracket attachment including at least one chain pad having at least one chain link engaging surface extending generally transverse to said direction of elongation of said bracket and outwardly of said second end portion on said bracket; the other of said trolley bracket and bracket attachment including reinforcement means extending into abutment with a portion of said chain pad opposite to said chain link engaging surface for supporting said chain pad and preventing its movement under load; and means for securing said bracket attachment to said bracket.

4,210,239

FOLDABLE NEEDLE PACK

Masamitsu Takahashi, Hiroshima, Japan, assignor to Bankoku Needle Manufacturing Company Ltd., Hiroshima, Japan

Filed Oct. 2, 1978, Ser. No. 947,947
Claims priority, application Japan, Mar. 23, 1978, 53-37828[U]
Int. Cl.[3] B65D *85/24*
U.S. Cl. 206—45.13 **3 Claims**



1. A foldable needle pack comprising:
(a) a substantially rectangular shaped base member, which is creased or scored so as to present a fold line which serves as a hinge, said base member comprising a first base portion and a second base portion bordered by said fold line,
(b) a needle holder portion through which a plurality of needles can be received mounted near said fold line on said second base portion, and
(c) two closely aligned rigid transparent cover members, each formed as a hollow shell presenting an open side towards the base members, both said hollow shells presenting another open side towards each other, wherein one hollow shell is, at the end edge thereof opposite its open side, attached to said first base portion such that it normally contacts resiliently, at its peripheral edge facing said base member, with said first base portion while the other hollow shell is at the peripheral edge attached on said second base portion, said cover member attached to said first base portion being of a length whereby, when said first base portion is bent back along said fold line relative to said second base portion in such a manner that the angle between the surfaces of said base members on which said cover members are mounted increases, the top of each of the needles kept in the second cover member slides on the inner surface of said first cover member and then a free end edge of said first cover member comes into friction contact with the side of said needles thereby to hold the needle pack in a V-shape, and whereby the pack is returnable from its frictionally held V-shape to a closed position by applying a small force to the end edge of said first base portion while holding the end edge of the second base portion.

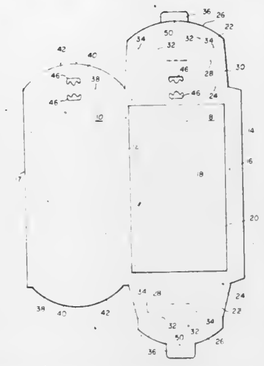
4,210,240

TWO-WALLED CARTON

Phillip J. Fricano, Hamburg, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 12, 1979, Ser. No. 11,715
Int. Cl.[2] B65D *5/42, 25/00*
U.S. Cl. 206—45.31 **12 Claims**

1. A hollow two-walled carton of substantially elliptical cross section defining an enclosure for an article comprising:
a front wall and an opposed rear wall; and an end flap having a first portion thereof hinged to one of the front and rear walls along an end flap hinge line spaced from and parallel to the end of the one wall, the first end flap portion having an arcuate end surface and end flap fold lines extending outwardly from the center of the end flap hinge line to spaced locations on said arcuate end surface to facilitate folding the first end flap portion so that a part thereof



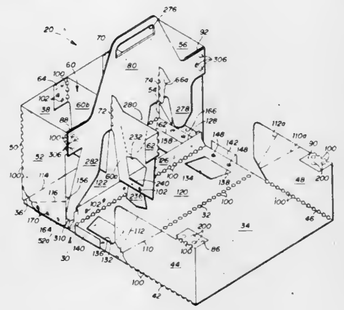
extending between the arcuate end surface and outermost end flap fold lines extends substantially at right angles from the one wall toward the other wall with the arcuate end surface in substantial engagement with the other wall.

4,210,241

COLLAPSIBLE ARTICLE CARRIER

Paul J. Morcom, Rte. 3, P.O. Box 224-17B, Troup, Tex. 75789

Filed Jul. 10, 1978, Ser. No. 923,392
Int. Cl.[2] B65D *5/36, 5/46, 5/48*
U.S. Cl. 206—172 **27 Claims**



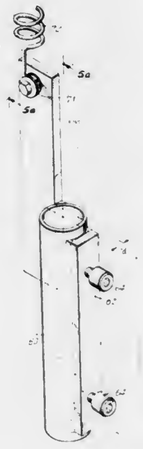
1. A collapsible article carrier formed from a folded sheet of material and being alternatively foldable into a substantially flat collapsed position and an open position for receiving articles comprising:
a unitary bottom member having first and second bottom panels, said first and second bottom panels being hingedly joined along a central horizontal fold line;
first and second side walls parallel to one another and being hingedly joined along bottom edges thereof to edges of said first and second bottom panels opposite said central horizontal fold line of said unitary bottom member, such that said first and second side walls extend perpendicularly to said unitary bottom member when the collapsible article carrier is in the open position;
first and second end panels parallel to one another when the collapsible article carrier is in the open position, said first and second end panels being hingedly joined to opposite edges of said first side wall to extend perpendicularly to said first side wall when the collapsible article carrier is in the open position;
third and fourth end panels parallel to one another when the collapsible article carrier is in the open position, said third and fourth end panels being hingedly joined to opposite edges of said second side wall to extend perpendicularly to said second side wall and parallel to said first and second end panels when the collapsible article carrier is in the open position;
said first and third end panels being hingedly joined to form a first end wall;
said second and fourth end panels being hingedly joined to form a second end wall;
each of said end panels including a fold line having a predetermined angle with respect to the bottom edge of said end panels to permit said first and third end panels to lie coincident with one another and to permit said second and fourth end panels to lie coincident with one another when the collapsible article carrier is in the collapsed position;
means for attaching said unitary bottom member to said end panels including first and second tab means formed from first and second cutouts contained within said first bottom panel and means for hingedly joining said first and second tab means to said first and second end panels for securing said first bottom panel to said first and second end panels, and third and fourth tab means formed from third and fourth cutouts contained within said second bottom panel and means for hingedly joining said third and fourth tab means to said third and fourth end panels for securing said second bottom panel to said third and fourth end panels; and
said bottom member being foldable along said central horizontal fold line to fold upwardly and inwardly between said side walls in the collapsible article carrier collapsed position to thereby permit either one of said end walls to fold inwardly between said side walls, to thereby permit said side walls to lie coincident with one another in the collapsible article carrier collapsed position, such that the collapsible article carrier may be folded about said hinged panels and walls to a substantially flat collapsed position and folded to the open position for receiving articles.

4,210,242

REPAIR KIT

James Mullen, 106 Edgewood Ave., Greenbrook, N.J. 08812

Filed May 21, 1979, Ser. No. 40,681
Int. Cl.[2] B25G *3/00;* **F16D** *1/00;* **F16G** *11/00*
U.S. Cl. 206—231 **11 Claims**



1. A repair kit for a broken rake arm in an automatic bowling pin setting machine, said repair kit comprising:
a. elongated rigid sleeve means having an internal dimension slightly larger than the comparable external dimension of the rake arm to thereby permit said sleeve means to be

slidably positioned over the broken portion of the rake arm;

b. at least one fastener threaded through the wall of said sleeve means and arranged to grippingly bear against the outside surface of the rake arm; and

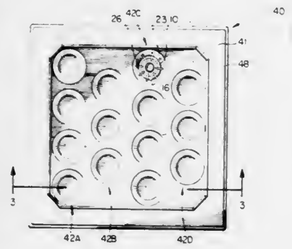
c. rigid strap means secured to said sleeve means in a plane that is parallel to and laterally offset from the central axis of said sleeve means with one end of said strap means extending past at least one of the ends of said sleeve means, said strap means being provided with a hole at at least one end thereof.

4,210,243

TRAY FOR HOLDING COMPONENTS WITH PREFORMED LEADS

Jeffrey B. McDowell, Rio Rancho, N. Mex., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Dec. 26, 1978, Ser. No. 972,751
Int. Cl.² B65D *73/02*
U.S. Cl. 206—332 **3 Claims**



1. A storage tray in combination with electrical component packages, each package including a cylindrical can type case having a plurality of preformed leads flared radially outward from the bottom of the case with flat portions on free ends of the leads being in a common plane, said storage tray comprising: a relatively flat top member having a plurality of funnel shaped openings formed in the top surface thereof, the lower portion of each opening being a cylindrically shaped hole with a flat bottom support surface and a diameter somewhat greater than the diameter of the cylindrical can portion of a package located therein, the spacing between the top of a case and the common plane being less than the spacing between the bottom and top surfaces for positioning the flat portions of leads below the top surface, the top portion of each opening being smoothly tapered outward in the direction of the top surface and receiving the preformed leads, surfaces of said top member and openings being relatively smooth and hard for preventing the free ends of leads catching on them, at least some of said openings having said component packages located therein with the tops of said cases resting on the bottom surfaces.

4,210,244

CARRIER AND HANDLE THEREFOR

Dale R. Westrick, 9041 W. Herbison Rd., Grand Ledge, Mich. 48837

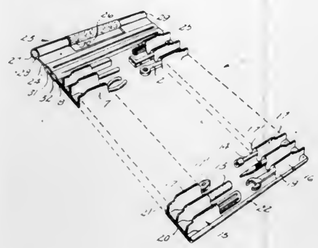
Filed Aug. 23, 1978, Ser. No. 935,892
Int. Cl.² B65D *85/54*
U.S. Cl. 206—373 **4 Claims**

1. In a carrier or the like, the combination comprising:

a resilient elongate base element;

a handle tab secured to said base element intermediate the ends thereof and projecting from said base intermediate the edges of said base, said tab including a grip surface; and

a handle receiving aperture defined at one end of said base element and including a rigid end edge of said base element and said handle aperture having a grip surface impinging said grip surface of said handle tab when said tab



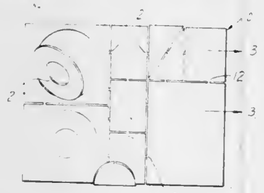
is passed through said aperture and said surfaces are pressed into contact.

4,210,245

ADHESIVE PAD PACKAGE

George W. Dodge, 3902 Clay St., San Francisco, Calif. 94118

Filed Mar. 12, 1979, Ser. No. 19,875
Int. Cl.² B65D *73/00, 85/62;* **A61F** *5/30*
U.S. Cl. 206—440 **6 Claims**



1. An adhesive pad package comprising:

a pair of sheets,

said pair including a planar sheet of pad material adhered to a relatively thin backing sheet of about the same area and extent,

said sheets being both die cut along a plurality of lines to form a plurality of pad elements together composing the entire area of said sheets,

the cuts along said lines being interrupted to provide at least one localized frangible connection between adjacent elements, whereby

each element may be selectively removed from its adjacent elements by breaking its connection to said adjacent elements.

4,210,246

RECLOSABLE HINGED BLISTER CARD PACKAGE

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Nov. 8, 1978, Ser. No. 958,716
Int. Cl.² B65D *83/00, 85/14*
U.S. Cl. 206—461 **12 Claims**

1. A reclosable hinged blister card package, comprising:

(a) a paperboard card having a front surface and a back surface, bottom, top and side edges, and an internal edge defining an opening in said card;

(b) a plastic blister having a raised product holding portion having bottom and side edges, and a peripheral flange at the sides and bottom of said product holding portion, said peripheral flange being adhered to the front surface of said card;

(c) opening tab means on said plastic blister and extending over at least a portion of said opening in said card and adapted to be pushed through said opening when said blister is reclosed for locking said blister in its reclosed position;

(d) cut score lines in the front surface of said card and extending partially through the thickness of said card along the inner and outer edges of the portions of said peripheral flange at the sides of said product holding portion, whereby said blister may be lifted by said opening tab means with confined ply separation of the paperboard card at the portions thereof which are adhered to the side



portions of said peripheral flange without breaking the bond between said flange and the front surface of said paperboard card; and

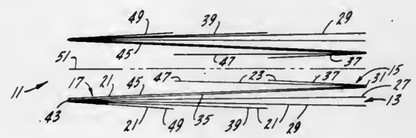
(e) a hinge line in said card formed along the bottom edge of said product holding portion and extending to the outside edges of said peripheral flange, and cuts formed in said card extending along the outside edges of said side peripheral flange portions from the bottom edge of said card to the ends of said hinge line, whereby said plastic blister can be swung open about said hinge line.

4,210,247

FOLDED SHEETS OF WRAPPING PAPER

Dana E. Frye; Russell G. Novcaski; Jack Mills, and Richard H. Horneck, all of Appleton, Wis., assignors to Fox Valley Corporation, Appleton, Wis.

Filed Feb. 5, 1979, Ser. No. 9,647
Int. Cl.² B65D *85/62*
U.S. Cl. 206—494 **1 Claim**



1. A nest of folds of decorative wrapping paper with each fold including at least one sheet of paper,

a first fold being creased longitudinally into a flat V-shaped configuration having two panels of approximately equal width,

a second fold being creased longitudinally into a flat Z-shaped configuration having three panels, which three panels include a center panel having the same width as a panel of said first fold and two side panels, one of which is one-third and the other of which is two-thirds as wide as the center panel,

a third fold being creased in the same configuration as the second fold,

said nest being assembled with the center panels of the folds superimposed upon one another, the two-thirds width side panels being positioned immediately outwardly of the center panels on opposite sides of the nest, and the one-third width side panels positioned immediately outward of the two-thirds width side panels on opposite sides of the nest, and

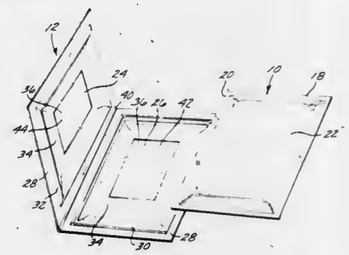
the assembled folds of the nest being folded in half longitudinally about a laterally extending crease line to form a folded nest in which the outer face on each side presents a shingled appearance in which one-third of each fold is visible.

4,210,248

PACKAGING FOR RETORTABLE POUCH

Arnold B. Engdahl, Jr., 15282 Moulins Cir., Irvine, Calif. 92714

Filed Dec. 11, 1978, Ser. No. 968,494
Int. Cl.² B65D *85/54*
U.S. Cl. 206—525 **13 Claims**



1. A compound package for food products comprising:

a sealed enclosure of substantially flat overall appearance having a portion wherein the food products are contained and a peripheral edge which is substantially narrower in cross section than the food products containing portion, and

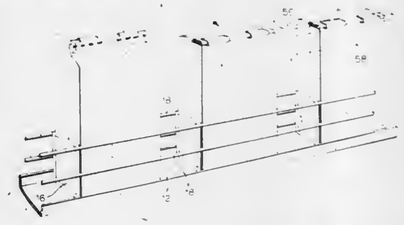
a container for accommodating the enclosure and configured to define a cavity of substantially the same size as said food containing portion and to be in contact with a substantial portion of the outer surface of the enclosure, and for fully surrounding at least the food products containing portion of the enclosure, the container having at least two substantially flat portions dimensioned to be superimposed in close proximity relative to one another, the flat portions being configured to accommodate between one another and to be in contact with the peripheral edge of the enclosure whereby the enclosure is held in position within the container and whereby the enclosure lends structural support to the container against a crushing force, and the like and whereby the container protects the enclosure from being damaged by a sharp object and the like.

4,210,249

RECLOSABLE BAG CLOSURE SYSTEM

Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada

Filed Mar. 8, 1976, Ser. No. 664,906
Claims priority, application United Kingdom, Mar. 11, 1975, 10177/75
Int. Cl.² B65D *17/06*
U.S. Cl. 206—632 **8 Claims**

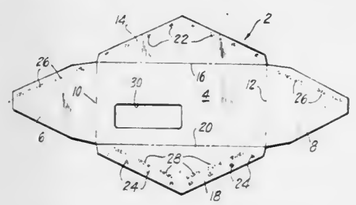


1. A closed, openable and reclosable bag structure having:

a generally rectangular base,

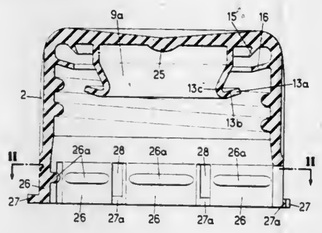
generally rectangular front and rear walls upstanding from and integral with said base,
generally rectangular side walls upstanding from said base and integral with said front and rear walls and said base, and
a top closure including
an outer face portion integral with said rear wall and said side walls, said outer face portion being located parallel to and dimensioned substantially the same as said base,
an inner integrally-formed portion integral with said front wall and said side walls and underlying said outer face portion,
said inner integrally-formed portion including a first part directed inwardly from the integral join with the front wall and a second part overlying the first part directed outwardly towards said integral join, and
at least one self-supporting generally U-shaped channel member fixedly joined to said first part of said inner portion adjacent said integral join and opening away from said integral join towards said rear wall and receiving therein the common edge of said outer face portion and said inner portion located at said integral join in sliding releasable relationship for opening said bag by releasing said common edge from said channel member and separating said outer and inner portions without destroying the integrity of the bag structure and for closing said bag by sliding fit of said common edge in said channel member,
said channel member including an elongate body member fixedly joined to said first part of said inner portion and at least one projection integrally joined to said body member and extending away from said integral join over said body member a short distance and in spaced relationship therewith,
said body member having at least one orifice extending therethrough.

4,210,250
REVERSIBLE ENVELOPE
Robert S. Yale, 1660 Avon Pl. NW., Washington, D.C. 20007
Filed Mar. 9, 1979, Ser. No. 19,155
Int. Cl.[2] B65D *27/06, 27/32*
U.S. Cl. 206—632 **7 Claims**



1. A blank for forming a reversible and returnable envelope comprising:
a sheet of material defining a main panel of generally rectangular shape;
an end flap foldably joined to each end of said main panel;
a first flap foldably joined to one side edge of said main panel;
a second flap foldably joined to the other side edge of said main panel;
the outer edge portions of said first flap having means thereon, on one face of said blank for releasably securing said first flap and its outer edge portion to at least one of the other flaps;
the outer edge portion of said second flap having selectably usable means thereon, positioned adjacent each other on said one face of said blank for securing said second flap to at least one of said other flaps at least one of said selectively usable means being readily releasable for releasably securing said second flap and its outer edge portion to said one of said outer flaps; and
said end flaps being provided with moisture activatable adhesive means on said one face of said blank.

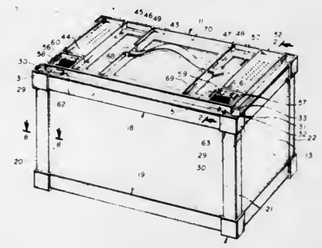
4,210,251
ONE PIECE MOLDED SCREW-TYPE BOTTLE CAP
Jean Grussen, "La Noue" Mondreville 78114, Longnes, France
Filed May 16, 1978, Ser. No. 906,668
Claims priority, application France, May 20, 1977, 77 15581
Int. Cl.[2] B65D *41/34*
U.S. Cl. 215—329 **5 Claims**



1. In a screw-type bottle cap molded in one piece from plastic material and comprising
an internal sealing skirt depending from the top of said cap and adapted to be force-fitted into the externally threaded neck of a bottle,
the improvement according to which said sealing skirt comprises a first substantially cylindrical portion adapted to engage in sealing contact with the internal surface of said neck,
said first portion merging into a central inwardly flared portion terminating in an outwardly extending collar bent prior to applying the cap on the bottle neck from an initially downwardly extending position into an upwardly extending position in which the peripheral portion of said collar is such a distance from the top of the cap that it penetrates inside the bottle neck only after an internal thread of the cap engages with the external thread of the bottle neck and the cap is screwed, said peripheral portion forming an additional seal with the inner surface of said bottle neck as the cap is screwed down.

4,210,252
ANGLEWORM STORAGE BOX
John P. Cooke, Minneapolis, and Walter Rohrbach, Burnsville, both of Minn., assignors to Inventors Products, Inc., Chaska, Minn.
Continuation of Ser. No. 810,931, Jun. 29, 1977, abandoned.
This application Aug. 28, 1978, Ser. No. 937,445
Int. Cl.[2] B65D *7/00, 21/02*
U.S. Cl. 220—4 F **1 Claim**

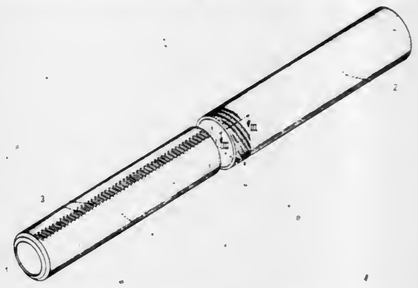
1. An angleworm storage box consisting of a closed imperforate container and comprised of:
(a) a planar integrally formed rectangular skeleton top frame having a central unobstructed major opening and a horizontal panel strip with outer peripheral edge portions and a vertically extending flange depending from said outer edge portions at each of its sides and ends;
(b) said panel strip surrounding said central opening;
(c) a planar integrally formed rectangular skeleton bottom frame having the same critical dimensions as said top frame and having a central unobstructed major opening and a horizontal bottom panel strip with outer peripheral edge portions and a flange extending upwardly from said outer edge portions at each of its sides and ends;
(d) each of said horizontal panel strips having corner portions with vertically extending latch apertures extending therethrough, at least some of the aperture-defining portions of said panel strips being comprised of elastic material;
(e) a plurality of separate non-tubular corner strut members, one each of which extends between each pair of corresponding corners of said top and bottom frames, each of said strut members being generally angular in cross-section and comprising a pair of elongated legs extending substantially normal to each other, each of said legs having interior surfaces facing toward each other and having latch elements at each of its opposite ends extending longitudinally outwardly therefrom into said latch apertures of its said associated corner and through its respective horizontal panel strip and latching itself thereto to comprise therewith a rigid rectangular skeleton box framework;
(f) substantially imperforate side, end, top and bottom panels separate from said frames and said strut members carried snugly against the interior surfaces of said elongated legs of said framework and of said strut members and readily removable therefrom and covering said openings and extending between said strut members and said frames and comprising therewith a closed generally rectangular box adapted to receive and retain earthworms therewithin;



(g) a cover member secured to said top frame and closing said central opening;
(h) said cover member having an elongated rib depending from its under surface and defining a generally rectangular configuration conforming to said central opening and extending downwardly thereinto;
(i) securing means carried by said rib and extending outwardly therefrom beneath said horizontal panel strip at one side of said framework to secure said cover at one of its sides thereto for relative pivotal movement;
(j) said cover member also having upstanding rib structure extending upwardly from the upper surface thereof and having openings therein defining a latch keeper;
(k) a latch member slidably mounted within said latch keeper and constructed and arranged to latchably engage the underside of the opposite horizontal panel strip of said upper frame to secure said cover member in closed position; and
(l) said latch member including a flexibly mounted latch-securing tongue constructed and arranged to extend through said latch keeper and engage the same in a plurality of positions to alternatively hold said latch member in cover-securing and cover-releasing positions as desired.

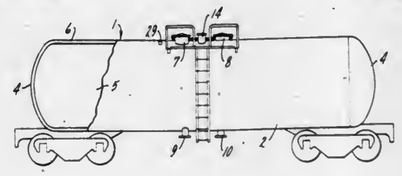
4,210,253
PACKING CONTAINER FOR ELONGATED OBJECTS
Peter Rösler, Thumen 110, D 8995 Sigmarszell, Fed. Rep. of Germany
Filed May 18, 1979, Ser. No. 40,474
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 7815027[U]
Int. Cl.[2] B65D *11/02, 85/54*
U.S. Cl. 220—8 **10 Claims**

1. Elongated packing container comprising a first and second cylindrically shaped axially elongated hollow body each having a closed end and an open end with the open end of said first hollow body telescopically insertable into the open end of and being coaxial with said second hollow body, said second hollow body being capable of telescopically receiving at least a part of the axial length of said first hollow body, said first hollow body has a row of teeth with the row extending for substantially the full axial length of said first hollow body and being parallel with the longitudinal axis thereof, said teeth extending outwardly from the outer surface of said first hollow body, each of said teeth extending substantially transversely of the axial direction of said first hollow body and in the circumferential direction of said first hollow body for a small angular extent thereof, and means on said second hollow body adjacent



the open end thereof for engagement with said teeth on said second hollow body, wherein the improvement comprises that said teeth are disposed at an oblique angle to the longitudinal axis of said first hollow body, said means on said second hollow body comprises an annular portion of individual threads having a short axial length relative to the length of said row of teeth and to the axial length of said second hollow body, said threads being inclined to the longitudinal axis of said second hollow body at substantially the same angle as said teeth form with the longitudinal axis of said first hollow body, and said threads extending inwardly from the inner surface of said second hollow body.

4,210,254
RAILROAD TANK CAR
James D. Parsons, Munster, and Paul S. Wike, Hammond, both of Ind., assignors to Union Tank Car Company, Lincolnshire, Ill.
Filed Aug. 10, 1978, Ser. No. 932,817
Int. Cl.[2] B65D *77/06, 87/32, 51/16*
U.S. Cl. 220—22 **9 Claims**



1. A container for a plurality of non-compatible liquids, comprising:
A. a generally cylindrical tank having a generally horizontal longitudinal axis;
B. a flexible diaphragm in said tank, the periphery of said diaphragm contacting the wall of said tank in a generally vertical plane which generally bisects said tank, said diaphragm alternately lying against opposite portions of said tank so as to define different chambers for such non-compatible liquids;
C. means for sealing said diaphragm against said wall; and
D. means for filling said chambers with liquid, comprising:

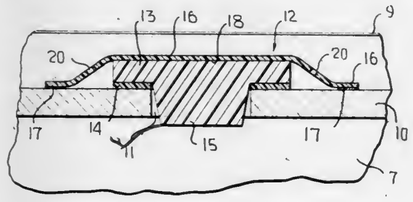
1. a pair of liquid inlet conduits extending upwardly from the upper portion of said tank, said inlet conduits being located on opposite sides of said plane, and each inlet conduit communicating with a chamber inside of said tank on a different side of said diaphragm;
2. a movable lid closing each of said inlet conduits; and
3. means for automatically venting both of said conduits to the atmosphere whenever either of said conduits is opened comprising a vent pipe adjacent each inlet conduit, a line connecting each vent pipe with the inside of the inlet conduit on the opposite side of said diaphragm, a removable cap closing each vent pipe, and means for preventing the movable lid of either inlet conduit from being opened until after the cap of its adjacent vent pipe has been removed.

4,210,255

SELF-VENTING END UNIT FOR PRESSURE PACKAGING

Peter N. Y. Pan, Country Club Hills, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Jun. 30, 1978, Ser. No. 921,037
Int. Cl.³ B60L *1/02*
U.S. Cl. 220—209 **8 Claims**



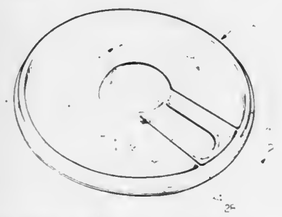
1. A venting container component comprising a container wall having a vent opening therethrough, a closure seated on said container wall and normally closing said vent opening, said closure projecting above said container wall, and an elastic retainer means extending from said closure remote from said container to said container wall in a state holding said closure seated on said container wall only under predetermined limited positive internal pressure conditions, said elastic retainer means having elasticity properties and a memory sufficient to reseat said closure on said container wall at container internal pressures less than said predetermined pressure.

4,210,256

POUR SPOUT LID

Christopher P. Amberg, Sylvania, Ohio, and Samuel L. Belcher, Clementon, N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 9, 1979, Ser. No. 55,719
Int. Cl.² B65D *41/48*; A47K *19/22*
U.S. Cl. 220—254 **12 Claims**



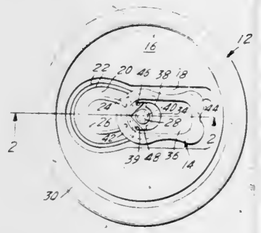
1. A closure with a rim adapted to engage the top of a container comprising:
a generally planar central area attached to said rim,
a centrally positioned load applying area connected to said planar central area and positioned at an elevation different than said central area,
a plurality of ribs connecting said load applying area to said rim,
a valve positioned between said ribs and attached in cantilevered fashion to said load applying area whereby said valve can be opened when pressure is applied to said load applying area.

4,210,257

FRACTURE AND TEAR-RESISTANT RETAINED TAB

Charles S. Radtke, Little Ferry, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Jun. 21, 1979, Ser. No. 50,647
Int. Cl.² B65D *41/32*
U.S. Cl. 220—269 **9 Claims**



1. An easy open closure for a container comprising:
(a) a central panel wall including means for joining said wall to said container;
(b) a displaceable panel in said panel wall at least substantially defined by scoring;
(c) a lever tab with a nose end and a lift end and a central web disposed therebetween, said web being lanced to form a tongue with the root of said tongue proximate said tab nose and the tip of the tongue disposed toward said lift end and wherein said tongue is coined to impart bendability thereto; and
(d) means for joining said tongue to said end wall.

4,210,258

SEAL FOR PLASTIC BUCKETS AND CANS

John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60603

Continuation-in-part of Ser. No. 882,883, Mar. 2, 1978, abandoned. This application Nov. 27, 1978, Ser. No. 963,736
Int. Cl.² B65D *55/16, 41/18, 43/10*
U.S. Cl. 220—306 **19 Claims**



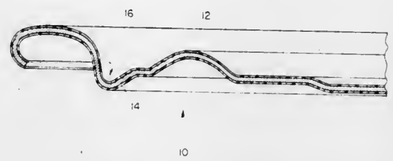
1. A plastic bucket lid adapted for removable attachment adjacent its periphery to a bucket, said lid defining first and second annular walls forming an annular, open depression adjacent its periphery, said second annular wall defining the outer limit of said depression and the first annular wall defining the inner limit of said depression, said lid also defining a third annular wall, positioned outwardly from said second wall, said second and third annular walls, in turn, defining an annular locking slot for receiving and holding the lip of a bucket, the improvement comprising, in combination:
radially positioned reinforcing fins carried by said lid within the annular, open depression, to restrict the flexing of said second wall, said fins extending in contact with a greater portion of the height of the second wall than the first wall.

4,210,259

BARRIER COATED METALLIC CONTAINER WALL AND SHEET

H. Dale Schrecker, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 8, 1978, Ser. No. 913,938
Int. Cl.² B65D *7/04*
U.S. Cl. 220—455 **5 Claims**



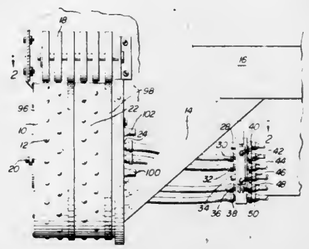
1. In a container having a metal end wall attached to the container body by a seam and severable therefrom by a mechanical can opening device, said end wall comprising:
a formed metal sheet; and
a protective, hard, abrasion resistant barrier coating, including a hard thermosetting epoxy resin and 20 up to 30% by weight particulate additive, on the exterior of said container end wall in the region where the end is to be severed by a can opening device to reduce friction between the end wall and the opening device to substantially eliminate metal slivers caused by the severance;
said particulate additive containing at least one material selected from the group consisting of polyethylene, synthetic wax and natural wax and having an average particle size of less than 20 microns.

4,210,260

SKIP ROW ATTACHMENT FOR PLANTER

Wondall R. Luttrell, P.O. Box 504, Clarendon, Tex. 79226

Filed Jul. 7, 1978, Ser. No. 923,256
Int. Cl.² B65G *29/00*; A01C *7/04*
U.S. Cl. 221—278 **11 Claims**



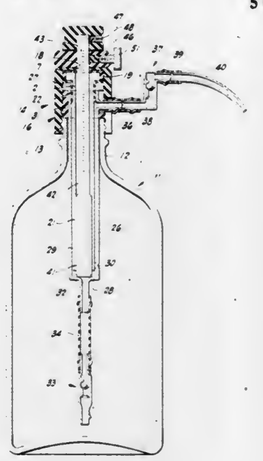
1. In a planter for planting of seeds in a plurality of planting rows, the improvement comprising an attachment having directing means for directing seed alternatingly into planted rows and away from skipped rows, said seed planter having a common seed storage receptacle, wherein said planter is of the rotating air pressurized drum type and has a plurality of seed tube connectors for discharge of seed into corresponding seed tubes leading to said planting rows, and wherein said directing means is interposed between sections of said seed tubes, whereby a strip can be planted to the end of a field, the planter reversed in its direction of travel to plant an adjacent strip, said directing means being pneumatically or hydraulically activated, and the planter can continue planting the adjacent strip with uniform spacing between planted rows of both strips.

4,210,261

CONTROLLABLE LIQUID DISPENSER

John J. Trujillo, Castro Valley, and Timothy E. Brown, Danville, both of Calif., assignors to LST Electronics, Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 834,571, Sep. 19, 1977. This application Jun. 12, 1978, Ser. No. 885,655
Int. Cl.² B67D *5/22*
U.S. Cl. 222—43 **5 Claims**



1. A controllable dispenser of liquids comprising
a cap adapted to engage the open top of a container,
a pair of radially spaced concentric cylinders depending from said cap with the inner cylinder having open ends and the outer cylinder having an inlet valve depending from the bottom thereof and an outlet valve adjacent the top thereof,
a pump plunger slidably disposed within said inner cylinder for movement longitudinally thereof to pump fluid and having a graduated gauge rod extending upwardly therefrom through said cap,
means in said cap limiting maximum upward movement of said pump plunger, and
a collar adjustably engaging said gauge rod above said cap for precise setting of the maximum pump plunger movement for each stroke to control the volume of liquid displaced by each plunger stroke.

4,210,262

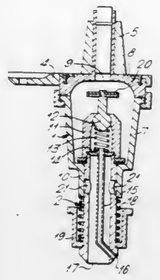
LIQUID DISPENSING APPARATUS WITH VENT VALVE

Peter Donaldson, 43 Hawthorne Way, Storrington, Sussex, England, assignor to Peter Donaldson, Storrington and David W. Moate, London, both of, United Kingdom

Filed Jul. 10, 1978, Ser. No. 923,479
Int. Cl.² G01F *11/32*
U.S. Cl. 222—442 **12 Claims**

1. Liquid dispensing apparatus comprising:
(a) a measuring chamber,
(b) an inlet port provided in said measuring chamber permitting liquid to enter the measuring chamber,
(c) an outlet port provided in said measuring chamber permitting liquid to leave the measuring chamber,
(d) a valve member disposed in said measuring chamber closing said inlet port on actuation thereof and opening said outlet port, said valve member being generally tubular and having at least one lateral aperture opening into said measuring chamber on actuation of the valve member such that liquid passes through said aperture and thence through the outlet port, and
(e) an air valve disposed in said valve member at its end in

the chamber opening on actuation of the valve member into an upper region of the measuring chamber permitting



air to enter the chamber to displace liquid as it leaves the chamber.

4,210,263

VALVE FOR BATCHWISE WITHDRAWING LIQUID FROM A CONTAINER

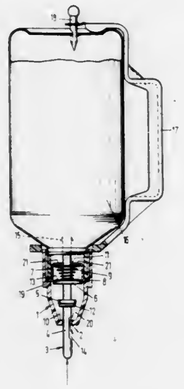
Willem Bos, Berkenweg 18, Zuidlaren, Netherlands

Filed Jun. 13, 1978, Ser. No. 915,155

Claims priority, application Netherlands, Jun. 14, 1977, 7706535

Int. Cl.² G01F *11/38*

U.S. Cl. 222—449 **5 Claims**



5. A container having a neck with an axial opening therethrough in the lower part thereof, and a valve for discharging liquid therefrom,

said container neck having a lower rim, and having screwthreads thereon,

a guide member having a cylindrical portion in and in engagement with the interior of said neck, a transverse portion within said neck, and an outwardly extending flange in engagement with said rim,

said transverse portion having a central aperture and a perforation,

a cap screwthreaded on said neck and having means thereon for clamping the outer portion of said flange against said rim, said cap having a lower outlet in alignment with said central aperture,

an axially movable valve unit comprising a valve stem and a pair of spaced, outwardly extending upper and lower collars thereon, said valve stem extending in said central aperture and said outlet,

said lower collar engageable with said cap around said outlet to seat thereon, and

said upper collar engageable with the inner portion of said flange to seat thereon.

4,210,264

IMMERSION NOZZLE FOR CONTINUOUS CASTING OF MOLTEN STEEL

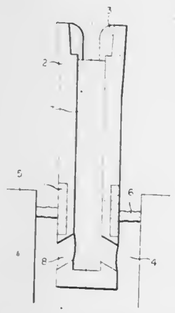
Masanao Kondo, Gifu, Japan, assignor to Akechi Taikarenga Kabushiki Kaisha, Gifu, Japan

Filed Apr. 18, 1979, Ser. No. 31,063

Claims priority, application Japan, Apr. 26, 1978, 53-50330

Int. Cl.² B22D *11/10*

U.S. Cl. 222—591 **1 Claim**



1. An immersion nozzle for continuous casting of molten steel, which comprises:

a nozzle body comprising an alumina-graphite refractory and a refractory layer excellent in erosion resistance against a molten mold powder, said refractory layer being arranged so as to be integral with said nozzle body and flush with the outer surface of said nozzle body at the outside portion of said nozzle body in contact, when the lower portion of said immersion nozzle is being immersed into molten steel in a mold, with a molten mold powder layer on the meniscus of said molten steel;

said immersion nozzle being characterized in that:

said refractory layer arranged at said outside portion of said nozzle body

consists essentially of, in weight percentage:

Carbon (C): from 2to 10 %,

Zirconia (ZrO_2): from 70 to 90%,

At least one compound selected from the group consisting of silicon carbide (SiC) and amorphous silica (SiO_2): from 5to 27 %, and,

Incidential impurities up to 3%.

4,210,265

MOLDED CASE FOR RETURNABLE BEVERAGE BOTTLES

Rudolf F. Steinlein, Münichen, Fed. Rep. of Germany, assignor to Alexander Schoeller & Co. AG, Switzerland

Filed Mar. 27, 1979, Ser. No. 24,477

Claims priority, application Canada, Oct. 31, 1978, 315579

Int. Cl.² A47G *23/06;* **B65D** *1/24, 7/42*

U.S. Cl. 224—48 A **6 Claims**

1. An integrally molded thermoplastic resin case for transporting beverage bottles, said case being of the type including:

a pair of parallel, spaced side walls;

a pair of parallel, spaced end walls perpendicular to said side walls and joined across the ends of said side walls;

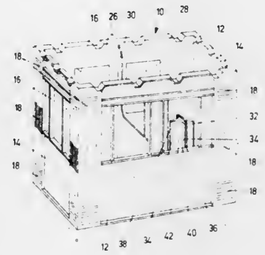
a floor lattice of support ribs joining the bottom edges of said side and end walls to form a rectangular box-shaped case, and

at least one facing, adjacent pair of separator pillars extending vertically from said floor lattice and having a slot therebetween for receiving therein a dividing wall of a bottle carrier to be inserted into said case together with bottles contained therein,

wherein the improvement comprises that:

said pillars are open on their facing sides and have at least one cylindrically concave bottle contact face;

at least one longitudinal reinforcement rib is disposed substantially along the center line region of the inside surface of said pillar opposite said contact face;



a short web of material fills the gap between the facing edges of said pillars in said slot on each side of said slot adjoining said floor lattice, and

said pillars are anchored to said floor lattice by anchoring points which include at least points located on the outside of said pillars directly opposite said inner reinforcement ribs.

4,210,266

DEVICE FOR EJECTING A LOOP OF LEADER TAPE FROM A MAGNETIC TAPE CASSETTE

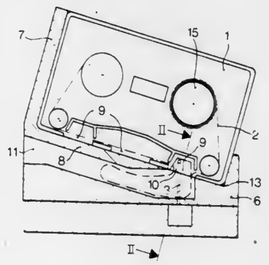
Klaus Schoettle, Heidelberg; Peter Dobler, Ludwigshafen; Lothar Gliniorz, Frankenthal; Dieter Gaiser, Rheinau-Diersheim, and Helmut Lewin, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 897,094

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719460

Int. Cl.² B65H *17/32, 17/42*

U.S. Cl. 226—97 **5 Claims**



1. A device for ejecting a portion of the leader tape from a magnetic tape cassette to form a loop, said cassette having a front wall with openings through one of which said leader is ejected, said device comprising:

a relatively stationary holder for said cassette, and, carried by said holder, at least one nozzle which, as the cassette is placed on the holder, projects from the side of said holder facing said front wall, into said cassette through one of said openings and laterally of, and to a point past, said leader so that, upon connection of said nozzle to a pressurized source of gas, said leader is ejected from said cassette.

4,210,267

REAR-LOADING POWDER-ACETUATED TOOL

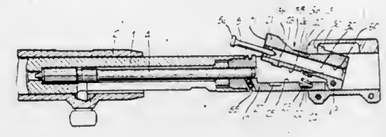
Marc Combette, and Jean Ollivier, both of Valence, France, assignors to Societe de Prospection et d'Inventions Techniques, S.P.I.T., Bourg-les-Valence, France

Filed Sep. 18, 1978, Ser. No. 943,021

Claims priority, application France, Nov. 23, 1977, 77 35264

Int. Cl.² B25C *1/14*

U.S. Cl. 227—10 **2 Claims**



1. A fastener driving apparatus comprising a barrel-holder, a barrel slidably carried in said holder, a support fixedly carried on a distal end of said barrel, a fastener guide pivotally mounted, proximate one end thereof, on said support, said guide being pivotable between a first position concentric with said barrel and a second position eccentric with said barrel, sleeve means, slidably carried on said support and moveable, relative to said guide, along the barrel axis, said sleeve coacting with said guide to displace the latter from one to the other of said positions pursuant to an axial displacement of the former, and spring means biasing a distal end of said guide away from the barrel axis.

4,210,268

ROTARY STAPLING MACHINE

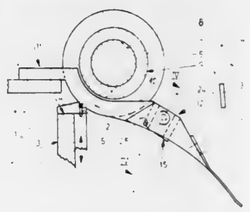
Emil Fischer, Lu-Oggersheim, Fed. Rep. of Germany, assignor to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 39,010

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822136

Int. Cl.² B27F *7/12*

U.S. Cl. 227—81 **9 Claims**



1. In a stapling machine of the type including at least one rotatable stapling cylinder having a wire transport and a peripheral recess formed therein, a shaped disk disposed for cooperation with said cylinder which, for the formation of staples, has an outer periphery which projects into the peripheral recess, and a fixed staple guide which, relative to the rotational direction of the stapling cylinder, is positioned after the shaped disk and which projects into the peripheral recess and has a surface which is underrun by a back of a finished staple, the improvement comprising:

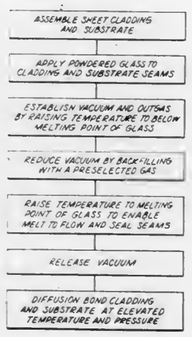
said staple guide having, in the area of its surface which is underrun by the back of the finished staple, a post-bending edge which projects deeper into the peripheral recess than does the outer periphery of said shaped disk.

4,210,269

METHOD FOR DIFFUSION BONDING SHEET CLADDINGS TO SUPERALLOY SUBSTRATES

William F. Schilling, Niskayuna, and Adrian M. Beltran, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,842
Int. Cl.[2] B23K *19/00*
U.S. Cl. 228—193 **7 Claims**



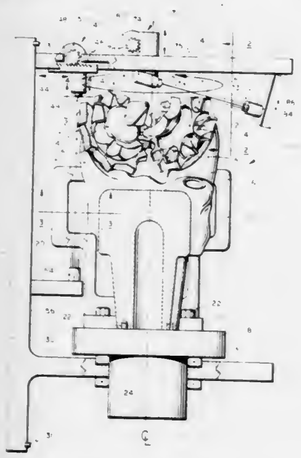
1. A method of applying a sheet cladding to a substrate comprising (a) assembling the sheet cladding to the substrate so that the cladding closely conforms to the substrate; (b) applying powdered glass to the seams of the cladding and the substrate; (c) establishing a vacuum at which the glass can be melted without decomposition; (d) melting the glass under said vacuum in the presence of a gas which is dissolvable in the cladding or substrate to enable at least a portion of the melted glass to seal the seams between the cladding and the substrate; and (e) diffusion bonding the sheet cladding and substrate at elevated temperature and pressure.

4,210,270

ELECTRONIC MONITORING OF ROCK BIT PARAMETERS

Lloyd L. Garner, San Clemente, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Oct. 23, 1978, Ser. No. 953,738
Int. Cl.[2] B23K *37/04*
U.S. Cl. 228—103 **17 Claims**



1. A method which provides precise alignment geometry of a rock bit wherein the bit size parameters are determined and monitored during the bit welding process comprising the steps of:

positioning at least one electronic sensing system mounted to a housing adjacent said rock bit,

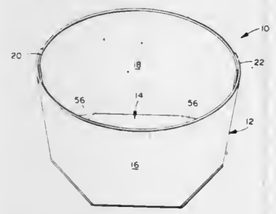
rotating said rock bit mounted to a rotatable weld fixture spaced from said at least one electronic sensing system about its axis, and actuating said at least one electronic sensing system to continuously monitor the bit size parameters during said welding process.

4,210,271

TUB-SHAPED CARTON AND BLANK FOR FORMING SAME

Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 829,720, Sep. 1, 1977, Pat. No. 4,153,196. This application Jul. 14, 1978, Ser. No. 924,655
Int. Cl.[2] B65D *3/04, 5/24*
U.S. Cl. 229—1.5 B **2 Claims**



1. A tub shaped carton comprising:

(a) a hexagonal base

(b) a cylindrically-shaped side wall formed of first and second side wall panels joined at side wall seams,

(i) each of said side wall panels having a generally arcuate top edge and

(ii) a bottom edge congruent with three sides of said hexagonal base,

(iii) the middle portion of said bottom edge of each side wall panel being congruent with, hingedly connected to and integrally formed with one of opposing sides of said hexagonal base, and

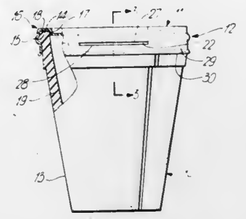
(c) closure means attached between each of the remaining sides of said hexagonal base and an adjacent side wall panel to close the space therebetween, said closure means comprising a single ply, triangular panel having one edge thereof formed integral with portions of said carton adjacent said bottom edge of said side wall, the remaining two edges of said triangular panel being individually defined by cut lines, and wherein an altitude reference line extending perpendicular to the base edge of said triangular panel and through the vertex of said triangular panel opposite said base edge thereof intersects said base edge at an area along said base edge spaced from the mid-point of said base edge in a direction toward the corresponding side wall seam, portions of said triangular panel immediately adjacent said reference line presenting increased surface area which is adhesively attached between said hexagonal base and said adjacent side wall panel whereby to strengthen the attachment between said hexagonal base and said first and second side wall panels adjacent said side wall seams, each of said triangular panels having one face thereof adhesively bonded to interior surface areas of said hexagonal base, said triangular panels being positioned in a flattened condition against said hexagonal base, said base edge of each of said triangular panels being hingedly connected by a fold line to a corresponding one of said first and second side wall panels.

4,210,272

CONTAINER LID

Maurice Sequin, Windsor, Canada, assignor to Michael M. Sakovich, Ottawa, Canada

Filed Jun. 27, 1978, Ser. No. 919,480
Int. Cl.[2] B65D *5/66, 5/72*
U.S. Cl. 229—7 R **14 Claims**



1. A lid for a container having an open end defined by a circumferential edge of a sidewall including lid engagement means, the lid comprising:

a disc having thin walls of uniform thickness throughout for spanning and overlapping the open end, the overlapping portion including a downwardly depending resilient skirt adapted to partly overlie in engaging relation one surface of the sidewall adjacent said edge;

complementary engagement means formed in the skirt for releasably engaging the lid engagement means;

a reclosable tear strip forming an integral part of the disc and said skirt, the strip having sides defined by fracture lines formed in the disc, an outer end defined by said lines extending into the skirt to include said complementary engagement means, an inner end forming a hinge along a weakened line in said disc and wherein said lines extending into the skirt terminate at a slot having an upper edge defining the outer end below said complementary engagement means, and a lower edge bounding one side of a strip defined by the lower edge of the slot and a bottom edge of the skirt; and

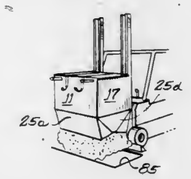
means for venting the container.

4,210,273

BOTTOM-UNLOADING BULK CONTAINER

Charles D. Hegele, Knoxville, Tenn., assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Feb. 22, 1979, Ser. No. 14,240
Int. Cl.[2] B65D *5/72, 17/00*
U.S. Cl. 229—17 B **11 Claims**



1. A bottom-unloading bulk container which comprises

a body having a pair of vertical sidewalls and a pair of vertical end walls,

bottom closure means closing the opening at the bottom of said body,

top closure means covering the opening at the upper end of said body which includes a pair of top flaps hinged to the top edges of said sidewalls,

openings means in said side walls spaced apart from each other and proportioned to receive the protruding tines of a forklift truck,

rigid support means extending generally longitudinally of said body transverse to said end walls,

said opening means being located a predetermined distance below the top edge of said sidewalls, which distance is about equal to the vertical dimension of said rigid support means,

means for locating said rigid support means just above said sidewall opening means, and

banding means encircling said body and said top and bottom closure means to secure said bulk container during shipment

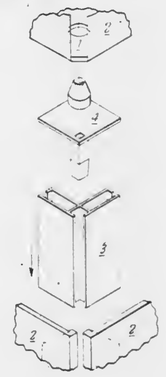
whereby said container can be lifted and transported to an unloading location by a forklift truck whose tines extend through said opening means in said sidewalls and its contents dumped through the bottom opening upon release of said encircling banding means.

4,210,274

BOXES

Lionel Leonard, Drumelzier House, Donnington Rd., Bicker, near Boston, Lincolnshire, England

Filed Jan. 5, 1979, Ser. No. 1,228
Claims priority, application United Kingdom, Jan. 6, 1978, 553/78; May 23, 1978, 21674/78
Int. Cl.[2] B65D *5/42, 57/00*
U.S. Cl. 229—49 **6 Claims**



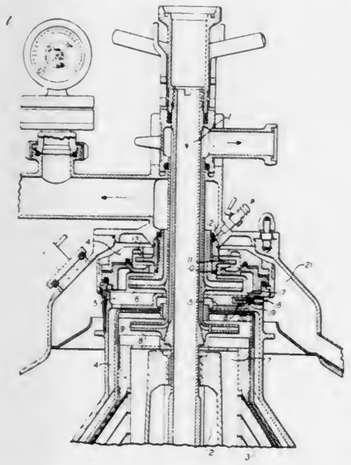
1. A box having a base and sidewalls folded up from the base, the sidewalls being held at their ends to form the corners of the box by extruded section corner posts, each corner post including a plurality of elongate channels open at both ends to enable the post to be slid axially on to the ends of adjacent sidewalls to hold the walls together at the corner of the box and in planes substantially perpendicular to the base, and including means comprising a plurality of stacking pegs each having a first and a second extremity enabling one box to be stacked on top of a like box with the two corner posts at each corner of the stack of two boxes so formed being vertically aligned, each said corner post at its top including means for engagement with a first extremity of a stacking peg, said base including adjacent a plurality of its corners means for engagement with a second extremity of a stacking peg, and each stacking peg having an offset configuration whereby each peg is engageable via the first extremity thereof with said engagement means at the top of a corner post and via the second extremity thereof with said engagement means in the base of a like box stacked immediately above, and the two boxes so stacked are positively prevented from moving laterally with respect to each other.

4,210,275

CONTINUOUSLY OPERATING CENTRIFUGAL SEPARATOR

Karl-Heinz Zettier, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator Aktiengesellschaft, Oelde Westfalen, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,367
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737463
Int. Cl.[2] B04B *11/00*
U.S. Cl. 233—20 R
6 Claims



1. In the continuously operating separating centrifuge for separation of liquid mixtures, comprising a separating chamber for effecting the separation, paring means including a paring chamber, for continuous discharge of a separated liquid phase from the separating chamber, air seal means disposed over the paring means for preventing air from entering the paring chamber from above, and a radially extending overflow passage in communication with the paring chamber and with the outside of the centrifuge for receiving and discharging of overflow of the paring chamber, the improvement which comprises shut-off means disposed in the overflow passage for preventing air from entering the overflow passage from the outside of the centrifuge.

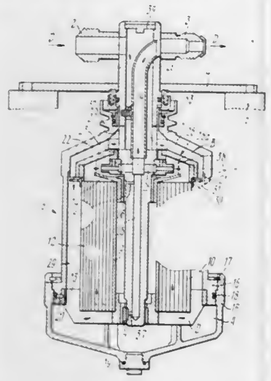
4,210,276

CENTRIFUGAL FLUID CLEANER

Igor M. Lapshev, ulitsa 20 let VLKSM, 21, kv. 13; Nikolai A. Khodosov, Oktyabrsky poselok, 6 linia, 36, and Viktor A. Berber, Shelkovichnaya ulitsa, 184, kv. 65, all of Saratov, U.S.S.R.

Filed May 26, 1978, Ser. No. 909,991
Int. Cl.[2] B04B *11/02*
U.S. Cl. 233—31
4 Claims

1. A centrifugal fluid cleaner comprising: a base, a hollow shaft positioned vertically, fixed rigidly to said base and provided with conduits for the supply and removal of fluid arranged in the shaft upper part; a cylindrical rotor rotatably mounted on said hollow shaft; a drive to impart rotation to said cylindrical rotor consisting of a sleeve coaxial with said hollow shaft, an upper impeller press-fitted into said sleeve at the upper end and intended to accelerate a gyratory movement of the fluid, a lower impeller fitted into the said sleeve at the lower end and designed to promote the gyratory movement of the fluid, a band attached at one end to said sleeve and coiled around it in a helical manner, spacers installed in a radial array between adjacent turns of said helical band preferably in parallel with said hollow shaft, slots for conveyance of working fluid, said slots being formed by said spacers and said helical band, a casing secured to said upper and lower impellers and enclosing said sleeve-and-band assembly and said upper and lower impellers; a cavity in said casing, which is formed between the casing lower part and bottom end face of said band-and-sleeve assembly and used to accommodate said lower impeller, a chamber formed in said casing for accommodation of said upper impeller and communicating with the outlet conduit in said hollow shaft, an additional cavity formed between said casing and said chamber and communicating with the inlet conduit in said hollow shaft, an annular duct formed between said casing and the peripheral turn of said helical band and providing communication of said additional cavity with said lower cavity; an impeller made in said additional cavity; a pressure disk mounted on said hollow shaft within said chamber, whose function is to transfer the purified fluid into the expulsion line.

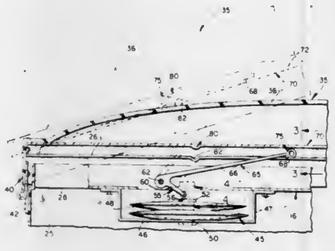


4,210,277

AUTOMATIC ROOF VENTILATOR

Stanley Kolt, Mamaroneck, N.Y., assignor to Leonard W. Suroff, Jericho, N.Y., a part interest

Continuation-in-part of Ser. No. 832,482, Sep. 12, 1977, Pat. No. 4,123,001. This application Sep. 25, 1978, Ser. No. 945,784
Int. Cl.[2] F24F *7/02*
U.S. Cl. 236—49
7 Claims



1. An automatic temperature responsive assembly for ventilating through a roof a confined space to the atmosphere whereby heat buildup in the confined space may be released from the confined space, said assembly comprising:

A. housing means adapted to be coupled to the roof of the confined space and having an opening extending therethrough,

B. cover means operatively associated with said housing means,

C. mounting means operatively associated with said housing means for pivotally securing said cover means thereto, so as to be movable between a generally open position and a generally closed position for enclosing said opening,

D. a temperature responsive drive assembly mounted to detect temperature changes in the confined space and adapted to actuate in response to temperature changes within a predetermined range,

E. camming means pivotally secured relative to said housing means and including a camming surface thereon for engaging said drive assembly,

F. transmission means operatively extending between said cover means and said camming means for communicating movement of said drive assembly through said camming means, such that said cover means is moved to varying positions in response to temperature changes in the confined space,

G. guide means for providing controlled movement of said transmission means in the directions for obtaining said open position and said closed position of said cover means, so as to obtain an automatic closing of said cover means in relationship to the movement in said drive assembly,

H. said drive assembly comprises:

(1) a bottom plate,

(2) means for retaining said plate in spatially fixed position relative to said housing means,

(3) a fluid-containing bellows unit capable of expanding and contracting in response to temperature changes between predetermined limits and to generate a force upon expansion, and

(4) said bellows having one end connected to said bottom plate such that the opposite end thereof is free for moving towards and away from said camming means,

I. said transmission means includes a transmission arm mounted in fixed relation relative to said camming means and having a distal end operative for movement relative to said guide means,

J. said guide means includes:

(5) a channel associated with said cover means extending substantially thereacross, and

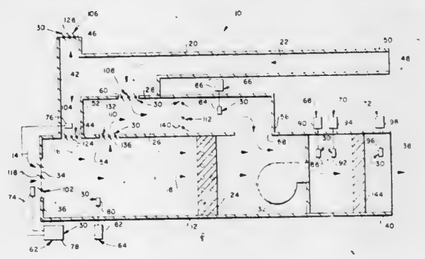
(6) a transmission element mounted on said distal end of said transmission arm and adapted for reciprocal movement within said channel in response to expansion and contraction of said bellows resulting in movement of said free end thereof.

4,210,278

APPARATUS FOR SUPPLYING CONDITIONED AIR AT A SUBSTANTIALLY CONSTANT TEMPERATURE AND HUMIDITY

Henry D. Obler, Lanham, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 6, 1979, Ser. No. 9,886
Int. Cl.[2] F24F *13/04*
U.S. Cl. 236—49
15 Claims



1. Apparatus for supplying conditioned air at a substantially constant temperature and humidity comprising:

supply duct means coupled to a source of supply air for carrying said supply air therethrough;

return duct means coupled to said supply duct means for carrying return conditioned air therethrough;

means for reducing the temperature of said supply and said return conditioned air;

by-pass duct means coupled to said supply duct means for selectively directing portions of said supply and said return conditioned air around said reducing means;

another by-pass duct means coupled to said return duct means for selectively directing portions of said return conditioned air around said supply duct means and said reducing means;

first thermostat means within said supply duct means for sensing the temperature of said supply air;

first damper means coupled to said first thermostat means for regulating the flow of said return conditioned air to the outside of said apparatus;

second damper means coupled to said first thermostat means for regulating the flow of said return conditioned air into said supply duct means;

third damper means coupled to said first thermostat means for regulating the flow of outside air into the supply duct means;

humidistat means within said by-pass duct means for sensing the humidity of said supply air and said return conditioned air;

fourth damper means coupled to said humidistat means for regulating the flow of said return conditioned air within said another by-pass duct means;

fifth damper means coupled to said humidistat means for regulating the flow of said supply air and said return conditioned air within said by-pass duct means;

second thermostat means within said supply duct means for sensing the temperature of said conditioned air;

sixth damper means coupled to said second thermostat means for regulating the flow of the supply air and said return conditioned air within said by-pass duct means; and

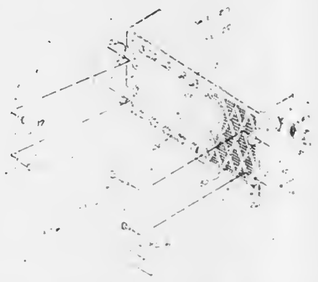
means for moving said supply air, said return conditioned air and said conditioned air through said supply duct means, said return duct means, said by-pass duct means, and said another by-pass duct means.

4,210,279

TEMPERATURE-RESPONSIVE AUTOMATIC VENTILATOR

Edward D. McSwain, Rte. 7, Box 325, Lincolnton, N.C.

Filed Mar. 1, 1979, Ser. No. 16,491
Int. Cl.[2] F24F *7/00, 13/14*
U.S. Cl. 236—49
11 Claims



1. An automatic ventilator comprising:

(a) a housing, said housing having peripheral side walls defining an air passageway therethrough, one of said side walls defining a spring receiving opening therein, said spring receiving opening being generally circular and defining a peripheral slot extending radially therefrom;

(b) at least one shutter element received in said air passageway and mounted to said housing for rotary movement between a closed position where the passageway is gener-

ally closed and an open position where the passageway is generally open to the passage of ventilating air therethrough;

(c) temperature responsive spring means received in said spring receiving opening, an outer end of said spring means being received in said slot to preclude rotation of said spring means;

(d) rod means connected directly between said spring means and said shutter element whereby temperature variation effects on said spring means cause said shutter element to move toward an open or closed position; and

(e) cap means receivable in said side wall opening, said cap means having a plurality of members extending outwardly therefrom, said members having a shoulder at an outer end, certain of said shoulders being on opposite sides of said members from other of said shoulder, certain of said shoulders engaging an inside surface of said side wall and certain of said shoulders engaging a side of said spring, whereby said cap when inserted into said side wall opening secures said spring means within said side wall.

4,210,280

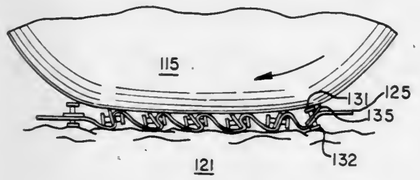
TRACTION MAT

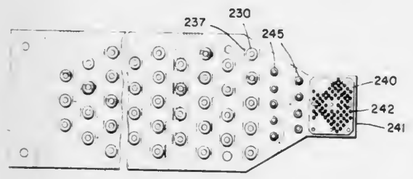
Robert J. Reisner, 1624 N. Kilbourn Ave., Chicago, Ill. 60639

Continuation-in-part of Ser. No. 912,053, Jun. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 900,565, Apr. 27, 1978, abandoned. This application Aug. 22, 1978, Ser. No. 935,975

Int. Cl.² E01B *23/00*

U.S. Cl. 238—14 **17 Claims**





1. A traction mat assembly for obtaining increased traction for an automotive vehicle wheel on a ground surface, said traction mat comprising a substantially uniformly thick resilient sheet having a plurality of spaced openings, a plurality of pin assemblies, each comprising a pin loosely captivated in an opening having a stem portion and opposing ends, each of said opposing ends extending beyond a surface of said sheet, said pin being movable into and out of the plane of said sheet and pivotable about a point in the plane of said sheet to a position where one of said opposing ends is proximate to said surface of said traction mat assembly, said pin thereby engaging both said wheel of said vehicle with which it may be in contact and the ground surface underneath said traction mat, each of said pin assemblies pivoting independently of the others, and the collective action of said pin assemblies within said traction mat assembly being sufficient to provide increased traction of said wheel with respect to the ground.

4,210,281

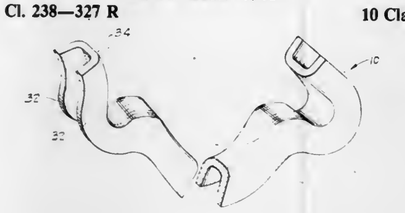
SPRING TYPE ANCHORS

Graham M. Fee, Geneva, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Filed Sep. 5, 1978, Ser. No. 939,124

Int. Cl.² E01B *13/02*

U.S. Cl. 238—327 R **10 Claims**



1. A one-piece spring-type rail anchor of substantially uniform wall thickness, for gripping the base of a rail having laterally projecting flanges, said anchor comprising:

(a) a downwardly bowed throat portion;

(b) a pair of generally C-shaped members for engaging the laterally projecting flanges of a rail base, said C-shaped members extending from opposing ends of said throat; and

(c) a pair of rail bearing surfaces for engaging the base of said rail at spaced locations thereacross, said bearing surfaces being at the junctures of said C-shaped members and said throat; wherein said rail anchor has a generally inverted U-shaped cross-section comprised of a pair of substantially parallel side walls joined by a connecting web.

4,210,282

METHOD OF WATERING

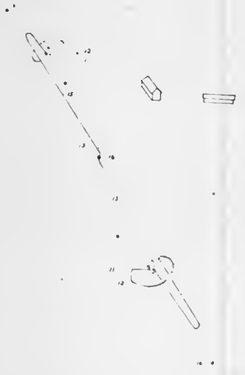
Lars G. Hermelin, Mariebergs säteri, 640 20 Björkvik, Sweden

Filed Feb. 28, 1978, Ser. No. 881,939

Claims priority, application Sweden, Mar. 3, 1977, 7702416

Int. Cl.² B05B *1/08, 3/18*

U.S. Cl. 239—11 **5 Claims**



1. A method of watering while using a watering apparatus comprising a pressure vessel and a spray device and to which water is supplied through a hose, comprising the steps of discharging intermittently from the pressure vessel the water supplied thereto, and intermittently moving the watering apparatus along a given path during the recharging of the pressure vessel by utilising the energy stored in the water.

4,210,283

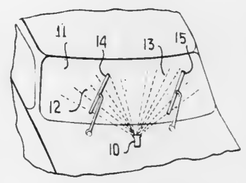
DUAL PATTERN WINDSHIELD WASHER NOZZLE

Ronald D. Stouffer, Silver Spring, Md., and Bowles Fluidics Corporation, 02, Silver Spring, Md.

Filed Sep. 11, 1978, Ser. No. 941,158

Int. Cl.² B05B *1/08*

U.S. Cl. 239—11 **15 Claims**



1. A device for receiving pressurized fluid and dispersing that fluid simultaneously in two distinct cyclical flow patterns, said device comprising:

a housing member;

a chamber defined in said housing member, said chamber having a top wall, a bottom wall, an upstream end, an open downstream end, and two opposed sidewalls extending between said upstream and downstream ends;

inlet means opening into said chamber, said inlet means being adapted to admit pressurized fluid into said chamber;

vortex-shedding means in said chamber comprising an obstruction body having surface means disposed in a flow path between said inlet means and said open downstream end to create downstream of the surface means a cavitation region around which vortices of clockwise and counterclockwise flow directions are alternately shed by said surface means and travel along with the pressurized fluid; and

flow splitter means disposed in said cavitation region to define two distinct outlet openings with respective sidewalls at the open downstream end of said chamber from which said clockwise and counterclockwise flowing vortices alternately issue to an ambient environment.

4,210,284

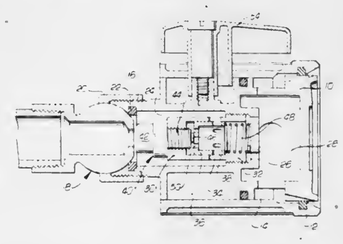
TEMPERATURE LIMITING DEVICE

Matthew G. Tarnay, Pasadena, and Sidney K. Krieff, Los Angeles, both of Calif., assignors to Price-Pfister Brass Mfg. Co., Pacoima, Calif.

Filed Sep. 21, 1978, Ser. No. 944,418

Int. Cl.² F16K *17/38*

U.S. Cl. 239—75 **1 Claim**



1. In a temperature limiting device:

(a) means forming a control chamber having an inlet at one end adjusted to connect with a source of water for bathing and an outlet at the other end adapted to connect with a water delivery device;

(b) a cylinder mounted in the control chamber and having one end facing the inlet, and its other end communicating with said outlet, said cylinder having peripheral openings defining a path of water from the inlet, about the cylinder, through the cylinder openings to said other end of the cylinder and said outlet;

(c) a control member in the cylinder and slidable therein to open and to restrict said path of water, said control member having uninterrupted passage means freely to conduct water from said one end of said cylinder, through said control member to the open end of the cylinder to equalize fluid pressure on said control member;

(d) a thermal sensing element attached to the exterior of said one end of said cylinder and positioned to be exposed to the path of water between said inlet and said cylinder openings, said sensing element having a part movable to engage said control member to move said control member to restricting position;

(e) a return spring engaging said control member to maintain said control member in following relationship with said sensing element part;

(f) restricted flow past said sensing element causing said sensing element to be responsive to the readjusted mix temperature at a place upstream of the control member whereby the pressure balanced control member rapidly resets to full flow.

4,210,285

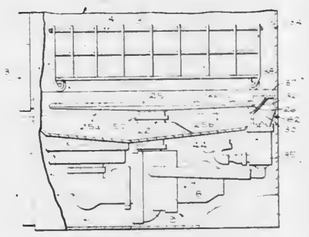
DISHWASHER HAVING IMPROVED SPRAY ARM

John A. Dicken, Jr., and David B. Ash, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 16, 1977, Ser. No. 861,317

Int. Cl.² B05B *3/06*

U.S. Cl. 239—251 **6 Claims**



1. A spray assembly for an automatic dishwasher comprising conduit means for receiving pressurized washing liquid located centrally of the spray assembly;

a hollow elongated spray arm having at least one radially extending projection including upper and lower walls interconnected by side walls defining a passageway adapted to receive said liquid therein and rotate about said conduit means and an end section;

said projection having a plurality of orifices formed in said upper wall portion for distributing said liquid throughout the dishwasher, an opening in said projection being arranged to include at least a portion thereof in said end section being aligned with said passageway;

guide means disposed within said projection being positioned between said walls and extending radially from said conduit means to a position adjacent said opening, said guide means being dimensioned for directing elongated foreign objects having a cross-section smaller than the opening and a length greater than height of said passageway,

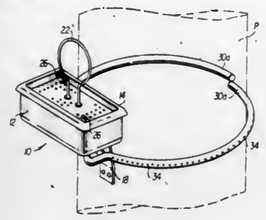
said guide means being dimensioned to orient said objects such that the elongated dimension becomes aligned with said orifice for passing therethrough.

4,210,286

POLE MOUNTED WEED KILLER DISPENSER

Ray C. Smitherman, 896 Old Brook Rd., Charlottesville, Va. 22901

Filed Oct. 30, 1978, Ser. No. 955,587
Int. Cl.[2] B05B *1/14;* A01G *29/00*
U.S. Cl. 239—302 4 Claims



1. A weed killer dispenser adapted to be mounted on and disposed about a pole, said dispenser comprising:

a box-like holder for water and water dispersible or water soluble weed killer, said holder having a recessed top which defines a water receiving perforated tray through which rain water may flow into the holder, said top being removable from said holder, weed killer containers in said holder, said containers being connected to said top so as to be removable therewith from said holder and replaceable; and

a liquid distributor comprising a pair of tubes, one of said tubes having a first substantially semi-circular part adapted to surround substantially one-half of the pole, the other of said tubes having a first substantially semi-circular part adapted to surround substantially the other half of the pole, each of said tubes having a substantially vertical part directly connected to said first part thereof and being in direct fluid communication at one end thereof with said holder through the bottom thereof to receive weed killer in a liquid from the holder, each of said tubes being pivotable relative to said holder through the second part thereof so as to be openable and closable for mounting and dismounting the dispenser on the pole, the first parts of said tubes having a plurality of circumferentially spaced holes therein through which the weed killer may flow downwardly along the pole to kill any weeds or vines thereon.

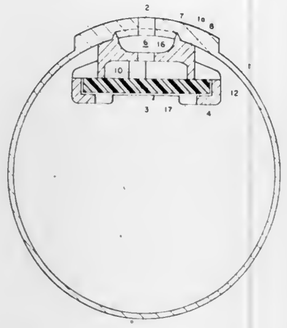
4,210,287

DRIP IRRIGATION SYSTEM

Raphael Mehoudar, Tel Aviv, Israel, assignor to Hydro-Plan engineering Ltd. and Netafim Mutzarei Hashkaya Vetiftuf Bekibbutz Hatzerm, both of Tel Aviv, Israel

Filed Nov. 21, 1978, Ser. No. 962,688
Claims priority, application Israel, Nov. 24, 1977, 53463
Int. Cl.[2] B05B *15/00, 1/20*
U.S. Cl. 239—542 14 Claims

1. A drip irrigation system comprising a thin walled thermoplastic conduit for conducting irrigation liquid having formed integrally therewith an axially directed wall portion of increased thickness, outlet apertures formed in said wall portion in an axially spaced relationship, a plurality of discrete, substantially flat emitter units, respectively heat welded to axially spaced apart locations of an inner surface of said wall portion which locations respectively include said apertures, each emitter unit comprising a body member of a substantially rigid thermoplastic material which is heat sealable with respect to the conduit, said body member having a first portion thereof heat welded to one of said spaced apart inner surface locations in a juxtaposed relationship with an outlet aperture and having a second and opposite portion thereof with an elongated groove formed therein, a cover member juxtaposed with respect to said second portion and defining with said groove a flow restricting flowpath spaced and thermally shielded from said first portion, directed towards the interior of said conduit and located substantially in the flow direction of said conduit, emitter unit inlets serving respectively to effect communication between the conduit interior and the inlet portions of the flowpaths, and emitter unit outlets serving respectively to effect communication between adjacently formed outlet apertures of said conduit and the outlet portions of said flowpaths,



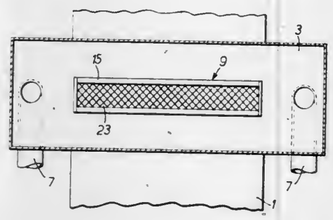
and wherein said cover member is constituted by a resiliently flexible membrane formed of a natural or synthetic elastomeric material and displaceable toward and away from said flow restricting flowpath in accordance with flow pressure variations in said conduit so as to stabilise the output rate of said emitter unit with respect to said variations.

4,210,288

COOLING APPARATUS

John C. Dobson, Sheffield, England, assignor to Davy-Loewy Limited, Sheffield, England

Filed Feb. 3, 1978, Ser. No. 874,740
Claims priority, application United Kingdom, Feb. 7, 1977, 4932/77
Int. Cl.[2] B05B *1/00*
U.S. Cl. 239—597 11 Claims



1. Apparatus for supplying a coherent curtain of cooling liquid of a given length comprising:

(a) a nozzle having an inlet and an outlet, each of elongate generally rectangular form substantially equal to said given length, but with the inlet having a considerably greater cross-sectional area than the outlet, and a portion of said same form and substantially equal to said length located between the inlet and the outlet and containing means which divide the interior of that portion of the nozzle into a multiplicity of individual but continuous passages extending in the direction between said inlet and said outlet,

(b) said portion also having a constraining portion located between said inlet and said means being at least equal in cross sectional area to the cross-sectional area of the adjacent portion of said means,

(c) a header tank having provision for receiving liquid coolant and in which at least the inlet of the nozzle is located, and wherein the outlet of the nozzle is outside of the header tank or communicates with an elongate slot in a wall of the header tank,

(d) said header tank arranged to extend substantially parallel to and be at least equal to said given length, and

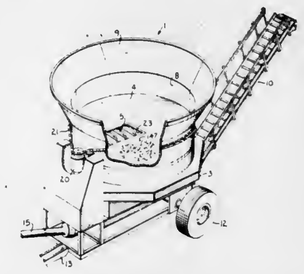
(e) said elongated slot arranged to extend substantially parallel to and substantially equal to said given length. outlet of the nozzle.

4,210,289

TUB GRINDER CONTROL

Adrian F. Arnoldy, Tipton, Kans. 67485

Filed Dec. 26, 1978, Ser. No. 972,794
Int. Cl.[2] B02C *13/286, 25/00*
U.S. Cl. 241—27 6 Claims



1. Livestock feed tub grinding apparatus comprising:

(a) a rotating hammermill powered by a prime mover and a tub for holding feed and being rotated by power means slaved to said hammermill prime mover by a governor, said tub having a bottom, an aperture in said tub bottom wherethrough said feed is delivered to said hammermill; and

(b) a dampener associated with said governor; said dampener being operably connected to said tub rotation power means and decelerating same in direct relation to the deceleration of the rotation of said hammermill;

(c) said dampener further delaying the acceleration of said tub rotation means with respect to the acceleration of the rotation of said hammermill; whereby rotational speed of said tub decreases as soon as said hammermill becomes overloaded but rotational speed of said tub increases at a slower rate than said hammermill.

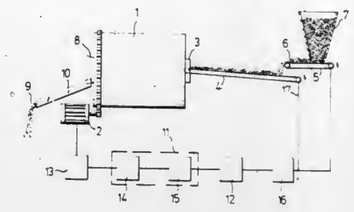
4,210,290

METHOD AND APPARATUS FOR CONTROLLABLY SUPPLYING MATERIAL TO A ROD MILL IN ACCORDANCE WITH POWER CONSUMPTION OF THE ROD MILL MOTOR

Roy E. P. Andersson, and Jan A. Bohm, both of Gallivare, Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Sep. 7, 1978, Ser. No. 940,285
Claims priority, application Sweden, Sep. 13, 1977, 7710256
Int. Cl.[2] B02C *17/00, 25/00*
U.S. Cl. 241—30 5 Claims

1. A method for operating a grinding plant of the type including a motor-driven rod mill and a means for controllably supplying material to be ground to said rod mill, comprising the step of adjusting the supply of material delivered by said means by increasing the supply of material upon an increase in the power consumption of the mill motor and decreasing the supply of material upon a decrease in the power consumption of the mill motor such that the power consumption of the mill motor is maintained within a region which exceeds the power



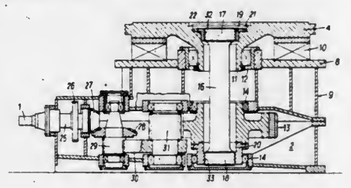
consumption of the mill motor at the occurrence of a rod jam by approximately 0.5-2%.

4,210,291

ROLLER MILL

Hans Kienast, Vienna, Austria, assignor to Erste Osterreichische Zahnraderfabrick Rudolf Kienast Gesellschaft m.b.H., Vienna, Austria

Filed Jul. 10, 1978, Ser. No. 923,664
Int. Cl.[2] B02C *15/00*
U.S. Cl. 241—110 8 Claims



1. A roller mill having a drive system for rotating a milling bowl which rotates about a vertical axis and contains at least one milling roller, a thrust bearing located below the bowl for absorbing downward forces on the bowl, a vertical shaft coaxial with the bowl for transmitting drive without relative rotation to the bowl from an axially-vertical gear wheel provided at the output end of a step-down drive transmission, a first bearing assembly having a vertical axis coaxial with the axis of the bowl and surrounding an element which is fixed to said bowl for absorbing horizontal forces exerted by the bowl, a second bearing assembly independent of the first bearing assembly, said second bearing assembly being coaxial with said first bearing assembly and said output gear rotating in said second bearing assembly, and a self-centering coupling arrangement coaxial with the vertical shaft connecting said output gear with the vertical shaft and connecting the vertical shaft with the bowl for absorbing minor axial inaccuracies between the shaft and the bowl.

4,210,292

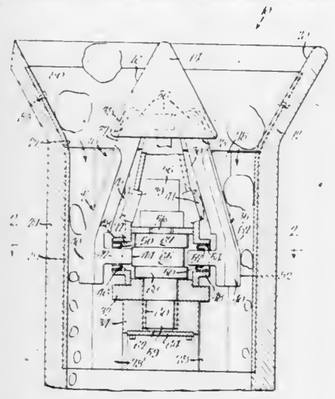
IMPACT ROCK CRUSHER

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 15, 1978, Ser. No. 942,832
Int. Cl.[2] B02C *1/02*
U.S. Cl. 241—148 10 Claims

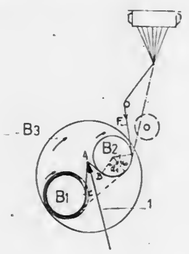
1. A mechanically driven impact rock-crushing apparatus, comprising: a stationary member having an internal tubular vertically disposed wall defining an opening extending vertically therethrough, a divider carried by said stationary member and being disposed at the entry end of said opening, said divider having a cone-shaped portion centrally disposed with respect to said entry end of said opening, at least two shanks carried by said divider, each shank being pivoted at one end portion on said divider and having the other end portion ex-

tending downwardly in said vertically extending opening and being movable toward and away from said vertically disposed wall of said stationary member, an impact hammer carried by said other end portion of each shank, each impact hammer having a contact face substantially evenly spaced from said vertically disposed wall, a shaft rotatably mounted in said divider and having a vertical axis substantially coinciding with a vertical axis of said divider, a motor carried by said divider and being operatively connected with said shaft for rotating



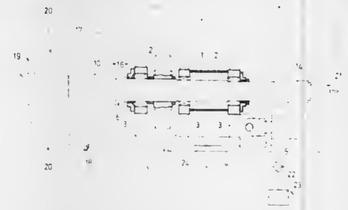
said shaft about said vertical axis, an eccentric mounted on said shaft said eccentric having a radially enlarged portion engaging each shank on each revolution of said eccentric, and flywheel means mounted on said shaft for rotation with said shaft and with said eccentric, said radially enlarged portion of said eccentric successively impacting said shanks to drive said impact hammers toward said vertically disposed wall of said stationary member to crush rocks between said contact faces of said impact hammers and said vertically disposed wall.

4,210,293
STRAND TRANSFER
Georges Fromaget, Servolex, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France
Filed May 10, 1979, Ser. No. 37,538
Claims priority, application France, May 12, 1978, 78 14143
Int. Cl.[2] B65H *54/02, 67/04*
U.S. Cl. 242—18 A **14 Claims**



1. Apparatus for the attenuation and winding of glass strand or like materials, said apparatus comprising an indexable turret having plural cylindrical winding collets mounted for rotation at spaced apart locations thereon, drive means for rotation of said collets and for indexing of said turret to a position in which an empty collet is shifted to a winding station in which strand is wound on its surface and an adjacent collet on which strand has been wound is shifted to a transfer station, said drive means maintaining the collets at each of said stations in rotation and a shiftable strand engaging control device moveable from a retracted position clear of the collets upon indexing movement of the turret to an operative position when a rotating empty collet is at the winding station, said strand engaging control device having an end portion configured to abrade and to press the strand between the full and empty collets when in said operative position to bring the strand into contact with a substantial portion of the circumference of said empty collet, the arc of contact being sufficient to effect adherence of the strand to the empty collet and to effect breakage of the strand between the full and empty collet by abrasion on the end portion of the control device as winding is commenced on the empty collet and continues on the full collet.

4,210,294
STRIP REEL
Johannes Jansen, Hilchenbach-Allenbach, Fed. Rep. of Germany, assignor to Schloemann-Siemag Akt., Düsseldorf, Fed. Rep. of Germany
Filed Mar. 26, 1979, Ser. No. 24,160
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1978, 2818042
Int. Cl.[2] B65H *75/18;* **B21C** *47/02*
U.S. Cl. 242—72.1 **6 Claims**

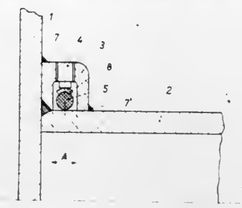


1. Method of operating a strip reel having a hollow shaft with a central longitudinal axis and a free end, a reel housing for rotatably supporting the hollow shaft and mounted on the stationary reel bed for movement along said axis, and an expandable drum mounted on the free end of the shaft for axial movement with the shaft and axial movement relative to the shaft, said drum having a plurality of segments which move in a transverse direction to said axis upon movement of the said axis relative to the shaft, said method comprising the steps of:
(a) moving the housing along said axis in a first-direction until the drum occupies a reel unwinding position,
(b) moving the drum along said axis relative to the shaft in a second direction opposite to the first direction and causing the segments to move in said transverse direction,
(c) measuring the amount of movement of the drum in said second direction, and
(d) moving the housing along said axis in said first direction an amount equal to said measured amount.

4,210,295
CABLE CLAMP FOR FASTENING A CABLE ONTO A CABLE SPOOL
André Brusselle, Kemmelbergstraat 33, Oostende, Belgium
Filed Aug. 23, 1978, Ser. No. 936,128
Claims priority, application Belgium, Aug. 23, 1977, 0180374
Int. Cl.[2] B65H *75/28*
U.S. Cl. 242—125.1 **5 Claims**

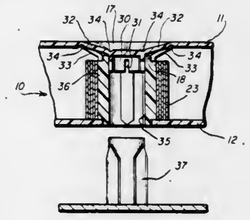
1. A cable clamp assembly for use with winches having a spool on which a cable made from several strands is wound, said spool being provided with a flange at each end thereof, wherein, said clamp assembly is secured to the spool and to an inner face of said flange, said clamp assembly comprises : a

body; a longitudinal slot formed in said body for receiving the cable and means recessed in the body and terminating within



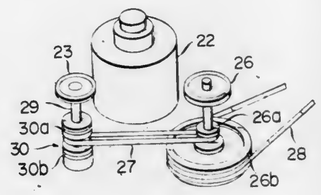
said slot cooperating with the body for pressing said cable between the spool and the clamp assembly.

4,210,296
RIBBON CARTRIDGE WITH INTEGRAL ANTI SPOOL ROTATION DEVICE
Thomas E. Frechette, Windsor Locks, Conn., assignor to Royal Business Machines, Inc., Hartford, Conn.
Filed Dec. 26, 1978, Ser. No. 972,996
Int. Cl.[2] B41J *15/00;* **B65H** *75/02*
U.S. Cl. 242—198 **4 Claims**



1. An inked ribbon cartridge having cover, side and bottom walls and hollow core ribbon supply and take-up spools rotatably mounted therein with ribbon extending from said supply to said take-up spool exteriorly of the cartridge through exit and entry openings in said side wall,
said cover wall being formed with circular depressions and openings at the center of said depressions, and said bottom wall having openings aligned with said cover wall openings, said cover and bottom wall openings providing bearings for said rotatably mounted spools,
means integrally formed with said cover wall and bridging the depression surrounding the cover wall opening rotatably supporting said supply spool,
said means comprising a supply spool core insert, and arms resiliently connected to said cover wall and said core insert for supporting said core insert above said supply spool core and for permitting said core insert to be axially moved and pushed into frictional engagement with said supply spool core to restrain rotation of said supply spool, and to permit axial movement of said core insert out of frictional engagement with said supply spool core by a supply spool support post incident to mounting said cartridge in a machine.

4,210,297
TAPE DRIVING SYSTEM FOR A TAPE RECORDER
Katsuyuki Tamaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Aug. 28, 1978, Ser. No. 937,547
Claims priority, application Japan, Aug. 31, 1977, 52-103626; Sep. 7, 1977, 52-106652; Sep. 7, 1977, 52-119456[U]
Int. Cl.[2] G11B *15/22;* **B11B** *15/30*
U.S. Cl. 242—201 **6 Claims**

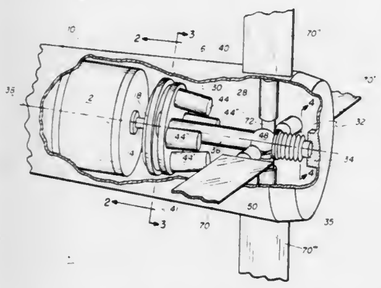


1. A tape driving system for operating in at least recording-reproduction, stop and fast-forward modes comprising:
a base;
a supply reel holder rotatably supported on the base;
a take-up reel holder rotatably supported on the base;
a fast feed drive tire;
means for pressing the fas feed drive tire against the take-up reel holder during the fast-forward mode and not the stop mode;
means for rotating the fast feed drive tire in at least the fast-forward mode;
means for driving the take-up reel holder including:
a motor,
a take-up tire,
means for pressing the take-up tire against the take-up reel holder during the recording-reproduction and stop modes, and
clutch means for transmitting force from the motor to the take-up tire, the clutch means including a first portion operatively connected to the motor, a second portion frictionally engaged with the first portion and operatively connected to the take-up tire, so that force is transmitted from the first portion to the second portion and the force applied to the second portion is limited to a predetermined maximum; and
means for braking the supply reel holder during the stop mode,
the clutch means preventing excessive force from being applied to the take-up reel during the recording-reproduction mode, and the inertia of the motor, clutch means, pressing means, take-up tire and braking means cooperating to prevent slack in the tape in the stop mode.

4,210,298
ELECTRO-MECHANICAL GUIDANCE ACTUATOR FOR A MISSILE
Harold J. Liberman, Randolph, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 1, 1978, Ser. No. 930,301
Int. Cl.[2] F42B *15/16*
U.S. Cl. 244—3.21 **9 Claims**

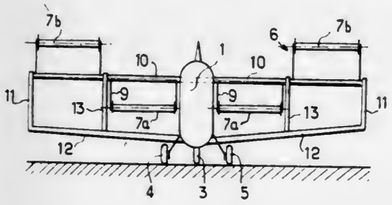
1. An electro-mechanical actuator for in-flight guidance of a missile toward a target which comprises:
a tubularly shaped missile airframe having a longitudinal axis therethrough and an axially disposed hub located on an interior rear wall of said missile airframe;
prime mover means for generating a unidirectional constant torque output, said prime mover means having a longitudinal axis axially aligned with said longitudinal axis of said missile airframe;

cam means fixedly axially connected to said prime mover means for changing from a neutral guide position to a plurality of selected guide positions;
electro-mechanical solenoid means for mechanically engaging said cam means upon receipt of an energizing electrical signal;
cantilever moment arm means, axially supported in said missile airframe, for operatively positioning said solenoid means proximate to said cam means, and for converting said unidirectional constant torque output of said prime mover means to a multi-orthogonal torque output;



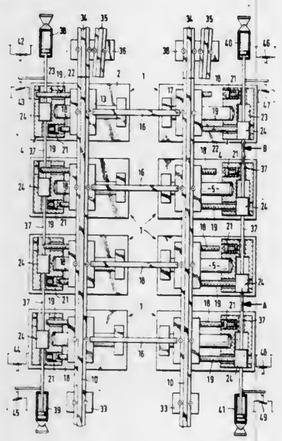
vane means rotatably disposed in said missile airframe and cooperatively slidably connected to said cantilever moment arm means, for guiding said missile toward the target; and
biased control means, axially disposed intermediate said hub and a first end of said cantilever moment arm means, for providing rotatable support for said first end of said cantilever moment arm means and for providing a spring force to automatically maintain and return to a neutral guide position from a guide position when said solenoid means is not receiving said energizing electrical signal.

4,210,299
PROPULSIVE LIFTING ROTORS
Marcel Chabonat, 4, Villa Etienne Mulot, 78000 Versailles, France
Filed Dec. 23, 1977, Ser. No. 863,626
Claims priority, application France, Dec. 27, 1976, 76 39820
Int. Cl.[2] B64C *27/00, 29/00, 39/00*
U.S. Cl. 244—20 **6 Claims**



1. A rotary-airfoil aircraft comprising:
a fuselage having a vertical longitudinal median plane;
a pair of rotors mounted on said fuselage symmetric on opposite sides of the median plane and rotatable about respective axes substantially transverse to said plane, each of said rotors comprising:
a drive shaft transverse to said median plane and rotatable about the respective axis,
a first pair of arms extending radially from said shaft and axially spaced about it therealong by a distance less than the length of said shaft over a first section thereof,
a single first airfoil spanning said first pair of arms and rotatable angularly relative to said first pair of arms about a first airfoil axis parallel to the leading edge of the first airfoil,
a second pair of arms extending radially from said shaft in a direction and spaced apart by a distance less than the length of said shaft while being angularly offset about the axis of said shaft with respect to the first pair of arms, said second pair of arms bracketing a second section of said shaft axially offset from said first section,
a single second airfoil spanning said second pair of arms and being angularly displaceable relative thereto about a second airfoil axis parallel to the leading edge of said second airfoil, said first and second airfoils lying exclusively to opposite sides of a respective plane of the respective rotor parallel to the median plane and perpendicular to said shaft, said first and second airfoils being the exclusive airfoils along said first and second sections of said shaft; and
means for driving said shafts, thereby rotating said rotors so that each airfoil describes an orbit about the respective shaft axis free from encounter with a wake from any other airfoil of the respective motor.

4,210,300
POINT SWITCH
Bernd-Joachim Kempa, Berlin, Fed. Rep. of Germany, assignor to Elektro-Thermit GmbH., Fed. Rep. of Germany
Filed Apr. 17, 1979, Ser. No. 30,750
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 2817782
Int. Cl.[2] E01B *7/08*
U.S. Cl. 246—430 **8 Claims**



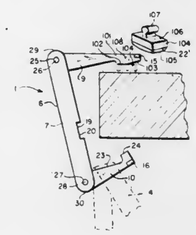
1. In a point switch in which the switch blades or tongues are composed of rail sections of the trunk or main track and are displaceably positioned on slide chairs in the transverse rail direction,
the improvement comprising shaft means on which each slide chair is slidingly mounted between two bearing blocks, one of said bearing blocks being inside the track and the other of said bearing blocks being outside of the track,
means rigidly connecting said bearing blocks with a joint base plate,
and two rod means on each chair parallel to said shaft means, a first one of said rod means being adapted to contact a stop means in a recess in said outside bearing block, and a second one of said rod means being adapted to contact a locking means in a recess in said outside bearing block,
whereby in an unlocked condition said first one of said rod means contacts said stop means, and in a locked condition said second one of said rod means contacts said locking means.

4,210,301
EAVESTROUGH BRACKET
Jacob B. Weiss, 270 Bryden Rd., Kelowna, Bristish Columbia, Canada (V1X 3Y4)
Filed Aug. 16, 1978, Ser. No. 934,041
Int. Cl.[2] E04D *13/06*
U.S. Cl. 248—48.2 **5 Claims**



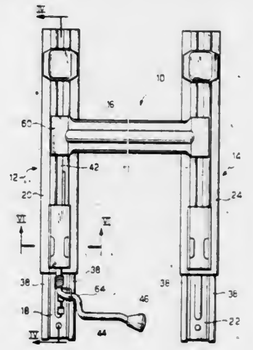
1. An eavestrough bracket for an eavestrough having an inwardly hooked outer marginal edge portion and an upwardly extending inner marginal edge portion comprising:
(a) a straight body portion adapted to extend across the eavestrough between said marginal edge portions,
(b) an upwardly hooked portion at one end of the body portion having a semi-circular bite for engaging in the inwardly hooked marginal edge portion of the eavestrough,
(c) an upstanding leg at an opposite end of the body portion for engaging the opposite marginal edge portion of the eavestrough, said upstanding leg having a nail receiving opening,
(d) a trough extending continuously from substantially the middle length of the bracket and upwardly along the leg and terminating at the opening therein for guiding a point of a nail along the body portion to the opening.

4,210,302
HANDBAG HOLDER
Alvin A. Serkez, Tappan, N.Y.
Filed Apr. 6, 1979, Ser. No. 27,888
Int. Cl.[2] A47F *5/00*
U.S. Cl. 248—308 **4 Claims**



1. In a holder for a bag having a strap, said holder being of the type including an elongate body; a support arm having one end pivotally secured to one end of said body for movement between a retracted position wherein said support arm is substantially aligned with said body and an extended position wherein said support arm extends away from said body and on one side thereof; and a hook arm pivotally secured to the other end of said body for movement between a retracted position wherein said hook arm is substantially aligned with said body and an extended position wherein said hook arm extends away from said body on said one side thereof, the improvement comprising:
the free end of said support arm having first and second surfaces in non-coplanar relation;
a base member having upper and lower surfaces; and
means for securing the free end of said support arm to said base member for movement between a first position wherein said first surface is seated on said upper surface and a second position wherein said second surface is seated on said upper surface.

4,210,303
SUPPORT AND GUIDE DEVICE FOR ADJUSTABLE VEHICLE SEATS
Franco Torta, Beinasco, and Mario Torta, Turin, both of Italy, assignors to Lifel di Torta Franco & C. s.a.s., Beinasco, Italy
Filed Apr. 26, 1978, Ser. No. 900,378
Claims priority, application Italy, Jun. 3, 1977, 68287 A/77
Int. Cl.[2] F16M *13/00;* **B60N** *1/02*
U.S. Cl. 248—429 **12 Claims**



12. In a support and guide device for an automobile adjustable seat, of the type including:
a pair of fixed guides adapted to be fixed to the floor of the vehicle, each said fixed guide comprising;
an elongate sheet metal element having a flattened generally U-shape cross section including:
a base portion,
two side arms projecting from said base portion,
outwardly directed flanges projecting from said side arms, said flanges extending at least part way along the length of said side arms;
a pair of movable guides adapted to be fixed to said automobile seat, each said movable guide comprising:
an elongate sheet metal element having a flattened generally U-shape cross section including,
a base portion,
two side arms projecting from said base portion, said side arms being formed with C-shape portions extending at least part way along their length, which C-shape portions surround said outwardly directed flanges of respective fixed guides in slidable relation thereto so that each fixed guide and the respective movable guide define an elongated space therebetween; and
latching means mounted on one of said movable guides and selectively engageable with one of said fixed guides whereby to permit or prevent relative sliding movement between said one fixed and said one movable guide, said latching means including:
a series of notches in said one fixed guide,
a shaft extending longitudinally of said one movable and said one fixed guides;
at least one tooth projecting from said shaft,
a control lever connected to said shaft by means of which it can be turned about its axis between a first position in which said at least one tooth is engaged in one of said notches in said one fixed guide to prevent relative sliding movement between said fixed and movable guide and a second position displaced from said notches permitting free relative sliding movement between said fixed and movable guides, and

resilient biasing means urging said shaft towards said first position thereof;

the improvement wherein said notches are formed as a series of windows in said base portion of said fixed guide spaced from the edge thereof, and

said shaft is pivotally supported on the base portion of said one movable guide, said at least one tooth projecting from said shaft into said space through an opening of the base portion of said one movable guide, so as to be disposed completely within said said space both when said shaft is in its first position and when said shaft is in its second position.

4,210,304

TRANSPARENT CEMENT FORM AND METHOD OF FORM USAGE

Rosario M. Mannina, 2209 E. Valley Dr., Lindenhurst, Ill. 60046

Filed Apr. 17, 1978, Ser. No. 896,698
Int. Cl.[2] E04G *11/02*
U.S. Cl. 249—22 **27 Claims**



1. A system for casting wet building cement comprising a plurality of lightweight form means, each of said means comprising a transparent panel having a smooth surface and separate frame means for surrounding said transparent panel for individually supporting and reinforcing around the edges of said panel and across the transparent surface; a plurality of connector means distributed throughout said frame means in order to enable said frames to be interconnected in any of many alternative configurations, said connector means comprises repeated uniform patterns of individual connection points, and means for assembling together a plurality of said frames by interconnecting corresponding frames connecting points on different forms in order to form a double wall enclosure for receiving wet building cement.

4,210,305

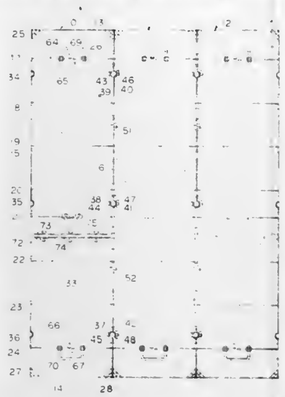
COMPOSITE FORMS FOR CONSTRUCTING CONCRETE WALLS

Chester I. Williams, 347 Greenbriar, SE., Grand Rapids, Mich. 49506

Filed Sep. 27, 1978, Ser. No. 946,436
Int. Cl.[2] E04G *11/06*
U.S. Cl. 249—191 **8 Claims**

1. A concrete wall-form unit having a marginal frame and panel means secured to said frame to provide a forming surface, said frame and panel having aligned marginal discontinuities for receiving fastening assemblies traversing said panel, wherein the improvement comprises:

a plurality of groups of positioning projections disposed on the opposite side of said units from said forming surface, said projections in said groups being positioned to interen-



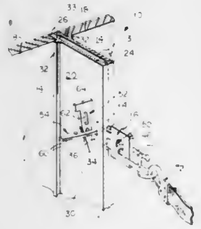
gage with said units in back-to-back relationship to establish the relative lateral position of said units.

4,210,306

SAFETY KEY AND LOCKING MEANS THEREFOR FOR USE WITH CONCRETE WALL FORM PANELS

Vernon R. Schimmel, Chicago, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Filed May 18, 1978, Ser. No. 907,138
Int. Cl.[2] E04G *11/06*
U.S. Cl. 249—196 **2 Claims**



1. A workman's safety device removably attachable in alternative positions to a concrete wall form side of the type that embodies a plurality of upstanding panels arranged in edge-to-edge relation, each panel embodying an inner facing from which there projects outwardly a marginal reinforcing frame including vertical frame members each having inner and outer, laterally outwardly extending longitudinal ribs and a flat web portion extending between the ribs, said ribs having notches at spaced centers therealong and said web portions having wedge bolt-receiving slots at spaced centers therealong and in horizontal alignment with respective notches, the frame members of adjacent panels being arranged in contiguity with the corresponding notches thereof disposed in registry and defining therebetween tie rod-receiving voids and the corresponding wedge bolt-receiving slots thereof disposed in pairs of opposed slots in horizontal alignment with respective voids, said device comprising an elongated shank portion and an integral head portion, said shank portion having a longitudinal slot therein sized to receive the shank portion of a wedge bolt therethrough, said head portion having an opening therein sized to receive the hook portion of a workman's safety belt therethrough, said shank portion of the device being sized for removable insertion of a distal end thereof in the alternative through an unused one of said voids or through an unused one of said pairs of web portion slots and having a length such that

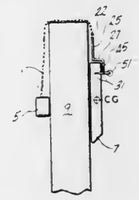
its distal end is confined between contiguous frame members when inserted through a void defined therebetween, said head portion being enlarged with respect to said shank portion of the device, said voids and said web portion slots, so as to prevent passage of the head portion through a void or a web portion slot, said slot in the shank portion of the device registering with one of said pairs of web portion slots when such shank portion is inserted through a void aligned with the one pair of slots, for receiving the shank portion of a wedge bolt through the registering slots, said slot in the shank portion of the device projecting outwardly from said frame members on the side thereof opposite to the side from which said head portion of the device projects when such shank portion is inserted through a pair of web portion slots, for receiving the shank portion of a wedge bolt through such slot, said integral shank and head portions being constructed to withstand the stress of a load transmitted to the device from the workman's safety belt.

4,210,307

PRE-FIXING HANGER FOR INSULATING SIDE BOARD

Stuart D. Kershner, Bethany, Conn., and Ken P. Smith, Warranwood,, Australia, assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 10, 1978, Ser. No. 922,933
Int. Cl.[2] B22D *7/10*
U.S. Cl. 249—202 **1 Claim**



1. A device for temporarily supporting a metallurgical side board in a predetermined position against a vertical surface of an ingot mold, said device comprising a spiked attachment member adapted for releasable impalement in a side board, a counterbalance body approximately equal in weight to the combination of said attachment member and a side board, and a flexible member connecting said counterbalance body and said attachment member, said attachment member including a pair of linear, transversely extending guide members providing visual cues facilitating placement of said attachment member along the longitudinal axis of a side board, the point of attachment of said flexible member to said attachment member is offset, relative to said guide members, whereby the device may be arranged such that a component of the gravitational force acting on an impaled side board urges the same against a vertical surface of a supporting ingot mold, said attachment member further comprising a handle portion, offset relative to said guide members on the side thereof opposite said point of attachment, and at least two spikes disposed perpendicular to the plane of said guide members, said spikes being adapted to be driven into a side board by pressure on said handle member.

4,210,308

VALVE

James O. Sims, Rte. 2, Box 248, Hartselle, Ala. 35640

Filed Jul. 24, 1978, Ser. No. 927,499
Int. Cl.[2] F16K *3/02, 31/122*
U.S. Cl. 251—31 **9 Claims**

1. A valve comprising:

a valve body;

an elongated blade having opposite, generally flat, surfaces, and a discrete opening between said surfaces being positioned at a selected location along said blade;

a fluid inlet in said valve body;

a first flat surface in said valve body;

guide means for enabling said blade to move along said first flat surface in a predetermined path;

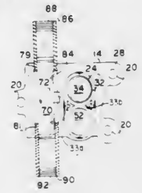
a groove in said first flat surface having a generally oval-shaped exterior edge, and a pair of generally o-shaped interior groove regions separated in part by the absence of a groove;

a first opening in said first flat surface interior of one of the "o" regions, and said opening extending through said first flat surface to said fluid inlet;

a fluid outlet in said valve body;

a second flat surface in said valve body positioned opposite said first flat surface, and between which said flat surfaces said blade is movably positioned;

an essentially figure 8-shaped groove in said second flat surface and aligned with and facing said figure 8 groove in said first flat surface;



a second opening in said second flat surface interior of one of the "o" regions, which second opening is opoosite said first opening, and said second opening extends through said second surface and connects to said fluid outlet;

first and second seals, each configured with an oval-shaped outer edge and a pair of spaced o-shaped regions and an open region between o-shaped regions to accommodate said non-groove regions, and thus each being adapted to fit within a said groove of one of said flat surfaces, and wherein at least one of the "o" regions of each seal has an opening through it; and

said blade being positionable and being engaged by and between said seal;

whereby the movement of said blade to a first position wherein the opening in said blade aligns with said first and second openings enables flow through said valve, and when said blade is moved in a position wherein the opening of said blade conforms to a position between "o's" in said seals wherein there is no such openings.

4,210,309

FLOW CONTROL MECHANISM FOR FLUSH VALVE

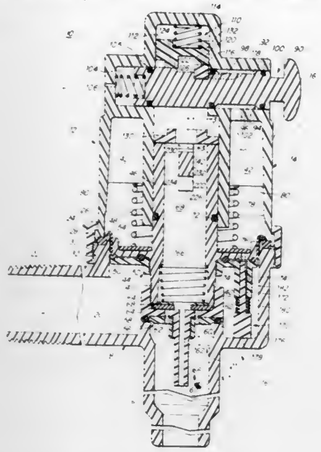
Wilfred J. Grenier, Rutland, Mass., assignor to General Industries, Inc., Rutland, Mass.

Continuation-in-part of Ser. No. 786,276, Apr. 11, 1977, abandoned. This application Aug. 9, 1978, Ser. No. 932,362
Int. Cl.[2] F16K *31/385*
U.S. Cl. 251—35 **8 Claims**

1. In a flush valve having a housing, a moveable partition sealingly engaging the housing and defining a primary chamber and a control chamber, an inlet port in the primary chamber and an outlet port in the primary chamber, a valve element connected with the partition for closing the outlet port, an actuator mechanism including an actuator valve for venting said control chamber and an actuator member for operating the actuator valve, the improvement comprising:

a flow control mechanism including an auxiliary chamber communicating with said control chamber through said actuator valve; a flow regulating outlet communicating with said outlet port and said auxiliary chamber for discharging fluid vented through said actuator valve; a flow regulating inlet in said auxiliary chamber for conducting into said auxiliary chamber, when said flush valve is open

and said valve element is separated from said outlet port, a portion of the fluid passing from said inlet port to said outlet port; and a unidirectional flow regulator valve for



permitting fluid flow through said flow regulating inlet into said auxiliary chamber but preventing fluid flow through said flow regulating inlet out of said auxiliary chamber.

4,210,310

FLUID CONTROL VALVES

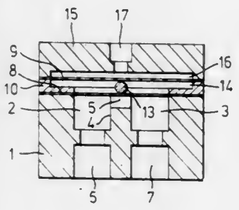
Francis X. Kay, The School House, Addington, Buckinghamshire, England

Filed May 30, 1978, Ser. No. 910,941

Claims priority, application United Kingdom, Nov. 28, 1977, 49465/77

Int. Cl.² F16K *31/126*

U.S. Cl. 251—61.1 **8 Claims**



1. In a sphincter valve which comprises a body defining at least two chambers, a seating spanning a fluid flow path joining said chambers, a control diaphragm deflectable into sealing engagement with said seating to control fluid flow in said path, an operating diaphragm spaced from, and of larger effective area than, said control diaphragm, the operating diaphragm being deflectable by operating fluid towards said control diaphragm, and a non-rigid thrust transmission element disposed between said diaphragms, the thrust transmission element having a face in contact with the control diaphragm: the improvement of the contact face of the thrust transmission element having a configuration conforming solely to the configuration of said seating and being deflectable by the operating diaphragm to deflect the control diaphragm into said sealing engagement.

4,210,311

VALVES

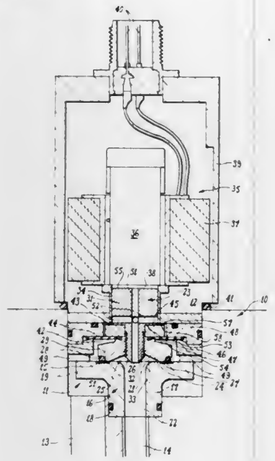
Alan M. Stone, Greensborough, Australia, assignor to Sphere Investments Limited, Nassau, The Bahamas

Filed Nov. 2, 1977, Ser. No. 847,940

Claims priority, application Australia, Nov. 11, 1976, 8090

Int. Cl.² F16K *31/06, 25/00*

U.S. Cl. 251—129 **11 Claims**



1. A valve including:
a housing having a valve chamber therein;
an annular valve seat within the chamber and surrounding a valve orifice;
a valve member mounted within said chamber for movement towards and away from said valve seat;
a flexible annular diaphragm connected between the valve member and the housing within the valve chamber so as to divide that chamber into a first compartment containing said valve orfice and a second compartment remote from said valve orifice;
a fluid inlet passage connecting with said first compartment;
a fluid outlet passage capable of communication with said first compartment through said orifice when the valve is in an open condition;
said valve member being engagable with said valve seat in a closed condition of the valve to block said communication between said first compartment and the outlet passage through said orifice;
actuating means for moving said valve member from closed to open position and for holding said valve member in open position;
said valve member and the diaphragm having opposed surfaces exposed to the pressure of fluid within said inlet passage and said first compartment such that the influence of inlet pressure on said surface of the diaphragm produces a force on the valve member in a direction away from the valve seat and the influence of inlet pressure on said surface of the valve member produces a force on the valve member in a direction toward the valve seat, the effective area of said diaphragm surface being slightly less than the effective area of said valve member surface whereby said forces are substantially counterbalanced but for a small biasing force urging the valve member toward said valve seat;
said valve member and said valve seat having facing surfaces, the facing surface of said valve member having an annular recess formed therein which slopes conically away from the facing surface of said valve seat in the radially inward direction to provide therebetween an annular passage which diverges radially inwardly of the valve seat such that, when the valve is open, fluid flowing

from said first compartment to said outlet passage between said facing surfaces creates a low pressure region between those surfaces, whereby movement of said valve member toward the valve seat is facilitated during closing of the valve; and
passage means allowing communication between said outlet passage and said second compartment, said valve member and the flexible diaphragm having surfaces within the second compartment exposed to outlet pressure, the effective areas of said last named surfaces being such that the influence of outlet pressure thereon counterbalances the influence of the outlet pressure on the valve member at the valve seat.

4,210,312

VALVE USING FLEXIBLE ELEMENT

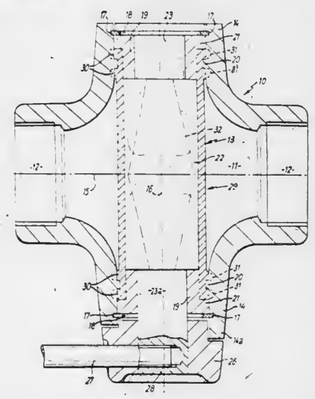
Geoffrey Hanson, Doncaster, England, assignor to Pegler Hattersley Limited, Doncaster, England

Continuation-in-part of Ser. No. 750,881, Dec. 15, 1976, abandoned. This application Mar. 15, 1978, Ser. No. 887,744

Claims priority, application United Kingdom, Dec. 19, 1975, 52204/75

Int. Cl.² F16K *31/524*

U.S. Cl. 251—258 **12 Claims**



1. A valve comprising:
(a) a valve housing having portions defining an inlet, an outlet, and a passageway connecting the inlet and the outlet;
(b) a control member positioned in said passageway for movement between a first position in which fluid is able to flow through said passageway and a second position in which said control member blocks fluid flow through said passageway, said control member comprising:
(1) a first relatively rigid member having interconnected continuous opposed surfaces, and
(2) a second relatively flexible member having portions thereof in continuous resilient engagement with the continuous opposed surfaces of said first member, the continuously engaged portions of said second member including generally diamond-shaped reinforced portions positioned in such manner that the width of the reinforced portions is greatest in the vicinity of a central portion of the second member and decreases from the central portion towards each end of the second member, said first member being so positioned in said passageway that movement of said control member from said first to said second position moves said first member thereby changing the contour of said second member and urging the reinforced portions of said second member into engagement with portions of said housing defining said passageway; and
(c) means connected to said first member of said control member for moving said control member between said first and said second positions so that said control member performs a valve control function.

4,210,313

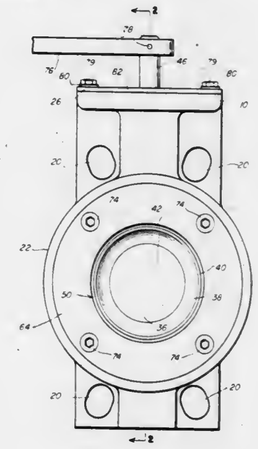
PRESSURE ACTUATED RESILIENT VALVE SEAL

Arnold M. Chester, West Hartford, Conn., assignor to Litton Industrial Products, Inc., East Hartford, Conn.

Continuation-in-part of Ser. No. 385,571, Aug. 3, 1973, abandoned. This application May 5, 1975, Ser. No. 574,570

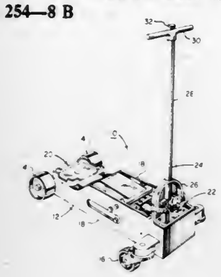
Int. Cl.² F16K *1/22*

U.S. Cl. 251—306 **4 Claims**



1. A valve comprising
a closure member including an annular peripheral substantially flat sealing surface,
a supporting shaft fixedly secured to opposing sides of closure member,
a housing including a cylindrical flow passage and means for rotatably supporting said closure member supporting shaft,
means for rotating said closure member from a first position whereat said flow passage is open to a second position whereat said flow passage is closed,
an annular substantially flat valve seat including an annular sealing surface,
said housing further including an annular valve seat receiving channel selectively configured to support said annular valve seat for mating engagement with said closure member sealing surface when said closure member is at said closed position and the valve seat is at the neutral or low pressure position,
said valve seat including a recessed portion on one side thereof with a first annular groove extending axially into said valve seat from said recessed portion, and
a second annular groove extending axially into the other side of said valve seat, said second groove dividing said other valve seat into upper and lower portions, said first annular groove-being located in said upper portion,
the side of said receiving channel adjacent to the other side of said valve seat being spaced from the lower most part of said upper portion and being selectively inclined relative thereto when the valve seat is in the neutral position, to establish a spacing therebetween which linearly increases towards the uppermost part ot said upper portion to permit selected rotation of said valve seat, the annular closure member sealing surface extending incrementally radially outwardly from the one side to the other side of the valve seat.

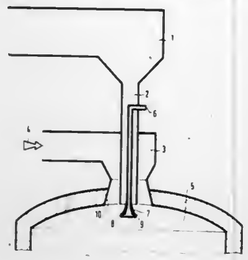
4,210,314
HYDRAULIC JACK
Herbert J. Carroll, 7729 Alto Caro Dr., Dallas, Tex. 75248, and Thomas C. Davis, Sr., 11214 Carissa Dr., Dallas, Tex. 75218
Filed Sep. 29, 1978, Ser. No. 946,951
Int. Cl.[2] B66F *5/04*
U.S. Cl. 254—8 B **17 Claims**



1. A hydraulic jack, comprising:
a frame having spaced apart longitudinal support members and transverse brace members interconnecting the longitudinal support members;
a saddle for engaging a load to be lifted by the jack;
a hydraulic unit carried by the frame and having a longitudinally extendable ram; and
an elevator mechanism including members intercoupling the saddle and the ram for converting horizontal movement of the ram into vertical movement of the saddle, the intercoupling members including forward and rearward elevator arms and a lever arm, the forward elevator arm having a first end pivotally secured in the frame and a second end rotatable about its first end, the rearward elevator arm having a first end longitudinally movable in the frame and a second end pivotally secured to the forward elevator arm at a point removed from the first end of the forward elevator arm, the first end of the rearward elevator arm being cooperatively intercoupled with the ram, the lever arm having a first end pivotally secured in the frame and a second end rotatable about its first end, the second end of the lever arm being cooperatively intercoupled with the saddle, the elevator mechanism further including a roller for intercoupling the forward elevator arm and the lever arm to translate vertical movement of the second end of the forward elevator arm into corresponding vertical movement of the saddle, the roller being journaled at the second end of the forward elevator arm for engaging a surface of the lever arm, whereby the lifting force of the jack is transferred from the ram to the saddle via the elevator arms, the roller and the lever arm.

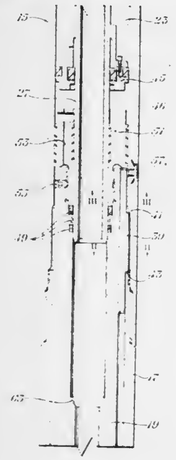
4,210,315
MEANS FOR PRODUCING A SUSPENSION OF A POWDERY SUBSTANCE AND A REACTION GAS
Launo L. Lilja, and Valto J. Makitalo, both of Pori, Finland, assignors to Outokumpu Oy, Finland
Division of Ser. No. 797,505, May 16, 1977, Pat. No. 4,147,535, This application Nov. 16, 1978, Ser. No. 961,226
Int. Cl.[2] F27B *1/20*
U.S. Cl. 266—182 **8 Claims**

1. An apparatus for forming a suspension of a powdery substance and a reaction gas, comprising a first supply tube for the powdery substance adapted to be inserted through the reaction gas entrance aperture in the upper part of a reaction chamber and directed downwardly into the reaction chamber, a second supply pipe for the gas and, extending centrally downwardly from the first supply tube, at least one sliding surface projecting gradually outwardly from its central axis, the terminal edge of which is substantially horizontal, further comprising, below the terminal edge of the sliding surface, one or several substantially horizontally directed apertures for



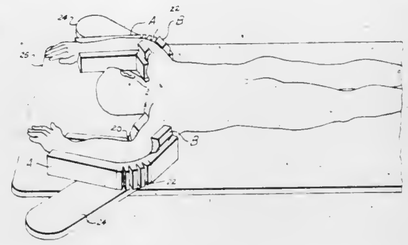
injecting dispersion gas jets into the flow of powdery substance discharging from the sliding surface.

4,210,316
DRILL STRING SHOCK ABSORBER WITH IMPROVED PIN TYPE TORQUE TRANSMISSION MEANS
James R. Hall, Huffman, Tex., assignor to Hughes Tool Company, Houston, Tex.
Filed Jan. 29, 1979, Ser. No. 7,264
Int. Cl.[2] E21B *17/02*
U.S. Cl. 267—125 **10 Claims**



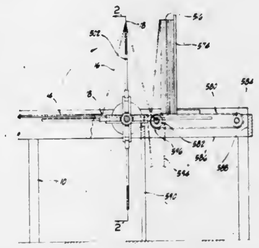
1. In a shock absorbing apparatus for use in a drill string, including a tubular body adapted to be secured to a drill string member; a mandrel reciprocably mounted to the tubular body for rotation therewith and having a portion adapted to be secured to another drill string member, the mandrel being shaped such that it sealingly engages the body; drilling fluid passage means within the tubular body and the mandrel for passage of drilling fluid; and a sealed chamber between the tubular body and the mandrel, containing pressurized fluid for absorbing load and shock; the improvement which comprises:
a. a plurality of longitudinal grooves on the exterior surface of the mandrel;
b. a plurality of longitudinal grooves on the interior surface of the tubular body mating with the mandrel grooves to form cavities;
c. pins inserted within the cavities for torque transmission; and
d. means to prevent rotation of the pins within the cavities to provide improved wearing characteristics of the pins.

4,210,317
APPARATUS FOR SUPPORTING AND POSITIONING THE ARM AND SHOULDER
Donald C. Spann, 5 Ferncreek Ct., Greenville, S.C. 30067, and Dorothy Sherry, 3135 Indian Hills Dr., Marietta, Ga. 30067
Filed May 1, 1979, Ser. No. 34,962
Int. Cl.[2] A61G *13/00*
U.S. Cl. 269—328 **12 Claims**



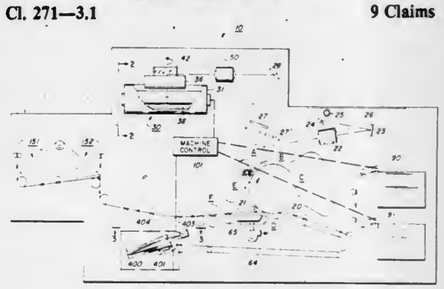
1. Apparatus for positioning the extremities of a patient placed in a prone position on an operating table during laminectomy and the like procedures comprising:
arm cradle means for properly supporting and positioning an arm of said patient including elongated block means having a support base for stably supporting said arm cradle;
an elongated trough formed in said block means cradling and positioning said arm including an enlarged contoured weight supporting surface affording reduced force per unit area against said arm supported thereon;
cuff means having a support portion for receiving and resiliently gripping a portion of said arm adjacent the axilla thereof; and
said cuff means including an exterior contoured surface receivable in said trough of said arm cradle means and interfacing with said countour of said trough surface in an interlocking manner for maintaining said shoulder in a properly rotated position.

4,210,318
FAN FOLDING AND STACKING DEVICE
Hubert R. Ver Mehren, Florissant, Mo., assignor to Ga-Vehren Engineering Company, St. Louis, Mo.
Filed May 24, 1978, Ser. No. 909,020
Int. Cl.[2] B65H *45/20*
U.S. Cl. 270—79 **12 Claims**



1. A device for fan-folding and stacking a continuous elongate web of the type which is separated lengthwise into a plurality of connected sections by transverse separation lines, the device comprising:
(a) support means having a longitudinal axis and opposed sides and including means for conveying the web longitudinally along the support means,
(b) rotatable means including a plurality of radial arm means mounted to the support means for rotation about an axis transverse to the longitudinal axis of the support means, said arm means being movable transversely relative to said longitudinal axis into and out of engagement with the web,
(c) actuating means carried by the support means and engageable with the rotatable means for selectively moving said arm means into engagement with the web to fold the web and out of engagement with the web to release the web, and
(d) drive means operatively connected in drive relation to said rotatable means.

4,210,319
COPY SET COUNTER DUPLEX TRAY
Frank R. Hynes, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 28, 1978, Ser. No. 919,892
Int. Cl.[2] B65H *1/24*
U.S. Cl. 271—3.1 **9 Claims**

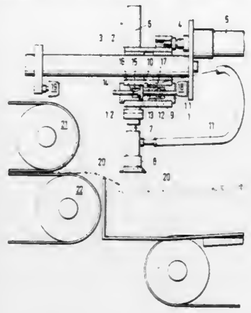


1. A duplex copying system for detecting copy sheet misfeeds comprising:
(a) processing means for placing page images on one side of copy sheets;
(b) stationary duplex copy set tray means for receiving the copy sheets and feeding the copy sheets therefrom;
(c) set separator means located within said tray means for separating multiple copy sheet sets, said set separator means adapted for movement between nonretracted and retracted positions; and
(d) machine control means for counting the number of one-sided copies entering said duplex tray and the number of one-sided copies exiting the duplex tray and retracting said separator fingers when there is coincidence between the number of copies entering the duplex tray and the number of copies exiting the duplex tray to allow additional sheets to fall into feeding position in said duplex tray.

4,210,320
VACUUM CONTROL FOR SHEET APPLICATOR MACHINES
Richard Feldkämper, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany
Filed Jan. 16, 1979, Ser. No. 3,880
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802475
Int. Cl.[2] B65H *3/08*
U.S. Cl. 271—108 **2 Claims**

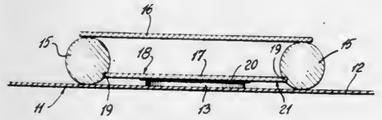
1. A vacuum control for sheet applicator machines, particularly for the base formers of bag-making machines, comprising suckers which lift the sheets individually, have a reciprocating conveying motion and are connected to a vacuum source by way of a controlled three-way valve, characterised in that the three-way valve (1) comprises a chamber (15) communicating with the atmosphere and a chamber (12) communicating with the vacuum source, the chambers being alternately connected to a conduit (10, 11) leading to the suckers (8) by means of a valve plate (13) which is displaceable between the chambers (15, 12) to close one of them and which is controlled by the

reciprocating conveying motion of the suckers (8), and that the valve plate 13 is biassed by a spring (17) which cannot overcome the suction acting on the valve plate (13) when the vacuum chamber (12) is closed and which, when the atmo-



spheric chamber (15) having a smaller diameter than that of the vacuum chamber (12) is closed, holds the valve plate (13) against atmospheric pressure in its position where it seals the atmospheric chamber (15).

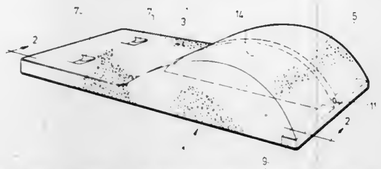
4,210,321
MAGICAL-TYPE GAME
Athanasios N. Ptinis, 7747 Stewart Ave., Montreal, Quebec, Canada
Filed Oct. 19, 1978, Ser. No. 952,728
Int. Cl.[2] A63J *21/00*
U.S. Cl. 272—8 N **5 Claims**



1. A game to create a vanishing illusion of an article, said game comprising a background element having a plain outer surface of uniform color, an article of contrasting color disposable on said background element, a displaceable ring member having a bore and movable within the boundaries of said background element ,said ring further having a diaphragm secured across said circular bore in an annular groove disposed on an inner circumferential portion of said ring member lowermost of the central plane of said ring passing through the center of the circular cross-section of said ring, and spaced from the outer lower plane of said ring whereby an angulated inner periphery of the ring is visible from above the ring below said central plane having a front surface of substantially identical uniform color as said background element, and a cover of contrasting color to said background element and configured to be removably positioned on said displaceable member to fully cover said diaphragm.

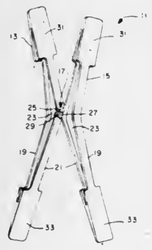
4,210,322
PORTABLE TUMBLING MAT
Michael E. Pritchard, Brook Rd., Freelton, Ontario, Canada
Filed Oct. 3, 1977, Ser. No. 838,893
Int. Cl.[2] A63B *5/18*
U.S. Cl. 272—109 **5 Claims**

4. A portable tumbling mat comprising a first portion and a second portion, integral with one another; said portions being constructed from a soft resilient material, said first portion being provided on its upper surface with a pair of hand grips comprising cut-away indentations for clamping engagement with the user's hands for performing repeated tumbling exercises, said second portion constituting a major share of said mat being thickened and relative to said first portion; the arrangement being such that when a person is lying in a supine position on said mat with the user's hands engaging said hand grips and with the



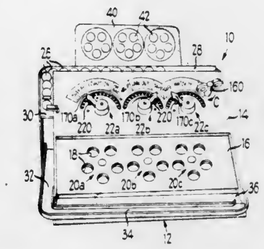
user's head resting on said first portion, the user's back is supported by and arched over said second portion, thereby enhancing the user's ability to perform repeated tumbling exercises.

4,210,323
BODY ENGAGING EXERCISING DEVICE
Jack V. Feather, P.O. Box 1399, Pebble Beach, Calif. 93953
Filed May 18, 1978, Ser. No. 907,098
Int. Cl.[2] A63B *21/32*
U.S. Cl. 272—137 **6 Claims**



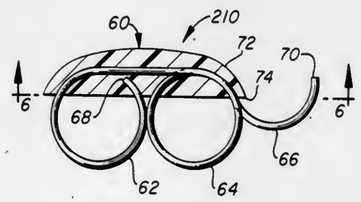
1. A body engaging exercising device comprising
a pair of bent rocker arms of equal length, each of said rocker arms being formed of one piece in cross section in an I-beam construction along the entire length of the arm with the web portions thereof lying in the same plane and the flange portions of each arm being angled with respect to each other and joined together at each end, each rocker arm being bent to form an obtuse angle, one of said rocker arms having a single bearing member integrally formed to the apex of its bend in a plane which bisects said apex and the other rocker arm having a pair of bearing members integrally formed to the apex of its bend in a plane which bisects said apex, each of said pair of bearing members being disposed on opposite sides of said single bearing member of the first rocker arm, said bearing members being interlocked at the pivot point by a pivot pin which is journalled in the bearing blocks, said pivot point being disposed between one-tenth and one-twentieth the length of the rocker arms from the center thereof, and
body engaging surfaces disposed on at least one pair of rocker arm ends and integrally secured thereto, said body engaging surfaces being generally planar and formed to contact the hands or inner thighs of the user, the planes of said body engaging surfaces being generally perpendicular to the plane of actuation of the rocker arms.

4,210,324
TIMER CONTROLLED GAME APPARATUS
Howard J. Morrison, Deerfield, and John R. Wildman, North Riverside, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 10, 1978, Ser. No. 876,407
Int. Cl.[2] A63F *7/00*
U.S. Cl. 273—1 R **20 Claims**



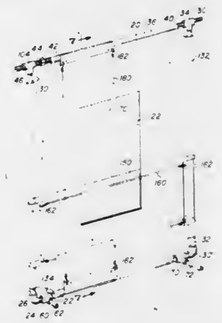
8. A game apparatus, comprising:
a frame having means defining a playing piece path of travel;
a plurality of playing pieces;
release means for sequentially releasing playing objects onto said playing piece path of travel;
a depository array including a plurality of array subsets whereby the playing pieces can be manually moved from the path of travel into the depository array subsets; and
a playing piece ejection means for each of said depository array subsets.

4,210,325
CUE GUIDE APPARATUS
Arthur T. McCann, P.O. Box 6368, Odessa, Tex. 79762
Filed May 16, 1978, Ser. No. 906,690
Int. Cl.[2] A63D *15/10*
U.S. Cl. 273—24 **4 Claims**



4. A cue guide apparatus having a cue guide member and spaced, adjacent, finger-receiving members;
a bridge member connecting said finger-receiving members and said cue guide member together such that when the apparatus is placed about the first and second fingers of one's hand, and one's hand is placed palm down on a billiard table, the cue guide member is positioned between the thumb and first finger in an elevated position respective to the surface of a billiard table;
said cue guide member having a curved surface which supports a cue stick such that the stick can be slidably reciprocated respective thereto;
said bridge member, said finger-receiving members, and said cue guide member being fabricated from a single continuous length of bent material;
an ornamental member rigidly attached to said bridge member and said finger receiving members, said ornamental member having a lower substantially planar surface of greater transverse dimension than said bridge and finger receiving members for increasing the area of contact across the top of the fingers when said cue guide is affixed to one's fingers, said ornamental member further having an upper curved surface, a marginal edge portion of said curved surface extending into overlying relationship respective to a marginal edge portion of said cue guide member so that a cue stick when placed in said cue guide member is simultaneously contacted by said ornamental member and said cue guide member.

4,210,326
PORTABLE BASEBALL PITCHING TARGET AND CATCHING APPARATUS
John A. Booth, 505 E. Winchcomb, Scottsdale, Ariz. 85254, and Jess H. Ingle, 6019 N. 36th Dr., Phoenix, Ariz. 85019
Filed Jun. 29, 1978, Ser. No. 920,169
Int. Cl.[2] A63B *69/40*
U.S. Cl. 273—26 A **9 Claims**



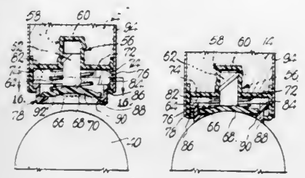
1. Pitching target apparatus, comprising, in combination:
front frame means, including
a generally horizontally disposed upper frame member,
a generally horizontally disposed lower front frame member spaced apart from the upper frame member,
a first front side frame member and a second front side frame member spaced apart from each other and connected to the upper and lower frame members, with the upper, lower, first side, and second side frame members defining a generally rectangular front frame;
bottom frame means comprising a base for the apparatus, including
a generally horizontally disposed rear frame member spaced apart from and generally parallel to the lower frame member,
a first lower side frame member secured to the lower front frame member and to the rear frame member,
a second lower side frame member secured to the lower front frame member and to the rear frame member, and spaced apart from the first lower side frame member;
diagonal frame means for supporting the front frame on the base, including
a first diagonal frame member extending between and secured to the upper frame member and the rear frame member,
a second diagonal frame member extending between and secured to the upper frame member and the rear frame member and spaced apart from the first diagonal frame member;
target panel means secured to the front frame means and including an aperture extending through the target panel means defining a target, including strip means for varying the size of the aperture; and
net means spaced apart from the target panel means for stopping projectiles thrown through the aperture in the target panel means.

4,210,327

RACKET-MOUNTED TENNIS BALL RETRIEVER

Steven M. Schubert, 3629 Warwick, Kansas City, Mo. 64111

Filed May 15, 1978, Ser. No. 906,126
Int. Cl.² A63B *69/38*
U.S. Cl. 273—73 R **15 Claims**



1. Means for the improved retention of a pair of objects, wherein interlocking hook and curly pile fabrics are utilized on the objects to effect said retention, said means comprising:

a mounting for one of the fabrics that produces relative sliding movement between the fabrics so as to interlock the same when the objects are pressed together,

said mounting including:

a device associated with one of the objects and supporting said one fabric for rotation in response to said pressing together of the objects; and

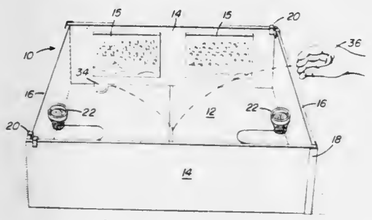
means for resisting rotation of the other object with said device during said pressing together of the objects whereby to achieve said relative sliding movement of the fabrics.

4,210,328

TABLE-TOP BASKETBALL GAME

Eddie R. Meintzer, 4520 Carlisle NE., Albuquerque, N. Mex. 87109; Paul M. Inglat, 10904 Rio Puerco SW., Albuquerque, N. Mex. 87105, and Zenon J. Zamora, 1008 Broadway SE., Albuquerque, N. Mex. 87102

Continuation-in-part of Ser. No. 834,339, Sep. 19, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,750
Int. Cl.² A63F *7/06*
U.S. Cl. 273—85 R **3 Claims**



1. A game apparaus of the type wherein a ball is thrown toward a target area comprising:

a game board having a planar configuration with a smooth hard surface;

end walls for perpendicular orientation to the ends of the game board each of said end walls being of constant height;

side walls for perpendicular orientation to the sides of the game board each of said side walls being of constant height, said side walls and said end walls being of equal height;

a hoop mounted on each end wall for disposition over the game board;

a resilient ball for bounding off the game board and walls and passing through the hoops; and

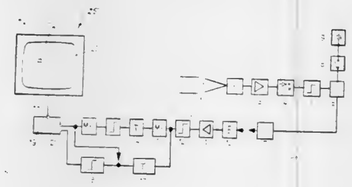
wherein one end wall and one side wall are hingedly interconnected for folding the side-by-side relation for storage and to perpendicular relation to be positioned alongside the side and end edge of the game board, and clip means comprising a right angle clip engaging the ends of an end wall and side wall remote from the hinged connection to retain the side and end walls in upstanding peripherally encircling relation to the game board to provide surfaces from which the ball may be banked through the hoops.

4,210,329

VIDEOGAME WITH MECHANICALLY DISJOINT TARGET DETECTOR

Klaus Steiger, Unterrodach, and Peter Wahl, Coburg, both of Fed. Rep. of Germany, assignors to Loewe-Opta GmbH, Kronach, Fed. Rep. of Germany

Filed Nov. 23, 1977, Ser. No. 854,229
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1976, 2653113
Int. Cl.² A63F *9/02*
U.S. Cl. 273—313 **13 Claims**



1. A videogame comprising:

a television receiver

a circuit for generating one or more movable light spot symbols on a line scanned screen of the television receiver;

an oscillator for generating horizontal synchronizing signals;

an oscillator for generating vertical synchronizing signals;

switching means for bright illumination and scanning of a predetermined intersection of horizontal and vertical sawtooth waveforms and the intersection being synchronized for generating a time proportional pulse; a target detector directable to the moving light spot symbol;

an optical sensor incorporated in the target detector for receiving light energy emitted from the light spot on the screen;

a trigger arm attached to the target detector for controlling an electrical switch;

an output stage comprising an emitter attached to the target detector and connected to the electrical switch and to the optical sensor for emitting unmodulated signals for a direction missing shot and modulated signals for a hit and a wireless transmission means for sending the signals from the emitter;

an input stage for receiving signals sent by the output stage;

an amplification stage for amplifying the signals coming from the input stage;

a pulse converter stage connected to the amplification stage for generating a pulse of a first duration for an incoming modulated signal and of a second duration different from the first duration for an incoming unmodulated signal;

a coincidence gate for receiving the pulses;

a summation circuit receiving the output signals of the coincidence gate and synchronizing them with the synchronizing and output signals of additional coincidence gates; and

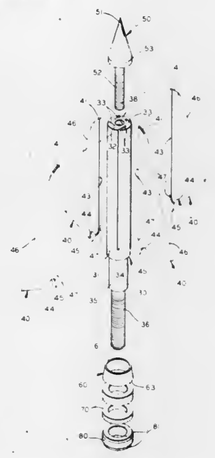
a counting and display stage connected to the television receiver for counting the shots when the trigger arm is actuated and for counting the hits when there is a coincidence in time between the actuation of the trigger arm and the entering of light energy on the optical sensor coming from the light spot on the screen and for displaying the results thereof on said television receiver.

4,210,330

MODULAR BROADHEAD ARROWHEAD

John V. Kosbab, Toledo, Ohio, assignor to Dynamic Sports concepts, Inc., Toledo, Ohio

Filed Feb. 13, 1978, Ser. No. 877,327
Int. Cl.² F41B *5/02*
U.S. Cl. 273—106.5 B **31 Claims**



1. A broadhead arrowhead comprising:

(A) a central shaft portion having at least one axially extending slot in a plane spaced radially from and parallel to the axis of said shaft portion,

(B) a device seatable in said slot having a notch at its rear end, and

(C) a deformable washer fitable in said notch for anchoring and locking the rear end of said device in said slot.

20. A broadhead arrowhead comprising:

(A) a central shaft portion having at least one axially extending slot open at its forward end,

(B) a bendable blade seatable in said slot and having a forward end extending out of said forward end of said slot, and

(C) tip means having an annular groove for engaging and bending said forward end of said blade out of the common plane of said slot and blade for anchoring said blade in said slot.

31. A broadhead arrowhead comprising:

(A) a central shaft portion externally threaded at its rear end for threading into an arrow shaft, internally threaded at its forward end, and having a plurality of axially extending slots in planes spaced equal radial distances from the axis of said shaft substantially along the central portion of said shaft portion,

(B) a plurality of blades seatable in said slots having acute angled projections at each end in said blades,

(C) a tip having an annular groove and threaded extension at its rear end for threading into the internal threaded forward end of said shaft portion whereby the front acute angled projections of said blades are anchored in said annular groove,

(D) a deformable annular collar axially slidably mounted around the rear end of said shaft portion overlapping the rear acute angled ends of said blades to anchor their rear ends in said slots, and

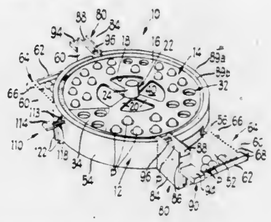
(E) a resilient locking washer axially slidably mounted between said collar and the front end of the arrow shaft for permitting angular adjustment of said blades with respect to said arrow shaft while the collar is axially urged into deformable contact with the rear of said blades by the threading of said externally threaded rear portion of said shaft portion into the front end of said arrow shaft.

4,210,331

ROTATABLE TARGET GAME

Ralph J. Kulesza, Chicago; John R. Wildman, N. Riverside; Henry Arias, Chicago, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,413
Int. Cl.² A63D *3/02*; A63F *7/10*
U.S. Cl. 273—120 R **2 Claims**



2. A game apparatus comprising:

a plurality of rollable playing pieces;

a base having a horizontal bottom, an upstanding side wall and a central top opening defined by a peripheral flange extending inwardly and downwardly from the top of said side wall;

a circular playing board mounted on said base and having a central hub and an outer annular area, the outer peripheral portion of which extends underneath said flange and said annular area being inclined slightly downwardly and centrally;

means connected to said hub for rotating the playing board;

said annular area having a plurality of spaced receptacles constituting playing piece retention positions to receive and removably retain playing pieces entering them;

a pair of playing piece launching stations located on the base at the exterior of said side wall and including receiving channels for directing playing pieces onto said annular area for possible retention in said receptacles;

selectively operable control means at each launching station normally preventing launching of a playing piece and a depressible control lever for launching a playing piece;

a pair of playing piece holding chambers at the exterior of said side wall, one adjacent each launching station;

gathering means underneath said playing board for receiving playing pieces and contoured to guide them to said holding chambers;

scoring areas adjacent said holding chambers; and

stop means to selectively stop rotation of the board.

4,210,332

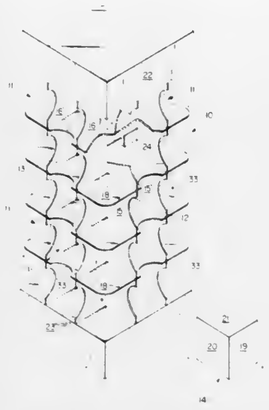
PUZZLE DEVICE INCLUDING POLYHEDRONS AND SUPPORT STRUCTURE THEREFOR

Steven R. Shanin, 6460 N. Lincoln Ave., Highland Park, Ill. 60645

Filed Jul. 24, 1978, Ser. No. 927,002
Int. Cl.² A63F *9/12*
U.S. Cl. 273—157 R **16 Claims**

1. A puzzle device comprising: a support structure, said support structure comprising a plurality of individual compartments located at the outer surface of said support structure, the compartments being adjacent to one another, and being open and unobstructed at the outer surface of said support structure to permit insertion into and removal from each compartment of a polyhedron, each compartment comprising wall means for separating adjacent compartments from one another and for supporting respective polyhedrons therein, said support structure including a central space equivalent to the space of at least one of said compartments; and a plurality of polyhedrons equal in number to the number of said surface compartments, each polyhedron having a size and shape such that each is insertable into a respective compartment such that, on inserting the poly-

hedrons into said compartments, the outer faces of said polyhedrons together form an outer surface of said support structure, each polyhedron having a plurality of faces and having different visual characteristics, the polyhedrons being arrangeable in said support structure in a plurality of arrangements in each of which at least one face of each polyhedron is visible at an outer



surface of said support structure in each of said arrangements, and in each of which the outer faces of the polyhedrons together form a pre-determined visual effect at said outer surfce of the support structure, each face of each polyhedron being useful in only one arrangement to form a pre-determined visual effect, all faces of all polyhedrons being used once to form said plurality of arrangements.

4,210,333

PUZZLE CUBES FOR FORMING RECTANGULAR PARALLELEPIPEDS

Steven R. Shanin, 6460 N. Lincoln Ave., Highland Park, Ill. 60645

Filed Jul. 24, 1978, Ser. No. 927,003
Int. Cl.[2] A63F *9/12*
U.S. Cl. 273—157 R **2 Claims**



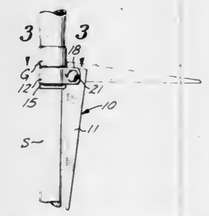
1. A puzzle device consisting of sixty two cubes, each cube having visual matter on a plurality of its faces, the cubes being arrangeable, using all sixty two cubes, in two different pre-determined ways into a first rectangular parallelepiped six cubes high by three cubes wide by four cubes deep with the exposed cube faces forming the sides and top of the parallelepiped, and arrangeable, using sixty of the cubes, into two still different pre-determined ways into a second parallelepiped four cubes high by three cubes wide by six cubes deep with the exposed cube faces forming the sides and top of the parallelepiped, each cube being unique in the visual matter on its faces, with respect to all other cubes, the visual format on said cubes being such that in each of said pre-determined arrangements, the exposed faces of the cubes together form a pre-determined visual format on the five sides of the parallelepiped, whereby twenty different pre-determined visual formats may be provided, one on each of the five sides of the rectangular parallelepiped formed by arrangement of the cubes.

4,210,334

GOLF CLUB INCLUDING SUPPORT ATTACHMENT

William F. Lind, 5958 Gaviota Ave., Long Beach, Calif. 90805

Filed Sep. 22, 1978, Ser. No. 944,755
Int. Cl.[2] A63B *55/10, 53/00*
U.S. Cl. 273—162 R **1 Claim**



1. In combination with a golf club that includes a head having a flat striking surface, a shaft that has first and second ends, said first end of said shaft secured to said head, and a grip that envelops a portion of said shaft that extends inwardly from said second end thereof, a device for maintaining said grip above the ground surface when said club is angularly positioned relative to the latter and said flat striking surface resting on said ground surface, said device including:

a. a trianglar spike having a short edge joined to a long edge at substantially orthogonal alignment;

b. a resilient sleeve mounted on said shaft adjacent an inwardly disposed end of said grip, said sleeve including a peripheral bead around the distal periphery thereof;

c. a circular clamp mounted on said sleeve and disposed between said head and said grip, said clamp including a strip that substantially encircles said sleeve, said strip including a pair of laterally spaced end tabs that extend outwardly from said shaft and substantially normal to said striking surface, said pair of tabs having axially aligned first openings therein that are aligned with a second opening in said spike when an end portion of said spike in which said second opening is formed is disposed between said pair of tabs;

d. a screw that extends through said first and second openings, said screw including a head in abutting contact with one of said tabs, and a threaded shank that projects outwardly from the other of said tabs; and

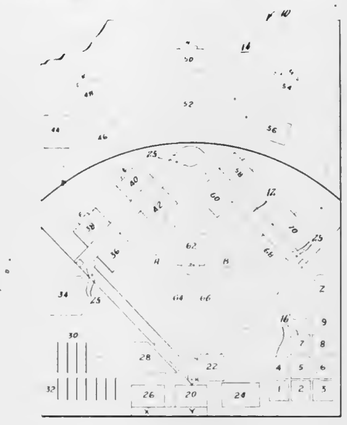
e. a nut that engages said threaded shank and pressure contacts the one of said tabs most adjacent thereto when said screw is tightened, with said screw when tightened applying pressure through said clamp to said sleeve to maintain it in a fixed longitudinal position on said shaft, and also forcing said pair of tabs into frictional contact with said spike to the extent said spike may be pivoted to a first position substantially parallel to said shaft when said spike is not in use or to a second position substantially normal to said shaft where it will support said grip above the ground surface when the outer extremity of said spike is in contact with the latter and said striking surface rests on said ground surface.

4,210,335

BASEBALL GAME

Bartholomew A. Licciardi, 11 B. Whittier Dr., Everett, Mass. 02149

Filed Jul. 28, 1977, Ser. No. 819,719
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—238 **7 Claims**



1. A baseball game comprising:

(a) a game board having a baseball field design thereon and specifically marked areas at positions corresponding to the infield and outfield defensive positions of first base, second base, shortstop, third base, left field, center field and right field of an actual baseball field for placing defensive playing cards face down and another specifically marked area at each of the said positions for placing defensive playing cards face-up;

(b) three decks of cards, each deck containing a number of cards, including a pitcher's deck with each of a plurality of the pitcher's deck cards having a different indicia thereon and includes a separate strike card for each of said infield and outfield defensive gameboard positions and the indicia on each of said plurality of pitcher's deck cards corresponds to the associated one of said gameboard positions, a batter's deck with each of the batter's deck cards having different indicia thereon, the indicia on each of said batter's deck cards corresponds to the indicia on one of said plurality of pitcher's deck cards and includes a separate batter's deck card for each of said infield and outfield defensive gameboard positions and the indicia on each of said batter's deck cards corresponds to the associated one of said gameboard positions for thereby providing a structure making possible simulated pitching to a batter by matching of position indicia on successive pitcher deck cards against position indicia on a batter's deck card for determining strikes and hits by the batter, and a defense deck of cards, the cards in each deck including baseball plays thereon, and

(c) moveable pieces representing base runner baseball players adapted to be placed at each base on said playing field in accordance with the outcome of said baseball plays.

4,210,336

GAME WITH GAME BOARD AND PIECES

Violetta Williamson, 1423 Easton Ave., Bethlehem, Pa.

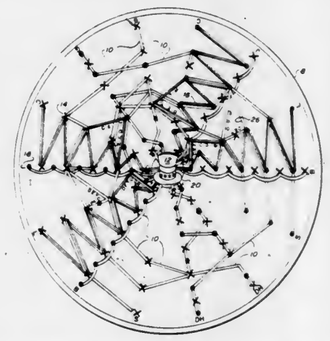
Filed Sep. 11, 1978, Ser. No. 941,153
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—258 **6 Claims**

1. Game apparatus designed for two players in competition to move game pieces along preset paths according to rules comprising:

(a) primary game pieces, said game pieces comprising a plurality of different pairs of game pieces, each member of each pair bearing indicia of identification to distinguish it from its set mate and from one another within the set and, thereby, providing each of two players with an identical group of non-identical game pieces;

(b) secondary game pieces comprising two sets of a plurality of identical game pieces, each of said set members bearing indicia of identification to distinguish it from its set mate, thereby providing each of said players with an identical group of identical game pieces; and

(c) a two-dimensional game board, said board's playing area being generally circular in shape and containing thereon a plurality of game piece paths in the form of zigzags, each



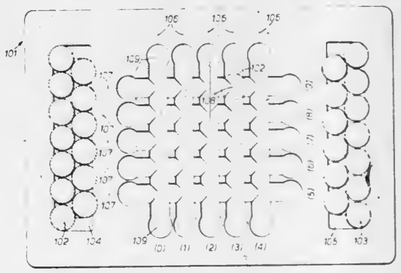
of said paths commencing at a point on said circle's edge, said commencement points each bearing indicia corresponding to the indicia on a different one of said primary game pieces, and terminating at said circle's center, said number of paths corresponding to the total of said primary game pieces, said paths bearing demarcations indicating resting places for game pieces during play, some of said resting place demarcations immediately preceding said termination points bearing indicia corresponding to the indicia on said secondary pieces, said resting places so marked being equal in number to the number of secondary game pieces.

4,210,337

ALIGNMENT GAME

Gilbert K. J. Obermair, Munich, Fed. Rep. of Germany, assignor to J. W. Spear & Sons Limited, United Kingdom

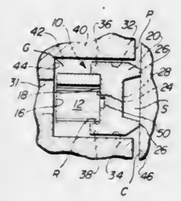
Filed Jan. 11, 1978, Ser. No. 868,679
Claims priority, application United Kingdom, Jan. 14, 1977, 1567/77
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—264 **12 Claims**



1. A game comprising at least two sets of playing pieces, each playing piece being in the form of a ball and having an identifiable characteristic, the playing pieces in each set having the same identifiable characteristic, which characteristic is

different from the identifiable characteristic of the pieces in the other set or sets, and a board defining a playing area, the playing area comprising two sets of parallel rows of channels, the rows in one set of rows lying transverse to the rows in the other set of rows, each of the intersections between the rows in one set and the rows in the other set defining a pocket for receiving a playing piece, the total number of playing pieces being at least one more than the number of pockets and the board defining a playing piece receiving region outside the playing area; wherein, in play, every pocket is simultaneously occupied by a playing piece, the playing pieces being visible and lying in substantially the same plane, and the number of pieces in one set of pieces on the playing area is the same as or one more than the number of pieces in the other set or sets of pieces on the playing area, and wherein the playing pieces in a row in which all its pockets are occupied are movable together along the axis of that row by applying a force to one of the two end pieces in that row, using a playing piece which is not in the playing area, so that each of the pieces in that row except the other end piece is moved into its next adjacent pocket in that row, so that the said other end piece is moved off the playing area and into the said receiving region, and so that the playing piece used to apply the force is received in the pocket previously occupied by the same one end piece.

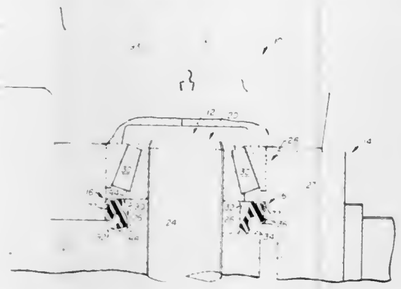
4,210,338
PISTON RING ASSEMBLY
Charles A. Collings, Jr., Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.
Filed Dec. 28, 1978, Ser. No. 973,737
Int. Cl.[2] F16J *9/06, 9/12*
U.S. Cl. 277—76 **12 Claims**



1. A piston ring assembly comprising
an annular parted expansion ring having an axial piston ring bearing portion; and
an annular parted piston ring disposed substantially circumferentially around said expansion ring and having an outer annular portion and an inner annular portion, the latter having a predetermined segment thereof in bearing contact with the bearing portion of said expansion ring; said inner annular portion being provided with at least one circumferential recess spaced generally radially outwardly from and in non-bearing relationship with the bearing portion of said expansion ring.

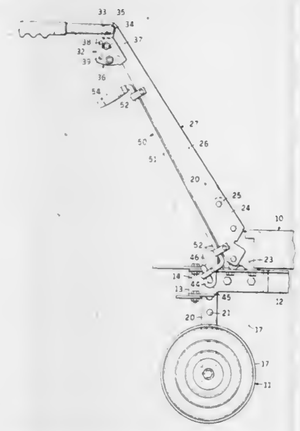
4,210,339
SEAL AND SEAL ASSEMBLY
James H. Povejsil, Mentor, Ohio, assignor to Towmotor Corporation, Mentor, Ohio
Filed Dec. 26, 1978, Ser. No. 4,791
Int. Cl.[2] F16J *15/32*
U.S. Cl. 277—153 **36 Claims**

1. A seal (**16**), comprising:
a body (**38**);
a leg (**40**) having first, second and third sides (**46,48,50**), a middle portion (**56**) and first and second end portions (**52,54**) and being connected at the first end portion (**52**) to the body (**38**) ,said first side (**46**) being linear and generally opposed to said second side (**48**), said second side (**48**) having a linear portion (**64**) intersecting the third side (**50**) and being parallel to the first side (**46**) and an arcuate portion (**62**) defining an arcuate surface (**58**) extending curvilinearly inwardly in a direction generally toward the first side (**46**) and defining a reduced cross-sectional area of said leg (**40**) at the middle portion (**56**) relative to the second end portion (**54**), said third side (**50**) being linear and intersecting said first and second sides (**46,48**) at the second end portion (**54**), said second end portion (**54**)



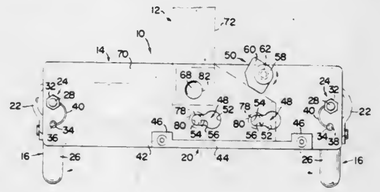
being of a construction sufficient for being controllably deflectable relative to said first end portion (**52**) in response to a force exerted on at least one of the first and third sides (**46,50**); and
first and second sealing areas (**42,44**) positioned on said leg (**40**) adjacent the intersection of the first and third sides (**46,50**), and the intersection of the second and third sides (**48,50**), respectively.

4,210,340
HEIGHT-ADJUSTING ASSEMBLY FOR IMPLEMENT WHEELS
Kenneth W. White, Bridgeton, Mo., assignor to Atlas Tool & Manufacturing Co., St. Louis, Mo.
Filed May 4, 1978, Ser. No. 902,868
Int. Cl.[2] B62D *21/18*
U.S. Cl. 280—43.17 **1 Claim**



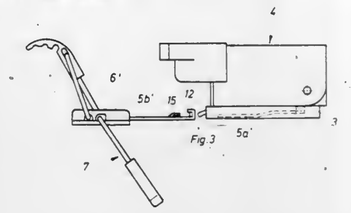
1. A height-adjusting assembly for implement wheels, comprising:
(a) a base including a wheel-mounting bracket,
(b) an implement handle attached to the base and extending upwardly and rearwardly from the base and including hand-gripping means at the upper end,
(c) wheel means including an adjustment bar disposed adjacent the bracket, the bar including a plurality of longitudinally spaced apertures, and
(d) locking means selectively interconnecting the adjustment bar and bracket, and including:
1. a lock pin reciprocatively mounted on the bracket and selectively interconnected with one of the bar apertures,
2. a compression spring between the bracket and the lock pin tending to urge the pin into the selected bar aperture, and
3. a wheel-adjusting handle means including an elongate rod rotatively mounted on its longitudinal axis on the implement handle, the elongate rod having one end connected to the lock pin, and having the other rod end located adjacent the hand-gripping means of the implement handle for rotating the elongate rod about its longitudinal axis for selectively withdrawing the lock pin from or inserting the lock pin in the bar apertures under loading of the spring to determine the adjusted wheel height.

4,210,341
TRANSPORT APPARATUS
William Minkoff, 15703 Redington Dr., Redington Beach, Fla. 33708
Filed Mar. 24, 1978, Ser. No. 889,734
Int. Cl.[2] B62B *3/04*
U.S. Cl. 280—79.1 A **7 Claims**



1. A transport apparatus comprising a pair of dolly devices for moving beds which include side rails having head and foot frames formed on opposite ends thereof wherein the head and foot frames each have at least one connector formed thereon, each said dolly device comprising an elongated base plate, a pair of swivel mounted casters attached to opposite ends of said elongated base plate and attachment means formed on said elongated base plate to engage the bed, said attachment means comprising at least one retainer aperture including an enlarged retainer opening and reduced retainer opening formed on said elongated base plate to receive the connector of the head and foot frames, a retainer element comprising a retaining member disposed along the longitudinal axis of said elongated base plate and at least one end member extending inwardly from one end thereof to engage the head and foot frames of the bed, and a frame lock comprising a tightener member and cam element coupled to said elongated base plate by a lock connector, said tightener member fixedly attached to the upper portion of said lock connector and said cam element rotatably mounted on said lock connector to engage the head and foot frames, said cam element comprises a member having its periphery unequal distances from its point of rotation, said tightener member movable between a locked and unlocked position to selectively lock said cam element in securing engagement with the head and foot frames.

4,210,342
CONNECTING ELEMENT
Erwin Krob, Vienna, and Erwin Weigl, Brunn am Gebirge, both of Austria, assignors to TMC Corporation, Baar, Switzerland
Filed Sep. 26, 1977, Ser. No. 836,844
Claims priority, application Austria, Sep. 24, 1976, 7121/76
Int. Cl.[2] A63C *11/00*
U.S. Cl. 280—636 **6 Claims**



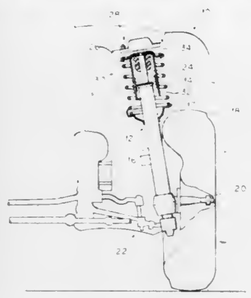
1. In a connecting element for the selective fastening of a stepping plate to a guide plate on a guide rail secured to a ski, said stepping plate and said guide plate being spaced from each other along the longitudinal axis of said ski, said stepping plate functioning as a base support for a ski boot when said ski boot is operatively associated with a ski binding mounted on said guide plate, wherein guide means are provided for guiding and supporting said guide plate for movement in a direction parallel to said longitudinal axis of said ski to selected positions, the improvement comprising wherein said connecting element comprises an elongated pull rod connected to and extending between said stepping plate and said guide plate and having first and second parts and releasable connecting means for connecting said first and second parts together, said first part being connected to said stepping plate and said second part being connected to said guide plate, said releasable connecting means including first projection means on one of said first and second parts, first receiving means on the other of said first and second parts for releasably receiving said first projection means therein, said releasable connecting means further including lateral support means for providing lateral stability to said stepping plate, said lateral support means comprising second projection means on one of said first and second parts and second receiving means on the other of said first and second parts for releasably receiving said second projection means therein, said first projection means and cooperating first receiving means, when said first and second parts are connected together, being spaced longitudinally along the length of the connected first and second parts from said second projection means and cooperating second receiving means to minimize relative lateral movement between said first and second parts and for maintaining the longitudinal axis of said pull rod parallel to said longitudinal axis of said ski.

4,210,343
AUTOMOTIVE SUSPENSION SYSTEM
Masanao Shiomi, Toyota; Masakazu Ishikawa, Aichi, and Hiroshi Kato, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyotashi, Japan
Continuation of Ser. No. 777,894, Mar. 16, 1977, abandoned. This application Jan. 12, 1979, Ser. No. 3,094
Claims priority, application Japan, Apr. 5, 1976, 51/40890
Int. Cl.[2] B60G *11/52*
U.S. Cl. 280—668 **3 Claims**

1. A suspension system including a shock absorber having a piston-cylinder assembly, comprising:
an inner cylindrical member secured to a piston rod in said shock absorber;
an outer cylindrical member disposed coaxially of said inner cylindrical member and secured to a body of an automobile;
a resilient member of a cylindrical form, which is positioned between said inner cylindrical member and said outer

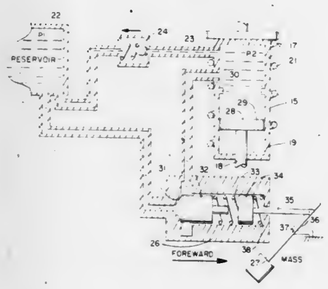
cylindrical member, said resilient member having an inner peripheral surface and an outer peripheral surface secured to said inner and outer cylindrical members, respectively, an inwardly concave contour being provided in the bottom surface of said resilient member, the lower portion of said resilient member being converged downwards, whereby high frequency, light vibratory loads capable of causing noise problems are loaded in shear on the resilient member and are effectively absorbed to thus isolate vibration from the body of the automobile; and

a stopper disposed in the close vicinity of the end surface of said resilient member and secured to said inner cylindrical member, said stopper including a flange portion spaced



from and adapted to abut the bottom surface of said cylindrical resilient member, the outer edge of said flange portion being rounded downwards, the flange portion of said stopper having a substantially "S" shaped cross-section which extends downwards in opposed relation to said bottom surface of said cylindrical resilient member, whereby said flange may abut said bottom surface of said resilient member to restrict an excessive displacement of said resilient member in its axial direction such that the contacting area between said cylindrical resilient member and said flange increases in proportion to the displacement of said cylindrical resilient member, thereby imparting a nonlinear characteristic to the stress-strain relationship of the resilient member.

4,210,344
CONTROLLED SHOCK ABSORBER
Charles Curnutt, 75992 Baseline, 29 Palms, Calif. 92277
Filed Jan. 26, 1979, Ser. No. 6,636
Int. Cl.[2] B60G *25/00*
U.S. Cl. 280—709 **7 Claims**



1. A controlled shock absorber for positioning between a vehicle frame and axle including, in combination:

(a) a fluid type piston-cylinder shock absorber including a cylinder coupled to said frame and piston reciprocable therein with fluid bypass means, said piston having a piston rod extending from one end of said cylinder and coupled to said axle;

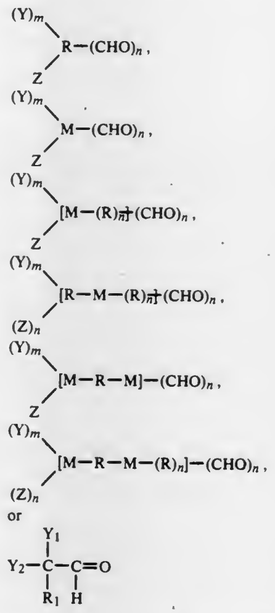
(b) a fluid reservoir for holding fluid under a given high pressure;

(c) a check valve connected between said cylinder and reservoir for passing fluid from said cylinder to said reservoir only when the pressure of fluid in said cylinder exceeds said given high pressure; and

(d) a pressure relief valve connected between said reservoir and cylinder and set to open a controlled amount to control the pressure of fluid in said cylinder and thereby the force tending to urge the piston from the cylinder.

4,210,345
PRESSURE-SENSITIVE RECORDING OR COPYING MATERIAL
Horst Kosche, Duren, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 24, 1978, Ser. No. 909,150
Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724295; Jul. 1, 1977, 2729739
Int. Cl.[2] B41M *5/16, 5/22*
U.S. Cl. 282—27.5 **16 Claims**

1. In a pressure sensitive recording or copying material which contains, in its color reactant system; a color-producing acceptor as the developer for the color-forming agent, the improvement wherein the developer contains at least one member which is the reaction product of an electronegatively substituted aldehyde and an aliphatic organic compound containing hydroxyl groups, such that the aldehyde moiety is bonded to the radical of said aliphatic organic compound via at least one oxygen atom, said electronegatively substituted aldehyde being an electronegatively substituted mono- or polyaldehyde, wherein at least one such electronegative substituents is halo or cyano and interacts electromerically with at least one aldehyde group thereof, said aldehyde having the formula



wherein

R is a substituted or unsubstituted, saturated or unsaturated aliphatic radical,

M is a substituted or unsubstituted aromatic, aromatic-cycloaliphatic, aromatic-heterocyclic or heterocyclic radical with aromatic properties,

Y is halo or cyano,

Z is hydrogen or an acid group,

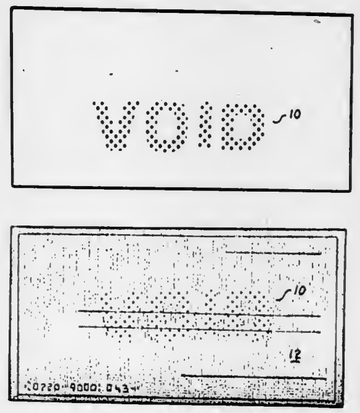
m and n are independently an integer of 1 to 6.

Y_1 is hydrogen or halogen,

Y_2 is halogen, and

R_1 is hydrogen, carboxyl, alkyl of 1 to 3 carbon atoms, halogenoalkyl of 1 to 3 carbon atoms, phenyl, benzyl or halogenobenzyl.

4,210,346
PROTECTED DOCUMENT BEARING WATERMARK AND METHOD OF MAKING
William H. Mowry, Jr., Ionia; Michael J. McElligott, Rochester; Victor J. Tkalenko, Jr., Rochester; Joseph Baran, Rochester, and Curtis W. Ingalls, Fairport, all of N.Y., assignors to Burroughs Corporation, Detroit, Mich.
Filed Jun. 23, 1977, Ser. No. 809,261
Int. Cl.[2] B42D *15/00;* **B44F** *1/12*
U.S. Cl. 283—8 B **10 Claims**



1. A security document adapted for use with a xerographic color copier having a lens reproduction system which has a reproduction density threshold which at normal operator accessible copier settings reproduces dots of a tone density which are larger than the reproduction density threshold and which does not resolve and consequently does not reproduce dots of a tone density which are smaller than the threshold, the security document preventing the faithful reproduction of all portions of the original image printed on the surface thereof on copies made at the normal operator accessible copier settings on said color copier and which instead, when copied using said lens reproduction system, is reproduced with a warning mark which is part of the original printed image on the document, the appearance of which warning mark indicating that the copy is not the original security document, said security document comprising:

a substrate; and

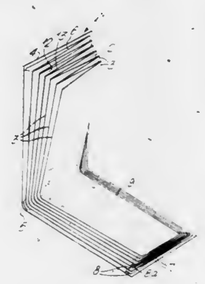
a security background printed on said substrate;

said security background comprising:

a warning mark composed of a dot pattern of a plurality of relatively large dots patterned so as to comprise said warning mark, which pattern is surrounded by a plurality of spaced small dots and wherein the large dots and small dots are printed in non-cumulative mode, the dots being registered so as to be in phase with the large dots being spaced a distance which is a multiple of the distance between the small dots, and further wherein the large dots and small dots are aligned as a parallel screen with the pitch of the smaller dots being twice the pitch of the large dots, which large dots and smaller dots are camouflaged by a camouflage overlay pattern printed as a visually confusing and obscuring pattern at and between said large and small dots on said substrate such that the large and small dots appear interspersed with said camouflage patterns;

said substrate bearing on one side thereof a printed protective watermark of white colored ink.

4,210,347
MAPS
Ralph G. Robbins, and Victor E. Bates, both of Basingstoke, England, assignors to The Automobile Association Limited, Basingstoke, England
Filed Jul. 11, 1978, Ser. No. 923,735
Claims priority, application United Kingdom, Jul. 15, 1977, 29848/77
Int. Cl.[2] G09B *29/00*
U.S. Cl. 283—35 **2 Claims**



1. A map comprising a concertina-folded sheet printed on both sides of the sheet, the markings on the two sides representing contiguous areas and being disposed so that a line on the map representing a route passing from one such area to the other extends around an edge of the sheet which lies at right angles to the concertina folds, the sheet having on an outer end flap two key maps, inverted with respect to each other and corresponding respectively to the two sides of the sheet, to direct the user to the desired part of the map by means of indicia associated with the key maps which correspond to indicia provided upon the edge folds of the map, and wherein the sheet is concertina-folded in such a way that successive panels, proceeding from the end flap having the key map thereon, are progressively wider, the said indicia being provided on the portions of the successive folds which are thereby rendered visible when the map is folded.

4,210,348
DUST-SEALING ASSEMBLY FOR A COUPLING
Willis S. Hobson, Columbus, and Elmer A. Graber, Seymour, both of Ind., assignors to Seymour Manufacturing Co., Inc., Seymour, Ind.
Filed Mar. 27, 1978, Ser. No. 890,067
Int. Cl.[2] F16L *37/22, 37/28*
U.S. Cl. 285—1 **5 Claims**

1. In a coupling for use in a fluid circuit:

(a) a mounting plate,

(b) a body member mounted on the mounting plate,

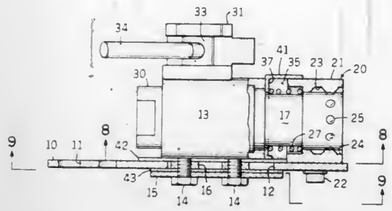
(c) a sleeve member movably mounted on and extending from one end of the body member,

(d) a nipple-releasing means fixed to the mounting plate and embracing the sleeve member, the nipple-releasing means being spaced from the one end of the body member,

(e) a compression spring disposed about the sleeve member in the space between the body member and nipple-releasing means for holding the body member relatively away

from the nipple-releasing means, and permitting relative axial movement toward and away from each other,

(f) a dust cover disposed about the sleeve member and spring, and in the space between the body member and



nipple-releasing means for deterring entry of foreign material into the space, and

(g) the same compression spring engaging the dust cover and retaining the dust cover in place against the body member.

4,210,349

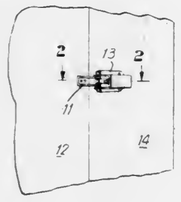
DEVICE FOR HOLDING A DOOR FIRMLY CLOSED

Sanford L. Cook, Ocean, and Joseph N. Villa, Freehold, both of N.J., assignors to Standard Keil Hardware Manufacturing Co., Allenwood, N.J.

Filed Dec. 26, 1978, Ser. No. 973,263

Int. Cl.[2] E05C *19/02*

U.S. Cl. 292—78 **6 Claims**



1. Device for holding a door firmly but releasably closed against a door jamb, comprising a bracket mountable on said door and a bistable assembly mountable on said jamb for engagement with said bracket, said bracket having a base for mounting same to said door and a top projecting toward said assembly for engagement therewith, said assembly including an assembly housing, said housing containing a hydraulic cylinder and a piston and spring within said cylinder, said piston extending through one end of said cylinder,

first pin means mounting said cylinder proximate the other end thereof to said housing for rotation about a first axis centered in said first pin means,

a bell crank having a tip arm for engagement with said bracket tip in closing a door and a piston arm for making connection with said piston,

second pin means mounting said bell crank proximate the junction of said arms to said housing for rotation about a second axis centered in said second pin means,

third pin means pivotally joining the outer end of said piston arm with the outer end of said piston for mutual rotation around a third axis centered in said third pin means, said first and second axes defining a fixed plane, said spring biasing said piston inwardly of said cylinder and urging said third pin means toward said first pin means,

said bell crank being rotatable between standby and engaged positions, said third pin means being on a first or second side of said plane when said bell crank is in said standby and engaged position respectively, and stop means engageable with said tip arm for defining said standby position of said bell crank and thereby of said cylinder and piston,

said bistable assembly being so constructed and disposed relative to said bracket and tip of same that opening of said door rotates said bell crank from said engaged to said standby position and closing of said door rotates said bell crank from said standby position to said engaged position, thereby moving said third pin means from one side of said fixed plane to the other side thereof, said spring in combination with said piston and third pin means serving

(1) to hold said bell crank releasably in whichever position to which said bell crank has been rotated by movement of said door and bracket tip; and

(2) to press said door firmly against said jamb by engagement of said tip arm of said bell crank with said bracket tip, said hydraulic cylinder and said bell crank being so disposed relative to each other that the distance from said first pin means to said third pin means exceeds the distance from said first pin means to said second pin means at and between said standby and engaged position, whereby said piston must pass through the axis of said second pin means in moving between said standby and engaged positions.

4,210,350

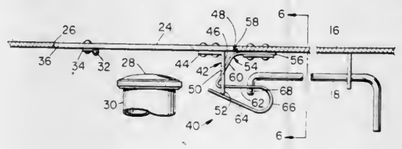
DOOR LATCH MECHANISM

George P. Lysenko, and Richard J. Smith, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jul. 20, 1978, Ser. No. 926,554

Int. Cl.[2] E05C *19/06*

U.S. Cl. 292—86 **6 Claims**



1. In combination with an enclosure having a wall provided with an access opening and a door having a hinge connection adjacent one edge thereof connecting the door to the wall for movement between a closed position wherein it blocks access through the opening and an open position wherein it is pivoted relative to the opening for permitting access therethrough, and a latch mechanism including a catch member mounted on the door adjacent a second edge opposite from the one edge and a lock member mounted on the wall for releasable engagement with the catch member; the improvement residing in the latch mechanism and comprising: said catch member including a catch portion disposed in spaced parallel relationship to the door; said lock member being in the form of a spring metal strap having a clip portion formed at one end thereof and including a pair of resiliently separable legs disposed in gripping engagement with the catch portion, when the door is in its closed position, an intermediate deflectable portion joined to the clip portion and a mounting portion joined to the intermediate portion and secured to the wall at a location adjacent the catch member when the door is in its closed position; and a lock member release actuator connected to the clip portion and operable for pulling on the latter to effect deflection of the deflectable portion and withdrawal of the separable legs from the catch portion of the latch member to thereby release the door.

4,210,351

SANITARY PICKUP DEVICE FOR ANIMAL FECES

Michael J. Orofino, 2 Brookside Dr., Baldwin, N.Y. 11510

Filed Sep. 19, 1978, Ser. No. 943,718

The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.

Int. Cl.[2] A01K *29/00*

U.S. Cl. 294—1 BB **12 Claims**



1. A portable device for picking up animal droppings and collecting those droppings into a wrapper comprising:

a frame;

a pair of blades pivotally mounted on said frame and each having side edges, an upper edge and a bottom edge, said blade upper edges defining a top access area and said blade lower edges defining a bottom access area;

a blade operating hinge having a pair of arms each having an upper end and a lower end with said lower ends each being hingeably connected to a blade upper edge, said hinge being located to one side of said blades to provide free access to the area between said blades via either said top or the bottom access areas;

an operating rod hingeably connected to said hinge upper ends and being movably connected to said frame so that movement of said rod with respect to said frame causes said blade upper edges to move via the movement of said hinge, said blades being mounted on said frame to be caused to tilt toward and away from each other by the movement of said upper edges; and

means for closing the wrapper.

4,210,352

HOISTING APPARATUS

Göran Eriksson, Gävle, Sweden, assignor to Jack Roland, Gävle, Sweden

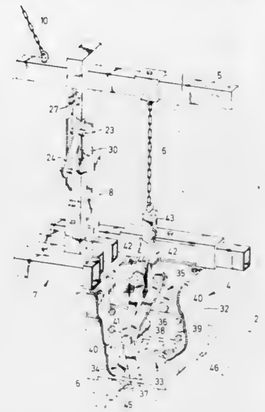
Filed Sep. 21, 1978, Ser. No. 944,617

Claims priority, application Sweden, Sep. 28, 1977, 7710827; Feb. 27, 1978, 7802186

Int. Cl.[2] B66C *17/04*

U.S. Cl. 294—81 R **18 Claims**

1. Hoisting apparatus of the type comprising at least one gripping device (**33**) associated with a holder (**4**), said gripping device being movable relative to the holder between an operative position and an inoperative position, and a carrier (**5**), which is movable relative to the holder (**4**) towards a position remote from the holder as well as securable—by means of a control mechanism—relative to the holder in a position closer thereto than the first-mentioned position, said carrier being connected to the gripping device (**33**) through at least one pull member (**6**) which in a tensioned condition—when the carrier is unsecured and movable relative to the holder—forces the gripping device to assume a first one of said two positions thereof and in a tensionless condition—when the carrier is unsecured relative to the holder—permits the gripping device to assume the second one of said two positions thereof, characterized in that the gripping device (**33**) comprises at least one arm (**36**) which is provided with a gripping claw (**37**) and rotatable between said operative position and said inoperative



position about an axis (**38**) which is associated with the holder (**4**) through a connection (**39, 40**) permitting raising and lowering of said axis relative to the holder so as to locate the gripping claw (**37**) substantially on one and the same level at the bottom of the holder irrespective of whether the gripping claw is kept in the operative position by action of said pull member or is remote from said position.

4,210,353

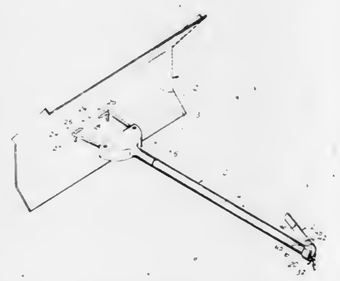
TOOL FOR INSERTING COMBINATION INSULATION STOP AND VENTILATION BAFFLE ARTICLES IN ROOF STRUCTURES

Bryce L. Koontz, 11432 - 41st NE., Marysville, Wash. 98270

Filed Sep. 28, 1978, Ser. No. 946,711

Int. Cl.[2] A47F *13/06*

U.S. Cl. 294—19 R **7 Claims**



1. A tool for remote installation of combination insulation stop and ventilation baffle articles in roof structures, comprising:

a hollow enlongated tube extending from an open forward end to an open rearward end;

a housing at the forward end of the tube;

a pair of pincers mounted to the housing and extending forwardly therefrom;

said pincers each having a pivoted end extending forward

and curved inward toward each other for penetrating a baffle article from one side thereof to grip the article transversely across the forward end of the tool to enable the article to be installed in a remote location in the roof structure;

said pincers each having transversely extending penetration stops rearward of the pointed ends for engaging the transversely extending article and limiting penetration of the pointed ends through the one side of the article;

said pincers being pivotally mounted to the housing for movement toward each other to cause the curved pointed ends to penetrate the one side of the article until the article abuts the penetration stops and to grip the article between the pincers with the article extending transversely across the forward end of the tool and for movement away from each other to gradually pull the pointed ends from the one side of the article to release the article;

link means operatively connected to the pincers and extending to the rear end of the hollow tube;

spring means operatively connected to the pincers for biasing the pincers away from each other; and

a manually operable pincer actuator at the rearward end operatively connected to the link means for moving the pincers toward each other against the bias of the spring means.

4,210,354

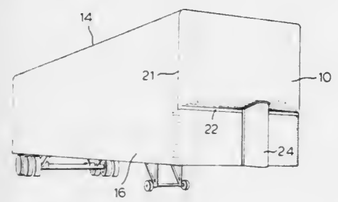
AERODYNAMIC DRAG-REDUCING SHIELD FOR MOUNTING ON THE FRONT OF A CARGO CARRYING COMPARTMENT OF A ROAD VEHICLE

Robert B, Canning, 120 Widdicombe Hill Blvd., Apt. 708, Weston, 4A6

Filed Feb. 6, 1978, Ser. No. 875,202

Int. Cl.² B62D *35/00*

U.S. Cl. 296—1 S **8 Claims**



1. An aerodynamic drag-reducing shield for mounting on the front of a cargo-carrying compartment of a road vehicle, the shield having a substantially rectangular rear edge adapted to conform to a substantially rectangular front face of said compartment, and a rigid, smoothly curved front surface of which all horizontal sections conform to a semi-ellipse having its minor axis extending longitudinally of the vehicle and its major axis transversely, each of said sections having the same transverse width, the shield having an upper portion curving smoothly rearwardly to the upper rear edge of the shield and having a vertical cross-section that conforms substantially to a segment of a further ellipse having its major axis extending in the vertical median plane of the shield, and a minor axis extending horizontally in said median plane; and a lower portion of the same width as said upper portion and being of uniform horizontal semi-elliptical cross-section.

4,210,355

AIR-TRANSPORTABLE HIGHLY AUTONOMOUS CROSS-COUNTRY MEDICAL VEHICLE

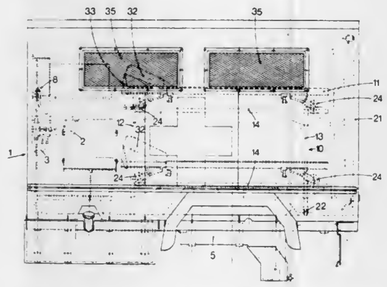
Paul E. R. Legueu, Pornichet, France, assignor to A.C.M.A.T. Ateliers de Constructions Mecaniques de l'Atlantique, Saint Nazaire, France

Filed Sep. 25, 1978, Ser. No. 945,333

Claims priority, application France, Jan. 11, 1978, 78 00639

Int. Cl.² A61G *3/00*

U.S. Cl. 296—19 **3 Claims**



1. An air-transportable highly autonomous cross-country medical vehicle adapted to travel in particular in desert regions, comprising chassis means, a drive unit and a closed body both carried by the chassis means, the body having a longitudinal axis, equipment for medical intervention and caring for victims of accidents or injured persons contained inside said body, said body comprising a front end wall, a rear end wall having two outwardly operable door members, lateral longitudinal extending walls, and a floor carrying sector-shaped tracks thereon; a stand mounted on said body to be movable between a transport position in which the stand is substantially parallel to said longitudinal axis and a loading position in which the stand makes an angle with said longitudinal axis, said stand comprising a frame including uprights, longitudinal members and cross-members assembled together, at least two superimposed stretchers removably mounted on said stand, two support means on the frame respectively receiving the stretchers, and sliding means associated with a lower part of the stand to facilitate said movement of the stand comprising rear uprights of said uprights of the frame relative to the forward direction of travel of the vehicle having in combination therewith rolling means rollable along said tracks when moving the stand between the transport and loading positions thereof.

4,210,356

CLAMP FOR FASTENING TRIM ABOUT A WINDSHIELD

Dietrich Junemann, Loerrach, and Hans Henning, Weil-Haltingen, both of Fed. Rep. of Germany, assignors to A Raymond, Loerrach, Fed. Rep. of Germany

Filed Feb. 22, 1978, Ser. No. 880,167

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2710592

Int. Cl.² B60J *1/00, 9/00*

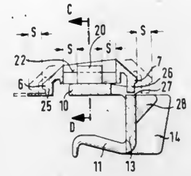
U.S. Cl. 296—84 A **12 Claims**

1. A clamp for fastening an elongated strip of trim about the margin of a windshield mounted in a seating frame comprising;

a clamping component for securing the clamp in place about the windshield,

a holding component including a pair of elastic holding strips extending lengthwise in a direction generally parallel to the margin of the windshield for holding the strip of trim, and

means carried by said clamping component and engageable with said holding component to secure said holding component to said clamping component for slidable movement of said holding component relative to said clamping component in a direction generally transverse to the longitudinal extent of said holding strips to compensate for dimensional deviations between the seating frame and the windshield.



4,210,357

VEHICLE HAVING SIDE-REAR SURVEILLANCE RADAR WITH ANTENNA REFLECTOR ASSEMBLED WITH REARVIEW MIRROR

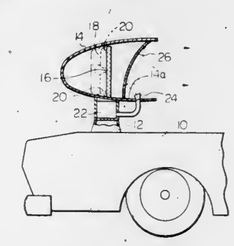
Masahiro Adachi, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Sep. 15, 1978, Ser. No. 942,791

Claims priority, application Japan, Sep. 16, 1977, 52-110538

Int. Cl.² B62D *39/00*

U.S. Cl. 296—84 B **11 Claims**



1. A vehicle comprising:

a body;

a rearview mirror unit including a mirror frame mounted on the outside of said body in a front and side portion thereof and a rearview mirror received in said mirror frame; and

a radar system for surveillance of a side and rear area, said radar system comprising a microwave transmitter unit, a feeder horn connected to said transmitter unit to radiate microwave generated by said transmitter unit and an antenna reflector to reflect rearwards the microwave radiated from said feeder horn, said reflector having a light-transmissible structure and being received in said mirror frame so as to be spaced rearwards from said rearview mirror, said mirror frame and said reflector being arranged such that said reflector protrudes, at least partly, sidewise from the outline of said body.

4,210,358

CLOSURE PANEL ACTUATOR

Philip J. Sweet; Buck C. Hamlet, and David L. Sweet, all of Fresno, Calif., assignors to American Carrier Equipment, Inc., Fresno, Calif.

Filed Oct. 16, 1978, Ser. No. 951,623

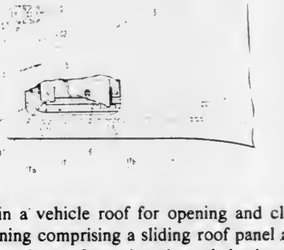
Int. Cl.² B60P *7/02*

U.S. Cl. 296—100 **8 Claims**

1. In combination with a closure panel adjacently related to an opening and supported for pivotal displacement between open and closed dispositions relative to said opening and about a first pivotal axis arranged in juxtaposition with the opening, the improvement comprising:

A. means for pivotally displacing said panel including a boss projected from the panel and supported thereby in parallelism with the first axis, and

means for displacing said boss along an arcuate path whereby said panel is pivotally displaced about said first axis between its open and closed dispositions including an arm supported for pivotal displacement about a second pivotal axis paralleling said first pivotal axis and along a path intercepted by said boss for displacing said boss along



said arcuate path and having a bearing surface extended along opposite side edge surfaces thereof for supporting the boss in sliding contact, whereby a sliding advancement of the boss along the arm is accommodated as said panel is pivotally displaced between its open and closed dispositions in response to displacement of the boss along said arcuate path as pivotal displacement is imparted to the arm; and

B. means for imparting to said arm pivotal displacement.

4,210,359

SLIDING ROOF APPARATUS FOR VEHICLES

Keiji Mori, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 28, 1978, Ser. No. 900,859

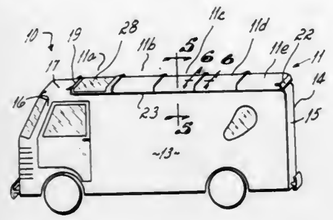
Claims priority, application Japan, Apr. 30, 1977, 52-50607

Int. Cl.² B60J *7/10*

U.S. Cl. 296—222 **7 Claims**

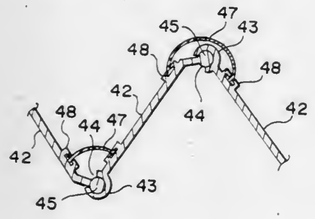
1. Apparatus in a vehicle roof for opening and closing a vehicle roof opening comprising a sliding roof panel adapted to close and open the roof opening through horizontal and vertical movement of the panel, means mounted on the vehicle roof for guiding the sliding panel, forward and rearward means provided respectively on the forward and rearward end portions of the sliding panel for engaging the guiding means, means operably connected to the guide-engaging means for driving the sliding panel to close and open the roof opening, and a link for pivotally mounting said rearward means on said slidable panel, the link having an end tooth portion engaging the guide means when the sliding panel is open for preventing vibration of the panel.

4,210,360
RECREATIONAL VEHICLE
Thomas E. Powers, 6325 Ridge Ave., Cincinnati, Ohio 45213
Filed Jun. 28, 1978, Ser. No. 919,753
Int. Cl.² B60J *7/10*
U.S. Cl. 296—216 **6 Claims**



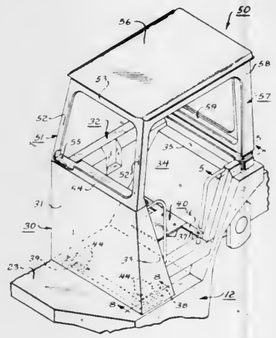
6. A recreational van vehicle body comprising,
a cab section including a windshield,
a body base having a floor, side walls extending from the floor to a level above the level of the windshield and a flange extending inwardly from the top of each of said side walls,
a first removable body top having low profile side walls, a ceiling extending between said side walls, and a lateral edge extending outwardly from each of said side walls,
a second removable body top having profile side walls, a ceiling wall extending between the top edge of said side walls, and said side walls including a flange extending outwardly from the bottom edge thereof, said side walls of said second removable body top being at least twice the height of said side walls of said first removable body top,
sealing means located between said body base side wall flange and said body top side walls,
locking means for interchangeably sealingly securing one of said first or second body tops to said body base, and,
each of said removable body tops comprising a plurality of unitary molded sections having joints molded therein along the leading and trailing edges thereof for interconnecting the sections one to the other and to the van body.

4,210,361
SLIDING COVER ASSEMBLY FOR OPEN BODY TRUCKS
Herbert Z. Marvin, 9860 SW. 102nd St.; Edmond L. Lohman, 9644 SW. 99th St., both of Miami, Fla. 33176, and Robert C. Lohman, 3570 SW. 123rd Ct., Miami, Fla. 33175
Filed Feb. 28, 1979, Ser. No. 16,838
Int. Cl.² B60J *7/10*
U.S. Cl. 296—210 **1 Claim**



1. A sliding cover assembly for open body trucks having side portions comprising a pair of guide means mounted on said side portions of said open body, a plurality of elongated panels extending across said open body having edge portions slidably mounted in said guide means, each of said elongated panels having a substantially arcuate portion mounted along one edge portion and a cylindrical portion mounted along the other edge portion, said cylindrical portion of each of said panels rotatably received in said arcuate portion of an adjacent panel, said panels being bent at an obtuse angle in proximity of said other edge portion to permit said panels to be positioned in substantially parallel relation when slid to the forward end of said body of said truck, spring actuated return means mounted at a forward end of said open body and connected to the forward edge portion of said pliable cover means, latch means mounted at the rearward edge portion of said pliable cover means for securing said cover means to said truck body in an extended position for converting said open body to a closed body, and clip means mounted on said panels along each side of said pivot means, pliable sheet members extending over said pivot means and having edge portions engaged by said clip means for preventing the seepage of water therethrough.

4,210,362
OPERATOR'S COMPARTMENT AND SEAT MOUNTING
Richard F. Boersma, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.
Filed Sep. 28, 1978, Ser. No. 946,516
Int. Cl.² B62D *27/04*
U.S. Cl. 296—190 **9 Claims**



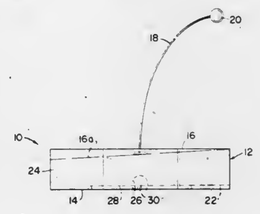
1. A mount for supporting an operator's compartment on a vehicle frame comprising
an operator's compartment supported on the vehicle frame,
securement means to fasten the operator's compartment to the vehicle frame at a plurality of support points, and
said securement means including isolation means operatively positioned adjacent said support points to isolate operator's compartment from noise and vibration induced on the vehicle frame during operation of the vehicle,
said isolation means includes a plurality of vibration absorption pads respectively situated between the operator's compartment and the vehicle frame at said plurality of support points,
said securement means further includes a plurality of fastening members adapted to support the pads in coupling relationship to the operator's compartment and the vehicle frame,
said operator's compartment and vehicle frame each including retention means receiving said fastening members to fasten the operator's compartment to the vehicle frame,
said retention means of the vehicle frame includes a forward pair of mounting brackets,
said mounting brackets having at least two openings for receiving a respective fastening member in coupling relationship, and
said at least two openings of one of said mounting brackets being aligned along an axis lying substantially perpendicular to an axis passing through said at least two openings of said other mounting bracket.

4,210,363
PORTABLE CONTAINER SEAT
Larry R. Taipalus, 29037 Barton, Garden City, Mich. 48135
Filed Jan. 10, 1979, Ser. No. 2,324
Int. Cl.² A47C *9/10*
U.S. Cl. 297—192 **10 Claims**



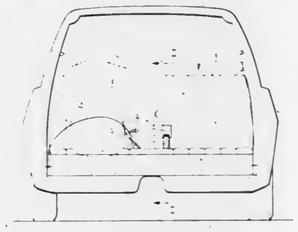
1. A portable container seat, comprising
an elongated stiff vertically-disposed hollow cylindrical container body having upper and lower end portions with openings therein,
a circular upper end closure structure secured to said upper end portion of said body in closing relationship to said upper end opening,
said upper end closure structure including a circular seat cushion thereon and extending across said upper end opening,
a circular lower-end closure structure disposed adjacent but in spaced relationship to said lower end portion in openable closing relationship to said lower end opening,
said lower end closure structure including an open-centered marginal member and a separate central member and means releasably securing said central portion to said marginal portion,
and means for securing said lower end closure structure to said lower end portion of said body.

4,210,364
PORTABLE FOOT REST
Calvin T. Kinsman, 1401 Bamboo La., New Port Richey, Fla.
Filed Jan. 19, 1979, Ser. No. 4,766
Int. Cl.² A47C *9/12, 4/52*
U.S. Cl. 297—439 **8 Claims**



1. A portable foot rest to support the operator's feet above the floor of like surface so that the pressure from the weight of the legs is not exerted on the underside of the lower portion of the legs, said portable foot rest comprising a support member comprising a base surface and a support surface disposed in spaced relationship relative to each other, for supporting the feet above the floor or like surface in combination with the carrying means for transporting said portable foot stool from place to place said carrying means comprises a handle means having a substantially spherical configuration coupled to said support member by a substantially flexible cord, a storage means formed in said support means to receive said carrying means when said portable foot rest is not in use, said storage means is formed in said base surface said storage means comprising a first portion extending inwardly from the periphery of said support member in communication with a seat such that said first portion and said seat form a recess in the surface of said base to receive said flexible cord and said handle means when said portable foot rest is stored.

4,210,365
FASTENING ARRANGEMENT OF SAFETY BELT LOCKS AT MOTOR VEHICLE SEATS
Werner Breitschwerdt, Stuttgart; Walter Jahn; Herbert Rapp, both of Sindelfingen, and Wilhelm Klein, Aidlingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 20, 1978, Ser. No. 898,185
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1977, 2718140
Int. Cl.² A62B *35/00;* **A47C** *31/00*
U.S. Cl. 297—481 **8 Claims**



1. A safety belt arrangement for vehicle passenger seats of the type having a seat cushion and a backrest, said arrangement comprising:
first and second safety belt means,
a safety belt lock on said first safety belt means for locking said first and second safety belt means together to hold a passenger in the seat,
and elastic holding means for automatically holding said first safety belt means and said safety belt lock against a front side of said backrest in a storage position whenever said safety belt means are unlocked, said elastic holding means being disposed to act on said first safety belt means in a direction other than the extension direction of said first safety belt means so that said storage position is an accessible unretracted position of said first belt means;
and wherein said elastic holding means is continuously connected directly to said safety belt lock.

4,210,366
METHOD OF DETONATING EXPLOSIVES FOR FRAGMENTING OIL SHALE FORMATION TOWARD A VERTICAL FREE FACE
Ned M. Hutchins, Grand Junction, Colo., and Richard D. Ridley, Bakersfield, Calif., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.
Filed Nov. 13, 1978, Ser. No. 959,893
Int. Cl.² E21B *43/24;* **E21C** *41/10*
U.S. Cl. 299—2 **34 Claims**

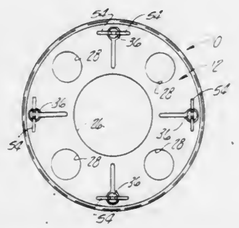
8. In a method for explosively expanding oil shale formation toward a limited void volume provided by a void excavated in a retort site in formation containing oil shale, wherein said void has at least one vertical free face, the improvement comprising the steps of:
placing explosive in a row of blasting holes in a remaining portion of unfragmented formation within the retort site adjacent such a vertical free face, said blasting holes being mutually spaced apart along the length of the void; and

detonating explosive in the blasting holes in a single round in a time delay sequence progressing along the length of the row of blasting holes for explosively expanding formation



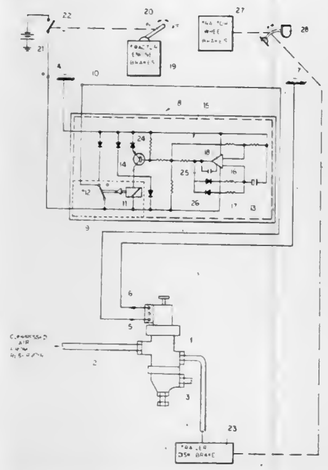
in said remaining portion of unfragmented formation toward such vertical free face for forming at least a portion of a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort.

4,210,367
WHEEL TRIM ASSEMBLY
Edward G. Spisak, 35700 Oakwood La., Westland, Mich. 48185
Filed Nov. 6, 1978, Ser. No. 958,010
Int. Cl.[2] B60B *7/00*
U.S. Cl. 301—37 R **9 Claims**



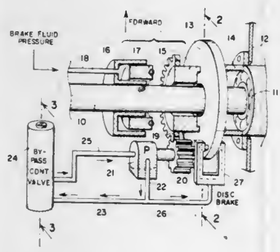
1. A wheel trim assembly for detachable attachment to the outer face of a vehicle wheel having a plurality of holes, the combination of; a mounting member forming a portion of a wheel trim member, a plurality of support elements extending axially and perpendicular to said mounting member, a plurality of resilient retainer elements detachably supported from each of said support elements, each of said retainer elements being generally U-shaped with a pair of legs joined to and spaced apart by a bight portion, said legs and bight portion being disposed parallel to the axis of said wheel with said bight portion engaging one end of the associated support element and said legs having free end portions engaging another end of the associated support element to maintain said retainer elements axially fixed relative to said mounting member, said pair of legs of each of said retainer elements having oppositely facing indentations to resiliently engage diametrically oppposed edges of said holes to releasably maintain said mounting member in position relative to said wheel.

4,210,368
TRACTOR-TRAILER AIR-BRAKE SYSTEM
Georg Sontheimer, Ulm, Fed. Rep. of Germany, assignor to BVT Beratungs-, Verwaltungs- und Treuhandgesellschaft mbH, Düsseldorf, Fed. Rep. of Germany
Filed Aug. 1, 1978, Ser. No. 929,955
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1977, 2735748
Int. Cl.[2] B60T *13/74*
U.S. Cl. 303—3 **7 Claims**



1. A tractor-trailer air-brake system comprising:
a tractor engine brake;
trailer air-powered disk wheel brakes;
actuator means for energizing said tractor engine brake and thereby braking the tractor of a tractor-trailer having said system;
means including an electrically operated valve operable between closed and open positions for pressurizing and energizing said trailer brakes on energization of said tractor brake to brake the trailer of said tractor; and
timer means connected to said valve and to said actuator means for automatically periodically operating said valve to periodically de-energize said trailer brakes even while said tractor brake is energized.

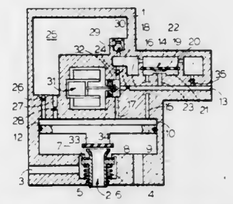
4,210,369
ANTI-LOCK POWER BRAKE
Charles R. Curnutt, 75922 Baseline, 29 Palms, Calif. 92277
Filed Dec. 11, 1978, Ser. No. 968,276
Int. Cl.[2] B60T *8/087*
U.S. Cl. 303—116 **4 Claims**



1. An anti-lock power brake for providing controlled braking of a vehicle wheel, including, in combination:

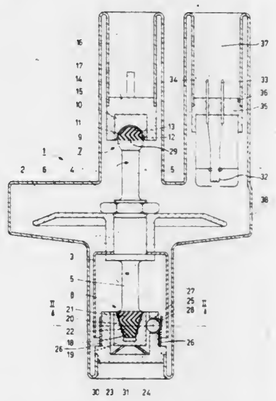
(a) a disc rotatable with said wheel;
(b) a freely rotatably mounted clutch member coaxial with said disc such that said clutch member rotates with said disc when axially urged into engagement therewith;
(c) means responsive to application of the brake pedal of said vehicle to urge said clutch member into engagement with said disc;
(d) a positive displacement fluid pump coupled to said clutch member so that rotation of said clutch member operates said pump to provide fluid pressure proportional to the speed of rotation of said clutch member;
(e) a bypass valve connected between the output and input lines of said pump so that fluid circulates through said bypass valve at said pressure said bypass valve having a variable sized orifice responsive to said fluid pressure of the fluid circulating therethrough so that an increase of pressure increases the size of the orifice to thereby reduce said pressure and a decrease in said pressure decreases the size of the orifice to thereby increase said pressure, said variable sized orifice further being responsive to inertia resulting from movement of the vehicle such that sudden deceleration of the vehicle results in a momentary increase in the size of the orifice; and
(f) friction means connected to the output line of said pump and responsive to said fluid pressure to apply friction on said disc proportional to said pressure whereby when the brake pedal is operating, said clutch member is rotated by said disc to exert hydraulic pressure by way of said pump to said friction means thereby slowing the rotation of said disc, the decreased rotation of said disc resulting in a lower pump speed to reduce said hydraulic pressure and thereby the friction applied to said disc by said friction means so that an automatically controlled braking action takes place.

4,210,370
ANTI-SKID VEHICLE BRAKING SYSTEMS
Ivan Mortimer, Solihull, England, assignor to Girling Limited, Birmingham, England
Filed Oct. 30, 1978, Ser. No. 955,536
Claims priority, application United Kingdom, Nov. 12, 1977, 47184/77
Int. Cl.[2] B60T *8/02*
U.S. Cl. 303—118 **9 Claims**



1. A fluid-pressure operated anti-skid system for vehicles comprising a wheel brake, a supply of operating fluid for actuating said wheel brake, fluid-flow control valve means through which operating fluid from said supply is supplied to said wheel brake, means responsive to a skid signal for operating said valve means to relieve pressure of said operating fluid at a skid point, means defining a memory chamber for storing a memory pressure dependent upon said pressure of said operating fluid at said skid point to provide a first changeover point between first and second stages of brake re-application, said first stage comprising the re-application of said operating fluid from said supply until an intermediate pressure less than the pressure at said skid point is attained at said first changeover point, and said second stage comprising the continued re-application of said supply of operating fluid at a reduced rate of pressure increase, means defining an application chamber for operating said fluid-flow control means, a supply of application pressure for said application chamber of which said pressure is reduced at said skid point by said means responsive to said skid signal, an inlet port from which said application pressure is supplied to said application chamber, a first one-way valve providing communication between said application chamber and said memory chamber, a first restrictor providing communication between said application chamber and said memory chamber in both directions, a latch valve disposed between said inlet port and said application chamber, a by-pass passage between said inlet port and said application chamber and by-passing said latch valve, a second restrictor in said by-pass passage, said latch valve being normally open but being adapted to be moved into a closed position in response to a decrease in pressure in said application chamber caused by said means responsive to said skid signal whereby said first and second successive stages of brake re-application depend upon said pressure in the application chamber being increased by said application pressure supplied only through said by-pass passage and said second restrictor until that pressure attains a value at a second changeover point, means for holding said latch valve in said closed position comprising a fluid pressure dependent upon pressure existing in said application chamber at said skid point, and means responsive to pressure in said application chamber at said second changeover point to cause said latch valve to open whereafter said application pressure at said inlet port can again be supplied to said application chamber through said latch valve to enable the pressure in said application chamber to be increased at an increased rate whereby brake re-application continues in a third stage continuous with said second but at a higher rate of pressure increase.

4,210,371
ROTARY-ANODE X-RAY TUBE
Jan Gerkema, and Everhardus A. Muijderman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 30, 1978, Ser. No. 965,111
Claims priority, application Netherlands, Dec. 9, 1977, 7713634
Int. Cl.[2] F16C *3/02, 17/10*
U.S. Cl. 308—9 **6 Claims**



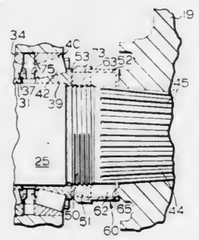
1. In an X-ray tube having a vacuum-tight housing, a rotary anode and at least one bearing having a first bearing surface on said rotary anode and a second bearing surface cooperating with said first surface to rotatably support said rotary anode in said housing, wherein the improvement comprises a lubricant for lubricating said bearing comprising Ga or a Ga alloy and having a sufficiently low melting point so that said lubricant is in a liquid state at the operating temperature of said bearing wherein said first and second bearing surfaces rotate with respect to each other with a gap therebetween which is filled

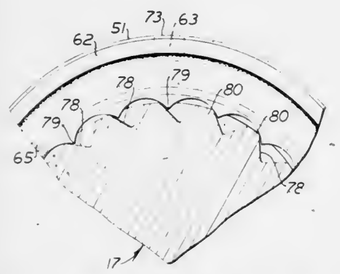
by the liquid Ga or Ga alloy so that there is no contact between said bearing surfaces even under loaded conditions, at least said cooperating bearing surfaces of said bearing being made from a material substantially resistant to attack by said Ga or Ga alloy and said Ga or Ga alloy being in molecular wetting contact with said bearing surfaces so that said lubricant in said liquid state is contained substantially within said bearing during operation of said tube thereby avoiding contamination of the tube with the lubricant.

4,210,372
RETAINER FOR BEARING LOCK NUT

Mary Ann C. McGee, Chillicothe, and William A. Bahnfleth, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 767,856, Feb. 11, 1977, abandoned. This application Jun. 19, 1978, Ser. No. 916,975
Int. Cl.² F16C *33/30*; F16B *39/00*
U.S. Cl. 308—189 R **18 Claims**





1. A mounting assembly for a shaft including a bearing assembly positioned circumferentially about the shaft for rotatably supporting the shaft within a housing, the shaft having a circumferential thread and axially-extending splines disposed outward of the bearing assembly in one axial direction, a lock nut engaging the shaft thread and being positioned outward of the bearing assembly to bear against the bearing assembly to prevent axial movement thereof in said one axial direction along the shaft, and means for restraining rotation of the lock nut relative to the shaft, said restraining means comprising:

a retainer outward of the lock nut in said one axial direction having a bore through which the shaft extends and having projections extending axially in the opposite axial direction toward the lock nut, said bore having serrations defining teeth non-complementary to the shaft splines in a circumferential direction to cooperate with the shaft splines, said bore being oversized relative to the shaft and said serration teeth being undersized relative to the circumferential width of the grooves between the shaft splines to provide an interference with the splines and hold said retainer against rotation relative to the shaft;

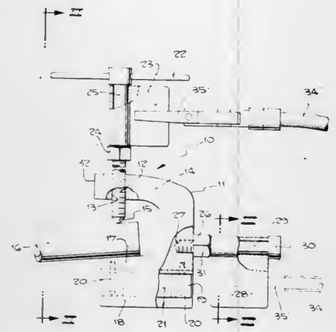
means associated with the lock nut for engaging said projections to fix the lock nut against rotation relative to said retainer; and

means outward of the lock nut and said retainer in said one axial direction fixed to the shaft against axial movement for bearing against said retainer to prevent said retainer from axial disengagement with the lock nut, whereby the lock nut is fixed against rotation relative to the shaft so that the lock nut and the bearing assembly remain in preselected axial position.

4,210,373
GROUND CLAMP FOR WELDING APPARATUS

Norris E. McGee, 929 Day Ave., Bakersfield, Calif. 93308

Filed May 21, 1979, Ser. No. 40,754
Int. Cl.² H01R *11/26*
U.S. Cl. 339—8 R **10 Claims**



1. A rotatable welding ground clamp comprising:

a main body portion forming upper and lower jaws of a clamp for securing a workpiece therebetween;

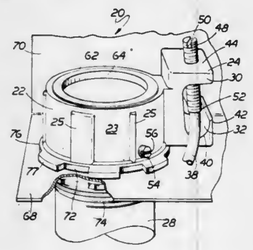
a rotatable bolt threadably mounted in one of said jaws having a handle at one end for rotating said bolt and a point at the other end extending between said upper and lower jaws for engaging a workpiece to thereby retain said workpiece between said point and the other of said jaws; and

a vane freely rotatably mounted on said bolt between said handle and said one of said jaws on the outside of said body portion, said vane and said bolt being of electrically conductive material.

4,210,374
SET-SCREW BUSHING INCLUDING INTEGRAL ELECTRICAL CLAMP

Daniel Churla, Old Forge, Pa., assignor to Atlas Technologies Inc., Scranton, Pa.

Filed Mar. 3, 1978, Ser. No. 882,848
Int. Cl.² H01R *3/06*
U.S. Cl. 339—14 L **12 Claims**



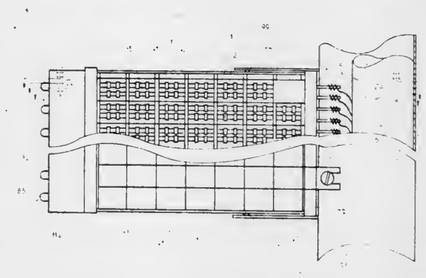
1. In a set-screw bushing comprising an annual bushing body having an unthreaded inner surface for securement in a slip fit over a pipe having a threaded end, and integral, inseparable electrical conductor clamping means extending away from said

bushing body, adjustable pipe tightening means spaced from said clamping means, said pipe tightening means extending through said bushing body to bear inwardly against said pipe to hold said bushing body in fixed position about said pipe, tab means, integral with said bushing body, said tab means extending inwardly from said bushing body to contact said pipe, whereby said tightening means may be advanced inwardly against said pipe so as to force said pipe against said tab means to achieve a firm union of said bushing body and said pipe.

4,210,375
CONNECTING UNIT FOR DISPATCHERS SYSTEMS

Yves Saligny, Cluses, France, assignor to Etablissements Carpano & Pons, France

Filed Oct. 27, 1978, Ser. No. 955,226
Claims priority, application France, Oct. 28, 1977, 77 33668; Oct. 5, 1978, 78 288141
Int. Cl.² H01R *3/06*
U.S. Cl. 339—14 L **29 Claims**



1. A connecting unit for dispatchers systems comprising junction means for a plurality of line wires, said means comprising a plurality of stacked insulating supports of generally rectangular shape with first and second sides opposite one another and third and fourth sides opposite one another and disposed at right angles to said first and second sides, first and second pre-shaped conducting elements forming inserts in said stacked insulating supports, first ends of said first pre-shaped conducting elements comprising input terminals at the first side of said stacked insulating supports for connection with said line wires, first ends of said second pre-shaped conducting elements comprising output terminals at the second side of said stacked insulating supports, and the second ends of said first and second pre-shaped conducting elements terminating at the third side of said stacked insulating supports in position to cooperate with a plug-in module, and at least one plug-in module cooperating with said second ends of said pre-shaped conducting element.

4,210,376
ELECTRICAL CONNECTOR RECEPTACLE

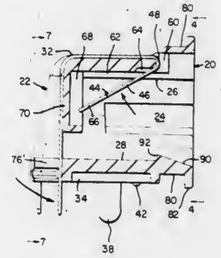
Donald W. K. Hughes, Mechanicsburg, and Ronald W. Myers, Landisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 967,441, Dec. 12, 1978. This application Feb. 23, 1979, Ser. No. 14,442
Int. Cl.² H05K *1/12*; H01R *23/10, 23/56*
U.S. Cl. 339—17 LC **10 Claims**

1. An electrical connector receptacle of the type comprising an insulating housing having a plug-receiving end and a rearward end, a plug-receiving opening extending into said plug-receiving end, said opening having opposed internal sidewalls and opposed internal endwalls, said housing having oppositely directed external sidewalls and oppositely directed external endwalls, a plurality of electrical conductors in side-by-side spaced-apart relationship, each of said conductors comprising a contact spring extending from one of said internal sidewalls at a location adjacent to said plug-receiving end diagonally into said opening and towards the opposite internal sidewall, and each conductor having a lead portion extending from said plug-receiving end through said housing between said one internal sidewall and the adjacent external sidewall and towards said rearward end, said plug-receiving opening being dimensioned to receive a connector plug having spaced-apart contact members therein which engage said contact spring portions of said conductors, said connector receptacle being characterized in that:

said plug-receiving end has a circumferentially continuous frame portion which surrounds plug-receiving opening,

conductor-receiving aperture means extending through said adjacent sidewall to said one internal sidewall, said conductor-receiving aperture means being spaced from said plug-receiving end and adjacent to said frame portion, said conductor-receiving aperture means communicating with said plug-receiving opening,



said conductors extending through said conductor-receiving aperture means, said contact springs extending into said plug-receiving opening from said conductor-receiving aperture means,

a plurality of side-by-side channels in said adjacent external sidewall extending from said conductor-receiving aperture means to said rearward end, said lead portions of said conductors extending across said adjacent external sidewall and being in said channels, said conductors extending from said adjacent external sidewall across said rearward end and having end portions which extend beyond the other one of said external sidewalls,

every other one of said conductors extending substantially normally from said adjacent external sidewall across said rearward end, the remaining conductors extending obliquely away from said adjacent external sidewall and across said rearward end whereby said end portions of said conductors are offset from each other.

4,210,377
ELECTRICAL PLUG PULL

Edward C. La Voque, 342 NE. 2nd Ct., Dania, Fla. 33004

Filed Jan. 5, 1979, Ser. No. 1,298
Int. Cl.² H01R *13/62*
U.S. Cl. 339—45 R **6 Claims**

1. A plug pull for removing a pronged electrical plug from an electrical socket, said plug pull having:

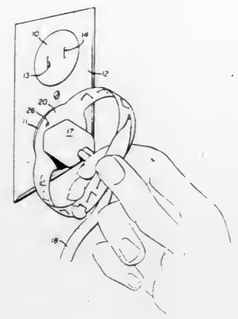
a thin insulating segment for engagement between the front of the socket and the body of the plug, said segment having openings therein which are shaped and dimensioned to pass the prongs on the plug for reception in the socket;

handle means connected to said segment and projecting therefrom outwardly past the plug to be grasped by the user for pulling the plug out of the socket;

said handle means comprising opposite, elongated, flexible legs extending from opposite sides of said thin segment for overlapping engagement with each other outwardly of the plug to form a loop handle to be grasped by the user;

at least one of said legs having an opening therein which is

elongated lengthwise of the leg, and the other of said legs having an outer end segment which is insertable through



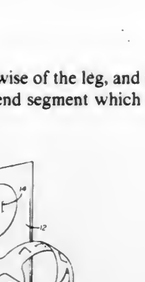
said opening and is turnable therein to a position in interlocking engagement with said one leg at said opening.

4,210,378

ELECTRICAL WIRE CONNECTION

Gary A. Baribeau, Troy Township, Saint Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 23, 1979, Ser. No. 32,385
Int. Cl.[2] H01R *9/08*
U.S. Cl. 339—97 R **7 Claims**



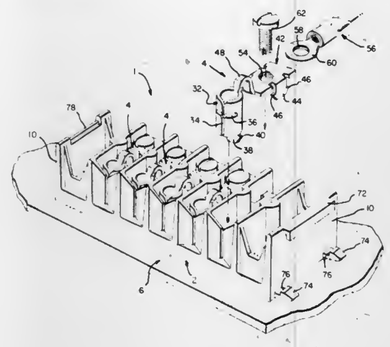
1. An electrical wire connection comprising:
an insulating connector body having a receptacle for a connector element,
an electrically conductive connector element within said receptacle, said element having an open-ended hollow cylindrical wire connecting end formed with a pair of identical opposed V-shaped wire entrance areas extending from the open end of said wire connecting end and leading into identical straight sided wire connecting slots running parallel to the axis of said wire connecting end,
an insulated electrical wire inserted into said wire connecting slots, said wire being inserted deeper into one slot than the other, having its insulation cut and the conductor thereof more deeply indented by the edges of said slot into which it is more deeply inserted and terminating a short distance outside of said connector element on the side thereof where it is more deeply inserted into said slot.

4,210,379

MODULAR BARRIER BLOCK

Vasantrai A. Vachhani, Kernersville; Melvin A. Soderstrom, Advance, and Richard L. Hughes, Clemmens, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 15, 1979, Ser. No. 20,774
Int. Cl.[2] H01R *13/56*
U.S. Cl. 339—101 **5 Claims**



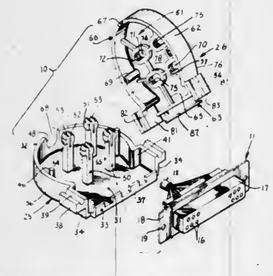
1. A barrier block for commoning electrical wires or for providing a junction point for incoming and outgoing wires, comprising:
a housing having individual partition walls with adjacent pairs of said walls being interconnected by an integral web,
an electrical terminal mounted on a respective web having a vertical hollow cylindrical barrel provided with a longitudinal slot divided into one or more pairs of opposed wire engaging and gripping jaws,
each said terminal having a second wire receiving contact connected to said barrel by an integral loop serving as a sloped wire stop at the entry of said barrel, and
strain relief flanges integral with said partition walls and having sides projecting diagonally toward each other to define a vertical wire receiving slot in alignment with said barrel slot.

4,210,380

CABLE CONNECTOR HOUSING HAVING STRAIN RELIEF SYSTEM

Melvin W. Brzostek, Bel Air, Md., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 959,040
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—107 **5 Claims**



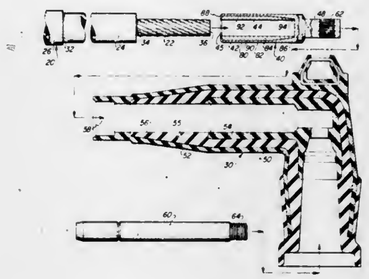
1. A housing which provides strain relief for a cable within a range of cross-sectional sizes which is assembled to a connector that is mounted to the housing, said housing comprising:
a first portion having a cable entrance end and a connector-input end and which includes a base having a plurality of posts each having a slotted free end and projecting therefrom in a predetermined pattern between said cable entrance end and said input end, said pattern providing a plurality of cable paths which extend from said entrance end to said input end with a predetermined path for each cross-sectional size cable within a range of sizes which causes engagement of the cable with one or more of said posts to provide suitable strain relief for the cable during use; and
a second portion being mateable with the first portion to provide a mounting for the connector adjacent the input end and to provide an enclosure for a cable which extends from the connector along its predetermined path about the posts to the cable entrance end, said second portion including a cover having a plurality of apertures therethrough which are adapted to receive the posts when said portions are mated together, said apertures in the cover being stepped with a ledge formed between a smaller portion and a larger portion, said larger portion of each aperture opening to an external surface of the cover, said posts being such that when the portions are mated together, the slotted free end of each post is moved into an associated aligned aperture, is compressed, and as the slotted end of each post is moved into the larger portion of each aperture, it expands and snap-locks above the ledge to secure the portions together.

4,210,381

ELECTRICAL CONNECTOR CONTACTS

Alan D. Borgstrom, Hackettstown, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Aug. 30, 1978, Ser. No. 938,074
Int. Cl.[2] H01R *3/02*
U.S. Cl. 339—115 C **30 Claims**



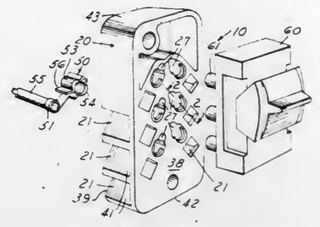
1. An electrical connector contact element capable of being connected to a cable conductor constructed of a material having given thermal expansion characteristics throughout a range of operating temperatures, the contact element comprising:
a first portion constructed of a material having thermal expansion characteristics similar to those of the cable conductor, the first portion having a prescribed length and including means for connecting the conductor to the first portion;
a second portion constructed of a material having thermal expansion characteristics different from those of the cable conductor, the second portion including means for connecting the second portion to a further conductive member; and
means in the second portion surrounding and capturing the first portion within the second portion essentially along the entire length of the first portion such that the first and second portions are in intimate electrical connection and remain in such intimate electrical connection throughout the range of operating temperatures.

4,210,382

ELECTRICAL CONNECTOR AND HOUSING

Thomas L. Culbertson, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 23, 1979, Ser. No. 41,587
Int. Cl.[2] H01R *9/16*
U.S. Cl. 339—192 R **5 Claims**



1. An electrical assembly engageable with a contact pin comprising:
an insulating one-piece housing having a top surface, a bottom surface and opposing side surfaces extending between said top and bottom surfaces, at least one passageway extending therein through a side surface and terminating at an end wall, said passageway being bounded by a stop wall, a bottom wall and opposed sidewalls, a top aperture in said top wall intersecting sid passageway for admitting the contact pin laterally into said passageway, a transverse ramp extending partly between said top and bottom walls having a ledge facing said end wall and an inclined surface facing away from said end wall, and said transverse ramp including a recess extending longitudinally in said passageway across said transverse ramp;
a generally U-shaped electrical contact terminal for being longitudinally positioned within said passageway including a generally cylindrical socket portion having a pin receiving axis disposed laterally in said passageway in alignment with said top aperture, a forward end of said terminal being engageable with said end wall to stop forward movement in said passageway, a ferrule portion for securing a wire lead electrically connected to said terminal, a first leg of said U-shaped terminal extending forward from said ferrule portion to said forward end generally forming a first side of said socket portion, a second resilient leg of said U-shaped terminal, integrally extending rearward from the forward end of said first leg generally forming a second side of said socket portion, and terminating adjacent said ledge to retain said terminal in said passageway, and
said first and second legs having a flanged portion at said socket portion for guiding movement of the contact pin into said socket portion, said ramp extending generally parallel to said pin receiving axis of said socket portion and said recess being aligned to pass said flanged portion thus easing entry of said terminal into said passageway and preventing such excessive deflection and deformation which would occur if said flanged portion had to pass over said ramp.

4,210,383

CIRCUIT TEST CLAMP

David E. Davis, 1739 Grand Teton Dr., Milpitas, Calif. 95035

Filed Mar. 7, 1979, Ser. No. 18,467
Int. Cl.[2] H01R *11/22*
U.S. Cl. 339—200 P **4 Claims**

1. An improved test clamp having a pair of oppositely disposed support members pivotally connected to one another, each said support member having a front and rear end, each said support member having a plurality of conducting elements extending longitudinally from a front to rear end of said support members, jaw-like clamping means disposed adjacent the front ends of said support members, and a resilient means

coacting with said support members for resiliently urging said jaw-like clamping means towards one another, wherein the improvement comprises:

an eyelet disposed at the rear end of each said conducting element,



an outwardly projecting extension from each said eyelet,

a recess extending transversely across each said support member exposing each said conducting element.

4,210,384

INVERTED-DESIGN OPTICAL MICROSCOPE

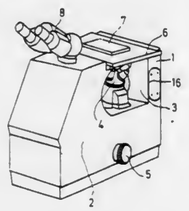
Manfred Meyer, Heidenheim; Willi Keydell, Oberkochen; Friederich K. Möllring, Aalen, and Klaus Weber, Koenigsbronn, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Continuation of Ser. No. 820,260, Jul. 29, 1977, abandoned. This application May 17, 1979, Ser. No. 40,080

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1976, 2640974

Int. Cl.[2] G02B *21/22*

U.S. Cl. 350—19 **12 Claims**



1. An inverted optical microscope, comprising a unitary closed housing of generally U-shape and characterized by a horizontal base portion and by two integrally related spaced upstanding legs and defining an interior space for optical elements and ray paths, optical elements contained within and carried by said housing, a rugged specimen table resting on spaced points on the upper ends of said legs and spanning the space between and interconnecting said legs, whereby said housing and thus-connected table exhibit the mechanically stable form of a right parallelepiped with a side-access opening in the space between said legs, lens-carrier means vertically adjustably carried by said housing within the space between said legs and beneath said specimen table, observation-tube means mounted on the top of one of said legs and providing ray connection with the optical elements within said housing as well as an unimpeded direct view of a specimen on said specimen table, said direct view being over said observation-tube means upon slight shifting of an observer's line of sight without substantial head movement, and light-source mounting means on the other of said legs for mounting a specimen-illuminating light source external to said housing.

4,210,385

OPTICAL PANORAMIC SURVEY-SYSTEMS

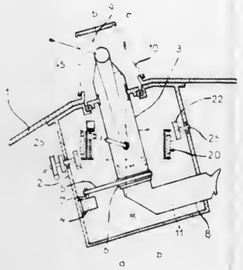
Jean-Jacques Baudot, Ville d'Avray, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Feb. 21, 1978, Ser. No. 879,362

Claims priority, application France, Feb. 23, 1977, 77 05215

Int. Cl.[2] G02B *23/02*

U.S. Cl. 350—16 **5 Claims**



1. A device for stabilizing the site of the sight line in an optical panoramic survey system carried by a vehicle, said system comprising a sighting tube rotatably mounted in the vehicle, driving means secured to the vehicle for rotating the tube about the optical axis thereof, and a reflector disposed at the top of the tube and rotatable about an axis normal to the optical axis, comprising a circular guideway, support means attached to the vehicle for supporting said guideway while holding vertical the axis thereof, a member guided along said guideway, a vertically adjustable member supported by said guided member, a link member with a variable length pivotally connected at one end to said adjustable member, a shaft secured to the other end of said link member, said shaft having an axis which intersects the axis of said guideway, means for imparting to said shaft a rotational movement identical with that of the tube, and means for transmitting the angular displacement from said shaft to said reflector with a 1:2 ratio.

4,210,386

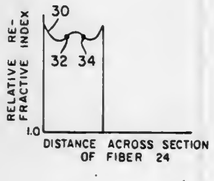
FLUORINE OUT-DIFFUSED OPTICAL DEVICE AND METHOD

Roger J. Araujo, Corning; Nicholas F. Borrelli, Elmira; John D. Crow, Mohegan Lake, and Thomas P. Seward, III, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 570,713, Apr. 23, 1975, Pat. No. 3,981,707. This application Jun. 1, 1976, Ser. No. 691,591

Int. Cl.[2] G02B *5/14*

U.S. Cl. 350—96.31 **1 Claim**



1. An optical waveguide comprising an elongated fluorine containing silicate glass fiber, the concentration of fluorine in said fiber gradually increasing from a first level at the optical axis of said fiber to a second level that is higher than said first level at some radius within said fiber so that the refractive index distribution throughout the length of said fiber, in a plane perpendicular to the fiber optical axis, progressively decreases from a first value at the optical axis of said fiber to a second value that is lower than said first value at some radius within said fiber, and wherein the concentration of fluorine in said fiber gradually decreases from said second level to a level lower than said second level at the outside surface of said fiber so that the refractive index distribution throughout the length of said fiber, in a plane perpendicular to the fiber optical axis, progressively increases from said second value of refractive index to a value of refractive index higher than said second value at the outer surface of said fiber.

4,210,387

FOCUS DEVICE FOR ZOOM LENS

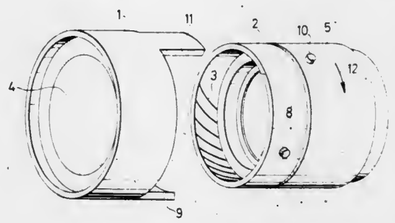
Ryota Ogawa, Kawagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1979, Ser. No. 27,638

Claims priority, application Japan, Apr. 21, 1978, 53/47474

Int. Cl.[2] G02B *7/04, 15/18*

U.S. Cl. 350—187 **5 Claims**



1. In a focussing device for a zoom lens including a lens mount barrel, a focussing member, a variator member, and a stopper defining a short distance photographing limit for said focussing member, the improvement comprising; means for moving said stopper in cooperation with said variator member, whereby in a particular range of a focal distance of the zoom lens said short distance photographing limit is advanced in the extreme short distance photographing direction to facilitate extreme close-up photographing with said zoom lens.

4,210,388

LARGE-APERTURE WIDE-ANGLE LENS SYSTEM FOR PHOTOGRAPHIC CAMERAS

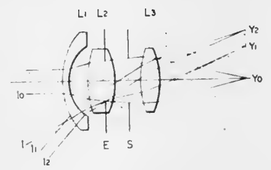
Yoshitsugi Ikeda, Hachiouji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Mar. 8, 1978, Ser. No. 884,544

Claims priority, application Japan, Mar. 14, 1977, 52/27700

Int. Cl.[2] G02B *9/64*

U.S. Cl. 350—214 **7 Claims**



1. A retrofocus type large-aperture wide-angle lens system for photographic cameras comprising a front diverging lens group, a middle converging lens group, a rear converging lens group, an aperture stop arranged between said middle converging lens group and said rear converging lens group and a flare stop which is arranged in the middle converging lens group before said aperture stop and in the vicinity of the intersecting point between the maximum aperture ray of the paraxial pencil among the rays passing through the lens system and the outermost ray of the offaxial pencil directing to the marginal portion of image and has an effective radius equal to the distance as measured from the optical axis to said intersecting point.

4,210,389

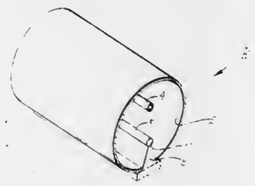
BOND AND METHOD OF MAKING THE SAME

Gordon H. Burkhart; Robert R. Rice, both of Florissant, and James R. Teague, St. Charles, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Nov. 14, 1978, Ser. No. 960,571

Int. Cl.[2] H01S *3/00*; G02B *5/12*; H01L *23/02*; B23K *1/00*

U.S. Cl. 350—321 **18 Claims**

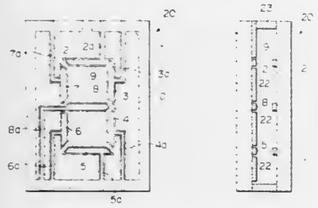




1. In combination with a crystalline or vitreous optical element that is subjected to significant optical power and a solid heat sink for conducting heat away from the optical element, an improved bond between the optical element and the heat sink for securing the optical element to the heat sink, said bond comprising: a reflective layer located directly against and adhered to the surface of the optical element, the reflective layer being highly reflective to radiation in the region of the spectrum at which the optical element operates; a solder layer between the reflective layer and the heat sink; and a barrier layer between the solder layer and reflective layer and being adhered to the reflective layer, the barrier layer being substantially impervious to the solder of the solder layer so that the solder does not penetrate it and scavenge the reflective layer.

12. A method of attaching a crystalline or vitreous optical element to a heat sink that is capable of conducting heat away from the optical element, said method comprising applying a reflective layer of metal to the crystalline or vitreous surface of the optical element, the reflective layer being highly reflective as to radiation in the region of the spectrum at which the optical element operates; applying a barrier layer to the reflective layer; placing a solder material between the barrier layer and the heat sink; and melting the solder layer to create a bond in the form of a solder layer between the barrier layer and the heat sink, the barrier layer being substantially impervious to the solder of the solder layer so that the reflective layer remains isolated from and unaffected by the solder.

4,210,390
ELECTROCHROMIC COMPOSITION AND ELECTROCHROMIC DISPLAY DEVICE USING SAME
Masachika Yaguchi, Yokohama, Japan, assignor to Dai Nippon Toryo Co., Ltd., Osaka, Japan
Filed Jun. 27, 1978, Ser. No. 919,607
Claims priority, application Japan, Jun. 28, 1977, 52-76114; May 22, 1978, 53-60721
Int. Cl.² G02F *1/17*; G09F *9/30*
U.S. Cl. 350—357 **32 Claims**



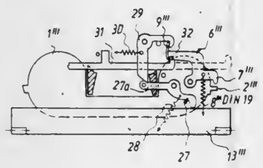
1. An electrochromic composition comprising a solvent, an electrochromic compound which is colored in a reduced state, the solubility to the solvent of which is not less than 10^{-2} mol/100 g-solvent in said reduced state and not less than 10^{-1} mol/100 g-solvent in an oxidized state, and an additive compound selected from the group consisting of (a) ammonia, (b) an amine where all substituents thereof are radicals selected from the group of aliphatic radicals, alicyclic radicals and aromatic radicals and (c) an alkali compound selected from the group consisting of hydroxides, carbonates, and phosphates, said electrochromic compound occurring in said reduced state and the solution of the reduced electrochromic compound being basic due to the presence of said additive compound.

4,210,391
MULTIFOCAL ZONE PLATE
Allen L. Cohen, 10108 Windsong Ter., Richmond, Va. 23233
Continuation-in-part of Ser. No. 833,368, Sep. 14, 1977, Pat. No. 4,162,122. This application Dec. 18, 1978, Ser. No. 970,751
Int. Cl.² G02B *3/08, 5/18*; G02C *7/04*
U.S. Cl. 351—161 **15 Claims**



1. A multiple focal power optical device comprising:
body means having a plurality of alternating odd and even, annular, concentric zones, bounded on the outside of radii r_n, with n=1,3,5, . . . , for the odd zones and n=2,4,6, . . . , for the even zones;
first focal power means within at least some of the odd zones for directing incident parallel light to a first focal point;
second focal power means within at least some of the even zones for directing incident parallel light to a second focal point different from said first focal point;
wherein the radii r_n of said odd and even zones are substantially proportional to square root of n.

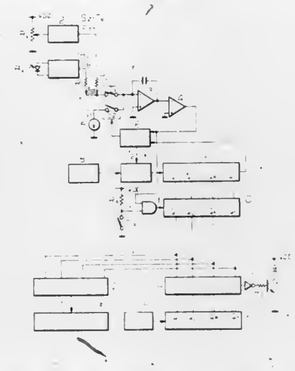
4,210,392
PHOTOGRAPHIC APPARATUS
Günter Fauth, Unterhaching, Fed. Rep. of Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 783,344, Mar. 31, 1977, abandoned. This application Dec. 13, 1978, Ser. No. 969,152
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614527
Int. Cl.² G03B *7/00*
U.S. Cl. 354—21 **7 Claims**



1. In a photographic apparatus for use with film containers having markers denoting a characteristic of the film therein, the combination of a housing including a first section having a chamber for film containers and a second section movable between operative and inoperative positions; mobile scanning means mounted in said housing and located in the path of movement of a marker during insertion of the respective container into said chamber so that said scanning means is moved by and bears against the marker in response to insertion of such container; and means for disengaging said scanning means from the marker in a container in said chamber and for maintaining said scanning means out of contact with the marker during exposure of film in the container which is confined in said chamber, including a first member movable relative to said second section between first and second positions, a displaceable second member mounted in said first section and located in the path of and being displaced by said second section during movement to said operative position, and a third member movable by said second member to an operative position in response to displacement of said second member by said second section, said scanning means being located in the path of movement of one of said members and being disengaged from the marker in said chamber, moved into engagement with and held by another of said members during movement of said first member from said first to said second position.

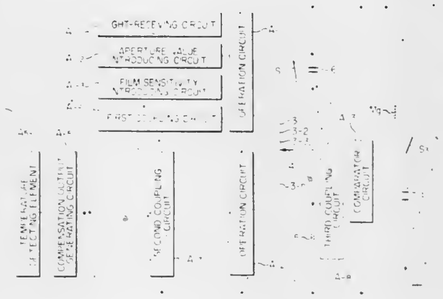
4,210,393
DEVICE FOR AUTOMATICALLY CONTROLLING DIAPHRAGM APERTURE
Yasuo Ishiguro; Kenji Wakazono, and Toshihisa Saito, all of Tokyo, Japan, assignors to Copal Company Limited, Tokyo, Japan
Filed Aug. 10, 1978, Ser. No. 932,476
Claims priority, application Japan, Aug. 15, 1977, 52/97014
Int. Cl.² G03B *7/08*
U.S. Cl. 354—23 D **5 Claims**

1. A device for automatically controlling a diaphragm aperture, comprising:
an exposure information pulse generation circuit for generating a pulse in a number corresponding to an aperture value to be controlled obtained based on exposure informations such as a scene brightness or the like,
a first counter circuit for counting the output of said exposure information pulse generation circuit,
an aperture value pulse generation circuit for generating pulses in a number corresponding to an aperture value of a diaphragm stopped down in association with a diaphragm drive,
diaphragm fixing means for fixing said diaphragm aperture, said diaphragm fixing means being actuated when an aperture value pulse number is coincident with an exposure information pulse number;
said aperture value pulse generating circuit including:
a light source,
a photoresponsive element, and



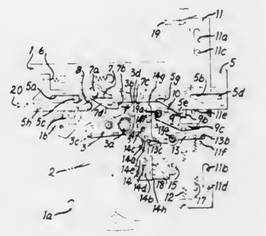
intermittent light transmitting means adapted for movement between said light source and said photoresponsive element in coupled relationship to the activation of said diaphragm.

4,210,394
SHUTTER TIME TEMPERATURE COMPENSATING DEVICE IN A CAMERA
Akihiko Sato, Tokyo, and Tetsuro Goto, Funabashi, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Sep. 14, 1978, Ser. No. 942,304
Claims priority, application Japan, Sep. 20, 1977, 52-112200
Int. Cl.² G03B *9/62*
U.S. Cl. 354—234 **18 Claims**



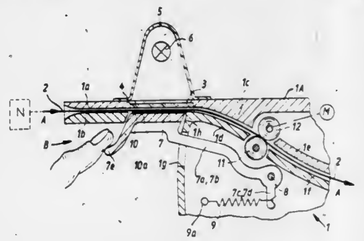
1. A device for compensating for the shutter time temperature characteristic of a camera shutter mechanism controlled by an electrical voltage, comprising means for detecting ambient temperature variations, and control means connected to the detecting means for generating a control voltage dependent upon the ambient temperature and the shutter time temperature characteristic of the shutter mechanism for controlling the shutter mechanism to substantially eliminate time variations in the shutter mechanism due to temperature.

4,210,395
ELECTRONIC PROGRAMMED SHUTTER
Kiyoshi Kitai, and Hiroaki Ishida, both of Chiba, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 17, 1978, Ser. No. 961,733
Claims priority, application Japan, Nov. 18, 1977, 52/154880
Int. Cl.² G03B *9/08*
U.S. Cl. 354—234 **2 Claims**



1. In an electronic programmed shutter of the type having a moveable sector which is also used as an aperture vane: a pivotably mounted sector opening and closing lever for effecting movement of said sector and being normally biased in the sector-closing direction, a driving member moveable in a linear direction by a release operation of the shutter, an electromagnetic device for controlling the closing time of the shutter by an electronic switching circuit, and a driving lever movably supported on said driving member and having a first part engageable with said sector opening and closing lever to pivot the same in the sector-opening direction to thereby effect opening movement of said sector to initiate an exposure in response to driving movement of said driving member and having a second part coacting with said electromagnetic device to effect disengagement of said driving lever from said sector opening and closing lever which thereafter pivots in the sector-closing direction due to the normal bias applied thereto to effect closing movement of said sector to thereby terminate the exposure.

4,210,396
ELECTROPHOTOGRAPHIC METHOD AND APPARATUS
Jüurgen Müller; Alfred Rheude, both of Munich, and Josef Pfeifer, Unterhaching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Mar. 16, 1978, Ser. No. 887,302
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713335
Int. Cl.² G03G *15/00*; G03B *27/02*
U.S. Cl. 355—12 **31 Claims**



22. Apparatus for imaging a sheet-like original having at least two types of image-forming zones of different light-absorptive properties onto a selected portion of a dielectric receptor sheet having at least one stratum consisting of a mate-

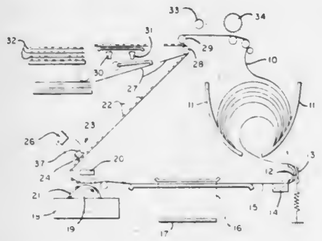
rial selected from the group consisting of polyvinyl chloride and polyethylene terephthalate, comprising a housing having a light-transmitting window for said selected portion of the receptor sheet; means for maintaining one side of the selected portion of the receptor sheet in said window in contact with the original; and a source of electromagnetic radiation operative to illuminate said window and the original with an intensity and for an interval of time which are sufficient for raising the temperature of those regions of said selected portions of said receptor sheet which are superimposed with one of the types of the image-forming zones above that of the regions of said selected portion which are superimposed with the other type of the image-forming zones and above the freezing temperature of the material of the stratum, to thereby provide said selected portion of the receptor sheet with a latent electrostatic image of the original.

4,210,397

COPYING MACHINE WITH ELECTROMAGNETIC SCAVENGER ASSEMBLY AND PROCESS

Paul J. Macaluso, Norwalk, and Lawrence E. Clifford, Danbury, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 13, 1978, Ser. No. 960,460
Int. Cl.² G03G *21/00*
U.S. Cl. 355—15 **11 Claims**



1. In an electrostatic copying apparatus comprising a continuous photoresponsive master, means for moving said master through a copying cycle comprising a charging station in which the photoresponsive surface of the master is provided with an electrostatic charge, an exposure station in which the charged surface is exposed to the light image of an imaged original sheet being copied, whereby the electrostatic charge is removed from said surface except in latent image areas exposed to the imaged areas of said original, a development station in which said latent image areas are developed by means of toner powder present in a two-component comosition comprising said toner powder and magnetic carrier particles, and an image-transfer station in which said developed images are transferred to a copy sheet and fused thereon, the improvement which comprises an electromagnet which is fixedly attached to said apparatus at a location beyond said development station and in advance of said transfer station and which is positioned across and closely-spaced from the path of the master, a non-magnetic shield fixedly secured to said apparatus and associated with said electromagnet and positioned between said electromagnet and the photoresponsive surface of said master, parallel to and uniformly closely-spaced from said photoresponsive surface; means for energizing said electromagnet during movement of the master through the copying cycle to create a sufficient magnetic field through said shield to attract any magnetic carrier particles which may be present on the surface of said photoresponsive master from said master to the adjacent collection surface of said shield, and means for de-energizing said electromanget after said copying cycle is completed to discontinue said magnetic field in the area of said shield to cause said magnetic particles to be released from the collection surface of the shield.

4,210,398

PHOTOGRAPHIC PRINTING APPARATUS

William H. Baskin, 4634 RIvercliff Dr., Lilburn, Ga. 30247

Filed Jun. 6, 1978, Ser. No. 913,047
Int. Cl.² G03B *27/44*
U.S. Cl. 355—54 **7 Claims**



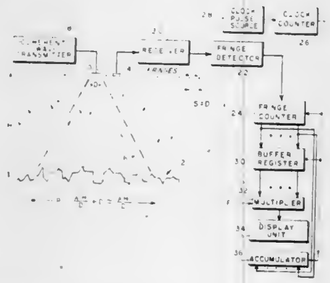
1. Photographic printing apparatus for printing a montage of images and comprising, in combination, a baseboard above which an enlarger may be positioned; a guide mounted atop said baseboard; an easel having an easel base upon which photographic printing paper may be supported, (and) a mask defining an aperture, and means for mounting said mask (mountable) upon said base in a plurality of orientations; and means for locating said easel at a plurality of positions along said guide atop said baseboard.

4,210,399

SYSTEM FOR RELATIVE MOTION DETECTION BETWEEN WAVE TRANSMITTER-RECEIVER AND IRREGULAR REFLECTING SURFACE

Atul Jain, 1545 E. Mendocino Dr., Altadena, Calif. 91001

Continuation-in-part of Ser. No. 758,637, Jan. 10, 1977, abandoned, which is a continuation of Ser. No. 601,791, Aug. 4, 1975, abandoned. This application Feb. 21, 1978, Ser. No. 879,046
Int. Cl.² G01P *3/36*
U.S. Cl. 356—28.5 **8 Claims**



1. In combination,
means for transmitting a beam of coherent waves of energy of known wavelength, λ, from a single source towards a reflecting surface through an aperture of known dimension, D, given by the relationship $P=(\lambda H/D)+D$, where P is the width of the beam on the reflecting surface and H is the distance from the reflecting surface to the aperture,
means for receiving coherent waves of energy from said beam reflected by scattering points on said surface at a known distance, H,
means for detecting the finest interference fringes between reflected waves of energy from said scattering points by

said receiving means, where said fringes have a spacing $S=\lambda H/P$, and
means for counting each interference fringe detected as a measure of the extent of relative motion between said surface and said receiving means, said measure being equal to the number of fringes detected times the fringe spacing S.

4,210,400

NON-SEGMENTED PHASE GRADIENT DETECTOR FOR COAT SYSTEM

Victor A. Misek, Hudson, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Sep. 7, 1978, Ser. No. 940,794
Int. Cl.² G01B *9/02*
U.S. Cl. 356—359 **2 Claims**



1. Apparatus for the detection of wavefront distortion in a transmitted coherent beam propagating through the atmosphere from a transmitting site to a remote location comprising:
means at said remote location for returning a part of the incident energy back to the transmitting site over the same path through the atmosphere as the transmitted beam;
means for optically heterodyning said returned energy with a coherent beam of the same optical frequency as that of said transmitted beam so as to produce an interference pattern; and
means for optically measuring the phase gradients of said returned energy in terms of the interference fringes of said interference pattern, wherein said measuring means further comprises
means for producing an interference pattern which includes means for producing two such patterns with one pattern phase shifted by 90° with respect to the other and wherein said optical measuring means includes two such devices, each for scanning a different interference pattern, and means for synchronizing the scans of said two devices.

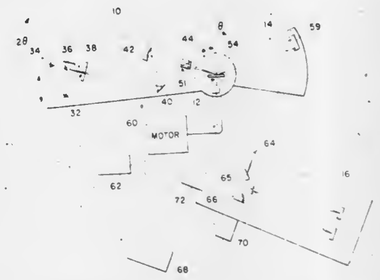
4,210,401

VISIBLE AND INFRARED POLARIZATION RATIO SPECTROREFLECTOMETER

Carmen E. Batten, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 28, 1978, Ser. No. 929,087
Int. Cl.² G01N *21/40*; G01J *4/00*
U.S. Cl. 356—369 **10 Claims**

1. An instrument for measuring the intensity of polarized light reflected from a surface, the combination comprising:
(a) a sample surface;
(b) a reference surface;
(c) multiple light sources;
(d) light selection and chopping means for selecting the light from one of said multiple light sources, chopping the light signal at a predetermined frequency, and focusing the light onto said sample surface;
(e) continuously rotating light polarizing means positioned between said sample surface and said light selection and chopping means and wherein said continuously rotating light polarizing means continuously changes the plane of polarization of the light from 0° to 360°;
(f) detection means for selectively sensing and analyzing light reflected from said sample surface and said reference surface;
(g) sample spinner means connected to said light selection and chopping means and positioned between said light selection and chopping means and said detection means for supporting said sample surface and said reference surface; and



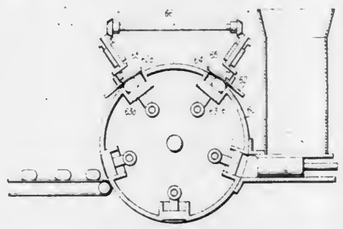
(h) aligning means for automatically aligning said light selection and chopping means, said sample spinner means, and said detection means while the angle of incidence is changed continuously or otherwise, so that the light from said light selection and chopping means upon striking said sample surface will reflect from said sample surface and impinge on said detection means.

4,210,402

APPARATUS FOR DIVIDING AND KNEADING A PIECE OF DOUGH

Herbert Schroder, and Reinhard Schroder, both of 8623 Staffelstein, Ofr., Angerstrasse 5, Nuremberg, Fed. Rep. of Germany

Division of Ser. No. 603,123, Aug. 8, 1975, Pat. No. 4,013,275. This application Dec. 8, 1976, Ser. No. 748,505
Int. Cl.² A21C *7/06*
U.S. Cl. 366—76 **2 Claims**



1. An apparatus for separating and kneading portions of dough including drum means rotatably mounted on a frame for rotating step-by-step in a constant direction of rotation; means connected to said drum means for performing the step-by-step rotation, said drum means including a plurality of circumferentially spaced measuring chambers; dough supply means adjacent the outer circumference of said drum means for periodic alignment with the respective measuring chambers; kneading means adjacent the periphery of said drum means in circumferentially spaced relation to the supply means for engaging and kneading dough in the measuring chambers; an exit portion adjacent the outer periphery of the drum means in circumferentially spaced relation to the supply means and the kneading means, to receive and remove kneaded dough from the drum means, said drum means having an inactive period, between two rotational steps, for said supply means to direct a portion of dough into a first of said measuring chambers, for the kneading means to engage and knead dough in another of said mea-

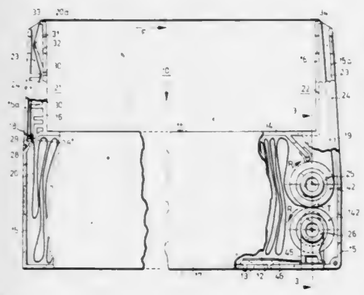
suring chambers, and for kneaded dough to be removed from still another measuring chamber at said exit portion; each of said measuring chambers including measuring-flask means, and control means for controlling adjustment of said measuring-flask means within said chambers during said step-by-step rotation of the drum means, wherein said drum means consists of five of said circumferentially spaced measuring chambers, said means for performing said step-by-step rotation consists of means for rotating the drum means through five equal steps to perform one complete 360° rotation of the drum means and the kneading means comprises a pair of kneading elements for kneading dough in two adjacent ones of said measuring chambers respectively.

4,210,403

INKING RIBBON CARTRIDGE HAVING FEED ROLLERS WITH DIFFERENT SURFACE HARDNESS

Joel Mazouet, Schweitzer-Belfort; Jean-Claude Michaux, Hericourt, and Jean Mahe, Champigny, all of France, assignors to Compagnie Internationale pour l'Informatique Cil-Honeywell Bull (Societe Anonyme), Paris, France

Filed Apr. 25, 1978, Ser. No. 899,723
Claims priority, application France, May 17, 1977, 77 15118
Int. Cl.[2] B41J *33/10*
U.S. Cl. 400—196.1 **7 Claims**



1. An inking ribbon cartridge for printers or the like, comprising:

a casing for housing an inking ribbon, said casing having a ribbon entrance opening and a ribbon exit opening;

a first projecting support member disposed at said exit opening and a second projecting support member disposed at said entrance opening, each of said support members being formed by a hollow conduit having one of its two ends in communication with said casing;

said inking ribbon being received within said casing and arranged in random loops, said ribbon passing through said support members and extending across the open space between the other ends of said support members, said ribbon having two faces, one of which is inked;

guiding and friction means disposed inside said first support member for providing a substantially constant drag force on said ribbon; and

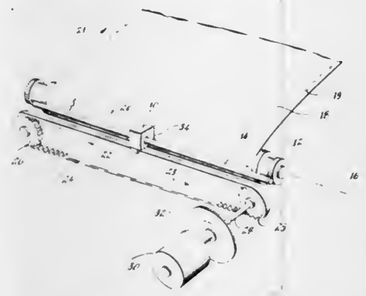
ribbon transport means arranged inside said casing for translating said ribbon from said exit opening to said casing via said support members and said entrance opening, said transport means including a rotatably supported drive roller and an idler pressure roller for engaging said ribbon therebetween, each of said rollers comprising at least a ring made of resilient elastomeric material, the hardness of the elastomeric material forming the ring of said drive roller being different from that of the elastomeric material forming the ring of said pressure roller.

4,210,404

PRINTHEAD COMPENSATION ARRANGEMENT FOR PRINTER

William A. Hanger, Churchville, Va., assignor to General Electric Company, Waynesboro, Va.

Filed Nov. 1, 1977, Ser. No. 847,569
Int. Cl.[2] B41J *3/12, 19/32*
U.S. Cl. 400—124 **27 Claims**



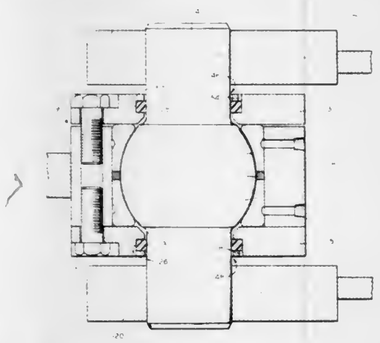
20. Printer control apparatus adapted for operation with a printer of the serial dot matrix character printing type in which a printing head having selectively actuable matrix printing elements moves along the line to be printed, comprising a sensor for providing output pulses indicative of such head movement, a print control counter responsive to sensor output pulses for controlling the print line locations where the actuating of printing elements is effected, the available number of sensor output pulses per character being greater than the maximum number of matrix element positions available to make up a character, and compensating means responsive to signals representative of the mechanical actuation characteristics of the motion of said printing head along said print line for applying additional pulses to said control counter.

4,210,405

PIVOT JOINT

Ronald M. Jesswein, Buchanan, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 20, 1978, Ser. No. 962,450
Int. Cl.[2] F16J *15/00*
U.S. Cl. 403—158 **10 Claims**



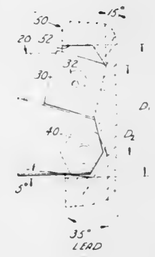
1. A pivot joint comprising an outer structure having an opening for receiving a pivot pin, said outer structure including a bushing, a pivot pin located in said opening in bearing contact with said bushing, said pivot pin having a cylindrical portion means for retaining lubricant between said pin and said outer structure including an internal annular groove in said outer structure and an elastomeric sealing member retained in said groove in sealing relation with the cylindrical portion of said pin, said outer structure forming an annular gap with said pivotal pin axially outwardly of said annular groove and extending radially outwrdly of said sealing member, and said outer structure including a relief opeing extending from adjacent the outer diameter of said groove through said outer structure to the outside of the joint.

4,210,406

DRILL WITH REPLACEABLE INSERTS

Robert W. Berry, Jr., Hazel Park, Mich., assignor to Fansteel Inc., North Chicago, Ill.

Filed Sep. 1, 1978, Ser. No. 938,765
Int. Cl.[2] B23B *51/00*
U.S. Cl. 408—223 **3 Claims**



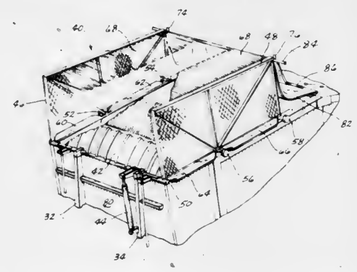
1. A drill comprising a body having a working end and a drive end with chordal support surfaces adjacent recesses in the working end distributed circumferentially about the axis of the body, cutting inserts retained on said support surfaces having cutting edges disposed toward and projecting from the cutting end of said body, said cutting edges being radially spaced conjointly to sweep the entire area of a working piece to be drilled and dimensioned wherein each cutting edge sweeps a substantially equal area of the entire area to be drilled, said inserts being indexable, wafer-like inserts of hard metal including a square insert disposed to cut the central portion of the entire area to be drilled and a hexagonal insert to cut a circumferential area outside the central portion.

4,210,407

LITTER CONTROL ASSEMBLY

Roy F. Broyhill, and James R. Parsons, both of Dakota City, Nebr., assignors to The Broyhill Manufacturing Company, Wayne, Nebr.

Filed Jun. 7, 1978, Ser. No. 913,515
Int. Cl.[2] B65F *3/02*
U.S. Cl. 414—407 **7 Claims**



1. In combination,

a wheeled refuse collection vehicle having a refuse collection box mounted thereon, said box having an opening formed therein to permit collected refuse to be placed in the interior of said box,

and a litter control assembly mounted on said vehicle adjacent said box opening,

said litter control assembly comprising means for permitting refuse to be passed therethrough during the collection thereof and for maintaining the refuse within said box,

said box opening having rearward and forward ends and opposite sides and wherein said litter control assembly comprises first and second upstanding members positioned at the opposite sides of said box opening,

a panel means positioned between said first and second upstanding members at the forward end of said box opening,

elongated flexible members secured to said first and second upstanding members and said panel means, said flexible members extending at least partially over said box opening,

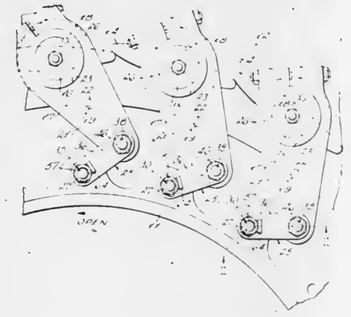
and a flexible sheet member secured to said box rearwardly of said box opening and secured to said upstanding members for closing the rearward end of said litter control assembly.

4,210,408

ECCENTRIC PIN POSITIVE LOCKING DEVICE FOR HYDRAULIC TURBINE WICKET GATES

Donald W. Nace, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 30, 1978, Ser. No. 956,093
Int. Cl.[2] F03B *3/18*
U.S. Cl. 415—163 **7 Claims**



1. In an operating mechanism for a wicket gate of a hydraulic turbine having wicket gate operating ring:

a bore in the wicket gate operating ring;

an eccentric pin having a cylindrical eccentric body portion the axis of which is offset but parallel to the axis of said pin, said cylindrical eccentric body portion being disposed within said bore of the wicket gate operating ring;

a wicket gate drive link operably connected to effect movement of said wicket gate, said drive link being secured to said eccentric pin to be driven thereby;

a sleeve nut mounted on said eccentric pin in abutting engagement with said drive link;

locking means engaged on said eccentric pin in engagement with said sleeve to lock said sleeve nut and said drive link to said eccentric pin;

removable means operating between said sleeve nut and said eccentric pin and operable to prevent relative rotational movement between said sleeve nut and said eccentric pin; and,

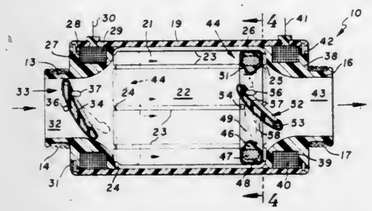
means to secure said sleeve nut in an adjusted radial position and thereby maintain said eccentric pin in an adjusted radial position.

4,210,409

SOLENOID OPERATING PUMP

Frank W. Child, Eagle Bend, Minn., assignor to Child Laboratories Inc., Eagle Bend, Minn.

Filed May 19, 1978, Ser. No. 907,809
Int. Cl.[2] F04B *17/04, 21/04;* **F04F** *7/00*
U.S. Cl. 417—241 **38 Claims**



1. A pump for moving a fluid comprising: a housing including a body having an inside wall surrounding a chamber, a plurality of longitudinal ribs on said inside wall, a first end having inlet passage means open to the chamber, and a second end having outlet passage means open to the chamber; first one-way valving means cooperating with the first end to allow forward flow of fluid through the inlet passage means into the chamber and restrict reverse flow of fluid through the inlet passage means out of the chamber; piston means located in the chamber movable in a forward direction to move fluid out of the chamber through the outlet passage means and allow fluid to flow into the chamber through the inlet passage means and movable in a reverse direction toward the first one-way valving means, said ribs spacing the piston means from the inside wall, said piston means including magnetic means and passage means allowing fluid to flow through the piston means; second one-way valving means movably mounted on the piston means allowing fluid to flow through the passage means in the piston means on reverse movement of the piston means and restricting flow of fluid through the passage means in the piston means on movement of the piston means in the forward direction; and solenoid means mounted on the housing operable to sequentially move the piston means in forward and reverse directions.

4,210,410

VOLUMETRIC TYPE FLOWMETER HAVING CIRCULAR AND INVOLUTE TOOTH SHAPE ROTORS

Iwao Ohtani, Inagi, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Apr. 14, 1978, Ser. No. 896,671
Claims priority, application Japan, Nov. 17, 1977, 52-138231; Nov. 22, 1977, 52-140292
Int. Cl.[2] G01F *3/10;* **F01C** *1/16;* **F04C** *1/10*
U.S. Cl. 418—150 **3 Claims**



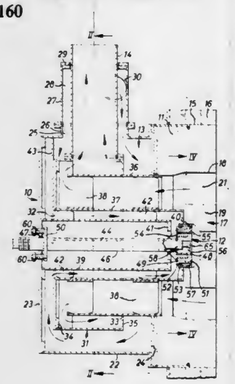
1. In a volumetric type flowmeter having a pair of rotors each of which has a plurality of teeth comprising tooth crests and valleys alternately disposed at equal angular intervals around the rotor in profile in a cross-sectional plane thereof perpendicular to the rotational axis thereof, said rotors being adapted to rotate in mutually opposite directions in mutually intermeshed state, in each rotor as viewed in said profile in said cross-sectional plane, said tooth crests and valleys respectively having convex and concave arcuate parts over specific peripheral extents thereof centered on the vertices and nadirs thereof, respectively, and remainder parts of involute curve shape between the extremities of said arcuate parts, the improvement comprising: each of said specific peripheral extents of the tooth crests and valleys being peripheral length of an arc of a circle with the center thereof on the pitch circle of said teeth, said arc having an angular extent of $(180-\alpha)$ degrees, α being the pressure angle, and having a central point coinciding with the tooth crest vertex in the case of a tooth crest and with the nadir point in the case of a valley; the number of said teeth being 4, and the pressure angle α being selected at a value in the range of $21° < \alpha < 30°$; each tooth of each rotor being helically twisted in shape with a total winding angle Φ with respect to the rotational axial direction of the rotor, said angle Φ is selected at a value greater than $(2\pi/4)(1-x)$, where x is the transverse contact ratio of the pair of rotors; and each tooth of each rotor being helically twisted with a helix angle ϕ selected at a value equal to $\cot^{-1}(2L/Dm\Phi)$, where L is the length of the rotor in the direction of the rotational axis thereof, and Dm is the diameter of the pitch circle.

4,210,411

SELF-RECUPERATIVE BURNER

Trevor Ward, and Clive Ward, both of Little Royd Mill, Low Road, Earlsheaton, Dewsbury, Yorkshire, England

Filed Jan. 20, 1978, Ser. No. 871,063
Claims priority, application United Kingdom, Jan. 21, 1977, 2445/77
Int. Cl.[2] F23D *11/44*
U.S. Cl. 431—160 **21 Claims**



1. Self recuperative fluid fuel burner including:

(a) means to supply fuel to a zone for combustion within that zone comprising means for conveying liquid fuel to the combustion zone and means adjacent the combustion zone for presenting liquid fuel so conveyed to the combustion zone in a form which is suitable for combustion within the combustion zone;

(b) heat exchange means comprising means defining juxtaposed passage systems for bringing two fluid streams into heat exchange relationship with one another;

(i) air supply passage means adapted to convey air via one of the juxtaposed passage systems of the heat exchange means to said zone to support combustion within that zone of fluid fuel supplied to that zone; and

(ii) exhaust passage means for conveying away from said zone products of combustion within that zone, said exhaust passage means being adapted to convey such products of combustion through another of the juxtaposed passage systems of said heat exchange means whereby air supplied to said zone by said air supply passage means is heated within the burner before reaching said zone by heat exchange in said heat exchange means with products of combustion within said zone;

(c) means surrounding the liquid fuel conveying means to convey heat away from same and to shield said conveying means from direct contact with combustion air heated by said heat exchange means thereby preventing overheating of the liquid fuel before it reaches said means for presenting liquid fuel to the combustion zone.

4,210,412

METHOD OF TRANSFER PRINTING FOR CELLULOSIC FIBER-CONTAINING TEXTILE PRODUCT

Kiyoshi Yamane; Shunzo Abe; Shuzo Sawada, and Hatsuo Matsumoto, all of Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Jul. 23, 1973, Ser. No. 381,562

Claims priority, application Japan, Jul. 25, 1972, 47/74845

Int. Cl.[2] D06P *1/00*

U.S. Cl. 8—471 **2 Claims**

1. A method of transfer printing for a cellulosic fiber-containing textile article which comprises pretreating the article with a 5–40 weight % aqueous solution of dispersion of a swelling agent selected from the group consisting of alkylene glycols, alkylene glycol mono- and di-ethers, alkylene glycol mono- and di-esters, alkylene glycol ether esters, polyalkylene glycols having an average molecular weight of 200–5000, polyalkylene glycol mono- and di-ethers having an average molecular weight of 200–5000 and polyalkylene glycol mono- and di-esters having an average molecular weight of 200–5000, all having a boiling point not lower than 150° C., squeezing the pretreated article to a wet pick-up of 50–100%, subjecting the squeezed article to drying at a temperature below 120° C., superposing the dried article with a transfer sheet printed with an ink containing a sublimable disperse dye having a molecular weight no greater than 394, pressing the resultant assembly under heating to transfer the dye of the transfer sheet onto the article and subjecting the dyed article to a cross-linking treatment in a bath containing a cross-linking agent and a catalyst.

4,210,413

TRANSFER PRINTING PROCESS

Günter Gehrke, Cologne, and Walter Hohmann, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

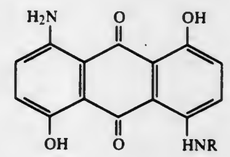
Filed Mar. 30, 1978, Ser. No. 891,843

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1977, 2714768

Int. Cl.[2] D06P *5/06*

U.S. Cl. 8—471 **1 Claim**

1. In the process of transfer printing in which a temporary support is printed with a sublimable dyestuff and the dyestuff is transferred by heat from the temporary support to a substrate, the improvement comprising using as the dyestuff a dyestuff of the formula



in which

R is isopropyl.

4,210,414

DYE MIXTURES FOR COLORING MINERAL OIL PRODUCTS

Guenter Hansen, Ludwigshafen; Franz Merger, Frankenthal; Gerhard Nestler, Ludwigshafen, and Georg Zeidler, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

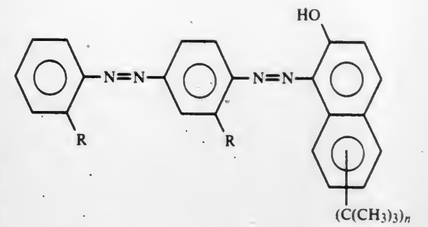
Filed Mar. 30, 1978, Ser. No. 891,839

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1977, 2716674

Int. Cl.[2] C09B *46/00;* **C10L** *1/10;* **D06P** *1/02*

U.S. Cl. 8—639 **3 Claims**

1. A mixture of dyes of the formula



wherein the mixture contains 10–90% of a dye with n=0 and 10–90% of a dye with n=1-6, and wherein R is hydrogen or methyl.

4,210,415

SHRINKPROOFING OF FABRICS OF WOOL

Clay E. Pardo, Jr., Albany; Robert E. Foster, Concord, both of Calif., and Willie Fong, deceased, late of Richmond, Calif. (by Yukiye Fong, executrix), assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 7, 1977, Ser. No. 785,615

Int. Cl.[2] D06M *3/02, 13/00*

U.S. Cl. 8—128 A **13 Claims**

1. A process for shrinkproofing and fulling a woolen fabric without significant impairment of its hand, which comprises

(a) applying a diisocyanate as a solid interfacial coating to the fabric,

(b) then, fulling the diisocyanate-treated fabric by agitating the same in water at ordinary temperature for a period of about 4 to 20 minutes, and

(c) exposing the so-treated fabric to a solution of polyamine in water to form a polyurea in situ on the fabric by chemical reaction between the diisocyanate and the polyamine at the solid-liquid interface produced by the solid diisocyanate on the fibers and the solution of the polyamine.

4,210,416

FINE-PARTICULATE ALKALI METAL ALUMINOSILICATES IN THE PROCESS OF WASHING AND CLEANING RAWHIDES AND FUR SKINS

Juergen Plapper, Hilden; Milan J. Schwuger, Haan; Heinz G. Smolka, Langenfeld; Klaus Schumann, Erkrath; Emanuel Arndt, Düsseldorf, and Emil Ruscheinsky, Leverkusen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien(Henkel KGaA), Duüseldorf, Fed. Rep. of Germany

Filed May 8, 1978, Ser. No. 903,597

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728812

Int. Cl.[2] D01C *3/00*

U.S. Cl. 8—139.1 **11 Claims**

1. In the process of washing and cleaning rawhides and fur skins before tanning comprising subjecting rawhides and fur skins to the action of an aqueous solution containing (1) surface-active compounds selected from the group consisting of anionic surface-active compounds, nonionic surface-active compounds and mixtures thereof, (2) emulsifiable solvents for fats and (3) electrolyte, removing said aqueous solution, rinsing and recovering washed and cleaned rawhides and fur skins, the improvement consisting essentially of employing a fine-particulate, water-insoluble alkali metal aluminosilicate, containing bound water, of the formula

$$(M_2O)_x \cdot Al_2O_3 \cdot (SiO_2)_y$$

wherein M represents an alkali metal, x is an integer from 0.7 to 1.5 and y is an integer from 0.8 to 6, said aluminosilicates having an average particle size in the range of from 0.1 to 25μ

and a calcium binding power of from 20 to 200 mg CaO/gm of anhydrous active substance measured at 22° C., as partial or total replacement of said electrolyte and optionally partial replacement of said surface-active compounds, whereby the pH of said aqueous solution is maintained between 6.5 and 8.5.

4,210,417

METHOD OF SOIL RELEASE POLYMER APPLICATION TO FABRICS IN HOME LAUNDERING

Charles P. McClain, and Jerry E. Yowell, both of La Mirada, Calif., assignors to Purex Corporation, Lakewood, Calif.

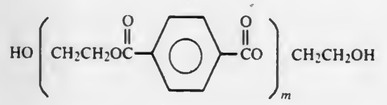
Continuation of Ser. No. 621,667, Oct. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 519,750, Oct. 31, 1974, abandoned. This application Feb. 13, 1978, Ser. No. 877,273

Int. Cl.[2] **D06M** *13/20;* **B08B** *3/00*

U.S. Cl. 8—137 **6 Claims**

1. The method of imparting soil release properties to fabrics consisting of polyester, polyamide, rayon or modacrylic fibers and blends of these fibers with other natural or synthetic fibers during a home laundering process, which consists essentially of the following steps and conditions: agitating said fabrics in an aqueous dispersion of the soil release polymer product which has an empirical formula of $(C_{39}H_{79}N_2O_{17})_{3n}$, where n is equal to about 3–10, at a polymer concentration of about 0.0002 to 0.2 weight percent of the water and subsequently drying the fabrics at a temperature customarily employed in home laundering, said soil release polymer being characterized as having been prepared by:

(a) loading into a clean and dried reactor, 209 parts of a mixture comprising 18% ethylene glycol and 82% of



where m is equal to 1–3, to obtain an oligomer mixture with a melting point between 160° and 185° C.;

(b) adding to said oligomer mixture 1298 parts of the monomethylether of polyethylene glycol of molecular weight about 550, and about 789 parts of a product prepared by ethoxylation of the mixture of straight-chain alcohols containing 60% dodecanol, 25% tetradecanol and 11% hexadecanol to form a product containing 15 links of ethylene oxide for every mole of alcohol;

(c) heating the resulting mixture to 210°±2° C., maintaining this temperature for one half hour and then cooling and maintaining the mixture at a temperature of 135°±5° C.;

(d) adding 357 parts of hexa(methoxymethyl) melamine and reducing the pressure on the mixture to 20–40 torr for one half hour;

(e) introducing gaseous nitrogen to adjust the pressure of the reactor to one atmosphere and adding 3.17 parts of anhydrous p-toluene sulfonic acid before reducing the pressure to 200 torr;

(f) reducing the pressure in the reactor after the reaction has started to between 20 and 40 torr, and heating the load in the reactor to 190°±2° C., and maintaining this temperature for four hours to terminate the reaction;

(g) cooling the load in the reactor to about 70° C. and bringing the pressure in the reactor to atmospheric pressure by adding nitrogen;

(h) adding the reacted load of step (g) to a preformed mixture of 9972 parts of water and 1.7 parts of sodium bicarbonate to form an aqueous dispersion of about 20% concentration of the said soil release polymer which has an empirical formula of $(C_{39}H_{79}N_2O_{17})_{3n}$,

said dispersion upon dilution being suitable for the treatment of textiles to improve their antistaining properties.

4,210,418

CONTAINER FOR IMMUNOCHEMICAL AND ENZYMATICAL DETERMINATIONS OR PROCEDURES

James L. Brown, House Springs; Wayne H. T. Lin, Chesterfield, and James W. Woods, Creve Coeur, all of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 718,694, Aug. 30, 1976, abandoned. This application Jan. 10, 1977, Ser. No. 758,364

Int. Cl.[2] **G01N** *33/16*

U.S. Cl. 23—230 B **36 Claims**



1. An elongated, hollow container suitable for use in an immunochemical or enzymatical procedure comprising

(a) a lower reactive part composed of a polymeric material, said part being closed at one end and having on at least a portion of its inner surface a coating of an inert protein to which a biologically active substance is attached; and

(b) a separable inert upper part connected to and in communication with said lower part.

2. In an immunochemical or enzymatical method for determining the concentration of a member selected from the group consisting of an antigen and hapten in a measured amount of an aqueous sample wherein said aqueous solution is contacted with (1) an insoluble carrier to which has been attached a biologically active substance capable of reacting with said member and (2) a measured amount of tracer labelled member to form after substantial equilibration a 2-phase system containing a solid phase having a portion of the labelled member and unlabelled member bound to said biologically active substance and a liquid phase containing the balance of the unbound labelled member and unlabelled member, the two phases separated and the concentrated determined, the improvement comprising using as the insoluble carrier the container of claim **1**.

4,210,419

AUTOMATED QUANTITATIVE MUSCLE BIOPSY ANALYSIS SYSTEM

Kenneth R. Castleman, Glendale, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Feb. 17, 1978, Ser. No. 878,731

Int. Cl.[2] **G01N** *33/16*

U.S. Cl. 23—230 B **10 Claims**

1. A method for automatic biopsy analysis of a muscle tissue specimen mounted upon a microscope slide, said tissue specimen being stained to produce a histochemical reaction of varying degrees of intensity distinguishing at least first and second types of muscle fibers, said reaction causing said first type muscle fiber to appear dark and said second type muscle fiber to appear light, said method comprising steps of

positioning said stained microscope slide in the specimen plane of a microscope,

using said microscope to obtain a magnified image of said muscle tissue specimen,

digitizing discrete points of raster scans of said image to produce digital data, each of said points comprising a pixel having a digital value representing image light intensity,

processing said pixels to determine area boundaries of fibers, using said pixels to compute size and average density of each

of said muscle fibers by counting the number of pixels in a boundary area while accumulating pixel values for each boundary in order to determine both size and average density,



classifying said muscle fibers into two or more types based upon their measured size and average density characteristics, and

generating a graphical display of fiber characteristics showing the distribution of fiber sizes for each of several fiber types.

4,210,420

DETECTION OF FIBRIN MONOMER AND COMPOSITION THEREFOR

D. Joe Baughman, Flemington; Ann Lytwyn, New Brunswick, and Kurt Myrmel, Somerville, all of N.J., assignors to Ortho Diagnostics Inc., Raritan, N.J.

Filed Nov. 13, 1978, Ser. No. 960,421

Int. Cl.[2] **G01N** *33/16, 31/02, 21/22*

U.S. Cl. 23—230 B **15 Claims**

1. A fibrin monomer precipitating composition comprising water, sodium chloride, protamine sulfate, a buffering amount of a buffer having a pKa in the range of 6 to 7, said composition having a pH of 6.5±0.5 and an ionic strength of 0.15 to 5.0.

4,210,421

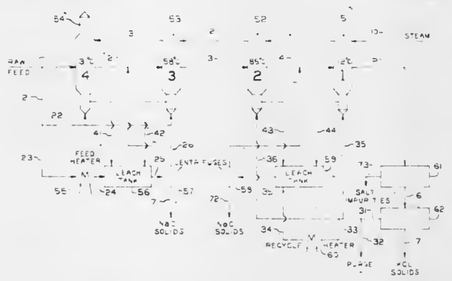
METHOD FOR REDUCING KCL TAILINGS LOSS FROM EVAPORATION

James B. Dahms, London, England, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 13, 1978, Ser. No. 960,197

Int. Cl.[2] **B01D** *1/26*

U.S. Cl. 23—303 **6 Claims**



1. In a method of concentrating with respect to potassium chloride, an aqueous solution containing potassium chloride, sodium chloride and a minor amount of salt impurities, by multiple stage evaporation at progressively higher temperatures and backward feed, wherein each evaporator stage communicates with an elutriation leg, wherein sodium chloride and potassium chloride solids co-precipitate in an evaporator stage and a slurry containing sodium chloride and potassium chloride solids are withdrawn from the elutriation leg of that stage and wherein the concentrated solution is forwarded to a step where potassium chloride is recovered by cooling, the improvement comprising:

A. leaching selectively in a separate vessel precipitated potassium chloride solids contained in the slurry withdrawn from the evaporator stage by initimately contacting and dissolving potassium chloride solids in the vessel with raw feed and/or mother liquor from the step where potassium chloride is recovered;

B. then separating the leach liquor from the sodium chloride solids and discharging the sodium chloride solids from the evaporation system; and

C. recovering precipitated potassium chloride by recycling the enriched leaching liquid to an evaporator stage.

4,210,422

REMOVAL OF SULFUR COMPOUNDS FROM COAL DURING PIPELINE TRANSPORT

Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 26, 1978, Ser. No. 972,839

Int. Cl.[2] **C10L** *9/10;* **C10B** *57/00*

U.S. Cl. 44—15 R **5 Claims**

1. A process for removal of sulfur compounds from coal during preparation of the coal for pipeline transport and pipeline transport of the coal, comprising:

storing the coal in contact with oxygenated water for 1 to 7 days;

preparing the coal in particles sufficiently fine for transport as an aqueous slurry;

mixing the coal particles with oxygenated water and a basic chemical substance selected from the group consisting of calcium carbonates, sodium hydroxide, ammonium hydroxide, ammonia, and sodium carbonate;

transporting the coal as a slurry in a pipeline; and

separating the coal from water containing soluble sulfur compounds and from sludge-containing insoluble sulfur compounds.

4,210,423

SOLID FUEL USE IN SMALL FURNACES

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 6, 1979, Ser. No. 27,628

Int. Cl.[2] **C10L** *9/00, 9/08*

U.S. Cl. 44—1 C **12 Claims**

1. A method for producing a solid fuel for small furnaces in powder form or in briquette form which has: (a) a uniform heat content of approximately 12,000–14,000 Btu per pound, (b) a sulfur content that is balanced with a scavenger for SO_2 gas to enable stack gases from said small furnaces to meet EPA emission standards for SO_2, (c) an ash that is soft, pliable, and non-sticking and that does not form "clinkers" while burning, (d) no tendency during normal storage conditions to undergo spontaneous combustion or auto-ignition, (e) adequate flow properties so that said fuel in powder form maintains fluidity and does not stick in the delivery system therefor, (f) insignificant tendency to pick up moisture during transportation or storage, (g) excellent ignition properties during cold weather starting in a cold furnace, and (h) excellent combustion properties for reducing carbon monoxide emission and soot formation and for improved heat recovery, which comprises the following steps:

A. grinding a coal or mixture of coals having a heating value of about 12,000 to 14,000 Btu to a fineness below 200 mesh;

B. drying the coal or coals with a hot gas, which is at

150°-800° F. and contains a trace amount of oxygen, to a dried moisture content of 1-15%;

C. blending the coal or coals with at least one additive selected from each group set forth below;

(1) an SO_2 scavenger for minimizing the effects of sulfur in said coal selected from the group consisting of limestone, lime, dolomite, gypsum, calcium phosphate, bauxite, and mixtures thereof,

(2) a combustion improver and ash modifier for imparting burning properties and for reducing corrosion, fouling, and ash slagging, selected from the group consisting of manganese dioxide, iron oxide, and manganese nodules.

4,210,424

COMBINATION OF ETHYLENE POLYMER, NORMAL PARAFFINIC WAX AND NITROGEN CONTAINING COMPOUND (STABILIZED, IF DESIRED, WITH ONE OR MORE COMPATIBILITY ADDITIVES) TO IMPROVE COLD FLOW PROPERTIES OF DISTILLATE FUEL OILS

Nicholas Feldman, Woodbridge; Jack Ryer, East Brunswick, and Martin F. Dooley, Edison, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 3, 1978, Ser. No. 957,568

Int. Cl.² C10L *1/22*

U.S. Cl. 44—62 **18 Claims**

1. A wax-containing petroleum fuel oil comprising a major proportion of a distillate oil boiling in the range of 120° to 425° C., which fuel oil has been improved in its low temperature flow properties, containing in the range of about 0.001 to 2.5 wt. %, based on the weight of the total composition, of a flow improving combination of:

(A) one part by weight of an oil-soluble ethylene backbone distillate flow improving polymer having a number average molecular weight in the range of about 500 to 50,000;

(B) 0.1 to 30 parts by weight of wax comprising principally n-paraffins having from 20 to 60 carbons; and

(C) 0.01 to 10 parts by weight of an oil-soluble nitrogen compound containing a total of about 30 to 300 carbon atoms and having at least one straight chain alkyl segment of 8 to 40 carbons, and selected from the class consisting of amine salts and/or amides of hydrocarbyl carboxylic acids or anhydrides having 1 to 4 carbonyl groups.

4,210,425

GLYCOL POLYETHER-ACRYLIC ACID-AMINE REACTION PRODUCT FOR FUEL AND MINERAL OILS

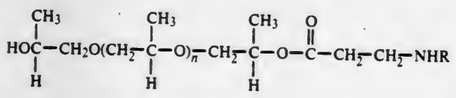
Cummings, William M., Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,890

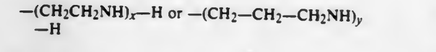
Int. Cl.² C10L *1/18, 1/22*

U.S. Cl. 44—72 **6 Claims**

1. A motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range and a glycol polyether reaction product represented by the formula:



in which n is a number from about 10 to 90 and R is a monovalent hydrocarbon radical having from about 2 to 30 carbon atoms or a radical selected from the group represented by the formulas:



in which x and y are integers from 1 to 6.

4,210,426

PROCESS FOR RECOVERING PROPENE AND PROPENE/PROPANE MIXTURES FROM THE OFF-GASES FROM THE HYDROFORMYLATION OF PROPENE

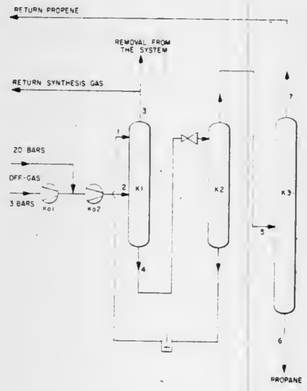
Srinivasan Sridhar, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,505

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1977, 2749890

Int. Cl.² B01D *19/00*

U.S. Cl. 55—68 **27 Claims**



1. A process for separating off and recovering propene and propene/propane mixtures from the off-gases from the hydroformylation of propene, said off-gases including carbon monoxide, hydrogen, propene and propane, which comprises passing said off-gases from the hydroformylation of propene to an absorbent, absorbing the propene and propane from said off-gases in the absorbent, which absorbent is comprised of at least one of the liquid substances which have formed during the hydroformylation of propene, and subsequently desorbing the propene and propane from said liquid substances.

4,210,427

METHOD AND APPARATUS FOR CLEANING GAS

David P. Brett, and Christopher J. Walker, both of 3 Patern St., Highton, Geelong, Victoria, 3216, Australia

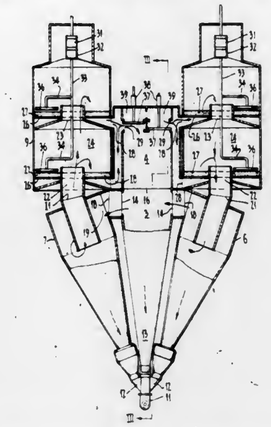
Filed Oct. 12, 1976, Ser. No. 731,798

Claims priority, application Australia, Oct. 10, 1975, PC3523

Int. Cl.² B01D *46/30, 29/08, 46/04*

U.S. Cl. 55—96 **8 Claims**

1. A method of cleaning a filter bed of particulate material for filtering gas, wherein the gas to be filtered is passed in the form of a third gas stream through said bed in a downward direction, said method comprising passing a first gas stream upwardly through the filter bed from below in the substantial absence of said third gas stream and in a direction of flow which is counter current to the flow of said third gas stream through the filter bed during filtering, while disturbing at least the upper surface of the filter bed with a second gas stream



issuing downwardly from a nozzle located outside of and above the filter bed.

4,210,428

GAS SCRUBBING PLANT AND BAFFLES THEREFOR

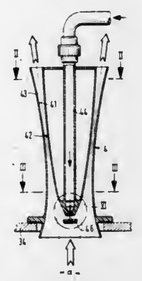
Jürg Schneider, Muttenz, and Volker Fattinger, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,555

Claims priority, application Switzerland, Nov. 29, 1977, 14584/77

Int. Cl.² B01D *47/10*

U.S. Cl. 55—223 **10 Claims**



1. A baffle for a gas scrubbing plant comprising a substantially conical inner member with a continuously smooth-curved outer surface located coaxially within an outer member with a continuously smooth-curved inner surface to define between the outer surface of the inner member and the inner surface of the outer member an annular passage, the inner surface of said outer member being shaped so that the cross sectional area of the annular passage from the apex of the conical member defining the inlet to the baffle decreases and then increases towards the outlet of the baffle defined by the base portion of the inner member and the top of the outer member and the annular passage diverges upwards from the inlet to the outlet at an angle in the range of 10° to 90°; said baffle further including a feed tube coaxial with said inner member and having an outlet at the apex thereof and a disc mounted in front of said outlet to deflect liquid supplied by said tube into a rotationally symmetrical jet directed up into said annular passage.

4,210,429

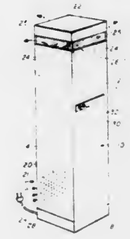
AIR PURIFIER

Jerome J. Golstein, Denver, Colo., assignor to Alpine Roomaire Systems, Inc., Denver, Colo.

Continuation of Ser. No. 784,157, Apr. 4, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,736

Int. Cl.² B01D *46/10*

U.S. Cl. 55—279 **4 Claims**



1. An air purification system comprising; means defining an elongated upright enclosed housing including a plurality of walls and means forming a base supporting the walls vertically,

elongated removable means forming a part of the housing to provide access to the interior of the housing and including a removable panel having a top section and a bottom section hinged from the top section and having a plurality of openings therein; said panel being designed and dimensioned to enable complete disengagement from said housing by only raising said panel a slight vertical distance and polling the bottom thereof outwardly from said housing,

a blower disposed at the bottom end of the housing adjacent the bottom section of the removable panel for drawing air into the housing through said plurality of openings in the bottom section,

means for selectively operating said blower,

a partitioning wall disposed above the blower demarcating the bottom end of the germicidal chamber and having an opening for the blower outlet,

means defining a germicidal chamber within the housing having at least one ultraviolet lamp means disposed therein for killing viruses and bacteria flowing through the germicidal chamber,

said ultraviolet lamp extending longitudinally of said housing between top and bottom ends of the germicidal chamber with said germicidal chamber having a height at least on the order of the height of the filter,

a high efficiency filter disposed in the housing for trapping small particles down to 0.3 microns,

flange means on the interior of said housing supporting said filter above said germicidal chamber whereby substantially all viruses and bacteria that are to be destroyed are so destroyed before the air reaches the filter,

and means defining an outlet from the top of the housing for discharging the purified air,

said housing having a height substantially greater than its width with the filter, blower, and ultraviolet lamp means stacked one above the other,

said high efficiency filter dimensioned with a comparable width and depth to those of the housing so as to fit snugly within the housing entirely above the germicidal chamber and ultraviolet lamp means,

said blower causing air passage through the germicidal chamber in only one direction past the ultraviolet lamp means.

4,210,430

CYCLONE SEPARATOR ASSEMBLY

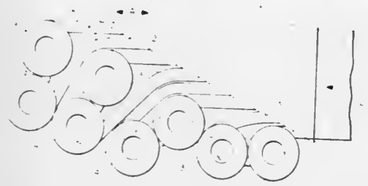
Manfred Galow, Essen, and Nikolaus Stefancik, Düsseldorf, both of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 965,710

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755257

Int. Cl.² B01D *45/16*; B01D *5/28*

U.S. Cl. 55—344 **10 Claims**



1. A cyclone separator assembly for use in separating solids such as coal from a carrier gas conveying such solids, said assembly comprising:

conveying pipe means for conveying a carrier gas and solids conveyed thereby along a flow path extending in a rectilinear direction;

a diagonal wall extending across said conveying pipe means in a direction which is diagonally inclined with respect to said rectilinear direction;

a plurality of cyclone separators located adjacent said diagonal wall; and

branching pipe means for transferring said carrier gas and solids from said conveying pipe means to said cyclone separators, whereat said solids and carrier gas are separated, said branching pipe means comprising a plurality of branch pipes, one said branch pipe for each said cyclone separator, each said branch pipe having a first end connected to said diagonal wall and opening into said conveying pipe means and a second end connected to and opening into a respective said cyclone separator, at least an initial length portion of each said branch pipe, taken from said first end thereof, extending in a direction substantially parallel to said rectilinear direction, such that said solids and carrier gas, upon passing said diagonal wall into said branch pipes, continue to flow substantially in said rectilinear direction within said initial length portions of said branch pipes, thereby preventing premature separation of said solids within said branch pipes.

4,210,431

METHOD FOR MAKING VITREOUS CARBON COATINGS ON GLASS FIBERS

David L. Bachman, Lindley, and Francis W. Voorhees, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,988

Int. Cl.² C03C *25/02*

U.S. Cl. 65—3 C **11 Claims**

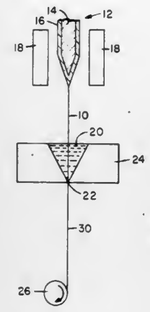
1. A method for producing a vitreous carbon coating on the surface of a highly refractory substrate which comprises the steps:

(a) providing a highly refractory substrate that is at a temperature in excess of about 1000° C.;

(b) bringing said hot substrate into contact with a thermally decomposable organic material in liquid form, the temperature of said liquid being less than about 400° C. and said organic material having a flash point in excess of 200° F.;

(c) maintaining said contact for a sufficient length of time to thermally decompose said organic material to from a vitreous carbon coating on the surface of said substrate;

(d) cooling said substrate while in contact with said organic material to a temperature below about 400° C.; and thereafter



(e) removing said substrate from contact with said organic material.

4,210,432

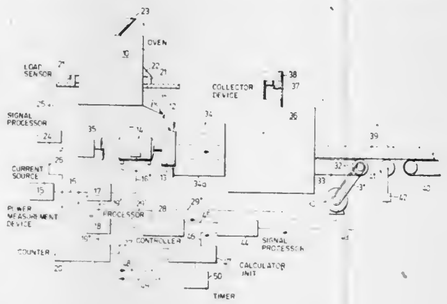
METHOD FOR CONTROL OF THE SURFACE WEIGHT OF A MINERAL WOOL MAT

Hans E. O. Brelen, Skövde; Arvid S. Dahlberg, Tidan, and Ulf L. Åberg, Skövde, all of Sweden, assignors to Rockwood Aktiebolaget, Skövde, Sweden

Filed Jul. 3, 1978, Ser. No. 921,882

Int. Cl.² C03B *37/00*

U.S. Cl. 65—4 R **57 Claims**



1. A method for controlling the surface weight of a mineral wool mat in a production process in which fibres of mineral wool are produced by spinning of a mineral melt and mineral wool formed from the fibres is transferred to a collection device by means of a transport medium comprising a stream of gas, said stream of gas being separated from the mineral wool in said collection device, and the mineral wool forming a mat on a collection band, said method further comprising measuring at least two variables which influence the amount of mineral wool formed per unit time and predicting, based on said measurements, the amount of mineral wool formed per unit time at a pre-future point in time, determining, by weighing, the surface weight of the formed mineral wool mat, measuring the speed of the collection band, utilizing the measured surface weight and measured collection band speed to determine the actual amount of mineral wool formed per unit at said predetermined point in time, comparing the actual amount of mineral wool formed per unit time with the predicted amount of mineral wool formed per unit so as to determine the error in the predicted amount, updating the measurements of the at least two variables, and providing a new prediction for the amount of mineral wool formed per unit time at a further point in time, based on the error in the earlier prediction and the updated measurements, so as to minimize the error in the new prediction, whereby the error of each new prediction is adaptively minimized, said method further comprising utilizing a control unit to control the surface weight of the formed mineral wool mat in accordance with the predicted amount of mineral wool formed per unit time.

4,210,433

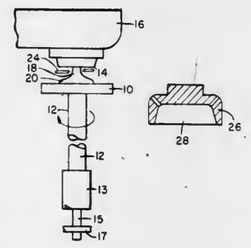
FORMING GLASS ARTICLES BY USING A SPIN PLATE

Chester A. Andrysick, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 15, 1978, Ser. No. 961,009

Int. Cl.² C03B *19/04*

U.S. Cl. 65—66 **4 Claims**



1. A method of forming a disc-shaped parison of molten glass which comprises, positioning a spin plate having a substantially flat upper surface in axial alignment with a discharge orifice, discharging molten glass from said orifice and depositing such glass upon an axial center of the upper surface of said spin plate, and rotating said spin plate about its vertical axial center and uniformly distributing such molten glass radially outwardly across said substantially flat upper surface into a disc-shaped parison of desired thickness centrally of said spin plate.

4,210,434

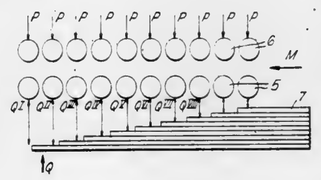
AUTOMATIC SYSTEM AND PROCESS OF SHAPING AND TEMPERING GLASS PIECES

Luis Galíndez (Aldecoa), Llodio-Alava, Spain, assignor to Ingenieria Del Vidrio, S.A.-Ingevisa, Vitoria, Spain

Filed Oct. 26, 1978, Ser. No. 955,070

Int. Cl.² C03B *23/00, 27/00*

U.S. Cl. 65—104 **15 Claims**



1. A process for automatically shaping and tempering glass pieces comprising in combination:

(a) receiving heated glass pieces;

(b) inserting the heated glass pieces between an upper series and a lower series of transverse drive rollers, driving and shaping the heated glass pieces between alternate rollers of the two series;

(c) simultaneously directing currents of cooling air on the heated glass pieces at the moment such glass pieces traverse the space between the upper and lower rollers to thereby temper the glass pieces; and

(d) discharging the shaped glass pieces from between the rollers.

12. An automatic apparatus for simultaneously shaping and tempering heated glass pieces comprising in combination an upper series of transversely extending drive rollers, a lower series of transversely extending drive rollers in generally vertical alignment with the upper series of rollers, means in the form of elongate spring strips supporting the lower series of rollers, means for applying pressure to said upper rollers toward said lower rollers, means for varying curvature of the spring strips and thus the vertical location of the lower rollers whereby the location of the upper and lower rollers may assume a curve shaped bed to shape a glass piecé, the space between the upper and the lower rollers being on the order of the thickness of a glass piece to be shaped thereon and to facilitate projection of air currents on the glass piece passing in the space between the upper and lower rollers.

4,210,435

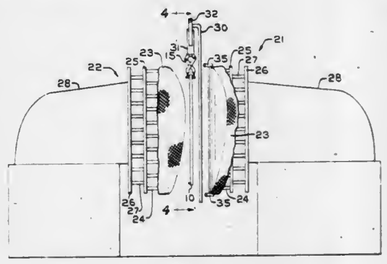
METHOD OF MAKING ACCENT LINES IN BENT GLASS SHEETS

George R. Claassen, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 2, 1979, Ser. No. 26,107

Int. Cl.² C03B *23/02*

U.S. Cl. 65—106 **5 Claims**



1. A method for imparting an accent line to a glass sheet comprising:

heating a glass sheet to a softened condition, supporting the heated glass sheet in a press bending station between an opposed pair of complementary, substantially continuous shaping surfaces, supporting a rod-shaped impression member between one side of the glass sheet and one of the shaping surfaces in alignment with the desired path of the accent line on the glass sheet, closing the bending molds upon the glass sheet and the impression member, thereby pressing the impression member into the glass surface and creating distortion in the glass sheet along the line of contact between the impression member and the glass, separating the mold members, and cooling the glass sheet.

4,210,436

METHOD OF IMPRESSING AN ACCENT LINE IN BENT GLASS SHEETS WITH A HEATED TUBE

Vaughn R. Imler, Tyrone, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 2, 1979, Ser. No. 26,108

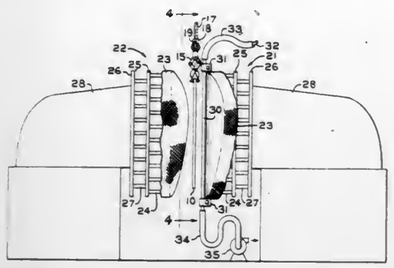
Int. Cl.² C03B *23/02*

U.S. Cl. 65—106 **6 Claims**

1. A method for imparting an accent line to a glass sheet comprising:

heating a glass sheet to a softened condition; supporting the heated glass sheet in a press bending station between an opposed pair of complementary, substantially continuous shaping surfaces; supporting an elongated, tubular impression member between one side of the glass sheet and one of the shaping surfaces in alignment with the desired path of the accent line on the glass sheet; heating the tubular impression member by passing hot fluid therethrough; closing the bending molds upon the glass sheet and the

impression member, thereby pressing the impression member into the glass surface and creating distortion in the



glass sheet along the line of contact between the impression member and the glass; separating the mold members; and cooling the glass sheet.

4,210,437

LIQUID FERTILIZER FOR SUPPLY OF SULFUR, NITROGEN AND MICRONUTRIENT METALS

Richard J. Windgassen, Wheaton, and Louis E. Ott, Oswego, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 14, 1978, Ser. No. 969,441
Int. Cl.[2] C05C *9/00, 3/00*
U.S. Cl. 71—28 **11 Claims**

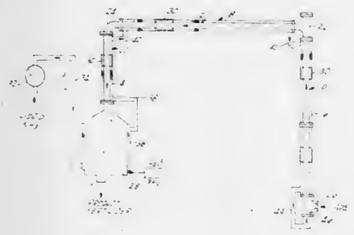
1. A liquid fertilizer composition comprising an aqueous solution of ammonium thiosulfate, ammonia and a metal source comprising at least one metal compound selected from the group consisting of the oxides and salts of copper, zinc and manganese, wherein the amount of ammonium thiosulfate is from about 20 to about 60 percent by weight of the solution, the proportion of metal source is such that the amount of metal provided by said metal source is from about 1 to about 15 percent by weight of the solution, and the amount of ammonia is such that the ratio of moles of ammonia to gram-atoms of said metal is from about 2 to about 30.

4,210,438

AMMONIATED PHOSPHORIC ACID FERTILIZER PRODUCTION

Philip W. Casperson, Houston, Tex., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed Sep. 7, 1977, Ser. No. 831,344
Int. Cl.[2] C05B *7/00*
U.S. Cl. 71—34 **17 Claims**



1. In a process for the production of fertilizers by reaction of superphosphoric acid with ammonia to yield a high temperature reactant melt in a tubular reaction zone providing an interior metal surface in contact with said reactant melt, the constituents of which are potentially reactive to form scale by temperature determined reactions, the method of preventing scale formation. The improvement comprising passing cold liquid ammonia through an annular passageway surrounding said tubular reaction zone in an amount sufficient to remove at least about 45,000 BTU/sq. ft. of internal metal surface/hr by indirect heat exchange with accompanying total vaporization of ammonia, whereby the interior metal surface of the tubular reaction zone will be maintained at a temperature below a temperature at which scale formation will initiate and passing the vaporized ammonia into said tubular reaction zone.

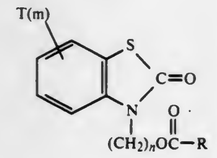
4,210,439

N-SUBSTITUTED OXOBENZOTHIAZOLINES AND THEIR USE AS PLANT GROWTH REGULATORS

Frederic G. Bollinger, Creve Coeur, and John J. D'Amico, Olivette, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

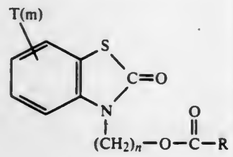
Filed Dec. 22, 1977, Ser. No. 863,498
Int. Cl.[2] A01N *9/12;* **C07D** *277/68*
U.S. Cl. 71—90 **24 Claims**

1. A compound of the formula



wherein R is alkyl having from 1-5 carbon atoms, T is Chloro, NO_2, alkyl having from 1-5 carbon atoms, or alkoxy having from 1 to 5 carbon atoms, m is 0 or 1, and n is 1 or 2.

9. A method of regulating the natural growth and development of leguminous crop plants which comprises applying to the plant locus an effective plant regulating, non-lethal, amount of a compound of the formula



wherein R is alkyl having from 1-5 carbon atoms, T is chloro, NO_2, alkyl having from 1-5 carbon atoms or alkoxy having from 1-5 carbon atoms, m is 0 or 1 and n is 1 or 2.

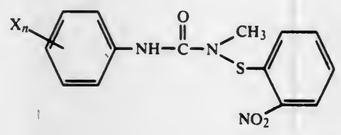
4,210,440

UREA DERIVATIVES, PROCESS FOR PREPARING THE SAME AND HERBICIDAL COMPOSITION CONTAINING THE SAME

Masanori Okada, Niiza; Yasushi Murakami; Hiromi Tomioka, both of Suginami; Norio Shirakawa, Iruma, and Kunihiko Togashi, Yachiyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1978, Ser. No. 881,891
Claims priority, application Japan, Mar. 14, 1977, 52-27077
Int. Cl.[2] A01N *9/12;* **C07C** *69/02*
U.S. Cl. 71—98 **21 Claims**

1. An N-(substituted phenyl)-N'-methyl-N'-(2-nitrophenyl) urea represented by the formula



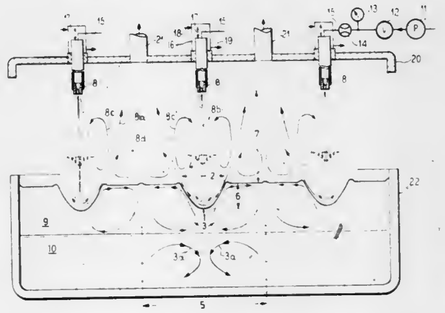
wherein X is halogen, lower alkyl, lower alkoxy, nitro or trifluoromethyl; n is an integer of from 1 to 3, provided that if n is 2 or 3, X may represent any one of the members defined above.

4,210,441

METHOD FOR THE CONTINUOUS OR DISCONTINUOUS TREATMENT OF MOLTEN SLAG, PARTICULARLY WITH CONTENTS OF HEAVY METAL OXIDES, FOR THE RECOVERY OF PORTIONS CONTAINED THEREIN OF VALUABLE METALS OR THEIR COMBINATIONS, RESPECTIVELY

Wolfgang Wuth, Berlin, Fed. Rep. of Germany

Filed Oct. 3, 1977, Ser. No. 838,723
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2645585
Int. Cl.[2] C22B *25/00*
U.S. Cl. 75—24 **6 Claims**



1. A method for treatment of molten slag having heavy metal oxides for the recovery of valuable metals contained therein through precipitation during the slag melting and volatizing out of the slag melting bath, said slag floating on and completely covering a molten material bath, said method comprising the steps:

blowing reaction gases through a nozzle in a vertical jet with substantial force down onto the surface of the slag melt to form a depression in the surface of said slag while still maintaining a continuous cover over said molten material bath, thereby causing a reaction contact between the gas of the jet and the slag and generating a torous movement of the slag material adjacent said depression, while causing upward blowing of gases;

inducing a torus movement in the liquid molten material beneath the slag adjacent said jet-formed slag depression by said torus movement of said slag; and

adjusting the force of the vertical jet acting on the slag so that the horizontal diameter of the induced flow in the molten material beneath the slag is in the range of 2 to 5 times greater than the horizontal diameter of said slag depression and the depth of the induced flow in the molten material is on the order of one-half the diameter of the jet-formed slag depression.

4,210,442

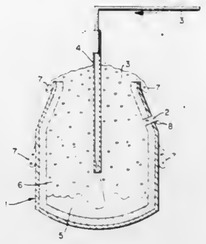
ARGON IN THE BASIC OXYGEN PROCESS TO CONTROL SLOPPING

Jennings B. Lewis, III, Putnam Valley, N.Y., and Peter P. Kelly, Grosse Ile, Mich., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 7, 1979, Ser. No. 10,316
Int. Cl.[2] C21C *5/32*
U.S. Cl. 75—60 **6 Claims**

1. In a process for refining molten steel contained in a vessel by blowing oxygen into the melt from above the melt surface whereby an emulsion is formed above said surface, the improvement comprising:

preventing slopping of said emulsion from said vessel by:



(a) blowing an inert gas into the vessel when slopping is imminent or has begun, at a flow rate sufficient to stop slopping, while continuing to blow with oxygen, and

(b) ceasing the blow of inert gas into the vessel when slopping has stopped or is no longer imminent.

4,210,443

IRON GROUP TRANSITION METAL-REFRACTORY METAL-BORON GLASSY ALLOYS

Ranjan Ray, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Feb. 27, 1978, Ser. No. 881,213
Int. Cl.[2] C22C *19/00, 38/06, 38/32*
U.S. Cl. 75—123 K **7 Claims**

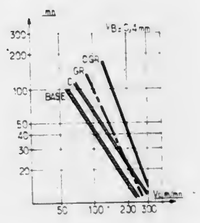
1. A substantially totally glassy alloy consisting essentially of about 5 to 10 atom percent boron, about 5 to 15 atom percent of at least one of molybdenum and tungsten and the balance essentially iron, cobalt and nickel, each present in an amount of at least about 5 atom percent, plus incidental impurities.

4,210,444

MAGNESIUM-FREE, FINE-GRAINED STRUCTURAL STEEL WITH IMPROVED MACHINABILITY AND WORKABILITY

Jean Bellot, Pompey, France, assignor to Societe Nouvelle des Acieries de Pompey, Neuilly-sur-Seine, France

Filed May 31, 1978, Ser. No. 911,113
Claims priority, application France, Jun. 24, 1977, 77 19484
Int. Cl.[2] C22C *38/60*
U.S. Cl. 75—124 **5 Claims**



1. A fine-grained structural steel composition having improved machinability and good mechanical properties, said steel consisting essentially of the following elements in the following percentage ranges, by weight:

C	0.05-0.7
Mn	0.3-2
S	0.02-0.10
Te	0.0014-0.013
Ca	0.0002-0.0018
Al	0.01-0.05
Si	0.15-2
Cr	0-5

-continued

Ni	0–5
Mo	0–2
V	0–1
Fe	balance.

wherein the weight ratio of tellurium to sulphur is in a range between 0.07 and 0.13, and wherein oxide and sulphide inclusions are essentially of the globular type and comprise calcium aluminate inclusions containing little Ca and coated with an outer layer consisting essentially of manganese and calcium sulphide and globular inclusions consisting essentially of manganese sulpho-telluride.

4,210,445

NIOBIUM-CONTAINING WELDABLE STRUCTURAL STEEL HAVING GOOD WELDABILITY

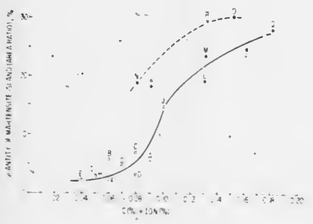
Yutaka Kasamatsu, Mikagenakamachi; Mutsuo Hiromatsu, Akashi; Syuzi Takashima, Kakogawa; Takasi Hosoya, Akashi, and Takamichi Hamanaka, Kakogawa, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Mar. 8, 1978, Ser. No. 884,384

Claims priority, application Japan, Oct. 18, 1977, 52-125249

Int. Cl.² C22C *38/04, 38/12;* C21D *7/14*

U.S. Cl. 75—124 **2 Claims**



1. A niobium-containing weldable structural steel having good weldability which consists of 0.005–0.04% of C, 0.01–0.50% of Si, 1.20–2.50% of Mn, 0.01–0.07% of Nb, 0.005–0.030% of Ti, 0.005–0.06% of Al and the balance of iron and inevitable impurities whereby $(C(\%)+10\ N(\%))$ is not greater than 0.10% and $Ti(\%)/(C(\%)+10\ N(\%))$ is from 0.05 to 0.60 whereby the amount of the martensite islands in the weld heat affected zone when said steel is subjected to a welding process is not greater than 15% in terms of the area fraction.

4,210,446

ALUMINUM ALLOY FOR ENAMELLING

Michel Deleuze, Annecy; Francois-Regis Boutin, Virieu sur Bourbre, and Daniel Marchive, Coublevie, all of France, assignors to Forges de Crans, Annecy, France

Filed Apr. 19, 1978, Ser. No. 897,720

Claims priority, application France, May 24, 1977, 77 16631

Int. Cl.² C22C *21/02*

U.S. Cl. 75—148 **4 Claims**

1. Aluminum-based alloy intended more particularly for the manufacture of enamelled articles, consisting essentially of the following composition (by weight):

Si: 1 to 1.5%

at least one of the elements of the group Fe-Ni-Co in a total quantity between 0.3 and 2%

at least one of the elements of the group Mo-Nb-Ta in a total quantity between 0.05 and 1%

Cr: 0.05 to 0.2%

Cu: <0.2%

Mg: <0.01%

the remainder being aluminum with the standard impurities, the silicon operates in the alloy to enhance adhesion of the enamel while the elements from the groups Fe-Ni-Co and Mo-Nb-Ta favorably influence the adhesion of the enamel.

4,210,447

DENTAL RESTORATIONS USING CASTINGS OF NON-PRECIOUS METALS

Min H. Tsai, Van Nuys, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Continuation-in-part of Ser. No. 854,407, Nov. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 743,192, Nov. 19, 1976, which is a continuation of Ser. No. 643,621, Dec. 23, 1975, which is a continuation of Ser. No. 465,837, May 1, 1974, abandoned. This application Nov. 20, 1978, Ser. No. 962,118

Int. Cl.² C22C *19/05*

U.S. Cl. 75—171 **3 Claims**

1. A non-precious metal base for a dental restoration, comprising:

a body of a stainless metal alloy configured for intra-oral installation, the alloy comprising about:

58 to 68 percent nickel, 18 to 23 percent chromium, 6 to 10 percent molybdenum, 1 to 4 percent columbium plus tantalum, and 0.01 to 5 percent of at least one rare-earth element selected from the group consisting of lanthanum, cerium, praseodymium, neodymium, samarium, gadolinium, and dysprosium.

4,210,448

PROCESS FOR ELECTROPHOTOGRAPHIC IMAGE FORMATION AND TRANSFER

Gabor Forgo, Zurich, Switzerland, assignor to Elfotec A.G., Zumikon, Switzerland

Filed Oct. 18, 1976, Ser. No. 733,494

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1975, 2547118

Int. Cl.² G03G *13/16, 9/14*

U.S. Cl. 430—126 **10 Claims**

1. Process for electrophotographic image production by the toner transfer process by use of a corona, comprising applying in the absence of applied potential field a magnetic one-component toner having a resistivity of at least 10^{13} ohm-cms and comprising particles which have a core of magnetizable or magnetic material and a carbon content of the surface of the toner particles of at most 0.7 percent by weight which has not been charged by applied potential field or by frictional electricity for production of the image, and transferring the produced toner image to a surface by applying a corona thereto.

4,210,449

RADIATION SENSITIVE COMPOSITION COMPRISING COPOLYMER OF GLYCIDYL METHACRYLATE AND ALLYL GLYCIDYL ETHER AND DIAZONIUM SALT OF COMPLEX HALOGENIDE

Sheldon I. Schlesinger, E. Windsor Township, Mercer County, and Veronica Cochran, Cranbury, both of N.J., assignors to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 297,829, Oct. 16, 1972, abandoned. This application Feb. 4, 1975, Ser. No. 547,080

Int. Cl.² G03C *1/70, 1/54, 1/86, 1/94*

U.S. Cl. 430—183 **14 Claims**

1. A composition of matter comprising, in admixture, a copolymer of glycidyl methacrylate and allyl glycidyl ether, derived from about 4 to about 5 moles of glycidyl methacrylate per mole of allyl glycidyl ether, having an inherent viscosity of at least about 0.25 and an epoxide equivalent of at least about 0.65 per 100 grams of polymer and, as a latent curing catalyst, an aromatic diazonium salt of a complex halogenide which decomposes upon exposure to electromagnetic or electron beam irradiation to release a Lewis Acid effective to initiate polymerization, said catalyst being present in an amount sufficient to effect polymerization of said copolymer and being selected from compounds having the general formula $(ArN_2)_m(MX_{n+m})$ wherein Ar is an aryl or substituted aryl group, X is halogen, M is selected from the group consisting of arsenic, antimony, bismuth, iron, tin, phosphorus and boron, n is the oxidation state of M, and m is the number of diazonium groups in the diazonium salt as determined by the net charge on the complex anion $(MX_{n+m})^{-m}$.

4,210,450

METHOD FOR FORMING PHOTOSENSITIVE SILVER HALIDE EMULSION

Leo D. Corben, Swampscott, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 20, 1978, Ser. No. 962,337

Int. Cl.² G03C *1/02*

U.S. Cl. 430—567 **10 Claims**

1. The method for forming photosensitive silver halide grains which comprises the following steps, in sequence:

(a) precipitating silver chloroiodobromide grains;

(b) adding a water-soluble iodide salt to said chloroiodobromide grains;

(c) precipitating additional silver chloroiodobromide;

(d) adding a water-soluble iodide salt to said chloroiodobromide grains;

(e) precipitating additional silver chloroiodobromide;

(f) adding a water-soluble iodide salt to said chloroiodobromide grains.

4,210,451

REGENERATED CELLULOSE FLAMEPROOFED WITH ORGANOPHOSPHORYLAMIDES

Claudine Mauric, Basel, and Rainer Wolf, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

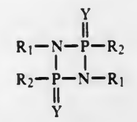
Continuation of Ser. No. 745,414, Nov. 26, 1976, abandoned, which is a continuation of Ser. No. 520,303, Nov. 4, 1974, abandoned. This application Oct. 16, 1978, Ser. No. 951,393

Claims priority, application Switzerland, Nov. 9, 1973, 15814/73; Feb. 12, 1974, 1934/74; Jun. 10, 1974, 7882/74; Jun. 25, 1974, 8681/74

Int. Cl.² C09K *3/28*

U.S. Cl. 106—18.17 **20 Claims**

1. Flameproofed regenerated cellulose containing as a flameproofing agent a compound of formula,



in which

both Y's are oxygen or sulphur,

both R_1's are unsubstituted phenyl or phenyl substituted with up to 3 substituents selected from 1 to 3 chlorine atoms, a bromine atom in the para-position, 1 to 3 C_{1-4} alkyl radicals and 1 to 3 C_{1-4} alkoxy radicals, the aggregate of the carbon atoms in the alkyl and/or alkoxy radicals being a maximum of 4, and, when Y is sulphur, both R_1's may also be methyl, and

both R_2's are a radical of formula



wherein R_3 is hydrogen and

R_4 is unsubstituted phenyl or phenyl substituted with up to 3 substituents selected from 1 to 3 chlorine atoms, a bromine atom in the para-position, 1 to 3 C_{1-4} alkyl radicals and 1 to 3 C_{1-4} alkoxy radicals, the aggregate of the carbon atoms in the alkyl and/or alkoxy radicals being a maximum of 4, or, when Y is oxygen, R_4 can be cyclohexyl, or when

Y is oxygen R_3 and R_4, together with the common nitrogen atom and optionally with a further hetero atom, form a saturated 5- or 6-membered heterocyclic ring,

with the proviso that when simultaneously Y is oxygen, R_3 is hydrogen and R_1 is unsubstituted or substituted phenyl, R_4 is only unsubstituted or substituted phenyl.

4,210,452

NOVEL INTUMESCENT COMPOSITION

Richard R. Nicholson; Ray E. Smith, and Jayendra G. Shukla, all of Ann Arbor, Mich., assignors to Veesicol Chemical Corporation, Chicago, Ill.

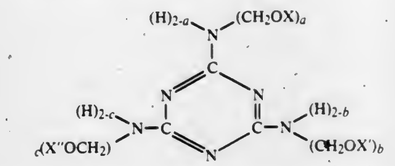
Filed Dec. 6, 1978, Ser. No. 966,931

Int. Cl.² C09D *5/18*

U.S. Cl. 106—18.18 **11 Claims**

1. An intumescent composition comprising a cyclic nitrogen compound, a phosphorus polyol, a phosphorus acid, and water, wherein:

(a) said nitrogen compound is



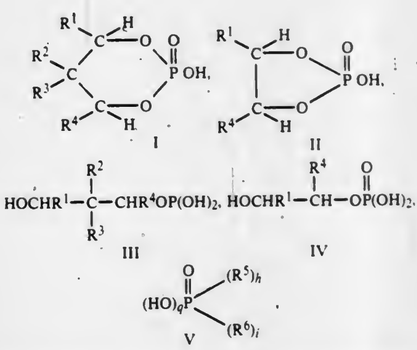
wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X', and X'' are independently selected from the group consisting of hydrogen and $-CH_3$, provided that at least one of said X, X', and X'' groups is $-CH_3$;

(b) said phosphorus polyol is the reaction product of the reaction of:

1. a member selected from the group consisting of phosphorous acid, phosphoric acid, phosphonic acids, pyrophosphoric acid, diphosphoric acid, diphosphinic acids, monoesters of phosphoric acid, monoesters of polyphosphoric acid, monoesters of diphosphori acid, diesters of diphosphoric acid, diesters of diphosphinic acid diesters of diphosphonic acids, diesters of pyrophosphoric acid, and mixtures thereof; and

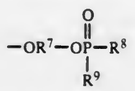
2. an oxide selected from the group consisting of alkylene oxides, alkylene dioxides, and epihalohydrin.

(c) said acid is selected from the group consisting of



and mixtures thereof, wherein R^1, R^2, R^3, and R^4 are independently selected from the group consisting of hydrogen, alkyl of

from about 1 to about 3 carbon atoms, haloalkyl of from about 1 to about 3 carbon atoms, and hydroxyalkyl of from 1 to about 3 carbon atoms, provided that the total number of carbon atoms in the R^1, R^2, R^3, and R^4 groups does not exceed about 5; wherein q is an integer of from 1 to 2, h and i are integers independently selected from the group consisting of 0, 1, and 2, and q plus h plus i equals 3; and wherein R^5 and R^6 are independently selected from the group consisting of alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from 1 to about 3 halogen atoms, hydroxy-polyalkyleneoxy containing 2 to 6 carbon atoms and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, haloalkoxy of from about 2 to about 6 carbon atoms and from about 1 to about 3 halogen atoms,



wherein R^7 is selected from the group consisting of alkylene of from about 2 to about 6 carbon atoms, haloalkylene of from about 3 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, polyalkyleneoxy containing 2 to 6 carbon atoms and 1 to 5 oxygen atoms, and hydroxyalkylene of from 3 to about 6 carbon atoms and 1 to 4 hydroxyls, and R^8 and R^9 are independently selected from the group consisting of hydrogen, hydroxyl, alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, hydroxy-polyalkylenoxy of from about 2 to about 6 carbon atoms, and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, and haloalkoxy of from about 2 to about 6 carbon atoms and 1 to about 3 halogen atoms, provided that the total number of carbon atoms in the R^5 and R^6 groups does not exceed about 8.

4,210,453

CARBON BONDED REFRACTORY BRICK COMPOSITION

Donald J. Bowers, Jackson, Ohio, assignor to Davis Refractories, Inc., Oak Hill, Ohio

Filed Nov. 8, 1978, Ser. No. 958,828
Int. Cl.² C04B *35/52*
U.S. Cl. 106—56 **4 Claims**

1. A moldable refractory composition for making a compact shaped body which includes about 75 percent by weight periclase with about 34 percent of said periclase having a size which passes through a 4 mesh Tyler Standard Screen and is retained on a 10 mesh screen, about 28 percent by weight having a size which passes through a 10 mesh screen and is retained on a 35 mesh screen, about 14 percent by weight having a size which passes through a 35 mesh screen and about 34 percent by weight having a size which passes through a 150 mesh screen and about 25 percent by weight carbon, a portion of said carbon prior to subjecting said composition to curing at elevated temperatures being in the form of a liquid carbonaceous bonding resin.

4,210,454

ALUMINOUS REFRACTORY COMPOSITIONS CONTAINING CARBON, SILICON AND CHROME OXIDE

Harold L. Rechter, Country Club Hills, Ill., assignor to Chicago Fire Brick Company, Chicago, Ill.

Filed Mar. 5, 1979, Ser. No. 17,270
Int. Cl.² C04B *35/52*
U.S. Cl. 106—56 **10 Claims**

1. In a refractory composition comprising alumina or aluminum silicate refractory material, carbon and powdered silicon, the improvement of having chromic oxide and carbon present in the composition in amount sufficient to give greater resistance to slag over that of aluminous composition in which chromic oxide and carbon are absent.

4,210,455

RETARDED AQUEOUS HYDRAULIC CEMENT SLURRY

Arthur S. Metcalf, Tulsa, and Louis H. Eilers, Inola, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 30, 1978, Ser. No. 955,681
Int. Cl.² C04B *7/35*
U.S. Cl. 106—90 **17 Claims**

1. A hydraulic cement slurry comprising a hydraulic cement, sufficient water to form a pumpable slurry which will cure to a dimensionally stable solid, and an effective amount of a retarder selected from the group consisting of

alkaline earth metal salts of mono- and di-carboxylic acid derivatives of simple sugars,

said slurry being substantially free of lignin derivatives.

4,210,456

METHOD FOR PRODUCING A STORABLE MORTAR

Richard L. Miller, Mountain Green, Utah, assignor to Ultra Mortar, Inc., Ogden, Utah

Filed Apr. 21, 1978, Ser. No. 898,877
Int. Cl.² C04B *7/352*
U.S. Cl. 106—92 **7 Claims**

1. A method for controlling the initiation of hydraulic hydration of hydraulic mortar mixtures formed of cementitious material, aggregate and water to allow prolongation of the setting times of such mixtures while retaining workability prior to setting and retaining normal strength characteristics subsequent to setting and to cause the setting rate on initiation of hydraulic hydration to be at least as rapid as that of hydraulic mortar mixtures which have not undergone suspension of hydraulic hydration, comprising the steps of:

mixing with the hydraulic mortar mixture an effective amount of an additive comprised of saccharide polymers, each said saccharide polymer being composed of glucose units and having a size of from 3 glucose units to on the order of 25 glucose units;

storing the resulting admixture of additive and hydraulic mortar mixture under sealed conditions for a period of time exceeding the normal setting time of the hydraulic mortar mixture to minimize moisture evaporation from the admixture; and

removing the admixture from the sealed conditions at ambient atmospheric pressure at the time of intended use of the admixture to allow initiation of setting to proceed.

4,210,457

PORTLAND CEMENT-FLY ASH-AGGREGATE CONCRETES

Vance H. Dodson, Walpole, and Lawrence R. Roberts, Acton, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Oct. 12, 1978, Ser. No. 950,918
Int. Cl.² C04B *7/02*
U.S. Cl. 106—97 **32 Claims**

1. A dry, hydratable concrete composition comprising a mixture of Portland cement and fly ash, and, in addition, aggregate in particulate form, said Portland cement and fly ash being present in a weight ratio of from 1 part cement to at least 1 part ash, said aggregate being present in an amount of at least 50 percent by volume of the total volume of the composition, said fly ash upon analysis having a total calcium oxide content greater than about 10 percent by weight, the total additive amount of SiO_2, Al_2O_3 and Fe_2O_3 present in said fly ash being less than about 80 percent by weight, said fly ash furthe not having been first treated to promote activity prior to incorporation in said concrete composition.

4,210,458

PLASTICIZED SULFUR WITH IMPROVED THIXOTROPY

Militun Simic, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 670,036, Mar. 24, 1976, abandoned. This application Nov. 30, 1978, Ser. No. 965,126
Int. Cl.² C09K *3/00*
U.S. Cl. 106—287.23 **12 Claims**

1. A method of preparing a plasticized sulfur composition from a molten mixture of solidified preformed plasticized sulfur concentrate and sulfur, which comprises mixing the preformed sulfur concentrate in the molten state with molten sulfur in the presence of 0.01 to 5 weight percent of a C_2-C_{25} saturated polyhydric alcohol thereby to increase the viscosity of the molten plasticized sulfur concentrate-sulfur mixture by at least 500 centipoises at an RPM of 6 using a No. 3 spindle in a Brookfield Viscometer test at 145° C., the plasticized sulfur concentrate in the preformed state comprising at least 10 weight percent sulfur, and the molten plasticized sulfur concentrate-sulfur mixture comprising at least 50 weight percent sulfur and at least 10 weight percent more sulfur than the plasticized sulfur concentrate.

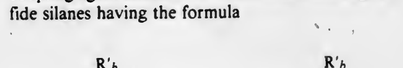
4,210,459

POLYMER COMPOSITE ARTICLES CONTAINING POLYSULFIDE SILICON COUPLING AGENTS

Thomas C. Williams, Ridgefield, Conn., and George E. Totten, West Haverstraw, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 810,853, Jun. 28, 1977, Pat. No. 4,151,157. This application Jan. 8, 1979, Ser. No. 1,856
Int. Cl.² C09C *3/12*
U.S. Cl. 106—308 N **15 Claims**

1. An inorganic substrate treated with a polysulfide silicon coupling agent selected from the class consisting of (i) polysulfide silanes having the formula



(I)

wherein R′ is hydrogen or a monovalent radical selected from the class consisting of hydrocarbon radicals and substituted hydrocarbon radicals;

wherein X is a hydrolyzable radical selected from the class consisting of alkoxy, aryloxy, acyloxy, secondary amino and aminooxy radicals;

wherein R is a divalent bridging group selected from the class consisting of hydrocarbon radicals, groups of the formula —R″OR″— and groups of the formula —R″SR″— wherein R″ is a divalent hydrocarbon radical.

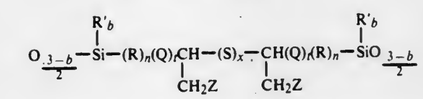
wherein Q is an oxygen atom or a sulfur atom;

wherein Z is a monovalent organic amino radical the nitrogen atom of which is directly bonded to the carbon atom of the (CH_2) group of the above formula;

wherein n has a value of 0 or 1 and t has a value of 0 or 1, with the proviso that when n is 0, then t is 0; and

wherein b has a value of 0 to 2, and x has a value of 2 to 4;

(ii) polysulfide siloxane homopolymers consisting essentially of siloxy units having the formula



(II)

wherein R′, R, Q, Z, n, t, b and x are the same as defined above; and (iii) polysulfide siloxane copolymers consisting essentially of at least one siloxy unit represented by formula (II) above and at least one siloxy unit represented by the formula



(III)

wherein R′ is the same as defined in formula (II) above, and wherein c has a value of from 0 to 3 inclusive.

4,210,460

SPILL CONTROL COMPOSITION AND USE THEREOF

James W. Seidenberger, Bethlehem, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Oct. 22, 1975, Ser. No. 624,591
Int. Cl.² B08B *3/08*
U.S. Cl. 134—7 **2 Claims**

1. A method for the control and cleanup of spilled hydrofluoric acid comprising first applying to the spilled hydrofluoric acid an aqueous solution of about 25 to 29% by weight of calcium acetate and about 71 to 75% by weight of water and thereafter applying to said spilled hydrofluoric acid a powdered composition of about 99.90 to 99.99% by weight powdered magnesium oxide and about 0.01 to 0.10% by weight of a solid pH indicator changing color in the range pH 6.0–8.0, which powdered composition has first been activated by the addition of at least 350 ml of water per 110 grams of powdered composition, and thereafter disposing of the resulting treated hydrofluoric acid slurry after a change in color of the pH indicator in the slurry evidences that the slurry has reached an essentially safe pH condition.

4,210,461

METHOD FOR RECOVERING HEAT IN A VAPOR DEGREASING APPARATUS

Hans G. E. Möree, Surte, and Helmut Grunewald, Gothenburg, both of Sweden, assignors to Elecktrokemiska AB, Fack, Sweden

Continuation of Ser. No. 691,075, Jun. 14, 1976, abandoned. This application Jun. 29, 1978, Ser. No. 920,281
Claims priority, application Sweden, Jun. 2, 1975, 75062513; Dec. 15, 1975, 75141093
Int. Cl.² B08B *5/00*
U.S. Cl. 134—11 **3 Claims**

1. A method of heat control in a solvent vapor degreasing apparatus, said apparatus comprising a tank containing a liquid solvent bath in the bottom thereof, and with a solvent vapor zone for degreasing objects above said liquid solvent bath, said method comprising the steps of:

a. heating the bottom of said tank for heating said liquid to be continuously at the boiling point, thereby generating vapor from said liquid solvent bath;

b. cooling a region defined by a cooling coil at least partially surrounding the inside of said tank at a level above said solvent vapor zone;

c. recovering the vapor in a liquid form from said cooling region and returning a first portion of the recovered liquid to said liquid solvent bath and diverting a second portion of the recovered liquid into said cooling coil of a heat pump means;

d. supplying heat absorbed by said cooling coil in said cool-

ing region from said solvent vapor to a circulating heat-carrying medium of a system including said heat pump means, in which the medium is vaporized and thereafter is compressed and discharging the vaporized and compressed medium at high temperature and pressure directly into the liquid solvent bath, said heat-carrying medium including said second portion of said recovered liquid solvent; and

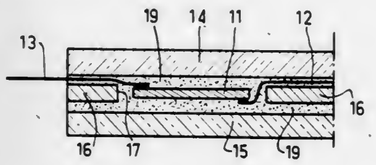
e. supplying extra energy from outside the system including the heat pump means for operation of said system and cooling away excess heat outside the degreasing apparatus for balancing said system.

4,210,462

GENERATOR PANEL HAVING SOLAR CELLS INCORPORATED IN A LAMINATED ASSEMBLY

Michel Tourneux, Velizy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1978, Ser. No. 903,052
Claims priority, application France, Jun. 24, 1977, 77 19435
Int. Cl.² H01L *31/04*
U.S. Cl. 136—89 EP **6 Claims**



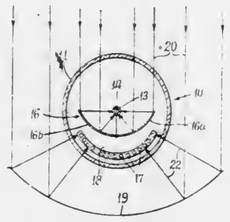
1. A photovoltaic generator panel which comprises a plurality of lamellar elements, the two external lamellar elements being formed of a vitreous material, at least one of said vitreous material lamellar elements being transparent; an inner lamellar element provided with a plurality of openings, said inner lamellar element being formed of a synthetic resin having a softening temperature above 70° C.; a solar cell positioned in each such opening, the thickness of the inner lamellar element being slightly greater than that of the solar cells; and a transparent adhesive bonding said lamellar elements and said solar cells together, said adhesive being a synthetic resin formed from a monomer polymerized at a temperature below 70° C.

4,210,463

MULTIMODE SOLAR ENERGY COLLECTOR AND PROCESS

William J. D. Escher, 506 S. Clinton Ave., St. Johns, Mich. 48879

Continuation-in-part of Ser. No. 814,289, Jul. 11, 1977, Pat. No. 4,136,673. This application Jan. 11, 1979, Ser. No. 2,663
The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.
Int. Cl.² H01L *31/04;* **F24J** *3/02*
U.S. Cl. 136—89 PC **29 Claims**



1. A multimode solar energy collector comprising: a transparent tubular body portion having end closures sealing each end of said body portion providing a fluid-tight cavity within the tube, a concentrator-reflector within the tube, a focal-line solar energy absorber in the focus of said concentrator-reflector, means for removal of absorbed energy from said focal-line solar energy absorber to the exterior of said tube, a diffuse solar energy absorber within the tube adapted to be in the path of reflected or diffuse solar radiation, a low temperature fluid conduit in thermal exchange relation with said diffuse solar energy absorber, heat exchanger fluid in said conduit and means for introducing and withdrawing the heat exchange fluid from said collector, said concentrator-reflector adapted to be in the path of direct solar radiation and focusing said direct radiation to said focal-line absorber and said diffuse absorber adapted to be in the path of reflected or diffuse solar radiation.

4. The multimode solar energy collector of claim 1 wherein said focal-line energy absorber is coated with a photovoltaic material or fitted with photovoltaic cells directly converting the solar energy into electrical energy.

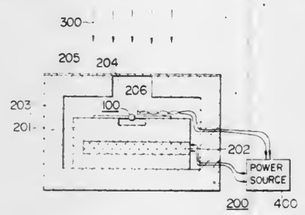
5. The multimode solar energy collector of claim 1 wherein said concentrator-reflector is in movable relation to the tube.

4,210,464

METHOD OF SIMULTANEOUSLY CONTROLLING THE LIFETIMES AND LEAKAGE CURRENTS IN SEMICONDUCTOR DEVICES BY HOT ELECTRON IRRADIATION THROUGH PASSIVATING GLASS LAYERS

Tomoyuki Tanaka; Masahiro Okamura; Toshikatsu Shirasawa, and Takuzo Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 31, 1978, Ser. No. 873,774
Claims priority, application Japan, Feb. 2, 1977, 52-9682
Int. Cl.² H01L *21/263;* **C03C** *3/04*
U.S. Cl. 148—1.5 **7 Claims**



1. A method of controlling the lifetime of minority carriers in a semiconductor device without increasing the reverse leakage current in said device, wherein said semiconductor device has a semiconductor substrate including a pn junction substantially responsible for the blocking voltage of the device, said method comprising the steps of:

coating an exposed end of said pn junction with a glass insulator material substantially free of alkali metal ions to provide a passivating glass layer thereon;

sintering said glass material by heating said layer; and

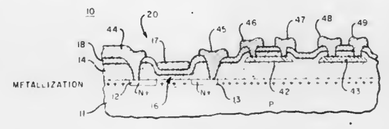
reducing said lifetime by irradiating said pn junction having said passivating glass layer with radiation capable of causing lattice defects in said semiconductor device at a temperature above 300° C. in a temperature range wherein a reverse leakage current in said substrate is made smaller than that current obtained when said pn junction is subjected to said irradiation at room temperature and wherein the electrical characteristics of said device are not deteriorated.

4,210,465

CISFET PROCESSING INCLUDING SIMULTANEOUS IMPLANTATION OF SPACED POLYCRYSTALLINE SILICON REGIONS AND NON-MEMORY FET CHANNEL

Ronald W. Brower, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 20, 1978, Ser. No. 962,422
Int. Cl.² H01L *7/34, 11/00;* **B01J** *17/00*
U.S. Cl. 148—1.5 **6 Claims**



1. In a process for forming an integrated circuit including at least one non-memory field effect transistor and at least one polysilicon component on a semiconductor substrate and wherein the threshold voltage of the field effect transistor and the resistance of the polysilicon component are determined by the impurity concentration therein, the improvement wherein, prior to forming the transistor gate electrode and circuit interconnections, the threshold voltage-determining concentration and the resistance-determining impurity concentration of at least a portion of the polysilicon component are established simultaneously in the partially completed integrated circuit which comprises the substrate having a source and drain formed therein and field insulation formed selectively thereon, by:

forming a layer of polysilicon on the field insulation in a predetermined pattern of at least one component, the size of the component being selected to provide a given resistance for a given impurity concentration therein;

forming a window in the insulating oxide over the location of the transistor channel;

selectively implanting the channel and the polysilicon component to establish the given threshold voltage-determining impurity concentration in the channel and the given resistance-determining impurity concentration in at least the portion of the polysilicon component; and

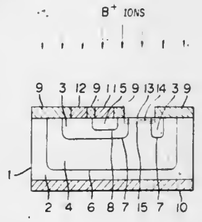
forming a non-memory gate insulator over the transistor channel.

4,210,466

PROCESS FOR PREPARING HEAT SENSITIVE SEMICONDUCTOR SWITCH

Yutaka Mihashi, and Josuke Nakata, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1978, Ser. No. 966,627
Claims priority, application Japan, Dec. 5, 1977, 52-146245
Int. Cl.² H01L *23/56, 29/66, 21/263*
U.S. Cl. 148—1.5 **3 Claims**



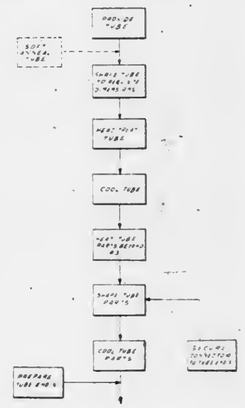
1. A process for preparing a heat sensitive semiconductor switch which comprises a step of preparing a first conductive type silicon substrate; a step of forming a first region by diffusing a second conductive type impurity from at least one main surface of said silicon substrate; a step of forming a second region having a surface exposed part of said silicon substrate by diffusing a second conductive type impurity from the other main surface of said silicon substrate; a step of forming a third region by diffusing a first conductive type impurity in said second region; a step of coating a metal electrode at the surface exposed part in said first, second and third regions; and a step of ion implantation of a second conductive type deciding impurity in the surface exposed part of the substrate in the second region at least after forming said first second and third regions.

4,210,467

METHOD OF MAKING A REINFORCEMENT FOR VEHICLE DOORS

Stefan Klatzer, Schloss Neuhaus, and Winfried Dickhoff, Paderborn, both of Fed. Rep. of Germany, assignors to Benteler Werke AG, Paderborn, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,593
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750867
Int. Cl.² C21D *9/08, 7/14*
U.S. Cl. 148—12 R **8 Claims**



1. A method of making a tubular reinforcing element, particularly for vehicle doors, comprising the steps of providing a tubular element composed of steel containing 0.14 to 0.18% by weight of carbon, 0.15 to 0.30% by weight of silicon, 1.60 to 1.80% by weight of manganese, 1.90 to 2.10% by weight of chromium, 0.45 to 0.60% by weight of molybdenum and at least 0.015% by weight of aluminum; annealing the tubular element at a temperature of between 900° to 930° C. and thereupon cooling it; heating portions of the tubular element to a temperature above the point A_3 of the iron-carbon equilibrium diagram; deforming the thus heated portions to impart to them the desired shape; and cooling the tubular element.

4,210,468

PISTON PIN AND METHOD FOR MAKING SUCH

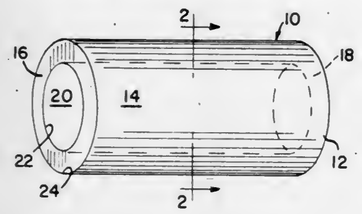
Sherwood W. McGee, Lisle, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Aug. 17, 1978, Ser. No. 934,337
Int. Cl.² C21D *9/08*
U.S. Cl. 148—12.4 **5 Claims**

1. A method of making a piston pin rod particularly adapted for use in an internal combustion engine, said method comprising the steps of:

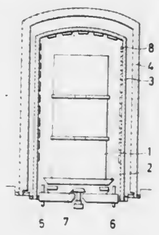
(1) forming a steel bar stock having a uniformly distributed carbon content beig in a range by weight of 0.25 to 0.6 % into a piston pin having an elongated cylindrical body with a center aperture and with an annular wall of a predetermined wall thickness, said annular wall extending between spaced end walls,

(2) heating said body to a temperature above the critical temperature of said steel with a first heating means to produce a uniform austenitic microstructure within said annular wall,
(3) cooling said body to a temperature below said critical temperature at a rate so as to produce a microstructure of hard martensite throughout said annular wall,
(4) applying induction heating along an outer surface of said annular wall to provide zones at different temperatures within said annular wall comprising a thin outer annular zone having a temperature above said critical temperature, a thin inner annular zone having a temperature not



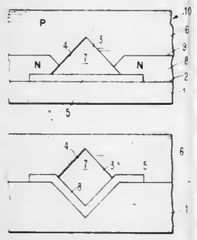
exceeding 325° F. and a central zone intermediate said inner and outer zones and having a temperature gradient between said temperatures of said inner and outer zones and less than said critical temperature, and
(5) cooling said body so as to produce a microstructure of hard martensite in a high compressive stress state in said inner and outer zones including said end walls, and a microstructure of tempered martensite in a tensile stress state in said central zone with said carbon content remaining substantially uniform throughout,
wherein said piston pin has improved tensile strength, fatigue life and impact resistance.

4,210,469
PROCESS OF ANNEALING FOR PREVENTING TEMPER COLORS ON A STEEL SHEET
Shoji Shimada; Kazuhiko Yoshinari, and Hidefumi Koyakumaru, all of Kitakyushu, Japan, assignors to Nippon Steel Corp., Ote, Japan
Continuation of Ser. No. 592,532, Jul. 2, 1975, abandoned. This application Sep. 12, 1977, Ser. No. 832,578
Claims priority, application Japan, Jul. 11, 1974, 49-79425
Int. Cl.[2] C21D *1/48*
U.S. Cl. 148—16 **2 Claims**



1. In a method for box annealing a cold rolled steel strip coil at a temperature of 650° to 750° C. in a furnace in which a protective furnace gas containing small amounts of water vapor therein is circulated, said cold rolled steel strip coil being susceptible to the development of temper colors on the surface thereof during the box annealing at said temperature range, and then cooling the thus-annealed steel strip coil, the improvement wherein an iron-base material capable of being oxidized at low temperatures is placed within the circulating path of the furnace gas in the furnace at a position inside an inner cover of the furnace and above the furnace bottom, where the iron-base material is at a temperature which is between 50 and 100° C. lower than that of the steel strip coil in the cooling step of the annealing cycle so as to ensure that the iron-base material first reacts with the water vapor during the cooling step to produce a reducing furnace atmosphere, thereby preventing the formation of temper colors on the steel strip, said iron-base material being one selected from the group consisting of lathe turnings of cast iron and steel scraps.

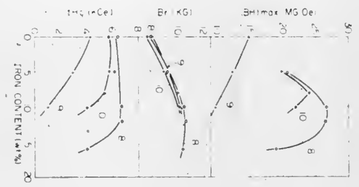
4,210,470
EPITAXIAL TUNNELS FROM INTERSECTING GROWTH PLANES
John C. Marinace, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 17,230, Mar. 5, 1979. This application Jun. 13, 1979, Ser. No. 48,245
Int. Cl.[2] H01L *29/04, 29/06*
U.S. Cl. 148—33.2 **7 Claims**



1. A crystalline structure comprising a substrate and a body of a crystal, said substrate having a crystallographically oriented surface that has two preferential growth planes that intersect said surface and that intersect each other;
a shape defining crystallographic growth inhibiting design on the surface of said substrate; and
a grown monocrystalline body epitaxial with said substrate enclosing a void governed at said surface by the shape of said design.

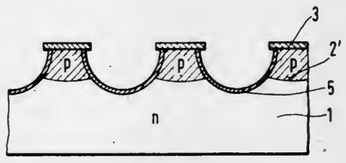
4,210,471
PERMANENT MAGNET MATERIAL AND PROCESS FOR PRODUCING THE SAME
Tetsuhito Yoneyama, Ichikawa; Tetsuo Hori, Sugamachi, and Teruhiko Ojima, Nagareyama, all of Japan, assignors to TDK Electronics, Co., Ltd., Tokyo, Japan
Filed Feb. 8, 1977, Ser. No. 766,686
Claims priority, application Japan, Feb. 10, 1976, 51-13600; Mar. 16, 1976, 51-28431; Mar. 22, 1976, 51-31131
Int. Cl.[2] H01F *1/08*
U.S. Cl. 148—102 **42 Claims**

1. A permanent magnet of R_2Co_{17} type crystal structure consisting essentially of at least one rare earth metal in an amount of from 24 to 28% by weight, copper in an amount of from 5 to 12% by weight, iron in an amount of from 8 to 15% by weight, a total combined amount of cobalt and iron being from 56 to 70.8% by weight, and niobium in an amount of from



0.2 to 4% by weight, all percentages being based on the total weight of magnet.

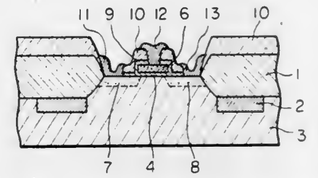
4,210,472
MANUFACTURING PROCESS OF SEMICONDUCTOR DEVICES
Hans Hoffmann, Reute, and Peter Krieger, March, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Nov. 16, 1978, Ser. No. 961,355
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755168
Int. Cl.[2] H01L *21/22*
U.S. Cl. 148—187 **8 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:
coating to one conductivity type by means of a doping agent the surface layer of a semiconductor substrate of the other conductivity type whereby a PN-junction is formed;
forming a mesa structure from said substrate; and
diffusing in said doping agent so as to fix the depth of the PN-junction within the semiconductor substrate while simultaneously passivating said mesa structure.

4,210,473
PROCESS FOR PRODUCING A SEMICONDUCTOR DEVICE
Mikio Takagi, Kawasaki; Hajime Kamioka, Yokohama; Haruo Shimoda, Tokyo, and Hidekazu Miyamoto, Machida, all of Japan, assignors to Fujitsu Limited, Japan
Filed Oct. 30, 1978, Ser. No. 955,754
Claims priority, application Japan, Nov. 29, 1977, 52-143189
Int. Cl.[2] H01L *21/223*
U.S. Cl. 148—189 **26 Claims**

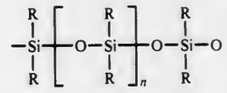
1. A process for producing a semiconductor device, comprising the steps of:
providing a wafer comprising a single crystal silicon substrate, an insulating layer selectively covering said substrate, and a polycrystalline silicon layer selectively covering said insulating layer and substrate to leave at least two portions of said single crystal silicon substrate exposed;
subjecting said wafer to a diffusing operation in which said wafer is placed in a capsule together with a material capable of releasing an impurity substance, in which the capsule is evacuated and heated to a temperature sufficient to cause the impurity substance to be released from said



material and to simultaneously diffuse into both the exposed portions of the substrate and the polycrystalline silicon layer in amount sufficient to form at least one pair of source and drain regions in said substrate and at least one gate in said polycrystalline silicon for device; and
selectively electrically connecting said at least one gate and source and drain regions within said device.

4,210,474
SILICONE CONTAINING SOLID PROPELLANT
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Kumar N. R. Ramohalli, Pasadena, Calif.
Filed Oct. 16, 1978, Ser. No. 951,830
Int. Cl.[2] C06B *45/10*
U.S. Cl. 149—19.2 **8 Claims**

1. A composite solid propellant comprising a continuous phase of 10 to 14% by weight of cured, solid elastomeric polybutadiene binder containing 0.1 to 3% by weight of a polysiloxane liquid oil having a viscosity from 500 to 2,000 centistokes of the formula:



where n is an integer and R is an alkyl of 1 to 5 carbon atoms and said binder contains a dispersion of in excess of 85% by weight of combustible solids including metal and oxidizer.

4,210,475
ADHESION METHOD EMPLOYING LIGNIN AMINE CORD ADHESIVES
Terry C. Neubert, Ravenna, and Donald W. Anderson, Norton, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 826,281, Aug. 22, 1977, abandoned. This application Jan. 10, 1979, Ser. No. 2,432
Int. Cl.[2] B29H *5/02;* **B60C** *5/00;* **C09J** *5/00*
U.S. Cl. 156—110 A **11 Claims**

1. In a method for adhering a tire cord to a vulcanized conjugated diene rubber compound by treating said tire cord with a composition comprising an aqueous alkaline dispersion of from about 10 to 30% by weight (as dry solids) of a mixture of 100 parts of a rubbery vinyl pyridine copolymer containing about 50 to 95% of a conjugated diolefin, about 5 to 40% of vinyl pyridine and about 0 to 40% of a styrene; about 1.0 to 30 parts water soluble resorcinol and formaldehyde reaction product having a pH of 8–11 and heat treating said tire cord to remove the water and to heat set the solids from said composition and to deposit on said tire cord from said composition a total of from about 2 to 30% by weight (solids), said heat

treatment being conducted at temperatures of from about 150° C. to 260° C. for from about 30 to 150 seconds, cooling said treated tire cord, combining said cooled treated tire cord with an unvulcanized vulcanizable rubber consisting essentially of conjugated diene as the major elastomer component, and vulcanizing the same, the improvement which comprises using as the resorcinol formaldehyde reaction product a reaction product of resorcinol, formaldehyde and a lignin amine wherein the lignin amine is selected from the class consisting of a reaction product of lignin, formaldehyde and a primary or secondary amine; a reaction product of lignin with a reaction product of an epichlorohydrin and a tertiary amine; and a quaternary ammonium salt of lignin.

4. In a tire having a tire cord embedded in a vulcanized rubber, said tire cord containing a total of from about 2 to 30% by weight (dry) based on the weight of said uncoated tire cord of an adhesive composition comprised of a deposit of heat set mixture containing 100 parts of a rubbery vinyl pyridine copolymer and 1 to 30 parts of a resin produced in a basic media said adhesive composition forming a bond between said tire cord and said rubber, wherein the improvement comprises said resin being a lignin amine and resorcinol and formaldehyde reaction product, wherein the lignin amine is selected from the class consisting of a reaction product of lignin, formaldehyde and a primary or secondary amine; a reaction product of lignin with a reaction product of an epichlorohydrin and a tertiary amine; and a quaternary ammonium salt of lignin.

4,210,476

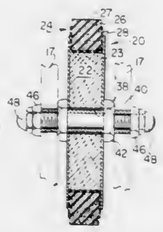
METHOD OF MAKING AN INKING RING

James G. McKay, Skokie, Ill., assignor to Kiwi Coders Corporation, Wheeling, Ill.

Division of Ser. No. 800,222, May 25, 1977, Pat. No. 4,126,090, which is a continuation of Ser. No. 669,645, Mar. 23, 1976, abandoned, which is a continuation of Ser. No. 477,654, Jun. 10, 1974, abandoned. This application Jul. 17, 1978, Ser. No. 925,188

Int. Cl.² B41F *31/22*

U.S. Cl. 156—112 **8 Claims**



1. A method of manufacturing an inking ring comprising the steps of forming an annular band of ink-absorbent material, forming a thin walled annular shell having a floor and side walls formed of ink-impervious vulcanizable thin sheet material, seating said band within the interior of said formed shell to expose the peripheral portion of the said band radially outward of said shell, applying a vulcanizable adhesive material within said shell interior before seating said band therewithin and vulcanizing such assembly simultaneously forming a unitary body.

4,210,477

TUBE FORMING METHOD

William S. Gillespie, Barrington, and Hal L. Inglis, Fox River Grove, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Jun. 30, 1978, Ser. No. 921,092

Int. Cl.² B29C *19/02*

U.S. Cl. 156—203 **3 Claims**



1. In the method of continuously folding into tubular form, and then heat sealing, the lapped side margins of an elongated continuous strip of non-ferrous metal foil coated on its opposed lateral surfaces with a heat softenable plastic material capable of bonding to itself when softened, the longitudinal edges of the metal foil being exposed at both lateral extremeties of the strip: feeding the tubular form having lapped side margins in encompassing relation on to a circular mandrel of non-ferrous material, positioning inside the tubular form a bar of magnetizable material aligned on the axis of the heat seal, surrounding the tubular form so fed with an induction coil excited by high frequency current causing the heat softenable material to melt to form the heat seal between the lapped surfaces, and regulating the inductance field to be of sufficient intensity to also assure the plastic melts to cover the exposed foil edges in the area of the heat seal but without melting the plastic on the outside of the seam.

4,210,478

METHOD OF MAKING A CATHETER

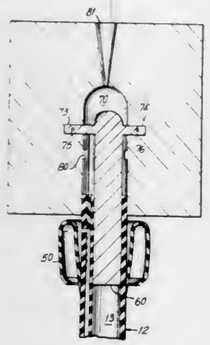
Suryakant R. Shoney, Cranston, R.I., assignor to International Paper Company, New York, N.Y.

Continuation of Ser. No. 655,636, Feb. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 539,298, Jan. 8, 1975, abandoned, which is a division of Ser. No. 358,309, May 8, 1973, Pat. No. 3,865,666. This application Dec. 2, 1977, Ser. No. 856,861

The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.

Int. Cl.² B29C *11/00*

U.S. Cl. 156—242 **19 Claims**



1. The process of manufacturing a catheter which comprises:
a. providing an elastomeric catheter shaft having a drainage lumen extending longitudinally thereof;
b. inserting a guide in the drainage lumen of said shaft;
c. inserting at least a portion of said shaft, including at least a portion of said guide in a mold;
d. molding a hollow tip and simultaneously bonding said tip to the distal end of said shaft by introducing elastomeric material under pressure into said mold; and
e. providing at least one drainage eye through said tip and communicating via the hollow tip with said drainage lumen.

4,210,479

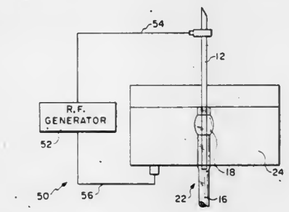
METHOD FOR BONDING A PLASTIC TUBING TO A METAL NEEDLE AND THE NEEDLE ASSEMBLY FORMED THEREBY

Eugene Fabisiewicz, Mt. Prospect, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 14, 1978, Ser. No. 915,516

Int. Cl.² B29C *19/04;* **B23K** *13/02;* **H05B** *9/04*

U.S. Cl. 156—273 **20 Claims**



1. A method for bonding the end portion of a plastic tubing to a metal needle including the steps of: applying a cement to the inner end of the needle to be inserted within the tubing end portion, placing the needle and tubing within a die comprising two parts, one part being made of an insulating material within which the needle is placed and the other part being metallic within which the tubing end portion is placed, inserting the coated inner end of the needle within the tubing end portion, and applying a high frequency voltage across the outer end of the needle and the metallic part of the die to heat seal the tubing end portion surrounding the coated inner end of the needle to the inner end of the needle.

4,210,480

STEAM SEAL OF BAG PLY

Fred B. Wilharm, Cantonment, Fla., assignor to St. Regis Paper Company, New York, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,545

Int. Cl.² B32B *3/00*

U.S. Cl. 156—308.4 **25 Claims**



1. A bag ply sealer to seal together two contiguous edges of inner heat sealable ply means in a bag form, comprising in combination,
an openable and closable steam chest positioned on a first path,
valve means connected to supply steam to said chest,
conveyor means to move a bag form along said first path to said steam chest,
power means connected to open and to close said steam chest in a condition enveloping an open part of the bag form with two contiguous edges of the heat sealable ply means exposed to the interior of said steam chest,
and control means connected to said power and valve means, to close said steam chest over the open part of a bag form and to stop the conveying of the bag form, to control said valve means to apply steam to said steam chest to enter the open part of a bag to heat the two contiguous edges of the heat sealable ply means, to close said valve means, and to open said steam chest and restart the conveying of the bag form by said conveyor means to move the bag form out of the opened steam chest.

4,210,481

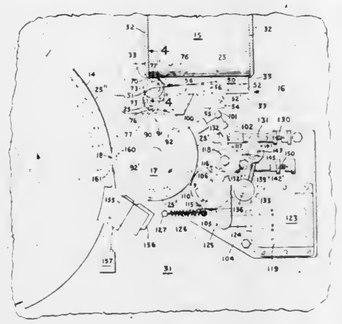
LABELING MACHINES

Edwin K. Wolff, Stockholm, and Alfred F. Schwenzer, Totowa, both of N.J., assignors to NJM, Inc., Hoboken, N.J.

Filed Nov. 14, 1978, Ser. No. 960,709

Int. Cl.² B32B *1/00*

U.S. Cl. 156—357 **11 Claims**



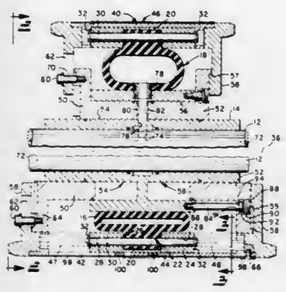
1. In a labeling machine a first continuously rotatable drum provided with suction means to enable it to carry separate labels on its peripheral surface, means for supplying separate labels in given succession to said drum with the face sides of such labels turned outwardly, a second continuously rotatable drum rotating in the opposite direction at a peripheral speed equal to that of said first drum, said second drum being positioned adjacent to said first drum and provided with suction means to receive the labels from said first drum and to retain the labels on its peripheral surface with their back sides outermost while being adhesively activated, and printing means adjacent to said first drum and positioned in circumferentially spaced relation between said label supply means and said second drum for printing indicia on the face sides of the labels carried by said first drum, said printing means comprising a printing cylinder mounted for rotation about a first axis at a peripheral speed equal to the peripheral speed of said first drum, means normally supporting said printing cylinder with said first axis stationarily located to maintain said printing cylinder in operative printing position relative to said first drum during the rotative movements of said drum and operable to move said printing cylinder by a translatory movement relative to said first drum about a second axis, operable means connected to said supporting means for moving the latter about said second axis to shift said printing cylinder from an operative printing position to a withdrawn inoperative printing position and vice versa, and vacuum operated means operatively connected to the suction means of said first drum and to said operable means, and operable when a label is not carried by said first drum for a printing operation by said printing cylinder to actuate said operable means to withdraw said printing cylinder.

4,210,482

VARIABLE WIDTH TIRE BUILDING DRUM

Marcus H. Collins, Akron, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 25, 1978, Ser. No. 954,400
Int. Cl.[2] B29H *17/16*
U.S. Cl. 156—415 **11 Claims**



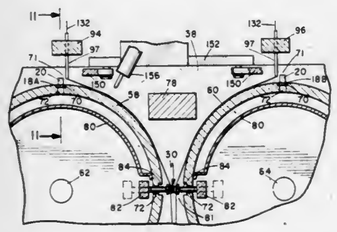
1. An annular tire building drum having an infinitely variable axial width for building portions of tires having infinitely variable widths in a tire building machine comprising a hub portion supportable for rotation in the tire building machine about an axis of rotation, an annular fluid expandable tube element supported on said hub portion, a plurality of pairs of shoe members supported on an exterior surface of said tube element for movement therewith in a radial direction upon expansion and contraction of said tube element, said shoe members cooperating to define an annular tire building surface which is movable in a radial direction upon expansion and contraction of said tube element, piston means supported by said hub portion, said piston means being operatively associated with said plurality of pairs of shoe members and movable in response to fluid pressure acting thereon to effect movement of one of said shoe members of each pair of shoe members in a first direction parallel to said axis of rotation and to effect movement of the other of said shoe members of each pair in a direction opposite to said first direction to infinitely vary the axial width of the building surface defined by said plurality of shoe members, stop means for limiting the axial movement of said shoe members, said stop means being adjustable to allow the axial width of said tire building surface to be infinitely variable between a predetermined minimum width and a predetermined maximum width to enable various width tires to be built on the adjustable width building surface.

4,210,483

APPARATUS FOR MAKING AN INDUCTIVE DELAY LINE COMPONENT

Bryan P. Kent, San Diego, Calif., assignor to Variani Associates, Inc., Palo Alto, Calif.

Filed Apr. 9, 1979, Ser. No. 28,232
Int. Cl.[2] B31F *1/00*
U.S. Cl. 156—443 **18 Claims**



1. Apparatus for making an inductive delay line component composed of a pair of bobbin elements of inductive material, each having an elongated connecting plate with a longitudinal row of spaced posts extending perpendicularly from one side thereof, the apparatus comprising:

a frame;

a pair of holders mounted on said frame, each having means for holding a bobbin element therein;

indexing means for moving said holders to position the bobbin elements therein at a pair of winding stations;

winding means at each winding station for winding wire around all the posts on the bobbin elements simultaneously;

said indexing means being operable to move said holders to a joining station with the bobbin elements in close confronting relation;

joining means on said holders for pressing the bobbin elements together with the posts interfitting, and bonding the elements to form the inductive delay line component;

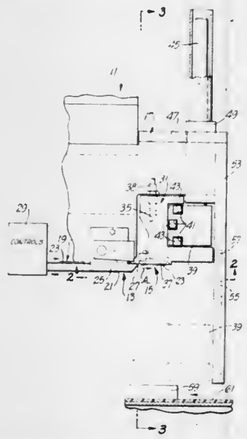
and extraction means for removing the component from said holders.

4,210,484

LABEL SPREADER APPLICATOR

Michael Crankshaw, Santa Fe Springs, and Leo Kucheck, Irvine, both of Calif., assignors to Label-Aire Inc., Fullerton, Calif.

Filed Aug. 3, 1978, Ser. No. 930,722
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—542 **19 Claims**



1. A label applicator for use with labels which are provided in a plurality of rows extending longitudinally on a backing strip, said label applicator comprising:

label dispensing means for peeling at least one label from each of at least two rows on the backing strip with the labels moving in a first direction off of the backing strip to provide at least first and second labels at a label dispensing station;

label separating means for receiving from the label dispensing means at the label dispensing station the first and second labels which have been peeled from the backing strip and separating the first and second labels in a direction generally transverse to said first direction to increase the distance between the first and second labels;

transferring means for transferring the first and second labels which have been separated by said label separating means to at least one article; and

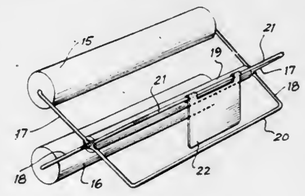
said label separating means including first and second label receivers for receiving the first and second labels, respectively, means for mounting said first label receiver, and means for mounting said second label receiver for movement relative to the first label receiver to effect separation of the first and second labels, and each of said label receivers including means for releasably retaining the labels supplied thereto.

4,210,485

WALLPAPER APPLICATOR

Ernest C. Lake, Lot 16, Glenrock Pde., Koolewong, New South Wales, Australia (2256)

Filed Jul. 31, 1978, Ser. No. 929,310
Claims priority, application Australia, Aug. 8, 1977, PD1133
Int. Cl.[2] B44C *7/00*
U.S. Cl. 156—577 **1 Claim**



1. A device for applying wallpaper and the like to a surface comprising first and second rollers each rotatably mounted on the open ends of U-shaped bars, said bars being held in fixed relationship with each other to form an X on each side and having a third roller mounted between the points of axis of said U-shaped bars, and a brake pivotally mounted on the outer closed portion of one of said U-shaped bars, said wallpaper being fed from the support over said third roller and under said first roller which is adapted to press successive areas of the wallpaper against successive areas of the surface as the wallpaper is fed from the support onto the surface, said second roller acting as an idler and adapted to contact one area of the unpapered surface at the same time that said first roller is pressing the wallpaper against another area of the surface, said brake being movable to frictionally engage the wallpaper as it passes over said third roller.

4,210,486

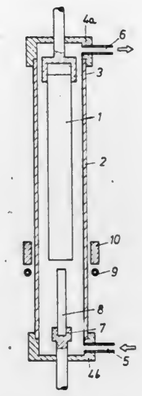
PROCESS FOR DETERMINING THE EFFECTIVE DOPING AGENT CONTENT OF HYDROGEN FOR THE PRODUCTION OF SEMICONDUCTORS

Dietrich Schmidt, Burghausen; Johann Hofer, Kirchdorf, and Heinz Herzer, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Mar. 2, 1977, Ser. No. 773,571
Claims priority, application Fed. Rep. of Germany, May 25, 1976, 2623350
Int. Cl.[2] B01J *17/34*
U.S. Cl. 156—601 **1 Claim**

1. A process for determining the purity of hydrogen used in the production of semiconductors, relative to the effective doping agent content thereof, comprising the steps of:

zone drawing a silicon rod of highest purity and known specific resistance in a quartz tube havng a slightly larger internal diameter than the diameter of the silicon rod by means of an induction coil surrounding said quartz tube, moving at a speed of 0.01 to 1 cm/min., solely in the presence of the hydrogen to be tested by passing a definite amount of said hydrogen around said rod during the zone-drawing thereof and thereby doping said silicon rod with the doping agents which may be present in said hydrogen; and



determining the effective doping agent content of said hydrogen and, in turn, the purity thereof, by measuring the specific resistance of the silicon rod after zone-drawing.

4,210,487

PROCESS FOR MAKING SYNTHETIC PAPER PULP

Gary L. Driscoll, Boothwyn, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 648,985, Jan. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 412,510, Nov. 2, 1973, abandoned. This application Jul. 25, 1977, Ser. No. 818,490
The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.
Int. Cl.[2] D21H *5/12*
U.S. Cl. 162—146 **1 Claim**

1. A process for preparing synthetic paper comprising:

(a) heating a blend consisting essentially of a synthetic thermoplastic polymer wherein the polymer is a mixture of polystyrene and polypropylene or polyethylene in which the mixture contains more than 40 percent by weight of the polypropylene or polyethylene and the blend contains from about 0.1 to about 20 percent weight of sodium bicarbonate and whereby a molten blend is formed;

(b) extruding the molten blend from a die into a zone of reduced pressure to produce an extrudate;

(c) attenuating the extrudate while the polymer is in its molten or amorphous state with the attenuation caused by withdrawing the extrudate from the die at a linear rate of from about 20 to about 200 times the linear ratio at which the blend reaches the lips of the die;

(d) subjecting the attenuated extrudate, which is now fibrous and solid, to sufficient force to cause the extrudate to break into fibers suitable for mixing with cellulosic pulp; and

(e) the resulting fibers, in an amount of about 10 to 50 weight % of the total weight, are mixed with bleached kraft paper fibers laid out in a sheet and formed into a paper by application of heat and pressure.

4,210,488

PROCESS FOR IMPROVING THE DRY STRENGTH OF PAPER AND FOR IMPROVING THE EFFECT OF OPTICAL BRIGHTENERS IN THE PREPARATION OR COATING OF PAPER

Peter J. Reuss, Starenkamp 33, D-2080 Pinneberg, and Josef Weigl, Bauseweinallee 86, D-8000 Muenchen 60, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 841,972, Oct. 13, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,543
Int. Cl.[2] D21H *3/80*
U.S. Cl. 162—162 **13 Claims**

1. In a process for improving the dry strength of paper and for improving the effect of optical brighteners in the preparation of paper which includes the step of adding fillers and/or pigments and anionic brighteners to the paper making process the improvement comprising adding to paper making pulp a polypiperidine halide adsorbed in a dispersed state on a fine-particle organic or inorganic carrier and thereafter adding the anionic brightener to said paper making pulp.

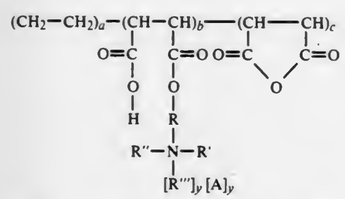
4,210,489

METHOD OF IMPARTING WET STRENGTH TO PAPER PRODUCTS

Sheldon B. Markofsky, Olney, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jun. 21, 1978, Ser. No. 917,716
Int. Cl.[2] D21D *3/00*
U.S. Cl. 162—164 R **10 Claims**

1. A method of imparting a combination of wet strength and water absorbency to paper formed from cellulosic fibers comprising contacting the cellulosic fibers with an aqueous solution of a composition comprising an effective amount to impart wet strength and water absorbency of (1) a copolymer selected from an at least partially hydrolyzed ethylene/maleic anhydride or an ethylene/maleic anhydride half ester, having the general formula:



wherein R, R′, R″, and R‴ are each of C_1–C_4 alkyl or alkoxy groups; A is a quarternary anion; Y has a value of 0 to 1 and a is an integer, and b and c are integers including 0, such that the ratio of a to b plus c is 2:1 to 1:2, and (2) a reaction product formed by reacting an aqueous mixture of reactants (a) a C_2–C_{12} secondary alkyl amine; (b) a C_1–C_{25} primary amine and (c) a member selected from epihalohydrin or a dihalo monohydroxy C_3–C_4 alkane; the equivalent ratio of reactant (c) to (b) is 1:0.009 to 0.5, and of reactants (c) to (b) plus (a) is 1:0.22 to 1.3, and the weight ratio of reaction product (2) to copolymer (1) being from about 0.2:1 to 50:1 and treating the paper formed from said cellulosic fibers to sufficient elevated temperature to cause drying of the paper product and curing of the agents therein.

4,210,490

METHOD OF MANUFACTURING PAPER OR CARDBOARD PRODUCTS

John H. Taylor, St. Austell, England, assignor to English Clays Lovering Pochin & Company, Limited, St. Austell, England

Continuation-in-part of Ser. No. 813,512, Jul. 7, 1977, abandoned. This application Dec. 19, 1978, Ser. No. 970,973
Int. Cl.[2] D21H *3/28*
U.S. Cl. 162—175 **8 Claims**

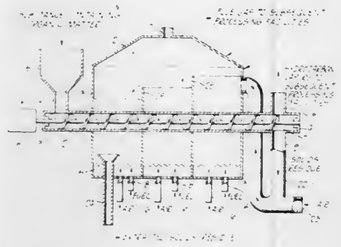
1. A method of manufacturing a paper or cardboard product of improved strength characteristics which method comprises in sequence the steps of mixing an aqueous solution or dispersion of a cationic starch which contains primary, secondary or tertiary amino groups or quaternary ammonium groups and has a nitrogen content ranging from about 0.1 to about 0.25% by weight, with an aqueous suspension of a kaolinitic clay filler which contains not more than 50% by weight of particles smaller than 2 microns and not more than 35% by weight of particles smaller than 1 micron, to form a mixture containing flocs consisting essentially of starch and clay filler; thereafter adding the mixture thus obtained to an aqueous stock of cellulosic fibres to form a furnish containing the flocs of starch and clay filler, and the cellulosic fibres; and then forming the furnish into a paper or cardboard product; wherein the product of the rate at which shear is applied to, and the period for which the shear is applied to, said flocs during the formation of said mixture and said furnish is such that the flocs are reduced in size sufficiently to enable substantially all of the mixture to pass through a No. 200 mesh British Standard sieve but not so much that more than 90% of the mixture can pass through a No. 300 mesh British Standard sieve.

4,210,491

METHOD AND APPARATUS FOR RETORTING A SUBSTANCE CONTAINING ORGANIC MATTER

Bernard L. Schulman, Golden, Colo., assignor to Tosco Corporation, Los Angeles, Calif.

Continuation of Ser. No. 737,466, Nov. 1, 1976, abandoned. This application Oct. 16, 1978, Ser. No. 951,723
Int. Cl.[2] C10B *1/10, 23/00, 47/20, 49/18*
U.S. Cl. 201—2.5 **21 Claims**



1. An apparatus for converting a substance containing organic matter into hydrocarbon vapors and solids residue comprising:
(a) a fluidized bed housing having an upstream end and a downstream end;
(b) a substantially cylindrical retort, extending through and stationary relative to said fluidized bed housing and having an upstream end and a downstream end, each end being outside of said housing, the longitudinal axis of said retort being substantially parallel to a horizontal plane;
(c) feeding means for feeding the substance containing organic matter into said retort, said feeding means communicating with the upstream portion of said retort;
(d) means located within said retort for moving the substance containing organic matter from the upstream portion of said retort to the downstream portion thereof;
(e) solids residue removing means for removing solids residue from said retort, said solids residue removing means communicating with the downstream portion of said retort;
(f) solids residue introducing means for introducing said solids residue removed from said retort into said fluidized bed housing to employ said solids residue as particles of a fluidized bed, one end of said introducing means communicating with said solids residue removing means and the other end thereof communicating with the upper upstream portion of said fluidized bed housing;

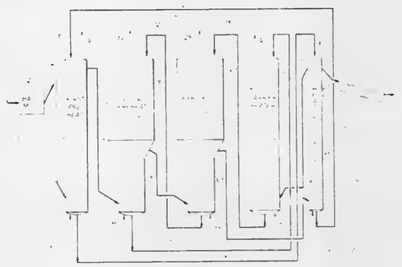
(g) solids residue extracting means for extracting solids residue from said fluidized bed housing and communicating with the lower downstream portion of said fluidized bed housing;
(h) fluidizing means for maintaining within said fluidized bed housing a fluidized bed of heated particles of solids residue with which to heat said retort;
(i) heating means for heating the particles;
(j) hydrocarbon vapors removing means for removing hydrocarbon vapors from said retort, said hydrocarbon vapors removing means communicating with said retort at at least one point located downstream, with respect to the flow of said substance containing organic matter in said retort, from said feeding means;
(k) solids residue flow controlling means for controlling the flow of the solids residue while the solids residue is being employed as particles of the fluidized bed such that the solids residue flow from the upstream portion to the downstream portion of said fluidized bed housing and in a direction substantially countercurrent to the flow within said retort of the substance containing organic matter, said solids residue flow controlling means including at least one partition separating said fluidized bed housing into a plurality of successively adjacent sections aligned such that the first thereof is nearest the upstream end of said fluidized bed housing and the last thereof is nearest the downstream end of said fluidized bed housing, each partition having a height greater than the height of the top of the retort and less than the height of the inside of the fluidized bed housing top immediately thereabove, each partition which is downstream, with respect to the flow of particles in said fluidized bed housing, from another partition having a height which is less than the height of the partition immediately upstream therefrom, with respect to the flow of particles in said fluidized bed housing; and
(l) regulating means for regulating the levels of the fluidized bed sections maintained within the fluidized bed housing whereby solids residue which is in a section of said fluidized bed housing upstream, with respect to the flow of particles in said fluidized bed housing, from another section thereof may be caused to overflow into the section of the fluidized bed housing which is immediately downstream therefrom with respect to the flow of particles in said fluidized bed housing.

4,210,492

PROCESS FOR THE PYROLYSIS OF COAL IN DILUTE- AND DENSE-PHASE FLUIDIZED BEDS

Scott C. Roberts, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 14, 1977, Ser. No. 777,196
Int. Cl.[2] C10B *23/00, 49/22;* **C10G** *1/02*
U.S. Cl. 201—12 **4 Claims**



1. A process for the pyrolysis of coal comprising,
(a) countercurrently contacting coal subdivided to a particle size fluidizable in gas in the form of a relatively cool, upwardly moving fluidized mass in a first vertically-oriented preheating zone with an inert relatively hot first particulate heat carrier thereby transferring sensible heat from the heat carrier to the subdivided coal and heating said coal to an elevated temperature not above the boiling point of water, said coal being fluidized in gas in a manner to create a dilute-phase fluidized mass in said first preheating zone and said particulate heat carrier being introduced in the upper portion of the preheating zone and having a particle size and density such that it falls through the dilute-phase fluidized mass at a substantially uniform rate and collects in the lower portion of the vertical preheating zone as a relatively cool first particulate heat carrier;
(b) recovering the bulk of said subdivided coal at elevated temperature in the upper portion of said preheating zone and passing said recovered coal to a second preheating zone;
(c) recovering said relatively cool first particulate heat carrier in the lower portion of said preheating zone, and passing said recovered heat carrier to a heat recovery zone;
(d) introducing said subdivided coal at elevated temperature into a second verticaly-oriented preheat zone as a dense phase, fluidized mass in gas, and countercurrently contacting said fluidized mass with a second inert particulate heat carrier heated to a temperature above the boiling point of water to transfer sensible heat from the heat carrier to the coal and remove any water in the coal, said second particulate heat carrier being introduced in the upper portion of the second preheat zone wherein its particle size and density are such that it falls at a substantially uniform rate and collects in the lower portion of the vertical zone along with a minor amount of entrained solid material;
(e) removing water from the upper portion of said second preheat zone, and also removing preheated subdivided coal separately from the upper portion of the second preheat zone;
(f) recovering said second particulate heat carrier from the lower portion of said second preheat zone and passing said recovered heat carrier to a carrier heating zone wherein the carrier's temperature is raised to a level above that required for pyrolysis, and passing said second particulate heat carrier after heating to the upper portion of a pyrolysis zone;
(g) introducing said subdivided preheated coal at elevated temperature into a vertically-oriented pyrolysis zone as a dense phase, fluidized mass, and contacting said fluidized mass with said second particulate heat carrier heated to a temperature above that required for pyrolysis to transfer sensible heat from the heat carrier to the subdivided coal and obtain a vapor phase containing hydrocarbonaceous fluids and a char residue, said second particulate heat carrier having been passed from the carrier heating zone and introduced in the upper portion of the pyrolysis zone wherein its particle size and density are such that it falls at a substantially uniform rate and collects in the lower portion of the vertical pyrolysis zone along with a minor amount of entrained solid material;
(h) recovering said hydrocarbonaceous fluids from the upper portion of said pyrolysis zone;
(i) separating said second particulate heat carrier in the lower portion of said pyrolysis zone from entrained solid material and char residue and passing said separated second particulate heat carrier to the second preheat zone;
(j) removing solid char residue from the dense fluidized phase in the pyrolysis zone and passing the char residue to a heat recovery zone;
(k) introducing the solid char residue from the pyrolysis zone into a heat recovery zone, and countercurrently contacting said residue with the relatively cool, first particulate heat carrier from the preheating zone to transfer sensible heat from the residue to the first particulate heat carrier, and returning said relatively hot first particulate heat carrier to the first preheating zone;
(l) recovering said relatively cool particulate char residue from the heat recovery zone.

4,210,493

C-NITROSO COMPOUNDS AS ANAEROBIC POLYMERIZATION INHIBITORS FOR ACRYLIC ACID OR METHACRYLIC ACID

Thomas Stewart, Andalusia, and Richard F. Merritt, Ft. Washington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 30, 1976, Ser. No. 671,801
Int. Cl.[2] C07C *51/50, 57/04;* B01D *3/34*
U.S. Cl. 203—8 **5 Claims**

1. A method of inhibiting the polymerization of acrylic or methacrylic acid at ambient or above ambient temperatures, said method comprising contacting said acid with a polymerization inhibiting compound having the formula:

R—NO

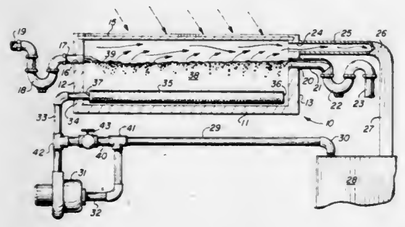
where R is alkyl in an amount of from 0.01% to 0.5% by weight based upon the weight of the acid during the preparation, purification or storage of said acid under substantially anaerobic conditions.

4,210,494

SOLAR DESALINATION SYSTEM

William A. Rhodes, 4421 N. 13th Pl., Phoenix, Ariz. 85014

Filed May 3, 1978, Ser. No. 902,445
Int. Cl.[2] C02B *1/06*
U.S. Cl. 203—10 **10 Claims**



9. In the solar desalination of salt water, the method comprising the steps of:

(a) introducing salt water into a tank having a bottom wall and a transparent top cover, said salt water in said tank forming a body of said water having a top surface, the space in the tank above the top surface being occupied by a first mixture of air and water vapor;

(b) withdrawing water from said body of water in the tank to maintain the top surface of the body of water substantially constant;

(c) heating the body of water and the first mixture of air and water vapor in the space above the top surface of the body of water by solar rays passing through the transparent top cover of the tank;

(d) withdrawing the first mixture of air and water vapor from said tank, the amount of water vapor in the mixture being such as to substantially saturate the air of the mixture;

(e) condensing water vapor from the first mixture in a condenser;

(f) withdrawing a second mixture of air with a residual amount of water vapor from the condenser and increasing the pressure thereof; and

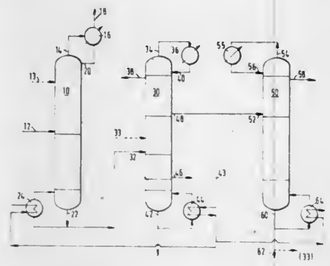
(g) forcing at a desired pressure said second mixture into a sparger located slightly above the bottom wall of the tank and in the body of water in the tank, said sparger having orifices through which the pressurized second mixture passes, and which second mixture is converted to small bubbles which pass upwardly through the water body to the top surface thereof and during such passage the air in the second mixture becomes heated and substantially saturated with water vapor transforming said second mixture to said first mixture.

4,210,495

METHANOL DISTILLATION PROCESS

Alwyn Pinto, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 14, 1978, Ser. No. 877,737
Claims priority, application United Kingdom, Mar. 11, 1977, 10403/77
Int. Cl.[2] B01D *3/14;* C07C *29/26*
U.S. Cl. 203—22 **14 Claims**



1. A process for producing purified methanol by distillation, comprising the steps of:

(a) feeding a water-methanol mixture containing small quantities of ethanol, ketones and higher alcohols to a first distillation column, taking a product methanol stream from an upper level, taking aqueous methanol containing at least 95% w/w of methanol as a side stream and taking a predominantly water stream as bottoms; and

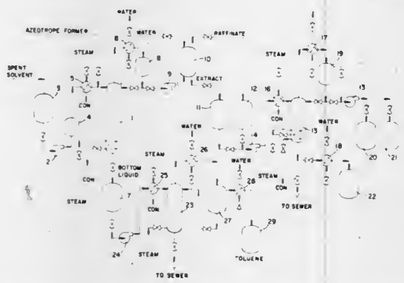
(b) feeding the aqueous methanol side stream to a second distillation column, taking a product methanol stream from an upper level and taking as bottoms a stream containing methanol, ethanol and water containing less than 40% w/w of water.

4,210,496

DISTILLATION PROCESS FOR RECOVERY OF HEXAMETHYL DISILOXANE

Wang-Mo Wong, Matteson, Ill., assignor to Arthur G. McKee & Company, Independence, Ohio

Filed Jun. 7, 1978, Ser. No. 913,531
Int. Cl.[2] B01D *3/36;* C07F *7/20*
U.S. Cl. 203—46 **16 Claims**



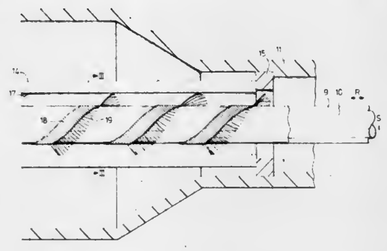
1. In a distillation process for separating a mixture of hexamethyl disiloxane (HMDO) and toluene, the improvement which comprises adding pyrrolidine to the mixture prior to distillation to form an azeotrope of HMDO and pyrrolidine and then distilling the mixture to separate and recover one fraction of the toluene and another fraction of said azeotrope.

4,210,497

METHOD FOR PROVIDING A SURFACE COATING ON THE WALL IN A CAVITY BY MEANS OF ELECTROLYTIC PLATING AND THE SURFACE COATING PRODUCED BY THE METHOD

Kaj-Ragnar Loqvist, Fagersta, and Leif-Åke Bennstedt, Falun, both of Sweden, assignors to Wave Energy Development I Vastmanland Aktiebolag, Fagersta, Sweden

Filed Jan. 30, 1978, Ser. No. 873,524
Claims priority, application Sweden, Feb. 8, 1977, 7701371
Int. Cl.[2] C25D *5/04*
U.S. Cl. 204—26 **15 Claims**



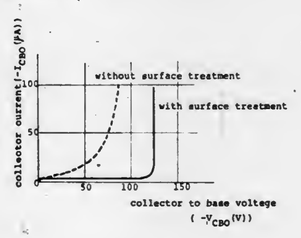
1. A method for providing a surface coating of a metal or metal alloy on the wall of an elongate cavity in a workpiece by means of electrolytic plating, the workpiece being used as cathode, comprising bringing an electrolyte containing ions of at least one metal intended for the coating into movement inside said cavity with the aid of at least one conveyor, said conveyor comprising a resilient flexible netlike or fibrous strip of electrically insulating material, helically wound around an elongate anode in said cavity, the strip being at least partly fringed or slit on the edge facing toward the cavity wall so as to form outstanding fingers bringing said strip into rotation and oscillation relative to said surface to bring said fingers into contact and adjustment with the surface being coated, thereby rapidly transporting electrolyte and gases generated during the plating at the surface being coated and in the cavity, while maintaining the electrolyte at a low temperature.

4,210,498

METHOD OF INCREASING THE AMPLIFICATION OF A TRANSISTOR THROUGH USE OF ORGANIC COMPOUNDS

Tooru Tamura, Ikeda; Nobuyuki Ojima, Katano; Sigeru Kondo, Higashi-Osaka, and Kenichirou Kishita, Kagoshima, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 7, 1975, Ser. No. 629,907
Claims priority, application Japan, Nov. 20, 1974, 49-134027; May 20, 1975, 50-60748; May 19, 1975, 50-60394; May 20, 1975, 50-60747
Int. Cl.[2] C25D *5/36*
U.S. Cl. 204—35 N **10 Claims**



1. A method of treating a germanium transistor in which the minority carriers are holes, comprising:

1. anodically electrolysing said transistor in an alkali solution;

2. then dipping the transistor into an organic solution comprising a chelating agent, a thermosetting silicone resin and an organic solvent, said chelating agent being selected from the group consisting of Y-pyrones, nitrated catechols, flavones and combinations thereof; and

3. baking the thus treated transistor to cure said thermosetting silicone resin.

4,210,499

METHOD OF FORMING COLORED PATTERNS ON ALUMINUM OR ITS ALLOYS

Hatsuo Hirono, Nyuzen; Katsuyuki Nagata, Uozu, and Nobushige Doguchi, Toyama, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,464
Claims priority, application Japan, Dec. 5, 1977, 52-145192
Int. Cl.[2] C25D *11/20*
U.S. Cl. 204—38 A **6 Claims**

1. A method of forming a colored pattern of wood grain on the surface of an article made of aluminum of its alloys comprising:

anodically oxidizing the surface of said article to form an oxide film on said surface;

forming a colored film on the anodized surface of said article by means of electrolytic coloring in an electrolytic bath;

dipping said article into a coating bath having a resinous coating material, selected from the group consisting of acrylic resins or alkyd resins, in the form of multilinear or multiannular patterns floated thereon to deposited a clear coated, colored wood-grain pattern on said article;

forming a colored film on the pattered anodized surface of said article by means of electrolytic coloring; and

applying a finishing coating to said article.

4,210,500

ALKALINE ZINC ELECTROPLATING BATH AND ADDITIVE COMPOSITIONS THEREFOR

Craig V. Bishop, Cleveland, Ohio, assignor to Rohco, Inc., Cleveland, Ohio

Filed Jun. 28, 1979, Ser. No. 52,741
Int. Cl.[2] C25D *3/24;* C08G *73/02, 73/04*
U.S. Cl. 204—55 Y **11 Claims**

1. A composition comprising the reaction product obtained by reacting

(a) a polyhydroxyethylated polyamine having a carbon to nitrogen weight ratio of from about 2.8:1 to about 3.3:1 and a nitrogen to oxygen weight ratio of from about 1:1 to about 2.0:1, and

(b) a 3-halo-2-hydroxypropane sulfonate.

6. An aqueous alkaline electroplating bath suitable for producing bright metallic zinc deposits comprising a source of zinc ions and cyanide ions, and an effective amount, sufficient to yield a bright zinc deposit, of a bath-soluble reaction product obtained by the process of reacting

(a) a polyhydroxyethylated polyamine having a carbon to nitrogen weight ratio of about 2.8:1 to about 3.3:1 and a nitrogen to oxygen weight ratio of about 1:1 to about 2:1, and

(b) a 3-halo-2-hydroxypropane sulfonate.

4,210,501

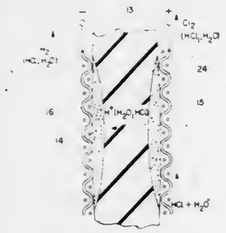
GENERATION OF HALOGENS BY ELECTROLYSIS OF HYDROGEN HALIDES IN A CELL HAVING CATALYTIC ELECTRODES BONDED TO A SOLID POLYMER ELECTROLYTE

Russell M. Dempsey, Hamilton; Thomas G. Coker, Waltham, and Anthony B. La Conti, Lynnfield, all of Mass., assignors to General Electric Company, Wilmington, Mass.

Continuation-in-part of Ser. No. 893,090, Apr. 3, 1978, abandoned, which is a continuation of Ser. No. 858,942, Dec. 9, 1977, abandoned. This application Jul. 6, 1978, Ser. No. 922,287

Int. Cl.[2] C25B *1/34, 1/46, 11/02, 13/00*

U.S. Cl. 204—129 **22 Claims**



1. A process for the continuous production of chlorine from hydrochloric acid which comprises:

(a) continuously providing an aqueous solution of hydrochloric acid to the anode compartment of an electrolytic cell which is separated from the cathode compartment by a cation selective ion exchange membrane, bringing the solution into contact with a catalytic, bonded, graphite anode electrode activated with reduced platinum group metals and oxides thereof bonded to and embedded in the membrane on the side facing the anode compartment said anode being opposite to a catalytic cathode bonded to and embedded in the other side of the membrane forming a unitary electrode-membrane structure whereby catalytic sites in the electrodes are in contact with the ion exchanging sites of the membrane so that electrolysis takes place directly at the membrane-electrode interface,

(b) applying a potential to the electrodes through separate electron conductive current collectors in physical contact with the bonded electromechanically active electrodes to electrolyze the aqueous hydrochloric acid solution to produce chlorine at the anode electrode and hydrogen ions which are transported across said membrane to produce hydrogen at the cathode electrode,

(c) continuously removing chlorine from the anode compartment and hydrogen from the cathode department.

4,210,502

PROCESS FOR RECOVERY OF WASTE H_2SO_4 AND HCL

Morio Watanabe, Amagasaki, and Sanji Nishimura, Kyoto, both of Japan, assignors to Solex Research Corporation of Japan, Osaka, Japan

Continuation of Ser. No. 936,595, Aug. 24, 1978, Pat. No. 4,177,119, which is a continuation of Ser. No. 773,657, Mar. 2, 1977, Pat. No. 4,113,588. This application Mar. 14, 1979, Ser. No. 20,403

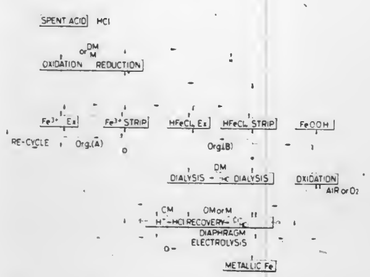
Claims priority, application Japan, Mar. 9, 1976, 51-25223; Mar. 25, 1976, 51-33029; Oct. 4, 1976, 51-118598

Int. Cl. C25B *1/22*

U.S. Cl. 204—151 **7 Claims**

1. A process for the recovery of acid and metallic iron or iron oxide from an iron chloride complex which has been extracted into an organic solvent (A) consisting of phosphoric acid esters or compounds selected from the group consisting of primary, secondary, tertiary, and quaternary amines together with a petroleum hydrocarbon as a solvent comprising:

(1) stripping the extract by contacting it with the catholyte from the electrolysis of step (2) hereof to regenerate solvent (A) and produce a first aqueous solution; and



(2) subjecting said first solution to a diaphragm electrolysis to recover Cl^- ions as HCl and Fe ions as metallic iron or FeO.

4,210,503

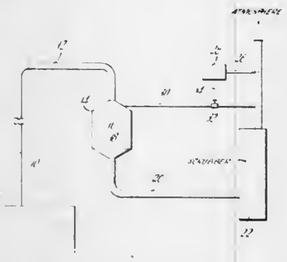
EMISSION CONTROL METHOD AND SYSTEM

Robert G. Confer, Colonia, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 31, 1975, Ser. No. 645,810

Int. Cl.[2] B01J *1/00, 1/10*

U.S. Cl. 204—158 R **10 Claims**



1. A method for controlling gaseous emissions exhausted to the atmosphere from a process, comprising the steps of:

(a) passing said gaseous emissions through a decomposition chamber having a predetermined volume;

(b) exposing said gaseous emissions in said chamber to ultraviolet radiation of sufficient intensity by passage of said emissions through said ultraviolet radiation to decompose predetermined components of said emissions including vinyl chloride which is decomposed into at least hydrogen chloride, wherein said predetermined volume of said decomposition chamber affords adequate residence time for said gaseous emissions to decompose;

(c) passing the decomposition products including hydrogen chloride from step (b) through an absorption medium wherein said products including at least said hydrogen chloride are absorbed; and

(d) exhausting said gaseous emissions after step (c) to the atmosphere with an acceptable level of vinyl chloride contained therein.

4,210,504

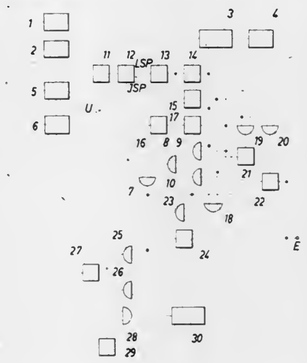
METHOD FOR MEASURING THE ELECTROPHORETIC MOBILITY OF PARTICLES

Klaus Friedel; Ehrhard Dammann; Hans-Joachim Pohl, all of Jena; Wolfgang Schütt, and Hans-Ludwig Jensen, both of Rostock, all of German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed Feb. 26, 1978, Ser. No. 940,793

Int. Cl.[2] G01N *27/26, 27/28;* **B01K** *5/00*

U.S. Cl. 204—180 R **1 Claim**



1. Method for measuring the electrophoretic mobility of particles comprising the steps of

applying a voltage to a sample contained in an electrophoreses chamber including the particles to be measured, microscopically observing said sample,

producing an image signal by a vidicon from said sample, said image signal including image synchronization pulses and line synchronization pulses,

converting said image signal into an image of said sample on the screen of a monitor feeding the image signals into a filter line,

subsequent thereto comparing said image signal to an adjustable reference voltage and converting thereby said image signal into a digitalised image signal,

producing a first pulse obtained from the image synchronization pulse by adjustable delay and imaging said first pulse on the screen of said monitor,

producing a second and a third pulse from out of the line synchronization pulse by adjustable delay and imaging said second and third pulse on the screen of the monitor,

logically combining said first, second and third pulse and said digitalised image signal, and obtaining from the logical combination a first and a second signal, said first signal starting a counting operation, said second signal stopping said counting operation.

4,210,505

METHOD AND APPARATUS FOR ELECTRODEPOSITION COATING

Nobuaki Todoroki, Warabi; Junichi Yasukawa, Chigasaki; Norio Kawamura, Kawagoe, and Akio Kasai, Sayama, all of Japan, assignors to Shinto Paint Co., Ltd, Amagasaki; Honda Motor Co., Ltd. and Taikisha Ltd., both of Tokyo, all of, Japan

Filed Nov. 14, 1978, Ser. No. 960,558

Int. Cl.[2] C25D *13/06, 13/22*

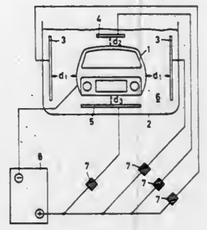
U.S. Cl. 204—181 C **2 Claims**

1. In a method for coating an article by electrodeposition which comprises: immersing the article to be coated in a bath comprising a powder containing electrodeposition coating composition comprising a water thinnable cationic synthetic resin which is a nitrogen-containing basic resin partially neutralized with an acidic compound and a synthetic resin in the form of fine powder which is solid at a room temperature but can melt when heated;

employing as a cathode, said article to be coated;

and applying a voltage between the cathode and plural anodes placed in the bath,

the improvement which comprises positioning the above-



mentioned anodes to face the respective surface of said article to be coated and controlling the amount of coating on the respective surfaces of said article by regulating the quantity of electricity flowing to each anode by means of a breaker connected to each anode so that the current flow to each anode is stopped when the desired quantity of electricity has been passed to the particular anode.

4,210,506

COATING BATH FOR THE CATAPHORETIC COATING OF METALLIC SURFACES

Karl Hoppe, and Udo Strauss, both of Münster, Fed. Rep. of Germany, assignors to BASF Farben & Fasern Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 637,029, Dec. 2, 1975, abandoned. This application Jun. 30, 1978, Ser. No. 921,081

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1974, 2457437

Int. Cl.[2] C25D *13/10*

U.S. Cl. 204—181 C **15 Claims**

1. In a process for the production of coatings on metallic iron surfaces by dipping said surfaces into a coating bath in which is maintained a direct current between an anode and a cathode, said metallic iron surfaces being the cathode, said coating bath containing an aqueous solution or an aqueous dispersion of salts of cationic film-forming agents with an acid, the improvement which comprises said cationic film-forming agents selected from the group consisting of:

(1) a reaction product of an epoxy resin with a Mannich base from a condensed phenol, a secondary amine carrying a hydroxyl group and formaldehyde;

(2) reaction products of epoxy resin with a diisocyanate; or

(3) a copylymer wherein the following components have been incorporated by polymerization:

(a) 3–50 percent by weight of at least one mono- or bicyclic compound with a five- to six-membered heterocycle containing 1–3 hetero atoms, one of which is a nitrogen atom, carrying a vinyl group;

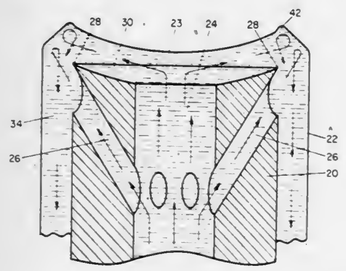
(b) 3–30 percent by weight of at least one amide, alkyl amide, hydroxyalkyl amide and oxaalkyl amide of methacrylic acid or acrylic acid; and

(c) 20–94 percent by weight of at least one alkyl ester of methacrylic acid or acrylic acid and/or at least one alkylene benzene;

and said cationic film-forming agents containing metallic ions from metallic salts selected from the group of metallic lons, the potential of which in the electrolytic voltage series of the cations being higher than the potential of the iron metal surfaces, said metallic salts being selected from the group consisting of copper (II) acetate, copper (II) sulfate, copper (II) nitrate, cobalt (II) nitrate, cadmium (II) acetate, zinc (II) acetate, nickel (II) acetate, tin (II) chloride, antimony (III) chloride and chromium (III)

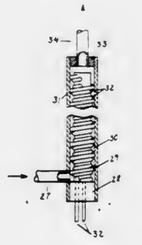
acetate, said metallic ions having an ion concentration from said metallic salts dissolved in said coating composition of 1-2000 parts per million, based on the amount of said cationic film-forming agents present in said coating compositions.

4,210,507
ELECTROCOATING FLOW CONTROL ELECTRODE AND METHOD
John J. Davidson, New Kensington, and David A. Smith, Murrysville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Sep. 18, 1978, Ser. No. 943,154
Int. Cl.[2] B05B *5/02;* **B05C** *7/04;* **C25D** *13/14, 17/12*
U.S. Cl. 204—181 R **6 Claims**



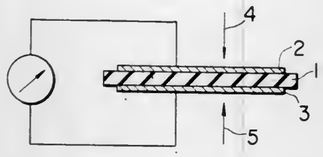
5. In a method of electrocoating a container by inserting a hollow electrically conductive probe into an inverted container, flowing a primary supply of coating material through said probe to flood the container in a transient bath of electrocoating material, and impressing an electrical potential between the container and the probe to electrocoat the interior of the container, wherein the improvement comprises:
establishing a secondary flow of coating material in the container in a direction substantially opposite to the primary flow by flowing such material from the periphery of said probe toward the container end wall to retard the flow of primary coating material from within the container and to increase the turbulence of flow while maintaining coating material in continuous contact with the container interior to facilitate electrocoating.

4,210,508
ELECTROLYTIC HYGROMETER IMPROVEMENT
Gustav Bergson, Cedarbrook Hill Apts., Apt. B-117, Wyncote, Pa. 19095
Filed Dec. 15, 1975, Ser. No. 640,818
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 W **6 Claims**



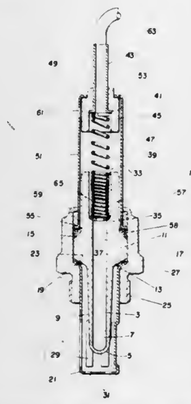
1. An electrolytic cell comprising an insulating outer casing and within that casing an inner element having a helical pair of wires of different material which are spaced from each other but in contact with a hygroscopic material which is electrically conducting only when wet, one of the wires being an anode selected from the class consisting of platinum and rhodium and the other being a cathode of tantalum.

4,210,509
OXYGEN SENSOR
Hidehito Obayashi, Tokyo, and Hiroshi Okamoto, Ohme, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 23, 1978, Ser. No. 936,129
Claims priority, application Japan, Sep. 2, 1977, 52-104966
Int. Cl.[2] G01N *27/58*
U.S. Cl. 204—195 S **6 Claims**



1. An oxygen sensor comprising an oxygen ion conductive solid metal oxide electrolyte having two different surfaces and an electrode formed on each of the two different surfaces of the solid electrolyte, said solid electrolyte comprising means for generating an electromotive force between said two electrodes whereby the oxygen concentration in a gas to be tested is determined from a value of the electromotive force generated between said two electrodes when the gas to be tested is caused to fall in contact with one of said two surfaces of the solid electrolyte and a standard gas having a known oxygen concentration is caused to fall in contact with the other surface of the solid electrolyte, said solid electrolyte containing fluorine at least in the surface region on the side to be contacted with the gas to be tested, the concentration of fluorine in the surface region being between 0.04 and 0.8 weight percent.

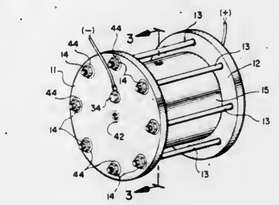
4,210,510
GAS SENSOR WITH CLOSELY WOUND TERMINATION SPRINGS
Donald A. Grimes, Findlay, Ohio, assignor to Bendix Autolite Corporation, Fostoria, Ohio
Filed Jul. 25, 1979, Ser. No. 60,448
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 S **7 Claims**



1. An electrochemical gas sensor comprising:
An ion conductive solid electrolyte sensing element in the form of a tube closed at one end and open at the other end,
a first electrical conductor on the interior surface of said sensing element,

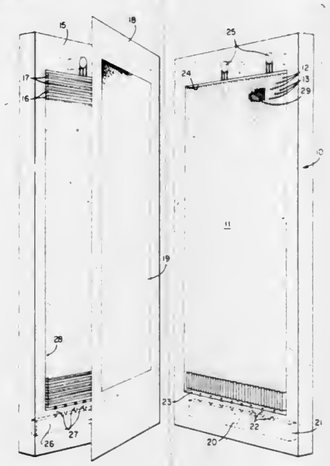
a second electrical conductor on the exterior surface of said sensing element,
a tubular sleeve fitted over and extending beyond the open end of the sensing element and secured thereto,
an insulator axially retained by said sleeve in spaced relation to said open end of the sensing element,
an elongated electrical terminal retained in axial alignment with said sleeve by said insulator and electrically insulated from said sleeve thereby, said terminal extending through said insulator, and
an electrically conductive, helical compression spring extending axially through said sleeve and compressed between said terminal and said sensing element, said spring forming a portion of a series electrical circuit between the first electrical conductor on the interior surface of said sensing element and said terminal; said spring having a tightly wound portion adjacent the end of the spring exposed to temperatures which would cause open coils of the spring to relax and having a compressed length sufficient to maintain at least a preselected force against the terminal and the sensing element over the range of operating temperatures to which the sensor components are exposed.

4,210,511
ELECTROLYZER APPARATUS AND ELECTRODE STRUCTURE THEREFOR
Barrie C. Campbell, Payson, and Harold M. Simons, Orem, both of Utah, assignors to Billings Energy Corporation, Provo, Utah
Filed Mar. 8, 1979, Ser. No. 17,681
Int. Cl.[2] C25B *9/00, 11/03, 11/04*
U.S. Cl. 204—256 **21 Claims**



1. An electrode structure for electrolysis apparatus in which the cathode and anode are disposed, respectively, on either side of and in contact with a solid polymer electrolyte membrane, said electrode structure comprising:
a cathode plate composed of an electrically conductive material which has been formed so as to be porous, whereby the cathode plate is capable of being permeated by a liquid such as water;
a first annular sealing ring circumscribing the perimeter of the cathode plate;
a flat, retainer ring having substantially the same thickness as the thickness of said cathode plate, said flat ring circumscribing the perimeter of said first sealing ring;
a solid polymer electrolyte membrane one side of which is disposed in contact with the one side of said cathode plate, with said membrane extending outwardly beyond the perimeter of said cathode and beyond said first sealing ring, so that the perimeter of the membrane is substantially coterminous with the perimeter of said flat ring;
an anode plate composed of a porous, electrically conductive material, said anode plate having one side thereof disposed in contact with the other side of said membrane, with the perimeter of said anode plate being substantially coterminous with the perimeter of said membrane;
an elongate flow passage extending through said cell structure from one end thereof to the other, said elongate passage comprising concentrically aligned bores through the cathode plate, membrane, and anode plate, with the bore in said anode having a larger diameter than the bores in said membrane which is in contact with the side of said anode, so as to form an indented annular groove around the flow passage;
a second annular sealing ring positioned within said annular groove in the flow passage;
means for securing the cathode plate, membrane, and anode plate in firm, side-by-side, series engagement;
means for applying a liquid to the porous anode plate to flow therethrough;
wherein said liquid flowing through said porous anode wets the membrane, products produced at the interface of the membrane and anode diffuse through the porous anode and are carried away with the liquid, and products produced at the interface of the membrane and the cathode diffuse through the porous cathode to said flow passage, and
means for applying a D.C. current to the cathode and anode.

4,210,512
ELECTROLYSIS CELL WITH CONTROLLED ANOLYTE FLOW DISTRIBUTION
Richard J. Lawrance, Hampstead, N.H., and John H. Russell, Reading, Mass., assignors to General Electric Company, Wilmington, Mass.
Filed Jan. 8, 1979, Ser. No. 1,879
Int. Cl.[2] C25B *9/00, 9/04;* **H01B** *1/04;* **H01M** *2/14*
U.S. Cl. 204—257 **10 Claims**



1. In an electrolytic cell,
(a) an anode compartment,
(b) a cathode compartment, said compartment being separated by an ion permeable, liquid impervious, membrane,
(c) an anode electrode bonded to one side of said membrane,
(d) a cathode electrode bearing against the opposite side of said membrane,
(e) means for establishing an electrical potential between the anode and cathode electrode, said means comprising a conductive member contacting said cathode and a plurality of spaced, elongated anode conductors contacting said anode defining a plurality of fluid transporting channels for movement of anolyte and gaseous electrolysis product, therealong,
(f) means communicating with each of said channels to introduce anolyte to the inlet portion of each of said channels,
(g) means for providing controlled anolyte distribution across the surface of said anode and along each of said individual fluid transporting channels including means for preventing gaseous electrolysis products from blocking

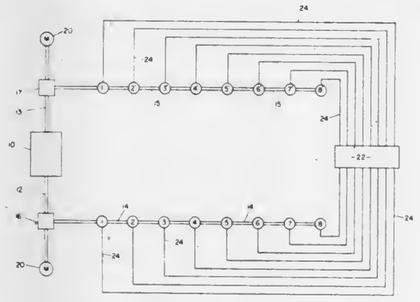
the inlet of any of the individual ones of said channels by introducing a predetermined pressure drop at the inlet thereby maintaining pressure at the inlet of such individual channel higher than the pressure along the remaining length of each such individual channels.

4,210,513

PNEUMATIC ANODE POSITIONING SYSTEM

Thomas A. Mutschler, and Gary J. Zimmerman, both of New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 2, 1978, Ser. No. 957,302
Int. Cl.[2] C25C *3/10, 3/20*
U.S. Cl. 204—225 **6 Claims**



1. An apparatus for positioning any number of a plurality of anodes with respect to a cathode in an electrolytic cell comprising:

drive means for incrementally rotating a substantially horizontally disposed shaft;

a plurality of jack screws substantially vertically disposed with respect to the shaft, each of said screws connected to an anode and provided with means there between for changing incremental rotary motion to incremental, vertically longitudinal, anode motion;

a plurality of worm gears each connected at its outer periphery to the shaft and connected at its inner periphery to an actuator nut disposed concentrically about said jack screw; and

means for selectively engaging each actuator nut to its respective jack screw to rotate the jack screw incrementally in response to the incremental rotary movement of the shaft.

4,210,514

PROCESS FOR REDUCING THE MAGNETIC DISTURBANCES IN SERIES OF HIGH-INTENSITY ELECTROLYSIS TANKS

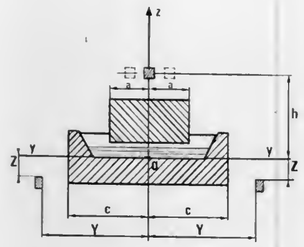
Paul Morel, Le Vestinet, and Jean-Pierre Dugois, Ste. Jean de-Maurienne, both of France, assignors to Aluminum Pechiney, Lyons, France

Filed Jan. 26, 1979, Ser. No. 6,674
Claims priority, application France, Feb. 8, 1978, 78 04193
Int. Cl.[2] C25C *3/06, 3/08*
U.S. Cl. 204—243 M **5 Claims**

1. A process for reducing magnetic disturbances in series of electrolysis tanks, operating at high current strength, for the production of aluminium, the tanks being disposed lengthwise, each tank being supplied with current from the preceding tank both by way of the upstream end at a fraction α of the current strength, and by way of at least one other point disposed between the upstream end and the downstream end inclusive, with a fraction $(1-\alpha)$ of the current strength, characterised in that the horizontal longitudinal component B_y of the magnetic field at the centre of the tank is nullified and that the vertical component B_z of the magnetic field is made anti-symmetric with respect to the axis Oy by disposing the negative conductors in such a way that they are parallel to the axis Ox and pass substantially through the points of co-ordinates Y and Z satisfying the two following relationships:

$$Y^2+Z^2+\mu Z=0$$

$$(\mu^2\gamma+4a^2\gamma-2)\,Z^2-\mu\,(1-2a^2\gamma)\,Z+a^2\,(\gamma a^2-1)=0$$



in which μ and γ are coefficients which are independent of strength and which depend solely on the half-width 'a' of the anodic system, the height 'h' of the cross member above the cathodic reference plane xOy, and the fraction α of the current strength which supplies the upstream end of each tank.

4,210,515

THERMOPLASTIC FIBERS AS SEPARATOR OR DIAPHRAGM IN ELECTROCHEMICAL CELLS

Arvind S. Patil, Grosse Ile, and Shyam D. Argade, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 10, 1975, Ser. No. 548,684
Int. Cl.[2] C25B *1/16, 1/26, 13/08*
U.S. Cl. 204—266 **15 Claims**

1. In an electrolytic cell of the type having a diaphragm between the anode and cathode, the improvement which comprises:

a diaphragm consisting essentially of discrete fibers of a self-bonding thermoplastic material, the fibers having a diameter of between 0.05 and 40 microns, each of the fibers containing from about 0.01 to about ten percent, by weight, based on the weight of the fibers, of a surfactant.

4,210,516

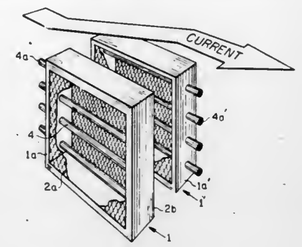
ELECTRODE ELEMENT FOR MONOPOLAR ELECTROLYSIS CELLS

Luciano Mose, Dortmund; Helmut Schurig, Holzwickede, and Bernd Strasser, Hamm, all of Fed. Rep. of Germany, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 17, 1979, Ser. No. 39,984
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821984
Int. Cl.[2] C25B *11/03, 11/02, 9/04*
U.S. Cl. 204—284 **30 Claims**

1. An improved electrode element for monopolar electrolysis cells comprising, in combination, an electrode frame having electrical current connections, a pair of opposed electrode surface substantially parallel and spaced apart from one another, said electrode surfaces being electrically fastened to said electrode frame, and at least one electrode rod connected in electrically conductive fashion to a side portion of said electrode frame, said rod extending through the space between said opposed electrode surfaces and being substantially parallel to said electrode surfaces, the diameter of said rod being smaller

than the distance between said opposed electrode surfaces, said electrode rod having conductive members distributed over the



length thereof and connected in electrically conductive fashion with both the electrode surfaces and the electrode rod.

4,210,517

PREPARATION OF CARBONACEOUS PRODUCTS

Hisashi Murakami, Tokyo; Toshikatsu Ohtsubo, Kamishirakawa; Kenji Fukuda, Omuta, and Noriaki Ohnishi, Ogawa, all of Japan, assignors to Mitsui Mining Co. Ltd. and Mitsui Coke Co. Ltd., both of Tokyo, Japan

Filed Sep. 18, 1978, Ser. No. 943,070
Claims priority, application Japan, Oct. 31, 1977, 52-129709; Oct. 31, 1977, 52-129710; Oct. 31, 1977, 52-129711; Oct. 31, 1977, 52-129712; Oct. 31, 1977, 52-129713
Int. Cl.[2] C10G *1/00, 1/06;* **C10B** *57/04;* **C10G** *9/14*
U.S. Cl. 208—8 LE **16 Claims**

1. In a process for the preparation of a green coke having a structure selected from the group consisting of needle-like, coarse-mosaic, mosaic, fine mosaic and glassy, wherein coal is dissolved in a hydrocarbon solvent to form a solution of coal having a predetermined degree of depolymerization, residual insoluble components are separated from said solution, said solvent is removed therefrom to yield a solvent purified coal useful as a raw material for said green coke, and said solvent purified coal is coked to form said green coke, the improvement wherein said solvent purified coal is selected from the group consisting of a first type of solvent purified coal useful as a raw material for structurally needle-like green coke and characterized by a (N+O+S)/C atomic ratio of less than 0.0445, a second type of solvent purified coal useful as a raw material for structurally coarse mosaic green coke and characterized by a (N+O+S)/C atomic ratio of from 0.0445 to but excluding 0.0516, a third type of solvent purified coal useful as a raw material for structurally mosaic green coke and characterized by a (N+O+S)/C atomic ratio of from 0.0516 to but excluding 0.0584, a fourth type of solvent purified coal useful as a raw material for structurally fine mosaic green coke and characterized by a (N+O+S)/C atomic ratio of from 0.0584 to but excluding 0.0645, and a fifth type of solvent purified coal useful as a raw material for structurally glassy green coke and characterized by a (N+O+S)/C atomic ratio equal to or greater than 0.0645.

4,210,518

HYDROGEN-DONOR COAL LIQUEFACTION PROCESS

Edward L. Wilson, Jr., and Willard N. Mitchell, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 744,845, Jan. 24, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,925
Int. Cl.[2] C10G *1/06*
U.S. Cl. 208—10 **17 Claims**

1. A hydrogen-donor liquefaction process for converting coal or similar carbonaceous solids into lower molecular weight liquid hydrocarbons which comprises:

(a) contacting said carbonaceous solids with a hydrogen-donor solvent and molecular hydrogen at a temperature in the range between about 775° F. and about 950° F. in a liquefaction zone operated such that the temperature remains substantially constant throughout said zone and wherein said carbonaceous solids are converted into lower molecular weight liquid hydrocarbons to form a liquefaction effluent, said hydrogen-donor solvent having a donatable hydrogen concentration higher than the thermodynamic equilibrium concentration at the temperature in said liquefaction zone when said solvent enters said zone;

(b) maintaining a higher concentration of catalytic material that is active in promoting the hydrogenation of aromatics to form hydroaromatics in said liquefaction zone near said outlet of said zone than near said inlet of said zone; and

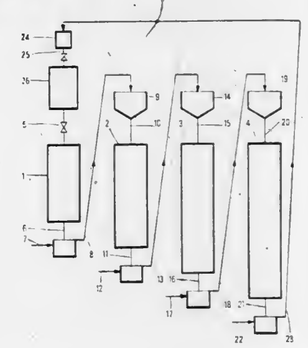
(c) recovering liquid hydrocarbonaceous products from said liquefaction effluent.

4,210,519

PROCESS AND APPARATUS FOR HYDROCARBON CONVERSION

Roger Boret, Le Pecq; Charles Bronner, Chatou; Roland Huin, Montesson-la-Borde, and Andre Vidal, Le Vesinet, all of France, assignors to Intitut Francals du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 741,744, Nov. 15, 1976, Pat. No. 4,133,743, Ser. No. 589,987, Jun. 24, 1975, abandoned, and Ser. No. 305,797, Nov. 13, 1972, abandoned. This application Dec. 6, 1978, Ser. No. 966,995
Claims priority, application France, Nov. 16, 1971, 71.41069; Feb. 7, 1972, 72.04055; Mar. 13, 1972, 72.08731
Int. Cl.[2] C10G *13/16, 35/12*
U.S. Cl. 208—49 **6 Claims**



1. A process for the continuous conversion of hydrocarbons, in the presence of a granular catalyst containing a carrier and at least one metal selected from the group consisting of metals from groups VI a, VII a and VIII of the periodic classification of the elements, comprising circulating a charge formed of hydrogen and hydrocarbons through a reaction space comprising at least two elementary catalytic zones, connected in series, substantially vertical and placed side by side, each of them being of the moving bed type, the charge circulating successively through each zone and the catalyst also passing successively through each zone and moving continuously downwardly therethrough, continuously withdrawing the catalyst from the bottom of the last catalytic zone, passing resultant withdrawn catalyst to an accumulator, and from the accumulator sending the catalyst to a fixed bed regeneration zone, isolating the fixed bed regeneration zone from the process during regeneration, the catalyst in the regeneration zone where, forming a fixed bed, it is successively subjected in the form of said fixed bed (a) to a combustion by means of a gas containing molecular oxygen whose oxygen content by volume is from 0.01 to 1%, (b) to an oxychlorination by means of a gas containing molecular oxygen whose oxygen content by volume is from 1 to 3% and simultaneously by means of at least one alkyl

halide, and (c) to a final oxidation treatment by means of an oxygen-containing gas whose oxygen content by volume is from 3 to 20%, passing resultant regenerated catalyst to a reducing zone and from which the reduced catalyst is progressively reintroduced into the upper part of the first catalytic zone of the reaction space so as to maintain a substantially constant high level of activity in each point of the catalytic zones, and wherein said granular catalyst, progressively withdrawn from one reaction space, is introduced in a lifting pot from where it is sent to a regeneration zone or to another reaction space, by lift means whose driving fluid consists essentially of recycle hydrogen, introduced through the lifting pot, in which the hydrogen stream, before being introduced into the lifting pot is subdivided in two flows defined as "primary hydrogen" and "secondary hydrogen", the "primary hydrogen" being introduced permenently through the bottom of the lifting pot, the "secondary hydrogen" supplied intermittently to the raising pot for insuring the catalyst raising, being introduced through a duct opening into the lateral wall of the lifting pot, and in the lower portion of said lateral wall, the so-formed system acting as a valve for causing the catalyst circulation and interrupting the same.

4,210,520

UNSUPPORTED CATALYSTS IN THE PRODUCTION OF OLEFINS

Hans J. Wernicke, Wolfratshausen, and Walter Kreuter, Penzberg, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,485

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721504

Int. Cl.² C10G *37/06, 23/02*

U.S. Cl. 208—57 **11 Claims**

9. In a process for the production of olefins in two stages wherein, in the first stage, a heavy petroleum fraction is hydrogenated essentially in the liquid phase in the presence of hydrogen and a hydrogenation catalyst and, in the second stage, the thus-hydrogenated fraction is subjected to thermal cracking in the vapor phase in the presence of steam, the improvement which comprises employing as the hydrogenation catalyst a support-free catalyst consisting essentially of at least one of Co-Mo, Ni-Mo, Co-Mo sulfide, Ni-Co-Mo sulfide, Ni-Mo sulfide, Ni-Co sulfide, Co-Mo oxide, Ni-Co-Mo oxide, Ni-Mo oxide, Ni-Co oxide, Ni-W sulfide, Ni-W oxide, or organometallic complexes of the aforementioned metallic mixtures.

4,210,521

CATALYTIC UPGRADING OF REFRACTORY HYDROCARBON STOCKS

Robert L. Gorring, Washington Crossing, Pa., and Robert L. Smith, Hopewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 793,706, May 4, 1977, Pat. No. 4,153,540. This application May 2, 1979, Ser. No. 35,153

Int. Cl.² C10G *23/04*

U.S. Cl. 208—89 **11 Claims**

1. A dual bed process for upgrading a refractory hydrocarbon feed, characterized by a Bromine No. greater than about 10 and an aromatics content of at least about 40 weight percent, which comprises contacting a stream of said feed initially in a hydrotreating zone containing a bed of hydrotreating catalyst under reaction conditions which include a pressure within the range of about 100 to about 1800 psig, a temperature between about 550° F. and about 850° F. in the presence of between about 2.4 and about 24 moles of hydrogen/mole of hydrocarbon charge to convert sulfur and nitrogen derivatives of hydrocarbon to hydrogen sulfide and ammonia; passing the entire effluent from said hydrotreating zone to a hydrocracking zone containing a bed of hydrocracking catalyst comprising a crystalline aluminosilicate zeolite characterized by a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12 in combination with a metal component exhibiting hydrogenation/dehydrogenation activity under reaction conditions which include a pressure within the above stated range, a hydrogen concentration between about 2 and about 23 moles of hydrogen per mole of charge to said latter zone and a temperature between about 650° F. and about 950° F. and recovering gasoline of high octane number directly as a product of the aforenoted dual bed sequential operation.

4,210,522

HYDROCRACKING CATALYST

Lee Hilfman, and Mark J. O'Hara, both of Mt. Prospect, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 25, 1978, Ser. No. 954,685

Int. Cl.² C10G *13/02, 23/04;* B01J *23/64*

U.S. Cl. 208—111 **6 Claims**

1. A process for the conversion of heavy hydrocarbon oil boiling above about 650° F. into lower boiling hydrocarbons, which comprises hydrocracking the heavy oil in admixture with hydrogen and in contact with a catalyst comprising a rare earth exchange metal component and a platinum group metal component supported on a mixture of Ziegler alumina and a zeolite.

4,210,523

HYDROCARBON CONVERSION WITH A SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE CONTAINING TWO DIFFERENT TYPES OF RHENIUM SITES

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 888,708, Mar. 20, 1978, Pat. No. 4,149,962. This application Feb. 21, 1979, Ser. No. 13,491

Int. Cl.² C10G *35/08*

U.S. Cl. 208—139 **23 Claims**

1. A process for converting a hydrocarbon which comprises contacting said hydrocarbon at hydrocarbon conversion conditions with a catalytic composite comprising a reduced combination of a catalytically effective amount of an adsorbed rhenium-oxygen complex with a porous carrier material containing catalytically effective amounts of a rhenium component other than that derived from said rhenium-oxygen complex and of a platinum group component wherein said platinum group component is uniformly dispersed in the carrier material and is maintained in the elemental metallic state during adsorption and reduction of the rhenium-oxygen complex and wherein at least a portion of the rhenium-oxygen complex is adsorbed on the surface of the platinum group component prior to the reduction of the rhenium-oxygen complex.

4,210,520

HYDROCARBON CONVERSION WITH A SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE CONTAINING TWO DIFFERENT TYPES OF RHENIUM SITES

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Mar. 7, 1979, Ser. No. 18,811

Int. Cl.² C10G *35/08*

U.S. Cl. 208—139 **21 Claims**

1. A process for converting a hydrocarbon which comprises contacting said hydrocarbon with a catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a catalytically effective amount of a non-carbonyl derived rhenium component and a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental state during the incorporation of said rhenium carbonyl component.

4,210,525

HYDRODENITROGENATION OF DEMETALLIZED RESIDUAL OIL

Alan W. Peters, Moorestown, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 24, 1979, Ser. No. 32,827

Int. Cl.² C10G *23/02*

U.S. Cl. 208—212 **5 Claims**

1. A process for preparing a high quality catalytic feedstock from a residual oil, which process comprises treating said oil to reduce the metals content thereof to a metals factor of less than 50 thereby forming demetallized residual oil, and contacting said demetallized oil in the presence of hydrogen at a temperature of 600° to 850° F., a pressure of 500 to 3000 psig, and a liquid hourly space velocity of 0.1 to 10.0 with a denitrogenation catalyst comprising the oxides or sulfides of a group VIB metal and an iron group metal on an acidic porous refractory oxide, said catalyst having at least 80% of its pore volume in pores up to 50 Angstroms diameter.

4,210,526

DESULFURIZING FOSSIL FUELS

Rollan Swanson, 220 California Ave., Santa Monica, Calif. 90403

Continuation-in-part of Ser. No. 898,206, Apr. 20, 1978, Pat. No. 4,160,721. This application Jun. 16, 1978, Ser. No. 915,905

Int. Cl.² C10G *19/00, 34/00;* C01B *17/00, 17/16*

U.S. Cl. 208—230 **9 Claims**

1. In a process wherein petroleum residues are desulfurized by treating with at least 0.25 volume thereof of an alkali metal monosulfide hydrate reagent at a process temperature of between about 120° and 325° C. from about 3 to 60 minutes: separating said residues now having a reduced sulfur content from the corresponding alkali metal polysulfides, the improvement which comprises the steps of:

(a) separating at said process temperature a mixture of unreacted alkali metal monosulfide hydrate and alkali metal polysulfides from said desulfurized residue;

(b) hydrolizing in a closed system said polysulfides by adding to said mixture at said temperature at least one mol of water per mol of hydrate and polysulfide thereby forming steam and hydrogen sulfide;

(c) removing said steam and said hydrogen sulfide from said system thereby reducing the water content therein to that of the alkali metal monosulfide hydrate and separating the highest sulfur content polysulfide from the said hydrate.

4,210,527

TWIN AIR CLASSIFIER SYSTEM

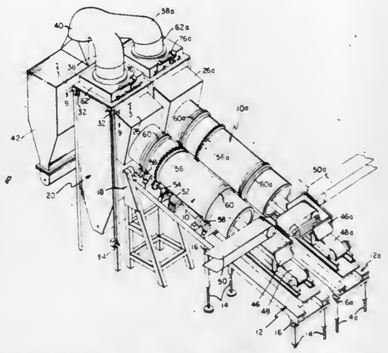
Malcolm M. Paterson, Lee, N.H.; William J. Paxson, Cedar Rapids, and Stewart B. Olson, SE. Cedar Rapids, both of Iowa, assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 12, 1979, Ser. No. 29,169

Int. Cl.² B07B *4/06*

U.S. Cl. 209—152 **11 Claims**

1. Resource recovery apparatus comprising the combination of a plenum having two separate materials-receiving chambers in its upper region and a materials-collection chamber in its lower region in direct communication with both of said receiving chambers, a pair of inclined rotary drum classifiers having their upper ends operatively connected with respective receiving chambers, and means for creating air streams through the drums and the respective receiving chambers, said drums being rotatable whereby materials deposited in the drums will be separated therein into heavy components which exit from the lower ends of the drums and light components which are



removed by the air streams into the respective receiving compartments and deposited in the common collection chamber.

4,210,528

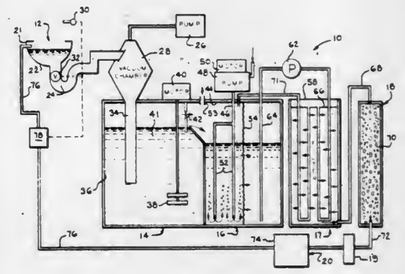
CLOSED LOOP WASTE TREATMENT AND WATER RECYCLING TOILET SYSTEM

Allan J. Coviello, Ann Arbor, Mich.; Frederick E. Bernardin, Wilmington, Del., and Kathryn R. Kalb, Brighton, Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 006,619, Jan. 26, 1979, which is a continuation of Ser. No. 850,559, Nov. 11, 1977, abandoned. This application Feb. 28, 1979, Ser. No. 16,124

Int. Cl.² C02C *1/17*

U.S. Cl. 210—4 **8 Claims**



1. In a multi-stage method for treating toilet waste and recycling treated liquid therefrom, the steps of:

a. receiving said waste at a first stage and flushing said waste from said first stage with flush water containing nitrates thereby to form a liquid mixture of the waste and nitrate-containing flush water,

b. transferring said liquid mixture to a second stage whereby said mixture is agitated and is maintained under anoxic conditions so as to cause denitrification of said liquid mixture and generation of nitrogen gas, said nitrogen gas being vented from said second stage in such manner as to prevent the entry of oxygen into said second stage thereby to assist in maintaining the anoxic conditions in said second stage,

c. transferring liquid from said second stage to a third stage containing biologically active solids and liquid and being maintained under aerobic conditions, air being passed through the mixture in said third stage at a sufficient rate to cause nitrification of nitrogenous compounds in said mixture, thereby to produce nitrates therein, the dissolved oxygen in the mixture in said third stage being greater than 2 mg/l,

d. transferring the nitrate-containing mixture from said third

stage directly to a filtering stage wherein said mixture is filtered to separate nitrate-containing water therein from the solids therein, the concentration of nitrate nitrogen in said nitrate-containing water being at least 50 mg/l,

e. cycling solids from said filtering stage back to said third stage; and

f. cycling said nitrate-containing water from said filtering stage to said first stage thereby to serve as said nitrate-containing flush water in said first stage.

4,210,529

BLOOD COMPATIBLE POLYMERS AND APPLICATIONS THEREOF

Robert J. Petersen, Minneapolis, Minn., assignor to Midwest Research Institute, Kansas City, Mo.

Division of Ser. No. 536,397, Dec. 26, 1974, Pat. No. 4,008,047. This application Feb. 7, 1977, Ser. No. 766,436

Int. Cl.² B01D *13/00;* **A61M** *1/03*

U.S. Cl. 210—22 A **7 Claims**

4. A method of using a solid surface comprising a blood compatible fluoroacylated ethyl cellulose derivative having about 4.4 to about 5.5 ethoxide groups per disaccharide unit, whereby essentially all of the pendant methylol groups and more than about 50 mole % of the ring-substituted hydroxyls of said ethyl cellulose derivatives are etherified, said ethyl cellulose derivative containing about 0.5 to about 1.6 ring-substituted $-OCO(CF_2)_mCF_3$ groups per disaccharide unit, wherein m is a number ranging from 1 to 6, said ethyl cellulose derivative containing, at most, trace amounts of residual hydroxyl groups as determined by infrared spectroscopic analysis and having a calculated chamically combined fluorine content of more than 10% by weight, said method comprising:

applying said fluoroacylated ethyl cellulose derivative to a biomedical device comprising surface means for contacting blood, whereby said surface means comprises the said fluoroacylated ethyl cellulose derivative.

4,210,530

TREATMENT OF METAL PLATING WASTES WITH AN UNEXPANDED VERMICULITE CATION EXCHANGE COLUMN

James E. Etzel, Lafayette, Ind., and Vasiliki Keramida, Athens, Greece, assignors to Purdue Research Foundation, Lafayette, Ind.

Filed Feb. 22, 1979, Ser. No. 13,929

Int. Cl.² C02B *1/44*

U.S. Cl. 210—38 B **11 Claims**

1. A method for removing multivalent heavy metal ions from metal plating waste effluents to avoid polluting the water supplies, comprising:

passing an effluent containing ion-exchangeable heavy metal ions at a concentration of 200 mg/l or less through a cation exchange column packed with unexpanded vermiculite particles having a cation exchange capacity of at least about 69 meq/100 gm,

whereby the ion-exchangeable multivalent heavy metal ions are exchanged for nonpolluting magnesium ions, the heavy metal ions are retained by the vermiculite lattice, and the treated effluent exiting from said column has a heavy metal ions concentration of 2 mg/l or less, and

discharging from said column a treated waste effluent containing heavy metal ions at concentrations of 2 mg/l or less so as to prevent polluting the water supplies.

4,210,531

PROCESS FOR DEWATERING MINERAL CONCENTRATES

Samuel S. Wang, Cheshire, and Morris E. Lewellyn, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 15, 1977, Ser. No. 860,912

Int. Cl.² B01D *21/01;* **C02B** *1/20*

U.S. Cl. 210—51 **10 Claims**

1. A process for dewatering mineral concentrates which consists essentially of first mixing with an aqueous slurry of said mineral concentrate an effective amount of a polyacrylamide flocculant; next mixing with the flocculant-treated slurry an effective amount of a combination of an anionic surface active agent composition and a water-insoluble organic liquid selected from aliphatic hydrocarbons, aromatic hydrocarbons, aliphatic alcohols, aromatic alcohols, aliphatic halides, aromatic halides, vegetable oils, and animal oils, said combination comprising from about 5 to about 95 weight percent of anionic surface active agent and, corresponsingly, from about 95 to about 5 weight percent of water-insoluble organic liquid, based on the total weight of surface active agent and organic liquid, said water-insoluble organic liquid being different from any water-insoluble organic liquid present in said anionic surface active agent composition; and thereafter removing water as a liquid from said slurry.

4,210,532

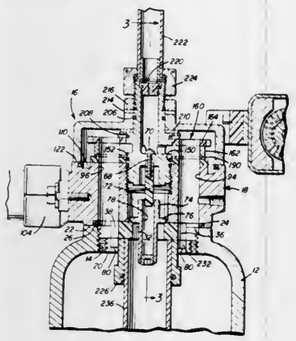
WATER CONDITIONER ROTARY VALVE STRUCTURE

Harvey L. Loke, P.O. Box 128, Wells, Minn. 56097

Filed Sep. 14, 1978, Ser. No. 942,910

Int. Cl.² B01D *15/06;* **F16K** *11/02*

U.S. Cl. 210—136 **6 Claims**



1. In combination with a water conditioning container for water conditioning minerals, a rotary valve structure including a valve body having flow passages formed therethrough opening through first and second opposite ends of said body, first and second passage defining end members secured over said first and second ends, respectively, a rotary valve member interposed between said first end member and said first end and journaled from the latter for angular displacement about an axis extending between said ends, said second end being secured in an opening formed in said container and opening into an upper portion of the interior thereof, said body including inlet and outlet ports formed therein as well as a brine port formed therein and said body including means defining a drain port opening outwardly thereof through said first end member, said rotary valve member, said second end member, and said valve body including selectively registrable passages, upon positioning of said rotary valve member in successive first, second and third angularly displaced positions relative to said valve body operative to (1) communicate said inlet port with an upper portion of the interior of said container and a lower portion of the interior of said container with said outlet port,

(2) communicate said inlet port with said lower portion of the interior of said container and said upper portion of the interior of said container with said drain port, and (3) communicate said inlet with said upper portion of the interior of said container through a venturi area with which said brine port is communicated and communicate said lower portion of said container with said drain port, said container including an elongated zone of the interior thereof extending along a path extending between the upper and lower portions of said container interior, said selectively registrable passage, when said rotary valve member is in said second position, only, also including means operative to discharge jets of the liquid flowing through said container horizontally laterally outwardly from said path at points spaced therealong and extending in generally the same horizontal direction away from said path.

4,210,533

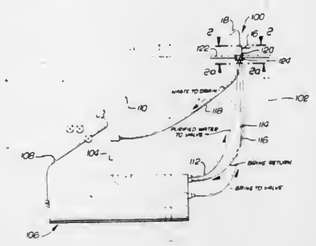
REMOTE CONTROL VALVE FOR REVERSE OSMOSIS WATER PURIFIER

Jaromir Astl, 626 Circle Dr., East, Solana Beach, Calif. 92075

Filed Jan. 24, 1978, Ser. No. 871,826

Int. Cl.² B01D *31/00*

U.S. Cl. 210—136 **4 Claims**



1. A remote control valve for a reverse osmosis water purifier which is connected to a source of pressurized feed water and produces purified water and brine from the feed water, the purified water being pressurized by the feed water, the purifier having a purified water outlet, a brine outlet and a brine return inlet, the control valve comprising:

a valve body having a purified water inlet with means for connection to the purified water outlet of the purifier, a brine inlet with means for connection to the purifier brine outlet, a brine return outlet with means for connection to the purifier brine return inlet, and a waste outlet with means for connection to a drain;

a purified water discharge outlet connected directly to the purified water inlet, which has a backflow preventing check valve therein;

said brine inlet being coupled to said brine return outlet;

a brine inlet valve mounted in and normally closing said inlet;

manually operable means for opening said brine inlet valve to direct brine through said brine return outlet to the purifier, so as to pressurize the purified water therein to feed water pressure and deliver the purified water to said discharge outlet;

brine bleed means for metering brine from said brine inlet to said waste outlet when the brine inlet valve is closed;

and a purified water bleed outlet between said purified water inlet and said discharge outlet for bleeding excess purified water to said waste outlet.

4,210,534

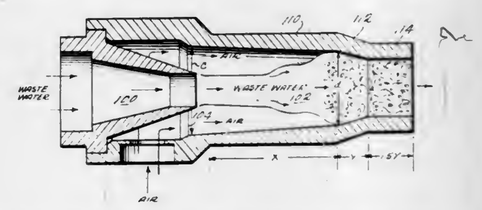
MULTIPLE STAGE JET NOZZLE AND AERATION SYSTEM

Allen E. Molvar, Barrington, R.I., assignor to Clevepak Corporation, White Plains, N.Y.

Filed May 11, 1979, Ser. No. 38,225

Int. Cl.² C02C *1/02;* **B01F** *3/04*

U.S. Cl. 210—220 **11 Claims**



1. A system for aerating waste water in a body of waste water comprising:

at least one mixing chamber adapted for immersion in said body for providing a waste water passage, including:

an extending chamber,

a liquid passage for guiding waste water flow into said extending chamber, the cross-sectional area of the liquid passage at the entry into said extending chamber being less than the cross-sectional area of said extending chamber at the entry so as to form a step region, and said extending chamber including at least three sections extending from said step region, a first section extending downstream from said step region, a second section extending downstream from said first section and tapered inwardly at a rate greater than any rate of taper of the first section to maintain mixing within said extending chamber and a third non-diverging section extending downstream from said second section, any taper of said third section being less than the taper of said first section, and said third section being at least as long as said second section and directly discharging a mixed stream into said body and,

means defining at least one gas passage terminating at said step region for injecting gas into said extending chamber to form parallel gas and water streams, said extending chamber extending downstream from the termination of said gas passage for confining flow of the parallel gas and water streams for a distance until the interface between said streams becomes unstable in said extending chamber and vortices are tripped to produce gas bubbles which are mixed with the water stream to produce said mixed stream;

means for pumping said waste water through said at least one mixing chamber;

means for mounting said mixing chamber below the surface of said body of water; and

means for supplying an aerating gas to said gas passage for injection into waste water within said mixing chamber.

4,210,535

MAGNETIC TREATMENT DEVICES FOR WATER PIPELINES

George Risk, 716 E. 5th St., Kimball, Nebr. 69145

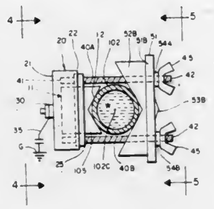
Filed Dec. 4, 1978, Ser. No. 965,941

Int. Cl.² B01D *35/06*

U.S. Cl. 210—222 **3 Claims**

1. In removable combination with a water pipeline extending from a reservoir of iod-laden water and terminating remotely downstream therefrom at the water consumer's outlet-valve, a magnetic treatment device removably securably associated with a selected pipe-segment of the pipeline and which is located nearer to the outlet-valve than to the upstream water reservoir and said selected pipe-segment surrounding a central-

axis along which the water concentrically flows, said removably secured treatment device providing magnetic flux intersecting said central-axis whereby the water flowing therethrough has its ionic characteristics altered thereat and discernible to the water consumer at the outlet-valve, said magnetic treatment device comprising at least a pair of magnetic poles one of which is a North-pole and the other of which is a South-pole, said poles being in a fixedly separated relationship with the gap therebetween being directionally parallel said central-axis as defined by a suitable holder means, said holder means including a non-magnetic housing having non-magnetic anchoring means therein to maintain the magnetic poles in said fixedly separated relationship, the magnetic poles extending from the housing and terminally located immediately adjacent the pipe-segment external side, said housing carrying a directional indicator to visually indicate that the housing should be mounted with the North-pole located downstream of the



South-pole, said housing being maintained adjacent the pipe-segment with suitable mounting means comprising a pair of parallel and laterally separated threaded bolts rigidly extending from the housing and passing through a structurally reinforced portion of the web of a laterally extending bridger member located opposite the magnetic poles and comprising the following parts in structurally continuous relationship:

A. a laterally extending web,

B. a pair of laterally extending identical dogs which are separated directionally parallel the central-axis and extending transversely directionally from the web with inwardly recessed terminii abutting the pipe-segment, and

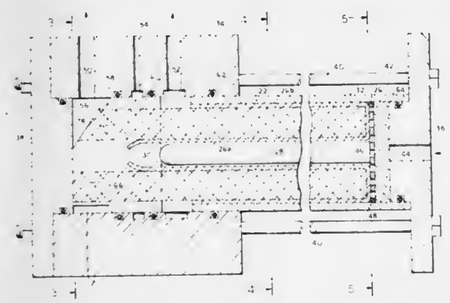
C. a pair of laterally extending strengtheing ribs respectively extending transversely from the web and directionally opposite the dogs' protuberance of the web juncture between the dogs and the ribs; and wing nuts threadedly engaged with the bolts to draw the bridger dogs tightly against the intervening pipe-segment.

4,210,536

HOLLOW FILAMENT SEPARATORY MODULE

Myron J. Coplan, Natick, and Robert E. Sebring, Westwood, both of Mass., assignors to Albany International Corporation, Menands, N.Y.

Filed Sep. 19, 1978, Ser. No. 943,793
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—321 R **7 Claims**



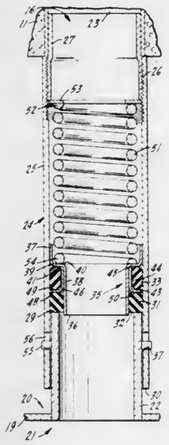
1. A hollow filament separatory module including in combination an annulus of filaments consisting of a plurality of layers of semi-permeable helically wound hollow filaments, open ends of said filaments, main portions of said filaments, a pressurized zone of said module, first flow means in said pressurized zone for flowing fluid in contact with the outer surfaces of said filaments at the main portions thereof, a collection zone of said module, second flow means in said collection zone for flowing fluid within said hollow filaments and through the open ends thereof, an intermediate zone between said pressurized zone and said collection zone, first and second sealing means defining said intermediate zone and separating said pressurized zone and said collection zone and weep hole port means between said first and second sealing means.

4,210,537

LIQUID TREATMENT APPARATUS

Donald J. Butterworth, Stirling, and Leo F. Ryan, Bridgewater, both of N.J., assignors to Ecodyne Corporation, Lincolnshire, Ill.

Filed Sep. 18, 1978, Ser. No. 943,404
Int. Cl.[2] B01D *27/00, 29/00*
U.S. Cl. 210—323 T **8 Claims**



1. A liquid filter comprising:

A. a pressurized vessel having an untreated liquid inlet and a treated liquid outlet;

B. a tube sheet spanning a portion of said vessel and defining an untreated liquid chamber communicating with said inlet and a treated liquid chamber communicating with said outlet;

C. a plurality of tubes attached to said tube sheet and projecting into said untreated liquid chamber, the inside of said tubes communicating with said treated liquid chamber through said tube sheet;

D. a plurality of elongated porous filter elements, each having a closed end and an open end, each of said open ends being axially aligned with one of said tubes and communicating with said treated liquid chamber through its associated tube;

E. means for releasably connecting said filter elements to said tubes; and

F. sliding seals for preventing leakage from said untreated liquid chamber between said filter elements and tubes into said treated liquid chamber, each such seal comprising:

1. an open-ended central support cylinder having one end attached to the open end of one of said filter elements, the interior of said support cylinder communicating with the interior of such filter element;

2. the terminal end of one of said tubes extending into the other end of said support cylinder;

3. a first annular gasket within said support cylinder, one surface of said first gasket sealingly engaging said terminal end of said tube;

4. a second annular gasket within said support cylinder, one surface of said second gasket sealingly engaging the inside wall of said support cylinder between said first gasket and said open end of said filter element;

5. a movable hollow seal cage within said support cylinder comprising:

a. a first member having an axially extending annular rim spaced from the inside of said support cylinder, a wall defining a first shoulder which faces said open end of said filter element and a second shoulder which faces said terminal end of said tube, said second gasket means bearing against said second shoulder, and said first gasket means being retained by said rim;

b. a second member having an axially extending sleeve spaced from the inside of said support cylinder, said sleeve telescoping over and tightly engaging said rim of said first member, one end of said sleeve abutting said second shoulder and the other end of said sleeve terminating short of the terminal end of said second rim, a flange having one end connected to said other end of said sleeve, said flange defining a third shoulder which faces said open end of said filter element and a fourth shoulder which faces said terminal end of said tube, said second gasket means being retained by said sleeve and bearing against said third shoulder, and said first gasket means bearing against said fourth shoulder; and

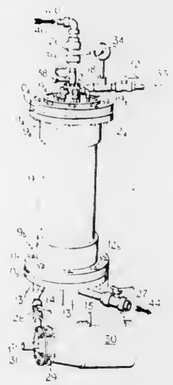
6. spring means within said support cylinder bearing against said filter element and said first shoulder for maintaining a sealing force on said first gasket.

4,210,538

FILTER BACK-WASHING

Robert M. Tantillo, Brockton, Mass., and David A. Niven, Waterbury, Conn., assignors to Bob Baker Enterprises, Inc., Melvin Village, N.H.

Filed Mar. 31, 1978, Ser. No. 892,176
Int. Cl.[2] B01D *35/22*
U.S. Cl. 210—333 A **9 Claims**



5. Filtration apparatus which comprises, in combination, a liquid-tight substantially cylindrical tank, partitioning means within said tank dividing it into two axially-spaced chambers, said partitioning means including a cluster of substantially rigid laterally-spaced tubular members extending into one of the chambers and having relatively large openings through the side walls thereof, each of said tubular members supporting a sleeve of flexible porous filter material in a surrounding closely-mated relationship therewith wherein said porous filter material extends across and closes said openings, means for introducing into said one of said chambers from outside said tank a liquid from which suspended contaminants are to be filtered, means for releasing from said tanks filtered liquid which accumulates in the other of said chambers, a plurality of sparger pipes extending one each coaxially into said tubular members, each having an inlet and a plurality of minute spray-forming orifices therethrough distributed along the portions thereof within said members and oriented to direct jets of liquid through said openings and directly onto said filter material which extends across said openings, means for interrupting the introduction of liquid into said one of said chambers and the release of filtered liquid from the other of said chambers, means for introducing pressurized flushing liquid from a supply main outside said tank into an inlet of each of said sparger pipes, and means for draining flushing liquid and filtered contaminants entrained therein from said one of said chambers, whereby contaminants filtered by the sleeves of filter material may be dislodged therefrom and drained when said sparger pipes spray said jets of flushing liquid against said filter material through said openings through side walls of said tubular members while preventing said contaminants from entering said other of said chambers.

4,210,539

WATER SCREEN

Samir S. Shiban, 870 Armstrong, Eugene, Oreg. 97404

Filed Oct. 10, 1978, Ser. No. 949,693
Int. Cl.[2] B01D *33/06*
U.S. Cl. 210—391 **10 Claims**



1. A water screen for total submergence in a body of water acted on by atmospheric pressure for removal of suspended matter from an outflow, said screen comprising,

a conduit in communication with the intake side of a pump and having an inlet end for submerged disposition in the body of water and through which a screened outflow passes,

a support structure including a base plate in place on said inlet end of the conduit,

an upright drum shaped screen structure for submerged disposition in the body of water and rotatably supported by said support structure, said screen structure closed at its upper end,

a backwash system within said screen structure and comprising conduits receiving a pressurized flow of water and having orifices discharging a backwash flow against the drum interior in a chordal direction with the backwash flow additionally imparting rotation to said screen, and

said screen structure having a substantial pressure drop thereacross by reason of both atmospheric and hydrostatic pressure being applied to the submerged screen structure exterior.

4,210,540

IMPROVED FILTER TUBE

Kenneth A. Perrotta, Methuen, Mass., assignor to Whatman Reeve Angel Limited, Maidstone, England

Division of Ser. No. 803,026, Jun. 3, 1977, Pat. No. 4,102,785.
This application Aug. 7, 1978, Ser. No. 931,864
Int. Cl.[2] B01D *29/10*
U.S. Cl. 210—497 R **12 Claims**

1. An improved filter tube, which filter tube comprises interrelated, randomly disposed, inorganic fibers having interstices therebetween to define the porosity of the filter tube, the fibers having a diameter ranging from about 0.01 to about 10 microns, and bonded at the junction of the fiber crossover points in the filter tube, with a bonding agent consisting essentially of a fused, thermoplastic, fluorocarbon polymer, the bonding agent generally uniformly distributed throughout the thickness of the filter tube wall and present in an amount of from about 3% to 40% by weight of the tube, the fibers interrelated to form a porous, self-supporting filter tube.

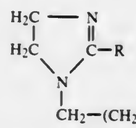
4,210,541

STABILIZED HYDRAULIC FLUID COMPOSITION

James T. Mann, Plum Borough, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 27, 1978, Ser. No. 963,933
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—32.7 E **5 Claims**

1. A hydraulic fluid stabilized against thermal degradation comprising a base oil having a 100° F. (37.8° C.) viscosity of between about 100 SUS (20.6 cs.) and about 1,000 SUS (215 cs.) and selected from highly refined mineral oils, alpha-olefin oligomers and mixtures thereof; from about 0.1 to about 2.0 volume percent of a zinc bis(dialkyldithiophosphate) in which the alkyl groups have between about four and about twelve carbon atoms; from about 0.01 to about 1.0 volume percent of a metal dialkylnaphthalene sulfonate in which the metal is selected from lithium, sodium, magnesium, calcium, barium and zinc and the alkyl groups contain between about six and about twenty carbon atoms; and from about 0.01 to about 1.0 weight percent of a composition having the general formula



where n is an integer selected from 0, 1, 2 and 3 and R is selected from alkyl, alkenyl, alkadienyl, alkatrienyl, and mixtures thereof having from about ten to about thirty carbon atoms.

4,210,542

MULTICOMPONENT STABILIZED HYDRAULIC FLUID

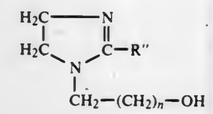
James T. Mann, Plum Borough, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 1, 1978, Ser. No. 965,336
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—32.7 E **5 Claims**

1. A hydraulic fluid stabilized against thermal degradation comprising a base oil having a 100° F. (37.8° C.) viscosity of between about 100 SUS (20.6 cs.) and about 1,000 SUS (215 cs.) and selected from highly refined mineral oils, alpha-olefin oligomers and mixtures thereof; from about 0.1 to about 2.0 volume percent of one or more zinc bis(dialkyldithiophosphate)s in which the alkyl groups have between about four and about twelve carbon atoms; from about 0.01 to about one volume percent of an alkali metal or alkaline earth metal phosphonate having the general formula



in which M is an alkali metal or alkaline earth metal, n is the valence of the metal, R is lower alkyl having one to about four carbon atoms and R′ is higher alkyl having from about 10 to about 30 carbon atoms, or a mixture of said phosphonates; and from about 0.01 to about 1.0 weight percent of a composition having the general formula



where n is an integer selected from 0, 1, 2 and 3 and R″ is selected from alkyl, alkenyl, alkadienyl, alkatrienyl, and mixtures thereof having from about ten to about thirty carbon atoms.

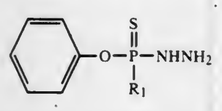
4,210,543

USE OF HYDRAZIDOTHIOATES AS ADDITIVES FOR FUNCTIONAL FLUIDS

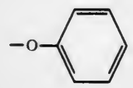
Frank J. Milnes, Guilford, and John R. Parziale, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 1, 1978, Ser. No. 956,556
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—46.7 **5 Claims**

1. A functional fluid composition comprising a major amount of an oil of lubricating viscosity or mixtures thereof and a minor load-carrying amount of additive selected from the group of hydrazidothioates of the formula:



wherein R_1 is selected from -$NHNH_2$ and



4,210,544

DUAL PURPOSE CUTTING OIL COMPOSITION

James R. Burton, Groves; Vernon W. Cantwell, Port Neches, both of Tex., and James E. Davis, Summerville, S.C., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 18, 1976, Ser. No. 715,356
Int. Cl.[2] C10M *3/26*
U.S. Cl. 252—47.5 **8 Claims**

1. A lubricating composition useful as a cutting oil comprising, in combination a major amount of a paraffinic base oil having a viscosity of about 90 to 190 SUS/100° F., 0.5 to 10 weight percent each of a di-tertiary alkyl polysulfide, and of a chlorinated paraffin and 0.01 to 1.0 weight percent of a 2,5-bis(n-alkyldithio)thiadiazole.

4,210,545

OXIDATION RESISTANT LUBRICANT COMPOSITION

Richard J. Lee, Downers Grove, and Eugene E. Richardson, Aurora, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 30, 1979, Ser. No. 25,656
Int. Cl.[2] C10M *1/38*
U.S. Cl. 252—47.5 **9 Claims**

1. The oil-soluble product prepared by the process comprising, (a) dissolving in an organic solvent in molar ratios from about 0.1 to about 1.0 mole of thio-oxamide, from about 0.2 to about 2.0 moles of a saturated aliphatic aldehyde having from 1 to about 20 carbon atoms, and from about 0.2 mole to about 2.0 moles of an olefin hydrocarbon having at least 8 carbon atoms, (b) agitating the solution while cooling the same to a temperature of about 34°–38° F., (c) adding to said cooled solution from about 10 parts to about 20 parts by weight boron triflouride etherate per 100 parts by weight of the solution of step (c).

5. A lubricant composition comprising a major amount of a normally liquid lubricating oil, and from about 0.1% to about 10% of the oil-soluble reaction product prepared by the process of claim 1.

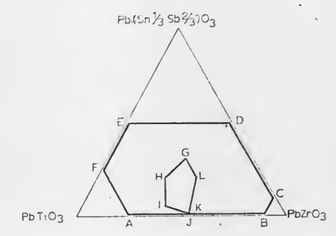
9. An addition agent concentrate for lubricating oils, comprising a lubricating oil containing from about 10% to about 75% of the oil-soluble reaction product prepared by the process of claim 1.

4,210,546

PIEZOELECTRIC CERAMIC COMPOSITIONS

Hiromu Ouchi, Toyonaka; Masamitsu Nishida, Osaka, and Shigeru Hayakawa, Hirakata,all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 2, 1975, Ser. No. 619,005
Claims priority, application Japan, Oct. 9, 1974, 49-116474; Oct. 9, 1974, 49-116475; Oct. 9, 1974, 49-116476; Oct. 9, 1974, 49-116477; Oct. 9, 1974, 49-116478
Int. Cl.[2] C04B *35/46, 35/48*
U.S. Cl. 252—62.9 **4 Claims**



1. A piezoelectric ceramic composition consisting essentially of a base ternary solid solution selected from those defined by and included within area A B C D E F of the diagram of FIG. 2 and further containing CoO in an amount ranging from 0.1 to 5 weight percent.

2. A piezoelectric ceramic composition consisting essentially of a base ternary solid solution selected from those defined by and included within area A B C D E F of the diagram of FIG. 2 and further containing Cr_2O_3 in an amount ranging from 0.1 to 5 weight percent.

3. A piezoelectric ceramic composition consisting essentially of a base ternary solid solution selected from those defined by and included within area A B C D E F of the diagram of FIG. 2 and further containing Fe_2O_3 in an amount ranging from 0.1 to 5 weight percent.

4. A piezoelectric ceramic composition consisting essentially of a base ternary solid solution selected from those defined by and included within area A B C D E F of the diagram of FIG. 2 and further containing NiO in an amount ranging from 0.1 to 0.5 weight percent.

4,210,547

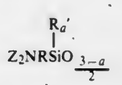
HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ANTIFREEZE CONTAINING AMINOSILICONE-SILICATE POLYMERS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1979, Ser. No. 348
Int. Cl.[2] C09K *15/32*
U.S. Cl. 252—76 **4 Claims**

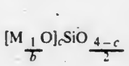
1. A single-phase antifreeze and coolant concentrate consisting essentially of an alcohol, an aminosilicone-silicate polymer corrosion inhibitor, and a hydroxybenzoic acid pH buffer and corrosion inhibitor wherein said pH buffer is present in an amount of about 0.1 percent to about 1.5 percent by weight and said polymer corrosion inhibitor is present in an amount of from 0.1 percent to 10 percent by weight all based upon the weight of said concentrate and consists essentially of:

(A) from 0.1 to 99.9 parts by weight of siloxane groups represented by the formula:



wherein Z is a member selected from the group consisting of the hydrogen atom, unsubstituted monovalent hydrocarbon groups, and substituted monovalent hydrocarbon groups containing from 0 to 1 hydroxy group as a substituent and from 0 to 1 amino group as a substituent; R is an unsubstituted divalent hydrocarbon group containing at least three carbon atoms; the Z_2N group is attached to at least the third carbon atom removed from the silicon atom; R′ is an unsubstituted monovalent hydrocarbon group and a has a value from 0 to 2 inclusive and

(B) from 0.1 to 99.9 parts by weight of groups represented by the formula:



wherein M is a cation that forms a water soluble silicate selected from the group consisting of sodium, potassium, lithium, rubidium and tetra-organoammonium cations; b is the valence of the cation represented by M and has a value of at least one and c has a value from 1 to 3 inclusive and wherein said alcohol is selected from the group consisting of at least one of ethanol, methanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol and said pH buffer and corrosion inhibitor is selected from the group consisting of ortho or para hydroxybenzoic acid and mixtures thereof.

4,210,548

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ANTIFREEZE CONTAINING ORGANOSILOXANE-SILICATE COPOLYMERS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1979, Ser. No. 350
Int. Cl.[2] C09K *15/32*
U.S. Cl. 252—76 **4 Claims**

1. A single-phase antifreeze or coolant concentrate consisting essentially of an alcohol is selected from the group consisting of methanol, ethanol, propanol, diethylene glycol, triethylene glycol, propylene glycol, glycerol and ethylene glycol, a water-soluble organosiloxanesilicate copolymer corrosion inhibitor, and at least one hydroxybenzoic acid pH buffer and corrosion inhibitor capable of buffering the pH in the range above about 9 to about 11 wherein said copolymer is present in

the amount of from 0.01 percent to 10 percent by weight based upon the weight of said concentrate and consists essentially of:

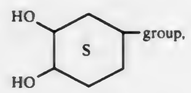
(1) from 0.1 to 99.9 parts by weight of at least one member selected from the group consisting of (a) siloxane groups represented by the formula:

$$RSiO_{1.5}$$

wherein R is a member selected from the group consisting of the methyl, ethyl, phenyl and vinyl groups and (b) siloxane groups represented by the formula:

$$[YC_aH_{2a}]_bSiO_{4-\frac{(b+c)}{2}}$$

wherein Y is a member selected from the group consisting of the cyano group, $CH_2(OH)CH(OH)$ group, $CH_2(OH)CH(OH)CH_2$ group,



$CH_2(OH)CH(OH)CH_2O$—group and $R''(OCH_2CH_2)_n(OC_3H_6)_mO$—group, wherein R'' is a member selected from the group consisting of the monovalent hydrocarbons and the hydrogen atom, n and m are integers and n has a value of at least 1, m has a value from 0 to 20 inclusive, the ratio of n to m is at least 2 to 1, a is an integer and has a value of at least 2, C_aH_{2a} is an alkylene group, the group represented by Y is separated from the silicon atom by at least two successive carbon atoms, b is an integer and has a value of from 1 to 3 inclusive, R' is a monovalent hydrocarbon group, c is an integer and has a value from 0 to 2 inclusive, (b+c) has a value from 1 to 3 inclusive; and

(2) from 0.1 to 99.9 parts by weight of at least one silicate group represented by the formula:

$$\left[\frac{M_1O}{d}\right]_e SiO_{\frac{4-e}{2}}$$

wherein M is a cation that forms a water soluble silicate, d is the valence of the cation represented by M and has a value of at least 1 and e has a value from 1 to 3 inclusive, said parts by weight of said groups in the copolymer being based on 100 parts by weight of the copolymer wherein said pH buffer is at least one of para hydroxybenzoic acid and ortho hydroxybenzoic acid and is present in the amount of about 0.1 percent to about 1.5 percent by weight based upon the weight of said concentrate.

4,210,549

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ALKALI METAL SILICATE-CONTAINING ANTIFREEZE COMPOSITIONS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1979, Ser. No. 351
Int. Cl.[2] C09K *15/32*
U.S. Cl. 252—76 **7 Claims**

1. A single-phase antifreeze or coolant concentrate consisting essentially of a major proportion of at least one alcohol selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol, an amount of about 0.05 to about 0.5 percent by weight of at least one water-soluble silicate and, as a pH buffer and corrosion inhibitor, about 0.1 to about 1.5 percent by weight of at least one hydroxybenzoic acid selected from the group consisting of ortho and para hydroxybenzoic acid, wherein said water-soluble silicate has the formula:

$$M_2O(SiO_2)_n$$

wherein M is an alkali metal and n has a value of about 0.5 to about 4, and wherein said buffer serves to maintain the pH of said antifreeze above about 9 to about 11.

4,210,550

DETERGENT COMPOSITION CONTAINING AN ALKALI CARBONATE

Emery G. Ph. Cornelissens, Nootdorp, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Jul. 14, 1978, Ser. No. 924,552
Int. Cl.[2] C11D *3/10, 3/20, 17/00, 17/04*
U.S. Cl. 252—90 **3 Claims**

1. A detergent composition containing 5-30 percent by weight of one or more surfactants, 5-80 percent by weight of an alkali carbonate, and an acid, the acidic constituent and the alkaline constituent being separately present in the composition, said acidic constituent dissolving in a wash liquor at an earlier moment than the alkaline constituent, and the total amount of alkali being present in excess relative to the amount of acid, characterized in that the acidic constituent contains 5 to 30 percent by weight, calculated on the total amount of detergent composition, of a mixture consisting of 20 to 40 percent by weight of adipic acid, 20 to 40 percent by weight of succinic acid and 20 to 60 percent by weight of glutaric acid.

2. The detergent composition of claim 1 characterized in that the alkaline constituent is provided with a coating which disintegrates in water only after at least 2 and at most 10 minutes.

4,210,551

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Gaylen R. Brubaker, Lawrenceville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 1, 1979, Ser. No. 16,712
Int. Cl.[2] C11D *7/54*
U.S. Cl. 252—102 **13 Claims**

7. A bleaching composition consisting essentially of a peroxygen bleaching compound and as a peroxygen activator therefor an imidoyl compound of the formula

$$R_1-N=\underset{\displaystyle X}{\overset{\displaystyle |}{C}}-R_2$$

wherein R_1 is an organic radical selected from the group consisting of hydrogen; an aliphatic radical of 1 to 18 carbon atoms; an aromatic radical of the benzene and naphthalene series and a heterocyclic radical of 1 to 2 rings each containing 5 to 6 members of which 1 to 3 are heteroatoms selected from the class consisting of nitrogen, oxygen and sulfur; R_2 is an organic radical selected from the group consisting of R_1 and —OR wherein R is equal to R_1 except for hydrogen and X is a leaving group, said radicals or leaving groups bearing non-interfering substituents.

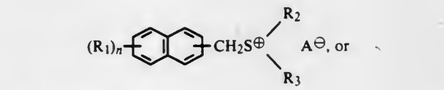
4,210,552

SULFONIUM COMPOUNDS AS CORROSION INHIBITORS IN AQUEOUS ACIDIC CLEANING SOLUTIONS

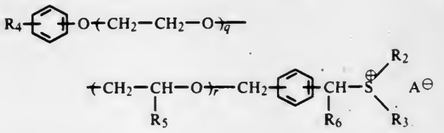
Wayne W. Frenier, and William J. Settineri, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 785,883, Apr. 8, 1977, abandoned, which is a division of Ser. No. 669,116, Mar. 22, 1976, Pat. No. 4,101,438, which is a continuation of Ser. No. 350,295, Apr. 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 118,175, Feb. 23, 1973, Pat. No. 3,764,543. This application Sep. 28, 1978, Ser. No. 946,899
The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.
Int. Cl.[2] C11D *7/34;* **C23G** *1/06*
U.S. Cl. 252—151 **25 Claims**

1. An aqueous acidic cleaning solution of at least one non-oxidizing inorganic acid having dissolved or dispersed therein a sulfonium salt corresponding to the formula



II



III

wherein n is 1 or 2; each R_1 independently is hydrogen or a hydrocarbyl, a hydrocarbyl whose chain length is interrupted by an atom of oxygen or sulfur, a hydrocarbyloxy or a hydrocarbylthio radical of from 1 to about 24 carbon atoms; R_2 is a hydrocarbyl or inertlysubstituted hydrocarbyl radical of from 1 to about 24 carbon atoms, with the proviso that the total aggregate carbon content of R_1 and R_2 is from 7 to about 25; R_3 is an alkyl radical of from 1 to 4 carbon atoms or an inertly-substituted alkyl radical of from 2 to 4 carbon atoms, allyl, phenyl or an inertly-substituted phenyl radical; or R_2 and R_3 are joined to form a 5-or 6-membered heterocyclic ring, with the proviso that the total aggregate carbon content of R_1, R_2 and R_3 is from 10 to about 25; R_4 is alkyl of 4 to about 20 carbon atoms; R_5 is methyl or ethyl; R_6 is hydrogen, methyl or ethyl; q is an integer of from 0 to 8; r is an integer of from 0 to 10, with the proviso that the sum of q plus r is equal to or less than 10; and $A^\ominus$ is an anion; said sulfonium salt being present in an amount at least sufficient to inhibit the acid-induced corrosion of ferrous metals in contact with said solution and ferric ions.

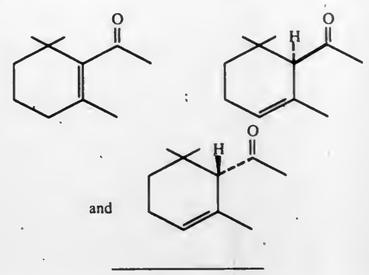
4,210,553

DETERGENT COMPOSITIONS CONTAINING 1-ACYL-2,6,6-TRIMETHYLCYCLOHEXENE DERIVATIVES AND PROCESSES FOR PREPARING SAME

Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; Robin Kasper, Eatontown; Manfred H. Vock, Locust; Joaquin Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 965,418, Dec. 1, 1978, Pat. No. 4,172,850. This application May 15, 1979, Ser. No. 39,194
Int. Cl.[2] C11D *3/30;* **C11B** *9/00*
U.S. Cl. 252—174.11 **5 Claims**

1. A process for augmenting or enhancing the aroma of a liquid or solid anionic, cationic or nonionic detergent comprising intimately admixing with a liquid or solid anionic, cationic or nonionic detergent base from 0.1% up to 6% by weight of at least one 1-acetyl-2,6,6-trimethylcyclohexene derivative having a structure selected from the group consisting of:



and

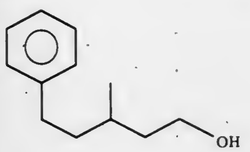
4,210,554

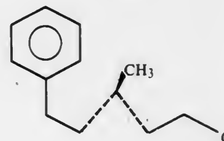
FRAGRANCE COMPOSITIONS CONTAINING 3-METHYL-1-PHENYL-PENTANOL-5 OR SPECIFIC OPTICAL ISOMERS THEREOF AND ONE OR MORE BUTANOYL CYCLOHEXANE DERIVATIVES

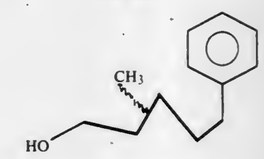
Frederick L. Schmitt, Holmdel, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 949,140, Oct. 6, 1978. This application Jul. 13, 1979, Ser. No. 57,414
Int. Cl.[2] C11D *3/50, 9/44*
U.S. Cl. 252—174.11 **3 Claims**

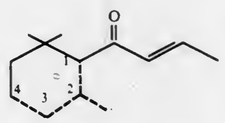
1. A process for augmenting or enhancing the aroma of a solid or liquid detergent comprising the step of intimately admixing with a solid or liquid detergent base from 0.10% up to 1.0% of a mixture consisting essentially of 3-methyl-1-phenyl-pentanol-5 or stereoisomer thereof having a structure selected from the group consisting of:







and intimately admixed therewith a cyclohexylbutenone derivative having the structure:



wherein one or two of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond with the proviso that when two of the dashed lines are carbon-carbon double bonds said carbon-carbon dou-

ble bonds are conjugated based on said solid or liquid anionic, cationic or nonionic detergent base.

4,210,555

PROCESS FOR THE GENERATION OF DENSE CLOUDS FOR CAMOUFLAGE PURPOSES

Willi Lübbers, Trittau, and Uwe Krone, Hamfelde Krs. Stormarn, both of Fed. Rep. of Germany, assignors to Nico-Pyrotechnik Hanns-Juergen Diederichs KG., Trittau, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,987

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1977, 2729055

Int. Cl.² C09K *3/30*

U.S. Cl. 252—305 **4 Claims**

4. A composition for generating dense clouds for camouflage purposes, consisting essentially of finely divided solid particles in the form of microfine powder, said particles being selected from powders of talc, kaolin, calcium carbonates, magnesium carbonates and sodium hydrogen carbonates, the particles having a diameter from 3 to 60 μm and being impenetrable to visible light and infra-red light of up to 14 μm wavelength, said microfine powder being rendered flowable by being discharged and dispersed from a container by means of compressed gas.

4,210,556

SOLID ANTISTATIC COMPOSITIONS

Anthony J. Castro, La Grange, and James W. Stoll, Woodridge, both of Ill., assignors to Akzona Incorporated, Ashville, N.C.

Division of Ser. No. 622,643, Oct. 15, 1975, Pat. No. 4,147,742, which is a continuation-in-part of Ser. No. 436,252, Jan. 24, 1974, abandoned. This application Oct. 27, 1978, Ser. No. 955,561

Int. Cl.² C08L *23/06, 71/04*

U.S. Cl. 525—6 **11 Claims**

1. An antistatic agent adapted for incorporation into a polymer subject to the development of electrostatic charges to render said polymer antistatic comprising a normally liquid N,N-bis-(2-hydroxyethyl) aliphatic (C_6-C_{18}) amine having antistatic properties and polyphenylene oxide, said amine being present in an amount of about 10% to about 90%, based on the total weight of the amine and polyphenylene oxide and said antistatic agent being a solid with no visually discernible liquid phase.

4,210,557

NON-HIGH DENSITY LIPOPROTEIN PRECIPITANT

Gerald J. Handschuh, Carlsbad, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 15, 1978, Ser. No. 970,050

Int. Cl.² G01N *31/02, 33/16;* **G09K** *3/00*

U.S. Cl. 252—408 **34 Claims**

1. In a reagent comprising a non-high density lipoprotein precipitator capable of precipitating low density lipoproteins, very low density lipoproteins, and other non-high density lipoproteins, the improvement wherein said reagent further comprises an inert, water-insoluble, adsorptive agent which is non-interfering with analysis of HDL cholesterol and capable of enhancing the flocculation of a precipitant formed by said precipitator and said non-high density lipoprotein fractions in highly lipemic serum.

4,210,558

REACTIVATION OF SPENT COPPER CONTAINING HYDROCYANATION CATALYSTS

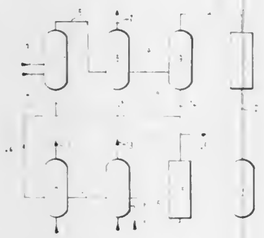
Graham R. Crooks, Wilton, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 27, 1978, Ser. No. 955,246

Claims priority, application United Kingdom, Nov. 7, 1977, 46211/77

Int. Cl.² B01J *27/32;* **C07C** *120/02*

U.S. Cl. 252—415 **7 Claims**



1. A process for the reactivation of an at least partially deactivated copper halide catalyst in a nitrile solvent, said catalyst having been deactivated in a process for hydrocyanation of butadiene with hydrogen cyanide in a nitrile solvent in the presence of a copper halide catalyst, which comprises;

(a) isolating hydrogen cyanide, butadiene and 3-pentenenitrile from the hydrocyanation reaction mixture and collecting a reaction mixture residue comprising said nitrile solvent and catalyst and;

(b) treating said reaction mixture residue with hydrogen halide in an amount sufficient to reactivate said catalyst for re-use in said hydrocyanation reaction.

4,210,559

CATALYST FOR THE PREPARATION OF POLYALPHA-OLEFINS HAVING BROAD MOLECULAR WEIGHT DISTRIBUTIONS

John L. Melquist, Naperville, Ill.; Nicholas K. Kildahl, Shrewsbury, Mass., and Peter Fotis, Highland, Ind., assignors to Standard Oil Company of Indiana, Chicago, Ill.

Filed Oct. 30, 1978, Ser. No. 955,775

Int. Cl.² C08F *4/64*

U.S. Cl. 252—431 R **28 Claims**

1. A catalyst for the polymerization of alpha-olefins consisting essentially of (A) an organometallic promoter and (B) a solid component which is the reaction product of an alkylaluminum dihalide; at least one titanium(IV) compound selected from the group consisting of halides, alkoxides, and alkoxyhalides; and at least one zirconium(IV) alkoxide; wherein the atomic ratio of titanium to zirconium ranges from about 0.01:1 to about 100:1, the alkylaluminum dihalide is employed in an amount such that the atomic ratio of aluminum to titanium plus zirconium ranges from about 1:1 to about 40:1 and the atomic ratio of total halogen in the system to the sum of elemental titanium and zirconium is at least 4:1; said reaction being carried out at about −20° to about 140° C. and including a first step wherein at least said zirconium alkoxide is present.

4,210,560

CATALYTIC SUPPORTS WITH CONTROLLED PORE PROPERTIES

William L. Kehl, Pittsburgh, Pa., assignor to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Nov. 8, 1978, Ser. No. 958,804

Int. Cl.² B01J *27/14*

U.S. Cl. 252—437 **21 Claims**

1. A catalyst support comprising a magnesia-alumina-aluminum phosphate matrix characterized after calcination at 500° C. for 10 hours as amorphous, and having an average pore radius of from about 10° A to about 300° A; a surface area ranging from about 100 M^2/g to about 350 M^2/g; a pore volume of from about 0.3 cc/g to about 1.5 cc/g; wherein the magnesia-alumina-aluminum phosphate matrix has a mole percent ratio of from about 10:80:10 to about 25:10:65, and wherein said matrix retains at least 90% of its surface area when the matrix is additionally calcined at a temperature up to about 750° C. for about 10 hours.

4,210,561

ACTIVATED AND ATTENUATED MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 888,705, Mar. 20, 1978, Pat. No. 4,156,640, which is a continuation-in-part of Ser. No. 848,699, Nov. 4, 1977. This application Nov. 30, 1978, Ser. No. 965,373

Int. Cl.² B01J *27/08, 27/10, 23/60*

U.S. Cl. 252—441 **18 Claims**

1. A catalytic composite comprising the pyrolyzed reaction product of a catalytically effective amount of a ruthenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component maintained in the elemental metallic state and of a zinc component.

4,210,562

CELLULOSE-CONTAINING PHENOLIC RESIN-BASED BINDER

Frank P. McCombs, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 8, 1979, Ser. No. 1,985

Int. Cl.² C08L *1/28*

U.S. Cl. 260—14 **5 Claims**

1. A hardenable binder composition consisting essentially of phenolic resin, hydroxyethylcellulose and a silane, said hydroxyethylcellulose being present in an amount sufficient to increase the wet tensile strength of the binder composition after cure thereof.

4,210,563

SAND MOLD COMPOSITIONS CONTAINING SCENTED WOOD

Masamitsu Miki, No. 25-15, 1-chome, Nakahara, Mitaka-shi, Tokyo, Japan

Filed Sep. 29, 1978, Ser. No. 946,954

Claims priority, application Japan, Oct. 4, 1977, 52-118575

Int. Cl.² C08L *1/00;* **B22C** *1/22*

U.S. Cl. 260—17.2 **5 Claims**

1. A moldable composition for the production of forms, cores or shell molds which comprises sand, a synthetic resin binder and wood meal, said wood meal being scented and emitting a fragrance when heated and being present in an amount 0.5 to 5% based on the weight of the resin content of the composition.

4,210,564

AQUEOUS DISPERSIONS OF POLYVINYLBUTYRAL

Jean-Marie Pouchol, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Nov. 15, 1977, Ser. No. 851,768

Claims priority, application France, Nov. 24, 1976, 76 36147; Mar. 31, 1977, 77 10493

Int. Cl.² C08L *29/04*

U.S. Cl. 260—29.6 B **19 Claims**

1. A method for preparing an aqueous dispersion of polyvinylbutyral, free from plasticizer, comprising reacting a mixture of butanal and an α-aldehydic acid with an aqueous solution of polyvinyl alcohol in the presence of phosphoric acid to effect, simultaneously, butyralization of the polyvinyl alcohol and dispersion of the product polyvinylbutyral.

4,210,565

AMBIENT OR LOW-TEMPERATURE CURABLE COATINGS

William D. Emmons, Huntingdon Valley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 2, 1979, Ser. No. 9,023

Int. Cl.² C08F *216/34, 16/34, 20/02*

U.S. Cl. 260—29.6 TA **19 Claims**

1. An ambient or low-temperature curable polymer composition adapted to coat a rigid substrate comprising:

a. a polymer polymerized from a monomer mixture comprising (1) from about 0.25% to about 35% by weight of a polymerizable aldehyde, and (2) at least one copolymerizable mono-ethylenically unsaturated monomer selected from the group consisting of α,β-ethylenically unsaturated carboxylic acid, (C_1-C_{24})alkyl methacrylates, (C_1-C_{24})alkyl acrylates, vinylidene halides, vinyl halides, (meth)acrylonitrile, vinyl esters, ethylene and alpha-olefins, acrylic and methacrylic acid esters of alcohol-ethers, vinyl ether, styrene and alkyl-substituted styrenes and vinyl aromatics, the combination of monomers being selected to provide a T_g of the polymer of greater than about 0° C.; and

b. a curing agent comprising a member selected from the group consisting of a dicarboxylic acid bis-hydrazide represented by the formula, $H_2N—NH—C(O)—R—C(O)—NH—NH_2$, and a dicarboxylic acid bis-hydrazone represented by the formula $R^1R^2C=N—NH—C(O)—R—C(O)—NH—N=CR^1R^2$, and acrylic oligomers and low molecular weight acrylic solution polymers containing a plurality of pendant hydrazide groups of the formula $—C(O)—NH—NH_2$ or hydrazone groups of the formula $—(O)—NH—N=CR^1R^2$, wherein R is a member selected from the group consisting of a divalent alkylene group or alicyclic group having from 0 to 34 carbon atoms and a divalent aromatic ring and R^1 and R^2 are selected from the group consisting of H and (C_1-C_6) alkyl and alicyclic groups, the amount of hydrazide or hydrazone compound being selected to provide a ratio of hydrazide or of hydrazone groups to aldehyde groups of the polymer in the dispersion of from about 1:2 to 2:1.

4,210,566

JET INK COMPOSITIONS

Lee J. Murray, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 26, 1978, Ser. No. 972,998

Int. Cl.² C09D *11/02*

U.S. Cl. 260—31.8 T **26 Claims**

1. An ink composition suitable for use in jet ink printing operations comprising a solution of:

(a) a solvent blend comprised of;

(i) from about 50 to 90% n-propyl acetate as a major solvent;

(ii) a secondary solvent of from about 2 to 30% of a high boiling solvent selected from the group consisting of methyl cellosolve, dimethyl formamide, and 2,4-pentanedione; and

(iii) about 6 to 30% of an auxiliary solvent selected from the group consisting of lower aliphatic alcohols having from 1 to 3 carbon atoms, and mixtures thereof;

(b) about 0.5 to 5.0% of a colorant comprised of at least a primary dye, soluble and compatible with the ink composition components;

(c) about 3 to 25% of a binder soluble and compatible with the solvent blend, and

(d) an effective amount of an electrolyte, all of said percent-

ages being based on the total weight of the ink composition.

4,210,567

PLASTISOL OF AN ACRYLATE POLYMER AND A PLASTICIZER

Bernhard Kösters, Heidelberg, Fed. Rep. of Germany, assignor to Teroson G.m.b.H., Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 630,271, Nov. 10, 1975, abandoned. This application Feb. 27, 1978, Ser. No. 881,745

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1975, 2529732; Nov. 15, 1974, 2454235

Int. Cl.[2] C08L *33/08, 33/10, 33/12*

U.S. Cl. 260—31.8 R **18 Claims**

1. A plastisol consisting essentially of

(a) 100 weight parts of solid particles of an organic polymer having units derived from a monomer selected from t-butylacrylate or methyl, ethyl, n-propyl, isopropyl, isobutyl, sec-butyl, t-butyl or cyclohexyl methacrylate, and copolymers of at least one said monomer with at least one comonomer selected from methacrylates of alphatic C_2 to C_{10} alcohols, acrylates of C_1 to C_{10} alcohols, styrene and a-methyl-styrene, whereby the polymer has an average particle size of 0.1 to 500 microns, a glass transition temperature above 35° C. and an average degree of polymerization of more than 400,

(b) 0.1 to 50 parts by weight of an adhesion promoter, said adhesion promoter selected from triethyleneglycol dimethylacrylate, trimethylol trimethylacrylate combined with peroxides, amino silanes and mixtures thereof, and

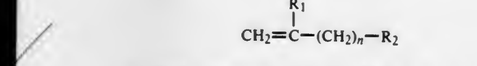
(c) 30 to 1000 parts of an organic liquid plasticizer which is sufficiently compatible with the polymer that at least 8 days after gelling of said plastisol the plasticizer does not exude from said plastisol, said plasticizer further being effective to provide the plastisol with a viscosity index $V_{8/0}$ of less than 3.0; the average particle size of polymer (a) being related to its glass transition temperature so as to lie within the triangle XYZ of the accompanying drawing, said plastisol further being in the form of a liquid or paste-like dispersion of polymer particles in plasticizer capable of being gelled by heating to a temperature between about 70° and 240° C.

2. In a plastisol, in which solid particles of an organic polymer component (a) are dispersed in an organic liquid component (b), which serves as a compatible plasticizer for the organic polymer, in a proportion effective to form a viscous dispersion having a liquid or paste-like appearance capable of being gelled by heating, the improvement in which the organic polymer component consists essentially of units derived from

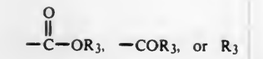
(i) at least one monomer selected from: t-butyl acrylate, a C_{1-4} alkyl methacrylate and cyclohexyl methacrylate, or

(ii) at least one of the above monomers and at least one comonomer selected from: methacrylates of aliphatic C_2 to C_{10} alcohols, acrylates of aliphatic C_1 to C_{10} alcohols, styrene and alphamethylstyrene, and, as an adhesion promoter comonomer in said organic polymer component,

(iii) at least one adhesion promoter comonomer selected from acrylate monomer with free functional groups selected from the group consisting of carboxyl, hydroxyl, epoxy and amino functional groups, methacrylate monomer with free functional groups selected from the group consisting of carboxyl, hydroxyl, epoxy and amino functional groups, copolymerizable heterocyclic vinyl compound of the general formula



in which n is equal to 0 or 1, R_1 is a hydrogen atom, a linear or branched chain alkyl group with 1 to 4 carbon atoms or a phenyl group and R_2 is a group of the formulae



in which R_3 is a heterocyclic group having at least one ring with

at least one nitrogen atom in the ring,

the polymer having a glass transition temperature of above 35° C. and an average degree of polymerization of more than 400, and the average particle size of the polymer in the plastisol being from 0.1 to 500 microns; said plasticizer being present in an amount of from 30 to 1000 parts per 100 parts by weight of said polymer and being sufficiently compatible that at least 8 days after the gelling of said plastisol, the plasticizer does not exude from said plastisol, said plasticizer moreover being effective to provide the plastisol with a viscosity index $V_{8/0}$ of less than 3.0.

4,210,568

PLASTICIZATION OF NEUTRALIZED SULFONATED ELASTOMERIC POLYMER WITH ORGANIC CARBAMATES

Henry S. Makowski, Scotch Plains; Robert D. Lundberg, Bridgewater, and Robert R. Klein, Berkley Heights, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 20, 1978, Ser. No. 898,465

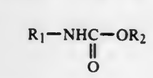
Int. Cl.[2] C08K *5/16*

U.S. Cl. 260—32.4 **56 Claims**

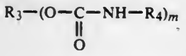
1. A polymeric composition including:

(a) a neutralized sulfonated polymer having 15 to about 50 meq. neutralized sulfonate groups per 100 grams of said sulfonated polymer, said neutralized sulfonate groups containing metal, ammonium or amine cations; and

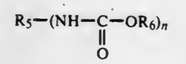
(b) about 1 to about 75 parts by weight of an N-substituted organic carbamate per 100 parts said neutralized sulfonated polymer said N-substituted organic carbamate having the formula selected from the group consisting of



wherein R_1 and R_2 are normal or branched chain alkyl, cycloalkyl, aryl, alkaryl, or arylalkyl groups, either R_1 or R_2 must be a long chain alkyl group having about 10 to about 50 carbon atoms,



wherein m is 2, 3 or 4, R_4 is a long chain, linear saturated alkyl group having about 10 to about 50 carbon atoms and R_3 is a di-, tri-, or tetrafunctional aliphatic, cycloaliphatic, aryl, or alkaryl group, and



wherein n is 2, 3 or 4, R_6 is a long chain, linear saturated alkyl group having 10 to about 50 carbon atoms and R_5 are di-, tri-, or tetrafunctional aliphatic, cycloaliphatic, aryl, or alkylaryl groups.

4,210,569

POLYMERIC ADHESIVE ANTIHALATION COMPOSITION FOR MAKING METAL-BACKED PHOTOPOLYMERIC PRINTING FORMS

Valentina G. Sysjuk, ulitsa Stefanika, 15, kv. 9, Lvov; Eduard T. Lazarenko, ulitsa K. Libknekhta, 2, kv. 13, Lvov; Yaroslav A. Ovdienko, ulitsa Stavropigiiskaya, 3, kv. 2, Lvov; Vladislav V. Bernatsek, ulitsa Shishkina, 20, kv. 4, Lvov; Vladislav F. Jurin, ulitsa Fedoseeva, 35, kv. 49, Lysiva Permskoi oblasti, and Anatoly F. Nikolaev, ulitsa Shkolnaya, 15, kv. 42, Leningrad, all of U.S.S.R.

Filed Mar. 19, 1979, Ser. No. 21,360

Int. Cl.[2] G03C *1/84;* **C08K** *5/07*

U.S. Cl. 260—328 EP **1 Claim**

1. As adhesive antihalation composition for making metal-backed photopolymeric printing forms, consisting of the following components:

an adhesive comprising a product of copolymerization of diphenylol-propane epoxy resin with a molecular weight from 360 to 3000 and phenol-formaldehyde novolac resin with a molecular weight from 400 to 1000 in a weight ratio of 1:1 in the product;

an antihalation component selected from the group consisting of iron oxide and chromium oxide;

a solvent comprising a mixture of ethanol and acetone in a volumetric ratio of 1:1;

said components being used in the composition in the following proportions (in % by weight):

antihalation component: 10–15

adhesive: 35–45

solvent: 55–40.

4,210,570

BLENDS OF SUBSTANTIALLY AMORPHOUS OLEFIN COPOLYMERS, COMPATIBLE TACKIFYING RESINS AND PLASTICIZING OILS USEFUL AS HOT MELT, PRESSURE-SENSITIVE ADHESIVES

Jimmy R. Trotter; Frederick B. Joyner, and Richard L. McConnell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 6, 1978, Ser. No. 867,643

Int. Cl.[2] C08K *5/01*

U.S. Cl. 260—33.6 AQ **16 Claims**

1. An adhesive composition capable of being used as a hot-melt, pressure-sensitive adhesive comprising a blend of

(1) about 98 to 25 weight percent of a substantially amorphous or semicrystalline olefin copolymer containing at least one C_3 to C_5 linear alpha-olefin and 15 to 60 mole percent of at least one higher linear alpha-olefin of 6 to 10 carbon atoms, said copolymer having a melt viscosity of 5,000 to 1,000,000 centipoise at 190° C.,

(2) 1 to 60 weight percent of at least one compatible tackifying resin, and

(3) 1 to 25 weight percent plasticizing oil.

4,210,571

SURFACTANTS AND THEIR USE AS COUPLING AGENTS IN THERMOSETTING POLYMERS

Daniel F. Herman, Princeton, N.J., assignor to NL Industries, Inc., New York, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,624

Int. Cl.[2] C08K *9/04*

U.S. Cl. 260—40 R **25 Claims**

1. A composition comprising a vinyl carboxylic acid ester derivative of a compound selected from the group consisting of a polyoxyethylene ether derivative of mono-, di-, and trihydroxy fatty acid esters of C_1 to C_4 mono- and polyhydric alcohols.

4,210,572

COUPLING AGENTS FOR THERMOSETTING COMPOSITES

Daniel F. Herman, Princeton, and Francis C. Naughton, Mountainside, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Aug. 29, 1978, Ser. No. 937,748

Int. Cl.[2] C08K *9/04*

U.S. Cl. 260—40 R **14 Claims**

1. A thermosettng resin composition comprising a thermosetting resin, a particulate inorganic mineral filler and a coupling agent, said coupling agent being present in an amount of from about 0.2 to 3% by weight of filler and comprising a polyoxyalkylene glycol ether derivative of a compound selected from the group consisting of mono-, di-, and tri-hydroxy fatty acid esters of C_1 to C_4 mono- and polyhydric alcohols.

4,210,573

POLYOLEFIN CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES

Stephen W. Cornell, Naperville, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,344

Int. Cl.[2] C08K *9/06*

U.S. Cl. 260—42.15 **7 Claims**

1. In a process for compression molding containers from billets prepared from polyolefin resins having incorporated therein inorganic fillers to impart low oxygen gas permeability thereto the improvement which consists essentially of treating the fillers prior to their incorporation in the polyolefin resin with a polar silane compound having the general formula

wherein R_1, R_2 and R_3 are alkoxy groups and R_4 is a polar group selected from the group consisting of amino, (amino-ethyl) amino, cyano and trifluoro and x is an integer of 1 to 3 whereby the containers when subjected to food sterilization conditions undergo a limited change in gas permeability.

4,210,574

PROCESS FOR PREPARING FILLED POLYVINYL CHLORIDE COMPOSITIONS

Ruth E. Stephens, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 655,125, Feb. 4, 1976, Pat. No. 4,132,700. This application May 22, 1978, Ser. No. 907,992

Int. Cl.[2] C08K *9/04*

U.S. Cl. 260—42.16 **8 Claims**

1. In a process for preparing a polyvinyl chloride composition having increased tensile strength and improved color, the step comprising adding to said polyvinyl chloride composition finely divided particles of kaolinite said particles having been pretreated by adding said particles to a dilute aqueous solution containing ammonia or an amine to form a slurry, agitating said slurry to thoroughly expose the kaolinite particles to the action of the solution, separating said particles from said slurry and drying said separated particles prior to incorporating said particles into said polyvinyl chloride composition.

4,210,575

ANTI-CORROSION COMPOSITIONS

Cyril F. Drake, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 2, 1978, Ser. No. 912,129

Claims priority, application United KingdomZ, Jun. 3, 1977, 23790/77

Int. Cl.[2] C08K *3/32*

U.S. Cl. 260—42.52 **5 Claims**

1. A paint composition adapted to inhibit corrosion of a metal surface to which it is applied, the composition including a glass material dispersed in a resin carrier, in which said glass consists, as its major constituents, of phosphorus pentoxide and

zinc oxide, which together provide the glass forming oxide and glass modifying oxide respectively of the glass, together with a minor proportion of one or more metal oxides selected from the group consisting of alumina, ferric oxide, gallium oxide, titanium oxide and an oxide of a metal of Group IIA of the periodic table, the composition of the glass being such that, when the glass is contacted with water, zinc and phosphate ions leach into solution.

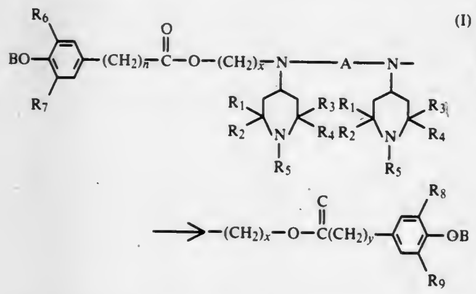
4,210,576

STABILIZERS FOR POLYMERS AND POLYMERS STABILIZED THEREBY

Piero Di Battista, S. Donato Milanese; Renzo Fontanelli, Milan; Francesco Gratani, Sesto San Giovanni, and Giuseppe Nelli, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Nov. 28, 1978, Ser. No. 964,161
Claims priority, application Italy, Nov. 29, 1977, 30139 A/77
Int. Cl.[2] C08K *5/34;* **C07D** *401/12*
U.S. Cl. 260—45.8 NE **14 Claims**

1. Derivatives of N,N'-piperidyl-tetralkyl-substituted alkylene diamine having the formula (I):

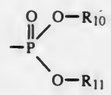


(I)

in which: each of R_1, R_2, R_3 and R_4, which may be the same or different, is an alkyl having 1 to 4 carbon atoms; R_5 is hydrogen or an alkyl having 1 to 4 carbon atoms; A is an alkylene group having 2 to 10 carbon atoms or a cycloalkylene group having 4 to 10 carbon atoms; x and y are integers from 0 to 10; each of R_6, R_7, R_8 and R_9, which may be the same or different, is a linear or ramified alkyl group having 1 to 8 carbon atoms or an aralkyl group having 7 to 18 carbon atoms, and B is hydrogen, a linear or ramified alkyl group having 1 to 8 carbon atoms, a cycloalkyl, aryl or alkyl-aryl group having 4 to 18 carbon atoms, a phosphite group

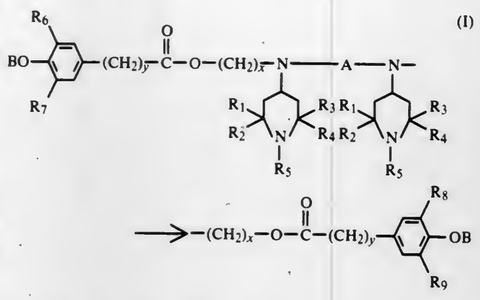


or a phosphate group



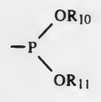
in which each of R_{10} and R_{11}, which may be the same or different, is an alkyl radical having 1 to 6 carbon atoms, an alkenyl radical having 2 to 6 carbon atoms, a cycloalkyl, aryl, arylene or alkyl-aryl radical having 4 to 18 carbon atoms or R_{10} and R_{11} together form an aromatic nucleus, or a substituted aromatic nucleus.

3. Compositions comprising synthetic thermoplastic polymers stabilized to sunlight, to heat and to ageing, and having incorporated therein, in an amount sufficient to prevent degradation of the polymer, a compound having formula:

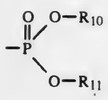


(I)

in which: each of R_1, R_2, R_3 and R_4, which may be the same or different, represent an alkyl having 1 to 4 carbon atoms; R_5 is hydrogen or an alkyl having 1 to 4 carbon atoms; A is an alkylene group having 2 to 10 carbon atoms or a cycloalkylene group having 4 to 10 carbon atoms; x and y are integers from 0 to 10; each of R_6, R_7, R_8 and R_9, which may be the same or different, is a linear or ramified alkyl group having 1 to 8 carbon atoms, or an aralkyl group having 7 to 18 carbon atoms, and B is hydrogen, a linear or ramified alkyl group having 1 to 8 carbon atoms, a cycloalkyl, aryl or alkylaryl group having 4 to 18 carbon atoms, a phosphite group



or a phosphate group



in which R_{10} and R_{11}, which may be the same or different, represent an alkyl radical having 1 to 6 carbon atoms, a cycloalkyl, aryl, arylene or alkyl-aryl radical having 4 to 18 carbon atoms, or R_{10} and R_{11} together form an aromatic necleus, or a substituted aromatic nucleus.

4,210,577

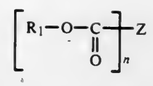
STABILIZERS FOR SYNTHETIC POLYMERS COMPRISING 2,2,6,6-TETRAMETHYL-4-PIPERIDYL CARBOXYLIC ACID ESTER, PHOSPHONIC ACID ESTER AND PHENOL

Motonobu Minagawa, Kosigaya; Yutaka Nakahara, Iwatsuki; Naohiro Kubota, and Toshihiro Shibata, both of Urawa, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Dec. 8, 1977, Ser. No. 858,599
Claims priority, application Japan, Dec. 24, 1976, 51-155972
Int. Cl.[2] C08K *5/13, 5/34, 5/35, 5/53*
U.S. Cl. 260—45.8 NT **35 Claims**

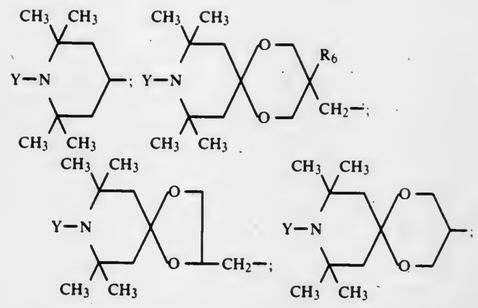
1. A stabilizer composition for organic polymeric materials comprising

(a) a 2,2,6,6-tetramethyl-4-piperidyl carboxylic acid ester in an amount from about 90 to about 35 parts by weight and having the general formula:

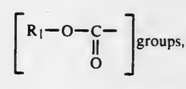


wherein:

R_1 is selected from the group consisting of



Y is selected from the group consisting of hydrogen and O;
R_6 is lower alkyl having from one to two carbon atoms;
n is selected from the group consisting of 1, 2, 3 and 4; and
Z is an organic radical having a valence from 1 to 4, the valence positions being taken by



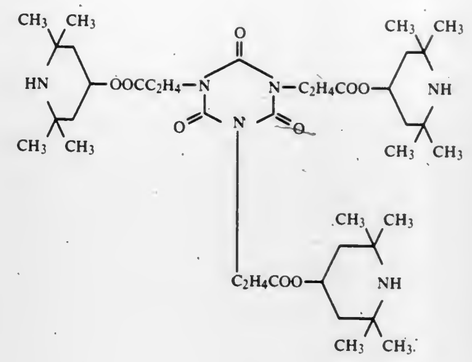
groups,

and from one to about twenty carbon atoms, and selected from the group consisting of alkyl, alkenyl, alkylene, alkenylene, alkylidene; aryl, arylene, aralkyl, aralkylene, aralkylidene; alkaryl, alkarylene, alkarylidene; tris (N,N',N''-alkylene)cyanuric acid, bis (N,N'-alkylene)piperazine, cycloaklyl, cycloaklenyl, cycloalkylene, cycloalkenylene, cycloalkylidene, alkcycloalkyl, alkcycloalkenyl, alkcycloalkenylene, alkcycloalkylene, cycloalkalkylene, cycloalkalkyl, cycloalkalkenyl, and cycloalkalkenylene, aminoalkylene, nitriloalkylene and hydroxyarylenealkylene;

(b) a phosphonic acid ester in an amount of from about 10 to about 35 parts by weight; and

(c) a phenolic antioxidant in an amount of from about 10 to about 35 parts by weight.

32. An olefin polymer composition having improved resistance to deterioration comprising an olefin polymer selected from the group consisting of polymers of alpha-olefins having from two to six carbon atoms and polystyrene, and an amount to enhance the resistance of the polymer to deterioration of a stabilizer composition comprising diphenyl phenyl phosphonate, 1,3,5-tris(3,5-di-t-butyl-4-hydroxy benzyl)-isocyanurate and the piperidine compound



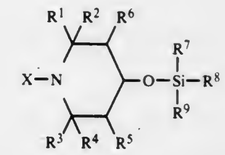
4,210,578

4-SILOXY DERIVATIVES OF POLYALKYLATED PIPERIDINES

Jean Rody, Basel, Switzerland; Gerd Greber, Bad Vöslau, Austria, and Helmut Müller, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y. and Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 853,664, Nov. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 687,824, May 19, 1976, abandoned. This application Nov. 17, 1978, Ser. No. 961,836
Claims priority, application United Kingdom, May 28, 1975, 23351/75
Int. Cl.[2] C07D *211/46, 401/12, 401/14;* **C08K** *5/54*
U.S. Cl. 260—45.8 N **12 Claims**

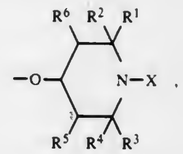
1. A compound of formula I



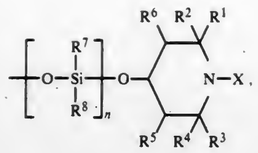
(I)

or a mixture of isomers thereof or an acid addition salt thereof, wherein

R^1 and R^3 are each ethyl,
R^2, R^4 and R^5 are each methyl,
R^6 is hydrogen and
R^5 and R^6 are interchangeable,
R^7 is hydrogen, methyl, phenyl or vinyl,
R^8 and R^9 are independently of each other hydrogen, methyl, phenyl, vinyl, alkoxy having 1–8 C-atoms, phenoxy which may be substituted by an alkyl group having from 1 to 4 carbon atoms, or a group of the formula



and if R^7 and R^8 are hydrogen, methyl, phenyl or vinyl, R^9 may also be a residue of the formula



n is an integer from 1 to 10, and

X is hydrogen, alkyl having 1 to 4 C-atoms, benzyl or an aliphatic acyl group having 1 to 4 C-atoms.

5. A composition of matter stabilized against light-induced deterioration comprising an organic polymer, normally subject to deterioration by light, and from 0.01 to 5.0 percent by weight of a compound of formula I, or a mixture of isomers thereof or an acid addition salt thereof, as claimed in claim 1.

4,210,579

THERMOPLASTIC MIXTURES OF POLYPROPYLENE WITH ETHYLENE/VINYL ACETATE AND ETHYLENE/PROPYLENE COPOLYMERS

Ulrich Grigo, Krefeld; Josef Merten, Korschenbroich; Rudolf Binsack, and Erhard Tresper, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,448

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811548

Int. Cl.[2] C08L *23/16, 53/00, 45/00*

U.S. Cl. 525—88 **6 Claims**

1. A thermoplastic mixture comprising

(A) from 2 to 40% by weight of a partially crystalline sequential ethylene/propylene copolymer or terpolymer having an ethylene content of from 70 to 90% by weight and an endothermic heat of fusion of from 6 to 18 cal/g,

(B) from 30 to 93% by weight of a crystalline polypropylene having an isotactic content of more than 90%, and

(C) from 5 to 30% by weight of a copolymer of ethylene and vinyl acetate containing from 20 to 70% by weight of vinyl acetate,

the percentages being based on the sum of (A)+(B)+(C).

4,210,580

PROCESS FOR SEPARATION AND ISOLATION OF AHF AND FIBRONECTIN FROM BLOOD PLASMA

David Amrani, 75 Rumson Rd., Staten Island, N.Y. 10304

Filed Jun. 19, 1979, Ser. No. 49,965

Int. Cl.[2] A23J *1/06;* **A61K** *35/16;* **C07G** *7/00*

U.S. Cl. 260—112 B **7 Claims**

1. A process for the separation and isolation of AHF and fibronectin fractions from blood plasma comprising:

(a) adding a sulfated mucopolysaccharide to blood plasma to a concentration of 0.15–0.25 mg/ml of plasma;

(b) then cooling said plasma to 0° C.–15° C.;

(c) centrifuging the plasma to isolate a precipitate which forms;

(d) removing the supernatant liquid from the precipitate, said supernatant liquid being rich in AHF;

(e) washing the precipitate in a slightly basic solution of dilute salts;

(f) thereafter dissolving said precipitate in a buffered solution of chaotrophic salts of the Hofmeister series having an ionic strength from 0.01–1;

(g) and thereafter separating said fibronectin from the dissolved precipitate which contains fibronectin and fibrinogen by chromotographic means.

2. A process as claimed in claim 1, wherein said mucopolysaccharide is heparin.

4,210,581

ORGANIC COMPOUNDS

Artur Rüegger, Bottmingen, and Max Kuhn, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 736,106, Oct. 27, 1976. This application Jun. 9, 1978, Ser. No. 914,118

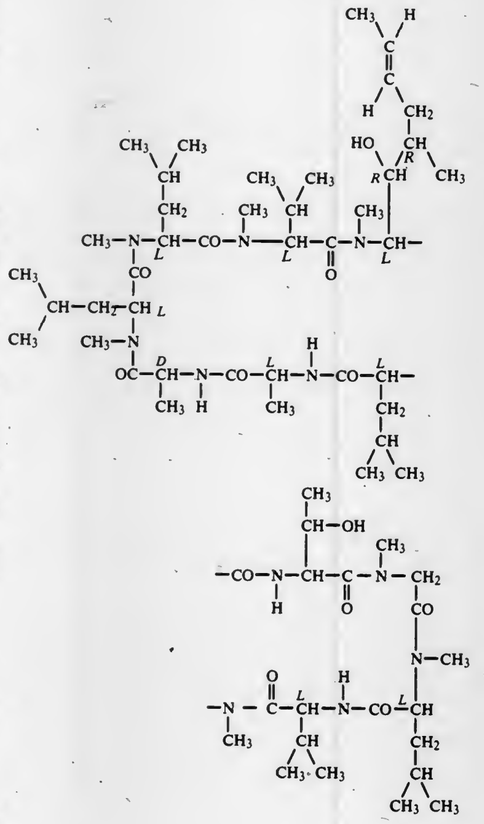
Claims priority, application Switzerland, Nov. 4, 1975, 14195/75

The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.

Int. Cl.[2] C07C *103/52;* **A61K** *37/00;* **C07D** *210/00*

U.S. Cl. 260—112.5 R **3 Claims**

1. Cyclosporin C of formula,



4,210,582

WATER-SOLUBLE PYRAZOLONE-IMIDE CONTAINING AZO DYESTUFFS

Rene de Montmollin, Riehen, and Hans-Ulrich Schütz, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

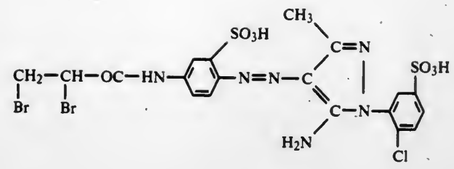
Continuation of Ser. No. 638,776, Dec. 8, 1975, abandoned, which is a continuation of Ser. No. 324,034, Jan. 16, 1973, abandoned. This application Jul. 25, 1977, Ser. No. 818,682

Claims priority, application Switzerland, Jan. 27, 1972, 1227/72

Int. Cl.[2] C09B *29/38*

U.S. Cl. 260—154 **2 Claims**

1. A monoazo dyestuff of the formula



4,210,583

AZO DYES OF THE 2,6-DI(SUBSTITUTED) AMINO PYRIDINE SERIES

Johannes Dehnert, Ludwigshafen; Walter Kurtz, Bad Duerkheim, and Gunther Lamm, Hassloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

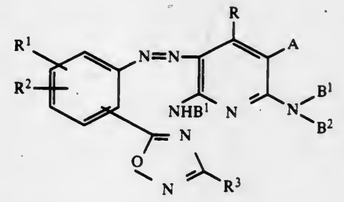
Filed Jul. 28, 1978, Ser. No. 928,967

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734927

Int. Cl.[2] C09B *29/36;* **D06P** *1/18, 3/26, 3/54*

U.S. Cl. 260—156 **14 Claims**

1. A compound of the formula



where

A is cyano or carbamoyl,

R is hydrogen or alkyl of 1 to 3 carbon atoms,

R^1 is hydrogen, chlorine, bromine or nitro,

R^2 is hydrogen, chlorine, bromine, nitro, methyl, trifluoromethyl, sulfamoyl, N-monoalkyl- or N,N-dialkylsulfamoyl, where alkyl is of 1 to 4 carbon atoms, or a sulfonic acid phenyl ester, methylphenyl ester, chlorophenyl ester or methoxyphenyl ester group,

R^3 is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms which is unsubstituted or substituted by hydroxyl, alkoxy of 1 to 8 carbon atoms, allyloxy, phenoxy, methylphenoxy, chlorophenoxy, methoxyphenoxy, or optionally substituted arylsulfonyl; benzyl; phenylethyl; cyclohexyl; phenyl which is unsubstituted or substituted by chlorine, bromine, nitro, methyl, ethyl, methoxy, ethoxy or phenoxy; naphthyl; pyridyl; thienyl; furyl; and

$$-X-(O-Y)_n-OT$$

wherein

X is alkylene of 1 to 3 carbon atoms,

Y is alkylene of 2 or 3 carbon atoms,

n is 1 or 2,

T is hydrogen, alkyl of 1 to 4 carbon atoms, benzyl, phenylethyl, phenyl or tolyl,

B^1 is hydrogen, alkyl of 1 to 8 carbon atoms, alkyl of 2 to 8 carbon atoms which is substituted by hydroxyl, alkoxy of 1 to 8 carbon atoms, phenoxy, tolyloxy, phenyl, alkanoyloxy of 1 to 8 carbon atoms, C_1 to C_4 alkoxycarbonyl, C_1 to C_4 alkylaminocarbonyloxy or phenylaminocarbonyloxy, or cyclohexyl, norbornyl, allyl, phenyl, tolyl or chlorophenyl, or

$$-Y-(O-Y)_n-OT \text{ and}$$

B^2 is hydrogen or alkyl of 1 to 4 carbon atoms which is unsubstituted or substituted by hydroxy or by alkoxy of 1 to 4 carbon atoms.

4,210,584

VINDESINE SYNTHESIS

Gloria C. Paschal, Mooresville, and Gerald L. Thompson, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

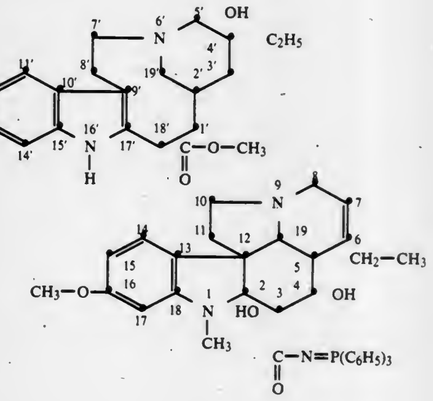
Filed Jan. 15, 1979, Ser. No. 3,442

Int. Cl.[2] C07D *519/04*

U.S. Cl. 260—244.4 **6 Claims**

1. The process which comprises the steps of reacting 4-desacetyl VLB C-3 carboxhydrazide with a nitrite in the presence of acid in an inert solvent to form 4-desacetyl VLB C-3 carboxazide, reacting said carboxazide with triphenylphosphine to yield 4-desacetyl VLB C-3 N-(triphenylphosphoranyl)carboximide and then reacting said iminophosphorane of 4-desacetyl VLB carboxylic acid with acid to yield vindesine.

6. A compound of the formula



4,210,585

PROCESS FOR PREPARING 9H-DIBENZ[c,f]IMIDAZO[1,2-a][1]AZEPIN-9-ONES

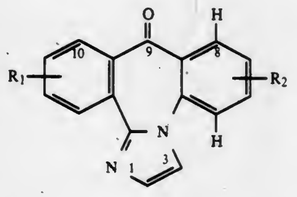
William J. Houlihan, Mt. Lakes, N.J., assignor to Sandoz, Inc., East Hanover, N.J.

Division of Ser. No. 907,951, May 22, 1978. This application Jun. 18, 1979, Ser. No. 49,330

Int. Cl.[2] C07D *487/04*

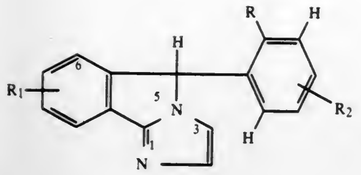
U.S. Cl. 260—245.6 **2 Claims**

1. A process for preparing a compound of the formula



(II)

which comprises treating a compound of the formula



(III)

where

R_1 represents H, mono or dichloro, or mono or difluoro,

R_2 represents H, chloro, fluoro, alkyl of 1-3 carbon atoms, alkoxy of 1-3 carbon atoms or trifluoromethyl, and

R represents chloro or fluoro, in inert solvent with an alkali metal hydride and oxygenating the resulting product.

4,210,586

DISPERSE DYES FROM 2-BROMO, CHLORO, OR CYANO-4,6-DINITROANILINE AND SELECTED ALKYL-3-(2'-ALKOXY-5-ALKANOYLAMINOANILINO)-BUTYRATE OR ALKYL-4-(2'-ALKOXY-5'-ALKANOYLAMINOANILINO)-VALERATE

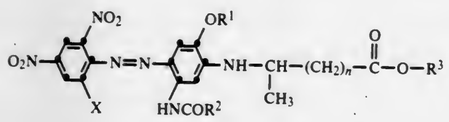
Gary T. Clark, and Max A. Weaver, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,250

Int. Cl.² C09B *29/06*

U.S. Cl. 260—207.1 **3 Claims**

1. A compound of the formula



wherein

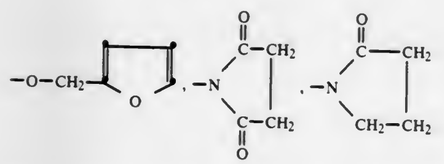
X is Br, Cl, or CN,

R^1 is straight or branched alkyl of 1 to 4 carbons,

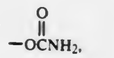
R^2 is straight or branched alkyl of 1 to 4 carbons, or phenyl,

n is 1 or 2, and

R^3 is straight or branched alkyl of 1 to 6 carbons, cyclohexyl, benzyl, phenyl or said alkyl substituted with $-O-R^4$, $O-C_2H_4-R^4$, —Cl,



phenyl, phenoxy, cyclohexyl, cyclohexyloxy, NHCO—R^4, $N(R^4)_2$, acyloxy,



—S—R^4, or —SO_2—R^4, where R^4 is straight or branched alkyl of 1 to 4 carbons.

4,210,587

7-ACYLAMINO-3-[1-[2-(CARBOXYMETHYLAMINO)ETHYL]TETRAZOL-5-YLTHIO METHYL]-3-CEPHEM-4-CARBOXYLIC ACIDS

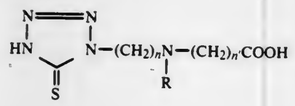
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 809,585, Jun. 24, 1977, Pat. No. 4,117,125. This application Jul. 3, 1978, Ser. No. 921,921

Int. Cl.² C07D *257/04*

U.S. Cl. 548—251 **3 Claims**

1. A compound of the formula:



in which:

R is lower alkyl having from one to four carbons or hydrogen;

n is two to four;

n' is one to four; or its alkali metal and ammonium salts.

4,210,588

SILICON-MODIFIED IMIDYL-PHTHALIC ACID DERIVATIVES

Roland Darms, Therwil; Siegfried Wyler, Dornach, both of Switzerland, and Gerd Greber, Bad Vöslau, Austria, assignors to Ciba-Geigy Corporation, Ardsely, N.Y.

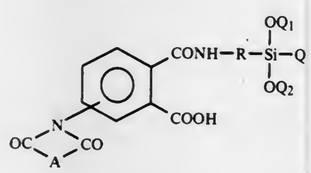
Filed Aug. 30, 1978, Ser. No. 938,169

Claims priority, application Switzerland, Sep. 9, 1977, 11068/77

Int. Cl.² C07D *209/08, 209/96;* **C09J** *1/00*

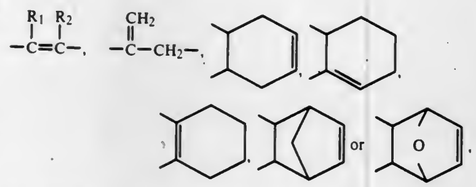
U.S. Cl. 260—326 E **4 Claims**

1. A compound of the formula I

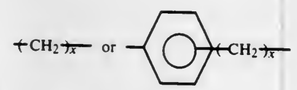


(I)

and its corresponding cyclised imide derivative, in which A is a radical of the formula



R_1 and R_2 independently of one another are hydrogen or methyl, Q is methyl, phenyl or —OQ_3, Q_1, Q_2 and Q_3 independently of one another are alkyl with 1-6 C atoms or phenyl, R is



and, x is an integer from 2 to 4.

4,210,589

METHOD OF PREPARATION FOR AROMATIC N-SUBSTITUTED HALO-SUBSTITUTED 2-PYRROLIDINONES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

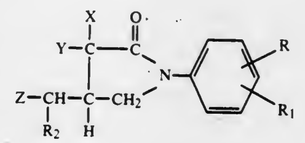
Division of Ser. No. 647,963, Jan. 9, 1976, Pat. No. 4,110,105, which is a continuation-in-part of Ser. No. 563,279, Mar. 28, 1975, abandoned. This application Apr. 10, 1978, Ser. No. 895,207

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

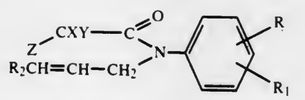
Int. Cl.² C07D *207/38*

U.S. Cl. 260—326.5 FL **6 Claims**

1. The method of preparing monocyclic aromatic N-substituted halo-2-pyrrolidinones having the formula



in which X is hydrogen, chlorine or methyl; Y is hydrogen, chlorine or bromine, Z is chlorine or bromine; R_2 is alkyl or hydrogen; R is hydrogen, alkyl having 1-4 carbon atoms, inclusive, acetyl, chlorine, bromine, fluorine, iodine, trifluoromethyl, nitro, cyano, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, trifluoromethylthio, trifluoromethylsulfinyl, trifluoromethylsulfonyl, pentafluoropropionamido, or 3-methylureido; and R_1 is hydrogen, alkyl, chlorine or trifluoromethyl, which comprises the the steps of heating an N-alkenyl haloacyl amide of the formula



in which X, Y, Z, R, R_1 and R_2 are as above defined, in the presence of a catalytic amount of ferrous ion and recovery of the resulting product.

4,210,590

REDUCTION OF INDOLE COMPOUNDS TO INDOLINE COMPOUNDS

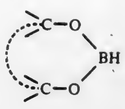
Bruce E. Maryanoff, Solebury Township, Bucks County, and David F. McComsey, Philadelphia, both of Pa., assignors to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Filed Jan. 6, 1978, Ser. No. 867,564

Int. Cl.² C07D *209/04, 209/94, 487/04*

U.S. Cl. 260—326.11 R **12 Claims**

1. A process for selectively reducing an indole compound to the corresponding indoline compound which comprises causing an indole compound to react with a borane reagent in the presence of trifluoroacetic acid, said indole compound being characterized by having a basic nitrogen bearing group and also by the absence of an electron-withdrawing group substituted directly on the 2-position of the indole nucleus and thereby being one capable of forming an indolenium ion in the trifluoroacetic acid containing reaction medium, and said borane reagent being either (a) a neutral complex of BH_3 with an organic Lewis base and selected from the group consisting of BH_3.THF, BH_3.Pyridine and $BH_3.S(CH_3)_2$ in THF, or (b) a dioxyborane represented by the structure



and selected from the group consisting of catechol borane, bis(trifluoroacetoxy)borane and a compound formed in situ from said complex of BH_3 with an organic Lewis base and trifluoroacetic acid.

4,210,591

INDOLINOSPIROPYRANE COMPOUNDS

Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

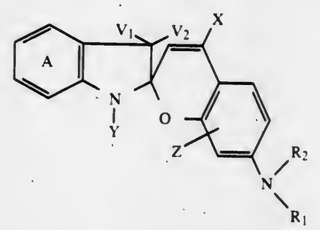
Filed Jan. 21, 1977, Ser. No. 761,042

Claims priority, application Switzerland, Jan. 30, 1976, 1175/76; Sep. 7, 1976, 11326/76

Int. Cl.² C07D *209/04*

U.S. Cl. 260—326.11 S **6 Claims**

1. An indolinospirane compound of the formula



(1)

wherein

R_1 represents alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, hydroxyl, cyano, lower lakoxy or lower alkyl-carbonyloxy, or cycloalkyl, phenyl or benzyl or phenyl or benzyl which are substituted by halogen, nitro, lower alkyl or lower alkoxy,

R_2 represents hydrogen, alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, hydroxyl, cyano, lower alkoxy or lower alkylcarbonyloxy, or cycloalkyl or benzyl which is unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy,

X represents phenyl, benzyl or phenyl or benzyl which are substituted in the aromatic nucleus thereof by halogen, lower alkyl, lower alkoxy or



wherein T_1 and T_2 independently represent hydrogen, lower alkyl, lower alkyl-carbonyl,

Y represents alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, cyano or lower alkoxy, or benzyl which is unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy,

Z represents hydrogen, halogen or lower alkyl,

V_1 and V_2 each represent lower alkyl, cycloalkyl or benzyl, or conjointly represent alkylene, and

the ring A is unsubstituted or substituted by halogen, nitro, cyano, trifluoromethyl, lower alkyl, lower alkoxy, lower alkoxy-carbonyl, phenoxy, amino, lower alkylamino or N-lower alkyl-carbonylamino.

4,210,592

THIOPHOSPHORO-S-ACYLATED HYDRAZONES

Joseph H. Lesser, Beer Sheva, Israel, assignor to Makhteshim Chemical Works Ltd., Beer Sheva, Israel

Continuation-in-part of Ser. No. 699,685, Jun. 25, 1976, abandoned. This application Nov. 8, 1977, Ser. No. 850,091
Claims priority, application Israel, Jun. 27, 1975, 47591
Int. Cl.[2] C07D *307/46;* **C07F** *9/165*
U.S. Cl. 260—347.2 **14 Claims**

1. A compound selected from the group consisting of
O,O-diethylthiophosphoro-S-acetyl-α-phenylhydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-methyl-α-phenylhydrazone;
O,O-diethylthiophosphoro-S-acetyl-α,α-dimethyl-hydrazone;
O,O-dimethylthiophosphoro-S-acetyl-α-methyl-α-t-butylhydrazone;
O,O-dimethylthiophosphoro-S-acetyl-α-(3,4-dichlorophenyl)-hydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-(2-furan)-hydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-methylhydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-methyl-α-ethylhydrazone;
O,O-dimethylthiophosphoro-S-acetyl-α-methyl-α-iso-propylhydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-methyl-α-iso-propylhydrazone;
O,O-dimethylthiophosphoro-S-acetyl-α-(4-chlorophenyl)-hydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-(3,4-dichlorophenyl)-hydrazone; and
O,O-dimethylthiophosphoro-S-acetyl-α-(2-furan)-hydrazone.

4,210,593

PROCESS FOR PREPARING ACETYLSULFAGUANIDINE

Imre A. Halmos, Summit, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 4, 1978, Ser. No. 902,597
Int. Cl.[2] C07C *143/58*
U.S. Cl. 397.7 R **4 Claims**

1. A process for preparing acetylsulfaguanidine which comprises: heating ammonium acetylsulfanilylcyanamide to about 150°-200° C. to form acetylsulfaguanidine; and cooling and recovering the same, the improvement comprising, preliminary to the heating step:
adding a concentrated aqueous solution of ammonium acetylsulfanilylcyanamide as a thin layer to a container;
subjecting said layer to microwave radiation for between about 30–90 seconds to form a soft glassy sheet of essentially anhydrous ammonium acetylsulfanilylcyanamide having a temperature between about 70°-130° C.; and
removing said sheet from said microwave radiation.

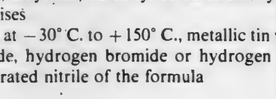
4,210,594

PROCESS FOR SEPARATING ESTERS OF FATTY ACIDS

Ted J. Logan, and David C. Underwood, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 858,484, Dec. 8, 1977, abandoned. This application Mar. 28, 1979, Ser. No. 24,759
Int. Cl.[2] C09F *5/10;* **C11B** *3/00*
U.S. Cl. 260—428.5 **38 Claims**

1. A continuous process for separating an ester of a more unsaturated fatty acid from a feed mixture comprising an ester of a more unsaturated fatty acid and an ester of a less unsaturated fatty acid, which process comprises the steps of:
(a) contacting said mixture in the fluid state, with a solid adsorbent, thereby selectively adsorbing said ester of a more unsaturated fatty acid;
(b) removing from the adsorbent a raffinate stream enriched (relative to the composition of the original mixture) in said ester of a less unsaturated fatty acid;
(c) contacting said adsorbent with a fluid desorbent material to effect desorption of said ester of a more unsaturated fatty acid from said solid adsorbent; and
(d) removing from said solid adsorbent an extract stream enriched (relative to the composition of the original mixture) in said ester of a more unsaturated fatty acid;
wherein said adsorbent comprises an X or Y zeolite containing at cation exchangeable sites at least one cation selected from the group consisting of metals of Group IA of the Periodic Table of Elements, magnesium, calcium, strontium, barium, silver, gold, zinc, nickel, copper, cadmium and mercury and combinations thereof; wherein said fluid desorbent material consists essentially of a mixture of one or more paraffinic hydrocarbons containing from about 5 to about 12 carbon atoms, and one or more ethers having the formula



wherein R_1 and R_2 are alkyl groups containing from about 2 to about 6 carbon atoms, n is 4 or 5, y is 1 or 2 and the sum of n and y is 5 or 6, wherein the volume ratio of paraffinic hydrocarbon to ether is from about 9:1 to 1:9 and wherein contact between solid adsorbent and fluids in said process is effected by means of continuous countercurrent flow fluid-solid contact.

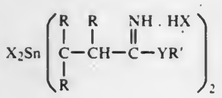
4,210,595

PROCESS FOR THE PRODUCTION OF ORGANO-TIN COMPOUNDS

Hermann O. Wirth, Bensheim, and Hermann W. Wehner, Zwingenberg, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 900,546, Apr. 27, 1978, Pat. No. 4,158,669. This application Mar. 28, 1979, Ser. No. 24,846
Claims priority, application Switzerland, May 6, 1977, 5708/77; Nov. 9, 1977, 13665/77
Int. Cl.[2] C07F *7/22*
U.S. Cl. 260—429.7 **10 Claims**

1. A process for the production of organotin compounds of the formula

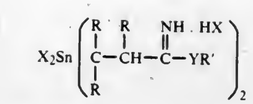


wherein
X represents a chlorine, bromine, or iodine atom,
Y represents an oxygen atom,
R is selected from the group consisting of a hydrogen atom and alkyl, and
R′ represents a hydrocarbon group of aliphatic or aromatic character, or said group substituted by a hydroxyl, thiol, alkoxy, alkylthio, carboxyl or carboalkoxy group, which comprises
reacting, at −30° C. to +150° C., metallic tin with hydrogen chloride, hydrogen bromide or hydrogen iodide and an unsaturated nitrile of the formula



in a reactant medium consisting of an alcohol (R′OH) wherein the molar ratio of alcohol to nitrile is between 1.2:1 to 1:1.

10. A process for the production of organotin compounds of the formula



wherein X, R and R′ are defined as in claim 1 and Y is a sulfur atom, which comprises
reacting, in essentially stoichiometric molar amounts, a compound made by the process according to claim 1 with a mercaptan (R′SH).

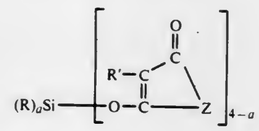
4,210,596

SILYL ETHERS OF 1,3-DICARBONYL CYCLIC COMPOUNDS

James A. Cella, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,288
Int. Cl.[2] C07F *7/18*
U.S. Cl. 556—436 **5 Claims**

1. 1,3-silyl carbonyl ethers of the formula,



where R is a monovalent organic radical of up to 13 carbon atoms selected from the class consisting of aryl radical, halogenated aryl radicals, aralkyl radicals, alkyl radicals, alkenyl radicals and cyclo alkyl radicals, R^1 is selected from hydrogen, halogen and R radicals, Z is a divalent organic radical of up to 13 carbon atoms selected from alkylene, cycloalkylene and arylene, a is a whole number having a value of from 0 to 2 inclusive.

4,210,597

PREPARATION OF OXYGENATES FROM CARBON MONOXIDE AND HYDROGEN

Yun-Yang Huang, Troy, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed May 14, 1979, Ser. No. 38,470
Int. Cl.[2] C07C *27/06*
U.S. Cl. 260—449 R **3 Claims**

1. A process for producing oxygenated compounds which comprises contacting a gaseous mixture of carbon monoxide and hydrogen with a catalyst comprising rhodium, tungsten, and an oxygenate-promoting amount of an alkali metal, at reaction conditions correlated to achieve optimal selectivity for oxygenated compounds, these conditions comprising:
(a) a temperature of from about 250° to about 350° C.;
(b) a pressure of from about 100 to about 5,000 psig;
(c) a space velocity of from 200 to 20,000; and
(d) a hydrogen to carbon monoxide ratio of from 0.1 to 4.

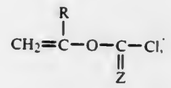
4,210,598

PROCESS FOR THE INDUSTRIAL SYNTHESIS OF VINYL AND ISOPROPENYL CHLOROFORMATE AND THIOCHLOROFORMATE

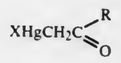
Marc D. Piteau, Mennecy, and Thierry A. Malfroot, Saint Germain les Corbeil, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Feb. 10, 1978, Ser. No. 876,688
Claims priority, application France, Feb. 25, 1977, 77 05641
Int. Cl.[2] C07C *154/00, 68/02*
U.S. Cl. 260—455 B **10 Claims**

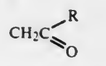
1. Process for the synthesis of a compound of the general formula



in which R=H or CH_3 and Z—O or S, which comprises reacting a chloride, which is a member selected from the group consisting of carbonyl chloride and thiocarbonyl chloride, with a mercury salt having the formula:



in which R is a hydrogen atom or a methyl group and X is a chlorine atom or the same



group, in a solent medium comprising a solvent of dielectric constant greater than 10 at 20° C. or a mixture of solvent having a dielectric constant which is greater than 10 at 20° C., at a temperature between +80° C. and −80° C.

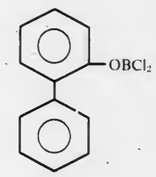
4,210,599

SYNTHESIS OF BOROXAROPHENANTHRENES

Robert F. Bridger, Hopewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 896,268, Apr. 14, 1978, abandoned. This application Feb. 15, 1979, Ser. No. 12,410
Int. Cl.[2] C07F *5/04*
U.S. Cl. 260—462 C **16 Claims**

1. In an improved process for synthesizing a boroxarophenanthrene, which comprises the steps of reacting gaseous BCl_3 with o-phenylphenol to form an intermediate product having the formula



heating this intermediate in the presence of an aluminum halide and treating the product thus obtained with the appropriate reagent to obtain the said boroxarophenanthrene, the improvement whereby the BCl_3 is added to a liquid hydrocarbon slurry of o-phenylphenol maintained at a temperature of from about 0° C. to about 80° C.

4,210,600

METHOD FOR THE PREPARATION OF UREA WITH A HIGH-YIELD REACTOR

Umberto Zardi, San Donato Milanese, Italy, assignor to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 845,371, Oct. 25, 1977, abandoned. This application May 21, 1979, Ser. No. 40,863
Claims priority, application Italy, Oct. 28, 1976, 28779 A/76
Int. Cl.² C07C *126/02*
U.S. Cl. 260—555 A **3 Claims**



1. The method of producing urea with a high-yield reactor having a first reaction zone, a second reaction zone and a heat exchange surface separating said first reaction zone from said second reaction zone and operated at elevated temperatures and at sufficient pressures to maintain the reactants in the liquid phase, the pressure in the first reaction zone being in the range between the pressure in the second reaction zone and 200 atmospheres above said second reaction zone pressure, which includes the steps of:

(a) synthesizing a quantity of urea by feeding to said first reaction zone a stoichiometric mixture of NH_3 and CO_2 together with a portion of excess recycle NH_3 sufficient to provide an NH_3/CO_2 ratio in the range of from 2.5 to 5 in said first reaction zone feed so that an exothermic reaction generating heat in excess of the amount required to synthesize said quantity of urea is carried out in said first reaction zone;

(b) synthesizing a further quantity of urea through an endothermic reaction by feeding to said second reaction zone ammonium carbamate condensate together with the balance of said excess recycle NH_3 to provide an NH_3/CO_2 ratio in the range of 3.5 to 8 and withdrawing from the first reaction zone to the second reaction zone through said heat exchange surface sufficient heat to maintain the endothermic reaction in the second reaction zone;

(c) withdrawing from said reactor a stream containing an aqueous solution of urea, ammonium carbamate, and excess recycle NH_3;

(d) separating urea from the stream withdrawn through step (c);

(e) withdrawing excess recycle NH_3 from the stream withdrawn through step (c);

(f) supplying a portion of the excess recycle NH_3 withdrawn through step (e) to the feed for the first reaction zone in step (a);

(g) forming ammonium carbamate condensate from said ammonium carbamate; and

(h) supplying said ammonium carbamate condensate and the balance of the excess recycle NH_3 withdrawn through step (e) to the feed for the second reaction zone in step (b).

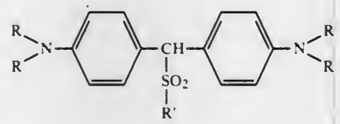
4,210,601

PROCESS FOR PREPARING ARYL[4,4'-BIS(DI-LOWERALKYL-AMINO)BENZHYDRYL]SULFONES

John P. Dundon, North Branch; Erwin Klingsberg, Mountainside, and John H. Bright, Kendall Park, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

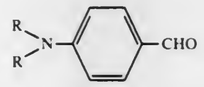
Filed Jan. 22, 1979, Ser. No. 5,251
Int. Cl.² C07C *85/20*
U.S. Cl. 260—570 D **6 Claims**

1. A process for the preparation of aryl[4,4'-bis-(di-loweralkylamino)benzhydryl] sulfones (I)



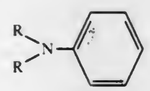
wherein each R is alkyl of 1 to 4 carbon atoms and R' is phenyl, naphthyl, alkyl-, chloro-, nitro-, or alkoxy-substituted phenyl or naphthyl, which comprises condensing, in the presence of essentially one molar proporation of urea, essentially one molar proportion of a 4-di(loweralkylamino)benzaldehyde (II),

(II)



essentially one molar proportion of a di(loweralkyl)aniline (III),

(III)



and essentially one molar proportion of a salt of an aryl sulfinic acid (IV),

$$R'—SO_2M \qquad (IV)$$

wherein R' is described hereinabove and M is an alkali or alkaline earth metal, magnesium, ammonium, or a salt-forming amine, in an aqueous acidic medium containing at least about 70°-95° C. for about 2 to 5 hours; adjusting the pH of the resulting reaction mixture to 5.5 to 7 by the addition of a strong inorganic base and extracting the mixture at an elevated temperature with an aromatic hydrocarbon solvent in which said (I) is soluble; separating the organic phase from the aqueous phase; and isolating said (I) from the organic phase.

4,210,602

PROCESS FOR THE PREPARATION OF ASYMMETRICAL N-PHENYL-N'-SUBSTITUTED PARA-PHENYLENE DIAMINES

Manfred Bergfeld, Erlenbach, and Hans G. Zengel, Kleinwallstadt, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Feb. 23, 1979, Ser. No. 14,673
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816460
Int. Cl.² C07C *85/08, 85/11*
U.S. Cl. 260—576 **11 Claims**

1. In an improved process for the preparation of asymmetrical N-phenyl-N'-substituted para-phenylene diamines by the reductive alkylation of para-nitroso-diphenylhydroxylamine with an aldehyde or a ketone in the presence of hydrogen and a hydrogenation catalyst, the improvement comprising utilizing as the hydrogenation catalyst (1) one member selected from the group consisting of palladium and platinum sulfide, in an amount less than 1%, by weight based on the weight of para-nitroso-diphenylhydroxylamine, and (2) activated carbon with a specific surface area of at least 700 square meters per gram and an ash content of less than 7.5%, by weight, in an amount from about 10 to about 200%, by weight based on the weight of para-nitroso-diphenylhydroxylamine.

4,210,603

PRODUCTION OF CYCLIC HYDROCARBONS FROM N-BUTENES

John L. Cihonski, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Filed Apr. 16, 1979, Ser. No. 30,539
Int. Cl.² C07C *85/11, 15/10, 3/44*
U.S. Cl. 260—580 **6 Claims**

1. A process for the production of cyclic hydrocarbons from light acyclic hydrocarbons which comprises contacting n-butenes with an oxidized Group VIII metal catalyst in the presence of molecular oxygen at a temperature between about 130° C. and 500° C. and a pressure between about 1 and 200 psi to convert the n-butenes to vinylcyclohexene and ethylbenzene with a conversion efficiency of at least 80 weight percent.

4,210,604

PROCESS FOR PREPARING SECONDARY AMINES FROM MIXTURES OF ALIPHATIC ALCOHOLS AND NITRILES

Heinz Müller, and Adolf Becker, both of Burgkirchen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,279
Claims priority, application Switzerland, Jul. 25, 1977, 9196/77
Int. Cl.² C07C *85/06, 85/12*
U.S. Cl. 260—583 R **8 Claims**

1. In a process for the manufacture of secondary aliphatic amines from aliphatic nitriles and aliphatic alcohols in the liquid phase in the presence of hydrogenation-dehydrogenation catalysts as elevated temperatures and removing water by passing hydrogen gas through the reaction mixture of alcohols and nitriles by contacting at temperatures of from about 120 to about 260° C. and under conditions of virtually atmospheric pressure a primary or secondary aliphatic alcohol of the formula R_1OH, wherein R_1 is a straight-chain or branced alkyl, alkenyl or ethylenically multi-unsaturated hydrocarbon radial having from 8 to 26 C atoms, or a radical of the formula $R_2(OX)_m$— having a molecular weight of at least 130, wherein R_2 is an alkyl, alkenyl or ethylenically multi-unsaturated hydrocarbon radical having from 1 to 26 C atoms, m is a number of from 1 to 20, X is an alkylene radical selected from the group $—CH_2CH_2—$, $—CH(CH_3)—CH_2—$, or $—CH_2—CH(CH_3)—$ including combinations thereof, or mixtures of said alcohols R_1OH, with an aliphatic nitrile of the formula $R_3—CN$, wherein R_3 is an alkyl, alkenyl or ethylenically multi-unsaturated hydrocarbon radical having from 8 to 26 C atoms or a radical of the formula $R_4(OX)_n—O(CH_2)_p—$ having a molecular weight of at least 130, wherein R_4 is an alkyl, alkenyl or ethylenically multi-unsaturated hydrocarbon radical having from 1 to 26 C atoms, n is a number of from 1 to 20 or 0, p is 1 or 3; X is a radical as defined above including combinations thereof, or mixtures of said nitriles $R_3—CN$ in a molar ratio of alcohol: nitrile of from 90:10 to 10:90, passing and recycling at least 2 moles of hydrogen per mole of said nitrile through the reaction mixture, the improvement which comprises maintaining an ammonia concentration of from 3 to 75% by volume, calculated on the sum of hydrogen and ammonia in the circulating gas, during the entire reaction period.

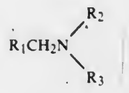
4,210,605

PROCESS FOR THE PREPARATION OF ALIPHATIC AMINES

Fumiro Hoshino; Hiroshi Kimura, and Kazuhito Matsutani, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

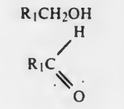
Filed Feb. 12, 1979, Ser. No. 11,751
Claims priority, application Japan, Mar. 16, 1978, 53-30149
Int. Cl.² C07C *85/02, 83/00*
U.S. Cl. 260—585 B **17 Claims**

1. In a process for the preparation of aliphatic amine having the formula:



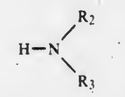
(IV)

wherein R_1 is a linear or branched, saturated or unsaturated aliphatic group having 7 to 23 carbon atoms, and R_2 and R_3 each is hydrogen or a linear or branched, saturated or unsaturated aliphatic group having 1 to 24 carbon atoms,
which comprises reacting an aliphatic alcohol or an aliphatic aldehyde having the formulas:



(I)
(II)

wherein R_1 is the same as defined above, with ammonia or a primary or secondary aliphatic amine having the formula:



(III)

wherein R_2 and R_3 are the same as defined above, at a temperature of 100° to 350° C. in the presence of a catalyst, the improvement which comprises: said catalyst is a homogeneous colloidal catalyst prepared by reducing with hydrogen or other reducing agent, a catalyst material selected from the group consisting of (1) component A, wherein component A is a copper salt or silver salt of a carboxylic acid or a mixture of said salts, (2) a mixture of said component A and component B, wherein component B is one or a mixture of two or more salts of carboxylic acids with one or more elements selected from the group consisting of the elements of group VIII of the Periodic Table of The Elements, manganese and zinc, and (3) a mixture of said component A, said component B and component C, wherein component C is one or a mixture of two or more salts of carboxylic acids with one or more elements selected from the group consisting of alkali metals and alkaline earth metals, said carboxylic acids having from 5 to 36 carbon atoms.

4,210,606

DECOMPOSITION OF CUMENE HYDROPEROXIDE WITH A HALOGEN-SUBSTITUTED THIOPHENOL CATALYST

Richard G. Austin, Churchill; Wayne R. Pretzer, and Thaddeus P. Kobylinski, both of Gibsonia, all of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Jun. 15, 1979, Ser. No. 48,743
Int. Cl.² C07C *45/00, 37/08*
U.S. Cl. 568—385 **8 Claims**

1. The method for cleaving cumene hydroperoxide at high selectivity to phenol and acetone which comprises contacting a solution comprising about 0.1 to about 20 weight percent

cumene hydroperoxide with a catalytic amount of thiophenol having from one to five ring substituents selected from fluorine, chlorine, bromine and mixtures thereof at a temperature between about 25° and about 110° C.

4,210,607

DECOMPOSITION OF CUMENE HYDROPEROXIDE USING A STABLE NITROSONIUM OR NITRONIUM SALT AS THE CATALYST

Richard G. Austin, Churchill; Wayne R. Pretzer, and Thaddeus P. Kobylinski, both of Gibsonia, all of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Jun. 20, 1979, Ser. No. 50,469

Int. Cl.[2] C07C *45/00, 37/08*

U.S. Cl. 568—385 **8 Claims**

1. The method for cleaving cumene hydroperoxide at high selectivity to phenol and acetone which comprises contacting a solution comprising about 0.1 to about 20 weight percent cumene hydroperoxide with a catalytic amount of a salt comprising a cation selected from nitrosonium and nitronium and an anion selected from tetrafluoroborate, hexafluorophosphate, hexachlorostibnate and hexafluoroarsenate at a temperature between about 25° and about 110° C.

4,210,608

MANUFACTURE OF LINEAR PRIMARY ALDEHYDES AND ALCOHOLS

Paul A. Pinke, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 469,162, May 13, 1974, Pat. No. 3,959,386. This application Dec. 8, 1975, Ser. No. 638,881 The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.

Int. Cl.[2] C07C *45/10*

U.S. Cl. 568—451 **11 Claims**

1. A method of converting linear internal monoolefinic hydrocarbons possessing from 4 to 16 carbon atoms to linear primary aldehydes and alcohols which comprises treating said internal monoolefinic hydrocarbons in admixture with hydrogen and carbon monoxide and in contact with an aluminum catalyst selected from the group consisting of metallic aluminum, alkyl aluminum and alkyl aluminum hydride, and in contact with a Group VIII metal hydroformylation catalyst at a temperature of from about 25° to about 400° C. and at a pressure of from about 14 to about 14,000 pounds per square inch.

4,210,609

METHOD OF TREATING 1-NITROPROPANE

William A. Summers, Terre Haute, Ind.; Peter C. Markunas, Springfield, Ill., and Lois V. Faulkner, Daly City, Calif., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Aug. 23, 1978, Ser. No. 936,315

Int. Cl.[2] C07C *79/04*

U.S. Cl. 568—947 **5 Claims**

1. A process for decolorizing 1-nitropropane containing color bodies by passing it through a bed of alumina.

4,210,610

PROCESS FOR THE PREPARATION OF CHLOROARYLACETYLENE PRECURSORS

Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, both of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

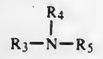
Filed Dec. 7, 1978, Ser. No. 967,247

Int. Cl.[2] C07C *17/00, 29/00*

U.S. Cl. 260—649 R **17 Claims**

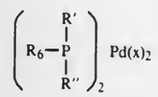
1. A process for the production of a chloroaryl hydroxy substituted acetylene which comprises:

reacting a chloroarylbromide with a substituted terminal acetylene compound containing at least three carbon atoms and an hydroxy group on the carbon atom adjacent to the acetylene group in the presence of a solvent comprising a compound having the formula:



where R_3, R_4, and R_5 can be the same or different and are selected from the group consisting of hydrogen and lower alkyl groups having from 1 to 4 carbon atoms with the proviso that no more than one of said R groups can be hydrogen, and in the added presence of:

a catalyst comprising a compound having the formula:



where x can be Br, I, or Cl;

and where R_6, R′ and R″ can be the same or different and are selected from the group consisting of phenyl, substituted phenyl and alkyl groups having from 1 to 4 carbon atoms;

and a promotor comprising cuprous iodide; to produce HBr and the resultant chlorophenyl hydroxy substituted acetylenes.

11. A process in accordance with claim 1 wherein the resultant chloroarylhydroxy substituted acetylene compound is converted to a chloroarylacetylene by reacting said chloroarylhydroxy substituted acetylene compound with an alkali metal hydroxide in the presence of a solvent for said acetylene compound.

4,210,611

HALOGENATED HYDROCARBONS, USEFUL AS INSECTICIDE INTERMEDIATES, AND METHODS FOR THEIR PREPARATION

John Crosby, and Bernard W. H. Terry, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

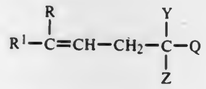
Filed May 18, 1979, Ser. No. 40,455

Claims priority, application United Kingdom, May 25, 1978, 22429/78

Int. Cl.[2] C07C *17/28*

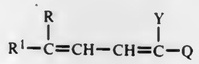
U.S. Cl. 260—653.5 **5 Claims**

1. A halogenated hydrocabon having the general formula:



(I)

and a halogenated hydrocarbon having the general formula:



(II)

and mixtures thereof, wherein

Y represents fluorine, chlorine or bromine,

R represents hydrogen or a lower alkyl group,

R^1 represents a lower alkyl group,

Z is Y or Q and

Q is $W(CF_2)_m$—in which W is hydrogen, fluorine or chlorine and

m is 1 or 2.

4,210,612

NOVEL POLYMERIC N-HETEROCYCLIC COMPOUNDS

Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geigy Corp., Ardsley, N.Y.

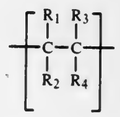
Filed Jul. 13, 1978, Ser. No. 924,417

Claims priority, application Switzerland, Jul. 19, 1977, 8915/77

Int. Cl.[2] C08L *75/04, 39/04, 77/00*

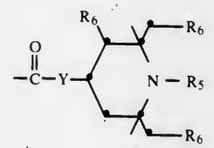
U.S. Cl. 525—204 **11 Claims**

1. A composition which comprises a plastic material containing a stabilizing amount of a stabilizer selected from the group of (1) a homopolymeric compound having the recurring structural unit of the formula I

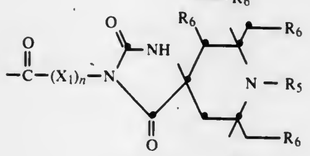


(I)

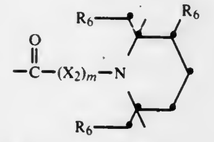
in which R_1 is a group, containing an N-heterocyclic ring, of the formulae II, III, IV and V



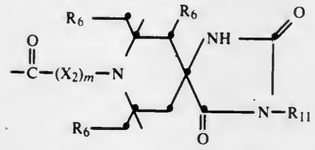
(II)



(III)

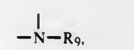


(IV)

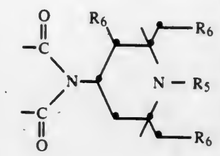


(V)

in which R_5 is hydrogen, oxygen, C_1-C_{18} alkyl, C_3-C_8 alkenyl, C_3-C_6 alkynyl, C_7-C_{12} aralkyl, C_2-C_{21} alkoxyalkyl, an aliphatic acyl group having 1-4 C atoms or one of the groups $—CH_2COOR_7$ or $—COOR_8$, in which R_7 is C_1-C_{12} alkyl, C_3-C_8 alkenyl, phenyl, C_7-C_8 aralkyl or cyclohexyl and R_8 is C_1-C_{12} alkyl, phenyl, benzyl or cyclohexyl, and R_6 is hydrogen or C_1-C_4 alkyl and Y is —O— or



in which R_9 is hydrogen, C_1-C_{12} alkyl, C_7-C_{12} aralkyl or cyclohexyl, and X_1 is a group of the formula $—O—CH(R_{10})—CH_2—$ (VI), in which R_{10} is hydrogen, methyl, ethyl, phenoxymethyl or phenyl, and n is 0 or 1, and X_2 is a group of the formula VI, in which R_{10} is as defined above, or a group of the formula $—O—CH_2—CH(OH)—CH_2—$ (VII), and m is 0 or 1, and R_{11} is C_1-C_{18} alkyl or is cyclohexyl, phenyl or benzyl which are unsubstituted or substituted by C_1-C_4 alkyl or C_1-C_4 alkoxy, and R_2 is hydrogen or C_1-C_4 alkyl, and, if R_2 and R_4 are hydrogen, R_1 and R_3 together form a group of the formula VIII



(VIII)

in which R_5 and R_6 are as defined above and R_3 is hydrogen or C_1-C_2 alkyl and R_4 is hydrogen or methyl, and (2) a copolymer of (1) with a compound containing at least one polymerisable double bond, the molar ratio of the component of the formula I to the co-component being up to 1:10.

4,210,613

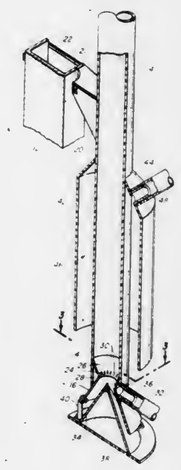
WATER TREATING DEVICE

William G. Webb, 6564 Ralston St., Ventura, Calif. 93003

Filed Apr. 6, 1978, Ser. No. 894,055

Int. Cl.[2] B01F *3/04*

U.S. Cl. 261—120 **1 Claim**



1. An aeration device for adding gases to a liquid medium comprising:

an elongate hollow tube;

support means for supporting said elongate tube upright in said liquid;

a bell-shaped member on the lower end of said tube;

said bell-shaped member terminating inside said tube in a throat of smaller cross-section than said tube;

an annular ring flaring outwardly from said bell-shaped member throat into abutment with the inside surface of said tube forming an annular chamber between the tube, bell-shaped member and ring;

a plurality of spaced apertures in said ring positioned substantially on the peripheral edge of said throat;

supply means for supplying a gas to said chamber;

a cone positioned beneath the entrance to said bell-shaped member;

whereby the gas discharged through the apertures in said

skirt causes a swirling stream of liquid to rise through said tube;

a collar attached to the outside of said tube forming a cavity between the outside of the tube and the inside of said collar; and

gas supply means for supplying a gas to said cavity whereby said collar can be used as a flotation collar for maneuvering said aeration device.

4,210,614

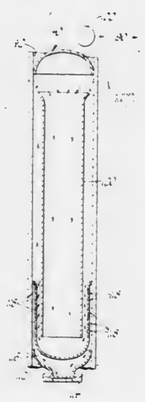
PASSIVE CONTAINMENT SYSTEM

Frank W. Kleimola, Jackson, Mich., assignor to Nucledyne Engineering Corp., Reed City, Mich.

Division of Ser. No. 548,744, Feb. 10, 1975, Pat. No. 4,050,983, and a continuation-in-part of Ser. No. 383,485, Jul. 30, 1973, Pat. No. 3,984,282, which is a continuation of Ser. No. 61,063, Aug. 5, 1970, abandoned. This application May 18, 1977, Ser. No. 798,078

Int. Cl.[2] B01F *3/04*; G21C *15/12*

U.S. Cl. 261—124 **7 Claims**



1. Energy absorbing and quenching apparatus for use in absorbing thermal energy from a vaporized fluid contained within a chamber of a confining structure, said apparatus comprising tank means, cooling liquid contained within said tank means, said cooling liquid being of such a volumetric displacement within said tank means as to result in a selected freeboard space within said tank means, passage means formed in said tank means and effective for communicating between said chamber and a lower disposed portion of said cooling liquid within said tank means, pressure responsive valve means operatively closing said passage means and effective for preventing said cooling liquid to flow from said tank means through said passage means to said chamber during normal conditions and prior to said vaporized fluid attaining a first predetermined pressure within said chamber, said valve means being effective upon said vaporized fluid attaining said first predetermined pressure to open communication through said passage means as between said cooling liquid and said chamber thereby permitting said vaporized fluid to start to flow through said passage means and into said cooling liquid while maintaining said cooling liquid within said tank means to thereby transfer heat energy from said vaporized fluid to said cooling liquid and to develop steam within said freeboard space, and said cooling liquid being effective upon sufficient steam being formed within said freeboard space to flow out of said tank means through said passage means and into said chamber to provide quenching of said vaporized fluid within said chamber.

4,210,615

MANUFACTURE OF THERMOPLASTICS FIBRIDS

Peter Engler, Frankenthal; Otto Nagel, Neustadt, both of Fed. Rep. of Germany; Leo Unterstenhöfer, deceased, late of Limburgerhof, Fed. Rep. of Germany (by Ilse Unterstenhöfer, heiress-at-law); Hans Frielingsdorf, Bad Durkheim, Fed. Rep. of Germany; Heinz Berbner, Moerlenbach, Fed. Rep. of Germany; Heinz Mueller-Tamm, Ludwigshafen, Fed. Rep. of Germany, and Dieter Stoehr, Mutterstadt, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 472,828, May 23, 1974, abandoned. This application Dec. 31, 1975, Ser. No. 645,660

Claims priority, application Fed. Rep. of Germany, May 23, 1973, 2326143

Int. Cl.[2] B01J *2/06*

U.S. Cl. 264—11 **8 Claims**

1. A process for the manufacture of thermoplastic fibrids having a length of from 100 to 50,000 μm, a thickness of from 1 to 1,000 μm, and a ratio of length to thickness of at least 10, which comprises:

1. dissolving a thermoplastic polymer in an organic solvent which is a solvent for said thermoplastic polymer only at elevated temperature;
2. ejecting said polymer solution through the outer aperture means of a concentric nozzle at a temperature of from 50° to 300° C.;
3. ejecting, simultaneously with the solution ejection of step 2, a jet of water at a velocity of from 5 m/s to 500 m/s and at a temperature between 20° and 200° C. below the temperature of the ejected solution, through a central orifice of said concentric nozzle, so that said solution is cooled by said water to a temperature below said elevated temperature of step 1, said central orifice having a diameter of from 1 to 10 mm while said outer aperture means which is disposed concentrically around said central orifice is in the form of an annular gap having a width of from 0.2 to 2.0 mm;
4. directing the solution and the water from said concentric nozzle into a tubular impulse exchange chamber having a length of from 2 to 30 times the mean inlet diameter of said chamber, said polymer solution being comminuted in said chamber by impingement with said water jet and under the influence of shearing forces so as to yield an energy dissipation density of 10 to 10^6 watts/liter, said chamber being filled with said water and being positioned so that the longitudinal axis of the chamber is in line with the axis of the nozzle, the distance from the nozzle to the impulse exchange chamber inlet being less than twice the mean inlet diameter of the impulse exchange chamber and the chamber having a mean inlet diameter of from 2 to 20 times the diameter of a circular area equal to the total area of the nozzle aperture means from which the polymer solution emerges; and
5. collecting the produced fibrids after their emergence from the impulse exchange chamber.

4,210,616

APPARATUS FOR FORMING PLASTIC

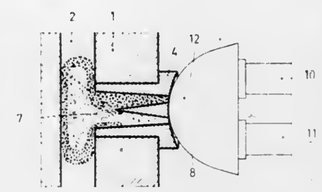
Helmut Eckardt, and Jürgen Ehritt, both of Hilchenbach-Allenbach, Fed. Rep. of Germany, assignors to Schloemann-Siemag AG., Düsseldorf, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,182

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705291

Int. Cl.[2] B29D *27/00*; B29F *1/10*

U.S. Cl. 264—45.1 **4 Claims**



1. Method of manufacturing molded parts of thermoplastic material with a compact skin and a porous core in a mold having a cavity, an injection channel connected to the cavity and a pair of fixed inlet channels extending from outer openings in the mold and intersecting within the injection channel at a point spaced from the cavity, said method comprising:

(a) injecting a first plastic mass into one of said openings until it partially fills the cavity, and

(b) injecting a second plastic mass containing a foaming agent into the other of said outer openings so that the second plastic merges with the first plastic mass in the injection channel and thereafter fills the entire mold cavity together with the first plastic mass.

4,210,617

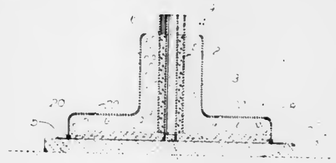
METHOD OF CASTING AN INTEGRAL SLIDE GATE AND NOZZLE

Jan Bowman, Orinda, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Aug. 3, 1978, Ser. No. 930,785

Int. Cl.[2] B28B *1/04, 1/10*

U.S. Cl. 264—71 **7 Claims**



1. Method of casting an integral slide gate and nozzle assembly, said assembly having a channel therethrough for passage of molten metal, wherein (A) a casing conforming to the exterior sides and bottom of the assembly and having an opening in the bottom in the region of the channel exit, is placed upside down on a flat smooth plate to form a mold, (B) a first tube conforming to the channel to be formed in the assembly is placed within casing with one end fixed to plate and the other end extending through and fixed within the opening in the bottom of the casing, and (C) refractory castable material is placed within the mold, characterized in that (D) a measured amount of a first refractory castable of superior resistance to molten metal, sufficient in amount to form a layer at least 1 cm thick on the bottom of the mold, is placed in the mold, (E) a second tube, of diameter at least 2 cm greater than that of the first tube, is placed concentrically about the first tube, its lower end extending to the refractory cast in step (D), (F) a further amount of the first refractory castable is placed between the first and second tubes to form a collar of that refractory, (G) a second refractory castable, of lesser resistance to molten metal than the first refractory castable, is placed in the mold outside of the second tube, and (H) the second tube is removed from the mold.

4,210,618

METHOD OF MAKING TEAR OPENING DEVICES FOR CONTAINERS

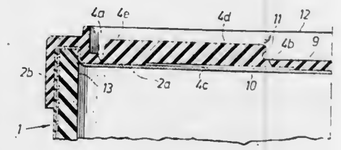
Lars-Eric Piltz, Dalby; Bo T. Quist, Bjärred; Folke Kiellarson, Barsebäck; Siwer Månsson, Lund, and Bengt Nilsson, Södra Sandby, all of Sweden, assignors to AB Akerlund & Rausing, Sweden

Division of Ser. No. 721,866, Sep. 9, 1976. This application Apr. 2, 1979, Ser. No. 25,772

Claims priority, application Sweden, Sep. 12, 1975, 7510169; Sep. 12, 1975, 7510170

Int. Cl.[2] B29F *1/00*; B29D *31/00*

U.S. Cl. 264—130 **4 Claims**



1. A method for manufacturing an opening device for a package, which opening device comprises an outer wall portion and an inner layer of substantially gas-tight material, said outer wall portion including a first tearing notch defining an opening and a second tearing notch defining a grip tongue, an said outer wall and said inner layer being interconnected substantially over their total surfaces facing each other with said outer wall portion and said inner layer being separated within an area substantially under said grip tongue; the method comprising the steps of:

(a) coating the inner layer with an adhesion preventing coating within an area corresponding to said grip tongue; and

(b) connecting said inner layer to said substantially rigid outer wall portion.

4,210,619

CEMENT BONDED AGGLOMERATE CONTAINING BORON

George D. Haley, 12 Imperial Dr., Greenville, Pa. 16125

Filed Aug. 18, 1978, Ser. No. 934,926

Int. Cl.[2] B28B *1/14*

U.S. Cl. 264—140 **4 Claims**

1. A method for producing cement bonded agglomerates containing boron wherein the setting time of the agglomerated mixture is essentially unchanged which comprises the steps of:

(a) dissolving at least one water soluble boron compound selected from the group consisting of borax, colemanite, rasorite, boric oxide, or boric acid in water;

(b) adding a sufficient amount of at least one water soluble calcium compound selected from the group consisting of oxides and hydroxides of calcium to chemically react with substantially all of the dissolved boron compound to form a slurry;

(c) mixing the slurry with ferroalloy materials to be agglomerated and cement to form a flowable concrete mixture;

(d) next pouring the resulting mixture into a suitable mold; and

(e) allowing the mixture to set.

4,210,620

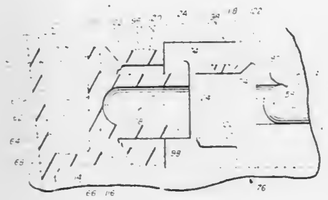
PIVOT ASSEMBLY MOLD METHOD

John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Division of Ser. No. 805,739, Jun. 13, 1977, which is a continuation-in-part of Ser. No. 739,198, Nov. 5, 1976, abandoned. This application May 30, 1978, Ser. No. 911,001

Int. Cl.[2] B29D *31/00*

U.S. Cl. 264—163 **17 Claims**



1. A method of forming a pivot assembly comprising the steps of:

providing a first passage,

moving a first ring in one direction within said passage to define a first bearing cavity having a first bearing surface formed by the outer surface of said ring and a second bearing cavity having a second bearing surface formed by the inner surface of said ring,

forming a retaining cavity in communication with said second bearing cavity and spaced axially of said ring in the opposite direction,

moving a first core member spaced radially inwardly of said ring in said one direction to form a wall of said retaining cavity spaced radially inwardly of said second bearing surface,

introducing a plastic material into each of said cavities by first passing said material into one of said cavities and then passing plastic material from said one cavity through an aperture in said ring into the other of said cavities to form a first bearing in said first bearing cavity, a second bearing in said second bearing cavity, and a resilient member in said retaining cavity secured to said second bearing,

moving said core member in said opposite direction to enable said resilient member to flex radially inwardly,

moving said ring in said opposite direction, thus severing the plastic in said aperture from said first and second bearings, while first engaging said resilient member with said ring to flex said resilient member radially inwardly from said radial position intercepting said first bearing cavity and then disengaging said ring from said resilient member for enabling said resilient member to intercept axial movement of said first bearing in said opposite direction.

17. The method of molding a pivot assembly which comprises:

placing a ring member in a mold chamber to define a pair of spaced mold cavities inside and outside of said ring member;

filling said mold cavities with material to be molded, and positioning said material in said mold cavities to form resilient, interlocking means whereby said molded, pivotable mebers are normally prevented from separating from each other, and removing said ring member from between said pair of spaced mold cavities and pivotable members by temporarily deforming said interlocking means to allow the ring member to pass from between said molded pivotable members and thereafter permitting said interlocking resilient means to spring back into their interlocking position.

4,210,621

METHOD OF APPLYING VERMICULAR EXPANDED GRAPHITE COMPOSITE MATERIAL

John A. Snover, and R. Scott Caines, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 23, 1978, Ser. No. 889,309

Int. Cl.[2] B29C *17/06*

U.S. Cl. 264—516 **10 Claims**

1. A method of applying a vermicular expanded graphite composite material to the interior surface of a conduit comprising:

(a) providing a supply of a vermicular expanded graphite composite material containing from about 3 to about 50 percent by weight of a corrosion resistant resin;

(b) positioning within the interior of said conduit a pressure actuated resiliently expandable element having substantially the same longitudinal dimension and substantially the same peripheral contour as the interior surface of said conduit, but said element having an initial outside diameter smaller than the inside diameter of said conduit;

(c) charging said vermicular expanded graphite composite material into the interior of said conduit such that said composite material is loosely disposed within the annular space formed between the internal surface of said conduit and the outer surface of said pressure actuated resiliently expandable element;

(d) applying sufficient pressure within said expandable element to compress said composite material against the interior surface of said conduit; and

(e) isostatically compressing said composite material under sufficient pressure to form a substantially smooth fluid impervious lining of said composite material on the interior surface of said conduit.

4,210,622

KIT FOR ASSAY OF IMMUNE COMPLEXES

John F. Soothill, and Roland J. Levinsky, both of London, England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 831,349, Sep. 7, 1977, Pat. No. 4,141,965. This application Jul. 21, 1978, Ser. No. 926,736

Int. Cl.[2] G01N *33/16*

U.S. Cl. 422—61 **4 Claims**

1. A kit for use in the estimation of a human immune complex and analysis of a constituent thereof by a latex particle agglutination test comprising a carrier with

a first vial which contains low affinity non-human IgM antibodies raised in a non-human animal against the constituent of said human complex undergoing analyses; and

a second vial containing latex particles sufficiently coated with said constituent, so that said latex particles may be agglutinated when said particles are mixed with said IgM antibodies of the first vial.

4,210,623

FLUID COLLECTION APPARATUS

Philip J. Breno, Oregon; Robert N. Clark, Sylvania, and Frank E. Semersky, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 1, 1978, Ser. No. 901,948

Int. Cl.[2] B01D *33/00;* **B01L** *3/00*

U.S. Cl. 422—101 **12 Claims**

1. A fluid collection apparatus for collecting fluid from a mixture of a fluid and a particulate located in a container comprising:

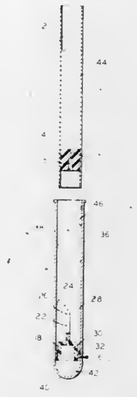
an elongate, hollow body insertable in the container and having a first and a second open end;

detachable closure means for said first end;

a self-sealing septum sealingly disposed within said body adjacent said second end; and

a composite piston slidably insertable into said second end of said hollow body, said piston having an annular body

defining a central passageway therethrough, an axially projecting hollow piercing element adapted to pierce said septum and provide communication between said central passageway and the interior of said hollow body, a filter element disposed within said central passageway, and means on said piston for sealingly engaging the interior wall of the container, said means including a laterally



extending flange extending beyond the outer wall of said hollow body whereby when the apparatus is inserted into the container, the fluid of the mixture is caused to pass through said filter element, said hollow piercing means, and thence into the interior of said hollow body, and when the apparatus is withdrawn from the container, the laterally extending flange maintains said composite piston in the container.

4,210,624

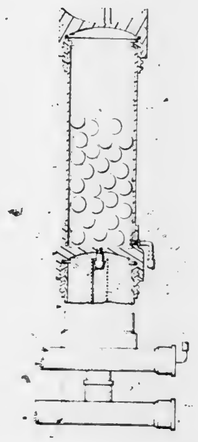
UNIVERSAL CHLORINATOR MODULE

Kenneth E. Price, Whittier, Calif., assignor to Rainbow Lifegard Products, Inc., El Monte, Calif.

Continuation of Ser. No. 735,964, Oct. 27, 1976, abandoned. This application May 15, 1978, Ser. No. 906,673

Int. Cl.[2] B01D *11/02*

U.S. Cl. 422—264 **4 Claims**



1. A chlorinator for use with a swimming pool system having an intermittently operated water circulation pump and a filter assembly, the chlorinator being adapted for placement on the filter assembly exteriorly thereof and comprising a housing defining therein a selectively openable airtight chamber adapted for receiving therein a quantity of water-soluble dry chlorine material and for trapping in the chamber upon closure thereof a quantity of air which is compressible in response to introduction to the chamber of water under pressure, a water inlet port communicating to the chamber essentially at the bottom thereof, and a separate water outlet port communicating from the chamber essentially at the bottom thereof, the inlet port being adapted for connection thereto of an exterior inlet duct by which water to be chlorinated can be applied under substantial pressure from the system to the inlet port and to rise in the chamber against and compress air trapped therein, the duct including a closable flow regulating valve, the outlet port being adapted for connection to an outlet duct for flow of water therefrom to the system at a location in the system downstream relative to the pump from the location of connection of the inlet duct to the system, and a check valve coupled to the outlet port for preventing water flow through the outlet port to the chamber, the inlet and outlet ports defining the only water flow openings so and from the chamber during operation of the chlorinator whereby air trapped in the chamber can expand to drive water from the chamber during periods when water is not supplied under said substantial pressure to the chamber via the inlet port, the check valve and the regulating valve when closed serving to prevent flow of water to the chamber when the chamber is opened for loading of dry chlorine material thereinto.

4,210,625

PROCESS FOR SEPARATING COBALT AND NICKEL BY SOLVENT EXTRACTION

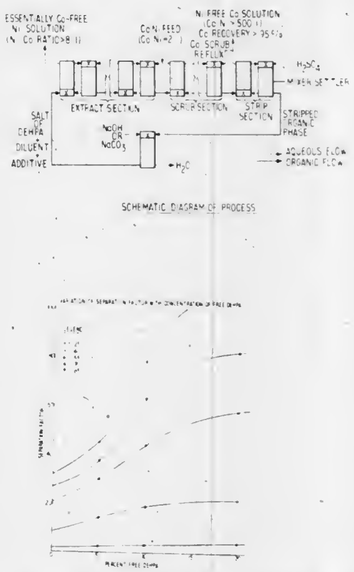
Douglas S. Flett, Stevenage, England, assignor to Matthey Rustenburg Refiners (Proprietary) Limited, Johannesburg, South Africa

Filed Jan. 10, 1978, Ser. No. 868,455

Claims priority, application United Kingdom, Jan. 11, 1977, 935/77

Int. Cl.[2] C01G *53/00*

U.S. Cl. 423—139 **20 Claims**



1. In a process for the separation of cobalt from nickel by solvent extraction which comprises contacting an aqueous solution containing divalent cobalt and nickel ions in the octahedral configuration with an organic phase containing an ester of phosphoric acid and then separating the organic phase

containing cobalt from the aqueous phase containing nickel, the improvement which comprises carrying out said contact at a temperature in the range of 40° C. to 90° C. a concentration of 11 to 16.0 grams per liter of cobalt in the organic phase so as to convert substantially all the cobalt present in the organic phase from an octahedral configuration to a tetrahedral configuration and thus enable the said organic phase to preferentially extract cobalt rather than nickel, the latter remaining in the octahedral configuration and in the aqueous phase.

4,210,626

MANUFACTURE OF MAGNESIUM CARBONATE AND CALCIUM SULPHATE FROM BRINE MUD

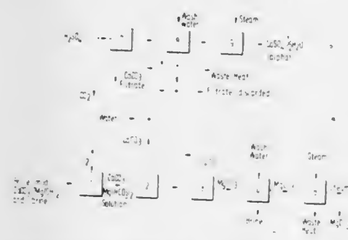
John S. Berrie, and Graham E. Woolley, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 21, 1976, Ser. No. 688,547

Claims priority, application United Kingdom, Jun. 4, 1975, 24103/75

Int. Cl.² C01F *1/00, 11/18, 11/46*

U.S. Cl. 423—166 **21 Claims**



11. A process for treating brine mud, the precipitate resulting from the purification of sodium chloride brine, which comprises solid calcium carbonate, solid magnesium hydroxide and aqueous sodium chloride solution, said process comprising:

(i) carbonating a slurry of brine mud in sodium chloride brine to a pH in the range of 6–8 with carbon dioxide to produce a slurry of solids comprising calcium carbonate and a liquor comprising magnesium bicarbonate and sodium chloride,

(ii) separating the slurry produced by the carbonation stage (i) into moist solid calcium carbonate and a liquor comprising magnesium bicarbonate and sodium chloride,

(iii) heating the liquor from (ii) to produce a slurry of solids comprising magnesium carbonate, a liquor comprising sodium chloride, and gaseous carbon dioxide,

(iv) separating the slurry from (iii) into moist hydrated magnesium carbonate and a liquor comprising sodium chloride,

(v) drying the moist hydrated magnesium carbonate.

(vi) slurrying the calcium carbonate from stage (ii) with a water and interacting said slurry with sulphuric acid to produce a slurry comprising calcium sulphate in the solid phase and gaseous carbon dioxide,

(vii) separating moist calcium sulphate from the slurry produced in stage (vi), and

(viii) drying the moist calacium sulphate from stage (vii) to give a dry calcium sulphate.

4,210,627

METHOD FOR INCREASING THE HYDROGEN SULPHIDE CONCENTRATION IN AN ACID GAS

Jan Verloop, and Johannes W. T. M. Braam, both of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 31, 1978, Ser. No. 873,821

Claims priority, application Netherlands, Feb. 4, 1977, 7701175

Int. Cl.² B01D *53/34*

U.S. Cl. 423—220 **14 Claims**



1. A process for the removal of H_2S and CO_2 from a gas stream comprising:

(a) measuring the flow of the gas stream to produce a value representing the magnitude of the gas stream,

(b) contacting said gas stream with a liquid regenerable absorbent in an absorber to absorb H_2S and CO_2 from the gas stream and producing a loaded absorbent solution,

(c) regenerating the loaded absorbent solution in a regenerator to produce an acid gas stream containing H_2S and CO_2, and an absorbent solution,

(d) comparing the value representing the magnitude of gas stream entering the absorber of step (a) with a predetermined value, and, if this value is smaller than a predetermined value, passing a portion of the acid gas stream to a second selective absorber, the second absorber being maintained under conditions to absorb H_2S and reject CO_2 and the absorbent solution being a portion of that regenerated from the regenerator,

(e) returning loaded absorbent solution from the second selective absorber to the regenerator, and

(f) regenerating the loaded absorbent solutions from steps (c) and (e) to produce an acid gas having an increased H_2S concentration.

4,210,628

REMOVAL OF NITROGEN OXIDES

Nobutaka Ninomiya, Kyoto; Hiroshi Nishino; Toshio Aibe, both of Osaka, and Kiyoshi Itoga, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 487,801, Jul. 11, 1974, abandoned. This application Jan. 5, 1979, Ser. No. 1,196

Claims priority, application Japan, Jul. 12, 1973, 48-78980; Sep. 21, 1973, 48-107170; Dec. 20, 1973, 48-143174

Int. Cl.² B01D *53/39*

U.S. Cl. 423—239 **4 Claims**

1. A process for treating a waste gas, which consists essentially of the steps of contacting a nitrogen oxide-containing waste gas with activated carbon as the sole catalyst in the presence of gaseous ammonia and oxygen at a temperature between about 150° C. and about 250° C. to convert the nitrogen oxide to nitrogen, whereby the nitrogen oxide is removed from said waste gas, said gaseous ammonia being present in amounts not less than ⅔ mole per mole, in terms of NO, of the nitrogen oxide contained in the waste gas and wherein the oxygen is present in an amount of not less than 0.5 mole per mole, in terms of NO, of the nitrogen oxide contained in the waste gas.

4,210,629

FLUE GAS TREATMENT

Edward Michalko, Hemet, Calif., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 1, 1979, Ser. No. 16,675

Int. Cl.² C01B *17/00*

U.S. Cl. 423—242 **7 Claims**

1. In a process for the absorptive removal of sulfur dioxide from a gaseous mixture by contacting said gaseous mixture in a scrubbing zone with a scrubbing liquor comprising an aqueous alkaline carbonate reagent solution having dissolved therein an undesirable quantity of silica contaminant which, upon the lowering of the pH of said scrubbing liquor tends to precipitate from solution and form deleterious deposits which interfere with the functioning of said scrubbing zone, the improvement which comprises the prior addition of a water soluble basic salt of aluminum to said scrubbing liquor before the contacting of said liquor with said gaseous mixture thereby effecting a chemical reaction between said silica and said basic salt of aluminum to obtain an aluminosilicate compound having a minimum deleterious effect when precipitated and relatively minor interference with the functioning of said scrubbing zone.

4,210,630

STABILIZED RED PHOSPHORUS

Franz-Josef Dany; Ursus Thümmler, both of Erftstadt; Joachim Wortmann, Kerpen-Türnich; Horst Staendeke, and Joachim Kandler, both of Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 21, 1979, Ser. No. 22,446

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813151

Int. Cl.² C01B *25/023*

U.S. Cl. 423—265 **4 Claims**

1. Stabilized pulverulent red phosphorus comprising a homogeneous blend of red phosphorus particles with a size of at most about 2 mm, aluminum hydroxide and a further metal hydroxide as oxidation stabilizers, wherein the metal hydroxide is lead hydroxide, the homogeneous blend containing aluminum hydroxide and lead hydroxide in a total proportion of about 0.1 to 6 weight%, based on the quantity of red phosphorus, the aluminum hydroxide and lead hydroxide, calculated as Al_2O_3 to PbO, being used in a quantitative ratio of about 0.5 to 2.0.

4,210,631

PREPARATION OF BORON TRICHLORIDE

Norman R. DeLue, Corpus Christi, Tex., and John C. Crano, Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 26, 1979, Ser. No. 23,858

Int. Cl.² C01B *35/06*

U.S. Cl. 423—292 **20 Claims**

1. In the process of producing boron trichloride by chlorination of borate ester wherein phosgene is produced as a coproduct, the improvement which comprises reducing the amount of phosgene formed by contacting the borate ester with chlorine in a reactor in the presence of a free-radical initiator at temperatures of from about 20° C. to about 100° C. and simultaneously removing gaseous products of the chlorination reaction from the reactor, the mole ratio of chlorine to borate ester introduced into the reactor being about 5.5:1 and about 7.5:1.

4,210,632

PROCESS AND APPARATUS FOR CALCINING LIMESTONE

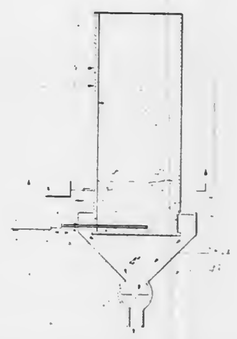
Terence A. Rourke, Nelson, Canada, assignor to Domlim Inc., Longueuil, Canada

Filed May 1, 1978, Ser. No. 901,638

The portion of the term of this patent subsequent to Jun. 21, 1994, has been disclaimed.

Int. Cl.² C01F *11/06;* **F27D** *1/08*

U.S. Cl. 423—637 **15 Claims**



1. A process for the continuous production of calcined lime in a vertical kiln, in which fuel is injected, through at least one injector spaced from the lower end of the kiln, at a pulsed rate between 100 and 1,000 injections per injector per minute, each of said injections occurring in a time period of up to one third of the pulse period, and air is passed continuously upwardly, countercurrent to the passage of lime, through the kiln from a position below said injector and in an amount sufficient to support combustion, and wherein a protected void space is provided in said kiln adjacent and vertically above said injectors so as to form a mixing space for said fuel and air.

6. An apparatus for the production of calcined lime comprising: a refractory lined vertical shaft provided with material feed means and gas exhaust means at the upper end thereof;

means to withdraw calcined lime from the lower end of said apparatus;

at least one injector means spaced from said lower end of said apparatus for introducing fuel into said shaft;

means for supplying fuel to said injector means at a rate between 100 and 1,000 injections per minute;

means for passing air, in an amount sufficient to support combustion in said apparatus, through said apparatus from a position below said injector means; and

deflector means disposed vertically above and spaced from said injector means in said shaft, thereby creating a protected void space adjacent and above said injector means in which said air and fuel mix.

4,210,633

FLURANDRENOLIDE FILM FORMULATION

Harun Takruri, and Jane E. Chavers, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Minn.

Filed Oct. 20, 1978, Ser. No. 953,160

Int. Cl.² A61K *31/79, 31/58*

U.S. Cl. 424—80 **2 Claims**

1. The process of treating a lesion of a persistent dermatosis treatable by an anti-inflammatory steroid which comprises applying to a skin area of a human in which there is such a lesion, a formulation capable of forming a medicated water-soluble, adherent film containing the following ingredients in the percentages (w/w) given:

Ingredient	Percent
Flurandrenolide	0.01–0.5
Polyvinyl Alcohol	4–15
Polyvinylpyrrolidone	5–20
Glycerin	0–20
Ethyl Alcohol	0–30
Propylene Glycol	0–20
Benzyl Alcohol	0–5
Disodium Edetate	0–0.5
Citric Acid	0–1
Water	q.s. to 100

allowing the volatile constituents of the formulation to evaporate leaving a continuous adherent medicated film covering the lesion, and removing the film by peeling or with water after a period of at least 16 hours.

4,210,634

GROWTH PROMOTING FISH FOOD COMPOSITION

Karl H. Jaeger, Obereggenen-Schallsingen, Fed. Rep. of Germany, assignor to Elkawi AG, Zug, Switzerland

Filed May 16, 1978, Ser. No. 906,635

Claims priority, application Switzerland, May 24, 1977, 6413/77

Int. Cl.[2] A61K *35/14, 37/02*

U.S. Cl. 424—101 **9 Claims**

1. In a fish food composition containing, as principal active ingredients, 15 to 50 percent native protein, 2 to 5 percent fat, and 3 to 10 percent of at least one adjuvant selected from the group consisting of crude fiber, minerals, vitamins, and trace elements, the improvement which comprises said composition containing 0.05 to 0.5 percent of at least one material capable of catalytically enhancing cell respiration in animal tissue, and a polypeptide composed of naturally occurring amino acid units, the weight of said polypeptide being between 2 and 15 times the weight of said material, said percent values being based on the weight of said food composition on a dry basis, said material being an extract of the blood of a vertebrate animal, said polypeptide having an average molecular weight of 2000 to 50,000, the composition being useful for enhancing the protein to fat ratio in fish.

4,210,635

ANTIBACTERIAL COMPOSITION

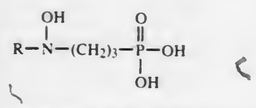
Hiroshi Imanaka, Osaka, and Minoru Nishida, Kyoto, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 877,944, Feb. 15, 1978. This application Sep. 14, 1978, Ser. No. 942,364

Int. Cl.[2] H61K *35/00*

U.S. Cl. 424—114 **9 Claims**

1. An antibacterial composition comprising (a) a phosphonic acid derivative of the formula:



wherein R is formyl or acetyl, or its pharmaceutically acceptable salt and (b) an antibiotic selected from ampicillin, carbenicillin, ticarcillin or their pharmaceutically acceptable salts, wherein (a) and (b) are contained in the composition in a ratio of 1:2 to 2:1 by weight.

4,210,636

ANTISECRETORY POLYPEPTIDES

Eric L. Lien, Paoli; Dimitrios Sarantakis, West Chester, and Norman H. Grant, Wynnewood, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 17, 1978, Ser. No. 906,813

Int. Cl.[2] A61K *37/02;* **C07C** *103/52*

U.S. Cl. 424—177 **6 Claims**

1. A compound selected from the group consisting of [des-Ala[1]-Gly[2]], Ala[5], Ser[6]-somatostatin, Met[7]-somatostatin, and [des-Ala[1]-Gyl[2]-Lys[4]],-(3-mercapto-1-oxopropyl)[3]-somatostatin, the reduced linear forms thereof and pharmaceutically acceptable salts thereof.

4,210,637

COMPOSITION AND METHOD FOR SUPPRESSING APPETITE FOR CALORIES AS CARBOHYDRATES

Richard J. Wurtman; Judith J. Wurtman, both of Waban, and John D. Fernstrom, Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 31, 1978, Ser. No. 929,387

Int. Cl.[2] A61K *31/70*

U.S. Cl. 424—180 **17 Claims**

8. The method of using a composition consisting essentially of tryptophan and a carbohydrate for decreasing appetite in an animal for calories as carbohydrates which comprises administering to the animal a composition consisting essentially of an amount of tryptophan effective to increase brain serotonin levels and a carbohydrate in an amount effective to cause insulin to be released in the animal.

17. A composition which, when administered to an animal, decreases appetite for calories as carbohydrates which comprises an amount of tryptophan effective to increase brain serotonin levels in the animal, a carbohydrate in an amount effective to cause insulin to be released in the animal, tyrosine in an amount effective to maintain or increase brain dopamine and/or norepinephrine levels in the animal and caffeine.

4,210,638

ANTIVIRAL COMPOSITION AND METHOD OF TREATING VIRUS DISEASES

Sheldon Greer, Miami, Fla., assignor to PCR, Inc., Gainesville and University of Miami, Miami, both of, Fla.

Filed Mar. 17, 1978, Ser. No. 887,541

Int. Cl.[2] A61K *31/70;* **C07H** *17/00*

U.S. Cl. 424—180 **15 Claims**

1. A pharmaceutical composition for the treatment of Herpes or Herpes-like viruses, comprising an effective amount of 5-trifluoromethyl-2'-deoxycytidine and an effective amount of a cytidine deaminase inhibitor which is tetrahydrouridine or 2'-deoxytetrahydrouridine.

10. A method of treating a host suffering from a Herpes or a Herpes-like virus infection, said method comprising administering to said host a therapeutically effective amount of 5-trifluoromethyl-2'-deoxycytidine and a therapeutically effective amount of a cytidine deaminase inhibitor which is tetrahydrouridine or 2'-deoxytetrahydrouridine.

4,210,639

5'-DEOXY-5'-(ISOBUTYLTHIO)-3-DEAZAADENOSINE, METHOD OF MAKING SAME AND ITS ANTIVIRAL EFFECT ON ROUS SARCOMA VIRUS AND GROSS MURINE LEUKEMIA VIRUS

Peter K. Chiang, Kensington; Guilio L. Cantoni, Bethesda; John P. Bader, Rockville, all of Md.; William M. Shannon, Birmingham, Ala.; H. Jeanette Thomas, Birmingham, Ala., and John A. Montgomery, Birmingham, Ala., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Aug. 29, 1978, Ser. No. 937,704

Int. Cl.[2] A61K *31/70;* **C07H** *19/16, 17/00*

U.S. Cl. 424—180 **3 Claims**

1. 5'-Deoxy-5'-(isobutylthio)-3-deazaadenosine.

2. A method of inhibiting viral activity in chick embryo cells infected with Rous sarcoma virus which comprises mixing with said cells in tissue culture an effective amount of 5'-deoxy-5'-(isobutylthio)-3-deazaadenosine and measuring the resulting inhibition of viral foci in said cells.

4,210,640

SUBLIMABLE FUNGICIDAL COMPOSITIONS CONTAINING TRIISOPROPYL- OR TRITERTIARY-BUTYL-S-TRIOXANE CARRIERS

Yasuhiko Ueno, Kawanishi; Yoshito Saeki, Suita; Takuya Akiyama, Nagaokakyo, and Masao Fujita, Amagasaki, all of Japan, assignors to Ogawa & Co., Ltd., Osaka, Japan

Division of Ser. No. 737,196, Oct. 29, 1976, Pat. No. 4,123,525, which is a continuation-in-part of Ser. No. 463,176, Apr. 22, 1974, abandoned. This application Aug. 7, 1978, Ser. No. 931,444

Claims priority, application Japan, Jun. 15, 1973, 48-68013; Jun. 15, 1973, 48-68014

Int. Cl.[2] A01N *9/00, 9/28, 9/36*

U.S. Cl. 424—181 **8 Claims**

1. In a sublimable fungicidal composition in the form or rough grains, pulverized powders or tablets consisting essentially of an effective amount of at least one fungicide and a carrier therefor, said fungicide being intimately mixed with the carrier, the improvement wherein the carrier is triisopropyl-s-trioxane having a melting point of 62.5° C. or tritertiary butyl-s-trioxane having a melting point of 92.0° C.

4,210,641

NOVEL POLYSACCHARIDE EXTRACTS AND METHOD OF USE

Claudine Brossard, Osny; Martine Henry, Fontenay le Fleury, and Denis Raichvarg, Epinay sur Seine, all of France, assignors to Roussel Uclaf, Paris, France

Filed Oct. 20, 1978, Ser. No. 953,001

Claims priority, application France, Oct. 27, 1977, 77 32416

Int. Cl.[2] C08B *37/00;* **A61K** *31/73*

U.S. Cl. 424—180 **12 Claims**

1. Polysaccharide extracts of microbial bodies of *Haemophilus influenza* having an apparent molecular weight greater than 200,000 and constituted principally of galactose, glucose and mannose and containing a small amount of osamines.

9. A method of treating or immunizing against *Haemophilus influenza* infections in warm-blooded animals comprising administering orally, rectally, parenterally or topically to warm-blooded animals an antigenically and immunostimulatingly effective amount of a polysaccharide of claim **1**.

4,210,642

INSECTICIDAL AND ACARICIDAL COMPOSITIONS

Klaus-Detlef Bock, Kelsterbach, and Anna Waltersdorfer, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

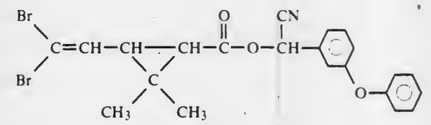
Filed Oct. 2, 1978, Ser. No. 947,858

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744540; Nov. 10, 1977, 2750304

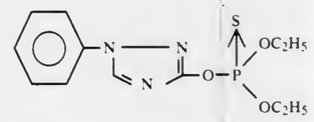
Int. Cl.[2] A01N *9/36, 9/20*

U.S. Cl. 424—200 **7 Claims**

1. An insecticidal and acaricidal composition containing a combination of compound I



and compound III



the weight ratio of compound I to compound III being 1:100 to 50:1.

4,210,643

PHOSPHONATE PHARMACEUTICAL COMPOSITION

Herbert A. Fleisch, and Rolf Felix, both of Bern, Switzerland, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 792,946, May 2, 1977, Pat. No. 4,113,861. This application Jun. 12, 1978, Ser. No. 915,026

The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.

Int. Cl.[2] A61K *31/66*

U.S. Cl. 424—204 **1 Claim**

1. A process for treating *diabetes mellitus* in humans and lower animals, comprising administering to a human or lower animal in need of such treatment a safe and effective amount of ethane-1-amino-1,1-diphosphonic acid, or a pharmaceutically-acceptable salt thereof.

4,210,644

MALE CONTRACEPTION

Larry L. Ewing, Timonium, Md., and Claude Desjardins, Austin, Tex., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Feb. 23, 1978, Ser. No. 880,879

Int. Cl.[2] A61K *31/56*

U.S. Cl. 424—239 **6 Claims**

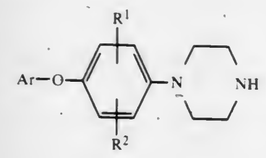
1. A method of affecting male contraception which comprises subdermally implanting in the male a contraceptively effective amount of a synergistically active mixture of an androgen and an estrogen in one or more slow release capsules, the ratio of androgen to estrogen being in the range of 250 to 1 and 500 to 1, and permitting the androgen and estrogen to be continuously released at relatively constant rates for the desired length of time, said method being characterized by providing effective contraception without chronic elevation of the androgen and estrogen content in the peripheral blood.

4,210,645
(1,4)DITHIINO(2,3-b)(1,2,5)-THIADIAZOLE(3,4-e)PYRAZINE-6,7-DICARBONITRILE
Charles A. Wilson, and Craig E. Mixan, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Apr. 10, 1978, Ser. No. 894,670
Int. Cl.² A61K *31/505;* **C07D** *513/14*
U.S. Cl. 424—250 **3 Claims**

1. (1,4)Dithiino(2,3-b)(1,2,5)thiadiazole-(3,4-e)pyrazine-6,7-dicarbonitrile.

4,210,646
ANTIMICROBIAL COMPOSITIONS CONTAINING 1-(ARYLOXYPHENYL)PIPERAZINES
Marcel A. C. Janssen, Vosselaar, Belgium, assignor to Janssen Pharmaceutica, N.V., Beerse, Belgium
Filed Apr. 11, 1978, Ser. No. 895,166
Int. Cl.² A01N *9/00, 9/22*
U.S. Cl. 424—250 **6 Claims**

6. A method of combatting the growth of microorganisms selected from the group consisting of fungi and bacteria which comprises contacting said microorganisms with an effective antifungal and antibacterial amount of a compound selected from the group consisting of a 1-(aryloxyphenyl)piperazine having the formula



and the physiologically acceptable acid addition salts thereof, wherein:

R^1 and R^2 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, lower alkyloxy, cyano, trifluoromethyl and lower alkyloxycarbonyl; and

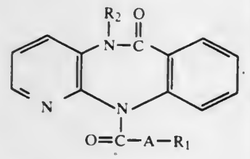
Ar is a member selected from the group consisting of phenyl, substituted phenyl and naphthalenyl, wherein said substituted phenyl is phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, trifluoromethyl, cyano, hydroxy(lower alkyl), lower alkylcarbonyl, nitro, amino and mono- and di(lower alkyl)amino.

4,210,647
ANTIVIRAL COMBINATIONS
Donald C. DeLong, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Jun. 18, 1979, Ser. No. 49,671
Int. Cl.² A61K *31/495, 31/13*
U.S. Cl. 424—250 **1 Claim**

1. A method of suppressing influenza virus infections in mammals which comprises administering to a mammal exposed to influenza virus a virus-suppressing amount of a combination containing from 0.5–5 mg/kg of ethyl 6,7-dibromo3-4-dihydro-3-oxquinoxaline carboylate and from 0.3–3 mg/kg of 1 aminoadamantane.

4,210,648
II-AMINOACYL-5,11-DIHYDRO-6H-PYRIDO(2,3-B)(1,4)BENZODIAZEPIN-6-ONES AND SALTS THEREOF
Günther Schmidt, and Mátyás Leitold, both of Biberach an der Riss, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany
Filed May 19, 1978, Ser. No. 907,823
Claims priority, application Fed. Rep. of Germany, May 31, 1977, 2724478
Int. Cl.² A61K *31/55*
U.S. Cl. 424—256 **5 Claims**

1. A compound of the formula



wherein

A is methylene or ethylene,

R_1 is (1 -ethyl-pyrrolidin-2-yl)-methyl-amino, (1-methyl-pyrrolidin-2-yl)-methyl-amino, (1-methyl-pyrrolidin-2-yl)-ethyl-amino, (1-n-propyl-pyrrolidin-2-yl)-methyl-amino or (1-allyl-pyrrolidin-2yl)-methyl-amino; and

R_2 is hydrogen or methyl;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

5. The method of treating gastro-intestinal ulcers or inhibiting gastro-intestinal secretion in a warm-blooded animal, which comprises perorally, parenterally or rectally administering to said animal an effective anti-ulcerogenic or secretion-inhibiting amount of a compound of claim **1**.

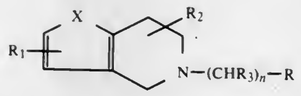
4,210,649
PROCESS FOR THE TREATMENT OF PATIENTS SUFFERING FROM DREPANOCYTOSIS
Jean Blanchard, Toulouse, and Monique Verry, Saint-Cloud, both of France, assignors to Centre d'Etude pour l'Industrie Pharmaceutique, Toulouse, France
Filed Jun. 20, 1978, Ser. No. 917,374
Claims priority, application France, Jun. 22, 1977, 77 19161
Int. Cl.² A61K *31/435*
U.S. Cl. 424—256 **2 Claims**

1. A method for the treatment of a patient suffering of drepanocytic anemia caused by the presence of S-hemoglobin in drepanocytes, which patient is showing the symptoms of drepanocytosis, which method comprises,

administering to said patient a compound of formula (I) causing a reversal of the drepanocytosis by causing the drepanocytes to lose their sickle shape and revert to their disk-like shape,

increasing the hemoglobin content and

causing a remission of the symptoms of said patient, the compound of formula (I) being administered in a therapeutically effective amount, and having the formula



(I)

in which X is oxygen or sulfur; R is a radical selected from the group consisting of hydrogen, a phenyl radical, a phenyl radical substituted with at least one radical selected from the group consisting of a halogen atom, a lower alkyl, lower alkoxy, nitro, amino, sulfonylamino, aryl, carboxy, alkoxycarbonyl, cyano, hydroxymethyl and methylenedioxy group; a styryl, naphthyl, thienyl, benzhydryl radical, each of the later being optionally substituted with at least one radical selected from the group consisting of a halogen atom, a lower alkyl, lower alkoxy, aryl, nitro, amino, sulfonylamino, carboxy, alkoxycarbonyl, cyano, hydroxymethyl and methylenedioxy group; a benzoyl radical and a benzoyl radical substituted with at least one radical selected from the group consisting of a halogen atom, a lower alkyl, lower alkoxy, nitro, amino and sulfonylamino group; R_1 and R_2 represent each at least one atom or group selected from the group consisting of hydrogen, halogen, a hydroxy, lower alkyl, lower alkoxy, nitro and amino group; R_3 is a radical selected from the group consisting of hydrogen, halogen, a hydroxy, lower alkyl, lower alkoxy, nitro and amino group; and n is zero or an integer from 1 to 15; and the symbols R_3 may have different meanings in each radical CHR_3 when n is greater than 1, or a pharmaceutically acceptable acid addition salt or quaternary ammonium derivative of said compound.

4,210,650
ANTIPHLOGISTIC METHOD OF TREATMENT
Csaba Szantay; Lajos Szabo; Laszlo Töke; Istvan Toth; Sandor Virag; Erzsebet Kanyo, and Agoston David, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT., Budapest, Hungary
Continuation-in-part of Ser. No. 744,608, Nov. 24, 1976, which is a continuation-in-part of Ser. No. 624,470, Oct. 21, 1975, Pat. No. 4,102,886. This application Feb. 21, 1979, Ser. No. 13,271
Claims priority, application Hungary, Oct. 23, 1974, C 1514; Sep. 11, 1975, C 1603
Int. Cl.² A61K *31/47*
U.S. Cl. 424—258 **3 Claims**

1. An antiphlogistic method of treatment which comprises administering to a mammalian subject requiring such treatment a pharmaceutically effective dosage of a compound selected from the group which consists of:

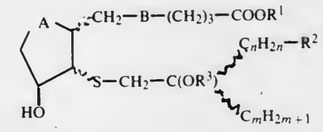
2-oxo-3-(β-cyanoethyl)-9,10-methylenedioxy-1,2,3,4,6,7-hexahydro-11bH-benzo(a)quinilozidine,

2-oxo-3-(β-cyanoethyl)-9,10-diethoxy-1,2,3,4,6,7-hexahydro-11bH-benzo(a)quinilozidine,

and a pharmaceutically effective salt thereof.

4,210,651
THIAPROSTAGLANDINS
Hans-Eckart Radunz; Josef Krämer; Manfred Baumgarth, and Dieter Orth, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany
Division of Ser. No. 576,140, May 9, 1975, Pat. No. 4,080,458. This application Jan. 18, 1978, Ser. No. 870,555
Claims priority, application Fed. Rep. of Germany, May 11, 1974, 2422924
Int. Cl.² A61K *31/19, 31/215;* **C07C** *177/00*
U.S. Cl. 424—263 **22 Claims**

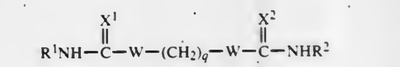
1. A compound of the formula



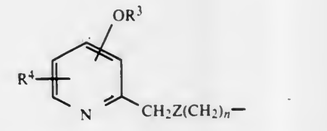
wherein A is —CO— or —CHOH—, B is CH_2—CH_2—, R^1 is H or alkyl with 1 to 4 carbon atoms, m is a whole number from 0 to 5, n is a whole number from 0 to 3, R^2 is alkoxy of 1 to 4 carbon atoms, phenoxy, pyridyl, thienyl, naphthyl, phenoxy substituted by F, Cl, Br, OH, OCH_3, CH_3 or CF_3, and R^3 is H, methyl or ethyl, and the physiologically acceptable salts thereof.

4,210,652
PHARMACOLOGICALLY ACTIVE 1,3-BIS[1-(2-HETEROALKYLTHIO)ETHYLAMINO)-2-NITROVINYL-1-AMINO]PROPANE DERIVATIVES
Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and George S. Sach, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Division of Ser. No. 816,420, Jul. 18, 1977, Pat. No. 4,139,624. This application Oct. 4, 1978, Ser. No. 948,617
Claims priority, application United Kingdom, Jul. 28, 1976, 31392/76
Int. Cl.² C07D *213/53;* **A61K** *31/44*
U.S. Cl. 424—263 **8 Claims**

1. A compound of the formula



wherein X^1 and X^2 are each $CHNO_2$; R′ is a grouping of the structure



wherein R^3 is lower alkyl or $—(CH_2)_pA$ where p is 2 to 4, and A is hydroxy, lower alkoxy or dimethylamino; R^4 is hydrogen, lower alkyl, lower alkoxy, amino, halogen, or methylamino; or $—OR^3$ and R^4 can together form a $—O(CH_2)_bO$-group attached to adjacent carbon atoms on the pyridine ring; where b is 1 to 4; Z is sulphur or methylene; n is 2 or 3; R^2 has the same scope as R′ or a grouping of the structure:

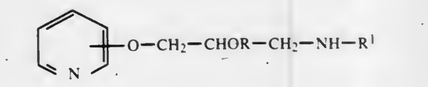
$$Het—(CH_2)_{m'}Z'(CH_2)_{n'}—$$

wherein Het is a nitrogen containing 5 or 6 membered heterocyclic ring such as imidazole, pyridine, thiazole, isothiazole, oxazole, isoxazole, pyrazole, triazole or thiadiazole which is optionally substituted by lower alkyl, hydroxy, halogen or amino; Z′ is sulphur or methylene; m′ is 0, 1 or 2; n′ is 2 or 3 and the sum of m′ and n′ is 3, 4; W is NH; and q is an integer from 2 to 8 or a pharmaceutically acceptable acid addition salt thereof.

8. A method of inhibiting H-2 histamine receptors which comprises administering orally or parenterally to an animal in need thereof in an effective amount to inhibit said receptors a compound of claim **1**.

4,210,653
PYRIDYLOXYPROPANOLAMINES
John J. Baldwin, Lansdale, and David E. McClure, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Jun. 27, 1978, Ser. No. 919,593
Int. Cl.² A61K *31/44;* **C07D** *213/04*
U.S. Cl. 424—263 **13 Claims**

1. Compounds having the formula



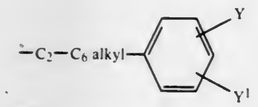
wherein R is H or



wherein

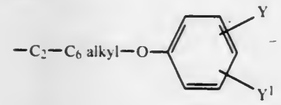
L is C_1-C_{10} alkyl, phenyl or mono- or di-substituted phenyl wherein said substituents are C_1-C_4 alkyl, C_1-C_4 alkoxy or halo and

R^1 is a phenyl C_2-C_6 alkyl group having the formula



(a)

or



(b)

wherein Y and Y^1 are H, $-OCH_3$, —OH, halo or CN, or are joined to form $-O-(CH_2)_{1 \text{ or } 2}-O-$.

4,210,654

ANTISEBORRHEIC PREPARATIONS

Robert Bauer, Bettingen, and Hans U. Hostettler, Arlesheim, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 11, 1978, Ser. No. 941,444

Claims priority, application Switzerland, Sep. 14, 1977, 11213/77

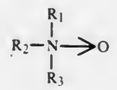
Int. Cl.[2] **A61K** *31/44*

U.S. Cl. 424—263 **8 Claims**

1. An antiseborrheic composition comprising:

(a) a cosmetically acceptable carrier suitable for application to the skin, hair and scalp, said carrier being substantially free from oils and fats, and

(b) from about 0.2% by weight to about 5% by weight of pyridoxine tripalmitate and, as a solubilizer therefor, from about 0.1% by weight to about 10% by weight of one or more amine oxides of the formula



wherein R_1 is an alkyl group containing from 16 to 20 carbon atoms and each of R_2 and R_3 is methyl or hydroxyethyl.

4,210,655

ANTI-DEPRESSANT BENZOFURANYL PIPERIDINES

Karl Schenker, Binningen, and Raymond Bernasconi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

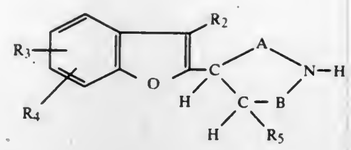
Continuation of Ser. No. 657,652, Feb. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 446,244, Feb. 27, 1974, abandoned. This application Apr. 5, 1978, Ser. No. 893,104

Claims priority, application Switzerland, Mar. 2, 1973, 3103/73

Int. Cl.[2] **A61K** *31/445;* **C07D** *405/04*

U.S. Cl. 424—267 **33 Claims**

1. A compound of the formula I a



(Ia)

wherein

R_2 represents hydrogen or lower alkyl,

R_3 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy, hydroxy, trifluoromethyl, 1-hydroxycycloalkyl, cycloalk-1-enyl or cycloalkyl, each of the three last-named groups having 5–8 carbon atoms,

R_4 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy or hydroxy, or

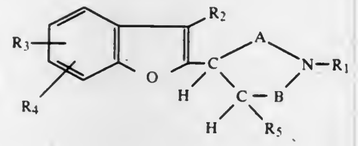
R_3 and R_4 together represent trimethylene or tetramethylene or, corresponding to a fused-on benzene ring, the 1,3-butadienylene radical,

R_5 represents hydrogen, or alkyl having at most 4 carbon atoms, and

A and B represent methylene, ethylene, trimethylene or a direct bond, whereby A and B together always contain 3 chain members,

or a pharmaceutically acceptable addition salt thereof with an inorganic or organic acid.

18. A compound of the formula Ib



(Ib)

wherein

R_1 represents 2-propynyl or cyclopropylmethyl

R_2 represents hydrogen or lower alkyl,

R_3 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy, hydroxy, trifluoromethyl, 1-hydroxycycloalkyl, cycloalk-1-enyl or cycloalkyl, each of the three last-named groups having 5–8 carbon atoms,

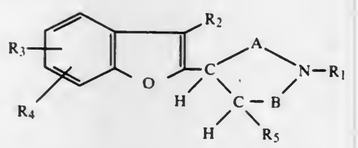
R_4 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy or hydroxy, or

R_3 and R_4 together represent trimethylene or tetramethylene or, corresponding to a fused-on benzene ring, the 1,3-butadienylene radical,

R_5 represents hydrogen, or alkyl having at most 4 carbon atoms, and

A and B represent methylene, ethylene, trimethylene or a direct bond, whereby A and B together always contain 3 chain members, or a pharmaceutically acceptable addition salt thereof with an inorganic or organic acid.

30. A therapeutic composition for the treatment of mental depression in warm-blooded animals comprising a therapeutically effective amount of a compound according to claim **18** having the formula



(Ib)

wherein

R_1 represents 2-propynyl or cyclopropylmethyl

R_2 represents hydrogen or lower alkyl,

R_3 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy, hydroxy, trifluoromethyl, 1-hydroxycycloalkyl, cycloalk-1-enyl or cycloalkyl, each of the three last-named groups having 5–8 carbon atoms,

R_4 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy or hydroxy, or

R_3 and R_4 together represent trimethylene or tetramethylene or, corresponding to a fused-on benzene ring, the 1,3-butadienylene radical,

R_5 represents hydrogen, or alkyl having at most 4 carbon atoms, and

A and B represent methylene, ethylene, trimethylene or a direct bond, whereby A and B together always contain 3 chain members, or a pharmaceutically acceptable addition salt thereof with an inorganic or organic acid, together with a pharmaceutical carrier.

4,210,656

IMIDAZOLYL VINYL ETHERS AND PROCESS FOR PREPARING SAME

Ludwig Zirngibl, Zofingen; Johanna Fischer, Reiden, and Kurt Thiele, Zofingen, all of Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

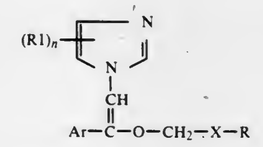
Filed Dec. 18, 1978, Ser. No. 970,312

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2757113

Int. Cl.[2] **A61K** *31/415;* **C07D** *233/60*

U.S. Cl. 424—273 R **8 Claims**

1. An α-aryl-β-imidazol-1-yl vinyl ether having the formula



(I)

or an acid addition salt thereof acceptable for bactericidal or fungicidal use, in which Ar represents phenyl or naphthyl that is unsubstituted or mono- or poly-substituted with substituents that are independently selected from the group consisting of halogeno, alkyl and cycloalkyl of up to 6 carbon atoms, trifluoromethyl, alkoxy and alkylthio of up to 6 carbon atoms, phenyl, benzyl, cyano, nitro and amino,

X represents oxy, thio, sulfinyl or sulfonyl,

R is (a) unbranched or branched aliphatic or cycloaliphatic hydrocarbyl of up to 12 carbon atoms which is either saturated or contains one or more double and/or triple carbon bonds or (b) Ar as defined above,

R1 represents alkyl of 1 to 6 carbon atoms or nitro and may occur in any desired position in the imidazole ring, and

n is zero, 1, 2 or 3 wherein the individual R1 groups are the same or different from each other when n is 2 or 3 provided that only one R1 group may be nitro.

2. An imidazolyl vinyl ether according to claim **1** wherein Ar is 2,4-dichlorophenyl and n is zero.

6. A process for making a compound as defined in claim **1** which comprises reacting a corresponding 1-arylacylimidazole in the presence of NaH initially at a temperature below 0° C. and thereafter at a temperature up to 50° C. with a corresponding α-halogen ether or α-halogen thioether or α-halogen sulfinyl compound or α-halogen sulfonyl compound, and recovering imidazolyl vinyl ether product from the resulting reaction mixture.

4,210,657

ARYL IMIDAZOLYL VINYL ETHERS AND PROCESSES FOR USING SAME

Ludwig Zirngibl, Zofingen; Johanna Fischer, Reiden, and Kurt Thiele, Zofingen, all of Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

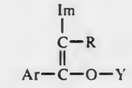
Filed Dec. 18, 1978, Ser. No. 970,330

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839388

Int. Cl.[2] **A61K** *31/415;* **C07D** *233/60*

U.S. Cl. 424—273 R **9 Claims**

1. An imidazolyl vinyl ether of the formula



(I)

or an acid addition salt thereof acceptable for bactericidal or fungicidal use, wherein

Ar signifies phenyl or naphthyl unsubstituted or mono- or polysubstituted with substituents that are independently selected from the group consisting of halogeno, alkyl and cycloalkyl of up to 6 carbon atoms each, trifluoromethyl, alkoxy and alkylthio of from 1 to 6 carbon atoms in the alkyl portion of each, phenyl, benzyl, cyano, nitro and amino,

Im signifies unsubstituted 1-H-imidazol-1-yl or substituted 1-H-imidazol-1-yl which has 1 to 3 substituents independently selected from the group consisting of halogeno, alkyl and alkoxy of 1 to 4 carbon atoms, and not more than one nitro group,

Y signifies (a) unbranched or branched aliphatic or cycloaliphatic hydrocarbyl of up to 12 carbon atoms which either is saturated or is unsaturated and contains one or more double and/or triple bonds, or (b) Ar as defined above, or (c) -Z-Ar wherein Ar is as defined above and Z is alkylene or alkylene having its carbon chain once or twice interrupted by a linkage selected from the group consisting or oxy, thio, sulfinyl or sulfonyl or (d) an aliphatic hydrocarbyl as defined in (a) above wherein the carbon chain linked to the ether oxygen is once or twice interrupted by a linkage selected from the group consisting of oxy, thio, sulfinyl and sulfonyl, and

R signifies (i) unbranched or branched aliphatic or cycloaliphatic hydrocarbyl of up to 12 carbon atoms which is either saturated or contains one or more double and/or triple bonds, (ii) Ar as defined above, or (iii) hydrogen but only if Y is not $-CH_2-X-R''$ wherein X represents oxy, thio, sulfinyl or sulfonyl and R'' is (a) unbranched or branched aliphatic or cycloaliphatic hydrocarbyl of up to 12 carbon atoms which is either saturated or contains one or more double and/or triple bonds or (b) Ar as defined above.

8. A process for controlling fungi or bacteria which comprises applying thereto an effective amount of a compound of claim **1**.

4,210,658

AMIDINOSULPHONIC ACID DERIVATIVES

Graham J. Durant, Welwyn Garden City; Rodney C. Young, Bengeo, both of England, and Zev Tashma, Jerusalem, Israel, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

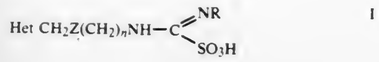
Filed Sep. 6, 1978, Ser. No. 940,063

Claims priority, application United Kingdom, Sep. 8, 1977, 37468/77

Int. Cl.[2] **A61K** *31/415;* **C07D** *233/64*

U.S. Cl. 424—273 R **4 Claims**

1. A compound of the formula:



where Het is an imidazolyl group optionally substituted by a lower alkyl, hydroxy, lower alkoxy, halogen, trifluoromethyl, hydroxymethyl or amino group; Z is sulphur or a methylene group; n is 2 or 3 and R is hydrogen, lower alkyl or Het $CH_2Z(CH_2)_n$—, in neutral form or in the form of a pharmaceutically acceptable salt thereof.

4. A method of blocking histamine H_2-receptors which comprises administering to an animal an effective amount to block said receptors of a compound of claim **1**.

4,210,659

SUBSTITUTED 7-PHENYL-2,3-DIHYDRO-IMIDAZO[1,2-α]IMIDAZOLES AND SALTS THEREOF

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, Fed. Rep. of Germany; Walter Kobinger, Vienna, Austria; Christian Lillie, Vienna, Austria, and Ludwig Pichler, Vienna, Austria, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

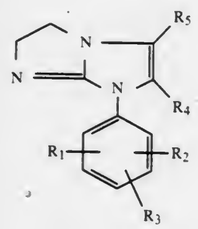
Filed Jun. 27, 1979, Ser. No. 52,566

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827617

Int. Cl.[2] **A61K** *31/415;* **C07D** *487/04*

U.S. Cl. 424—273 R **4 Claims**

1. A compound of the formula



wherein

R_1, R_2 and R_3, which may be identical to or different from each other, are each hydrogen, fluorine, chlorine, bromine, methyl, methoxy or trifluoromethyl, provided that one of them is other than hydrogen; and

R_4 and R_5, which may be identical to or different from each other, are each hydrogen or methyl;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4. The method of reducing the heart rate of a warm-blooded animal in need thereof, which comprises perorally or parenterally administering to said animal an effective bradycardiac amount of a compound of claim **1**.

4,210,660

BENZAMIDE DERIVATIVES

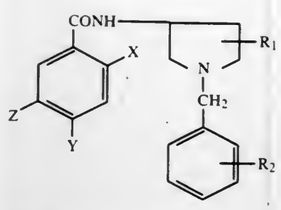
Mutsuo Takashima, Kawagoe; Sumio Iwanami, Omiya, and Shinji Usuda, Okegawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,504

Int. Cl.[2] **C07D** *207/14;* **A61K** *31/40*

U.S. Cl. 424—274 **6 Claims**

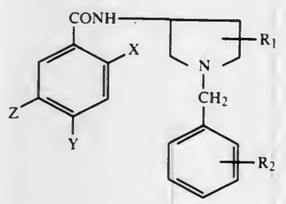
1. Benzamide compounds of the formula



wherein X represents a lower alkoxy group, Y represents a mono- or di-lower alkyl amino group; Z represents a halogen atom; R_1 represents a lower alkyl group; and R_2 represents a hydrogen atom or halogen atom;

and the pharmacologically acceptable nontoxic salts thereof.

6. A pharmaceutical composition comprising a CNS depressing-effective amount of a benzamide compound of the formula



wherein

X is a lower alkoxy group,

Y is a mono- or di-lower alkyl amino group,

Z is a halogen atom,

R_1 is a lower-alkyl group and

R_2 is a hydrogen or a halogen atom or a non-toxic salt thereof and a pharmaceutically acceptable carrier.

4,210,661

SYNTHETIC β-LACTAM COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Roger J. Ponsford, Horsham; Robert Southgate, Warnham, and Patricia M. Roberts, Redhill, all of England, assignors to Beecham Group Limited, England

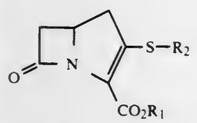
Filed Aug. 2, 1978, Ser. No. 930,225

Claims priority, application United Kingdom, Aug. 6, 1977, 33037/77

Int. Cl.[2] **C07D** *487/04;* **A61K** *31/40*

U.S. Cl. 424—274 **66 Claims**

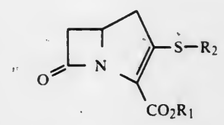
1. A compound of the formula (II):



(II)

wherein R_1 is a group such that CO_2R_1 is a carboxylic acid group or a pharmaceutically acceptable salt or a lower alkyl ester, a lower alkoxyl lower alkyl ester, the benzyl ester, a lower alkoxy benzyl ester, a nitrobenzyl ester, a chlorobenzyl ester or an in-vivo hydrolyzable ester thereof selected from the group consisting of the acetoxymethyl, pivaloyloxymethyl, α-ethoxycarbonyloxyethyl and phthalidyl esters and R_2 is phenyl or phenyl substituted by one to four substituents selected from the group consisting of lower alkyl, fluorine, chlorine, bromine, CN, NO_2, COR_3, OR_3, SR_3, NH_2, $NHCOR_3$, $NHCO_2R_3$, CO_2R_3, and CO_2R_{10} wherein R_3 is lower alkyl, benzyl, fluorobenzyl, chlorobenzyl, bromobenzyl or nitrobenzyl and CO_2R_{10} is carboxyl or a pharmaceutically acceptable salt thereof, not more than three such substituents being selected from the group consisting of fluorine, chlorine, bromine, CN, NO_2, NH_2, COR_3 and CO_2R_3 and not more than two such substituents being selected from the group consisting of CN, NO_2 and NH_2.

20. A pharmaceutical composition useful for the treatment or prophylaxis of bacterial infections in humans and animals which comprises an effective amount of a compound of the formula (II):



(II)

wherein R_1 is a group such that CO_2R_1 is a carboxylic acid group or a pharmaceutically acceptable salt or a lower alkyl ester, a lower alkoxyl lower alkyl ester, the benzyl ester, a lower alkoxyl benzyl ester, a nitrobenzyl ester, a chlorobenzyl ester or an in-vivo hydrolyzable ester thereof selected from the group consisting of the acetoxymethyl, pivaloyloxymethyl, α-ethoxycarbonyloxyethyl and phthalidyl esters and R_2 is phenyl or phenyl substituted by one to four substituents selected from the group consisting of lower alkyl, fluorine, chlorine, bromine, CH, NO_2, COR_3, OR_3, SR_3, NH_2, $NHCOR_3$, $NHCO_2R_3$, CO_2R_3 and CO_2R_{10} wherein R_3 is lower alkyl, benzyl, fluorobenzyl, chlorobenzyl, bromobenzyl or nitrobenzyl and CO_2R_{10} is carboxyl or a pharmaceutically acceptable salt thereof, not more than three such constituents being selected from the group consisting of fluorine, bromine, CN, NO_2, NH_2, COR_3 and CO_2RHD **3** and not more than two such substituents being selected from the group consisting of CN, NO_2 and NH_2, in combination with a pharmaceutically acceptable carrier.

4,210,662

SIDE CHAIN SULPHOXIDE METABOLITES

Alfred J. Eglington, Betchworth; Thomas T. Howarth, Cranleigh, and David F. Corbett, Reigate, all of England, assignors to Beecham Group Limited, England

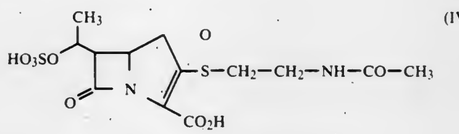
Filed May 25, 1977, Ser. No. 800,347

Claims priority, application United Kingdom, Jun. 30, 1976, 27201/76

Int. Cl.[2] **C07D** *487/04;* **A61K** *34/40*

U.S. Cl. 424—274 **12 Claims**

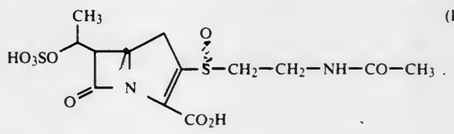
1. A compound of the formula



(IV)

or a pharmaceutically acceptable salt thereof.

5. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially effective amount of a compound for the formula



(IV)

or a pharmaceutically acceptable salt thereof.

4,210,663

HALOGEN SUBSTITUTED BENZOPYRAN- AND BENZOTHIOPYRAN-4-CARBOXYLIC ACIDS

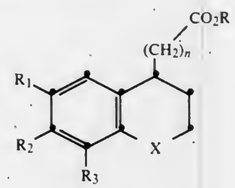
John L. Belletire, Madison, Wis., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 959,023

Int. Cl.[2] **A61K** *31/38, 31/35;* **C07D** *311/04, 335/06*

U.S. Cl. 424—275 **25 Claims**

1. A compound of the formula



and the pharmaceutically acceptable salts thereof, wherein X is selected from the group consisting of O, S, S=O and



n is zero or one;

R is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms;

R_1 is selected from the group consisting of hydrogen, chloro, bromo, fluoro and phenyl;

R_2 and R_3, when taken individually, are each selected from hydrogen, alkyl of 1 to 3 carbon atoms, chloro, bromo and fluoro; and when taken together, R_2, R_3 and the carbon atoms to which they are connected form a fused benzene ring; with the proviso that at least one of R_1, R_2 and R_3 is selected from the group consisting of chloro, bromo and fluoro.

4,210,664

USE OF α,α′-DITHIOBIS(β-ARYLACRYLIC ACID) DERIVATIVES TO ENHANCE ZINC SERUM AND TISSUE CONCENTRATIONS

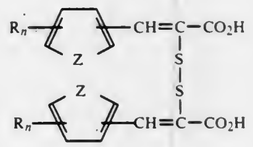
Eugene L. Giroux, Cincinnati, Ohio; Nellikunja J. Prakash, and Paul J. Schechter, both of Strasbourg, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Filed Mar. 2, 1979, Ser. No. 16,942

Int. Cl.[2] **A61K** *31/19, 31/34, 31/38, 31/40*

U.S. Cl. 424—275 **5 Claims**

1. A method of enhancing zinc serum and tissue levels in a patient in need thereof which comprises administering to said patient an effective amount of α,α′-dithiobis(β-arylacrylic acid) of the following formula



wherein Z is C=C, O, S or NH; R is H, CH_3, C_2H_5, OH, CH_3O, C_2H_5O, Cl, Br, F, L or CF_3; and n is 1, 2 or 3; or a pharmaceutically acceptable non-toxic salt thereof.

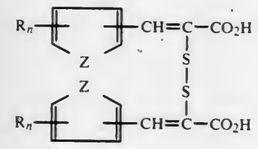
4,210,665

USE OF α,α'-DITHIOBIS(β-ARYLACRYLIC ACID) DERIVATIVES IN HEAVY METAL POISONING

Eugene L. Giroux, Cincinnati, Ohio; Nellikunja J. Prakash, and Paul J. Schechter, both of Strasbourg, France, assignors to Merrell Toraude et Campagnie, Strasbourg, France

Filed Mar. 2, 1979, Ser. No. 16,940
Int. Cl.[2] A61K *31/19, 31/34, 31/38, 31/40*
U.S. Cl. 424—275 **5 Claims**

1. A method of combatting poisoning resulting from heavy metals selected from the group consisting of zinc, cadmium, copper and mercury in a patient in need thereof which comprises administering to said patient an effective amount of a compound of the following formula:



wherein Z is C=C, O, S, or NH; R is H, CH_3, C_2H_5, OH, CH_3O, C_2H_5O, Cl, Br, F, I, or CF_3 ; and n is 1, 2 or 3; or a pharmaceutically acceptable non-toxic salt thereof.

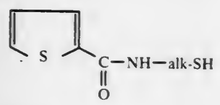
4,210,666

MUCOLYTIC THIOPHENECARBOXAMIDO ALKYL MERCAPTANS

Harry R. Munson, Jr., Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

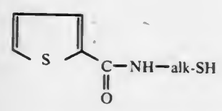
Continuation-in-part of Ser. No. 932,746, Aug. 10, 1978, abandoned. This application Jan. 18, 1979, Ser. No. 4,622
Int. Cl.[2] A61K *31/38;* **C07D** *333/02*
U.S. Cl. 424—275 **7 Claims**

1. A method of combating mucus build-up in a living warm-blooded animal for the purpose of alleviating lung congestion in an animal suffering therefrom by administering through inhalation an amount of a compound effective for dissolving lung mucus causing the congestion having the formula:



wherein -alk- is a straight or branched divalent alkylene radical of 2 to 4 carbon atoms.

5. A compound of the formula



wherein -alk- is a straight or branched chain alkylene radical of 2 to 4 carbon atoms.

4,210,667

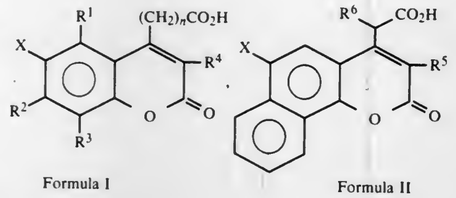
PHARMACEUTICAL PREPARATIONS CONTAINING COUMARIN CARBOXYLIC ACID DERIVATIVES

Reinhard Sarges, Mystic, Conn.; John L. Belletire, Madison, Wis., and Rodney C. Schnur, Noank, Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Apr. 19, 1979, Ser. No. 31,564
Int. Cl.[2] A61K *31/37*
U.S. Cl. 424—281 **9 Claims**

1. A pharmaceutical preparation useful for prophylactic or remedial treatment of diabetic cataracts, retinopathy, nephropathy or neuropathy in a diabetic patient, which comprises:

a pharmaceutical carrier and a therapeutic amount of a coumarin carboxylic acid derivative selected from the group consisting of



Formula I Formula II

and the pharmaceutically acceptable salts thereof, wherein

R^1, R^2, R^3, R^4, R^5 and R^6 are independently selected from H or CH_3;

X is H, CH_3, F or Cl; and

n is 0 or 1; provided that when R^1 is CH_3, R^2 or R^3 is CH_3.

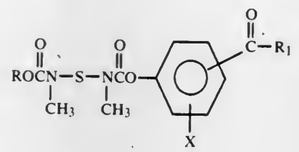
4,210,668

INSECTICIDAL CARBAMATES

James V. Hay, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 23, 1979, Ser. No. 14,534
Int. Cl.[2] A01N *9/12;* **C07C** *119/06*
U.S. Cl. 424—298 **55 Claims**

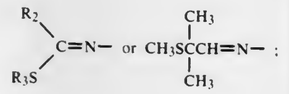
1. A compound selected from



(I)

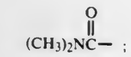
wherein

R is



R_1 is OR_4, SR_5 or NR_6R_7;

R_2 is C_1-C_3 alkyl, CH_3OCH_2— or



R_3 is C_1-C_3 alkyl;

R_4 is C_1-C_{14} alkyl, $—CH_2CH_2O)_nR_8$, or C_6H_5—;

R_5 is C_1-C_4 alkyl;

R_6 and R_7 are independently H or C_1-C_3 alkyl;

R_8 is H or C_1-C_3 alkyl;

X is H, C_1-C_9 alkyl, Cl, $(CH_3)_2N$ or OR_9;

R_9 is C_1-C_4 alkyl;

n is 1, 2 or 3.

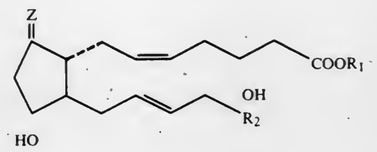
4,210,669

PROSTANOIC ACID DERIVATIVES

Hiromi Shimomura, Nishinomiya; Akihiko Sugie, Takarazuka, and Junki Katsube, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 30, 1978, Ser. No. 911,039
Claims priority, application Japan, May 31, 1977, 52-64217; Sep. 6, 1977, 52-107642
Int. Cl.[2] C07C *177/00;* **A61K** *31/19, 31/215*
U.S. Cl. 424—305 **3 Claims**

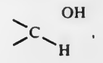
1. A compound of the formula



wherein

R_1 is hydrogen or C_{1-4} alkyl,

R_2 is C_{4-8} alkyl and >C=Z is >C=O



4,210,670

ANTITHROMBOTIC AGENTS

Ernest Cooke, London, England, assignor to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Filed Jun. 23, 1978, Ser. No. 918,476
Claims priority, application Sweden, Jul. 6, 1977, 7707867
Int. Cl.[2] A61K *31/165*
U.S. Cl. 424—324 **7 Claims**

1. A method for prophylactic prevention of postoperative deep venous thrombosis in mammals, including man, which are to be subjected to surgical incisions, whereby a therapeutically effective amount of a compound selected from the group consisting of 2-amino-2',6'-propionoxylidide and diethylaminoacet-2',6'-xylidide, or a therapeutically acceptable salt thereof is administered.

4,210,671

ABIETAMIDE DERIVATIVES, THEIR PRODUCTION AND USE

Hiromu Murai; Katsuya Ohata; Hiroshi Enomoto; Kenji Sempuku; Koji Kitaguchi; Yukio Fujita; Yoshiaki Yoshikuni; Kohei Kura; Katsuhide Saito; Tamiki Mori, and Yasuo Yasutomi, all of Kyoto, Japan

Filed May 12, 1975, Ser. No. 576,303
Claims priority, application Japan, May 17, 1974, 49-55758
Int. Cl.[2] A61K *31/16, 31/165*
U.S. Cl. 424—324 **31 Claims**

7. An amide according to claim 1 which is N-allyldihydroabietamide.

4,210,672

PREPARATION OF YOGURT

Kosei Hata, Osaka, Japan, assignor to Seikenkai, Tondabayashi, Japan

Continuation-in-part of Ser. No. 672,959, Apr. 2, 1976, abandoned. This application Dec. 30, 1977, Ser. No. 866,396
Int. Cl.[2] A23C *9/12;* **C12K** *1/08, 3/00*
U.S. Cl. 426—43 **5 Claims**

1. A product of a dry material consisting essentially of a major amount of milk powder and a minor amount of the spores of a *Bacillus coagulans* having highly thermobiotic characteristics, the bacillus having characteristics such that:

(a) the spores are able to exist in boiling water at 100° C. for more than two minutes;

(b) the spores have the capacity to generate germ cells in a period no longer than five hours;

(c) the germ cells have the capacity such that lactic acid fermentation occurs rapidly within four hours at about 50° C.;

(d) the germ cells have characteristics such that the coagulation of milk occurs in a period no longer than five hours after the germ cells are formed;

(e) the germ cells have the capacity to produce lactic acid in the final medium in a concentration more than 0.8%, and

(f) the germ cells have the capacity to produce a final pH in the culture medium of a fermentation process of below 4.0.

4,210,673

PROCESS FOR FERMENTATION OF GREEN FODDER

Endre Kvanta, Angelholm, Sweden, assignor to AB Medipharm, Sweden

Filed Feb. 15, 1978, Ser. No. 877,983
Claims priority, application Sweden, Feb. 16, 1977, 7701687
Int. Cl.[2] A23K *3/02*
U.S. Cl. 426—53 **6 Claims**

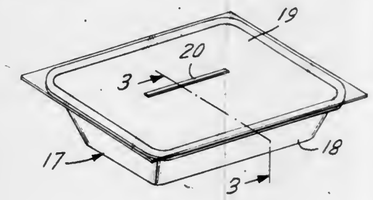
1. A process of fermentation of green fodder, wherein the green fodder is compressed to a press fodder comprising supplying to the green fodder a culture of Streptococcus faecium producing a metabiolite having anti-*E-coli*-activity, and effecting the fermentation in the presence of a nitrogen source, a source of fermentable carbohydrates and essential growth factors at a temperature of at least 15° C. until the final amount of lactic acid in the press fodder is at least 2%.

4,210,674

AUTOMATICALLY VENTABLE SEALED FOOD PACKAGE FOR USE IN MICROWAVE OVENS

Richard P. Mitchell, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 20, 1978, Ser. No. 971,318
Int. Cl.[2] B65D *51/16;* **H05B** *9/00*
U.S. Cl. 426—107 **12 Claims**

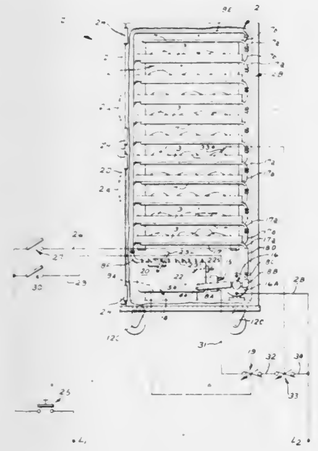


1. A refrigerated food package capable of being heated in a microwave oven, said package comprising dielectric receptacle means and dielectric cover means hermetically sealed thereover to accommodate heating of food contained therein by microwave energy, and means for venting said package automatically in response to its subjection to microwave energy, said means for venting including a strip of electrically conductive material on said cover means so shaped and dimensioned as to be heated by said microwave energy, upon heating said package, in an amount effective to produce a venting perforation in said cover means wherein said cover means is of a meltable material and the heat content of said strip of electrically conductive material is effective to raise the temperature of the underlying portion of the cover means to melt the latter in production of said venting.

4,210,675
METHOD OF TRANSFERRING HEAT TO FOOD ARTICLES

Benno E. Liebermann, 2805 Lime Kiln La., Louisville, Ky. 40222

Continuation-in-part of Ser. No. 835,808, Sep. 22, 1977. This application Jul. 5, 1978, Ser. No. 922,230
Int. Cl.[2] A23L *1/00*; A47F *3/00*
U.S. Cl. 426—233 2 Claims



1. A method of holding cooked meat food products at a temperature above 140° F. and within a range of ±5° F. within a chamber while the closure means of said chamber are repeatedly and frequently opened and closed, which method comprises:

(a) supporting cooked meat food articles on support means located within a chamber having closure means intended to be repeatedly and frequently opened and closed;

(b) mechanically forcing circulation of heated liquid water through radiator means for transferring heat to the food articles, said radiator means being located in the upper portion of said chamber adjacent to and on opposite sides of said support means and being fluid-connected via hollow conduit means to sump means for containing said liquid water that are located in the lower portion of said chamber beneath said support means such that said liquid water is both withdrawn from and returned to said sump means by said circulation thereof, with the water being heated in said sump means;

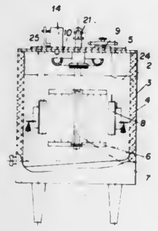
(c) maintaining the humidity within said chamber above that of the atmosphere outside of said chamber by heating the water so as to produce water vapor in said sump and controlling the amount of water vapor that is first transferred from said sump means to said chamber and, subsequently, vented from said chamber to the atmosphere by operation of means for controling flow through an opening that is provided between said sump means and said chamber and by operation of vent means provided for said chamber; and

(d) maintaining said heated liquid water at a temperature of within ±5° F. of a desired temperature that is greater than 140° F. by directly heating said liquid water with heater means located within said sump means.

4,210,676
PROCESS AND APPARATUS FOR THE ACCELERATION OF THE RIPENING OF SPIRITS

Klaus Dudar; Ewald Seliger; Gertraude Hübner, and Wilhelm Banse, all of Halle, German Democratic Rep., assignors to VEB Rationalisierung Halle, Halle, German Democratic Rep.

Filed Feb. 1, 1979, Ser. No. 8,501
Claims priority, application German Democratic Rep., Feb. 1, 1978, 203503
Int. Cl.[2] C12H *1/22*
U.S. Cl. 426—238 10 Claims



1. A process for acceleration of the ripening process of spirits through ultrasonic irradiation of the spirits in the presence of bouquet-improving additives, preferably wood, in which the spirit serves as the transmission medium for the ultrasonic waves, wherein the spirit liquid is circulated within a closed system and treated throughout its entire volume with an ultrasonic frequency of between 20–50 kHz and a specific ultrasonic output of about 1.7 W/l, an average ultrasonic intensity of about 0.5 W/cm^2, the liquid being in contact with a wood surface area which is dependent upon the spirit being treated and ranges between 20–40 cm^2/l, and the treatment being effected within a time period of between about 30–60 minutes while the liquid is circulated at a circulation rate of 3–4 cycles per hour.

4. An apparatus for acceleration of ripening of spirits through ultrasonic irradiation, comprising means forming at least one irradiation chamber provided with an inlet and an outlet for the spirits; resonators for introducing ultrasonic radiation into the spirits in said chamber; covers for hermetically sealing said irradiation chamber; holders attached to said covers for orienting said resonators so as to insure uniformity of irradiation and also holding wood staves serving as bouquet-improving additive; and a pump for circulating said spirits within said irradiation chamber.

4,210,677
PROCESS FOR PRODUCTION OF A RESTRUCTURED FRESH MEAT PRODUCT

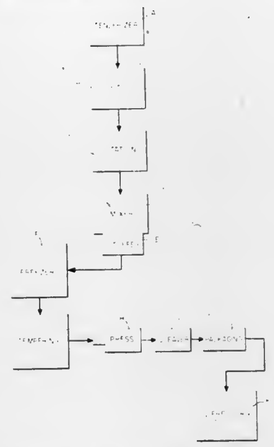
Dale L. Huffman, Auburn, Ala., assignor to Auburn Research Foundation, Auburn, Ala.

Filed Jan. 24, 1978, Ser. No. 872,024
Int. Cl.[2] A23L *1/31*
U.S. Cl. 426—272 25 Claims

1. A method of restructuring fresh meat comprising the steps of:

providing fresh, unheated meat to be restructured;
boning said meat;
freezing said meat;
tempering said meat to an internal temperature of approximately 26° F.;
slicing said tempered meat into thin wafers;
defatting other meat;
tenderizing said other meat on a mechanical tenderizer;
cutting said tenderized other meat into cubes;
removing excess connective tissue and gristle from said cubes by cutting;
combining said meat wafers and said meat cubes by mixing said meat wafers and said meat cubes;

blending said mixed meats;
preforming said blended meats into an initial desired shape;
wrapping said preformed meats with a film-like material;
freeze tempering said wrapped preformed meats such that said meats remain deformable;

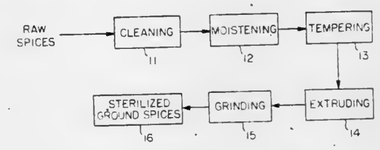


pressing said frozen meats into a final desired shape;
slicing said pressed frozen meats into a plurality of slices; and
freezing said slices.

4,210,678
METHOD OF STERILIZING SPICES

Michael J. Bayusik, and Peter H. Chen, both of Rochester, N.Y., assignors to The R. T. French Co., Rochester, N.Y.

Filed Aug. 24, 1978, Ser. No. 936,220
Int. Cl.[2] A23L *3/16*
U.S. Cl. 426—521 5 Claims



1. A method of commercially sterilizing edible materials selected from the group consisting of herbs and spices in their raw forms by extruding them through a small opening in a die, comprising

raising the moisture level of the raw herb or spice prior to the extrusion step by mixing water with the herb or spice and allowing the mixture to stand until the moisture equilibrates in the herb or spice to a range above approximately 8–14% by weight,

heating the moistened herb or spice to a temperature above approximately 200° F. by passing it through a heating chamber without introducing any steam into the chamber, apart from that which may emanate from the moistened herb or spice, and

forcing the moistened and heated herb or spice through a die opening under an extrusion pressure in the vicinity of 200–1500 psig thereby to reduce the spore and microbiological counts of the herb or spice to satisfactory levels.

4,210,679
PROCESS FOR THE MANUFACTURE OF A MERINGUE OF IMPROVED STIFFNESS

Rene Meili, Neuhausen am Rheinfall, Switzerland, assignor to Firma Schoxi AG, Neuhausen am Rheinfall, Switzerland

Filed Oct. 20, 1978, Ser. No. 952,987
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748474
Int. Cl.[2] A23J *3/02*
U.S. Cl. 426—564 1 Claim

1. A process for the manufacture of a xylitol-containing meringue which will retain its stiffness for a prolonged period of time after whipping, said process comprising:

forming a mixture of warm water, boiled gelatine, and milk-based whipping agents;

whipping said mixture to form a stiff meringue; adding to the whipped mixture a boiling aqueous solution of xylitol under continued whipping; and

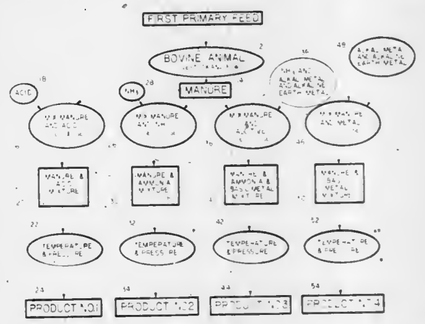
adding pulverized xylitol to the meringue while continuing the whipping of the mixture until a non-collapsing stiffness is attained;

said process employing 25–35 percent by weight of water, 4–8 percent by weight of gelatine, 0.3–0.8 percent by weight of milk-based whipping agents, 20–30 percent by weight of xylitol in aqueous solution, and 30–40 percent by weight of pulverized xylitol, based on the weight of the total mixture.

4,210,680
APPARATUS AND A PROCESS FOR TREATING WASTE

Gaynor W. Dawson, Richland; Hugh C. Leiper, Enumclaw, and Arthur T. Brix, Konwenits, all of Wash., assignors to Herds, Inc., Enumclaw, Wash.

Filed Jan. 15, 1973, Ser. No. 323,886
Int. Cl.[2] A23K *1/00*
U.S. Cl. 426—641 21 Claims



1. A process for making a feed for livestock and fowl, said process comprising:

a. subjecting manure and an additive selected from the group consisting of an acid, a base, a compound comprising an alkali metal and a compound comprising an alkaline earth metal, to an elevated temperature and an elevated pressure for a suitable period of time to allow the manure and the additive to react to form a product;

b. said temperature being in the range of about 250° F. to approximately 400° F.;

c. said pressure being in the range of about 30 pounds per square inch to, approximately, 250 pounds per square inch; and,

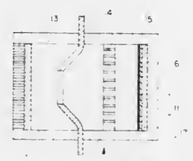
d. said product being said feed for said livestock and fowl.

4,210,681

METHOD OF MAKING THIN ANTIREFLECTION COATING FOR ELECTRO-OPTICAL DEVICE

Herbert K. Pollehn, Alexandria, and Jerry L. Bratton, Woodbridge, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 906,711, May 17, 1978. This application Feb. 23, 1979, Ser. No. 14,675
Int. Cl.² H01J 29/28, 1/70
U.S. Cl. 427—64 8 Claims



1. A method of making an antireflection coating for a phosphor screen with an aluminum backing for an electro-optical device having at least a photocathode capable of producing an electron image from an electromagnetic energy image in a band impinging thereon, said phosphor screen juxtaposed to said photocathode and with said aluminum layer on the side of the screen toward said photocathode, whereby an electron image on said photocathode is focussed through said aluminum layer onto said screen to induce a photoimage thereon, the method including the steps of:

coating said backing with a thin dielectric layer, and

coating said dielectric layer with a thin metallic layer, whereby the combination of layers is transparent to electrons from said photocathode and absorbent to electromagnetic energy in the band of said electromagnetic image.

4,210,682

SHEET METAL RIBBON COATING METHOD

Bernard H. Davis, Stoney Creek, Canada, and Thomas M. Welsh, Connersville, Ind., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Division of Ser. No. 857,678, Dec. 5, 1977, Pat. No. 4,167,150. This application Nov. 14, 1978, Ser. No. 960,659
Int. Cl.² B05D 3/02
U.S. Cl. 427—178 8 Claims



1. In the operation of a discontinuous strip handling apparatus, the method of threading a sheet metal ribbon along a pass line of said apparatus, extending from an uncoiling roll, over a first ribbon support, through at least one work station, over a second ribbon support to a recoiling roll so as to establish and maintain a long-span catenary in said ribbon between the first and second ribbon supports without significant waste at the leading end of said ribbon, comprising the steps of

impelling a leading end of said ribbon over said first ribbon support to a first location;

gripping said leading end of said ribbon at said first location;

impelling said ribbon over said first ribbon support at a substantially constant speed while simultaneously pulling said leading end away from said first location at a substantially constant torque, through said work station, over said second ribbon support to a second location thereby to introduce increasing tension in said ribbon as the leading end thereof approaches said second ribbon support, said increasing tension being in addition to the tension introduced by the weight of the ribbon extending between the first and second ribbon supports, said sheet metal ribbon being unsupported in the region between said first ribbon support and said second ribbon support and extending therebetween as a long-span catenary; p1 continuing to impel said ribbon over said first ribbon support at said substantially constant speed while simultaneously pulling said ribbon at said substantially constant torque over said second ribbon support at a speed sufficient to maintain a selected sag in said catenary;

freeing said leading end of said ribbon at said second location; and

recoiling said ribbon at a location beyond said second location.

4,210,683

PROCESS FOR PREPARING PESTICIDES RELEASING HYDROGEN PHOSPHIDE

Werner Praxl, Rimbach, and Reiner Ehret, Weinheim, both of Fed. Rep. of Germany, assignors to Dr. Werner Freyberg Chemische Fabrik, Laudenbach, Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,154
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643814
Int. Cl.² B05D 7/00
U.S. Cl. 427—221 11 Claims

1. A method for the preparation of a pesticide composition which comprises forming a mixture of particles of a pesticide which releases hydrogen phosphide on exposure to water and selected from the group consisting of alkaline earth metal phosphides, earth metal phosphides and mixtures thereof with a solution of a water soluble polymer in an anhydrous solvent containing sufficient polymer to coat the surface of said particles upon evaporation of the solvent, and thereafter evaporating the solvent.

4,210,684

PROTECTIVE COATING FOR CANS AND METHODS FOR APPLICATION OF COATING THERETO

Frank L. Shriver, Lakewood, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Mar. 29, 1978, Ser. No. 891,309
Int. Cl.² B05D 1/28, 5/00
U.S. Cl. 427—286 11 Claims



1. Apparatus for simultaneously applying a thin narrow width annular coating to a portion of the outer peripheral cylindrical surface of a plurality of can body members or the like between the end edge surfaces thereof comprising:

elongated conveyor means for rotatably transporting the can body members therealong in equally spaced relationship in a horizontal attutude along a horizontal path of movement;

elongated coating means mounted below and associated with said elongated conveyor means for simultaneously engaging and applying the thin narrow width annular coating to lowermost portions of the plurality of can body members during passage of the can body members therealong;

the coating means including an elongated coating application roller member mounted in a horizontal attitude and having an axis of rotation extending parallel to the direction of movement of the can body members and transversely to the central longitudinal axes thereof and having an elongated narrow width upper peripheral portion located along the path of movement of the can body members for engagement with a narrow width peripheral portion of the outer peripheral cylindrical surface of each of the can body members between the end edge surfaces thereof during rotating movement of the can body members therealong; and

can body member drive means mounted above said coating means and extending along said elongated conveyer means for causing rotation and movement of the can body members along the roller member and engagement therebetween to effect coating of each of the can body members during substantially only one revolution thereof and to uniformly space the can body members along the roller member.

4,210,685

POLYESTER-STARCH SIZED PAPER, SIZING COMPOSITION, AND PROCESS THEREFOR

Robert B. Login, and Daniel R. Dutton, both of Woodhaven, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 22, 1978, Ser. No. 908,403
Int. Cl.² B05D 3/02, 3/12
U.S. Cl. 427—361 5 Claims

1. A process for manufacturing surface-sized paper or paperboard having improved water resistance comprising sizing said paper at the size press with a composition comprising a degraded starch or starch derivative and a polyester wherein said polyester is the reaction product of a dicarboxylic reactant, a diol or polyoxyalkylene glycol, and a phosphorus acid reactant, said polyester having a branched chain, an average molecular weight of about 4,000 to about 11,000, and wherein said starch is selected from the group consisting of alkaline hypochlorite oxidized starches, hydroxyethyl starch ethers, cyanoethyl starch ethers and cationic starches.

4,210,686

MULTI-LAYERED PLASTIC SHEETING HAVING HIGH CLARITY, STRENGTH, AND RESISTANCE TO WATER VAPOR TRANSMISSION

Henry Gajewski, Winnetka; Dean G. Laurin, Lake Zurich; Paul Measells, Libertyville, and R. Daniel Webster, Wauconda, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 19, 1978, Ser. No. 917,122
Int. Cl.² B32B 1/02; B65D 65/38
U.S. Cl. 428—35 21 Claims

1. A mutliple-layered, autoclavable, flexible plastic sheet which comprises: (a) at least one first layer consisting essentially of 30 to 90 percent by weight of a block copolymer having thermoplastic, rubbery characteristics, and having rubbery polyolefin blocks consisting essentially of ethylene and butylene units and blocks of a polystyrene; the rubber polyolefin blocks comprising from 60 to 85 percent by weight of said block copolymer; and from 10 to 70 percent by weight of a polyolefin derived principally from at least one of propylene, ethylene, and 4-methylpentene-1, said polyolefin having a Vicat Softening Temperature of above 120° C.; and (b) at least one second layer consisting essentially of a polyolefin derived principally from at least one of propylene, ethylene, and 4-methylpentene-1, and being of semi-crystalline characteristic to exhibit low permeability to water vapor, said first and second layers being bonded together in alternating arrangement.

4,210,687

METHOD FOR THE COATING OF GLASS SURFACES

Johann Obendorf, Dorsten; Günter Dörmann, Bochum; Rainer Gras, and Elmar Wolf, both of Herne, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Herne, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,020
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1977, 2740253
Int. Cl.² B65D 11/22; B05D 3/02
U.S. Cl. 428—35 9 Claims

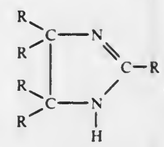
1. A method for the coating of glass surfaces, in order to prevent the scattering of glass particles, with a transparent, durpolasfic protective coat by depositing a paste of hydroxy group-containing 1,2-epoxy compounds, with at least one 1,2-epoxide group in the molecule and a lower melting point of more than 40° C. and a hardening agent, and hardening the overlay at higher temperatures, which comprises

first treating the clean glass surface with an aqueous or alcoholic silane skim coat,

drying said surface if necessary and thereafter warming said surface to a temperature up to 120° C.,

coating the glass surface with said paste of hydroxy group-containing 1,2-epoxy compounds and hardening said paste with further addition of heat

wherein said hardening agents are polyisocyanates blocked with cyclic amidines of the formula:



wherein R's are the same or different substituents selected from the group consisting of hydrogen, alkyl-, cycloalkyl-, arylalkyl-, and aryl, wherein the hardening agent is added in an amount of 2-15% by weight, calculated with respect to the amount of 1,2-epoxide compounds.

4,210,688

PRESSURE SENSITIVE LABEL STRIP FOR USE IN A LABEL PRINTING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Tokyo, Japan

Continuation-in-part of Ser. No. 867,007, Jan. 5, 1978, abandoned. This application Jul. 20, 1978, Ser. No. 926,704
Claims priority, application Japan, Mar. 28, 1977, 52-033374; Feb. 13, 1978, 53-015723[U]
Int. Cl.² G09F 3/00; B65D 65/30; B32B 3/16
U.S. Cl. 428—41 23 Claims



1. A pressure sensitive label strip, comprising:

a tape like strip of label material; a tape like strip of backing

material; said strip of label material being overlaid on and separably adhered by adhesive material to said strip of backing material;

parting cut lines extending transversely across said strip of label material and being spaced at regular intervals so as to form a plurality of unit label pieces of said label strip material;

a plurality of first feeding tongues arrayed at spaced intervals along the length of said strip of backing material; each said first tongue of said plurality being at a position corresponding to the position of a said parting cut line on said strip of label material; each said first feeding tongue being defined by a feeding cut through said strip of backing material; each said first feeding tongue feeding cut being in the shape of an unclosed geometric figure and having an open uncut side by which said feeding tongue is connected to said strip of backing material; said open uncut sides of said first feeding tongue feeding cuts all facing downstream along the path of motion of said strip as said strip is advanced, whereby when each said first feeding tongue is engaged, it is upraised in the forward direction of the motion of said label strip;

at least one respective feeding cut line, which is formed at and which crosses each said parting cut line in said strip of label material; said at least one feeding cut line at each said parting cut line having generally the same shape as said at least one feeding cut line at the other said parting cut lines; each said at least one feeding cut line in combination with its respective said parting cut line, being differently shaped than said feeding cut of a respective said first feeding tongue, thereby to define a second feeding tongue in said strip of label material at each said parting cut line; each said second feeding tongue being placed to overlie a respective said first feeding tongue of said strip of backing material.

17. A pressure sensitive label strip, comprising:

a tape-like strip of a label material having a rear side and a tape-like strip of backing material having a front side; said rear side of said strip of label material and said front side of said strip of backing material being separably adhered together by adhesive material;

a plurality of parting cut lines extending transversely across said strip of label material and being spaced at regular intervals so as to form a plurality of unit label pieces of said label material;

pairs comprising two first feeding cut lines being defined across said parting cut lines in said label material; said two feeding cut lines of each said pair being separated sufficiently that said label material will not normally tear to define an unclosed geometric figure including said two feeding cut lines and the tear; each said feeding cut line pair and the respective said parting cut line forming respective feeding tongues of said unit label pieces;

second feeding cut lines being defined in said backing material and each being in the shape of an unclosed geometric figure to form a respective feeding tongue in said backing material at a position generally corresponding to a respective said pair of first feeding cut lines of said label material, and the positions of said second feeding cut lines of said backing material not being in accurate alignment with the respective said pairs of first feeding cut lines of said label material.

4,210,689

METHOD OF PRODUCING SEMICONDUCTOR DEVICES

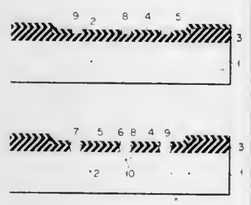
Shigeru Komatsu, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 13, 1978, Ser. No. 969,007

Claims priority, application Japan, Dec. 26, 1977, 52-156812; Dec. 26, 1977, 52-156813

Int. Cl.[2] H01L *21/38*

U.S. Cl. 427—88 **13 Claims**



1. A method of producing semiconductor devices, comprising the steps of:

forming a first insulation film on a semiconductor substrate of one conductivity type having a first semiconductor region of the opposite conductivity type formed therein in advance, said first semiconductor region being exposed to the surface of the substrate and said first insulation film covering the first semiconductor region;

forming a second insulation film on the first insulation film, said second insulation film having a property which permits it to be etched 3 to 10 times as fast as said first insulation film;

providing the second insulation film with at least one hole;

converting said second insulation film to have a property which permits it to be etched at substantially the same rate as said first insulation film;

forming a nitride film over the remaining second insulation film and within the hole in the second insulation film;

providing that portion of the nitride film which is located in the hole of the second insulation film with at least one opening selectively exposing the first insulation film;

providing the first insulation film with an opening through the opening in the nitride film so as to expose selectively the surface of the first semiconductor region formed in the substrate; and

forming a second semiconductor region of said one conductivity type within the first semiconductor region by utilizing the opening in the first insulation film.

4,210,690

SPUN NONWOVEN FABRIC OF POLYESTER FILAMENTS FOR USE AS BACKING MATERIAL FOR A DEEP-DRAWABLE TUFTED CARPET

Ludwig Hartmann, and Ivo Ruzek, both of Kaiserslautern, Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

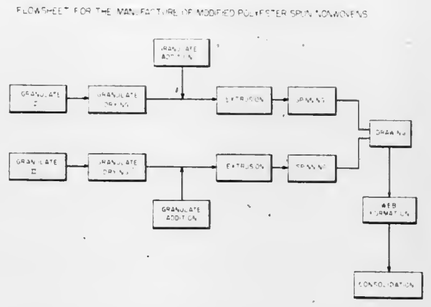
Filed Sep. 29, 1978, Ser. No. 947,287

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1978, 2834438

Int. Cl.[2] D05C *17/00*

U.S. Cl. 428—95 **7 Claims**

1. A spun nonwoven fabric of polyester filaments for use as backing for a deep-drawable tufted carpet, wherein the polyester filaments have uniformly distributed therethrough about 0.1 to 1% by weight of a diol-modified copolyester containing



units of at least two different diols; the diol composition of the copolyester differing from that of the polyester.

4,210,691

PHOTOCHEMICAL PROCESS FOR TREATING NYLON FIBER YARN OR PILE FABRIC

Nicholas C. Bolgiano, 824 Dorsea Rd., Lancaster, Pa. 17601, and Daniel Swern, 7700B Stenton Ave., Philadelphia, Pa. 19118

Filed Dec. 18, 1978, Ser. No. 970,352

Int. Cl.[2] B32B *7/04*

U.S. Cl. 428—96 **7 Claims**

1. A photochemical process for imparting soil release properties to nylon fiber yarn or pile fabric which comprises treating the nylon fiber yarn or pile fabric with an effective amount of a N-halogenating agent to break at least a portion of the amide hydrogen bonds on the amide linkages along the nylon molecular chain and form in place thereof photolabile nitrogen-halogen bonds; treating the resulting halogenated nylon fiber yarn or pile fabric having photolabile nitrogen-halogen bonds with a vinyl monomer and irradiating the vinyl monomer treated nylon fiber yarn or pile fabric with sufficient actinic or electron beam radiation to

(a) break the photolabile nitrogen-halogen bonds and form free radical host sites along the nylon molecular chain and

(b) subsequently graft the vinyl monomer onto the nylon molecular chain at the free radical host sites.

4,210,692

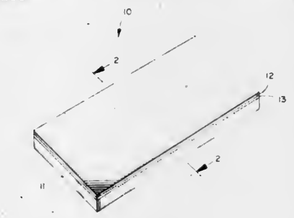
OVERLAY SHEET AND WOOD LAMINATE

Reinhard D. Bohme, Bloomington, and Robert O. Ragan, Minneapolis, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Nov. 17, 1978, Ser. No. 961,755

Int. Cl.[2] D21H *5/18, 5/20;* **B32B** *21/02, 21/10, 21/06*

U.S. Cl. 428—106 **8 Claims**



5. A laminate comprising a wood core and an overlay sheet adhered to at least one surface of said core, said overlay sheet formed from a furnish comprising, for each 100 parts by weight, 10 to 25 parts of a synthetic pulp comprising a synthetic polymer in fibrous form, 10 to 20 parts mineral fiber, 0.1 to 2 parts size, 0.1 to 2 parts wet strength resin, and 79.8 to 51 parts wood fiber.

4,210,693

REGISTER EMBOSS AND METHOD

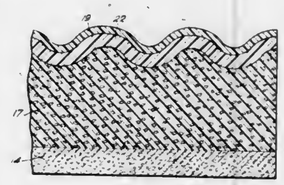
Ernest E. Regan, Fort Lauderdale, and Thomas J. McCann, Hollywood, both of Fla., assignors to Dowdflor Corporation, Miami, Fla.

Filed Dec. 20, 1977, Ser. No. 862,627

The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.

Int. Cl.[2] B32B *3/00;* **B05D** *3/06*

U.S. Cl. 428—152 **6 Claims**



1. The process for providing a crinkle finish on a decorative pattern on a flexible substrate comprising the steps of:

coating said substrate with a foamable vinyl composition and heating to gel the foamable composition,

applying a decorative pattern to the surface of the gelled composition,

coating a vinyl overlay over the decorative pattern,

heating to gel the vinyl overlay,

passing the flexible coated substrate through a printer where an actinic radiation curable coating of lower elongation properties than that of the vinyl overlay is applied at varying thicknesses in preselected areas of the substrate in register with the decorative pattern,

curing said coating upon exposure to actinic radiation,

passing the flexible coated substrate through a fusion and expansion oven, whereby upon exiting, the foamable coat has expanded to a cellular foam, the vinyl overlay is fused, and the product exhibits a crinkled surface texture which has been created on the surface of the flexible substrate by permitting the differential elongation properties of the overlay and the printed actinic radiation cured coatings to interact to give the crinkle surface texture.

4,210,694

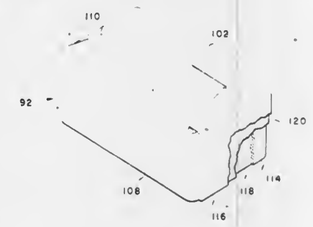
LAMINATED COMPOSITE STRUCTURAL FITTING AND METHOD OF MAKING

Lawrence D. Fogg, III, Burbank, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed May 9, 1977, Ser. No. 795,286

Int. Cl.[2] B32B *3/00, 27/04, 27/12*

U.S. Cl. 428—174 **7 Claims**



5. A laminated composite structural fitting comprising: a ply of oriented, high strength, filament-reinforced, thermosetting resin-impregnated material, said filament being in the nature of graphite, boron or glass, said ply having a bottom panel and a

side panel adjacent to and integrally formed with said bottom panel and separated therefrom by a fold line, and first and second end panels respectively adjacent to said bottom panel and said side panel and separated therefrom by fold lines, said fitting having said end panels overlapping and laminated to each other to form a homogeneous filament reinforced corner for stress distribution around the corner from said end panel through said side panel to said bottom panel.

4,210,695

METHOD OF FORMING COLORED PATTERNS ON ALUMINUM OR ITS ALLOYS

Hatsuo Hirono, Nyuzen; Katsuyuki Nagata, Vozu, and Nobushige Doguchi, Toyama, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,465
Claims priority, application Japan, Dec. 5, 1977, 52-145191
Int. Cl.² C23B *9/02*
U.S. Cl. 428—209 **6 Claims**

1. A method of forming a textured, colored pattern on the surface of an article made of aluminum or its alloys comprising:
   dipping said article in a coating bath which includes a resinous coating material, selected from the group consisting of acrylic resins and alkyd resins, in the form of multilinear or multiannular patterns floated thereon to deposit a mask coating in a wood-grain pattern on a surface of said article;
   applying an alkaline solution to said surface to deeply etch the unmasked areas to form a textured surface;
   removing the mask coating; and
   electrolytically coloring said surface, including both the etched and previously masked portions.

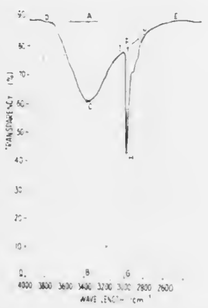
6. An aluminum article produced by the method of claim 1, which has a close resemblance to a straight or cross grain of natural wood with a stereographic effect.

4,210,696

ANTISTATIC COMPOSITE FILM AND PROCESS FOR THE PREPARATION THEREOF

Tadayoshi Ikeda, Kobe; Yasuzi Omori, and Saizo Ikeda, both of Himeji, all of Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Nov. 27, 1978, Ser. No. 963,834
Claims priority, application Japan, Nov. 28, 1977, 52-142416
Int. Cl.² B32B *7/02, 27/36*
U.S. Cl. 428—212 **14 Claims**



1. A coated article having a high surface hardness, resistance to marring, an antistatic property and improved resistance to washing with water, comprising: a substrate having a surface made of an easily electrostatically chargeable material; a first layer coated on the surface of said substrate; a second layer coated on said first layer; said first and second layers having been prepared by applying onto said surface of said substrate a first coating layer of a solution in a first organic solvent of a solvent-soluble, further-curable product obtained by partial hydrolysis and condensation of alkyltrialkoxysilane having the formula $R^1Si(OR^2)_3$, wherein R^1 is alkyl having 1 to 4 carbon atoms, phenyl or vinyl and R^2 is alkyl having 1 to 4 carbon atoms or phenyl, and drying said first coating layer to evaporate said first organic solvent and to begin further condensation of said further-curable product, and then before the condensation reaction in the first coating layer is completed applying onto said first coating layer a second coating layer of a solution in a second organic solvent of a solvent-soluble hydrolyzate or hydrolyzed partial condensate of hydrolyzable tetrafunctional silicon compound, chloropolysiloxane or alkoxypolysiloxane, and heating the first and second layers to evaporate the second solvent and to substantially complete condensation reactions in the first and second coating layers.

11. A process for preparing a transparent coated article having a high surface hardness, resistance to marring, an antistatic property and improved resistance to washing with water, comprising: applying to a substrate having a surface made of an easily electrostatically chargeable material a first coating layer of a solution in a first organic solvent of a solvent-soluble, further-curable product obtained by partial hydrolysis and condensation of alkyltrialkoxysilane having the formula $R^1Si(OR^2)_3$, wherein R^1 is alkyl having 1 to 4 carbon atoms, phenyl or vinyl and R^2 is alkyl having 1 to 4 carbon atoms or phenyl, and drying said first coating layer to evaporate said first organic solvent and to begin further condensation of said further-curable product, and then before the condensation reaction in the first coating layer is completed applying onto said first coating layer a second coating layer of a solution in a second organic solvent of a solvent-soluble hydrolyzate or hydrolyzed partial condensate of hydrolyzable tetrafunctional silicon compound, chloropolysiloxane or alkoxypolysiloxane and heating the first and second layers to evaporate the second solvent and to substantially complete the condensation reactions of the first and second coating layers.

4,210,697

PROCESS FOR PREPARING HYDROPHOBIC POROUS FIBROUS SHEET MATERIAL OF HIGH STRENGTH AND POROSITY AND PRODUCT

Joseph G. Adiletta, Thompson, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Sep. 15, 1978, Ser. No. 942,505
Int. Cl.² B32B *27/04*
U.S. Cl. 428—272 **22 Claims**

1. A process for preparing a hydrophobic porous fibrous sheet material which comprises impregnating a substrate of porous fibrous sheet material with an aqueous dispersion consisting essentially of at least one polymer selected from the group consisting of polytetrafluoroethylene and polytrifluorochloroethylene in an amount within the range from about 2 to about 40% by weight of the emulsion, and a silicone resin prepolymer in an amount within the range from about 0.1 to about 8% by weight of the emulsion; and drying the substrate at a temperature above about 525° F. to cure the silicone resin prepolymer, forming a hydrophobic polymer, and sinterbond the polytetrafluoroethylene or polytrifluorochloroethylene thereto and to the substrate, thereby forming a hydrophobic porous fibrous sheet material that is inert, has a high strength and a high resistance to deterioration at elevated temperature; each of the silicone polymer and polytetrafluoroethylene or polytrifluorochloroethylene synergizing the hydrophobicity and strength imparted to the substrate by the other.

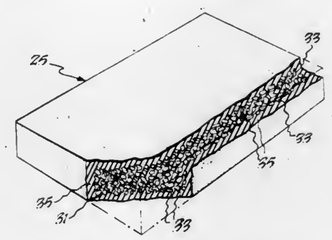
4,210,698

REINFORCED ELASTOMER PRODUCTS

Stewart C. Watson, Williamsville, N.Y., assignor to Watson Bowman Associates, Inc., Amherst, N.Y.

Continuation-in-part of Ser. No. 616,140, Sep. 24, 1975, Pat. No. 4,080,086. This application Mar. 21, 1978, Ser. No. 888,660
Int. Cl.² B32B *5/16*
U.S. Cl. 428—327 **4 Claims**

1. A reinforced elastomer product suitable for use as a resilient but pressure resistant bearing block comprising a body of relatively soft elastomer having embedded therein a plurality of separate reinforcing elements of relatively hard, not easily



crushed material, said elements being fragments of crushed rock and being present in sufficient quantity as to be effective to reduce the deformation of said product by compressive forces.

4,210,699

ABRASION RESISTANT SILICONE COATED POLYCARBONATE ARTICLE

Siegfried H. Schroeter, Schenectady, and Daniel R. Olson, Clifton Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 1, 1978, Ser. No. 956,874
Int. Cl.² G02B *1/04;* **B32B** *27/30, 27/14*
U.S. Cl. 428—331 **26 Claims**

1. A shaped non-opaque coated polycarbonate article having improved abrasion and chemical solvent resistance comprising a polycarbonate substrate having on at least one surface thereof (i) an adhesion promoting primer layer consisting essentially of a thermoplastic acrylic polymer containing functional groups; and (ii) having disposed on said primer layer a tenaciously and durably adhered top coat consisting essentially of a colloidal silica filled thermoset organopolysiloxane which is the condensation product of a silanol of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 carbon atoms, the vinyl radical, the 3,3,3-trifluoropropyl radical, the gamma-glycidoxypropyl radical and the gamma-methacryloxypropyl radical, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$.

4,210,700

PRODUCTION OF POLYESTER YARN

Robert M. Marshall, Chester, and Vimon C. Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 15, 1978, Ser. No. 942,583
Int. Cl.² D02G *3/48;* **B05D** *1/24;* **B32B** *17/04*
U.S. Cl. 428—395 **3 Claims**

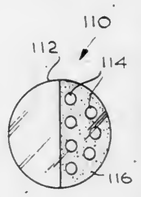
1. A synthetic filamentary yarn comprised of polyethylene terephthlate filaments which are first treated with from about 0.3 to about 0.6 weight percent based on the weight of the yarn of a liquid composition consisting essentially of about 10 to about 20 weight percent of said composition of each hexadecyl stearate and refined coconut oil, about 3.0 to about 6.0 weight percent of said composition of ethoxylated tallow amine, about 10 to about 20 weight percent of said composition of ethoxylated lauryl alcohol, about 8.0 to about 12.0 weight percent of said composition of sodium salt of alkylarylsulfonate, about 1.0 to about 3.0 weight percent of said composition of dinonylsodium-sulfosuccinate, and about 35 to 50 weight percent of said composition of white mineral oil having a boiling point of between about 265° C. (510° F.) and 327° C. (620° F.) and a viscosity of between 38 to 40 SSU at about 38° C. (100° F.) wherein at least about 0.15 to about 0.30 weight percent is retained on said yarn; and then said yarn is treated with from about 0.7 to about 1.2 weight percent based on the weight of said yarn of a liquid composition which is an oil-in-water emulsion of about 10 to 20 percent by weight of said oil portion, said oil portion consisting essentially of from about 55 to 65 percent by weight of coconut oil, about 20 to 35 percent by weight of polyoxyethylene hydrogenated castor oil, and about 7 to 15 percent by weight of phosphated polyoxyethylated tridecyl alcohol, neutralized with potassium hydroxide.

4,210,701

METHOD AND APPARATUS FOR DEPOSITING FILM ON A SUBSTRATE, AND PRODUCTS PRODUCED THEREBY

Joseph E. Berg, and Randolph E. Brown, Jr., both of Los Angeles, Calif., assignors to Precision Thin Film Corporation, Los Angeles, Calif.

Division of Ser. No. 571,480, Apr. 24, 1975, Pat. No. 4,017,350, which is a division of Ser. No. 280,489, Aug. 14, 1972, Pat. No. 3,913,520. This application Jul. 31, 1978, Ser. No. 929,733
Int. Cl.² C23C *13/12;* **B05D** *3/06;* **B32B** *31/28*
U.S. Cl. 428—409 **9 Claims**



1. A product having at least a portion thereof produced by the bombardment of a substrate by ionized molecular particles of a selected material comprising:
   a specimen substrate;
   a film deposited on and implanted in said substrate, said implantation occurring to a depth of from severl hundred angstroms to several microns.

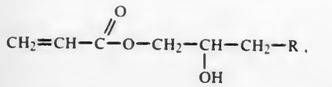
4,210,702

PROCESS FOR THE MANUFACTURE OF SOLUBLE COPOLYMERS WHICH CONTAIN HYDROXYL GROUPS AND WHICH COPOLYMERS CAN BE CROSSLINKED WITH ORGANIC POLYISOCYANATES

Horst Dalibor, Norderstedt, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 760,360, Jan. 9, 1977, Pat. No. 4,163,836. This application Aug. 18, 1978, Ser. No. 934,868
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603259
Int. Cl.² B32B *27/38;* **B05D** *3/02;* **C08F** *212/08*
U.S. Cl. 428—413 **23 Claims**

1. A process for the manufacture of coatings from polyhydroxy compounds, which are based on copolymers, which contain hydroxyl groups and are reaction products of mixtures of styrene, methyl methacrylate, hydroxyethyl methacrylate, acrylic acid and glycidyl esters of α-alkylalkanemonocarboxylic acids and/or α,α-dialkylalkanemonocarboxylic acids, and from organic polyisocyanates in solvents which have no active hydrogen atoms, which comprises mixing
   A. a copolymer, which contains hydroxyl groups and consists of components
      (a) 26–28% by weight of styrene,
      (b) 20–22% by weight of methyl methacrylate,
      (c) 18–20% by weight of hydroxyethyl methacrylate,
      (d and e) 32.5–35.5% by weight of a reaction product of acrylic acid and glycidyl esters of acids selected from the group consisting of α-alkylalkanemonocarboxylic acids and α,α-dialkylalkanemonocarboxylic acids, having the empirical formula $C_{13}H_{24}O_3$, which reaction product has the formula



wherein R is the radical of an α-alkylalkanemonocarboxyl acid or an α,α-dialkylalkanemonocarboxylic acid and the radical has the empirical formula $C_{10}H_{19}O_2$, and in which the incorporated components (a), (b), (c), (d) and (e) add up to 100% by weight, dissolved in solvents which do not contain active hydrogen atoms, is reacted with (B) an organic polyisocyanate, the amounts of the copolymer (A) and the polyisocyanate (B) in the mixture adding up to 100 percent by weight, and applying this mixture to a substrate to be coated, and then removing the solvent in order to obtain the finished coating.

16. An article coated according to the process of claim 1.

4,210,703

POLYESTER-FILM BACKED MAGNETIC RECORDING TAPE HAVING EPOXY SUBBING LAYER

William M. Scantlin, Woodbury, and Lawrence M. Clemens, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 11, 1979, Ser. No. 2,790
Int. Cl.[2] B32B *27/38*
U.S. Cl. 428—413 **14 Claims**

1. In magnetic recording tape having a biaxially oriented polyester film backing, a magnetizable coating and a subbing layer between the magnetizable coating and film backing, the improvement comprising:

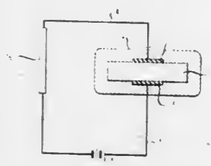
the subbing layer comprises a cationically polymerized epoxy resin.

4,210,704

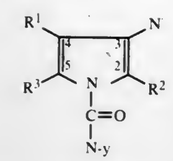
ELECTRICAL DEVICES EMPLOYING A CONDUCTIVE EPOXY RESIN FORMULATION AS A BONDING MEDIUM

Edwin A. Chandross, Berkeley Heights, and Louis H. Sharpe, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 4, 1978, Ser. No. 931,160
Int. Cl.[2] B32B *7/14, 27/38;* **H01B** *1/06*
U.S. Cl. 428—414 **4 Claims**



1. Device comprising a first electrically conductive or semiconducting member and a second electrically conductive or semiconducting member, said first member being bonded to said second member by a bonding agent, said bonding agent consisting essentially of (a) a polyfunctional epoxide, (b) a reactive viscosity reducer which is a mono or difunctional aliphatic diglycidyl ether, (c) a curing agent, and (d) a conductive material, characterized in that said curing agent consists essentially of an imidazole compound having the general formula



wherein R^1 represents hydrogen, a phenyl group or an alkoxyphenyl group having from 1-6 carbon atoms in the alkoxy chain; R^2 and R^3 represent an alkyl group of 1-6 carbon atoms, a phenyl group or hydrogen; and Y represents a cyclic group of the formula $(CH_2)_4$ or $(CH_2)_5$, or $O(CH_2)_4$; or two alkyl groups, $(R^4)_2$, wherein R^4 is an aklyl group having from 1-6 carbon atoms.

4,210,705

POLYVINYL BUTYRAL COMPOSITIONS

Harold K. Inskip, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 874,612, Feb. 2, 1978. This application May 3, 1979, Ser. No. 35,644
Int. Cl.[2] B32B *27/00;* **D01F** *1/02*
U.S. Cl. 428—500 **3 Claims**

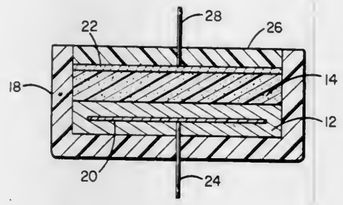
1. In the process for the preparation of a plasticized polyvinyl butyral sheeting suitable for use in safety glass laminates, the improvement which comprises immersing the polyvinyl butyral sheeting in a solution of divalent metal salt of neo decanoic acid wherein the metal is magnesium or calcium wherein the amount of said neo decanoic acid salt incorporated into the polyvinyl butyral is about from 0.01-0.5 wt. percent based on plasticized polyvinyl butyral.

4,210,706

CATHODE MATERIALS FOR ELECTROCHEMICAL CELLS

Paul M. Skarstad, Wayzata, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1979, Ser. No. 34,266
Int. Cl.[2] H01M *4/36, 6/18*
U.S. Cl. 429—105 **8 Claims**



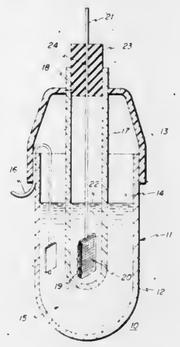
1. As a cathode material for electrochemical cells, a combination consisting essentially of a conductive saturated liquid solution comprising two initial components and any reaction product thereof, one of the initial components being an organic compound selected from the group of pyridine derivatives consisting of dimeric pyridine, monomeric substituted pyridines, dimeric substituted pyridines, monomeric quinoline, monomeric substituted quinolines, trimeric substituted pyridines, and mixtures thereof, and the other initial component being iodine dissolved therein.

4,210,707

SEALED LITHIUM-TYPE ELECTROCHEMICAL CELL

Gregory C. Farrington, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 962,009, Nov. 20, 1978, abandoned. This application Jul. 16, 1979, Ser. No. 58,066
Int. Cl.[2] H01M *4/36*
U.S. Cl. 429—105 **4 Claims**



1. A sealed lithium electrochemical cell comprising a casing, an anode positioned within the casing, the anode selected from the class consisting of lithium, lithium as an amalgam, lithium in a non-aqueous electrolyte, a lithium-alloy with from 1.0 weight percent to 99.0 weight percent lithium, a lithium-alloy as an amalgam, and a lithium alloy in a non-aqueous electrolyte, a cathode positioned within the casing, the cathode functioning with the anode, a solid lithium-sodium beta''-alumina electrolyte positioned within the casing between the anode and the cathode, the solid lithium-sodium beta''-alumina having the formula

$$y(LiNa)O.nX.5Al_2O_3$$

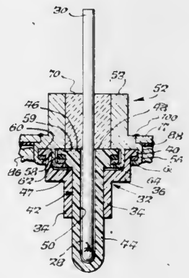
wherein y is a range from 0.55 to 1.0; X is an oxide selected from the group consisting of MgO, Li_2O, $m(MgO)p(Li_2O)$ wherein the total of m and p equal n; n is a range from 0 to 1.0; and 1.0 to 99.0 percent of the total alkali ion content is lithium.

4,210,708

LITHIUM-IODINE CELL

Ralph T. Mead, Kenmore; Norbert W. Frenz, Jr., North Tonawanda; Frank W. Rudolph, Depew, and Wilson Greatbatch, Clarence, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,636
Int. Cl.[2] H01M *2/06*
U.S. Cl. 429—181 **33 Claims**



1. A lithium-iodine cell comprising:

a. a casing of electrically conducting material;

b. anode means positioned within said casing and comprising an element of lithium having an exposed surface portion and another surface portion;

c. electrical conductor means operatively connected to said other surface portion and extending through said casing;

d. means for sealing said conductor means from the remainder of said cell, said sealing means comprising an insulator element in generally concentric relationship with said conductor within said casing, said insulator element having an axial end face portion and being of a material which does not exhibit electronic conduction when exposed to iodine, an isolator element of a material which does not exhibit electronic conduction when exposed to iodine and located between said insulator element and said conductor, said isolator element having an axial end face portion substantially coplanar with said axial end face portion of said insulator element, and a ferrule element in generally concentric relationship with said conductor, said ferrule having one end within said casing and having a portion extending from said casing, said end of said ferrule within said casing having an axial end face portion abutting said axial end face portions of said insulator and said isolator, said ferrule including a first formation extending generally axially outwardly from said ferrule end face portion and generally radially inwardly engaging said isolator element for joining said ferrule to said isolator, said ferrule including a second formation located radially outwardly of said first formation extending generally axially outwardly from said ferrule end face portion and generally radially inwardly engaging said insulator for joining said ferrule to said insulator;

e. cathode means comprising iodine-containing material within said casing and in operative contact with said exposed surface portion of said lithium element and with a major portion of the surface of said casing in a manner such that said casing serves as a cathode current collector; and

f. said sealing means shielding said conductor means from said iodine-containing material and electrically insulating said conductor means from said casing;

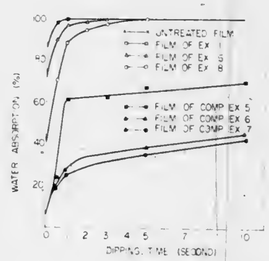
g. whereby an electrical potential difference exists between said conductor means and said casing during operation of said cell.

4,210,709

MICROPOROUS FILM BATTERY SEPARATOR

Yoshinao Doi, Kawasaki; Osamu Fugii, Tachikawa; Shigeo Kaneko, and Takeo Hanamura, both of Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 1, 1978, Ser. No. 929,983
Int. Cl.[2] H01M *2/16*
U.S. Cl. 429—250 **48 Claims**



1. A microporous film which comprises a matrix comprising 40 to 90 volume percent of a polyolefin having a number average molecular weight of 15,000 or more and 10 to 60 volume percent of an inorganic filler, said matrix having therein void spaces at a rate of 30 to 75 volume percent based

on the volume of the film; and 2 to 20 weight percent, based on the total weight of the polyolefin and the inorganic filler, of an organic substance which is substantially insoluble in and inert to sulfuric acid and has a solubility parameter ranging from 7.3 inclusive to 8.4 exclusive; said organic substance, in its majority, adhering to the overall surface of the film including the outer surfaces of the film and the surfaces of the polyolefin walls defining said void spaces in cooperation with said inorganic filler; said microporous film being prepared by a method comprising blending said polyolefin, said inorganic filler, and an organic liquid having a solubility parameter ranging from 8.4 to 9.9 inclusive in amounts of 10 to 60 volume percent, 7 to 42 volume percent, and 30 to 75 volume percent, respectively, based on the whole volume of the polyolefin-filler-organic liquid composition, the amount of the polyolefin being $\frac{2}{3}$ to 9 multiple of the amount of the inorganic filler; subjecting the resulting blend to molding to form a film; extracting from said film the organic liquid to form a matrix which comprises 40 to 90 volume percent of the polyolefin and 10 to 60 volume percent of the inorganic filler and having therein void spaces at a rate of 30 to 75 volume percent based on the volume of the film; and applying to the matrix the organic substance which is substantially insoluble in and inert to sulfuric acid and has a solubility parameter ranging from 7.3 inclusive to 8.4 exclusive so that said organic substance adheres to the overall surface of the film in an amount of 2 to 20 weight percent based on the total weight of the polyolefin and the inorganic filler.

4,210,710
PHOTOCONDUCTOR OF VARYING LIGHT SENSITIVITY FROM CENTER TO EDGES

William E. Bixby, Deerfield, Ill., assignor to A. B. Dick Company, Niles, Ill.

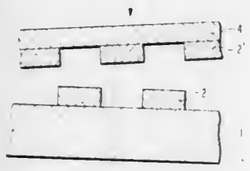
Filed Jun. 26, 1978, Ser. No. 919,089
Int. Cl.[2] G03G *5/04, 5/082*
U.S. Cl. 430—56 **7 Claims**

1. A photoconductor comprising a substrate and a photoconductive layer on the substrate characterized by a sensitivity to light which is greater in the outer edge portions of the photoconductive layer than at the central portion of the photoconductive layer in which said photoconductive layer increases in light sensitivity from said central portion to said outer edge portions.

4,210,711
PROCESS FOR FORMING AN IMAGE

Masao Kitajima; Hiromichi Tachikawa; Fumiaki Shinozaki, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 6, 1978, Ser. No. 966,996
Claims priority, application Japan, Dec. 6, 1977, 52-145684
Int. Cl.[2] G03C *11/12, 5/00*
U.S. Cl. 430—253 **18 Claims**



1. A process for forming an image, which comprises imagewise exposing a photo-sensitive image-forming material composed of a support and a layer of a thermoplastic photo-sensitive composition which is not adhesive at ordinary temperatures, heating the exposed photo-sensitive material in intimate contact with a peeling development carrier sheet at least one surface of which is composed of a thermoplastic material not adhesive at ordinary temperature to a temperature above the softening temperature of at least one of the photo-sensitive composition layer and the peeling development carrier sheet, and then peeling development carrier sheet from the photo-sensitive image-forming material at about or below said heating temperature thereby to form the exposed or unexposed area of the photo-sensitive composition layer on the peeling development carrier sheet, and the corresponding unexposed or exposed area on the support, respectively as a separate image wherein said photo-sensitive composition contains a photo-sensitive polyhalogen compound, a photo-sensitive quinone, a photo-sensitive polymer, a silver halide or an organic silver salt.

4,210,712
ADHESIVE-BEARING METAL SHEET WITH PHOTOPOLYMERIZABLE LAYER

Stanley H. Munger, Rumson, and Herbert J. Pine, Edison, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 14, 1978, Ser. No. 915,312
Int. Cl.[2] G03C *1/94*
U.S. Cl. 430—275 **7 Claims**

1. A metal sheet bearing a layer of an adhesive composition consisting essentially of

(a) A copolymer of ethyl acrylate, methyl methacrylate and acrylic acid, 17 to 98 parts by weight;

(b) a copolymer of styrene and a maleate ester taken from the group of secondary butyl maleate and isobutyl maleate, 1.7 to 67 parts by weight.

(c) aqueous colloidal silica, 1.4 to 11.7 parts by weight; and

(d) an aqueous acrylic latex of a self-curing interpolymer of (1) from 90 to 99.9% by weight of at least one ester having the structure

$$CH_2=C(R)-COOR'$$

wherein R is a member of the class consisting of hydrogen, an alkyl radical having from 1 to 4 carbon atoms, a halogen and a cyano group and R' represents an alkyl radical having from 1 to 4 carbon atoms, (2) from 0 to 5% by weight of an alpha,-beta-monoolefinically unsaturated nitrile, (3) from about 0.1 to 5% by weight of an alpha,beta-olefinically unsaturated monocarboxylic acid and (4) from about 0 to 5% by weight of an N-alkylol amide of an alpha,beta-olefinically unsaturated carboxylic acid having from 4 to 10 carbon atoms, 2 to 7.5 parts by weight;

(e) a pigment, 0 to 7.0 parts by weight; and

(f) an antifoaming compound, 0 to 1.0 part by weight, the adhesive bearing metal sheet adhered to an aqueous soluble photopolymerizable layer.

4,210,713
PHOTO-CURABLE COMPOSITION FOR COATING CONTAINING AN UNSATURATED URETHANE MODIFIED POLYMER

Iwao Sumiyoshi, Osaka; Tamio Iimure, Suita, and Akio Tomotsugu, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 648,805, Jan. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 437,217, Jan. 28, 1974, abandoned. This application May 4, 1978, Ser. No. 902,817
Claims priority, application Japan, Feb. 1, 1973, 48-13288
Int. Cl.[2] G03C *1/68;* **C08G** *18/00*
U.S. Cl. 430—284 **13 Claims**

1. A photo-curable composition having a high hiding power which comprises

(1) a photo-curable, urethane-modified polymer having at least one unsaturation unit of an acrylate or methacrylate type moiety in the side chain and a molecular weight such that the weight of the polymer per single unsaturation unit is 200–10,000, said photocurable, urethane-modified polymer being produced by reacting (A) an isocyanate compound having at least one unsaturation unit of an acrylate or methacrylate type moiety with (B) a polymer having at least one active hydrogen atom, said isocyanate compound (A) being produced by reacting (C) an acrylate or methacrylate compound having at least one acrylate or methacrylate moiety and at least one active hydrogen atom with (D) a polyfunctional isocyanate having isocyanate groups bonded directly to the carbon atom,

(2) an α,β-ethylenically unsaturated compound,

(3) a photo-sensitizer, and

(4) a coloring agent having ultraviolet ray transmitting properties, wherein the weight ratio of the photo-curable, urethane-modified polymer (1), the α,β-ethylenically unsaturated compound (2) and the photo-sensitizer (3) is 20–99:80–1:0.01–20 and wherein the amount of coloring agent is 3 to 50 parts by weight to 100 parts by weight of the combined amount of the photo-curable, urethane-modified polymer (1), the α,β-ethylenically unsaturated compound (2) and the photo-sensitizer (3).

4,210,714
PHOTOGRAPHIC MATERIAL WITH IMPROVED PROPERTIES

Heinrich Odenwälder, Cologne; Anita von König, Krefeld; Franz Moll; Walter Pätzold, both of Leverkusen; Lothar Rosenhahn, Cologne, and Friedhelm Sommer, Leverkusen, all in, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,811
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711942
Int. Cl.[2] G03C *5/30, 7/00*
U.S. Cl. 430—372 **5 Claims**

1. A process of producing photographic images from photographic silver halide material containing at least one light-sensitive silver halide emulsion layer by imagewise exposure and photographic processing including developing exposed photographic material with a developer composition,

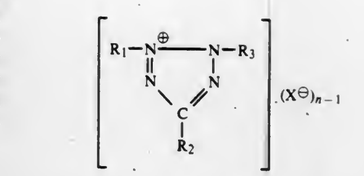
wherein the improvement is, the processing of the exposed photographic material carries out development of the exposed material in the presence of a stabilizing amount of 3-mercapto-5 (2-furyl)-1,2,4-triazole.

4,210,715
LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD OF PROCESSING THEREOF

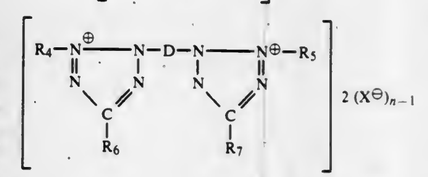
Mitsuto Fujiwhara; Syunji Matsuo; Toyoaki Masukawa; Yutaka Kaneko, and Mikio Kawasaki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Nihonbashi-muromachi, Japan

Continuation of Ser. No. 819,398, Jul. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 710,385, Aug. 2, 1976, abandoned. This application Mar. 2, 1979, Ser. No. 16,987
Claims priority, application Japan, Aug. 2, 1975, 50-94295; Jul. 31, 1976, 51-91919
Int. Cl.[2] G03C *5/30, 1/06*
U.S. Cl. 430—439 **13 Claims**

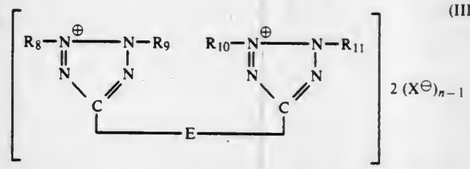
1. A light-sensitive silver halide photographic material which material consists essentially of a support, at least one hydrophilic colloidal layer coated thereon which contains silver halide grains having an average grain size of from 0.05 to 1.4μ and at least 75% of which grains being within a range of 0.6 to 1.4 times the average grain size, a tetrazolium compound and a sensitizing dye; said tetrazolium compound being selected from the group consisting of a compound of formulae (I), (II) or (III):



(I)

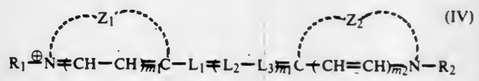


(II)

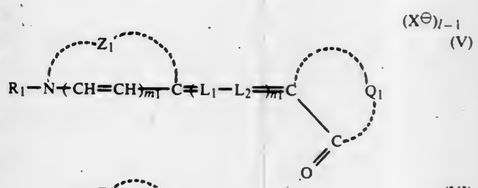


(III)

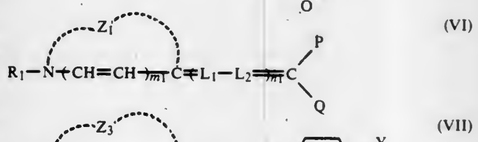
wherein R_1, R_3, R_4, R_5, R_8, R_9, R_{10} and R_{11} each represents an aryl group or a heterocyclic group; R_2, R_6 and R_7 each represents an aryl group, a heterocyclic group, an alkyl group, hydroxyl, carboxyl or the salt thereof, an amino group, mercapto, nitro or hydrogen; D represents a divalent aromatic group; E represents an alkylene group, an arylene group or an aralkylene group; X is an anion; said heterocyclic group being selected from the group consisting of a thiadiazolyl, benzothiadiazolyl, oxazolyl, pyrimidinyl, pyridyl and 2,5-dimethylthiadiazolyl group; and n is 1 or 2, provided that the tetrazolium compound forms an intramolecular salt when n is 1; said sensitizing dye being present in said hydrophilic colloidal layer and being selected from the group consisting of a compound of a formula of formulae (IV) through (X);



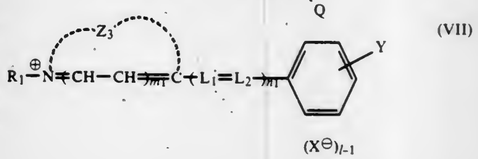
(IV)



(V)



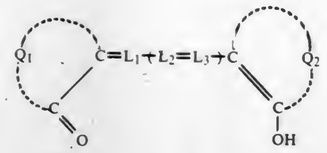
(VI)



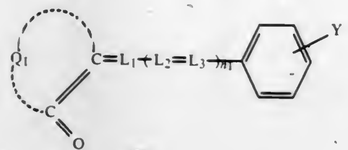
(VII)

-continued

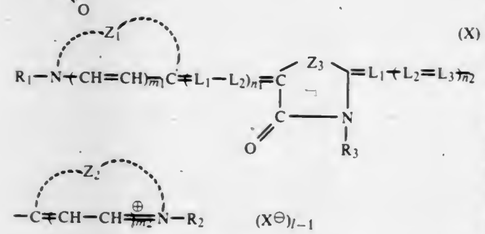
(VIII)



(IX)



(X)



$(X^{\ominus})_{l-1}$

wherein R_1, R_2 and R_3 each represents an alkyl group or an aryl group; L_1, L_2 and L_3 each represents a methynyl group; Z_1, Z_2 and Z_3 each represents an atom or atomic group necessary for forming a 5 to 6-membered heterocyclic ring; P and Q each represents cyano, $-COOR_4$, $-COR_4$ or $-SO_2R_4$ in which R_4 represents an alkyl group; Q_1 and Q_2 each represents an atomic group necessary for forming a thiooxazolone ring, a pyrazolone ring, an oxyindole ring, a barbituric acid, a 2-thiobarbituric acid, a 2,4-oxazolidinedione ring, a 2,4-thiazolidinedione ring, a 2,4-imidazolidinedione ring, a 2-thio-2,4-oxazolidinedione ring, a 2-thio-2,4-thiazolidinedione ring, a 2-thio-2,4-selenazolidinedione ring, a 2-thio-2,5-thiazolidinedione ring, a 2-thio-hydantoinone ring, a 4-oxazolinone ring, a 4-thiazoline ring or a 4-imidazoline ring; Y represents hydrogen, amino, alkylamino, dialkylamino, halogen, an alkoxy group or an alkyl group; m_1 and m_2 each represents 0 or 1; n_1 and n_2 each represents 0 or 2; X represents an acid anion group; and l represents 1 or 2 provided that the sensitizing dye compound forms an intramolecular salt when l is 1.

4,210,716

SILVER HALIDE EMULSION CONTAINING TETRATHIOCINO DIISOTHIAZOLES AS ANTIFOGGERS

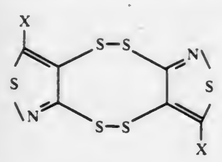
John H. Bigelow, St. Petersburg, Fla., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1979, Ser. No. 8,049

Int. Cl.[2] G03C *1/34*

U.S. Cl. 430—615 **14 Claims**

1. A photographic element comprising a light-sensitive silver halide emulsion, a support therefor, and an antifoggant amount of a tetrathiocino diisothiazole of the formula



wherein X is cyano or

Q is $-OR_1$ or $-NR_2R_3$; R_1 and R_3 are hydrogen or alkyl of 1-4 carbon atoms and R_2 is hydrogen or methyl.

4,210,717

HALF SOAP FORMATION FOR PHOTOTHERMOGRAPHIC EMULSIONS

Kenneth G. Gatzke, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 18, 1978, Ser. No. 970,264

Int. Cl.[2] G03C *1/02*

U.S. Cl. 430—620 **6 Claims**

1. In the process of forming a photothermographic emulsion by converting in solution, suspension, or dispersion 25 to 80% by weight of an organic acid, comprising an alkyl group of 8 to 28 carbon atoms with a terminal carboxylic acid group, to an alkali metal or ammonia salt of said acid and then converting in solution or suspension the salt to a silver salt of the organic acid, with silver halide being present during either the conversion of the acid to a salt or the conversion of the salt to a silver salt of the organic acid, the improvement which comprises maintaining the solutions, suspensions, or dispersions at a pH of more than 9 and a temperature of at least 70° C. when the acid is converted to an alkali metal or ammonia salt and when the alkali metal or ammonia salt is converted to a silver salt.

4,210,718

PRODUCTION OF TUMOR ANGIOGENESIS FACTOR BY CELL CULTURE

William R. Tolbert, Manchester; Joseph Feder, University City, and Mau-Jung Kuo, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1978, Ser. No. 974,403

Int. Cl.[2] C12P *1/00*

U.S. Cl. 435—41 **6 Claims**

1. Process for the production of human TAF in vitro comprising growing the human melanoma cell line A-375 in agitated, liquid suspension of nutrient culture medium at about 35°-38° C. for a sufficient time to elaborate TAF and recovering the resulting TAF from the cells or cell product.

4,210,719

PRODUCTION OF TUMOR ANGIOGENESIS FACTOR BY CELL CULTURE

William R. Tolbert, Manchester; Joseph Feder, University City, and Mau-Jung Kuo, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1978, Ser. No. 974,407

Int. Cl.[2] C12P *1/00*

U.S. Cl. 435—41 **6 Claims**

1. Process for the production of human TAF in vitro comprising growing the human rhabdomyosarcoma cell line RD in agitated, liquid suspension of nutrient culture medium at about 35°-38° C. for a sufficient time to elaborate TAF and recovering the resulting TAF from the cells or cell product.

4,210,720

PROCESS FOR FERMENTATIVELY PRODUCING VITAMIN B_{12}

Ichiro Kojima, Yokosuka; Hiroshi Sato, Kawasaki, and Yasuo Fujiwara, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,630

Claims priority, application Japan, May 26, 1977, 52-60414

Int. Cl.[2] C12D *5/06*

U.S. Cl. 435—42 **10 Claims**

1. A process for fermentatively producing vitamin B_{12}, which comprises cultivating a vitamin B_{12}-producing microorganism belonging to at least one of the genus Arthrobacter and the genus Propionibacterium, in the presence of a precultivation product of a vitamin B_{12}-producing microorganism belonging to at least the other genus, wherein the cultivation is carried out under one of the following conditions:

(i) precultivating a vitamin B_{12}-producing strain of the genus Arthrobacter and a vitamin B_{12}-producing strain of the genus Propionibacterium as a mixture or separately; then inoculating the mixed precultivation product in a culture medium; or inoculating the separate precultivation products in the culture medium either simultaneously or at different times; or inoculating the mixed precultivation product and either one of the separate precultivation products in the culture medium either simultaneously or at different times;

(ii) mix-cultivating a vitamin B_{12}-producing strain of the genus Arthrobacter and a vitamin B_{12}-producing strain of the genus Propionibacterium, and inoculating the resulting mixed precultivation product and cultivating it in a culture medium;

(iii) mixing a living precultivation product of a vitamin B_{12}-producing strain of the genus Arthrobacter with a living precultivation product of a vitamin B_{12}-producing strain of the genus Propionibacterium, and cultivating the mixture with or without adding additional ingredients for the culture medium and/or a vitamin B_{12}-producing strain of at least one of the two above genera;

(iv) inoculating a vitamin B_{12}-producing strain of the genus Propionibacterium in a living precultivation product of a vitamin B_{12}-producing strain of the genus Arthrobacter and cultivating it with or without adding additional ingredients for the culture medium;

(v) inoculating a vitamin B_{12}-producing strain of the genus Propionibacterium in a precultivation product of a vitamin B_{12}-producing strain of the genus Arthrobacter which has been sterilized or from which the living microbial cells have been removed, and cultivating it with or without adding additional ingredients for the culture medium;

(vi) mixing a living precultivation product of a vitamin B_{12}-producing microorganism of the genus Propionibacterium with a precultivation product of a vitamin B_{12}-producing strain of the genus Arthrobacter which has been sterilized or from which living microbial cells have been removed, and cultivating the mixture with or without adding additional ingredients for the culture medium and/or a vitamin B_{12}-producing strain of the genus Propionibacterium; or

(vii) inoculating a vitamin B_{12}-producing strain of the genus Arthrobacter in a living precultivation product of a vitamin B_{12}-producing strain of the genus Propionibacterium, and cultivating it with or without adding additional ingredients for the culture medium;

to thereby produce a vitamin B_{12}-containing culture broth and then recovering vitamin B_{12} from said broth.

4,210,721

METHOD FOR DISSOLVING COLLAGEN-CONTAINING SKIN TISSUES

Rolf Monsheimer, Walter-Rathenau-Str. 46, Darmstadt-Eberstadt, and Ernst Pfleiderer, Grimmelshausenstr. 3, Darmstadt-Arheilgen, both of Fed. Rep. of Germany

Filed Sep. 19, 1977, Ser. No. 834,423

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2643012

Int. Cl.[2] C12P *21/06*

U.S. Cl. 435—69 **13 Claims**

1. A method for disposing of collagen-containing waste material of the leather industry which is unsuitable for directly working up further by decomposing said waste material to form a water-soluble hydrolyzate which is recoverable or disposable, which method consists essentially of hydrolyzing said waste material in an aqueous hydrolysis medium, the active components of which consist essentially of 0.01 to 0.08 mol per liter of urea and from 0.03 to 3 percent, by dry weight of the waste material being treated, of an alkaline proteinase having an activity optimum between pH 9 and 13, said hydrolysis medium at least initially having a pH in the pH region optimum for the alkaline proteinase employed.

4,210,722

PROTEIN IMMOBILIZER

Spencer F. Silver, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 14, 1977, Ser. No. 851,492

Int. Cl.[2] C07G *7/02, 7/00*

U.S. Cl. 435—176 **30 Claims**

1. An article to which biologically active proteins can be attached so as to retain substantially all of their biological activity comprising:

a solid polar support having on the surface thereof a monolayer about 10 to 250A thick of a water soluble polymer having repeating units containing a β-hydroxyalkyleneamine moiety wherein the equivalent weight of said polymer based on said moiety is 87 to 10,000.

4,210,723

METHOD OF COUPLING A PROTEIN TO AN EPOXYLATED LATEX

Linneaus C. Dorman, and Inder Mani, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 708,231, Jul. 23, 1976, abandoned. This application Nov. 25, 1977, Ser. No. 854,930

Int. Cl.[2] C07G *7/00, 7/02*; G01N *31/14*

U.S. Cl. 435—180 **12 Claims**

1. A method for coupling a protein having a reactive group containing a labile hydrogen to polymer particles containing free epoxy groups in a latex wherein the polymer particles in the latex range in size from about 0.15 to 1.5 micrometers in diameter and have an inner core and an outer shell containing free epoxy groups, said inner core being formed by the polymerization or copolymerization of one or more hard monomers and optionally soft monomer to produce a latex containing polymer particles that are said inner core and said outer shell being formed by copolymerization in the presence of said inner core polymer particles one or more hard monomers and a copolymerizable ethylenically unsaturated compound having free epoxy groups and optionally soft monomer, said method comprising reacting said polymer particles containing free epoxy groups in the latex and said protein at a pH of 7.0-9.0 for a time sufficient to form a covalent bond between the reactive group of the protein and the free epoxy group of the polymer particles and removing the unreacted protein from the latex-protein conjugate.

4,210,724

APPARATUS FOR LIQUID DISPOSAL AND DISTRIBUTION IN AUTOMATIC CULTURE SYSTEM

Shinroku Sogi; Makoto Yoshinaga, both of Hachioji; Toshio Shinohara, Chofu; Takayuki Aihara, and Ikuo Tawara, both of Hachioji, all of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Mar. 20, 1978, Ser. No. 888,036

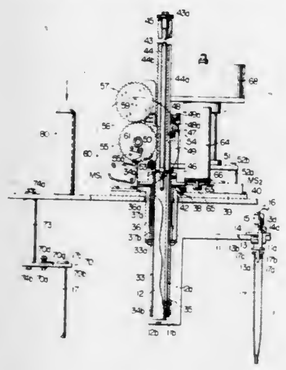
Claims priority, application Japan, Mar. 28, 1977, 52-33364; Mar. 29, 1977, 52-38106[U]; Apr. 2, 1977, 52-40253[U]; Apr. 4, 1977, 52-40893[U]

Int. Cl.[2] C12M *1/26*

U.S. Cl. 435—292 **14 Claims**

1. Apparatus for liquid disposal and distribution in an automatic culture system, comprising a first turntable carrying a plurality of culture vessels which are disposed thereon on a common circumference and at an equal spacing, a second turntable carrying a plurality of centrifuge tubes which are disposed thereon on a common circumference and at an equal

spacing, a pipette holding arm having its one end disposed to be angularly movable in a horizontal plane between part of the circumference on which the culture vessels are disposed and part of the circumference on which the centrifuge tubes are disposed, the other end of the arm being supported by and driven by a rotary and elevating mechanism, a tapered, pipette fitting cylinder secured to said one end of the pipette holding arm and having an opening formed therein for suction and



discharge, a fixed displacement pump connected through a tubing with the opening of the cylinder, and a pipette holder, a pipette remover and a liquid disposal pot disposed at corresponding positions on the path of angular movement of the cylinder which is secured to the arm, the pipette holding arm detachably carrying a pipette for distribution of liquid into the culture vessel and the centrifuge tube and for disposing unnecessary liquid from the culture vessel.

4,210,725

COMPOSITION FOR FORMING AN INTUMESCENT MATERIAL

Cyril A. Redfarn, London, England, assignor to Dixon International Limited, Pampisford, England

Filed Feb. 2, 1978, Ser. No. 874,513

Claims priority, application United Kingdom, Feb. 4, 1977, 04653/77

Int. Cl.[2] C08J *9/00*

U.S. Cl. 521—100 **14 Claims**



1. A composition for forming an intumescent material which upon heating decomposes into gas and a solid foam residue, comprising:

a water-dispersible melamine formaldehyde prepolymer resin which when cured is hydrophobic;

an inorganic hydrophillic setting agent which chemically absorbs water and hardens quickly causing the composition to set;

a cross-linking agent present in an amount to cure the melamine formaldehyde prepolymer resin, the cross-linking agent being selected from the group consisting of dicyandiamide and guanidine;

an ammonium phosphate;

polyvinyl acetate;

a solid polyhydroxy compound; and

reinforcing fibrous material.

4,210,726

PROCESS FOR PRODUCING POLYURETHANE FOAM USING AS A FOAM STABILIZER AN ORGANOSILICONE OIL AND A HYDROCARBON OIL

Tadashi Hamamura, Yokohama; Isao Noda, Tokyo; Tadashi Yoshii, Yokohama; Masao Takase, Yokohama, and Terumi Watanabe, Yokohama, all of Japan, assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 10, 1978, Ser. No. 932,637

Claims priority, application Japan, Aug. 12, 1977, 52-96157

Int. Cl.[2] C08G *18/14*

U.S. Cl. 521—110 **12 Claims**

1. In the process for producing high resilience polyurethane foam by foaming a mixture containing polyalkylene ether polyol having at least two hydroxyl groups per molecule on an average, more than 20% of said hydroxyl groups being primary hydroxyl groups, organic isocyanates, water and/or organic blowing agents, catalysts, and optionally additives, the improvement which comprises using as a foam stabilizer an organosilicone oil compound consisting of an organosilicone oil of average molecular weight 200–2000 composed of the blocks represented by the formula

$$R_aR'_bSiO_{\frac{4-(a+b)}{2}}$$

wherein a+b is 1 to 3, b is 0 or 1, R is a methyl group, and R′ is a hydrocarbon group of 3–15 carbon atoms, said organosilicone oil containing at least one R′ unit on an average in one molecule, and a hydrocarbon oil of average molecular weight 200–2000 containing more than 20 weight percent of alicyclic hydrocarbon and/or aromatic hydrocarbon.

4,210,727

GRAFT COPOLYMERS FROM UNSATURATED MONOMERS AND PEROXY DI-ESTER POLYOLS AND POLYURETHANES PREPARED THEREFROM

Frank J. Preston, Madison; Theodore C. Kraus, and Kiran B. Chandalia, both of Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 843,104, Oct. 18, 1977, Pat. No. 4,153,643. This application Feb. 15, 1979, Ser. No. 12,537

Int. Cl.[2] C08G *18/14*

U.S. Cl. 521—137 **21 Claims**

1. In a process for preparing a polyurethane foam from a reaction mixture comprising an organic polyisocyanate, a foaming agent, and a polyol reactant, the improvement characterized by including a polyol reactant which comprises a graft copolymer prepared by a process comprising polymerizing an unsaturated monomer in a polyol comprising a peroxy di-ester polyol of the formula:

$$((HO)_m\text{—}R_1\text{—}O\text{—}\overset{O}{\overset{\|}{C}}\text{—}R_2\text{—}\overset{O}{\overset{\|}{C}}\text{—}O\text{—}O\text{—}\overset{O}{\overset{\|}{C}}\text{—}R_3\text{—}\overset{O}{\overset{\|}{C}}\text{—}O\text{—}R_4\text{—}(OH)_r)$$

wherein m and r independently represent integers from 1–5, R_2 and R_3 independently represents radicals selected from aryl and alkenyl of 2–5 carbon atoms, and $((HO)_m\text{—}R_1\text{—}O\text{—}$ and $\text{—}O\text{—}R_4\text{—}(OH)_r)$ independently represent residues of polyols $R_1(OH)_{m+1}$ and $R_4(OH)_{r+1}$, wherein R_1 and R_4 independently represent polyether or polyester chains, having an average equivalent weight ranging from about 250 to 5000, after removal of one hydroxy hydrogen therefrom; said polymerizing occurring at a temperature at or above which the peroxy linkages of the peroxy di-ester polyol are ruptured.

4,210,728

PREPARATION OF HIGH RESILIENCY POLYURETHANE FOAMS

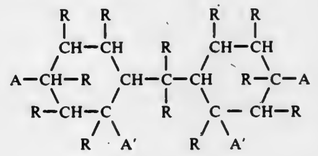
John T. Patton, Jr., Wyandotte, and Robert L. McBrayer, Lincoln Park, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 3, 1978, Ser. No. 866,296

Int. Cl.[2] C08G *18/14, 18/32, 18/63*

U.S. Cl. 521—160 **12 Claims**

1. A polyurethane foam composition obtained by the reaction, in the presence of a blowing agent, of an organic polyisocyanate with a reactive polyol composition comprising (a) a polyol having an equivalent weight of from 500 to 5000 and a functionality of from 2 to 4 and (b) from 0.5 percent to 5.0 percent by weight based on the weight of the polyol of a reactive diamine of the formula:



wherein R is H or alkyl of 1 to 4 carbon atoms and A and A′ are NH_2 or H with the provisos that in each ring either A or A′ is NH_2, not both and when A or A′ is NH_2 then the R attached to that carbon atom is H.

4,210,729

PREACTIVATED CATALYTIC COMPLEX SPOGOSPHERES

Jean-Pierre Hermans, Strombeek-Bever, and Paul Henrioulle, Marilles, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Aug. 27, 1973, Ser. No. 391,737

Claims priority, application Luxembourg, Aug. 25, 1972, 65954

Int. Cl.[3] C08F *4/66, 10/06*

U.S. Cl. 525—247 **30 Claims**

1. A storage stable catalytic complex for stereospecific α-olefin polymerization prepared by:

(a) reducing $TiCl_4$ with a reducing agent of the formula AlR_nX_{3-n} wherein R is a hydrocarbon radical with from 1 to 18 carbon atoms, X is a halogen, and n is a positive number which is at most 3;

(b) treating thus obtained reduced solid with a complexing agent which is an organic compound with at least one atom or group having at least one pair of free electrons capable of effecting coordination with titanium or aluminum, and is a compound of one of the formulae:

R′—O—R″, R′—S—R″, and R′—SH

wherein

R′ is a hydrocarbon radical with from 1 to 15 carbon atoms, and

R″ is a hydrocarbon radical with from 1 to 15 carbon atoms;

(c) reacting resulting treated solid with $TiCl_4$; (d) isolating thus formed catalytic complex;

(e) contacting thus formed catalytic complex with a stabilizing amount of a preactivator consisting of an organic compound of a metal of one of groups Ia, IIa, IIb and IIIa of the Periodic Table, less than 10 hours after isolation of the catalytic complex.

4,210,730

PLASTIFIERS, METHOD OF PREPARATION AND PVC COMPOSITIONS CONTAINING SAME

J. William Hirzy, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1977, Ser. No. 864,889

Int. Cl.[2] C08G *63/76*

U.S. Cl. 525—440 **10 Claims**

1. An ordered-random, solid, block copolyester having from about 15 to about 50 percent by weight amorphous end blocks and from about 85 to about 50 percent by weight center block having from about 20 to about 95 percent crystallinity based on heat of fusion, said copolymer having from about 25 to about 95 percent crystallinity based on heat of fusion, said center block having randomly alternating amorphous blocks and semi-crystalline blocks, and said end blocks and center block being acid halide-coupled.

4,210,731

AROMATIC POLYFORMAL-POLYCARBONATE BLOCK POLYMERS AND METHOD FOR MAKING SAME

Howard M. Relles, Rexford, and Donald S. Johnson, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 18, 1978, Ser. No. 942,950

Int. Cl.[2] C08L *69/00*

U.S. Cl. 525—469 **9 Claims**

1. A method for making aromatic polyformal-polycarbonate block polymer composed essentially of oligomeric aromatic polycarbonate which comprises,

(A) agitating a mixture containing as essential ingredients bisphenol of the formula,

HOROH,

methylene halide, from 1.5 to 2.2 moles of alkali metal hydroxide, per mole of bisphenol, and a member selected from the class consisting of a phase transfer catalyst and a dipolar aprotic solvent, where the phase transfer catalyst is utilized in a proportion of from about 0.01 to 2.0 moles, per mole of the bisphenol

(B) diluting the resulting mixture of (A) with at least 0.5 part by weight of an inert organic solvent, per part of (A)

(C) filtering the resulting solution of (B),

(D) while agitating the solution of (C), adding at least 0.5 part by weight of an antisolvent per part of the solution of (C) to effect the precipitation of oligomeric aromatic polyformal,

(E) combining the isolated oligomeric aromatic polyformal of (D) with a bisphenol of (A) and phosgenating the resulting mixture in the presence of a suitable inert organic solvent and

(F) recovering the polyformal-polycarbonate block polymer from the mixture of (E) where R is a divalent $C_{(6-30)}$ aromatic organic radical.

4,210,732

PHENOLIC RESINS WITH IMPROVED LOW TEMPERATURE PROCESSING STABILITY

Myron C. Annis, North Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 915,335, Jun. 13, 1978. This application Apr. 13, 1979, Ser. No. 30,037

Int. Cl.[2] C08L *61/12, 61/10*

U.S. Cl. 525—501 **21 Claims**

1. A phenolic novolak molding composition having improved low temperature processing stability comprising a phenol-aldehyde resin wherein from about 55% to about 90% of the available theoretical para-phenyl linkages in the resin chain are bridged to a phenyl group, and which comprises a blend of (1) a novolak resin condensation product of about one mole of a phenol and less than about one mole of aldehyde, and

(2) a novolak resin condensation product of about one mole of a bisphenol and less than about one mole of aldehyde.

4,210,733

COMPOSITE RESINOUS COMPOSITION

Hideo Hayashi, and Hisatake Sato, both of Yokohama, Japan, assignors to Nippon Oil Company, Ltd., Nishi-Shinbashi, Japan

Filed Apr. 6, 1978, Ser. No. 893,944
Claims priority, application Japan, Apr. 11, 1977, 52/41056
Int. Cl.² C08L *63/00*
U.S. Cl. 525—529 **5 Claims**

1. A composite resinous composition comprising:
(a) 5–90 weight parts of an aromatic resin resulting from the polymerization of 100 weight parts of cracked petroleum fractions which consists of unsaturated hydrocarbons and boiling in the range of 140°–280° C., the aromatic resin having a softening point of 50°–120° C. and a number average molecular weight of 500–1,500, and 7–40 weight parts of phenols in the presence of Friedel-Crafts catalysts; and
(b) 95–10 weight parts of an epoxy resin.

4,210,734

CONTROLLED ETHYLENE POLYMERIZATION PROCESS

Jean P. Machon, Bethune, France, assignor to Societe Chimique des Charbonnages-CdF Chimie, Paris-la-Defense, France

Filed Aug. 3, 1978, Ser. No. 930,668
Claims priority, application France, Aug. 9, 1977, 77 24540
Int. Cl.² C08F *4/02, 4/66, 10/02*
U.S. Cl. 526—65 **7 Claims**

1. A process for polymerising ethylene at a temperature of between 180° and 340° C. under a pressure of between 200 and 2,500 bars in a reaction system comprising at least two reaction zones, by means of a catalytic system comprising:
(a) an activator selected from hydrides and organometallic compounds of a metal of groups I to III of the Periodic Table,
(b) a compound represented by the formula

$$(TiCl_a)\,(MgCl_2)_y\,(AlCl_3)_z\,(RMgCl)_b$$

in which $2 \leqq a \leqq 3$, $y \leqq 2$, $0 \leqq z \leqq \frac{1}{3}$, $0 \leqq b \leqq 1$ and R is an aliphatic or aromatic hydrocarbon radical, and
(c) a compound represented by the formula

$$TiCl_3(AlCl_3)_w\,(E,\,TiCl_4)_x$$

in which $0 \leqq w \leqq \frac{1}{3}$, $0 \leqq x \leqq 0{,}03$ and E is a diisoamyl- or di-n-butylether,
wherein the compound (b) is not injected in the same reaction zone as the compound (c), wherein the residence time of each catalytic compound in its own reaction zone is between 1 and 150 seconds, and wherein the amounts of (a), (b) and (c) are such that the atomic ratio Al/Ti is between 1 and 10 in each reaction zone.

4,210,735

PROCESS FOR THE POLYMERIZATION OF α-OLEFINS

Jean-Pierre Hermans, Strombeek-Bever, and Paul Henrioulle, Marilles, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Oct. 12, 1972, Ser. No. 297,087
Claims priority, application Luxembourg, Nov. 24, 1971, 64328
Int. Cl.³ C08F *4/66, 10.06*
U.S. Cl. 526—119 **15 Claims**

1. Process for the polymerisation of α-olefins, comprising polymerizing the α-olefin in the presence of an organometallic activator selected from the group consisting of compounds of a metal of one of Groups Ia, IIa, IIb, and IIIa of the Periodic Table and a solid catalytic element prepared by:
(a) reducing $TiCl_4$ by a reducing metal selected from the group consisting of the metals of Groups Ia, IIa, IIb, and IIIa of the Periodic Table, so as to prepare a double chloride of titanium and the reducing metal which corresponds to the general formula $n\text{-}TiCl_3.MCl_x$ in which:
n is any number such that $0 < n \leqq 3$;
M is the reducing metal; and
x is the valency of the reducing metal,
(b) treating the double chloride thus prepared of said general formula with a complexant which is capable of insuring coordination with the reducing metal and is of the general formula R′—O—R′, wherein R′ is an aliphatic radical containing 2 to 8 carbon atoms,
(c) reacting the double chloride thus treated with $TiCl_4$ to prepare a solid catalytic element, and
(d) separating the solid catalytic element thus prepared from its reaction medium.

4,210,736

PARTICLES OF TITANIUM TRICHLORIDES WHICH CAN BE USED FOR THE STEREOSPECIFIC POLYMERIZATION OF ALPHA-OLEFINES

Paul Baekelmans, Brussels, and Albert Bernard, Kraainem, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Continuation of Ser. No. 730,845, Oct. 8, 1976, abandoned. This application Apr. 23, 1979, Ser. No. 32,478
Claims priority, application Luxembourg, Oct. 15, 1975, 73593
Int. Cl.² B01J *31/38;* **C08F** *4/64;* **C01G** *23/02*
U.S. Cl. 526—142 **44 Claims**

1. Particles of titanium trichlorides which can be used for the stereospecific polymerization of alpha-olefines, which have been dried until their liquid content is less than 1% by weight relative to the weight of titanium trichloride present in the particles, the particles being of spherical shape and consisting of an agglomerate of micro-particles which are themselves spherical and which are porous.

4,210,737

SYNTHESIS OF SUBSTITUTED CYCLOPENTADIENES AND CYCLOPENTADIENE-FUNCTIONALIZED POLYMERS

Joseph P. Kennedy, 952 Genesee Rd., Akron, Ohio 44303, and Kenneth F. Castner, 2365 Cooledge Ave., Akron, Ohio 44305

Division of Ser. No. 770,436, Feb. 22, 1977, Pat. No. 4,138,441. This application Nov. 20, 1978, Ser. No. 962,048
Int. Cl.² C08F *4/52, 210/10*
U.S. Cl. 526—185 **4 Claims**

1. A method for preparing a polymer containing a cyclopentadiene terminal group which comprises reacting a material selected from the group consisting of isobutylene, styrene and α-methylstyrene with an initiator consisting of tertiary, allylic or benzylic halide of the formula RX, wherein R is selected from the group consisting of alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkaryl or aryl, and X represents chlorine, bromine or iodine, and $R_x'Al(CPD)_y$ wherein CPD represents the cyclopentadiene group, R′ represents an alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkaryl or aryl group, y equals 1 to 2 and x equals 2 to 1 and the sum of x plus y is equal to 3.

4,210,738

CATALYTIC COMPLEXES

Jean P. Hermans, Strombeek-Bever, and Paul Henrioulle, Marilles, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Mar. 21, 1972, Ser. No. 236,407
Claims priority, application Luxembourg, Mar. 23, 1971, 62841; Aug. 17, 1971, 63732; Oct. 8, 1971, 64034
Int. Cl.² C08F *4/66, 10/00, 10/06*
U.S. Cl. 526—152 **46 Claims**

1. A solid titanium trichloride which is a catalytic complex for stereospecific α-olefin polymerization having a specific surface greater than 75 square meters per gram and a total porosity higher than 0.15 cm^3/g, said titanium trichloride having the formula

$$TiCl_3.(AlR_n,X_{3-n'})_{x'}(C)_y$$

wherein
R is a hydrocarbon radical with from 1 to 18 carbon atoms;
X is a halogen;
n′ is a number from 0 to 2, inclusive
C is a complexing agent which is an organic compound with at least one atom or group having at least one pair of free electrons capable of effecting coordination with titanium or aluminum, and is a compound of one of the formulae:

R′—O—R″, R′—S—R″, and R′—SH

wherein
R′ is a hydrocarbon radical with from 1 to 15 carbon atoms, and
R″ is a hydrocarbon radical with from 1 to 15 carbon atoms;
x is any number less than 0.30; and
y is any number higher than 0.001.

4,210,739

INTERNALLY PLASTICIZED VINYL CHLORIDE COPOLYMER COMPOSITION

Ruth E. Gallagher, Dobbs Ferry; Jagadish C. Goswami, New City; Paul Kraft, Spring Valley, all of N.Y., and Arthur J. Yu, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 795,990, May 11, 1977, abandoned, which is a continuation of Ser. No. 610,910, Sep. 5, 1975, abandoned. This application Jul. 21, 1978, Ser. No. 926,773
Int. Cl.² C08F *214/06, 220/18*
U.S. Cl. 526—325 **17 Claims**

1. An internally plasticized copolymer consisting of:
(1) from about 45% to about 80%, by weight, of vinyl chloride;
(2) from about 15% to about 54%, by weight, of a C_2–C_{10} alkyl acrylate; and
(3) from about 1% to about 15%, by weight, of a C_8–C_{22} dialkyl maleate or fumarate, or mixtures thereof.

4,210,740

COPOLYESTERS PREPARED FROM PHOSPHORUS COMPOUNDS WHICH CAN BE SHAPED AND WHICH HAVE REDUCED FLAMMABILITY

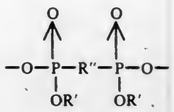
Paul Couchoud, Dardilly, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Jan. 30, 1978, Ser. No. 873,601
Claims priority, application France, Feb. 3, 1977, 77 03688
Int. Cl.² C08G *63/68*
U.S. Cl. 528—167 **17 Claims**

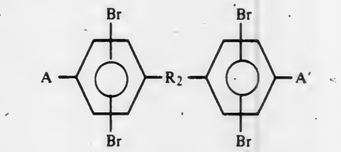
1. A copolyester which may be shaped and which has reduced flammability, and comprising 85 to 99.5% of repeating units of the formula:

—CO—R—CO—O—R_1—O—

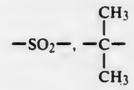
wherein the R radicals are derived from acid reactants, and in which 78.5 to 100% of the R radicals are selected from divalent aromatic paraphenylene and 2,6-naphthylene, 0 to 19.5 mol % relative to the sum of the radicals R are selected from the metaphenylene group and an aliphatic radical containing 6 to 12 carbon atoms, and 0 to 2 mol % relative to the sum of the radicals R are a trivalent or tetravalent radical derived from branching agents of acid character; 98 to 100% of the R_1 radicals are selected from the group consisting of divalent aliphtic, cycloaliphatic and cyclanic radicals and mixtures of two or more of these radicals, and 0 to 2% of the R_1 radicals are a trivalent or tetravalent radical derived from a branching agent of alcohol character; the sum of the trivalent or tetravalent radicals not exceeding 2 mol % relative to all the acid reactants;
at least 0.5% of units of the formula:



in which R′ represents an alkyl radical containing 1 to 6 carbon atoms, and R″ represents a divalent radical selected from an aliphatic group, one or more aromatic nuclei bonded in 1,4 position or fused, an aryl-aliphatic group containing one or more aromatic nuclei;
and 0 to 14.5% of units produced from a brominated compound of the formula:



in which R_2 is a direct bond or represents an



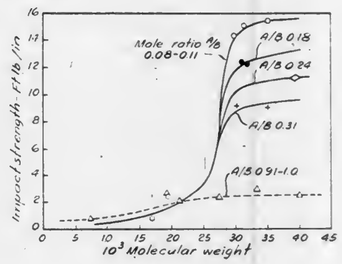
or —CH_2—or —O— group, and A and A′ represent either —CO—OX groups, in which X=H or a lower alkyl group, or —X′—OH groups in which X′=a $+OCH_2—CH_2+_n$ group and n=1 to 10.

4,210,741

PHENOLPHTHALEIN-DIHYDROXY AROMATIC COMPOUND POLYCARBONATES

Joseph M. Baggett, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 606,149, Aug. 20, 1975, abandoned. This application Apr. 18, 1977, Ser. No. 788,197
Int. Cl.² C08G *63/62*
U.S. Cl. 528—196 **7 Claims**



1. A thermoplastic polycarbonate resin consisting of a chain of divalent phenolphthalein radicals mixed with divalent dihydroxyaromatic radicals in the mole ratio range of phenolphthalein to dihydroxyaromatic compound from about 0.05 to about 0.7 wherein the phenolphthalein and dihydroxyaromatic radicals are linearly connected by carbonate ester groups, said resin having a weight average molecular weight range from about 25,000 to about 50,000 as determined by gel permeation chromatography.

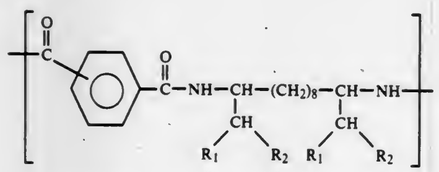
4,210,742
TRANSPARENT POLYAMIDES FROM BRANCHED CHAIN DIAMINE

Josef Pfeifer, Therwil, and Heinz Peter, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 26, 1978, Ser. No. 954,810
Claims priority, application Switzerland, Oct. 28, 1977, 13145/77
Int. Cl.² C08G *69/26*
U.S. Cl. 528—346 **9 Claims**

1. A transparent polyamide having a reduced specific viscosity of 0.4 to about 3 dl/g, determined in a 0.5% solution of the polyamide in m-cresol at 25° C., and consisting either of

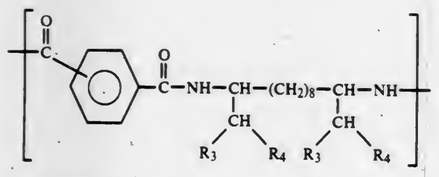
(a) recurring structural units of the formula (I)



(I)

wherein the carbonyl groups are bonded to the benzene ring in the 1,3- or 1,4-position, each of R_1 and R_2 represents methyl or R_1 and R_2, together with the carbon atom to which they are attached, represent cycloalkyl of 4 to 6 carbon atoms, and the proportion of structural units of the formula (I) in which the carbonyl groups are bonded in the 1,3-position to the benzene ring is 30 to 100%, or of

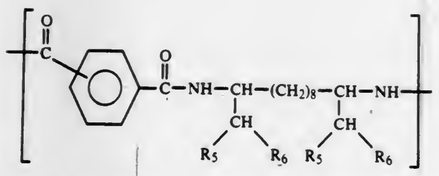
(b) recurring structural units of the formula (II)



(II)

wherein the carbonyl groups are bonded in the 1,3- or 1,4-position to the benzene ring, R_3 represents alkyl of 2 to 8 carbon atoms and R_4 represents alkyl or 1 to 4 carbon atoms, and wherein the proportion of structural units of the formula (II) in which the carbonyl groups are bonded to the benzene ring in the 1,3-position is 30 to 50%, or of

(c) recurring structural units of the formula (V)



(V)

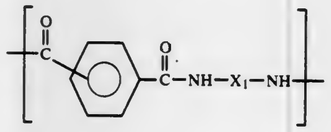
wherein the carbonyl groups are bonded to the benzene ring either exclusively in the 1,3-position or exclusively in the 1,4-position or partly in the 1,3-position and partly in the 1,4-position, and in which R_5 and R_6, together with the carbon atom to which they are attached, represent cycloalkyl of 7 to 12 carbon atoms.

4,210,743
TRANSPARENT POLYAMIDES FROM BRANCHED CHAIN DIAMINES

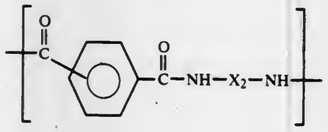
Josef Pfeifer, Therwil, and Heinz Peter, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 26, 1978, Ser. No. 954,809
Claims priority, application Switzerland, Oct. 28, 1977, 13149/70
Int. Cl.² C08G *69/26*
U.S. Cl. 528—347 **10 Claims**

1. A transparent polyamide having a reduced specific viscosity of 0.4 to about 3 dl/g, determined in a 0.5% solution of the polyamide in m-cresol at 25° C., and which consists of recurring structural units of the formula I

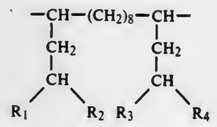


and of recurring structural units of the formula II

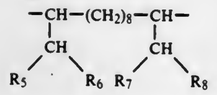


wherein

X_1 represents



X_2 represents



R_1 and R_3, each independently of the other, represent hydrogen or alkyl of 1 to 4 atoms,

R_2 and R_4, each independently of the other, represent alkyl of 1 to 12 carbon atoms,

R_5 and R_7, each independently of the other, represent alkyl of 1 to 4 carbon atoms,

R_6 and R_8, each independently of the other, represent alkyl of 1 to 10 carbon atoms, or

R_5 and R_6, and R_7 and R_8, each pair independently of the other pair, together with the carbon atom to which they are attached, represent cycloalkyl of 4 to 12 carbon atoms,

and in formula I and II the carbonyl groups are bonded to the benzene ring in the 1,4-position in an amount of 100 to 25 mol% and in the 1,3-position in an amount of 0 to 75 mol%, in each case based on all benzenedicarboxylic acid groups present, and the diamine components, based on all diamine components present, consist of 100 to 25 mol% of those of the formula —NH—X_1—NH— and of 0 to 75 mol% of those of the formula —NH—X_2—NH—, and the amount of diamine components —NH—X_1—NH—, expressed in mol%, is less than or equal to the amount of terephthalic acid components.

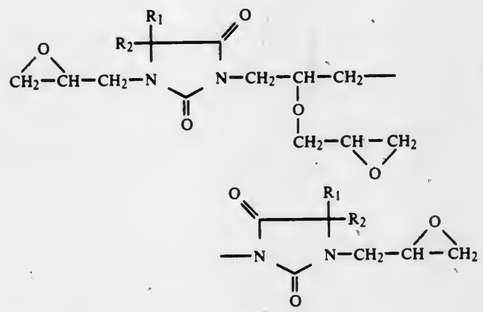
4,210,744
ADDUCTS CONTAINING EPOXIDE GROUPS, FROM HYDANTOIN TRISEPOXIDES AND BINUCLEAR HYDANTOINS

John H. Bateman, Bardonia, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,149
Int. Cl.² C08G *59/02, 59/26*
U.S. Cl. 528—363 **10 Claims**

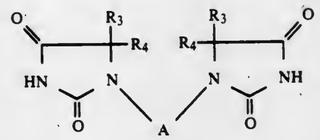
1. An advanced addition product containing 1,2-epoxide groups which is prepared by reacting a mixture of

(a) a hydantoin compound of the formula



wherein R_1 is hydrogen, alkyl containing 1 to 8 carbon atoms, or cycloalkyl containing 5 to 6 carbon atoms; and R_2 is alkyl containing 5 to 8 carbon atoms; with

(b) less than 1.0 equivalents of NH groups per epoxide group of (a) a binuclearbishydantoin compound of the formula



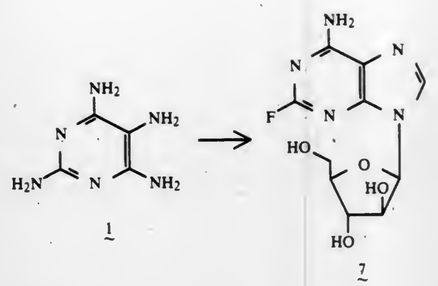
wherein R_3 and R_4 are selected from the group consisting of hydrogen or alkyl of 1 to 4 carbon atoms; or together R_3 and R_4 form tetramethylene or pentamethylene; and A is selected from the group consisting of alkylene, alkylidene or alkylidene substituted by one or more halogen atoms.

4,210,745
PROCEDURE FOR THE PREPARATION OF 9-β-D-ARABINOFURANOSYL-2-FLUOROADENINE

John A. Montgomery, Birmingham, Ala., assignor to The United States of America as represented by the Department of Health, Education & Welfare, Washington, D.C.

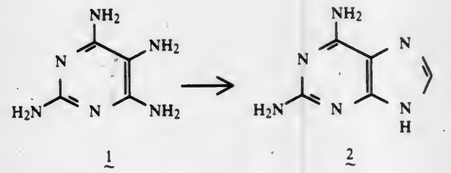
Continuation-in-part of Ser. No. 885,340, Mar. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 866,907, Jan. 4, 1978. This application Nov. 20, 1978, Ser. No. 962,107
Int. Cl.² C07H *19/16, 17/00*
U.S. Cl. 536—26 **5 Claims**

1. In an improved multi-step process of preparing 9-β-D-arabinofuranosyl-2-fluoroadenine by the reaction of



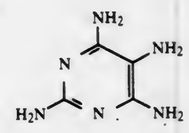
1

which includes



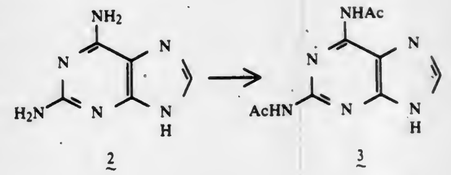
1 2

the improvement which utilizes



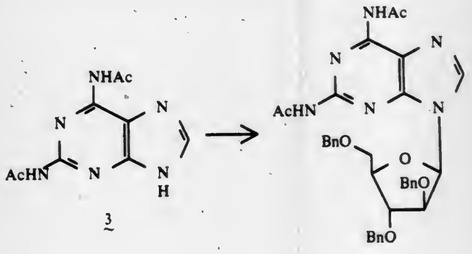
1

as a reactant and in the step



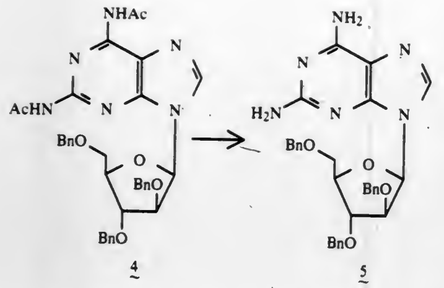
2 3

the improvement wherein the acetylation is carried out with acetic acid in pyridine and in the step



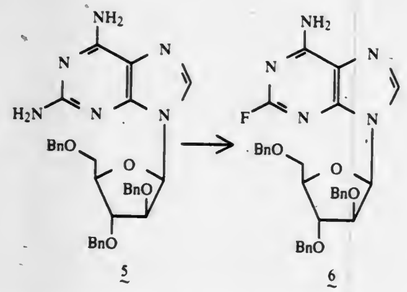
3 4

wherein a chlorosugar reactant is utilized in ethylene chloride in the presence of a molecular sieve and in the deacetylation step



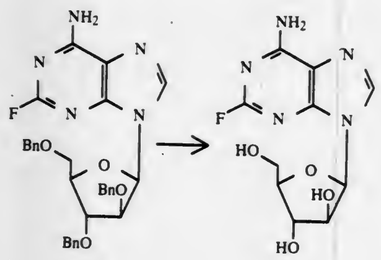
4 5

where deacetylation is carried out with methanolic sodium methoxide and in the step



5 6

wherein the diazotization is carried out in a homogeneous mixture of tetrahydrofuran and fluorboric acid and in the step



6 7

9(2,3,5-tri-O-benzyl-β-D-arabinofuranosyl-2-fluoroadenine

9-β-D-arabinofuranosyl-2-fluoradenine

where the 2,3,5-tri-O-benzyl is converted to hydroxyl and the benzyl product groups are removed.

4,210,746

NUCLEOTIDE INHIBITOR OF PROTEIN SYNTHESIS

Ian M. Kerr, London; Ronald E. Brown, Hemel Hempstead, and Ara G. Hovanessian, London, all of England, assignors to National Research Development Corporation, England

Filed Aug. 10, 1978, Ser. No. 932,488

Int. Cl.² C07H *17/00, 15/12*

U.S. Cl. 536—27 **5 Claims**

1. A compound of the formula

$$(p)_m—(5'—A—2'—p)_n—(A)_x$$

wherein

p is orthophosphate,
m is 0, 2, or 3
A is adenosine,
n is from 2 to 5 and
x is 0 or 1,

said compound containing at least three adenosine residues, the figures 5' and 2' signifying the carbon atoms of the ribose ring to which the respective phosphate groups p are attached.

4,210,747

PROCESS FOR THE PREPARATION OF VISCOSE

Erkki Sorsa; Esko Haukkovaara, and Jan Fors, all of Valkeakoski, Finland, assignors to Kemira Oy, Helsinki, Finland

Continuation of Ser. No. 773,399, Mar. 2, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 930,917

Claims priority, application Finland, Mar. 10, 1976, 760623

Int. Cl.² C08B *9/00;* D21C *9/00*

U.S. Cl. 536—60 **2 Claims**

1. A process for the preparation of viscose from paper grade pulp, prepared by alkali cooking without prehydrolysis, which consists of adding to said pulp, steeping lye in excess of the amount required for steeping the pulp and an organic compound which is a member selected from the group consisting of a phosphatidylcholine, diethylene glycol monobutylether, methyl isobutylketone, a mixture of primary amyl alcohol isomers containing 60% pentanol-1 and 40% 2- and 3 -methyl-butanol-1, a mixture of secondary amyl alcohol isomers containing about 60% 2-pentanol and about 36% 3-pentanol, and piperidine, steeping said pulp to form alkali cellulose, removing excess alkali, recovering alkali cellulose, aging said alkali cellulose, xanthating said aged alkali cellulose with carbon disulfide in an amount of 20–35% of the quantity of alpha cellulose presentin the recovered alkali cellulose to obtain cellulose xanthate and dissolving said cellulose xanthate to obtain viscose.

4,210,748

ENLARGED-HETERO-RING PROSTA-CYCLIN ANALOGS

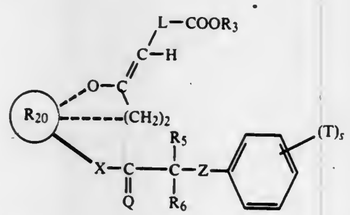
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,899

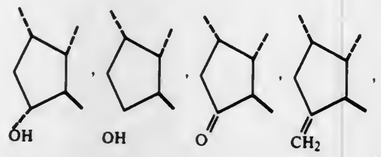
Int. Cl.² C07D *311/02*

U.S. Cl. 542—426 **97 Claims**

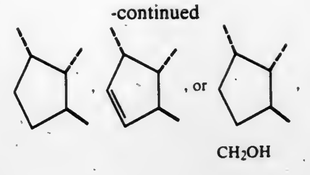
1. A 4Z compound of the formula



wherein (R20) is



-continued



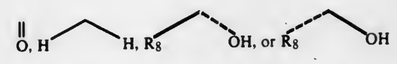
wherein

L is $—(CH_2)_d—C(R_2)_2—$

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro,

wherein

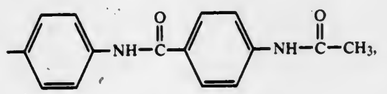
Q is



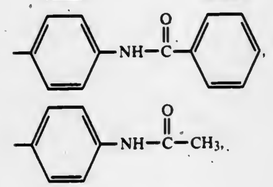
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_3 is (a) hydrogen (b) alkyl of one to 12 carbon atoms, inclusive, or (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,

(g)

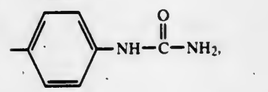


(h)

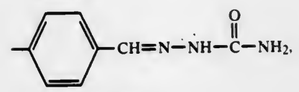


(i)

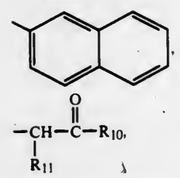
(j)



(k)



(l)



(m)

wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wheren R_{11} is hydrogen or benzoyl, or (n) a pharmacologically acceptable cation;

wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—), a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the phenyl ring;

wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and

wherein X is

(1) trans—CH=CH—
(2) cis—CH=CH—
(3) —C≡C— or
(4) $—CH_2CH_2—$;

including the lower alkanoates thereof.

4,210,749

SUBSTITUTED 1,2,4,5-TETRAHYDRO-3H,3 BENZAZEPINES

Bola V. Shetty, Rockville, Md., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 747,151, Dec. 3, 1976, which is a continuation of Ser. No. 523,092, Nov. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 241,091, Apr. 4, 1972, abandoned, which is a continuation of Ser. No. 711,897, Mar. 11, 1968, abandoned. This application May 21, 1979, Ser. No. 41,574

Int. Cl.² A61K *31/55;* C07D *233/00, 403/06, 413/06*

U.S. Cl. 542—469 **2 Claims**

1. A compound selected from the group consisting of 7-methoxy-3-(3-phenylallyl)-1,2,4,5-tetrahydro-3H,3-benzazepine and 7-hydroxy-3-(3-phenylallyl)-1,2,4,5-tetrahydro-3H,3-benzazepine.

4,210,750

PROCESS FOR THE PREPARATION OF 3-CARBAMOYL CEPHALOSPORINS USING ISOCYANATES

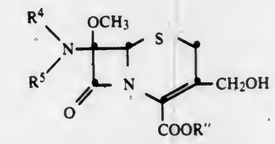
Stephen Marburg, Plainfield, and Janos Kollonitsch, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 647,961, Jan. 9, 1976, abandoned, which is a continuation of Ser. No. 487,851, Jul. 11, 1974, abandoned, which is a continuation of Ser. No. 275,614, Jul. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 174,949, Aug. 25, 1971, abandoned. This application Nov. 17, 1976, Ser. No. 742,486

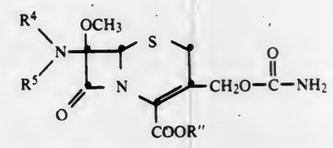
Int. Cl.² C07D *501/26, 501/28, 501/32, 501/34*

U.S. Cl. 544—21 **2 Claims**

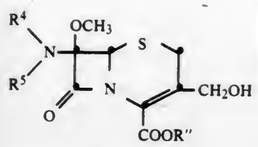
1. A process wherein a compound having the formula



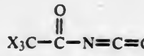
is converted to a compound of the formula



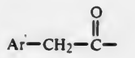
which comprises the sequence of reacting a compound of the formula:



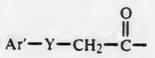
with an N-substituted isocyanate of the formula:



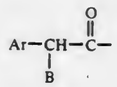
in which X is fluoro, to produce the corresponding 3-(N-substituted) carbamoyloxymethyl derivative, and cleaving the N-substituent in the presence of an aqueous buffer solution having a pH of from about 4 to about 6 to produce the desired 3-carbamoyloxymethyl cephalosporin derivative, in which, in the foregoing formulae, R_4 is hydrogen and R_5 is cyanoacetyl;



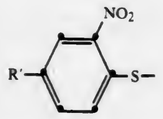
in which Ar is phenyl, thienyl, furyl, or phenyl substituted with substituents selected from the group consisting of halo, hydroxy, methoxy, and nitro;



in which Ar' is phenyl, or pyridyl, and Y is sulfur;



in which Ar is as defined above, and B is hydroxyl or carboxyl;



in which R' is hydrogen or methoxy; tetrazolylacetyl; and R'' is hydrogen.

4,210,751

PROCESS FOR PRODUCING 7β-AMINO-7α-METHOXYCEPHALOSPORINS

Kazuharu Tamazawa, Shiraokamachi; Takashi Fujikura, Hachioji; Tadao Kojima, Shiraokamachi, and Masaru Iwanami, Yokohama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

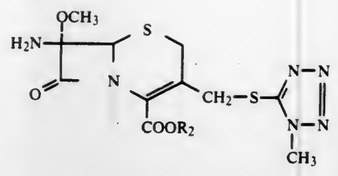
Filed Aug. 2, 1978, Ser. No. 930,214

Claims priority, application Japan, Aug. 8, 1977, 52/94756

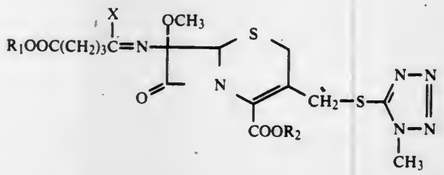
Int. Cl.² C07D *501/18*

U.S. Cl. 544—21 **7 Claims**

1. A process for producing a 7β-amino-7α-methoxycephalosporanic acid compound of the formula



wherein R_2 represents a hydrogen or a protective group for the carboxyl group which comprises reacting an iminohalide compound or an iminoether compound of the formula



wherein R_1 and R_2 each represents a hydrogen atom or a protective group for the carboxyl group and X represents a halogen atom or a lower alkoxy group and absolute methanol at −70° C. to −20° C.

4,210,752

SYNTHESIS OF SUBSTITUTED SULFAM(NA)PHTHALEINS

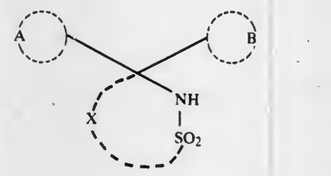
Louis Cincotta, and James W. Foley, both of Andover, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 2, 1978, Ser. No. 957,162

Int. Cl.² C07D *279/02, 275/06*

U.S. Cl. 544—33 **22 Claims**

1. A method which comprises reacting (a) a compound of the formula



wherein A is selected from a 4'-hydroxy-1'-naphthyl moiety substituted in the 3'-position with a group,

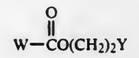


wherein R^I is perhalomethyl and R^{II} is hydrogen or perhalomethyl and a 4'-hydroxy-1'-phenyl moiety substituted in the 3'-position with a group,

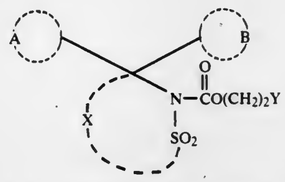


wherein R^I is perhalomethyl and R^{II} is hydrogen or perhalomethyl; B is a phenyl moiety or a naphthyl moiety provided B is a phenyl moiety when said A is said 4'-hydroxy-1'-naphthyl moiety and X represents the atoms necessary to

complete a ring-closing moiety selected from a sulfamphthalein moiety and a sulfamnaphthalein moiety and (b) an acid halide of the formula



wherein W is chloro or bromo and Y is hydrogen or an electron-withdrawing group in pyridine at a temperature between about 0° C. and 100° C. in the presence of 2 to 20 grams per gram of compound (a) of acidic alumina or zeolite molecular sieve to yield (c) the corresponding N-acylated compound of the formula



wherein A, B, X and Y have the same meaning given above.

4,210,753

CARBOSTYRIL COMPOUNDS

Michiaki Tominaga; Hitoshi Tone, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

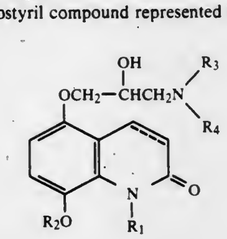
Continuation-in-part of Ser. No. 778,537, Mar. 17, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 965,470

Claims priority, application Japan, Mar. 17, 1976, 51/28957; May 7, 1976, 51/52498

Int. Cl.² C07D *413/12*

U.S. Cl. 544—128 **8 Claims**

1. A carbostyril compound represented by the formula (I):



(I)

wherein R_1 represents a hydrogen atom, R_2 represents a hydrogen atom, a phenylalkyl group selected from the group consisting of monophenylalkyl and diphenylalkyl groups having a straight or branched chain alkyl group having 1 to 6 carbon atoms in the alkyl moiety, an alkoxyalkyl group having a straight or branched chain alkoxy group of 1 to 6 carbon atoms in the alkoxy moiety thereof and a straight or branched chain alkylene group of 1 to 6 carbon atoms in the alkyl moiety thereof, a mono hydroxyalkyl group having a straight or branched chain alkyl group of 1 to 6 carbon atoms, an alkylcarbonyl group having a straight or branched chain alkyl group of 1 to 6 carbon atoms in the alkyl moiety thereof, or a straight or branched chain alkynyl group having 2 to 7 carbon atoms, R_3 represents a hydrogen atom, and R_4 represents a pyrrolidinoalkyl group having a straight or branched alkylene group of 1 to 6 carbon atoms, a piperazinoalkyl group having a straight or branched alkylene group of 1 to 6 carbon atoms, or a morpholinoalkyl group having a straight or branched alkylene group of 1 to 6 carbon atoms, or R_3 and R_4 can form, when taken together with the nitrogen atom to which they are attached, a piperidino group, a morpholino group, a pyrrolidino group or a piperazino group, said phenylalkyl, pyrrolidinoalkyl, piperazinoalkyl, morpholinoalkyl, piperidino, morpholino, pyrrolidino or piperazino group optionally containing 1 to 3 substituents selected from the class contsisting of an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a halogen atom, an alkylenedioxy group of 1 to 2 carbon atoms, a carbamoyl group and a phenyl group, the 3,4-bond of the carbostyril nucleus represents a single bond, and the pharmaceutically acceptable acid additional salts thereof.

4,210,754

MORPHOLINO CONTAINING BENZAMIDES

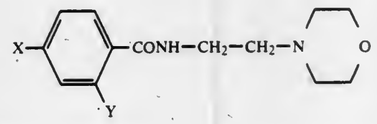
Willy Burkard, Reinach, and Pierre-Charles Wyss, Muttenz, both of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 764,621, Feb. 1, 1977, abandoned. This application Oct. 20, 1978, Ser. No. 953,721

Int. Cl.² C07D *295/06, 295/14*

U.S. Cl. 544—167 **7 Claims**

1. A compound of the formula



wherein X is halogen
and Y is hydrogen or nitro,
an N-oxide thereof or pharmaceutically acceptable acid addition salt thereof.

4,210,755

AMINATED γ-DIALDEHYDE; METHODS FOR PREPARING THE SAME AND COSMETIC COMPOSITIONS CONTAINING THE SAME

Guy Vanlerberghe, Montjay-la-Tour par Claye-Souilly, and Georges Rosenbaum, Asnieres, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 750,518, Dec. 14, 1976, Pat. No. 4,118,423, which is a division of Ser. No. 463,808, Apr. 24, 1974, Pat. No. 4,014,990, which is a division of Ser. No. 210,217, Dec. 20, 1971, Pat. No. 3,812,246. This application Jul. 10, 1978, Ser. No. 923,311

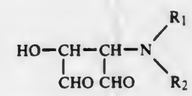
Claims priority, application Luxembourg, Dec. 24, 1970, 62317

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.² C07C *295/02, 211/14, 95/02, 95/06*

U.S. Cl. 544—175 **6 Claims**

1. Aminated γ-dialdehyde having the formula



wherein R_1 and R_2 each independently are selected from the group consisting of hydrogen, alkyl having 1–6 carbon atoms, hydroxy-alkyl wherein the alkyl moiety has 1–6 carbon atoms, cycloalkyl having 3–6 carbon atoms, aryl, alkaryl wherein the alkyl moiety has 1–6 carbon atoms, (2,5-dialkoxy 4-hydroxy)-3-tetrahydrofuryl wherein each of the alkoxy moieties has 1–4 carbon atoms, β-N-[(2,5-dialkoxy 4-hydroxy)-3-tetrahydrofuryl]-aminoethyl wherein each of the alkoxy moieties has 1–4 carbon atoms, and together with the nitrogen atoms to which they are attached form a heterocycle selected from the group consisting of piperidinyl and morpholinyl.

4,210,756

TETRAHYDROQUINOLINE HYDANTOINS FOR CHRONIC DIABETIC COMPLICATIONS

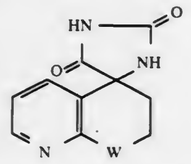
Reinhard Sarges, Mystic, Conn., assignor to Pfizer, Inc., New York, N.Y.

Division of Ser. No. 849,546, Nov. 8, 1977, Pat. No. 4,147,795, which is a division of Ser. No. 767,803, Feb. 11, 1977, Pat. No. 4,117,230, which is a continuation-in-part of Ser. No. 733,062, Oct. 18, 1976, abandoned. This application Nov. 16, 1978, Ser. No. 961,256

Int. Cl.[2] C07D *487/10*

U.S. Cl. 546—15 **4 Claims**

1. The compound of the formula:



and the base salts thereof with pharmacologically acceptible cations, wherein

W is $-(CH_2)_n-$ and

n is zero or one.

4,210,757

NOVEL NAPHTHOYLENE-PERINONES DISPERSE DYESTUFFS

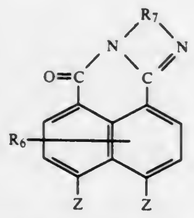
Siegfried Dengler, Choëx; Peter Loew, Münchenstein; Christian Zickendraht, Binningen, and Hansrudolf Schwander, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 669,011, Mar. 22, 1976, Pat. No. 4,067,889, which is a division of Ser. No. 480,085, Jun. 14, 1974, Pat. No. 3,970,675. This application Oct. 28, 1977, Ser. No. 846,287

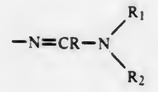
Int. Cl.[2] C07D *471/06*

U.S. Cl. 546—52 **3 Claims**

1. A dyestuff or a isomeric dyestuff mixture of the formula



wherein R_6 represents lower alkyl, lower alkoxy, hydroxy, chlorine or bromine or hydrogen, R_7 represents naphthyl or phenyl or phenyl substituted by lower alkyl, lower alkoxy, phenyl, di (lower alkyl)-amino, nitro, cyano, bromine, chlorine, SO_3H, SO_2 phenyl, $SO_2N(C_4H_9)_2$, $COOC_2H_5$ or $CON(CH_3)_2$, [SO_2N (alkyl C_1-C_4)$_2$, COO lower alkyl or CON (alkyl C_1-C_4,] which is bonded in 1,2-position, and one Z represents hydrogen and the other Z represents a radical of the formula



in which R is hydrogen or lower alkyl, R_1 is hydrogen, alkyl C_1-C_6, benzyl or R_1 and R_2 together with the adjacent nitrogen form tetrahydroquinoline, tetrahydroquinoline substituted by lower alkyl or indoline substittued by lower alkyl, and R_2 is alkyl C_1-C_4, benzyl or phenyl, said isomeric mixture being a mixture of positional isomers resulting from substituents Z, R_6 and R_7 phenyl substituted with said substituents.

4,210,758

1,5-DIHYDRO-1,5-DIOXO-N-1H-TETRAZOL-5-YL-4H-[1]BENZOPYRANO[3,4-B]PYRIDINE-2-CARBOXAMIDES

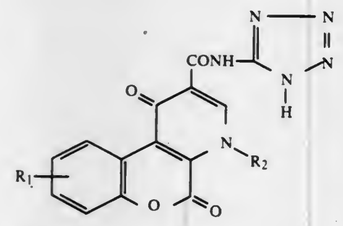
David T. Connor, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 21, 1979, Ser. No. 22,391

Int. Cl.[2] C07D *491/04*

U.S. Cl. 546—92 **7 Claims**

1. A compound of the formula:



I

wherein R_1 is hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl, or nitro and R_2 is hydrogen or lower alkyl and the pharmaceutically acceptable salts thereof.

4,210,759

BENZENE SULFONAMIDO PYRIDINE DERIVATIVES

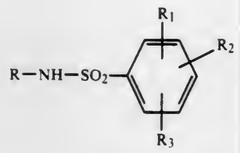
Michael J. Virnig, Fridley, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed May 24, 1978, Ser. No. 909,225

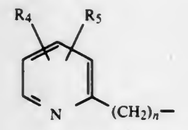
Int. Cl.[2] C07D *213/42*

U.S. Cl. 546—312 **19 Claims**

1. Compounds of the structure:



wherein R is a pyridine group of the structure:



wherein R_4 and R_5, which may be the same or different, are selected from the group consisting of hydrogen, linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms, halogen, nitrile, alkoxy containing from 1 to 20 carbon atoms, and trifluoromethyl and n is an integer equal to 0 or 1, said pyridine group being bonded to the sulfonamido group through a carbon adjacent to the hetero atom of the ring and R_1, R_2 and R_3, which may be the same or different, are selected from the group consisting of hydrogen, and linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms, said compounds being further characterized as having solubilities of at least 2% by weight in essentially water-immiscible liquid hydrocarbon solvents.

4,210,760

PROCESSES FOR DEHYDROGENATION OF ARYLIMIDAZOLIDONES

Sivaraman Raghu, Norwalk, and Arthur K. Hoffmann, New Canaan, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 6, 1978, Ser. No. 958,218

Int. Cl.[2] C07D *233/70*

U.S. Cl. 548—320 **11 Claims**

1. A process for the production of enantiomerically enhanced imidazolidones which comprises the steps of: reacting 1-(2-alkoxyalkyl)-4-aryl-2-imidazolidone in the presence of a noble metal catalyst to dehydrogenate the imidazolidone and provide the corresponding 1-(2-alkoxyalkyl)-4-aryl-2-imidazolinone, reacting the latter with a lower aliphatic carboxylic acid anhydride to produce 1-(2-alkoxyalkyl)-3-acyl-4-imidazolin-2-one, hydrogenating the latter imidazolinone in the presence of a rhodium complex asymmetric catalyst to produce 1-(2-alkoxyalkyl)-3-acyl-4-aryl-2-imidazolidone with an excess of one enantiomer, and hydrolyzing the imidazolidone enhanced in one enantiomer to produce 1-(2-alkoxyalkyl)-4-aryl-2-imidazolidone.

4,210,761

1-(4-CHLOROPHENYL)-3-(2,2-DIETHOXYETHYL)-2-IMIDAZOLIDINONE

Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,514

Int. Cl.[2] C07D *233/34*

U.S. Cl. 548—320 **1 Claim**

1. The compound 1-(4-chlorophenyl)-3-(2,2-diethoxyethyl)-2-imidazolidinone.

4,210,762

2[5-(3-TRIFLUOROMETHYLPHENYL)-1,3,4-OXADIAZOL-2-YL] BENZOATES

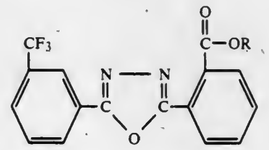
Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 17, 1978, Ser. No. 934,440

Int. Cl.[2] C07D *271/10*; A01N *9/22*

U.S. Cl. 548—145 **4 Claims**

1. A compound having the formula



wherein R is H, lower alkyl or agriculturally acceptable cations

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4,210,763

WATER-SOLUBLE ACID ADDITION OR QUATERNARY AMMONIUM SALTS USEFUL IN ELIMINATING OR PREVENTING THE BRIGHTENING EFFECTS OF ANIONIC OPTICAL BRIGHTENERS

Giuseppe Raspanti, Fiorano al Serio, Italy, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 758,134, Jan. 10, 1977, Pat. No. 4,098,954, which is a continuation of Ser. No. 516,579, Oct. 21, 1974, abandoned. This application Apr. 26, 1978, Ser. No. 900,175

Int. Cl.[2] C07D *403/14*

U.S. Cl. 548—350 **13 Claims**

1. A water-soluble acid addition salt or quaternary ammonium salt of a compound produced by the acylation of an excess of diethylene triamine with isophthalic or terephthalic acid or a functional derivative thereof in a molar ratio of diethylene triamine:acylating agent exceeding 1.5:1, respectively, subsequently cyclizing the product to afford imidazoline groups, said acylation and cyclization being conducted at a temperature of from about 150° C. to about 250° C. for a time sufficient to allow the reaction to substantially reach completion, and reacting the product further by acylation at a temperature of from about 150° C. to about 180° C. in a molar ratio of initial to present acylating agent of 1:0.3 to 1:1.0, respectively, with a bifunctional acylating agent which is a saturated aliphatic dicarboxylic acid of formula,

$$HOOC+CH_2\frac{}{}_q COOH$$

in which q is an integer 1 to 6, or a functional derivative thereof, or a functional derivative of carbonic acid, any free base of the compound resulting from acylation with said bifunctional acylating agent is reacted with sufficient acid to produce an acid addition salt thereof and any quaternary ammonium salt of the compound resulting from acylation with said bifunctional acylating agent is produced by reacting said compound with an alkylating agent to yield a methyl, ethyl or phenyl- or naphthyl-substituted methyl or ethyl group, with the proviso that the quaternary ammonium salt does not contain a nitrogen atom bearing more than two phenyl- or naphthyl-substituted methyl or ethyl groups.

4,210,764

BARIUM OXIDE/CRESYLIC ACID CATALYZED ETHOXYLATION

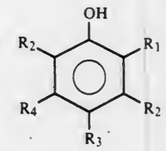
Kang Yang; Gerald L. Nield, and Paul H. Washecheck, all of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed May 4, 1979, Ser. No. 36,273

Int. Cl.[2] C07C *41/02, 41/10*

U.S. Cl. 568—618 **10 Claims**

1. A method for the ethoxylation of alkanols containing from about 4 to about 24 carbon atoms comprising contacting said alkanols with ethylene oxide in the presence of a catalyst system comprising at least one material selected from the group consisting of barium oxide, barium hydroxide and hydrated barium hydroxide, together with an effective amount of phenol or a substituted phenol of the general formula



wherein R_1, R_2, R_3, R_4, and R_5 are independently hydrogen or an alkyl group containing from 1 to 10 carbon atoms, and wherein the ethoxylation is carried out at temperatures of from about 120° to about 250° C.

4,210,765

PROCESS FOR OBTAINING HALOGENATED DIPHENOLS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 28, 1978, Ser. No. 882,242

Int. Cl.[2] C07C *39/16, 37/00*

U.S. Cl. 568—726 **8 Claims**

1. A process for obtaining halogenated diphenols comprising:

dissolving or suspending a diphenol of the bisphenol type in methylene chloride; and,

introducing sulfuryl chloride into said diphenol and methylene chloride in an amount sufficient to provide about 0.1-2 moles chlorine per mole of diphenol, said sulfuryl chloride generating sulfur dioxide which purges the reac-

tion of halogen halide coproduct such that there is obtained therefrom either a substantially pure dihalodiphenol or a statistical ternary mixture consisting essentially of unreacted diphenol, monohalodiphenol and dihalodiphenol.

4,210,766

PROCESS FOR PRODUCING 2-HALO-4-BROMOPHENOLS

Tibor Somlo, Birsfelden, and Anton Hungerbühler, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

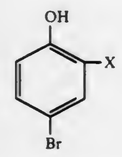
Filed Aug. 22, 1978, Ser. No. 935,837

Claims priority, application Switzerland, Aug. 26, 1977, 10453/77

Int. Cl.² C07C *39/27, 39/28*

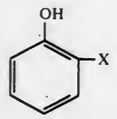
U.S. Cl. 568—779 **9 Claims**

1. A process for producing 2-halo-4-bromophenols of the formula I



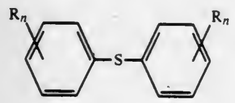
(I)

in which X represents chlorine or bromine, by bromination of 2-halophenols of the formula II



(II),

in which X has the meaning given under the formula I, which process comprises brominating, at a temperature of from about 0°–60° C., a halophenol of the formula II in the presence of from about 0.1–5.0%, by weight of said 2-halophenol, of a mixed catalyst consisting of approximately equimolar amounts of a halide of zinc, iron, aluminum or cobalt, and a diphenyl sulfide of the formula III



(III)

in which
R represents methyl or halogen, and
n represents 0 to 3;
said bromination utilizing a bromination agent selected from the group consisting of elementary bromine, mixtures of chlorine and bromine, bromine chloride, N-bromine compounds and hypobromites.

4,210,767

2,2,3-TRIMETHYL-3-CYCLOPENTEN-1-YLALKENYL AND ALKYLIDENE SECONDARY ALKANOLS, ALKANONES, CYCLOALKANOLS AND CYCLOALKANONES, ORGANOLEPTIC USES THEREOF IN PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES AND PROCESS FOR PRODUCING SAME

Takao Yoshida, West Long Branch; Braja D. Mookherjee, Holmdel; Venkatesh Kamath, Red Bank; John B. Hall, Rumson; William I. Taylor, Summit, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

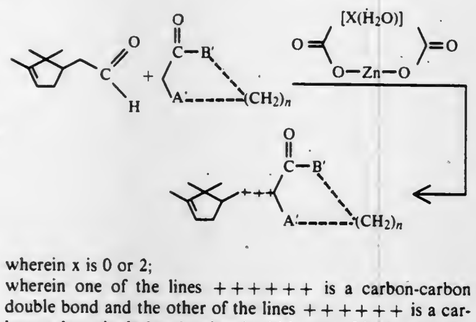
Division of Ser. No. 932,677, Aug. 10, 1978, Pat. No. 4,169,109. This application Mar. 23, 1979, Ser. No. 23,442

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

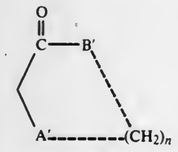
Int. Cl.² C07C *45/00, 29/00*

U.S. Cl. 568—345 **8 Claims**

1. A process for preparing 2,2,3-trimethyl-3-cyclopenten-1-ylalkenyl and alkylidene alkanones and cycloalkanones according to the reaction scheme:



wherein x is 0 or 2;
wherein one of the lines ++++++ is a carbon-carbon double bond and the other of the lines ++++++ is a carbon-carbon single bond; wherein A′ is one of hydrogen, C_3, C_2H_5 or $—CH_2—$ and B′ is hydrogen, CH_3, C_2H_5 or $—CH_2—$; n is 0, 1 or 2; each of the dashed lines represents a carbon-carbon single or no bond; with the proviso that A′ and B′ is both $—CH_2—$ when n=1 or n=2 and the dashed line represents a carbon-carbon single bond; and A′ is hydrogen and B′ is C_2H_5 or CH_3 or A′ is CH_3 and B′ is CH_3 or C_2H_5 and n is 0 and the dashed line represents no bond comprising the steps of intimately admixing campholenic aldehyde with a ketone having the structure:



in the presence of a catalyst selected from the group consisting of zinc acetate and zinc acetate dihydrate; said reaction being carried out in the liquid phase at an elevated temperature sufficient to produce the desired product.

4,210,768

NICKEL SILICATE HYDROGENATION PROCESS

Harold E. Swift, Gibsonia, Pa., assignor to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Aug. 24, 1978, Ser. No. 936,245

Int. Cl.² C07C *5/02, 5/14*

U.S. Cl. 585—250 **10 Claims**

1. A process for hydrogenating hydrocarbons selected from the group consisting of aromatic compounds having from six to 14 ring carbon atoms, olefinic and diolefinic compounds having from two to 60 carbon atoms and acetylic compounds having from two to 10 carbon atoms which comprises reacting said hydrocarbon with hydrogen at a temperature of about 5° to about 500° C. and a pressure of about 50 to about 5,000 pounds per square inch gauge in contact with a layered complex nickel silicate catalyst characterized as having repeating units of the structural formula

$$[(1-x)NI^{+2}+xMg^{+2}]_3(OH)_4Si_2O_5 \cdot wH_2O,$$

wherein x is a number from 0 to 0.6 and w is a number ranging from 0 to 4, said catalyst having the following X-ray powder diffraction pattern:

d(A.)	I
7.50	s.
4.50	m.
3.67	s.
2.58	m.
2.46	m.
2.10	w.
1.725	w.
1.545	m.
1.320	w.
1.300	w.

said catalyst having been treated, prior to said reaction, by reduction in a hydrogen atmosphere at a temperature of about 200° to about 600° C. and a pressure of about 15 to about 1,000 pounds per square inch gauge for a period of about one to about 24 hours, oxidation in an atmosphere containing molecular oxygen at a temperature of about 100° to about 600° C. for a period of about two to about 24 hours using a gas containing from about two to about 90 volume percent molecular oxygen and then again reduction in a hydrogen atmosphere at a temperature of about 200° to about 600° C. and a pressure of about 15 to about 1,000 pounds per square inch gauge for a period of about one to about 24 hours.

4,210,769

HYDROCARBON DEHYDROGENATION WITH A SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 907,240, May 18, 1978, Pat. No. 4,157,989, which is a division of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Apr. 30, 1979, Ser. No. 34,810

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.² C07C *5/40*

U.S. Cl. 585—379 **17 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at hydrocarbon dehydrogenation conditions, with a catalytic composite consisting essentially of a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of a catalytically effective amount of a platinum group component maintained in the elemental metallic state.

4,210,770

PROCESS FOR AROMATIC HYDROCARBON CONVERSION AND CATALYST THEREFOR

Christian Marcilly, Houilles, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 842,132, Oct. 14, 1977, Pat. No. 4,151,120. This application Feb. 23, 1979, Ser. No. 14,401

Claims priority, application France, Oct. 15, 1976, 76 31320; Dec. 22, 1976, 76 39015

Int. Cl.² C07C *3/62*

U.S. Cl. 585—474 **9 Claims**

1. In a process for dismutation and/or transalkylation or alkylaromatic hydrocarbons in the presence of a catalyst, the improvement which comprises employing a catalyst consisting essentially of a mordenite, said mordenite having a molar ratio of SiO_2/Al_2O_3 of from 10 to 100, containing up to 0.5% by weight of sodium, and further containing at least one metal being cobalt, nickel, silver or palladium; wherein said catalyst is produced by the steps of:

(a) eliminating from a mordenite in sodic form having a SO_2/Al_2O_3 ratio close to 10 the major portion of the sodium and incorporating at least one metal being cobalt, nickel, silver or palladium;

(b) drying the resultant catalyst mass at a temperature of from 50° to 150° C.;

(c) subjecting the resultant dried catalyst mass to a dry calcination at a temperature of from 300° to 700° C. in the presence of an inert or oxidizing dry gas containing less than 1% by volume of steam; and

(d) subjecting the resultant dry-calcined catalyst to a wet calcination at a temperature of from 250° to 700° C. in the presence of at least one gas selected from the group consisting of steam, an inert gas and an oxidizing gas, the inert or oxidizing gas containing at least 3% by volume of steam.

4,210,771

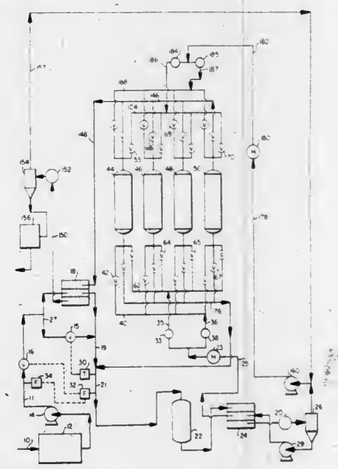
TOTAL ISOMERIZATION PROCESS

Thomas C. Holcombe, Scarsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 2, 1978, Ser. No. 957,288

Int. Cl.² C07C *5/30*

U.S. Cl. 585—701 **5 Claims**



1. A process for the virtually complete isomerization of normal paraffin hydrocarbons contained in a feed stream consisting essentially of mixed normal and non-normal hydrocarbons comprising

(a) passing a combined reactor feed of said feed stream and a desorption effluent, as hereinafter delineated, through an

isomerization reactor containing an isomerization catalyst and including hydrogen in said reactor feed to convert at least a portion of the normal hydrocarbons in said reactor feed to non-normal hydrocarbons;

(b) passing the reactor effluent from the reactor to an adsorption section and adsorbing the normal hydrocarbons remaining in the reactor effluent in a molecular sieve zeolite adsorber bed and passing the non-normal hydrocarbons out of the adsorption section as adsorber effluent containing an isomerate product;

(c) desorbing the adsorber bed with an essentially constant hydrogen purge gas thereby producing a variable desorption vapor effluent comprised of a constant flow of hydrogen purge gas which contains a varying concentration of desorbed normal hydrocarbons in the range of 20 to 30 mole percent at the beginning of the desorption step to less than 5 mole percent at the end of such step; and

(d) controllably varying the fresh feed stream flow rate and blending such fresh feed stream with the desorption effluent produced in step (c) to provide a constant flow of combined reactor feed in step (a).

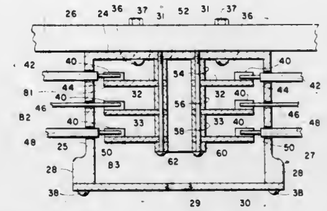
ELECTRICAL

4,210,772

PRE-WIRED ELECTRICAL CIRCUIT BOX

Cecil L. Magana, and Gary D. Spears, both of Box 248, Dewey, Okla. 74029

Filed May 15, 1978, Ser. No. 905,728
Int. Cl.² H01R 9/00
U.S. Cl. 174—59 **10 Claims**



1. A prewired electrical circuit box comprising:

(a) a circuit box made of thin walled non-conducting material, having a base of lateral dimension D and a circumferential wall of height H, and means to mount said circuit box to a structure;

(b) a plurality of electrical circuit boards of shape similar to that of said box, and of dimension less than D, assembled co-axially, in parallel spaced relation, and locked in angular relation to each other,

(c) a plurality of electrical fastenings attached to each of said circuit boards at their periphery, in selected individual angularly-spaced pattern, said fastenings on each board connected together electrically in selected patterns which are different on at least two boards.

(d) means to mount said assembly of circuit boards in said circuit box in a fixed angular position;

(e) a plurality of small diameter openings in the wall of said circuit box, each of said openings positioned opposite one of said fastenings on said boards, so that a bare electrical wire of selected diameter can be inserted through an opening into the corresponding fastening opposite that opening; and

(f) means to attach and detach each wire to and from said fastening in which it is inserted;

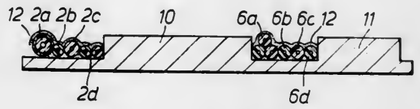
whereby a plurality of electrical wires can be inserted into selected ones of said plurality of openings, and be connected to each other in a preselected manner.

4,210,773

WIRING HARNESS

Roy Haley, Meysey; Brian Cooper, Marlborough, and Pushpkumar D. Changani, Swindon, all of England, assignors to Raychem Limited, London, England

Filed Nov. 17, 1977, Ser. No. 852,571
Claims priority, application United Kingdom, Nov. 22, 1976, 48669/76
Int. Cl.² H02G 3/00
U.S. Cl. 174—72 A **7 Claims**



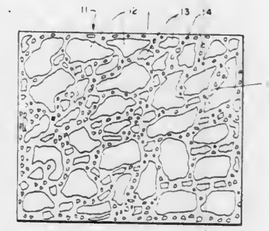
1. A wiring harness having at least a section comprising a plurality of individual elongate electrical conductors arranged at least partly in a common plane in electrically insulated spatial relation and having a change in direction along the length thereof, the radius of curvature of the change in direction lying in said plane, the electrical conductors being fixed in the spatial relation by means of a bonding agent applied as a fluid coating to the conductors after the conductors are arranged in the spatial relationship in the common plane.

4,210,774

FILLED POLYMER ELECTRICAL INSULATOR

Elijah R. Perry, Portola Valley, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 16, 1977, Ser. No. 807,163
Int. Cl.² H01B 3/12
U.S. Cl. 174—140 R **12 Claims**



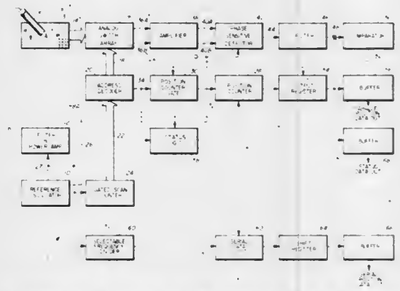
1. A track resistant electrical insulation filled polymer body comprising an intimate mixture of about 85 to 97 weight % of essentially electrically non-conductive inert nonporous inorganic filler particles including a major portion of silica, and 3 to 15 weight % of a resinous adhesive polymer binder bonding said filler particles together into an integral structure, said particles being graded in nonhomogeneous sizes including at least four different grades to maximize loading, over 50% by weight of said filler particles being characterized by a nominal diameter in excess of 0.3 mm, said polymer being formed from a monomer comprising methyl methacrylate characterized by a viscosity less than 150 cps at room temperature.

4,210,775

METHOD AND APPARATUS FOR DIGITIZING THE LOCATION OF AN INSTRUMENT RELATIVE TO A GRID

James L. Rodgers, Tempe, and Billy C. Fowler, Scottsdale, both of Ariz., assignors to Talos Systems, Inc., Scottsdale, Ariz.

Filed Jul. 3, 1978, Ser. No. 921,572
Int. Cl.² H04N 1/00; G08C 21/00
U.S. Cl. 178—19 **16 Claims**



1. Apparatus for producing an electrical signal representing the location of an instrument positioned over a plurality of spaced conductors, said apparatus comprising in combination:

(a) means for producing a signal of predetermined amplitude and frequency;

(b) coil means supported over said spaced conductors by said instrument responsive to said signal producing means for inducing a plurality of electrical signals in said spaced conductors;

(c) means responsive to said signal producing means for

sensing the electrical signals induced in said respective spaced conductors in a predetermined order;

(d) means responsive to said sensing means for detecting a phase reversal between electrical signals induced in ones of said conductors located on opposite sides of said coil means to produce a characteristic signal which changes polarity in response to said phase reversal;

(e) counter means responsive to said signal for counting in response to said signal producing means; and

(f) means responsive to said phase reversal detecting means for stopping said counter means in response to said polarity change;

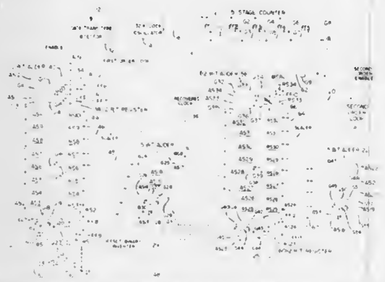
whereby the digital number in said counter means after said stopping represents a location of said instrument with respect to said spaced conductors.

4,210,776

LINEAR DIGITAL PHASE LOCK LOOP

Kenneth R. VanMeter, Phoenix, Ariz., assignor to Harris Corporation, Cleveland, Ohio

Filed Aug. 11, 1977, Ser. No. 823,645
Int. Cl.² H03K *1/00*
U.S. Cl. 375—120 **18 Claims**



12. A linear digital phase locked loop for generating a recovered clock signal, level transitions in which are synchronized with level transitions in an input data signal comprising:

first means for repeatedly generating a digital code, the value of which changes at a frequency which is a multiple of the frequency of said input data signal; and

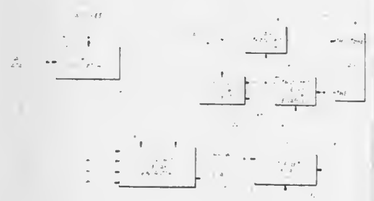
second means, coupled to said first means, for producing said recovered clock having prescribed level transitions which occur at times when the value of said digital code reaches the same preselected number.

4,210,777

PSEUDO-TRANSPARENT STOP BIT GENERATOR

John J. Bowerman, Rock Ridge, and John F. Wilson, Frederick, both of Md., assignors to Frederick Electronics Corp., Frederick, Md.

Filed Jun. 15, 1978, Ser. No. 915,725
Int. Cl.² H04L *25/38*
U.S. Cl. 375—117 **23 Claims**



13. In an improved circuit for generating a stop bit for use in a line terminator unit, said terminator unit having a transmitter for transmitting serial data from said terminator unit to a terminal, said serial data having a stop bit, the improvement comprising:

(a) a detector for detecting the absence of a data transfer signal in a sequence of data transfer signals, said transfer signals generated in the transfer of data between terminator units, said detector generating a clock signal when said absence is detected; and

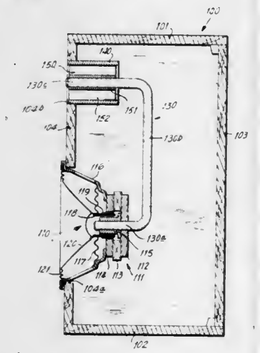
(b) means responsive to said transfer signals and said detector, for generating a variable length stop bit by generating a stop bit time interval that varies in length according to the number of data transfer signals occurring between previous clock signals.

4,210,778

LOUDSPEAKER SYSTEM WITH HEAT PIPE

Sadaaki Sakurai, Yokohama, and Hisashi Suwa, Sagamihara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 5, 1978, Ser. No. 912,292
Claims priority, application Japan, Jun. 8, 1977, 52-74593[U]
Int. Cl.² H04R *1/02*
U.S. Cl. 179—1 E **17 Claims**



1. A loudspeaker apparatus comprising:

transducer means having a drive means and producing acoustic radiation in response to application of an electric current to drive means;

enclosure means having a first aperture in which said transducer means is mounted for emission of said acoustic radiation through said aperture with said drive means in the interior of said enclosure means, and a second aperture; and

heat pipe means having a heat absorbing portion in thermal contact with said transducer means to receive heat generated by said electric current in said drive means and having a heat radiating portion extending through said second aperture to the exterior of said enclosure means for carrying such heat out of the latter, thereby preventing overheating of said drive means.

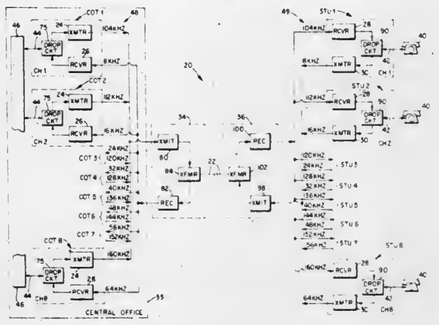
4,210,779

AMPLITUDE MODULATED TELEPHONE CARRIER SYSTEM AND TERMINAL EQUIPMENT THEREFOR

Frank L. Simokat, Babylon, N.Y., assignor to Tii Corporation, Lindenhurst, N.Y.

Filed Aug. 11, 1978, Ser. No. 932,706
Int. Cl.² H04J *1/12*
U.S. Cl. 179—2.51 **19 Claims**

1. A telephone carrier system communication receiver for receiving a pre-selected one of a plurality of incoming amplitude modulated carrier signals of different pre-selected frequencies in a plural channel frequency division multiplexed amplitude modulated telephone carrier system, comprising a pre-detection channel bandpass filter tuned to the frequency of said pre-selected one of said carrier signals for passing said pre-selected one of said incoming carrier signals, and means



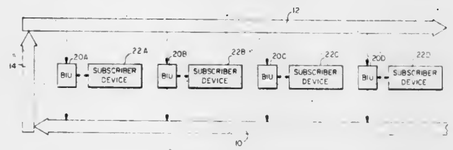
connected to said filter for synchronously detecting the amplitude modulated carrier signal to which said bandpass filter is tuned, the order of said bandpass filter being no greater than two.

4,210,780

MULTIPLE ACCESS DIGITAL COMMUNICATIONS SYSTEM

Gregory T. Hopkins, Chelmsford, Mass., and Paul E. Wagner, Nashua, N.H., assignors to The Mitre Corporation, Bedford, Mass.

Filed Mar. 27, 1978, Ser. No. 890,479
Int. Cl.² H04J *6/02*
U.S. Cl. 370—80 **14 Claims**



1. An unslotted multiple access bus communications system comprising:

a communications bus including a pair of oppositely-directed, unidirectional signal paths connecting a plurality of remote locations, and a path coupling means for transferring signals from the inbound path to the outbound path at one end of said pair of paths,

a plurality of bus interface units (BIU's), each one of said BIU's being coupled to said bus at an associated one of said remote locations, and including:

A. means for identifying times when no carrier signal is present on said outbound path,

B. means for selectively transmitting modulated carrier signals on said inbound path, wherein the carrier modulation for each of said modulated carrier signals is representative of a data packet, said data packet including at least a portion of an addressed message to be transmitted, said transmitting means being operative to commence a modulated signal carrier transmission only during said identified times,

C. means for receiving modulated carrier signals from said outbound path,

D. means for monitoring said received modulated carrier signals, said monitoring means being operative during a collision window, said collision window, commencing at least as early as t_1 from the time when said transmitter means initiates a transmission on said inbound path, and extending until at least t_2 after said transmission initiation time, where t_1 equals the signal propagation time along said inbound path, said path coupling means, and said outbound path from the location of said one BIU back to said one BIU and t2 equals the signal propagation time along said inbound path, said path coupling means, and said outbound path from the location of the BIU farthest from said path coupling means back to the location of said one BIU,

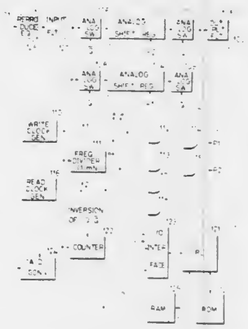
E. transmitter control means responsive to said monitoring means for disabling said transmitting means immediately when at least a portion of said monitored signals fail to correspond to a corresponding portion of the modulated carrier signal of said transmission, and for disabling said transmitting means following the complete transmission of said modulated carrier signal otherwise.

4,210,781

SOUND SYNTHESIZING APPARATUS

Satoshi Nishimura, Kagamigahara; Kenichi Sato, and Youji Sugiura, both of Gifu, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Dec. 8, 1978, Ser. No. 967,717
Claims priority, application Japan, Dec. 16, 1977, 52-153275; Dec. 16, 1977, 52-153276; Feb. 13, 1978, 53-16046; Mar. 20, 1978, 53-33492; Apr. 20, 1978, 53-48872
Int. Cl.² G10L *1/00*
U.S. Cl. 179—15.55 T **62 Claims**



1. A sound synthesizing apparatus, comprising:

means for providing an analog sound signal,

means for providing a signal representing a predetermined sampling period,

storage means,

means for providing a write clock signal having a first frequency,

means for providing a read clock signal having a second frequency,

control means responsive to said sampling period representing signal and said write clock signal for writing in said storage means said analog sound signal as a succession of sound elements, each determined by said sampling period representing signal, and responsive to said read clock signal for reading said sound elements in succession from said storage means,

means for joining said sound elements read from said storage means in succession at a junction therebetween for synthesization of a reproduced sound,

means responsive to said write clock signal for providing first data concerning the waveform of a preceding sound element being stored in said storage means and second data concerning the waveform of a succeeding sound element being stored in said storage means following said preceding sound element,

means responsive to said first data and said second data for evaluating a phase relation between the waveforms of said

preceding and succeeding sound elements for providing closer similarity of said waveforms of said preceding and succeeding sound elements in the vicinity of said junction between said preceding and succeeding sound elements, and

means responsive to said phase relation evaluating means for controlling a phase relation between said preceding and succeeding sound elements for joining said preceding and succeeding sound elements with closer similarity of waveforms of said preceding and succeeding sound elements in the vicinity of said junction between said preceding and succeeding sound elements.

4,210,782

DISTRIBUTED CONTROL TYPE TELEPHONE SWITCHING SYSTEM

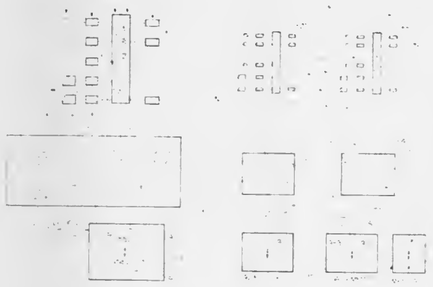
Kazunori Fujita, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1978, Ser. No. 917,342

Claims priority, application Japan, Jun. 23, 1977, 52/74862; Jun. 23, 1977, 52/74863; Aug. 8, 1977, 52/95301; Dec. 9, 1977, 52/147911; Mar. 2, 1978, 53/24092; Mar. 15, 1978, 53/30169; Mar. 15, 1978, 53/30170; Mar. 22, 1978, 53/33349

Int. Cl.² H04Q *3/54*

U.S. Cl. 179—18 ES **15 Claims**



4. A distributed switching control system comprising a plurality of separate switching systems, each of said separate switching systems having its own separate switching network, whereby there are a plurality of such switching networks, each having its own characteristics, first data processor means individually associated and compatible with each of said separate switching networks, second data processor means common to all of said separate switching networks, and means for exchanging a common form of signals between said first and second data processor means for controlling said separate switching networks as if they were a single integrated network despite any differences in the characteristics of the separate switching networks.

4,210,783

DIGITALLY CONTROLLED TELEPHONE ANSWERING SWITCHING SYSTEM

Ronald P. Vicari, Elmwood Park, N.J., and Barry Yampol, Oyster Bay, N.Y., assignors to Graphic Scanning Corp., Englewood, N.J.

Division of Ser. No. 591,233, Jun. 27, 1975, Pat. No. 3,987,252, which is a continuation-in-part of Ser. No. 392,634, Aug. 29, 1973, abandoned. This application Oct. 18, 1976, Ser. No. 733,357

Int. Cl.² H04Q *3/60*

U.S. Cl. 179—18 FC **2 Claims**

1. A digitally remote controlled trunk line concentrator for coupling incoming telephone circuit trunk lines to a lesser number of outgoing telephone circuit trunk lines comprising:

(a) matrix switching means for interconnecting any one of said incoming trunk lines to any one of said outgoing trunk lines;

(b) decoding means responsive to a digital command from a remote source to connect a particular incoming trunk line to a particular outgoing trunk line;

(c) digital control circuit means in said matrix switching means responsive to said decoding means for causing said matrix switching means to connect said particular incoming trunk line to said particular outgoing trunk line, with one control circuit for each of the incoming trunk lines; and



(d) a bidirectional analog multiplexer in the control circuit associated with each of the incoming trunk lines,

(1) the tip wire of each incoming trunk line being connected to the input side of said analog multiplexer and the ring wire of each incoming trunk line being grounded, and

(2) the tip wire of each outgoing trunk line being connected to the output side of said analog multiplexer,

(3) said analog multiplexer thereby serving as a single wire analog switch for interconnecting an incoming trunk line to any outgoing trunk line.

4,210,784

SPEAKER SYSTEM

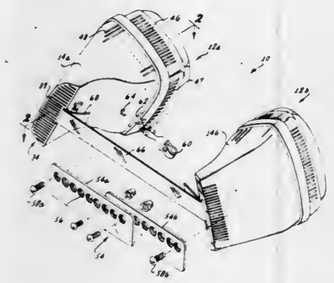
William W. Phillips, Rancho Palos Verdes, Calif., assignor to Shaymar, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 728,933, Oct. 4, 1976, Pat. No. 4,061,877. This application Apr. 21, 1977, Ser. No. 789,457

The portion of the term of this patent subsequent to Apr. 26, 1994, has been disclaimed.

Int. Cl.² H04R *1/32*

U.S. Cl. 179—146 H **8 Claims**



1. A stereo speaker system structure for mounting at the back of a seat, adapted for use as a sound enhancing adjunct to a conventional stereo system including a source of stereo electrical signals to enhance stereo separation and clarity of the overall sound, said stereo speaker system comprising:

first and second loud speaker assemblies, each including at least one loud speaker;

an enclosure means for enclosing each of said loud speaker assemblies, comprising a shell of rigid material substantially surrounding said loud speaker assembly on all sides to form a chamber substantially occupied by said loud speaker assembly and having an opening on one side thereof for emitting sound produced by its respective loud speaker;

at least one elongated spacer comprising an elongated member having means for positioning each enclosure at a preselected location along its length to form a system structure comprising two of said enclosures held at a predetermined spacing from each other by said at least one elongated spacer;

means operable for positioning said first and second speaker assemblies at the back of a seat respectively adjacent and rearward of the expected position, respectively of the left and right ears of the head of a seat occupant to emit sound at the occupant's ears; and

means operable for electrically coupling the speakers to the source of stereo electrical signals.

4,210,785

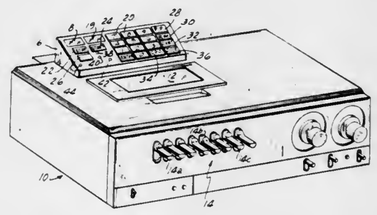
TAPE REPLAY SYSTEM

William B. Huber, Oak Park; Ian L. Bower, Rosemont; James A. Flynn, LaGrange, and Gary C. Elfring, Lombard, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sep. 28, 1978, Ser. No. 946,988

Int. Cl.² G11B *27/00, 5/02*

U.S. Cl. 179—100.1 PS **17 Claims**



1. In a tape playback machine, a system for selecting and replaying desired segments of a recorded tape in any predetermined sequence comprising:

means for reading a tape having encoded thereon a plurality of programs, tape location indicia, and program location information correlating the position of the programs on the tape with the tape location indicia;

operator-actuable means for selecting programs for replay and the sequence in which the selected programs are to be replayed; and

controller means responsive to said operator selection for determining from said program location information the location on the tape of said selected programs and for actuating the playback machine to replay the selected programs in the sequence selected,

whereby selected programs on the tape are replayed in any desired sequence, irrespective of their location on the tape.

4,210,786

MAGNETIC FIELD STRUCTURE FOR PLANAR SPEAKER

James M. Winey, White Bear Lake, Minn., assignor to Magnepan, Incorporated, White Bear Lake, Minn.

Filed Jan. 24, 1979, Ser. No. 6,007

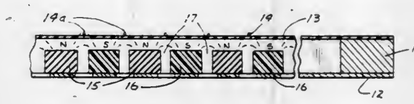
Int. Cl.² H04R *9/06*

U.S. Cl. 179—115.5 PV **10 Claims**

1. An acoustical electromagnetic transducer, comprising

a film type diaphragm having conductor means on the surface thereof and arranged in a plurality of elongate and spaced conductor runs through which a sound generating current is to be carried, and

a magnetic structure confronting the diaphragm in spaced relation and having a plurality of elongate and spaced magnetic strips extending along each other and defining



elongate magnetic gaps therebetween and extending along the conductor runs of the diaphragm, the magnetic strips being permanent magnets establishing magnetic flux in and adjacent the gaps, magnetic strips adjacent to each other being formed of different magnetic materials with significantly different magnetic properties.

4,210,787

KEYBOARD CONSTRUCTION

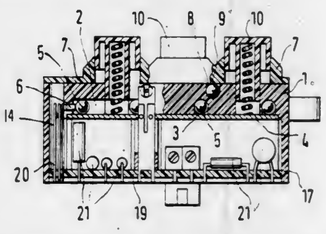
Alfred Zielke, Peine-Vöhrum, Fed. Rep. of Germany, assignor to ELMEG-Electro-Mechanik Gesellschaft mit beschränkter Haftung, Peine, Fed. Rep. of Germany

Filed Jun. 12, 1978, Ser. No. 914,536

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727433

Int. Cl.² H01H *9/26*

U.S. Cl. 200—5 EA **4 Claims**



1. A keyboard including a member containing intersecting channels filled with displacement bodies to be displaced by tongues extending from keys, so that upon pressing a key the bodies in two channels are displaced resulting, respectively, in the displacement of actuation pins, respectively, at one end of each channel, the improvement comprising:

a printed circuit board;

a plurality of contact springs mounted on the printed circuit board;

circuit elements and interconnect lines on the printed circuit board for connection to the contact springs on the board, said board with mounted springs and circuit elements constituting an independent subassembly; and

means for mounting said board to said member but in spacedapart relation thereto, thereby placing free ends of the contact springs into actuation ranges of said pins and for engagement therewith so that the pins upon displacement operate the respective contact springs.

4,210,788

MANUAL OPERATING HANDLE ASSEMBLY FOR CIRCUIT INTERRUPTER DEVICES

Norman J. Stranczek, Niles, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Jul. 10, 1978, Ser. No. 923,232

Int. Cl.² H01H *9/28*

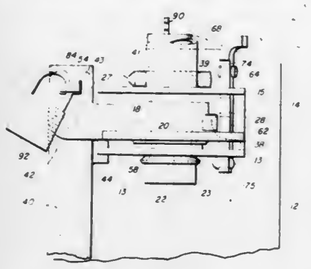
U.S. Cl. 200—42 T **15 Claims**

1. A mechanism for permitting manual operation of an interrupter device to open the interrupter device when a first set of

conditions is extant and for inhibiting additional operation of the interrupter device to reset the interrupter device unless a second set of different conditions is extant, which comprises:

mounting means;

an operating shaft suitably supported by said mounting means and operably connected to the interrupter device for opening and resetting the interrupter device;



handle means for manually rotating said operating shaft; and

interlock means for, in a first position, limiting the rotation of said operating shaft by said handle means to the amount of rotation required to open the interrupter device, and for, in a second position, not limiting the rotation of said operating shaft so that said operating shaft can be rotated by said handle means to reset the interrupter device.

4,210,789

IMPACT DETECTING SWITCH

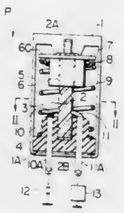
Kenichi Ushiku, Tokaimura, and Akira Hasegawa, Katsuta, both of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of, Japan

Filed Oct. 18, 1977, Ser. No. 843,268

Claims priority, application Japan, Oct. 20, 1976, 51/124882

Int. Cl.² H01H *35/14*

U.S. Cl. 200—61.45 R **32 Claims**



1. An impact detecting device comprising:

a casing;

a movable member capable of moving substantially along a straight line relative to said casing;

means for rotating said movable member during the movement of said movable member substantially along the straight line;

elastic means interposed between said casing and said movable member for elastically loading said movable member in a direction along said straight line to resist the movement of said movable member;

a switch means to be closed, when said movable member is moved a given distance relative to said casing against the action of said elastic means,

wherein said movable member has a center hole extending therethrough in the direction of the movement of said movable member; said means for rotating said movable member comprising guide means which is provided with spiral grooves in the outer peripheral surface thereof and has at least one end thereof secured to said casing and extends through said center hole of said movable member, and interconnecting means engaging said movable member in given positions as well as said spiral grooves, and movable along said spiral grooves.

4,210,790

VACUUM-TYPE CIRCUIT INTERRUPTER

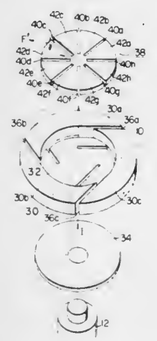
Yukio Kurosawa; Hiroyuki Sugawara, and Yukio Kawakubo, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 2, 1977, Ser. No. 802,941

Claims priority, application Japan, Jun. 9, 1976, 51-67339

Int. Cl.² H01H *33/66*

U.S. Cl. 200—144 B **44 Claims**



1. In a vacuum-type circuit interrupter having a pair of relatively movable opposed electrodes carried respectively by electrically conductive support members, each of said electrodes having a structure comprising:

an annular portion having opposite annular surfaces, one of said annular surfaces providing an annular contact-making surface which separably makes contact with the corresponding contact-making surface of the other opposite electrode and acts as an arc-running surface upon actuation of said circuit interrupter to break the circuit therethrough;

a substantially disc-shaped recessed portion surrounded by said annular portion and having substantially circular opposite surfaces, said disc-shaped portion being secured to said support member at the central area of one of said substantially circular opposite surfaces thereof, the other substantially circular surface being sunk below said contact-making surface to provide a sunk surface untouchably opposing the corresponding sunk surface of the opposite electrode;

first self-acting magnetically driving means for driving an arc produced on said contact-making surface to impel the same in a circumferential direction of said contact-making surface; and

second self-acting magnetically driving means for driving an arc produced at the recessed portion surrounded by said annular portion to shift the same toward and onto said contact-making surface.

4,210,791

SLIDE SWITCH

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Dec. 26, 1978, Ser. No. 973,147

Int. Cl.² H01H *9/02, 15/02*

U.S. Cl. 200—164 R **6 Claims**

1. A slide switch comprising

a base member of dielectric material having laterally spaced side walls, integrally connected end walls extending between said side walls, and a rear wall cooperating with said side and end walls to define a forwardly open recess

a plurality of fixed contacts having portions projecting forwardly through said rear wall and arranged in at least one row oriented longitudinally on said base member

a slide member of dielectric material having a length greater than the longitudinal dimension of said recess in the direction of said row of contacts, and having laterally projecting portions slidably received in elongated slots defined in



said base side walls to support said slide member for slidable movement relative to said base and to limit such movement so said base recess remains covered by said slide member

a bridging contact in a rearwardly open recess provided in said slide member, and

said dielectric members housing all of said contacts and defining a closed environment for said contacts consisting only of said dielectric slide and base members.

4,210,792

INDUCTION HEATING APPARATUS WITH LOAD DETECTING AND CONTROL CIRCUIT

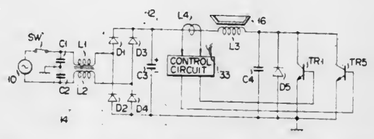
Iwao Higuchi, Ayase, and Takashi Fujita, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Jun. 22, 1977, Ser. No. 808,893

Claims priority, application Japan, Jul. 27, 1976, 51/89468; Jul. 27, 1976, 51/89471

Int. Cl.² H05B *5/04*

U.S. Cl. 219—10.49 R **1 Claim**



1. An induction heating apparatus comprising first and second DC power source terminals, electric energy storing means connected between said first and second DC power source terminals, a series circuit including a heating coil and a capacitor connected across said power source terminals, a rectifying element connected in parallel with said capacitor and in reverse direction with respect to said DC power source terminals, first and second switching means connected in parallel with said capacitor, means for detecting the current flowing through said heating coil, and a control circuit comprised of a pulse generator which is connected to said current detecting means for generating a pulse when said current detecting means detects that the current flowing through the heating coil and the rectifier element in the forward direction reaches a predetermined value, a monostable multivibrator circuit triggered by the output pulse from said pulse generator, a bistable multivibrator circuit whose output state is reversed in response to the output signal from said monostable multivibrator circuit, a first energizing signal generating circuit responsive to the output signals from said monostable multivibrator circuit and said bistable multivibrator circuit for applying an output signal to said first switching means when both of said monostable multivibrator circuit and said bistable multivibrator circuit are set, and a second energizing signal generating circuit responsive to the output signal of said monostable multivibrator circuit and the invention of the output signal of said bistable multivibrator circuit for applying an output signal to said second switching means when said monostable multivibrator circuit is set and said bistable multivibrator circuit is reset.

4,210,793

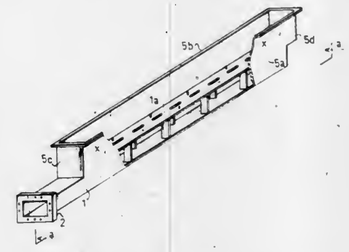
MICROWAVE APPLICATOR FOR RADIATING MICROWAVES TO AN ELONGATED ZONE

Christian Fournet-Fayas, Bruguieres, France, assignor to Agence Nationale de Valorisation de la Recherche (A.N.-V.A.R.), Neuilly sur Seine, France

Filed Mar. 6, 1978, Ser. No. 883,899

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 F **6 Claims**



1. A microwave applicator for irradiation an elongated zone of the length L with energy having a frequency range around a central frequency F comprising:

a wave guide adapted to guide microwaves within said frequency range, said wave guide having a length greater than L,

a plurality of resonant shunt slots in said wave guide and arranged on a longitudinal axis of said wave guide in the axial plane, the centers of said slots being separated by a distance equal to a whole number of half wave length $\lambda g/2$, wherein λg is the length of the guided wave corresponding to the frequency F,

inside posts within said wave guide on the transverse axis of said slots and adjacent thereto, wherein said inside posts associated with slots separated by an uneven number of half wave length are on opposite sides of said slots and the heights of said inside posts are such as to provide a desired power distribution along the wave guide,

outside posts positioned outside of said wave guide and at the same points as said inside posts,

said inside posts including a guide member projecting into said wave guide, and said outside posts including a threaded shaft passing through the wall of said wave guide and projecting outwardly thereof and inwardly thereof into said guide members, whereby the height of said outside posts are adjustable independently of the heights of said inside posts, and

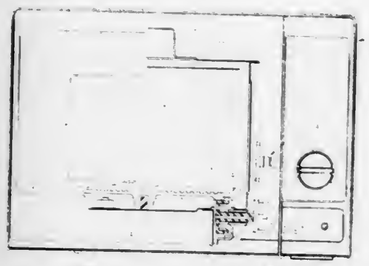
a flange member comprising lateral flanges and frontal flanges extending from the periphery of said wave guide and surrounding said shunt slots such that the volume defined by said flange member and the face of said wave guide having said shunt slots is excited by the radiation in phase from said shunt slots for applying a uniform predetermined power intensity having only slight variation with frequency to an elongated zone adjacent said flange member.

4,210,794

TURNTABLE DRIVE IN A MICROWAVE OVEN

Ichiro Oguri, Yao, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 25, 1977, Ser. No. 800,478
Claims priority, application Japan, May 26, 1976, 51-67829
Int. Cl.[2] H05B *9/06*
U.S. Cl. 219—10.55 F 17 Claims



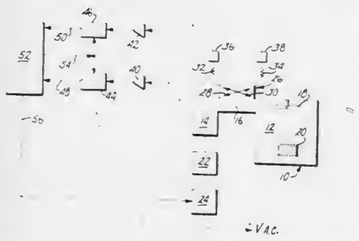
1. In a turntable drive mechanism for driving a turntable adapted to rotate a foodstuff mounted thereon at the base portion of a microwave oven the improvement comprising:
- a geared portion circularly formed at the peripheral portion of the lower surface of a turntable;
- a drive gear associated with said geared portion of the turntable in order to rotate the turntable at a fixed velocity; and
- a reflection metal means provided near said drive gear in order to protect the drive gear from the microwave energy generated by the microwave oven.

4,210,795

SYSTEM AND METHOD FOR REGULATING POWER OUTPUT IN A MICROWAVE OVEN

Ronald R. Lentz, Wayzata, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 30, 1978, Ser. No. 964,917
Int. Cl.[2] H05B *9/06*
U.S. Cl. 219—10.55 B 19 Claims



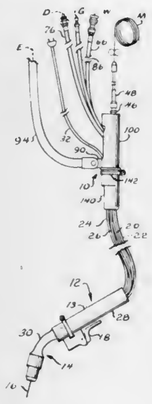
1. In a microwave oven having a food heating cavity, a magnetron, and waveguide means for coupling the magnetron to the heating cavity, means for controlling the microwave oven heating cycle comprising:
- (a) detector means coupled to the microwave oven for measurement of the microwave reflection coefficient within the oven; and
- (b) means connected to said detector means and to the magnetron for regulating the power output of the magnetron in response to said measured reflection coefficient.

4,210,796

UTILITIES SUPPLY STATION FOR WELDING GUN

Delford A. Moerke, 1020 Shady Oak Dr., North Mankato, Minn. 56001

Filed May 24, 1978, Ser. No. 908,914
Int. Cl.[2] B23K *9/32;* H01R *3/04*
U.S. Cl. 219—137.63 9 Claims



1. A welding gun utilities station through which a welding gun is connected to utilities such as welding voltage, arc shielding gas and cooling fluid, said station comprising an inner body and an enclosing sleeve of insulative material, said inner body embodying spaced upper and lower block portions and an axially offset tubular portion between said block portions defining a passageway through which a consumable wire electrode feeds; the lower end of said tubular portion being adapted for connection to an electrode receiving casing which leads to the welding gun, at least the lower block portion being of electrically conductive metal and containing spaced ports to the lower ends of which a gas hose, a cooling fluid hose and a fluid drainage hose leading to the welding gun are respectively connected, said sleeve of insulative material having an access slot through the wall thereof opposite said tubular portion of the inner body and extending between said upper and lower block portions of said inner body, and short length hoses each having one end connected to the upper end of each said ports, said short length hoses extending outwardly of the sleeve through the access slot thereof, and coupler means at the opposite end of each said short length hoses by which said short length hoses are respectively connected to outlets of a gas supply, a cooling fluid supply and to drainage, each said coupler means including normally closed valve means which is opened by its connection of the short length hoses to said outlets.

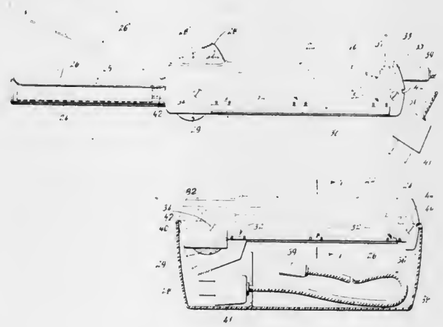
4,210,797

FOLDABLE CURLING IRON PROVIDING FOR SELF-STORAGE AND SAFETY DISCONNECTION

Patrick M. Tomaro, Maplewood, N.J., assignor to Conair Corporation, Edison, N.J.

Filed Nov. 4, 1977, Ser. No. 848,471
Int. Cl.[2] H05B *3/06;* A45D *1/04, 2/24;* H01H *3/16*
U.S. Cl. 219—225 13 Claims

1. An electrically heated curling iron comprising:
- a tubular barrel having an electric heating element therein;
- a hollow handle;
- barrel pivot means for pivotally mounting said tubular barrel to said handle, said barrel being pivotal through a pivot angle from an operative position extending forwardly of said handle to a folded storage position within said handle through an opening in a side of said handle,
- a clamp extending along most of said tubular barrel and having a transverse shape conforming to the external contour of said tubular barrel,
- clamp pivot means for pivotally mounting said clamp to said tubular barrel,
- clamp biasing means for biasing said clamp against said tubular barrel throughout said pivot angle of said tubular barrel,
- electrical connector means in said handle for connecting said electrical heating element in said tubular barrel to an electric source when said tubular barrel is in its extended position, and



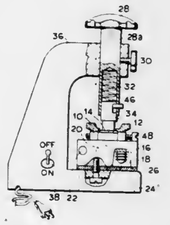
- two doors closing said opening and pivotal inwardly through said opening in the side of said handle and into said handle, but spring biased outwardly to conform with the handle outer surface when said tubular barrel is in its extended position, said tubular barrel forcing said doors inwardly when in its folded storage position within said handle,
- whereby an electrically heated curling iron which is foldable into a compact form is provided.

4,210,798

DEVICE FOR DETACHABLY MOUNTING GLASS ON TIMEPIECE CASES

Sadao Ode, Houya, and Toshikazu Hatuse, Tanashi, both of Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Filed May 4, 1978, Ser. No. 902,945
Claims priority, application Japan, Feb. 9, 1978, 53-13006
Int. Cl.[2] H05B *1/00*
U.S. Cl. 219—243 12 Claims



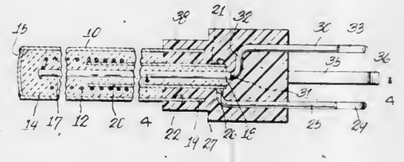
1. A device for detachably mounting a glass on a timepiece case, comprising:
- a. a main body including a supporting member and a substrate;
- b. a heater board secured to said substrate and including a temperature control means;
- c. a case holding frame disposed above said heater board in thermal contact therewith for holding the timepiece case; and
- d. a push rod adjustably supported by said supporting member of said main body for urging the glass toward or away from said timepiece case.

4,210,799

ELECTRIC HEATING UNITS

Walter J. Dzaack, Glenshaw, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 4, 1978, Ser. No. 948,569
Int. Cl.[2] H05B *3/08*
U.S. Cl. 219—541 4 Claims



1. An electric heating element, comprising:
- a tubular metal sheath, closed at one end,
- a helically coiled resistance conductor disposed centrally within said sheath,
- material within said sheath to electrically insulate said resistance conductor from said sheath and to conduct heat from said conductor to said sheath,
- a metal tube of smaller diameter than said sheath, said tube being insulated from said sheath and having portions extending inwardly and outwardly of the opposite end of said sheath, said inwardly extending portion being electrically connected to one end of said helically coiled resistance conductor and said outwardly extending portion providing one terminal end,
- a return conductor extending longitudinally within and insulated from said helically coiled resistance conductor and electrically connected to the latter at the opposite end thereof, said return conductor having a portion extending through said tube in insulated manner, and extending from the terminal end of said tube to provide another terminal end,
- a pair of terminal pins, one electrically connected to said tube terminal end and the other terminal pin electrically connected to said return conductor terminal end, said terminal pins being spaced apart and connectable to a source of electrical energy,
- and a rigid plastic block molded over said sheath opposite end and encapsulating portions of said terminal pins adjoining their connections with said tube terminal end and said return conductor terminal end, and rigidly holding said terminal pins in spaced relation.

4,210,800

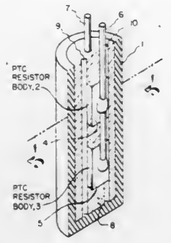
HEATING ELEMENT COMPRISING A PTC-RESISTOR BODY

André M. A. Van Bokestal, and Charles J. G. Belhomme, both of Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,419
Claims priority, application Netherlands, Feb. 21, 1977, 7701813
Int. Cl.[2] H05B *3/44*
U.S. Cl. 219—544 2 Claims

1. A heating element comprising at least one positive temperature coefficient resistor body embedded in a heat conductive potting composition, said heat conductive potting composition surrounded by a heat conductive casing except for one surface thereof open to the atmosphere, electric current conductor means attached to said positive temperature coefficient resistor body and extending through said potting composition and out of said heat conductive casing and as a means for preventing explosions from occurring in said heating element,

at least one channel positioned in said potting composition within a heat-effective distance from said resistor body, an end

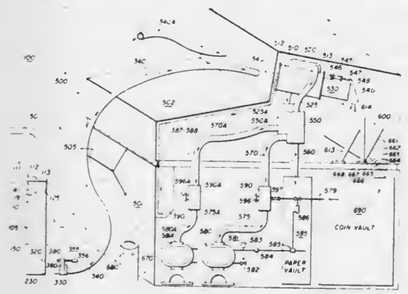


of which channel is situated at the surface of said potting composition open to the atmosphere.

4,210,801
FARE COLLECTION SYSTEM AND COMPONENTS THEREOF

Jim H. Gomez, Kankakee, and Jose E. Davila, Bourbonnais, both of Ill., assignors to Transit Systems Technology, Inc., Kankakee, Ill.

Filed Nov. 30, 1977, Ser. No. 855,970
Int. Cl.[2] G06M *3/08, 7/06*
U.S. Cl. 235—92 AC **50 Claims**

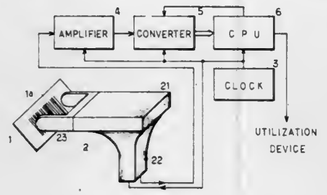


1. A fare collection system comprising a plurality of mobile fare boxes and a stationary central processing unit, each of said fare boxes having a collection chamber for receiving fares therein, a counter-recorder in each fare box for counting and recording the fares as the fares are deposited in the associated chamber, an acceptor coupling on each of said fare boxes providing access to the contents of the associated chamber, an extractor conduit having one end in communication with said central processing unit and an extractor coupling on the other end thereof, said extractor coupling cooperating with each of said acceptor couplings to provide communication between the associated chamber and said central processing unit for conveying the contents of said chamber to said central processing unit, and a high speed sorter-counter-recorder in said central processing unit for sorting and counting and recording the contents of each of said fare box chambers one-by-one, whereby to make a first count of the fares in each fare box at the fare box and to make a second count of the fares in each fare box at the central processing unit for comparison with the first count.

4,210,802
BAR CODE SCANNER

Toshiyasu Sakai, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 12, 1978, Ser. No. 923,966
Claims priority, application Japan, Jul. 26, 1977, 52/89962
Int. Cl.[2] G06K *13/06, 7/10*
U.S. Cl. 235—483 **5 Claims**

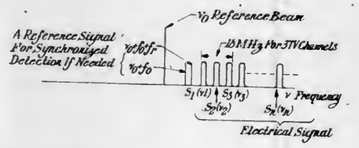


1. In a system for scanning a bar code or bar codes having a plurality of parallel bar symbols recorded in contrastive light reflective colors, a bar code scanner comprising:
a casing;
a pair of side guide members extending in parallel with each other from said casing by a uniform length, said side guide members being spaced from each other to encompass said parallel bar symbols therebetween and defining a scan line, said scan line being visually observable at least in the regions thereof adjacent the top portions of said side guide members to facilitate proper positioning of the scanner along the bar code; and
an image sensor supported within said casing and having a plurality of light responsive elements arranged in a transverse relation with said side guide members, said light responsive elements being activated one by one to convert reflected light applied from said parallel bar symbols through the space defined by said side guide members into responsive electric signals.

4,210,803
METHOD AND APPARATUS FOR SIGNAL TRANSMISSION VIA AN OPTICAL FIBER

Charles C. Ih, Newark, Del., assignor to University of Delaware, Newark, Del.

Filed Mar. 15, 1979, Ser. No. 20,750
Int. Cl.[2] H04B *9/00*
U.S. Cl. 455—610 **14 Claims**



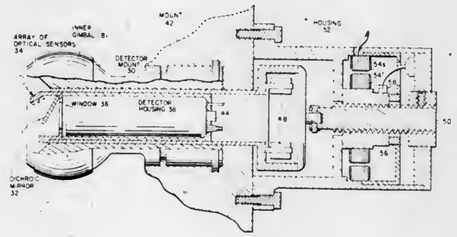
1. A method of signal transmission via an optical fiber transmission line comprising
providing a first substantially monochromatic beam of radiation reserved as a carrier radiation beam,
providing a second substantially monochromatic beam of radiation frequency-interlocked with said first beam of radiation to a preselected degree dependent upon the transmission service to be effected reserved as an information radiation beam,
imposing an electrical signal to be transmitted upon said information radiation beam, thereby responsively modulating said information radiation beam,
combining said carrier radiation beam and said modulated information radiation beam,
transmitting said combined radiation via said optical fiber transmission line to a preselected destination, and

detecting said combined radiation with a square law detector to thereby obtain a subcarrier signal constituting the difference in frequency between said carrier radiation beam and said information beam upon which said electrical signal is modulated as the beat frequency of said carrier radiation beam and said information radiation beam, and demodulating to reconstitute said original electrical signal.

4,210,804
FREE-GYRO OPTICAL SEEKER

Richard R. LaTorre, Bedford; Barry N. Levitt, Framingham, and Gordon C. MacKenzie, North Billerica, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 22, 1978, Ser. No. 936,269
Int. Cl.[2] F42B *15/02*
U.S. Cl. 250—203 R **2 Claims**



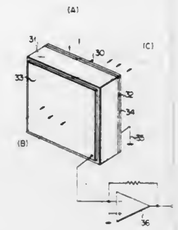
1. In an optical seeker for a guided missile having a longitudinal axis, such seeker including focusing means spin-stabilized about a movable line of sight having a point in common with the longitudinal axis, optical sensor means disposed in the focal plane of the focusing means when the line of sight and the longitudinal axis are coincident and a mirror disposed between the focusing means and the optical sensor means to position the center of the focal plane at a point removed from the longitudinal axis, the improvement comprising:
(a) a universal joint having a first part affixed to the guided missile and a second part rotatably mounted on the first part, the opposing surfaces of the first and second part being complementary spherical surfaces centered on the longitudinal axis of the guided missile;
(b) a passageway formed through the first part coaxially with the longitudinal axis of the guided missile;
(c) a hollow support member slidably disposed within the passageway to position the optical sensor means and the mirror along the longitudinal axis of the guided missile;
(d) means for affixing the focusing means to the second part of the universal joint and for orienting and spinning such second part and focusing means to spin-stabilize the optical axis of the focusing means in a given direction; and
(e) means for moving the hollow support member along the longitudinal axis in accordance with the direction of the line of sight of the focusing means to maintain the center of the focal plane of such focusing means substantially in coincidence with the center of the optical sensor means.

4,210,805
SEMICONDUCTOR RADIATION DETECTOR

Tetsuji Kobayashi; Tohru Sugita, both of Yokohama, and Noboru Matsuo, Nagasaki, all of Japan, assignors to Tokyo Shibaura Electric Company, Limited, Kawasaki, Japan

Filed Feb. 15, 1978, Ser. No. 877,942
Claims priority, application Japan, Feb. 17, 1977, 52-16375; Feb. 21, 1977, 52-17951; Feb. 24, 1977, 52-19526; Feb. 24, 1977, 52-19527; Feb. 24, 1977, 52-19528; May 19, 1977, 52-58074
Int. Cl.[2] G01T *1/22*
U.S. Cl. 250—370 **13 Claims**

1. A semiconductor radiation detector comprising a detector unit including a detection element having a single crystal silicon substrate with an impurity concentration of less than 1×10^{14} cm^{-3}, a metal layer formed on one surface of the substrate to provide a surface barrier between the metal layer and the substrate, the surface barrier having a rectifying characteristic, and an electrode layer formed on the other surface

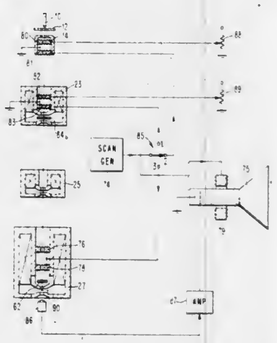


of the substrate, and an output circuit connected to the metal layer and electrode layer of the detection element to obtain an output corresponding to an amount of X-ray or gamma ray radiation incident on the detector unit without the application of a bias across the detection element.

4,210,806
HIGH BRIGHTNESS ELECTRON PROBE BEAM AND METHOD

Alec N. Broers, Purdys Station, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 18, 1979, Ser. No. 4,518
Int. Cl.[2] G01M *23/00*
U.S. Cl. 250—311 **22 Claims**



1. Apparatus for generating a high brightness electron beam, comprising:
an electron gun for producing a beam of electrons having a spatial distribution of electron intensity and an angular distribution of electron intensity;
an electron optical column for demagnifying said beam into a final beam focused upon a target plane, said column accepting for said final beam only a portion of said angular distribution and only a portion of said spatial distribution;
means for varying the portion of said angular distribution accepted by said column for said final beam;
means for varying the portion of said spatial distribution accepted by said column for said final beam;
means for measuring the intensity of said final beam while varying the accepted portion of said angular distribution and the accepted portion of said spatial distribution in order to determine the portion of said angular distribution and the portion of said spatial distribution which together result in maximum final beam intensity; and
means for causing said column to accept for said final beam

the determined portion of said angular distribution and the determined portion of said spatial distribution, thereby maximizing the effective brightness of said final beam.

4,210,807

HEAT IMAGING APPARATUS

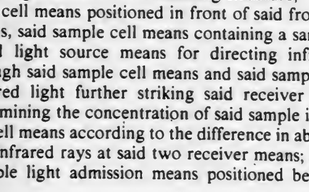
Roderich Rüger, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jul. 5, 1978, Ser. No. 921,945

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731739

Int. Cl.² H01J *31/49*

U.S. Cl. 250—330 **3 Claims**



1. A heat imaging apparatus comprising a heat image system including optical means having a focal surface, heat detector means located in said focal surface, said optical means further having a diffusion circle of given dimension, said heat detector means comprising at least one heat detector element, each heat detector element having a size (A_D) smaller than said given dimension of said diffusion circle.

4,210,808

PNEUMATIC INFRARED ANALYZER OF THE SINGLE BEAM TYPE

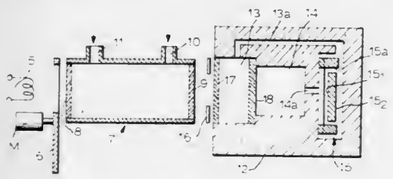
Kimio Miyatake, Miyanohigashi, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Sep. 12, 1978, Ser. No. 941,638

Claims priority, application Japan, Oct. 26, 1977, 52-128956

Int. Cl.² G01J *1/00*

U.S. Cl. 250—343 **4 Claims**



1. A detector means for a single beam pneumatic infrared analyzer, comprising:

a front light receiver means contained within a first containing structure, said containing structure further containing therein a control gas;

a rear light receiver means positioned in series behind said front light receiver means, said rear light receiver means being contained within a second containing structure, said second containing structure further containing said same control gas as said first containing structure;

sample cell means positioned in front of said front receiver means, said sample cell means containing a sample gas;

infrared light source means for directing infrared light through said sample cell means and said sample gas, said infrared light further striking said receiver means for determining the concentration of said sample in said sample cell means according to the difference in absorption of said infrared rays at said two receiver means; and

adjustable light admission means positioned between said sample cell means and said two receiver means for blocking out the peripheral portions of said infrared light entering said front receiver means.

4,210,809

METHOD AND APPARATUS FOR THE NON-INVASIVE DETERMINATION OF THE CHARACTERISTICS OF A SEGMENTED FLUID STREAM

Milton H. Pelavin, Chappaqua, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,034

Int. Cl.² G01N *21/26*

U.S. Cl. 250—343 **26 Claims**



1. In apparatus for the detection of the respective segments, and the respective segment interfaces, of a continuous fluid stream which comprises alternating fluid segments flowing in an optionally transparent conduit, said fluid segments having different radiation energy absorbance and/or refraction characteristics, the improvements comprising, radiation energy source means disposed without said conduit and operable to irradiate the same and said flowing fluid stream, radiation energy detecting means disposed without said conduit and operable to detect the radiation energy from said source means which is transmitted through said conduit and said flowing fluid stream, and to output a signal indicative thereof, and means to process said output signal to indicate said fluid segments and said segment interfaces, respectively, wherein, said fluid segments comprise segments of liquids, and wherein the spectral content of said radiation energy is generally outside the radiation energy absorbance range of said liquids.

4,210,810

RADIATION SCANNING SYSTEM

Peter J. Berry, and Herbert M. Runciman, both of Glasgow, Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Filed Aug. 31, 1978, Ser. No. 938,517

Claims priority, application United Kingdom, Sep. 13, 1977, 38087/77

Int. Cl.² G01J *1/00*

U.S. Cl. 250—347 **5 Claims**

1. A radiation scanning system comprising a radiation detector, a transfer lens disposed to form a real image of said detector, a first scanning means comprising a rotor having a plural-

ity of reflective planar facets disposed uniformly around its circumference, each facet having its normal substantially perpendicular to the axis of rotation of the rotor, said rotor being interposed between the transfer lens and the image of the detector formed by the transfer lens and having its axis of rotation intersecting the optical axis of the transfer lens and disposed in such a way that as the rotor is rotated the aforesaid image is caused to move in a substantially circular locus, a concave substantially-spherical mirror located substantially concentrically with the aforesaid detector locus and having the locus substantially at the focal surface of the concave mirror so that following reflection from the aforesaid concave mirror the rays from the detector for any given rotational position of the rotor are collimated to a parallel bundle, and a second scanning means for deflecting the aforesaid parallel bundle of rays in a direction substantially perpendicular to the direction of deflection due to the first scanning means, said second scanning means being located substantially at the pupil formed by the intersection of the different bundles of parallel rays from the detector for different rotational positions of the first scanning means.

4,210,811

DRIVE FOR MOVEABLE SHIELD IN LUGGAGE SCREENING APPARATUS

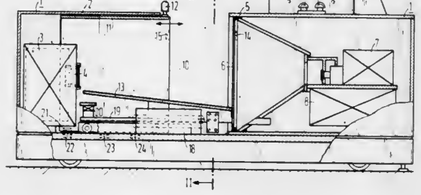
Manfred Dennhoven, Wiesbaden, and Claus Kunze, Taunusstein, both of Fed. Rep. of Germany, assignors to Heimann GmbH, Wiesbaden-Dotzheim, Fed. Rep. of Germany

Continuation of Ser. No. 734,333, Oct. 20, 1976, abandoned. This application Sep. 22, 1978, Ser. No. 945,097

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1975, 2549211

Int. Cl.² G01K *23/00*

U.S. Cl. 250—358 R **5 Claims**



1. In a radiation-screening apparatus for inspecting sealed articles such as parcels and luggage, including a moveable shield selectively enclosing a monitoring duct, and drive means for moving said shield with respect to a fixed housing of said apparatus, the improvement comprising wherein:

said drive means comprises:

an electromagnetically operable linear motor means having a rail and a stator, one of said rail and stator being attached to the shield and the other being fixed in the housing; and motor control means connected to said linear motor means and to an electrical power supply, said control means including three proximity switches and an activator, said switches and activator being mounted to be moveable relative to each other, two of said switches comprising limit end switches terminating electrical power to drive said linear motor at opposite ends of travel of said shield and the third proximity switch comprising a braking switch reducing electrical power to said linear motor between opposite ends of travel of said shield.

4,210,812

X-RAY IMAGING DIAGNOSTIC APPARATUS WITH LOW X-RAY RADIATION

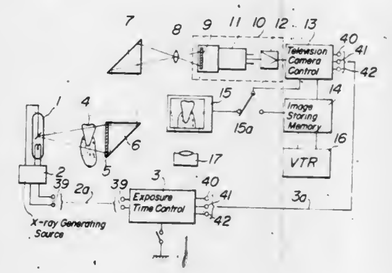
Shoichi Ando; Kiminobu Inaba, and Tomoaki Yoshida, all of Tokyo, Japan, assignors to The Foundation: The Assn. of Japan General Denistry, Tokyo, Japan

Continuation of Ser. No. 851,703, Nov. 15, 1977, abandoned. This application Mar. 30, 1979, Ser. No. 25,466

Claims priority, application Japan, Jun. 2, 1977, 52-63941

Int. Cl.² G03B *41/16*

U.S. Cl. 250—416 TV **4 Claims**



1. An X-ray image diagnostic apparatus having a low X-ray radiation dosage level comprising:

an X-ray generating source for emitting radiation to expose an object;

an optical system having a fluorescent screen at an entrance thereof for receiving said emitted X-ray radiation;

an imaging device comprising a television camera tube having an image intensifier target and a high voltage supply and deflection synchronizing and blanking circuits coupled directly to said optical system for receiving an X-ray image from said fluorescent screen and forming a video signal image from said fluorescent screen image;

a television camera control unit for amplifying the output from said imaging device, said television camera control unit including a sequence circuit for controlling the supply of synchronizing signals to said camera tube;

an exposure time control circuit for controlling the exposure time of the X-ray radiation emitted from said X-ray generating source so that it is less than 1/100 second;

an image storing memory circuit connected to said television camera control unit for storing an image signal from said control unit; and,

a monitor circuit for displaying said image signal, said X-ray exposure time control circuit comprising:

a chattering preventing circuit for shaping an input signal to a rectangular pulse train wave form which serves as a time base wave,

a trigger flip-flop circuit for receiving said rectangular time base wave signal,

a differentiating circuit for receiving said rectangular time base wave signal and supplying an initiation signal to said sequence circuit,

a schmidt trigger circuit for changing a sinusoidal wave form from a power source to a rectangular trigger wave form,

a first decimal counter circuit having an input receiving said rectangular trigger wave form and a reset terminal connected to said trigger flip-flop circuit for supplying a frame blanking signal obtained at its output terminal to said sequence circuit,

a first delay flip-flop circuit having a reset terminal connected to output terminals of said schmidt trigger circuit, said first decimal counter circuit and said trigger flip-flop circuit,

a following reset flip-flop circuit connected to the output terminal of said first delay flip-flop circuit after a delay

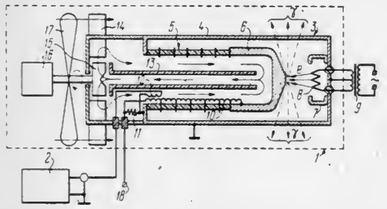
corresponding to one pulse wave and for supplying a delayed output signal,
a first AND circuit for receiving the output signals of said reset flip-flop circuit and said schmidt trigger circuit,
a second decimal counter circuit for receiving the output signal from said first AND circuit,
a third decimal counter circuit for receiving the output signal from said second decimal counter circuit,
a second delay flip-flop circuit connected to the output of said schmidt trigger circuit for supplying an output signal forming a scanning starting signal supplied to said second and third decimal counters and said sequence circuit,
a LED display device connected to said second and third decimal counter circuits through a latching circuit for displaying an exposure time, and
an exposure time setting switching circuit connected to the outputs of said second and third decimal counter circuits for producing an exposure time setting switching signal and transferring it through second and third AND circuits to said X-ray tube so as to start X-ray emission.

4,210,813

IONIZING RADIATION GENERATOR

Vladimir F. Romanovsky, proezd Shokalskogo,4,korpus 1,kv.13; Vadim S. Panasjuk, 3 Schukinsky proezd,3,kv.80; Boris M. Stepanov, Leninsky prospekt,57,kv.34; Alexandr M. Ovcharov, Balaklavsky prospekt,4,korpus 2,kv.104, and Jury A. Akimov, Vladimirskaya ulitsa,4,kv. 10, all of Moscow, U.S.S.R.

Filed Nov. 16, 1978, Ser. No. 961,378
Claims priority, application U.S.S.R., Jan. 9, 1978, 2568767
Int. Cl.² H05G *1/10*
U.S. Cl. 250—421 **2 Claims**



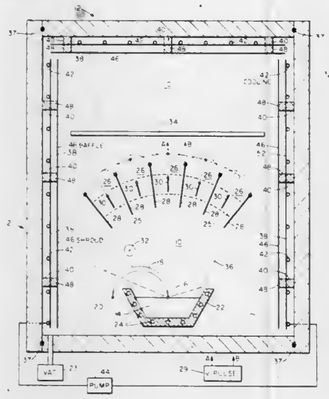
1. An ionizing radiation generator comprising:
an ionizing radiation emitter including a resonance transformer and an accelerating tube;
a field winding and a step-up winding, having a low-voltage and high-voltage ends, of said resonance transformer, said field winding of said resonance transformer being arranged near said low-voltage end of said step-up winding;
an electrically conducting housing of said resonance transformer, electrically associated with said low-voltage end of said step-up winding;
a high-frequency oscillator electrically associated with said field winding;
a high-voltage electrode of said accelerating tube, connected to said high-voltage end of said step-up winding of said resonance transformer;
a tubular insulator of said accelerating tube, secured in said electrically conducting housing of said resonance transformer, said high-voltage electrode being attached to one end thereof;
an inner space of said tubular insulator, accommodating said step-up winding of said resonance transformer;
an evacuated inner space of said accelerating tube, confined between said electrically conducting housing of said resonance transformer and said tubular insulator;
a low-voltage electrode of said accelerating tube, arranged in said electrically conducting housing of said resonance transformer and electrically associated with said housing;
a source of charge particles of said accelerating tube, arranged in said evacuated space and electrically associated with one of said electrodes;
a coolant supplied into said inner space of said tubular insulator, to said step-up winding of said resonance transformer and to said high-voltage electrode of said accelerating tube.

4,210,814

CONTROL OF PYROPHORICITY IN DEPOSITS PRODUCED BY ELECTRON BEAM EVAPORATION OF URANIUM

John C. Clifford, Richland, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Jan. 9, 1978, Ser. No. 867,678
Int. Cl.² H01J *27/00*
U.S. Cl. 250—427 **19 Claims**



1. Apparatus for reducing the pyrophoricity of deposits of a material evaporated within a chamber comprising:
a sealed chamber defined by an enclosure;
means for providing within said chamber an atmosphere of generally non-reactive nature;
a reservoir of a material to be evaporated;
means for directing a vapor of said material from said reservoir into said chamber;
at least one surface within said chamber in the path of the directed vapor and on which at least portions of the vaporized material deposits;
means for cooling said enclosure to a temperature at which said vapor deposits at a relatively low pyrophoric density; and
means for maintaining a temperature for said collection surfaces higher than the enclosure temperature to promote deposition of said material at a relatively higher density.

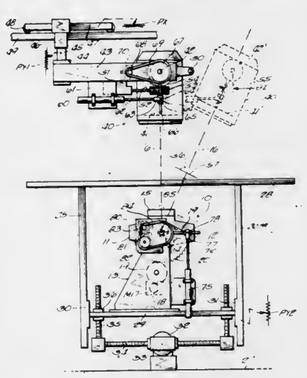
4,210,815

X-RAY APPARATUS SERVO SYSTEM

Mark E. Riehl, Waukesha, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,274
Int. Cl.² G01N *21/34, 23/04*
U.S. Cl. 250—445 R **4 Claims**

1. In x-ray apparatus including an x-ray source device for projecting an x-ray beam from its focal spot, an x-ray receptor device spaced from said source to enable an examination subject to be disposed in the beam from the source to the receptor, means for mounting said source device and said receptor device, respectively, for angulation about their respective first and second axis, the angulation axis of one of said source device and said receptor device being stationary and the other of said source and said receptor devices and its angulation axis being translatable along a first line having a length designated as the x distance and constituting one side of a triangle, said first line being perpendicular to a second line extending between said axes and having a length designated as the y distance and constituting another side of said triangle, a line extending between the axis of the untranslated device and the axis of the translated device constituting the hypotenuse of said triangle and defining with said second line an angle designated as θ, and first and second servo systems including motor means operative to angulate said source and said receptor, respectively,
each of said servo systems including control means having input means for an error signal and having output means supplying driving power to the servo motors for angulating said devices in response to error signals,
respective means for developing first signals each corresponding with the varying instantaneous values of the tangents of the angles (in radians) in which said devices are angulated during operation of said motor means and during concurrent angulation of said image receptor and said x-ray source means while an error signal exists,
means for developing x distance and y distance related signals proportional, respectively, to the said x and y distances which define the position to which one device has been translated,
means for dividing said signal proportional to the x distance by the signal proportional to the y distance to produce a



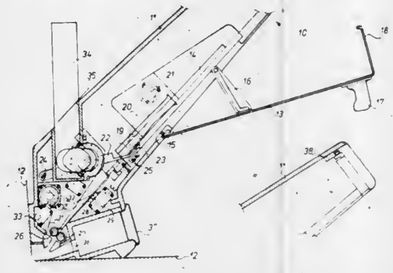
servo system command signal proportional to the tangent of θ,
means for producing respective angulation error signals for said receptor and said source representing the differences between said command signal corresponding with tangent of θ resulting from division and each of said instantaneous varying signals corresponding with the tangents of the angulation angles in radians, said servo motors operating until being interrupted in response to nulling of said error signals,
individual means either of which is responsive to the existence of one error signal by preventing energization of said x-ray source,
means for producing a signal corresponding directly with the value of the angle to which said x-ray source has been angulated at any instant during angulation following translation of said one of said image receptor and x-ray source,
means for producing an error signal representative of the difference between said signal corresponding with said instantaneous angulation and the command signal corresponding with the tangent of θ,
means responsive to the existence of said last named error signal by preventing energization of said x-ray source,
means for producing a signal corresponding directly with the value of the angle to which said receptor has been angulated at any instant following translation of one of said image receptor and said source,
means for producing an error signal representative of the difference between said last named signal and the command signal corresponding with the tangent of θ, and
means responsive to existence of said last named error signal by preventing energization of said x-ray source.

4,210,816

APPARATUS FOR UNLOADING RADIOGRAPHIC CASSETTES IN DAYLIGHT

Emile F. Stievenart, Hoboken; Hendrik S. Plessers, Boechout, and Georges J. Neujens, Merksem, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Continuation of Ser. No. 742,636, Nov. 17, 1976, abandoned. This application Aug. 10, 1978, Ser. No. 932,628
Claims priority, application United Kingdom, Nov. 20, 1975, 47807/75
Int. Cl.² G11B *1/00*
U.S. Cl. 250—468 **7 Claims**



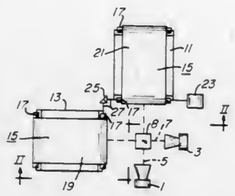
1. An apparatus for automatically unfastening and opening radiographic film cassettes of the type having a container body for holding a sheet of said film and including bottom and side walls, a lid hinged to one side wall of said body and unlatchable latching means for securing said lid in closed position on said body, said apparatus comprising a housing having an access opening in one wall thereof for the introduction and removal of one of said cassettes into and from the housing interior and including an openable closure for said opening, said housing being substantially light-tight when said closure is closed; a first switch means activated in response to closure of said closure means; means within said housing adjacent said opening for supporting a cassette in a downwardly inclined position with its bottom side up and its hinged end elevated above its opposite end at an angle sufficient to cause the film sheet to slide upon said lid under the action of gravity when the cassette body is clear of said lid, a second switch means associated with said supporting means and activated in response to the presence thereon of a cassette in correctly oriented condition; a cyclically operative cassette unlatching and opening mechanism including a motor drive means for cyclically operating said mechanism when energized and being energized in response to activation of both said switch means, means for engaging said cassette latch and unlatching the same, and means for thereafter engaging a wall of the body of said cassette at a point spaced from the hinge of the latter and for elevating the end of said body remote from said hinge clear from said lid to permit said film sheet to slide along said lid out of said cassette under the force of gravity, and means for receiving the thus released radiographic film.

4,210,817

APPARATUS FOR ELIMINATING CROSS-FOGGING IN BIPLANE RADIOGRAPHY

Joseph A. Horton, 4817 Trinity Pl., Philadelphia, Pa. 19143

Filed Jan. 9, 1979, Ser. No. 2,199
Int. Cl.[2] G21G *11/00*
U.S. Cl. 250—515 **5 Claims**



1. An apparatus for practicing biplane radiography comprising first and second X-ray emitters arranged to direct x-rays through a common object along intersecting planes and first and second film changers for sequentially presenting film for exposure by x-rays generated by said first and second x-ray emitters respectively, the improvement for eliminating cross-fogging comprising:

first and second shielding means associated with the first and second film changers respectively, each said shielding means having radiolucent and radiopaque portions alternately disposed in front of the associated film changer to allow or block passage of x-rays to the film presented for exposure, respectively; and

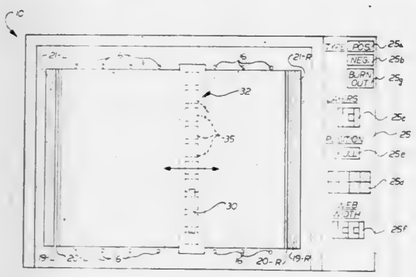
means for synchronizing the shield means to dispose the radiopaque portion of one shielding means in front of the film presented for exposure by its associated film changer when the radiolucent portion of the other shielding means is disposed in front of the film presented for exposure by its associated film changer.

4,210,818

APPARATUS FOR DETERMINING IMAGE AREAS FOR PRINTING

Barry P. Green, Waterford, Conn., and Francis J. Sciulli, Palm Bay, Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Jun. 7, 1978, Ser. No. 913,519
Int. Cl.[2] G01N *21/30*
U.S. Cl. 250—559 **9 Claims**



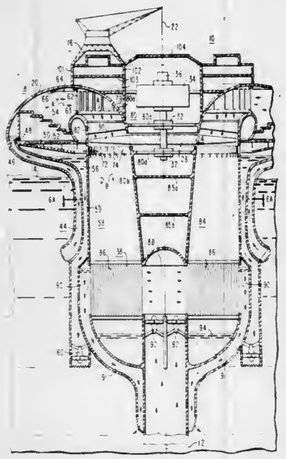
1. Apparatus for determining the relative image area in each column of an image member divided into ink key columns corresponding to those in which ink is controlled in a printing cylinder comprising support means divisible into ink key columns for supporting said image member at positions thereon corresponding to the column positions on said printing cylinder at which the image on said image member is to be printed, light source means for directing light on said columns of said support means, means for sensing light from said columns and providing signals indicating the amount of light received, means for providing information as to areas of said image member containing information to be printed, and means for utilizing said area information for storing data from said signals only from columns of said support means in said areas to be printed.

4,210,819

OPEN CYCLE OCEAN THERMAL ENERGY CONVERSION STEAM CONTROL AND BYPASS SYSTEM

J. Michael Wittig, West Goshen, and Stephen J. Jennings, Radnor Township, Delaware County, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 17, 1978, Ser. No. 934,574
Int. Cl.[2] F03G *7/04*
U.S. Cl. 290—52 **7 Claims**



1. An open cycle ocean thermal energy conversion system comprising:

an axial flow turbine having a rotor whose axis of rotation is vertical and radially inner and outer casing structures which therebetween define an annular motive fluid path, said rotor including an annular array of radial blades extending across said fluid path;

a condenser in fluid communication with said annular motive fluid flow path for condensing the motive fluid expanded through the turbine blades;

a flash evaporator disposed about the turbine's axis of rotation, said evaporator having a generally toroidal-shaped casing, the interior of said casing being in fluid communication with said condenser both through and in bypassing relationship with said turbine blades;

first means for regulating motive fluid flow from said evaporator to said condenser through said turbine blades; and

second means for regulating bypass motive fluid flow from said evaporator to said condenser.

4,210,820

OPEN CYCLE OCEAN THERMAL ENERGY CONVERSION SYSTEM STRUCTURE

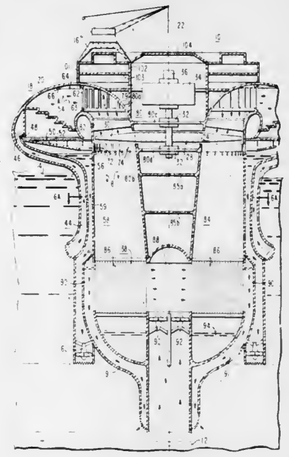
J. Michael Wittig, West Goshen, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 17, 1978, Ser. No. 934,575
Int. Cl.[2] F03G *7/04*
U.S. Cl. 290—52 **22 Claims**

1. An open cycle, ocean thermal energy conversion system comprising:

an axial flow turbine having a substantially vertical rotatable shaft about which at least one axial row of radial blades is disposed, an annular steam inlet structure through which motive steam is supplied to said turbine blades, and a steam outlet structure through which motive steam is exhausted after expansion through said blades;

a flash evaporator disposed about the turbine's shaft, said evaporator having a generally toroidal-shaped casing, an inlet opening in a radially outer portion of said casing through which relatively warm ocean water is received, a portion of said warm ocean water being flashed into steam and transmitted through said turbine steam inlet structure, the unflashed warm ocean water being drained from said evaporator casing through a drain outlet disposed in a radially inner portion of said casing, said water assuming a substantially radial flow direction from the inlet to the outlet;



a substantially annular condenser disposed axially adjacent said turbine about said turbine's axis of rotation, said condenser including radially inner and outer tube sheets, a plurality of tubes extending therebetween, a condensate sump disposed under said tubes for collection of condensed motive steam, and an outlet manifold, said inner tube sheets and said steam outlet structure cooperating to form an inlet manifold for distributing relatively cold ocean cooling water to the tubes, said cooling water traversing the tubes and exiting therefrom into the outlet manifold disposed radially adjacent said outer tube sheets;

a generator driven by said turbine for producing electrical energy;

first propulsion means for circulating relatively warm ocean water through said evaporator's inlet opening and drain outlet; and

second propulsion means for circulating the cooling water through said condenser's inlet and outlet manifolds.

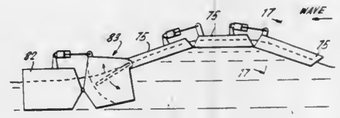
4,210,821

APPARATUS FOR EXTRACTING ENERGY FROM MOVEMENT OF WATER

Christopher Cockerell, Southampton, England, assignor to Wavepower Limited, Southampton, England

Filed Mar. 21, 1977, Ser. No. 779,705
Claims priority, application United Kingdom, Mar. 31, 1976, 13039/76
Int. Cl.[2] F03B *13/00*
U.S. Cl. 290—53 **23 Claims**

1. Apparatus for converting into useful energy movement imparted thereto by movement of water, comprising at least two interconnected buoyant members each having a substantially continuous surface which contacts the water so that in use of the apparatus said members move relative to each other about the interconnection due to vertical motions of the water, means for converting said relative movements of the interconnected members into useful energy, at least one of said members being provided with a member which in use of the apparatus is movable relative thereto in response to horizontal motions of the water, and means for converting the movement of said member into useful energy, said apparatus in use floating on the surface of the water and being free from any vertical



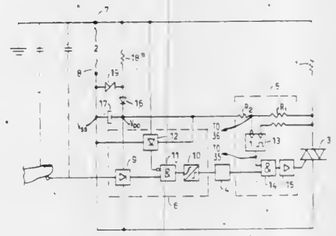
reaction forces between itself and any member supported from the bed of the water, said means responsive to horizontal motions comprising a flap member located for movement within a duct provided in the associated one of said members and movable by water flowing into and out of the duct due to surge motion of the water, said flap member being operatively connected to means for converting its movement into useful energy, said flap being pivotally connected to the associated one of said members, and each duct having a curved wall whose radius is struck from the pivot axis of said flap.

4,210,822

TOUCH CONTROL SWITCH

Lars A. Wern, Upplandsgatan 65, 113 28 Stockholm, Sweden

Filed Mar. 13, 1978, Ser. No. 885,806
Claims priority, application Sweden, Aug. 5, 1977, 7708952
Int. Cl.[2] H03K *17/68*
U.S. Cl. 307—116 **3 Claims**



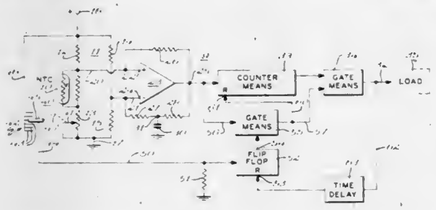
1. Touch control switch suitable for connection between a lamp load and a supply circuit in a lighting installation for alternating current and comprising a semiconductor switching element with a gate electrode, a counting circuit with a forward stepping input and a digital control output connected to the gate electrode of the semiconductor switching element via a trigger pulse generating circuit for controlling the conduction of the semiconductor switching element in dependence on the condition of activation of the digital control output, and a control pulse shaping circuit having an output connected to the forward stepping input of the counting circuit and a first and second input terminal for connection to a first and second, respectively terminal of the supply circuit via a touch sensitive impedance, characterized in that the trigger pulse generating circuit comprises an edge-triggered mono-pulse generating circuit that has a first input for leading edge triggering and a second input for trailing edge triggering jointly connected to the supply circuit.

4,210,823

CONDITION CONTROL SYSTEM WITH SPECIAL SET POINT MEANS

John L. Kabat, Bloomington, and Marvin D. Nelson, St. Louis Park, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 15, 1978, Ser. No. 905,704
Int. Cl.² G05B *13/00*
U.S. Cl. 307—117 **10 Claims**



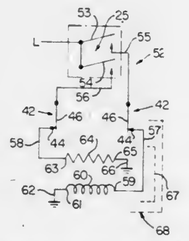
1. Means for sensing a change in a set point of a condition control system, including: condition control system means responsive to a sensed condition and including condition control set point means; said condition control system means having a switched output upon said system means sensing a condition within a proportional band of said system; said condition control system means having a constant output upon said system means sensing a condition outside of said proportional band; said set point means including pulse generating means activated by movement of said set point means; and pulse responsive circuit means responsive to said pulse generating means and connected to an intermediate portion of said condition control system means; said pulse generating means activating said intermediate portion of said condition control system whenever said set point means is moved to cause the set point of said system means to have a value outside of said proportional band of said system; said pulse responsive circuit means responding to the change of said set point means to cause said intermediate portion of said condition control system means to adjust said switched output to correspond with said set point means.

4,210,824

TIMER CONTROLLED CONTROL SYSTEM AND TIMER CONSTRUCTION THEREFOR

Edgar E. Marquis, Newtown, and James A. Draghi, Southington, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 31, 1977, Ser. No. 847,330
Int. Cl.² H01H *43/00*
U.S. Cl. 307—141 **10 Claims**



1. In a timer controlled control system for an apparatus having two controlled devices and a timer construction operatively associated with said devices to operate the same, the improvement wherein said timer construction comprises a single timer having a pair of selector means respectively operatively associated with said devices and each selector means being adapted for selecting the total timer period said timer is to operate both of said devices and each selector means being adapted for selecting a certain percentage of said selected total time period said timer is to operate its respective device concurrently with the other device, said system having an energy source, said timer construction having a main unit and two branch units, said timer having a time setting means for operating said main unit, said main unit being adapted to interconnect said energy source respectively through said two branch units to said controlled devices for a time period set by said time setting means, said pair of selector means being respectively and operatively interconnected to said time setting means so that either selector means can set said time setting means for said particular time period, and means respectively and operatively interconnecting said pair of selector means to said branch units so that either selector means can set its respective branch unit to interconnect said energy source to its respective controlled device for only said certain percentage of said particular time period whereby one of said controlled devices will be interconnected to said energy source for the entire said particular time period and the other of said controlled device will be interconnected to said energy source only for said certain percentage of said particular time period.

6. In a timer construction for a timer controlled control system of an apparatus having two controlled devices, said timer construction being adapted to be operatively associated with said devices to operate the same, the improvement wherein said timer construction comprises a single timer having a pair of selector means respectively being adapted to be operatively associated with said devices and each selector means being adapted for selecting the total time period said timer is to operate both of said devices and each selector means being adapted for selecting a certain percentage of said selected total time period said timer is to operate its respective device concurrently with the other device, said timer construction having a main unit and two branch units, said timer having a time setting means for operating said main unit, said main unit being adapted to interconnect an energy source respectively through said two branch units to said controlled devices for a time period set by said time setting means, said pair of selector means being respectively and operatively interconnected to said time setting means so that either selector means can set said time setting means for said particular time period, and means respectively and operatively interconnecting said pair of selector means to said branch units so that either selector means can set its respective branch unit to interconnect said energy source to its respective controlled device for only said certain percentage of said particular time period whereby one of said controlled devices will be interconnected to said energy source for the entire said particular time period and the other of said controlled devices will be interconnected to said energy source only for said certain percentage of said particular time period.

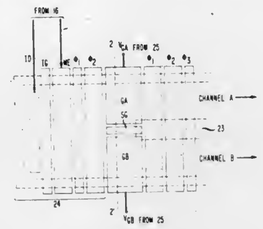
4,210,825

LINEAR DIFFERENTIAL CHARGE SPLITTING INPUT FOR CHARGE COUPLED DEVICES

Ronald E. Crochiere, Berkeley Heights, N.J.; Carlo H. Sequin, Berkeley, Calif., and Michael F. Tompsett, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 748,485, Dec. 8, 1976. This application May 12, 1978, Ser. No. 905,169
Int. Cl.² G11C *19/28*; H01L *29/78*
U.S. Cl. 307—221 D **6 Claims**

1. A charge transfer device comprising a layer of semiconductor material in which first charge packets can be moved along a first path from an input portion in response to a succession of localized electric fields, and electrical conductor means including a first set of electrodes coupled to said layer for generating said fields in a manner to move said first charge packets along said first path, wherein said input portion includes means for generating signal independent charge packets, said means comprising a second electrode coupled to said layer and an input diode along with clock means for applying clock pulses to said second electrode and said input diode, and input means comprising first and second input gate electrodes and an input signal source for applying to said first and second



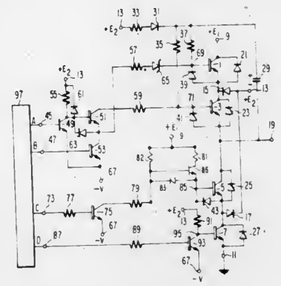
gate electrodes information input signals for dividing each of said signal independent charge packets into first and second charge packets, each of said first charge packets being linearly related to said information input signals, said first charge packet being positioned for movement along said first path.

4,210,826

SWITCHING CIRCUIT

Richard H. Baker, Bedford, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 21, 1978, Ser. No. 944,633
Int. Cl.² H03K *17/00*
U.S. Cl. 307—254 **15 Claims**



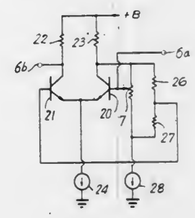
1. A bipolar nonlinear switching amplifier, comprising:
first through fourth like conductivity transistor switch means connected sequentially in cascode, each having a base, collector, and emitter electrodes, said base electrodes being receptive of first through fourth control signals, respectively, an operating voltage E_1 being applied to one end of said cascode combination, a source of reference voltage being applied to the other end of said cascode combination;
a primary output terminal connected to the common connection of said second and third transistor switch means;
first diode means connected between the common connection of said first and second switch means and a first source of bias voltage having a voltage level of E_2 volts and the same polarity as said operating voltage, said first diode means being polarized for providing in combination with said second transistor switch means a gated current path, for selectively passing current in one direction between said source of bias voltage and said output terminal; and
second diode means connected between said source of bias voltage and the common connection of said third and fourth switch means, said second diode means being polarized in the opposite direction as said first diode means, for providing in combination with said third transistor switch means a gated current path for selectively passing current in the opposite direction between said source of bias voltage and said output terminal;
the difference in voltage between said operating voltage E_1 and bias voltage E_2 being less than the V_{CEX}, the breakdown voltage from collector to emitter with some backbias voltage applied to the base electrode of each one of said first through fourth transistor switch means, whereby the combination of said first through fourth transistor switch means are operable to a first state where said first and second switch means are turned on and said third and fourth switch means turned off, for applying said operating voltage E_1 to said primary output terminal, to a second state where only said second switch means is turned on, to a third state where all of said first through fourth switch means are turned off, to a fourth state where only said third switch means is turned on, and to a fifth state where only said third and fourth switch means are turned on for applying said reference voltage to said primary output terminal, the combination of said first through fourth transistor switches being operable from any one to another of said first through fifth states, for permitting switching of said operating voltage E_1 having a value substantially greater than the V_{CEX} rating of each one of said first through fourth transistor switch means, and also being operable from either one of said second, third and fourth states directly to a sixth state in which only said second and third transistor switch means are turned on for providing bidirectional current flow between said source of bias voltage and said output terminal.

4,210,827

CONTROL CIRCUIT FOR GENERATING A STEP-TYPE CONTROL SIGNAL AND A CONTINUOUSLY VARYING CONTROL SIGNAL WHOSE AMPLITUDE CHARACTERISTIC REPEATS AT THE STEP TRANSITION

Kenichi Kanazawa, Atsugi, and Yukio Tanaka, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 10, 1978, Ser. No. 932,618
Claims priority, application Japan, Aug. 11, 1977, 52-96480
Int. Cl.² H03K *1/14*
U.S. Cl. 307—264 **9 Claims**



1. A control circuit for use with an adjustable resistance to generate a first control signal whose amplitude is a function of the setting of said resistance and to generate a second control signal whose level is changed over from a first level to a second level at a predetermined setting of said resistance, said control circuit comprising a pair of transistor means each having base, emitter and collector electrodes, the emitter electrodes of said pair of transistor means being coupled in common to a reference potential; an adjustable resistance coupled to the collector electrode of one of said pair of transistor means and having an adjustable output tap from which said first control signal is derived; impedance means coupled to the collector electrode of said one of said pair of transistor means; a current source connected in common to said adjustable resistance and to said impedance means such that each of said adjustable resistance and said impedance means is coupled between said collector electrode and said current source;

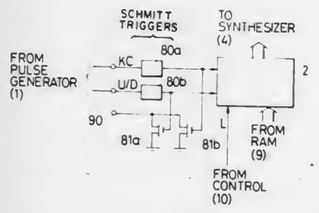
means for connecting said adjustable output tap of said adjustable resistance to the base electrode of said one of said pair of transistor means; means for connecting an output of said impedance means to the base electrode of said other of said pair of transistor means; and means for deriving said second control signal from the collector electrode of said other of said pair of transistor means, such that as the setting of said adjustable output tap changes, the voltage applied to the base electrode of said one of said pair of transistor means, as well as said first control signal, correspondingly changes from a first amplitude toward a second amplitude until said predetermined setting is reached, whereupon the relative conductivities of said pair of transistor means is reversed and said first control signal changes back to said first amplitude.

4,210,828

DEVICE FOR IMPROVING OUTPUT WAVEFORM OF MANUALLY CONTROLLABLE PULSE GENERATOR FOR USE IN PRESET ELECTRONIC TUNING CONTROL DEVICE

Saburo Takaoka, and Youichiro Tsuda, both of Tokarozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 2, 1978, Ser. No. 912,143
Claims priority, application Japan, Jun. 3, 1977, 52-66067
Int. Cl.[2] H03K *5/153*
U.S. Cl. 307—268 **3 Claims**



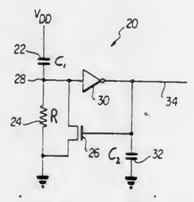
1. In a preset type electronic tuning control device having a manually operable pulse generator and an up/down counter having inputs connected to at least two outputs of said pulse generator, a device for improving the output waveforms of said pulse generator and comprising a first Schmitt trigger circuit connected to one of said outputs of said pulse generator and a second Schmitt trigger circuit connected to the other output of said pulse generator, and further comprising threshold level checking means for checking the threshold levels of said first and second Schmitt trigger circuits.

4,210,829

POWER UP CIRCUIT WITH HIGH NOISE IMMUNITY

Thomas S. W. Wong, San Francisco; Wing Y. Wong, and Edwin M. W. Chow, both of Sunnyvale, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 2, 1978, Ser. No. 947,521
Int. Cl.[2] H03K *17/60, 5/08*
U.S. Cl. 307—296 R **8 Claims**



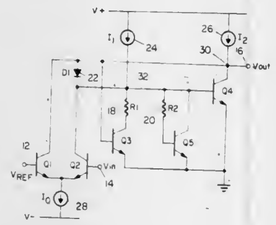
1. In a power up circuit for resetting an associated digital circuit upon the application of a power supply potential to the digital circuit which includes a series connection of a capacitor and an impedance which is connected between the power supply potential and a reference potential and an inverting amplifier having an input coupled to the node of the capacitor and the impedance and an output which is coupled to a reset line of the digital circuit, the improvement comprising:
(a) a transistor having a control electrode and two additional electrodes, the two additional electrodes being coupled in parallel with the impedance, the control electrode being coupled to the output of the inverting amplifier; and
(b) a second capacitor having two terminals, the first terminal being coupled to the output of the inverting amplifier and the second terminal being coupled to the reference potential.

4,210,830

HIGH SPEED SWITCHING CIRCUIT

Kiyoshi Fukahori, San Jose, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Aug. 28, 1978, Ser. No. 937,510
Int. Cl.[2] H03K *5/153*
U.S. Cl. 307—362 **21 Claims**



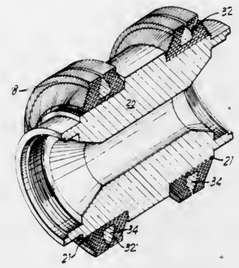
1. A high speed switching circuit comprising:
a first transistor and means for connecting said first transistor in a common emitter circuit configuration;
a second transistor and means for connecting said second transistor in a common emitter circuit configuration with its collector connected to the base of said first transistor;
resistance means connected between the collector of said first transistor and the base of said second transistor;
first means for supplying a substantially constant predetermined current to a first circuit node interconnecting said resistance means and the base of said second transistor, the product of said predetermined current and the resistance of said resistance means being greater than the base-to-emitter voltage drop of said second transistor when it is turned on;
second means for supplying a substantially constant current to a second circuit node interconnecting the base of said first transistor and the collector of said second transistor; and
means for selectively steering the flow of current from said first current supplying means away from said first circuit node and from the base of the second transistor, whereby said first transistor is turned on by flow of current into its base from said second current supplying means, and said second transistor is turned off; and for selectively restoring the flow of current from said first current supplying means first through said resistance means into the collector of the first transistor whereby the base voltage of said second transistor is increased, and the base voltage of said first transistor is then decreased as the collector of said second transistor approaches ground to rapidly change the states of said first and second transistors.

4,210,831

INVOLUTE LAMINATION ARMATURE FOR A LINEAR RECIPROCATING MOTOR

Ralph Hurst, Clifton Park, N.Y., assignor to Exxon Enterprises, Inc., New York, N.Y.

Filed Jan. 2, 1979, Ser. No. 143
Int. Cl.[2] H02K *41/02*
U.S. Cl. 310—13 **16 Claims**



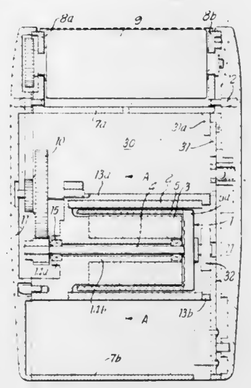
1. An improved armature for a linear motor comprising a generally cylindrical core of homogeneous nonlaminate ferromagnetic material and at least one annular ring of involute laminations surrounding said core and secured thereto each said lamination being in the form of an involute and extending radially from and axially along said core to provide an essentially solid cylindrical armature having an outer region of laminate construction.

4,210,832

ELECTRIC SHAVERS

Enzo Ascoli, Lausanne, Switzerland, assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 681,769, Apr. 29, 1976, abandoned.
This application Mar. 14, 1978, Ser. No. 886,482
Claims priority, application United Kingdom, May 2, 1975, 18361/75
Int. Cl.[2] H02K *7/14*
U.S. Cl. 310—50 **14 Claims**



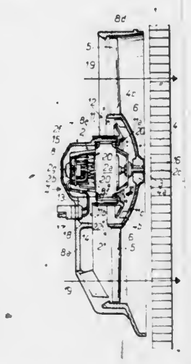
1. In an electric shaver comprising a housing, a cutting head, electric motor having a stator including a hollow cylinder of magnetizable material and a rotor mounted for rotation within the stator cylinder, and electric circuit means for supplying energizing current to the motor, the improvement comprising:
the stator having two flat parallel opposed faces and the housing being moulded in situ around the hollow stator cylinder with an external surface of the housing formed flush with the flat faces of the stator so as to be contiguous with the stator from end to end to secure and locate the stator cylinder in position and to serve as a reference member for mounting of the cutting head, electric motor and electric circuit means.

4,210,833

MOTOR-FAN UNIT WITH COOLED MOTOR

Rene R. Neveux, Les Clayes-sous-Bois, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Dec. 6, 1977, Ser. No. 858,062
Claims priority, application France, Dec. 13, 1976, 76 37451
Int. Cl.[2] H02K *9/00*
U.S. Cl. 310—58 **2 Claims**



1. In a motor-fan unit for an automobile engine cooling system, said unit comprising an electric motor, a rotary helicoid fan driven by said electric motor, a rotary centrifugal blading fitted in a central area of said helicoid fan and driven in conjunction therewith by said electric motor, and means whereby the air sucked by said centrifugal blading is caused to flow over said electrical motor and cool the same, the combination comprising:
(a) an inner housing surrounding said electric motor and having at least one lateral air inlet,
(b) an outer shroud surrounding said helicoid fan,
(c) at least one arm bracing said outer shroud to said inner housing and extending generally radially opposite said lateral air inlet, and
(d) said arm including a generally U-shaped cavity having its concavity opening in the direction of the air flow that is circulated by said helicoid fan,
(e) said cavity being effective to cause air sucked into said cavity through said lateral air inlet to move along a tortuous path.

4,210,834

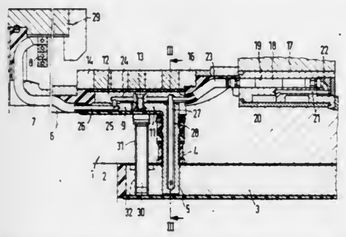
DEVICE FOR COOLING AND ELECTRICALLY CONNECTING FIELD-CURRENT LINES TO WATER-COOLED TURBOGENERATOR ROTORS

Erich Weghaupt, and Gerhard Krieger, both of Mülheim, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,187
Claims priority, application Fed. Rep. of Germany, May 23, 1977, 2723202
Int. Cl.[2] H02K *1/32*
U.S. Cl. 310—61 **7 Claims**

1. In a water-cooled turbogenerator rotor mounted on a rotor shaft and having water-cooled end turn leads surrounded by a rotor end-bell and further having radial current-contact pins contacting ends of exciter current lines disposed in the rotor shaft, the pins being cooled by cooling water fed thereto through high-pressure insulating hoses axially connected to cooling water distribution, chambers provided on the rotor shaft, the pins being connectible at radially outer ends thereof to the water-cooled end turn leads disposed in slots formed on

the rotor shaft and to the high-pressure insulating hoses, a device for cooling and electrically connecting the exciter current lines comprising respective widened contact straps formed at respective ends of the end turn leads extending out from the rotor end-bell and at the respective radially outer ends of the current-contact pins, said widened contact straps of said end turn leads and said current-contact pins being received in a slot formed in the surface of the rotor shaft and being in



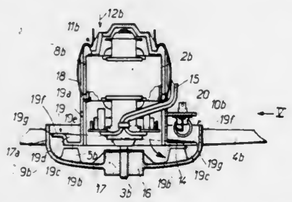
mutually abutting relationship, and a connecting strap overlying said widened contact straps and electrically, hydraulically and mechanically connecting said widened contact straps, said connecting straps being formed with cooling-water channels and means for connecting said cooling-water channels to the high-pressure insulating hoses, said radial current-contact pins and said connecting straps being disposed beyond the rotor end-ball in axial direction of the rotor shaft.

4,210,835

FAN WITH A COOLED MOTOR

Rene R. Neveux, Les Clayes-sous-Bois, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Dec. 6, 1977, Ser. No. 858,061
Claims priority, application France, Dec. 13, 1976, 76 37449
Int. Cl.[2] H02K *9/06*
U.S. Cl. 310—62 **4 Claims**



1. In a motor-fan unit for an automobile engine cooling system, said unit including an electric motor having an energizing circuit, and a rotary helicoid fan driven by said electric motor, the combination comprising:

(a) a rotary centrifugal blading fitted in a central area of said helicoid fan and driven in conjunction therewith by said electric motor to impel air,

(b) means whereby the air impelled by said centrifugal blading is caused to flow over said electric motor and cool the same,

(c) a volute fixed with respect to said unit and extending around the rotary centrifugal blading and being effective to receive the air impelled by the blading,

(d) air outlet means on said helicoid fan which is adjacent to the electric motor,

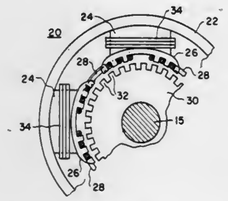
(e) said outlet means being effective to discharge said air received by said volute out of said volute at said helicoid fan side.

4,210,836

PERMANENT MAGNET GENERATOR

Carroll C. Kouba, Fort Shawnee, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 10, 1978, Ser. No. 894,879
Int. Cl.[2] H02K *19/12*
U.S. Cl. 310—112 **4 Claims**



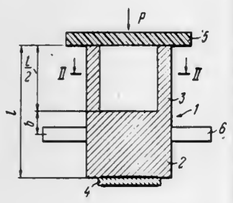
1. A dynamoelectric machine comprising: a main generator and an auxiliary generator within a common housing; said main generator comprising a rotor and a stator respectively including field and armature windings that produce magnetic fields; said auxiliary generator comprising a rotor mounted for rotation on a common shaft with said rotor of said main generator and a stator including a plurality of radially disposed permanent magnet pole members with a pole face portion of magnetic material at the inner extremity of each pole member, said pole members connected into a magnetic circuit at their outer periphery, and an output winding located in said pole face portions; the magnetic circuit of said auxiliary generator stator being located within said magnetic fields produced by said main generator windings; and a short-circuited conducting means encircling each of said auxiliary generator pole members for minimizing the effects of said magnetic fields on said magnetic circuit of said auxiliary generator.

4,210,837

PIEZOELECTRICALLY DRIVEN TORSIONAL VIBRATION MOTOR

Petr E. Vasiliev, ulitsa Ugnyagyasju, 9, kv. 17, Vilnjus; Kazimiras M. Ragulskis, ulitsa Donelaichio, 17, kv. 20, Kaunas; Ionas A. Savitskas, ulitsa Kauno, 25, kv. 104, Vilnjus; Vitaly M. Misikov, ulitsa Karolinishkju, 13, kv. 226, Vilnjus, and Oleg D. Topolnitsky, ulitsa Dzerzhinskogo, 130, kv. 47, Vilnjus, all of U.S.S.R.

Filed Mar. 8, 1979, Ser. No. 18,594
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—323 **10 Claims**



1. A vibration motor comprising: a concentrator of torsional vibrations; a cylinder-shaped first stage of said concentrator; a cylinder-shaped second stage of said concentrator, having a cross-sectional area smaller than that of said first stage and rigidly coupled with said first stage; a piezoelectric cell contacting said first stage; a rotor contacting said second stage; rods provided on a side surface of said first stage in a plane normal to the axis of said concentrator; said rods being inclined each at an acute angle to a tangent at a point where said rod is attached to a line of intersection of the side surface of said first

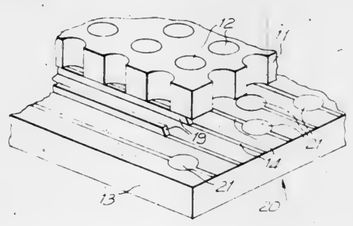
stage with said plane of location of the rods; said rods serving as resonators of torsional vibrations propagating therein.

4,210,838

GAS DISCHARGE DISPLAY PANEL

Frank Walters, Bury, England, assignor to Ferranti Limited, Hollinwood, England

Filed Aug. 14, 1978, Ser. No. 933,570
Claims priority, application United Kingdom, Aug. 25, 1977, 35726/77
Int. Cl.[2] H01J *61/04, 61/30, 61/54*
U.S. Cl. 313—198 **7 Claims**



1. A gas discharge display panel including a block of electrically insulating material containing a plurality of gas filled cavities forming display cells arranged in a two-coordinate array, each line of cavities including a priming cell containing a discharge for providing ultraviolet radiation to effect priming of adjacent display cells, a first end plate attached to the block to seal off one end of each of said cavities, the plate carrying on one face thereof adjacent the block a set of conductors extending along one coordinate of the array and associated one each with lines of cavities to form electrodes of discharge cells contained in said cavities the conductors having thickened parts extending across the ends of the cavities of display cells to space the end plate from the block so that the parts of the conductors associated with the cavities of the priming cells are spaced from the ends of the cavities enabling radiation from a priming cell discharge extending into the space to illuminate the sides of adjacent conductors, a second plate attached to the block to seal off the other ends of the cavities and carrying on one face thereof adjacent the block a plurality of further electrodes corresponding to other ends of the cavities, and a further set of conductors extending along the other co-ordinate of the array associated one each with lines of cavities connected to said further electrodes by way of resistive elements.

4,210,839

MERCURY LAMP FOR PROMOTING PLANT GROWTH

Dieter Hagen, Pincourt, Canada, assignor to Westron of Canada Limited, Dorval, Canada

Filed Mar. 13, 1978, Ser. No. 886,040
Int. Cl.[2] H01J *17/08, 1/14, 1/30*
U.S. Cl. 313—218 **14 Claims**

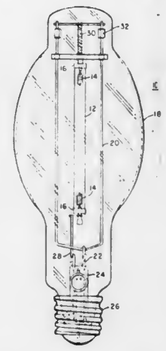
1. A mercury lamp having a spectral output which promotes plant growth and having electrodes therein with an emission coating material on said electrodes, characterized by said coating material including the mineral scheelite, the promotion of plant growth by said spectral output exceeding the promotion of plant growth by the spectral output of an identical lamp whose emission coating material does not include the mineral scheelite.

4,210,840

HID LAMP EMISSION MATERIAL

Ranbir S. Bhalla, Montville Township, Morris County, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 12, 1978, Ser. No. 968,709
Int. Cl.[2] H01J *1/14, 61/073*
U.S. Cl. 313—218 **8 Claims**



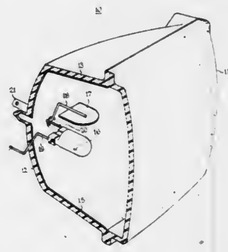
1. In combination with a high-intensity vapor discharge lamp comprising a radiation transmitting arc tube having electrodes operatively supported therein proximate the ends thereof and adapted to have an elongated arc discharge maintained therebetween, and means for connecting said electrodes to an energizing power source; the improved emission material dispersed in said electrodes, said improved electron emission material comprising a reacted mixture of barium zirconate ($BaZrO_3$) plus strontium zirconate ($SrZrO_3$) in a ratio of from 9:1 to 1:1.

4,210,841

ALL PLASTIC HEADLAMP

Vincent Vodicka, South Euclid, Ohio, and Fred F. Holub, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 17, 1978, Ser. No. 896,707
Int. Cl.[2] H01J *61/30*
U.S. Cl. 313—221 **10 Claims**



1. In a sealed, long life headlamp having a transparent plastic lens, a plastic reflector having a specular coating thereon, and at least one filament, the improvement comprising:

a sealed inner bulb enclosing said at least one filament with lead wires therefor, sealed through said reflector, and with said filament operating at a sufficient wattage and lumen output for the principal forward lighting source for a motor vehicle;

said lens and reflector characterized by a heat distortion temperature in excess of 130° Celsius; and

said lens and reflector being sealed together to define an enclosed volume and said filament having a wattage such

that the loading of said headlamp in watts per cc. is from 0.045-0.078 inclusive.

4,210,842

COLOR PICTURE TUBE WITH SHADOW MASK

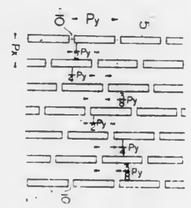
Takeshi Nakayama, Tokyo; Takehiko Nishimoto, Kodaira; Machio Kawashima, Mobara; Kozi Takahashi, Mobara, and Kuniharu Osakabe, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 31, 1976, Ser. No. 719,154

Claims priority, application Japan, Sep. 10, 1975, 50-108989; Apr. 14, 1976, 51-41295

Int. Cl.² H01J *29/07*

U.S. Cl. 313—403 **5 Claims**



1. A color picture tube having a shadow mask which is provided with a plurality of aperture rows juxtaposed to one another, said aperture row extending in perpendicular to a scanning line and comprising a plurality of electron beam transmissive apertures aligned with a predetermined pitch P_y, wherein there exists between positional deviation Δy of said apertures relative to those in the adjacent aperture rows and said pitch P_y the following relation:

$$\frac{(k-0.35)}{2n} Py \leqq \Delta y \leqq \frac{(k+0.35)}{2n} Py$$

in which n is a positive integer at least among 1, 2, 3 and 4, and k is a positive odd number smaller than 2n, and wherein said plurality of aperture rows include at last two different rows of different deviation Δy, wherein said shadow mask includes a combination of three varieties of aperture rows having different deviations Δy_1, Δy_2 and Δy_3 which are set in a range

	$0.465\ P_y \leqq \Delta y_1 \leqq 0.535\ P_y$
,	$0.163\ P_y \leqq \Delta y_2 \leqq 0.338\ P_y$
or	$0.663\ P_y \leqq \Delta y_2 \leqq 0.837\ P_y$
	$0.081\ P_y \leqq \Delta y_3 \leqq 0.169\ P_y$
or	$0.331\ P_y \leqq \Delta y_3 \leqq 0.418\ P_y$
or	$0.581\ P_y \leqq \Delta y_3 \leqq 0.668\ P_y$
or	$0.831\ P_y \leqq \Delta y_3 \leqq 0.918\ P_y$

4,210,843

COLOR CRT SHADOW MASK AND METHOD OF MAKING SAME

Subramanya Avadani, Elmhurst, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 3, 1979, Ser. No. 26,494

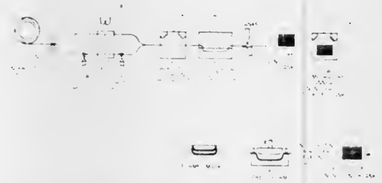
Int. Cl.² H01J *9/02*

U.S. Cl. 313—403 **9 Claims**

1. An improved method of making a color CRT shadow mask composed of a very thin steel foil material and having a pattern of apertures therein, such mask being highly susceptible to denting, creasing, scratching, tearing and other unacceptable handling-related mechanical defects attributable in large part to the fragility of the mask, the improved method resulting in significantly reduced looses from such handling-related mechanical defects and thus effecting substantial manufacturing economies, and a superior product as well, the method comprising:

providing a plurality of shadow mask blanks each with a pattern of apertures photoetched therein, which blanks have been cut from a foil of steel, precision cold-rolled to a full hard condition with a thickness of about 6-8 mils, said foil being characterized by being composed of an interstitial free steel material;

subjecting a stack of said blanks to a limited annealing operation, said annealing operation being characterized by being carried out at a relatively low maximum temperature and for a relatively brief period sufficient only to achieve recrystallization of the material without causing significant grain growth, said maximum temperature being below the temperature at which the blanks mutually adhere, said relatively low maximum temperature being effective to avoid any significant sticking together of said blanks, thus avoiding any handling-related folding or creasing of the blanks normally associated with attempts to separate blanks stuck together in conventional high



temperature annealing operations, said blanks being substantially free of dents, creases, scratches and other handling-related mechanical defects which would be expected if the conventional high temperature anneal were employed; and,

clamping and drawing each blank to form a dished shadow mask without the interposition of vibration or roller leveling operations and thereby avoiding undesirable creasing, roller marking, denting, tearing or work hardening of the blank normally associated with these operations,

whereby the end product shadow mask, due to the use of a full hard, interstitial free steel material, and the obviation of a high temperature anneal and the necessary consequent vibration and roller leveling, is comparatively free of the aforesaid handling-related mechanical defects and is thus much less costly to manufacture than prior masks despite the higher initial material cost, and

whereby the end product shadow mask, due to the use of said interstitial free steel material, has an aperture pattern of improved definition as a result of more uniform stretching of the mask blank.

4,210,844

CATHODE RAY TUBE ARC SUPPRESSOR COATING

William E. Buescher, Seneca Falls, and Anthony V. Gallaro, Auburn, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

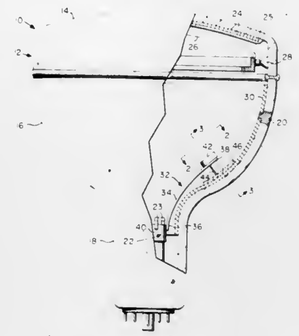
Filed Nov. 20, 1978, Ser. No. 962,494

Int. Cl.² H01J *29/88, 29/94*

U.S. Cl. 313—479 **5 Claims**

1. In a cathode ray tube comprised of a glass envelope having a viewing screen at one end thereof and a multi electrode electron gun formed for directing a beam of electrons to said screen at an opposite end thereof; an electrically conductive coating having a high electrical resistance disposed on the interior surface of said glass envelope and extending from said screen to said electron gun, said high electrical resistance coating having a resistance of from about 20,000 ohms to about 7 megohms and comprising a mixture of Fe_2O_3, K_2SiO_3 and graphite; the final electrode of said gun being electrically connected to said coating; and an antenna getter comprised of

an electrically conductive, flexible metal shaft having a proximal end and a distal end, said proximal end being connected to said final electrode and said distal end carrying a getter device, the improvement comprising: a layer of extremely high resis-



tance material overlying a portion of said high resistance coating, said extremely high resistance coating having a resistance about 100 times greater than said high resistance coating and comprising a mixture of Fe_2O_3 and a silicate, said getter device being in contact with said extremely high resistance layer.

4,210,845

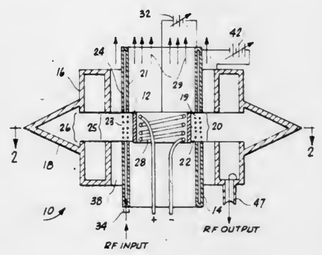
TRIROTRON: TRIODE ROTATING BEAM RADIO FREQUENCY AMPLIFIER

Jean V. Lebacqz, Stanford, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 24, 1978, Ser. No. 963,495

Int. Cl.² H01J *25/22*

U.S. Cl. 315—5.25 **16 Claims**



1. A rotating beam radio-frequency amplifier, including:

a cylindrical cathode having an outer curved surface for producing electrons;

radio-frequency waveguide input means including means for establishing a traveling wave for forming said electrons into a beam and rotating said beam around said cathode;

means for adding energy to said beam during said rotation; and

output means for extracting the energy of the beam, said input and output means including waveguides that support traveling waves at a frequency that is an integral multiple of one or more of the frequency of said established traveling wave.

4,210,846

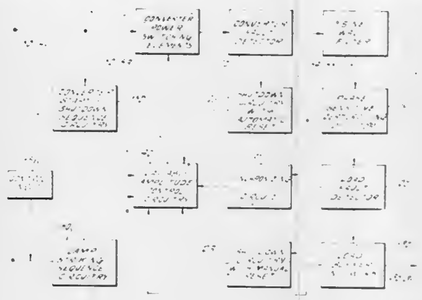
INVERTER CIRCUIT FOR ENERGIZING AND DIMMING GAS DISCHARGE LAMPS

Dennis Capewell, Easton; David G. Luchaco, Macungie, and Joel S. Spira, Allentown, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Dec. 5, 1978, Ser. No. 966,643

Int. Cl.² H02M *7/515;* **H05B** *41/29, 41/39*

U.S. Cl. 315—121 **40 Claims**



16. An energy-conserving illumination control system consisting of:

a plurality of passive linear ballasts and respective gas discharge lamps therefor;

a single high frequency power source including power switching means having control electrode means for turning power on and off at an output frequency in excess of about 20 kHz, and a sine wave filter; said high frequency power source being connected to each of said plurality of passive linear ballasts and lamps;

the output wave shape of said high frequency power source being sinusoidal;

a zero crossing detector circuit for producing an output pulse each time the output current of said sine wave filter goes through zero;

a synchronizing circuit connected to said zero crossing detector circuit and producing an output pulse train at the frequency of the output current of said sine wave filter;

a variable amplitude control circuit coupled to said control electrode means and connected to said synchronizing circuit and producing output pulses to said control electrode means at said frequency of said output current of said sine wave filter;

and control circuit means connected to said variable amplitude control circuit for controllably delaying the phasing of said output pulses of said variable amplitude control circuit relative to the current zero time of said output current of said sine wave filter;

said control circuit means varying the amplitude of the wave shape of the output of said high frequency power source, thereby to vary the light intensity of each of said lamps; the energy consumed by said illumination control system being functionally related to the output light intensity from said plurality of lamps.

4,210,847

ELECTRIC WIND GENERATOR

Roger L. Shannon, Federal Way; Dale F. Watkins, Sumner, both of Wash., and John T. Pogson, San Jose, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 28, 1978, Ser. No. 974,154

Int. Cl.² H05H *1/00*

U.S. Cl. 315—111.9 **8 Claims**

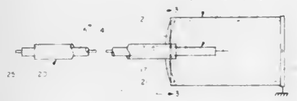
1. A portable device for generating an air jet from corona discharge comprising:

a housing made of dielectric material and means for positioning a high voltage probe therein,

said positioning means including a centering tube extending axially outward from one end of said housing;

a metallic screen mounted across the end of said housing opposite said positioning means and means grounding said screen;





a high voltage source external to said housing and a probe connected to said source and terminating in said housing for creating a corona discharge at the probe end in said housing; and

means insulating said probe from said centering tube, whereby said device may be held by said centering tube and an air jet generated by a flow of ions from said probe end to said screen may be selectively directed for cooling, venting or other purposes.

4,210,848

THIN-FILM EL DISPLAY PANEL WITH LIGHT-ACTIVATED WRITE AND ERASE MEANS

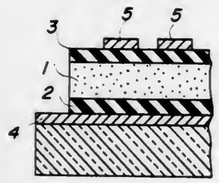
Chuji Suzuki, Nara; Masahiro Ise, Tenri; Kenzo Inazaki, Tenri, and Katsuyuki Machino, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 19, 1978, Ser. No. 925,973

Claims priority, application Japan, Jul. 20, 1977, 52-87767; Aug. 17, 1977, 52-99000; Sep. 6, 1977, 52-107424

Int. Cl.² H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—169.3 **9 Claims**



1. A display device comprising:

a thin-film EL display panel exhibiting a light brightness effect when excited by an applied voltage, said El display panel further exhibiting a hysteresis loop phenomenon when said applied voltage is plotted on X and Y coordinate axes with respect to said light brightness;

means for applying to said thin-film EL display panel a string of alternating fixed amplitude sustain voltage pulses the voltage amplitude of said sustain pulses being chosen at the voltage level appearing at the point in the hysteresis loop characteristics such that the difference between the minimum light brightness on the voltage increasing curve and the maximum light brightness on the voltage decreasing curve is substantially a maximum; and

flash lamp means for releasing light beams toward said thin-film EL display panel, said light beams being released in synchronism with the application period and pause period, respectively, of said alternating sustain pulses, said flash lamp means releasing a considerable quantity of light beams having a wave length of approximately 3,500 angstroms, whereby light excited write and erase operations are performed on said thin-film EL display panel.

4,210,849

ELECTRONIC CONTROL CIRCUITRY FOR TERMINATING FLASH OUTPUT

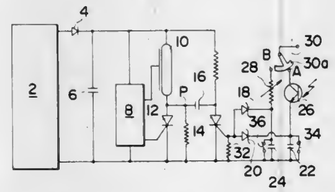
Mikio Naya; Yoshiharu Ohta, both of Izumi, and Hiroshi Hosomizu, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 802,852, Jun. 2, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,634

Claims priority, application Japan, Jun. 2, 1976, 51-64935

Int. Cl.² H05B *41/32*

U.S. Cl. 315—241 P **13 Claims**



1. Control circuitry for terminating flash output from a flash device coupled with a camera having a driving means for high speed continuous photography, said control circuitry comprising:

a first time constant circuit having a time constant depending on the amount of light reflected from an object illuminated by said flash device;

a second time constant circuit including a variable circuit element adjustable in accordance with the photographic cycle of high speed continuous photography;

a control circuit responsive to said first and second time constant circuits for interrupting the current through said flash device when the output of either said first or said second time constant circuit reaches a predetermined level, said second time constant circuit limiting the duration of flash firing such that the charging time of the flash device is synchronized with said photographic cycle; and

a change-over switch having a first position for simultaneously actuating both said first and second time constant circuits, and second and third positions for respectively actuating said first and said second time constant circuits.

4,210,850

CIRCUITS FOR OPERATING ELECTRIC DISCHARGE LAMPS

John Britton, Sevenoaks, England, assignor to The General Electric Company Limited, London, England

Filed Jun. 15, 1978, Ser. No. 915,614

Claims priority, application United Kingdom, Jun. 27, 1977, 26771/77

Int. Cl.² H05B *41/16*

U.S. Cl. 315—290 **6 Claims**

1. A circuit for operating an electric discharge lamp comprising:

(A) a pair of input terminals for connection to an alternating current supply;

(B) a pair of output terminals for connection across the lamp;

(C) a reactive ballast impedance connected between one of the input terminals and one of the output terminals, said ballast impedance having a tapping point;

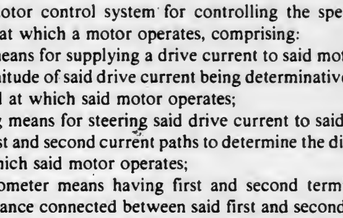
(D) a connection between the other input terminal and the other output terminal;

(E) a controllable electronic switching device connected between said tapping point and said other input terminal; and

(F) a triggering circuit for said switching device comprising:

(i) a pair of resistances connected in series directly between said tapping point and said other input terminal;

(ii) a capacitance connected across one of said resistances; and



(iii) a voltage sensitive breakdown device connected between the junction between said resistances and the control electrode of said switching device;

(G) the triggering circuit rendering said switching device alternately non-conducting and conducting several times during each of at least one set of alternate half cycles of the supply voltage when the lamp has not fired, thereby to produce a burst of high voltage pulses between the output terminals for starting the lamp.

4,210,851

MOTOR CONTROL SYSTEM

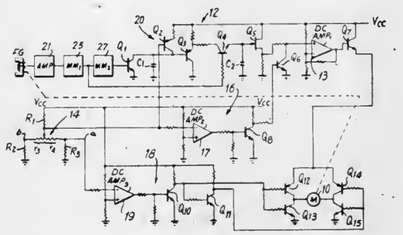
Tadamitsu Wakamiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 22, 1978, Ser. No. 935,967

Claims priority, application Japan, Aug. 25, 1977, 52-101123

Int. Cl.² H02P *5/00*

U.S. Cl. 318—257 **12 Claims**



1. A motor control system for controlling the speed and direction at which a motor operates, comprising:

drive means for supplying a drive current to said motor, the magnitude of said drive current being determinative of the speed at which said motor operates;

steering means for steering said drive current to said motor in first and second current paths to determine the direction at which said motor operates;

potentiometer means having first and second terminals, a resistance connected between said first and second terminals, and an adjustable wiper settable along said resistance to determine a desired speed and a desired direction of operation of said motor, the setting of said wiper including a predetermined zero speed setting;

power supply means having a power terminal and a reference terminal for providing an operating potential thereacross, said power terminal being coupled to said wiper and said reference terminal being coupled to said second terminal of said potentiometer means; and

first resistor means for coupling said first terminal of said potentiometer means to said reference terminal;

said wiper being coupled to said drive means and said first terminal being coupled to said steering means, whereby the setting of said wiper determines the magnitude of the voltage supplied thereby to said drive means so as to determine the speed at which said motor operates, and the setting of said wiper also determines the magnitude of the voltage supplied to said steering means by said first terminal to determine the direction at which said motor operates.

4,210,852

ELECTRIC NUTRUNNER

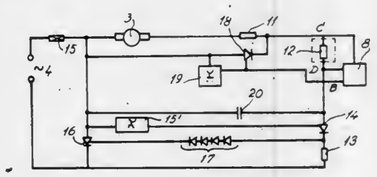
Fredrik Gustavson, Täby, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Continuation of Ser. No. 739,711, Nov. 8, 1976, abandoned. This application Dec. 7, 1978, Ser. No. 967,139

Claims priority, application Sweden, Nov. 14, 1975, 7512866

Int. Cl.² H02P *3/00*

U.S. Cl. 318—459 **13 Claims**



1. An electric nutrunner for tightening screw joints to a predetermined tightening torque or clamping force, said nutrunner comprising:

voltage supply means;

motor-starting means coupled to said voltage supply means;

drive means, including a DC motor, coupled to said motor-starting means, for tightening a screw joint;

control means coupled to said drive means; and

means coupling said control means with said voltage supply means;

said control means including:

signal generating means for measuring the current flowing through said D.C. motor of said drive means, said signal generating means being responsive to a measured D.C. current value corresponding to said predetermined tightening torque or clamping force being reached for providing a terminating signal for causing the stopping of said D.C. motor, thereby causing the tightening of the screw joint to be terminated; and

compensating control means coupled to said signal generating means for measuring the growth rate of said current flowing through said D.C. motor and being responsive to said measured growth rate which corresponds to joint stiffness for causing said signal generating means to provide said terminating signal as a function of said measured growth rate, thereby providing compensation for a variation in the terminating torque of the screw joint as the result of varying joint stiffness by varying the time of generation of said terminating signal.

4,210,853

CONTROL DEVICE WITH AN INTEGRATING POSITION DRIVE

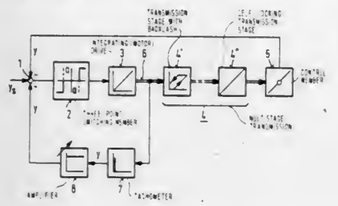
Kurt Ewe, and Edmund Linzenkirchner, both of Karlsruhe, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 6, 1978, Ser. No. 912,985

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726112

Int. Cl.² G05B *11/01*

U.S. Cl. 318—630 **4 Claims**



1. In a control device having an integrating positioning drive with a transmission backlash and lag, the device having a first feedback signal proportional to the position of a control member which is driven by the positioning drive, the improvement comprising:

(a) means for providing a second feedback signal which is proportional to the positioning rate and which is scaled by a scaling factor proportional to the lag of the positioning drive; and

(b) a transmission having an amount of backlash which is greater than the sum of the position change of the control member which would occur, during the starting of the positioning motor from stand-still until nominal speed is reached, plus the position change during said lag of the positioning drive, if the drive had no backlash.

4,210,854

METHOD AND DEVICE FOR CHARGING SECONDARY ELECTRIC BATTERIES BY PRIMARY SOURCES

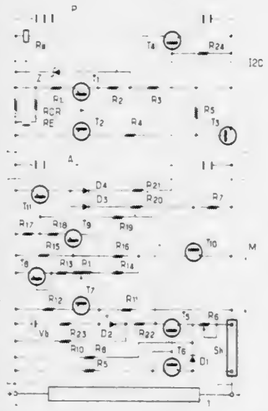
Pierre Godard, Tremblay les Gonesse, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Mar. 22, 1978, Ser. No. 888,852

Claims priority, application France, Mar. 31, 1977, 77 09831

Int. Cl.² H02J *7/04*

U.S. Cl. 320—10 **10 Claims**



1. A method of charging a secondary electric battery from a primary source of electric current, the secondary battery being connected to supply an intermittently applied load that draws a current which is greater than the primary source is capable of supplying, the method comprising:

sensing the current drawn by the load whenever the load is applied to the secondary electric battery;

continuously recording a signal proportional to said sensed current drawn by the load during each period of application to obtain a value proportional to the total quantity of electricity discharged by the secondary battery during said period;

charging the secondary battery from said primary source at a first rate from the beginning of its discharge upon application of the load; and

continuing the charging at said first rate for a period of time which is a function of the recorded discharge value.

4,210,855

APPARATUS FOR REGULATING THE CURRENT DRAWN FROM AN ELECTRIC BATTERY

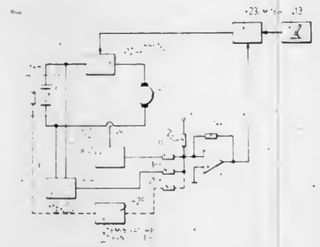
Helmut Harer, Aldingen-Neckarrems; Rolf Schulze, Vaihingen, and Josef Juhasz, Vaihingen-enz-Rosswag, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 908,932

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726367

Int. Cl.² H02J *7/04*

U.S. Cl. 320—13 **12 Claims**



1. In a system having an electrical battery (**10**), a load (**11**) connected to said battery, and current regulator means (**12**) for regulating the current drawn from said battery under external control, the improvement comprising, in accordance with the invention, voltage sensor means (**14**) connected across said battery for furnishing a sensed voltage signal corresponding to the voltage across said battery;

current sensor means (**15-16**) connected in series with said load for furnishing a sensed current signal corresponding to said current drawn from said battery;

means for furnishing a reference signal;

additive combining means (**17**, **18**) connected to said voltage sensor means and said current sensor means, adding the voltage signal and the current signal, and furnishing a combined addition signal;

comparing means (**19**) connected to said combining means and said means for furnishing a reference signal for comparing said combined signal to said reference signal and furnishing a difference signal corresponding to the difference therebetween;

and limiter means (**23**) interconnected between said comparing means and said current regulator means, for controlling said current regulator means.

4,210,856

BATTERY CHARGING SYSTEMS FOR ROAD VEHICLES

Joseph D. F. Taylor, Kidderminster, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 20, 1978, Ser. No. 888,274

Claims priority, application United Kingdom, Apr. 2, 1977, 14014/77

Int. Cl.² H02J *7/14*

U.S. Cl. 320—17 **11 Claims**



1. A battery charing system for a road vehicle comprising an alternator, a rectifier connecting the alternator to a main battery for charging thereof by the alternator, a voltage regulator connected to the alternator and operating to control the output voltage of the alternator, and a d.c. to d.c. converter connecting the main battery to an auxiliary battery which is in series with the main battery, the d.c. to d.c. converter including a pair of semi-conductor switching elements, an auto-transformer having a pair of main windings, each connected at one end to one terminal of the main battery and connected at its other end through a respective one of said semi-conductor switching elements to the other terminal of the main battery, said switching elements forming part of an oscillator so that the switching elements are turned on alternately, a diode, and at least one further winding connected in series with said diode between said other end of one of the main windings and a terminal of the auxiliary battery.

4,210,857

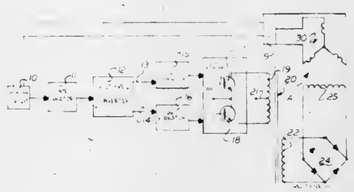
FIELD EXERTING AND REGULATOR CIRCUIT FOR A BRUSHLESS ALTERNATOR

George K. Korbell, Euclid, Ohio, assignor to Sheller-Globe Corporation, Cleveland, Ohio

Filed Apr. 19, 1978, Ser. No. 897,689

Int. Cl.² H02P *9/26*

U.S. Cl. 322—28 **6 Claims**



1. A field exciting and regulating system for an electrodynamic machine for generating electricity with the machine having a rotor, a field winding on the rotor, and a rotary transformer having a secondary winding rotatable with the rotor with the secondary winding being connected to energize the field winding and a primary winding having first and second winding sections for conducting currents in opposite directions in the primary winding, said system comprising circuit means for regulating the output voltage level of the machine comprising a first circuit for providing a potential which varies as a function of the output voltage of the machine, a voltage controlled oscillator connected to said first circuit for providing a first and second series of triggering signals both having a frequency which varies with said potential of said first circuit with the first and second triggering signals being approximately 180° out of phase, second circuit means for producing first and second pulse trains for effecting energization of said first and second primary sections alternately with a current pulse of a fixed width comprising pulse generating circuitry responsive to said first series and second series of triggering signals to respectively provide said first and second pulse trains wherein each pulse is of fixed duration and has a duration substantially equal to the half period for the frequency of said oscillator when full field current is supplied.

4,210,858

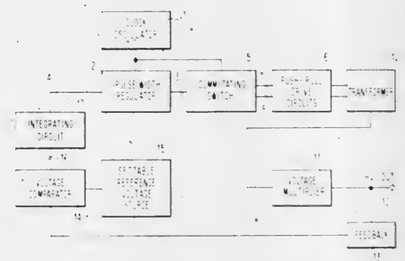
HIGH FREQUENCY HIGH VOLTAGE POWER SUPPLY

Leland W. Ford, Boulder, Colo.; Alberto M. Ramirez, Tucson, Ariz., and Gerald L. Smith, Broomfield, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1978, Ser. No. 897,897

Int. Cl.² G03G *15/00*; **H01T** *19/00*

U.S. Cl. 323—22 T **8 Claims**



1. A power supply providing a regulated output signal adapted for rapid change in signal amplitude comprising:

a settable reference voltage,

means for comparing said output signal and said reference voltage to produce a difference voltage,

a generator of recurrent pulses having widths controllable in response to an input voltage,

means for applying said difference voltage as said input voltage to said generator,

a transformer means having separate primary and secondary windings, said recurrent pulses being applied to said primary winding,

said transformer including an energy storage means for limiting the short circuit output current and for providing a transformer output that is a linear function of the controllable width of said recurrent pulses,

said secondary winding being divided into serially connected cylindrical winding sections, each section having a fraction of the total number of turns of said secondary winding, the turns of adjacent sections being insulated from each other, and

a voltage multiplier connected to said secondary winding and providing said output signal.

4,210,859

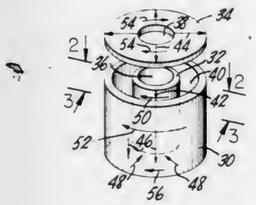
INDUCTIVE DEVICE HAVING ORTHOGONAL WINDINGS

Paul L. Meretsky, 46/11 Keren Hyesod, and Amiram Carmon, 35 Ruth St., both of Haifa, Israel (32000), assignors to Technion Research & Development Foundation Ltd.; Paul L. Meretsky and Amiram Carmon, all of Haifa, Israel

Filed Apr. 18, 1978, Ser. No. 897,395

Int. Cl.[2] G05F *7/00*

U.S. Cl. 323—44 R **51 Claims**



1. An inductive device comprising in combination:
a magnetic core formed of ferromagnetic material;
inductive means for producing a first magnetic field in a closed path substantially throughout said core;
inductive means for producing a second magnetic field in a closed path substantially throughout said core;
wherein said first field is substantially orthogonal to said second field at all points within said core; and
means for controlling one of said magnetic fields to reduce the rate of fall-off of the inductance of the inductive means which produces the other orthogonal field while increasing the inductive coupling between the inductive means.

4,210,860

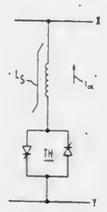
VAR GENERATOR WITH CURRENT SENSITIVE INDUCTANCE BREAK POINT

John Rosa, Penn Hills, and Laszlo Gyugyi, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 15, 1978, Ser. No. 942,838

Int. Cl.[2] H02J *3/18*

U.S. Cl. 323—119 **17 Claims**



1. A VAR generator of the type which is connected to an electrical system for the purpose of supplying reactive power thereto, comprising:
(a) control means interconnected with said electrical system for determining the amount of reactive power that is to be provided to said electrical system during a given period of time and for providing an output signal related thereto; and
(b) switch controlled inductive means connected to said control means to receive said output signal therefrom and connected to said electrical system for delivering said reactive power thereto as a function of a control means determined conduction interval during said given period of time, said inductive means having a first value of inductance for values of reactive current conducted therethrough which are equal to or less than a predetermined amount, said inductive means having a second value of inductance for values of reactive current conducted therethrough which are greater than said predetermined amount, said reactive power being related to said reactive current, the amount of reactive power thus delivered to said electrical system for a given conductive interval being dependent upon whether said reactive current exceeds said predetermined amount or not during said given conduction interval.

4,210,861

FOURIER-TRANSFORM NUCLEAR GYROMAGNETIC RESONANCE SPECTROMETER

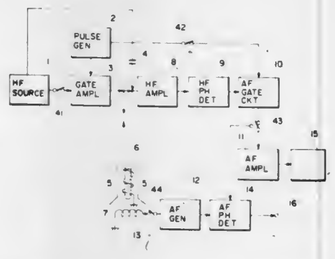
Munetaka Tsuda; Hiroshi Yokokawa, both of Ibaraki, and Yoshiharu Utsumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 14, 1978, Ser. No. 924,721

Claims priority, application Japan, Jul. 21, 1977, 52-88020; Aug. 12, 1977, 52-96009

Int. Cl.[2] G01R *33/08*

U.S. Cl. 324—308 **10 Claims**



1. A Fourier-transform nuclear gyromagnetic resonance spectrometer comprising:
means for establishing a unidirectional magnetic field;
means for placing a specimen in said unidirectional magnetic field;
means for generating pulse-like high-frequency waves and continuous high-frequency waves having a frequency substantially equal thereto;
means for selectively feeding said pulse-like high-frequency waves and said continuous high-frequency waves to said specimen, such that resonance signals and free induction decay signals are selectively generated by said specimen;
means for detecting said resonance signals and free induction decay signals; and
means for Fourier-transforming said detected free induction decay signals.

4,210,862

TEST DEVICE FOR INDICATING AN ELECTRIC VOLTAGE AND/OR THE POLARITY THEREOF, AND THE PASSAGE OF CURRENT THROUGH AN ELECTRIC CONDUCTOR

Manfred Koslar, Rheda-Wiedenbrueck, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 13, 1978, Ser. No. 895,960

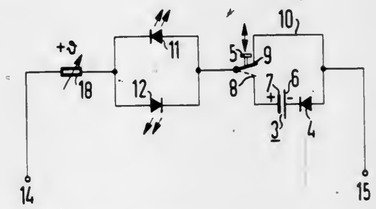
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717286; Aug. 2, 1977, 2734833; Aug. 5, 1977, 2735374; Aug. 5, 1977, 7724448[U]; Dec. 20, 1977, 2756830

Int. Cl.[2] G01R *31/02, 19/16, 1/06*

U.S. Cl. 324—51 **2 Claims**

1. A test device for indicating an electrical voltage and/or the polarity thereof, as well as the passage of current through an electrical conductor, comprising two handles, which are connected by means of a cable and are provided with contact tips, and one of the handles contains two luminous diodes connected antiparallelly and preconnected to a ceramic cold

conductor as a current limiting resistor and for testing for passage of current through an electrical conductor, the following features are present:
(a) a battery (3) connected in series with a protective diode (4) mounted in one of the handles (1), in which said cold conductor (18) and the luminous diodes (11, 12) are housed;
(b) a keying switch (5) and a Zener diode (19) connected in parallel and mounted in said handle (1);
(c) the series connection of the battery (3) and protective diode (4) connected to a normally open contact (8) of a



keying switch (5), which is normally connected with a switch contact (9) connected to a parallel line (10), which bridges the battery (3) and the protective diode (4);
(d) the keying switch (5), Zener diode (19), battery (3) and protective diode (4) connected in series with the antiparallel connection of the luminous diodes (11, 12);
(e) the battery (3) is housed with positive and negative terminals (6, 7) in a removeable housing (22), which, by means of projections (24) in the inserted state, engage the handle (1) and is removeable only to an extent such that the opening (26) of the recess (23) in the handle (1) remains closed.

4,210,863

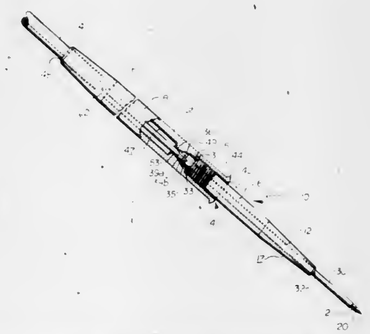
EXTENDIBLE PROBE FOR USE WITH TEST INSTRUMENTS

Bill Hunt, Snohomish, and Dean R. Merriman, Mukilteo, both of Wash., assignors to Huntron Instruments, Inc., Seattle, Wash.

Continuation of Ser. No. 781,874, Mar. 28, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,263

Int. Cl.[2] G01R *31/02*

U.S. Cl. 324—72.5 **10 Claims**



1. A probe with an extendible electrode for use with electrical test apparatus, comprising:
an elongated, small diameter electrode which is electrically insulated along its length except for a small region about one end thereof to facilitate convenient operative contact with a selected point in a crowded electrical circuit, wherein said electrode is adapted to permit connection with a test lead which in turn is connectable to the electrical test apparatus;
an elongated housing for said electrode, wherein said housing comprises forward and rearward sections movable relative to each other, said forward section including (1) an opening at its front end at least the size of the electrode, through which said electrode extends, and (2) a slotted projection having an opening therein at its back end, through which said electrode also extends, wherein the opening in said projection decreases in diameter under pressure applied to the projection, said forward section extending a substantial distance forward of the front end of said rearward section, said rearward section having a front end portion which overlays and engages the slotted projection of said forward section, said rearward section extending a substantial distance beyond the back end of said forward section, the diameter of said rearward section being such that the rearward section may be easily held by an operator, the diameter of said forward section being smaller than that of said rearward section, so as to facilitate the use of the apparatus in crowded electrical circuit, wherein the front end portion of said rearward section engages the slotted projection of said forward section in such a manner that as said rearward section moves in one direction relative to the forward section, pressure increases on the projection, forcing it tight against said electrode, thereby holding said electrode in place, and further such that as said rearward section moves in the opposite direction relative to the forward section, pressure decreases on said projection, thereby releasing the projection from said electrode and permitting said electrode to be freely moved into a desired position relative to said housing, wherein the entire length of said rearward section and the portion of said forward section between its front end and the front end of said rearward section are exposed when said electrode has been clamped in place by the action of said rearward section on said projection of said forward section.

4,210,864

APPARATUS FOR SENSING TONER DENSITY USING A STATIONARY FERROMAGNETIC MASS WITHIN THE TONER TO INCREASE SENSITIVITY

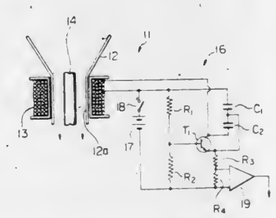
Seiichi Miyakawa; Susumu Tatsumi; Koji Sakamoto, and Yoshihiro Ogata, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,466

Claims priority, application Japan, Apr. 19, 1977, 52-44925

Int. Cl.[2] G01R *33/00;* **G01N** *9/00*

U.S. Cl. 324—204 **7 Claims**



3. An apparatus for sensing a toner density of a powdered toner mixture including a non-magnetic toner component and a ferromagnetic carrier component, the toner density being constituted by a ratio of the toner component to the carrier component, the apparatus comprising:
container means for containing the toner mixture, said container means being disposed to have toner mixture pass therethrough such that the toner density of different portions of the toner mixture may be sensed in passing through the container means;

an electromagnetic coil wound around the outside of said container means;
a stationary electrically conductive mass provided in the container means;
power source means for applying an alternating electric signal to the coil; and
sensor means for sensing an amount of dissipation of the electric signal, said stationary mass being constructed and arranged such that the flux passing through the stationary mass results in power dissipation of the electric signal in the stationary mass through conversion into heat such that the sensitivity to detect small changes in toner density is enhanced in that a relatively small change in toner density will result in a relatively large change in power dissipation.

4,210,865

POSITION SENSOR OF LINEARLY MOVING BODIES

Vladimir P. Nikolaev, ulitsa Proletarskaya, 58, kv. 91; Leopold I. Chaika, bulvar Trudyaschikhsya, 7, kv. 203, both of Kolpino Leningradskoi oblasti, and Ivan V. Ivanov, Pozharny pereulok, 1, kv. 9, Tosno Leningradskoi oblasti, all of U.S.S.R.

Filed Dec. 12, 1977, Ser. No. 859,792
Int. Cl.² G01R *33/00*
U.S. Cl. 324—207 **1 Claim**



1. A position sensor for determing the position of a body in linear motion comprising:
a plurality of inductance coil means, each having a primary winding and a secondary winding wound on spool like cores and coaxially spaced one after another, an additional coil means coaxially spaced after said inductance coil means and having two primary and two secondary windings, each primary and secondary winding being wound on a respective core of a two spool core, said secondary windings being connected in a measuring circuit, the secondary windings of said inductance coil means indicating coarse movement and the secondary windings of said additional coil means indicating fine movement;
a tubular shunting element arranged coaxially around said coil means and attached to said linear moving body, for movement along the axis of said coil means, and being provided with groups of holes arranged along the travel path of the linearly moving body, the holes of each group being arranged along the periphery of the shunting element, the distance L between the outer ends of said additional coil means being derived from the following relationship:

$$L=n(a+b)-\tfrac{1}{2}(a+3b),$$

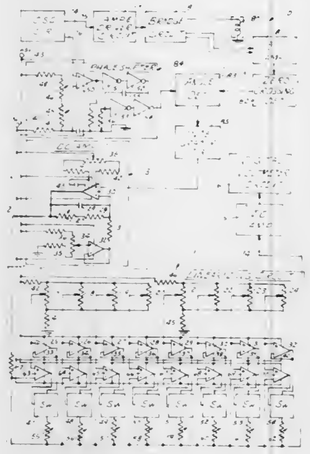
where a is the width of a hole of the shunting element measured along the axis of its travel,
b is the distance between the groups of holes of the shunting element, and
n is a natural number beginning with n=3, said shunting element, as it moves along the axis of the coils, shunting the cores of the coils so that a signal is produced in the output circuit of a respective coil, which carries information on the position of the body in linear motion.

4,210,866

LINEARIZING CIRCUIT FOR A NON-DESTRUCTIVE TESTING INSTRUMENT HAVING A DIGITAL DISPLAY

Thomas E. Paulson, Glenview, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed May 8, 1978, Ser. No. 903,872
Int. Cl.² G01R *33/12*
U.S. Cl. 324—222 **5 Claims**



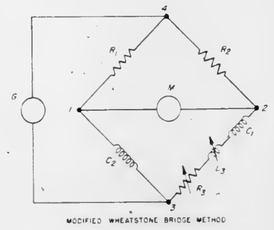
1. In a non-destructive testing instrument including probe means for physical association with structure to be tested and probe circuit means associated with said probe means and operative to develop a DC voltage having a magnitude varying between first and second limits and having a non-linear relationship to units of measurement of a physical characteristic of the structure tested, a linearizing circuit comprising an input line and a reference ground line for connection to said probe circuit means for application of said DC voltage therebetween, an output line at which an output voltage of said linearizing circuit is produced, and a resistance connected between said input and output lines, at least first, second and third stages in said linearizing circuit respectively including first, second and third reference voltage sources each having a pair of terminals with one terminal of each reference voltage source being connected to said reference ground line, first, second and third adjustable resistances, and first, second and third connection means in series with said first, second and third adjustable resistances between the other terminals of said first, second and third reference voltage sources and said output line of said linearizing circuit, said first reference voltage source supplying a first reference voltage having a magnitude between said first and second limits and relatively close to said first limit, said second reference voltage source supplying a second reference voltage having a magnitude between that of said first reference voltage and said second limit, and said third reference voltage source supplying a third reference voltage having a magnitude between that of said second reference voltage and said second limit, said first connection means being operative for connecting said first adjustable resistance between the said other output terminal of said first reference voltage source and said output line when the magnitude of said linearizing circuit output voltage is between the magnitude of said first reference voltage and said second limit, said second connection means being operative for connecting said second adjustable resistance between the said other output terminal of said second reference voltage source and said output line when the magnitude of said second reference voltage is between the magnitude of said first reference voltage and said second limit, and said third connection means being operative for connecting said third adjustable resistance between the said other output terminal of said third reference voltage source and said output line when the magnitude of said output voltage is between the magnitude of said third reference voltage and said second limit.

4,210,867

INDUCTION COIL METHOD FOR DETECTING UNDERGROUND FLAME FRONTS

Irwin Ginsburgh, Morton Grove, and John D. McCollum, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 17, 1978, Ser. No. 925,176
Int. Cl.² G01V *3/00*
U.S. Cl. 324—323 **8 Claims**



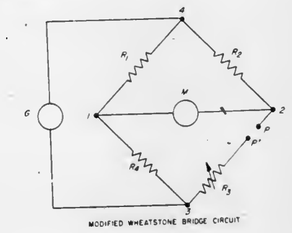
1. In the in situ combustion of a subterranean carbonaceous stratum, a method for detecting an underground flame front comprising
(a) providing at least one stationary multi-turn coil of wire on the surface of the ground electrically connected into one or more circuits in which an electrical resonance condition is established;
(b) continuously monitoring the change in impedance characteristics in one or more of said circuits as the combustion progresses and providing an indication of the location, speed, and vertical and lateral movement of said flame front in response to said monitored change in impedance characteristic.

4,210,868

METHOD FOR DETECTING AN UNDERGROUND FLAME FRONT USING RESISTANCE PROBES

Irwin Ginsburgh, Morton Grove, and John D. Mc Collum, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 17, 1978, Ser. No. 925,177
Int. Cl.² G01V *3/02*
U.S. Cl. 324—323 **7 Claims**



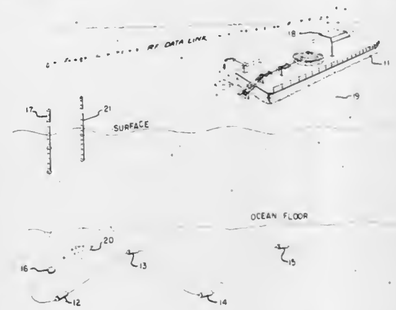
1. In the in situ combustion of a subterranean carbonaceous stratum, a method for detecting the flame front comprising
(a) providing two or more stationary probes inserted into the ground electrically connected in one or more circuits capable of measuring the resistance between pairs of probes,
(b) monitoring the change in resistance between two or more stationary probes during the combustion in one or more of said circuits and providing an indication of the location, pattern and orientation of said flame front in response to said monitored change in resistance.

4,210,869

ROTATING TELLURIC FIELD MEASUREMENTS

Goethe M. Groenendyke, deceased, late of Dallas, Tex. (by Betty Groenendyke, sole heir), and Gustave L. Hoehn, Jr., Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 875,264, Feb. 6, 1978, abandoned. This application Apr. 2, 1979, Ser. No. 26,144
Int. Cl.² G01V *3/00*
U.S. Cl. 324—349 **8 Claims**



1. In magneto-telluric geophysical exploration, the system for determining the earth's electric telluric field in two orthogonal directions comprising:
(a) means for measuring the earth's telluric field along a first horizontal line in a first known direction and for producing a first telluric signal representative thereof,
(b) means for measuring the earth's telluric field along a second horizontal line in a second known direction and producing a second telluric signal representative thereof,
(c) means for producing a pair of signals representative of the values of said first and second telluric signals along a third predetermined horizontal line and for combining said pair of signals to provide a signal representative of the earth's electric telluric field along said third horizontal line, and
(d) means for producing a pair of signals representative of the values of said first and second telluric signals along a fourth horizontal line orthogonal to said third horizontal line and for combining said pair of signals to provide a signal representative of the earth's electric telluric field along said fourth horizontal line.

4,210,870

SIGNAL TRANSMITTING SYSTEM

Kari Kallio-Könnö, Helsinki, Finland, assignor to Vaisala Oy, Finland

Filed Dec. 28, 1978, Ser. No. 973,796
Int. Cl.² H04B *1/70, 1/034*
U.S. Cl. 455—95 **7 Claims**

1. A signal transmitting system for transmitting signals from a radiosonde to a surface station, said signal transmitting system comprising
capacitive sensors in the radiosonde for producing capacitive signals dependent upon a quantity being measured;
an oscillator in the radiosonde having an output frequency

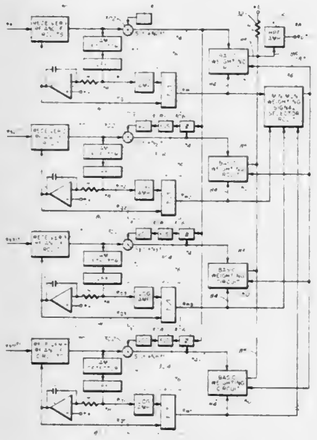
controlled by the capacitive signals, said output frequency being dependent upon said capacitive signals;
a frequency divider for dividing said output frequency by a factor d of the order of 2^6 to 2^8, said divider having an input frequency and an output frequency; and
a high frequency radio transmitter in the radiosonde frequency modulated by a frequency



$f_{MI}=f_{MO}/d$

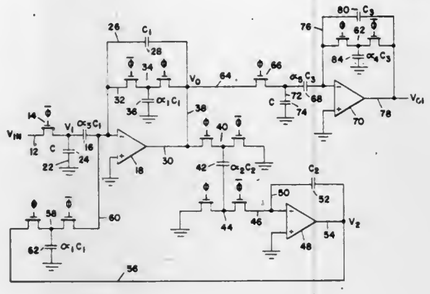
wherein f_{MI} is the output frequency of said divider and f_{MO} is the input frequency of said divider.

4,210,871
OPTIMUM DIVERSITY COMBINING CIRCUIT FOR A PLURALITY OF CHANNELS
Eugene R. Hill, Thousand Oaks, and Eugene L. Law, Ventura, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 1, 1978, Ser. No. 939,163
Int. Cl.[2] H04B *1/06, 7/08*
U.S. Cl. 455—137 **22 Claims**



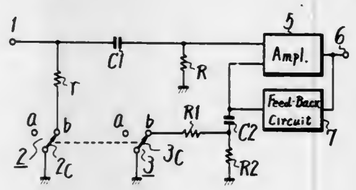
13. An AGC weighted diversity combiner circuit responsive to AGC voltages from AGC loops of a plurality of receivers as well as respective instantaneous input signal and noise voltages of the receivers for combining a plurality of diversity signals whereby the output signal to noise ratio is maximized comprising:
a. a plurality of weighting circuits each responsive to a respective independent one of said AGC voltage from a respective one of said AGC loops and to respective said instantaneous input signal and noise voltages from respective said receivers for generating a plurality of respective independent weighted diversity signals, each respective weighted diversity signal being associated with a respective receiver; and
b. means for summing said plurality of weighted diversity signals, said summed diversity signals being the output signal and noise voltages with maximized signal-to-noise ratio.

4,210,872
HIGH PASS SWITCHED CAPACITOR FILTER SECTION
Roubik Gregorian, Sunnyvale, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.
Filed Sep. 8, 1978, Ser. No. 940,717
Int. Cl.[2] H03F *1/34*
U.S. Cl. 330—9 **8 Claims**



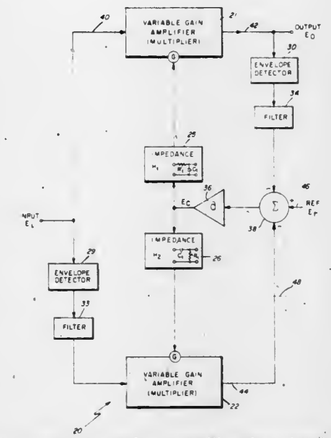
5. A sampled-data high pass filter comprising
a first operational amplifier having its own feedback loop;
input means to said first operational amplifier;
a second operational amplifier, means connecting the output of said first operational amplifier to the input of said second operational amplifier;
means for providing a feedback loop from the output of said second operational amplifier to said input means of said first operational amplifier;
a third operational amplifier having its own feedback loop;
means connecting the output of the first operational amplifier to the input of said third operational amplifier;
a plurality of switched capacitors in said feedback loops and said connection means;
switch means operated by a continuous two-phase clock generator for controlling the charging and discharging of said switched capacitors so that said filter produces a predetermined filter characteristic with a third order transfer function.

4,210,873
GAIN AND IMPEDANCE SWITCHING CIRCUIT FOR AN AMPLIFIER
Tadao Suzuki, Tokyo, and Hirohito Kawada, Mitaka, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 23, 1978, Ser. No. 936,103
Claims priority, application Japan, Aug. 29, 1977, 52/115397[U]
Int. Cl.[2] H03G *3/14*
U.S. Cl. 330—51 **8 Claims**



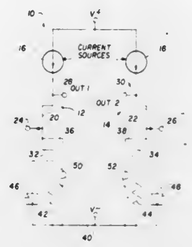
1. A gain and impedance switching circuit for an amplifier comprising:
(a) an amplifier having input, feedback and output terminals;
(b) a feedback circuit having first and second impedances, the first impedance of which is connected between the feedback terminal and the output terminal of said amplifier, and the second impedance of which is connected between said feedback terminal of said amplifier and a reference point;
(c) a third impedance connected between the input terminal of said amplifier and said reference point;
(d) first circuit means having a fourth impedance and a first switch and connected between the input terminal of said amplifier and said reference point; and
(e) second circuit means having a fifth impedance and a second switch and connected between the feedback terminal of said amplifier and said reference point, said first and second switches being cooperated with each other so as to increase the gain of said amplifier as soon as the input impedance of said amplifier decreases.

4,210,874
GAIN CONTROL AMPLIFIER CIRCUIT
Jacob F. Moskowitz, Kensington, Md., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 23, 1978, Ser. No. 953,821
Int. Cl.[2] H03G *3/26*
U.S. Cl. 330—134 **2 Claims**



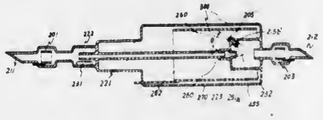
1. A gain control circuit for controlling the gain of a variable gain amplifier having input, output and gain control terminals comprising:
first and second means for detecting the amplitudes, respectively, of an input signal at said input terminal and an output signal at said output terminal;
filtering means coupled between said first and said second detecting means for applying a signal to said control terminal, said filtering means including a feedback circuit and a first impedance means coupled between said feedback circuit and said gain control terminal;
said feedback circuit including a second impedance network complimentary to said first impedance network;
said feedback circuit further comprising a multiplying means coupled between said first detecting means and an output terminal of said second impedance network; and
wherein said feedback circuit further comprises a summing means coupled between said second detecting means and an output terminal of said multiplying means, said summing means combining the amplitude of said output signal and a reference signal with the product of the input signal amplitude times a signal of said second impedance network to provide a sum signal to input terminals of said first and said second impedance networks

4,210,875
INTEGRATED AMPLIFIER WITH ADJUSTABLE OFFSET VOLTAGE
James D. Beasom, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.
Filed Dec. 29, 1978, Ser. No. 974,477
Int. Cl.[2] H03F *3/45*; B01J *17/00*
U.S. Cl. 330—261 **25 Claims**



1. In an amplifier including first and second separate current paths having a predetermined differential voltage offset therebetween in the absence of any input signals to said amplifier an in each of said current paths a field effect transistor having a source, drain and gate electrodes, the improvement being said field effect transistors each comprising:
a first and second separate drain segments with a common electrode;
fusible conductive means interconnecting said second drain segment and said common electrode; and
impedance means interconnecting said first drain segment and said common electrode for steering the current to said fusible conductive means produced when a voltage is applied across the gate and drain segments to blow said fusible conductive means and alter said voltage offset.

4,210,876
METAL VAPOR LASER
Yoshiro Ogata, Ibaraki, Japan, assignor to Matsushita Electronics Corporation, Kadoma, Japan
Filed Dec. 7, 1977, Ser. No. 858,404
Claims priority, application Japan, Dec. 13, 1976, 51-149976
Int. Cl.[2] H01S *3/03*
U.S. Cl. 331—94.5 G **10 Claims**



1. A metal vapor laser discharge tube comprising:
an anode,
a cathode,
a laser capillary,
a metal reservoir disposed at one end of said laser capillary between said anode and said laser capillary,
an air-tight envelope enclosing said cathode and said laser capillary, and
a condenser coaxial with said laser capillary and said cathode disposed in a discharge path between said laser capillary and said cathode for condensing metal vapor, said discharge path being formed inside said condenser.

4,210,877

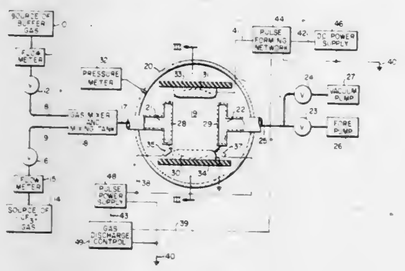
SPLIT GROUND STATE ATOMIC IODINE OR BROMINE LASER

Lyn D. Pleasance, Allegheny County; Ernest P. Riedel, Westmoreland County, and Lelland A C. Weaver, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 759,504, Jan. 14, 1977, abandoned, which is a continuation of Ser. No. 577,954, May 15, 1975, abandoned. This application Jul. 24, 1978, Ser. No. 927,306

Int. Cl.[2] H01S *3/09*

U.S. Cl. 331—94.5 PE **9 Claims**



1. Laser apparatus comprising:

an enclosure;

a gas in said enclosure comprising an inert buffer gas and an active gas having the formula $C_nY_{2n+1}X$, wherein Y is H or F, X is either I or Br and n is 1, 2, 3 or 4;

spaced apart electrode means defining a volume discharge region therebetween;

means for producing a flow of said gas through said volume discharge region;

means for exciting said gas by producing electrons to collide with the molecules of said active gas to produce electrically excited atomic iodine or bromine;

said means for exciting said gas including;

(1) means for providing free electrons to the volume discharge region both prior to and during a volumetric electrical discharge; and

(2) pulse dc excitation means operably connected to said spaced apart electrodes to produce a volumetric electrical discharge across said electrode to excite said gas; and

means for producing stimulated emission of radiation from said gas.

4,210,878

SEMICONDUCTOR LASER ELEMENT HAVING A UNITARY FILM ON A LASER CRYSTAL AND A HEAT SINK THEREOF

Hiroo Yonezu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

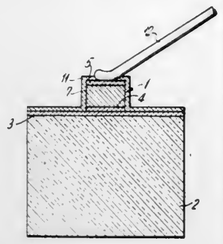
Continuation-in-part of Ser. No. 760,373, Jan. 18, 1977, abandoned. This application Sep. 6, 1978, Ser. No. 940,305

Claims priority, application Japan, Jan. 20, 1976, 51-5336

Int. Cl.[2] H01S *3/19*

U.S. Cl. 331—94.5 H **11 Claims**

1. A semiconductor laser element comprising a semiconductor laser crystal having a pair of opposing reflection surfaces and a pair of opposing principal surfaces, a pair of ohmic contacts at least on predetermined areas of the respective principal surfaces, a heat sink having a planar surface wider than each of said principal surfaces of said laser crystal, a layer of a fusible metal on said planar surface of said heat sink, said fusible metal being fusible at a temperature below about 370° C., said laser crystal being fused to said heat sink by said fusible metal layer with one of said contacts brought into contact with a predetermined portion of said fusible metal layer, said fusible metal layer thereby having an exposed portion that is left uncovered by the laser crystal fused to said heat sink, and a unitary film of an electrically insulating material continuously



covering at least said reflection surfaces of said laser crystal and said exposed portion of said fusible metal layer.

4,210,879

FOUR-PHASE STAGGERED SHIFT KEYING MODULATOR SYSTEM

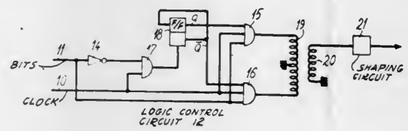
Jean-Pierre R. Poitevin, 53, rue Denis-Gogue, 92140 Clamart, and Pierre C. Brossard, 9, rue des Fleurs, 78190 Montigny-le-Bretonneux, both of France

Filed Jun. 5, 1978, Ser. No. 912,513

Claims priority, application France, Jun. 13, 1977, 77 18770

Int. Cl.[2] H04L *27/20*

U.S. Cl. 332—9 R **6 Claims**



1. A four phase staggered shift keying modulator employing transition coding by a series of binary digits in which each bit does or does not modify the phase condition of a carrier according to transition coding by a phase shift representing its contribution depending on its value defined by the two bits which precede it, including a voltage controlled oscillator means for generating the carrier, a control circuit, means to apply the series of bits to the input of the control circuit, the control circuit generating positive or negative pulses of a duration less than or equal to the duration of one bit of the series, means to apply the positive or negative pulses from the control circuit to the input of the voltage controlled oscillator, each pulse shifting the phase of the output frequency of the oscillator by $+90°$ or $-90°$ depending on its sign, wherein the 0 bits do not generate any pulses and the 1 bits generate a positive or a negative pulse, the sign of two successive pulses being modified or not depending on the parity of the number of intermediate 0 bits.

4,210,880

MULTIPLE BRANCH-LINE WAVE GUIDE COUPLER

Jean-Pierre Boujet, Chatillon, and Jean Dietz, Villejuif, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Sep. 14, 1978, Ser. No. 942,258

Claims priority, application France, Oct. 7, 1977, 77 30274

Int. Cl.[2] H01P *1/20, 5/18*

U.S. Cl. 333—110 **5 Claims**

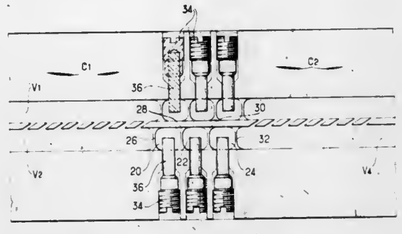
1. A multiple branch-line wave guide coupler comprising:

a first main wave guide having a rectangular cross-section with two large surfaces along two large sides of the cross-section and two small surfaces along two small sides thereof,

a second main wave guide of the same type as the first,

positioned at a distance from the first and extending parallel thereto with a large surface facing a large surface of the first, and

a plurality of coupling arms in the form of coupling wave guides with rectangular cross-sections each with a large side parallel to each other and substantially coextensive with the large sides of the cross-sections of the main wave guides, said arm extending parallel to each other between the two large surfaces which face each other of the two main wave guides and opening out at both their ends into



the two main wave guides to couple these two wave guides together,

the improvement wherein all of said coupling arms extend parallel to each other in the same direction and at an angle A of less than 90° to the direction of the main wave guides, all of said coupling arms comprising hollowed arms in a conductive surrounding material, and

said coupling arms have a cross-section, the large side of which is substantially coextensive with the large side of the main guide cross-section.

4,210,881

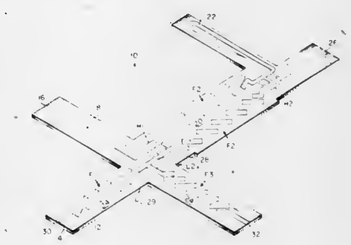
MILLIMETER WAVE MICROSTRIP TRIPLEXER

David Rubin, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 9, 1978, Ser. No. 959,383

Int. Cl.[2] H01P *1/20, 5/18*

U.S. Cl. 333—110 **9 Claims**



1. A planar millimeter wave triplexer for separating three bands B_1, B_2 and B_3 of frequencies comprising:

a dielectric substrate having first and second surfaces;

a ground plane conductor disposed on said substrate second surface;

first means disposed on said first surface for receiving a signal including components within said three bands of frequencies;

second means disposed on said first surface and connected to said first means for separating out from said signal the component thereof in said band B_2, for providing said B_2 component at a first output and for providing at a second output the components of said signal in said bands B_1 and B_3, said second means comprising a first planar quadrature coupler coupled to said first means, first and second identical planar bandpass filter sections coupled to said first coupler, and a second planar quadrature coupler coupled to said first and second identical bandpass filter sections; and

third means disposed on said first surface and connected to said second means for separating said signal components in said bands B_1 and B_3 and for outputting a B_1 signal component output and a B_3 signal component output at third and fourth outputs, respectively.

4,210,882

DELAY NETWORK COMPRISING A CHAIN OF ALL-PASS SECTIONS

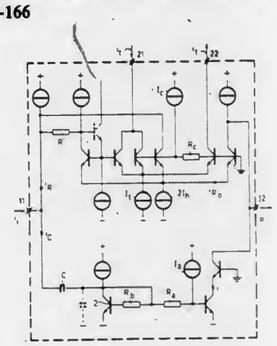
Engel Roza, and Johannes O. Voorman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,643

Claims priority, application Netherlands, Sep. 2, 1977, 7709663

Int. Cl.[2] H03H *7/28, 7/30, 7/10, 7/22*

U.S. Cl. 333—166 **9 Claims**



1. A Programmable filter comprising:

a chain of at least three all-pass sections having mutually substantially identical phase responses and substantially flat amplitude responses as a function of frequency at least up to a given frequency value;

tappings being provided on said chain of sections to which adjustable signals are applied and/or derived for adjusting the signal transfer characteristic of said programmable filter, said signals being adjustable with the aid of weighting factor adjusting means;

said all-pass sections being integrated on a semiconductor body;

each of said all-pass sections comprising:

a semiconductor amplifier circuit having first and second inputs and a common output;

a circuit comprising:

a resistor and a capacitor coupling an input terminal of said section to said first and second inputs in such manner that first and second signal paths having resistive and capacitive elements respectively connect said input terminal to said common output via said first and second inputs respectively;

the coupling from the input terminal of each section to the first input of the corresponding amplifier circuit including the corresponding resistor in series therewith;

the coupling from the input terminal of each section to the second input of the corresponding amplifier circuit including the corresponding capacitor in series therewith;

each amplifier circuit being inverting from one of its said inputs to its output and being non-inverting from the other of its said inputs to its output;

the input impedance of said amplifier circuit at each of its said inputs being negligibly small;

each amplifier circuit including a current mirror coupling one of its inputs to its output;

such that a signal applied to said input terminal will be split between said paths; and

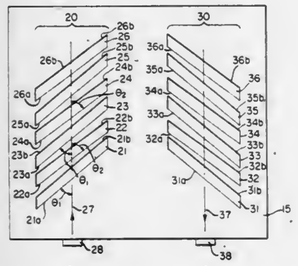
said amplifier circuit arrangement being constructed to exhibit negligible consumption of input signal power.

4,210,883

TECHNIQUE FOR WIDENING THE TEMPERATURE RANGE OF SURFACE ACOUSTIC WAVE REFLECTION ARRAY FILTERS

Manhar L. Shah, Melbourne Beach, and William D. Hunt, Palm Bay, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Jun. 27, 1978, Ser. No. 919,626
Int. Cl.² H03H *9/26, 9/32*
U.S. Cl. 333—195 **35 Claims**



1. In a surface acoustic wave device comprising a substrate capable of supporting acoustic waves at a surface thereof, and a reflective array grating formed of a plurality of acoustic wave-reflective elements, the boundaries of which elements create reflective discontinuities along the surface of said substrate, disposed at said surface of said substrate, a boundary of each element defining a respective grating angle relative to a prescribed direction of acoustic propagation,

the improvement wherein

said plurality of elements is comprised of plural sets of said elements, the elements of one of said sets having a discontinuity-creating boundary the grating angle of which differs from the grating angle of a discontinuity-creating boundary of the elements of another of said sets, and wherein the elements of said sets are interleaved with one another along said prescribed direction of acoustic propagation, so that an acoustic wave traveling along said prescribed direction encounters the boundaries of differing grating angles of each of the elements of said plural sets and thereafter repeatedly encounters the boundaries of different grating angles of each of the elements of said plural sets.

4,210,884

HELICAL RESONATOR BAND PASS FILTER WITH NOVEL COUPLING MEANS

Toshihide Tabuchi, Hirakata, and Masakatsu Tsumura, Shijonawate, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 5, 1978, Ser. No. 912,255
Claims priority, application Japan, Jun. 3, 1977, 52-66146; Feb. 8, 1978, 53-15108
Int. Cl.² H01P *7/00, 5/00, 1/20*
U.S. Cl. 333—203 **11 Claims**

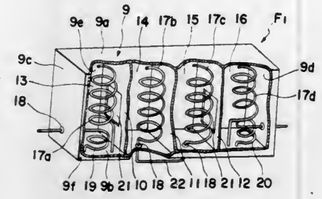
1. A band pass filter comprising in combination:

a metallic shield casing in the shape of a box-like chamber;

at least one metallic partition wall electrically connected to and disposed within said box-like chamber for dividing said box-like chamber into at least two enclosed spaces which are substantially electrically shielded from each other;

a quarter-wavelength winding, having first and second ends, disposed within each of said enclosed spaces and electrically insulated from said shield casing;

a first connecting means, electrically insulated from said shield casing, connected to said first end of each of said quarter-wavelength windings for electrically connecting said quarter-wavelength windings;



an input means coupled to a first of said enclosed spaces for supplying an input signal to said first enclosed space; and

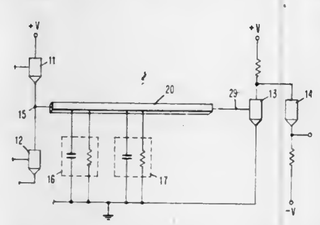
an output means coupled to a second of said enclosed spaces for producing an output signal from said second enclosed space.

4,210,885

THIN FILM LOSSY LINE FOR PREVENTING REFLECTIONS IN MICROCIRCUIT CHIP PACKAGE INTERCONNECTIONS

Chung W. Ho, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,914
Int. Cl.² H01P *3/08*
U.S. Cl. 333—238 **8 Claims**



1. In an integrated circuit package carrying a plurality of integrated circuit chips having an electrical ground plane and a plurality of conductors with at least one conductor connecting electrically from one circuit node to another, each of said chips having a plurality of electrical terminals connected to some of said nodes, the improvement comprising a total resistance value in each of said conductors that is greater than $\frac{1}{2}$ but less than 2 times the characteristic impedance of said conductors, and said conductors and ground plane forming lossy strip transmission lines, whereby significant attenuation of reflected signals is provided between chips.

4,210,886

ISOLATOR HAVING REACTIVE NEUTRALIZING MEANS AND PREDETERMINED ANGLE BETWEEN INPUT-OUTPUT WINDINGS

Ralph T. Enderby, and Lawrence N. Dworsky, both of Coral Springs, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 18, 1978, Ser. No. 943,077
Int. Cl.² H01P *1/36*
U.S. Cl. 333—24.2 **4 Claims**

1. An isolator for use in radio frequency apparatus comprising in combination:

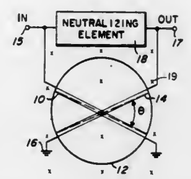
an input terminal;

an output terminal;

a reference voltage terminal;

first conductive means coupled across the input terminal and the reference voltage terminal;

second conductive means coupled across the output terminal and the reference voltage terminal, and positioned with its longitudinal axis in substantially the same plane as the longitudinal axis of the first conductive means and forming a first predetermined angle with said axis of the first conductive means, said angle having a value within one of the ranges 5° to 85° and 95° to 175°;



gyromagnetic means positioned in close proximity to the first and second conductive means with the major plane thereof parallel to the plane of the axes of said conductive means;

magnetic means for providing a substantially uniform static magnetic field and the first and second conductive means and the gyromagnetic means being positioned within and normal to said magnetic field; and

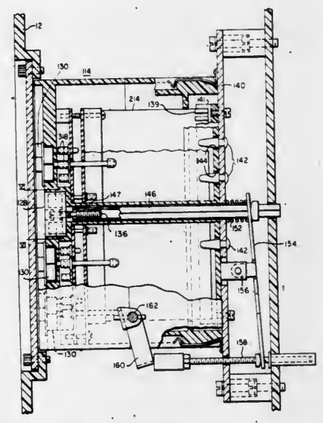
reactive neutralizing means coupled to provide minimum insertion loss at said first predetermined angle between the conductive means.

4,210,887

CIRCUIT INTERRUPTER WITH INTERLOCKED INTERCHANGEABLE TRIP UNIT

Joseph J. Matsko, Beaver; Robert H. Hill, South Beaver; Paul Skalka, Beaver, and Alfred E. Maier, Beaver Falls, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 23, 1977, Ser. No. 853,990
Int. Cl.² H01H *9/24;* **H02H** *3/08*
U.S. Cl. 335—6 **7 Claims**



1. A circuit interrupter, comprising:

a housing;

a circuit breaker mechanism disposed in said housing and comprising separable contacts, an operating mechanism responsive to manual operation to open and close said contacts, and trip means responsive to electrical operation to open said contacts;

sensing means responsive to current flow through said contacts;

an interchangeable trip unit removably disposed in said housing and electrically connected between said sensing means and said trip means, said trip unit activating said trip means to open said contacts upon detection of overload current by said sensing means; and

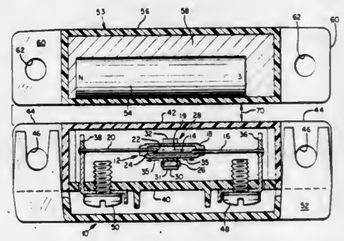
rejection means comprising a first mechanical mating member disposed in said housing and having a mechanical structure coordinated with electrical parameters of said circuit breaker mechanism and said sensing means, and a second mechanical mating member having a mechanical structure coordinated with electrical parameters of said trip unit, and positioned upon said trip unit to cooperate with said first mechanical mating member to permit a trip unit having electrical parameters compatible with electrical parameters of said operating mechanism and said sensing means to be completely inserted in said housing to effect electrical connection to said sensing means and trip means, said first and second mechanical mating members cooperating to prevent a trip unit having electrical parameters not compatible with the electrical parameters of said operating mechanism and sensing means from being completely inserted in said housing.

4,210,888

MAGNETICALLY OPERATED PROXIMITY SWITCH

Thomas J. Holce, 10905 SW. 5th #250, Beaverton, Oreg. 97005

Filed Jul. 20, 1978, Ser. No. 926,440
Int. Cl.² H01H *36/00*
U.S. Cl. 335—207 **13 Claims**



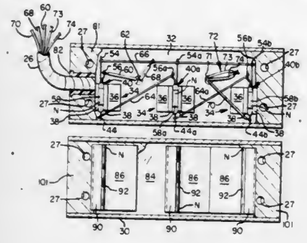
1. A proximity switch device for controlling an electrical circuit in response to the presence of a magnetic field of predetermined strength, said proximity switch device comprising:

(a) a reed switch having a pair of magnetic contacts contained within an elongate capsule having a longitudinal axis, said contacts being movable relative to one another from an unactuated state to a magnetically actuated state in response to the presence of a magnetic field of at least a predetermined minimum flux density;

(b) permanent magnet means, having an axis of polarity, associated with said capsule for providing a predetermined portion of said predetermined magnetic flux density, said predetermined portion being less than the minimum required to retain said contacts in said magnetically actuated state; and

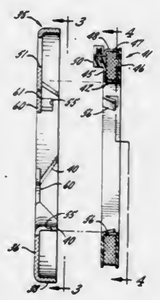
(c) magnet carrier means resiliently gripping said capsule for adjustably positioning said permanent magnet means relative to said reed switch so as to provide said predetermined portion of said predetermined magnetic field strength, said magnet carrier means including means for holding said permanent magnet means such that said axis of polarity is parallel to said longitudinal axis and said permanent magnet means is a predetermined distance from said longitudinal axis, and said magnet carrier means permitting said magnet to be moved in a longitudinal direction relative to said capsule while maintaining said predetermined distance between said permanent magnet means and said longitudinal axis.

4,210,889
MAGNETICALLY ACTUATED SENSING DEVICE
Thomas J. Holce, 10905 SW. 5th #250, Beaverton, Oreg. 97005
Filed Jul. 20, 1978, Ser. No. 926,442
Int. Cl.[2] H01H *36/00*
U.S. Cl. 335—207 **10 Claims**



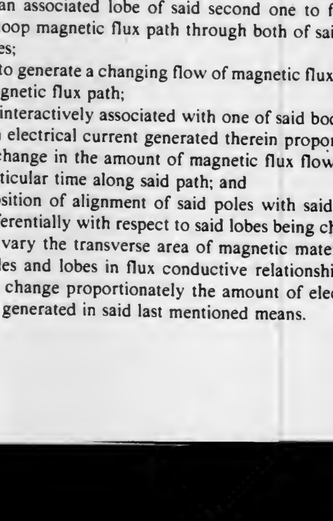
1. A magnetically actuated sensing device for controlling an electrical circuit in a physical security monitoring system, said sensing device comprising:
(a) a switch unit having at least three electrically interconnected reed switches, each one of said reed switches being responsive to a respective predetermined magnetic flux density, presence of said respective predetermined flux density causing magnetic actuation of each respective one of said reed switches;
(b) a plurality of permanent magnet biasing means, one of said permanent magnet biasing means being located adjacent each one of said reed switches for providing said respective predetermined magnetic flux density surrounding each one of said plurality of reed switches, at least one of said plurality of permanent magnet biasing means being located so as to provide magnetic flux in substantial opposition to magnetic flux of at least one other of said plurality of permanent magnet biasing means; and
(c) an actuating unit comprising means for allowing each one of said reed switches to assume a magnetically nonactuated state by reducing the net flux density surrounding each one of said plurality of reed switches sufficiently below said respective predetermined flux density when said actuating unit is in a predetermined position relative to said switch unit.

4,210,890
FIELD ASSEMBLY FOR AN ELECTROMAGNET
Robert A. Olsen, Janesville, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.
Filed Sep. 27, 1978, Ser. No. 946,114
Int. Cl.[2] H01F *3/00, 7/08*
U.S. Cl. 335—281 **9 Claims**



1. A field assembly for an electromagnet, said field assembly comprising a single-piece shell, said shell including a disc having a hole through the center thereof, arcuate flange means projecting axially from said disc and extending around said hole adjacent the margins thereof, said flange means defining a magnetic pole and also defining a mounting hub, said field assembly further comprising a coil assembly defined by an annular bobbin and by a multiple turn winding supported by said bobbin, said bobbin having an inner annulus telescoped over said mounting hub, said field assembly being characterized in that said shell and said bobbin are formed with coacting means which interlock with one another with a snap action when the annulus of said bobbin is telescoped over the mounting hub of said shell and is moved axially in one direction to a predetermined position on said hub, said coacting means being operable when interlocked, to prevent axial movement of said bobbin in the opposite direction along said hub and thereby serving to prevent said bobbin from being separated axially from said shell.

4,210,891
ELECTROMAGNETIC POSITION INDICATOR/DIFFERENTIAL TRANSFORMER
Homer A. Boushey, 70 Stonegate Rd., Portola Valley, Calif. 94025
Filed Nov. 20, 1978, Ser. No. 961,983
Int. Cl.[2] H01F *21/06*
U.S. Cl. 336—135 **9 Claims**



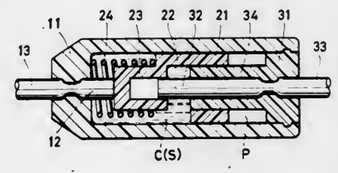
1. An electromagnetic structure comprising:
A. a pair of magnetic flux conductive bodies;
B. a first one of said bodies having at least two magnetic flux conductive poles projecting therefrom at spaced apart locations and having a connection of a flux conductive material extending therebetween adjacent their bases;
C. the second one of said bodies having at least two magnetic flux conductive lobes projecting therefrom, which lobes extend circumferentially about said second one and are spaced differing distances from one another at differing circumferential positions thereabout, said second one of said bodies also having a connection of a flux conductive material extending between said lobes adjacent their bases;
D. said bodies being mounted with each pole of said first one generally alignable respectively with, and in close proximity to, an associated lobe of said second one to form a closed-loop magnetic flux path through both of said pair of bodies;
E. means to generate a changing flow of magnetic flux along said magnetic flux path;
F. means interactively associated with one of said bodies to have an electrical current generated therein proportional to the change in the amount of magnetic flux flowing at any particular time along said path; and
G. the position of alignment of said poles with said lobes circumferentially with respect to said lobes being changeable to vary the transverse area of magnetic material of said poles and lobes in flux conductive relationship and thereby change proportionately the amount of electrical current generated in said last mentioned means.

4,210,892
ELECTRIC FUSE HAVING HELICALLY WOUND FUSIBLE ELEMENTS
Erwin Salzer, Waban, Mass., assignor to Gould Inc., Rolling Meadows, Ill.
Filed Feb. 12, 1979, Ser. No. 11,398
Int. Cl.[2] H01H *85/04*
U.S. Cl. 337—161 **5 Claims**



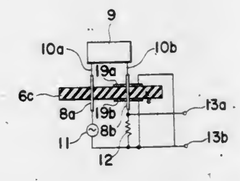
1. An electric fuse for elevated circuit voltages including a tubular casing of an electric insulating material; a pair of terminal elements closing the ends of said casing; a pulverulent arc-quenching filler inside said casing; a plurality of equidistantly spaced fusible elements electrically connected in parallel wound substantially helically in planes defining a prism and forming part of a current path conductively interconnecting said pair of terminal elements, wherein the novel feature consists in that said plurality of fusible elements are formed by a unitary metal stamping including a plurality of aligned metallic bridges interconnecting all of said plurality of fusible elements, said plurality of metallic bridges being of smaller width than each of said plurality of fusible elements and arranged in such a way that they are confined to said planes of said prism and spaced from the edges thereof, said plurality of bridges interconnecting all of said plurality of fusible elements at least once in each of said planes of said prism for each full turn of said plurality of fusible elements.

4,210,893
THERMAL CUT-OFF FUSE
Kunio Hara, Kawasaki, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Nov. 3, 1978, Ser. No. 957,390
Claims priority, application Japan, Nov. 4, 1977, 52-131426; Jul. 6, 1978, 53-92313[U]
Int. Cl.[2] H01H *37/76*
U.S. Cl. 337—407 **7 Claims**



1. A thermal cut-off fuse comprising a housing, first and second lead wires extending from said housing with at least said first lead wire extending into the interior of said housing, a conductive fluid initially in contact in said interior with at least said first lead wire for completing an electrical circuit to said second lead wire, slideable means comprising an electrically insulating barrier means initially disposed at a point remote from said first lead wire, spring means which initially tends to force said slideable means toward said first lead wire and an initially solid pellet positioned so as to restrain said spring means from forcing said slideable means toward said lead wire until a predetermined temperature is reached and said pellet melts, said slideable means being constructed so that upon the melting of said pellet said barrier means is interposed relative to said first lead wire so that any conductive fluid that remains in contact with said first lead wire is completely electrically isolated from the rest of the conductive fluid in said interior of said housing by said barrier means, which breaks the electrical circuit that otherwise would be made between said first and second lead wires through said conductive fluid in the absence of said barrier means.

4,210,894
TERMINAL UNIT FOR ELECTRICAL CIRCUIT ELEMENTS AND SENSING DEVICE EMPLOYING SAID TERMINAL UNIT
Tsuneharu Nitta, Katano; Ziro Terada, Yao, and Shigeru Hayakawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Aug. 29, 1978, Ser. No. 938,313
Claims priority, application Japan, Aug. 30, 1977, 52-104431; Apr. 13, 1978, 53-43987
Int. Cl.[2] H01L *7/00*
U.S. Cl. 338—35 **10 Claims**

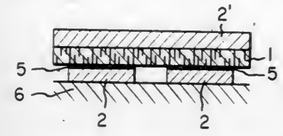


1. An electrical sensing device comprising:
a grounded electrically conductive substrate having a pair of bores disposed therein;
a pair of electrically insulating members disposed in respective bores of said electrically conductive substrate;
a pair of electrically conductive terminal leads extending through respective bores of said electrically conductive substrate, and embedded in and supported by respective electrically insulating members thereby being electrically insulated from said electrically conductive substrate; and
a sensing element exposed to the atmosphere having a pair of terminals connected to respective terminal leads and having an electrical impedance which varies in response to changes in an atmospheric quantity.

4,210,895
PRESSURE SENSITIVE RESISTOR ELEMENTS
Ryoichi Sado, Saitama, and Akio Nakamura, Toda, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan
Filed Dec. 12, 1978, Ser. No. 968,760
Claims priority, application Japan, Dec. 15, 1977, 52/151143
Int. Cl.[2] H01R *11/20*
U.S. Cl. 338—99 **3 Claims**

1. A pressure sensitive resistor element comprising an anisotropically electroconductive sheet formed of an electrically insulating rubbery elastomer as a matrix, said matrix including a number of electroconductive fibers dispersed and oriented in alignment in a direction substantially perpendicular to the

plane of the sheet, an electrode provided on each surface of the sheet and an insulating layer formed of an electrically insulating material interposed between at least one of the electrodes



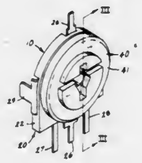
and the sheet, the insulating layer having a thickness sufficient to be insulating in the absence of, and to contribute to electric conduction in the presence of, a compressive force between the electrodes.

4,210,896

VARIABLE RESISTANCE CONTROL AND METHOD OF MAKING THE SAME

John D. Van Benthuysen, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Apr. 24, 1978, Ser. No. 899,116
Int. Cl.[2] H01C *10/00*
U.S. Cl. 338—159 **16 Claims**



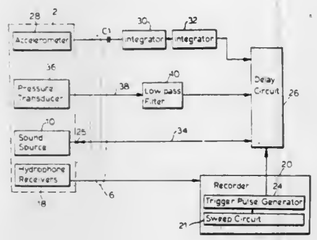
1. A variable resistance control comprising a structure plate having front and back plate surfaces and having peripheral edges and comprising a collector intermediate of the peripheral edges and having a collector surface defining a portion of the front plate surface and a center terminal integral with the structure plate, a body molded to the front plate surface and having a front body surface spaced from the front plate surface and having an opening in the front body surface exposing the collector surface, the center terminal extending outwardly from the body distal from the front body surface, a pair of end terminals embedded in the body, and having internal ends exposed on the front body surface, and having external ends projecting from the body distal from the front body surface, a resistance element arcuately disposed on the front body surface radially outward from the collector surface and electrically connected to the pair of end terminals, the resistance element being intimately bonded to the front plate surface by the body, a driver operably connected to the structure plate for rotation about an axis intermediate of and orthogonal to the arcuately disposed resistance element, and having an inner surface proximal to the front body surface, a contactor disposed intermediate the inner surface of the driver and the structure plate and drivingly connected to the driver for rotation thereby and electrically contacting the collector surface and the resistance element, and heat sink means comprising a portion of the structure plate that substantially corresponds in size and location to the resistance element for receiving and dissipating heat from the resistance element, the area of the front plate surface of the structure plate being at least as large as the area of the resistance element.

4,210,897

HEAVE COMPENSATION SYSTEM

Roger Hutchins, Toronto, Canada, assignor to Huntec (70) Limited, Scarborough, Canada

Continuation of Ser. No. 747,588, Dec. 6, 1976, Pat. No. 4,091,356. This application Mar. 3, 1978, Ser. No. 883,076
The portion of the term of this patent subsequent to May 23, 1995, has been disclaimed.
Int. Cl.[2] G01V *1/38*
U.S. Cl. 367—106 **3 Claims**



1. An underwater seismic system for producing sound signals in water and for recording echoes from the bottom beneath the surface of such water, comprising:

(1) a body adapted to travel through said water and including

(a) a sound source for generating a sound signal, said source including input trigger means responsive to a trigger pulse received thereat for generating said sound level,

(b) a receiver for receiving echoes from said bottom,

(2) a recorder connected to said receiver for recording said echoes, said recorder including repetitive sweep means, and means for generating a first start signal upon commencement of each sweep,

(3) delay means including:

(a) pressure compensation means comprising a pressure transducer located in said body for producing a pressure signal indicative of the depth of said body, said pressure signal having a steady state value when the water pressure above said body is constant and said pressure signal changing in a first sense when the water pressure above said body decreases and changing in an opposite sense from said steady state value when the water pressure above said body increases,

(b) means connected to said recorder for receiving said first start signal from said recorder,

(c) means connected to said pressure compensation means for receiving said pressure signal and also connected to said means (b) and responsive to receipt of said first start signal for thereupon generating a second start signal at a time delayed from said first start signal by a time interval which has a predetermined value when said pressure signal has said steady state value and which decreases from said predetermined value when said pressure signal changes in said first sense and which increases from said predetermined value when said pressure signal changes in said opposite sense,

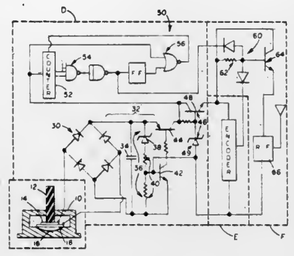
(d) means connecting said means (c) to said input trigger means for said second start signal to constitute said trigger pulse, so that vertical movement of said body beneath said surface of said water will cause compensating variations in the time of operation of said source.

4,210,898

LOW TIRE WARNING SYSTEM

David A. Betts, Mentor-on-the-Lake, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Apr. 30, 1979, Ser. No. 34,900
Int. Cl.[2] B60C *23/06*
U.S. Cl. 340—58 **11 Claims**



1. A tire profile monitoring apparatus including at least one telemetry means adapted to be mounted adjacent a pneumatic tire of a vehicle, said telemetry means comprising:

transducer means for sensing an abnormal tire profile and for producing electric pulses in response to said detected abnormal profile;

accumulator means for accumulating said transducer pulses, said accumulator means operatively connected with transducer means, said accumulator means comprising counting means for counting an indicia of the number of transducer pulses received, said counting means causing an enable signal upon counting to a predetermined number;

encoder means for producing a modulating signal;

transmitting means for transmitting modulated radio signals, said transmitting means operatively connected with encoder means for receiving said modulating signal for producing modulated radio signals, said transmitting means being enabled by said enable signal, said transmitting means being operatively connected with said accumulator means for receiving said enable signal whereby said transmitting means transmits a modulated radio signal when the counting means counts the predetermined number of counts.

4,210,899

FINGERPRINT-BASED ACCESS CONTROL AND IDENTIFICATION APPARATUS

Claron W. Swonger, Elma, N.Y.; Dan M. Bowers, Fairfield, Conn., and Robert M. Stock, Severna Park, Md., assignors to Fingermatrix, Inc., North White Plains, N.Y.

Continuation of Ser. No. 589,287, Jun. 23, 1975, abandoned. This application Nov. 25, 1977, Ser. No. 855,043
Int. Cl.[2] G06K *9/12*
U.S. Cl. 340—146.3 E **4 Claims**

1. Terminal means for reading fingerprints and for transmitting and receiving data and including:

(a) means for displaying information to a user;

(b) means for entering identity data;

(c) prism means having one face to be contacted by a finger of a person to be identified;

(d) photodetector means for producing an electrical output directly related to light incident thereon;

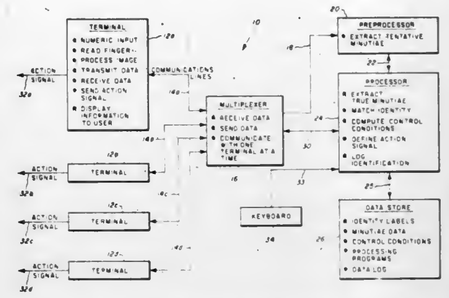
(e) means for projecting an image of a fingerprint, of a finger of the person to be identified which is in contact with said prism means, onto said photodetector means;

(f) means for moving the image of the fingerprint of the person to be identified across said photodetector means;

(g) video signal processing means for processing the electrical output of said photodetector means;

(h) means for synchronizing said means for moving an image and said video signal processing means;

(i) means for transmitting entered identity data and the processed electrical output of said photodetector means; and



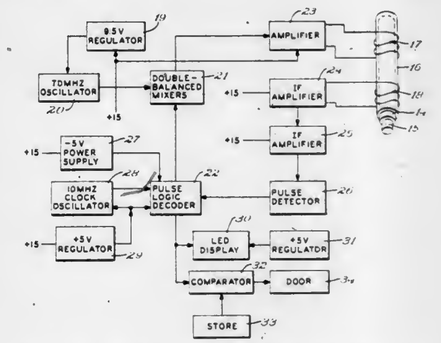
(j) means for receiving data indicating whether an identity is confirmed.

4,210,900

SURFACE ACOUSTIC WAVE CODE READER

Gideon Shavit, Highland Park, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 16, 1978, Ser. No. 934,155
Int. Cl.[2] H04Q *3/00*
U.S. Cl. 340—149 R **17 Claims**



1. An access control system, for permitting access to a protected area, utilizing a coded surface acoustic wave device, said system comprising:

supply means for transmitting energy;

surface acoustic wave means having energy receiving means for receiving said energy, first transducer means connected to said energy receiving means for converting said energy into surface acoustic waves, second transducer means for converting said surface acoustic waves into a coded signal, and code transmitting means connected to said second transducer means for transmitting said coded signal;

receiver means for providing an output dependent upon said coded signal; and,

output means connected to said receiver means for receiving said output to permit access to said protected area in response to a predetermined coded signal.

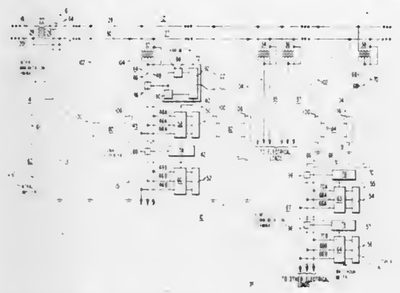
4,210,901
SIGNAL REPEATER FOR A DISTRIBUTION NETWORK COMMUNICATION SYSTEM

Ian A. Whyte, Churchill Boro.; Leonard C. Vercellotti, Oakmont, and James P. McGivern, Plum Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 790,227, Apr. 25, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,825

Int. Cl.[2] H04B *3/54*

U.S. Cl. 340—310 R **14 Claims**



11. A power line communication system comprising:

an electrical distribution network including primary conductors extending between a distribution substation and a plurality of distribution transformers, branch secondary conductors extending between said distribution transformers and certain electrical loads, with one of said primary and one of said secondary conductors disposed at ground potential with respect to the others of said primary and secondary conductors to form a continuous ground conductor extending between said distribution substation and each electrical load;

uniquely addressable remote communication terminals associated with certain of said electrical loads; said remote communication terminals disposed in signal communication with said ground conductor of said distribution network;

means, disposed in signal communication with one of said primary conductors of said distribution network for generating interrogation signals containing at least the address of a repeater and remote communication terminal;

each of said remote communication terminals, upon receiving an interrogation signal, providing a response signal on said ground conductor;

uniquely addressable signal repeaters associated with certain of said remote communication terminals, each of said signal repeaters including single means for receiving and single means for transmitting interrogation and response signals, each of said signal repeaters further including first and second signal couplers, said first signal coupler including a coupling capacitor and a first conductor connected to earth ground, said coupling capacitor coupling one of said other primary conductors in signal communication with said first ground conductor, said second signal coupler including a second conductor connected to earth ground and to one of said conductors at ground potential adjacent one of said distribution transformers,

first and second transformer elements associated with said first and second ground conductors, respectively, each of said first and second transformers having primary and secondary portions; said primary portion consisting of a hollow core of magnetic material disposed in inductive relation around one of said first or second ground conductors whereby a single turn primary winding is formed; said secondary portion including two wound conductors inductively coupled to said core to form first and second coupling terminations;

each of said signal repeaters including at least first and second switches, said first switch being connected to said single receiving means and said second switch being connected to said single transmitting means;

said first switch switchably disposed between said first coupling terminations of said first and second transformers, said second switch switchably disposed between said second coupling terminations of said first and second transformers;

each of said signal repeaters including switch control means for operably moving said first and second switches between said coupling terminations of said first and second transformer elements; and

each of said signal repeaters further including logic means for decoding selected bits of said interrogation and response signals and for generating, in response thereto, control signals useful in operating said switch control means,

said logic means including means for comparing the address of said signal repeater with the repeater address contained in said interrogation and response signals and for generating in response thereto, a control signal whenever said addresses match;

said switch control means being responsive to said control signal from said comparing means and having a first state wherein said first and second switches are connected to said first and second coupling terminations of said first transformer element, respectively, and a second state wherein said first and second switches are connected to said first and second coupling terminations of said second transformer element, respectively.

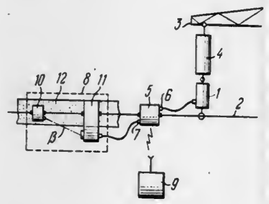
4,210,902
DEVICE FOR TELEMETERING LOADS ON POWER TRANSMISSION LINE CONDUCTORS

Vladimir A. Palekhin, ulitsa Chernyakhovskogo, 30, kv. 56, Smolensk; Alexandr A. Neiman, Volgogradsky prospekt, 169, kv. 10, and Veniamin G. Kagan, Golikovsky pereulok, 13, kv. 1, both of Moscow, all of U.S.S.R.

Filed Jan. 29, 1979, Ser. No. 7,258

Int. Cl.[2] G01B *15/02*; **G08C** *17/00*; **G08B** *21/00*; **H02G** *7/16*

U.S. Cl. 340—310 A **1 Claim**



1. A device for telemetering loads on power transmission line conductors, comprising:

a plurality of load sensors installed along a power transmission line to measure the load on the line conductors, each load sensor being fixed in place at a point of suspension of one of said line conductors to a supporting structure of said power transmission line and having an output;

a plurality of transducers converting the load sensor output signal into a high-frequency signal, the number of said transducers being equal to the number of said load sensors, each transducer shaping and transmitting a high-frequency signal, and having two inputs, a first of said inputs being connected to the output of a respective load sensor;

sources of power for said transducers;

a plurality of ice load sensors mounted along said power transmission line, each ice load sensor being attached to said line conductor and having an output connected to a second of said inputs of a respective transducer, said ice load sensors producing an output signal in proportion to the thickness of the ice layer accumulated on said line conductor;

sources of radioactive radiation mounted on said line conductor, each source of radioactive radiation being mounted in relation to a respective ice load sensor;

a detector of radioactive radiation mounted on said line conductor in the path of the radiation from a respective source of radioactive radiation; and

a high-frequency signal receiver receiving the signals of said transducers.

4,210,903
METHOD FOR PRODUCING ANALOG-TO-DIGITAL CONVERSIONS

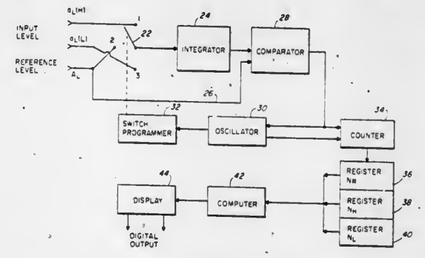
Paul J. LaBrie, Salem, Mass., assignor to Semiconductor Circuits, Inc., Haverhill, Mass.

Continuation of Ser. No. 654,298, Feb. 2, 1976, Pat. No. 4,110,747. This application Jun. 21, 1978, Ser. No. 917,464

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 NT **2 Claims**



1. A method of converting an unknown analog electronic signal having high and low levels to a digital electronic signal representing a digital measurement of said unknown analog signal, comprising the steps of:

(a) electronically combining three different pairs of analog signals, a first pair comprised of the unknown high analog signal and a known reference signal, a second pair comprised of the unknown low analog signal and the known reference signal, and a third pair comprised of the known reference signal and the known reference signal;

(b) alternately switching electronically each signal of each pair in a predetermined pair sequence to an integrator for equal predetermined time periods;

(c) electronically comparing the amplitude of each pair for equality with the amplitude of said known reference signal;

(d) registering a count representing the integration time required to reach amplitude equality for each of said pairs, said counts defining three points on a straight line; and

(e) electronically generating a digital signal related to the number of counts registered for each said pair, said digital signal representing said unknown analog signal in digital form.

4,210,904
METHOD AND APPARATUS FOR CONVERTING ANALOG ULTRASONIC ECHO SIGNALS INTO DIGITAL FORM

Peter Renzel, Duren, and Werner Vermoehlen, Elsdorf, both of Fed. Rep. of Germany, assignors to Krautkramer-Branson, Incorporated, Stratford, Conn.

Filed Sep. 12, 1978, Ser. No. 941,378

Int. Cl.[2] H03K *13/02*

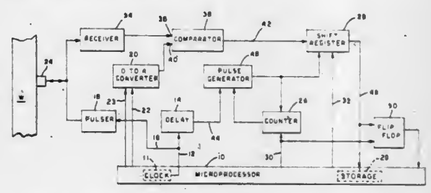
U.S. Cl. 340—347 AD **19 Claims**

1. A method for processing and storing an echo signal in pulse-echo ultrasonic testing comprising the steps of:

cyclically transmitting ultrasonic search signal into a workpiece;

receiving corresponding ultrasonic echo signals, each echo signal being responsive to a respective search signal intercepting an acoustic discontinuity in the workpiece and converting each such echo signal into an electrical analog echo signal;

generating a reference signal and varying the amplitude level of said reference signal from an initial value by a predetermined increment concomitantly with each cyclically transmitted ultrasonic search signal until a predetermined condition is reached;



providing a signal indicative of a gated time interval commencing a predetermined time after transmitting each search signal and terminating after a predetermined quantity of time increments occurs;

comparing the amplitude of a cyclically received analog echo signal with the amplitude level of a respective reference signal and generating a digital signal responsive to the amplitude of said electrical analog signal exceeding or failing to exceed the amplitude level of said reference signal at predetermined time increments during a gated time interval, and

storing said digital signals so generated in time increment responsive relation.

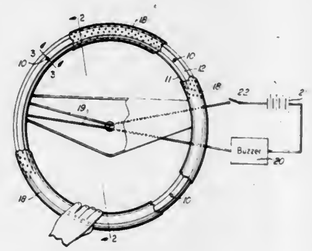
4,210,905
ALARM FOR WAKING A DOZING DRIVER

David A. Coons, 753 E. 1825 South, Bountiful, Utah 84010

Filed Jul. 21, 1978, Ser. No. 926,843

Int. Cl.[2] G08B *21/00*; **B60Q** *5/00*

U.S. Cl. 340—575 **9 Claims**



1. An alarm for waking a dozing driver of a vehicle having a steering wheel, comprising in combination with such steering wheel a plurality of electrical switches arranged about the periphery thereof on the side of the steering wheel facing the driver; a rigid ring member of diameter substantially equal to the diameter of the steering wheel extending continuously about said periphery in juxtaposition with said plurality of switches and resiliently attached to said steering wheel so as to be positioned between the steering wheel and the driver, said rigid member being operatively arranged with respect to the plurality of switches so that a normal grasp of the steering wheel will cause said rigid member to be displaced toward the steering wheel and at least one switch of the plurality of switches to change from its normal position; alarm means electrically connected to said plurality of switches so that an alarm is given if all switches of the plurality are in their normal

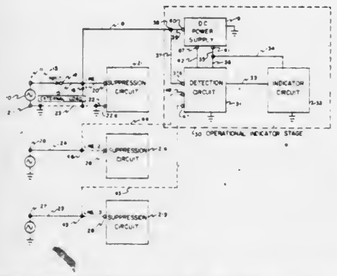
position; and means to supply power to the switches and the alarm means.

4,210,906

TRANSIENT SUPPRESSION AND DETECTION SYSTEM WITH OPERATIONAL INDICATOR MEANS

Jennings T. Smith, 2929 W. 11400 South, and George L. LeBaron, 3068 W. 10755 South, both of South Jordan, Utah 84065

Filed Nov. 20, 1978, Ser. No. 961,859
Int. Cl.² H02H 3/22
U.S. Cl. 340—659 **14 Claims**



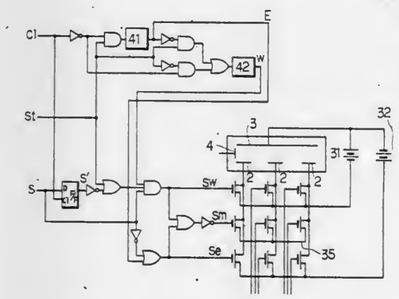
1. An on-line dynamically operating transient suppression and detection system including, in combination, a pair of input terminals constructed for coupling to a desired load and also to a power distribution circuit; means coupled to said input terminals for suppressing and dissipating transient energies appearing across said input terminals; means coupled to said input terminals for automatically detecting possible transient presence thereat should said suppressing and dissipating means fail to operate; and means coupled to said detecting means for indicating the operationally effective status of said transient suppressing and dissipating means as reflected in said detecting means.

4,210,907

UNIFORM COLORATION CONTROL IN AN ELECTROCHROMIC DISPLAY OF THE SEGMENTED TYPE

Hiroshi Hamada; Hiroshi Take; Yasuhiko Inami, all of Tenri, and Hisashi Uede, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 4, 1978, Ser. No. 893,513
Claims priority, application Japan, Apr. 4, 1977, 52-38631
Int. Cl.² G06F 3/14; G09F 9/32
U.S. Cl. 340—785 **8 Claims**



1. In a drive system for driving an electrochromic display cell during a coloration period, and a bleaching period, said display cell having a memory period when said drive system is not driving said electrochromic display cell, said drive system including an external power source, said cell including an electrochromic material and a predetermined number of display electrodes, different combinations of said display electrodes defining different desired display patterns, said drive system comprising:

coloration means for conducting coloration operations by applying a coloration voltage to selected ones of said display electrodes during said coloration period; and

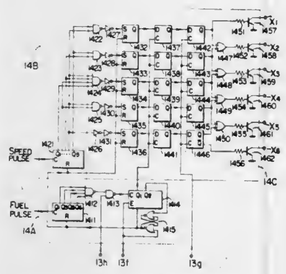
communication means responsive to the absence of the conducting of said coloration operations to said selected ones of said display electrodes by said coloration means for electrically connecting said selected ones of said display electrodes together during said memory period, said external power source being disconnected from said selected ones of said display electrodes during said memory period, thereby maintaining the degree of coloration of the selected ones of said display electrodes uniform.

4,210,908

TWO-DIMENSIONAL DISPLAY APPARATUS FOR AN AUTOMOBILE

Yasuyuki Sakakibara, Okazaki, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 21, 1978, Ser. No. 879,496
Claims priority, application Japan, Feb. 23, 1977, 52-21707
Int. Cl.² G06F 3/14
U.S. Cl. 340—754 **6 Claims**



1. A two-dimensional display apparatus for a vehicle for displaying two-dimensionally on a plane the correlation between two parameters which vary in association with the running of the automobile, comprising:

a display including a plurality of discrete, direct current light-emitting elements having opposite polarity terminals and being arranged as a matrix in rows and columns on a plane, each of said light-emitting elements being adapted to be lighted by being fed with a direct current and having a polarity of current flow, and a plurality of first electrical conductors and a plurality of second electrical conductors connected to the terminals of said light-emitting elements so that the terminals of one polarity of the elements for each row are connected by a respective first conductor and the terminals of the other polarity of the elements for each column are connected by a respective second conductor,

a first signal generating circuit for generating first signals related to said first parameter of said vehicle and having a plurality of output terminals for coupling said first signals respectively with said first conductors corresponding to the rows of said light-emitting elements in said display for selectively energizing a particular row responsive to the value of said first parameter, and

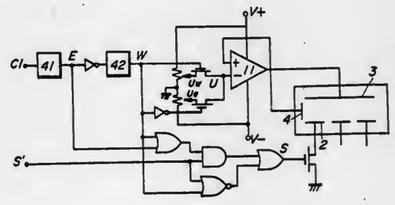
a second signal generating circuit for generating second signals related to said second parameter of said vehicle and having a plurality of output terminals for coupling said second signals respectively with said second conductors corresponding to the columns of the light-emitting elements in said display for selectively energizing a particular column responsive to the value of said second parameter; whereby light can only result from the single light-emitting element which is at the crossing point of the row and column respectively energized by said first and second signals from said first and second signal generating circuits for indicating a particular correlation between said parameters.

4,210,909

COMPLETE BLEACHING OF NON-SELECTED DISPLAY ELECTRODES IN AN ELECTROCHROMIC DISPLAY DRIVE

Hiroshi Hamada; Hiroshi Take; Yasuhiko Inami, all of Tenri, and Hisashi Uede, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1978, Ser. No. 896,591
Claims priority, application Japan, Apr. 20, 1977, 52/46097
Int. Cl.² G09F 9/32; G06F 3/14
U.S. Cl. 340—763 **13 Claims**



1. In a drive system for an electrochromic display device which includes an electrochromic material and at least one display electrode, said drive system including coloration means for conducting a coloration operation to said display electrode thereby coloring said display electrode for a predetermined period of time, and bleaching means for conducting a bleaching operation to said display electrode thereby bleaching said display electrode, said drive system further comprising:

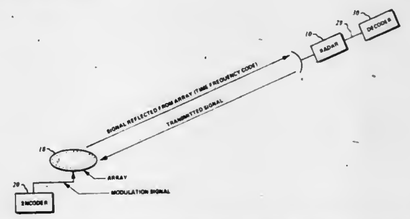
holding means for maintaining conduction of said bleaching operation to said display electrode when said display electrode is not being colored, said holding means maintaining conduction of said bleaching operation until the coloration operation is conducted to said display electrode.

4,210,910

DECODER FOR A SPACE RETRODIRECTIVE ARRAY

Robert J. Wohlers, Orchard Park, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,443
Int. Cl.² G01S 7/02
U.S. Cl. 343—7.6 **5 Claims**



1. A method for extracting information contained in a time-frequency code superimposed on radar signals of an inquiry radar including the steps of:

receiving radar return signals containing a time-frequency code;

separating the received radar return signals into their component bands;

determining the presence of a predetermined number of component bands in a predetermined range of frequencies; and

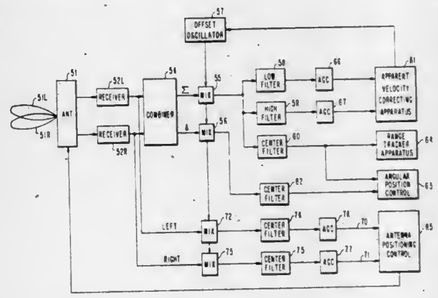
producing an output containing the extracted time-frequency code when a predetermined number of channels are present in the received signal.

4,210,911

METHOD FOR DECREASING MINIMUM OBSERVABLE VELOCITY OF MOVING TARGETS

Omar J. Jacomini, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 19, 1977, Ser. No. 861,819
Int. Cl.² G01S 9/42
U.S. Cl. 343—7.7 **6 Claims**



1. A method of decreasing the minimum velocity of a moving target observable by an airborne radar system comprising

transmitting a radar beam from the airborne radar system toward the earth;

receiving radar echoes having different doppler frequency shifts corresponding to the apparent velocity of target, clutter, and objects in a plurality of overlapping beams having crossover points of less than 3 decibels, to compensate for decreased single beam two way gains when detecting slow moving targets off boresite;

scanning away from potential targets to improve detection of slow moving targets;

rejecting the echoes having a doppler frequency shift corresponding to the apparent velocity of stationary targets and clutter at maximum amplitude in each beam; and

detecting the echoes including the echoes from slow moving targets having a doppler frequency shift corresponding to targets having an apparent velocity greater than the stationary ground clutter.

4,210,912

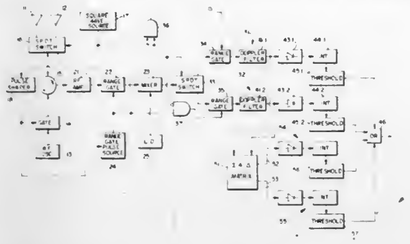
PULSED DOPPLER MOVING TARGET DETECTOR

Herbert H. Naidich, and John E. Westmark, both of Cincinnati, Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Mar. 16, 1978, Ser. No. 887,670
Int. Cl.² G01S 9/42
U.S. Cl. 343—7.7 **13 Claims**

2. A pulsed doppler radar for detecting a moving target comprising a plurality of antennae with patterns covering differing spatial regions, means for applying pulses having a common predetermined carrier frequency to the antennae in sequence so that pulses are never simultaneously applied to adjacent antennae, the energy from the pulses incident on the moving target being reflected back toward the antennae with a shift in carrier frequency, a plurality of signal processing channels, one for each of the antennae, each of said channels being responsive to reflected energy from the target transduced by the transducer associated with the channel, said channels being

activated in synchronism with the sequentially energized antennae so that each channel is responsive to the reflected energy at differing times, each of said channels including filter means for passing a replica of the shifted carrier frequency to



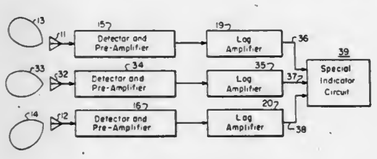
the exclusion of the carrier frequency energizing the antenna associated with the channel, means for deriving a signal indicative of the amplitude of the replica passed by the filter means, and means responsive to signals derived from the plural channels for indicating the presence of the target.

4,210,913

PASSIVE DETECTION AND TRACKING APPARATUS

Paul D. Newhouse, Linthicum Heights, and Charles M. Allen, Arbutus, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 13, 1957, Ser. No. 640,050
Int. Cl.² G01S *3/28*
U.S. Cl. 343—123 **14 Claims**



1. In passive detection and tracking apparatus, in combination, a plurality of directional signal obtaining means for obtaining from radiant energy received from the same source a plurality of signals which vary in predetermined manners with variations in the direction from the passive detection and tracking apparatus to said source, gating means operatively connected to said plurality of signal obtaining means, and indicator means operatively connected to said gating means, said gating means being constructed and arranged to pass to the indicator means certains signals only while said plurality of signals have preselected relative characteristics with respect to each other, said indicator means being constructed and arranged to utilize the passed signals to provide an indication of the direction to said source.

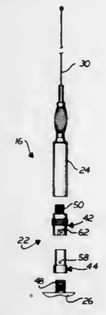
4,210,914

ROD ANTENNA WITH LOADING COIL AND QUICK-CONNECT COUPLING ASSEMBLY

Cornelius P. Blackman, Middleburg Heights, Ohio, assignor to The Hansen Manufacturing Company, Cleveland, Ohio

Filed Jul. 29, 1977, Ser. No. 820,144
Int. Cl.² H01Q *1/32*
U.S. Cl. 343—715 **8 Claims**

1. An apparatus for use in sending and/or receiving radio frequency electrical signals, said apparatus comprising a base having a conductor element, an antenna, loading coil means connected to one end of said antenna for increasing the effective electrical length of said antenna, and a quick-connective coupling assembly interconnecting said base and said loading coil means, said quick-connective coupling assembly including plug and socket assemblies connected with said base and loading coil means, said socket assembly including surface means for defining a chamber to telescopically receive at least a portion of said plug assembly and retaining means for holding said plug and socket assemblies against axial movement relative to each other, said plug assembly including first conductor means having first and second end portions, said first end portion being disposed in engagement with said conductor element to provide for the conduction of radio frequency electrical signals between said plug assembly and base, a plug body circumscribing said first conductor means, and electrically insulating material disposed between said first conductor means and said plug body, said electrically insulating material having an end surface which cooperates with an end surface of said plug body and an end surface of said second end portion of said first conductor means to form a smooth end portion of said plug assembly to retard the accumulation of foreign materials on the end portion of said plug assembly, said socket assembly including second conductor means having a first end portion



disposed in engagement with said end surface of said second end portion of said first conductor means to provide for the conduction of radio frequency electrical signals between said first and second conductor means, said second conductor means having a second end portion disposed in engagement with said loading coil means to provide for the conduction of radio frequency electrical signals between said second conductor means and said loading coil means, a socket body circumscribing said second conductor means, and electrically insulating material disposed between said second conductor means and said socket body, said second conductor means including a first conductor member which is movable relative to said socket housing and a second conductor member which is fixedly connected with said socket housing and is connected with said first conductor member, said first end portion of said second conductor means being disposed on said first conductor member, said second end portion of said second conductor means being disposed on said second conductor member.

4,210,915

MICROWAVE ANTENNA WITH EXPONENTIALLY EXPANDING HORN STRUCTURE

Karl-Heinz Kienberger, Schopfheim-Wiechs, and Don J. R. Stock, Schopfheim-Langenau, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

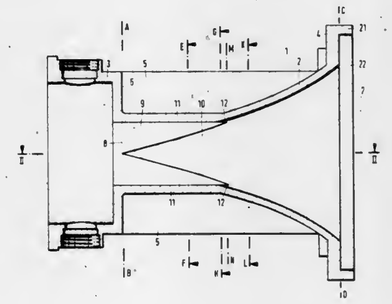
Filed Sep. 27, 1978, Ser. No. 946,367
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744841
Int. Cl.² H01Q *13/02*
U.S. Cl. 343—786 **8 Claims**

1. A micro-wave, horn-type antenna having a longitudinal axis, said antenna comprising

an outlet portion having a circular inlet opening and a circular outlet opening, the diameter of the outlet portion decreasing exponentially along said longitudinal axis from said circular outlet opening to the circular inlet opening; and

a transition portion having a rectangular inlet opening and a circular outlet opening which coincides with the circular inlet opening of the outlet portion,

each cross-section of said transition region in a plane perpendicular to said longitudinal axis following the outline of a circle obtained by exponentially decreasing the diameter of said circular outlet opening thereof to the plane of said cross-section in accordance with the same rate of exponential decrease which occurs between said circular outlet



and inlet openings of the output region insofar as the circular outline lies outside of a projection of said rectangular inlet opening onto the plane of said cross-section, the remainder of said outline comprising said projection of the rectangular inlet opening, said circular outlet portion of the transition region circumscribing a projection of the rectangular inlet opening onto the plane containing the last-mentioned circular outlet opening; and

said rectangular inlet opening inscribing an imaginary circle obtained by decreasing the diameter of said circular outline to the plane of said rectangular outlet opening at said same rate of exponential decrease.

4,210,916

INK JET INKS

Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Mar. 5, 1979, Ser. No. 17,709
Int. Cl.² C09D *11/02*
U.S. Cl. 346—1.1 **3 Claims**

1. In a process for information recording comprising producing a fine jet of colored aqueous liquid, directing the jet of colored liquid onto a recording medium, modulating the density of the applied jet by an electric field in accordance with the information to be recorded, the improvement comprising the step of adding a humectant at least one mono alkene diol.

4,210,917

MULTICOLOR MULTIPOINT RECORDER

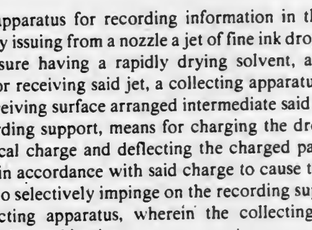
Charles E. Lane, III, Meadowbrook, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 928,849, Jul. 28, 1978. This application Mar. 28, 1979, Ser. No. 24,547
Int. Cl.² G01D *9/00, 9/28, 13/02*; B41J *27/00*
U.S. Cl. 346—34 **6 Claims**

1. A multicolor ink cartridge comprising:

a support shaft,

a plurality of parallel ink containing layers attached to said shaft, and



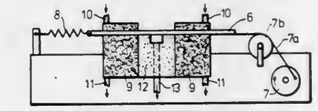
a plurality of ink impervious layers attached to said shaft for separating adjacent ones of said ink containing layer.

4,210,918

INK JET PRINTER

Klaus Hoffmann, Leverkusen, and Detlef Döppner, Cologne, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,486
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657360
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **3 Claims**



1. An apparatus for recording information in the form of symbols by issuing from a nozzle a jet of fine ink droplets under high pressure having a rapidly drying solvent, a recording support for receiving said jet, a collecting apparatus provided with a receiving surface arranged intermediate said nozzle and said recording support, means for charging the droplets with an electrical charge and deflecting the charged particles in a field and in accordance with said charge to cause the charged particles to selectively impinge on the recording support or on the collecting apparatus, wherein the collecting apparatus comprises in combination;

a separating member having a surface capable of receiving said ink droplets and a knife edge defined by one edge of said surface,

a porous extraction member adjacent to the knife-edged separating member,

at least two spaced porous cleaning devices bearing against the separating member,

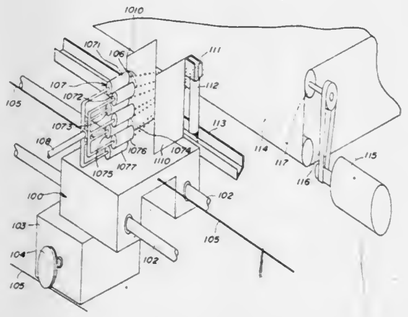
means supplying a cleaning solvent to said cleaning devices, said cleaning devices being capable of removing ink from the knife edge and the receiving surface and means for moving the separating member laterally across both said porous extraction member and said spaced cleaning devices to continuously provide said knife edge and said receiving surface adjacent said extraction member free of an accumulation of the ink.

4,210,919

INK JET SYSTEM PRINTER INCLUDING PLURAL INK DROPLET ISSUANCE UNITS FOR ONE COLUMN PRINTING

Masahiko Aiba, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 14, 1978, Ser. No. 886,597
Claims priority, application Japan, Mar. 14, 1977, 52-28197; May 20, 1977, 52-59215
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **9 Claims**



1. In an ink jet system printer which emits a plurality of charged ink droplets toward a record receiving medium, deflects said charged ink droplets and deposits said deflected ink droplets on said record receiving medium, whereby a desired pattern is printed on said record receiving medium in accordance with a predetermined set of print data information in a dot matrix fashion yielding a dot matrix pattern, the improvement comprising:

a plurality of discrete ink droplet issuance units;

emitting means for emitting said plurality of ink droplets in corresponding streams from each of said ink droplet issuance units, said emitting means including adjustable means and being responsive thereto for simultaneously forming ink droplets at each of said respective ink droplet issuance units and simultaneously emitting each of said ink droplets therefrom to maintain corresponding ink droplets in said streams substantially in phase with one another;

each of said ink droplet issuance units including a charging means for selectively charging some of said plurality of ink droplets in accordance with said print data information;

said charging means charging each selected one of said plurality of ink droplets immediately upon the simultaneous and in phase formation of each of said ink droplets at each of said respective ink droplet issuance units;

a deflecting means for deflecting each of said charged ink droplets emitted from each of said ink droplet issuance units in a predetermined direction; and

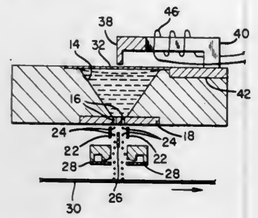
a beam gutter for collecting each of said ink droplets not charged by said charging means, one column of said dot matrix pattern being printed at a time by said selectively charged plurality of ink droplets emitted from said plurality of discrete ink droplet issuance units.

4,210,920

MAGNETICALLY ACTIVATED PLANE WAVE STIMULATOR

James E. Burnett, Xenia, and E. J. Doyle Kenworthy, Dayton, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jan. 31, 1979, Ser. No. 7,921
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **18 Claims**



1. An ink jet printing head for use in an ink jet printing device, comprising:

manifold means for defining a printing liquid reservoir having a plurality of orifices defined in a surface thereof through which the liquid is expelled to form a continuous series of droplets from each orifice directed towards a printing medium;

magnetically active diaphragm means communicating with said reservoir remote from said orifices;

electromagnetic means having a portion coupled to said diaphragm means to form a magnetic flux path therethrough and another portion disposed adjacent said diaphragm means such that said other portion and said diaphragm means form opposite poles of an electromagnet; and

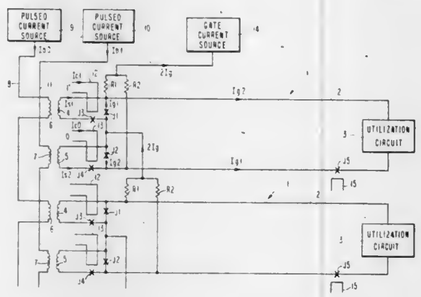
signal generating means for imposing an alternating electric current on said electromagnetic means thereby causing said diaphragm means to vibrate so as to stimulate said drops at a desired frequency.

4,210,921

POLARITY SWITCH INCORPORATING JOSEPHSON DEVICES

Sadeg M. Faris, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,911
Int. Cl.[2] H01L *39/22*
U.S. Cl. 357—5 **18 Claims**



1. A Josephson junction polarity reversing circuit comprising:

a pair of Josephson devices,

means connected to each of said devices for applying a given value of gate current to each of said pair of devices,

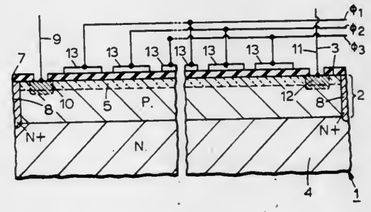
interconnection means connected to said pair of devices, and means connected to said pair of devices for applying opposite polarity currents of at most said given value of gate current to said interconnection means.

4,210,922

CHARGE COUPLED IMAGING DEVICE HAVING SELECTIVE WAVELENGTH SENSITIVITY

John M. Shannon, Whyteleafe, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 745,477, Nov. 26, 1976, abandoned. This application Jun. 22, 1978, Ser. No. 917,848
Claims priority, application United Kingdom, Nov. 28, 1975, 49089/75
Int. Cl.[2] H01L *29/78, 27/14, 31/00, 29/167*
U.S. Cl. 357—24 **14 Claims**



1. A charge coupled device for converting an electromagnetic radiation pattern in a certain wavelength range into electrical signals comprising means for reading charge and a semiconductor body having a semiconductor layer of one conductivity type in which pattern information in the form of discrete packets of majority charge carriers can be generated and transported via the interior of the semiconductor layer to said means for reading the charge, the layer comprising a concentration of at least one shallow level doping impurity characteristic of the one conductivity type and a concentration of at least one deep level doping impurity which provides deep level centers for trapping majority charge carriers which can be released upon excitation by radiation in said wavelength range, said shallow level doping impurity concentration and the deep level doping impurity concentration being such that depletion regions can be formed extending through the thickness of the layer while avoiding breakdown only as a result of substantially all the deep level centers within the depletion regions being full of majority charge carriers characteristic of the one conductivity type, and the deep level doping impurity concentration being formed by defects introduced into the crystal lattice of at least part of the layer of the one conductivity type.

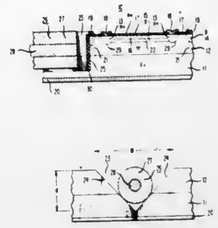
4,210,923

EDGE ILLUMINATED PHOTODETECTOR WITH OPTICAL FIBER ALIGNMENT

James C. North, New Providence, and David P. Schinke, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 2, 1979, Ser. No. 71
Int. Cl.[2] H01L *27/14*
U.S. Cl. 357—30 **9 Claims**

1. A semiconductor device for detection of incident light comprising a body of silicon (**11** and **12**) with two major surfaces and means (**22** and **29**) formed in said body responsive to light which is incident thereon essentially parallel to said major surfaces characterized in that the major surfaces lie in the (110) plane and a portion of the semiconductor body defines a groove (**23**) adjacent to said light responsive means, said groove having sloping sidewalls (**24**) lying in (111) planes



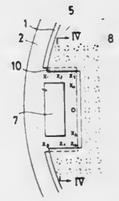
suitable for placing an optical fiber in the groove aligned with the area under said light responsive means.

4,210,924

SEMICONDUCTOR CONTROLLED RECTIFIER WITH CONFIGURED CATHODE TO ELIMINATE HOT-SPOTS

Katsumi Akabane; Isao Kojima; Yoshikazu Takita; Soushi Suzuki; Yasuhiko Ikeda; Koichi Wajima, all of Hitachi, and Yoshio Terasawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 12, 1978, Ser. No. 941,588
Claims priority, application Japan, Sep. 14, 1977, 52-109922
Int. Cl.[2] H01L *29/74*
U.S. Cl. 357—38 **11 Claims**



1. A semiconductor controlled rectifier comprising:

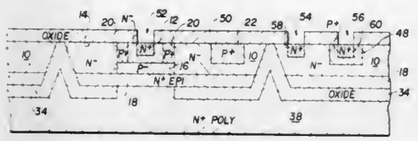
(a) a semiconductor substrate having first, second, third and fourth layers of alternatively different conductivity types and having a pair of main surfaces on the opposite sides of said substrate, one of said main surfaces being formed of the exposed surfaces of at least said first and second layers and the other main surface being formed of the exposed surface of at least said fourth layer;

(b) a gate electrode provided in ohmic contact with said second layer on said one main surface and being of a shape having a relatively long side and a relatively short side;

(c) a cathode electrode provided in ohmic contact with said first layer on said one main surface and disposed adjacent to and spaced apart from said gate electrode, said cathode electrode having a first portion extending along the short side of said gate electrode and a second portion extending along the long side of said gate electrode, said first portion of said cathode electrode being formed to extend toward said gate electrode a p-n junction defined between said first layer extending along said first portion of the cathode electrode and said second layer so as to be in ohmic contact with said second layer to short circuit the gate electrode to the cathode electrode along the short side of the gate electrode when firing of the semiconductor control rectifier occurs so that said firing will take place between the long side of the gate electrode and the second portion of the cathode electrode; and

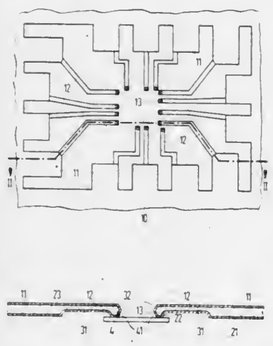
(d) an anode electrode provided in ohmic contact with said fourth layer on said other main surface.

4,210,925
I^2L INTEGRATED CIRCUIT AND PROCESS OF FABRICATION
William R. Morcom, Melbourne Beach; Hugh C. Nicolay, Melbourne Village, and Eugene R. Cox, Palm Bay, all of Fla., assignors to Harris Corporation, Melbourne, Fla.
Filed Feb. 7, 1978, Ser. No. 875,824
Int. Cl.² H01L 27/02
U.S. Cl. 357—46 **18 Claims**



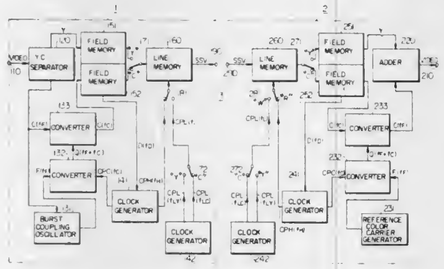
1. A complementary pair of bipolar transistors including a vertical and a lateral transistor comprising:
a substrate of a first conductivity type having separate portions forming the base of said lateral transistor and collector of said vertical transistor;
an epitaxial emitter region of said vertical transistor of said first conductivity type at a first surface of and distinct from said substrate;
a base region of said vertical transistor of a second conductivity type opposite said first conductivity type extending into said substrate from said first surface and said epitaxial emitter region;
a collector region of said vertical transistor of said first conductivity type being more heavily doped than and extending into said substrate portion which forms said collector from a second surface opposite said first surface;
an emitter region of said lateral transistor of said second conductivity type extending into said substrate from said second surface; and
a collector region of said lateral transistor of said second conductivity type extending from said second surface to said base region of said vertical transistor.

4,210,926
INTERMEDIATE MEMBER FOR MOUNTING AND CONTACTING A SEMICONDUCTOR BODY
Hans J. Hacke, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Continuation of Ser. No. 858,395, Dec. 7, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 21,235
Int. Cl.² H01L 23/48, 29/44, 29/52
U.S. Cl. 357—70 **7 Claims**



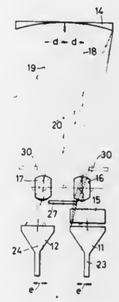
1. An intermediate member system for mounting and contacting a semiconductor body, comprising:
a semiconductor body having thin electrodes, said electrodes having a height above a top surface of the semiconductor body which provides insufficient clearance to permit direct lateral contacting;
self-supporting metal contact fingers which each have an outer contact and an inner contact, each inner contact connecting by solder with one of said semiconductor body electrodes, each of the inner contacts being provided as an integral raised projection with respect to adjacent bordering portions of the fingers and formed by a depression in the fingers, a height of said projection being sufficient to prevent contact between said adjacent bordering portions of the finger and the top surface of the semiconductor body, a connection facing surface of the inner contact not overlapping the electrode of the semiconductor body;
support frame means connecting to said outer contacts;
and a solder repelling layer provided in said depression and adjacent to each inner contact connection with the semiconductor electrode.

4,210,927
METHOD FOR TRANSMITTING A COLOR VIDEO SIGNAL ON A NARROW-BAND TRANSMISSION LINE
Yasufumi Yumde, and Takashi Furuhata, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan
Filed May 8, 1978, Ser. No. 903,609
Claims priority, application Japan, May 11, 1977, 52-53090
Int. Cl.² H04N 9/32
U.S. Cl. 358—12 **14 Claims**



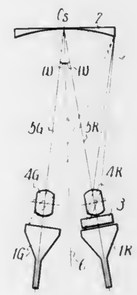
1. A method for transmitting a color video signal by a color video signal transmission system over a narrow-band transmission line comprising means for storing an input color video signal in a memory, means for reading said color video signal in the form of a time-divided luminance signal Y and a carrier chrominance signal C, at a speed different from the storing speed, to transmit the luminance signal Y and the chrominance signal C in a narrow band, and a group of clock pulse generating means for driving said memory and the reading means; comprising the steps of
storing said color video signal in said memory with a write clock having a frequency f_H sufficiently high to store a predetermined band of the Y signal in the form of picture elements, while said C signal is rendered a multiple signal which is produced by a quadrature modulation of a carrier of a frequency $1/m{\cdot}n$ of the write clock frequency f_H (m being a given number, and n an integer not less than 1) in advance of said storing; and
reading said video signal from said memory by a read clock signal of a frequency f_L sufficiently low to transmit said Y signal in a band of the transmission line which is narrower than the band of the input color video signal.

4,210,928
PROJECTING APPARATUS
Masayuki Ohmori, and Norio Ito, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 903,002, May 4, 1978, abandoned. This application Dec. 27, 1978, Ser. No. 973,581
Claims priority, application Japan, May 9, 1977, 52-52883
Int. Cl.² H04N 9/31
U.S. Cl. 358—60 **10 Claims**



1. A projecting apparatus for projecting a compound image onto a screen; comprising a plurality of image sources each providing a respective plane image with each of the image sources having a central axis normal to the plane of the image thereof; plural focusing means for projecting said images in respective optical paths onto said screen to form said compound image, said focusing means having respective principal axes which are arranged substantially parallel to one another, at least one of said focusing means being arranged with the principal axis thereof epaxially displaced with respect to the central axis of a respective one of said plurality of image sources so that the projected images are made to coincide with each other on said screen; and intercepting means interposed in at least one of said optical paths between said image sources and said screen to intercept a portion of the light emitted by at least one of said image sources so as to compensate for unevenness of distribution of brightness in the projected images.

4,210,929
VIDEO PROJECTING APPARATUS WITH RASTER DISTORTION CORRECTION
Kazuhiko Takabayashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 25, 1978, Ser. No. 936,731
Claims priority, application Japan, Aug. 30, 1977, 52-103998
Int. Cl.² H04N 9/16
U.S. Cl. 358—64 **4 Claims**



1. A video projecting apparatus for projecting a compound color image onto a projection screen comprising:
a plurality of color cathode ray tubes, each of said cathode ray tubes having a phosphor screen for producing a color image, each of said color images being of a different color;
a plurality of projecting means for projecting said color images on said projection screen with predetermined elevation and horizontal deflection angles; and
a pre-distorting means for distorting raster shapes of said color images on said respective phosphor screens to compensate for distortion of said projected color images, wherein the center of the longest horizontal scanning line of each of said color images coincides with the center of a respective horizontal line of the respective one of said phosphor screens of said color cathode ray tubes.

4,210,930
APPROACH SYSTEM WITH SIMULATED DISPLAY OF RUNWAY LIGHTS AND GLIDE SLOPE INDICATOR
Richard D. Henry, R.D. #1, Clinton, Pa. 15026
Filed Nov. 18, 1977, Ser. No. 852,961
Int. Cl.² H04N 7/18
U.S. Cl. 358—103 **18 Claims**

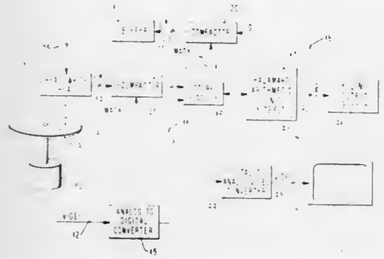


1. In combination with an improved landing system for blind flight approaches, during which landing lights are nonvisible;
an airborne navigational device for assisting in landing operations by locating runway and approach landing operations, comprising a plurality of microwave emitters disposed at spaced locations along the length of a runway and at approximately the same locations as the runway lights thereon, a reflector associated one with each of said microwave emitters and reflecting such wave energy in opposite directions corresponding to the opposite ends of said runway, airborne camera means adapted to produce an image responsively to the microwave frequency received from said on-ground reflector means, gyroscopic mean for mounting said airborne camera to provide a display which is independent of the orientation of the aircraft, means for converting the image provided by said camera to a transmittable electrical signal form, and a display tube coupled with said camera and receiving said electrical signal to provide a visual readout of the runway as a series of lights which correspond to runway lights that would normally appear as visible lights under favorable weather conditions.

4,210,931
VIDEO PLAYER AND/OR RECORDER WITH HADAMARD TRANSFORM
Jack H. Bailey, Millbrook, and Gerald H. Ottaway, Pleasant Valley, both of N.Y., assignors to DiscoVision Associates, Los Angeles, Calif.
Filed Dec. 28, 1978, Ser. No. 973,839
Int. Cl.² H04N 5/79
U.S. Cl. 358—128.5 **5 Claims**

1. In a video player or recorder apparatus, a processor for a Hadamard transform of picture information, comprising,

a data store having data accessible in a memory word comprising a predetermined number of data units,
an arithmetic unit comprising a plurality of adders and a like plurality of subtractors each having two inputs for receiving a data unit of a predetermined number of bits,
timing means defining cycles of the data store and the arithmetic unit,
means for initially loading an array of the data store in a predetermined order with a matrix to be processed,
addressing means including means for fetching a memory word on each cycle and first gating means for supplying each data unit of a fetched memory word to a predetermined input of one adder and one subtractor,



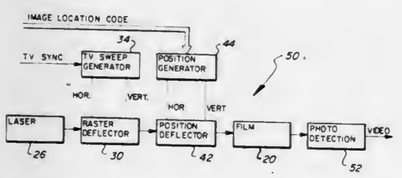
a plurality of registers each holding the number of data units in a memory word, and second gating means for transferring the output of each adder and each subtractor to a predetermined data unit position of said registers in a repeating pattern of a plurality of cycles, and
third gating means and store operation means in said addressing means for loading a register into a predetermined data store word location on each cycle in an identical addressing pattern for the fetch and store operations during each of a plurality of passes of arrays of the data store through the arithmetic unit.

4,210,932

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING ON FILM DIRECTLY VIEWABLE TV VIDEO SIGNALS

Donald E. Dick, Boulder; Robert L. Metz, Superior, and Raymond D. Elliott, Denver, all of Colo., assignors to Life Instruments Corporation, Colo.

Filed Jul. 5, 1978, Ser. No. 922,184
Int. Cl.[2] H04N *5/84;* **G11B** *7/00*
U.S. Cl. 358—130 **14 Claims**



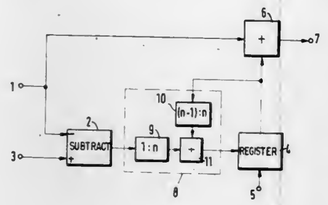
1. A method of recording TV video signals having camera signals and sync signals of rasters of images on film and reproducing the TV video signals from the recording of the rasters, comprising the steps of:
producing a write beam of coherent light of substantial constant intensity from a source;
modulating the intensity of the write beam as a function of the amplitude of the camera signals of each of the rasters to be recorded:
deflecting the intensity modulated write beam to cause the write beam to conduct a TV raster scan for each of the images to be recorded;
focusing the write beam onto a nonmoving photographic film to expose the film, the film when developed producing a photographic record of the rasters, each of said photographic rasters being a directly viewable reproduction of an image, said photographic film having a plurality of sectors forming an array, the size of each sector being such that a raster scan is conducted by the beam in each of the sectors so that an image is recorded in each sector, the position of the photographic film being fixed relative to the source of the beam during the recording and reproducing of the TV video signals in each of the sectors, the photographic film also being fixed relative to the beam source during the positioning of the beam from each of the sectors to the next predetermined sectors on which a raster scan is to be conducted;
the reproducing of the TV video signals from the developed photographic record of the rasters, comprising the steps of:
producing a scanning beam of coherent light of substantially constant intensity;
deflecting the unmodulated scanning beam to cause the beam to conduct a raster scan of the photographic record of each of the rasters recorded on the nonmoving film, the intensity of the scanning beam being modulated by the transmissivity of the film; and
converting the intensity modulated scanning beam into amplitude modulated electrical signals, said electrical signals being a substantial reproduction of the TV video signals of each of the rasters recorded on the film.

4,210,933

PROCESS AND APPARATUS FOR DIGITALLY CLAMPING PULSE CODE MODULATED VIDEO SIGNALS

Jürgen Heitmann, Seeheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,498
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737431
The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.
Int. Cl.[2] H04N *5/18;* **H04B** *1/12*
U.S. Cl. 358—172 **10 Claims**



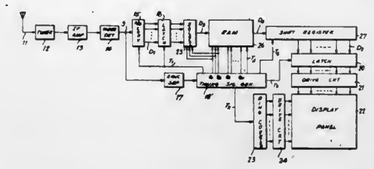
1. An apparatus for digitally time-average clamping binary encoded signals to a desired binary level comprising:
(a) a digital subtracter means for providing at its output the difference between the desired binary level and the binary, encoded signal,
(b) a time-averaging means, connected to the output of the subtracter means and responsive to a switching pulse input, for transferring to its output a binary correction value numerically equal to said difference arithmetically averaged with a similarly obtained difference from at least one prior-in-time binary encoded signal, and
(c) digital adding means connected to the output of the time-averaging means for adding the binary correction value and the binary encoded signal, thereby providing at its output a digitally time-average clamped binary encoded signal.

4,210,934

VIDEO DISPLAY APPARATUS HAVING A FLAT X-Y MATRIX DISPLAY PANEL

Ken Kutaragi, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,577
Claims priority, application Japan, Feb. 16, 1978, 53-16934
Int. Cl.[2] H04N *3/14, 5/70*
U.S. Cl. 358—241 **18 Claims**



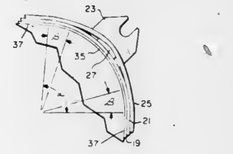
1. Video display apparatus having a flat X-Y matrix display panel comprised of an X-Y array of display elements for displaying a picture derived from a video signal, comprising:
analog-to-digital converting means for obtaining m samples of a line of said video signal, each sample being formed of n bits of different bit levels from the least significant bit level to the most significant bit level;
memory means for storing each sample in a respective one of m storage locations, each said storage location including n storage compartments for storing said n bits of a sample, respectively;
read-out means for serially reading out all of the bits of one level from the corresponding storage compartment in all of said n storage locations, and then for serially reading out all of the bits of the next level from the corresponding storage compartment in all of said m storage locations, and so on, in succession, until the bits of all levels have been read out from said m storage locations;
enabling means for enabling successive lines of said display elements in said display panel to be energized sequentially on a line-by-line basis; and
energizing means supplied in parallel with the m bits of each bit level, sequentially by level, read out from said storage locations for energizing selected ones of the display elements in an enabled line in accordance with the bit values of the read out bits.

4,210,935

L-SHAPED BRACKET ASSEMBLY AND RIMBAND TYPE IMPLOSION-RESISTANT CATHODE RAY TUBE

Robert B. Mitchell, Seneca Falls, and Harry R. Swank, Waterloo, both of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 12, 1978, Ser. No. 941,622
Int. Cl.[2] H04N *5/65*
U.S. Cl. 358—246 **11 Claims**



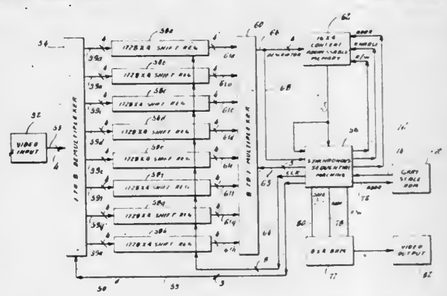
1. In an implosion-resistant cathode ray tube having an evacuated envelope with a face panel sealed to a flared neck portion wherein said flared neck portion has an electron gun assembly sealed therein and said face panel has a substantially rectangular-shaped viewing portion extending to an upturned flanged portion with corners having a given radius of curvature extending into a flattened portion, a pair of rimbands contacting said flanged portion, and a metal band encircling and exerting a compressive force on the rimbands and upturned flanged portion of the face panel the improvement comprising at least one substantially "L"-shaped bracket member having a base portion connected to an upstanding attachment portion with the base portion positionally located and compressively held intermediate said rimbands and said metal band at said corner of said face panel and of a size to provide contact of said encircling metal band and said rimbands at a point on said given radius of curvature of said corner and prior to said flattened portion of said flanged portion of said face panel.

4,210,936

METHOD AND APPARATUS FOR REPRODUCING AN ORIGINAL GRAY SCALE IMAGE

Gregory M. Cinque, Stamford; Roger W. Pryor, Trumbull, and Arthur Rubinstein, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,208
Int. Cl.[2] H04N *1/40;* **G01B** *1/29*
U.S. Cl. 358—283 **23 Claims**



1. A method of reproducing, on a reproduction medium, an original gray scale image that may be divided into an array of discrete picture elements, said method comprising the steps of:
A. scanning each of said picture elements to determine its gray level and its location in said picture element array, to thereby generate gray level data representative of the gray level and location data representative of the location in said picture element array of each said picture element;
B. calculating the gray level of the picture element array from the gray level data representative of each of said individual picture elements in accordance with a gray scale function, and
C. on said reproduction medium in an array of reproduction locations corresponding to the locations of picture elements in said picture element array, by using said gray level data and said location data, sequentially darkening reproduction locations in the order of decreasing picture element gray level, beginning with the reproduction location that corresponds to the location in said picture element array of the one of said picture elements having the darkest gray level, until the actual gray level of said array of reproduction locations substantially equals the calculated gray level of said picture element array, whereby the distribution of darkened reproduction locations within said array of reproduction locations approaches the distribution of the gray level of said picture elements within said picture element array.

4,210,937

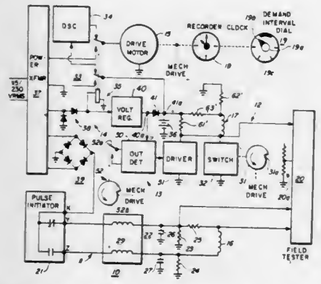
SOLID STATE POWER OUTAGE RECORDING CIRCUIT

Robert E. Dyer, Springfield, Ill., assignor to Sangamo Weston, Inc., Atlanta, Ga.

Filed May 8, 1978, Ser. No. 903,761
Int. Cl.[2] G11B *5/00*
U.S. Cl. 360—6 **10 Claims**

1. In a recording apparatus for recording data and time information derived from an associated meter device, said

recording apparatus having data recording means for recording data signals on a magnetic tape, and time recording means including an interval timer operative to generate time reference signals which represent predetermined intervals of time of operation of said meter device, and a time record circuit having a recording head for recording said time reference signals on said magnetic tape as a time reference for said data signals, said time recording means being energized by power from a power circuit means whenever power is applied to said meter device, and being energized by power from an auxiliary source during an interruption of power to said meter device, permitting recording of time reference signals both during the presence and the interruption of power to said meter device; a power outage indicating circuit for detecting the presence of power and the interruption of power to said meter device, said power outage indicating circuit comprising: a power outage detecting circuit including a controlled solid state switching device operable between conducting and non-conducting states energizing circuit means connected to said power circuit means for applying power to said detecting circuit whenever power is applied to said meter device; isolation circuit means



for isolating at least said energizing circuit means and said detecting circuit from said auxiliary source whereby said switching device is operated to one of said states following an interruption of power to said meter device; and said detecting circuit including enabling circuit means for causing said switching device to be operated to said other state to generate a power outage indication following the restoration of power to said meter device; outage indication recording circuit means including timing circuit means enabled in response to the outage indication generated as said switching device is operated from said one state to said other state for generating a timing signal, and second switching means responsive to said timing signal for controlling said time record circuit to record a power outage indicating signal on said magnetic tape, said enabling means including outage switch means coupled to said interval timer and operated thereby in timed relationship therewith to cause the power outage indication to be generated in association with a succeeding time reference signal generated following the restoration of power and said switching device being maintained in said other state, inhibiting said indication recording circuit means as long as power continues to be applied to said meter device.

4,210,938

METHOD AND SYSTEM FOR SPEED-MODIFIED REPRODUCTION OF VIDEO SIGNALS STORED ON VIDEO RECORDING TAPE

Jürgen Heitmann, Seeheim, and Rudolf Wilhelm, Klein-Gerau, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 908,930

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725365

Int. Cl.² G11B *5/78, 27/10;* **H04N** *5/78*

U.S. Cl. 360—10 **9 Claims**

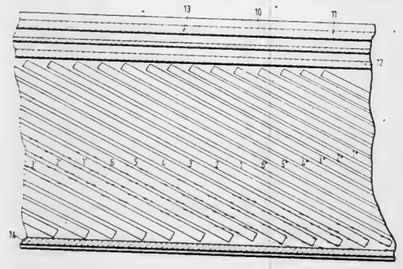
1. Method to reproduce video signals stored on magnetic tape in form of track portions which are inclined with respect to the center line of the tape (**10**) and utilizing a reproduction apparatus in which the tape is guided in a spiral path about at least a portion of the circumference of the cylinder in which a head wheel, having at least one transducer head, is rotatably mounted, for magnetic signal transducing engagement with the tape, and in which the speed of the tape, with respect to the head wheel, differs from the speed of the tape during recording;

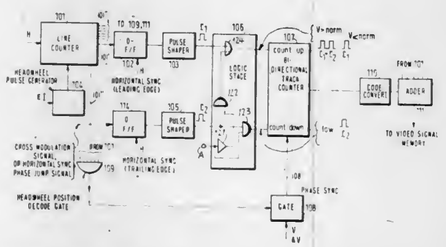
and wherein at least three track portions form a complete video frame;

comprising, in accordance with the invention, the steps of

rotating the head wheel at a predetermined, essentially constant speed, regardless of the tape speed over the cylinder;

determining the instantaneous position of the head wheel





and deriving head wheel position signals defining addresses of said head wheel position as the head wheel rotates;

determining the instantaneous position of incremental areas of the tape on the cylinder, and deriving tape position signals defining addresses of said tape position as the tape moves over the cylinder;

combining said head wheel position address and said tape position address and deriving a line address of a signal transduced by said head wheel from said incremental area;

and, by means of said line address, associating the signal content of incremental areas in any one line and storing said signal content in a memory for subsequent reading out of the signal information from said memory at said line addresses.

4,210,939

METHOD AND SYSTEM FOR SYNCHRONIZING THE MOVEMENT OF PLURAL RECORDING MEDIA

Ichiro Ninomiya, Atsugi; Katsuhiko Nagakura, Yokohama; Hitoshi Sakamoto, Zama, and Katsuichi Tachi, Kawasaki, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 843,314, Oct. 18, 1977, abandoned. This application Jun. 16, 1978, Ser. No. 916,052

Claims priority, application Japan, Oct. 21, 1976, 51-126658

Int. Cl.² G11B *15/52*

U.S. Cl. 360—14 **15 Claims**

1. A system for synchronizing the movement of a first recording medium by first transport means with the movement of a second recording medium by second transport means, each of said first and second recording media having addressable recording frames identified by frame signals and addresses recorded thereon, said system comprising:

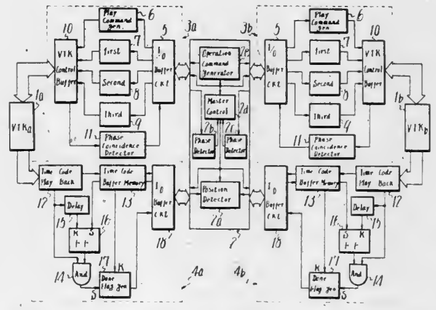
first advancing means for controlling said first transport means to move said first recording medium at a fixed normal speed in capstan servo-controlled relation;

second advancing means for controlling said second transport means to move said second recording medium at a selective speed greater than, equal to or less than said normal speed;

first playback means for playing back the addresses recorded on said first recording medium while said first recording medium is moved at said fixed normal speed in said capstan servo-controlled relation;

second playback means for playing back the addresses recorded on said second recording medium while said second recording medium is moved at said selective speed;

address comparison means selectively operable upon the occurrence of a predetermined phasing condition of said first and second recording media for comparing the respective instantaneous addresses played back by said first and second playback means to respective predetermined first and second addresses; and



speed command means responsive to said address comparison means for commanding said second advancing means to control said second transport means to move said second recording medium at said greater than normal speed when the difference between said instantaneous address played back by said second playback means and said second predetermined address is greater than the difference between said instantaneous address played back by said first playback means and said first predetermined address, to control said second transport means to move said second recording medium at said less than normal speed when the difference between said instantaneous address played back by said second playback means and said second predetermined address is less than the difference between said instantaneous address played back by said first playback means and said first predetermined address, and to control said second transport means to move said second recording medium at said normal speed when the difference between said instantaneous address played back by said second playback means and said second predetermined address is equal to the difference between said instantaneous address played back by said first playback means and said first predetermined address.

4,210,940

VARIABLE FORMAT TAPE REPLAY SYSTEM

Daniel G. Prysby, Elk Grove Village; Ian L. Bower, Rosemont, and William B. Huber, Oak Park, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sep. 29, 1978, Ser. No. 946,989

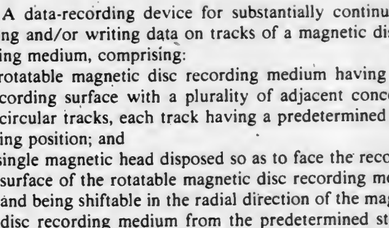
Int. Cl.² G11B *27/00, 5/02*

U.S. Cl. 360—33 **16 Claims**

1. For use with a tape playback machine, a system for selecting and replaying desired tape segments in any predetermined sequence, comprising:

means for manually entering a plurality of tape addresses corresponding to starting addresses of segments of the tape selected for play back and for entering tape addresses corresponding to stopping addresses of the selected segments of tape;

means for manually selecting any sequence in which the tape segments are to be played back; and



a controller for storing said tape addresses and for causing the playback machine to replay each selected tape segment from its starting address to its stopping address in the sequence selected,

whereby multiple segments of a tape may be selected for replay, each such segment beginning and stopping at any selected location on the tape, and all such segments are replayed in a selected sequence.

4,210,941

DATA-RECORDING DEVICE

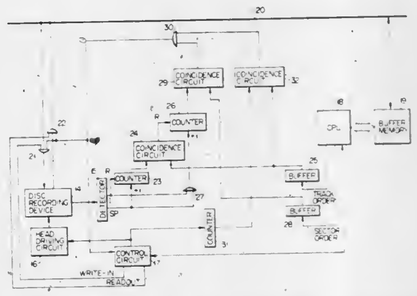
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 712,532, Aug. 9, 1976. This application Jun. 30, 1978, Ser. No. 920,719

Claims priority, application Japan, Aug. 11, 1975, 50-97348; Dec. 26, 1975, 50-158628

Int. Cl.² G11B *5/09, 15/18*

U.S. Cl. 360—48 **5 Claims**



1. A data-recording device for substantially continuously reading and/or writing data on tracks of a magnetic disc recording medium, comprising:

a rotatable magnetic disc recording medium having a recording surface with a plurality of adjacent concentric circular tracks, each track having a predetermined starting position; and

a single magnetic head disposed so as to face the recording surface of the rotatable magnetic disc recording medium and being shiftable in the radial direction of the magnetic disc recording medium from the predetermined starting position of one track of that of another track while said magnetic disc recording medium is rotating, said magnetic head including means for detecting the starting position of the first read-write portion of each track;

means coupled to said single magnetic head for reading and/or writing data on adjacent tracks of said recording medium; and

means for specifying said starting position of said first read-write portion of at least two adjacent tracks to be at the initial points of different circumferential angular intervals of the recording medium as measured from the position of the magnetic head, and for specifying the starting position of the first read-write portion of a succeeding track to be spaced from that of a preceding track in which read-write is carried out earlier by a circumferential angular distance longer than that distance through which the rotatable magnetic disc recording medium is rotated during the time that the single magnetic head is radially shifted from one track to an adjacent track, said specifying means including:

a counter operated by a first pulse issued in synchronization with the rotation of said rotatable recording medium so as to define a particular circumferential angular interval through which said rotatable recording medium is to be rotated to bring the starting position of said first read-write portion of each track to said magnetic head, and a second pulse for separating a plurality of sectors into which one full length of each track of the rotatable recording medium is divided, to thereby distinguish the respective sectors of each track; and

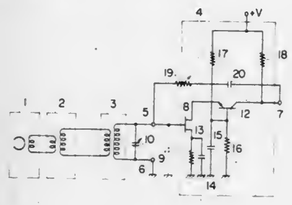
comparing means for comparing the counts made by said counter and the sequential order of a specified track, thereby determining said starting position of said first read-write portion of each track.

4,210,942

VIDEO SIGNAL PLAY-BACK CIRCUIT

Hisashi Nakamura, Tokyo; Toshiyuki Akiyama, Kokubunji; Akira Shibata, Yokosuka, and Yoichi Tokunaga, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 3, 1978, Ser. No. 883,155
Claims priority, application Japan, Mar. 11, 1977, 52-25943
Int. Cl.[2] G11B *5/45, 5/02*
U.S. Cl. 360—65 **8 Claims**



1. A video signal play-back circuit comprising:

a magnetic head which detects a video signal recorded on a magnetic recording medium;

a resonance circuit which is electrically connected to said magnetic head so that the signal picked up by said magnetic head may be applied to said resonance circuit, and which includes an inductance element and a capacitance element including a variable capacitor for adjusting the resonance frequency of the resonance circuit for equalization of the frequency characteristic of the signal play-back circuit;

an amplifier circuit having a field-effect transistor of which the gate terminal is connected with said resonance circuit to provide a high input impedance to said amplifier circuit; and

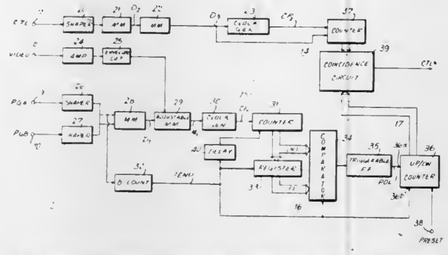
a variable resistor which is connected between one output terminal of said amplifier circuit and one terminal of said resonance circuit and which serves to adjust a quality factor Q of said resonance circuit.

4,210,943

AUTOMATIC TRACKING SERVO CONTROL SYSTEM

Tadahiko Nakamura, Kanagawa, and Kenji Nakano, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 7, 1978, Ser. No. 940,269
Claims priority, application Japan, Sep. 8, 1977, 52-107233
Int. Cl.[2] G11B *21/10, 15/46*
U.S. Cl. 360—70 **19 Claims**



1. In a servo control system of the type adapted to control the tracking of at least one rotary signal reproducing head which scans successive parallel record tracks on a movable record medium for reproducing information signals recorded in said tracks and including position pulse generating means for generating position pulses when said at least one head rotates into a predetermined position with respect to said record medium, a control transducer for reproducing control signals which are recorded along said movable record medium, and control means for controlling the relative position of said at least one head with respect to the tracks scanned thereby as a function of said position pulses and said reproduced control signal: the improvement comprising detecting means for detecting the relative strength of the information signal reproduced by said at least one head during periodic intervals; means for producing a phase shift signal in response to a difference between said relative signal strengths in successive periodic intervals, each said phase shift signal representing a predetermined increment of positive or negative phase shift for the control signal reproduced by said control transducer during each said periodic interval; phase shift means responsive to said phase shift signal for shifting the phase of each reproduced control signal; and means for supplying the phase shifted control signal to said control means.

4,210,944

TAPE STOP DETECTION MECHANISM FOR CASSETTE TAPE RECORDERS

Akihiro Fushimi; Noboru Tabara, and Mikio Isaki, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

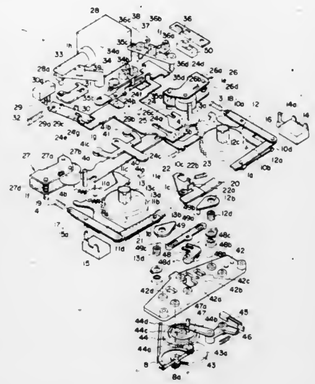
Filed Jan. 31, 1979, Ser. No. 8,287
Claims priority, application Japan, Jan. 31, 1978, 53-8789
Int. Cl.[2] G11B *15/22;* **B65H** *59/38*
U.S. Cl. 360—74.2 **6 Claims**

1. A mechanism for detecting the stoppage of tape run in a cassette tape recorder including two reel bases with reel shafts, said reel bases being driven by a suitable drive, which comprises

two slip plates associated with said reel bases so as to be biased upon rotation of the reel shafts,

a detection lever connected at either end with said slip plates, said lever being displaced upon rotation of at least one reel shaft,

cam means which does not cooperate with the detection lever when the lever is displaced, but cooperates with the detection lever when the lever is restored as a result of stoppage of the reel shafts, and



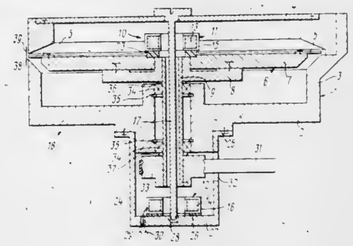
means for interrupting the drive to the reel bases or changing the drive into another state in response to the cooperation of said cam means with said detection lever.

4,210,945

ROTARY MAGNETIC HEAD ASSEMBLY

Konstantin A. Lavrentiev, ulitsa Kutsygina, 6, kv. 97; Svyatoslav D. Kretov, Leninsky prospekt, 153, kv. 59, and Alexandr G. Koshelev, Leninsky prospekt, 189, kv. 87, all of Voronezh, U.S.S.R.

Filed Sep. 5, 1978, Ser. No. 939,338
Int. Cl.[2] G11B *5/20*
U.S. Cl. 360—108 **30 Claims**



1. A rotary magnetic head assembly, comprising:

a current-conducting housing comprising a bottom, walls, a lid and an internal surface;

a hollow shaft rotatably arranged in said housing;

a holder mounted on said shaft and supporting magnetic heads;

a contactless signal transformer device accommodated in said housing and having a rotor mounted on said holder and a stator spaced at some distance from said rotor, said rotor and stator having external surfaces, cores constructed as closed magnetic circuits, and windings constructed as helices having first ends and second ends and wound around said closed magnetic circuits so that centers of the turns of said helices are on a circumference matched with a center line of each of said closed magnetic circuits, the ends of said winding of said rotor being electrically connected to said magnetic heads; and

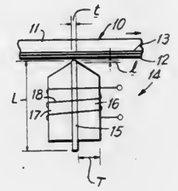
a current-conducting element accommodated in said hollow shaft so that it partially comes out of that shaft and is encompassed by said closed magnetic circuits, said current-conducting element being so attached to said bottom and said lid of said housing that said lid, said walls and said bottom of said housing and said current-conducting element make up a closed spatial coupling loop of said windings of said rotor and stator.

4,210,946

MAGNETIC RECORDING MEDIUM

Shun-Ichi Iwasaki, 1-11-35 Kunimi, Sendai-shi, Miyagi-ken, and Yoshihisa Nakamura, Izumi, both of Japan, assignors to Sony Corporation, Tokyo; Fujitsu Limited, Kanagawa and Shun-Ichi Iwasaki, Miyagi, all of, Japan

Filed Sep. 19, 1978, Ser. No. 943,749
Claims priority, application Japan, Sep. 30, 1977, 52-118424
Int. Cl.[2] G11B *5/66*
U.S. Cl. 360—131 **15 Claims**



1. A magnetic recording medium for the perpendicular recording of signals by a single-pole type magnetic recording head comprising:

a first layer defining a surface of the medium adapted to confront the recording head and being formed of a chromium-cobalt alloy containing about 5 to 25 weight percent of chromium and having an easy axis of magnetization substantially perpendicular to said surface, with the thickness of said first layer being no greater than 3.0 microns;

a second layer of a low coercive force magnetic material disposed at the side of said first layer facing away from said surface and having a coercive force no greater than one-fifth the coercive force of said first layer, with the thickness of said second layer being at least 0.1 microns; and

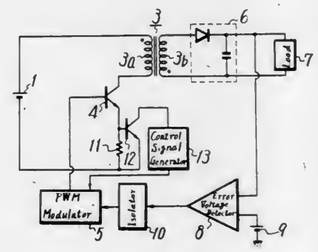
supporting means disposed at the side of said second layer remote from said first layer and on which said first and second layers are supported.

4,210,947

PROTECTIVE CIRCUIT FOR A SWITCHING REGULATOR

Akio Koizumi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 4, 1978, Ser. No. 948,578
Claims priority, application Japan, Oct. 6, 1977, 52-120343; Oct. 31, 1977, 52-130669
Int. Cl.[2] H02H *7/10*
U.S. Cl. 361—18 **9 Claims**



1. A protective circuit for a switching regulator comprising:

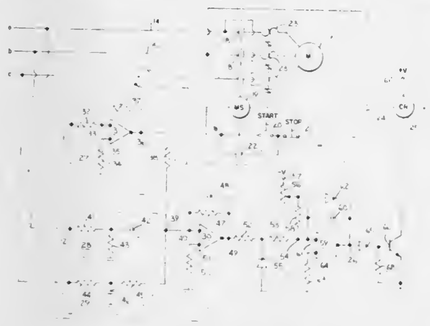
(a) a DC voltage source having a pair of terminals;
(b) a transformer having primary, secondary windings and a magnetic core;
(c) a switching transistor having first, second and third electrodes;
(d) circuit means for connecting the second and third electrodes of said switching transistor between the pair of terminals of said DC voltage source through the primary winding of said transformer;
(e) DC output means connected across the secondary winding of said transformer to produce a DC signal in response to the ON/OFF operation of said switching transistor;
(f) control means connected to the first electrode of said switching transistor so as to ON/OFF control the same in response to the DC signal of said DC output means;
(g) detecting means for detecting an overcurrent flowing through the primary winding of said transformer and for producing a control signal in accordance with a change of the saturated magnetic flux density of the magnetic core of said transformer when the temperature thereof is increased to a predetermined value; and
(h) protective means for stopping the ON/OFF operation of said switching transistor in response to the control signal from said detecting means.

4,210,948

METHOD AND APPARATUS FOR MONITORING LINE VOLTAGE IN A POLYPHASE SOURCE

Richard W. Waltz, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Jun. 15, 1978, Ser. No. 915,898
Int. Cl.² H02H *3/32*
U.S. Cl. 361—76 **5 Claims**



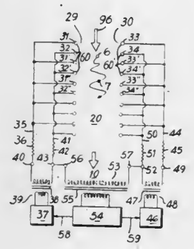
1. A method of monitoring open phase, phase reversal and voltage unbalance conditions in both wye-connected and delta-connected polyphase power sources having first, second and third phased voltage signals, V_a, V_b and V_c, respectively, in preselected phase sequence a-b-c, comprising the steps of:
imparting a preset phase shift of approximately 180° to a signal that is proportional to V_a;
imparting a preset phase shift of approximately 60° to a signal that is proportional to V_b;
imparting a preset phase shift of approximately −60° to a signal that is proportional to V_c; and summing the three phase-shifted signals to generate a negative-sequence signal that is proportional to the negative-sequence component of the three-phase line voltage.

4,210,949

DEVICE FOR ELECTRICALLY CHARGING PARTICLES

Senichi Masuda, No. 605, 1-40-10 Nishigahara, Kuta-ku, Tokyo, Japan

Filed Aug. 31, 1978, Ser. No. 938,370
Claims priority, application Japan, Sep. 5, 1977, 52-106400; Dec. 15, 1977, 52-150937
Int. Cl.² H05B *5/02*
U.S. Cl. 361—226 **9 Claims**



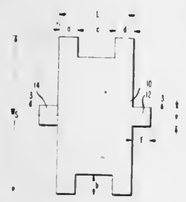
1. In a device for electrically charging particles, comprising two or more parallel plane plasma generating means opposite to one another at a determined distance and provided with corona discharge electrodes for charging particles in the intervening space, corona generating high voltage power sources coupled to apply a high voltage alternately to the corona discharge electrodes of said respective plane plasma generating means, for generating corona discharge, and a main field forming AC high voltage power source connected to apply a high AC voltage between the opposing plane plasma generating means, for forming a main AC field in the charging space; the improvement wherein said corona generating high voltage power sources comprise intermittently operative power sources for supplying intermittent high voltages of a frequency at least equal to that of said main field, said corona generating high voltage power sources applying high voltages to the respective plasma generating means to produce corona discharge for thereby generating plasma only when the plane plasma generating means have specific relative polarities, whereby unipolar ions of said polarity are alternately emitted from opposing plane plasma generating means to the charging space therebetween, for charging particles introduced into said space.

4,210,950

HIGH-RATIO-ACCURACY CAPACITOR GEOMETRIES FOR INTEGRATED CIRCUITS

Donald L. Fraser, Jr., Warren Township, Somerset County, and Michael F. Tompsett, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 29, 1978, Ser. No. 947,020
Int. Cl.² H01G *4/38*
U.S. Cl. 361—329 **8 Claims**



6. An integrated circuit comprising
a first capacitor having two spaced apart plates of selected shape, plate separation distance, and dielectric material,

said first capacitor having a capacitance value C_S, at least one of said plates having
an area A_S,
and a perimeter P_S,
and a second capacitor having only two continuous spaced-apart plates with plate separation distance and dielectric material identical to the plate separation distance and dielectric material of the first capacitor, said second capacitor having a capacitance value $C_L = kC_S$ where k(k greater than unity) is the ratio of said second capacitance to the first capacitance, at least one of said plates of said second capacitor having
an area A_L,
and a perimeter P_L,
and wherein the aforementioned areas and perimeters of said plates are related by the expressions $A_L = kA_S$ and

$$\frac{A_S}{P_S} = \frac{A_L}{P_L}.$$

4,210,951

APPARATUS FOR HOUSING ELECTRICAL COMPONENTS

Peter Ritter, and Dieter Fahrenkrog-Petersen, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 929,944
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736546
Int. Cl.² H02B *1/02*
U.S. Cl. 361—391 **13 Claims**



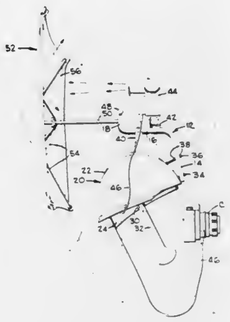
1. Apparatus for housing electrical components comprising:
a housing having opposed first and second ends, said first end having an opening therein;
guide means disposed in said housing for guiding at least one circuit board inserted through said opening;
a mounting member retained within said housing adapted to receive electrical components to be mounted thereon, said mounting member including a first leg adapted to be received in a portion of said opening;
at least one circuit board removably insertable in said housing in cooperation with said guide means, said circuit board being adapted to receive electrical components to be mounted thereon and including a plate mounted on an end thereof adapted to be received in the remainder of said opening whereby said first leg of said mounting member and said plate of said circuit board essentially close said opening when received therein; and
electrical contact means mounted on said mounting member and said circuit board adapted to mate upon insertion of said circuit board in said housing.

4,210,952

PORTABLE ILLUMINATION SOURCE FOR PHOTOGRAPHERS

Roger H. Ressmeyer, 679-4th Ave., San Francisco, Calif. 94118

Filed Feb. 23, 1978, Ser. No. 880,385
Int. Cl.² G03B *15/02*
U.S. Cl. 362—17 **8 Claims**



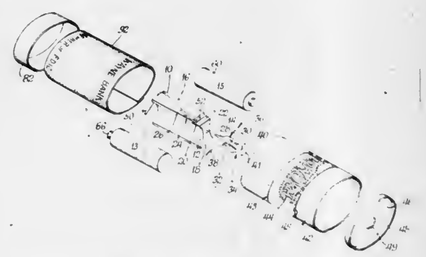
8. Portable apparatus for affording illumination of a subject in front of a photographer comprising a frame, means for securing the frame on the photographer's head so that said frame extends upward and rearward thereof, a light source mounted on the frame and directed rearward, and a reflector secured to the frame in light receiving relation to the light source for reflecting and diffusing light incident thereon toward the subject, the center of gravity of said frame, light source and reflector being rearward of the midpoint of the photographer's head so as to produce a moment thereon in a direction upwardly away from the photographer's face, said securing means including tension resisting means engagable with photographer's chin for counteracting said moment, said reflector being mounted so that the majority of the reflective surface thereof is above the top of the photographer's head.

4,210,953

SELF-ILLUMINATED CASE

Wilfred S. Stone, Box 4, Wayne, Ill. 60184

Continuation of Ser. No. 557,277, Mar. 10, 1975, which is a continuation of Ser. No. 424,321, Dec. 13, 1973, which is a division of Ser. No. 299,858, Oct. 24, 1972, Pat. No. 3,796,869. This application Nov. 19, 1976, Ser. No. 743,414
Int. Cl.² F21L *7/00*; F21V *23/04*
U.S. Cl. 362—189 **5 Claims**



1. An electrical flashlight comprising
a flashlight case having a resilient contact portion of electrically insulating material,
at least first and second electrically coupled batteries carried within said case, each of said batteries having an electrically conducting can acting as one terminal thereof and a

terminal post acting as a second terminal of opposite polarity electrically isolated from said can,

an externally directed electrically energizable flashlight bulb carried by said case and having a pair of electrical terminals, each one of said terminals being mutually exclusively electrically coupled to a terminal of opposite polarity of each of said batteries, and

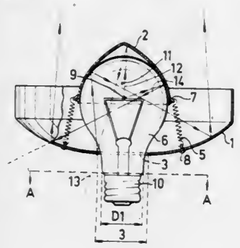
a resilient electrically conducting cantilevered switch wire having one end electrically coupled to and supported from one terminal of one of said batteries and an opposite free end extending to a position normally adjacent to and spaced from a terminal of opposite polarity of the other of said batteries, said switch wire being carried within said case adjacent to said resilient electrically insulating contact portion such that said switch wire is closed into electrical contact with said adjacent normally spaced battery terminal to illuminate said flashlight bulb upon flexing said resilient contact portion of said flashlight case.

4,210,954

REFLECTORS

Max Laser, Tunnelgatan 20B, Stockholm, Sweden

Filed May 22, 1978, Ser. No. 908,527
Claims priority, application Sweden, Jan. 30, 1978, 7801054
Int. Cl.[2] F21V *7/00, 17/04*
U.S. Cl. 362—303 **3 Claims**



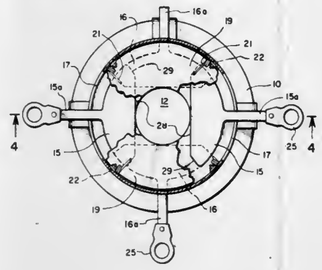
1. Improvement in reflectors, comprising a first reflector, means for detachably holding a light bulb in said first reflector, said bulb having a spherical top portion and a filament with a center, a small reflector, and means for holding said small reflector onto said light bulb, said small reflector being placed in front of the bulb, and opposite to said first reflector for reflecting direct light beams from the bulb to said first reflector, said first reflector having a centrally arranged hole through which the neck of the bulb is inserted, the edge of said hold being placed on the neck of the bulb said second reflector being placed on the spherical top part of the bulb, whereby said first reflector and said second reflector being positioned in relation to each other and in relation to the center of the filament of the bulb independently of how the bulb is inserted in a socket, wherein said second reflector has a spherical annular form where it abuts the bulb and for the rest has a symmetrical curvature that is parabolically formed, the center of the filament of the bulb being placed outside the focal point of said parabolic curvature, whereby the light beams, which are emitted from the center of the filament of the bulb and are reflected by the concave side of said second reflector towards the bulb, will meet the inner surface of said first reflector outside its center hole.

4,210,955

SHUTTER SYSTEM FOR STAGE-LIGHTING SPOTLIGHTS

Joseph H. Labrum, West Jordan, Utah, assignor to Electro Controls Inc., Salt Lake City, Utah

Continuation of Ser. No. 777,448, Mar. 14, 1977, abandoned.
This application Sep. 20, 1978, Ser. No. 944,084
Int. Cl.[2] F21V *17/02*
U.S. Cl. 362—321 **10 Claims**



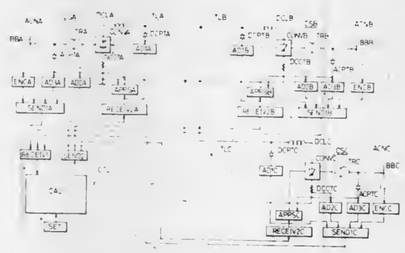
1. A shutter system for stage-lighting spotlights comprising a housing; a fixed framing gate in said housing having an opening therein for the passage of light; two sets of opposing slots in said housing, one set located on each side of said framing gate; two sets of opposing shutter blades, each set of blades being associated with a set of slots and each shutter blade having a neck portion thereof extending through one of the slots of its associated set of slots and being adapted to be moved into or out of the open portion of said framing gate to restrict to any desired degree the size of the opening through which light passes; two pressure plates, one on each side of said framing gate and each having a central opening corresponding to said opening in the framing gate, each set of shutter blades being sandwiched between a pressure plate and said framing gate so as to hold the respective pressure plates separated from the framing gate by spaces corresponding to the thickness of a shutter blade; and means located completely outside of said spaces for resiliently and constantly urging the pressure plates toward said framing gate so that the shutter blades are held securely in place between the pressure plate and framing gate but are movable under force applied to the blades.

4,210,956

METHOD AND SYSTEM OF CONTROLLING HIGH VOLTAGE DIRECT CURRENT POWER TRANSMISSION PLANTS

Atsumi Watanabe, Ibaraki, Japan, assignor to Hitachi, Limited, Japan

Filed Dec. 30, 1977, Ser. No. 865,874
Claims priority, application Japan, Jan. 5, 1977, 52-92
Int. Cl.[2] H02H *7/00;* **H02J** *3/36*
U.S. Cl. 363—51 **34 Claims**



1. A method of controlling an HVDC power transmission plant, which comprises a D.C. transmission line, said transmission line comprising two D.C. conductors; at least two converter stations, at least one of said stations being a rectifier and at least one an inverter station, each station being connected on its A.C. side to A.C. system and on its D.C. side in parallel with the other stations through a D.C. reactor, and being provided with an A.C. voltage measuring means for said A.C. system, a D.C. current measuring means for said D.C. transmission line, a first data sending means for sending the outputs of said measuring means to a central control means, a first data receiving means for receiving the outputs of the central control means, and an automatic pulse phase shifter for sending a firing pulse to the converter in the station in accordance with the outputs of said first data receiving means; the central control means being provided with a second data receiving means for receiving the outputs of said first data sending means, a setting means for setting certain data, a calculating means for calculating a delay angle value for each converter in accordance with the outputs of said second data receiving means and said setting means, and a second data sending means for sending the outputs of said calculating means to said first receiving means; which method comprises the steps;

(a) setting an operational D.C. voltage Vds, current I_d and a commutation reactance X for each converter station,

(b) calculating by said calculating means a delay angle value α for each converter in accordance with the following equation

$$\alpha = \cos^{-1}\left\{\frac{1}{\frac{3}{\pi}\sqrt{2}\,E}\left(Vds + \frac{3}{\pi}\,X\,I_d\right)\right\}$$

where E is a measured A.C. voltage, and

(c) controlling each converter in accordance with the delay angle value calculated therefor by said calculating means of the central control means.

determining said actual load capacity, said actual refrigerant head, an optimized switchover capacity based upon said actual refrigerant head, said design refrigerant head, said minimum refrigerant head, said optimized changeover capacity at said design refrigerant head and said optimized changeover capacity at said minimum refrigerant head, and for comparing said optimized switchover capacity to said actual load capacity to switch on both chillers when said actual load capacity exceeds said optimized switchover capacity and to switch off one of said chillers when said actual load capacity falls below said optimized switchover capacity.

14. A method for optimally switching on and off chillers in a parallel connected plural chiller refrigerant system, said chillers having an optimized range of changeover capacity defined at one end by an optimized changeover capacity at design refrigerant head and at the other end by an optimized changeover capacity at minimum refrigerant head, said method comprising the steps of:

determining actual load of said building in terms of capacity;

determining actual refrigerant head for said chillers;

determining an optimized switchover capacity based upon actual refrigerant head, design refrigerant head, minimum refrigerant head, optimized changeover capacity at design refrigerant head, and optimized changeover capacity at minimum refrigerant head;

comparing the actual load in terms of capacity and the optimized switchover capacity; and,

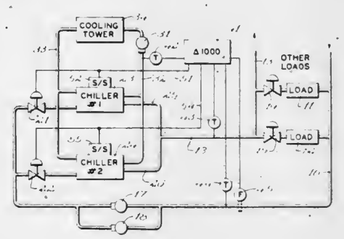
switching on an additional chiller when the actual load in terms of capacity exceeds the optimized switchover capacity and switching off a chiller when the actual load in terms of capacity falls below the optimized switchover capacity.

4,210,957

OPERATING OPTIMIZATION FOR PLURAL PARALLEL CONNECTED CHILLERS

Donald H. Spethmann, Arlington Hts., Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 8, 1978, Ser. No. 904,170
Int. Cl.[2] G05B *13/02;* **G06F** *15/20;* **F24H** *11/06*
U.S. Cl. 364—105 **17 Claims**



1. An optimization system for switching between at least first and second parallel connected chillers of a plural chiller refrigeration system, said chillers having an optimized range of changeover capacities defined at one end by an optimized changeover capacity at design refrigerant head of said first chiller and at the other end by an optimized changeover capacity at minimum refrigerant head of the first chiller, said optimization system comprising:

first means for supplying signals from which the actual load capacity of said building can be determined;

second means for supplying signals from which the actual refrigerant head of said chillers can be determined; and,

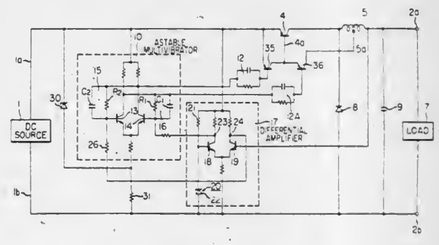
third means responsive to said first and second means for

4,210,958

DC-DC CONVERTER OUTPUT STABILIZING DEVICE

Tsuneo Ikenoue, 14-6, Ichiban-cho 1-chome, Sendai-shi, Miyagi-ken, Japan; Mitsugi Suzuki, and Shin-Yng Liu, both of Sendai, Japan, assignors to Tsuneo Ikenoue; Tōhoku Ricoh, Ltd. and Tōhoku Musen Denki Co., Ltd., all of Miyagi, Japan

Filed Oct. 25, 1978, Ser. No. 954,455
Int. Cl.[2] H02M *3/335*
U.S. Cl. 363—124 **2 Claims**



1. A DC-DC converter comprising:

a DC voltage source;

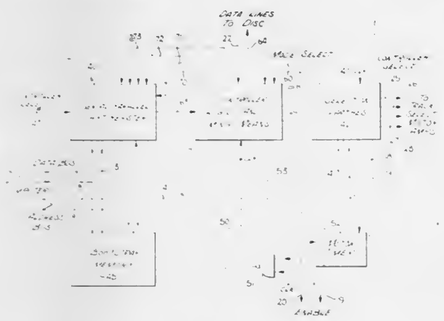
a series combination of a switching element having a control electrode, an input electrode and an output electrode, and an inductor connected in series with said DC voltage source;

a series combination of two transistors, the junction between said transistors being connected to said control electrode, and one end of said series combination of two transistors being connected to said input electrode;

a filter circuit for supplying direct current to a load, the switching element being controlled in response to a train of pulses applied to the control electrode thereof so as to control the output voltage from said filter circuit;

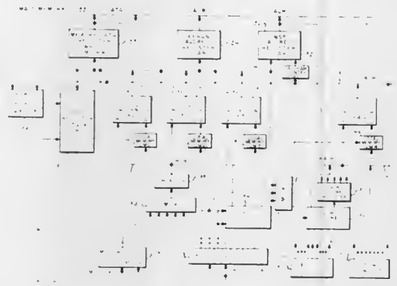
an astable multivibrator connected in parallel with said DC voltage source and having two time constant circuits;
a constant voltage circuit connected in parallel with said astable multivibrator, one common terminal of said parallel arrangement being connected to a terminal of said DC voltage source;
a differential amplifier connected in parallel with said DC voltage source for comparing the output from the filter circuit with a reference voltage and providing two oppositely phased control signals, the differential amplifier being connected to apply said control signals to vary the relative discharge times of said time constant circuits of said astable multivibrator,
the other end of said series combination of two transistors being connected to the output electrode of said switching element, the control electrodes of said two transistors being respectively connected through resistance-capacitance coupling circuits to the output circuits of said astable multivibrator.

4,210,959
CONTROLLER FOR MAGNETIC DISC, RECORDER, OR THE LIKE
Stephen G. Wozniak, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed May 10, 1978, Ser. No. 904,420
Int. Cl.[2] G06F *13/08, 3/06*
U.S. Cl. 364—200 **14 Claims**



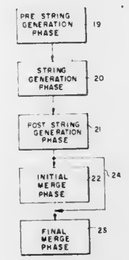
1. An interfacing means for interfacing between a digital computer and storage device such as a magnetic disc recorder, comprising:
register means having a plurality of parallel input/output lines for coupling to said computer and a serial input/output line for coupling to said storage device, said register means also having a control means having a plurality of register control lines for controlling transfer of data to and from said register means;
latch means having a plurality of latch input lines and a plurality of latch output lines, said latch means for controlling the flow of digital signals between latch input lines and latch output lines in response to a timing signal,
clock means for generating said timing signal,
read-only memory means having an address means with a plurality of address input lines, and a plurality of data output lines, said read-only memory means for receiving input signals on said address input lines and for providing predetermined output signals on said data output lines in response thereto;
a portion of said read-only memory means data output lines being coupled to said register control means via said register control lines for controlling data flow to and from said register, another portion of said read-only memory means data output lines being coupled to said latch means input lines, said latch means output lines being coupled to said addressing means via a portion of said read-only memory means address lines for providing a portion of an address thereto such that some of said output signals from said read-only memory means are employed as next address signals to said read-only memory means in response to said timing signal;
said interfacing means further including means for coupling the addressing means via another portion of said read-only memory means address lines to said computer whereby said computer may communicate with said storage device through said interfacing means.

4,210,960
DIGITAL COMPUTER WITH OVERLAPPED OPERATION UTILIZING CONDITIONAL CONTROL TO MINIMIZE TIME LOSSES
Barry R. Borgerson, Gwynedd Valley; Garold S. Tjaden, Doylestown, both of Pa., and Merlin L. Hanson, Arden Hills, Minn., assignors to Sperry Corporation, New York, N.Y.
Filed Sep. 2, 1977, Ser. No. 830,305
Int. Cl.[3] G06F *9/28, 9/26*
U.S. Cl. 364—200 **37 Claims**



1. Conditional control apparatus for a digital computer capable of executing a plurality of instructions, said computer operating in computer cycles during which instruction fetching is overlapped with instruction execution without wasting computer cycles in effecting the overlapped operation, comprising
storage means for storing a plurality of instruction words each having first and second next address control fields and first and second function control fields,
fetching means for fetching an instruction word from said storage means during each computer cycle,
decision logic means for providing first and second decision signals in accordance with conditions generated within said computer,
said fetching means being responsive to said first and second next address control fields of an instruction word fetched in a computer cycle previous to the current computer cycle and to said first decision signal for selecting said first or second next address control field in accordance with said first decision signal and fetching, in said current computer cycle, the next instruction word from said storage means in accordance with the next address control field selected by said first decision signal, and
processor means for executing operations designated by said function control fields,
said processor means being responsive to said first and second function control fields of said instruction word fetched in said previous computer cycle and to said second decision signal for selecting said first or second function control field in accordance with said second decision signal and executing, in said current computer cycle, the operation designated by the function control field selected by said second decision signal,
said decision logic means providing said first and second decision signals for use in said current computer cycle in accordance with conditions generated within said computer in response to execution by said computer, in said previous computer cycle, of an instruction word fetched during a computer cycle occurring before said previous computer cycle,
whereby said fetching of said next instruction word is overlapped with said execution of said operation without wasting computer cycles in effecting said overlapped operation.

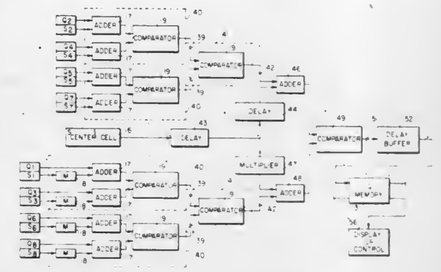
4,210,961
SORTING SYSTEM
Duane L. Whitlow, Hillsdale, N.J., and Azra Sasson, New York, N.Y., assignors to Whitlow Computer Services, Inc., Englewood Cliffs, N.J.
Continuation of Ser. No. 501,874, Aug. 30, 1974, which is a continuation of Ser. No. 187,689, Oct. 8, 1971. This application Sep. 19, 1978, Ser. No. 943,695
Int. Cl.[2] G06F *9/16*
U.S. Cl. 364—300 **35 Claims**



1. The new use of a general purpose electronic data processor having a central processing unit with a working storage area, at least one random access storage device and at least one input/output means, the new use comprising a method of ordering data comprising the steps of:
generating strings of sequentially ordered data, said strings being stored in sets of data ordered blocks,
dynamically detecting the bias of said data,
reversing the ordered sequence of string generation when a significant negative bias is detected,
calculating an optimum sequence for merging said generated strings, said sequence minimizing the number of times said data is merged,
anticipating the order in which new transfer units of data will be required for merging, said transfer units comprising at least one data block,
initially merging said generated strings according to said calculated string merge sequence to form a set of merged strings,
finally merging said set of merged strings to form a single string of ordered data, and
synchronizing the read/write operations during said merging steps.

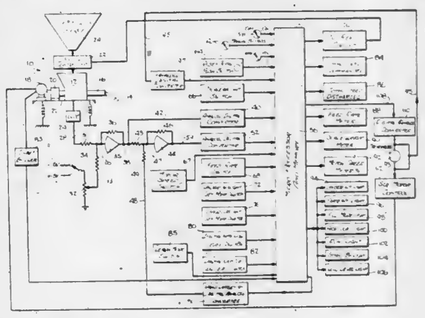
4,210,962
PROCESSOR FOR DYNAMIC PROGRAMMING
James P. Marsh, San Jose, and Howard L. Steadman, Santa Cruz, both of Calif., assignors to Systems Control, Inc., Palo Alto, Calif.
Filed Jun. 30, 1978, Ser. No. 920,970
Int. Cl.[2] G06F *15/46*
U.S. Cl. 364—402 **10 Claims**

1. In a processor for solving dynamic programming problems, the combination comprising:
A. first computation means to compare data representative of candidate transitions to or from each one of a first plurality of states of a stage of a dynamic programming problem, to determine the optimum one of said first plurality of state transitions;
B. second computation means to compare data representative of candidate transitions to or from each one of a second plurality of states of said stage of dynamic programming problem, to determine the optimum one of said second plurality of state transitions; and



C. third computation means to compare data representative of the optimum ones of said state transitions of said first and second pluralities, simultaneously with comparison by said first and second computation means of data respectively representative of transitions to or from states of third and fourth pluralities of states of a successive stage of said dynamic programming problem to determine the optimum one of said state transitions of said third and fourth pluralities.

4,210,963
WEIGH FEEDER SYSTEM
Ronald J. Ricciardi, 108 Malcolm Ave., Garfield, N.J. 07026; Angelo Ferrara, 7 Bryn Mawr Way, Fairfield, and Joseph L. Hartmann, 85 Hillside Ave., West Caldwell, both of N.J. 07006
Continuation of Ser. No. 803,251, Jun. 3, 1977, abandoned, which is a continuation of Ser. No. 678,391, Apr. 19, 1976, Pat. No. 4,054,784, which is a continuation-in-part of Ser. No. 587,869, Jun. 18, 1975, abandoned. This application Jun. 6, 1978, Ser. No. 913,203
Int. Cl.[2] G01G *11/08;* **G06F** *15/46*
U.S. Cl. 364—567 **13 Claims**



1. A weigh feeding machine comprising:
a container for a substance;
means for discharging substance from the container at a controllable feed-out rate;
means for sensing the weight of at least the container and any substance therein and for producing a first electrical signal indicative of the instantaneous value of said weight;
a digital microprocessor and a digital memory;
means for supplying to said digital microprocessor and memory said first electrical signal and a second electrical signal indicative of a desired feed-out rate;

means for causing said digital microprocessor and memory to combine said first and second electrical signals and to produce as a result a third electrical signal indicative of the degree of a departure, if any, from the desired feed-out rate;

means for causing the discharging means to feed out said substance at a feed-out rate determined by said third electrical signal;

means for detecting forces which act on said weight sensing means and are in addition to the forces acting thereon which are due to the weight of said container and substance, and for producing a fourth electrical signal indicative of said additional forces; and

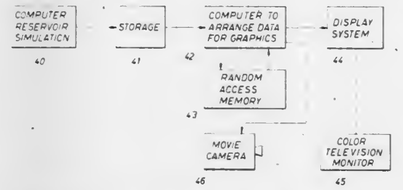
means for supplying said fourth electrical signal to the digital microprocessor and memory and for causing the digital microprocessor and memory to compensate said third electrical signal for the additional forces of which said fourth electrical signal is indicative and to thereby tend to make the feed-out rate insensitive to said additional forces.

4,210,964

DYNAMIC VISUAL DISPLAY OF RESERVOIR SIMULATOR RESULTS

William L. Rogers, Rijswijk, Netherlands; Paul A. Good, Houston, and Richard A. Smith, Missouri City, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 17, 1978, Ser. No. 870,231
Int. Cl.[2] G06F *15/36*; H04N *7/18*
U.S. Cl. 364—578 **13 Claims**



1. In a method for producing a dynamic visual display of the variation with time along a surface of physical characteristics of a producing petroleum reservoir wherein the magnitude of each characteristic is calculated for each of a series of times, a series of steps comprising:

assigning color (tint), intensities and saturations (perceived whiteness) to variuos values of the magnitude of each characteristic;

producing for each one of said series of times a visual display of the variation in the magnitude of each characteristic along the surface using the assigned color, intensity, and saturation, to represent the magnitude of the characteristic;

forming a separate photographic record of said visual display for each of said series of times; and,

displaying a sequence of said photographic records to form a dynamic display of the variation with time along said surface of said variation.

4,210,965

ACOUSTIC WELL LOGGING METHOD AND APPARATUS FOR DETECTING AND MEASURING AN ACOUSTIC WAVE

John D. Ingram, Meudon, France, assignor to Schlumberger Technology Corp., New York, N.Y.

Division of Ser. No. 581,381, May 27, 1975, abandoned. This application Jul. 27, 1978, Ser. No. 928,715
Int. Cl.[2] G01V *1/40*
U.S. Cl. 367—26 **21 Claims**

1. A method for automatically determining the location of an acoustic wave in a waveform which is representative of the output of a sonic receiver during well logging comprising the steps of

scanning the waveform to form a gauge value indicative of maximum amplitude of the waveform;

selecting a predetermined portion of the gauge value to establish a threshold value;



forming combinations of initial portions of the waveform; and

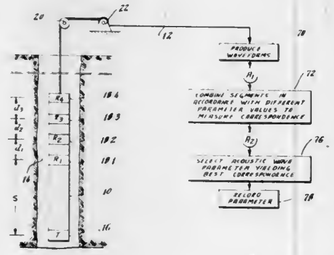
comparing the combinations with the threshold value to identify the place where the waveform exceeds the threshold as the location of the acoustic wave.

4,210,966

SELECTIVELY COMBINING SEGMENTS OF AT LEAST FOUR ACOUSTIC WELL LOGGING WAVEFORMS TO AUTOMATICALLY MEASURE AN ACOUSTIC WAVE PARAMETER

John D. Ingram, Meudon, France, assignor to Schlumberger Technology Corp., New York, N.Y.

Continuation of Ser. No. 581,381, May 27, 1975, abandoned. This application Jul. 27, 1978, Ser. No. 928,389
Int. Cl.[2] G01V *1/40, 1/36*
U.S. Cl. 367—27 **19 Claims**



1. A method for automatically measuring an acoustic wave parameter of a sonic wave present in a plurality of waveforms derived from selectively spaced sonic receivers operated in a borehole investigation comprising the steps of

producing a set of waveforms representative of sonic waves detected by at least four sonic receivers;

combining by multiplication successively different waveform segments from respective ones of said at least four receivers, wherein said segments are selected according to different values of an acoustic wave parameter of a sonic wave to produce measurements of the correspondence between waveform segments from at least four different sonic receivers as a function of the different acoustic wave parameter values;

automatically comparing said correspondence measurements to determine which represents the best correspondence between said waveform segments;

selecting the acoustic wave parameter value which yields said best correspondence between the waveform segments

in the set to determine the acoustic wave parameter for said sonic wave; and

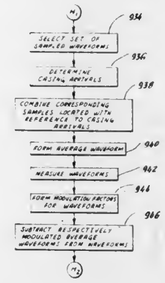
recording said selected acoustic wave parameter as a function of borehole depth.

4,210,967

METHOD AND APPARATUS FOR DETERMINING ACOUSTIC WAVE PARAMETERS IN WELL LOGGING

John D. Ingram, Houston, Tex., assignor to Schlumberger Technology Corp., New York, N.Y.

Division of Ser. No. 581,381, May 27, 1975, abandoned. This application Jul. 27, 1978, Ser. No. 928,390
Int. Cl.[2] G01V *1/40, 1/28*
U.S. Cl. 367—34 **11 Claims**



1. An automatic sonic borehole investigating method operating with sonic waveforms derived from a plurality of sonic receivers which are vertically disposed in a predetermined manner in a borehole to respond to sonic waves introduced to propagate through an acoustic responsive medium by a transmitter located at preselected distances from the receivers comprising the steps of

producing waveforms individually representative of sonic waves incident upon respective different receivers;

estimating the arrival time of a predetermined signal in the different waveforms;

combining the different waveforms in correspondence with an alignment of the estimated signal arrivals to form a signal emphasized waveform; and

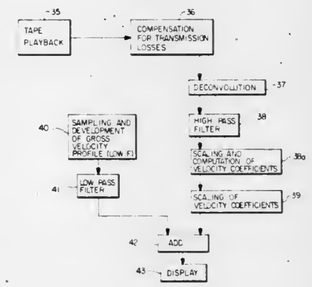
removing predetermined portions of the signal emphasized waveform from respectively associated waveforms to produce waveforms from which the predetermined signal is effectively filtered.

4,210,968

SEISMIC EXPLORATION TECHNIQUE

Roy O. Lindseth, 241 Eagle Ridge Dr., Calgary, Canada

Filed Dec. 16, 1975, Ser. No. 641,219
Int. Cl.[2] G01V *1/28, 1/36*
U.S. Cl. 367—46 **5 Claims**



1. A method of producing a display of the acoustic velocity characteristics of individual strata in a geologic section comprising the steps of:

propagating acoustic energy through said section from a surface transmission station;

detecting at least one receiving station at the surface of the earth acoustic energy reflected from interfaces within the section;

recording signals representative of the amplitude of the received energy as a function of time;

compensating the signals representative of energy reflected from each interface for the transmission losses due to transmission through the strata above that interface;

filtering the compensated signals to remove signals having frequencies below a preselected frequency threshold;

inverting the reflection coefficients to determine a series of velocity coefficients;

providing signals below the preselected threshold representative of a gross velocity profile of the section;

adding the compensated filtered velocity coefficient signals to the signals representative of gross velocity profile; and

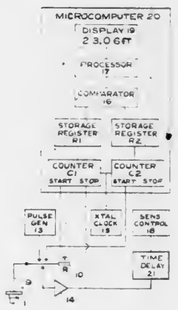
displaying the resulting added signals.

4,210,969

SONIC RANGING SYSTEMS TO ELIMINATE ERRORS DUE TO VARIATIONS IN THE SOUND VELOCITY IN THE MEDIUM

Frank Massa, Randolph, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees

Filed Mar. 13, 1978, Ser. No. 885,813
Int. Cl.[2] G01S *9/68*
U.S. Cl. 367—108 **6 Claims**



1. In combination in an electroacoustic sound range measurement system, transmitting electroacoustic transducer means, electric signal means for driving said transmitting transducer, switching means for momentarily connecting said electric signal means to said transducer, whereby a short burst of sound is generated by said transducer, a small sound reflecting target mounted along the axis of propagation of said burst of sound and precisely spaced from the sound radiating surface of said transmitting transducer by a fixed specified distance D1, electronic time measurement circuit means, switching means for starting said electronic time measurement means at the same instant of connecting the electric signal means to said transmitting transducer, receiving electroacoustic transducer means for receiving said transmitted sound burst signal after it is reflected from said target, said receiving transducer means also adapted for receiving said sound burst signal after it is returned from a sound reflecting surface located at an unknown distance D2 from said transducer radiating surface, first electronic circuit means connected to said receiving transducer and adapted for first stopping said electronic time measurement means at the first instant of the sound reflection from said reflecting target, whereby a first time period T1 is indicated by said time measurement means, second electronic circuit means

connected to said receiving transducer and adapted for stopping said time measurement means a second time at the instant of arrival of the sound reflection from said sound reflecting surface located at the unknown D2, whereby a second time period T2 is indicated by said time measurement means, and signal processing means whereby the ratio of T2/T1 is determined, said ratio T2/T1 being representative of the true distance D2 independent of the velocity of sound in the vicinity of said transmitting electroacoustic transducer, said electronic time measurement circuit means includes a sensitivity control means in said second electronic circuit means for adjusting the threshold sensitivity of said second electronic circuit whereby said time measurement circuit means is not responsive to any signal that may be generated by the receiving transducer as a result of multiple reflection between the receiving transducer and said target.

4,210,970

ECHO SOUNDERS

Walter M. Toubkin, London, and Alan J. Mulley, Stevenage, both of England, assignors to Space Age Electronics Limited, London, England

Filed Dec. 15, 1977, Ser. No. 860,896

Claims priority, application United Kingdom, Dec. 16, 1976, 52615/76

Int. Cl.[2] G01S *9/68, 7/66*

U.S. Cl. 367—109 **10 Claims**



1. An echo sounder comprising transducer means for transmitting and receiving pulses of energy; first and second display means for displaying received echo pulses in a manner indicative of the distance of the object giving rise to the echo; and a variable gain amplifier through which the transducer means is connected to the first and second display means; the first display means comprising a motor, a rotary member coupled to the motor, a light emitting device carried by the rotary member, a scale with which the rotary member co-operates, a first switch means co-operating with the rotary member and coupled to the transducer means, whereby said rotary member actuates said first switch means at a first frequency and a second switch means in series with the motor; and the second display means including an oscillator operating at said first frequency coupled to the transducer means and connected so as to be rendered operative when the second switch means is operated to de-energize the motor, whereby said variable gain amplifier is adjusted to a desired threshold during operation of said first display means and then said second switch is actuated to cause the display to appear only on said second display means.

4,210,971

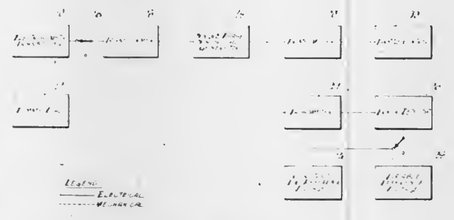
LONG DISTANCE UNDERWATER COMMUNICATION

William H. Martin, Jr., Morris Township, Morris County, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 11, 1963, Ser. No. 308,293

Int. Cl.[2] H04B *1/02*

U.S. Cl. 367—134 **1 Claim**



1. A transmitter for use in long distance underwater communication comprising:

(a) an electrostrictive transducer operable for radiating at least one hundred kilowatts of acoustic power into sea water in a frequency band fifty to one hundred cycles wide about a median frequency below five hundred cycles per second,

(b) an alternating current generator for supplying essentially sinusoidal electric signal power to the transducer,

(c) a dummy load approximating the load characteristics of the transducer,

(d) a transformer for coupling output power of the generator to one of the transducer and dummy load,

(e) a switching device between the transformer and the transducer and dummy load,

(f) an engine directly coupled to the alternator and operable with said generator at a very low coefficient of fluctuation, on the order of 1 part in 80,000,

(g) and means for controlling the engine speed in steps for changing the frequency of the generated power from any one of a plurality of equally spaced frequency steps within the band about six cycles apart to any other of the frequency steps within the band in less than ten seconds and then changing frequency at an essentially linear rate of two cycles per second per minute in a fixed length of time on the order of one to five minutes duration to the next higher or lower frequency step and then in less than ten seconds thereafter setting the frequency at any of the frequency steps within the band and changing frequency at an essentially linear rate in the same fixed length of time to the next higher or lower frequency step.

DESIGN PATENTS

GRANTED JUL. 1, 1980

ERRATA

For CLASS	See PATENT NO.
D24-053	255,679
D26-031	255,726
D28-008.1	255,727

255,616
DRESS
Garnet Miller, 306 Caledonia Ashley Rd., Caledonia, Ohio 43314
Filed Aug. 16, 1978, Ser. No. 934,018
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—80



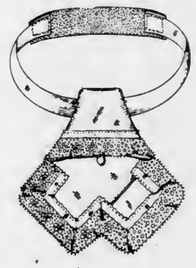
255,617
ATHLETIC SHOE
Adolf Dassler, Herzogenaurach, Fed. Rep. of Germany, assignor to Adidas Sportschuhfabriken Adi Dassler Kg, Herzogenaurach, Fed. Rep. of Germany
Filed Jul. 27, 1977, Ser. No. 819,628
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1977, 7308; Feb. 3, 1977, 7309
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



255,618
SHOE SOLE
Maurice D. Artstein, Creve Coeur, Mo., assignor to Brown Group, Inc., St. Louis, Mo.
Filed Dec. 21, 1977, Ser. No. 862,936
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



255,619
NECKTIE
Gaetano Leonardi, 452 - 69th St., Brooklyn, N.Y. 11220
Filed Jun. 30, 1977, Ser. No. 811,780
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—354



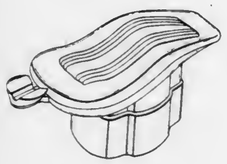
255,620
BOOT REMOVER
Louis D. Innocenzi, 12 Flower Hill Dr., Trenton, N.J. 08638
Filed Aug. 17, 1978, Ser. No. 934,300
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—378.2



255,621
BEVERAGE CARRIER OR SIMILAR ARTICLE
Richard V. McCool, 1904 Ramstead La., Reston, Va. 22091
Filed Mar. 6, 1978, Ser. No. 884,043
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—394

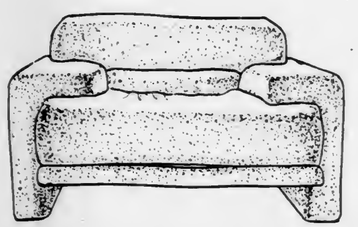


255,622
DENTAL CHAIR
Sadayasu Ota, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan
Filed Dec. 7, 1977, Ser. No. 858,419
Claims priority, application Japan, Jul. 29, 1977, 52-30307
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—22



255,623
SOFA
Lester Beall, Jr., High Point, N.C., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.
Filed Dec. 22, 1977, Ser. No. 863,273
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62

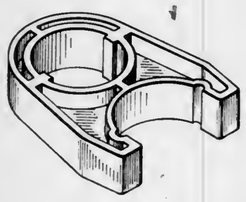
255,624
UPHOLSTERED SEAT
Antonello Mosca, Milan, Italy, assignor to Fratelli Saporiti, Varese, Italy
Filed Mar. 17, 1977, Ser. No. 778,390
Claims priority, application Italy, Sep. 17, 1976, 60924/76[U]
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



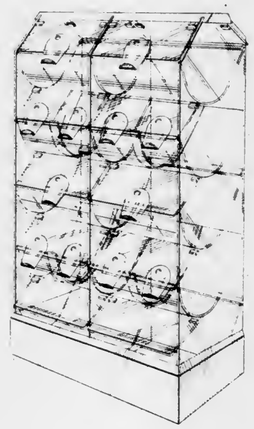
255,625
ARMCHAIR
Karl Lübke, Rheda, Fed. Rep. of Germany, assignor to Lübke KG, Rheda, Fed. Rep. of Germany
Filed Sep. 9, 1977, Ser. No. 831,794
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



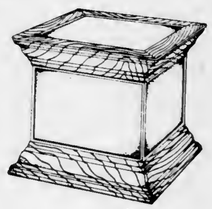
255,626
BRACKET FOR HAND HELD SHOWERHEAD
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed Jul. 26, 1977, Ser. No. 819,223
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—86



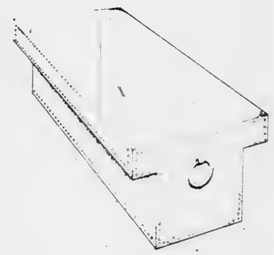
255,627
COMBINED DISPLAY AND SELF-SERVICE MERCHANDISING CABINET FOR FOOD PRODUCTS
Hamilton S. Newsom, Jr., Hinsdale, and Vincent Battista, Elmhurst, both of Ill., assignors to Midwest Nut & Seed Company, Inc., Chicago, Ill.
Filed Feb. 13, 1978, Ser. No. 877,552
Term of patent 14 years
Int. Cl. D20—*02*; D6—*04*
U.S. Cl. D6—157



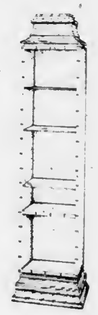
255,628
CUBE TABLE OR THE LIKE
John O. Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 835,987
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



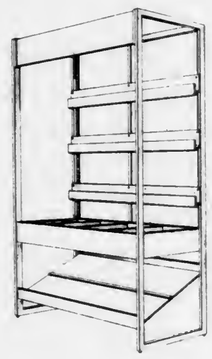
255,629
TABLE OR THE LIKE
John O. Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 836,201
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



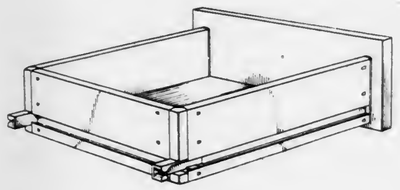
255,630
OPEN CABINET OR THE LIKE
John O. Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 836,191
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



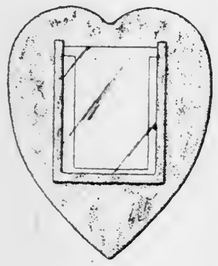
255,631
DISPLAY UNIT
Robert H. Sniderman, 110 Glenrose Ave., Toronto, Ontario, Canada (M4T 1K8)
Filed May 15, 1978, Ser. No. 905,824
Claims priority, application Canada, Nov. 18, 1977, 1811772
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—190



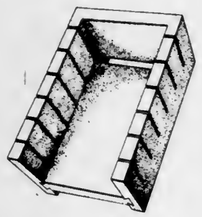
255,632
DRAWER
Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L. B. (Plastics) Limited, Belper, England
Filed Jan. 27, 1978, Ser. No. 872,957
Claims priority, application United Kingdom, Jul. 29, 1977, 980962/77
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



255,633
TEXTURED PICTURE FRAME
Joe L. Felton, 831 S. Fiske Blvd., Rockledge, Fla. 32955
Filed Feb. 6, 1978, Ser. No. 875,141
Term of patent 7 years
Int. Cl. D6—*07*
U.S. Cl. D6—244



255,634
BEAN CUTTING FRAME
Robert K. Zuck, 69 Glenwild Rd., Madison, N.J. 07940
Filed Sep. 28, 1978, Ser. No. 946,839
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—43



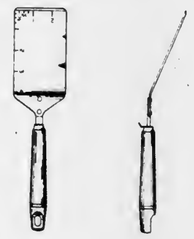
255,635
BEVERAGE CONTAINER HOLDER
Daniel F. Valmassei, 356 Armitage Dr., Monroe, Mich. 48161
Filed Apr. 21, 1978, Ser. No. 899,011
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—70



255,636
VEGETABLE MASHER
Roger L. Kelly, Palatine, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 28, 1978, Ser. No. 937,497
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—101



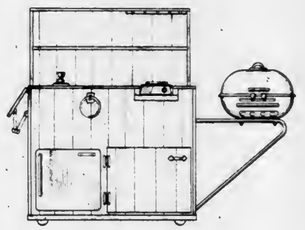
255,637
TURNER OR THE LIKE
Roger L. Kelly, Palatine, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 28, 1978, Ser. No. 937,493
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—102



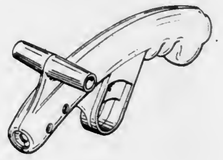
255,638
TURNER OR THE LIKE
Roger L. Kelly, Palatine, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 28, 1978, Ser. No. 937,495
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—102



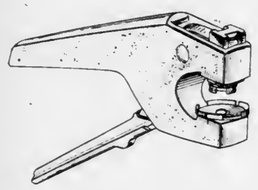
255,639
PATIO BAR AND BAR-B-QUE UNIT
Averil B. Cox, 20239 Arminta, Canoga Park, Calif. 91306
Filed Dec. 8, 1977, Ser. No. 858,714
Term of patent 14 years
Int. Cl. D7—*05*; D12—*14*
U.S. Cl. D7—108



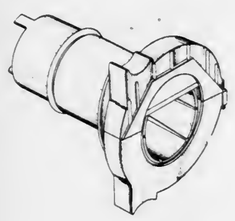
255,640
HANDLE FOR VEGETATION TRIMMER OR SIMILAR ARTICLE
Charles B. Pittinger, Sr., Rte. 1, Box 68, Weatherford, Tex. 76086
Filed Jul. 14, 1977, Ser. No. 815,609
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



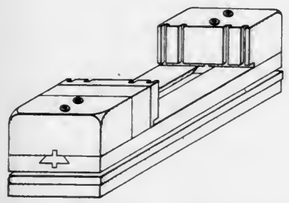
255,641
HAND-TOOL FOR APPLYING GROMMETS AND THE LIKE
Alfred W. Wakeman, Durham, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed Aug. 22, 1977, Ser. No. 826,874
Term of patent 14 years
Int. Cl. D08—*08*
U.S. Cl. D8—52



255,642
ROTARY CUT-OFF APPARATUS FOR ROLLED WINDOW SHADES AND THE LIKE
Paul J. Erpenbeck, Muskegon, Mich., and Milton P. Chernack, West Hempstead, N.Y., assignors to Breneman, Inc., Cincinnati, Ohio
Filed Sep. 26, 1977, Ser. No. 836,690
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—60



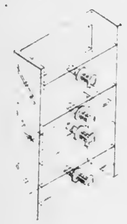
255,643
VISE
Arthur S. Speiser, 4400 Clarkwood Pkwy., Warrensville Hts., Ohio 44128, and Samuel G. Sheterom, Jr., 25 Wintergreen Hill, Painesville, Ohio 44077
Filed Nov. 16, 1977, Ser. No. 851,840
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—74



255,644
HANDLE
Jean-Francois Moulin, 2 Allée G. Clémenceau, 91000 Evry, France
Filed Sep. 26, 1977, Ser. No. 836,843
Claims priority, application France, Apr. 1, 1977, 77 75574
Term of patent 14 years
Int. Cl. D15—*99*; D8—*06*
U.S. Cl. D8—308



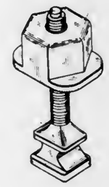
255,645
PLANT STAKE EXTENDER
Joe A. West, 16415 Bear Creek Rd., Boulder Creek, Calif. 95006
Filed Sep. 29, 1977, Ser. No. 837,917
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



255,646
WALL HANGER
Kenneth F. Fischer, Roseland, N.J., assignor to Acme Metal Goods Mfg. Co., Newark, N.J.
Filed Nov. 7, 1977, Ser. No. 848,912
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—370



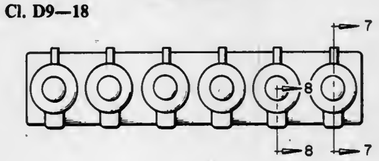
255,647
CLOSET BOLT AND NUT UNIT
Martin E. Ismert, III, and Joseph P. Ismert, both of c/o Sious Chief Manufacturing Co., Inc., P.O. Box 282, 4000 Main St., Grandview, Mo. 64030
Filed Mar. 20, 1978, Ser. No. 888,514
The portion of the term of this patent subsequent to Sep. 5, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—387



255,648
COMBINED BOTTLE AND CUP
Bernard J. Bolter, San Mateo, Calif., assignor to United Vintners, Inc., Calif.
Filed Oct. 17, 1977, Ser. No. 843,129
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—10



255,649
PACKAGING CONTAINER
Anton H. Clemens, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Sep. 6, 1977, Ser. No. 830,906
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—18



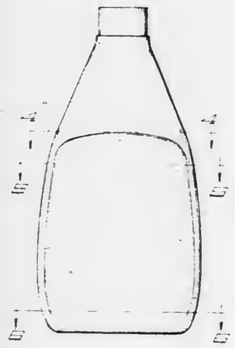
255,650
BOTTLE
William J. Britt, Greenville, S.C., assignor to Morton-Norwich Products, Inc., Greenville, S.C.
Filed Mar. 23, 1978, Ser. No. 889,580
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—48



255,651
BOTTLE
Daniel C. Wilson, Taylors, S.C., assignor to Morton-Norwich Products, Inc., Greenville, S.C.
Filed Mar. 21, 1978, Ser. No. 888,722
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60



255,652
BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 30, 1978, Ser. No. 891,784
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—115



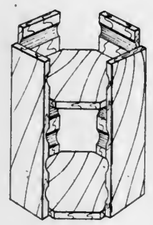
255,653
BOTTLE
Frank F. Lipsz, St. Laurent, Canada, assignor to Leabrooke Manufacturing Incorporated, Montreal, Canada
Filed Sep. 26, 1977, Ser. No. 836,910
Claims priority, application Canada, Aug. 29, 1977, 2908772
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—158



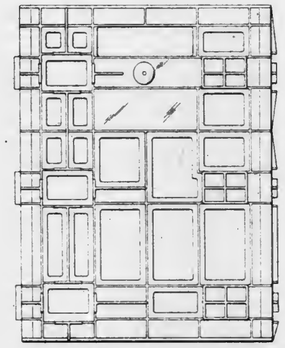
255,654
CONTAINER FOR A TOILETRY STICK
Stephen H. Goss, Brooklyn, N.Y., assignor to Bristol-Myers Company, New York, N.Y.
Filed Oct. 11, 1977, Ser. No. 840,931
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—169



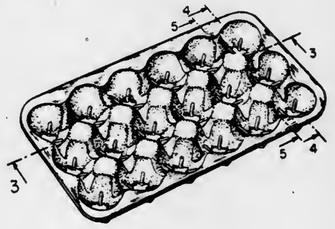
255,655
PACKAGING CONTAINER
Patrick Hart, Towaco, N.J., assignor to Hartstone Inc., Chatham, N.J.
Filed Dec. 15, 1977, Ser. No. 861,099
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—171



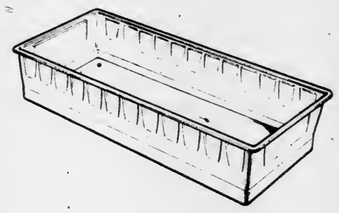
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BOTTLE CARRIER
Alfred G. Stauble, Box 615, Hollis, N.H. 03049
Filed Dec. 27, 1977, Ser. No. 864,691
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—177



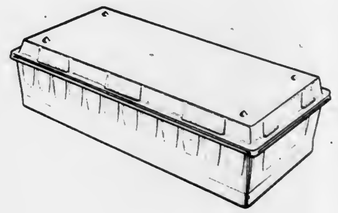
255,657
PACKAGING TRAY OR THE LIKE
John Florian; William Punt, Jr., and Albert C. Verrell, all of Bakersfield, Calif., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 19, 1977, Ser. No. 843,466
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



255,658
PACKAGING TRAY
David R. Dugan, Warsaw, and Kenneth E. Prince, Indianapolis, both of Ind., assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Sep. 29, 1977, Ser. No. 837,952
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



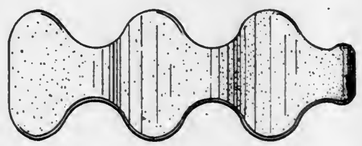
255,659
COMBINED PACKAGING TRAY AND LID
David R. Dugan, Warsaw, and Kenneth E. Prince, Indianapolis, both of Ind., assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Sep. 29, 1977, Ser. No. 838,046
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



255,660
STOPPER
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sep. 13, 1978, Ser. No. 942,014
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—285



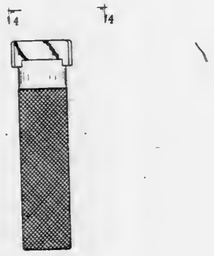
255,661
LOOSE-FILL PACKING ELEMENT
Harry D. Atkins, 5802 Troost Ave., North Hollywood, Calif. 91601
Filed Sep. 26, 1977, Ser. No. 836,520
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



255,662
WATCH
Cherokee J. Gorden, Newbury Park, Calif., assignor to D. G. Originals, a partnership, Newbury Park, Calif.
Filed May 4, 1978, Ser. No. 902,997
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—37



255,663
APERTURE GAUGE FOR HEAVY DUTY VEHICLE BRAKES
Thomas E. Morgan, 11060 Clinton River Dr., Sterling Heights, Mich. 48078
Filed Jan. 9, 1978, Ser. No. 867,914
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



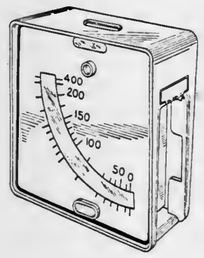
255,664
TRAILER HITCH LOAD SCALE
Martin H. Wahl, Box 53, R.D. #2, Evans City, Pa. 16033
Continuation-in-part of Ser. No. 691,404, Jun. 1, 1976. This application Jan. 25, 1978, Ser. No. 872,320
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—89



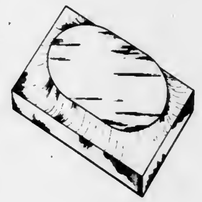
255,665
CARBURETOR TUNER
Timothy P. Lewis, 10217 Parise Dr., Whittier, Calif. 90604
Filed Mar. 16, 1978, Ser. No. 887,454
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



255,666
AIR VELOCITY GAUGE
Steven O. Buchanan, Michigan City, and Robert W. Butts, Lakeville, both of Ind., assignors to Dwyer Instruments, Inc.
Filed May 5, 1978, Ser. No. 903,226
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



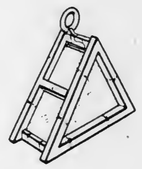
255,667
PUSH BUTTON FOR AN ELEVATOR
Pekka Perjo, Helsinki, Finland, assignor to Kone Osakeyhtio, Helsinki, Finland
Filed Apr. 10, 1978, Ser. No. 895,866
Claims priority, application Finland, Dec. 8, 1977, 77731
Term of patent 14 years
Int. Cl. D10—*06*; D13—*03*
U.S. Cl. D10—108



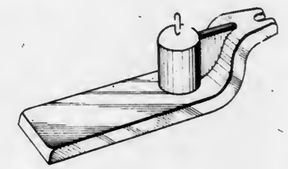
255,668
IDENTIFICATION BAND OR SIMILAR ARTICLE
Bryan Sidders, Germiston, and Bernard G. MacLarty, Bedfordview, both of South Africa, assignors to Promex Plastics (Proprietary) Limited, Johannesburg, South Africa
Filed Jul. 19, 1977, Ser. No. 817,062
Claims priority, application South Africa, Feb. 16, 1977, 77/0202
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—04



255,669
LOCKET
Matthew J. Trupiano, 20316 Van Antwerp, Harper Woods, Mich. 48225
Filed Oct. 11, 1978, Ser. No. 950,532
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79



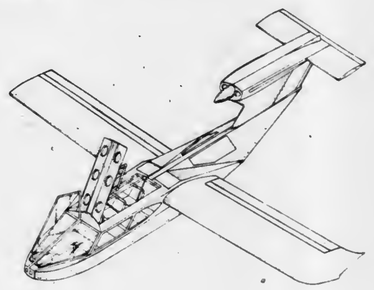
255,670
PIERCING EARRING HOLDER
Walter B. Ambler, Attleboro, Mass., assignor to Concept Marketing, Inc., Attleboro, Mass.
Filed Jan. 3, 1978, Ser. No. 866,947
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—86



255,671
COMBINED SCREW AND CAGE NOVELTY
Larry Gwynn, Encino, Calif., assignor to CPA, Inc., Laguna Hills, Calif.
Filed Oct. 6, 1978, Ser. No. 949,385
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157



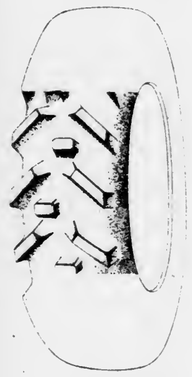
255,672
AMPHIBIOUS CAMPING AND UTILITARIAN AIRCRAFT
Donald A. Stock, Rte. 2, Box 15A, Roanoke, Tex. 76262
Filed Mar. 3, 1977, Ser. No. 774,221
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—3



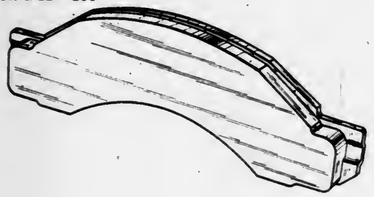
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KYACK
Richard A. Sherwin, North Devon, England, assignor to Guy Mansell, Richmond, England
Filed May 4, 1978, Ser. No. 902,991
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—63



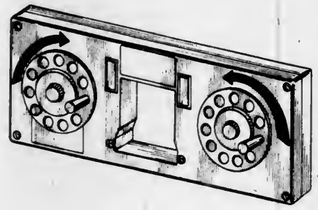
255,674
TIRE
Jean Menin, Maurecourt, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, France
Filed Mar. 8, 1978, Ser. No. 884,725
Claims priority, application France, Nov. 16, 1977, 77 40766
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



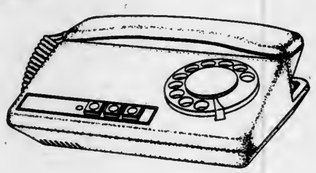
255,675
VEHICLE DISC BRAKE SHOE
Thomas D. Weiser, Dearborn, and Kurt H. Rinker, Ann Arbor, both of Mich., assignors to Kelsey Hayes Co., Romulus, Mich.
Filed Mar. 1, 1978, Ser. No. 882,497
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—180

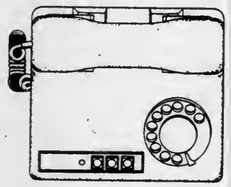


255,676
MICROFILM CASSETTE
George N. McGuire, deceased, late of St. Tammany Parish, La. by Bertie Inez Strickland McGuire, Sheila Lynne McGuire, Cheryl Ann McGuire, heirs, assignor to Bertie Inez Strickland McGuire; Sheila Lynne McGuire and Cheryl Ann McGuire, all of Slidell, La.
Filed Sep. 9, 1977, Ser. No. 832,079
Term of patent 14 years
Int. Cl. D16—*05;* D14—*99*
U.S. Cl. D14—11



255,677
TELEPHONE SET
Toshio Shiono, Yokohama, Japan, assignor to Tamura Electric Works, Ltd., Tokyo, Japan
Filed Feb. 14, 1978, Ser. No. 877,799
Claims priority, application Japan, Aug. 15, 1977, 52-32062
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

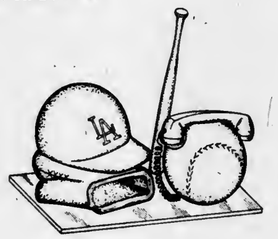




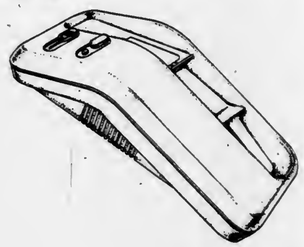
255,678
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jan. 29, 1979, Ser. No. 7,328
Term of patent 14 years
Int. Cl. D14—*03;* D21—*01*
U.S. Cl. D14—53

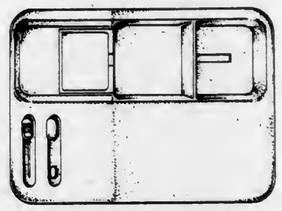


255,679
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jan. 29, 1979, Ser. No. 7,330
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D24—53

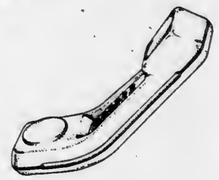


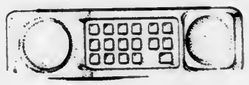
255,680
TELEPHONE BASE
Clifford D. Read, Almonte, and John F. Tyson, Ottawa, both of Canada, assignors to Northern Telecom Limited
Filed May 12, 1978, Ser. No. 905,415
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



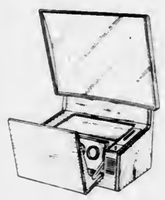


255,681
TELEPHONE HANDSET
Clifford D. Read, Almonte, and John F. Tyson, Ottawa, both of Canada, assignors to Northern Telecom Limited
Filed May 15, 1978, Ser. No. 906,131
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—64

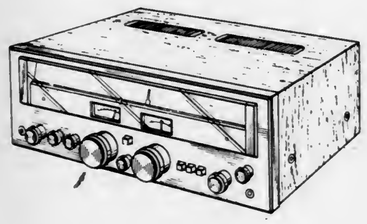




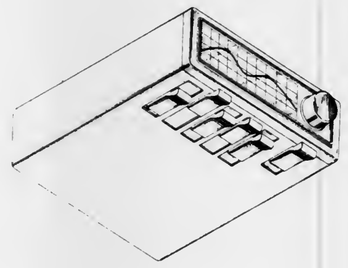
255,682
PROJECTION TELEVISION RECEIVER
Chuichi Inoue, Uji, and Minoru Hashimoto, Ibaragi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jan. 17, 1978, Ser. No. 870,149
Claims priority, application Japan, Jul. 18, 1977, 52-28314
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—83



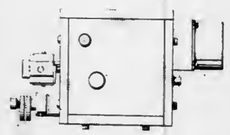
255,683
COMBINED AMPLIFIER AND TUNER
Akira Kato, Chofu, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Feb. 2, 1978, Ser. No. 874,672
Claims priority, application Japan, Aug. 30, 1977, 52/34531
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96

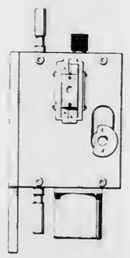


255,684
RESPONSE TRACER AMPLIFIER UNIT HAVING GRAPHIC AMPLIFIER RESPONSE DISPLAY FOR STEREO SOUND SYSTEMS AND THE LIKE
John F. Castagna, Brooklyn, N.Y., assignor to Sparkomatic Corporation, Milford, Pa.
Filed Mar. 21, 1978, Ser. No. 889,122
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96

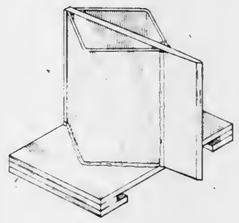


255,685
APPARATUS FOR HONING PIEZO-ELECTRIC CRYSTALS
Stephen Ozimec, 33391 Padina Cir., Laguna Niguel, Calif. 92677
Filed Jul. 27, 1977, Ser. No. 819,376
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—99

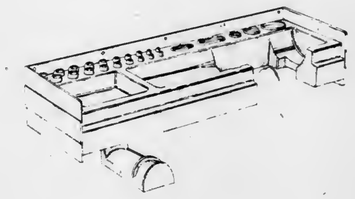




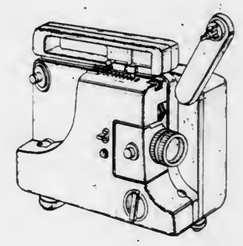
255,686
LOG SPLITTER BLADE
Kenneth L. Duppong, Arvada, and Randall E. Toler, Broomfield, both of Colo., assignors to Speeco, Incorporated, Lakewood, Colo.
Filed May 20, 1977, Ser. No. 798,917
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—139



255,687
COMBINED RACK FOR DRILLING MACHINES AND SUPPORT HOOK THEREFOR
Ole S. Ravn, Farum, Denmark, assignor to Stig Ravn A/S, Farum, Denmark
Filed Jun. 1, 1978, Ser. No. 911,509
Claims priority, application Denmark, Dec. 1, 1977, 927/77
Term of patent 14 years
Int. Cl. D15—*09*; D6—*04*
U.S. Cl. D15—140



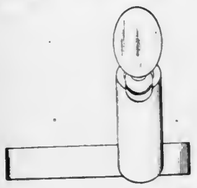
255,688
FILM PROJECTOR
Hans-Ulrich Schade, Pfuhl, Fed. Rep. of Germany, assignor to Foto-Quelle GmbH, Nuremberg, Fed. Rep. of Germany
Filed Jul. 20, 1977, Ser. No. 817,320
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 109
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—23

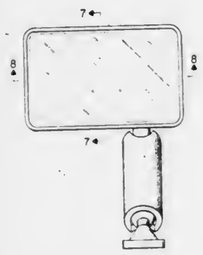


255,689
ELECTRONIC FLASH UNIT
Chong Ap, Singapore, Malaysia; Ong C. Kim, and Ernst-Gunther Zobel, both of Singapore, Singapore, assignors to Rollei, Werke, Franke & Heidecke, Brunswick, Fed. Rep. of Germany
Filed May 3, 1978, Ser. No. 902,786
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 1137
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

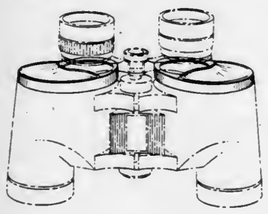


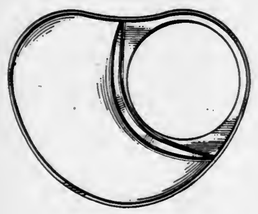
255,690
MAGNIFYING DEVICE FOR DETAIL WORK
Helen I. Tourtellotte, and John F. Tourtellotte, both of 3757 Rock Hill Rd., Birmingham, Ala. 35223
Filed Mar. 16, 1978, Ser. No. 887,451
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—56



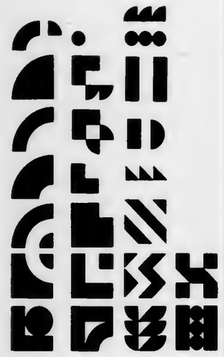


255,691
BINOCULAR COVER PLATE
Claus O. Huckenbeck, Westlake Village, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Nov. 23, 1977, Ser. No. 854,500
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—59





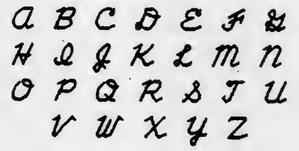
255,692
HIEROGLYPHIC FONT
Robert G. Fennell, 54 Ellingwood Ave., Stoney Creek, Ontario, Canada (L8E 1B9)
Filed Aug. 22, 1978, Ser. No. 934,941
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—25

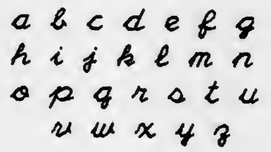


255,693
FONT OF CHARACTERS
Carl O. Bombarger, Jr., Elmira, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.
Filed May 18, 1978, Ser. No. 907,315
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—27

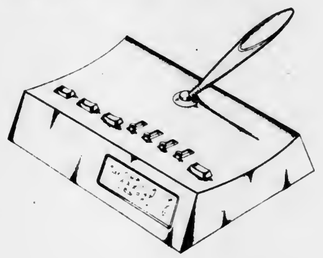


255,694
TYPE FONT
William R. Bitticker, Centerville, Ohio, assignor to The Mead Corporation
Filed Jan. 23, 1978, Ser. No. 871,768
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—28

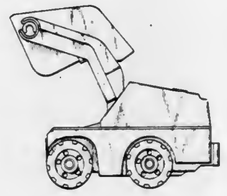




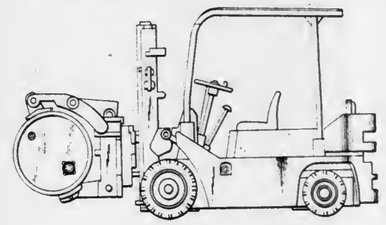
255,695
COMBINED PEN HOLDER AND CLOCK
Chii T. Yu, Taipei, Taiwan, assignor to Sterling Electronics Corp., Taipei, Taiwan
Filed Mar. 3, 1978, Ser. No. 883,240
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—77



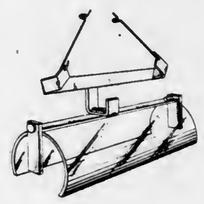
255,696
TOY PAY LOADER
Victor J. Fratarcangeli, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 6, 1978, Ser. No. 867,521
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—132



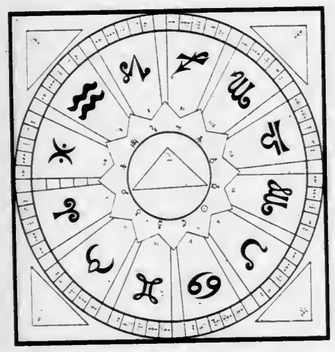
255,697
COMBINED TOY FORKLIFT AND TOY BARREL THEREFOR
Kiyoji Asano, 2-27-23, Sumida, Sumida-ku, Tokyo, Japan
Filed Dec. 2, 1975, Ser. No. 637,018
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



255,698
TENNIS BALL RETRIEVER
Donald O. Wright, 26333 Belle Porte Ave., Harbor City, Calif. 90710
Filed Apr. 4, 1978, Ser. No. 893,500
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D21—206



255,699
ASTROLOGICAL GAME BOARD
Robert K. Myers, Willoughby, Ohio, assignor to Mariann Cade, South Euclid, Ohio
Filed Dec. 19, 1977, Ser. No. 862,145
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—241



255,700
GUN TARGET
Charles R. Dulude, 33 Burnside Ave., East Hartford, Conn. 06108
Filed Apr. 7, 1978, Ser. No. 894,639
Term of patent 14 years
Int. Cl. D22—*04*
U.S. Cl. D22—15



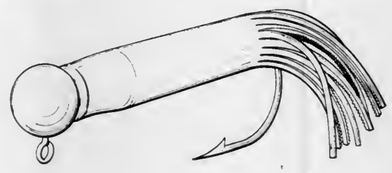
255,701
LINE GUIDE FOR A FISHING ROD
Shigeru Yamamoto, Higashikurume, Japan, assignor to Daiwa Seiko, Inc., Higashikurume, Japan
Filed Sep. 1, 1978, Ser. No. 939,042
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—24



255,702
FISHING REEL
Kanji Iinuma, Kogaeni, Japan, assignor to Daiwa Seiko, Inc., Higashikurume, Japan
Filed Jan. 19, 1978, Ser. No. 870,777
Claims priority, application Japan, Dec. 26, 1977, 52/36498
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



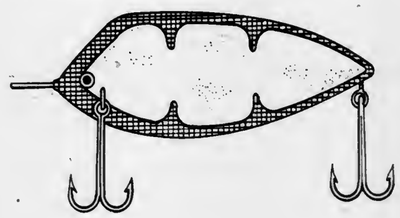
255,703
FISHING LURE
Leslie W. Kent, P.O. Box 3162, Tyler, Tex. 75701
Filed Aug. 3, 1978, Ser. No. 930,673
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



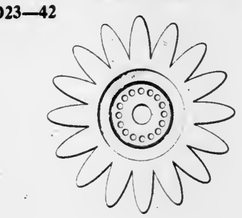
255,704
FISHING LURE OR SIMILAR ARTICLE
Ronald A. Helfenstine, Fort Worth, and Richard W. McDaniel, Hurst, both of Tex., assignors to Sports Marketing, Inc., Fort Worth, Tex.
Filed Sep. 26, 1978, Ser. No. 945,859
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



255,705
ARTIFICIAL FISH LURE
Jimmie L. Standifer, 14213 Stansbury, Detroit, Mich. 49223
Filed Aug. 25, 1978, Ser. No. 936,766
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

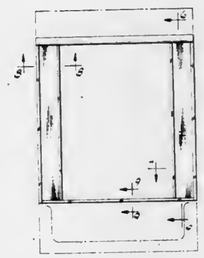


255,706
SINK STRAINER COVER
John M. Adam, 2404 Powers Ferry Rd., Marietta, Ga. 30062
Filed Nov. 18, 1977, Ser. No. 852,938
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—42

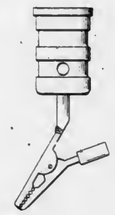




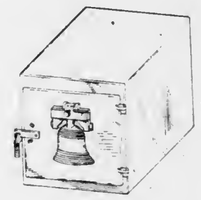
255,707
FRAME FOR A SHOWER DOOR
Nicholas J. Obradovits, St. Louis, Mo., assignor to Shower Enclosure Service Company, St. Louis, Mo.
Filed Feb. 1, 1978, Ser. No. 874,550
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



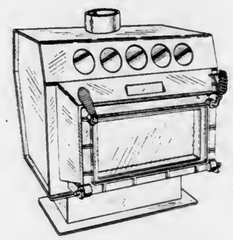
255,708
INCENSE BURNER
Gerald L. Allen, 6765 Portage Ave., and Craig A. Chapman, 5417 Clem Rd., both of Portage, Ind. 46368
Filed Jun. 19, 1978, Ser. No. 917,004
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D23—78



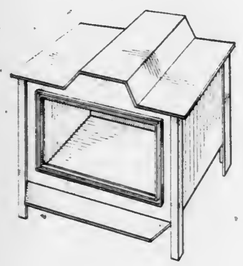
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STOVE
George H. Lester, Metal Design Mfg., Inc., 20 Willard Ave., Newington, Conn. 06111
Filed Mar. 16, 1978, Ser. No. 887,458
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



255,710
FIREPLACE HEATER
Friedrich W. Heine, 577 Garfield, P.O. Box 10924, Eugene, Oreg. 97401
Filed Apr. 10, 1978, Ser. No. 894,621
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



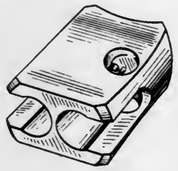
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STOVE
Theodore Abraham, 126 Gloucester St., Cornwall, Ontario, K6H 3W4, Canada
Filed Apr. 14, 1978, Ser. No. 896,260
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

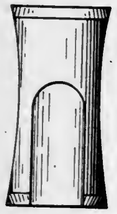


255,712
HUMIDIFIER
Masao Chihara, Matsudo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Mar. 6, 1978, Ser. No. 884,026
Claims priority, application Japan, Sep. 21, 1977, 52-37588
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146



255,713
DENTAL BUR TOOL
Paul D. Sturges, Newberg, Oreg., assignor to A-Dec, Inc., Newberg, Oreg.
Filed Feb. 15, 1978, Ser. No. 878,174
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10





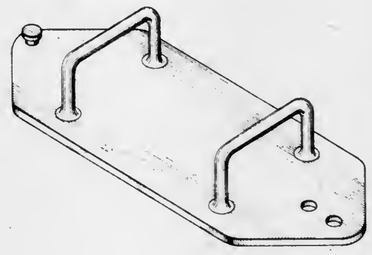
255,714
AMALGAM WELL USED IN DENTISTRY
Joseph J. Lancellotti, 8 Starr Rd., East Brunswick, N.J. 08816
Filed Feb. 27, 1978, Ser. No. 881,866
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



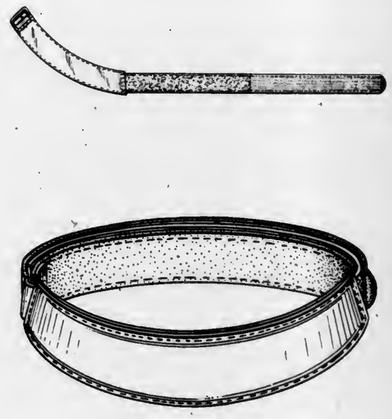
255,715
SURGICAL CLAMP
Harold A. Markham, 6637 Drexel Ave., Los Angeles, Calif. 90048
Filed Oct. 10, 1978, Ser. No. 950,220
Term of patent 14 years
Int. Cl. D24—*02*; D8—*08*
U.S. Cl. D24—27



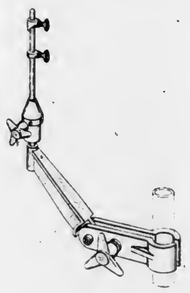
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BABY BOTTLE STRAP
Alicia P. Giesa, 492 School House La., Devon, Pa. 19333
Filed Oct. 11, 1977, Ser. No. 841,158
Term of patent 14 years
Int. Cl. D24—*104*
U.S. Cl. D24—48



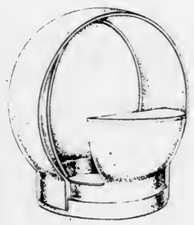
255,717
SURGICAL STRAP OR SIMILAR ARTICLE
Jack Levine, 70 E. 10th St., New York, N.Y. 10003
Filed Jan. 13, 1978, Ser. No. 869,117
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



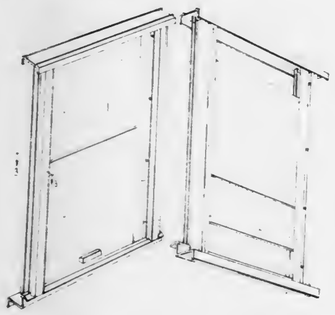
255,718
ARTICULAR ARM FOR MOUNTING AND POSITIONING A HEAD MODEL FOR DENTAL STUDENT USE
Roderick S. Hunt, Portland, Oreg., assignor to Adcoa, Inc., Portland, Oreg.
Filed Mar. 2, 1978, Ser. No. 883,042
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—99



255,719
KIOSK
Michel A. Panzini, Senneville, Canada, assignor to Unibisc Inc., Montreal, Canada
Filed Apr. 10, 1978, Ser. No. 895,290
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—16



255,720
WINDOW
John H. Shugg, 5 Elonara Ct., Glen Waverley, Victoria 3150, Australia
Filed Oct. 13, 1977, Ser. No. 841,992
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—52



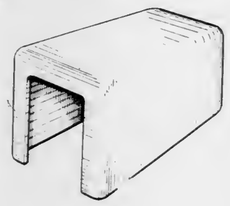
255,721
BOOK LAMP
Jesse K. Makainai, Jr., Kaneohe, Hi.
Filed Jan. 11, 1978, Ser. No. 868,510
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—60



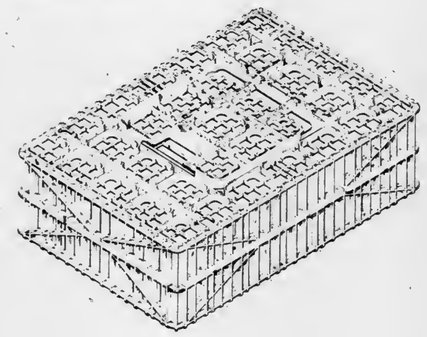
255,722
HAIR DRYER
Sung Jae Shin, Yongdu 2-Dong 739-4 Dongdaemoon-Gu, Seoul, Rep. of Korea; John W. Christensen, 28283 Tahoe Ct., Hayward, Calif. 94545, and Paul S. Han, 307 Dolphin Isle, Foster City, Calif. 94404
Filed Mar. 13, 1978, Ser. No. 885,710
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13



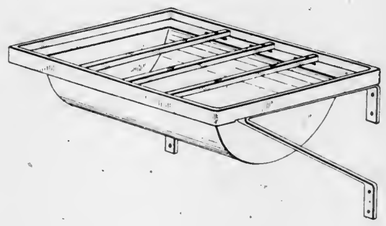
255,723
ANIMAL SHELTER
Arthur V. Anderson, 272 S. 13th, Sharpsville, Pa. 16150
Filed Jan. 17, 1978, Ser. No. 870,264
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



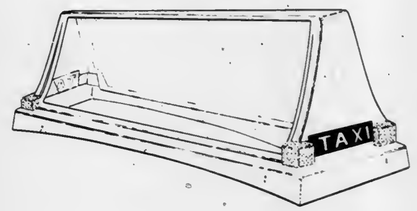
255,724
POULTRY COOP OR SIMILAR ARTICLE
James C. Carroll, Hopkinsville, Ky., and Lewis T. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 13, 1978, Ser. No. 959,954
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



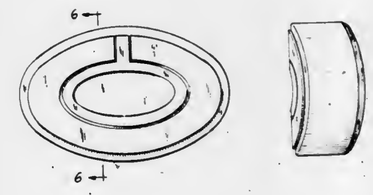
255,725
FOAL FEEDER
Donald M. Kitterman, 4100 Riverside, Kansas City, Mo. 64150
Filed Jun. 12, 1978, Ser. No. 914,848
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



255,726
VEHICLE TOP SIGN HOUSING
Fred W. Leuthesser, Knoxville, Tenn., assignor to Benco Industries, Inc., Knoxville, Tenn.
Filed Sep. 28, 1977, Ser. No. 837,595
Term of patent 14 years
Int. Cl. D10—*06*; D26—*06*
U.S. Cl. D26—31



255,727
SOAP BAR
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 21, 1978, Ser. No. 944,463
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D28—8.1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See—*
Bixby, William E., 4,210,710, Cl. 430-56.000.

A.C.M.A.T. "Ateliers de Constructions Mecaniques de l'Atlantique: *See—*
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A Raymond: *See—*
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AB Akerlund & Rausing: *See—*
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,210,618, Cl. 264-130.000.

AB Medipharm: *See—*
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Abe, Shunzo: *See—*
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Abrams, Abraham: *See—*
Baumann, John; Abrams, Abraham; and Broitman, Marvin, 4,210,225, Cl. 184-28.000.

Abrams, Henry H., III. Flexible surfboard. 4,209,867, Cl. 9-310.00E.

Acevedo, Ignacio. Tool handle assembly with freely-reversible socket member. 4,210,185, Cl. 145-76.000.

ACF Industries, Incorporated: *See—*
Atkinson, Eulas R., 4,209,884, Cl. 29-157.10R.

Adachi, Masahiro, to Nissan Motor Company, Limited. Vehicle having side-rear surveillance radar with antenna reflector assembled with rearview mirror. 4,210,357, Cl. 296-84.00B.

Adiletta, Joseph G., to Pall Corporation. Process for preparing hydrophobic porous fibrous sheet material of high strength and porosity and product. 4,210,697, Cl. 428-272.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
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Fauth, Gunter, 4,210,392, Cl. 354-21.000.
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Muller, Juurgen; Rheude, Alfred; and Pfeifer, Josef, 4,210,396, Cl. 355-12.000.
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.

AGFA-GEVAERT N.V.: *See—*
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., 4,210,816, Cl. 250-468.000.

Aiba, Masahiko, to Sharp Kabushiki Kaisha. Ink jet system printer including plural ink droplet issuance units for one column printing. 4,210,919, Cl. 346-75.000.

Aibe, Toshio: *See—*
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Aisin Seiki Kabushiki Kaisha: *See—*
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Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, to Hitachi, Ltd. Semiconductor controlled rectifier with configured cathode to eliminate hot-spots. 4,210,924, Cl. 357-38.000.

Akai, Tsutomu, to Yoshida Kogyo K.K. Pivot mechanism for pivoted windows. 4,209,946, Cl. 49-390.000.

Akechi Taikarenga Kabushiki Kaisha: *See—*
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Akimov, Jury A.: *See—*
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Akishino, Katsuo: *See—*
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Akiyama, Toshiyuki: *See—*
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Albany International Corp.: *See—*
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Albert-Frankenthal AG: *See—*
Fischer, Emil, 4,210,268, Cl. 227-81.000.

Albert, Howard C. Automatic meat inspecting and trimming machine and method. 4,209,878, Cl. 17-52.000.

Aldrich, Allyn M., to Sundstrand Corporation. Power drive unit. 4,210,066, Cl. 91-506.000.

Alexander Schoeller & Co. AG: *See—*
Steinlein, Rudolf F., 4,210,265, Cl. 224-48.00A.

Allen-Bradley Company: *See—*
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Allen, Charles M.: *See—*
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Allen & Hanburys Limited: *See—*
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Allen, Joseph C.; and Tate, Jack F., to Texaco Inc. Secondary recovery process. 4,210,205, Cl. 166-271.000.

Allied Chemical Corporation: *See—*
Marshall, Robert M.; and Dardoufas, Kimon C., 4,210,700, Cl. 428-395.000.
Ray, Ranjan, 4,210,443, Cl. 75-123.00K.

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Alpine Roomaire Systems, Inc.: *See—*
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Alza Corporation: *See—*
Higuchi, Takeru, 4,210,139, Cl. 128-260.000.

Amberg, Christopher P.; and Belcher, Samuel L., to Owens-Illinois, Inc. Pour spout lid. 4,210,256, Cl. 220-254.000.

Amerace Corporation: *See—*
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American Can Company: *See—*
Gillespie, William S.; and Inglis, Hal L., 4,210,477, Cl. 156-203.000.
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Mitchell, Richard P., 4,210,674, Cl. 426-107.000.
Murray, Lee J., 4,210,566, Cl. 260-31.80T.
Radtke, Charles S., 4,210,257, Cl. 220-269.000.
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American Carrier Equipment, Inc.: *See—*
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., 4,210,358, Cl. 296-100.000.

American Cyanamid Company: *See—*
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Halmos, Imre A., 4,210,593, Cl. 260-397.70R.
Raghu, Sivaraman; and Hoffmann, Arthur K., 4,210,760, Cl. 548-320.000.
Wang, Samuel S.; and Lewellyn, Morris E., 4,210,531, Cl. 210-51.000.

American Home Products Corporation: *See*—
Lien, Eric L.; Sarantakis, Dimitrios; and Grant, Norman H., 4,210,636, Cl. 424-177.000.
American Hospital Supply Corporation: *See*—
Choksi, Pradip V.; and Johnston, Donald L., 4,210,173, Cl. 137-512.300.
American Microsystems, Inc.: *See*—
Gregorian, Roubik, 4,210,872, Cl. 330-9.000.
Amos, Lynn G.; Beechey, Charles M.; and Rogers, Charles H., to Corning Glass Works. Blood sample collecting means. 4,210,026, Cl. 73-425.600.
AMP Incorporated: *See*—
Hughes, Donald W. K.; and Myers, Ronald W., 4,210,376, Cl. 339-17.0LC.
Vachhani, Vasantrai A.; Soderstrom, Melvin A.; and Hughes, Richard L., 4,210,379, Cl. 339-101.000.
Amrani, David. Process for separation and isolation of AHF and fibronectin from blood plasma. 4,210,580, Cl. 260-112.00B.
Amsted Industries Incorporated: *See*—
McGee, Sherwood W., 4,210,468, Cl. 148-12.400.
Anderson, Arthur A.: *See*—
Dent, Enid-Mary; and Anderson, Arthur A., 4,209,945, Cl. 47-84.000.
Anderson, Donald W.: *See*—
Neubert, Terry C.; and Anderson, Donald W., 4,210,475, Cl. 156-110.00A.
Anderson, James H., to Sea Solar Power. Dynamic positioning of sea thermal power plants by jet propulsion. 4,209,991, Cl. 60-641.000.
Andersson, Roy E. P.; and Bohm, Jan A., to Boliden Aktiebolag. Method and apparatus for controllably supplying material to a rod mill in accordance with power consumption of the rod mill motor. 4,210,290, Cl. 241-30.000.
Ando, Shoichi; Inaba, Kiminobu; and Yoshida, Tomoaki, to Foundation: The Assn. of Japan General Denistry, The. X-Ray imaging diagnostic apparatus with low X-ray radiation. 4,210,812, Cl. 250-416.0TV.
Andresen, Jens N., to Danfoss A/S. Servo motor operated by a heatable expansible substances. 4,209,989, Cl. 60-527.000.
Andresen, Jens N., to Danfoss A/S. Servo motor. 4,210,030, Cl. 74-43.000.
Andrysick, Chester A., to Corning Glass Works. Forming glass articles by using a spin plate. 4,210,433, Cl. 65-66.000.
Ankenman, Dale E. Quick mounting mechanism for agricultural implement. 4,210,210, Cl. 172-272.000.
Annis, Myron C., to Hooker Chemicals & Plastics Corp. Phenolic resins with improved low temperature processing stability. 4,210,732, Cl. 525-501.000.
Antos, George J., to UOP Inc. Hydrocarbon conversion with a superactive multimetallic catalytic composite containing two different types of rhenium sites. 4,210,523, Cl. 208-139.000.
Antos, George J., to UOP Inc. Hydrocarbon conversion with a superactive multimetallic catalytic composite containing two different types of rhenium sites. 4,210,524, Cl. 208-139.000.
Antos, George J., to UOP Inc. Activated and attenuated multimetallic catalytic composite. 4,210,561, Cl. 252-441.000.
Antos, George J., to UOP Inc. Hydrocarbon dehydrogenation with a superactive multimetallic catalytic composite for use therein. 4,210,769, Cl. 585-379.000.
Aoki, Jun; Hayashida, Takashi; Komatu, Shigesabroh; Miyakawa, Seii; and Takahasi, Naoki, to Hitachi, Ltd. Assembly line for parts of electronic and other equipments. 4,209,898, Cl. 29-783.000.
Apple Computer, Inc.: *See*—
Wozniak, Stephen G., 4,210,959, Cl. 364-200.000.
Apple, Wayne R. Apparatus for automatic ventilation of the lungs. 4,210,136, Cl. 128-204.210.
Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, to Corning Glass Works. Fluorine out-diffused optical device and method. 4,210,386, Cl. 350-96.310.
Argade, Shyam D.: *See*—
Patil, Arvind S.; and Argade, Shyam D., 4,210,515, Cl. 204-266.000.
Argelich, Termes y Cia., S.A.: *See*—
Trullas, Isidro F., 4,210,005, Cl. 68-148.000.
Argus Chemical Corporation: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Kubota, Naohiro; and Shibata, Toshihiro, 4,210,577, Cl. 260-45.8NT.
Arias, Henry: *See*—
Kulesza, Ralph J.; Wildman, John R.; Arias, Henry; and Breslow, Jeffrey D., 4,210,331, Cl. 273-120.00R.
Armco Inc.: *See*—
Byrd, Fred; and Fisher, James A., 4,210,097, Cl. 118-65.000.
Armstrong, William J.: *See*—
Falk, Donald G.; and Armstrong, William J., 4,209,999, Cl. 62-344.000.
Arndt, Emanuel: *See*—
Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,210,416, Cl. 8-139.100.
Arnoldy, Adrian F. Tub grinder control. 4,210,289, Cl. 241-27.000.
Arthur D. Little, Inc.: *See*—
Loeffler, Herbert H., 4,209,866, Cl. 9-304.000.
Arthur G. McKee & Company: *See*—
Wong, Wang-Mo, 4,210,406, Cl. 203-46.000.
Artweger-Industrie-Gesellschaft m.b.H.: *See*—
Artweger, Wolfgang, 4,210,122, Cl. 126-432.000.
Artweger, Wolfgang, to Artweger-Industrie-Gesellschaft m.b.H. Energy conversion apparatus. 4,210,122, Cl. 126-432.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Doi, Yoshinao; Fugii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,210,709, Cl. 429-250.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Ogawa, Ryota, 4,210,387, Cl. 350-187.000.
Ascoli, Enzo, to Gillette Company, The. Electric shavers. 4,210,832, Cl. 310-50.000.
Ash, David B.: *See*—
Dicken, John A., Jr.; and Ash, David B., 4,210,285, Cl. 239-251.000.
Astl, Jaromir. Remote control valve for reverse osmosis water purifier. 4,210,533, Cl. 210-136.000.
Astra Lakemedel Aktiebolag: *See*—
Cooke, Ernest, 4,210,670, Cl. 424-324.000.
Atkinson, Eulas R., to ACF Industries, Incorporated. Method of forming valve seats. 4,209,884, Cl. 29-157.10R.
Atlas Copco Aktiebolag: *See*—
Gustavson, Fredrik, 4,210,852, Cl. 318-459.000.
Atlas Technologies Inc.: *See*—
Churla, Daniel, 4,210,374, Cl. 339-14.00L.
Atlas Tool & Manufacturing Co.: *See*—
White, Kenneth W., 4,210,340, Cl. 280-43.170.
Auburn Research Foundation: *See*—
Huffman, Dale L., 4,210,677, Cl. 426-272.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., to Gulf Research and Development Company. Decomposition of cumene hydroperoxide with a halogen-substituted thiophenol catalyst. 4,210,606, Cl. 568-385.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., to Gulf Research and Development Company. Decomposition of cumene hydroperoxide using a stable nitrosonium or nitronium salt as the catalyst. 4,210,607, Cl. 568-385.000.
Automobile Association Limited, The: *See*—
Robbins, Ralph G.; and Bates, Victor E., 4,210,347, Cl. 283-35.000.
Automobiles Peugeot: *See*—
Dore, Jacques P., 4,210,002, Cl. 64-32.00F.
Avadani, Subramanya, to Zenith Radio Corporation. Color CRT shadow mask and method of making same. 4,210,843, Cl. 313-403.000.
Baboian, Robert, to Texas Instruments Incorporated. Method of assembly of an anti-corrosion anode connector system. 4,209,896, Cl. 29-855.000.
Bachman, David L.; and Voorhees, Francis W., to Corning Glass Works. Method for making vitreous carbon coatings on glass fibers. 4,210,431, Cl. 65-3.00C.
Bachman, Walter S.; and Cedrone, Nicholas J., to Daymarc Corporation. Magnetic storage system and method for an axial lead sorter. 4,209,959, Cl. 53-475.000.
Bader, John P.: *See*—
Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., 4,210,639, Cl. 424-180.000.
Baekelmans, Paul; and Bernard, Albert, to Solvay & Cie. Particles of titanium trichlorides which can be used for the stereospecific polymerization of alpha-olefines. 4,210,736, Cl. 526-142.000.
Baggett, Joseph M., to Dow Chemical Company, The. Phenolphthalein-dihydroxy aromatic compound polycarbonates. 4,210,741, Cl. 528-196.000.
Bahnfleth, William A.: *See*—
McGee, Mary Ann C.; and Bahnfleth, William A., 4,210,372, Cl. 308-189.00R.
Bailey, Jack H.; and Ottaway, Gerald H., to DiscoVision Associates. Video player and/or recorder with Hadamard transform. 4,210,931, Cl. 358-128.500.
Bailey, Peter E. Article strapping. 4,209,958, Cl. 53-553.000.
Baker, Fred E., to General Electric Company. Bag sealer lid assembly. 4,210,068, Cl. 93-8.00R.
Baker International Corporation: *See*—
McStravick, David M.; and Roberts, William M., 4,210,207, Cl. 166-330.000.
Motsinger, James V., 4,210,017, Cl. 73-139.000.
Baker, Richard A. Counting device. 4,210,093, Cl. 116-222.000.
Baker, Richard H., to Exxon Research & Engineering Co. Switching circuit. 4,210,826, Cl. 307-254.000.
Baldwin, John J.; and McClure, David E., to Merck & Co., Inc. Pyridyloxypropanolamines. 4,210,653, Cl. 424-263.000.
Balter, Jack S., to Rockwell International Corporation. Axle assembly. 4,210,220, Cl. 180-70.00R.
Banchieri, Carlo, to Industrie Pirelli S.p.A. Pneumatic tires for motor vehicles having compression-stressed sidewalls. 4,210,188, Cl. 152-353.00C.
Banko, Anton. Surgical instrument with flexible blade. 4,210,146, Cl. 128-305.000.
Bankoku Needle Manufacturing Company Ltd.: *See*—
Takahashi, Masamitsu, 4,210,239, Cl. 206-45.130.
Banse, Wilhelm: *See*—
Dudar, Klaus; Seliger, Ewald; Hubner, Gertraude; and Banse, Wilhelm, 4,210,676, Cl. 426-238.000.
Bantsekin, Viktor I.: *See*—
Vykhodtsev, Nikolai A.; Vykhodtseva, Tatyana P.; Bantsekin, Viktor I.; Borisov, Boris K.; and Grishin, Oleg P., 4,210,021, Cl. 73-170.00R.
Baran, Joseph: *See*—
Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; Baran, Joseph; and Ingalls, Curtis W., 4,210,346, Cl. 283-8.00B.
Baribeau, Gary A., to Minnesota Mining and Manufacturing Company. Electrical wire connection. 4,210,378, Cl. 339-97.00R.

Barker, Henry P., to General Electric Company. Process and apparatus for the drying of resinous materials. 4,209,912, Cl. 34-10.000.
Barnum, Edward F.: *See*—
Smith, Homer, Jr.; Pruitt, Richard L.; Barnum, Edward F.; and Knerr, Robert P., Jr., 4,210,086, Cl. 110-173.00A.
Barr & Stroud Limited: *See*—
Berry, Peter J.; and Runciman, Herbert M., 4,210,810, Cl. 250-347.000.
BASF Aktiengesellschaft: *See*—
Dehnert, Johannes; Kurtz, Walter; and Lamm, Gunther, 4,210,583, Cl. 260-156.000.
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.
Hansen, Guenter; Merger, Franz; Nestler, Gerhard; and Zeidler, Georg, 4,210,414, Cl. 8-639.000.
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, 4,210,266, Cl. 226-97.000.
BASF Farben & Fasern Aktiengesellschaft: *See*—
Hoppe, Karl; and Strauss, Udo, 4,210,506, Cl. 204-181.00C.
BASF Wyandotte Corporation: *See*—
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,547, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,548, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,549, Cl. 252-76.000.
Login, Robert B.; and Dutton, Daniel R., 4,210,685, Cl. 427-361.000.
Patil, Arvind S.; and Argade, Shyam D., 4,210,515, Cl. 204-266.000.
Patton, John T., Jr.; and McBrayer, Robert L., 4,210,728, Cl. 521-160.000.
Baskin, William H. Photographic printing apparatus. 4,210,398, Cl. 355-54.000.
Basta, Michael I.: *See*—
Morse, Phillip H.; Noce, Louis O.; and Basta, Michael I., 4,210,178, Cl. 137-625.500.
Bateman, John H., to Ciba-Geigy Corporation. Adducts containing epoxide groups, from hydantoin trisepoxides and binuclear hydantoins. 4,210,744, Cl. 528-363.000.
Bates, Victor E.: *See*—
Robbins, Ralph G.; and Bates, Victor E., 4,210,347, Cl. 283-35.000.
Batten, Carmen E., to United States of America, National Aeronautics and Space Administration. Visible and infrared polarization ratio spectroreflectometer. 4,210,401, Cl. 356-369.000.
Battersby, Horace V. Boat anchor. 4,210,092, Cl. 114-299.000.
Baudot, Jean-Jacques, to Societe Anonyme de Telecommunications. Optical panoramic survey-systems. 4,210,385, Cl. 350-16.000.
Bauer, Robert; and Hostettler, Hans U., to Hoffmann-La Roche Inc. Antiseborrheic preparations. 4,210,654, Cl. 424-263.000.
Baughman, D. Joe; Lytwyn, Ann; and Myrmel, Kurt, to Ortho Diagnostics Inc. Detection of fibrin monomer and composition therefor. 4,210,420, Cl. 23-230.00B.
Baumann, John; Abrams, Abraham; and Broitman, Marvin, to Unitwave, Inc. Liquid oil feeders. 4,210,225, Cl. 184-28.000.
Baumgarth, Manfred: *See*—
Radunz, Hans-Eckart; Kramer, Josef; Baumgarth, Manfred; and Orth, Dieter, 4,210,651, Cl. 424-263.000.
Baxter Travenol Laboratories, Inc.: *See*—
Fabisiewicz, Eugene, 4,210,479, Cl. 156-273.000.
Jess, Thurman S.; and Zissimopoulos, Nicholas, 4,210,138, Cl. 128-214.00E.
Bayer Aktiengesellschaft: *See*—
Gehrke, Gunter; and Hohmann, Walter, 4,210,413, Cl. 8-471.000.
Grigo, Ulrich; Merten, Josef; Binsack, Rudolf; and Tresper, Erhard, 4,210,579, Cl. 525-88.000.
Klein, Johann, 4,210,154, Cl. 128-685.000.
Bayusik, Michael J.; and Chen, Peter H., to R. T. French Co., The. Method of sterilizing spices. 4,210,678, Cl. 426-521.000.
Beasom, James D., to Harris Corporation. Integrated amplifier with adjustable offset voltage. 4,210,875, Cl. 330-261.000.
Beccaris, Carlo, to Societe Anonyme Francaise du Ferodo. Clutch mechanisms with two clutch plates. 4,210,232, Cl. 192-48.800.
Becker, Adolf: *See*—
Muller, Heinz; and Becker, Adolf, 4,210,604, Cl. 260-583.00R.
Beckman Instruments, Inc.: *See*—
Emmons, William D., 4,210,565, Cl. 260-29.6TA.
Handschuh, Gerald J., 4,210,557, Cl. 252-408.000.
Beecham Group Limited: *See*—
Eglington, Alfred J.; Howarth, Thomas T.; and Corbett, David F., 4,210,662, Cl. 424-274.000.
Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., 4,210,661, Cl. 424-274.000.
Beechey, Charles M.: *See*—
Amos, Lynn G.; Beechey, Charles M.; and Rogers, Charles H., 4,210,026, Cl. 73-425.600.
Beer, Richard L.: *See*—
Davis, Frederick C.; and Beer, Richard L., 4,210,118, Cl. 126-25.00R.
Beerens, Josephus J., to Hydraudyne B.V. Method and device for braking the speed of movement of the piston of a plunger-cylinder device. 4,210,064, Cl. 91-394.000.
Belcher, Samuel L.: *See*—
Amberg, Christopher P.; and Belcher, Samuel L., 4,210,256, Cl. 220-254.000.
Belenson, Mark I. Camera bag. 4,210,186, Cl. 150-52.00J.
Belhomme, Charles J. G.: *See*—
Van Bokestal, Andre M. A.; and Belhomme, Charles J. G., 4,210,800, Cl. 219-544.000.
Bell & Howell Company: *See*—
Huber, William B.; Bower, Ian L.; Flynn, James A.; and Elfring, Gary C., 4,210,785, Cl. 179-100.1PS.
Prysby, Daniel G.; Bower, Ian L.; and Huber, William B., 4,210,940, Cl. 360-33.000.
Bell Telephone Laboratories, Incorporated: *See*—
Chandross, Edwin A.; and Sharpe, Louis H., 4,210,704, Cl. 428-414.000.
Crochiere, Ronald E.; Sequin, Carlo H.; and Tompsett, Michael F., 4,210,825, Cl. 307-221.00D.
Fraser, Donald L., Jr.; and Tompsett, Michael F., 4,210,950, Cl. 361-329.000.
North, James C.; and Schinke, David P., 4,210,923, Cl. 357-30.000.
Belletire, John L., to Pfizer Inc. Halogen substituted benzopyran- and benzothiopyran-4-carboxylic acids. 4,210,663, Cl. 424-275.000.
Belletire, John L.: *See*—
Sarges, Reinhard; Belletire, John L.; and Schnur, Rodney C., 4,210,667, Cl. 424-281.000.
Bellot, Jean, to Societe Nouvelle des Acieries de Pompey. Magnesium-free, fine-grained structural steel with improved machinability and workability. 4,210,444, Cl. 75-124.000.
Belov, Jury N.: *See*—
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.
Beltran, Adrian M.: *See*—
Schilling, William F.; and Beltran, Adrian M., 4,210,269, Cl. 228-193.000.
Bendix Autolite Corporation: *See*—
Grimes, Donald A., 4,210,510, Cl. 204-195.00S.
Bendix Corporation, The: *See*—
Dyce, John W.; and Buczak, Ronald F., 4,209,893, Cl. 29-522.00R.
Bennett, Elmer T. Finger stick blood collection apparatus. 4,210,156, Cl. 128-763.000.
Bennstedt, Leif-Ake: *See*—
Loqvist, Kaj-Ragnar; and Bennstedt, Leif-Ake, 4,210,497, Cl. 204-26.000.
Benteler Werke Aktiengesellschaft: *See*—
Klatzer, Stefan; and Dickhoff, Winfried, 4,210,467, Cl. 148-12.00R.
Berber, Viktor A.: *See*—
Lapshev, Igor M.; Khodosov, Nikolai A.; and Berber, Viktor A., 4,210,276, Cl. 233-31.000.
Berbner, Heinz: *See*—
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.
Berg, Joseph E.; and Brown, Randolph E., Jr., to Precision Thin Film Corporation. Method and apparatus for depositing film on a substrate, and products produced thereby. 4,210,701, Cl. 428-409.000.
Berges, David A., to SmithKline Corporation. 7-Acylamino-3-[1-[2-(carboxymethylamino)ethyl]tetrazol-5-ylthio methyl]-3-cephem-4-carboxylic acids. 4,210,587, Cl. 548-251.000.
Bergfeld, Manfred; and Zengel, Hans G., to Akzona Incorporated. Process for the preparation of asymmetrical N-phenyl-N'-substituted para-phenylene diamines. 4,210,602, Cl. 260-576.000.
Bergson, Gustav. Electrolytic hygrometer improvement. 4,210,508, Cl. 204-195.00W.
Bergstrom, Rolf: *See*—
Johansson, Sigge; and Bergstrom, Rolf, 4,209,978, Cl. 59-27.000.
Bernard, Albert: *See*—
Baekelmans, Paul; and Bernard, Albert, 4,210,736, Cl. 526-142.000.
Bernardin, Frederick E.: *See*—
Coviello, Allan J.; Bernardin, Frederick E.; and Kalb, Kathryn R., 4,210,528, Cl. 210-4.000.
Bernasconi, Raymond: *See*—
Schenker, Karl; and Bernasconi, Raymond, 4,210,655, Cl. 424-267.000.
Bernatsek, Vladislav V.: *See*—
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F., 4,210,569, Cl. 260-328.0EP.
Berrie, John S.; and Woolley, Graham E., to Imperial Chemical Industries Limited. Manufacture of magnesium carbonate and calcium sulphate from brine mud. 4,210,626, Cl. 423-166.000.
Berry, Fred M., to International Medical Electronics Ltd. Method and apparatus for measuring and controlling the output power of a short-wave therapy apparatus. 4,210,152, Cl. 128-422.000.
Berry, Peter J.; and Runciman, Herbert M., to Barr & Stroud Limited. Radiation scanning system. 4,210,810, Cl. 250-347.000.
Berry, Robert W., Jr., to Fansteel Inc. Drill with replaceable inserts. 4,210,406, Cl. 408-223.000.
Bertin & Cie: *See*—
Rouquie, Georges, 4,210,095, Cl. 118-57.000.
Betts, David A., to Gould Inc. Low tire warning system. 4,210,898, Cl. 340-58.000.
Bhalla, Ranbir S., to Westinghouse Electric Corp. HID Lamp emission material. 4,210,840, Cl. 313-218.000.
Bianchetta, Donald L., to Caterpillar Tractor Co. Three-circuit fluid system having controlled fluid combining. 4,210,061, Cl. 91-6.000.
Bigelow, John H., to Du Pont de Nemours, E. I., and Company. Silver halide emulsion containing tetrathiocino diisothiazoles as antifoggers. 4,210,716, Cl. 430-615.000.

Billings Energy Corporation: *See—*
Campbell, Barrie C.; and Simons, Harold M., 4,210,511, Cl. 204-256.000.

Bimond, Jean-Pierre; Lazarre, Flavien; and Puyau, Andre, to Societe Nationale Elf Aquitaine (Production). Pneumatic compensator for a fluid sampling cell. 4,210,025, Cl. 73-421.00R.

Binsack, Rudolf: *See—*
Grigo, Ulrich; Merten, Josef; Binsack, Rudolf; and Tresper, Erhard, 4,210,579, Cl. 525-88.000.

Birkestrand, Orville J. Machine for pinch rolling, deburring and the like. 4,210,008, Cl. 72-105.000.

Bishop, Craig V., to Rohco, Inc. Alkaline zinc electroplating bath and additive compositions therefor. 4,210,500, Cl. 204-55.00Y.

Bixby, William E., to A. B. Dick Company. Photoconductor of varying light sensitivity from center to edges. 4,210,710, Cl. 430-56.000.

Black & Decker, Inc.: *See—*
Pugh, Timothy G.; and Shifflett, Omer L., Jr., 4,209,875, Cl. 15-344.000.

Blackman, Cornelius P., to Hansen Manufacturing Company, The. Rod antenna with loading coil and quick-connect coupling assembly. 4,210,914, Cl. 343-715.000.

Blanchard, Jean; and Verry, Monique, to Centre d'Etude pour l'Industrie Pharmaceutique. Process for the treatment of patients suffering from drepanocytosis. 4,210,649, Cl. 424-256.000.

Blanton, James R., to Dresser Industries, Inc. Temperature compensating hydraulic jarring tool. 4,210,214, Cl. 175-297.000.

Blore, James H., to Phillips Petroleum Company. Knitting intermittently drawn yarns. 4,209,881, Cl. 28-243.000.

Bob Baker Enterprises, Inc.: *See—*
Tantillo, Robert M.; and Niven, David A., 4,210,538, Cl. 210-333.00A.

Bobkowicz, Emilian. Universal spinning system. 4,209,965, Cl. 57-5.000.

Bocharov, Jury A.: *See—*
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

Bock, Klaus-Detlef; and Waltersdorfer, Anna, to Hoechst Aktiengesellschaft. Insecticidal and acaricidal compositions. 4,210,642, Cl. 424-200.000.

Boehringer Ingelheim GmbH: *See—*
Schmidt, Gunther; and Leitold, Matyas, 4,210,648, Cl. 424-256.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,210,659, Cl. 424-273.00R.

Boersma, Richard F., to Fiat-Allis Construction Machinery, Inc. Operator's compartment and seat mounting. 4,210,362, Cl. 296-190.000.

Bohm, Jan A.: *See—*
Andersson, Roy E. P.; and Bohm, Jan A., 4,210,290, Cl. 241-30.000.

Bohme, Reinhard D.; and Ragan, Robert O., to Champion International Corporation. Overlay sheet and wood laminate. 4,210,692, Cl. 428-106.000.

Bohmer, Friedhelm: *See—*
Bretschneider, Erich; Leitner, Hermann; and Bohmer, Friedhelm, 4,210,011, Cl. 72-234.000.

Bolgiano, Nicholas C.; and Swern, Daniel. Photochemical process for treating nylon fiber yarn or pile fabric. 4,210,691, Cl. 428-96.000.

Boliden Aktiebolag: *See—*
Andersson, Roy E. P.; and Bohm, Jan A., 4,210,290, Cl. 241-30.000.

Bollinger, Frederic G.; and D'Amico, John J., to Monsanto Company. N-Substituted oxobenzothiazolines and their use as plant growth regulators. 4,210,439, Cl. 71-90.000.

Bolt Associates, Inc.: *See—*
Chelminski, Paul; and Chelminski, Stephen V., 4,210,222, Cl. 181-107.000.

Boodley, Nancy K.; and Hanshaw, Frank. Solar collector with multiturn collecting strips. 4,210,130, Cl. 126-449.000.

Booth, John A.; and Ingle, Jess H. Portable baseball pitching target and catching apparatus. 4,210,326, Cl. 273-26.00A.

Boret, Roger; Bronner, Charles; Huin, Roland; and Vidal, Andre, to Intitut Francais du Petrole. Process and apparatus for hydrocarbon conversion. 4,210,519, Cl. 208-49.000.

Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., to Sperry Corporation. Digital computer with overlapped operation utilizing conditional control to minimize time losses. 4,210,960, Cl. 364-200.000.

Borgstrom, Alan D., to Amerace Corporation. Electrical connector contacts. 4,210,381, Cl. 339-115.00C.

Borisov, Boris K.: *See—*
Vykhodtsev, Nikolai A.; Vykhodtseva, Tatyana P.; Bantsekin, Viktor I.; Borisov, Boris K.; and Grishin, Oleg P., 4,210,021, Cl. 73-170.00R.

Borrelli, Nicholas F.: *See—*
Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, 4,210,386, Cl. 350-96.310.

Borzone, Rocco: *See—*
Walker, Peter S.; and Borzone, Rocco, 4,209,861, Cl. 3-1.911.

Bos, Willem. Valve for batchwise withdrawing liquid from a container. 4,210,263, Cl. 222-449.000.

Bosch-Siemens Hausgerate GmbH: *See—*
Husslein, Julius; and Hertel, Wilhelm, 4,210,124, Cl. 126-390.000.

Boss, Jurg A., to Flowtec AG. Method for the inductive measurement of fluid flow. 4,210,022, Cl. 73-861.170.

Boujet, Jean-Pierre; and Dietz, Jean, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Multiple branch-line wave guide coupler. 4,210,880, Cl. 333-110.000.

Bourque, Edmond A. Grounded flying saucer toys. 4,209,941, Cl. 46-230.000.

Boushey, Homer A. Electromagnetic position indicator/differential transformer. 4,210,891, Cl. 336-135.000.

Boutin, Francois-Regis: *See—*
Deleuze, Michel; Boutin, Francois-Regis; and Marchive, Daniel, 4,210,446, Cl. 75-148.000.

Bower, Ian L.: *See—*
Huber, William B.; Bower, Ian L.; Flynn, James A.; and Elfring, Gary C., 4,210,785, Cl. 179-100.1PS.
Prysby, Daniel G.; Bower, Ian L.; and Huber, William B., 4,210,940, Cl. 360-33.000.

Bowerman, John J.; and Wilson, John F., to Frederick Electronics Corp. Pseudo-transparent stop bit generator. 4,210,777, Cl. 375-117.000.

Bowers, Dan M.: *See—*
Swonger, Claron W.; Bowers, Dan M.; and Stock, Robert M., 4,210,899, Cl. 340-146.30E.

Bowers, Donald J., to Davis Refractories, Inc. Carbon bonded refractory brick composition. 4,210,453, Cl. 106-56.000.

Bowles Fluidics Corporation: *See—*
Stouffer, Ronald D.; and Bowles Fluidics Corporation, 4,210,283, Cl. 239-11.000.

Bowman, Jan, to Kaiser Aluminum & Chemical Corporation. Method of casting an integral slide gate and nozzle. 4,210,617, Cl. 264-71.000.

Boyer, Robert C.; and Williams, George J., to Ecolaire Incorporated. Support for heat exchange tubes. 4,210,202, Cl. 165-162.000.

Boynton, Greg. Fish alert. 4,209,930, Cl. 43-17.000.

Braam, Johannes W. T. M.: *See—*
Verloop, Jan; and Braam, Johannes W. T. M., 4,210,627, Cl. 423-220.000.

Brammall, Inc.: *See—*
Gillette, Robert H., 4,209,951, Cl. 51-290.000.

Bratton, Jerry L.: *See—*
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Breedis, John F.: *See—*
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Breitschwerdt, Werner; Jahn, Walter; Rapp, Herbert; and Klein, Wilhelm, to Daimler-Benz Aktiengesellschaft. Fastening arrangement of safety belt locks at motor vehicle seats. 4,210,365, Cl. 297-481.000.

Brelen, Hans E. O.; Dahlberg, Arvid S.; and Aberg, Ulf L., to Rockwool Aktiebolaget. Method for control of the surface weight of a mineral wool mat. 4,210,432, Cl. 65-4.00R.

Breno, Philip J.; Clark, Robert N.; and Semersky, Frank E., to Owens-Illinois, Inc. Fluid collection apparatus. 4,210,623, Cl. 422-101.000.

Breslow, Jeffrey D.: *See—*
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Bretschneider, Erich; Leitner, Hermann; and Bohmer, Friedhelm, to Schloemann-Siemag Aktiengesellschaft. Rolling mill. 4,210,011, Cl. 72-234.000.

Brett, David P.; and Walker, Christopher J. Method and apparatus for cleaning gas. 4,210,427, Cl. 55-96.000.

Bridger, Robert F., to Mobil Oil Corporation. Synthesis of boroxarophenanthrenes. 4,210,599, Cl. 260-462.00C.

Brieger, Emmet F., to Gearhart-Owen Industries, Inc. Formation testers. 4,210,018, Cl. 73-155.000.

Bright, John H.: *See—*
Dundon, John P.; Klingsberg, Erwin; and Bright, John H., 4,210,601, Cl. 260-570.00D.

Brinkman, Willem, to Holec N.V. Electromagnetically actuated pumps. 4,210,116, Cl. 123-504.000.

Brinkman, Willem, to Holec N.V. Device for supplying fuel to a combustion engine and method of manufacturing said device. 4,210,117, Cl. 123-504.000.

Britton, John, to General Electric Company Limited, The. Circuits for operating electric discharge lamps. 4,210,850, Cl. 315-290.000.

Brix, Arthur T.: *See—*
Dawson, Gaynor W.; Leiper, Hugh C.; and Brix, Arthur T., 4,210,680, Cl. 426-641.000.

Brockman, Raymond G.; and Nadeau, William C., to Nadeau, William C. Hiccough treatment appliance. 4,210,141, Cl. 128-272.000.

Brodrene Gram A/S: *See—*
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Broers, Alec N., to International Business Machines Corporation. High brightness electron probe beam and method. 4,210,806, Cl. 250-311.000.

Broitman, Marvin: *See—*
Baumann, John; Abrams, Abraham; and Broitman, Marvin, 4,210,225, Cl. 184-28.000.

Bronner, Charles: *See—*
Boret, Roger; Bronner, Charles; Huin, Roland; and Vidal, Andre, 4,210,519, Cl. 208-49.000.

Brossard, Claudine; Henry, Martine; and Raichvarg, Denis, to Roussel Uclaf. Novel polysaccharide extracts and method of use. 4,210,641, Cl. 424-180.000.

Brossard, Pierre C.: *See—*
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Brothers, Jack, to United States of America, Army. Sub projectile or flechette launch system. 4,210,082, Cl. 102-8.000.

Brouwer, Nicholaas L.: *See—*
Dameron, H. Clifford, Jr.; Martin, Guy E.; and Brouwer, Nicholaas L., 4,210,012, Cl. 72-235.000.

Brower, Ronald W., to NCR Corporation. CISFET Processing including simultaneous implantation of spaced polycrystalline silicon regions and non-memory FET channel. 4,210,465, Cl. 148-1.500.

Brown, Ivan R., to Hardinge Brothers, Inc. Apparatus for turning machines and the like for simultaneous axial and radial profiling of work. 4,210,040, Cl. 82-19.000.

Brown, Jack E., Jr., to Goodyear Tire & Rubber Company, The. Tire with a folded annular reinforcement. 4,210,189, Cl. 152-361.0FP.

Brown, James L.; Lin, Wayne H. T.; and Woods, James W., to Mallinckrodt, Inc. Container for immunochemical and enzymatical determinations or procedures. 4,210,418, Cl. 23-230.00B.

Brown, Randolph E., Jr.: *See—*
Berg, Joseph E.; and Brown, Randolph E., Jr., 4,210,701, Cl. 428-409.000.

Brown, Ronald E.: *See—*
Kerr, Ian M.; Brown, Ronald E.; and Hovanessian, Ara G., 4,210,746, Cl. 536-27.000.

Brown, Timothy E.: *See—*
Trujillo, John J.; and Brown, Timothy E., 4,210,261, Cl. 222-43.000.

Brown & Williamson Tobacco Corporation: *See—*
Kohnhorst, Earl E.; Summers, Thomas W.; and Gordon, David L., 4,210,157, Cl. 131-8.00R.

Broyhill Manufacturing Company, The: *See—*
Broyhill, Roy F.; and Parsons, James R., 4,210,407, Cl. 414-407.000.

Broyhill, Roy F.; and Parsons, James R., to Broyhill Manufacturing Company, The. Litter control assembly. 4,210,407, Cl. 414-407.000.

Brubaker, Gaylen R., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,210,551, Cl. 252-102.000.

Brugmann, Dirk A. Labeling tab for hanging folders. 4,209,925, Cl. 40-359.000.

Brunswig, Klaus: *See—*
Goring, Hermann; List, Hansjorg; Brunswig, Klaus; and Labatzke, Winfried, 4,210,057, Cl. 85-83.000.

Brusselle, Andre. Cable clamp for fastening a cable onto a cable spool. 4,210,295, Cl. 242-125.100.

Brzostek, Melvin W., to Western Electric Company, Inc. Cable connector housing having strain relief system. 4,210,380, Cl. 339-107.000.

Buczak, Ronald F.: *See—*
Dyce, John W.; and Buczak, Ronald F., 4,209,893, Cl. 29-522.00R.

Budd Company, The: *See—*
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Buescher, William E.; and Gallaro, Anthony V., to GTE Sylvania Incorporated. Cathode ray tube arc suppressor coating. 4,210,844, Cl. 313-479.000.

Bulten-Kanthal AB: *See—*
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Burkard, Willy; and Wyss, Pierre-Charles, to Hoffmann-La Roche Inc. Morpholino containing benzamides. 4,210,754, Cl. 544-167.000.

Burkhart, Gordon H.; Rice, Robert R.; and Teague, James R., to McDonnell Douglas Corporation. Bond and method of making the same. 4,210,389, Cl. 350-321.000.

Burnett, James E.; and Kenworthy, E. J. Doyle, to Mead Corporation, The. Magnetically activated plane wave stimulator. 4,210,920, Cl. 346-75.000.

Burri, Peter, to Ciba-Geigy Corporation. Indolinospiropyrane compounds. 4,210,591, Cl. 260-326.11S.

Burroughs Corporation: *See—*
Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; Baran, Joseph; and Ingalls, Curtis W., 4,210,346, Cl. 283-8.00B.

Burton, James R.; Cantwell, Vernon W.; and Davis, James E., to Texaco Inc. Dual purpose cutting oil composition. 4,210,544, Cl. 252-47.500.

Butterworth, Donald J.; and Ryan, Leo F., to Ecodyne Corporation. Liquid treatment apparatus. 4,210,537, Cl. 210-323.00T.

BVT Beratungs-, Verwaltungs- und Treuhandgesellschaft mbH: *See—*
Sontheimer, Georg, 4,210,368, Cl. 303-3.000.

Byrd, Fred; and Fisher, James A., to Armco Inc. Means for maintaining a non-oxidizing atmosphere at positive pressure within the metallic strip preparation furnace of a metallic coating line during line stops. 4,210,097, Cl. 118-65.000.

C. L. Frost & Son, Inc.: *See—*
Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., 4,210,238, Cl. 198-687.000.

Caines, R. Scott: *See—*
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California Institute of Technology: *See—*
Castleman, Kenneth R., 4,210,419, Cl. 23-230.00B.

Calspan Corporation: *See—*
Wohlers, Robert J., 4,210,910, Cl. 343-7.600.

Campbell, Barrie C.; and Simons, Harold M., to Billings Energy Corporation. Electrolyzer apparatus and electrode structure therefor. 4,210,511, Cl. 204-256.000.

Canning, Robert B. Aerodynamic drag-reducing shield for mounting on the front of a cargo carrying compartment of a road vehicle. 4,210,354, Cl. 296-1.00S.

Cantoni, Guilio L.: *See—*
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Cantwell, Vernon W.: *See—*
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Capability Brown Limited: *See—*
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Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., to Lutron Electronics Co., Inc. Inverter circuit for energizing and dimming gas discharge lamps. 4,210,846, Cl. 315-121.000.

Carl Freudenberg, Firma: *See—*
Hartmann, Ludwig; and Ruzek, Ivo, 4,210,690, Cl. 428-95.000.

Carl Zeiss-Stiftung: *See—*
Meyer, Manfred; Keydell, Willi; Mollring, Friederich K.; and Weber, Klaus, 4,210,384, Cl. 350-19.000.

Carlingswitch, Inc.: *See—*
Sorenson, Richard W., 4,210,791, Cl. 200-164.00R.

Carmon, Amiram: *See—*
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Carroll, Herbert J.; and Davis, Thomas C., Sr. Hydraulic jack. 4,210,314, Cl. 254-8.00B.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 4,210,941, Cl. 360-48.000.

Casperson, Philip W., to Occidental Petroleum Corporation. Ammoniated phosphoric acid fertilizer production. 4,210,438, Cl. 71-34.000.

Castaneda, Jimeno O., to Consejo Nacional de Ciencia y Tecnologia. Vaginal microscope. 4,210,133, Cl. 128-6.000.

Castleman, Kenneth R., to California Institute of Technology. Automated quantitative muscle biopsy analysis system. 4,210,419, Cl. 23-230.00B.

Castner, Kenneth F.: *See—*
Kennedy, Joseph P.; and Castner, Kenneth F., 4,210,737, Cl. 526-185.000.

Castro, Anthony J.; and Stoll, James W., to Akzona Incorporated. Solid antistatic compositions. 4,210,556, Cl. 525-6.000.

Caterpillar Tractor Co.: *See—*
Bianchetta, Donald L., 4,210,061, Cl. 91-6.000.
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Master, Ralph E., 4,209,985, Cl. 60-337.000.
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Centre d'Etude pour l'Industrie Pharmaceutique: *See—*
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Chabonat, Marcel. Propulsive lifting rotors. 4,210,299, Cl. 244-20.000.

Chaika, Leopold I.: *See—*
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Champion International Corporation: *See—*
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Dutcher, Daniel P., 4,210,271, Cl. 229-1.50B.

Chandalia, Kiran B.: *See—*
Preston, Frank J.; Kraus, Theodore C.; and Chandalia, Kiran B., 4,210,727, Cl. 521-137.000.

Chandler, Mikel G.; and Chandler, Von. Turnrow plow. 4,210,211, Cl. 172-451.000.

Chandler, Von: *See—*
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Chandross, Edwin A.; and Sharpe, Louis H., to Bell Telephone Laboratories, Incorporated. Electrical devices employing a conductive epoxy resin formulation as a bonding medium. 4,210,704, Cl. 428-414.000.

Changani, Pushpkumar D.: *See—*
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Chavers, Jane E.: *See—*
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Chelminski, Paul; and Chelminski, Stephen V., to Bolt Associates, Inc. Air gun monitoring method and apparatus. 4,210,222, Cl. 181-107.000.

Chelminski, Stephen V.: *See—*
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Chemische Werke Huls Aktiengesellschaft: *See—*
Obendorf, Johann; Dormann, Gunter; Gras, Rainer; and Wolf, Elmar, 4,210,687, Cl. 428-35.000.
Sridhar, Srinivasan, 4,210,426, Cl. 55-68.000.

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Chester, Arnold M., to Litton Industrial Products, Inc. Pressure actuated resilient valve seal. 4,210,313, Cl. 251-306.000.

Chevron Research Company: *See—*
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Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., to United States of America, Health, Education and Welfare. 5'-Deoxy-5'-(isobutylthio)-3-deazaadenosine, method of making same and its antiviral effect

on Rous sarcoma virus and Gross murine leukemia virus. 4,210,639, Cl. 424-180.000.
Chicago Fire Brick Company: *See—*
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Child, Frank W., to Child Laboratories Inc. Solenoid operating pump. 4,210,409, Cl. 417-241.000.
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Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.
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de Montmollin, Rene; and Schutz, Hans-Ulrich, 4,210,582, Cl. 260-154.000.
Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, 4,210,757, Cl. 546-52.000.
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Pfeifer, Josef; and Peter, Heinz, 4,210,743, Cl. 528-347.000.
Rody, Jean; Greber, Gerd; and Muller, Helmut, 4,210,578, Cl. 260-45.80N.
Schenker, Karl; and Bernasconi, Raymond, 4,210,655, Cl. 424-267.000.
Schneider, Jurg; and Fattinger, Volker, 4,210,428, Cl. 55-223.000.
Somlo, Tibor; and Hungerbuhler, Anton, 4,210,766, Cl. 568-779.000.
Wirth, Hermann O.; and Wehner, Hermann W., 4,210,595, Cl. 260-429.700.
Ciccarelli, Ronald R. Valve construction for brass wind instrument. 4,210,056, Cl. 84-392.000.
Cihonski, John L., to El Paso Products Company. Production of cyclic hydrocarbons from n-butenes. 4,210,603, Cl. 260-580.000.
Cina, Ronald A.; and Kluge, Albert D., to Roberts Corporation. Automatic method for producing molds using chemically bonded sands. 4,210,194, Cl. 164-16.000.
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Citizen Watch Co., Ltd.: *See—*
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Clark, Gary T.; and Weaver, Max A., to Eastman Kodak Company. Disperse dyes from 2-bromo, chloro, or cyano-4,6-dinitroaniline and selected alkyl-3-(2'-alkoxy-5-alkanoylaminoanilino)butyrate or alkyl-4-(2'-alkoxy-5'-alkanoylaminoanilino)valerate. 4,210,586, Cl. 260-207.100.
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Cohen, Allen L. Multifocal zone plate. 4,210,391, Cl. 351-161.000.
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Cole, Joseph I., to Nassau Recycle Corporation. Wheel-band type continuous casting apparatus. 4,210,198, Cl. 164-433.000.
Collings, Charles A., Jr., to Cummins Engine Company, Inc. Piston ring assembly. 4,210,338, Cl. 277-76.000.
Collins, Marcus H., to Eaton Corporation. Variable width tire building drum. 4,210,482, Cl. 156-415.000.
Combette, Marc; and Ollivier, Jean, to Societe de Prospection et d'Inventions Techniques, S.P.I.T. Rear-loading powder-acetuated tool. 4,210,267, Cl. 227-10.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
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Connor, David T., to Warner-Lambert Company. 1,5-Dihydro-1,5-dioxo-N-1H-tetrazol-5-yl-4H-[1]benzopyrano[3,4-b]pyridine-2-carboxamides. 4,210,758, Cl. 546-92.000.
Conoco, Inc.: *See—*
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Hill, Edward G., 4,210,038, Cl. 82-11.000.
Cook, Sanford L.; and Villa, Joseph N., to Standard Keil Hardware Manufacturing Co. Device for holding a door firmly closed. 4,210,349, Cl. 292-78.000.
Cooke, Ernest, to Astra Lakemedel Aktiebolag. Antithrombotic agents. 4,210,670, Cl. 424-324.000.
Cooke, John P.; and Rohrbach, Walter, to Inventors Products, Inc. Angleworm storage box. 4,210,252, Cl. 220-4.00F.
Coons, David A. Alarm for waking a dozing driver. 4,210,905, Cl. 340-575.000.
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Coors Container Company: *See—*
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Coplan, Myron J.; and Sebring, Robert E., to Albany International Corp. Hollow filament separatory module. 4,210,536, Cl. 210-321.00R.
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Cornell, Stephen W. Polyolefin containers having improved gas barrier properties. 4,210,573, Cl. 260-42.150.
Corning Glass Works: *See—*
Amos, Lynn G.; Beechey, Charles M.; and Rogers, Charles H., 4,210,026, Cl. 73-425.600.
Andrysick, Chester A., 4,210,433, Cl. 65-66.000.
Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, 4,210,386, Cl. 350-96.310.
Bachman, David L.; and Voorhees, Francis W., 4,210,431, Cl. 65-3.00C.
Kellberg, Howard E.; and Wilder, Arthur H., 4,210,126, Cl. 126-443.000.
Cortes-Garza, Rodrigo. Bathroom fixtures and process of manufacture. 4,209,862, Cl. 4-187.00R.
Couchoud, Paul, to Rhone-Poulenc-Textile. Copolyesters prepared from phosphorus compounds which can be shaped and which have reduced flammability. 4,210,740, Cl. 528-167.000.
Courbot, Pierre, to Societe Anonyme DBA. Clutch assembly. 4,210,233, Cl. 192-89.00B.
Coviello, Allan J.; Bernardin, Frederick E.; and Kalb, Kathryn R., to Thetford Corporation. Closed loop waste treatment and water recycling toilet system. 4,210,528, Cl. 210-4.000.
Cox, Eugene R.: *See—*
Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., 4,210,925, Cl. 357-46.000.
Crankshaw, Michael; and Kucheck, Leo, to Label-Aire Inc. Label spreader applicator. 4,210,484, Cl. 156-542.000.
Crano, John C.: *See—*
DeLue, Norman R.; and Crano, John C., 4,210,631, Cl. 423-292.000.
Criscitelli, Fred J., to United States Postage Corporation. Stamp book vending machine. 4,210,236, Cl. 194-1.00D.
Crochiere, Ronald E.; Sequin, Carlo H.; and Tompsett, Michael F., to Bell Telephone Laboratories, Incorporated. Linear differential charge splitting input for charge coupled devices. 4,210,825, Cl. 307-221.00D.
Croker, John H., to Gastetner Limited. Planographic printing plate and process for making the same. 4,210,081, Cl. 101-465.000.
Crooks, Graham R., to Imperial Chemical Industries Limited. Reactivation of spent copper containing hydrocyanation catalysts. 4,210,558, Cl. 252-415.000.
Crosby, John; and Terry, Bernard W. H., to Imperial Chemical Industries Limited. Halogenated hydrocarbons, useful as insecticide intermediates, and methods for their preparation. 4,210,611, Cl. 260-653.500.
Crow, John D.: *See—*
Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, 4,210,386, Cl. 350-96.310.
CTS Corporation: *See—*
Van Benthuysen, John D., 4,210,896, Cl. 338-159.000.
Culbertson, Thomas L., to Ford Motor Company. Electrical connector and housing. 4,210,382, Cl. 339-192.00R.
Cummings, to Texaco Inc. Glycol polyether-acrylic acid-amine reaction product for fuel and mineral oils. 4,210,425, Cl. 44-72.000.
Cummins Engine Company, Inc.: *See—*
Collings, Charles A., Jr., 4,210,338, Cl. 277-76.000.
Cunningham, Robert F. Method of and apparatus for auxiliary control of fluid operated steering apparatus for ships, boats and the like. 4,209,986, Cl. 60-403.000.
Curnutt, Charles. Controlled shock absorber. 4,210,344, Cl. 280-709.000.
Curnutt, Charles R. Anti-lock power brake. 4,210,369, Cl. 303-116.000.
Dahlberg, Arvid S.: *See—*
Brelen, Hans E. O.; Dahlberg, Arvid S.; and Aberg, Ulf L., 4,210,432, Cl. 65-4.00R.
Dahms, James B., to PPG Industries, Inc. Method of reducing KCl tailings loss from evaporation. 4,210,421, Cl. 23-303.000.
Dai Nippon Toryo Co., Ltd.: *See—*
Yaguchi, Masachika, 4,210,390, Cl. 350-357.000.
Daicel Ltd.: *See—*
Ikeda, Tadayoshi; Omori, Yasuzi; and Ikeda, Saizo, 4,210,696, Cl. 428-212.000.
Daimler-Benz Aktiengesellschaft: *See—*
Breitschwerdt, Werner; Jahn, Walter; Rapp, Herbert; and Klein, Wilhelm, 4,210,365, Cl. 297-481.000.
Dalibor, Horst, to Hoechst Aktiengesellschaft. Process for the manufacture of soluble copolymers which contain hydroxyl groups and which copolymers can be crosslinked with organic polyisocyanates. 4,210,702, Cl. 428-413.000.
Dameron, H. Clifford, Jr.; Martin, Guy E.; and Brouwer, Nicholaas L., to Aluminum Company of America. Roll compacting of stranded conductor. 4,210,012, Cl. 72-235.000.
D'Amico, John J.: *See—*
Bollinger, Frederic G.; and D'Amico, John J., 4,210,439, Cl. 71-90.000.
Dammann, Ehrhard: *See—*
Friedel, Klaus; Dammann, Ehrhard; Pohl, Hans-Joachim; Schutt, Wolfgang; and Jensen, Hans-Ludwig, 4,210,504, Cl. 204-180.00R.
Danfoss A/S: *See—*
Andresen, Jens N., 4,209,989, Cl. 60-527.000.
Andresen, Jens N., 4,210,030, Cl. 74-43.000.
Daniels, Raymond R.; and Scheid, Norman W. Chemical injection assembly. 4,210,175, Cl. 137-564.500.
Danko, Peter J. Method of making a chair. 4,210,182, Cl. 144-317.000.
Dany, Franz-Josef; Thummler, Ursus; Wortmann, Joachim; Staendeke, Horst; and Kandler, Joachim, to Hoechst Aktiengesellschaft. Stabilized red phosphorus. 4,210,630, Cl. 423-265.000.
Dardoufas, Kimon C.: *See—*
Marshall, Robert M.; and Dardoufas, Kimon C., 4,210,700, Cl. 428-395.000.
Darms, Roland; Wyler, Siegfried; and Greber, Gerd, to Ciba-Geigy Corporation. Silicon-modified imidyl-phthalic acid derivatives. 4,210,588, Cl. 260-326.00E.
David, Agoston: *See—*
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.
Davidson, John J.; and Smith, David A., to Aluminum Company of America. Electrocoating flow control electrode and method. 4,210,507, Cl. 204-181.00R.
Davies, Evan E., to Textron Inc. Fixture for holding zipper sliders. 4,209,897, Cl. 29-768.000.
Davila, Jose E.: *See—*
Gomez, Jim H.; and Davila, Jose E., 4,210,801, Cl. 235-92.0AC.
Davis, Bernard H.; and Welsh, Thomas M., to H. H. Robertson Company. Sheet metal ribbon coating method. 4,210,682, Cl. 427-178.000.
Davis, David E. Circuit test clamp. 4,210,383, Cl. 339-200.00P.
Davis, Frederick C.; and Beer, Richard L., to Companion Pty. Limited. Collapsible barbecues. 4,210,118, Cl. 126-25.00R.
Davis, James E.: *See—*
Burton, James R.; Cantwell, Vernon W.; and Davis, James E., 4,210,544, Cl. 252-47.500.
Davis Refractories, Inc.: *See—*
Bowers, Donald J., 4,210,453, Cl. 106-56.000.
Davis, Thomas C., Sr.: *See—*
Carroll, Herbert J.; and Davis, Thomas C., Sr., 4,210,314, Cl. 254-8.00B.
Davy-Loewy Limited: *See—*
Dobson, John C., 4,210,288, Cl. 239-597.000.
Dawson, Gaynor W.; Leiper, Hugh C.; and Brix, Arthur T., to Herds, Inc. Apparatus and a process for treating waste. 4,210,680, Cl. 426-641.000.
Daymarc Corporation: *See—*
Bachman, Walter S.; and Cedrone, Nicholas J., 4,209,959, Cl. 53-475.000.
Dayus, Barry R.: *See—*
Tatum, James R.; and Dayus, Barry R., 4,210,070, Cl. 98-40.00D.
Deere & Company: *See—*
Jackson, William W.; Steinbach, James G.; and Geiger, Lon R., 4,210,212, Cl. 172-645.000.
Kittle, Carl E.; and Wittren, Richard A., 4,209,984, Cl. 60-328.000.
Lysenko, George P.; and Smith, Richard J., 4,210,350, Cl. 292-86.000.
Dehnert, Johannes; Kurtz, Walter; and Lamm, Gunther, to BASF Aktiengesellschaft. Azo dyes of the 2,6-di(substituted) amino pyridine series. 4,210,583, Cl. 260-156.000.
De Jonckheere, Raphael, to Societe Anonyme dite: Consortium General Textile. Disposable nappy for a baby. 4,210,143, Cl. 128-287.000.
Deleuze, Michel; Boutin, Francois-Regis; and Marchive, Daniel, to Forges de Crans. Aluminum alloy for enamelling. 4,210,446, Cl. 75-148.000.
DeLong, Donald C., to Eli Lilly and Company. Antiviral combinations. 4,210,647, Cl. 424-250.000.
DeLue, Norman R.; and Crano, John C., to PPG Industries, Inc. Preparation of boron trichloride. 4,210,631, Cl. 423-292.000.
de Montmollin, Rene; and Schutz, Hans-Ulrich, to Ciba-Geigy Corporation. Water-soluble pyrazolone-imide containing azo dyestuffs. 4,210,582, Cl. 260-154.000.
Dempsey, Russell M.; Coker, Thomas G.; and La Conti, Anthony B., to General Electric Company. Generation of halogens by electrolysis of hydrogen halides in a cell having catalytic electrodes bonded to a solid polymer electrolyte. 4,210,501, Cl. 204-129.000.
Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, to Ciba-Geigy Corporation. Novel naphthoylene-perinones disperse dyestuffs. 4,210,757, Cl. 546-52.000.
Dennhoven, Manfred; and Kunze, Claus, to Heimann GmbH. Drive for moveable shield in luggage screening apparatus. 4,210,811, Cl. 250-358.00R.
Dent, Enid-Mary; and Anderson, Arthur A., to Capability Brown Limited. Plant growth package. 4,209,945, Cl. 47-84.000.
Derderian, Harry A.: *See—*
Pronovost, Jacques O.; and Derderian, Harry A., 4,209,980, Cl. 60-517.000.
Desjardins, Claude: *See—*
Ewing, Larry L.; and Desjardins, Claude, 4,210,644, Cl. 424-239.000.
Deuser, Erich, to Kabushikigaisha OMCO. Massaging device. 4,210,135, Cl. 128-57.000.
Deutschlander, Gert; Rebsamen, August; and Fluck, Rene, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for maintaining constant the weight of article stacks. 4,209,960, Cl. 53-502.000.
Devine, John W., Jr.: *See—*
Nestor, Jack; and Devine, John W., Jr., 4,210,145, Cl. 128-305.000.
Nestor, Jack; and Devine, John W., Jr., 4,210,147, Cl. 128-327.000.
Di Battista, Piero; Fontanelli, Renzo; Gratani, Francesco; and Nelli, Giuseppe, to Montedison S.p.A. Stabilizers for polymers and polymers stabilized thereby. 4,210,576, Cl. 260-45.8NE.

Dick, Donald E.; Metz, Robert L.; and Elliott, Raymond D., to Life Instruments Corporation. Method and apparatus for recording and reproducing on film directly viewable TV video signals. 4,210,932, Cl. 358-130.000.
Dicken, John A., Jr.; and Ash, David B., to General Electric Company. Dishwasher having improved spray arm. 4,210,285, Cl. 239-251.000.
Dickhoff, Winfried: *See*—
Klatzer, Stefan; and Dickhoff, Winfried, 4,210,467, Cl. 148-12.00R.
Didier Engineering GmbH: *See*—
Galow, Manfred; and Stefancik, Nikolaus, 4,210,430, Cl. 55-344.000.
Dietz, Jean: *See*—
Boujet, Jean-Pierre; and Dietz, Jean, 4,210,880, Cl. 333-110.000.
Dimitroff, Edward; and Vitkovits, John A., to Southwest Research Institute. Fuel system for and a method of operating a spark-ignited internal combustion engine. 4,210,103, Cl. 123-1.00A.
DiscoVision Associates: *See*—
Bailey, Jack H.; and Ottaway, Gerald H., 4,210,931, Cl. 358-128.500.
Dixon International Limited: *See*—
Redfarn, Cyril A., 4,210,725, Cl. 521-100.000.
Dobler, Peter: *See*—
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, 4,210,266, Cl. 226-97.000.
Dobson, John C., to Davy-Loewy Limited. Cooling apparatus. 4,210,288, Cl. 239-597.000.
Dr. Werner Freyberg Chemische Fabrik: *See*—
Praxl, Werner; and Ehret, Reiner, 4,210,683, Cl. 427-221.000.
Dodge, George W. Adhesive pad package. 4,210,245, Cl. 206-440.000.
Dodson, Vance H.; and Roberts, Lawrence R., to W. R. Grace & Co. Portland cement-fly ash-aggregate concretes. 4,210,457, Cl. 106-97.000.
Doguchi, Nobushige: *See*—
Hirono, Hatsuo; Nagata, Katsuyuki; and Doguchi, Nobushige, 4,210,499, Cl. 204-38.00A.
Hirono, Hatsuo; Nagata, Katsuyuki; and Doguchi, Nobushige, 4,210,695, Cl. 428-209.000.
Doi, Yoshinao; Fugii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, to Asahi Kasei Kogyo Kabushiki Kaisha. Microporous film battery separator. 4,210,709, Cl. 429-250.000.
Domlim Inc.: *See*—
Rourke, Terence A., 4,210,632, Cl. 423-637.000.
Donaldson, Peter, to Donaldson, Peter; and Moate, David W. Liquid dispensing apparatus with vent valve. 4,210,262, Cl. 222-442.000.
Donatelle, Leo P., to Spanjer Brothers, Inc. Knockdown sign tubular interlocking device. 4,209,927, Cl. 40-607.000.
Donnelley, James R., to Stevenson Industries. Guide mechanism for self-guiding stretch-wrap machine. 4,209,961, Cl. 53-588.000.
Donovan, John S. Gas operated automatic weapon. 4,210,060, Cl. 89-192.000.
Dooley, Martin F.: *See*—
Feldman, Nicholas; Ryer, Jack; and Dooley, Martin F., 4,210,424, Cl. 44-62.000.
Doppner, Detlef: *See*—
Hoffmann, Klaus; and Doppner, Detlef, 4,210,918, Cl. 346-75.000.
Dore, Jacques P., to Societe Anonyme Automobiles Citroen; and Automobiles Peugeot. Transmission joint with bellows dust-guard. 4,210,002, Cl. 64-32.00F.
Dorman, Linneaus C.; and Mani, Inder, to Dow Chemical Company, The. Method of coupling a protein to an epoxylated latex. 4,210,723, Cl. 435-180.000.
Dormann, Gunter: *See*—
Obendorf, Johann; Dormann, Gunter; Gras, Rainer; and Wolf, Elmar, 4,210,687, Cl. 428-35.000.
Dosmann, Joseph B. Space heater heat recovery system. 4,210,102, Cl. 122-20.00B.
Doucette, Edward I.; and Shelley, Samuel P., to Doucette Industries, Inc. Heat exchange system. 4,210,199, Cl. 165-70.000.
Doucette Industries, Inc.: *See*—
Doucette, Edward I.; and Shelley, Samuel P., 4,210,199, Cl. 165-70.000.
Dow Chemical Company, The: *See*—
Baggett, Joseph M., 4,210,741, Cl. 528-196.000.
Dorman, Linneaus C.; and Mani, Inder, 4,210,723, Cl. 435-180.000.
Frenier, Wayne W.; and Settineri, William J., 4,210,552, Cl. 252-151.000.
Metcalf, Arthur S.; and Eilers, Louis H., 4,210,455, Cl. 106-90.000.
Snover, John A.; and Caines, R. Scott, 4,210,621, Cl. 264-516.000.
Wilson, Charles A.; and Mixan, Craig E., 4,210,645, Cl. 424-250.000.
Dowdflor Corporation: *See*—
Regan, Ernest E.; and McCann, Thomas J., 4,210,693, Cl. 428-152.000.
Doyel, John S. Hand-held cleaning device with snout-like sweep tunnel. 4,209,870, Cl. 15-97.00R.
Doyel, John S. Hand-operated kitchen appliance for drying vegetables and the like. 4,209,916, Cl. 34-58.000.
Draft Systems, Inc.: *See*—
Fallon, Merton R.; and Clements, Thomas W., 4,210,172, Cl. 137-504.000.
Draghi, James A.: *See*—
Marquis, Edgar E.; and Draghi, James A., 4,210,824, Cl. 307-141.000.
Dragotta, Peter. Medicine dropper cap and bulb assembly apparatus. 4,209,899, Cl. 29-783.000.
Drake, Cyril F., to International Standard Electric Corporation. Anti-corrosion compositions. 4,210,575, Cl. 260-42.520.
Dresser Industries, Inc.: *See*—
Blanton, James R., 4,210,214, Cl. 175-297.000.
Koskie, Earl T., Jr., 4,209,890, Cl. 29-450.000.
Dreyer, Bernard F.; and Paglericcio, Paul F. Hair styling device. 4,210,162, Cl. 132-9.000.
Driscoll, Gary L., to Sun Oil Company of Pennsylvania. Process for making synthetic paper pulp. 4,210,487, Cl. 162-146.000.
Dudar, Klaus; Seliger, Ewald; Hubner, Gertraude; and Banse, Wilhelm, to VEB Rationalisierung Halle. Process and apparatus for the acceleration of the ripening of spirits. 4,210,676, Cl. 426-238.000.
Duffield, Albert J.: *See*—
Silva, Joseph W.; and Duffield, Albert J., 4,209,889, Cl. 29-432.000.
Dugois, Jean-Pierre: *See*—
Morel, Paul; and Dugois, Jean-Pierre, 4,210,514, Cl. 204-243.00M.
Dundon, John P.; Klingsberg, Erwin; and Bright, John H., to American Cyanamid Company. Process for preparing aryl[4,4'-bis(di-loweralkyl-amino)benzhydryl]sulfones. 4,210,601, Cl. 260-570.00D.
Dunham-Bush, Inc.: *See*—
Falk, Donald G.; and Armstrong, William J., 4,209,999, Cl. 62-344.000.
Falk, Donald G.; and Armstrong, William J., 4,209,999, Cl. 62-344.000.
Shaw, David N., 4,209,996, Cl. 62-175.000.
Shaw, David N., 4,209,998, Cl. 62-324.000.
Du Pont de Nemours, E. I., and Company: *See*—
Bigelow, John H., 4,210,716, Cl. 430-615.000.
Hay, James V., 4,210,668, Cl. 424-298.000.
Inskip, Harold K., 4,210,705, Cl. 428-500.000.
Munger, Stanley H.; and Pine, Herbert J., 4,210,712, Cl. 430-275.000.
Dupro AG: *See*—
Maier, Siegfried, 4,209,872, Cl. 15-179.000.
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., to Smith Kline & French Laboratories Limited. Pharmacologically active 1,3-bis[1-(2-heteroalkylthio)ethylamino)-2-nitrovinyl-1-amino]propane derivatives. 4,210,652, Cl. 424-263.000.
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, to Smith Kline & French Laboratories Limited. Amidinosulphonic acid derivatives. 4,210,658, Cl. 424-273.00R.
Dutcher, Daniel P., to Champion International Corporation. Tub-shaped carton and blank for forming same. 4,210,271, Cl. 229-1.50B.
Dutton, Daniel R.: *See*—
Login, Robert B.; and Dutton, Daniel R., 4,210,685, Cl. 427-361.000.
Dworsky, Lawrence N.: *See*—
Enderby, Ralph T.; and Dworsky, Lawrence N., 4,210,886, Cl. 333-24.200.
Dyce, John W.; and Buczak, Ronald F., to Bendix Corporation, The. Solder pack and method of manufacture thereof. 4,209,893, Cl. 29-522.00R.
Dyer, Robert E., to Sangamo Weston, Inc. Solid state power outage recording circuit. 4,210,937, Cl. 360-6.000.
Dynamic Sports concepts, Inc.: *See*—
Kosbab, John V., 4,210,330, Cl. 273-106.50B.
Dzaack, Walter J., to Emerson Electric Co. Electric heating units. 4,210,799, Cl. 219-541.000.
Eastman Kodak Company: *See*—
Clark, Gary T.; and Weaver, Max A., 4,210,586, Cl. 260-207.100.
Trotter, Jimmy R.; Joyner, Frederick B.; and McConnell, Richard L., 4,210,570, Cl. 260-33.6AQ.
Eaton Corporation: *See*—
Collins, Marcus H., 4,210,482, Cl. 156-415.000.
Eckardt, Helmut; and Ehritt, Jurgen, to Schloemann-Siemag Aktiengesellschaft. Apparatus for forming plastic. 4,210,616, Cl. 264-45.100.
ECO Motor Industries Ltd.: *See*—
Pronovost, Jacques O.; and Derderian, Harry A., 4,209,980, Cl. 60-517.000.
Ecodyne Corporation: *See*—
Butterworth, Donald J.; and Ryan, Leo F., 4,210,537, Cl. 210-323.00T.
Ecolaire Incorporated: *See*—
Boyer, Robert C.; and Williams, George J., 4,210,202, Cl. 165-162.000.
Egan, William E., to Goodyear Tire & Rubber Company, The. Pneumatic tire having self-sealing feature. 4,210,187, Cl. 152-347.000.
Eglington, Alfred J.; Howarth, Thomas T.; and Corbett, David F., to Beecham Group Limited. Side chain sulphoxide metabolites. 4,210,662, Cl. 424-274.000.
Ehret, Reiner: *See*—
Praxl, Werner; and Ehret, Reiner, 4,210,683, Cl. 427-221.000.
Ehritt, Jurgen: *See*—
Eckardt, Helmut; and Ehritt, Jurgen, 4,210,616, Cl. 264-45.100.
Eilers, Louis H.: *See*—
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El Paso Products Company: *See*—
Cihonski, John L., 4,210,603, Cl. 260-580.000.
Eldec Corporation: *See*—
Godden, Glenn S., 4,210,216, Cl. 177-134.000.
Elecktrokemiska AB: *See*—
Moree, Hans G. E.; and Grunewald, Helmut, 4,210,461, Cl. 134-11.000.
Electric Power Research Institute, Inc.: *See*—
Hildebrand, B. Percy, 4,210,028, Cl. 73-598.000.
Perry, Elijah R., 4,210,774, Cl. 174-140.00R.

Electro Controls Inc.: *See*—
Labrum, Joseph H., 4,210,955, Cl. 362-321.000.
Elektro-Thermit GmbH.: *See*—
Kempa, Bernd-Joachim, 4,210,300, Cl. 246-430.000.
Elfotec A.G.: *See*—
Forgo, Gabor, 4,210,448, Cl. 430-126.000.
Elfring, Gary C.: *See*—
Huber, William B.; Bower, Ian L.; Flynn, James A.; and Elfring, Gary C., 4,210,785, Cl. 179-100.1PS.
Eli Lilly and Company: *See*—
DeLong, Donald C., 4,210,647, Cl. 424-250.000.
Paschal, Gloria C.; and Thompson, Gerald L., 4,210,584, Cl. 260-244.400.
Takruri, Harun; and Chavers, Jane E., 4,210,633, Cl. 424-80.000.
Elkawi AG: *See*—
Jaeger, Karl H., 4,210,634, Cl. 424-101.000.
Elliott, Raymond D.: *See*—
Dick, Donald E.; Metz, Robert L.; and Elliott, Raymond D., 4,210,932, Cl. 358-130.000.
Elmeg-Electro-Mechanik GmbH: *See*—
Zielke, Alfred, 4,210,787, Cl. 200-5.0EA.
Ely, John W.; and Tinsley, John M., to Halliburton Company. High temperature well treating with crosslinked gelled solutions. 4,210,206, Cl. 166-294.000.
Emerson Electric Co.: *See*—
Dzaack, Walter J., 4,210,799, Cl. 219-541.000.
Moore, James L.; and Ewing, Lenoard G., 4,209,902, Cl. 30-276.000.
Emming, Joseph L., to J. I. Case Company. Hydraulic liquid reservoir with internal baffle. 4,210,176, Cl. 137-573.000.
Emmons, William D., to Rohm and Haas Company; and Beckman Instruments, Inc. Ambient or low-temperature curable coatings. 4,210,565, Cl. 260-29.6TA.
Enderby, Ralph T.; and Dworsky, Lawrence N., to Motorola, Inc. Isolator having reactive neutralizing means and predetermined angle between input-output windings. 4,210,886, Cl. 333-24.200.
Endress u. Hauser GmbH u. Co.: *See*—
Kienberger, Karl-Heinz; and Stock, Don J. R., 4,210,915, Cl. 343-786.000.
Engdahl, Arnold B., Jr. Packaging for retortable pouch. 4,210,248, Cl. 206-525.000.
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased (by Unterstenhofer, Ilse, heiress-at-law); Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, to BASF Aktiengesellschaft. Manufacture of thermoplastics fibrids. 4,210,615, Cl. 264-11.000.
English Clays Lovering Pochin & Company, Limited: *See*—
Taylor, John H., 4,210,490, Cl. 162-175.000.
Enomoto, Hiroshi: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.
Enrique Mitman: *See*—
Mitman, Enrique; and Sadovnik, Isaac, 4,210,041, Cl. 83-32.000.
Erba, Mario. Automatic machine for continuously producing tinned strap caps fitted with opening devices and devices therefor. 4,210,091, Cl. 113-113.00D.
Erikson, Keith W.: *See*—
Erikson, Kenneth W.; and Erikson, Keith W., 4,210,033, Cl. 74-424.80A.
Erikson, Kenneth W.; and Erikson, Keith W., to Kerk Motion Products, Inc. Anti-backlash nut. 4,210,033, Cl. 74-424.80A.
Eriksson, Goran, to Roland, Jack. Hoisting apparatus. 4,210,352, Cl. 294-81.00R.
Ernest, Raymond; and Nestor, Jack, to Ernest, Raymond. Toothbrush with improved interproximal and free gingival margin accessibility. 4,209,871, Cl. 15-167.00R.
Eross, Bela, to Instrumentation Industries, Inc. Positive pressure valves. 4,210,174, Cl. 137-528.000.
Erste Osterreichische Zahnraderfabrick Rudolf Kienast Gesellschaft m.b.H.: *See*—
Kienast, Hans, 4,210,291, Cl. 241-110.000.
Escher, William J. D. Multimode solar energy collector and process. 4,210,463, Cl. 136-89.0PC.
Etablissements Carpano & Pons: *See*—
Saligny, Yves, 4,210,375, Cl. 339-14.00L.
Ethyl Corporation: *See*—
Huang, Yun-Yang, 4,210,597, Cl. 260-449.00R.
Stephens, Ruth E., 4,210,574, Cl. 260-42.160.
Etzel, James E.; and Keramida, Vasiliki, to Purdue Research Foundation. Treatment of metal plating wastes with an unexpanded vermiculite cation exchange column. 4,210,530, Cl. 210-38.00B.
Euzen, Jean-Paul; and Scemama, Patrick, to Institut Francais du Petrole; and Societe Anonyme Pipe Line Service. Device for following the variations in the composition of a flowing heterogeneous liquid mixture. 4,210,015, Cl. 73-61.10R.
Evans, Alton, Jr., to Owens-Corning Fiberglas Corporation. Method of and apparatus for making air filters. 4,210,067, Cl. 93-1.00F.
Ewe, Kurt; and Linzenkirchner, Edmund, to Siemens Aktiengesellschaft. Control device with an integrating position drive. 4,210,853, Cl. 318-630.000.
Ewing, Larry L.; and Desjardins, Claude, to Johns Hopkins University, The. Male contraception. 4,210,644, Cl. 424-239.000.
Ewing, Lenoard G.: *See*—
Moore, James L.; and Ewing, Lenoard G., 4,209,902, Cl. 30-276.000.
Exxon Enterprises, Inc.: *See*—
Hurst, Ralph, 4,210,831, Cl. 310-13.000.
Exxon Research & Engineering Co.: *See*—
Baker, Richard H., 4,210,826, Cl. 307-254.000.
Confer, Robert G., 4,210,503, Cl. 204-158.00R.
Feldman, Nicholas; Ryer, Jack; and Dooley, Martin F., 4,210,424, Cl. 44-62.000.
Makowski, Henry S.; Lundberg, Robert D.; and Klein, Robert R., 4,210,568, Cl. 260-32.400.
Wilson, Edward L., Jr.; and Mitchell, Willard N., 4,210,518, Cl. 208-10.000.
F. A. Hughes and Company Limited: *See*—
Odds, David J. H., 4,209,952, Cl. 51-415.000.
Fabisiewicz, Eugene, to Baxter Travenol Laboratories, Inc. Method for bonding a plastic tubing to a metal needle and the needle assembly formed thereby. 4,210,479, Cl. 156-273.000.
Fahrenkrog-Petersen, Dieter: *See*—
Ritter, Peter; and Fahrenkrog-Petersen, Dieter, 4,210,951, Cl. 361-391.000.
Falk, Donald G.; and Armstrong, William J., to Dunham-Bush, Inc.; General Electric Company; and Dunham-Bush, Inc. Household refrigerator with through-the-door ice service. 4,209,999, Cl. 62-344.000.
Fallon, Merton R.; and Clements, Thomas W., to Draft Systems, Inc. Apparatus for dispensing fluid under pressure. 4,210,172, Cl. 137-504.000.
Fansteel Inc.: *See*—
Berry, Robert W., Jr., 4,210,406, Cl. 408-223.000.
Farfor, James D.; and Gall, Huba, to Rocla Concrete Pipes Limited. Reinforcement fibres. 4,210,009, Cl. 72-186.000.
Faris, Sadeg M., to International Business Machines Corporation. Polarity switch incorporating Josephson devices. 4,210,921, Cl. 357-5.000.
Farrington, Gregory C., to General Electric Company. Sealed lithium-type electrochemical cell. 4,210,707, Cl. 429-105.000.
Fattinger, Volker: *See*—
Schneider, Jurg; and Fattinger, Volker, 4,210,428, Cl. 55-223.000.
Faulkner, Lois V.: *See*—
Summers, William A.; Markunas, Peter C.; and Faulkner, Lois V., 4,210,609, Cl. 568-947.000.
Fauser, Fritz: *See*—
Meyer, Burton C.; Kripak, Leonid; and Fauser, Fritz, 4,209,940, Cl. 46-145.000.
Fauth, Gunter, to AGFA-Gevaert, A.G. Photographic apparatus. 4,210,392, Cl. 354-21.000.
Fearing, D. David, to Fearing Manufacturing Co., Inc. Marking tag. 4,209,924, Cl. 40-301.000.
Fearing Manufacturing Co., Inc.: *See*—
Fearing, D. David, 4,209,924, Cl. 40-301.000.
Feather, Jack V. Body engaging exercising device. 4,210,323, Cl. 272-137.000.
Feder, Joseph: *See*—
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,210,718, Cl. 435-41.000.
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,210,719, Cl. 435-41.000.
Fee, Graham M., to True Temper Corporation. Spring type anchors. 4,210,281, Cl. 238-327.00R.
Fehlau, Robert; Schlussel, Peter; and Schneider, Matthias, to Hellige GmbH. Medical diagnostic device for determining bleeding times and behavior of bleedings from a standardized wound. 4,210,153, Cl. 128-637.000.
Feldkamper, Richard, to Windmoller & Holscher. Vacuum control for sheet applicator machines. 4,210,320, Cl. 271-108.000.
Feldman, Nicholas; Ryer, Jack; and Dooley, Martin F., to Exxon Research & Engineering Co. Combination of ethylene polymer, normal paraffinic wax and nitrogen containing compound (stabilized, if desired, with one or more compatibility additives) to improve cold flow properties of distillate fuel oils. 4,210,424, Cl. 44-62.000.
Felix, Rolf: *See*—
Fleisch, Herbert A.; and Felix, Rolf, 4,210,643, Cl. 424-204.000.
Felten, Gilbert A., to Goodyear Tire & Rubber Company, The. Method for parting ply stock between side-by-side cords or wires. 4,210,042, Cl. 83-49.000.
Fender, William H., to Solardyne, Inc. Water flow controller device. 4,210,125, Cl. 126-437.000.
Ferdelman, Donald C., to White Consolidated Industries, Inc. Controls for room air conditioner with timer and power saver. 4,209,995, Cl. 62-157.000.
Fernstrom, John D.: *See*—
Wurtman, Richard J.; Wurtman, Judith J.; and Fernstrom, John D., 4,210,637, Cl. 424-180.000.
Ferranti Limited: *See*—
Walters, Frank, 4,210,838, Cl. 313-198.000.
Ferrara, Angelo: *See*—
Ricciardi, Ronald J.; Ferrara, Angelo; and Hartmann, Joseph L., 4,210,963, Cl. 364-567.000.
Fiat-Allis Construction Machinery, Inc.: *See*—
Boersma, Richard F., 4,210,362, Cl. 296-190.000.
Filkins, David E.: *See*—
Wallin, Lloyd A.; and Filkins, David E., 4,209,913, Cl. 34-21.000.

Fingerle, Karl; and Lotzwik, Gerd, to Fortuna-Werke Maschinenfabrik GmbH. Band knife splitting machine feed roll arrangement. 4,210,051, Cl. 83-871.000.

Fingermatrix, Inc.: *See*—
Swonger, Claron W.; Bowers, Dan M.; and Stock, Robert M., 4,210,899, Cl. 340-146.30E.

Fischer, Emil, to Albert-Frankenthal AG. Rotary stapling machine. 4,210,268, Cl. 227-81.000.

Fischer, Johanna: *See*—
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,656, Cl. 424-273.00R.
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,657, Cl. 424-273.00R.

Fisher, Arnold R., to Libbey-Owens-Ford Company. Scoring mechanism. 4,210,052, Cl. 83-881.000.

Fisher, Arthur W., III: *See*—
Hermsdorf, Horst G.; and Pitts, Clyde T., 4,209,982, Cl. 60-325.000.

Fisher, James A.: *See*—
Byrd, Fred; and Fisher, James A., 4,210,097, Cl. 118-65.000.

Fleer, Ernst O., to Siemens Aktiengesellschaft. Mobile dental unit. 4,209,908, Cl. 433-78.000.

Fleisch, Herbert A.; and Felix, Rolf, to Procter & Gamble Company, The. Phosphonate pharmaceutical composition. 4,210,643, Cl. 424-204.000.

Flett, Douglas S., to Matthey Rustenburg Refiners (Proprietary) Limited. Process for separating cobalt and nickel by solvent extraction. 4,210,625, Cl. 423-139.000.

Flowtec AG: *See*—
Boss, Jurg A., 4,210,022, Cl. 73-861.170.

Fluck, Rene: *See*—
Deutschlander, Gert; Rebsamen, August; and Fluck, Rene, 4,209,960, Cl. 53-502.000.

Flumm, Paul T., to Timex Corporation. Means of setting a solid state watch. 4,209,976, Cl. 368-187.000.

Flynn, James A.: *See*—
Huber, William B.; Bower, Ian L.; Flynn, James A.; and Elfring, Gary C., 4,210,785, Cl. 179-100.1PS.

FMC Corporation: *See*—
Brubaker, Gaylen R., 4,210,551, Cl. 252-102.000.

Fogg, Lawrence D., III, to Lockhead Corporation. Laminated composite structural fitting and method of making. 4,210,694, Cl. 428-174.000.

Foley, James W.: *See*—
Cincotta, Louis; and Foley, James W., 4,210,752, Cl. 544-33.000.

Fong, Willie, deceased: *See*—
Pardo, Clay E., Jr.; Foster, Robert E.; and Fong, Willie, deceased, 4,210,415, Cl. 8-128.00A.

Fong, Yukiye, executrix: *See*—
Pardo, Clay E., Jr.; Foster, Robert E.; and Fong, Willie, deceased, 4,210,415, Cl. 8-128.00A.

Fontanelli, Renzo: *See*—
Di Battista, Piero; Fontanelli, Renzo; Gratani, Francesco; and Nelli, Giuseppe, 4,210,576, Cl. 260-45.8NE.

Ford, Leland W.; Ramirez, Alberto M.; and Smith, Gerald L., to International Business Machines Corporation. High frequency high voltage power supply. 4,210,858, Cl. 323-22.00T.

Ford Motor Company: *See*—
Culbertson, Thomas L., 4,210,382, Cl. 339-192.00R.
McPherson, James C., 4,210,195, Cl. 164-57.000.

Forest, Roger C. Safety stirrup having a swingaway footrest released by toe-actuated deflector plates. 4,209,962, Cl. 54-49.000.

Forges de Crans: *See*—
Deleuze, Michel; Boutin, Francois-Regis; and Marchive, Daniel, 4,210,446, Cl. 75-148.000.

Forgo, Gabor, to Elfotec A.G. Process for electrophotographic image formation and transfer. 4,210,448, Cl. 430-126.000.

Fors, Jan: *See*—
Sorsa, Erkki; Haukkovaara, Esko; and Fors, Jan, 4,210,747, Cl. 536-60.000.

Fortuna-Werke Maschinenfabrik GmbH: *See*—
Fingerle, Karl; and Lotzwik, Gerd, 4,210,051, Cl. 83-871.000.

Foster, Robert E.: *See*—
Pardo, Clay E., Jr.; Foster, Robert E.; and Fong, Willie, deceased, 4,210,415, Cl. 8-128.00A.

Fotis, Peter: *See*—
Melquist, John L.; Kildahl, Nicholas K.; and Fotis, Peter, 4,210,559, Cl. 252-431.00R.

Foundation: The Assn. of Japan General Denistry, The: *See*—
Ando, Shoichi; Inaba, Kiminobu; and Yoshida, Tomoaki, 4,210,812, Cl. 250-416.0TV.

Fournet-Fayas, Christian, to Agence Nationale de Valorisation de la Recherche (ANVAR). Microwave applicator for radiating microwaves to an elongated zone. 4,210,793, Cl. 219-10.55F.

Fowler, Billy C.: *See*—
Rodgers, James L.; and Fowler, Billy C., 4,210,775, Cl. 178-19.000.

Fox, Austin L.: *See*—
Clayson, Arthur J.; and Fox, Austin L., 4,209,956, Cl. 53-396.000.

Fox Valley Corporation: *See*—
Frye, Dana E.; Novcaski, Russell G.; Mills, Jack; and Horneck, Richard H., 4,210,247, Cl. 206-494.000.

Fraser, Donald L., Jr.; and Tompsett, Michael F., to Bell Telephone Laboratories, Incorporated. High-ratio-accuracy capacitor geometries for integrated circuits. 4,210,950, Cl. 361-329.000.

Frechette, Thomas E., to Royal Business Machines, Inc. Ribbon cartridge with integral anti spool rotation device. 4,210,296, Cl. 242-198.000.

Frederick Electronics Corp.: *See*—
Bowerman, John J.; and Wilson, John F., 4,210,777, Cl. 375-117.000.

Frenier, Wayne W.; and Settineri, William J., to Dow Chemical Company, The. Sulfonium compounds as corrosion inhibitors in aqueous acidic cleaning solutions. 4,210,552, Cl. 252-151.000.

Frenz, Norbert W., Jr.: *See*—
Mead, Ralph T.; Frenz, Norbert W., Jr.; Rudolph, Frank W.; and Greatbatch, Wilson, 4,210,708, Cl. 429-181.000.

Fricano, Phillip J., to Quaker Oats Company, The. Two-walled carton. 4,210,240, Cl. 206-45.310.

Friedel, Klaus; Dammann, Ehrhard; Pohl, Hans-Joachim; Schutt, Wolfgang; and Jensen, Hans-Ludwig, to Jenoptik Jena G.m.b.H. Method for measuring the electrophoretic mobility of particles. 4,210,504, Cl. 204-180.00R.

Frielingsdorf, Hans: *See*—
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.

Fritz, Gary R.: *See*—
Howell, Stephen L.; and Fritz, Gary R., 4,210,054, Cl. 84-1.190.

Fromaget, Georges, to Saint-Gobain Industries. Strand transfer. 4,210,293, Cl. 242-18.00A.

Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., to C. L. Frost & Son, Inc. Chain bracket with strengthened chain supports. 4,210,238, Cl. 198-687.000.

Frye, Dana E.; Novcaski, Russell G.; Mills, Jack; and Horneck, Richard H., to Fox Valley Corporation. Folded sheets of wrapping paper. 4,210,247, Cl. 206-494.000.

Fryman, Richard K.: *See*—
Hodits, Frank W., Jr.; and Fryman, Richard K., 4,209,997, Cl. 62-226.000.

Frymaster Corporation, The: *See*—
Moore, L. Frank; and Price, George M., 4,210,123, Cl. 126-374.000.
Moore, L. Frank; and Price, George M., 4,210,177, Cl. 137-613.000.

Fuelling, William, Jr.; and Heismann, Richard A., to Outboard Marine Corporation. Two-speed forward and reverse self-propel system for walk-behind mowers. 4,209,964, Cl. 56-11.200.

Fugii, Osamu: *See*—
Doi, Yoshinao; Fugii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,210,709, Cl. 429-250.000.

Fuji Photo Film Co., Ltd.: *See*—
Kitajima, Masao; Tachikawa, Hiromichi; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,210,711, Cl. 430-253.000.

Fujikura, Takashi: *See*—
Tamazawa, Kazuharu; Fujikura, Takashi; Kojima, Tadao; and Iwanami, Masaru, 4,210,751, Cl. 544-21.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Imanaka, Hiroshi; and Nishida, Minoru, 4,210,635, Cl. 424-114.000.

Fujita, Kazunori, to Nippon Electric Co., Ltd. Distributed control type telephone switching system. 4,210,782, Cl. 179-18.0ES.

Fujita, Kinya. Orthodontic appliance (bracket and lock pin). 4,209,906, Cl. 433-11.000.

Fujita, Masanori: *See*—
Moritani, Nakanobu; Samejima, Toshihide; Matsumura, Toshio; Oda, Hajime; and Fujita, Masanori, 4,209,975, Cl. 368-186.000.

Fujita, Masao: *See*—
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,210,640, Cl. 424-181.000.

Fujita, Takashi: *See*—
Higuchi, Iwao; and Fujita, Takashi, 4,210,792, Cl. 219-10.49R.

Fujita, Yukio: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.

Fujitsu Limited: *See*—
Iwasaki, Shun-Ichi; and Nakamura, Yoshihisa, 4,210,946, Cl. 360-131.000.
Takagi, Mikio; Kamioka, Hajime; Shimoda, Haruo; and Miyamoto, Hidekazu, 4,210,473, Cl. 148-189.000.

Fujiwara, Yasuo: *See*—
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,210,720, Cl. 435-42.000.

Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kaneko, Yutaka; and Kawasaki, Mikio, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material and method of processing thereof. 4,210,715, Cl. 430-439.000.

Fukahori, Kiyoshi, to Precision Monolithics, Inc. High speed switching circuit. 4,210,830, Cl. 307-362.000.

Fukuda, Kenji: *See*—
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,210,517, Cl. 208-8.0LE.

Fukuichi, Takuro, to Kabushiki Kaisha Daini Seikosha. Digital electronic timepiece having an alarm display. 4,209,972, Cl. 368-71.000.

Furuhata, Takashi: *See*—
Yumde, Yasufumi; and Furuhata, Takashi, 4,210,927, Cl. 358-12.000.

Fushimi, Akihiro; Tabara, Noboru; and Isaki, Mikio, to Pioneer Electronic Corporation. Tape stop detection mechanism for cassette tape recorders. 4,210,944, Cl. 360-74.200.

G.P. Societa per Azichi: *See*—
Seragnoli, Enzo, 4,209,955, Cl. 53-54.000.

Ga-Vehren Engineering Company: *See*—
Ver Mehren, Hubert R., 4,210,318, Cl. 270-79.000.

Gaiser, Dieter: *See*—
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, 4,210,266, Cl. 226-97.000.

Gajewski, Henry; Laurin, Dean G.; Measells, Paul; and Webster, R. Daniel, to John P. Kirby, Esq. Multi-layered plastic sheeting having high clarity, strength, and resistance to water vapor transmission. 4,210,686, Cl. 428-35.000.

Galer, Herbert W., to United States Steel Corporation. Pipe-thread protector. 4,210,179, Cl. 138-96.00T.

Galindez (Aldecoa), Luis, to Ingenieria Del Vidrio, S.A.-Ingevisa. Automatic system and process of shaping and tempering glass pieces. 4,210,434, Cl. 65-104.000.

Gall, Huba: *See*—
Farfor, James D.; and Gall, Huba, 4,210,009, Cl. 72-186.000.

Gallagher, Ruth E.; Goswami, Jagadish C.; Kraft, Paul; and Yu, Arthur J., to Stauffer Chemical Company. Internally plasticized vinyl chloride copolymer composition. 4,210,739, Cl. 526-325.000.

Gallaro, Anthony V.: *See*—
Buescher, William E.; and Gallaro, Anthony V., 4,210,844, Cl. 313-479.000.

Galow, Manfred; and Stefancik, Nikolaus, to Didier Engineering GmbH. Cyclone separator assembly. 4,210,430, Cl. 55-344.000.

Ganellin, Charon R.: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,210,652, Cl. 424-263.000.

Garner, Lloyd L., to Smith International, Inc. Electronic monitoring of rock bit parameters. 4,210,270, Cl. 228-103.000.

Garrett Corporation, The: *See*—
Woodhouse, Geoffrey D.; and Mattson, George B., 4,209,979, Cl. 60-39.040.

Gastetner Limited: *See*—
Croker, John H., 4,210,081, Cl. 101-465.000.

Gatzke, Kenneth G., to Minnesota Mining and Manufacturing Company. Half soap formation for photothermographic emulsions. 4,210,717, Cl. 430-620.000.

Gauthier, R. Raymond. Tubular frame supported, cantilevered chain saw. 4,210,049, Cl. 83-796.000.

Gearhart-Owen Industries, Inc.: *See*—
Brieger, Emmet F., 4,210,018, Cl. 73-155.000.

Gehrke, Gunter; and Hohmann, Walter, to Bayer Aktiengesellschaft. Transfer printing process. 4,210,413, Cl. 8-471.000.

Geiger, Lon R.: *See*—
Jackson, William W.; Steinbach, James G.; and Geiger, Lon R., 4,210,212, Cl. 172-645.000.

General Electric Company: *See*—
Baker, Fred E., 4,210,068, Cl. 93-8.00R.
Barker, Henry P., 4,209,912, Cl. 34-10.000.
Cella, James A., 4,210,596, Cl. 556-436.000.
Chiabrandy, Robert E., 4,210,058, Cl. 89-12.000.
Dempsey, Russell M.; Coker, Thomas G.; and La Conti, Anthony B., 4,210,501, Cl. 204-129.000.
Dicken, John A., Jr.; and Ash, David B., 4,210,285, Cl. 239-251.000.
Falk, Donald G.; and Armstrong, William J., 4,209,999, Cl. 62-344.000.
Farrington, Gregory C., 4,210,707, Cl. 429-105.000.
Hanger, William A., 4,210,404, Cl. 400-124.000.
Lawrance, Richard J.; and Russell, John H., 4,210,512, Cl. 204-257.000.
Mark, Victor, 4,210,765, Cl. 568-726.000.
Relles, Howard M.; and Johnson, Donald S., 4,210,731, Cl. 525-469.000.
Riehl, Mark E., 4,210,815, Cl. 250-445.00R.
Schilling, William F.; and Beltran, Adrian M., 4,210,269, Cl. 228-193.000.
Schroeter, Siegfried H.; and Olson, Daniel R., 4,210,699, Cl. 428-331.000.
Strickland, John J.; and Hoover, Thomas H., 4,209,882, Cl. 29-33.520.
Vodicka, Vincent; and Holub, Fred F., 4,210,841, Cl. 313-221.000.

General Electric Company Limited, The: *See*—
Britton, John, 4,210,850, Cl. 315-290.000.

General Industries, Inc.: *See*—
Grenier, Wilfred J., 4,210,309, Cl. 251-35.000.

General Motors Corporation: *See*—
Jones, Milford F., 4,210,234, Cl. 192-106.100.

General Signal Corporation: *See*—
Sutton, Gary W., 4,210,170, Cl. 137-493.400.

General Tire & Rubber Company, The: *See*—
Neubert, Terry C.; and Anderson, Donald W., 4,210,475, Cl. 156-110.00A.

Gerkema, Jan; and Muijderman, Everhardus A., to U.S. Philips Corporation. Rotary-anode X-ray tube. 4,210,371, Cl. 308-9.000.

Gilbert, Richard, to Stanley Tools Limited. Retractable blade knife. 4,209,900, Cl. 30-162.000.

Gillespie, William S.; and Inglis, Hal L., to American Can Company. Tube forming method. 4,210,477, Cl. 156-203.000.

Gillette Company, The: *See*—
Ascoli, Enzo, 4,210,832, Cl. 310-50.000.
Savage, Paul F.; and Pye, Michael R., 4,210,163, Cl. 132-33.00R.

Gillette, Robert H., to Brammall, Inc. Piston ring honing. 4,209,951, Cl. 51-290.000.

Gillings, Barrie R. D., to University of Sydney. Denture retention. 4,209,905, Cl. 433-189.000.

Gillum, Gary C.; and Klipsch, Paul W., to Klipsch and Associates, Inc. Low frequency folded exponential horn loudspeaker apparatus with bifurcated sound path. 4,210,223, Cl. 181-152.000.

Ginsburgh, Irwin; and McCollum, John D., to Standard Oil Company (Indiana). Induction coil method for detecting underground flame fronts. 4,210,867, Cl. 324-323.000.

Ginsburgh, Irwin; and McCollum, John D., to Standard Oil Company (Indiana). Method for detecting an underground flame front using resistance probes. 4,210,868, Cl. 324-323.000.

Girling Limited: *See*—
Mortimer, Ivan, 4,210,370, Cl. 303-118.000.
Rees, John R., 4,210,229, Cl. 188-18.00A.

Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., to Merrell Toraude et Compagnie. Use of α,α'-dithiobis(β-arylacrylic acid) derivatives to enhance zinc serum and tissue concentrations. 4,210,664, Cl. 424-275.000.

Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., to Merrell Toraude et Compagnie. Use of α,α'-dithiobis(β-arylacrylic acid) derivatives in heavy metal poisoning. 4,210,665, Cl. 424-275.000.

Glasscock, Theodore E., Sr. Shaft puller. 4,209,888, Cl. 29-263.000.

Gliniorz, Lothar: *See*—
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, 4,210,266, Cl. 226-97.000.

Godard, Pierre, to Saft-Societe des Accumulateurs Fixes et de Traction. Method and device for charging secondary electric batteries by primary sources. 4,210,854, Cl. 320-10.000.

Godden, Glenn S., to Eldec Corporation. Heated platform scale. 4,210,216, Cl. 177-134.000.

Golovin, Vasily Y.: *See*—
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

Golstein, Jerome J., to Alpine Roomaire Systems, Inc. Air purifier. 4,210,429, Cl. 55-279.000.

Gomez, Jim H.; and Davila, Jose E., to Transit Systems Technology, Inc. Fare collection system and components thereof. 4,210,801, Cl. 235-92.0AC.

Good, Paul A.: *See*—
Rogers, William L.; Good, Paul A.; and Smith, Richard A., 4,210,964, Cl. 364-578.000.

Goodyear Tire & Rubber Company, The: *See*—
Brown, Jack E., Jr., 4,210,189, Cl. 152-361.0FP.
Egan, William E., 4,210,187, Cl. 152-347.000.
Felten, Gilbert A., 4,210,042, Cl. 83-49.000.

Gordon, David L.: *See*—
Kohnhorst; Earl E.; Summers, Thomas W.; and Gordon, David L., 4,210,157, Cl. 131-8.00R.

Goring, Hermann; List, Hansjorg; Brunswig, Klaus; and Labatzke, Winfried, to Upat GmbH & Co. Anchoring dowel with cetent lugs. 4,210,057, Cl. 85-83.000.

Gorring, Robert L.; and Smith, Robert L., to Mobil Oil Corporation. Catalytic upgrading of refractory hydrocarbon stocks. 4,210,521, Cl. 208-89.000.

Goswami, Jagadish C.: *See*—
Gallagher, Ruth E.; Goswami, Jagadish C.; Kraft, Paul; and Yu, Arthur J., 4,210,739, Cl. 526-325.000.

Goto, Tetsuro: *See*—
Sato, Akihiko; and Goto, Tetsuro, 4,210,394, Cl. 354-234.000.

Gould Inc.: *See*—
Betts, David A., 4,210,898, Cl. 340-58.000.
Salzer, Erwin, 4,210,892, Cl. 337-161.000.

Graber, Elmer A.: *See*—
Hobson, Willis S.; and Graber, Elmer A., 4,210,348, Cl. 285-1.000.

Gram, Hans, to Brodrene Gram A/S. System for transferring articles from a continuously moving feeding conveyor to a receiving conveyor. 4,210,237, Cl. 198-425.000.

Grant, Norman H.: *See*—
Lien, Eric L.; Sarantakis, Dimitrios; and Grant, Norman H., 4,210,636, Cl. 424-177.000.

Graphic Scanning Corp.: *See*—
Vicari, Ronald P.; and Yampol, Barry, 4,210,783, Cl. 179-18.0FC.

Gras, Rainer: *See*—
Obendorf, Johann; Dormann, Gunter; Gras, Rainer; and Wolf, Elmar, 4,210,687, Cl. 428-35.000.

Gratani, Francesco: *See*—
Di Battista, Piero; Fontanelli, Renzo; Gratani, Francesco; and Nelli, Giuseppe, 4,210,576, Cl. 260-45.8NE.

Graupe, Daniel, to United States of America, Veterans' Affairs. System and method for multifunctional control of upper limb prosthesis via EMg signal identification. 4,209,860, Cl. 3-1.100.

Greatbatch, Wilson: *See*—
Mead, Ralph T.; Frenz, Norbert W., Jr.; Rudolph, Frank W.; and Greatbatch, Wilson, 4,210,708, Cl. 429-181.000.

Greber, Gerd: *See*—
Darms, Roland; Wyler, Siegfried; and Greber, Gerd, 4,210,588, Cl. 260-326.00E.
Rody, Jean; Greber, Gerd; and Muller, Helmut, 4,210,578, Cl. 260-45.80N.

Green, Barry P.; and Sciulli, Francis J., to Harris Corporation. Apparatus for determining image areas for printing. 4,210,818, Cl. 250-559.00D.

Greer, Sheldon, to PCR, Inc.; and University of Miami. Antiviral composition and method of treating virus diseases. 4,210,638, Cl. 424-180.000.

Gregorian, Roubik, to American Microsystems, Inc. High pass switched capacitor filter section. 4,210,872, Cl. 330-9.000.

Greiner, Harry; and Preuss, Friedrich, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Apparatus for use on printing presses

to insure optimum color density and to assist in making corrective adjustment. 4,210,078, Cl. 101-136.000.
Grenier, Wilfred J., to General Industries, Inc. Flow control mechanism for flush valve. 4,210,309, Cl. 251-35.000.
Grigo, Ulrich; Merten, Josef; Binsack, Rudolf; and Tresper, Erhard, to Bayer Aktiengesellschaft. Thermoplastic mixtures of polypropylene with ethylene/vinyl acetate and ethylene/propylene copolymers. 4,210,579, Cl. 525-88.000.
Grimes, Donald A., to Bendix Autolite Corporation. Gas sensor with closely wound termination springs. 4,210,510, Cl. 204-195.00S.
Grimes, Jerry. Inspirational inhalation spirometer apparatus. 4,210,155, Cl. 128-727.000.
Grishin, Oleg P.: *See—*
Vykhodtsev, Nikolai A.; Vykhodtseva, Tatyana P.; Bantsekin, Viktor I.; Borisov, Boris K.; and Grishin, Oleg P., 4,210,021, Cl. 73-170.00R.
Groenendyke, Betty, sole heir: *See—*
Groenendyke, Goethe M., deceased; and Hoehn, Gustave L., Jr., 4,210,869, Cl. 324-349.000.
Groenendyke, Goethe M., deceased (by Groenendyke, Betty, sole heir); and Hoehn, Gustave L., Jr., to Mobil Oil Corporation. Rotating telluric field measurements. 4,210,869, Cl. 324-349.000.
Grossman, William C. Fluid power device. 4,210,063, Cl. 91-196.000.
Grunewald, Helmut: *See—*
Moree, Hans G. E.; and Grünewald, Helmut, 4,210,461, Cl. 134-11.000.
Grussen, Jean. One piece molded screw-type bottle cap. 4,210,251, Cl. 215-329.000.
GTE Automatic Electric Laboratories, Inc.: *See—*
McDowell, Jeffrey B., 4,210,243, Cl. 206-332.000.
GTE Products Corporation: *See—*
Mitchell, Robert B.; and Swank, Harry R., 4,210,935, Cl. 358-246.000.
GTE Sylvania Incorporated: *See—*
Buescher, William E.; and Gallaro, Anthony V., 4,210,844, Cl. 313-479.000.
Guerton, Jean P.; Waleckx, Jean; and Monville, Jean M., to SKF Compagnie d'Applications Mechaniques. Resilient coupling device for textile twisting apparatus. 4,209,967, Cl. 57-58.720.
Gulf Research and Development Company: *See—*
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,606, Cl. 568-385.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,607, Cl. 568-385.000.
Kehl, William L., 4,210,560, Cl. 252-437.000.
Mann, James T., 4,210,541, Cl. 252-32.70E.
Mann, James T., 4,210,542, Cl. 252-32.70E.
Sabourin, Edward T.; and Selwitz, Charles M., 4,210,610, Cl. 260-649.00R.
Swift, Harold E., 4,210,768, Cl. 585-250.000.
Gundlach, Robert W., to Xerox Corporation. Imaging method and apparatus. 4,210,080, Cl. 101-426.000.
Günther Rathsack Ingenieurtechnik: *See—*
Rathsack, Gunther; and Hendel, Reinhard, 4,209,910, Cl. 33-185.00R.
Gurney, Gerald W.: *See—*
Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., 4,210,238, Cl. 198-687.000.
Gustafsson, Berth U., to Projectus Industriprodukter Aktiebolag. Method and device for drying machine parts. 4,209,914, Cl. 34-27.000.
Gustavson, Fredrik, to Atlas Copco Aktiebolag. Electric nutrunner. 4,210,852, Cl. 318-459.000.
Gyugyi, Laszlo: *See—*
Rosa, John; and Gyugyi, Laszlo, 4,210,860, Cl. 323-119.000.
H. Goodman & Sons, Inc.: *See—*
Sidelman, Abraham, 4,210,164, Cl. 132-40.000.
H. H. Robertson Company: *See—*
Davis, Bernard H.; and Welsh, Thomas M., 4,210,682, Cl. 427-178.000.
Haas, Edgar; and Kottsieper, Edward, to Herman Schwabe, Inc. Die cutting machine with magnetic holder for accurate die positioning. 4,210,047, Cl. 83-530.000.
Hacke, Hans J., to Siemens Aktiengesellschaft. Intermediate member for mounting and contacting a semiconductor body. 4,210,926, Cl. 357-70.000.
Hagen, Dieter, to Westron of Canada Limited. Mercury lamp for promoting plant growth. 4,210,839, Cl. 313-218.000.
Haley, George D. Cement bonded agglomerate containing boron. 4,210,619, Cl. 264-140.000.
Haley, Roy; Cooper, Brian; and Changani, Pushpkumar D., to Raychem Limited. Wiring harness. 4,210,773, Cl. 174-72.00A.
Hall, James R., to Hughes Tool Company. Drill string shock absorber with improved pin type torque transmission means. 4,210,316, Cl. 267-125.000.
Hall, John B.: *See—*
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,210,767, Cl. 568-345.000.
Halliburton Company: *See—*
Ely, John W.; and Tinsley, John M., 4,210,206, Cl. 166-294.000.
Hallworth, Gerald W.: *See—*
James, Michael; Rand, Paul K.; and Hallworth, Gerald W., 4,210,140, Cl. 128-266.000.
Halmos, Imre A., to American Cyanamid Company. Process for preparing acetylsulfaguanidine. 4,210,593, Cl. 260-397.70R.
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Uniform coloration control in an electrochromic display of the segmented type. 4,210,907, Cl. 340-785.000.
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Complete bleaching of non-selected display electrodes in an electrochromic display drive. 4,210,909, Cl. 340-763.000.
Hamamura, Tadashi; Noda, Isao; Yoshii, Tadashi; Takase, Masao; and Watanabe, Terumi, to Union Carbide Corporation. Process for producing polyurethane foam using as a foam stabilizer an organosilicone oil and a hydrocarbon oil. 4,210,726, Cl. 521-110.000.
Hamanaka, Takamichi: *See—*
Kasamatsu, Yutaka; Hiromatsu, Mutsuo; Takashima, Syuzi; Hosoya, Takasi; and Hamanaka, Takamichi, 4,210,445, Cl. 75-124.000.
Hamlet, Buck C.: *See—*
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., 4,210,358, Cl. 296-100.000.
Hanamura, Takeo: *See—*
Doi, Yoshinao; Fugii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,210,709, Cl. 429-250.000.
Hancu, Theodore, to Societe d'Exploitation de Brevets J.B. Windscreen-wiper blade. 4,209,874, Cl. 15-250.320.
Handschuh, Gerald J., to Beckman Instruments, Inc. Non-high density lipoprotein precipitant. 4,210,557, Cl. 252-408.000.
Hanger, William A., to General Electric Company. Printhead compensation arrangement for printer. 4,210,404, Cl. 400-124.000.
Hansen, Guenter; Merger, Franz; Nestler, Gerhard; and Zeidler, Georg, to BASF Aktiengesellschaft. Dye mixtures for coloring mineral oil products. 4,210,414, Cl. 8-639.000.
Hansen Manufacturing Company, The: *See—*
Blackman, Cornelius P., 4,210,914, Cl. 343-715.000.
Hanshaw, Frank: *See—*
Boodley, Nancy K.; and Hanshaw, Frank, 4,210,130, Cl. 126-449.000.
Hanson, Geoffrey, to Pegler Hattersley Limited. Valve using flexible element. 4,210,312, Cl. 251-258.000.
Hanson, Merlin L.: *See—*
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,210,960, Cl. 364-200.000.
Hara, Kunio, to Nifco Inc. Thermal cut-off fuse. 4,210,893, Cl. 337-407.000.
Harding Development Company: *See—*
Hawk, Gary D., 4,209,883, Cl. 29-116.00R.
Hardinge Brothers, Inc.: *See—*
Brown, Ivan R., 4,210,040, Cl. 82-19.000.
Harer, Helmut; Schulze, Rolf; and Juhasz, Josef, to Robert Bosch GmbH. Apparatus for regulating the current drawn from an electric battery. 4,210,855, Cl. 320-13.000.
Hargassner, Reinhard; Holleis, Gunter; and Hoscher, Rudolf, to Voest-Alpine Aktiengesellschaft. Lifting-table-guide arrangement. 4,210,197, Cl. 164-416.000.
Harris Corporation: *See—*
Beasom, James D., 4,210,875, Cl. 330-261.000.
Green, Barry P.; and Sciulli, Francis J., 4,210,818, Cl. 250-559.000.
Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., 4,210,925, Cl. 357-46.000.
Shah, Manhar L.; and Hunt, William D., 4,210,883, Cl. 333-195.000.
VanMeter, Kenneth R., 4,210,776, Cl. 375-120.000.
Harrison, David V.; Weaver, Roy; and Wilson, Henry G. E., to Shell Internationale Research Maatschappij B.V. Apparatus for treating internal surfaces of walls of a tank. 4,210,098, Cl. 118-317.000.
Hartmann, Joseph L.: *See—*
Ricciardi, Ronald J.; Ferrara, Angelo; and Hartmann, Joseph L., 4,210,963, Cl. 364-567.000.
Hartmann, Ludwig; and Ruzek, Ivo, to Carl Freudenberg, Firma. Spun nonwoven fabric of polyester filaments for use as backing material for a deep-drawable tufted carpet. 4,210,690, Cl. 428-95.000.
Hasegawa, Akira: *See—*
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Hata, Kosei, to Seikenkai. Preparation of yogurt. 4,210,672, Cl. 426-43.000.
Hatono, Akio: *See—*
Sakamoto, Yoshiyasu; Kobayashi, Sumio; and Hatono, Akio, 4,210,023, Cl. 73-290.00R.
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electronic ignition control method and apparatus. 4,210,111, Cl. 123-414.000.
Hatuse, Toshikazu: *See—*
Ode, Sadao; and Hatuse, Toshikazu, 4,210,798, Cl. 219-243.000.
Haukkovaara, Esko: *See—*
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Hawera Probst GmbH & Co.: *See—*
Peetz, Wolfgang; and Klaissle, Siefgried, 4,210,215, Cl. 175-394.000.
Hawk, Gary D., to Harding Development Company. Paint applicator roller construction. 4,209,883, Cl. 29-116.00R.
Hay, James V., to Du Pont de Nemours, E. I., and Company. Insecticidal carbamates. 4,210,668, Cl. 424-298.000.
Hayakawa, Shigeru: *See—*
Nitta, Tsuneharu; Terada, Ziro; and Hayakawa, Shigeru, 4,210,894, Cl. 338-35.000.
Ouchi, Hiromu; Nishida, Masamitsu; and Hayakawa, Shigeru, 4,210,546, Cl. 252-62.900.

Hayashi, Fumio: *See—*
Nishibori, Kengi; Hayashi, Fumio; and Ogawa, Tadashi, 4,210,115, Cl. 123-122.00D.
Hayashi, Hideo; and Sato, Hisatake, to Nippon Oil Company, Ltd. Composite resinous composition. 4,210,733, Cl. 525-529.000.
Hayashida, Takashi: *See—*
Aoki, Jun; Hayashida, Takashi; Komatu, Shigesabroh; Miyakawa, Seii; and Takahasi, Naoki, 4,209,898, Cl. 29-783.000.
Hebert, Harold J. Oyster dredging apparatus. 4,209,920, Cl. 37-55.000.
Heffernan, Patrick M., to Sumari Engineering, Inc. Vacuum valve for introduction of controlled amounts of air into engine systems. 4,210,113, Cl. 123-574.000.
Hegele, Charles D., to Inland Container Corporation. Bottom-unloading bulk container. 4,210,273, Cl. 229-17.00B.
Heilman, Marlin S.; and Langer, Alois A., to Mirowski, Mieczyslaw. Implantable cardioverter with patient communication. 4,210,149, Cl. 128-419.00D.
Heimann GmbH: *See—*
Dennhoven, Manfred; and Kunze, Claus, 4,210,811, Cl. 250-358.00R.
Heismann, Richard A.: *See—*
Fuelling, William, Jr.; and Heismann, Richard A., 4,209,964, Cl. 56-11.200.
Heitmann, Jurgen, to Robert Bosch GmbH. Process and apparatus for digitally clamping pulse code modulated video signals. 4,210,933, Cl. 358-172.000.
Heitmann, Jurgen; and Wilhelm, Rudolf, to Robert Bosch GmbH. Method and system for speed-modified reproduction of video signals stored on video recording tape. 4,210,938, Cl. 360-10.000.
Helene Curtis Industries, Inc.: *See—*
Wagman, Julius, 4,210,161, Cl. 132-7.000.
Hellige GmbH: *See—*
Fehlau, Robert; Schlussel, Peter; and Schneider, Matthias, 4,210,153, Cl. 128-637.000.
Hemingway, Joseph M. Shearguard. 4,209,901, Cl. 30-233.000.
Hendel, Reinhard: *See—*
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Henkel Corporation: *See—*
Virnig, Michael J., 4,210,759, Cl. 546-312.000.
Henkel Kommanditgesellschaft auf Aktien: *See—*
Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,210,416, Cl. 8-139.100.
Henkin, Melvyn L. Altitude conditioning method and apparatus. 4,210,137, Cl. 128-200.240.
Henning, Hans: *See—*
Junemann, Dietrich; and Henning, Hans, 4,210,356, Cl. 296-84.00A.
Henrioulle, Paul: *See—*
Hermans, Jean P.; and Henrioulle, Paul, 4,210,738, Cl. 526-152.000.
Hermans, Jean-Pierre; and Henrioulle, Paul, 4,210,729, Cl. 525-247.000.
Hermans, Jean-Pierre; and Henrioulle, Paul, 4,210,735, Cl. 526-119.000.
Henry, Martine: *See—*
Brossard, Claudine; Henry, Martine; and Raichvarg, Denis, 4,210,641, Cl. 424-180.000.
Henry, Richard D. Approach system with simulated display of runway lights and glide slope indicator. 4,210,930, Cl. 358-103.000.
Herds, Inc.: *See—*
Dawson, Gaynor W.; Leiper, Hugh C.; and Brix, Arthur T., 4,210,680, Cl. 426-641.000.
Herion-Werke AG: *See—*
Koppe, Werner; and Prummer, Rolf, 4,210,167, Cl. 137-375.000.
Herman, Daniel F., to NL Industries, Inc. Surfactants and their use as coupling agents in thermosetting polymers. 4,210,571, Cl. 260-40.00R.
Herman, Daniel F.; and Naughton, Francis C., to NL Industries, Inc. Coupling agents for thermosetting composites. 4,210,572, Cl. 260-40.00R.
Herman Schwabe, Inc.: *See—*
Haas, Edgar; and Kottsieper, Edward, 4,210,047, Cl. 83-530.000.
Hermans, Jean P.; and Henrioulle, Paul, to Solvay & Cie. Catalytic complexes. 4,210,738, Cl. 526-152.000.
Hermans, Jean-Pierre; and Henrioulle, Paul, to Solvay & Cie. Preactivated catalytic complex spogospheres. 4,210,729, Cl. 525-247.000.
Hermans, Jean-Pierre; and Henrioulle, Paul, to Solvay & Cie. Process for the polymerization of α-olefins. 4,210,735, Cl. 526-119.000.
Hermelin, Lars G. Method of watering. 4,210,282, Cl. 239-11.000.
Hermsdorf, Horst G.; and Pitts, Clyde T., to Fisher, Arthur W., III. Low temperature fluid energy conversion system. 4,209,982, Cl. 60-325.000.
Hertel, Wilhelm: *See—*
Husslein, Julius; and Hertel, Wilhelm, 4,210,124, Cl. 126-390.000.
Herzer, Heinz: *See—*
Schmidt, Dietrich; Hofer, Johann; and Herzer, Heinz, 4,210,486, Cl. 156-601.000.
Hessels, Eleutheer A., to Manta, Naamioze Venncotschap. Devices for fitting and removing tires. 4,210,190, Cl. 157-1.240.
Higuchi, Iwao; and Fujita, Takashi, to Tokyo Shibaura Electric Co., Ltd. Induction heating apparatus with load detecting and control circuit. 4,210,792, Cl. 219-10.49R.
Higuchi, Takeru, to Alza Corporation. Osmotic device with compartment for governing concentration of agent dispensed from device. 4,210,139, Cl. 128-260.000.
Hildebrand, B. Percy, to Electric Power Research Institute, Inc. Method and apparatus for ultrasonically measuring concentrations of stress. 4,210,028, Cl. 73-598.000.
Hilfman, Lee; and O'Hara, Mark J., to UOP Inc. Hydrocracking catalyst. 4,210,522, Cl. 208-111.000.
Hill, Edward G., to Continuance Curve Contact Lenses, Inc. Lathe having a guided movable cutter. 4,210,038, Cl. 82-11.000.
Hill, Eugene R.; and Law, Eugene L., to United States of America, Navy. Optimum diversity combining circuit for a plurality of channels. 4,210,871, Cl. 455-137.000.
Hill, Robert H.: *See—*
Matsko, Joseph J.; Hill, Robert H.; Skalka, Paul; and Maier, Alfred E., 4,210,887, Cl. 335-6.000.
Hiromatsu, Mutsuo: *See—*
Kasamatsu, Yutaka; Hiromatsu, Mutsuo; Takashima, Syuzi; Hosoya, Takasi; and Hamanaka, Takamichi, 4,210,445, Cl. 75-124.000.
Hirono, Hatsuo; Nagata, Katsuyuki; and Doguchi, Nobushige, to Yoshida Kogyo K.K. Method of forming colored patterns on aluminum or its alloys. 4,210,499, Cl. 204-38.00A.
Hirono, Hatsuo; Nagata, Katsuyuki; and Doguchi, Nobushige, to Yoshida Kogyo K.K. Method of forming colored patterns on aluminum or its alloys. 4,210,695, Cl. 428-209.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for antifreeze containing aminosilicone-silicate polymers. 4,210,547, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for antifreeze containing organosiloxane-silicate copolymers. 4,210,548, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., to BASF Wyandotte Corporation. Hydroxybenzoic acid as pH buffer and corrosion inhibitor for alkali metal silicate-containing antifreeze compositions. 4,210,549, Cl. 252-76.000.
Hirzy, J. William, to Monsanto Company. Plastifiers, method of preparation and PVC compositions containing same. 4,210,730, Cl. 525-440.000.
Hitachi Koki Company, Limited: *See—*
Yamamoto, Takahiro; and Sugano, Kazuo, 4,210,076, Cl. 101-111.000.
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Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, 4,210,924, Cl. 357-38.000.
Aoki, Jun; Hayashida, Takashi; Komatu, Shigesabroh; Miyakawa, Seii; and Takahasi, Naoki, 4,209,898, Cl. 29-783.000.
Kurosawa, Yukio; Sugawara, Hiroyuki; and Kawakubo, Yukio, 4,210,790, Cl. 200-144.00B.
Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, 4,210,942, Cl. 360-65.000.
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,210,842, Cl. 313-403.000.
Obayashi, Hidehito; and Okamoto, Hiroshi, 4,210,509, Cl. 204-195.00S.
Tanaka, Tomoyuki; Okamura, Masahiro; Shirasawa, Toshikatsu; and Ogawa, Takuzo, 4,210,464, Cl. 148-1.500.
Tsuda, Munetaka; Yokokawa, Hiroshi; and Utsumi, Yoshiharu, 4,210,861, Cl. 324-308.000.
Ushiku, Kenichi; and Hasegawa, Akira, 4,210,789, Cl. 200-61.45R.
Watanabe, Atsumi, 4,210,956, Cl. 363-51.000.
Yumde, Yasufumi; and Furuhata, Takashi, 4,210,927, Cl. 358-12.000.
Ho, Chung W., to International Business Machines Corporation. Thin film lossy line for preventing reflections in microcircuit chip package interconnections. 4,210,885, Cl. 333-238.000.
Hobson, Willis S.; and Graber, Elmer A., to Seymour Manufacturing Co., Inc. Dust-sealing assembly for a coupling. 4,210,348, Cl. 285-1.000.
Hodits, Frank W., Jr.; and Fryman, Richard K. Accumulator cycling switch. 4,209,997, Cl. 62-226.000.
Hoechst Aktiengesellschaft: *See—*
Bock, Klaus-Detlef; and Waltersdorfer, Anna, 4,210,642, Cl. 424-200.000.
Dalibor, Horst, 4,210,702, Cl. 428-413.000.
Dany, Franz-Josef; Thummler, Ursus; Wortmann, Joachim; Staendeke, Horst; and Kandler, Joachim, 4,210,630, Cl. 423-265.000.
Muller, Heinz; and Becker, Adolf, 4,210,604, Cl. 260-583.00R.
Hoehn, Gustave L., Jr.: *See—*
Groenendyke, Goethe M., deceased; and Hoehn, Gustave L., Jr., 4,210,869, Cl. 324-349.000.
Hofer, Johann: *See—*
Schmidt, Dietrich; Hofer, Johann; and Herzer, Heinz, 4,210,486, Cl. 156-601.000.
Hoffman, Harmon L., to Meadox Medicals, Inc. Ligament and tendon prosthesis of polyethylene terephthalate and method of preparing same. 4,209,859, Cl. 3-1.000.
Hoffmann, Arthur K.: *See—*
Raghu, Sivaraman; and Hoffmann, Arthur K., 4,210,760, Cl. 548-320.000.
Hoffmann, Hans; and Krieger, Peter, to ITT Industries, Incorporated. Manufacturing process of semiconductor devices. 4,210,472, Cl. 148-187.000.
Hoffmann, Klaus; and Doppner, Detlef, to AGFA-Gevaert, A.G. Ink jet printer. 4,210,918, Cl. 346-75.000.

Hoffmann-La Roche Inc.: *See—*
Bauer, Robert; and Hostettler, Hans U., 4,210,654, Cl. 424-263.000.
Burkard, Willy; and Wyss, Pierre-Charles, 4,210,754, Cl. 544-167.000.
Hofstaedter, Gerard F.; and Sherrow, Lionel, to Budd Company, The. Method of manufacturing, packaging and assembling a railway car. 4,209,892, Cl. 29-469.000.
Hohmann, Walter: *See—*
Gehrke, Gunter; and Hohmann, Walter, 4,210,413, Cl. 8-471.000.
Holce, Thomas J. Magnetically operated proximity switch. 4,210,888, Cl. 335-207.000.
Holce, Thomas J. Magnetically actuated sensing device. 4,210,889, Cl. 335-207.000.
Holcombe, Thomas C., to Union Carbide Corporation. Total isomerization process. 4,210,771, Cl. 585-701.000.
Holec N.V.: *See—*
Brinkman, Willem, 4,210,116, Cl. 123-504.000.
Brinkman, Willem, 4,210,117, Cl. 123-504.000.
Holleis, Gunter: *See—*
Hargassner, Reinhard; Holleis, Gunter; and Hoscher, Rudolf, 4,210,197, Cl. 164-416.000.
Holmes, Gordon W., to Professional Packaging Limited. Reclosable bag closure system. 4,210,249, Cl. 206-632.000.
Holub, Fred F.: *See—*
Vodicka, Vincent; and Holub, Fred F., 4,210,841, Cl. 313-221.000.
Honda Motor Co., Ltd.: *See—*
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, 4,210,505, Cl. 204-181.00C.
Honeywell Inc.: *See—*
Kabat, John L.; and Nelson, Marvin D., 4,210,823, Cl. 307-117.000.
Lane, Charles E., III, 4,210,917, Cl. 346-34.000.
Mueller, Dale A.; and Serber, Stephen L., 4,209,994, Cl. 62-155.000.
Shavit, Gideon, 4,210,900, Cl. 340-149.00R.
Spethmann, Donald H., 4,210,957, Cl. 364-105.000.
Hooker Chemicals & Plastics Corp.: *See—*
Annis, Myron C., 4,210,732, Cl. 525-501.000.
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,210,516, Cl. 204-284.000.
Hooper, Bernard. Stepped piston two-stroke engines. 4,210,108, Cl. 123-65.00S.
Hoover, Thomas H.: *See—*
Strickland, John J.; and Hoover, Thomas H., 4,209,882, Cl. 29-33.520.
Hopkins, Gregory T.; and Wagner, Paul E., to Mitre Corporation, The. Multiple access digital communications system. 4,210,780, Cl. 370-80.000.
Hoppe, Karl; and Strauss, Udo, to BASF Farben & Fasern Aktiengesellschaft. Coating bath for the cataphoretic coating of metallic surfaces. 4,210,506, Cl. 204-181.00C.
Hori, Kenji: *See—*
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.
Hori, Tetsuo: *See—*
Yoneyama, Tetsuhito; Hori, Tetsuo; and Ojima, Teruhiko, 4,210,471, Cl. 148-102.000.
Horiba, Ltd.: *See—*
Miyatake, Kimio, 4,210,808, Cl. 250-343.000.
Horn and Gladden Lint Cleaner Company, Inc.: *See—*
Jackson, Richard E.; Schwartz, Robert C.; and Sparks, John E., 4,210,075, Cl. 100-35.000.
Horneck, Richard H.: *See—*
Frye, Dana E.; Novcaski, Russell G.; Mills, Jack; and Horneck, Richard H., 4,210,247, Cl. 206-494.000.
Horton, Joseph A. Apparatus for eliminating cross-fogging in biplane radiography. 4,210,817, Cl. 250-515.000.
Hoscher, Rudolf: *See—*
Hargassner, Reinhard; Holleis, Gunter; and Hoscher, Rudolf, 4,210,197, Cl. 164-416.000.
Hoshino, Fumiro; Kimura, Hiroshi; and Matsutani, Kazuhito, to Kao Soap Co., Ltd. Process for the preparation of aliphatic amines. 4,210,605, Cl. 260-585.00B.
Hosomizu, Hiroshi: *See—*
Naya, Mikio; Ohta, Yoshiharu; and Hosomizu, Hiroshi, 4,210,849, Cl. 315-241.00P.
Hosoya, Takasi: *See—*
Kasamatsu, Yutaka; Hiromatsu, Mutsuo; Takashima, Syuzi; Hosoya, Takasi; and Hamanaka, Takamichi, 4,210,445, Cl. 75-124.000.
Hostettler, Hans U.: *See—*
Bauer, Robert; and Hostettler, Hans U., 4,210,654, Cl. 424-263.000.
Houlihan, William J., to Sandoz, Inc. Process for preparing 9H-dibenz[c,f]imidazo[1,2-a][1]azepin-9-ones. 4,210,585, Cl. 260-245.600.
Hovanessian, Ara G.: *See—*
Kerr, Ian M.; Brown, Ronald E.; and Hovanessian, Ara G., 4,210,746, Cl. 536-27.000.
Howarth, Thomas T.: *See—*
Eglington, Alfred J.; Howarth, Thomas T.; and Corbett, David F., 4,210,662, Cl. 424-274.000.
Howe, Robert K., to Monsanto Company. 2[5-(3-Trifluoromethylphenyl)-1,3,4-oxadiazol-2-yl] benzoates. 4,210,762, Cl. 548-145.000.
Howell, Stephen L.; and Fritz, Gary R., to Kimball International, Inc. High note priority monophonic brass keyer system. 4,210,054, Cl. 84-1.190.
Howmedica, Inc.: *See—*
Walker, Peter S.; and Borzone, Rocco, 4,209,861, Cl. 3-1.911.
Huang, Yun-Yang, to Ethyl Corporation. Preparation of oxygenates from carbon monoxide and hydrogen. 4,210,597, Cl. 260-449.00R.
Huber, William B.; Bower, Ian L.; Flynn, James A.; and Elfring, Gary C., to Bell & Howell Company. Tape replay system. 4,210,785, Cl. 179-100.1PS.
Huber, William B.: *See—*
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Hubner, Gertraude: *See—*
Dudar, Klaus; Seliger, Ewald; Hubner, Gertraude; and Banse, Wilhelm, 4,210,676, Cl. 426-238.000.
Huffman, Dale L., to Auburn Research Foundation. Process for production of a restructured fresh meat product. 4,210,677, Cl. 426-272.000.
Hughes, Donald W. K.; and Myers, Ronald W., to AMP Incorporated. Electrical connector receptacle. 4,210,376, Cl. 339-17.0LC.
Hughes, Richard L.: *See—*
Vachhani, Vasantrai A.; Soderstrom, Melvin A.; and Hughes, Richard L., 4,210,379, Cl. 339-101.000.
Hughes Tool Company: *See—*
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Hungerbuhler, Anton: *See—*
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Hunt, Bill; and Merriman, Dean R., to Huntron Instruments, Inc. Extendible probe for use with test instruments. 4,210,863, Cl. 324-72.500.
Hunt, James P.: *See—*
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Hunt, William D.: *See—*
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Huntron Instruments, Inc.: *See—*
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Hurst, Ralph, to Exxon Enterprises, Inc. Involute lamination armature for a linear reciprocating motor. 4,210,831, Cl. 310-13.000.
Husslein, Julius; and Hertel, Wilhelm, to Bosch-Siemens Hausgerate GmbH. Dish for holding food to be heated in a microwave cooking chamber. 4,210,124, Cl. 126-390.000.
Hutchins, Ned M.; and Ridley, Richard D., to Occidental Oil Shale, Inc. Method of detonating explosives for fragmenting oil shale formation toward a vertical free face. 4,210,366, Cl. 299-2.000.
Hutchins, Roger, to Huntec (70) Limited. Heave compensation system. 4,210,897, Cl. 367-106.000.
Hyde, David R.: *See—*
Keuleman, Alexander H. F.; and Hyde, David R., 4,209,915, Cl. 34-48.000.
Hydraudyne B.V.: *See—*
Beerens, Josephus J., 4,210,064, Cl. 91-394.000.
Hydro-Plan Engineering Ltd.: *See—*
Mehoudar, Raphael, 4,210,287, Cl. 239-542.000.
Hydrocarbon Research, Inc.: *See—*
Weber, Carl L., 4,209,911, Cl. 34-9.000.
Hynes, Frank R., to Xerox Corporation. Copy set counter duplex tray. 4,210,319, Cl. 271-3.100.
Ichioka, Youichi, to Mitsubishi Denki Kabushiki Kaisha. Elevator control apparatus. 4,210,226, Cl. 187-29.00R.
Ih, Charles C., to University of Delaware. Method and apparatus for signal transmission via an optical fiber. 4,210,803, Cl. 455-610.000.
Iimure, Tamio: *See—*
Sumiyoshi, Iwao; Iimure, Tamio; and Tomotsugu, Akio, 4,210,713, Cl. 430-284.000.
Ikeda, Saizo: *See—*
Ikeda, Tadayoshi; Omori, Yasuzi; and Ikeda, Saizo, 4,210,696, Cl. 428-212.000.
Ikeda, Tadayoshi; Omori, Yasuzi; and Ikeda, Saizo, to Daicel Ltd. Antistatic composite film and process for the preparation thereof. 4,210,696, Cl. 428-212.000.
Ikeda, Tomoaki: *See—*
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Ikeda, Yasuhiko: *See—*
Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, 4,210,924, Cl. 357-38.000.
Ikeda, Yoshitsugi, to Olympus Optical Co., Ltd. Large-aperture wide-angle lens system for photographic cameras. 4,210,388, Cl. 350-214.000.
Ikenoue, Tsuneo; Suzuki, Mitsugi; and Liu, Shin-Yng, to Ikenoue, Tsuneo; Tohoku Ricoh, Ltd.; and Tohoku Musen Denki Co., Ltd. DC-DC Converter output stabilizing device. 4,210,958, Cl. 363-124.000.
Imanaka, Hiroshi; and Nishida, Minoru, to Fujisawa Pharmaceutical Co., Ltd. Antibacterial composition. 4,210,635, Cl. 424-114.000.
Imler, Vaughn R., to PPG Industries, Inc. Method of impressing an accent line in bent glass sheets with a heated tube. 4,210,436, Cl. 65-106.000.
Imperial Chemical Industries Limited: *See—*
Berrie, John S.; and Woolley, Graham E., 4,210,626, Cl. 423-166.000.
Crooks, Graham R., 4,210,558, Cl. 252-415.000.

Crosby, John; and Terry, Bernard W. H., 4,210,611, Cl. 260-653.500.
Pinto, Alwyn, 4,210,495, Cl. 203-22.000.
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Ando, Shoichi; Inaba, Kiminobu; and Yoshida, Tomoaki, 4,210,812, Cl. 250-416.0TV.
Inami, Yasuhiko: *See—*
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Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,909, Cl. 340-763.000.
Inazaki, Kenzo: *See—*
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Industrie Pirelli S.p.A.: *See—*
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Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; Baran, Joseph; and Ingalls, Curtis W., 4,210,346, Cl. 283-8.00B.
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Inglat, Paul M.: *See—*
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Ingle, Jess H.: *See—*
Booth, John A.; and Ingle, Jess H., 4,210,326, Cl. 273-26.00A.
Inglis, Hal L.: *See—*
Gillespie, William S.; and Inglis, Hal L., 4,210,477, Cl. 156-203.000.
Ingram, John D., to Schlumberger Technology Corp. Acoustic well logging method and apparatus for detecting and measuring an acoustic wave. 4,210,965, Cl. 367-26.000.
Ingram, John D., to Schlumberger Technology Corp. Selectively combining segments of at least four acoustic well logging waveforms to automatically measure an acoustic wave parameter. 4,210,966, Cl. 367-27.000.
Ingram, John D., to Schlumberger Technology Corp. Method and apparatus for determining acoustic wave parameters in well logging. 4,210,967, Cl. 367-34.000.
Inland Container Corporation: *See—*
Hegele, Charles D., 4,210,273, Cl. 229-17.00B.
Inland Steel Company: *See—*
Smith, Homer, Jr.; Pruitt, Richard L.; Barnum, Edward F.; and Knerr, Robert P., Jr., 4,210,086, Cl. 110-173.00A.
Inskip, Harold K., to Du Pont de Nemours, E. I., and Company. Polyvinyl butyral compositions. 4,210,705, Cl. 428-500.000.
Institut Francais du Petrole: *See—*
Euzen, Jean-Paul; and Scemama, Patrick, 4,210,015, Cl. 73-61.10R.
Marcilly, Christian, 4,210,770, Cl. 585-474.000.
Instrumentation Industries, Inc.: *See—*
Eross, Bela, 4,210,174, Cl. 137-528.000.
International Business Machines Corporation: *See—*
Broers, Alec N., 4,210,806, Cl. 250-311.000.
Faris, Sadeg M., 4,210,921, Cl. 357-5.000.
Ford, Leland W.; Ramirez, Alberto M.; and Smith, Gerald L., 4,210,858, Cl. 323-22.00T.
Ho, Chung W., 4,210,885, Cl. 333-238.000.
Marinace, John C., 4,210,470, Cl. 148-33.200.
International Flavors & Fragrances Inc.: *See—*
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Lindauer, Jerome, 4,209,864, Cl. 4-228.000.
Schmitt, Frederick L., 4,210,554, Cl. 252-174.110.
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.
Vinals, Joaquin F.; Kiwala, Jacob; Wilson, Richard A.; and Mookherjee, Braja D., 4,210,158, Cl. 131-10.00R.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,210,767, Cl. 568-345.000.
International Harvester Company: *See—*
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International Medical Electronics Ltd.: *See—*
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International Minerals & Chemical Corp.: *See—*
Summers, William A.; Markunas, Peter C.; and Faulkner, Lois V., 4,210,609, Cl. 568-947.000.
International Paper Company: *See—*
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International Standard Electric Corporation: *See—*
Drake, Cyril F., 4,210,575, Cl. 260-42.520.
International Telephone and Telegraph Corporation: *See—*
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Intitut Francais du Petrole: *See—*
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Isaki, Mikio: *See—*
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Ishida, Hiroaki: *See—*
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Ishiguro, Yasuo; Wakazono, Kenji; and Saito, Toshihisa, to Copal Company Limited. Device for automatically controlling diaphragm aperture. 4,210,393, Cl. 354-23.00D.
Ishikawa, Masakazu: *See—*
Shiomi, Masanao; Ishikawa, Masakazu; and Kato, Hiroshi, 4,210,343, Cl. 280-668.000.
Ishiwatari, Hiromasa; and Yamada, Yoshinori, to Matsushita Electric Industrial Co., Ltd. Temperature measurement apparatus. 4,210,024, Cl. 73-362.500.
Ito, Norio: *See—*
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Ito, Sumio: *See—*
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ITT Industries, Incorporated: *See—*
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Ivanov, Ivan V.: *See—*
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Iwanami, Masaru: *See—*
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Iwanami, Sumio: *See—*
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Iwasaki, Shun-Ichi; and Nakamura, Yoshihisa, to Sony Corporation; Fujitsu Limited; and Iwasaki, Shun-Ichi. Magnetic recording medium. 4,210,946, Cl. 360-131.000.
J. I. Case Company: *See—*
Emming, Joseph L., 4,210,176, Cl. 137-573.000.
J. T. Baker Chemical Company: *See—*
Seidenberger, James W., 4,210,460, Cl. 134-7.000.
J. W. Spear & Sons Limited: *See—*
Obermair, Gilbert K. J., 4,210,337, Cl. 273-264.000.
Jackson, Richard E.; Schwartz, Robert C.; and Sparks, John E., to Horn and Gladden Lint Cleaner Company, Inc. Bottom for lint feeder housing. 4,210,075, Cl. 100-35.000.
Jackson, William W.; Steinbach, James G.; and Geiger, Lon R., to Deere & Company. Tool mounting with member locatable in first and second position between standard and frame. 4,210,212, Cl. 172-645.000.
Jacomini, Omar J., to Westinghouse Electric Corp. Method for decreasing minimum observable velocity of moving targets. 4,210,911, Cl. 343-7.700.
Jaeger, Karl H., to Elkawi AG. Growth promoting fish food composition. 4,210,634, Cl. 424-101.000.
Jagenberg Werke Aktiengesellschaft: *See—*
Osburg, Dieter, 4,210,045, Cl. 83-497.000.
Jahn, Walter: *See—*
Breitschwerdt, Werner; Jahn, Walter; Rapp, Herbert; and Klein, Wilhelm, 4,210,365, Cl. 297-481.000.
Jain, Atul. System for relative motion detection between wave transmitter-receiver and irregular reflecting surface. 4,210,399, Cl. 356-28.500.
James, Donald N., to Staodynamics, Inc. Miniaturized transcutaneous nerve stimulating device. 4,210,150, Cl. 128-421.000.
James, Michael; Rand, Paul K.; and Hallworth, Gerald W., to Allen & Hanburys Limited. Device for dispensing medicaments. 4,210,140, Cl. 128-266.000.
Janome Sewing Machine Co. Ltd.: *See—*
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Jansen, Johannes, to Schloemann-Siemag Aktiengesellschaft. Strip reel. 4,210,294, Cl. 242-72.100.
Janssen, Marcel A. C., to Janssen Pharmaceutica N.V. Antimicrobial compositions containing 1-(aryloxyphenyl)piperazines. 4,210,646, Cl. 424-250.000.
Janssen Pharmaceutica N.V.: *See—*
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Jennings, Stephen J.: *See—*
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Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Clifford, John C., 4,210,814, Cl. 250-427.000.
Jess, Thurman S.; and Zissimopoulos, Nicholas, to Baxter Travenol Laboratories, Inc. Metering apparatus for a fluid infusion system with flow control station. 4,210,138, Cl. 128-214.00E.

Jesswein, Ronald M., to Clark Equipment Company. Pivot joint. 4,210,405, Cl. 403-158.000.

Johansson, Sigge; and Bergstrom, Rolf, to Bulten-Kanthal AB. Method of bending a link blank into a chain link and a bending machine for carrying out the method. 4,209,978, Cl. 59-27.000.

John P. Kirby, Esq.: *See—*
Gajewski, Henry; Laurin, Dean G.; Measells, Paul; and Webster, R. Daniel, 4,210,686, Cl. 428-35.000.

Johns Hopkins University, The: *See—*
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Johnson, Donald S.: *See—*
Relles, Howard M.; and Johnson, Donald S., 4,210,731, Cl. 525-469.000.

Johnson, Ian L., to Abaline Limited. Apparatus for supporting articles during exposure to a gaseous or vaporous medium. 4,209,917, Cl. 34-149.000.

Johnson, Lawrence N. Boat support roller. 4,210,235, Cl. 193-37.000.

Johnson, Roy A., to Upjohn Company, The. Enlarged-hetero-ring prosta-cyclin analogs. 4,210,748, Cl. 542-426.000.

Johnston, Donald L.: *See—*
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Jones, Milford F., to General Motors Corporation. Torsional vibration damper. 4,210,234, Cl. 192-106.100.

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Junemann, Dietrich; and Henning, Hans, to A Raymond. Clamp for fastening trim about a windshield. 4,210,356, Cl. 296-84.00A.

Jurin, Vladislav F.: *See—*
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Jyoban Jyuki Kensetsu Kabushiki Kaisha: *See—*
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Kabat, John L.; and Nelson, Marvin D., to Honeywell Inc. Condition control system with special set point means. 4,210,823, Cl. 307-117.000.

Kabushiki Kaisha Daini Seikosha: *See—*
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Ueda, Makoto; Shida, Masaharu; and Torisawa, Akira, 4,209,971, Cl. 368-76.000.

Kabushiki Kaisha Morita Seisakusho: *See—*
Tsukada, Naonobu; and Nishimura, Katsuyoshi, 4,209,907, Cl. 433-33.000.

Kabushiki Kaisha Nerikı: *See—*
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Kabushiki Kaisha Sato: *See—*
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Kabushiki Kaisha Seikosha: *See—*
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Kagan, Veniamin G.: *See—*
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Kalb, Kathryn R.: *See—*
Coviello, Allan J.; Bernardin, Frederick E.; and Kalb, Kathryn R., 4,210,528, Cl. 210-4.000.

Kallio-Konno, Kari, to Vaisala Oy. Signal transmitting system. 4,210,870, Cl. 455-95.000.

Kamath, Venkatesh: *See—*
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,210,767, Cl. 568-345.000.

Kamioka, Hajime: *See—*
Takagi, Mikio; Kamioka, Hajime; Shimoda, Haruo; and Miyamoto, Hidekazu, 4,210,473, Cl. 148-189.000.

Kanazawa, Kenichi; and Tanaka, Yukio, to Sony Corporation. Control circuit for generating a step-type control signal and a continuously varying control signal whose amplitude characteristic repeats at the step transition. 4,210,827, Cl. 307-264.000.

Kandler, Joachim: *See—*
Dany, Franz-Josef; Thummler, Ursus; Wortmann, Joachim; Staendeke, Horst; and Kandler, Joachim, 4,210,630, Cl. 423-265.000.

Kaneko, Shigeo: *See—*
Doi, Yoshinao; Fugii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,210,709, Cl. 429-250.000.

Kaneko, Yutaka: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kaneko, Yutaka; and Kawasaki, Mikio, 4,210,715, Cl. 430-439.000.

Kanyo, Erzsebet: *See—*
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.

Kao Soap Co., Ltd.: *See—*
Hoshino, Fumiro; Kimura, Hiroshi; and Matsutani, Kazuhito, 4,210,605, Cl. 260-585.00B.

Karrer, Friedrich, to Ciba-Geigy Corporation. Novel polymeric N-heterocyclic compounds. 4,210,612, Cl. 525-204.000.

Karyaev, Vladimir P.: *See—*
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.

Kasai, Akio: *See—*
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, 4,210,505, Cl. 204-181.00C.

Kasamatsu, Yutaka; Hiromatsu, Mutsuo; Takashima, Syuzi; Hosoya, Takasi; and Hamanaka, Takamichi, to Kobe Steel, Ltd. Niobium-containing weldable structural steel having good weldability. 4,210,445, Cl. 75-124.000.

Kashio, Toshio, to Casio Computer Co., Ltd. Data-recording device. 4,210,941, Cl. 360-48.000.

Kasper, Robin: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.

Kato, Hiroshi: *See—*
Shiomi, Masanao; Ishikawa, Masakazu; and Kato, Hiroshi, 4,210,343, Cl. 280-668.000.

Katsube, Junki: *See—*
Shimomura, Hiromi; Sugie, Akihiko; and Katsube, Junki, 4,210,669, Cl. 424-305.000.

Kawada, Hirohito: *See—*
Suzuki, Tadao; and Kawada, Hirohito, 4,210,873, Cl. 330-51.000.

Kawakubo, Yukio: *See—*
Kurosawa, Yukio; Sugawara, Hiroyuki; and Kawakubo, Yukio, 4,210,790, Cl. 200-144.00B.

Kawamura, Norio: *See—*
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, 4,210,505, Cl. 204-181.00C.

Kawasaki, Mikio: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kaneko, Yutaka; and Kawasaki, Mikio, 4,210,715, Cl. 430-439.000.

Kawase, Toru: *See—*
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, 4,210,111, Cl. 123-414.000.

Kawashima, Machio: *See—*
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,210,842, Cl. 313-403.000.

Kay, Francis X. Fluid control valves. 4,210,310, Cl. 251-61.100.

Keen, Ralph S., to Texas Instruments Incorporated. Fusible-link semiconductor memory. 4,209,894, Cl. 29-577.00R.

Kehl, William L., to Gulf Research and Development Company. Catalytic supports with controlled pore properties. 4,210,560, Cl. 252-437.000.

Kellberg, Howard E.; and Wilder, Arthur H., to Corning Glass Works. Solar energy collector. 4,210,126, Cl. 126-443.000.

Keller, John W., Jr., to Stimtech, Inc. Electronic pain control with scanned output parameters. 4,210,151, Cl. 128-421.000.

Kelly, Peter P.: *See—*
Lewis, Jennings B., III; and Kelly, Peter P., 4,210,442, Cl. 75-60.000.

Kemira Oy: *See—*
Sorsa, Erkki; Haukkovaara, Esko; and Fors, Jan, 4,210,747, Cl. 536-60.000.

Kempa, Bernd-Joachim, to Elektro-Thermit GmbH. Point switch. 4,210,300, Cl. 246-430.000.

Kendall Company, The: *See—*
Perlin, Alfred R., 4,210,131, Cl. 128-1.00R.
Perlin, Alfred R., 4,210,132, Cl. 128-1.00R.

Kennedy, Joseph P.; and Castner, Kenneth F. Synthesis of substituted cyclopentadienes and cyclopentadiene-functionalized polymers. 4,210,737, Cl. 526-185.000.

Kent, Bryan P., to Variani Associates, Inc. Apparatus for making an inductive delay line component. 4,210,483, Cl. 156-443.000.

Kenworthy, E. J. Doyle: *See—*
Burnett, James E.; and Kenworthy, E. J. Doyle, 4,210,920, Cl. 346-75.000.

Keramida, Vasiliki: *See—*
Etzel, James E.; and Keramida, Vasiliki, 4,210,530, Cl. 210-38.00B.

Kerk Motion Products, Inc.: *See—*
Erikson, Kenneth W.; and Erikson, Keith W., 4,210,033, Cl. 74-424.80A.

Kerr, Ian M.; Brown, Ronald E.; and Hovanessian, Ara G., to National Research Development Corporation. Nucleotide inhibitor of protein synthesis. 4,210,746, Cl. 536-27.000.

Kershner, Stuart D.; and Smith, Ken P., to Olin Corporation. Pre-fixing hanger for insulating side board. 4,210,307, Cl. 249-202.000.

Keuleman, Alexander H. F.; and Hyde, David R., to U.S. Philips Corporation. Control arrangements for clothes driers and clothes driers including such control arrangements. 4,209,915, Cl. 34-48.000.

Keydell, Willi: *See—*
Meyer, Manfred; Keydell, Willi; Mollring, Friederich K.; and Weber, Klaus, 4,210,384, Cl. 350-19.000.

Khodosov, Nikolai A.: *See—*
Lapshev, Igor M.; Khodosov, Nikolai A.; and Berber, Viktor A., 4,210,276, Cl. 233-31.000.

Kiellarson, Folke: *See—*
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,210,618, Cl. 264-130.000.

Kienast, Hans, to Erste Osterreichische Zahnraderfabrick Rudolf Kienast Gesellschaft m.b.H. Roller mill. 4,210,291, Cl. 241-110.000.

Kienberger, Karl-Heinz; and Stock, Don J. R., to Endress u. Hauser GmbH u. Co. Microwave antenna with exponentially expanding horn structure. 4,210,915, Cl. 343-786.000.

Kildahl, Nicholas K.: *See—*
Melquist, John L.; Kildahl, Nicholas K.; and Fotis, Peter, 4,210,559, Cl. 252-431.00R.

Kimball International, Inc.: *See—*
Howell, Stephen L.; and Fritz, Gary R., 4,210,054, Cl. 84-1.190.

Kimura, Hiroshi: *See—*
Hoshino, Fumiro; Kimura, Hiroshi; and Matsutani, Kazuhito, 4,210,605, Cl. 260-585.00B.

Kimura, Takeji, to Matsushita Electric Industrial Co., Ltd. Electronic musical instrument. 4,210,053, Cl. 84-1.010.

Kincaid, Duane P. Sheet metal fireplace stove with improved draft. 4,210,119, Cl. 126-61.000.

Kinsman, Calvin T. Portable foot rest. 4,210,364, Cl. 297-439.000.

Kirikae, Ichiro; and Akiyama, Taichiro, to Akiyama, Taichiro. Model of living body. 4,209,919, Cl. 35-17.000.

Kishita, Kenichirou: *See—*
Tamura, Tooru; Ojima, Nobuyuki; Kondo, Sigeru; and Kishita, Kenichirou, 4,210,498, Cl. 204-35.00N.

Kitaguchi, Koji: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.

Kitai, Kiyoshi; Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, to Seiko Koki Kabushiki Kaisha. Alarm clock. 4,209,969, Cl. 368-250.000.

Kitai, Kiyoshi; and Ishida, Hiroaki, to Seiko Koki Kabushiki Kaisha. Electronic programmed shutter. 4,210,395, Cl. 354-234.000.

Kitajima, Masao; Tachikawa, Hiromichi; Shinozaki, Fumiaki; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Process for forming an image. 4,210,711, Cl. 430-253.000.

Kitsugi, Kentaro, to Tokyo Automatic Control Kabushiki Kaisha. Pressure regulating equipment for air cushion. 4,210,165, Cl. 137-102.000.

Kittle, Carl E.; and Wittren, Richard A., to Deere & Company. Hydraulic system with unloading valve assembly. 4,209,984, Cl. 60-328.000.

Kiwala, Jacob: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.
Vinals, Joaquin F.; Kiwala, Jacob; Wilson, Richard A.; and Mookherjee, Braja D., 4,210,158, Cl. 131-10.00R.

Kiwi Coders Corporation: *See—*
McKay, James G., 4,210,476, Cl. 156-112.000.

Kiyota, Yuhiko: *See—*
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.

Klaissle, Siefgried: *See—*
Peetz, Wolfgang; and Klaissle, Siefgried, 4,210,215, Cl. 175-394.000.

Klatzer, Stefan; and Dickhoff, Winfried, to Benteler Werke Aktiengesellschaft. Method of making a reinforcement for vehicle doors. 4,210,467, Cl. 148-12.00R.

Kleimola, Frank W., to Nucledyne Engineering Corp. Passive containment system. 4,210,614, Cl. 261-124.000.

Klein, Darrel J. Combine grain drying apparatus. 4,209,918, Cl. 34-182.000.

Klein, Johann, to Bayer Aktiengesellschaft. Sleeve with armband. 4,210,154, Cl. 128-685.000.

Klein, Robert R.: *See—*
Makowski, Henry S.; Lundberg, Robert D.; and Klein, Robert R., 4,210,568, Cl. 260-32.400.

Klein, Wilhelm: *See—*
Breitschwerdt, Werner; Jahn, Walter; Rapp, Herbert; and Klein, Wilhelm, 4,210,365, Cl. 297-481.000.

Kleine, Charles A.; and Middleton, Verne L., to Olin Corporation. Heat exchanger panel having reference indicia and improved flow distribution. 4,210,127, Cl. 126-444.000.

Klingsberg, Erwin: *See—*
Dundon, John P.; Klingsberg, Erwin; and Bright, John H., 4,210,601, Cl. 260-570.00D.

Klipsch and Associates, Inc.: *See—*
Gillum, Gary C.; and Klipsch, Paul W., 4,210,223, Cl. 181-152.000.

Klipsch, Paul W.: *See—*
Gillum, Gary C.; and Klipsch, Paul W., 4,210,223, Cl. 181-152.000.

Kluge, Albert D.: *See—*
Cina, Ronald A.; and Kluge, Albert D., 4,210,194, Cl. 164-16.000.

Knerr, Robert P., Jr.: *See—*
Smith, Homer, Jr.; Pruitt, Richard L.; Barnum, Edward F.; and Knerr, Robert P., Jr., 4,210,086, Cl. 110-173.00A.

Kobashi, Mamoru: *See—*
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, 4,210,111, Cl. 123-414.000.

Kobayashi, Sumio: *See—*
Sakamoto, Yoshiyasu; Kobayashi, Sumio; and Hatono, Akio, 4,210,023, Cl. 73-290.00R.

Kobayashi, Tetsuji; Sugita, Tohru; and Matsuo, Noboru, to Tokyo Shibaura Electric Co., Ltd. Semiconductor radiation detector. 4,210,805, Cl. 250-370.000.

Kobe Steel, Ltd.: *See—*
Kasamatsu, Yutaka; Hiromatsu, Mutsuo; Takashima, Syuzi; Hosoya, Takasi; and Hamanaka, Takamichi, 4,210,445, Cl. 75-124.000.

Kobinger, Walter: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,210,659, Cl. 424-273.00R.

Kobylinski, Thaddeus P.: *See—*
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,606, Cl. 568-385.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,607, Cl. 568-385.000.

Kochauf, Josef. Flat iron foil. 4,209,921, Cl. 38-97.000.

Kohnhorst, Earl E.; Summers, Thomas W.; and Gordon, David L., to Brown & Williamson Tobacco Corporation. Smokable tobacco products. 4,210,157, Cl. 131-8.00R.

Koizumi, Akio, to Sony Corporation. Protective circuit for a switching regulator. 4,210,947, Cl. 361-18.000.

Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, to Nippon Oil Company, Ltd. Process for fermentatively producing vitamin B_{12}. 4,210,720, Cl. 435-42.000.

Kojima, Isao: *See—*
Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, 4,210,924, Cl. 357-38.000.

Kojima, Tadao: *See—*
Tamazawa, Kazuharu; Fujikura, Takashi; Kojima, Tadao; and Iwanami, Masaru, 4,210,751, Cl. 544-21.000.

Kollonitsch, Janos: *See—*
Marburg, Stephen; and Kollonitsch, Janos, 4,210,750, Cl. 544-21.000.

Kolt, Stanley, to Suroff, Leonard W., a part interest. Automatic roof ventilator. 4,210,277, Cl. 236-49.000.

Komatsu, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of producing semiconductor devices. 4,210,689, Cl. 427-88.000.

Komatu, Shigesabroh: *See—*
Aoki, Jun; Hayashida, Takashi; Komatu, Shigesabroh; Miyakawa, Seii; and Takahasi, Naoki, 4,209,898, Cl. 29-783.000.

Kondo, Masanao, to Akechi Taikarenga Kabushiki Kaisha. Immersion nozzle for continuous casting of molten steel. 4,210,264, Cl. 222-591.000.

Kondo, Shiro, to Olympus Optical Co., Ltd. Radio tuner for coupling with cassette tape recorder. 4,210,094, Cl. 116-255.000.

Kondo, Sigeru: *See—*
Tamura, Tooru; Ojima, Nobuyuki; Kondo, Sigeru; and Kishita, Kenichirou, 4,210,498, Cl. 204-35.00N.

Konishiroku Photo Industry Co., Ltd.: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kaneko, Yutaka; and Kawasaki, Mikio, 4,210,715, Cl. 430-439.000.

Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F. Hydraulic screw press drive. 4,209,987, Cl. 60-413.000.

Koontz, Bryce L. Tool for inserting combination insulation stop and ventilation baffle articles in roof structures. 4,210,353, Cl. 294-19.00R.

Koppe, Herbert: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,210,659, Cl. 424-273.00R.

Koppe, Werner; and Prummer, Rolf, to Herion-Werke AG. Emission-free valve. 4,210,167, Cl. 137-375.000.

Korbell, George K., to Sheller-Globe Corporation. Field exerting and regulator circuit for a brushless alternator. 4,210,857, Cl. 322-28.000.

Kosbab, John V., to Dynamic Sports concepts, Inc. Modular broadhead arrowhead. 4,210,330, Cl. 273-106.50B.

Kosche, Horst, to Ciba-Geigy Corporation. Pressure-sensitive recording or copying material. 4,210,345, Cl. 282-27.500.

Koshelev, Alexandr G.: *See—*
Lavrentiev, Konstantin A.; Kretov, Svyatoslav D.; and Koshelev, Alexandr G., 4,210,945, Cl. 360-108.000.

Koskie, Earl T., Jr., to Dresser Industries, Inc. Method of making a rotary rock bit with seal recess washer. 4,209,890, Cl. 29-450.000.

Koslar, Manfred, to Siemens Aktiengesellschaft. Test device for indicating an electric voltage and/or the polarity thereof, and the passage of current through an electric conductor. 4,210,862, Cl. 324-51.000.

Kosters, Bernhard, to Teroson G.m.b.H. Plastisol of an acrylate polymer and a plasticizer. 4,210,567, Cl. 260-31.80R.

Kottsieper, Edward: *See—*
Haas, Edgar; and Kottsieper, Edward, 4,210,047, Cl. 83-530.000.

Kouba, Carroll C., to Westinghouse Electric Corp. Permanent magnet generator. 4,210,836, Cl. 310-112.000.

Koyakumaru, Hidefumi: *See—*
Shimada, Shoji; Yoshinari, Kazuhiko; and Koyakumaru, Hidefumi, 4,210,469, Cl. 148-16.000.

Kozlowski, Robert L. Wallpaper hand tool with interchangeable blades. 4,209,865, Cl. 7-105.000.

Kraayvanger, Allan G., to Perrigraphics, Inc. Display device. 4,209,928, Cl. 40-610.000.

Kraft, Paul: *See—*
Gallagher, Ruth E.; Goswami, Jagadish C.; Kraft, Paul; and Yu, Arthur J., 4,210,739, Cl. 526-325.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Weghaupt, Erich; and Krieger, Gerhard, 4,210,834, Cl. 310-61.000.
Kramer, Josef: *See*—
Radunz, Hans-Eckart; Kramer, Josef; Baumgarth, Manfred; and Orth, Dieter, 4,210,651, Cl. 424-263.000.
Kraus, Bernd: *See*—
Peter, Cornelius; and Kraus, Bernd, 4,210,016, Cl. 73-116.000.
Kraus, Theodore C.: *See*—
Preston, Frank J.; Kraus, Theodore C.; and Chandalia, Kiran B., 4,210,727, Cl. 521-137.000.
Krautkramer-Branson, Incorporated: *See*—
Renzel, Peter; and Vermoehlen, Werner, 4,210,904, Cl. 340-347.0AD.
Krebaum, Gerald E.: *See*—
Krebaum, Lawrence J.; and Krebaum, Gerald E., 4,210,110, Cl. 123-319.000.
Krebaum, Lawrence J.; and Krebaum, Gerald E. Carburetor control device, 4,210,110, Cl. 123-319.000.
Kretov, Svyatoslav D.: *See*—
Lavrentiev, Konstantin A.; Kretov, Svyatoslav D.; and Koshelev, Alexandr G., 4,210,945, Cl. 360-108.000.
Kreuter, Walter: *See*—
Wernicke, Hans J.; and Kreuter, Walter, 4,210,520, Cl. 208-57.000.
Krieff, Sidney K.: *See*—
Tarnay, Matthew G.; and Krieff, Sidney K., 4,210,284, Cl. 239-75.000.
Krieger, Gerhard: *See*—
Weghaupt, Erich; and Krieger, Gerhard, 4,210,834, Cl. 310-61.000.
Krieger, Peter: *See*—
Hoffmann, Hans; and Krieger, Peter, 4,210,472, Cl. 148-187.000.
Kripak, Leonid: *See*—
Meyer, Burton C.; Kripak, Leonid; and Fauser, Fritz, 4,209,940, Cl. 46-145.000.
Krob, Erwin; and Weigl, Erwin, to TMC Corporation. Connecting element. 4,210,342, Cl. 280-636.000.
Krone, Uwe: *See*—
Lubbers, Willi; and Krone, Uwe, 4,210,555, Cl. 252-305.000.
Kubota, Naohiro: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Kubota, Naohiro; and Shibata, Toshihiro, 4,210,577, Cl. 260-45.8NT.
Kucheck, Leo: *See*—
Crankshaw, Michael; and Kucheck, Leo, 4,210,484, Cl. 156-542.000.
Kuchenbecker, Morris W., to American Can Company. Reclosable hinged blister card package. 4,210,246, Cl. 206-461.000.
Kuhn, Max: *See*—
Ruegger, Artur; and Kuhn, Max, 4,210,581, Cl. 260-112.50R.
Kulesza, Ralph J.; Wildman, John R.; Arias, Henry; and Breslow, Jeffrey D., to Marvin Glass & Associates. Rotatable target game. 4,210,331, Cl. 273-120.00R.
Kume, Kazunari; Watanabe, Minoru; Oono, Hideshi; and Tamaru, Munetaka, to Citizen Watch Co., Ltd. Electronic timepiece. 4,209,970, Cl. 368-76.000.
Kummer, Werner: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,210,659, Cl. 424-273.00R.
Kummerlin, Nikolaus A.: *See*—
Kummerlin, Walter; and Kummerlin, Nikolaus A., 4,210,224, Cl. 182-207.000.
Kummerlin, Walter; and Kummerlin, Nikolaus A. Longitudinally variable ladder. 4,210,224, Cl. 182-207.000.
Kunze, Claus: *See*—
Dennhoven, Manfred; and Kunze, Claus, 4,210,811, Cl. 250-358.00R.
Kuo, Mau-Jung: *See*—
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,210,718, Cl. 435-41.000.
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,210,719, Cl. 435-41.000.
Kura, Kohei: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.
Kurosawa, Yukio; Sugawara, Hiroyuki; and Kawakubo, Yukio, to Hitachi, Ltd. Vacuum-type circuit interrupter. 4,210,790, Cl. 200-144.00B.
Kurtz, Walter: *See*—
Dehnert, Johannes; Kurtz, Walter; and Lamm, Gunther, 4,210,583, Cl. 260-156.000.
Kutaragi, Ken, to Sony Corporation. Video display apparatus having a flat X-Y matrix display panel. 4,210,934, Cl. 358-241.000.
Kvanta, Endre, to AB Medipharm. Process for fermentation of green fodder. 4,210,673, Cl. 426-53.000.
Kyowa Kagakukogyo Kabushiki Kaisha: *See*—
Nozawa, Shigeo, 4,209,944, Cl. 47-59.000.
Labatzke, Winfried: *See*—
Goring, Hermann; List, Hansjorg; Brunswig, Klaus; and Labatzke, Winfried, 4,210,057, Cl. 85-83.000.
Label-Aire Inc.: *See*—
Crankshaw, Michael; and Kucheck, Leo, 4,210,484, Cl. 156-542.000.
LaBrie, Paul J., to Semiconductor Circuits, Inc. Method for producing analog-to-digital conversions. 4,210,903, Cl. 340-347.0NT.
Labrum, Joseph H., to Electro Controls Inc. Shutter system for stage-lighting spotlights. 4,210,955, Cl. 362-321.000.
Lachowicz, Eugene. Self-propelled steering device for trailers. 4,210,217, Cl. 180-13.000.
La Conti, Anthony B.: *See*—
Dempsey, Russell M.; Coker, Thomas G.; and La Conti, Anthony B., 4,210,501, Cl. 204-129.000.
Lad Research Industries, Inc.: *See*—
Porter, John H., 4,210,029, Cl. 73-705.000.
Lake, Ernest C. Wallpaper applicator. 4,210,485, Cl. 156-577.000.
Lamb, Raymond K.; Weathers, Richard E.; Coffey, Lacey C.; and Walker, Stephen J., to NL Industries, Inc. Apparatus and method for positioning one part relative to another part. 4,209,891, Cl. 29-466.000.
Lamm, Gunther: *See*—
Dehnert, Johannes; Kurtz, Walter; and Lamm, Gunther, 4,210,583, Cl. 260-156.000.
Lampert, Heinz. Torque converter especially for the use in electro mobils. 4,210,032, Cl. 74-198.000.
Lane, Charles E., III, to Honeywell Inc. Multicolor multipoint recorder. 4,210,917, Cl. 346-34.000.
Langer, Alois A.: *See*—
Heilman, Marlin S.; and Langer, Alois A., 4,210,149, Cl. 128-419.00D.
Langworthy, Colin G.; and Jefferies, Ralph G., to Stothert & Pitt Limited. Safety control system for self-propelled road rollers. 4,209,988, Cl. 60-431.000.
Lapshev, Igor M.; Khodosov, Nikolai A.; and Berber, Viktor A. Centrifugal fluid cleaner. 4,210,276, Cl. 233-31.000.
Laser, Max. Reflectors. 4,210,954, Cl. 362-303.000.
LaTorre, Richard R.; Levitt, Barry N.; and MacKenzie, Gordon C., to Raytheon Company. Free-gyro optical seeker. 4,210,804, Cl. 250-203.00R.
Laughman, Clyde R. Condiment applying apparatus and method. 4,210,074, Cl. 99-494.000.
Laurent, Roger, to Pomagalski S.A. Overhead cable transport testing. 4,210,019, Cl. 73-158.000.
Laurin, Dean G.: *See*—
Gajewski, Henry; Laurin, Dean G.; Measells, Paul; and Webster, R. Daniel, 4,210,686, Cl. 428-35.000.
Lavanchy, Gerard A.; and Rossier, Marc-Henri, to Maschinenfabrik & Eisengiesserei Ed. Mezger. Automatically controlled pouring method and apparatus for metal casting. 4,210,192, Cl. 164-4.000.
La Voque, Edward C. Electrical plug pull. 4,210,377, Cl. 339-45.00R.
Lavrentiev, Konstantin A.; Kretov, Svyatoslav D.; and Koshelev, Alexandr G. Rotary magnetic head assembly. 4,210,945, Cl. 360-108.000.
Law, Eugene L.: *See*—
Hill, Eugene R.; and Law, Eugene L., 4,210,871, Cl. 455-137.000.
Lawrance, Richard J.; and Russell, John H., to General Electric Company. Electrolysis cell with controlled anolyte flow distribution. 4,210,512, Cl. 204-257.000.
Lazarenko, Eduard T.: *See*—
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F., 4,210,569, Cl. 260-328.0EP.
Lazarre, Flavien: *See*—
Bimond, Jean-Pierre; Lazarre, Flavien; and Puyau, Andre, 4,210,025, Cl. 73-421.00R.
Lebacqz, Jean V., to United States of America, Energy. Trirotron: triode rotating beam radio frequency amplifier. 4,210,845, Cl. 315-5.250.
LeBaron, George L.: *See*—
Smith, Jennings T.; and LeBaron, George L., 4,210,906, Cl. 340-659.000.
Le Clear, Robert L.: *See*—
Trine, Ralph D.; Le Clear, Robert L.; and T & S Equipment Company, 4,209,869, Cl. 14-69.500.
Lee, Doo S. Refrigerating apparatus. 4,210,000, Cl. 62-417.000.
Lee, Richard J.; and Richardson, Eugene E., to Standard Oil Company (Indiana). Oxidation resistant lubricant composition. 4,210,545, Cl. 252-47.500.
Lee, Robert L. Dental apparatus. 4,209,909, Cl. 433-57.000.
Legueu, Paul E. R., to A.C.M.A.T. Ateliers de Constructions Mecaniques de l'Atlantique. Air-transportable highly autonomous cross-country medical vehicle. 4,210,355, Cl. 296-19.000.
Leiper, Hugh C.: *See*—
Dawson, Gaynor W.; Leiper, Hugh C.; and Brix, Arthur T., 4,210,680, Cl. 426-641.000.
Leitner, Hermann: *See*—
Bretschneider, Erich; Leitner, Hermann; and Böhmer, Friedhelm, 4,210,011, Cl. 72-234.000.
Leitold, Matyas: *See*—
Schmidt, Gunther; and Leitold, Matyas, 4,210,648, Cl. 424-256.000.
Leitzman, Noel E.: *See*—
McMillen, Russell G.; and Leitzman, Noel E., 4,210,221, Cl. 180-77.0TC.
Lentz, Ronald R., to Litton Systems, Inc. System and method for regulating power output in a microwave oven. 4,210,795, Cl. 219-10.55B.
Leonard, Lionel. Boxes. 4,210,274, Cl. 229-49.000.
Lesser, Joseph H., to Makhteshim Chemical Works, Ltd. Thiophosphoro-S-acylated hydrazones. 4,210,592, Cl. 260-347.200.
Levinsky, Roland J.: *See*—
Soothill, John F.; and Levinsky, Roland J., 4,210,622, Cl. 422-61.000.

Levitt, Barry N.: *See*—
LaTorre, Richard R.; Levitt, Barry N.; and MacKenzie, Gordon C., 4,210,804, Cl. 250-203.00R.
Lewellyn, Morris E.: *See*—
Wang, Samuel S.; and Lewellyn, Morris E., 4,210,531, Cl. 210-51.000.
Lewin, Helmut: *See*—
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, 4,210,266, Cl. 226-97.000.
Lewis, Jennings B., III; and Kelly, Peter P., to Union Carbide Corporation. Argon in the basic oxygen process to control slopping. 4,210,442, Cl. 75-60.000.
Li, Yao T. Film-type storm window. 4,210,191, Cl. 160-354.000.
Libbey-Owens-Ford Company: *See*—
Fisher, Arnold R., 4,210,052, Cl. 83-881.000.
Liberman, Harold J., to United States of America, Army. Electromechanical guidance actuator for a missile. 4,210,298, Cl. 244-3.210.
Licciardi, Bartholomew A. Baseball game. 4,210,335, Cl. 273-238.000.
Lidholm, Sven-Olof. Coffin. 4,209,880, Cl. 27-2.000.
Liebermann, Benno E. Method of transferring heat to food articles. 4,210,675, Cl. 426-233.000.
Lien, Eric L.; Sarantakis, Dimitrios; and Grant, Norman H., to American Home Products Corporation. Antisecretory polypeptides. 4,210,636, Cl. 424-177.000.
Life Instruments Corporation: *See*—
Dick, Donald E.; Metz, Robert L.; and Elliott, Raymond D., 4,210,932, Cl. 358-130.000.
Lifel di Torta Franco & C. s.a.s.: *See*—
Torta, Franco; and Torta, Mario, 4,210,303, Cl. 248-429.000.
Lilja, Launo L.; and Makitalo, Valto J., to Outokumpu Oy. Means for producing a suspension of a powdery substance and a reaction gas. 4,210,315, Cl. 266-182.000.
Lillie, Christian: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,210,659, Cl. 424-273.00R.
Lin, Wayne H. T.: *See*—
Brown, James L.; Lin, Wayne H. T.; and Woods, James W., 4,210,418, Cl. 23-230.00B.
Lind, William F. Golf club including support attachment. 4,210,334, Cl. 273-162.00R.
Lindahl, Bengt E., to Svensk Lasthanterings Bengt Lindahl AG. Roundsling. 4,210,089, Cl. 112-417.000.
Lindauer, Jerome, to International Flavors & Fragrances Inc. Process for aromatizing and/or deodorizing the environment surrounding the flush tank of a toilet. 4,209,863, Cl. 4-228.000.
Lindauer, Jerome, to International Flavors & Fragrances Inc. Cleanser and/or sanitizer and aroma emitting attachment for toilets and process for using same. 4,209,864, Cl. 4-228.000.
Linde Aktiengesellschaft: *See*—
Wernicke, Hans J.; and Kreuter, Walter, 4,210,520, Cl. 208-57.000.
Lindseth, Roy O. Seismic exploration technique. 4,210,968, Cl. 367-46.000.
Lindstrom, Nils A. E., to Svecia Silkcreen Maskiner AB. Printing machine. 4,210,077, Cl. 101-126.000.
Linn, Orville. Self-propelled swather. 4,209,963, Cl. 56-10.800.
Linzenkirchner, Edmund: *See*—
Ewe, Kurt; and Linzenkirchner, Edmund, 4,210,853, Cl. 318-630.000.
List, Hansjorg: *See*—
Goring, Hermann; List, Hansjorg; Brunswig, Klaus; and Labatzke, Winfried, 4,210,057, Cl. 85-83.000.
Litton Industrial Products, Inc.: *See*—
Chester, Arnold M., 4,210,313, Cl. 251-306.000.
Litton Systems, Inc.: *See*—
Lentz, Ronald R., 4,210,795, Cl. 219-10.55B.
Liu, Shin-Yng: *See*—
Ikenoue, Tsuneo; Suzuki, Mitsugi; and Liu, Shin-Yng, 4,210,958, Cl. 363-124.000.
Livesay, Richard E., to Caterpillar Tractor Co. Impact rock crusher. 4,210,292, Cl. 241-148.000.
Lockhead Corporation: *See*—
Fogg, Lawrence D., III, 4,210,694, Cl. 428-174.000.
Loeffler, Herbert H., to Arthur D. Little, Inc. Swim fin. 4,209,866, Cl. 9-304.000.
Loew, Peter: *See*—
Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, 4,210,757, Cl. 546-52.000.
Loewe-Opta GmbH: *See*—
Steiger, Klaus; and Wahl, Peter, 4,210,329, Cl. 273-313.000.
Logan, Ted J.; and Underwood, David C., to Procter & Gamble Company, The. Process for separating esters of fatty acids. 4,210,594, Cl. 260-428.500.
Login, Robert B.; and Dutton, Daniel R., to BASF Wyandotte Corporation. Polyester-starch sized paper, sizing composition, and process therefor. 4,210,685, Cl. 427-361.000.
Lohman, Edmond L.: *See*—
Marvin, Herbert Z.; Lohman, Edmond L.; and Lohman, Robert C., 4,210,361, Cl. 296-210.000.
Lohman, Robert C.: *See*—
Marvin, Herbert Z.; Lohman, Edmond L.; and Lohman, Robert C., 4,210,361, Cl. 296-210.000.
Lohr, Raymond J. Remote control car. 4,209,942, Cl. 46-253.000.
Loke, Harvey L. Water conditioner rotary valve structure. 4,210,532, Cl. 210-136.000.
Loos, John H., to White Consolidated Industries, Inc. Mounting for room air conditioner access door. 4,210,071, Cl. 98-94.0AC.
Loqvist, Kaj-Ragnar; and Bennstedt, Leif-Ake, to Wave Energy Development I Vastmanland Aktiebolag. Method for providing a surface coating on the wall in a cavity by means of electrolytic plating and the surface coating produced by the method. 4,210,497, Cl. 204-26.000.
L'Oreal: *See*—
Vanlerberghe, Guy; and Rosenbaum, Georges, 4,210,755, Cl. 544-175.000.
Lotzwik, Gerd: *See*—
Fingerle, Karl; and Lotzwik, Gerd, 4,210,051, Cl. 83-871.000.
Louviere, Huey P. Kelly bushing guard. 4,210,213, Cl. 175-195.000.
LST Electronics, Inc.: *See*—
Trujillo, John J.; and Brown, Timothy E., 4,210,261, Cl. 222-43.000.
Lubbers, Willi; and Krone, Uwe, to Nico-Pyrotechnik Hanns-Juergen Diederichs KG. Process for the generation of dense clouds for camouflage purposes. 4,210,555, Cl. 252-305.000.
Lucas Industries Limited: *See*—
Taylor, Joseph D. F., 4,210,856, Cl. 320-17.000.
Luchaco, David G.: *See*—
Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., 4,210,846, Cl. 315-121.000.
Lundberg, Robert D.: *See*—
Makowski, Henry S.; Lundberg, Robert D.; and Klein, Robert R., 4,210,568, Cl. 260-32.400.
Lutron Electronics Co., Inc.: *See*—
Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., 4,210,846, Cl. 315-121.000.
Luttrell, Wondall R. Skip row attachment for planter. 4,210,260, Cl. 221-278.000.
Lux, Virginia J.: *See*—
Tsaknis, Peter J.; and Lux, Virginia J., 4,210,099, Cl. 118-402.000.
Lysenko, George P.; and Smith, Richard J., to Deere & Company. Door latch mechanism. 4,210,350, Cl. 292-86.000.
Lytwyn, Ann: *See*—
Baughman, D. Joe; Lytwyn, Ann; and Myrmel, Kurt, 4,210,420, Cl. 23-230.00B.
M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See*—
Greiner, Harry; and Preuss, Friedrich, 4,210,078, Cl. 101-136.000.
Macaluso, Paul J.; and Clifford, Lawrence E., to Pitney Bowes Inc. Copying machine with electromagnetic scavenger assembly and process. 4,210,397, Cl. 355-15.000.
Machino, Katsuyuki: *See*—
Suzuki, Chuji; Ise, Masahiro; Inazaki, Kenzo; and Machino, Katsuyuki, 4,210,848, Cl. 315-169.300.
Machon, Jean P., to Societe Chimique des Charbonnages-CdF Chimie. Controlled ethylene polymerization process. 4,210,734, Cl. 526-65.000.
MacKenzie, Gordon C.: *See*—
LaTorre, Richard R.; Levitt, Barry N.; and MacKenzie, Gordon C., 4,210,804, Cl. 250-203.00R.
Maezawa, Shuzi, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece time zone display. 4,209,973, Cl. 368-84.000.
Magana, Cecil L.; and Spears, Gary D. Pre-wired electrical circuit box. 4,210,772, Cl. 174-59.000.
Magnaflux Corporation: *See*—
Paulson, Thomas E., 4,210,866, Cl. 324-222.000.
Magnepan, Incorporated: *See*—
Winey, James M., 4,210,786, Cl. 179-115.5PV.
Mahe, Jean: *See*—
Mazouet, Joel; Michaux, Jean-Claude; and Mahe, Jean, 4,210,403, Cl. 400-196.100.
Mahle GmbH: *See*—
Ruhle, Martin, 4,210,193, Cl. 164-4.000.
Maier, Alfred E.: *See*—
Matsko, Joseph J.; Hill, Robert H.; Skalka, Paul; and Maier, Alfred E., 4,210,887, Cl. 335-6.000.
Maier, Siegfried, to Dupro AG. Cleaning implement. 4,209,872, Cl. 15-179.000.
Makabe, Hachiro: *See*—
Takenoya, Hideaki; and Makabe, Hachiro, 4,210,088, Cl. 112-158.00E.
Makhteshim Chemical Works, Ltd.: *See*—
Lesser, Joseph H., 4,210,592, Cl. 260-347.200.
Makitalo, Valto J.: *See*—
Lilja, Launo L.; and Makitalo, Valto J., 4,210,315, Cl. 266-182.000.
Makowski, Henry S.; Lundberg, Robert D.; and Klein, Robert R., to Exxon Research & Engineering Co. Plasticization of neutralized sulfonated elastomeric polymer with organic carbamates. 4,210,568, Cl. 260-32.400.
Makushin, Mikhail P.: *See*—
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.
Malfroot, Thierry A.: *See*—
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Mallinckrodt, Inc.: *See*—
Brown, James L.; Lin, Wayne H. T.; and Woods, James W., 4,210,418, Cl. 23-230.00B.
Mamo, Anthony C.: *See*—
Vary, Robert F., 4,210,200, Cl. 165-98.000.
Mani, Inder: *See*—
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Mankey, Harry S.: *See—*
Oswald, Norman D.; and Mankey, Harry S., 4,210,218, Cl. 180-24.120.
Oswald, Norman D.; and Mankey, Harry S., 4,210,219, Cl. 180-24.120.

Mann, James T., to Gulf Research and Development Company. Stabilized hydraulic fluid composition. 4,210,541, Cl. 252-32.70E.

Mann, James T., to Gulf Research and Development Company. Multicomponent stabilized hydraulic fluid. 4,210,542, Cl. 252-32.70E.

Mannina, Rosario M. Transparent cement form and method of form usage. 4,210,304, Cl. 249-22.000.

Manno, Joseph T. Fishing rig assembly. 4,209,933, Cl. 43-43.150.

Mansson, Siwer: *See—*
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,210,618, Cl. 264-130.000.

Mansukhani, Ishwar R., to Whittaker Corporation. Ink jet inks. 4,210,916, Cl. 346-1.100.

Manta, Naamioze Venncotschap: *See—*
Hessels, Eleutheer A., 4,210,190, Cl. 157-1.240.

Marburg, Stephen; and Kollonitsch, Janos, to Merck & Co., Inc. Process for the preparation of 3-carbamoyl cephalosporins using isocyanates. 4,210,750, Cl. 544-21.000.

Marchive, Daniel: *See—*
Deleuze, Michel; Boutin, Francois-Regis; and Marchive, Daniel, 4,210,446, Cl. 75-148.000.

Marcilly, Christian, to Institut Francais du Petrole. Process for aromatic hydrocarbon conversion and catalyst therefor. 4,210,770, Cl. 585-474.000.

Margen, Peter H. E.; and Naslund, Rolf P., to Aktiebolaget Atomenergi. Heat exchanger apparatus. 4,210,203, Cl. 165-163.000.

Marinace, John C., to International Business Machines Corporation. Epitaxial tunnels from intersecting growth planes. 4,210,470, Cl. 148-33.200.

Mark, Victor, to General Electric Company. Process for obtaining halogenated diphenols. 4,210,765, Cl. 568-726.000.

Markofsky, Sheldon B., to W. R. Grace & Co. Method of imparting wet strength to paper products. 4,210,489, Cl. 162-164.00R.

Markunas, Peter C.: *See—*
Summers, William A.; Markunas, Peter C.; and Faulkner, Lois V., 4,210,609, Cl. 568-947.000.

Marquis, Edgar E.; and Draghi, James A., to Robertshaw Controls Company. Timer controlled control system and timer construction therefor. 4,210,824, Cl. 307-141.000.

Marsh, James P.; and Steadman, Howard L., to Systems Control, Inc. Processor for dynamic programming. 4,210,962, Cl. 364-402.000.

Marshall, Robert M.; and Dardoufas, Kimon C., to Allied Chemical Corporation. Production of polyester yarn. 4,210,700, Cl. 428-395.000.

Martin, Guy E.: *See—*
Dameron, H. Clifford, Jr.; Martin, Guy E.; and Brouwer, Nicholaas L., 4,210,012, Cl. 72-235.000.

Martin, William H., Jr., to United States of America, Navy. Long distance underwater communication. 4,210,971, Cl. 367-134.000.

Marvin Glass & Associates: *See—*
Kulesza, Ralph J.; Wildman, John R.; Arias, Henry; and Breslow, Jeffrey D., 4,210,331, Cl. 273-120.00R.
Meyer, Burton C.; Kripak, Leonid; and Fauser, Fritz, 4,209,940, Cl. 46-145.000.
Morrison, Howard J.; and Wildman, John R., 4,210,324, Cl. 273-1.00R.

Marvin, Herbert Z.; Lohman, Edmond L.; and Lohman, Robert C. Sliding cover assembly for open body trucks. 4,210,361, Cl. 296-210.000.

Maryanoff, Bruce E.; and McComsey, David F., to McNeil Laboratories, Incorporated. Reduction of indole compounds to indoline compounds. 4,210,590, Cl. 260-326.11R.

Masaki, Kenji: *See—*
Miyamori, Yukio; and Masaki, Kenji, 4,209,981, Cl. 60-274.000.

Maschinenfabrik & Eisengiesserei Ed. Mezger: *See—*
Lavanchy, Gerard A.; and Rossier, Marc-Henri, 4,210,192, Cl. 164-4.000.

Massa, Frank, to Stoneleigh Trust, The, Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees. Sonic ranging systems to eliminate errors due to variations in the sound velocity in the medium. 4,210,969, Cl. 367-108.000.

Massachusetts Institute of Technology: *See—*
Wurtman, Richard J.; Wurtman, Judith J.; and Fernstrom, John D., 4,210,637, Cl. 424-180.000.

Master, Ralph E., to Caterpillar Tractor Co. Transmission control system. 4,209,985, Cl. 60-337.000.

Masuda, Senichi. Device for electrically charging particles. 4,210,949, Cl. 361-226.000.

Masukawa, Toyoaki: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kaneko, Yutaka; and Kawasaki, Mikio, 4,210,715, Cl. 430-439.000.

Matsko, Joseph J.; Hill, Robert H.; Skalka, Paul; and Maier, Alfred E., to Westinghouse Electric Corp. Circuit interrupter with interlocked interchangeable trip unit. 4,210,887, Cl. 335-6.000.

Matsumoto, Hatsuo: *See—*
Yamane, Kiyoshi; Abe, Shunzo; Sawada, Shuzo; and Matsumoto, Hatsuo, 4,210,412, Cl. 8-471.000.

Matsumura, Toshio: *See—*
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Matsuo, Noboru: *See—*
Kobayashi, Tetsuji; Sugita, Tohru; and Matsuo, Noboru, 4,210,805, Cl. 250-370.000.

Matsuo, Syunji: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kaneko, Yutaka; and Kawasaki, Mikio, 4,210,715, Cl. 430-439.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Ishiwatari, Hiromasa; and Yamada, Yoshinori, 4,210,024, Cl. 73-362.500.
Kimura, Takeji, 4,210,053, Cl. 84-1.010.
Nitta, Tsuneharu; Terada, Ziro; and Hayakawa, Shigeru, 4,210,894, Cl. 338-35.000.
Ouchi, Hiromu; Nishida, Masamitsu; and Hayakawa, Shigeru, 4,210,546, Cl. 252-62.900.
Tabuchi, Toshihide; and Tsumura, Masakatsu, 4,210,884, Cl. 333-203.000.
Tamura, Tooru; Ojima, Nobuyuki; Kondo, Sigeru; and Kishita, Kenichirou, 4,210,498, Cl. 204-35.00N.

Matsushita Electronics Corporation: *See—*
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Matsutani, Kazuhito: *See—*
Hoshino, Fumiro; Kimura, Hiroshi; and Matsutani, Kazuhito, 4,210,605, Cl. 260-585.00B.

Matthey Rustenburg Refiners (Proprietary) Limited: *See—*
Flett, Douglas S., 4,210,625, Cl. 423-139.000.

Mattson, George B.: *See—*
Woodhouse, Geoffrey D.; and Mattson, George B., 4,209,979, Cl. 60-39.040.

Mattson, John P., to Solarspan, Inc. Black liquid absorbing solar collector. 4,210,128, Cl. 126-444.000.

Mauric, Claudine; and Wolf, Rainer, to Sandoz Ltd. Regenerated cellulose flameproofed with organophosphorylamides. 4,210,451, Cl. 106-18.170.

Mazouet, Joel; Michaux, Jean-Claude; and Mahe, Jean, to Compagnie Internationale pour l'Informatique. Inking ribbon cartridge having feed rollers with different surface hardness. 4,210,403, Cl. 400-196.100.

McBrayer, Robert L.: *See—*
Patton, John T., Jr.; and McBrayer, Robert L., 4,210,728, Cl. 521-160.000.

McCann, Arthur T. Cue guide apparatus. 4,210,325, Cl. 273-24.000.

McCann, Thomas J.: *See—*
Regan, Ernest E.; and McCann, Thomas J., 4,210,693, Cl. 428-152.000.

McClain, Charles P.; and Yowell, Jerry E., to Purex Corporation. Method of soil release polymer application to fabrics in home laundering. 4,210,417, Cl. 8-137.000.

McClure, David E.: *See—*
Baldwin, John J.; and McClure, David E., 4,210,653, Cl. 424-263.000.

McCollum, John D.: *See—*
Ginsburgh, Irwin; and McCollum, John D., 4,210,867, Cl. 324-323.000.
Ginsburgh, Irwin; and McCollum, John D., 4,210,868, Cl. 324-323.000.

McCombs, Frank P., to Owens-Corning Fiberglas Corporation. Cellulose-containing phenolic resin-based binder. 4,210,562, Cl. 260-14.000.

McComsey, David F.: *See—*
Maryanoff, Bruce E.; and McComsey, David F., 4,210,590, Cl. 260-326.11R.

McConnell, Richard L.: *See—*
Trotter, Jimmy R.; Joyner, Frederick B.; and McConnell, Richard L., 4,210,570, Cl. 260-33.6AQ.

McDonnell Douglas Corporation: *See—*
Burkhart, Gordon H.; Rice, Robert R.; and Teague, James R., 4,210,389, Cl. 350-321.000.

McDowell, Jeffrey B., to GTE Automatic Electric Laboratories, Inc. Tray for holding components with preformed leads. 4,210,243, Cl. 206-332.000.

McElligott, Michael J.: *See—*
Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; Baran, Joseph; and Ingalls, Curtis W., 4,210,346, Cl. 283-8.00B.

McGee, Mary Ann C.; and Bahnfleth, William A., to Caterpillar Tractor Co. Retainer for bearing lock nut. 4,210,372, Cl. 308-189.00R.

McGee, Norris E. Ground clamp for welding apparatus. 4,210,373, Cl. 339-8.00R.

McGee, Sherwood W., to Amsted Industries Incorporated. Piston pin and method for making such. 4,210,468, Cl. 148-12.400.

McGivern, James P.: *See—*
Whyte, Ian A.; Vercellotti, Leonard C.; and McGivern, James P., 4,210,901, Cl. 340-310.00R.

McGriff, Douglas H., to Producto Machinery Corporation. Circular resaw apparatus and method. 4,210,184, Cl. 144-312.000.

McKay, James G., to Kiwi Coders Corporation. Method of making an inking ring. 4,210,476, Cl. 156-112.000.

McLravy, Robert C., II; and Zakowski, Michael F. Folding article of furniture. 4,210,085, Cl. 108-35.000.

McMillen, Russell G.; and Leitzman, Noel E., to International Harvester Company. Transmission remote shift system of the disconnect type for a cab-over chassis. 4,210,221, Cl. 180-77.0TC.

McNeil Laboratories, Incorporated: *See—*
Maryanoff, Bruce E.; and McComsey, David F., 4,210,590, Cl. 260-326.11R.

McPherson, James C., to Ford Motor Company. Method of treating cast iron using packaged granular molten metal treatment mold inserts. 4,210,195, Cl. 164-57.000.

McStravick, David M.; and Roberts, William M., to Baker International Corporation. Valve apparatus. 4,210,207, Cl. 166-330.000.

McSwain, Edward D. Temperature-responsive automatic ventilator. 4,210,279, Cl. 236-49.000.

Mead Corporation, The: *See—*
Burnett, James E.; and Kenworthy, E. J. Doyle, 4,210,920, Cl. 346-75.000.

Mead, Ralph T.; Frenz, Norbert W., Jr.; Rudolph, Frank W.; and Greatbatch, Wilson, to Wilson Greatbatch Ltd. Lithium-iodine cell. 4,210,708, Cl. 429-181.000.

Meadox Medicals, Inc.: *See—*
Hoffman, Harmon L., 4,209,859, Cl. 3-1.000.

Measells, Paul: *See—*
Gajewski, Henry; Laurin, Dean G.; Measells, Paul; and Webster, R. Daniel, 4,210,686, Cl. 428-35.000.

Medtronic, Inc.: *See—*
Skarstad, Paul M., 4,210,706, Cl. 429-105.000.

Mehoudar, Raphael, to Hydro-Plan Engineering Ltd.; and Netafim Mutzarei Hashkaya Vetiftuf Bekibbutz Hatzerm. Drip irrigation system. 4,210,287, Cl. 239-542.000.

Meili, Rene, to Schoxi AG, Firma. Process for the manufacture of a meringue of improved stiffness. 4,210,679, Cl. 426-564.000.

Meintzer, Eddie R.; Inglat, Paul M.; and Zamora, Zenon J. Table-top basketball game. 4,210,328, Cl. 273-85.00R.

Melan, Corneille; and Weiwers, Rene. Method of operation for a refuse incinerating furnace. 4,210,087, Cl. 110-346.000.

Melquist, John L.; Kildahl, Nicholas K.; and Fotis, Peter, to Standard Oil Company (Indiana). Catalyst for the preparation of polyalpha-olefins having broad molecular weight distributions. 4,210,559, Cl. 252-431.00R.

Merck & Co., Inc.: *See—*
Baldwin, John J.; and McClure, David E., 4,210,653, Cl. 424-263.000.
Marburg, Stephen; and Kollonitsch, Janos, 4,210,750, Cl. 544-21.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Radunz, Hans-Eckart; Kramer, Josef; Baumgarth, Manfred; and Orth, Dieter, 4,210,651, Cl. 424-263.000.

Meretsky, Paul L.; and Carmon, Amiram, to Technion Research & Development Foundation Ltd.; Meretsky, Paul L.; and Carmon, Amiram. Inductive device having orthogonal windings. 4,210,859, Cl. 323-44.00R.

Merger, Franz: *See—*
Hansen, Guenter; Merger, Franz; Nestler, Gerhard; and Zeidler, Georg, 4,210,414, Cl. 8-639.000.

Merrell Toraude et Compagnie: *See—*
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,210,664, Cl. 424-275.000.
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,210,665, Cl. 424-275.000.

Merriman, Dean R.: *See—*
Hunt, Bill; and Merriman, Dean R., 4,210,863, Cl. 324-72.500.

Merritt, Richard F.: *See—*
Stewart, Thomas; and Merritt, Richard F., 4,210,493, Cl. 203-8.000.

Merten, Josef: *See—*
Grigo, Ulrich; Merten, Josef; Binsack, Rudolf; and Tresper, Erhard, 4,210,579, Cl. 525-88.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Ruger, Roderich, 4,210,807, Cl. 250-330.000.

Metcalf, Arthur S.; and Eilers, Louis H., to Dow Chemical Company, The. Retarded aqueous hydraulic cement slurry. 4,210,455, Cl. 106-90.000.

Metz, Robert L.: *See—*
Dick, Donald E.; Metz, Robert L.; and Elliott, Raymond D., 4,210,932, Cl. 358-130.000.

Meyer, Burton C.; Kripak, Leonid; and Fauser, Fritz, to Marvin Glass & Associates. Toy ejector apparatus. 4,209,940, Cl. 46-145.000.

Meyer, Manfred; Keydell, Willi; Mollring, Friederich K.; and Weber, Klaus, to Carl Zeiss-Stiftung. Inverted-design optical microscope. 4,210,384, Cl. 350-19.000.

Meyers, George L.; Seiden, Frederick C.; and Waller, Lonnie J., to American Can Company. Folding and gluing a scored carton blank. 4,210,069, Cl. 93-36.00M.

Michalko, Edward, to UOP Inc. Flue gas treatment. 4,210,629, Cl. 423-242.000.

Michaux, Jean-Claude: *See—*
Mazouet, Joel; Michaux, Jean-Claude; and Mahe, Jean, 4,210,403, Cl. 400-196.100.

Michel, Alain J., to Picot S.A. Bending machine. 4,210,007, Cl. 72-8.000.

Middleton, Verne L.: *See—*
Kleine, Charles A.; and Middleton, Verne L., 4,210,127, Cl. 126-444.000.

Midwest Research Institute: *See—*
Petersen, Robert J., 4,210,529, Cl. 210-22.00A.

Miessler, Heinz: *See—*
Stoll, Karl-Heinz A.; and Miessler, Heinz, 4,210,004, Cl. 68-27.000.

Mihashi, Yutaka; and Nakata, Josuke, to Mitsubishi Denki Kabushiki Kaisha. Process for preparing heat sensitive semiconductor switch. 4,210,466, Cl. 148-1.500.

Miki, Masamitsu. Sand mold compositions containing scented wood. 4,210,563, Cl. 260-17.200.

Miller, Bruce D., Sr. Refrigeration system having improved heat transfer and reduced power requirement for various evaporative refrigerants. 4,210,001, Cl. 62-468.000.

Miller, Donald E., to Continental Group, Inc., The. Press with load transfer mechanism. 4,210,013, Cl. 72-347.000.

Miller, Richard L., to Ultra Mortar, Inc. Method for producing a storable mortar. 4,210,456, Cl. 106-92.000.

Mills, Jack: *See—*
Frye, Dana E.; Novcaski, Russell G.; Mills, Jack; and Horneck, Richard H., 4,210,247, Cl. 206-494.000.

Milnes, Frank J.; and Parziale, John R., to Olin Corporation. Use of hydrazidothioates as additives for functional fluids. 4,210,543, Cl. 252-46.700.

Minagawa, Motonobu; Nakahara, Yutaka; Kubota, Naohiro; and Shibata, Toshihiro, to Argus Chemical Corporation. Stabilizers for synthetic polymers comprising 2,2,6,6-tetramethyl-4-piperidyl carboxylic acid ester, phosphonic acid ester and phenol. 4,210,577, Cl. 260-45.8NT.

Minkoff, William. Transport apparatus. 4,210,341, Cl. 280-79.10A.

Minnesota Mining and Manufacturing Company: *See—*
Baribeau, Gary A., 4,210,378, Cl. 339-97.00R.
Gatzke, Kenneth G., 4,210,717, Cl. 430-620.000.
Scantlin, William M.; and Clemens, Lawrence M., 4,210,703, Cl. 428-413.000.
Silver, Spencer F., 4,210,722, Cl. 435-176.000.

Minolta Camera Kabushiki Kaisha: *See—*
Nakatani, Keiji, 4,210,044, Cl. 83-241.000.
Naya, Mikio; Ohta, Yoshiharu; and Hosomizu, Hiroshi, 4,210,849, Cl. 315-241.00P.

Mirowski, Mieczyslaw: *See—*
Heilman, Marlin S.; and Langer, Alois A., 4,210,149, Cl. 128-419.00D.

Mirskaya, Natalya M.: *See—*
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

Misek, Victor A., to Sanders Associates, Inc. Non-segmented phase gradient detector for coat system. 4,210,400, Cl. 356-359.000.

Mishima, Robert K. Lance for spear fishing. 4,209,929, Cl. 43-6.000.

Misikov, Vitaly M.: *See—*
Vasiliev, Petr E.; Ragulskis, Kazimiras M.; Savitskas, Ionas A.; Misikov, Vitaly M.; and Topolnitsky, Oleg D., 4,210,837, Cl. 310-323.000.

Mitchell, Richard P., to American Can Company. Automatically ventable sealed food package for use in microwave ovens. 4,210,674, Cl. 426-107.000.

Mitchell, Robert B.; and Swank, Harry R., to GTE Products Corporation. L-shaped bracket assembly and rimband type implosion-resistant cathode ray tube. 4,210,935, Cl. 358-246.000.

Mitchell, Willard N.: *See—*
Wilson, Edward L., Jr.; and Mitchell, Willard N., 4,210,518, Cl. 208-10.000.

Mitman, Enrique; and Sadovnik, Isaac, to Enrique Mitman. Method for cutting a plurality of identical, irregular, non-polygonal pieces from material with minimum waste. 4,210,041, Cl. 83-32.000.

Mitre Corporation, The: *See—*
Hopkins, Gregory T.; and Wagner, Paul E., 4,210,780, Cl. 370-80.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Ichioka, Youichi, 4,210,226, Cl. 187-29.00R.
Mihashi, Yutaka; and Nakata, Josuke, 4,210,466, Cl. 148-1.500.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.

Mitsui Coke Co. Ltd.: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,210,517, Cl. 208-8.0LE.

Mitsui Mining Co. Ltd.: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,210,517, Cl. 208-8.0LE.

Mixan, Craig E.: *See—*
Wilson, Charles A.; and Mixan, Craig E., 4,210,645, Cl. 424-250.000.

Miyakawa, Seii: *See—*
Aoki, Jun; Hayashida, Takashi; Komatu, Shigesabroh; Miyakawa, Seii; and Takahasi, Naoki, 4,209,898, Cl. 29-783.000.

Miyakawa, Seiichi; Tatsumi, Susumu; Sakamoto, Koji; and Ogata, Yoshihiro, to Ricoh Company, Ltd. Apparatus for sensing toner density using a stationary ferromagnetic mass within the toner to increase sensitivity. 4,210,864, Cl. 324-204.000.

Miyamori, Yukio; and Masaki, Kenji, to Nissan Motor Company, Limited. Method and an apparatus to control the temperature of an engine exhaust gas purifying device. 4,209,981, Cl. 60-274.000.

Miyamoto, Hidekazu: *See—*
Takagi, Mikio; Kamioka, Hajime; Shimoda, Haruo; and Miyamoto, Hidekazu, 4,210,473, Cl. 148-189.000.

Miyatake, Kimio, to Horiba, Ltd. Pneumatic infrared analyzer of the single beam type. 4,210,808, Cl. 250-343.000.

Moate, David W.: *See—*
Donaldson, Peter, 4,210,262, Cl. 222-442.000.

Mobil Oil Corporation: *See—*
Bridger, Robert F., 4,210,599, Cl. 260-462.00C.
Gorring, Robert L.; and Smith, Robert L., 4,210,521, Cl. 208-89.000.

Groenendyke, Goethe M., deceased; and Hoehn, Gustave L., Jr., 4,210,869, Cl. 324-349.000.
Peters, Alan W., 4,210,525, Cl. 208-212.000.
Yan, Tsoung Y., 4,210,423, Cl. 44-1.00C.

Moeller, Henry W.; and Hunt, James P. Process and apparatus for commercial farming of marine and freshwater hydrophytes. 4,209,943, Cl. 47-1.400.

Moerke, Delford A. Utilities supply station for welding gun. 4,210,796, Cl. 219-137.630.

Molins Limited: *See—*
Clayson, Arthur J.; and Fox, Austin L., 4,209,956, Cl. 53-396.000.

Moll, Franz: *See—*
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.

Mollring, Friederich K.: *See—*
Meyer, Manfred; Keydell, Willi; Mollring, Friederich K.; and Weber, Klaus, 4,210,384, Cl. 350-19.000.

Molvar, Allen E., to Clevepak Corporation. Multiple stage jet nozzle and aeration system. 4,210,534, Cl. 210-220.000.

Monsanto Company: *See—*
Bollinger, Frederic G.; and D'Amico, John J., 4,210,439, Cl. 71-90.000.
Hirzy, J. William, 4,210,730, Cl. 525-440.000.
Howe, Robert K., 4,210,762, Cl. 548-145.000.
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,210,718, Cl. 435-41.000.
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,210,719, Cl. 435-41.000.

Monsheimer, Rolf; and Pfleiderer, Ernst. Method for dissolving collagen-containing skin tissues. 4,210,721, Cl. 435-69.000.

Montedison S.p.A.: *See—*
Di Battista, Piero; Fontanelli, Renzo; Gratani, Francesco; and Nelli, Giuseppe, 4,210,576, Cl. 260-45.8NE.

Montgomery, John A., to United States of America, Health, Education and Welfare. Procedure for the preparation of 9-β-D-arabinofuranosyl-2-fluoroadenine. 4,210,745, Cl. 536-26.000.

Montgomery, John A.: *See—*
Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., 4,210,639, Cl. 424-180.000.

Monville, Jean M.: *See—*
Guerton, Jean P.; Waleckx, Jean; and Monville, Jean M., 4,209,967, Cl. 57-58.720.

Mookherjee, Braja D.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.
Vinals, Joaquin F.; Kiwala, Jacob; Wilson, Richard A.; and Mookherjee, Braja D., 4,210,158, Cl. 131-10.00R.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,210,767, Cl. 568-345.000.

Moore, James L.; and Ewing, Lenoard G., to Emerson Electric Co. Apparatus for cutting vegetation. 4,209,902, Cl. 30-276.000.

Moore, L. Frank; and Price, George M., to Frymaster Corporation, The. Filter system for frying apparatus. 4,210,123, Cl. 126-374.000.

Moore, L. Frank; and Price, George M., to Frymaster Corporation, The. Positive reset safety control system for frying apparatus. 4,210,177, Cl. 137-613.000.

Morcom, Paul J. Collapsible article carrier. 4,210,241, Cl. 206-172.000.

Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., to Harris Corporation. I^2L Integrated circuit and process of fabrication. 4,210,925, Cl. 357-46.000.

Moree, Hans G. E.; and Grunewald, Helmut, to Electrokemiska AB. Method for recovering heat in a vapor degreasing apparatus. 4,210,461, Cl. 134-11.000.

Morel, Paul; and Dugois, Jean-Pierre, to Aluminum Pechiney. Process for reducing the magnetic disturbances in series of high-intensity electrolysis tanks. 4,210,514, Cl. 204-243.00M.

Mori, Keiji, to Aisin Seiki Kabushiki Kaisha. Sliding roof apparatus for vehicles. 4,210,359, Cl. 296-222.000.

Mori, Tamiki: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.

Moritani, Nakanobu; Samejima, Toshihide; Matsumura, Toshio; Oda, Hajime; and Fujita, Masanori, to Kabushiki Kaisha Seikosha. Time adjusting means for electronic timepiece. 4,209,975, Cl. 368-186.000.

Morrison, Howard J.; and Wildman, John R., to Marvin Glass & Associates. Timer controlled game apparatus. 4,210,324, Cl. 273-1.00R.

Morse, Phillip H.; Noce, Louis O.; and Basta, Michael I. Perpetual by-pass flushing device. 4,210,178, Cl. 137-625.500.

Mortimer, Ivan, to Girling Limited. Anti-skid vehicle braking systems. 4,210,370, Cl. 303-118.000.

Morton-Norwich Products, Inc.: *See—*
Schwan, Thomas J., 4,210,761, Cl. 548-320.000.

Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, to Hooker Chemicals & Plastics Corp. Electrode element for monopolar electrolysis cells. 4,210,516, Cl. 204-284.000.

Moskowitz, Jacob F., to Raytheon Company. Gain control amplifier circuit. 4,210,874, Cl. 330-134.000.

Motorola, Inc.: *See—*
Enderby, Ralph T.; and Dworsky, Lawrence N., 4,210,886, Cl. 333-24.200.

Motsinger, James V., to Baker International Corporation. Method and apparatus for generating an actual torque signal during the make-up of threaded joints. 4,210,017, Cl. 73-139.000.

Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; Baran, Joseph; and Ingalls, Curtis W., to Burroughs Corporation. Protected document bearing watermark and method of making. 4,210,346, Cl. 283-8.00B.

Mravic, Brian: *See—*
Winter, Joseph; Breedis, John F.; and Mravic, Brian, 4,209,886, Cl. 29-157.30V.

Mueller, Dale A.; and Serber, Stephen L., to Honeywell Inc. Heat pump system defrost control. 4,209,994, Cl. 62-155.000.

Mueller-Tamm, Heinz: *See—*
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.

Muijderman, Everhardus A.: *See—*
Gerkema, Jan; and Muijderman, Everhardus A., 4,210,371, Cl. 308-9.000.

Mullen, James. Repair kit. 4,210,242, Cl. 206-231.000.

Muller, Heinz; and Becker, Adolf, to Hoechst Aktiengesellschaft. Process for preparing secondary amines from mixtures of aliphatic alcohols and nitriles. 4,210,604, Cl. 260-583.00R.

Muller, Helmut: *See—*
Rody, Jean; Greber, Gerd; and Muller, Helmut, 4,210,578, Cl. 260-45.80N.

Muller, Juurgen; Rheude, Alfred; and Pfeifer, Josef, to AGFA-Gevaert, A.G. Electrophotographic method and apparatus. 4,210,396, Cl. 355-12.000.

Mulley, Alan J.: *See—*
Toubkin, Walter M.; and Mulley, Alan J., 4,210,970, Cl. 367-109.000.

Munger, Stanley H.; and Pine, Herbert J., to Du Pont de Nemours, E. I., and Company. Adhesive-bearing metal sheet with photopolymerizable layer. 4,210,712, Cl. 430-275.000.

Munie, Julius C. Mixing apparatus. 4,210,166, Cl. 137-271.000.

Munn, Gerhard, to Rheinmetall GmbH. Servo-release mechanism. 4,210,059, Cl. 89-132.000.

Munson, Harry R., Jr., to A. H. Robins Company, Inc. Mucolytic thiophenecarboxamido alkyl mercaptans. 4,210,666, Cl. 424-275.000.

Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo. Abietamide derivatives, their production and use. 4,210,671, Cl. 424-324.000.

Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, to Mitsui Mining Co. Ltd.; and Mitsui Coke Co. Ltd. Preparation of carbonaceous products. 4,210,517, Cl. 208-8.0LE.

Murakami, Yasushi: *See—*
Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, 4,210,440, Cl. 71-98.000.

Murray, Lee J., to American Can Company. Jet ink compositions. 4,210,566, Cl. 260-31.80T.

Mutschler, Thomas A.; and Zimmerman, Gary J., to Aluminum Company of America. Pneumatic anode positioning system. 4,210,513, Cl. 204-225.000.

Myers, Ronald W.: *See—*
Hughes, Donald W. K.; and Myers, Ronald W., 4,210,376, Cl. 339-17.0LC.

Myrmel, Kurt: *See—*
Baughman, D. Joe; Lytwyn, Ann; and Myrmel, Kurt, 4,210,420, Cl. 23-230.00B.

Nace, Donald W., to Allis-Chalmers Corporation. Eccentric pin positive locking device for hydraulic turbine wicket gates. 4,210,408, Cl. 415-163.000.

Nadeau, William C.: *See—*
Brockman, Raymond G.; and Nadeau, William C., 4,210,141, Cl. 128-272.000.

Nagaishi, Hastuo: *See—*
Nakamura, Koyo; and Nagaishi, Hastuo, 4,210,112, Cl. 123-571.000.

Nagakura, Katsuhiko: *See—*
Ninomiya, Ichiro; Nagakura, Katsuhiko; Sakamoto, Hitoshi; and Tachi, Katsuichi, 4,210,939, Cl. 360-14.000.

Nagata, Katsuyuki: *See—*
Hirono, Hatsuo; Nagata, Katsuyuki; and Doguchi, Nobushige, 4,210,499, Cl. 204-38.00A.
Hirono, Hatsuo; Nagata, Katsuyuki; and Doguchi, Nobushige, 4,210,695, Cl. 428-209.000.

Nagel, Otto: *See—*
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.

Nagumo, Shinichi: *See—*
Nakajima, Yasuo; Onoda, Michio; Sugihara, Kunihiko; and Nagumo, Shinichi, 4,210,109, Cl. 123-76.000.

Naidich, Herbert H.; and Westmark, John E., to Cincinnati Electronics Corporation. Pulsed doppler moving target detector. 4,210,912, Cl. 343-7.700.

Nakagami, Tatsuro: *See—*
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.

Nakagawa, Kazuyuki: *See—*
Tominaga, Michiaki; Tone, Hitoshi; and Nakagawa, Kazuyuki, 4,210,753, Cl. 544-128.000.

Nakahara, Yutaka: *See—*
Minagawa, Motonobu; Nakahara, Yutaka; Kubota, Naohiro; and Shibata, Toshihiro, 4,210,577, Cl. 260-45.8NT.

Nakajima, Yasuo; Onoda, Michio; Sugihara, Kunihiko; and Nagumo, Shinichi, to Nissan Motor Company, Limited. Multi-cylinder internal combustion engine. 4,210,109, Cl. 123-76.000.

Nakamura, Akio: *See—*
Sado, Ryoichi; and Nakamura, Akio, 4,210,895, Cl. 338-99.000.

Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,210,104, Cl. 123-259.000.

Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, to Hitachi, Ltd. Video signal play-back circuit. 4,210,942, Cl. 360-65.000.

Nakamura, Koyo; and Nagaishi, Hastuo, to Nissan Motor Company, Limited. Electronically controlled exhaust gas recirculation system in internal combustion engine. 4,210,112, Cl. 123-571.000.

Nakamura, Tadahiko; and Nakano, Kenji, to Sony Corporation. Automatic tracking servo control system. 4,210,943, Cl. 360-70.000.

Nakamura, Yoshihisa: *See—*
Iwasaki, Shun-Ichi; and Nakamura, Yoshihisa, 4,210,946, Cl. 360-131.000.

Nakano, Kenji: *See—*
Nakamura, Tadahiko; and Nakano, Kenji, 4,210,943, Cl. 360-70.000.

Nakata Giken Co., Ltd.: *See—*
Nakata, Kunii, 4,210,036, Cl. 81-15.800.

Nakata, Josuke: *See—*
Mihashi, Yutaka; and Nakata, Josuke, 4,210,466, Cl. 148-1.500.

Nakata, Kunii, to Nakata Giken Co., Ltd. Tire-chain handling tools. 4,210,036, Cl. 81-15.800.

Nakatani, Keiji, to Minolta Camera Kabushiki Kaisha. Roll paper cutting arrangement. 4,210,044, Cl. 83-241.000.

Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, to Hitachi, Ltd. Color picture tube with shadow mask. 4,210,842, Cl. 313-403.000.

Naslund, Rolf P.: *See—*
Margen, Peter H. E.; and Naslund, Rolf P., 4,210,203, Cl. 165-163.000.

Nassau Recycle Corporation: *See—*
Cole, Joseph I., 4,210,198, Cl. 164-433.000.

National Research Development Corporation: *See—*
Kerr, Ian M.; Brown, Ronald E.; and Hovanessian, Ara G., 4,210,746, Cl. 536-27.000.
Soothill, John F.; and Levinsky, Roland J., 4,210,622, Cl. 422-61.000.

National Semiconductor Corporation: *See—*
Wong, Thomas S. W.; Wong, Wing Y.; and Chow, Edwin M. W., 4,210,829, Cl. 307-296.00R.

National Union Electric Corporation: *See—*
Schaefer, Harold W., 4,209,873, Cl. 15-182.000.

Naughton, Francis C.: *See—*
Herman, Daniel F.; and Naughton, Francis C., 4,210,572, Cl. 260-40.00R.

Naya, Mikio; Ohta, Yoshiharu; and Hosomizu, Hiroshi, to Minolta Camera Kabushiki Kaisha. Electronic control circuitry for terminating flash output. 4,210,849, Cl. 315-241.00P.

NCR Corporation: *See—*
Brower, Ronald W., 4,210,465, Cl. 148-1.500.

Neiman, Alexandr A.: *See—*
Palekhin, Vladimir A.; Neiman, Alexandr A.; and Kagan, Veniamin G., 4,210,902, Cl. 340-310.00A.

Nelli, Giuseppe: *See—*
Di Battista, Piero; Fontanelli, Renzo; Gratani, Francesco; and Nelli, Giuseppe, 4,210,576, Cl. 260-45.8NE.

Nelson, Marvin D.: *See—*
Kabat, John L.; and Nelson, Marvin D., 4,210,823, Cl. 307-117.000.

Nestler, Gerhard: *See—*
Hansen, Guenter; Merger, Franz; Nestler, Gerhard; and Zeidler, Georg, 4,210,414, Cl. 8-639.000.

Nestor Engineering Associates, Inc.: *See—*
Nestor, Jack; and Devine, John W., Jr., 4,210,145, Cl. 128-305.000.
Nestor, Jack; and Devine, John W., Jr., 4,210,147, Cl. 128-327.000.

Nestor, Jack; and Devine, John W., Jr., to Nestor Engineering Associates, Inc. Surgical hole cutter for square hair transplant plugs. 4,210,145, Cl. 128-305.000.

Nestor, Jack; and Devine, John W., Jr., to Nestor Engineering Associates, Inc. Head tourniquet having incision closing capability. 4,210,147, Cl. 128-327.000.

Nestor, Jack: *See—*
Ernest, Raymond; and Nestor, Jack, 4,209,871, Cl. 15-167.00R.

Netafim Mutzarei Hashkaya Vetiftuf Bekibbutz Hatzerm: *See—*
Mehoudar, Raphael, 4,210,287, Cl. 239-542.000.

Neubert, Terry C.; and Anderson, Donald W., to General Tire & Rubber Company, The. Adhesion method employing lignin amine cord adhesives. 4,210,475, Cl. 156-110.00A.

Neujens, Georges J.: *See—*
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., 4,210,816, Cl. 250-468.000.

Neveux, Rene R., to Societe Anonyme Francaise du Ferodo. Motor-fan unit with cooled motor. 4,210,833, Cl. 310-58.000.

Neveux, Rene R., to Societe Anonyme Francaise du Ferodo. Fan with a cooled motor. 4,210,835, Cl. 310-62.000.

Newhouse, Paul D.; and Allen, Charles M., to Westinghouse Electric Corp. Passive detection and tracking apparatus. 4,210,913, Cl. 343-123.000.

Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., to Veesicol Chemical Corporation. Novel intumescent composition. 4,210,452, Cl. 106-18.180.

Nico-Pyrotechnik Hanns-Juergen Diederichs KG: *See—*
Lubbers, Willi; and Krone, Uwe, 4,210,555, Cl. 252-305.000.

Nicolay, Hugh C.: *See—*
Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., 4,210,925, Cl. 357-46.000.

Nield, Gerald L.: *See—*
Yang, Kang; Nield, Gerald L.; and Washecheck, Paul H., 4,210,764, Cl. 568-618.000.

Nifco Inc.: *See—*
Hara, Kunio, 4,210,893, Cl. 337-407.000.

Nikolaev, Anatoly F.: *See—*
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F., 4,210,569, Cl. 260-328.0EP.

Nikolaev, Vladimir P.; Chaika, Leopold I.; and Ivanov, Ivan V. Position sensor of linearly moving bodies. 4,210,865, Cl. 324-207.000.

Nilsen, Christopher. Tree clamp and shear support structure. 4,210,183, Cl. 144-34.00E.

Nilsson, Bengt: *See—*
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,210,618, Cl. 264-130.000.

Ninomiya, Ichiro; Nagakura, Katsuhiko; Sakamoto, Hitoshi; and Tachi, Katsuichi, to Sony Corporation. Method and system for synchronizing the movement of plural recording media. 4,210,939, Cl. 360-14.000.

Ninomiya, Nobutaka; Nishino, Hiroshi; Aibe, Toshio; and Itoga, Kiyoshi, to Takeda Chemical Industries, Ltd. Removal of nitrogen oxides. 4,210,628, Cl. 423-239.000.

Nippon Electric Co., Ltd.: *See—*
Fujita, Kazunori, 4,210,782, Cl. 179-18.0ES.
Yonezu, Hiroo, 4,210,878, Cl. 331-94.50H.

Nippon Kogaku K.K.: *See—*
Sato, Akihiko; and Goto, Tetsuro, 4,210,394, Cl. 354-234.000.

Nippon Oil Company, Ltd.: *See—*
Hayashi, Hideo; and Sato, Hisatake, 4,210,733, Cl. 525-529.000.
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,210,720, Cl. 435-42.000.

Nippon Paint Co., Ltd.: *See—*
Sumiyoshi, Iwao; Iimure, Tamio; and Tomotsugu, Akio, 4,210,713, Cl. 430-284.000.

Nippon Soken, Inc.: *See—*
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, 4,210,111, Cl. 123-414.000.
Sakakibara, Yasuyuki, 4,210,908, Cl. 340-754.000.

Nippon Steel Corp.: *See—*
Shimada, Shoji; Yoshinari, Kazuhiko; and Koyakumaru, Hidefumi, 4,210,469, Cl. 148-16.000.

Nippondenso Co., Ltd.: *See—*
Sakai, Toshiyasu, 4,210,802, Cl. 235-483.000.

Nishibori, Kengi; Hayashi, Fumio; and Ogawa, Tadashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Warm air intake system for an internal combustion engine. 4,210,115, Cl. 123-122.00D.

Nishida, Masamitsu: *See—*
Ouchi, Hiromu; Nishida, Masamitsu; and Hayakawa, Shigeru, 4,210,546, Cl. 252-62.900.

Nishida, Minoru: *See—*
Imanaka, Hiroshi; and Nishida, Minoru, 4,210,635, Cl. 424-114.000.

Nishimoto, Takehiko: *See—*
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,210,842, Cl. 313-403.000.

Nishimura, Katsuyoshi: *See—*
Tsukada, Naonobu; and Nishimura, Katsuyoshi, 4,209,907, Cl. 433-33.000.

Nishimura, Sanji: *See—*
Watanabe, Morio; and Nishimura, Sanji, 4,210,502, Cl. 204-151.000.

Nishimura, Satoshi; Sato, Kenichi; and Sugiura, Youji, to Sanyo Electric Co., Ltd. Sound synthesizing apparatus. 4,210,781, Cl. 179-15.55T.

Nishino, Hiroshi: *See—*
Ninomiya, Nobutaka; Nishino, Hiroshi; Aibe, Toshio; and Itoga, Kiyoshi, 4,210,628, Cl. 423-239.000.

Nissan Motor Company, Limited: *See—*
Adachi, Masahiro, 4,210,357, Cl. 296-84.00B.
Miyamori, Yukio; and Masaki, Kenji, 4,209,981, Cl. 60-274.000.
Nakajima, Yasuo; Onoda, Michio; Sugihara, Kunihiko; and Nagumo, Shinichi, 4,210,109, Cl. 123-76.000.
Nakamura, Koyo; and Nagaishi, Hastuo, 4,210,112, Cl. 123-571.000.
Ushiku, Kenichi; and Hasegawa, Akira, 4,210,789, Cl. 200-61.45R.

Nitta, Tsuneharu; Terada, Ziro; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Terminal unit for electrical circuit elements and sensing device employing said terminal unit. 4,210,894, Cl. 338-35.000.

Niven, David A.: *See—*
Tantillo, Robert M.; and Niven, David A., 4,210,538, Cl. 210-333.00A.

NJM, Inc.: *See—*
Wolff, Edwin K.; and Schwenzer, Alfred F., 4,210,481, Cl. 156-357.000.

NL Industries, Inc.: *See—*
Herman, Daniel F., 4,210,571, Cl. 260-40.00R.
Herman, Daniel F.; and Naughton, Francis C., 4,210,572, Cl. 260-40.00R.
Lamb, Raymond K.; Weathers, Richard E.; Coffey, Lacey C.; and Walker, Stephen J., 4,209,891, Cl. 29-466.000.
Noble, Robert T., to Texas Instruments Incorporated. Electronic timepiece circuits. 4,209,974, Cl. 368-84.000.
Noce, Louis O.: *See—*
Morse, Phillip H.; Noce, Louis O.; and Basta, Michael I., 4,210,178, Cl. 137-625.500.
Noda, Isao: *See—*
Hamamura, Tadashi; Noda, Isao; Yoshii, Tadashi; Takase, Masao; and Watanabe, Terumi, 4,210,726, Cl. 521-110.000.
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine injected accumulation chamber. 4,210,105, Cl. 123-277.000.
North, James C.; and Schinke, David P., to Bell Telephone Laboratories, Incorporated. Edge illuminated photodetector with optical fiber alignment. 4,210,923, Cl. 357-30.000.
Novcaski, Russell G.: *See—*
Frye, Dana E.; Novcaski, Russell G.; Mills, Jack; and Horneck, Richard H., 4,210,247, Cl. 206-494.000.
Nozawa, Shigeo, to Kyowa Kagakukogyo Kabushiki Kaisha. Method of hydroponic culture. 4,209,944, Cl. 47-59.000.
Nozu, Toshiro: *See—*
Tada, Hiroshi; and Nozu, Toshiro, 4,209,868, Cl. 14-16.100.
Nucledyne Engineering Corp.: *See—*
Kleimola, Frank W., 4,210,614, Cl. 261-124.000.
Obayashi, Hidehito; and Okamoto, Hiroshi, to Hitachi, Ltd. Oxygen sensor. 4,210,509, Cl. 204-195.00S.
Obear, Robert F., to Western Gear Corporation. Workpiece conditioning grinder system. 4,209,948, Cl. 51-92.00R.
Obendorf, Johann; Dormann, Gunter; Gras, Rainer; and Wolf, Elmar, to Chemische Werke Huls Aktiengesellschaft. Method for the coating of glass surfaces. 4,210,687, Cl. 428-35.000.
Obermair, Gilbert K. J., to J. W. Spear & Sons Limited. Alignment game. 4,210,337, Cl. 273-264.000.
Obler, Henry D., to United States of America, National Aeronautics and Space Administration. Apparatus for supplying conditioned air at a substantially constant temperature and humidity. 4,210,278, Cl. 236-49.000.
O'Brien, Edward F.: *See—*
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,547, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,548, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,549, Cl. 252-76.000.
Occidental Oil Shale, Inc.: *See—*
Hutchins, Ned M.; and Ridley, Richard D., 4,210,366, Cl. 299-2.000.
Occidental Petroleum Corporation: *See—*
Casperson, Philip W., 4,210,438, Cl. 71-34.000.
Oda, Hajime: *See—*
Moritani, Nakanobu; Samejima, Toshihide; Matsumura, Toshio; Oda, Hajime; and Fujita, Masanori, 4,209,975, Cl. 368-186.000.
Odds, David J. H., to F. A. Hughes and Company Limited. Underwater jet blasting apparatus. 4,209,952, Cl. 51-415.000.
Ode, Sadao; and Hatuse, Toshikazu, to Citizen Watch Co., Ltd. Device for detachably mounting glass on timepiece cases. 4,210,798, Cl. 219-243.000.
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, to AGFA-Gevaert, A.G. Photographic material with improved properties. 4,210,714, Cl. 430-372.000.
Ogata, Yoshihiro: *See—*
Miyakawa, Seiichi; Tatsumi, Susumu; Sakamoto, Koji; and Ogata, Yoshihiro, 4,210,864, Cl. 324-204.000.
Ogata, Yoshiro, to Matsushita Electronics Corporation. Metal vapor laser. 4,210,876, Cl. 331-94.50G.
Ogawa & Co., Ltd.: *See—*
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,210,640, Cl. 424-181.000.
Ogawa, Iwakichi, to Takara Co., Ltd. Modular toy building units. 4,209,934, Cl. 46-31.000.
Ogawa, Ryota, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focus device for zoom lens. 4,210,387, Cl. 350-187.000.
Ogawa, Tadashi: *See—*
Nishibori, Kengi; Hayashi, Fumio; and Ogawa, Tadashi, 4,210,115, Cl. 123-122.00D.
Ogawa, Takuzo: *See—*
Tanaka, Tomoyuki; Okamura, Masahiro; Shirasawa, Toshikatsu; and Ogawa, Takuzo, 4,210,464, Cl. 148-1.500.
Ogihara, Masuo: *See—*
Kitai, Kiyoshi; Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,209,969, Cl. 368-250.000.
Ogino, Hajime: *See—*
Ueki, Tetsuro; Ogino, Hajime; and Yaguchi, Shigeru, 4,209,926, Cl. 40-437.000.
Oguri, Ichiro, to Sharp Kabushiki Kaisha. Turntable drive in a microwave oven. 4,210,794, Cl. 219-10.55F.
O'Hanlon, Edward J. Solar heat collector. 4,210,129, Cl. 126-447.000.
O'Hanlon, Edward J. Low cost heat storage tank and heat exchanger. 4,210,201, Cl. 165-104.00S.
O'Hara, Mark J.: *See—*
Hilfman, Lee; and O'Hara, Mark J., 4,210,522, Cl. 208-111.000.
Ohata, Katsuya: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.
Ohinouye, Tsuneo: *See—*
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.
Ohmori, Masayuki; and Ito, Norio, to Sony Corporation. Projecting apparatus. 4,210,928, Cl. 358-60.000.
Ohnishi, Noriaki: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,210,517, Cl. 208-8.0LE.
Ohno, Tetatsu. Grinding method and apparatus. 4,209,947, Cl. 51-7.000.
Ohta, Yoshiharu: *See—*
Naya, Mikio; Ohta, Yoshiharu; and Hosomizu, Hiroshi, 4,210,849, Cl. 315-241.00P.
Ohtani, Iwao, to Tokico Ltd. Volumetric type flowmeter having circular and involute tooth shape rotors. 4,210,410, Cl. 418-150.000.
Ohtsubo, Toshikatsu: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,210,517, Cl. 208-8.0LE.
Oiles Industry Co. Ltd.: *See—*
Tada, Hiroshi; and Nozu, Toshiro, 4,209,868, Cl. 14-16.100.
Ojima, Nobuyuki: *See—*
Tamura, Tooru; Ojima, Nobuyuki; Kondo, Sigeru; and Kishita, Kenichirou, 4,210,498, Cl. 204-35.00N.
Ojima, Teruhiko: *See—*
Yoneyama, Tetsuhito; Hori, Tetsuo; and Ojima, Teruhiko, 4,210,471, Cl. 148-102.000.
Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, to Chugai Seiyaku Kabushiki Kaisha. Urea derivatives, process for preparing the same and herbicidal composition containing the same. 4,210,440, Cl. 71-98.000.
Okamoto, Hiroshi: *See—*
Obayashi, Hidehito; and Okamoto, Hiroshi, 4,210,509, Cl. 204-195.00S.
Okamura, Masahiro: *See—*
Tanaka, Tomoyuki; Okamura, Masahiro; Shirasawa, Toshikatsu; and Ogawa, Takuzo, 4,210,464, Cl. 148-1.500.
Okazaki, Tatsuo: *See—*
Okazaki, Yasukichi; and Okazaki, Tatsuo, 4,210,134, Cl. 128-24.100.
Okazaki, Yasukichi; and Okazaki, Tatsuo, to Kabushikigaisha OMCO. Pillow for manual therapeutics. 4,210,134, Cl. 128-24.100.
Oki, Hisashi: *See—*
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, 4,210,105, Cl. 123-277.000.
Olin Corporation: *See—*
Kershner, Stuart D.; and Smith, Ken P., 4,210,307, Cl. 249-202.000.
Kleine, Charles A.; and Middleton, Verne L., 4,210,127, Cl. 126-444.000.
Milnes, Frank J.; and Parziale, John R., 4,210,543, Cl. 252-46.700.
Preston, Frank J.; Kraus, Theodore C.; and Chandalia, Kiran B., 4,210,727, Cl. 521-137.000.
Silva, Joseph W.; and Duffield, Albert J., 4,209,889, Cl. 29-432.000.
Winter, Joseph, 4,209,885, Cl. 29-157.30V.
Winter, Joseph; Breedis, John F.; and Mravic, Brian, 4,209,886, Cl. 29-157.30V.
Ollivier, Jean: *See—*
Combette, Marc; and Ollivier, Jean, 4,210,267, Cl. 227-10.000.
Olsen, Robert A., to Warner Electric Brake & Clutch Company. Field assembly for an electromagnet. 4,210,890, Cl. 335-281.000.
Olson, Daniel R.: *See—*
Schroeter, Siegfried H.; and Olson, Daniel R., 4,210,699, Cl. 428-331.000.
Olson, Stewart B.: *See—*
Paterson, Malcolm M.; Paxson, William J.; and Olson, Stewart B., 4,210,527, Cl. 209-152.000.
Olympus Optical Co., Ltd.: *See—*
Ikeda, Yoshitsugi, 4,210,388, Cl. 350-214.000.
Kondo, Shiro, 4,210,094, Cl. 116-255.000.
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,210,724, Cl. 435-292.000.
Omori, Yasuzi: *See—*
Ikeda, Tadayoshi; Omori, Yasuzi; and Ikeda, Saizo, 4,210,696, Cl. 428-212.000.
Onoda, Michio: *See—*
Nakajima, Yasuo; Onoda, Michio; Sugihara, Kunihiko; and Nagumo, Shinichi, 4,210,109, Cl. 123-76.000.
Oono, Hideshi: *See—*
Kume, Kazunari; Watanabe, Minoru; Oono, Hideshi; and Tamaru, Munetaka, 4,209,970, Cl. 368-76.000.
Orenstein, Henry, to Toy Builders. Appendage operated toys. 4,209,938, Cl. 46-116.000.
Orofino, Michael J. Sanitary pickup device for animal feces. 4,210,351, Cl. 294-1.0BB.
Orth, Dieter: *See—*
Radunz, Hans-Eckart; Kramer, Josef; Baumgarth, Manfred; and Orth, Dieter, 4,210,651, Cl. 424-263.000.
Ortho Diagnostics Inc.: *See—*
Baughman, D. Joe; Lytwyn, Ann; and Myrmel, Kurt, 4,210,420, Cl. 23-230.00B.

Osakabe, Kuniharu: *See—*
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,210,842, Cl. 313-403.000.
Osburg, Dieter, to Jagenberg Werke Aktiengesellschaft. Slitter having adjustable circular knives. 4,210,045, Cl. 83-497.000.
Oswald, Norman D.; and Mankey, Harry S., to Standard Manufacturing Co., Inc. Undercarriage for adverse terrain vehicle. 4,210,218, Cl. 180-24.120.
Oswald, Norman D.; and Mankey, Harry S., to Standard Manufacturing Co., Inc. Undercarriage for adverse terrain vehicle. 4,210,219, Cl. 180-24.120.
Otsuka Pharmaceutical Co., Ltd.: *See—*
Tominaga, Michiaki; Tone, Hitoshi; and Nakagawa, Kazuyuki, 4,210,753, Cl. 544-128.000.
Ott, Louis E.: *See—*
Windgassen, Richard J.; and Ott, Louis E., 4,210,437, Cl. 71-28.000.
Ottaway, Gerald H.: *See—*
Bailey, Jack H.; and Ottaway, Gerald H., 4,210,931, Cl. 358-128.500.
Ouchi, Hiromu; Nishida, Masamitsu; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Piezoelectric ceramic compositions. 4,210,546, Cl. 252-62.900.
Outboard Marine Corporation: *See—*
Fuelling, William, Jr.; and Heismann, Richard A., 4,209,964, Cl. 56-11.200.
Outokumpu Oy: *See—*
Lilja, Launo L.; and Makitalo, Valto J., 4,210,315, Cl. 266-182.000.
Ovcharov, Alexandr M.: *See—*
Romanovsky, Vladimir F.; Panasjuk, Vadim S.; Stepanov, Boris M.; Ovcharov, Alexandr M.; and Akimov, Jury A., 4,210,813, Cl. 250-421.000.
Ovdienko, Yaroslav A.: *See—*
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F., 4,210,569, Cl. 260-328.0EP.
Owens-Corning Fiberglas Corporation: *See—*
Evans, Alton, Jr., 4,210,067, Cl. 93-1.00F.
McCombs, Frank P., 4,210,562, Cl. 260-14.000.
Owens-Illinois, Inc.: *See—*
Amberg, Christopher P.; and Belcher, Samuel L., 4,210,256, Cl. 220-254.000.
Breno, Philip J.; Clark, Robert N.; and Semersky, Frank E., 4,210,623, Cl. 422-101.000.
Owens, Warner R. Sprinkler head trimming device. 4,209,903, Cl. 30-302.000.
Paajanen, Erkki. Clamp. 4,209,879, Cl. 24-248.00R.
Paglericcio, Paul F.: *See—*
Dreyer, Bernard F.; and Paglericcio, Paul F., 4,210,162, Cl. 132-9.000.
Palekhin, Vladimir A.; Neiman, Alexandr A.; and Kagan, Veniamin G. Device for telemetering loads on power transmission line conductors. 4,210,902, Cl. 340-310.00A.
Pall Corporation: *See—*
Adiletta, Joseph G., 4,210,697, Cl. 428-272.000.
Palma, Florencio N. Sprinkler control valve. 4,210,169, Cl. 137-487.500.
Pan, Peter N. Y., to Continental Group, Inc., The. Self-venting end unit for pressure packaging. 4,210,255, Cl. 220-209.000.
Panasjuk, Vadim S.: *See—*
Romanovsky, Vladimir F.; Panasjuk, Vadim S.; Stepanov, Boris M.; Ovcharov, Alexandr M.; and Akimov, Jury A., 4,210,813, Cl. 250-421.000.
Pardo, Clay E., Jr.; Foster, Robert E.; and Fong, Willie, deceased (by Fong, Yukiye, executrix), to United States of America, Agriculture. Shrinkproofing of fabrics of wool. 4,210,415, Cl. 8-128.00A.
Parker, Herman. Apparatus for rocket sled game. 4,209,935, Cl. 46-44.000.
Parsons, James D.; and Wike, Paul S., to Union Tank Car Company. Railroad tank car. 4,210,254, Cl. 220-22.000.
Parsons, James R.: *See—*
Broyhill, Roy F.; and Parsons, James R., 4,210,407, Cl. 414-407.000.
Parziale, John R.: *See—*
Milnes, Frank J.; and Parziale, John R., 4,210,543, Cl. 252-46.700.
Paschal, Gloria C.; and Thompson, Gerald L., to Eli Lilly and Company. Vindesine synthesis. 4,210,584, Cl. 260-241.400.
Pate, Fred L. Spinner bait fishing lure. 4,209,932, Cl. 43-42.110.
Paterson, Malcolm M.; Paxson, William J.; and Olson, Stewart B., to Raytheon Company. Twin air classifier system. 4,210,527, Cl. 209-152.000.
Patil, Arvind S.; and Argade, Shyam D., to BASF Wyandotte Corporation. Thermoplastic fibers as separator or diaphragm in electrochemical cells. 4,210,515, Cl. 204-266.000.
Patterson, James A., to Specific Volume Systems, Inc. Method for determination and grading of precious minerals. 4,210,027, Cl. 73-432.00R.
Patton, John T., Jr.; and McBrayer, Robert L., to BASF Wyandotte Corporation. Preparation of high resiliency polyurethane foams. 4,210,728, Cl. 521-160.000.
Patzold, Walter: *See—*
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.
Paulitsch, Hans: *See—*
Vlad, Constantin; and Paulitsch, Hans, 4,210,010, Cl. 72-201.000.
Paulson, Thomas E., to Magnaflux Corporation. Linearizing circuit for a non-destructive testing instrument having a digital display. 4,210,866, Cl. 324-222.000.
Paulus, Helmut, to Saint-Gobain Industries. Cutting device with rotating cutters. 4,210,050, Cl. 83-848.000.
Paxson, William J.: *See—*
Paterson, Malcolm M.; Paxson, William J.; and Olson, Stewart B., 4,210,527, Cl. 209-152.000.
PCR, Inc.: *See—*
Greer, Sheldon, 4,210,638, Cl. 424-180.000.
Pedrini, Ivano. Portable cooking apparatus suitable as an oven or as a grill. 4,210,072, Cl. 99-340.000.
Peetz, Wolfgang; and Klaissle, Siefgried, to Hawera Probst GmbH & Co. Rock drill with helical dust conveying groove. 4,210,215, Cl. 175-394.000.
Pegler Hattersley Limited: *See—*
Hanson, Geoffrey, 4,210,312, Cl. 251-258.000.
Pelavin, Milton H., to Technicon Instruments Corporation. Method and apparatus for the non-invasive determination of the characteristics of a segmented fluid stream. 4,210,809, Cl. 250-343.000.
Peltie, Patrick, to POMA 2.000 S.A. Anti-collision device for passive vehicles. 4,210,084, Cl. 104-178.000.
Pennwalt Corporation: *See—*
Shetty, Bola V., 4,210,749, Cl. 542-469.000.
Perlin, Alfred R., to Kendall Company, The. Artificial sphincter with collection bag. 4,210,131, Cl. 128-1.00R.
Perlin, Alfred R., to Kendall Company, The. Artificial sphincter. 4,210,132, Cl. 128-1.00R.
Perrigraphics, Inc.: *See—*
Kraayvanger, Allan G., 4,209,928, Cl. 40-610.000.
Perrotta, Kenneth A., to Whatman Reeve Angel Limited. Improved filter tube. 4,210,540, Cl. 210-497.00R.
Perry, Elijah R., to Electric Power Research Institute, Inc. Filled polymer electrical insulator. 4,210,774, Cl. 174-140.00R.
Peter, Cornelius; and Kraus, Bernd, to Robert Bosch GmbH. Flow rate meter with temperature-dependent resistor. 4,210,016, Cl. 73-116.000.
Peter, Heinz: *See—*
Pfeifer, Josef; and Peter, Heinz, 4,210,742, Cl. 528-346.000.
Pfeifer, Josef; and Peter, Heinz, 4,210,743, Cl. 528-347.000.
Peters, Alan W., to Mobil Oil Corporation. Hydrodenitrogenation of demetallized residual oil. 4,210,525, Cl. 208-212.000.
Petersen, Robert J., to Midwest Research Institute. Blood compatible polymers and applications thereof. 4,210,529, Cl. 210-22.00A.
Pfeifer, Josef; and Peter, Heinz, to Ciba-Geigy Corporation. Transparent polyamides from branched chain diamine. 4,210,742, Cl. 528-346.000.
Pfeifer, Josef; and Peter, Heinz, to Ciba-Geigy Corporation. Transparent polyamides from branched chain diamines. 4,210,743, Cl. 528-347.000.
Pfeifer, Josef: *See—*
Muller, Juurgen; Rheude, Alfred; and Pfeifer, Josef, 4,210,396, Cl. 355-12.000.
Pfizer Inc.: *See—*
Belletire, John L., 4,210,663, Cl. 424-275.000.
Sarges, Reinhard; Belletire, John L.; and Schnur, Rodney C., 4,210,667, Cl. 424-281.00.
Sarges, Reinhard, 4,210,756, Cl. 546-15.000.
Pfleiderer, Ernst: *See—*
Monsheimer, Rolf; and Pfleiderer, Ernst, 4,210,721, Cl. 435-69.000.
Phillips Petroleum Company: *See—*
Blore, James H., 4,209,881, Cl. 28-243.000.
Phillips, William W., to Shaymar, Inc. Speaker system. 4,210,784, Cl. 179-146.00H.
Pichler, Ludwig: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,210,659, Cl. 424-273.00R.
Picot S.A.: *See—*
Michel, Alain J., 4,210,007, Cl. 72-8.000.
Pilewski, John J.: *See—*
Staats, Clyde; and Pilewski, John J., 4,209,949, Cl. 51-151.000.
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, to AB Akerlund & Rausing. Method of making tear opening devices for containers. 4,210,618, Cl. 264-130.000.
Pine, Herbert J.: *See—*
Munger, Stanley H.; and Pine, Herbert J., 4,210,712, Cl. 430-275.000.
Pinke, Paul A., to UOP Inc. Manufacture of linear primary aldehydes and alcohols. 4,210,608, Cl. 568-451.000.
Pinto, Alwyn, to Imperial Chemical Industries Limited. Methanol distillation process. 4,210,495, Cl. 203-22.000.
Pioneer Electronic Corporation: *See—*
Fushimi, Akihiro; Tabara, Noboru; and Isaki, Mikio, 4,210,944, Cl. 360-74.200.
Takaoka, Saburo; and Tsuda, Youichiro, 4,210,828, Cl. 307-268.000.
Piteau, Marc D.; and Malfroot, Thierry A., to Societe Nationale des Poudres et Explosifs. Process for the industrial synthesis of vinyl and isopropenyl chloroformate and thiochloroformate. 4,210,598, Cl. 260-455.00B.
Pitney Bowes Inc.: *See—*
Cinque, Gregory M.; Pryor, Roger W.; and Rubinstein, Arthur, 4,210,936, Cl. 358-283.000.
Macaluso, Paul J.; and Clifford, Lawrence E., 4,210,397, Cl. 355-15.000.
Pittala, John. Doll using circulating fluid to simulate body temperature. 4,209,939, Cl. 46-116.000.

Pitts, Clyde T.: *See—*
Hermsdorf, Horst G.; and Pitts, Clyde T., 4,209,982, Cl. 60-325.000.

Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, to Henkel Kommanditgesellschaft auf Aktien. Fine-particulate alkali metal aluminosilicates in the process of washing and cleaning rawhides and fur skins. 4,210,416, Cl. 8-139.100.

Platamone, Vito, Jr. Adjustable ligature for musical instrument. 4,210,055, Cl. 84-383.00R.

Pleasance, Lyn D.; Riedel, Ernest P.; and Weaver, Lelland A. C., to Westinghouse Electric Corp. Split ground state atomic iodine or bromine laser. 4,210,877, Cl. 331-94.5PE.

Plesko, Edward J. Air conversion for internal combustion engines. 4,210,062, Cl. 91-54.000.

Plessers, Hendrik S.: *See—*
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., 4,210,816, Cl. 250-468.000.

Pogson, John T.: *See—*
Shannon, Roger L.; Watkins, Dale F.; and Pogson, John T., 4,210,847, Cl. 315-111.900.

Pohl, Hans-Joachim: *See—*
Friedel, Klaus; Dammann, Ehrhard; Pohl, Hans-Joachim; Schutt, Wolfgang; and Jensen, Hans-Ludwig, 4,210,504, Cl. 204-180.00R.

Poitevin, Jean-Pierre R.; and Brossard, Pierre C. Four-phase staggered shift keying modulator system. 4,210,879, Cl. 332-9.00R.

Polaroid Corporation: *See—*
Cincotta, Louis; and Foley, James W., 4,210,752, Cl. 544-33.000.
Corben, Leo D., 4,210,450, Cl. 430-567.000.

Pollehn, Herbert K.; and Bratton, Jerry L., to United States of America, Army. Method of making thin antireflection coating for electro-optical device. 4,210,681, Cl. 427-64.000.

Polukhin, Dmitry I.: *See—*
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

POMA 2.000 S.A.: *See—*
Peltie, Patrick, 4,210,084, Cl. 104-178.000.

Pomagalski S.A.: *See—*
Laurent, Roger, 4,210,019, Cl. 73-158.000.

Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., to Beecham Group Limited. Synthetic β-lactam compounds, a process for their preparation and compositions containing them. 4,210,661, Cl. 424-274.000.

Popov, Vyacheslav E.: *See—*
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

Porreca, Arthur J. Adjustable and knock-down picture frame construction. 4,209,922, Cl. 40-155.000.

Porter, John H., to Lad Research Industries, Inc. Differential fiber optic differential pressure sensor. 4,210,029, Cl. 73-705.000.

Potomac Applied Mechanics, Inc.: *See—*
Stubbings, James H., 4,210,090, Cl. 113-54.00R.

Pouchol, Jean-Marie, to Rhone-Poulenc Industries. Aqueous dispersions of polyvinylbutyral. 4,210,564, Cl. 260-29.60B.

Povejsil, James H., to Towmotor Corporation. Seal and seal assembly. 4,210,339, Cl. 277-153.000.

Powell, Lloyd J., to International Telephone and Telegraph Corporation. Method of making a socket contact. 4,209,895, Cl. 29-874.000.

Powers, Thomas E. Recreational vehicle. 4,210,360, Cl. 296-216.000.

PPG Industries, Inc.: *See—*
Claassen, George R., 4,210,435, Cl. 65-106.000.
Dahms, James B., 4,210,421, Cl. 23-303.000.
DeLue, Norman R.; and Crano, John C., 4,210,631, Cl. 423-292.000.
Imler, Vaughn R., 4,210,436, Cl. 65-106.000.

Prakash, Nellikunja J.: *See—*
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,210,664, Cl. 424-275.000.
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,210,665, Cl. 424-275.000.

Praxl, Werner; and Ehret, Reiner, to Dr. Werner Freyberg Chemische Fabrik. Process for preparing pesticides releasing hydrogen phosphide. 4,210,683, Cl. 427-221.000.

Precision Monolithics, Inc.: *See—*
Fukahori, Kiyoshi, 4,210,830, Cl. 307-362.000.

Precision Thin Film Corporation: *See—*
Berg, Joseph E.; and Brown, Randolph E., Jr., 4,210,701, Cl. 428-409.000.

Preston, Frank J.; Kraus, Theodore C.; and Chandalia, Kiran B., to Olin Corporation. Graft copolymers from unsaturated monomers and peroxy di-ester polyols and polyurethanes prepared therefrom. 4,210,727, Cl. 521-137.000.

Pretty, Frederick A., to USM Corporation. Cross beam press and control. 4,210,046, Cl. 83-525.000.

Pretzer, Wayne R.: *See—*
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,606, Cl. 568-385.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,607, Cl. 568-385.000.

Preuss, Friedrich: *See—*
Greiner, Harry; and Preuss, Friedrich, 4,210,078, Cl. 101-136.000.

Price, George M.: *See—*
Moore, L. Frank; and Price, George M., 4,210,123, Cl. 126-374.000.
Moore, L. Frank; and Price, George M., 4,210,177, Cl. 137-613.000.

Price, Kenneth E., to Rainbow Lifegard Products, Inc. Universal chlorinator module. 4,210,624, Cl. 422-264.000.

Price-Pfister Brass Mfg. Co.: *See—*
Tarnay, Matthew G.; and Krieff, Sidney K., 4,210,284, Cl. 239-75.000.

Prince Industrial Development Co., Ltd.: *See—*
Yoshinaga, Sadao, 4,209,977, Cl. 368-10.000.

Pritchard, Michael E. Portable tumbling mat. 4,210,322, Cl. 272-109.000.

Procter & Gamble Company, The: *See—*
Fleisch, Herbert A.; and Felix, Rolf, 4,210,643, Cl. 424-204.000.
Logan, Ted J.; and Underwood, David C., 4,210,594, Cl. 260-428.500.
Sarge, Henry D., III; and Spector, Alan R., 4,210,144, Cl. 128-287.000.

Producto Machinery Corporation: *See—*
McGriff, Douglas H., 4,210,184, Cl. 144-312.000.

Professional Packaging Limited: *See—*
Holmes, Gordon W., 4,210,249, Cl. 206-632.000.

Projectus Industriprodukter Aktiebolag: *See—*
Gustafsson, Berth U., 4,209,914, Cl. 34-27.000.

Prokofiev, Vladimir I.: *See—*
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.

Pronovost, Jacques O.; and Derderian, Harry A., to ECO Motor Industries Ltd. Wobble plate engine. 4,209,980, Cl. 60-517.000.

Pruitt, Richard L.: *See—*
Smith, Homer, Jr.; Pruitt, Richard L.; Barnum, Edward F.; and Knerr, Robert P., Jr., 4,210,086, Cl. 110-173.00A.

Prummer, Rolf: *See—*
Koppe, Werner; and Prummer, Rolf, 4,210,167, Cl. 137-375.000.

Pryor, Roger W.: *See—*
Cinque, Gregory M.; Pryor, Roger W.; and Rubinstein, Arthur, 4,210,936, Cl. 358-283.000.

Prysby, Daniel G.; Bower, Ian L.; and Huber, William B., to Bell & Howell Company. Variable format tape replay system. 4,210,940, Cl. 360-33.000.

Ptinis, Athanasios N. Magical-type game. 4,210,321, Cl. 272-8.00N.

Pugh, Timothy G.; and Shifflett, Omer L., Jr., to Black & Decker, Inc. Cordless vacuum cleaner bowl and filter system. 4,209,875, Cl. 15-344.000.

Purdue Research Foundation: *See—*
Etzel, James E.; and Keramida, Vasiliki, 4,210,530, Cl. 210-38.00B.

Purex Corporation: *See—*
McClain, Charles P.; and Yowell, Jerry E., 4,210,417, Cl. 8-137.000.

Puyau, Andre: *See—*
Bimond, Jean-Pierre; Lazarre, Flavien; and Puyau, Andre, 4,210,025, Cl. 73-421.00R.

Pye, Michael R.: *See—*
Savage, Paul F.; and Pye, Michael R., 4,210,163, Cl. 132-33.00R.

Quaker Oats Company, The: *See—*
Fricano, Phillip J., 4,210,240, Cl. 206-45.310.

Quarenghi, Rodolfo, to CIR - S.p.A. - Divisione Sasib. Tobacco trimming device. 4,210,159, Cl. 131-21.00D.

Quist, Bo T.: *See—*
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,210,618, Cl. 264-130.000.

R. T. French Co., The: *See—*
Bayusik, Michael J.; and Chen, Peter H., 4,210,678, Cl. 426-521.000.

Radtke, Charles S., to American Can Company. Fracture and tear-resistant retained tab. 4,210,257, Cl. 220-269.000.

Radunz, Hans-Eckart; Kramer, Josef; Baumgarth, Manfred; and Orth, Dieter, to Merck Patent Gesellschaft mit beschrankter Haftung. Thiaprostaglandins. 4,210,651, Cl. 424-263.000.

Raes, Karl. Advancing cylinder for use in a printing machine. 4,210,079, Cl. 101-242.000.

Ragan, Robert O.: *See—*
Bohme, Reinhard D.; and Ragan, Robert O., 4,210,692, Cl. 428-106.000.

Raghu, Sivaraman; and Hoffmann, Arthur K., to American Cyanamid Company. Processes for dehydrogenation of arylimidazolidones. 4,210,760, Cl. 548-320.000.

Ragulskis, Kazimiras M.: *See—*
Vasiliev, Petr E.; Ragulskis, Kazimiras M.; Savitskas, Ionas A.; Misikov, Vitaly M.; and Topolnitsky, Oleg D., 4,210,837, Cl. 310-323.000.

Raichvarg, Denis: *See—*
Brossard, Claudine; Henry, Martine; and Raichvarg, Denis, 4,210,641, Cl. 424-180.000.

Rainbow Lifegard Products, Inc.: *See—*
Price, Kenneth E., 4,210,624, Cl. 422-264.000.

Ramirez, Alberto M.: *See—*
Ford, Leland W.; Ramirez, Alberto M.; and Smith, Gerald L., 4,210,858, Cl. 323-22.00T.

Ramohalli, Kumar N. R.: *See—*
United States of America, National Aeronautics and Space Administration; and Ramohalli, Kumar N. R., 4,210,474, Cl. 149-19.200.

Rand, Paul K.: *See—*
James, Michael; Rand, Paul K.; and Hallworth, Gerald W., 4,210,140, Cl. 128-266.000.

Rännenberg, George C., to United Technologies Corp. Efficiency air cycle environmental control system. 4,209,993, Cl. 62-80.000.

Rapp, Herbert: *See—*
Breitschwerdt, Werner; Jahn, Walter; Rapp, Herbert; and Klein, Wilhelm, 4,210,365, Cl. 297-481.000.

Raspanti, Giuseppe, to Sandoz Ltd. Water-soluble acid addition or quaternary ammonium salts useful in eliminating or preventing the brightening effects of anionic optical brighteners. 4,210,763, Cl. 548-350.000.

Rathsack, Gunther; and Hendel, Reinhard, to Gunther Rathsack Ingenieurtechnik. Auxiliary device for vertical turning and boring machine tools. 4,209,910, Cl. 33-185.00R.

Ray, Ranjan, to Allied Chemical Corporation. Iron group transition metal-refractory metal-boron glassy alloys. 4,210,443, Cl. 75-123.00K.

Raychem Limited: *See—*
Haley, Roy; Cooper, Brian; and Changani, Pushpkumar D., 4,210,773, Cl. 174-72.00A.

Raytheon Company: *See—*
LaTorre, Richard R.; Levitt, Barry N.; and MacKenzie, Gordon C., 4,210,804, Cl. 250-203.00R.
Moskowitz, Jacob F., 4,210,874, Cl. 330-134.000.
Paterson, Malcolm M.; Paxson, William J.; and Olson, Stewart B., 4,210,527, Cl. 209-152.000.

Ream, Donald F., to United States of America, Navy. Underwater electric current and alternating magnetic field detector. 4,210,083, Cl. 102-18.00M.

Rebsamen, August: *See—*
Deutschlander, Gert; Rebsamen, August; and Fluck, Rene, 4,209,960, Cl. 53-502.000.

Rechter, Harold L., to Chicago Fire Brick Company. Aluminous refractory compositions containing carbon, silicon and chrome oxide. 4,210,454, Cl. 106-56.000.

Redfarn, Cyril A., to Dixon International Limited. Composition for forming an intumescent material. 4,210,725, Cl. 521-100.000.

Rees, John R., to Girling Limited. Disc brake assemblies. 4,210,229, Cl. 188-18.00A.

Regan, Ernest E.; and McCann, Thomas J., to Dowdflor Corporation. Register emboss and method. 4,210,693, Cl. 428-152.000.

Reisner, Robert J. Traction mat. 4,210,280, Cl. 238-14.000.

Relles, Howard M.; and Johnson, Donald S., to General Electric Company. Aromatic polyformal-polycarbonate block polymers and method for making same. 4,210,731, Cl. 525-469.000.

Remys, Dionizas V.; and Scott, Donald R., to Sunbeam Corporation. Clock chime with shutoff. 4,209,968, Cl. 368-273.000.

Renzel, Peter; and Vermoehlen, Werner, to Krautkramer-Branson, Incorporated. Method and apparatus for converting analog ultrasonic echo signals into digital form. 4,210,904, Cl. 340-347.0AD.

Ressmeyer, Roger H. Portable illumination source for photographers. 4,210,952, Cl. 362-17.000.

Reuss, Peter J.; and Weigl, Josef. Process for improving the dry strength of paper and for improving the effect of optical brighteners in the preparation or coating of paper. 4,210,488, Cl. 162-162.000.

Rheinmetall GmbH: *See—*
Munn, Gerhard, 4,210,059, Cl. 89-132.000.

Rheude, Alfred: *See—*
Muller, Juurgen; Rheude, Alfred; and Pfeifer, Josef, 4,210,396, Cl. 355-12.000.

Rhodes, William A. Solar desalination system. 4,210,494, Cl. 203-10.000.

Rhone-Poulenc Industries: *See—*
Pouchol, Jean-Marie, 4,210,564, Cl. 260-29.60B.

Rhone-Poulenc-Textile: *See—*
Couchoud, Paul, 4,210,740, Cl. 528-167.000.

Ricciardi, Ronald J.; Ferrara, Angelo; and Hartmann, Joseph L. Weigh feeder system. 4,210,963, Cl. 364-567.000.

Rice, Robert R.: *See—*
Burkhart, Gordon H.; Rice, Robert R.; and Teague, James R., 4,210,389, Cl. 350-321.000.

Richardson, Eugene E.: *See—*
Lee, Richard J.; and Richardson, Eugene E., 4,210,545, Cl. 252-47.500.

Ricoh Company, Ltd.: *See—*
Miyakawa, Seiichi; Tatsumi, Susumu; Sakamoto, Koji; and Ogata, Yoshihiro, 4,210,864, Cl. 324-204.000.

Ridley, Richard D.: *See—*
Hutchins, Ned M.; and Ridley, Richard D., 4,210,366, Cl. 299-2.000.

Riedel, Ernest P.: *See—*
Pleasance, Lyn D.; Riedel, Ernest P.; and Weaver, Lelland A. C., 4,210,877, Cl. 331-94.5PE.

Riehl, Mark E., to General Electric Company. X-ray apparatus servo system. 4,210,815, Cl. 250-445.00R.

Rikuta, Sotokazu. Automatic controlling valve for maintaining the rate of fluid flow at a constant value. 4,210,171, Cl. 137-501.000.

Risk, George. Magnetic treatment devices for water pipelines. 4,210,535, Cl. 210-222.000.

Ritopecki, Branco. Furnace peep sight. 4,210,120, Cl. 126-200.000.

Ritter, Peter; and Fahrenkrog-Petersen, Dieter, to Siemens Aktiengesellschaft. Apparatus for housing electrical components. 4,210,951, Cl. 361-391.000.

Robbins, Ralph G.; and Bates, Victor E., to Automobile Association Limited, The. Maps. 4,210,347, Cl. 283-35.000.

Robert Bosch GmbH: *See—*
Harer, Helmut; Schulze, Rolf; and Juhasz, Josef, 4,210,855, Cl. 320-13.000.
Heitmann, Jurgen, 4,210,933, Cl. 358-172.000.
Heitmann, Jurgen; and Wilhelm, Rudolf, 4,210,938, Cl. 360-10.000.
Peter, Cornelius; and Kraus, Bernd, 4,210,016, Cl. 73-116.000.
Wessel, Wolf; and Sautter, Wilfried, 4,210,106, Cl. 123-489.000.

Roberts Corporation: *See—*
Cina, Ronald A.; and Kluge, Albert D., 4,210,194, Cl. 164-16.000.

Roberts, Lawrence R.: *See—*
Dodson, Vance H.; and Roberts, Lawrence R., 4,210,457, Cl. 106-97.000.

Roberts, Patricia M.: *See—*
Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., 4,210,661, Cl. 424-274.000.

Roberts, Scott C., to Shell Oil Company. Process for the pyrolysis of coal in dilute- and dense-phase fluidized beds. 4,210,492, Cl. 201-12.000.

Roberts, William M.: *See—*
McStravick, David M.; and Roberts, William M., 4,210,207, Cl. 166-330.000.

Robertshaw Controls Company: *See—*
Marquis, Edgar E.; and Draghi, James A., 4,210,824, Cl. 307-141.000.

Rockwell International Corporation: *See—*
Balter, Jack S., 4,210,220, Cl. 180-70.00R.

Rockwool Aktiebolaget: *See—*
Brelen, Hans E. O.; Dahlberg, Arvid S.; and Aberg, Ulf L., 4,210,432, Cl. 65-4.00R.

Rocla Concrete Pipes Limited: *See—*
Farfor, James D.; and Gall, Huba, 4,210,009, Cl. 72-186.000.

Rodgers, James L.; and Fowler, Billy C., to Talos Systems, Inc. Method and apparatus for digitizing the location of an instrument relative to a grid. 4,210,775, Cl. 178-19.000.

Rody, Jean; Greber, Gerd; and Muller, Helmut, to Ciba-Geigy Corporation; and Sankyo Company, Limited. 4-Siloxy derivatives of polyalkylated piperidines. 4,210,578, Cl. 260-45.80N.

Rogers, Charles H.: *See—*
Amos, Lynn G.; Beechey, Charles M.; and Rogers, Charles H., 4,210,026, Cl. 73-425.600.

Rogers, William L.; Good, Paul A.; and Smith, Richard A., to Shell Oil Company. Dynamic visual display of reservoir simulator results. 4,210,964, Cl. 364-578.000.

Rohco, Inc.: *See—*
Bishop, Craig V., 4,210,500, Cl. 204-55.00Y.

Rohm and Haas Company: *See—*
Emmons, William D., 4,210,565, Cl. 260-29.6TA.
Stewart, Thomas; and Merritt, Richard F., 4,210,493, Cl. 203-8.000.

Rohrbach, Walter: *See—*
Cooke, John P.; and Rohrbach, Walter, 4,210,252, Cl. 220-4.00F.

Roland, Jack: *See—*
Eriksson, Goran, 4,210,352, Cl. 294-81.00R.

Romanovsky, Vladimir F.; Panasjuk, Vadim S.; Stepanov, Boris M.; Ovcharov, Alexandr M.; and Akimov, Jury A. Ionizing radiation generator. 4,210,813, Cl. 250-421.000.

Rosa, John; and Gyugyi, Laszlo, to Westinghouse Electric Corp. VAR Generator with current sensitive inductance break point. 4,210,860, Cl. 323-119.000.

Rosenbaum, Georges: *See—*
Vanlerberghe, Guy; and Rosenbaum, Georges, 4,210,755, Cl. 544-175.000.

Rosenhahn, Lothar: *See—*
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.

Rosler, Peter. Packing container for elongated objects. 4,210,253, Cl. 220-8.000.

Rossier, Marc-Henri: *See—*
Lavanchy, Gerard A.; and Rossier, Marc-Henri, 4,210,192, Cl. 164-4.000.

Rouquie, Georges, to Bertin & Cie. Machine for draining parts emerging from hot galvanizing baths. 4,210,095, Cl. 118-57.000.

Rourke, Terence A., to Domlim Inc. Process and apparatus for calcining limestone. 4,210,632, Cl. 423-637.000.

Roussel Uclaf: *See—*
Brossard, Claudine; Henry, Martine; and Raichvarg, Denis, 4,210,641, Cl. 424-180.000.

Royal Business Machines, Inc.: *See—*
Frechette, Thomas E., 4,210,296, Cl. 242-198.000.

Roza, Engel; and Voorman, Johannes O., to U.S. Philips Corporation. Delay network comprising a chain of all-pass sections. 4,210,882, Cl. 333-166.000.

Rubin, David, to United States of America, Navy. Millimeter wave microstrip triplexer. 4,210,881, Cl. 333-110.000.

Rubinstein, Arthur: *See—*
Cinque, Gregory M.; Pryor, Roger W.; and Rubinstein, Arthur, 4,210,936, Cl. 358-283.000.

Rudolph, Frank W.: *See—*
Mead, Ralph T.; Frenz, Norbert W., Jr.; Rudolph, Frank W.; and Greatbatch, Wilson, 4,210,708, Cl. 429-181.000.

Ruegger, Artur; and Kuhn, Max, to Sandoz Ltd. Organic compounds. 4,210,581, Cl. 260-112.50R.

Ruger, Roderich, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Heat imaging apparatus. 4,210,807, Cl. 250-330.000.

Ruhle, Martin, to Mahle GmbH. Method of producing an aluminum-silicon casting. 4,210,193, Cl. 164-4.000.

Runciman, Herbert M.: *See—*
Berry, Peter J.; and Runciman, Herbert M., 4,210,810, Cl. 250-347.000.

Ruscheinsky, Emil: *See—*
Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,210,416, Cl. 8-139.100.

Russell, John H.: *See—*
Lawrance, Richard J.; and Russell, John H., 4,210,512, Cl. 204-257.000.

Ruzek, Ivo: *See—*
Hartmann, Ludwig; and Ruzek, Ivo, 4,210,690, Cl. 428-95.000.

Ryan, Leo F.: *See—*
Butterworth, Donald J.; and Ryan, Leo F., 4,210,537, Cl. 210-323.00T.

Ryer, Jack: *See—*
Feldman, Nicholas; Ryer, Jack; and Dooley, Martin F., 4,210,424, Cl. 44-62.000.

S&C Electric Company: *See—*
Stranczek, Norman J., 4,210,788, Cl. 200-42.00T.

Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research and Development Company. Process for the preparation of chloroarylacetylene precursors. 4,210,610, Cl. 260-649.00R.

Sach, George S.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,210,652, Cl. 424-263.000.

Sado, Ryoichi; and Nakamura, Akio, to Shin-Etsu Polymer Co., Ltd. Pressure sensitive resistor elements. 4,210,895, Cl. 338-99.000.

Sadovnik, Isaac: *See—*
Mitman, Enrique; and Sadovnik, Isaac, 4,210,041, Cl. 83-32.000.

Saeki, Yoshito: *See—*
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,210,640, Cl. 424-181.000.

Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Godard, Pierre, 4,210,854, Cl. 320-10.000.

Saint-Gobain Industries: *See—*
Fromaget, Georges, 4,210,293, Cl. 242-18.00A.
Paulus, Helmut, 4,210,050, Cl. 83-848.000.

St. Regis Paper Company: *See—*
Wilharm, Fred B., 4,210,480, Cl. 156-308.400.

Saito, Katsuhide: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.

Saito, Toshihisa: *See—*
Ishiguro, Yasuo; Wakazono, Kenji; and Saito, Toshihisa, 4,210,393, Cl. 354-23.00D,

Sakai, Toshiyasu, to Nippondenso Co., Ltd. Bar code scanner. 4,210,802, Cl. 235-483.000.

Sakakibara, Yasuyuki, to Nippon Soken, Inc. Two-dimensional display apparatus for an automobile. 4,210,908, Cl. 340-754.000.

Sakamoto, Hitoshi: *See—*
Ninomiya, Ichiro; Nagakura, Katsuhiko; Sakamoto, Hitoshi; and Tachi, Katsuichi, 4,210,939, Cl. 360-14.000.

Sakamoto, Koji: *See—*
Miyakawa, Seiichi; Tatsumi, Susumu; Sakamoto, Koji; and Ogata, Yoshihiro, 4,210,864, Cl. 324-204.000.

Sakamoto, Yoshiyasu; Kobayashi, Sumio; and Hatono, Akio, to Sumitomo Metal Industries, Ltd. Method and apparatus for measuring slag foaming using microwave lever meter. 4,210,023, Cl. 73-290.00R.

Sakovich, Michael M.: *See—*
Sequin, Maurice, 4,210,272, Cl. 229-7.00R.

Sakurai, Sadaaki; and Suwa, Hisashi, to Sony Corporation. Loudspeaker system with heat pipe. 4,210,778, Cl. 179-1.00E.

Saligny, Yves, to Etablissements Carpano & Pons. Connecting unit for dispatchers systems. 4,210,375, Cl. 339-14.00L.

Salov, Viktor P.: *See—*
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

Salzer, Erwin, to Gould Inc. Electric fuse having helically wound fusible elements. 4,210,892, Cl. 337-161.000.

Samejima, Toshihide: *See—*
Moritani, Nakanobu; Samejima, Toshihide; Matsumura, Toshio; Oda, Hajime; and Fujita, Masanori, 4,209,975, Cl. 368-186.000.

Sanders Associates, Inc.: *See—*
Misek, Victor A., 4,210,400, Cl. 356-359.000.

Sandoz, Inc.: *See—*
Houlihan, William J., 4,210,585, Cl. 260-245.600.

Sandoz Ltd.: *See—*
Mauric, Claudine; and Wolf, Rainer, 4,210,451, Cl. 106-18.170.
Raspanti, Giuseppe, 4,210,763, Cl. 548-350.000.
Ruegger, Artur; and Kuhn, Max, 4,210,581, Cl. 260-112.50R.

Sangamo Weston, Inc.: *See—*
Dyer, Robert E., 4,210,937, Cl. 360-6.000.

Sankyo Company, Limited: *See—*
Rody, Jean; Greber, Gerd; and Muller, Helmut, 4,210,578, Cl. 260-45.80N.

Sanyo Electric Co., Ltd.: *See—*
Nishimura, Satoshi; Sato, Kenichi; and Sugiura, Youji, 4,210,781, Cl. 179-15.55T.

Sarantakis, Dimitrios: *See—*
Lien, Eric L.; Sarantakis, Dimitrios; and Grant, Norman H., 4,210,636, Cl. 424-177.000.

Sarge, Henry D., III; and Spector, Alan R., to Procter & Gamble Company, The. Disposable diaper having refastenable tape system. 4,210,144, Cl. 128-287.000.

Sarges, Reinhard; Belletire, John L.; and Schnur, Rodney C., to Pfizer Inc. Pharmaceutical preparations containing coumarin carboxylic acid derivatives. 4,210,667, Cl. 424-281.000.

Sarges, Reinhard, to Pfizer Inc. Tetrahydroquinoline hydantoins for chronic diabetic complications. 4,210,756, Cl. 546-15.000.

Sasson, Azra: *See—*
Whitlow, Duane L.; and Sasson, Azra, 4,210,961, Cl. 364-300.000.

Sato, Akihiko; and Goto, Tetsuro, to Nippon Kogaku K.K. Shutter time temperature compensating device in a camera. 4,210,394, Cl. 354-234.000.

Sato, Hiroshi: *See—*
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,210,720, Cl. 435-42.000.

Sato, Hisatake: *See—*
Hayashi, Hideo; and Sato, Hisatake, 4,210,733, Cl. 525-529.000.

Sato, Kenichi: *See—*
Nishimura, Satoshi; Sato, Kenichi; and Sugiura, Youji, 4,210,781, Cl. 179-15.55T.

Sato, Yo, to Kabushiki Kaisha Sato. Pressure sensitive label strip for use in a label printing machine. 4,210,688, Cl. 428-41.000.

Saunders, George D. Sectional multi-purpose cargo container. 4,209,887, Cl. 29-240.000.

Sautter, Wilfried: *See—*
Wessel, Wolf; and Sautter, Wilfried, 4,210,106, Cl. 123-489.000.

Savage, Paul F.; and Pye, Michael R., to Gillette Company, The. Hair roller device. 4,210,163, Cl. 132-33.00R.

Saveliev, Valentin P.: *See—*
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.

Savitskas, Ionas A.: *See—*
Vasiliev, Petr E.; Ragulskis, Kazimiras M.; Savitskas, Ionas A.; Misikov, Vitaly M.; and Topolnitsky, Oleg D., 4,210,837, Cl. 310-323.000.

Sawada, Shuzo: *See—*
Yamane, Kiyoshi; Abe, Shunzo; Sawada, Shuzo; and Matsumoto, Hatsuo, 4,210,412, Cl. 8-471.000.

Scantlin, William M.; and Clemens, Lawrence M., to Minnesota Mining and Manufacturing Company. Polyester-film backed magnetic recording tape having epoxy subbing layer. 4,210,703, Cl. 428-413.000.

Scemama, Patrick: *See—*
Euzen, Jean-Paul; and Scemama, Patrick, 4,210,015, Cl. 73-61.10R.

Schaefer, Harold W., to National Union Electric Corporation. Brushbeater for a vacuum cleaner and method for making the same. 4,209,873, Cl. 15-182.000.

Schechter, Paul J.: *See—*
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,210,664, Cl. 424-275.000.
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,210,665, Cl. 424-275.000.

Scheid, Lloyd J. Panel construction having lateral edge members. 4,209,954, Cl. 52-601.000.

Scheid, Norman W.: *See—*
Daniels, Raymond R.; and Scheid, Norman W., 4,210,175, Cl. 137-564.500.

Schenker, Karl; and Bernasconi, Raymond, to Ciba-Geigy Corporation. Anti-depressant benzofuranyl piperidines. 4,210,655, Cl. 424-267.000.

Schilling, William F.; and Beltran, Adrian M., to General Electric Company. Method for diffusion bonding sheet claddings to superalloy substrates. 4,210,269, Cl. 228-193.000.

Schimmel, Vernon R., to Symons Corporation. Safety key and locking means therefor for use with concrete wall form panels. 4,210,306, Cl. 249-196.000.

Schinke, David P.: *See—*
North, James C.; and Schinke, David P., 4,210,923, Cl. 357-30.000.

Schlesinger, Sheldon I.; and Cochran, Veronica, to American Can Company. Radiation sensitive composition comprising copolymer of glycidyl methacrylate and allyl glycidyl ether and diazonium salt of complex halogenide. 4,210,449, Cl. 430-183.000.

Schloemann-Siemag Aktiengesellschaft: *See—*
Bretschneider, Erich; Leitner, Hermann; and Bohmer, Friedhelm, 4,210,011, Cl. 72-234.000.
Eckardt, Helmut; and Ehritt, Jurgen, 4,210,616, Cl. 264-45.100.
Jansen, Johannes, 4,210,294, Cl. 242-72.100.

Schlumberger Technology Corp.: *See—*
Ingram, John D., 4,210,965, Cl. 367-26.000.
Ingram, John D., 4,210,966, Cl. 367-27.000.
Ingram, John D., 4,210,967, Cl. 367-34.000.

Schlussel, Peter: *See—*
Fehlau, Robert; Schlussel, Peter; and Schneider, Matthias, 4,210,153, Cl. 128-637.000.

Schmid, Reinhold, to W. Schlafhorst & Co. Lifting or pressing device. 4,210,031, Cl. 74-89.210.

Schmidt, Dietrich; Hofer, Johann; and Herzer, Heinz, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for determining the effective doping agent content of hydrogen for the production of semiconductors. 4,210,486, Cl. 156-601.000.

Schmidt, Gunther; and Leitold, Matyas, to Boehringer Ingelheim GmbH. 11-Aminoacyl-5,11-dihydro-6H-pyrido(2,3-B) (1,4)benzodiazepin-6-ones and salts thereof. 4,210,648, Cl. 424-256.000.

Schmitt, Frederick L., to International Flavors & Fragrances Inc. Fragrance compositions containing 3-methyl-1-phenyl-pentanol-5 or

specific optical isomers thereof and one or more butanoyl cyclohexane derivatives. 4,210,554, Cl. 252-174.110.

Schmitt, Frederick L.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,210,767, Cl. 568-345.000.

Schneider, Jurg; and Fattinger, Volker, to Ciba-Geigy Corporation. Gas scrubbing plant and baffles therefor. 4,210,428, Cl. 55-223.000.

Schneider, Matthias: *See—*
Fehlau, Robert; Schlussel, Peter; and Schneider, Matthias, 4,210,153, Cl. 128-637.000.

Schnur, Rodney C.: *See—*
Sarges, Reinhard; Belletire, John L.; and Schnur, Rodney C., 4,210,667, Cl. 424-281.000.

Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, to BASF Aktiengesellschaft. Device for ejecting a loop of leader tape from a magnetic tape cassette. 4,210,266, Cl. 226-97.000.

Schoxi AG, Firma: *See—*
Meili, Rene, 4,210,679, Cl. 426-564.000.

Schrecker, H. Dale, to Aluminum Company of America. Barrier coated metallic container wall and sheet. 4,210,259, Cl. 220-455.000.

Schroder, Herbert; and Schroder, Reinhard. Apparatus for dividing and kneading a piece of dough. 4,210,402, Cl. 366-76.000.

Schroder, Reinhard: *See—*
Schroder, Herbert; and Schroder, Reinhard, 4,210,402, Cl. 366-76.000.

Schroeter, Siegfried H.; and Olson, Daniel R., to General Electric Company. Abrasion resistant silicone coated polycarbonate article. 4,210,699, Cl. 428-331.000.

Schubert, Steven M. Racket-mounted tennis ball retriever. 4,210,327, Cl. 273-73.00R.

Schuessler, Charles J.: *See—*
Wilzig, Herbert; and Schuessler, Charles J., 4,209,876, Cl. 16-82.000.

Schulman, Bernard L., to Tosco Corporation. Method and apparatus for retorting a substance containing organic matter. 4,210,491, Cl. 201-2.500.

Schulze, Rolf: *See—*
Harer, Helmut; Schulze, Rolf; and Juhasz, Josef, 4,210,855, Cl. 320-13.000.

Schumann, Klaus: *See—*
Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,210,416, Cl. 8-139.100.

Schurig, Helmut: *See—*
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,210,516, Cl. 204-284.000.

Schutt, Wolfgang: *See—*
Friedel, Klaus; Dammann, Ehrhard; Pohl, Hans-Joachim; Schutt, Wolfgang; and Jensen, Hans-Ludwig, 4,210,504, Cl. 204-180.00R.

Schutz, Hans-Ulrich: *See—*
de Montmollin, Rene; and Schutz, Hans-Ulrich, 4,210,582, Cl. 260-154.000.

Schwan, Thomas J., to Morton-Norwich Products, Inc. 1-(4-Chlorophenyl)-3-(2,2-diethoxyethyl)-2-imidazolidinone. 4,210,761, Cl. 548-320.000.

Schwander, Hansrudolf: *See—*
Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, 4,210,757, Cl. 546-52.000.

Schwartz, Robert C.: *See—*
Jackson, Richard E.; Schwartz, Robert C.; and Sparks, John E., 4,210,075, Cl. 100-35.000.

Schwenzer, Alfred F.: *See—*
Wolff, Edwin K.; and Schwenzer, Alfred F., 4,210,481, Cl. 156-357.000.

Schwuger, Milan J.: *See—*
Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,210,416, Cl. 8-139.100.

Sciulli, Francis J.: *See—*
Green, Barry P.; and Sciulli, Francis J., 4,210,818, Cl. 250-559.000.

Scott, Donald R.: *See—*
Remys, Dionizas V.; and Scott, Donald R., 4,209,968, Cl. 368-273.000.

Scott Paper Company: *See—*
Urion, Kenard E.; and Cleminshaw, Douglas R., 4,210,043, Cl. 83-175.000.

Sea Solar Power: *See—*
Anderson, James H., 4,209,991, Cl. 60-641.000.

Sebring, Robert E.: *See—*
Coplan, Myron J.; and Sebring, Robert E., 4,210,536, Cl. 210-321.00R.

Sedco, Inc.: *See—*
Shanks, Forrest E., 4,210,208, Cl. 166-352.000.

Seiden, Frederick C.: *See—*
Meyers, George L.; Seiden, Frederick C.; and Waller, Lonnie J., 4,210,069, Cl. 93-36.00M.

Seidenberger, James W., to J. T. Baker Chemical Company. Spill control composition and use thereof. 4,210,460, Cl. 134-7.000.

Seikenkai: *See—*
Hata, Kosei, 4,210,672, Cl. 426-43.000.

Seiko Koki Kabushiki Kaisha: *See—*
Kitai, Kiyoshi; Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,209,969, Cl. 368-250.000.
Kitai, Kiyoshi; and Ishida, Hiroaki, 4,210,395, Cl. 354-234.000.

Seitz, Robert F., to Youngstown Steel Door Company, The. Power wheel for folding doors. 4,210,231, Cl. 192-8.00R.

Seliger, Ewald: *See—*
Dudar, Klaus; Seliger, Ewald; Hubner, Gertraude; and Banse, Wilhelm, 4,210,676, Cl. 426-238.000.

Selwitz, Charles M.: *See—*
Sabourin, Edward T.; and Selwitz, Charles M., 4,210,610, Cl. 260-649.00R.

Semersky, Frank E.: *See—*
Breno, Philip J.; Clark, Robert N.; and Semersky, Frank E., 4,210,623, Cl. 422-101.000.

Semiconductor Circuits, Inc.: *See—*
LaBrie, Paul J., 4,210,903, Cl. 340-347.0NT.

Sempuku, Kenji: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.

Sequin, Carlo H.: *See—*
Crochiere, Ronald E.; Sequin, Carlo H.; and Tompsett, Michael F., 4,210,825, Cl. 307-221.00D.

Sequin, Maurice, to Sakovich, Michael M. Container lid. 4,210,272, Cl. 229-7.00R.

Seragnoli, Enzo, to G.P. Societa per Azichi. Device for feeding and checking layers of cigarettes in cigarette packaging machines. 4,209,955, Cl. 53-54.000.

Serber, Stephen L.: *See—*
Mueller, Dale A.; and Serber, Stephen L., 4,209,994, Cl. 62-155.000.

Serkez, Alvin A. Handbag holder. 4,210,302, Cl. 248-308.000.

Settineri, William J.: *See—*
Frenier, Wayne W.; and Settineri, William J., 4,210,552, Cl. 252-151.000.

Seward, Thomas P., III: *See—*
Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, 4,210,386, Cl. 350-96.310.

Seymour Manufacturing Co., Inc.: *See—*
Hobson, Willis S.; and Graber, Elmer A., 4,210,348, Cl. 285-1.000.

Shaffer, Donald J. Tuneable intake manifold. 4,210,107, Cl. 123-52.00M.

Shah, Manhar L.; and Hunt, William D., to Harris Corporation. Technique for widening the temperature range of surface acoustic wave reflection array filters. 4,210,883, Cl. 333-195.000.

Shanin, Steven R. Puzzle device including polyhedrons and support structure therefor. 4,210,332, Cl. 273-157.00R.

Shanin, Steven R. Puzzle cubes for forming rectangular parallelepipeds. 4,210,333, Cl. 273-157.00R.

Shanks, Forrest E., to Sedco, Inc. Subsea choke and riser pressure equalization system. 4,210,208, Cl. 166-352.000.

Shannon, John M., to U.S. Philips Corporation. Charge coupled imaging device having selective wavelength sensitivity. 4,210,922, Cl. 357-24.000.

Shannon, Roger L.; Watkins, Dale F.; and Pogson, John T., to United States of America, Navy. Electric wind generator. 4,210,847, Cl. 315-111.900.

Shannon, William M.: *See—*
Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., 4,210,639, Cl. 424-180.000.

Sharp Kabushiki Kaisha: *See—*
Aiba, Masahiko, 4,210,919, Cl. 346-75.000.
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,907, Cl. 340-785.000.
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,909, Cl. 340-763.000.
Oguri, Ichiro, 4,210,794, Cl. 219-10.55F.
Suzuki, Chuji; Ise, Masahiro; Inazaki, Kenzo; and Machino, Katsuyuki, 4,210,848, Cl. 315-169.300.

Sharpe, Louis H.: *See—*
Chandross, Edwin A.; and Sharpe, Louis H., 4,210,704, Cl. 428-414.000.

Shavit, Gideon, to Honeywell Inc. Surface acoustic wave code reader. 4,210,900, Cl. 340-149.00R.

Shaw, David N., to Dunham-Bush, Inc. Reciprocating compressor refrigeration system using step expansion and auto staging. 4,209,996, Cl. 62-175.000.

Shaw, David N., to Dunham-Bush, Inc. Air source heat pump with displacement doubling through multiple slide rotary screw compressor/expander unit. 4,209,998, Cl. 62-324.000.

Shaymar, Inc.: *See—*
Phillips, William W., 4,210,784, Cl. 179-146.00H.

Shell Internationale Research Maatschappij B.V.: *See—*
Harrison, David V.; Weaver, Roy; and Wilson, Henry G. E., 4,210,098, Cl. 118-317.000.

Shell Oil Company: *See—*
Roberts, Scott C., 4,210,492, Cl. 201-12.000.
Rogers, William L.; Good, Paul A.; and Smith, Richard A., 4,210,964, Cl. 364-578.000.
Titus, Paul E., 4,210,422, Cl. 44-15.00R.
Verloop, Jan; and Braam, Johannes W. T. M., 4,210,627, Cl. 423-220.000.

Sheller-Globe Corporation: *See—*
Korbell, George K., 4,210,857, Cl. 322-28.000.

Shelley, Samuel P.: *See—*
Doucette, Edward I.; and Shelley, Samuel P., 4,210,199, Cl. 165-70.000.
Shelton, Garland T., Jr., to Shelton and Ostrowski Incorporated. Gravity flow hydraulic device. 4,209,990, Cl. 60-640.000.
Shelton and Ostrowski Incorporated: *See—*
Shelton, Garland T., Jr., 4,209,990, Cl. 60-640.000.
Shepard, Richard W.: *See—*
Sqrillo, John J.; and Shepard, Richard W., 4,210,003, Cl. 66-116.000.
Sherrow, Lionel: *See—*
Hofstaedter, Gerard F.; and Sherrow, Lionel, 4,209,892, Cl. 29-469.000.
Sherry, Dorothy: *See—*
Spann, Donald C.; and Sherry, Dorothy, 4,210,317, Cl. 269-328.000.
Shetty, Bola V., to Pennwalt Corporation. Substituted 1,2,4,5-tetrahydro-3H,3 benzazepines. 4,210,749, Cl. 542-469.000.
Shiban, Samir S. Water screen. 4,210,539, Cl. 210-391.000.
Shibata, Akira: *See—*
Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, 4,210,942, Cl. 360-65.000.
Shibata, Toshihiro: *See—*
Minagawa, Motonobu; Nakahara, Yutaka; Kubota, Naohiro; and Shibata, Toshihiro, 4,210,577, Cl. 260-45.8NT.
Shida, Masaharu: *See—*
Ueda, Makoto; Shida, Masaharu; and Torisawa, Akira, 4,209,971, Cl. 368-76.000.
Shifflett, Omer L., Jr.: *See—*
Pugh, Timothy G.; and Shifflett, Omer L., Jr., 4,209,875, Cl. 15-344.000.
Shimada, Shoji; Yoshinari, Kazuhiko; and Koyakumaru, Hidefumi, to Nippon Steel Corp. Process of annealing for preventing temper colors on a steel sheet. 4,210,469, Cl. 148-16.000.
Shimoda, Haruo: *See—*
Takagi, Mikio; Kamioka, Hajime; Shimoda, Haruo; and Miyamoto, Hidekazu, 4,210,473, Cl. 148-189.000.
Shimomura, Hiromi; Sugie, Akihiko; and Katsube, Junki, to Sumitomo Chemical Company, Limited. Prostanoic acid derivatives. 4,210,669, Cl. 424-305.000.
Shin-Etsu Polymer Co., Ltd.: *See—*
Sado, Ryoichi; and Nakamura, Akio, 4,210,895, Cl. 338-99.000.
Shinohara, Toshio: *See—*
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,210,724, Cl. 435-292.000.
Shinozaki, Fumiaki: *See—*
Kitajima, Masao; Tachikawa, Hiromichi; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,210,711, Cl. 430-253.000.
Shinozaki, Nobuo: *See—*
Kitai, Kiyoshi; Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,209,969, Cl. 368-250.000.
Shinto Paint Co., Ltd.: *See—*
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, 4,210,505, Cl. 204-181.00C.
Shiomi, Masanao; Ishikawa, Masakazu; and Kato, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automotive suspension system. 4,210,343, Cl. 280-668.000.
Shirakawa, Norio: *See—*
Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, 4,210,440, Cl. 71-98.000.
Shirasawa, Toshikatsu: *See—*
Tanaka, Tomoyuki; Okamura, Masahiro; Shirasawa, Toshikatsu; and Ogawa, Takuzo, 4,210,464, Cl. 148-1.500.
Shoney, Suryakant R., to International Paper Company. Method of making a catheter. 4,210,478, Cl. 156-242.000.
Shriver, Frank L., to Coors Container Company. Protective coating for cans and methods for application of coating thereto. 4,210,684, Cl. 427-286.000.
Shukla, Jayendra G.: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,210,452, Cl. 106-18.180.
Sidelman, Abraham, to H. Goodman & Sons, Inc. Self-holding hair rollers. 4,210,164, Cl. 132-40.000.
Siegfried Aktiengesellschaft: *See—*
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,656, Cl. 424-273.00R.
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,657, Cl. 424-273.00R.
Sielemann, Hans. Grinding machine. 4,209,950, Cl. 51-267.000.
Siemens Aktiengesellschaft: *See—*
Ewe, Kurt; and Linzenkirchner, Edmund, 4,210,853, Cl. 318-630.000.
Fleer, Ernst O., 4,209,908, Cl. 433-78.000.
Hacke, Hans J., 4,210,926, Cl. 357-70.000.
Koslar, Manfred, 4,210,862, Cl. 324-51.000.
Ritter, Peter; and Fahrenkrog-Petersen, Dieter, 4,210,951, Cl. 361-391.000.
Sutor, Norbert; and Vogelsberg, Dieter, 4,209,966, Cl. 57-6.000.
SIG Schweizerische Industrie-Gesellschaft: *See—*
Deutschlander, Gert; Rebsamen, August; and Fluck, Rene, 4,209,960, Cl. 53-502.000.
Silva, Joseph W.; and Duffield, Albert J., to Olin Corporation. Corrosion resistant fastening system and method. 4,209,889, Cl. 29-432.000.
Silver, Spencer F., to Minnesota Mining and Manufacturing Company. Protein immobilizer. 4,210,722, Cl. 435-176.000.
Simic, Militun, to Chevron Research Company. Plasticized sulfur with improved thixotropy. 4,210,458, Cl. 106-287.230.
Simokat, Frank L., to TII Corporation. Amplitude modulated telephone carrier system and terminal equipment therefor. 4,210,779, Cl. 179-2.510.
Simons, Harold M.: *See—*
Campbell, Barrie C.; and Simons, Harold M., 4,210,511, Cl. 204-256.000.
Sims, James O. Valve. 4,210,308, Cl. 251-31.000.
Sir James Farmer Norton & Co. Limited: *See—*
Thorpe, Alfred, 4,210,006, Cl. 68-205.00R.
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G. Apparatus for continuous enamelling of tubes. 4,210,096, Cl. 118-58.000.
Skalka, Paul: *See—*
Matsko, Joseph J.; Hill, Robert H.; Skalka, Paul; and Maier, Alfred E., 4,210,887, Cl. 335-6.000.
Skarstad, Paul M., to Medtronic, Inc. Cathode materials for electrochemical cells. 4,210,706, Cl. 429-105.000.
SKF Compagnie d'Applications Mechaniques: *See—*
Guerton, Jean P.; Waleckx, Jean; and Monville, Jean M., 4,209,967, Cl. 57-58.720.
Sklar, Paul R. Flying saucer appendage. 4,209,936, Cl. 46-74.00D.
Smith, David A.: *See—*
Davidson, John J.; and Smith, David A., 4,210,507, Cl. 204-181.00R.
Smith, Gerald L.: *See—*
Ford, Leland W.; Ramirez, Alberto M.; and Smith, Gerald L., 4,210,858, Cl. 323-22.00T.
Smith, Homer, Jr.; Pruitt, Richard L.; Barnum, Edward F.; and Knerr, Robert P., Jr., to Inland Steel Company. Cover for soaking pits and the like. 4,210,086, Cl. 110-173.00A.
Smith International, Inc.: *See—*
Garner, Lloyd L., 4,210,270, Cl. 228-103.000.
Smith, Jennings T.; and LeBaron, George L. Transient suppression and detection system with operational indicator means. 4,210,906, Cl. 340-659.000.
Smith, Ken P.: *See—*
Kershner, Stuart D.; and Smith, Ken P., 4,210,307, Cl. 249-202.000.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,210,652, Cl. 424-263.000.
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,210,658, Cl. 424-273.00R.
Smith, Ray E.: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,210,452, Cl. 106-18.180.
Smith, Richard A.: *See—*
Rogers, William L.; Good, Paul A.; and Smith, Richard A., 4,210,964, Cl. 364-578.000.
Smith, Richard J.: *See—*
Lysenko, George P.; and Smith, Richard J., 4,210,350, Cl. 292-86.000.
Smith, Robert L.: *See—*
Gorring, Robert L.; and Smith, Robert L., 4,210,521, Cl. 208-89.000.
Smitherman, Ray C. Pole mounted weed killer dispenser. 4,210,286, Cl. 239-302.000.
SmithKline Corporation: *See—*
Berges, David A., 4,210,587, Cl. 548-251.000.
Smolka, Heinz G.: *See—*
Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,210,416, Cl. 8-139.100.
Smolnikov, Nikolai V.: *See—*
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.
Snamprogetti, S.p.A.: *See—*
Zardi, Umberto, 4,210,600, Cl. 260-555.00A.
Snover, John A.; and Caines, R. Scott, to Dow Chemical Company, The. Method of applying vermicular expanded graphite composite material. 4,210,621, Cl. 264-516.000.
Societe Anonyme Automobiles Citroen: *See—*
Dore, Jacques P., 4,210,002, Cl. 64-32.00F.
Societe Anonyme DBA: *See—*
Courbot, Pierre, 4,210,233, Cl. 192-89.00B.
Societe Anonyme de Telecommunications: *See—*
Baudot, Jean-Jacques, 4,210,385, Cl. 350-16.000.
Societe Anonyme dite: Consortium General Textile: *See—*
De Jonckheere, Raphael, 4,210,143, Cl. 128-287.000.
Societe Anonyme Francaise du Ferodo: *See—*
Beccaris, Carlo, 4,210,232, Cl. 192-48.800.
Neveux, Rene R., 4,210,833, Cl. 310-58.000.
Neveux, Rene R., 4,210,835, Cl. 310-62.000.
Societe Anonyme Pipe Line Service: *See—*
Euzen, Jean-Paul; and Scemama, Patrick, 4,210,015, Cl. 73-61.10R.
Societe Chimique des Charbonnages-CdF Chimie: *See—*
Machon, Jean P., 4,210,734, Cl. 526-65.000.
Societe de Prospection et d'Inventions Techniques, S.P.I.T.: *See—*
Combette, Marc; and Ollivier, Jean, 4,210,267, Cl. 227-10.000.
Societe d'Exploitation de Brevets J.B.: *See—*
Hancu, Theodore, 4,209,874, Cl. 15-250.320.

Societe Nationale des Poudres et Explosifs: *See—*
Piteau, Marc D.; and Malfroot, Thierry A., 4,210,598, Cl. 260-455.00B.
Societe Nationale Elf Aquitaine (Production): *See—*
Bimond, Jean-Pierre; Lazarre, Flavien; and Puyau, Andre, 4,210,025, Cl. 73-421.00R.
Societe Nouvelle des Acieries de Pompey: *See—*
Bellot, Jean, 4,210,444, Cl. 75-124.000.
Soderstrom, Melvin A.: *See—*
Vachhani, Vasantrai A.; Soderstrom, Melvin A.; and Hughes, Richard L., 4,210,379, Cl. 339-101.000.
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, to Olympus Optical Co., Ltd. Apparatus for liquid disposal and distribution in automatic culture system. 4,210,724, Cl. 435-292.000.
Sokol, Benjamin. Internal electric explosion engine. 4,209,983, Cl. 60-325.000.
Solardyne, Inc.: *See—*
Fender, William H., 4,210,125, Cl. 126-437.000.
Solarspan, Inc.: *See—*
Mattson, John P., 4,210,128, Cl. 126-444.000.
Solex Research Corporation of Japan: *See—*
Watanabe, Morio; and Nishimura, Sanji, 4,210,502, Cl. 204-151.000.
Solvay & Cie.: *See—*
Baekelmans, Paul; and Bernard, Albert, 4,210,736, Cl. 526-142.000.
Hermans, Jean P.; and Henrioulle, Paul, 4,210,738, Cl. 526-152.000.
Hermans, Jean-Pierre; and Henrioulle, Paul, 4,210,729, Cl. 525-247.000.
Hermans, Jean-Pierre; and Henrioulle, Paul, 4,210,735, Cl. 526-119.000.
Somlo, Tibor; and Hungerbuhler, Anton, to Ciba-Geigy Corporation. Process for producing 2-halo-4-bromophenols. 4,210,766, Cl. 568-779.000.
Sommer, Friedhelm: *See—*
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.
Sontheimer, Georg, to BVT Beratungs-, Verwaltungs- und Treuhandgesellschaft mbH. Tractor-trailer air-brake system. 4,210,368, Cl. 303-3.000.
Sony Corporation: *See—*
Iwasaki, Shun-Ichi; and Nakamura, Yoshihisa, 4,210,946, Cl. 360-131.000.
Kanazawa, Kenichi; and Tanaka, Yukio, 4,210,827, Cl. 307-264.000.
Koizumi, Akio, 4,210,947, Cl. 361-18.000.
Kutaragi, Ken, 4,210,934, Cl. 358-241.000.
Nakamura, Tadahiko; and Nakano, Kenji, 4,210,943, Cl. 360-70.000.
Ninomiya, Ichiro; Nagakura, Katsuhiko; Sakamoto, Hitoshi; and Tachi, Katsuichi, 4,210,939, Cl. 360-14.000.
Ohmori, Masayuki; and Ito, Norio, 4,210,928, Cl. 358-60.000.
Sakurai, Sadaaki; and Suwa, Hisashi, 4,210,778, Cl. 179-1.00E.
Suzuki, Tadao; and Kawada, Hirohito, 4,210,873, Cl. 330-51.000.
Takabayashi, Kazuhiko, 4,210,929, Cl. 358-64.000.
Wakamiya, Tadamitsu, 4,210,851, Cl. 318-257.000.
Soothill, John F.; and Levinsky, Roland J., to National Research Development Corporation. Kit for assay of immune complexes. 4,210,622, Cl. 422-61.000.
Sorenson, Richard W., to Carlingswitch, Inc. Slide switch. 4,210,791, Cl. 200-164.00R.
Sorsa, Erkki; Haukkovaara, Esko; and Fors, Jan, to Kemira Oy. Process for the preparation of viscose. 4,210,747, Cl. 536-60.000.
Southgate, Robert: *See—*
Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., 4,210,661, Cl. 424-274.000.
Southwest Research Institute: *See—*
Dimitroff, Edward; and Vitkovits, John A., 4,210,103, Cl. 123-1.00A.
Space Age Electronics Limited: *See—*
Toubkin, Walter M.; and Mulley, Alan J., 4,210,970, Cl. 367-109.000.
Spanjer Brothers, Inc.: *See—*
Donatelle, Leo P., 4,209,927, Cl. 40-607.000.
Spann, Donald C.; and Sherry, Dorothy. Apparatus for supporting and positioning the arm and shoulder. 4,210,317, Cl. 269-328.000.
Sparks, John E.: *See—*
Jackson, Richard E.; Schwartz, Robert C.; and Sparks, John E., 4,210,075, Cl. 100-35.000.
Spears, Gary D.: *See—*
Magana, Cecil L.; and Spears, Gary D., 4,210,772, Cl. 174-59.000.
Specific Volume Systems, Inc.: *See—*
Patterson, James A., 4,210,027, Cl. 73-432.00R.
Spector, Alan R.: *See—*
Sarge, Henry D., III; and Spector, Alan R., 4,210,144, Cl. 128-287.000.
Sperry Corporation: *See—*
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,210,960, Cl. 364-200.000.
Spethmann, Donald H., to Honeywell Inc. Operating optimization for plural parallel connected chillers. 4,210,957, Cl. 364-105.000.
Sphere Investments Limited: *See—*
Stone, Alan M., 4,210,311, Cl. 251-129.000.
Spira, Joel S.: *See—*
Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., 4,210,846, Cl. 315-121.000.
Spisak, Edward G. Wheel trim assembly. 4,210,367, Cl. 301-37.00R.
Sqrillo, John J.; and Shepard, Richard W., to Torrington Company, The. Knitting needle with reinforced hook. 4,210,003, Cl. 66-116.000.
Sridhar, Srinivasan, to Chemische Werke Huls Aktiengesellschaft. Process for recovering propene and propene/propane mixtures from the off-gases from the hydroformylation of propene. 4,210,426, Cl. 55-68.000.
Staats, Clyde; and Pilewski, John J., to Staats & Staats, Inc. Method and apparatus for high precision lapping machines. 4,209,949, Cl. 51-151.000.
Staats & Staats, Inc.: *See—*
Staats, Clyde; and Pilewski, John J., 4,209,949, Cl. 51-151.000.
Staendeke, Horst: *See—*
Dany, Franz-Josef; Thummler, Ursus; Wortmann, Joachim; Staendeke, Horst; and Kandler, Joachim, 4,210,630, Cl. 423-265.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, to Boehringer Ingelheim GmbH. Substituted 7-phenyl-2,3-dihydro-imidazo[1,2-α]imidazoles and salts thereof. 4,210,659, Cl. 424-273.00R.
Stahlwerke Peine-Salzgitter Aktiengesellschaft: *See—*
Vlad, Constantin; and Paulitsch, Hans, 4,210,010, Cl. 72-201.000.
Standard Keil Hardware Manufacturing Co.: *See—*
Cook, Sanford L.; and Villa, Joseph N., 4,210,349, Cl. 292-78.000.
Standard Manufacturing Co., Inc.: *See—*
Oswald, Norman D.; and Mankey, Harry S., 4,210,218, Cl. 180-24.120.
Oswald, Norman D.; and Mankey, Harry S., 4,210,219, Cl. 180-24.120.
Standard Oil Company (Indiana): *See—*
Ginsburgh, Irwin; and McCollum, John D., 4,210,867, Cl. 324-323.000.
Ginsburgh, Irwin; and McCollum, John D., 4,210,868, Cl. 324-323.000.
Lee, Richard J.; and Richardson, Eugene E., 4,210,545, Cl. 252-47.500.
Melquist, John L.; Kildahl, Nicholas K.; and Fotis, Peter, 4,210,559, Cl. 252-431.00R.
Windgassen, Richard J.; and Ott, Louis E., 4,210,437, Cl. 71-28.000.
Stanley Tools Limited: *See—*
Gilbert, Richard, 4,209,900, Cl. 30-162.000.
Staodynamics, Inc.: *See—*
James, Donald N., 4,210,150, Cl. 128-421.000.
Stark, Virgil. Solar energy collection. 4,210,121, Cl. 126-424.000.
Staubli, Peter E. Rider clip with offset retention flaps and retention bar for denture. 4,209,904, Cl. 433-177.000.
Stauffer Chemical Company: *See—*
Gallagher, Ruth E.; Goswami, Jagadish C.; Kraft, Paul; and Yu, Arthur J., 4,210,739, Cl. 526-325.000.
Teach, Eugene G., 4,210,589, Cl. 260-326.5FL.
Ste d'Application Plastique, Mecanique et Electronique Plastique-Mecanidue S.A.: *See—*
Utzmann, Rene, 4,209,957, Cl. 53-453.000.
Steadman, Howard L.: *See—*
Marsh, James P.; and Steadman, Howard L., 4,210,962, Cl. 364-402.000.
Stefancik, Nikolaus: *See—*
Galow, Manfred; and Stefancik, Nikolaus, 4,210,430, Cl. 55-344.000.
Steiger, Klaus; and Wahl, Peter, to Loewe-Opta GmbH. Videogame with mechanically disjoint target detector. 4,210,329, Cl. 273-313.000.
Steinbach, James G.: *See—*
Jackson, William W.; Steinbach, James G.; and Geiger, Lon R., 4,210,212, Cl. 172-645.000.
Steinlein, Rudolf F., to Alexander Schoeller & Co. AG. Molded case for returnable beverage bottles. 4,210,265, Cl. 224-48.00A.
Stepanov, Boris M.: *See—*
Romanovsky, Vladimir F.; Panasjuk, Vadim S.; Stepanov, Boris M.; Ovcharov, Alexandr M.; and Akimov, Jury A., 4,210,813, Cl. 250-421.000.
Stephens, Ruth E., to Ethyl Corporation. Process for preparing filled polyvinyl chloride compositions. 4,210,574, Cl. 260-42.160.
Stevenson Industries: *See—*
Donnelley, James R., 4,209,961, Cl. 53-588.000.
Stewart, Thomas; and Merritt, Richard F., to Rohm and Haas Company. C-Nitroso compounds as anaerobic polymerization inhibitors for acrylic acid or methacrylic acid. 4,210,493, Cl. 203-8.000.
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., to AGFA-GEVAERT N.V. Apparatus for unloading radiographic cassettes in daylight. 4,210,816, Cl. 250-468.000.
Stimtech, Inc.: *See—*
Keller, John W., Jr., 4,210,151, Cl. 128-421.000.
Stivala, Oscar G. Retention suture system. 4,210,148, Cl. 128-335.000.
Stock, Don J. R.: *See—*
Kienberger, Karl-Heinz; and Stock, Don J. R., 4,210,915, Cl. 343-786.000.
Stock, Robert M.: *See—*
Swonger, Claron W.; Bowers, Dan M.; and Stock, Robert M., 4,210,899, Cl. 340-146.30E.
Stoehr, Dieter: *See—*
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.
Stoll, James W.: *See—*
Castro, Anthony J.; and Stoll, James W., 4,210,556, Cl. 525-6.000.
Stoll, Karl-Heinz A.; and Miessler, Heinz, to Vosswerke GmbH. Batch washing machines. 4,210,004, Cl. 68-27.000.

Stone, Alan M., to Sphere Investments Limited. Valves. 4,210,311, Cl. 251-129.000.
Stone, Wilfred S. Self-illuminated case. 4,210,953, Cl. 362-189.000.
Stoneleigh Trust, The: *See—*
Massa, Frank, 4,210,969, Cl. 367-108.000.
Stothert & Pitt Limited: *See—*
Langworthy, Colin G.; and Jefferies, Ralph G., 4,209,988, Cl. 60-431.000.
Stouffer, Ronald D.; and Bowles Fluidics Corporation. Dual pattern windshield washer nozzle. 4,210,283, Cl. 239-11.000.
Stranczek, Norman J., to S&C Electric Company. Manual operating handle assembly for circuit interrupter devices. 4,210,788, Cl. 200-42.00T.
Strasser, Bernd: *See—*
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,210,516, Cl. 204-284.000.
Strauss, Udo: *See—*
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Streltsov, Alexei P.: *See—*
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.
Strickland, John J.; and Hoover, Thomas H., to General Electric Company. Light cell auto sleever. 4,209,882, Cl. 29-33.520.
Stubbings, James H., to Potomac Applied Mechanics, Inc. Formation of radius elbows and O.G. sets. 4,210,090, Cl. 113-54.00R.
Sugano, Kazuo: *See—*
Yamamoto, Takahiro; and Sugano, Kazuo, 4,210,076, Cl. 101-111.000.
Sugawara, Hiroyuki: *See—*
Kurosawa, Yukio; Sugawara, Hiroyuki; and Kawakubo, Yukio, 4,210,790, Cl. 200-144.00B.
Sugie, Akihiko: *See—*
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Sugihara, Kunihiko: *See—*
Nakajima, Yasuo; Onoda, Michio; Sugihara, Kunihiko; and Nagumo, Shinichi, 4,210,109, Cl. 123-76.000.
Sugita, Tohru: *See—*
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Sugiura, Youji: *See—*
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Sumari Engineering, Inc.: *See—*
Heffernan, Patrick M., 4,210,113, Cl. 123-574.000.
Sumitomo Chemical Company, Limited: *See—*
Shimomura, Hiromi; Sugie, Akihiko; and Katsube, Junki, 4,210,669, Cl. 424-305.000.
Sumitomo Metal Industries, Ltd.: *See—*
Sakamoto, Yoshiyasu; Kobayashi, Sumio; and Hatono, Akio, 4,210,023, Cl. 73-290.00R.
Sumiyoshi, Iwao; Iimure, Tamio; and Tomotsugu, Akio, to Nippon Paint Co., Ltd. Photo-curable composition for coating containing an unsaturated urethane modified polymer. 4,210,713, Cl. 430-284.000.
Summers, Thomas W.: *See—*
Kohnhorst, Earl E.; Summers, Thomas W.; and Gordon, David L., 4,210,157, Cl. 131-8.00R.
Summers, William A.; Markunas, Peter C.; and Faulkner, Lois V., to International Minerals & Chemical Corp. Method of treating 1-nitropropane. 4,210,609, Cl. 568-947.000.
Sun Oil Company of Pennsylvania: *See—*
Driscoll, Gary L., 4,210,487, Cl. 162-146.000.
Sunbeam Corporation: *See—*
Remys, Dionizas V.; and Scott, Donald R., 4,209,968, Cl. 368-273.000.
Sundstrand Corporation: *See—*
Aldrich, Allyn M., 4,210,066, Cl. 91-506.000.
Suroff, Leonard W.: *See—*
Kolt, Stanley, 4,210,277, Cl. 236-49.000.
Suss, Hans G.: *See—*
Zeindler, Stephan; and Suss, Hans G., 4,210,227, Cl. 187-29.00R.
Sutor, Norbert; and Vogelsberg, Dieter, to Siemens Aktiengesellschaft. Terminable communication cable with conductor pairs combined in groups. 4,209,966, Cl. 57-6.000.
Sutton, Gary W., to General Signal Corporation. Anti-cavitation and overload relief valve for a hydraulic system. 4,210,170, Cl. 137-493.400.
Suwa, Hisashi: *See—*
Sakurai, Sadaaki; and Suwa, Hisashi, 4,210,778, Cl. 179-1.00E.
Suzuki, Chuji; Ise, Masahiro; Inazaki, Kenzo; and Machino, Katsuyuki, to Sharp Kabushiki Kaisha. Thin-film EL display panel with light-activated write and erase means. 4,210,848, Cl. 315-169.300.
Suzuki, Mitsugi: *See—*
Ikenoue, Tsuneo; Suzuki, Mitsugi; and Liu, Shin-Yng, 4,210,958, Cl. 363-124.000.
Suzuki, Soushi: *See—*
Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, 4,210,924, Cl. 357-38.000.
Suzuki, Tadao; and Kawada, Hirohito, to Sony Corporation. Gain and impedance switching circuit for an amplifier. 4,210,873, Cl. 330-51.000.
Svecia Silkcreen Maskiner AB: *See—*
Lindstrom, Nils A. E., 4,210,077, Cl. 101-126.000.
Svensk Lasthantering Bengt Lindahl AG: *See—*
Lindahl, Bengt E., 4,210,089, Cl. 112-417.000.
Swank, Harry R.: *See—*
Mitchell, Robert B.; and Swank, Harry R., 4,210,935, Cl. 358-246.000.
Swanson, Rollan. Desulfurizing fossil fuels. 4,210,526, Cl. 208-230.000.
Sweet, David L.: *See—*
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., 4,210,358, Cl. 296-100.000.
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., to American Carrier Equipment, Inc. Closure panel actuator. 4,210,358, Cl. 296-100.000.
Swern, Daniel: *See—*
Bolgiano, Nicholas C.; and Swern, Daniel, 4,210,691, Cl. 428-96.000.
Swift, Harold E., to Gulf Research and Development Company. Nickel silicate hydrogenation process. 4,210,768, Cl. 585-250.000.
Switzer, Ralph E. Valve for controlling a fluid pressure operated device. 4,210,065, Cl. 91-469.000.
Swonger, Claron W.; Bowers, Dan M.; and Stock, Robert M., to Fingermatrix, Inc. Fingerprint-based access control and identification apparatus. 4,210,899, Cl. 340-146.30E.
Symons Corporation: *See—*
Schimmel, Vernon R., 4,210,306, Cl. 249-196.000.
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F. Polymeric adhesive antihalation composition for making metal-backed photopolymeric printing forms. 4,210,569, Cl. 260-328.0EP.
Systems Control, Inc.: *See—*
Marsh, James P.; and Steadman, Howard L., 4,210,962, Cl. 364-402.000.
Sytsma, Frederick R.: *See—*
Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., 4,210,238, Cl. 198-687.000.
Szabo, Lajos: *See—*
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Antiphlogistic method of treatment. 4,210,650, Cl. 424-258.000.
T & S Equipment Company: *See—*
Trine, Ralph D.; Le Clear, Robert L.; and T & S Equipment Company, 4,209,869, Cl. 14-69.500.
Tabara, Noboru: *See—*
Fushimi, Akihiro; Tabara, Noboru; and Isaki, Mikio, 4,210,944, Cl. 360-74.200.
Tabuchi, Toshihide; and Tsumura, Masakatsu, to Matsushita Electric Industrial Co., Ltd. Helical resonator band pass filter with novel coupling means. 4,210,884, Cl. 333-203.000.
Tachi, Katsuichi: *See—*
Ninomiya, Ichiro; Nagakura, Katsuhiko; Sakamoto, Hitoshi; and Tachi, Katsuichi, 4,210,939, Cl. 360-14.000.
Tachikawa, Hiromichi: *See—*
Kitajima, Masao; Tachikawa, Hiromichi; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,210,711, Cl. 430-253.000.
Tada, Hiroshi; and Nozu, Toshiro, to Oiles Industry Co. Ltd. Fixed support structure. 4,209,868, Cl. 14-16.100.
Taikisha Ltd.: *See—*
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, 4,210,505, Cl. 204-181.00C.
Taipalus, Larry R. Portable container seat. 4,210,363, Cl. 297-192.000.
Takabayashi, Kazuhiko, to Sony Corporation. Video projecting apparatus with raster distortion correction. 4,210,929, Cl. 358-64.000.
Takagi, Mikio; Kamioka, Hajime; Shimoda, Haruo; and Miyamoto, Hidekazu, to Fujitsu Limited. Process for producing a semiconductor device. 4,210,473, Cl. 148-189.000.
Takahashi, Kozi: *See—*
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,210,842, Cl. 313-403.000.
Takahashi, Masamitsu, to Bankoku Needle Manufacturing Company Ltd. Foldable needle pack. 4,210,239, Cl. 206-45.130.
Takahasi, Naoki: *See—*
Aoki, Jun; Hayashida, Takashi; Komatu, Shigesabroh; Miyakawa, Seii; and Takahasi, Naoki, 4,209,898, Cl. 29-783.000.
Takaoka, Saburo; and Tsuda, Youichiro, to Pioneer Electronic Corporation. Device for improving output waveform of manually controllable pulse generator for use in preset electronic tuning control device. 4,210,828, Cl. 307-268.000.
Takara Co., Ltd.: *See—*
Ogawa, Iwakichi, 4,209,934, Cl. 46-31.000.
Takase, Masao: *See—*
Hamamura, Tadashi; Noda, Isao; Yoshii, Tadashi; Takase, Masao; and Watanabe, Terumi, 4,210,726, Cl. 521-110.000.
Takashima, Mutsuo; Iwanami, Sumio; and Usuda, Shinji, to Yamanouchi Pharmaceutical Co., Ltd. Benzamide derivatives. 4,210,660, Cl. 424-274.000.
Takashima, Syuzi: *See—*
Kasamatsu, Yutaka; Hiromatsu, Mutsuo; Takashima, Syuzi; Hosoya, Takasi; and Hamanaka, Takamichi, 4,210,445, Cl. 75-124.000.
Take, Hiroshi: *See—*
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,907, Cl. 340-785.000.

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Takeda Chemical Industries, Ltd.: *See—*
Ninomiya, Nobutaka; Nishino, Hiroshi; Aibe, Toshio; and Itoga, Kiyoshi, 4,210,628, Cl. 423-239.000.
Takenoya, Hideaki; and Makabe, Hachiro, to Janome Sewing Machine Co. Ltd. Sewing machine with an electronic pattern stitch control system. 4,210,088, Cl. 112-158.00E.
Takita, Yoshikazu: *See—*
Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, 4,210,924, Cl. 357-38.000.
Takruri, Harun; and Chavers, Jane E., to Eli Lilly and Company. Flurandrenolide film formulation. 4,210,633, Cl. 424-80.000.
Talos Systems, Inc.: *See—*
Rodgers, James L.; and Fowler, Billy C., 4,210,775, Cl. 178-19.000.
Tamaki, Katsuyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape driving system for a tape recorder. 4,210,297, Cl. 242-201.000.
Tamaru, Munetaka: *See—*
Kume, Kazunari; Watanabe, Minoru; Oono, Hideshi; and Tamaru, Munetaka, 4,209,970, Cl. 368-76.000.
Tamazawa, Kazuharu; Fujikura, Takashi; Kojima, Tadao; and Iwanami, Masaru, to Yamanouchi Pharmaceutical Co., Ltd. Process for producing 7β-amino-7α-methoxycephalosporins. 4,210,751, Cl. 544-21.000.
Tamura, Tooru; Ojima, Nobuyuki; Kondo, Sigeru; and Kishita, Kenichirou, to Matsushita Electric Industrial Co., Ltd. Method of increasing the amplification of a transistor through use of organic compounds. 4,210,498, Cl. 204-35.00N.
Tanaka, Tomoyuki; Okamura, Masahiro; Shirasawa, Toshikatsu; and Ogawa, Takuzo, to Hitachi, Ltd. Method of simultaneously controlling the lifetimes and leakage currents in semiconductor devices by hot electron irradiation through passivating glass layers. 4,210,464, Cl. 148-1.500.
Tanaka, Yukio: *See—*
Kanazawa, Kenichi; and Tanaka, Yukio, 4,210,827, Cl. 307-264.000.
Tantillo, Robert M.; and Niven, David A., to Bob Baker Enterprises, Inc. Filter back-washing. 4,210,538, Cl. 210-333.00A.
Tarnay, Matthew G.; and Krieff, Sidney K., to Price-Pfister Brass Mfg. Co. Temperature limiting device. 4,210,284, Cl. 239-75.000.
Tashma, Zev: *See—*
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,210,658, Cl. 424-273.00R.
Tate, Jack F.: *See—*
Allen, Joseph C.; and Tate, Jack F., 4,210,205, Cl. 166-271.000.
Tatsumi, Susumu: *See—*
Miyakawa, Seiichi; Tatsumi, Susumu; Sakamoto, Koji; and Ogata, Yoshihiro, 4,210,864, Cl. 324-204.000.
Tatum, James R.; and Dayus, Barry R. Ceiling fixture with thermal protection. 4,210,070, Cl. 98-40.00D.
Tawara, Ikuo: *See—*
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,210,724, Cl. 435-292.000.
Taylor, Alfred. Spanner wrench. 4,210,037, Cl. 81-90.00C.
Taylor, John H., to English Clays Lovering Pochin & Company, Limited. Method of manufacturing paper or cardboard products. 4,210,490, Cl. 162-175.000.
Taylor, Joseph D. F., to Lucas Industries Limited. Battery charging systems for road vehicles. 4,210,856, Cl. 320-17.000.
Taylor, Robert K. Cable straightener. 4,210,014, Cl. 72-389.000.
Taylor, William I.: *See—*
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,210,767, Cl. 568-345.000.
TDK Electronics, Co., Ltd.: *See—*
Yoneyama, Tetsuhito; Hori, Tetsuo; and Ojima, Teruhiko, 4,210,471, Cl. 148-102.000.
Teach, Eugene G., to Stauffer Chemical Company. Method of preparation for aromatic N-substituted halo-substituted 2-pyrrolidinones. 4,210,589, Cl. 260-326.5FL.
Teague, James R.: *See—*
Burkhart, Gordon H.; Rice, Robert R.; and Teague, James R., 4,210,389, Cl. 350-321.000.
Technicon Instruments Corporation: *See—*
Pelavin, Milton H., 4,210,809, Cl. 250-343.000.
Technion Research & Development Foundation Ltd.: *See—*
Meretsky, Paul L.; and Carmon, Amiram, 4,210,859, Cl. 323-44.00R.
Terada, Ziro: *See—*
Nitta, Tsuneharu; Terada, Ziro; and Hayakawa, Shigeru, 4,210,894, Cl. 338-35.000.
Terasawa, Yoshio: *See—*
Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, 4,210,924, Cl. 357-38.000.
Teroson G.m.b.H.: *See—*
Kosters, Bernhard, 4,210,567, Cl. 260-31.80R.
Terry, Bernard W. H.: *See—*
Crosby, John; and Terry, Bernard W. H., 4,210,611, Cl. 260-653.500.
Texaco Inc.: *See—*
Allen, Joseph C.; and Tate, Jack F., 4,210,205, Cl. 166-271.000.
Burton, James R.; Cantwell, Vernon W.; and Davis, James E., 4,210,544, Cl. 252-47.500.
Christopher, Charles A., Jr.; and Clauset, Alvin O., Jr., 4,210,204, Cl. 166-270.000.
Cummings, 4,210,425, Cl. 44-72.000.
Texas Instruments Incorporated: *See—*
Baboian, Robert, 4,209,896, Cl. 29-855.000.
Keen, Ralph S., 4,209,894, Cl. 29-577.00R.
Noble, Robert T., 4,209,974, Cl. 368-84.000.
Textron Inc.: *See—*
Davies, Evan E., 4,209,897, Cl. 29-768.000.
Thetford Corporation: *See—*
Coviello, Allan J.; Bernardin, Frederick E.; and Kalb, Kathryn R., 4,210,528, Cl. 210-4.000.
Thiele, Kurt: *See—*
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,656, Cl. 424-273.00R.
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,657, Cl. 424-273.00R.
Thomas, H. Jeanette: *See—*
Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., 4,210,639, Cl. 424-180.000.
Thompson, Gerald L.: *See—*
Paschal, Gloria C.; and Thompson, Gerald L., 4,210,584, Cl. 260-244.400.
Thorpe, Alfred, to Sir James Farmer Norton & Co. Limited. Washing machines for use in the textile industry. 4,210,006, Cl. 68-205.00R.
Thummler, Ursus: *See—*
Dany, Franz-Josef; Thummler, Ursus; Wortmann, Joachim; Staendeke, Horst; and Kandler, Joachim, 4,210,630, Cl. 423-265.000.
TII Corporation: *See—*
Simokat, Frank L., 4,210,779, Cl. 179-2.510.
Timex Corporation: *See—*
Flumm, Paul T., 4,209,976, Cl. 368-187.000.
Timonin, Vitaly I.: *See—*
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.
Tinsley, John M.: *See—*
Ely, John W.; and Tinsley, John M., 4,210,206, Cl. 166-294.000.
Titus, Paul E., to Shell Oil Company. Removal of sulfur compounds from coal during pipeline transport. 4,210,422, Cl. 44-15.00R.
Tjaden, Garold S.: *See—*
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,210,960, Cl. 364-200.000.
Tkalenko, Victor J., Jr.: *See—*
Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; Baran, Joseph; and Ingalls, Curtis W., 4,210,346, Cl. 283-8.00B.
TMC Corporation: *See—*
Krob, Erwin; and Weigl, Erwin, 4,210,342, Cl. 280-636.000.
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, to Shinto Paint Co., Ltd.; Honda Motor Co., Ltd.; and Taikisha Ltd. Method and apparatus for electrodeposition coating. 4,210,505, Cl. 204-181.00C.
Togashi, Kunihiko: *See—*
Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, 4,210,440, Cl. 71-98.000.
Tohoku Musen Denki Co., Ltd.: *See—*
Ikenoue, Tsuneo; Suzuki, Mitsugi; and Liu, Shin-Yng, 4,210,958, Cl. 363-124.000.
Tohoku Ricoh, Ltd.: *See—*
Ikenoue, Tsuneo; Suzuki, Mitsugi; and Liu, Shin-Yng, 4,210,958, Cl. 363-124.000.
Toke, Laszlo: *See—*
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.
Tokico Ltd.: *See—*
Ohtani, Iwao, 4,210,410, Cl. 418-150.000.
Tokunaga, Yoichi: *See—*
Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, 4,210,942, Cl. 360-65.000.
Tokyo Automatic Control Kabushiki Kaisha: *See—*
Kitsugi, Kentaro, 4,210,165, Cl. 137-102.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Komatsu, Shigeru, 4,210,689, Cl. 427-88.000.
Tamaki, Katsuyuki, 4,210,297, Cl. 242-201.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Higuchi, Iwao; and Fujita, Takashi, 4,210,792, Cl. 219-10.49R.
Kobayashi, Tetsuji; Sugita, Tohru; and Matsuo, Noboru, 4,210,805, Cl. 250-370.000.
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, to Monsanto Company. Production of tumor angiogenesis factor by cell culture. 4,210,718, Cl. 435-41.000.
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, to Monsanto Company. Production of tumor angiogenesis factor by cell culture. 4,210,719, Cl. 435-41.000.
Tomaro, Patrick M., to Conair Corporation. Foldable curling iron providing for self-storage and safety disconnection. 4,210,797, Cl. 219-225.000.
Tominaga, Michiaki; Tone, Hitoshi; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril compounds. 4,210,753, Cl. 544-128.000.

Tomioka, Hiromi: *See—*
Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, 4,210,440, Cl. 71-98.000.
Tomotsugu, Akio: *See—*
Sumiyoshi, Iwao; Iimure, Tamio; and Tomotsugu, Akio, 4,210,713, Cl. 430-284.000.
Tompsett, Michael F.: *See—*
Crochiere, Ronald E.; Sequin, Carlo H.; and Tompsett, Michael F., 4,210,825, Cl. 307-221.00D.
Fraser, Donald L., Jr.; and Tompsett, Michael F., 4,210,950, Cl. 361-329.000.
Tone, Hitoshi: *See—*
Tominaga, Michiaki; Tone, Hitoshi; and Nakagawa, Kazuyuki, 4,210,753, Cl. 544-128.000.
Topolnitsky, Oleg D.: *See—*
Vasiliev, Petr E.; Ragulskis, Kazimiras M.; Savitskas, Ionas A.; Misikov, Vitaly M.; and Topolnitsky, Oleg D., 4,210,837, Cl. 310-323.000.
Torisawa, Akira: *See—*
Ueda, Makoto; Shida, Masaharu; and Torisawa, Akira, 4,209,971, Cl. 368-76.000.
Torrington Company, The: *See—*
Sqrillo, John J.; and Shepard, Richard W., 4,210,003, Cl. 66-116.000.
Torta, Franco; and Torta, Mario, to Lifel di Torta Franco & C. s.a.s. Support and guide device for adjustable vehicle seats. 4,210,303, Cl. 248-429.000.
Torta, Mario: *See—*
Torta, Franco; and Torta, Mario, 4,210,303, Cl. 248-429.000.
Tosco Corporation: *See—*
Schulman, Bernard L., 4,210,491, Cl. 201-2.500.
Toth, Istvan: *See—*
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.
Totten, George E.: *See—*
Williams, Thomas C.; and Totten, George E., 4,210,459, Cl. 106-308.00N.
Toubkin, Walter M.; and Mulley, Alan J., to Space Age Electronics Limited. Echo sounders. 4,210,970, Cl. 367-109.000.
Tourneux, Michel, to U.S. Philips Corporation. Generator panel having solar cells incorporated in a laminated assembly. 4,210,462, Cl. 136-89.0EP.
Touze, Francois. Heat exchange devices for cooling the wall and refractory of a blast furnace. 4,210,101, Cl. 122-20.00B.
Towmotor Corporation: *See—*
Povejsil, James H., 4,210,339, Cl. 277-153.000.
Toy Builders: *See—*
Orenstein, Henry, 4,209,938, Cl. 46-116.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Yamane, Kiyoshi; Abe, Shunzo; Sawada, Shuzo; and Matsumoto, Hatsuo, 4,210,412, Cl. 8-471.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, 4,210,111, Cl. 123-414.000.
Nishibori, Kengi; Hayashi, Fumio; and Ogawa, Tadashi, 4,210,115, Cl. 123-122.00D.
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, 4,210,105, Cl. 123-277.000.
Shiomi, Masanao; Ishikawa, Masakazu; and Kato, Hiroshi, 4,210,343, Cl. 280-668.000.
Watanabe, Haruo, 4,210,114, Cl. 123-489.000.
Transit Systems Technology, Inc.: *See—*
Gomez, Jim H.; and Davila, Jose E., 4,210,801, Cl. 235-92.0AC.
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Detergent compositions containing 1-acyl-2,6,6-trimethylcyclohexene derivatives and processes for preparing same. 4,210,553, Cl. 252-174.110.
Tresper, Erhard: *See—*
Grigo, Ulrich; Merten, Josef; Binsack, Rudolf; and Tresper, Erhard, 4,210,579, Cl. 525-88.000.
Trine, Ralph D.; Le Clear, Robert L.; and T & S Equipment Company. Lifting apparatus for dockboard. 4,209,869, Cl. 14-69.500.
Trotter, Jimmy R.; Joyner, Frederick B.; and McConnell, Richard L., to Eastman Kodak Company. Blends of substantially amorphous olefin copolymers, compatible tackifying resins and plasticizing oils useful as hot melt, pressure-sensitive adhesives. 4,210,570, Cl. 260-33.6AQ.
True Temper Corporation: *See—*
Fee, Graham M., 4,210,281, Cl. 238-327.00R.
Trujillo, John J.; and Brown, Timothy E., to LST Electronics, Inc. Controllable liquid dispenser. 4,210,261, Cl. 222-43.000.
Trullas, Isidro F., to Argelich, Termes y Cia., S.A. Apparatus for the wet processing of textile fabrics in rope form. 4,210,005, Cl. 68-148.000.
Tsai, Min H., to Unitek Corporation. Dental restorations using castings of non-precious metals. 4,210,447, Cl. 75-171.000.
Tsaknis, Peter J.; and Lux, Virginia J., to United States of America, Army. Floating receptacle for collecting histologic material. 4,210,099, Cl. 118-402.000.
Tsubata, Noritaka, to Yoshida Kogyo K.K. Woven fastener stringer. 4,210,180, Cl. 139-384.00B.
Tsuda, Munetaka; Yokokawa, Hiroshi; and Utsumi, Yoshiharu, to Hitachi, Ltd. Fourier-transform nuclear gyromagnetic resonance spectrometer. 4,210,861, Cl. 324-308.000.
Tsuda, Youichiro: *See—*
Takaoka, Saburo; and Tsuda, Youichiro, 4,210,828, Cl. 307-268.000.
Tsukada, Naonobu; and Nishimura, Katsuyoshi, to Kabushiki Kaisha Morita Seisakusho. Dental treatment chair assembly. 4,209,907, Cl. 433-33.000.
Tsukamoto, Yutaka: *See—*
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.
Tsumura, Masakatsu: *See—*
Tabuchi, Toshihide; and Tsumura, Masakatsu, 4,210,884, Cl. 333-203.000.
Ueda, Makoto; Shida, Masaharu; and Torisawa, Akira, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,209,971, Cl. 368-76.000.
Uede, Hisashi: *See—*
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,907, Cl. 340-785.000.
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,909, Cl. 340-763.000.
Ueki, Tetsuro; Ogino, Hajime; and Yaguchi, Shigeru, to Jyoban Jyuki Kensetsu Kabushiki Kaisha. Display device of louvre arrangement. 4,209,926, Cl. 40-437.000.
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, to Ogawa & Co., Ltd. Sublimable fungicidal compositions containing triisopropyl- or tritertiary-butyl-s-trioxane carriers. 4,210,640, Cl. 424-181.000.
Ueno, Yoshiki: *See—*
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, 4,210,111, Cl. 123-414.000.
Ultra Mortar, Inc.: *See—*
Miller, Richard L., 4,210,456, Cl. 106-92.000.
Underwood, David C.: *See—*
Logan, Ted J.; and Underwood, David C., 4,210,594, Cl. 260-428.500.
Union Carbide Corporation: *See—*
Hamamura, Tadashi; Noda, Isao; Yoshii, Tadashi; Takase, Masao; and Watanabe, Terumi, 4,210,726, Cl. 521-110.000.
Holcombe, Thomas C., 4,210,771, Cl. 585-701.000.
Lewis, Jennings B., III; and Kelly, Peter P., 4,210,442, Cl. 75-60.000.
Williams, Thomas C.; and Totten, George E., 4,210,459, Cl. 106-308.00N.
Union Tank Car Company: *See—*
Parsons, James D.; and Wike, Paul S., 4,210,254, Cl. 220-22.000.
United States Gypsum Company: *See—*
Wendt, Alan C., 4,209,953, Cl. 52-241.000.
United States of America
Agriculture: *See—*
Pardo, Clay E., Jr.; Foster, Robert E.; and Fong, Willie, deceased, 4,210,415, Cl. 8-128.00A.
Army: *See—*
Brothers, Jack, 4,210,082, Cl. 102-8.000.
Liberman, Harold J., 4,210,298, Cl. 244-3.210.
Pollehn, Herbert K.; and Bratton, Jerry L., 4,210,681, Cl. 427-64.000.
Tsaknis, Peter J.; and Lux, Virginia J., 4,210,099, Cl. 118-402.000.
Energy: *See—*
Lebacqz, Jean V., 4,210,845, Cl. 315-5.250.
Wittig, J. Michael; and Jennings, Stephen J., 4,210,819, Cl. 290-52.000.
Wittig, J. Michael, 4,210,820, Cl. 290-52.000.
Health, Education and Welfare: *See—*
Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., 4,210,639, Cl. 424-180.000.
Montgomery, John A., 4,210,745, Cl. 536-26.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Ramohalli, Kumar N. R. Silicone containing solid propellant. 4,210,474, Cl. 149-19.200.
National Aeronautics and Space Administration: *See—*
Batten, Carmen E., 4,210,401, Cl. 356-369.000.
Obler, Henry D., 4,210,278, Cl. 236-49.000.
Navy: *See—*
Hill, Eugene R.; and Law, Eugene L., 4,210,871, Cl. 455-137.000.
Martin, William H., Jr., 4,210,971, Cl. 367-134.000.
Ream, Donald F., 4,210,083, Cl. 102-18.00M.
Rubin, David, 4,210,881, Cl. 333-110.000.
Shannon, Roger L.; Watkins, Dale F.; and Pogson, John T., 4,210,847, Cl. 315-111.900.
Veterans' Affairs: *See—*
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U.S. Philips Corporation: *See—*
Gerkema, Jan; and Muijderman, Everhardus A., 4,210,371, Cl. 308-9.000.
Keuleman, Alexander H. F.; and Hyde, David R., 4,209,915, Cl. 34-48.000.
Roza, Engel; and Voorman, Johannes O., 4,210,882, Cl. 333-166.000.
Shannon, John M., 4,210,922, Cl. 357-24.000.
Tourneux, Michel, 4,210,462, Cl. 136-89.0EP.

Van Bokestal, Andre M. A.; and Belhomme, Charles J. G., 4,210,800, Cl. 219-544.000.
United States Postage Corporation: *See—*
Criscitelli, Fred J., 4,210,236, Cl. 194-1.00D.
United States Steel Corporation: *See—*
Galer, Herbert W., 4,210,179, Cl. 138-96.00T.
United Technologies Corp.: *See—*
Rannenberg, George C., 4,209,993, Cl. 62-80.000.
Unitek Corporation: *See—*
Tsai, Min H., 4,210,447, Cl. 75-171.000.
University of Delaware: *See—*
Ih, Charles C., 4,210,803, Cl. 455-610.000.
University of Miami: *See—*
Greer, Sheldon, 4,210,638, Cl. 424-180.000.
University of Sydney: *See—*
Gillings, Barrie R. D., 4,209,905, Cl. 433-189.000.
Uniwave, Inc.: *See—*
Baumann, John; Abrams, Abraham; and Broitman, Marvin, 4,210,225, Cl. 184-28.000.
Unterstenhofer, Ilse, heiress-at-law: *See—*
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.
Unterstenhofer, Leo, deceased: *See—*
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.
UOP Inc.: *See—*
Antos, George J., 4,210,523, Cl. 208-139.000.
Antos, George J., 4,210,524, Cl. 208-139.000.
Antos, George J., 4,210,561, Cl. 252-441.000.
Antos, George J., 4,210,769, Cl. 585-379.000.
Hilfman, Lee; and O'Hara, Mark J., 4,210,522, Cl. 208-111.000.
Michalko, Edward, 4,210,629, Cl. 423-242.000.
Pinke, Paul A., 4,210,608, Cl. 568-451.000.
Upat GmbH & Co.: *See—*
Goring, Hermann; List, Hansjorg; Brunswig, Klaus; and Labatzke, Winfried, 4,210,057, Cl. 85-83.000.
Upjohn Company, The: *See—*
Johnson, Roy A., 4,210,748, Cl. 542-426.000.
Urion, Kenard E.; and Cleminshaw, Douglas R., to Scott Paper Company. Cutting assembly. 4,210,043, Cl. 83-175.000.
Ushiku, Kenichi; and Hasegawa, Akira, to Hitachi, Ltd.; and Nissan Motor Company, Limited. Impact detecting switch. 4,210,789, Cl. 200-61.45R.
USM Corporation: *See—*
Pretty, Frederick A., 4,210,046, Cl. 83-525.000.
Usuda, Shinji: *See—*
Takashima, Mutsuo; Iwanami, Sumio; and Usuda, Shinji, 4,210,660, Cl. 424-274.000.
Utsumi, Yoshiharu: *See—*
Tsuda, Munetaka; Yokokawa, Hiroshi; and Utsumi, Yoshiharu, 4,210,861, Cl. 324-308.000.
Utzmann, Rene, to Ste d'Application Plastique, Mecanique et Electronique Plastique-Mecanidue S.A. Arrangement and process for activating and arresting the operation of a heat-forming machine. 4,209,957, Cl. 53-453.000.
Vaarala, Harri. Control method. 4,210,228, Cl. 187-73.000.
Vachhani, Vasantrai A.; Soderstrom, Melvin A.; and Hughes, Richard L., to AMP Incorporated. Modular barrier block. 4,210,379, Cl. 339-101.000.
Vaisala Oy: *See—*
Kallio-Konno, Kari, 4,210,870, Cl. 455-95.000.
Van Benthuysen, John D., to CTS Corporation. Variable resistance control and method of making the same. 4,210,896, Cl. 338-159.000.
Van Bokestal, Andre M. A.; and Belhomme, Charles J. G., to U.S. Philips Corporation. Heating element comprising a PTC-resistor body. 4,210,800, Cl. 219-544.000.
Vance, John E. Eyeless fishing rod employing novel hand and reel gripping means. 4,209,931, Cl. 43-22.000.
van der Lely, Cornelis. Agricultural implement. 4,210,209, Cl. 172-47.000.
Vanlerberghe, Guy; and Rosenbaum, Georges, to L'Oreal. Aminated γ-dialdehyde; methods for preparing the same and cosmetic compositions containing the same. 4,210,755, Cl. 544-175.000.
VanMeter, Kenneth R., to Harris Corporation. Linear digital phase lock loop. 4,210,776, Cl. 375-120.000.
Variani Associates, Inc.: *See—*
Kent, Bryan P., 4,210,483, Cl. 156-443.000.
Vary, Robert F., to Mamo, Anthony C. Energy saving device for habitable building enclosures having a heat changing system. 4,210,200, Cl. 165-98.000.
Vasiliev, Petr E.; Ragulskis, Kazimiras M.; Savitskas, Ionas A.; Misikov, Vitaly M.; and Topolnitsky, Oleg D. Piezoelectrically driven torsional vibration motor. 4,210,837, Cl. 310-323.000.
VEB Rationalisierung Halle: *See—*
Dudar, Klaus; Seliger, Ewald; Hubner, Gertraude; and Banse, Wilhelm, 4,210,676, Cl. 426-238.000.
Veesicol Chemical Corporation: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,210,452, Cl. 106-18.180.
Vercellotti, Leonard C.: *See—*
Whyte, Ian A.; Vercellotti, Leonard C.; and McGivern, James P., 4,210,901, Cl. 340-310.00R.
Verloop, Jan; and Braam, Johannes W. T. M., to Shell Oil Company. Method for increasing the hydrogen sulphide concentration in an acid gas. 4,210,627, Cl. 423-220.000.
Ver Mehren, Hubert R., to Ga-Vehren Engineering Company. Fan folding and stacking device. 4,210,318, Cl. 270-79.000.
Vermoehlen, Werner: *See—*
Renzel, Peter; and Vermoehlen, Werner, 4,210,904, Cl. 340-347.0AD.
Verry, Monique: *See—*
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Vicari, Ronald P.; and Yampol, Barry, to Graphic Scanning Corp. Digitally controlled telephone answering switching system. 4,210,783, Cl. 179-18.0FC.
Vidal, Andre: *See—*
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Villa, Joseph N.: *See—*
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Vinals, Joaquin: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.
Vinals, Joaquin F.; Kiwala, Jacob; Wilson, Richard A.; and Mookherjee, Braja D., to International Flavors & Fragrances Inc. 5-Isopropyl-3-nonene-2,8-dione as flavorant and as a flavor enhancer in conjunction with smoking tobacco and smoking tobacco articles. 4,210,158, Cl. 131-10.00R.
Virag, Sandor: *See—*
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.
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Vlad, Constantin; and Paulitsch, Hans, to Stahlwerke Peine-Salzgitter Aktiengesellschaft. Cooling arrangement. 4,210,010, Cl. 72-201.000.
Vock, Manfred H.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.
Vodicka, Vincent; and Holub, Fred F., to General Electric Company. All plastic headlamp. 4,210,841, Cl. 313-221.000.
Voest-Alpine Aktiengesellschaft: *See—*
Hargassner, Reinhard; Holleis, Gunter; and Hoscher, Rudolf, 4,210,197, Cl. 164-416.000.
Vogelsberg, Dieter: *See—*
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von Holdt, John W. Pivot assembly mold method. 4,210,620, Cl. 264-163.000.
von Konig, Anita: *See—*
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.
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Voorman, Johannes O.: *See—*
Roza, Engel; and Voorman, Johannes O., 4,210,882, Cl. 333-166.000.
Voss, Josef, to Voss, Josef. Bird cage. 4,210,100, Cl. 119-17.000.
Vosswerke GmbH: *See—*
Stoll, Karl-Heinz A.; and Miessler, Heinz, 4,210,004, Cl. 68-27.000.
Vykhodtsev, Nikolai A.; Vykhodtseva, Tatyana P.; Bantsekin, Viktor I.; Borisov, Boris K.; and Grishin, Oleg P. Method and device for detecting icing of objects found in air flow. 4,210,021, Cl. 73-170.00R.
Vykhodtseva, Tatyana P.: *See—*
Vykhodtsev, Nikolai A.; Vykhodtseva, Tatyana P.; Bantsekin, Viktor I.; Borisov, Boris K.; and Grishin, Oleg P., 4,210,021, Cl. 73-170.00R.
W. R. Grace & Co.: *See—*
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Wagman, Julius, to Helene Curtis Industries, Inc. Creme rinses with hair holding properties. 4,210,161, Cl. 132-7.000.
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Wakamiya, Tadamitsu, to Sony Corporation. Motor control system. 4,210,851, Cl. 318-257.000.

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Walker, Christopher J.: *See*—
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Walker, Peter S.; and Borzone, Rocco, to Howmedica, Inc. Joint prosthesis. 4,209,861, Cl. 3-1.911.

Walker, Stephen J.: *See*—
Lamb, Raymond K.; Weathers, Richard E.; Coffey, Lacey C.; and Walker, Stephen J., 4,209,891, Cl. 29-466.000.

Waller, Lonnie J.: *See*—
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Wallin, Lloyd A.; and Filkins, David E. Method and device for drying gloves. 4,209,913, Cl. 34-21.000.

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Waltersdorfer, Anna: *See*—
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Wang, Samuel S.; and Lewellyn, Morris E., to American Cyanamid Company. Process for dewatering mineral concentrates. 4,210,531, Cl. 210-51.000.

Ward, Clive: *See*—
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Ward, Trevor; and Ward, Clive. Self-recuperative burner. 4,210,411, Cl. 431-160.000.

Warner Electric Brake & Clutch Company: *See*—
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Washecheck, Paul H.: *See*—
Yang, Kang; Nield, Gerald L.; and Washecheck, Paul H., 4,210,764, Cl. 568-618.000.

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Watanabe, Atsumi, to Hitachi, Ltd. Method and system of controlling high voltage direct current power transmission plants. 4,210,956, Cl. 363-51.000.

Watanabe, Haruo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air-fuel ratio control apparatus for an internal combustion engine. 4,210,114, Cl. 123-489.000.

Watanabe, Minoru: *See*—
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Watanabe, Morio; and Nishimura, Sanji, to Solex Research Corporation of Japan. Process for recovery of waste H_2SO_4 and HCl. 4,210,502, Cl. 204-151.000.

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Watson, Stewart C., to Watson Bowman Associates, Inc. Reinforced elastomer products. 4,210,698, Cl. 428-327.000.

Wave Energy Development I Vastmanland Aktiebolag: *See*—
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Weaver, Max A.: *See*—
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Weaver, Roy: *See*—
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Webb, William G. Water treating device. 4,210,613, Cl. 261-120.000.

Weber, Carl L., to Hydrocarbon Research, Inc. Method and apparatus for drying a moisture-containing particulate material. 4,209,911, Cl. 34-9.000.

Weber, Klaus: *See*—
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Webster, R. Daniel: *See*—
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Weghaupt, Erich; and Krieger, Gerhard, to Kraftwerk Union Aktiengesellschaft. Device for cooling and electrically connecting field-current lines to water-cooled turbogenerator rotors. 4,210,834, Cl. 310-61.000.

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Weigl, Josef: *See*—
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Weiner, Lewis. Die casting apparatus. 4,210,196, Cl. 164-152.000.

Weiss, Jacob B. Eavestrough bracket. 4,210,301, Cl. 248-48.200.

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Wendt, David W. Slide holder tray. 4,209,923, Cl. 40-158.00B.

Wern, Lars A. Touch control switch. 4,210,822, Cl. 307-116.000.

Wernicke, Hans J.; and Kreuter, Walter, to Linde Aktiengesellschaft. Unsupported catalysts in the production of olefins. 4,210,520, Cl. 208-57.000.

Wessel, Wolf; and Sautter, Wilfried, to Robert Bosch GmbH. Method and apparatus for regulating a combustible mixture. 4,210,106, Cl. 123-489.000.

Western Electric Company, Inc.: *See*—
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Western Gear Corporation: *See*—
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Whitlow Computer Services, Inc.: *See*—
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Whitlow, Duane L.; and Sasson, Azra, to Whitlow Computer Services, Inc. Sorting system. 4,210,961, Cl. 364-300.000.

Whittaker Corporation: *See*—
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Whyte, Ian A.; Vercellotti, Leonard C.; and McGivern, James P., to Westinghouse Electric Corp. Signal repeater for a distribution network communication system. 4,210,901, Cl. 340-310.00R.

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Willemin, Paul, to Willemin Machines S.A. Apparatus for forming non-circular workpieces. 4,210,039, Cl. 82-18.000.

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Williamson, Violetta. Game with game board and pieces. 4,210,336, Cl. 273-258.000.

Wilson, Charles A.; and Mixan, Craig E., to Dow Chemical Company, The. (1,4)Dithiino(2,3-b)(1,2,5)-thiadiazole(3,4-e)pyrazine-6,7-dicarbonitrile. 4,210,645, Cl. 424-250.000.

Wilson, Edward L., Jr.; and Mitchell, Willard N., to Exxon Research & Engineering Co. Hydrogen-donor coal liquefaction process. 4,210,518, Cl. 208-10.000.

Wilson Greatbatch Ltd.: *See*—
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Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,548, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,549, Cl. 252-76.000.

Wilson, John F.: *See*—
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Wilson, Richard A.: *See*—
Vinals, Joaquin F.; Kiwala, Jacob; Wilson, Richard A.; and Mookherjee, Braja D., 4,210,158, Cl. 131-10.00R.

Wilzig, Herbert; and Schuessler, Charles J, Door stop. 4,209,876, Cl. 16-82.000.

Windgassen, Richard J.; and Ott, Louis E., to Standard Oil Company (Indiana). Liquid fertilizer for supply of sulfur, nitrogen and micronutrient metals. 4,210,437, Cl. 71-28.000.

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Winey, James M., to Magnepan, Incorporated. Magnetic field structure for planar speaker. 4,210,786, Cl. 179-115.5PV.

Winter, Joseph, to Olin Corporation. Process and apparatus for making composite sheet and heat exchanger panels therefrom. 4,209,885, Cl. 29-157.30V.

Winter, Joseph; Breedis, John F.; and Mravic, Brian, to Olin Corporation. Process and apparatus for making heat exchanger panels. 4,209,886, Cl. 29-157.30V.

Wirth, Hermann O.; and Wehner, Hermann W., to Ciba-Geigy Corporation. Process for the production of organo-tin compounds. 4,210,595, Cl. 260-429.700.

Witte, Earl L. Toy aircraft. 4,209,937, Cl. 46-81.000.

Wittig, J. Michael; and Jennings, Stephen J., to United States of America, Energy. Open cycle ocean thermal energy conversion steam control and bypass system. 4,210,819, Cl. 290-52.000.

Wittig, J. Michael, to United States of America, Energy. Open cycle ocean thermal energy conversion system structure. 4,210,820, Cl. 290-52.000.

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Wolff, Edwin K.; and Schwenzer, Alfred F., to NJM, Inc. Labeling machines. 4,210,481, Cl. 156-357.000.

Wong, Thomas S. W.; Wong, Wing Y.; and Chow, Edwin M. W., to National Semiconductor Corporation. Power up circuit with high noise immunity. 4,210,829, Cl. 307-296.00R.

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Worder, Hans. Twin chamber injection syringe. 4,210,142, Cl. 128-272.100.

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Wozniak, Stephen G., to Apple Computer, Inc. Controller for magnetic disc, recorder, or the like. 4,210,959, Cl. 364-200.000.

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Wurtman, Richard J.; Wurtman, Judith J.; and Fernstrom, John D., to Massachusetts Institute of Technology. Composition and method for suppressing appetite for calories as carbohydrates. 4,210,637, Cl. 424-180.000.

Wuth, Wolfgang. Method for the continuous or discontinuous treatment of molten slag, particularly with contents of heavy metal oxides, for the recovery of portions contained therein of valuable metals or their combinations, respectively. 4,210,441, Cl. 75-24.000.

Wyler, Siegfried: *See*—
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Yale, Robert S. Reversible envelope. 4,210,250, Cl. 206-632.000.

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Yamamoto, Takahiro; and Sugano, Kazuo, to Hitachi Koki Company, Limited. Printing apparatus. 4,210,076, Cl. 101-111.000.

Yamane, Kiyoshi; Abe, Shunzo; Sawada, Shuzo; and Matsumoto, Hatsuo, to Toyo Boseki Kabushiki Kaisha. Method of transfer printing for cellulosic fiber-containing textile product. 4,210,412, Cl. 8-471.000.

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Yan, Tsoung Y., to Mobil Oil Corporation. Solid fuel use in small furnaces. 4,210,423, Cl. 44-1.00C.

Yang, Kang; Nield, Gerald L.; and Washecheck, Paul H., to Conoco, Inc. Barium oxide/cresylic acid catalyzed ethoxylation. 4,210,764, Cl. 568-618.000.

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Yoneyama, Tetsuhito; Hori, Tetsuo; and Ojima, Teruhiko, to TDK Electronics, Co., Ltd. Permanent magnet material and process for producing the same. 4,210,471, Cl. 148-102.000.

Yonezawa, Keitaro, to Kabushiki Kaisha Neriki. Pressure-responsive valve unit for a fluid container. 4,210,168, Cl. 137-454.500.

Yonezu, Hiroo, to Nippon Electric Co., Ltd. Semiconductor laser element having a unitary film on a laser crystal and a heat sink thereof. 4,210,878, Cl. 331-94.50H.

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Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. 2,2,3-Trimethyl-3-cyclopenten-1-ylalkenyl and alkylidene secondary alkanols, alkanones, cycloalkanols and cycloalkanones, organoleptic uses thereof in perfume compositions, colognes and perfumed articles and process for producing same. 4,210,767, Cl. 568-345.000.

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Younger, Gilbert W. Channel plate for automatic transmissions. 4,210,034, Cl. 74-606.00R.
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Zengel, Hans G.: *See*—
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Zenith Radio Corporation: *See*—
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Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, to Siegfried Aktiengesellschaft. Aryl imidazolyl vinyl ethers and processes for using same. 4,210,657, Cl. 424-273.00R.
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LIST OF DEFENSIVE PUBLICATIONS

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DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 1ST DAY OF JULY, 1980

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Bexford Limited: *See*—
Kwok, John C., T996,002, Cl. 430-152.000.
Frederick, Leland L.: *See*—
Sheridan, Richard C.; McCullough, John F.; and Frederick, Leland L., T996,001, Cl. 71-36.000.
Kwok, John C., to Bexford Limited. Recording materials. T996,002, 7-1-80, Cl. 430-152.000.
McCullough, John F.: *See*—
Sheridan, Richard C.; McCullough, John F.; and Frederick, Leland L., T996,001, Cl. 71-36.000.
Sheridan, Richard C.; McCullough, John F.; and Frederick, Leland L., to Tennessee Valley Authority. Production of ammonium potassium polyphosphates. T996,001, 7-1-80, Cl. 71-36.000.
Tennessee Valley Authority: *See*—
Sheridan, Richard C.; McCullough, John F.; and Frederick, Leland L., T996,001, Cl. 71-36.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brauer, Melvin; and Kroplinski, Thaddeus F., to N L Industries, Inc. Mineral oil extended polyurethane system containing a coupling agent for decontaminating and sealing the interior spaces of an insulated electrical device. Re. 30,321, Cl. 260-18.0TN.
Crossley, Jack; and Wilson, David H., to Manesty Machines, Ltd. Tabletting machines. Re. 30,319, Cl. 425-345.000.
Du Pont de Nemours, E. I., and Company: *See*—
Hammer, Clarence F.; and Sinclair, Harold K., Re. 30,322, Cl. 525-183.000.
Dushku, Victor A. Lumbering tool. Re. 30,316, Cl. 7-161.000.
Hammer, Clarence F.; and Sinclair, Harold K., to Du Pont de Nemours, E. I., and Company. Novel elastomeric graft copolymers. Re. 30,322, Cl. 525-183.000.
Hellige GmbH: *See*—
Lubbers, Dietrich W.; and Huch, Albert, Re. 30,317, Cl. 128-635.000.
Hochiki Kabushiki Kaisha: *See*—
Tomioka, Yukio, Re. 30,323, Cl. 250-385.000.
Huch, Albert: *See*—
Lubbers, Dietrich W.; and Huch, Albert, Re. 30,317, Cl. 128-635.000.
Klinecky, Ladislav; and Krmela, Stanislav, to Zbrojovak Vsetin, narodni podnik; and Vyzkumny ustav lykovych vlaken. Method of and apparatus for preparing a weft supply in a magazine for weft insertion in shuttleless looms. Re. 30,318, Cl. 139-452.000.
Krmela, Stanislav: *See*—
Klinecky, Ladislav; and Krmela, Stanislav, Re. 30,318, Cl. 139-452.000.
Kroplinski, Thaddeus F.: *See*—
Brauer, Melvin; and Kroplinski, Thaddeus F., Re. 30,321, Cl. 260-18.0TN.
Lowther, Frank E., to Union Carbide Corporation. Corona reaction method and apparatus. Re. 30,320, Cl. 204-176.000.
Lubbers, Dietrich W.; and Huch, Albert, to Hellige GmbH. Method and apparatus for determining the perfusion efficiency factor of animal tissue. Re. 30,317, Cl. 128-635.000.
Manesty Machines, Ltd.: *See*—
Crossley, Jack; and Wilson, David H., Re. 30,319, Cl. 425-345.000.
N L Industries, Inc.: *See*—
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Sinclair, Harold K.: *See*—
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Wilson, David H.: *See*—
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Jessel, Walter H., Jr.; and Duffett, William E., 4,562, Cl. 76.000.
E. G. Hill Co., Inc.: *See*—
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Jelly, Robert G., to E. G. Hill Co., Inc. Red rose seedling named Hiltaco. 4,559, 7-1-80, Cl. 28.000.
Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,561, 7-1-80, Cl. 74.000.
Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,562, 7-1-80, Cl. 76.000.
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Shoesmith, Leonard H., to Pan-American Plant Company. Yellow chrysanthemum named Medalist. 4,563, 7-1-80, Cl. 78.000.
Smith, George C. Myoporum plant. 4,560, 7-1-80, Cl. 54.000.
Weeks, O. L. Rose plant. 4,558, 7-1-80, Cl. 17.000.
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American Cyanamid Company: *See—*
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Kelly, Roger L., 255,637, Cl. D7-102.000.
Kelly, Roger L., 255,638, Cl. D7-102.000.
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Ap, Chong; Kim, Ong C.; and Zobel, Ernst-Gunther, to Rollei-Werke Frank & Heidecke. Electronic flash unit. 255,689, 7-1-80, Cl. D16-42.000.
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CLASS 113
54 R 4,210,090
113 D 4,210,091

CLASS 114
299 4,210,092

CLASS 116
222 4,210,093
255 4,210,094

CLASS 118
57 4,210,095
58 4,210,096
65 4,210,097
317 4,210,098
402 4,210,099

CLASS 119
17 4,210,100

CLASS 122
20 B 4,210,101
4,210,102

CLASS 123
1 A 4,210,103
52 M 4,210,107
65 S 4,210,108
76 4,210,109
122 D 4,210,115
259 4,210,104
277 4,210,105
319 4,210,110
414 4,210,111
489 4,210,106
4,210,114
504 4,210,116
4,210,117
571 4,210,112
574 4,210,113

CLASS 126
25 R 4,210,118
61 4,210,119
200 4,210,120
374 4,210,123
390 4,210,124
424 4,210,121
432 4,210,122
437 4,210,125
443 4,210,126
444 4,210,127
4,210,128
447 4,210,129
449 4,210,130

CLASS 128
1 R 4,210,131
4,210,132
6 4,210,133
24.1 4,210,134
57 4,210,135
200.24 4,210,137
204.21 4,210,136
214 E 4,210,138
260 4,210,139
266 4,210,140
272 4,210,141
272.1 4,210,142
287 4,210,143
4,210,144
305 4,210,145
4,210,146
327 4,210,147
335 4,210,148
419 D 4,210,149
421 4,210,150
4,210,151
422 4,210,152
635 Re.30,317
637 4,210,153
685 4,210,154
727 4,210,155
763 4,210,156

CLASS 131
8 R 4,210,157
10 R 4,210,158
21 D 4,210,159
194 4,210,160

CLASS 132
7 4,210,161
9 4,210,162
33 R 4,210,163
40 4,210,164

CLASS 134
7 4,210,460
11 4,210,461

CLASS 136
89 EP 4,210,462
89 PC 4,210,463

CLASS 137
102 4,210,165
271 4,210,166
375 4,210,167
454.5 4,210,168
487.5 4,210,169
493.4 4,210,170
501 4,210,171
504 4,210,172
512.3 4,210,173
528 4,210,174
564.5 4,210,175
573 4,210,176
613 4,210,177
625.5 4,210,178

CLASS 138
96 T 4,210,179

CLASS 139
384 B 4,210,180
452 Re.30,318

CLASS 141
392 4,210,181

CLASS 144
34 E 4,210,183
312 4,210,184
317 4,210,182

CLASS 145
76 4,210,185

CLASS 148
1.5 4,210,464
4,210,465
4,210,466
12 R 4,210,467
12.4 4,210,468
16 4,210,469
33.2 4,210,470
102 4,210,471
187 4,210,472
189 4,210,473

CLASS 149
19.2 4,210,474

CLASS 150
52 J 4,210,186

CLASS 152
347 4,210,187
353 C 4,210,188
361 FP 4,210,189

CLASS 156
110 A 4,210,475
112 4,210,476
203 4,210,477
242 4,210,478
273 4,210,479
308.4 4,210,480
357 4,210,481
415 4,210,482
443 4,210,483
542 4,210,484
577 4,210,485
601 4,210,486

CLASS 157

1.24 4,210,190

CLASS 160

354 4,210,191

CLASS 162

146 4,210,487
162 4,210,488
164 R 4,210,489
175 4,210,490

CLASS 164

4 4,210,192
4,210,193
16 4,210,194
57 4,210,195
152 4,210,196
416 4,210,197
433 4,210,198

CLASS 165

70 4,210,199
98 4,210,200
104 S 4,210,201
162 4,210,202
163 4,210,203

CLASS 166

270 4,210,204
271 4,210,205
294 4,210,206
330 4,210,207
352 4,210,208

CLASS 172

47 4,210,209
272 4,210,210
451 4,210,211
645 4,210,212

CLASS 174

59 4,210,772
72 A 4,210,773
140 R 4,210,774

CLASS 175

195 4,210,213
297 4,210,214
394 4,210,215

CLASS 177

134 4,210,216

CLASS 178

19 4,210,775

CLASS 179

1 E 4,210,778
2.51 4,210,779
15.55 T 4,210,781
18 ES 4,210,782
18 FC 4,210,783
100.1 PS 4,210,785
115.5 PV 4,210,786
146 H 4,210,784

CLASS 180

13 4,210,217
24.12 4,210,218
4,210,219
70 R 4,210,220
77 TC 4,210,221

CLASS 181

107 4,210,222
152 4,210,223

CLASS 182

207 4,210,224

CLASS 184

28 4,210,225

CLASS 187

29 R 4,210,226
4,210,227
73 4,210,228

CLASS 188

18 A 4,210,229

CLASS 190

43 4,210,230

CLASS 192

8 R 4,210,231
48.8 4,210,232
89 B 4,210,233
106.1 4,210,234

CLASS 193

37 4,210,235

CLASS 194

1 D 4,210,236

CLASS 198

425 4,210,237
687 4,210,238

CLASS 200

5 EA 4,210,787
42 T 4,210,788
61.45 R 4,210,789
144 B 4,210,790
164 R 4,210,791

CLASS 201

2.5 4,210,491
12 4,210,492

CLASS 203

8 4,210,493
10 4,210,494
22 4,210,495
46 4,210,496

CLASS 204

26 4,210,497
35 N 4,210,498
38 A 4,210,499
55 Y 4,210,500
129 4,210,501
151 4,210,502
158 R 4,210,503
176 Re.30,320
180 R 4,210,504
181 C 4,210,505
4,210,506
181 R 4,210,507
195 S 4,210,509
4,210,510
195 W 4,210,508
225 4,210,513
243 M 4,210,514
256 4,210,511
257 4,210,512
266 4,210,515
284 4,210,516

CLASS 206

45.13 4,210,239
45.31 4,210,240
172 4,210,241
231 4,210,242
332 4,210,243
373 4,210,244
440 4,210,245
461 4,210,246
494 4,210,247
525 4,210,248
632 4,210,249
4,210,250

CLASS 208

8 LE 4,210,517
10 4,210,518
49 4,210,519
57 4,210,520
89 4,210,521
111 4,210,522
139 4,210,523
4,210,524
212 4,210,525
230 4,210,526

CLASS 209

152 4,210,527

CLASS 210

4 4,210,528
22 A 4,210,529
38 B 4,210,530
51 4,210,531
136 4,210,532
4,210,533
220 4,210,534
222 4,210,535
321 R 4,210,536
323 T 4,210,537
333 A 4,210,538
391 4,210,539
497 R 4,210,540

CLASS 215

329 4,210,251

CLASS 219

10.49 R 4,210,792
10.55 B 4,210,795
10.55 F 4,210,793
4,210,794
137.63 4,210,796
225 4,210,797
243 4,210,798
541 4,210,799
544 4,210,800

CLASS 220

4 F 4,210,252
8 4,210,253
22 4,210,254
209 4,210,255
254 4,210,256
269 4,210,257
306 4,210,258
455 4,210,259

CLASS 221

278 4,210,260

CLASS 222

43 4,210,261
442 4,210,262
449 4,210,263
591 4,210,264

CLASS 224

48 A 4,210,265

CLASS 226

97 4,210,266

CLASS 227

10 4,210,267
81 4,210,268

CLASS 228

103 4,210,270
193 4,210,269

CLASS 229

1.5 B 4,210,271
7 R 4,210,272
17 B 4,210,273
49 4,210,274

CLASS 233

20 R 4,210,275
31 4,210,276

CLASS 235

92 AC 4,210,801
483 4,210,802

CLASS 236

49 4,210,277
4,210,278
4,210,279

CLASS 238

14 4,210,280
327 R 4,210,281

CLASS 239

11 4,210,282
4,210,283
75 4,210,284
251 4,210,285
302 4,210,286
542 4,210,287
597 4,210,288

CLASS 241

27 4,210,289
30 4,210,290
110 4,210,291
148 4,210,292

CLASS 242

18 A 4,210,293
72.1 4,210,294
125.1 4,210,295
198 4,210,296
201 4,210,297

CLASS 244

3.21 4,210,298
20 4,210,299

CLASS 246

430 4,210,300

CLASS 248

48.2 4,210,301
308 4,210,302
429 4,210,303

CLASS 249

22 4,210,304
191 4,210,305
196 4,210,306
202 4,210,307

CLASS 250

203 R 4,210,804
311 4,210,806
330 4,210,807
343 4,210,808
4,210,809
347 4,210,810
358 R 4,210,811
370 4,210,805
385 Re.30,323
416 TV 4,210,812
421 4,210,813
427 4,210,814
445 R 4,210,815
468 4,210,816
515 4,210,817
559 4,210,818

CLASS 251

31 4,210,308
35 4,210,309
61.1 4,210,310
129 4,210,311
258 4,210,312
306 4,210,313

CLASS 252

32.7 E 4,210,541
4,210,542
46.7 4,210,543
47.5 4,210,544
4,210,545
62.9 4,210,546
76 4,210,547
4,210,548
4,210,549
90 4,210,550
102 4,210,551
151 4,210,552
174.11 4,210,553
4,210,554
305 4,210,555
408 4,210,557
415 4,210,558
431 R 4,210,559
437 4,210,560
441 4,210,561

CLASS 254

8 B 4,210,314

CLASS 260

14 4,210,562
17.2 4,210,563
18 TN Re.30,321
29.6 B 4,210,564
29.6 TA 4,210,565
31.8 R 4,210,567
31.8 T 4,210,566
32.4 4,210,568
33.6 AQ 4,210,570
40 R 4,210,571
4,210,572
42.15 4,210,573
42.16 4,210,574
42.52 4,210,575
45.8 N 4,210,578
45.8 NE 4,210,576
45.8 NT 4,210,577
112 B 4,210,580
112.5 R 4,210,581
154 4,210,582
156 4,210,583
207.1 4,210,586
244.4 4,210,584
245.6 4,210,585
326 E 4,210,588
326.11 R 4,210,590
326.11 S 4,210,591
326.5 FL 4,210,589
328 EP 4,210,569
347.2 4,210,592
397.7 R 4,210,593
428.5 4,210,594
429.7 4,210,595
449 R 4,210,597
455 B 4,210,598
462 C 4,210,599
555 A 4,210,600
570 D 4,210,601
576 4,210,602
580 4,210,603
583 R 4,210,604
585 B 4,210,605
649 R 4,210,610
653.5 4,210,611

CLASS 261

120 4,210,613
124 4,210,614

CLASS 264

11 4,210,615
45.1 4,210,616
71 4,210,617
130 4,210,618
140 4,210,619
163 4,210,620
516 4,210,621

CLASS 266

182 4,210,315

CLASS 267

125 4,210,316

CLASS 269

328 4,210,317

CLASS 270

79 4,210,318

CLASS 271

3.1 4,210,319
108 4,210,320

CLASS 272

8 N 4,210,321
109 4,210,322
137 4,210,323

CLASS 273

1 R 4,210,324
24 4,210,325
26 A 4,210,326
73 R 4,210,327
85 R 4,210,328
106.5 B 4,210,330
120 R 4,210,331
157 R 4,210,332
4,210,333
162 R 4,210,334
238 4,210,335
258 4,210,336
264 4,210,337
313 4,210,329

CLASS 277

76 4,210,338
153 4,210,339

CLASS 280

43.17 4,210,340
79.1 A 4,210,341
636 4,210,342
668 4,210,343
709 4,210,344

CLASS 282

27.5 4,210,345

CLASS 283

8 B 4,210,346
35 4,210,347

CLASS 285

1 4,210,348

CLASS 290

52 4,210,819
4,210,820
53 4,210,821

CLASS 292

78 4,210,349
86 4,210,350

CLASS 294

1 BB 4,210,351
19 R 4,210,353
81 R 4,210,352

CLASS 296

1 S 4,210,354
19 4,210,355
84 A 4,210,356
84 B 4,210,357
100 4,210,358
190 4,210,362
210 4,210,361
216 4,210,360
222 4,210,359

CLASS 297

192 4,210,363
439 4,210,364
481 4,210,365

CLASS 299

2 4,210,366

CLASS 301

37 R 4,210,367

CLASS 303

3 4,210,368
116 4,210,369
118 4,210,370

CLASS 307

116 4,210,822
117 4,210,823
141 4,210,824
221 D 4,210,825
254 4,210,826
264 4,210,827
268 4,210,828
296 R 4,210,829
362 4,210,830

CLASS 308

9 4,210,371
189 R 4,210,372

CLASS 310

13 4,210,831
50 4,210,832
58 4,210,833
61 4,210,834
62 4,210,835
112 4,210,836
323 4,210,837

CLASS 313

198 4,210,838
218 4,210,839
4,210,840
221 4,210,841
403 4,210,842
4,210,843
479 4,210,844

CLASS 315

5.25 4,210,845
111.9 4,210,847
121 4,210,846
169.3 4,210,848
241 P 4,210,849
290 4,210,850

CLASS 318

257 4,210,851
459 4,210,852
630 4,210,853

CLASS 320

10 4,210,854
13 4,210,855
17 4,210,856

CLASS 322

28 4,210,857

CLASS 323

22 T 4,210,858
44 R 4,210,859
119 4,210,860

CLASS 324

51 4,210,862
72.5 4,210,863
204 4,210,864
207 4,210,865
222 4,210,866
308 4,210,861
323 4,210,867
4,210,868
349 4,210,869

CLASS 330

9 4,210,872
51 4,210,873
134 4,210,874
261 4,210,875

CLASS 331

94.5 G 4,210,876
94.5 H 4,210,878
94.5 PE 4,210,877

CLASS 332

9 R 4,210,879

CLASS 333

24.2 4,210,886
110 4,210,880
4,210,881
166 4,210,882
195 4,210,883
203 4,210,884
238 4,210,885

CLASS 335

6 4,210,887
207 4,210,888
4,210,889
281 4,210,890

CLASS 336

135 4,210,891

CLASS 337

161 4,210,892
407 4,210,893

CLASS 338

35 4,210,894
99 4,210,895
159 4,210,896

CLASS 339

8 R 4,210,373
14 L 4,210,374
4,210,375
17 LC 4,210,376
45 R 4,210,377
97 R 4,210,378
101 4,210,379
107 4,210,380
115 C 4,210,381
192 R 4,210,382
200 P 4,210,383

CLASS 340

58 4,210,898
146.3 E 4,210,899
149 R 4,210,900
310 A 4,210,902
310 R 4,210,901
347 AD 4,210,904
347 NT 4,210,903
575 4,210,905
659 4,210,906
754 4,210,908
763 4,210,909
785 4,210,907

CLASS 343

7.6 4,210,910
7.7 4,210,911
4,210,912
123 4,210,913
715 4,210,914
786 4,210,915

CLASS 346

1.1 4,210,916
34 4,210,917
75 4,210,918
4,210,919
4,210,920

CLASS 350

16 4,210,385
19 4,210,384
96.31 4,210,386
187 4,210,387
214 4,210,388
321 4,210,389
357 4,210,390

CLASS 351

161 4,210,391

CLASS 354

21 4,210,392
23 D 4,210,393
234 4,210,394
4,210,395

CLASS 355

12 4,210,396
15 4,210,397
54 4,210,398

CLASS 356

28.5 4,210,399
359 4,210,400
369 4,210,401

CLASS 357

5 4,210,921
24 4,210,922
30 4,210,923
38 4,210,924
46 4,210,925
70 4,210,926

CLASS 358

12 4,210,927
60 4,210,928
64 4,210,929
103 4,210,930
128.5 4,210,931
130 4,210,932
172 4,210,933
241 4,210,934
246 4,210,935
283 4,210,936

CLASS 360

6 4,210,937
10 4,210,938
14 4,210,939
33 4,210,940
48 4,210,941
65 4,210,942
70 4,210,943
74.2 4,210,944
108 4,210,945
131 4,210,946

CLASS 361

18 4,210,947
76 4,210,948
226 4,210,949
329 4,210,950
391 4,210,951

CLASS 362

17 4,210,952
189 4,210,953
303 4,210,954
321 4,210,955

CLASS 363

51 4,210,956
124 4,210,958

CLASS 364

105 4,210,957
200 4,210,959
4,210,960
300 4,210,961
402 4,210,962
567 4,210,963
578 4,210,964

CLASS 366

76 4,210,402

CLASS 367

26 4,210,965
27 4,210,966
34 4,210,967
46 4,210,968
106 4,210,897
108 4,210,969
109 4,210,970
134 4,210,971

CLASS 368

4,209,977
71 4,209,972
76 4,209,970
4,209,971
84 4,209,973
4,209,974
186 4,209,975
187 4,209,976
250 4,209,969
273 4,209,968

CLASS 370

80 4,210,780

CLASS 375

117 4,210,777
120 4,210,776

CLASS 400

124 4,210,404
196.1 4,210,403

CLASS 403

158 4,210,405

CLASS 408

223 4,210,406

CLASS 414

407 4,210,407

CLASS 415

163 4,210,408

CLASS 417

241 4,210,409

CLASS 418

150 4,210,410

CLASS 422

61 4,210,622
101 4,210,623
264 4,210,624

CLASS 423

139 4,210,625
166 4,210,626
220 4,210,627
239 4,210,628
242 4,210,629
265 4,210,630
292 4,210,631
637 4,210,632

CLASS 424

80 4,210,633
101 4,210,634
114 4,210,635
177 4,210,636
180 4,210,637
4,210,638
4,210,639
4,210,641
181 4,210,640
200 4,210,642
204 4,210,643
239 4,210,644
250 4,210,645
4,210,646
186 4,209,975
187 4,209,976
256 4,210,648
4,210,649
258 4,210,650

CLASS 425

263 4,210,651
4,210,652
4,210,653
4,210,654
267 4,210,655
273 R 4,210,656
4,210,657
4,210,658
4,210,659
274 4,210,660
4,210,661
4,210,662
275 4,210,663
4,210,664
4,210,665
4,210,666
281 4,210,667
298 4,210,668
305 4,210,669
324 4,210,670
4,210,671
345 Re.30,319

CLASS 426

43 4,210,672
53 4,210,673
107 4,210,674
233 4,210,675
238 4,210,676
272 4,210,677
521 4,210,678
564 4,210,679
641 4,210,680

CLASS 427

64 4,210,681
88 4,210,689
178 4,210,682
221 4,210,683
286 4,210,684
361 4,210,685

CLASS 428

35 4,210,686
4,210,687
41 4,210,688
95 4,210,690
96 4,210,691
106 4,210,692
152 4,210,693
174 4,210,694
209 4,210,695
212 4,210,696
272 4,210,697
327 4,210,698
331 4,210,699
395 4,210,700
409 4,210,701
413 4,210,702
4,210,703
414 4,210,704
500 4,210,705

CLASS 429

105 4,210,706
4,210,707
181 4,210,708
250 4,210,709

CLASS 430

56 4,210,710
126 4,210,448
183 4,210,449
253 4,210,711
275 4,210,712
284 4,210,713
372 4,210,714

CLASS 431

160 4,210,411

CLASS 433

11 4,209,906
33 4,209,907
57 4,209,909
78 4,209,908
177 4,209,904
189 4,209,905

CLASS 435

41 4,210,718
4,210,719
42 4,210,720
69 4,210,721
176 4,210,722
180 4,210,723
292 4,210,724

CLASS 455

95 4,210,870
137 4,210,871
610 4,210,803

CLASS 521

100 4,210,725
110 4,210,726
137 4,210,727
160 4,210,728

CLASS 525

6 4,210,556
88 4,210,579
183 Re.30,322
204 4,210,612
247 4,210,729
440 4,210,730
469 4,210,731
501 4,210,732
529 4,210,733

CLASS 526

65 4,210,734
119 4,210,735
142 4,210,736
152 4,210,738
185 4,210,737
325 4,210,739

CLASS 528

167 4,210,740
196 4,210,741
346 4,210,742
347 4,210,743
363 4,210,744

CLASS 536

26 4,210,745
27 4,210,746
60 4,210,747

CLASS 542

426 4,210,748
469 4,210,749

CLASS 544

21 4,210,750
4,210,751
33 4,210,752
128 4,210,753
167 4,210,754
175 4,210,755

CLASS 546

15 4,210,756
52 4,210,757
92 4,210,758
312 4,210,759

CLASS 548

145 4,210,762
251 4,210,587
320 4,210,760
4,210,761
350 4,210,763

CLASS 556

436 4,210,596

CLASS 568

345 4,210,767
385 4,210,606
4,210,607
451 4,210,608
618 4,210,764
726 4,210,765
779 4,210,766
947 4,210,609

CLASS 585

250 4,210,768
379 4,210,769
474 4,210,770
701 4,210,771

CLASSIFICATION OF DESIGNS

D2— 80 255,616
309 255,617
322 255,618
354 255,619
378.2 255,620
394 255,621
D6— 22 255,622
62 255,623
71 255,624
73 255,625
86 255,626
157 255,627
177 255,628
255,629
186 255,630
190 255,631
191 255,632
244 255,633
D7— 43 255,634
70 255,635
101 255,636
102 255,637
255,638
108 255,639
D8— 8 255,640
52 255,641
60 255,642
74 255,643
308 255,644
370 255,646
382 255,645
387 255,647
D9— 10 255,648
18 255,649
48 255,650
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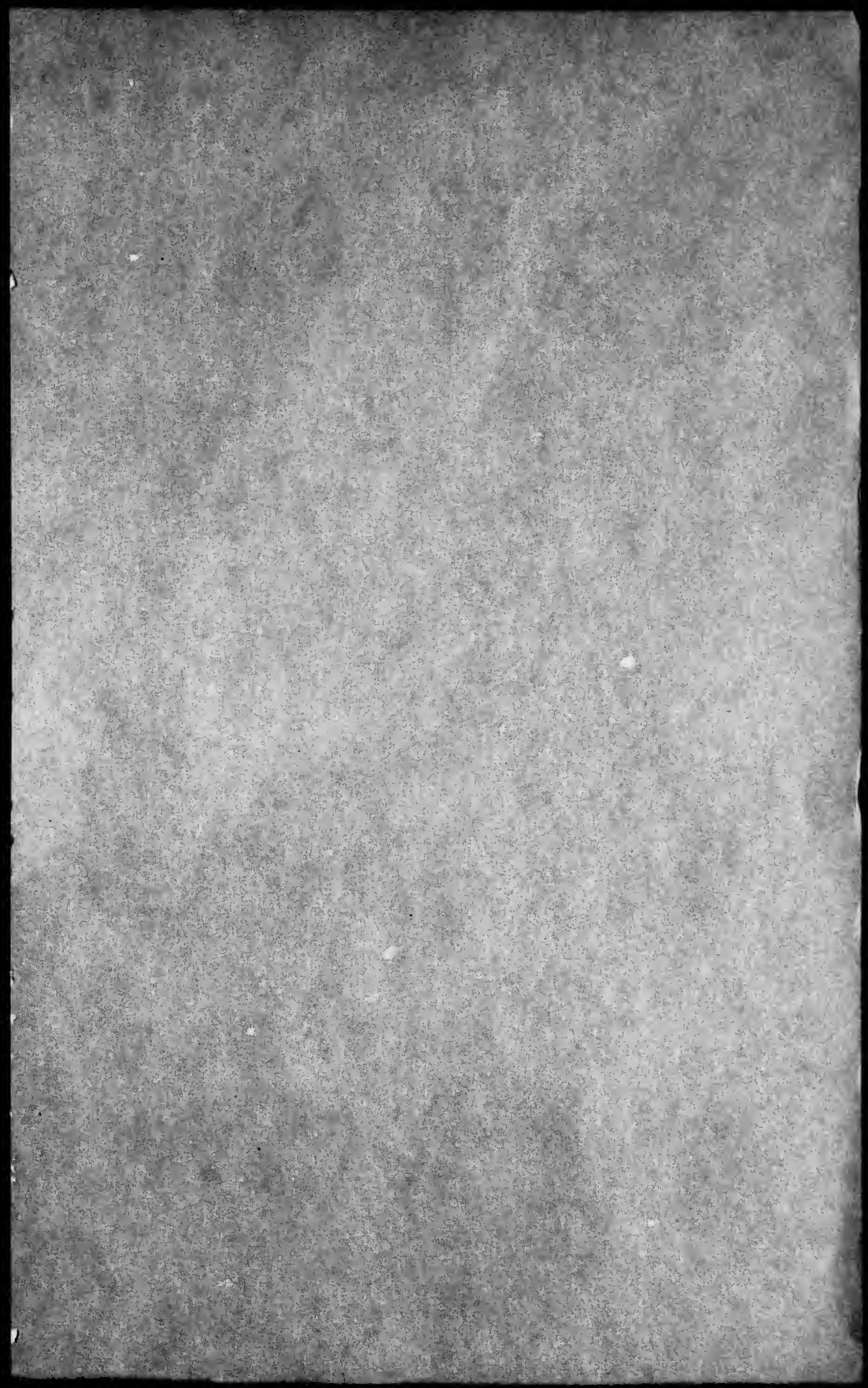
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Vol. 996 Number 2

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 8, 1980



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys or agents will be held on Tuesday, October 7, 1980.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trade mark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

37 C.F.R. 1.341(f) provides, in pertinent part, "Officers and employees of the United States who are disqualified by statute (18 U.S.C. 203, 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, may not be registered, * * * but officers or employees whose official duties require the preparation and prosecution of applications for patent may be registered (on compliance with the regulations in this part) or recognized to practice, to the extent necessary to carry out their official duties." If you are an officer or employee of the United States, your application for registration *must* be accompanied by your supervisor's *verified statement* that your official duties as a United States officer or employee require that you prepare and prosecute applications for patent.

The examination will be given under the supervision of the Office of Personnel Management (formerly Civil Service Commission), and may be taken in any of the cities in which the Office of Personnel Management regularly conducts examinations. Applications to take the examination must be filed in the Patent and Trademark Office together with a $35 fee not later than July 31, 1980.

Application blanks may be obtained from the Clerk of the Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
June 4, 1980. *Chairman, Committee on Enrollment.*

Patent Suits

Notices under 35 USC 290; Patent Act of 1952

2,995,017, James H. Breeding, APPARATUS FOR MAKING SUNDERED ICE, **filed** Feb. 27, 1979, D.C., E.D. Tex. (Sherman), Doc. S-79-23-CA, *James H. Breeding* v. *Turbo Refrigerating Co.* Case dismissed with prejudice with right of plaintiff to re-file same and costs herein taxed against plaintiff. Filed May 12, 1980.

3,113,492, Orlando W. Foss, METHOD FOR MAKING A CARDBOARD BOX, **filed** May 5, 1980, D.C., M.D. Fla. (Jacksonville), Doc. 80-402-C-J-B, *Orlando W. Foss, Sr.* v. *Peninsular Boxboard Products, Inc.*

3,128,408, Goodrich and Wiley, ELECTRON MULTIPLIER, **filed** Apr. 28, 1980, D.C.N.J. (Trenton), Doc. 80-1215, *Galileo Electro-Optics Corp.* v. *Murata Mfg. Co., Ltd. et al.*

3,324,516, Dutt and Kelleher, COMPOSITE SEAM MEMBER; **4,006,760,** Romanski and Stevens, FABRIC CONNECTOR SEAM, **filed** May 9, 1980, D.C.N.J. (Trenton), Doc. 80-1365, *Albany International Corporation* v. *William Kenyon & Sons, Inc.*

3,336,694, Robert A. O'Connell, AIR CURTAIN TYPE INSECT TRAP, **filed** Apr. 7, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c1687, *Texas Western Financial Corporation* v. *Dimensions Unlimited, Inc. et al.* **Same, filed** Apr. 8, 1980, D.C., N.D. Tex. (Dallas), Doc. CA-3-80-0424G, *Texas Western Financial Corporation* v. *Cotter & Company.* **Same, filed** Apr. 8, 1980, D.C., N.D. Tex. (Dallas), Doc. CA-3-80-0425-F, *Texas Western Financial Corporation et al.* v. *Gulf Oil Corporation.*

3,416,637, Societe Anonyme Francaise Du Ferodo, RADIALLY MOVABLE CLUTCH BEARING, **filed** May 5, 1980, D.C., E.D.N.Y. (Brooklyn), Doc. CV-80-1240, *Societe Anonyme Francaise Du Ferodo* v. *Federal Mogul Corporation.*

3,426,298, Adams-Russel Co., BROADBAND DIRECTIONAL COUPLER, **filed** Apr. 11, 1980, D.C.N.J. (Newark), Doc. 80-990, *Merrimac Industries, Inc.* v. *Adams-Russell Co., Inc.*

3,437,715, PPG Industries, Inc., RESIN COMPOSITION **3,840,618,** same, **filed** Apr. 16, 1976, D.C., N.D. Ohio (Cleveland), Doc. C-76-384, *PPG Industries, Inc.* v. *The Standard Oil Co. et al.* Complaint dismissed with prejudice at plaintiff's costs. Further ordered that defendant's are entitled to declaratory judgment on counterclaim that all 15 claims of patents in suit are invalid under 35 U.S.C. 102(a)(b) and (g) and 103. Filed Apr. 30, 1980.

3,500,992, Ralph L. Taber et al., TRANSFER SYSTEM, **filed** Apr. 4, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-71354, *MGA, Inc.* v. *Ralph L. Tabor.*

3,524,680, Letcher T. White, MINING MACHINE HAVING SPIRAL CUTTERS WITH SCAVENGER BOARD, **filed** May 5, 1980, D.C., E.D. Ky. (Lexington), Doc. 80-72, *Letcher T. White* v. *Jeffrey Mining Machinery Co. et al.*

3,661,144, Jensen and Jensen, SUCTION APPARATUS FOR BODY CAVITIES, **filed** June 6, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c2253, *A/S Ferrosan* v. *Milex Products, Inc. et al.* All claims in complaint and counterclaim dismissed without prejudice pursuant to stipulated order of dismissal filed May 2, 1980.

3,706,414, Herman K. Dupre, APPARATUS FOR MAKING SNOW; **3,822,825,** same, SNOW MAKING APPARATUS AND SYSTEM; **3,952,949,** same, METHOD OF MAKING SNOW, **filed** Sept. 28, 1979, D.C., N.D.N.Y. (Utica), Doc. 79-CV-636, *Herman K. Dupre* v. *Shumaker Mountain Corporation.* Stipulation and order for dismissal filed on Apr. 17, 1980.

3,738,682, Orville A. Ritter, CLOSE COUPLED PULLING HITCH ASSEMBLY, **filed** Sept. 18, 1979, D.C. Kans. (Wichita), Doc. 79-1501, *B/J Manufacturing Co., Inc.* v. *Orville A. Ritter.* Final consent judgment filed May 7, 1980.

3,744,222, Alexander Delao, CORRUGATED BOARD PAINT FILTER, **filed** Mar. 20, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80-1101-DWW, *Florence Filter Corporation* v. *Commercial Supply Company.*

3,822,825. (See 3,706,414.)

3,840,618. (See 3,437,715.)

3,890,655, Cleo D. Mathis, WHIRLPOOL JET FOR BATHTUBS; **3,890,656,** same; **3,946,449,** same, **filed** Apr. 9, 1980, D.C. C.D. Calif. (Los Angeles), Doc. 80-01389, *Cleo D. Mathis* v. *Hydro Air Industries, Inc. et al.*

3,890,656. (See 3,890,655.)

3,915,777, Benjamin B. Kaplan, METHOD OF APPLYING FIRE-RETARDANT COATING MATERIALS TO A SUBSTRATE HAVING CORNERS OR OTHER SHARP EDGES, **filed** May 1, 1979, D.C., E.D. Mo. (St. Louis), Doc. 79-0502C(2), *Stan Chem, Inc.* v. *TSI, Inc.* Stipulated dismissal filed May 8, 1980.

3,946,449. (See 3,890,655.)

3,948,556, Stollee of California, CHILD'S CAR SEAT, **filed** Feb. 7, 1980, D.C., E.D. Mo. (St. Louis), Doc. 80-183C(2), *Welsh Company* v. *California Strolee, Inc., doing business as Strollee of California.* Notice of dismissal filed May 6, 1980.

3,952,949. (See 3,706,414.)

3,995,102, Raceway Components, Inc., INSERT DEVICE FOR CABLES, **filed** Dec. 20, 1979, D.C.N.J. (Newark), Doc. 79-3610, *Raceway Components, Inc.* v. *Square D. Company, Inc.* Order of dismissal filed Apr. 30, 1980.

4,006,760. (See 3,324,516.)

4,072,401, SGL Industries, Inc., MOUNTING ARRANGEMENT FOR CASED ELECTRICAL COMPONENTS, **filed** July 23, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c3039, *SGL Industries, Inc.* v. *Antronic Corp.* Case dismissed with leave to reinstate on Mar. 21, 1980.

4,115,082, Newtron Co. (Ancaster) Ltd. (AIR CLEANER ASSEMBLY), **filed** Apr. 30, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-71699, *Newtron Co. (Ancaster) Ltd.* v. *Newtron Products Co. et al.*

4,152,259, Clevepak Corporation, BACKFLUSHING METHOD, **filed** May 5, 1980, D.C. Del. (Wilmington), Doc. 80-218, *Clevepak Corporation* v. *Houdaille Industries, Inc.*

4,179,299, The Carborundum Company, SINTERED ALPHA SILICON CARBIDE CERAMIC BODY HAVING EQUIAXED MICROSTRUCTURE, **filed** May 2, 1980, D.C., S.D. Calif. (San Diego), Doc. 80-0516-GT(M), *The Carborundum Company* v. *Kyocera International, Inc. et al.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

Re. 30,032, Re. S.N. 141,912, Filed Apr. 21, 1980, Cl. 260/45.75 S, CARBOFUNCTIONAL SULFUR AND CARBOXYLATE BRIDGED TIN COMPOUNDS, Thomas G. Kugele, et al., Owner of Record: *Cincinnati Milacron Chemicals, Inc., Reading, Ohio,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 143

4,064,900, Re. S.N. 073,697, Filed Sep. 10, 1979, Cl. 137/315, NON-RISE FAUCET ASSEMBLY, William C. Schmitt, Owner of Record: *Milwaukee Faucets, Inc., Milwaukee, Wis.,* Attorney or Agent: Nathan N. Kraus, et al., Ex. Gp.: 341

4,088,424, Re. S.N. 145,667, Filed May 1, 1980, Cl. 417/368, WET PICK-UP VACUUM UNIT MOTOR BEARING AIR SEAL, Robert L. Hyatt, et al., Owner of Record: *Ametek, Incorporated, Kent, Ohio,* Attorney or Agent: Albert L. Ely, Jr., Ex. Gp.: 343

4,100,960, Re. S.N. 146,627, Filed Apr. 5, 1980, Cl. 164/119, METHOD AND APPARATUS FOR CASTING METALS, Leonard Watts, Owner of Record: *Technicon Instruments Corporation, Tarrytown, N.Y.,* Attorney or Agent: Roland T. Bryan, et al., Ex. Gp.: 324

4,117,184, Re. S.N. 132,928, Filed Mar. 24, 1980, Cl. 228/224, ABSORBENT FILMS AND LAMINATES, Robert E. Erickson, et al., Owner of Record: *The Dow Chemical Company, Midland, Mich.,* Attorney or Agent: Richard G. Waterman, Ex. Gp.: 164

4,133,324, Re. S.N. 145,666, Filed May 1, 1980, Cl. 123/117 A, IGNITION TIMING CONTROL FOR ENGINE, Toru Yagi, et al., Owner of Record: *Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: John B. Young, et al., Ex. Gp.: 342

4,136,488, Re. S.N. 144,111, Filed Apr. 28, 1980, Cl. 51/58, HONING MACHINE, William G. Wunder, Owner of Record: *Ex-Cell-O Corporation, Troy, Mich.,* Attorney or Agent: Frank D. Risko, Ex. Gp.: 323

4,139,873, Re. S.N. 145,937, Filed May 2, 1980, Cl. 360/85, METHOD AND APPARATUS FOR VIDEO SIGNAL RECORDING, Alexander R. Maxey, Owner of Record: *Arvin Industries, Inc., Columbus, Ind.,* Attorney or Agent: Nathaniel R. French, et al., Ex. Gp.: 235

4,143,084, Re. S.N. 143,397, Filed Apr. 4, 1980, Cl. 585/24, DI-ALKYLBENZENE ISOMER MIXTURES, Warren W. Kaeding, et al., Owner of Record: *Mobil Oil Corporation, New York, N.Y.,* Attorney or Agent: Charles A. Huggett, et al., Ex. Gp.: 116

4,143,452, Re. S.N. 133,541, Filed Mar. 24, 1980, Cl. 29/434, PACIFIER METHOD OF CONSTRUCTION, Louise Z. Hakim, Owner of Record: *Inventor,* Attorney or Agent: Ezra Sutton, Ex. Gp.: 321

4,146,856, Re. S.N. 138,373, Filed Apr. 7, 1980, Cl. 335/151, SHUTTERLESS FIBER OPTIC SWITCH, James R. Jaeschke, Owner of Record: *Eaton Corporation, Cleveland, Ohio,* Attorney or Agent: Robert J. McCloskey, et al., Ex. Gp.: 212

4,147,836, Re. S.N. 104,553, Filed Jan. 8, 1980, Cl. 428/481, POLYESTER COATED PAPERBOARD FOR FORMING FOOD CONTAINERS AND PROCESS FOR PRODUCING THE SAME, Scott William Middleton, et al., Owner of Record: *American Can Company, Greenwich, Conn.,* Attorney or Agent: Robert P. Auber, et al., Ex. Gp.: 164

4,147,836, Re. S.N. 104,554, Filed Jan. 8, 1980, Cl. 428/481, POLYESTER COATED PAPERBOARD FOR FORMING FOOD CONTAINERS AND PROCESS FOR PRODUCING THE SAME, Scott William Middleton, et al., Owner of Record: *American Can Company, Greenwich, Conn.,* Attorney or Agent: Robert P. Auber, et al., Ex. Gp.: 164

4,158,953, Re. S.N. 139,006, Filed Apr. 10, 1980, Cl. 70/164, FRONT ENTRY ELECTRIC METER LOCK, Anker J. Nielsen, Jr., Owner of Record: *Inventor,* Attorney or Agent: Robert K. Randall, Ex. Gp.: 355

4,166,179, Re. S.N. 146,146, Filed May 2, 1980, Cl. 544/296, MANUFACTURE OF ORGANIC PIGMENTS, Wolfgang Lotsch, Owner of Record: *BASF Aktiengesellschaft, Rheinland-Pfalz, Germany,* Attorney or Agent: Herbert B. Keil, et al., Ex. Gp.: 122

4,180,125, Re. S.N. 145,953, Filed May 2, 1980, Cl. 165/48 R, APPARATUS FOR SELECTIVELY HEATING AN INDIVIDUAL FOOD ITEM IN A REFRIGERATED ENVIRONMENT, William J. Schulz, et al., Owner of Record: *UOP Inc., Des Plaines, Ill.,* Attorney or Agent: James R. Hoatson, Jr., et al., Ex. Gp.: 345

4,186,113, Re. S.N. 146,982, Filed May 5, 1980, Cl. 252/526, LOW IRRITATING DETERGENT COMPOSITIONS, Robert Joseph Verdicchio, et al., Owner of Record: *Johnson & Johnson, New Brunswick, N.J.,* Attorney or Agent: Leonard P. Prusak, et al., Ex. Gp.: 166

PATENT NOTICES

Certificates of Correction for the Week of July 8, 1980

Re. 29,162	4,172,779	4,185,368	4,192,184
D. 252,049	4,172,978	4,185,405	4,192,359
D. 253,540	4,173,495	4,185,415	4,192,432
4,005,231	4,174,372	4,185,741	4,192,525
4,044,986	4,174,803	4,186,286	4,192,542
4,059,844	4,176,313	4,186,471	4,192,688
4,068,555	4,176,395	4,186,851	4,192,996
4,076,685	4,176,672	4,187,350	4,193,195
4,096,820	4,177,149	4,187,788	4,193,236
4,101,363	4,177,202	4,188,153	4,193,758
4,128,130	4,177,214	4,188,239	4,193,887
4,132,900	4,178,047	4,188,275	4,193,948
4,132,985	4,178,050	4,188,346	4,194,153
4,133,166	4,180,307	4,188,486	4,194,282
4,133,948	4,181,143	4,188,527	4,194,366
4,135,214	4,181,210	4,188,698	4,194,452
4,138,640	4,181,380	4,188,926	4,195,027
4,140,504	4,181,669	4,189,295	4,195,029
4,141,971	4,181,740	4,189,430	4,195,549
4,144,904	4,181,995	4,189,464	4,195,592
4,152,165	4,182,072	4,189,555	4,195,674
4,152,774	4,182,098	4,189,750	4,195,691
4,154,720	4,182,660	4,189,754	4,195,736
4,157,407	4,182,679	4,189,966	4,195,930
4,159,528	4,183,026	4,190,158	4,196,184
4,164,590	4,183,119	4,190,450	4,196,371
4,164,983	4,183,534	4,190,475	4,196,561
4,167,323	4,183,704	4,190,481	4,196,959
4,167,581	4,183,788	4,191,001	4,197,095
4,168,146	4,183,832	4,191,397	4,197,287
4,169,311	4,183,948	4,191,566	4,197,431
4,170,597	4,183,970	4,191,598	4,197,475
4,171,271	4,184,110	4,191,611	4,197,531
4,171,356	4,184,871	4,191,908	4,197,825
4,171,455	4,185,085	4,191,922	4,197,908
4,172,593	4,185,248	4,192,073	4,197,931

Dedication

3,852,396.—*Donald D. Phillips*, Westfield, N.J. and *Loyal F. Ward, Jr.*, deceased, late of San Jose, Calif., by Melba L. Ward, executrix. 2-CHLOROVINYL ETHYL ISOPROPYL PHOSPHORAMIDATE AND 2-CHLOROVINYL ETHYL DIETHYL PHOSPHORAMIDATE. Patent dated Dec. 3, 1974. Dedication filed May 14, 1980, by the assignee, *Shell Oil Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

4,058,694.—*Robert O. Tuegel*, St. Louis County, Mo. MASTER CYLINDER RESERVOIR WITH VACUUM RELIEF DIAPHRAGM AND GUARDED FLUID LEVEL SENSOR. Patent dated Nov. 15, 1977. Disclaimer filed Apr. 3, 1980, by the assignee, *Wagner Electric Corporation*.

Hereby enters this disclaimer to claims 3, 4, 8, 9 and 11 of said patent.

4,069,148.—*David Glenn Hutton*, Newark and *Francis Leonard Robertaccio*, Hockessin, Del. INDUSTRIAL WASTE WATER TREATMENT PROCESS. Patent dated Jan. 17, 1978. Disclaimer filed Apr. 9, 1980, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,174,484.—*Fritz Schmider*, Hornberg, Germany. MOTOR WITH A DISK ROTOR. Patent dated Nov. 13, 1979. Disclaimer filed May 5, 1980, by the assignee, *Papst Motoren KG*.

Hereby enters this disclaimer to claims 30 through 39 of said patent.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va., 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent application must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION.
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent application 6-064,932. Aerial Refueling Receptacle Floodlights—Spoiler and Fuselage, Nose Mounted. Filed Aug. 8, 1979.

Patent application 6-068,822. Optical Multiplexer/Demultiplexer. Filed Aug. 22, 1979.

Patent application 6-069,476. Articulated Para-Ordered Aromatic Heterocyclic Polymers Containing Diphenoxybenzene Structures. Filed Aug. 24, 1979.

Patent application 6-070,454. Integrated Optical R-F Spectrum Analyzer. Filed Aug. 28, 1979.

Patent application 6-070,473. F-Phenylalkylene Oxide Diacetylenes. Filed Aug. 28, 1979.

Patent application 6-072,734. Laser Resistant Ceramic Composite. Filed Aug. 30, 1979.

Patent application 6-074,263. Method for Controlling the Resonance Frequency of Yttrium Iron Garnet Films. Filed Sept. 11, 1979.

Patent application 6-076,720. Self-Stressed Mode 1 Fracture Mechanics Test Piece. Filed Sept. 19, 1979.

Patent application 6-077,235. Hole Angularity Gage. Filed Sept. 19, 1979.

Patent 4,177,308. Non-Combustible High Temperature Abradable Seal Material. Filed Aug. 10, 1978. Patented Dec. 4, 1979. Not available NTIS

Patent 4,177,328. Wall Wick for Nickel-Hydrogen Cell. Filed Dec. 19, 1978. Patented Dec. 4 ,1979. Not available NTIS.

Patent 4,177,437. High Power Pre-TR Switch. Filed Jan. 20, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,464. Multiplexing of Multiple Loop Sidelobe Cancellers. Filed Nov. 13, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,465. Near-Range Personnel Beacon Locator Apparatus. Filed Oct. 6, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,493. High Voltage Antenna Protection System. Filed Dec. 29, 1977. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,681. Apparatus for Adjusting and Locking a Linear Actuator. Filed Apr. 6, 1978. Patented Dec. 11, 1979. Not available NTIS.

Patent 4,178,428. Thermally Stable Enyne Polysulfone Polymers. Filed Sept. 27, 1978. Patented Dec. 11, 1979. Not available NTIS.

Patent 4,179,086. Arm Restraint System. Filed July 20, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,179,190. Wide Band Adjustable Brewster Angle Polarizer. Filed Jan. 3, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,179,657. Anti-Jamming Communication System. Filed Aug. 28, 1958. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,179,799. Method of Molding a Double Cathode Having a Sensing Grid for a Porous Electrode Primary Battery. Filed Apr. 17, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,725. Grating Apparatus for Static Crossed Field Photomultipliers. Filed May 11, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,779. QPSK Demodulator With Two-Step Quadrupler and/or Time-Multiplexing Quadrupling. Filed Sept. 21, 1978. Patented Dec. 25, 1979. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administrative Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6-055,116. Novel Aroid Products. Filed July 5, 1979.

Patent application 6-080,734. Stickless Burley Tobacco Curing Frames. Filed Oct. 1, 1979.

Patent application 6-085,440. Automatic Hatchery Tray Dumper. Filed Oct. 16, 1979.

Patent application 6-088,673. Mechanical Buncher for Leafy Vegetables. Filed Oct. 26, 1979.

Patent application 6-094,539. Carcass Cleaning Unit. Filed Nov. 15, 1979.

Patent 3,577,711. Apparatus for Removing Entrained Particles From Gases. Filed June 2 ,1969. Patented May 4, 1971. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 4,103,310. Multiple-Image Oscilloscope Camera. Filed Jan. 27, 1977. Patented July 25, 1978. Not available NTIS.

Patent 4,143,131. Removal of Plutonium From Hepatic Tissue. Filed Mar. 29, 1974. Patented Mar. 6, 1979. Not available NTIS.

Patent 4,147,563. Method for Forming P-N Junctions and Solar-Cells by Laser-Beam Processing. Filed Aug. 9, 1978. Patented Apr. 3, 1979. Not available NTIS.

Patent 4,147,938. Fire Resistant Nuclear Fuel Cask. Filed Feb. 7, 1978. Patented Apr. 3, 1979. Not available NTIS.

Patent 4,148,134. Method for Forming a Thermocouple. Filed Oct. 12, 1977. Patented Apr. 10, 1979. Not available NTIS.

Patent 4,148,235. Coupling for Joining a Ball Nut to a Machine Tool Carriage. Filed Mar. 28, 1978. Patented Apr. 10, 1979. Not available NTIS.

Patent 4,149,931. Divertor for Use in Fusion Reactors. Filed July 16, 1973. Patented Apr. 17, 1979. Not available NTIS.

Patent 4,151,325. Titanium Nitride Thin Films for Minimizing Multipactoring. Filed Oct. 22, 1976. Patented Apr. 24, 1979. Not available NTIS.

Patent 4,151,419. Solids Irradiator. Filed Oct. 20, 1977. Patented Apr. 24, 1979. Not available NTIS.

Patent 4,151,773. Defect Scriber. Filed Apr. 28, 1978. Patented May 1, 1979. Not available NTIS.

Patent 4,151,873. Regenerator for Gas Turbine Engine. Filed Jan. 25, 1978. Patented May 1, 1979. Not available NTIS.

Patent 4,152,028. Expansible Apparatus for Removing the Surface Layer From a Concrete Object. Filed Feb. 24, 1978. Patented May 1, 1979. Not available NTIS.

Patent 4,152,175. Silicon Solar Cell Assembly. Filed July 24, 1978. Patented May 1, 1979. Not available NTIS.

Patent 4,152,178. Sintered Rare Earth-Iron Laves Phase Magnetostrictive Alloy Product and Preparation Thereof. Filed Jan. 24, 1978. Patented May 1, 1979. Not available NTIS.

Patent 4,152,647. Rapidly Deployable Emergency Communication System. Filed Feb. 23, 1978. Patented May 1, 1979. Not available NTIS .

Patent 4,153,370. Microinterferometer Transducer. Filed Dec. 5, 1977. Patented May 8, 1979. Not available NTIS.

Patent 4,154,868. Method for Forming Targets. Filed July 13, 1978. Patented May 15, 1979. Not available NTIS.

Patent 4,156,809. Data Acquisitor System. Filed Feb. 7, 1978. Patented May 29, 1979. Not available NTIS.

Patent 4,157,490. X- And Y-Axis Driver for Rotating Microspheres. Filed May 17, 1976. Patented June 5, 1979. Not available NTIS.

Patent 4,157,555. Superconducting Transistor. Filed Nov. 7, 1977. Patented June 5, 1979. Not available NTIS.

Patent 4,158,145. Combined Compressed Air Storage-Low Btu Coal Gasification Power Plant. Filed Oct. 20, 1977. Patented June 12, 1979. Not available NTIS.

Patent 4,158,176. Spatial Filter System as an Optical Relay Line. Filed Sept. 6, 1977. Patented June 12, 1979. Not available NTIS.

Patent 4,158,598. Parabolic Lithium Mirror for a Laser-Driven Hot Plasma Producing Device. Filed June 14, 1976. Patented June 19, 1979. Not available NTIS.

Patent 4,158,606. Austenitic Stainless Steel Alloys Having Improved Resistance to Fast Neutron-Induced Swelling. Filed Mar. 15, 1978. Patented June 19, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent 4,182,678. Micro-Scale Countercurrent Chromatograph. Filed Dec. 14, 1978. Patented Jan. 8, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th & C Sts. NW.,
Washington, D.C. 20240

Patent application 6-066,998. In-Situ Leach Mining Method and Apparatus. Filed Aug. 16, 1979.

Patent application 6-078,358. Automated Satellite Mapping System (MAPSAT). Filed Sept. 24, 1979.

Patent 4,173,141. Method of Determining Gas Leakage Through a Mine Stopping. Filed Nov. 28, 1978. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,180,177. Pressure Vent for Explosion-Proof Electrical Enclosures. Filed Apr. 4, 1979. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,352. Extensible Brattice and Cantilevered Roof Mounted Support System Therefor. Filed Nov. 7, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,181,588. Method of Recovering Lead Through the Direct Reduction of Lead Chloride by Aqueous Electrolysis. Filed Jan. 4, 1979. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,185,199. Method of Continuously Determining Radiation Working Level Exposure. Filed June 29, 1978. Patented Jan. 22, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 3,403,405. Telescoping Folded Monopole With Capacitance at Input. Filed June 8, 1965. Patented Sept. 24, 1968. Not available NTIS.

Patent 4,130,466. Antifouling Coating for Aluminum Structures. Filed May 31, 1978. Patented Dec. 19, 1978. Not available NTIS.

Patent 4,155,089. Notched/Diagonally Fed Twin Electric Microstrip Dipole Antennas. Filed Oct. 31, 1977. Patented May 15, 1979. Not available NTIS.

Patent 4,157,548. Offset Fed Twin Electric Microstrip Dipole Antennas. Filed Oct. 31, 1977. Patented June 5, 1979. Not available NTIS.

Patent 4,157,991. Corrosion Preventive Composition. Filed Apr. 10, 1978. Patented June 12, 1979. Not available NTIS.

Patent 4,166,729. Collector Plates for Electrostatic Precipitators. Filed July 26, 1977. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,167,735. Aircraft Orientation Determining Means. Filed Aug. 18, 1978. Patented Sept. 11, 1979. Not available NTIS.

Patent 4,172,630. Multimode Electrooptic Waveguide Switch. Filed Apr. 13, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,173,384. Flexible Co-Axial Connector for Cable In-Line Electronics. Filed Aug. 23, 1978. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,174,524. Ultra High Speed Gated Pulse Optical Imaging System. Filed Sept. 25, 1978. Patented Nov. 13, 1979. Not available NTIS.

Patent 4,174,843. Self-Adjusting Tandem Seal. Filed June 8, 1978. Patented Nov. 20, 1979. Not available NTIS.

Patent 4,176,040. Coal Liquefaction. Filed May 8, 1978. Patented Nov. 27, 1979. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP-2, Washington, D.C. 20546

Patent application 6-072,727. Method of Making V-MOS Field Effect Transistors. Filed Sept. 5, 1979.

Patent application 6-072,857. Multiwall Thermal Protection System. Filed Sept. 5, 1979.

Patent application 6-073,477. Scanning Afocal Laser Velocimeter Projection Lens System. Filed Sept. 7, 1979.

Patent application 6-092,143. Method for Shaping and Aiming Narrow Beams. Filed Nov. 7, 1979.

Patent application 6-092,145. Modified Face Seal for Positive Film Stiffness. Filed Nov. 7, 1979.

Patent application 6-093,714. Schottky Barrier Solar Cell and Method of Fabrication. Filed Nov. 13, 1979.

Patent application 6-098,568. Low Temperature Latching Solenoid. Filed Nov. 29, 1979.

Patent application 6-102,003. Improved Refractory Coatings and Method of Producing the Same. Filed July 12, 1979.

Patent application 6-102,593. Surface Conforming Thermal/Pressure Seal. Filed Dec. 12, 1979.

Patent application 838,308. Simultaneous Muscle Force and Displacement Transducer. Filed Sept. 30, 1977.

Patent application 940,970. Miniature Cyclotron Resonance Ion Source Using Small Permanent Magnet. Filed Sept. 11, 1978.

Patent application 972,252. Optical Gyroscope System. Filed Dec. 22, 1978.

Patent 4,094,775. Dialysis System. Filed Feb. 28, 1977. Patented June 13, 1978. Not available NTIS.

Patent 4,157,655. Coal-Shale Interface Detection System. Filed Nov. 3, 1977. Patented June 12, 1979. Not available NTIS.

Patent 4,157,718. Intra-Ocular Pressure Normalization Technique and Equipment. Filed Aug. 31, 1977. Patented June 12, 1979. Not available NTIS.

Patent 4,170,776. System for Real-Time Crustal Deformation Monitoring. Filed Dec. 21, 1977. Patented Oct. 9, 1979. Not available NTIS.

Patent 4,171,645. Displacement Probes With Self-Contained Exciting Medium. Filed July 26, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,172,228. Method for Analyzing Radiation Sensitivity of Integrated Circuits. Filed June 30, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,172,786. Ozonation of Cooling Tower Waters. Filed Sept. 29, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,173,820. Method for Forming a Solar Array Strip. Filed Mar. 29, 1978. Patented Nov. 13, 1979. Not available NTIS.

DEPARTMENT OF THE ARMY, OTJAG
Chief, Intellectual Property Division, Room 2D 444, Pentagon, Washington, D.C. 20310

Patent application 970,404. Non-Polluting Process for Desensitizing Explosives. Filed Dec. 18, 1978.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification. Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 17, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-18-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-3-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-25-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-1-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-31-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-2-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-25-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers, Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	4-2-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-23-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-16-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-21-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,088,114 to 3,091,767, inclusive
Plant Patents ..... Numbers 2,258 to 2,261, inclusive

REISSUES

JULY 8, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,324

LETTER AND NUMBER KITS AND THE PROCESS OF PREPARING SAME

Joseph P. Seme, Walton Hills, Ohio, assignor to Sem-Torq, Inc., Bedford, Ohio

Original No. 3,626,616, dated Dec. 14, 1971, Ser. No. 870,495, Oct. 2, 1969. Application for reissue Mar. 31, 1978, Ser. No. 892,469

Int. Cl.[2] G09F *7/12*

U.S. Cl. 40—595 **10 Claims**



1. A kit for use in preparing signs including a plurality of thin *relatively rigid* metal plates of substantial uniform thickness, each having longitudinal and transverse upper and lower score lines arranged in opposed relation to each other and dividing each of the plates into a plurality of rectangularly-shaped segments, each of which segments have a blank face or have printed thereon a letter, numeral, or punctuation mark and in which the depth of each of the opposed upper and lower score lines are limited to such an extent that thin connecting links of metal extend between segments on each plate which links have sufficient strength to hold the segments together but which are thin enough so that individual segments may be snapped from the plate without forming burrs or rough edges.

Re. 30,325

METHOD AND APPARATUS FOR PRODUCING GLUED FOLDED BOXES

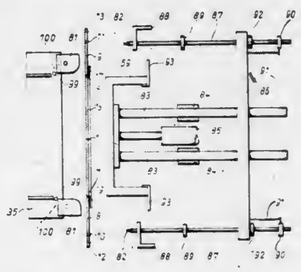
Wilhelm Waldbauer, deceased, late of Stuttgart, Fed. Rep. of Germany, assignor to Hoague-Sprague Leasing Company, Inc., Andover, Mass.

Original No. 3,459,105, dated Aug. 5, 1969, Ser. No. 648,841, Jun. 26, 1967. Application for reissue Jan. 8, 1979, Ser. No. 1,690

Int. Cl.[3] B31B *1/44, 9/26*

U.S. Cl. 93—51 M **20 Claims**

1. In a method of molding a flat precut blank so as to form a glued folded open box or box cover having a flat bottom or top, respectively, two pairs of opposite side walls connected to said bottom or top *and one pair of said walls having vertically arranged end edges*, a pair of flaps adjoining the vertical edges at each end of *said* one of said pairs of side walls and bent at right angles thereto and extending toward each other into the plane of one of the side walls of the other pair covering said flaps, and a marginal strip adjoining the upper edge of each side wall of said other pair and folded over the upper edges of one pair of said flaps and bent inwardly so as to overlap said upper edges and connect said [flap] *flaps* to each other, wherein before said blank is shaped to form said box or box cover by means of a plunger pressing said blank against a female mold and into a folding recess therein, said marginal strips are coated with adhesive and are bent outwardly mechanically by means of deflectors projecting laterally over said plunger, and wherein after said plunger has been retracted



from said mold, said marginal strips are mechanically folded over and glued to the inwardly bent flaps by means of [members pivotably mounted on said plunger] members *pivotably mounted on said mold*.

Re. 30,326

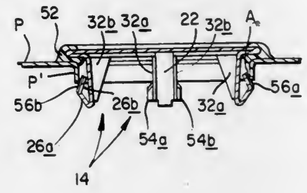
PANEL HOLE CLOSURE

Harold S. van Buren, Jr., Lincoln, Mass., assignor to TRW Inc., Cleveland, Ohio

Original No. 4,091,962, dated May 30, 1978, Ser. No. 817,461, Jul. 20, 1977. Application for reissue Jan. 5, 1979, Ser. No. 1,107

Int. Cl.[2] B65D *45/16*

U.S. Cl. 220—326 **16 Claims**



1. A panel hole closure comprising

A. a plate,

B. a plurality of flexible, resilient fingers projecting from one surface of the plate, said fingers being distributed about the center of the plate inboard of its rim,

C. means associated with each finger for stiffening said finger against inward deflection toward the axis of the plate, and

D. a sealing ring extending around the rim of the plate, said sealing ring being made of a plastic material which flows upon being subjected to a selected elevated temperature.

Re. 30,327

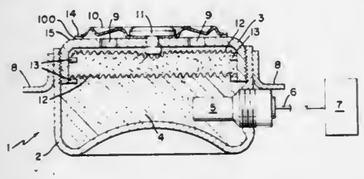
INFLATOR SEAL

William H. Damon, Huntsville, Ala., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Original No. 3,891,233, dated Jun. 24, 1975, Ser. No. 481,293, Jun. 20, 1974. Application for reissue Jun. 21, 1977, Ser. No. 808,489

Int. Cl.[2] B60R *21/10*

U.S. Cl. 280—740 23 Claims



1. A source of gas including a chamber from which inflating gas is developed, exit ports at one side of said chamber, a seal means overlying said exit ports, said seal means including a seal disc and adhesive, said seal disc containing at least one convolution, said seal disc attached to said source by said adhesive binding the outer extent of said seal disc to said source, said adhesive rupturing at a pressure lower than the pressure of the inflating gas exiting from said source, said gas directed by said seal disc on exiting from said exit ports to pass through said adhesive on rupture thereof, and said seal disc further attached to said source at a location separate from the area of adhesion to said source.

Re. 30,328

APPARATUS FOR DEVELOPING A TRAVELLING PHOTOGRAPHIC EMULSION CARRIER

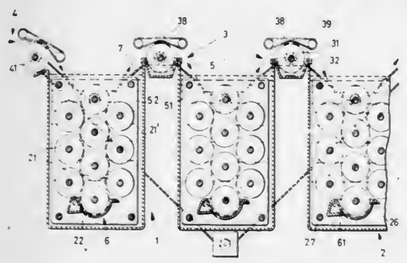
Heinrich Huss, Liebigstr. 1, 6051 Weiskirchen, Fed. Rep. of Germany

Original No. 4,034,389, dated Jul. 5, 1977, Ser. No. 615,794, Sep. 22, 1975. Application for reissue Aug. 14, 1978, Ser. No. 933,781

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1974, 2445503

Int. Cl.[2] G03D *3/08*

U.S. Cl. 354—322 14 Claims



1. An apparatus for developing a travelling photographic emulsion carrier, comprising at least two laterally spaced apart containers having upper edges and being adapted to accommodate baths of treating liquid, emulsion carrier guide means in the respective containers and each comprising a plurality of guide rollers for guiding the carrier in a loop-shaped path having a bight, and a deflecting roller for deflecting the carrier in said bight *in the the lower portion of said container*, all of said rollers being located downwardly of the respective upper edges *of said containers* so as to be at least partially immersed in the respective bath, said guide rollers and deflecting roller in each of said containers [being of identical diameters and] being arranged in three rows in the respective container; [a receptacle located intermediate said containers for accommodating a body of fresh water; and carrier transfer roller means at least partly immersed in the body of water and operative for engaging and transferring the carrier from one to the other of said containers] *a rinsing trough located intermediate laterally arrayed, in-line film treating containers and providing a transfer means for the emulsion carrier between film treating containers, this transfer means including a transfer roller in said trough and adapted to carry said emulsion carrier over the upper edges of the spaced apart containers and on top of this roller; a rinsing bath of fresh water carried in this trough and with the lower priphery of said transfer roller constantly dipped into and emerging from the water in the rinsing trough, and rotatable means carried above the transfer roller and providing means for engaging the travelling photographic emulsion carrier as it is transported on the upper surface of said transfer roller so that as the transfer roller is rotated any residual quantity of bath treating liquid from a preceding container remaining on the travelling emulsion carrier is removed by squeezing by the transfer roller and the rotatable means as this emulsion carrier is brought between the transfer roller and the rotatable means, the travelling emulsion carrier is constantly cleaned by the application of fresh water to the periphery of the transfer roller as said roller is rotated into the rinsing bath of fresh water.*

Re. 30,329

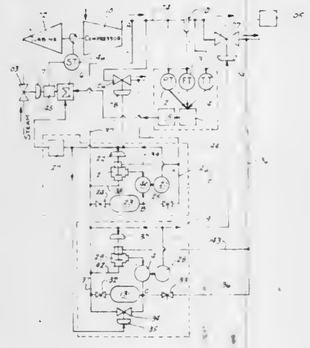
METHOD AND APPARATUS FOR ANTISURGE PROTECTION OF A DYNAMIC COMPRESSOR

Alexander Rutshtein, Oberlin, Ohio, and Naum Staroselsky, Des Moines, Iowa, assignors to Compressor Controls Corp., Des Moines, Iowa

Original No. 4,046,490, dated Sep. 6, 1977, Ser. No. 636,803, Dec. 1, 1975. Application for reissue May 31, 1978, Ser. No. 911,207

Int. Cl.[2] F04B *49/00*; F03B *15/00*

U.S. Cl. 415—1 5 Claims



1. A method of integrated antisurge control of a controlled object including a dynamic compressor having a discharge and a suction port, a driver for said compressor, a pipeline connecting the discharge port of the compressor to a user of compressed gas, a quick-acting on-off fluid relief means connected to said pipeline, and a control means for controlling a main controlled parameter, said parameter being one of (a) the mass flow rate of a gas to the user, (b) the discharge pressure of the compressor, (c) the suction pressure of the compressor and (d) the speed of rotation of the compressor, said method comprising:

measuring one of the [speed] *rate* of pressure drop in the discharge port of the compressor and the [speed] *rate* of flow drop [in the suction port of] *through* the compressor;

simultaneously operating two different means, one of said two means being said fluid relief means, the other of said two means being a means operatively connected to the compressor for changing the flow rate of a gas through the compressor, said operation further comprising two simultaneous actions, one of the actions being the [full automatic] opening of the fluid relief means *to a pre-established position* when the rate of one of the pressure drop in the discharge port of the compressor and the flow drop [in the suction port of] *through* the compressor [and the flow drop in the suction port of the compressor] reaches a magnitude corresponding to the beginning of surge, the time of said [full] opening of the fluid relief means being chosen so as to prevent the developing of surge as indicated by said one of the [speed] *rate* of pressure drop in the discharge port of the compressor and the [speed] *rate* of flow drop [in the suction port of] *through* the compressor and the other of said actions being acting on the means for changing the flow rate through the compressor to compensate for the decrease of the flow rate to the user caused by the outflow of the compressed gas through the opened relief means so as to insure the invariability of one of said main controlled parameters.

Re. 30,330

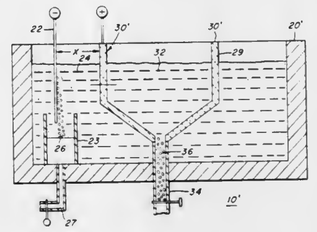
ALUMINUM PURIFICATION

Subodh K. Das, Natrona Heights; C. Norman Cochran, Oakmont; Richard A. Milito, Natrona; Robert M. Mazgaj, and Walter W. Hill, both of Lower Burrell, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Original No. 4,115,215, dated Sep. 19, 1978, Ser. No. 771,100, Feb. 23, 1977. Continuation-in-part of Ser. No. 725,482, Sep. 22, 1976, abandoned. Application for reissue May 17, 1979, Ser. No. 40,155

Int. Cl.[2] C25C *3/06*

U.S. Cl. 204—67 11 Claims



1. A process for purifying aluminum alloy comprising:

(a) providing the aluminum alloy in a molten state in a container having a porous membrane therein, said porous membrane being capable of containing molten aluminum in the container and being permeable by a molten electrolyte; and

(b) electrolytically transferring aluminum through said porous membrane to a cathode in the presence of the electrolyte, the transferring effected at a current density of greater than [200] *500* amps/ft[2] and characterized by depositing substantially all of the aluminum transferred through the porous membrane at the cathode, thereby substantially purifying said aluminum by separating it from its alloying constituents.

Re. 30,331

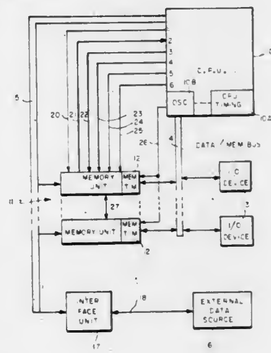
DATA PROCESSING SYSTEM HAVING A UNIQUE CPU AND MEMORY TIMING RELATIONSHIP AND DATA PATH CONFIGURATION

Karsten Sorensen, Lexington; David H. Bernstein, Ashland, and Michael B. Druke, Chelmsford, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Original No. 4,014,006, dated Mar. 22, 1977, Ser. No. 646,351, Jan. 2, 1976. Continuation of Ser. No. 387,523, Aug. 10, 1973, abandoned. Application for reissue Mar. 12, 1979, Ser. No. 19,578

Int. Cl.[3] G06F *13/00*

U.S. Cl. 364—200 20 Claims



8. A memory unit for use with a central processor unit of a data processing system, said memory unit comprising

memory timing means for providing memory timing control signals for controlling the operation of said memory unit;

means responsive to a memory enabling instruction signal from said central processor unit for enabling said memory timing means if said memory unit has been selected for access by the central processor unit; and

means further responsive to said memory enabling instruction signal for generating a disabling signal for supply to said central processor unit to instruct said central processor unit to remain in its current state when data which is to be read from said memory unit has not been made available for transfer to said central processor unit or when data which is to be stored in said memory unit has been made available for transfer to said memory unit from said central processor unit but said memory unit is not ready to accept data for storage.

PLANT PATENTS

GRANTED JULY 8, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,564

ROSE PLANT

Nelson F. Jolly, Galena, Md., assignor to Chattem, Inc., Chattanooga, Tenn.

Filed Mar. 5, 1979, Ser. No. 17,567
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by flowers of unusually constant orange red coloring which are very long lasting on the plant, up to 2 to 3 weeks, and as cut flowers, up to 7 to 8 days, and a vigorous, compact growing plant that blooms profusely.

4,565

VARIETY OF TROPICAL APRICOT SHRUB

William R. Farrell, 2406 SW. 42 Ave., Ft. Lauderdale, Fla. 33317

Filed Aug. 21, 1978, Ser. No. 935,556
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—33 **1 Claim**

1. A new and distinct variety of tropical apricot shrub substantially as described and illustrated having a leaf that is characterized by a central portion of dark and light green areas and a yellow perimeter surrounding the central portion.

4,566

NECTARINE TREE

Aaron Surabian, Reedley, Calif., assignor to Surabian Bros., Reedley, Calif.

Filed Feb. 12, 1979, Ser. No. 11,232
Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of Nectarine tree, substantially as illustrated and described, which is similar in size, productivity and regularity of bearing to the Red Grand variety of nectarine tree from which the new variety was derived as a seedling, the seedling was grown from an open-pollenated seed taken from a tree of the Red Grand variety growing near an orchard containing trees of the late LeGrand variety of nectarine tree; the new variety bears generally uniform, clingstone fruit characterized by yellow flesh and smooth skin having a strong red coloring over a moderate orange coloring, the strong red coloring spreading from a substantially solid covering near the base of the fruit to blotches of a strong red coloring near the apex of the fruit, and the fruit ripens in the San Joaquin Valley of California about four weeks later than the fruit of the Red Grand variety.

4,567

KALANCHOE NAMED PRINCESS

Claude Hope, Cartago, Costa Rica, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 8, 1979, Ser. No. 10,416
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct kalanchoe cultivar, substantially as herein shown and described, characterized by its abundant production of small bright pink florets which bloom on a plant of medium height and for an extended period due to several weeks of continuous flower bud developement.

4,568

KALANCHOE NAMED CONQUISTADOR

Claude Hope, Cartago, Costa Rica, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 8, 1979, Ser. No. 10,417
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct kalanchoe cultivar, substantially as herein shown and described, characterized by the orange-red coloration of its medium sized blooms, by its compact growth habit, and by the medium height of the flowering plant.

4,569

AFRICAN VIOLET NAMED JULIA

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 26, 1979, Ser. No. 15,355
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new variety of African violet plant, substantially as herein shown and described, characterized by its profuse production of medium sized bi-color flowers borne upright on rigid and erect stems and having white petals each with a bright blue margin.

PATENTS

GRANTED JUL. 8, 1980

ERRATA

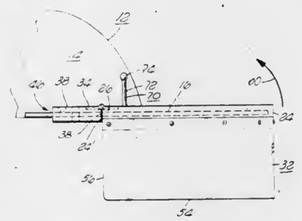
For CLASS	See PATENT NO.
433-229	4,211,008
433-126	4,211,009
368-272	4,211,064
368-047	4,211,065
368-113	4,211,066
368-185	4,211,067
072-250	4,211,095
073-345	4,211,124
024-269	4,211,389
430-359	4,211,558
430-211	4,211,559
430-313	4,211,560
430-306	4,211,561
430-456	4,211,562
430-286	4,211,563
548-112	4,211,703
556-470	4,211,717
568-424	4,211,726
568-437	4,211,727
525-106	4,211,729
375-002	4,211,891
371-015	4,211,915
371-015	4,211,916
371-020	4,211,917
455-601	4,211,920
455-075	4,211,975
455-344	4,211,976
455-326	4,211,977
455-295	4,211,978
455-306	4,211,979
455-040	4,211,980
371-037	4,211,996
371-038	4,211,997
370-030	4,212,013

PATENTS

GRANTED JULY 8, 1980

GENERAL AND MECHANICAL

4,210,972
DETACHABLE VISOR ARRANGEMENT
Paul S. Baclit, 2167 College View Dr., Monterey Park, Calif. 91754
Filed Apr. 24, 1979, Ser. No. 32,782
Int. Cl.[2] A42B *1/24*
U.S. Cl. 2—10 **12 Claims**



1. A detachable visor arrangement for a cap, said cap of the type having a head covering member and a bill member coupled thereto and extending outwardly therefrom, and said bill member having an upper surface, a lower surface, and peripheral edges, and comprising, in combination:

an arcuate rim means having a first end, a second end spaced a preselected distance from said first end, and in opposed relationship thereto, and a face shield holding member extending between said first end and said second end;

an arcuate face shield coupled to said arcuate face shield holding member of said arcuate rim means and extending a predetermined distance therefrom;

a first and a second hinge means coupled to said first and said second end, respectively, of said arcuate rim means;

a first clip means and a second clip means coupled to said first and said second hinge means, respectively, for detachable mounting on said peripheral edge of said bill member of said cap, and said first clip means mountable at a first location on said peripheral edge of said bill member of said cap and said second clip means mountable at a second location on said peripheral edge of said bill member of said cap for a first mounting condition of said face shield on said cap, and said first clip means mountable at said second location on said peripheral edge of said bill member of said cap and said second clip means mountable at said first location on said peripheral edge of said bill member of said cap for a second mounting condition of said face shield on said cap;

and said face shield extending downwardly from said lower surface of said bill member to regions below said bill member and said arcuate rim means adjacent said peripheral edge of said bill member for said face shield in a face guarding position of said first mounting condition, and said face shield pivotally movable on said hinge means in said first mounting condition from said face guarding position to a clear position wherein said rim means extends upwardly from said upper surface of said bill member of said cap;

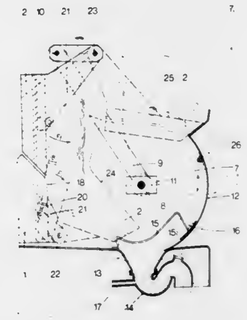
said arcuate rim means adjacent said peripheral edge of said bill member of said cap on the upper surface thereof and said face shield extending upwardly from said upper surface of said bill member of said cap for said face shield in said second mounting condition;

first restraining means for restraining said face shield in said face guarding position thereof;

second restraining means for restraining said face shield in said clear position thereof; and

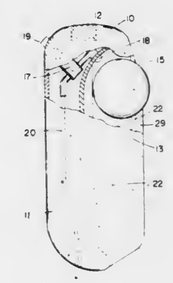
third restraining means for restraining said face shield in said second mounting condition.

4,210,973
SANITARY UNIT
Jean-Claude Decaux, 53 Avenue du Marechal Lyautey 75016, Paris, France
Filed Nov. 29, 1978, Ser. No. 964,454
Claims priority, application France, Dec. 2, 1977, 77 36370
Int. Cl.[2] E03D *11/00*
U.S. Cl. 4—420 **13 Claims**



1. A sanitary unit comprising wall means dividing the unit into a first part for receiving a user of the unit and a second part, a water-closer receiving vessel mounted to be movable between a first position of use in said first part and a vessel emptying and cleaning second position in said second part, the vessel having a closed bottom so as to be outlet-less and thereby retain matter received therein in said first position, said wall means including withdrawable wall means to allow movement of the vessel between said first and second positions, cleaning means located in said second part for cleaning the vessel in said second position, drain means located in said second part for receiving the matter removed from the vessel, shifting means combined with the vessel for shifting the vessel between said first position and second positions, actuating means combined with the cleaning means for actuating the cleaning means, and means associating operation of the actuating means with operation of the shifting means for actuation of the cleaning means when the vessel is in said second position.

4,210,974
PORTABLE GOLF BALL WASHER
Gary L. Stoltzman, 1287 Kennard St., St. Paul, Minn. 55106
Filed Jul. 13, 1979, Ser. No. 57,286
Int. Cl.[2] A63B *47/04*
U.S. Cl. 15—21 A **10 Claims**



1. A portable golf ball washer, comprising:

a. a substantially cylindrical elongated housing;

b. a completely enclosed chamber within said housing for storing cleaning fluid;
c. an elongated ball cleaning chamber within said housing having:
1. an opening for receiving a ball to be cleaned,
2. an elongated opening to permit holding the ball while cleaning,
3. an opening at the bottom for draining out dirt and cleaning fluid, and
4. cleaning means on an inner wall;
d. and means for applying cleaning fluid from said enclosed chamber to a ball located in the ball cleaning chamber.

4,210,975
FLUID LINE AND CONNECTION FOR FLUID-DRIVEN APPLIANCE

Walter D. Teague, Jr., Tweed Blvd., Nyack, N.Y. 10960, and Arthur T. Sempliner, 37-04 Van Nostrand Pl., Douglaston, Nebr.W YORK 11363

Filed Jun. 30, 1978, Ser. No. 920,685
Int. Cl.[2] A46B *13/02*
U.S. Cl. 15—22 R **12 Claims**



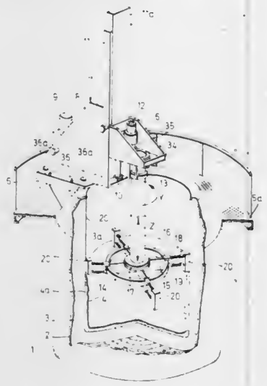
1. In the combination of a fluid device and a fluid conduit means connected to said device, said conduit means including first and second flexible tubes arranged concentrically, a swivel connection means for connecting said conduit means to said device, characterized by
(a) each of said flexible tubes including open end forming means,
(b) passage means in said device for receiving the end forming means of said first and second flexible tubes,
(c) O-ring elements associated with the end forming means of each of said tubes,
(d) internal shoulders formed within said passage means and forming seats for said O-ring elements,
(e) each of said O-ring elements being seated against one of said seats to retain said tubes in said passage means and being in a light, sealing relation with the complementary internal shoulder, the passage means, and the end forming means of the complementary flexible tube, whereby said O-ring elements form a seal around their respective tubes while permitting rotation of each of the tubes relative to the passage means of said device, and
(f) flange means extending radially outward from the end forming means of each of said tubes and overlying said O-ring elements on the sides thereof opposite said internal shoulders.

4,210,976
ARRANGEMENT FOR REMOVING THE SLAG INCRUSTATIONS ON MELTING AND CASTING VESSELS

Heinz Apelt, Roetgen, Fed. Rep. of Germany, and Helmut Packes, Kettenis, Belgium, assignors to Otto Junker GmbH, Simmerath, Fed. Rep. of Germany

Filed May 22, 1978, Ser. No. 908,246
Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723547
Int. Cl.[2] B08B *1/04*
U.S. Cl. 15—246.5 **17 Claims**

1. A device for removing incrustations from the inner wall surface of a cylindrical vessel defining a central axis, comprising a driven body; means for mounting said body on a vessel so that said body rotates about said axis and is movable lengthwise of the same while being prevented from movement transversely of said axis; a plurality of impact tools spaced circumferentially about said body and each having a straight abrading edge adjacent the inner wall surface and a face directed towards said axis; and a pair of axially spaced flexible links of identical radial length for each of said impact tools and having inner ends connected to said body and outer ends connected to

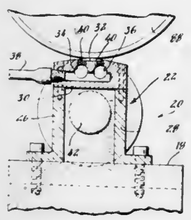


the respective face at locations thereof which are spaced lengthwise of said axis, such that the abrading edge of each impact tool is held along the inner circumference of the vessel lining in an operating position in which it extends approximately parallel to said axis during rotation of said body and beyond which it cannot approach the vessel lining in radial direction, so that the tool can remove deposits from the vessel lining but cannot damage the vessel lining itself.

4,210,977
AIR CLEANING APPARATUS

Harold R. Lillibridge, San Mateo, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed Feb. 28, 1979, Ser. No. 15,787
Int. Cl.[2] B08B *5/02*
U.S. Cl. 15—306 R **6 Claims**

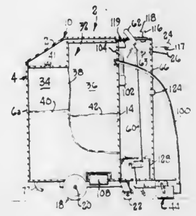


1. Air cleaning apparatus for removing adhesive from a rotatably mounted applicator roll of an adhesive applicating device comprising:
rotatable roller means, mounted in contacting relation with said applicator roll, said roller means for imparting a rotation to said applicator roll;
air guide means mounted adjacent said applicator roll, said air guide means including air jet means on opposite sides of said roller means for issuing an air stream against the surface of said applicator roll to clean the same as it is rotated by said roller means.

4,210,978
AUTOMATIC CARPET CLEANING MACHINE

Richard C. Johnson; Otto R. Kafer, both of Saint Paul, and Mike J. Todd, Rosemount, all of Minn., assignors to H. B. Fuller Company, Saint Paul, Minn.

Filed Dec. 20, 1977, Ser. No. 862,377
Int. Cl.[2] A47L *11/292, 11/30*
U.S. Cl. 15—320 **11 Claims**

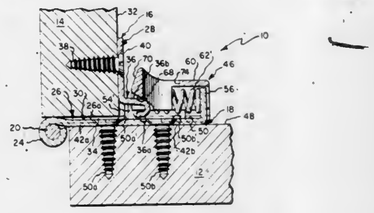


4. A carpet cleaning machine, which comprises:
(a) a body movably supported by at least one drive wheel for movement over the carpet;
(b) a powered drive means carried on the body and operatively connected to the drive wheel for moving the body at least in a forward direction;
(c) storage means carried on the body for storing cleaning solution therein, the storage means comprising an enclosed fluid-tight cavity in the body which is divided into first and second fluid-tight storage chambers by means of a flexible membrane, wherein the storage means is substantially permanently mounted on the body and the membrane is substantially permanently carried inside the cavity during a plurality of successive carpet cleaning operations so that the first and second storage chambers can be filled and emptied without removing the membrane from the cavity or the storage means from the body, and wherein the volumes of the first and second storage chambers are inversely related to one another such that the volume of the first storage chamber is at a maximum when the volume of the second storage chamber is at a minimum, the first storage chamber being suitable for containing fresh cleaning solution therein and the second storage chamber being suitable for containing spent cleaning solution therein;
(d) scrubbing means carried by the body for cleaning the carpet, the scrubbing means comprising:
(i) means for applying the fresh cleaning solution held in the first storage chamber to the carpet, the applying means including pump means for withdrawing the fresh cleaning solution from the first storage chamber;
(ii) means for agitating the fresh cleaning solution in contact with the carpet to remove foreign material therefrom, whereby the fresh cleaning solution is converted into the spent cleaning solution; and
(iii) means for removing the spent cleaning solution from the carpet and placing the spent solution in the second storage chamber, wherein the removing means includes means for drawing a vacuum in the second storage chamber for picking up and transporting the spent cleaning solution thereto; and
(e) control means for simultaneously activating the pump means and vacuum drawing means, whereby spent cleaning solution is placed into the second storage chamber as fresh cleaning solution is removed from the first storage chamber.

4,210,979
HINGE

Kenneth J. Boyd, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Jan. 2, 1979, Ser. No. 340
Int. Cl.[2] E05D *11/00*
U.S. Cl. 16—147 **8 Claims**



1. In a hinge latch mechanism for mounting a door on a cabinet or the like including first and second hinge parts joined by pivot means, said first hinge part being fixed to said cabinet and having a flange portion arranged to lie adjacent an inner surface of said cabinet adjacent a front surface thereof, said second hinge part being fixed to said door and including a flange portion arranged to lie adjacent a rear surface of said door adjacent a side edge thereof, said flange portion of said second hinge part being arranged essentially normal to said flange portion of said first hinge part when said door is in closed position, a strike and a keeper assembly mounted on said flange portions of said first and second hinge parts, respectively, and cooperating upon closing movements of said door for releasably latching said door in said closed position, the improvement wherein said keeper assembly comprises in combination:
a housing having camming and retaining surfaces;
mounting means for mounting said housing on said flange portion of said second hinge part for reciprocating movements between latched and release positions; and
spring means for biasing said housing towards said latched position, said housing cooperating with said flange portion of said second hinge part for enclosing said spring means, and said camming and retaining surfaces being arranged to successively engage with said strike, during closing movements of said door, for initially forcing said housing to move from said latched position against said bias of said spring means and for subsequently retaining said door in its closed position, respectively.

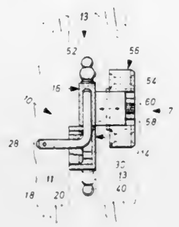
4,210,980
CABINET HINGE, ESPECIALLY FOR PERIOD FURNITURE

Karl Lautenschlager, Jr.; Horst Lautenschlager, and Reinhard Lautenschlager, all of Reinheim, Fed. Rep. of Germany, assignors to Karl Lautenschlager KG Mobelbeschlageabrik, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,735
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758090
Int. Cl.[2] E05D *3/02*
U.S. Cl. 16—171 **15 Claims**

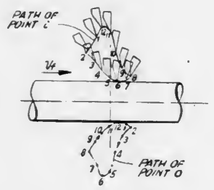
1. A hinge for cabinet doors or lids, especially for period furniture, comprising: two visible, sleeve-like hinge parts to be fastened to the supporting wall of the cabinet and to the cabinet door or lid, respectively, a pintle held in one of the hinge parts and engaging a complementary bore in the other hinge part, said hinge parts being swingable relative to one another about the longitudinal axis of said pintle, a mounting pin integral with said pintle and added at approximately right angles to its end held in the hinge part and fastenable in a bore of the associated cabinet part, said visible, sleeve-like hinge part holding the pintle having on the side facing the associated cabinet part an aperture through which the mounting pin can

be passed during assembly and from which the mounting pin protrudes, and a plug holding said pintle and said mounting pin



in the position correctly aligned with the sleeve-like hinge part, said plug being pushed onto the mounting pin and plugging up the aperture in the hinge part.

4,210,981
ECTATING RING SHIRRING METHOD AND APPARATUS
Albert G. Story, Brookfield, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed Sep. 29, 1978, Ser. No. 947,041
Int. Cl.[2] A22C *13/02*
U.S. Cl. 17—45 **6 Claims**



1. A method for shirring inflated cylindrical flexible tubing into shirred sticks, which method comprises directing the tubing along its longitudinal axis against a substantially constantly yielding force with a continuously applied gyrating arcuate line of shirring force, sequential portions of which line are directed to

(a) impinge on the tubing outer surface,

(b) urge the tubing forward in the direction of shirring progression while simultaneously indenting the tubing radially inward,

(c) continue the simultaneous direction of the shirring force forward and radially inward until a substantially complete major shirred pleat is formed, and

(d) continue the simultaneous direction of the shirring force forward and radially outward to compact the formed pleat against a shirred stick in formation.

3. Apparatus for shirring flexible tubing, comprising, in combination:

(a) a shirring station housing;

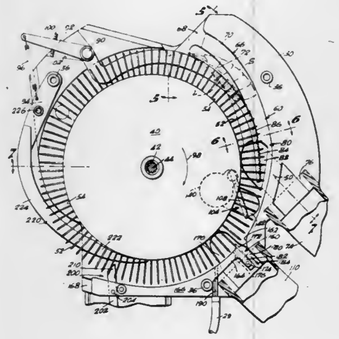
(b) an elongated hollow tubular mandrel passing through said housing having a longitudinal axis parallel with the longitudinal centerline of said housing;

(c) a yoke assembly disposed around the mandrel, rotatably mounted on said housing so as to have its rotational axis in parallelism with and offset eccentrically from the longitudinal axis of the mandrel;

(d) annular shirring ring means disposed around the mandrel rotatably mounted within the yoke assembly disposed in a plane displaced angularly from the mandrel longitudinal axis, and

(e) motive means to impart rotation to the yoke assembly.

4,210,982
SHRIMP PROCESSING METHOD
Paul H. Hoffman, 18003 N.W. 78 Ave., Hialeah, Fla. 33015, and John A. Lessig, 4140 Hardie Ave., Miami, Fla. 33133
Division of Ser. No. 727,647, Sep. 29, 1976, Pat. No. 4,087,887.
This application May 4, 1978, Ser. No. 903,010
Int. Cl.[2] A22C *29/02*
U.S. Cl. 17—48 **4 Claims**



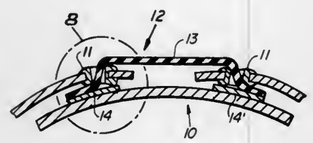
1. In the processing of fantail shrimp, the steps of

advancing ventrally impaled deheaded shrimp along a predetermined path;

longitudinally severing the abdominal membrane of said ventrally impaled shrimp while preventing decrease in the depth of impalement; and

pneumatically separating the shell portions of said membrane severed shrimp from the impaled meat portion thereof.

4,210,983
EYELET CLAMP FOR SHOES
Robert L. Green, 2744 N. 60th St., Scottsdale, Ariz. 85257
Filed Jan. 5, 1979, Ser. No. 1,223
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—73 ES **4 Claims**



1. A shoe fastener for extending between cooperating pairs of eyelets of the shoe comprising:

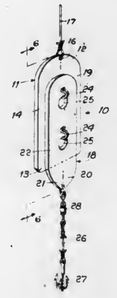
a flat resilient elongated member,

a pair of gripping members one covering substantially a different end of only one common surface of said resilient member and being bonded thereto along only terminal end parts of their lengths,

the second parts of the lengths of said gripping members comprising an unbonded tab portions juxtapositioned to each other along the length of said resilient member,

the ends of said resilient member including the gripping members when moved through an eyelet of a shoe causing said resilient member to separate from the associated gripping member along the unbonded portion thereof to form clamps for engaging the periphery of the associated eyelets of the shoe between said resilient member and the said second parts of the gripping members.

4,210,984
FISHING APPARATUS
Burton G. Koenig, 807 Avenue C, Bayonne, N.J. 07002
Continuation-in-part of Ser. No. 621,648, Oct. 14, 1975, abandoned. This application Feb. 13, 1978, Ser. No. 876,877
Int. Cl.[2] A44B *17/00*
U.S. Cl. 24—201 HE **1 Claim**



1. A fishing apparatus comprising:

(a) a back plate having a front face, a back face, an upper end and a lower end, the upper end being formed with a hole for the attachment to a fishing line;

(b) at least two members extending from the front face of the back plate, each member having a stem extending outwardly from the front face and each stem having a securing element at its outer end, which element comprises an upwardly opening hook having an upwardly and inwardly curved portion extending from the stem and an end portion substantially adjacent to the front face of the back plate;

(c) a front plate formed of semi-rigid material having a front face, a back face, an upper end and a lower end, the lower end being formed with a hole, the lower end of the front plate extending below the lower end of the back plate, the front plate being formed with at least two individual spaced openings opposed to the securing elements on the back plate wherein each opening is adapted to fit over the hook to hold the front plate against the back plate by frictional engagement of the end portion of the hook against the front face of the front plate; and

(d) a leader attached to the lower end of the front plate for the attachment of fishing accessories.

4,210,985
SLIDE FASTENER STRINGER WITH FOLDED AND BONDED CONTINUOUS MOLDED COUPLING ELEMENT AND METHOD AND APPARATUS FOR MANUFACTURING
George W. Scott, Conneaut Lake, Pa., assignor to Textron, Inc., Providence, R.I.
Filed May 17, 1976, Ser. No. 687,074
Int. Cl.[2] A44B *19/24*
U.S. Cl. 24—205.16 R **2 Claims**

1. A stringer for a slide fastener comprising

a tape,

a train of molded synthetic polymer coupling elements disposed along one longitudinal edge of the tape,

each of said coupling elements having a head portion and a pair of leg portions which extend in the same directon from opposite sides of the head portion,

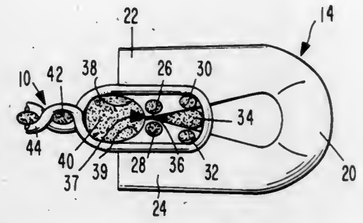
said leg portions terminating in heels thereof opposite to the head portions,

first and second connecting thread means having segments embedded in the respective leg portions to connect the coupling elements in the train,

said leg portions being bonded together adjacent their heels,

securing thread means extending around the connecting thread means between the coupling elements to secure the train of coupling elements to the one edge of the tape,

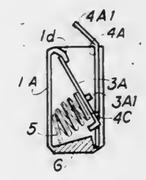
said coupling elements each including a groove formed in



the joined heels of the leg portions, said grooves extending longitudinal to the tape, and

a support cord in the one edge of the tape laying in the grooves of the coupling elements.

4,210,986
TILT RELEASE CATCH
Curtis Williams, 200 Center Plz., Apt. 321, Tulsa, Okla. 74119
Continuation-in-part of Ser. No. 881,536, Feb. 27, 1978, abandoned. This application Feb. 12, 1979, Ser. No. 11,380
Int. Cl.[2] A44B *11/25, 11/12*
U.S. Cl. 24—230 TC **7 Claims**



1. A tilt release catch comprising a housing member having a dog supported in a housing and constantly pressing against an opposite wall, a male member adapted for insertion between the dog member and said opposite wall and having an aperture for receiving one end of the dog therein in a locking position therebetween, and a stud member provided between the male member and the dog for releasing the engagement of the male member therefrom.

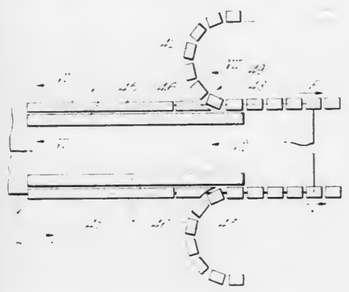
4,210,987
APPARATUS FOR FEEDING A MOVING WEB TO A STENTER APPARATUS
Nigel C. Benson, Ickleford; John M. F. Hughes; Denis Kingslake, both of Stevenage, and David G. Symonds, Hatfield, all of England, assignors to Imperial Chemical Industries Limited, London, England
Continuation-in-part of Ser. No. 816,192, Jul. 15, 1977, Pat. No. 4,173,611. This application Mar. 10, 1978, Ser. No. 885,343
Claims priority, application United Kingdom, Apr. 5, 1977, 14315/77
Int. Cl.[2] D06C *3/00*
U.S. Cl. 26—89 **7 Claims**

1. An assembly comprising a stenter apparatus and means for initially introducing a moving web into said stenter apparatus;

said stenter apparatus comprising linearly moving edge grips movable at a given linear speed over predetermined paths; and

said introducing means comprising: at least one conveyor belt located on one side of the moving web and at least one other conveyor belt located on the other side of the moving web, each of said conveyor belts extending into said stenter apparatus and terminating inwardly of the paths of

said edge grips of said stenter apparatus; said conveyor belts being positioned so that the edge margins of the web extend beyond the edges of the conveyor belts; means for driving said conveyor belts at a linear speed substantially equal to the linear speed of said stenter apparatus edge grips; and means for operatively moving said belt conveyors into and out of operative association with the web so that when said belt conveyors are in operative association with the web they grip and transport the web into operative association with said edge grips of said stenter apparatus, and so that when said belt conveyors are not in operative association with the web they do not engage or affect the movement of the web.



4,210,988

METHOD FOR MAKING AN INDIRECTLY-HEATED CATHODE ASSEMBLY

John C. Turnbull, and Benjamin F. Yoder, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 24, 1978, Ser. No. 936,529
Int. Cl.[2] H01J *9/02, 9/18*
U.S. Cl. 29—25.15 **10 Claims**



1. In a method for making an indirectly-heated cathode assembly including a cathode substrate having electron-emissive material on one surface thereof and a heater fixedly spaced from the opposite surface thereof, the steps for assembling said heater to said cathode substrate comprising

(a) spacing said heater from said opposite surface of said cathode substrate with a spacer material which, upon heating, decomposes substantially entirely into volatile fragments,

(b) fixing said heater in said spaced position with respect to said cathode substrate

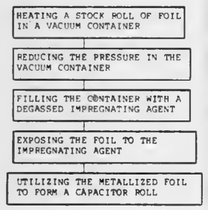
(c) and then heating said spacer material to decompose it into volatile fragments.

4,210,989

METHOD OF MANUFACTURING A CAPACITOR ROLL, AND A CAPACITOR COMPRISING A ROLL THUS MANUFACTURED

Johann Schmalz, Bischoffen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 763,656, Jan. 28, 1977, abandoned. This application Apr. 24, 1978, Ser. No. 899,288
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2605663
Int. Cl.[2] H01G *4/18*
U.S. Cl. 29—25.42 **4 Claims**



1. A method of manufacturing a capacitor roll comprising the steps of:

heating a stock roll of metallized dielectric foil of synthetic material, without a moisture-absorbing intermediate layer, in a vacuum container;

reducing the pressure in said vacuum container;

filling said vacuum container with a degassed impregnating agent;

exposing said dielectric foil in said vacuum container to said impregnating agent; and

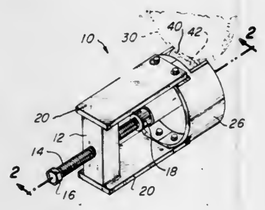
subsequently utilizing said metallized dielectric foil to form a capacitor roll.

4,210,990

GEAR PULLER

Raymond L. Krieger, Denver, Colo., assignor to B. K. Sweeney Manufacturing Company, Denver, Colo.

Filed Dec. 14, 1978, Ser. No. 969,448
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—263 **4 Claims**



1. Apparatus for pulling a press-fitted gear from a shaft comprising in combination:

puller assembly means including a rigid structural member and a screw thrust member threadedly received in the structural member for reciprocal movement relative to the structural member,

first and second puller jaws means, each having a semi-cylindrical wall, such that the jaw means can be placed in side-by-side relationship to form a generally cylindrical wall, each of said puller jaw means having a radially inturned lip extending along a portion of its periphery at one end of said semi-cylindrical wall, each of said puller jaws means also having a notch in the semi-cylindrical wall at said one end,

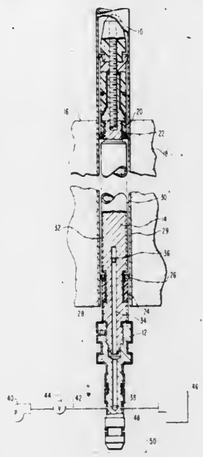
leg means each connected to said structural member and pivotally connected to each of said puller jaws means at a point laterally displaced from a plane passing through the centerline of said screw thrust member and said leg means, said pivot connection being adjacent the upper extremity of said semi-cylindrical wall, at least one said connections to said puller jaw means being adjacent to and in axial alignment with said notches in said puller jaws means so that when said lips on said puller jaw means are positioned behind said gear and the thrust member is advanced against said shaft, the leg means will pull on the puller jaw means and pivotally bias the lip on the first puller jaw means toward the lip on the second puller jaw means to assist in maintaining the lips behind the gear.

4,210,991

HYDRAULIC EXPANSION SWAGING OF TUBES IN TUBESHEET

Frank W. Cooper, Jr., Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 5, 1978, Ser. No. 939,553
Int. Cl.[2] B23P *11/00;* **B21D** *26/02, 39/08*
U.S. Cl. 29—421 R **7 Claims**



1. The method of hydraulically expansion-swaging a tube into a bore of a tube sheet comprising:

inserting a hydraulic expansion mandrel into the length of tube situated in the bore;

introducing fluid into the annular pressure space defined radially between the mandrel core and said tube, and defined axially by the opposite end seals of the mandrel;

increasing the pressure of the fluid to a value in one predetermined lower range and, then, without reducing that pressure;

applying a short pulse to increase the pressure of the fluid in the annular pressure space for a very short period to a higher value of at least double said lower value, and

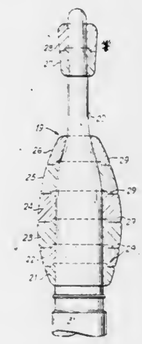
finally releasing said pressure in said annular space and removing said mandrel.

4,210,992

METHOD OF MAKING A MOLDED PLASTIC BOWLING PIN

George G. Murray, R.D. 5 Box 28, Jackson, N.J. 08527

Division of Ser. No. 757,480, Jan. 6, 1977, Pat. No. 4,123,057. This application Jun. 26, 1978, Ser. No. 919,326
Int. Cl.[2] B29D *27/00, 9/10;* **B32B** *1/06*
U.S. Cl. 29—525 **2 Claims**



1. A process for the manufacture of a bowling pin having a base, side walls, belly, neck and head, which comprises:

(a) assembling a core of molded filled polymer elements extending lengthwise of the pin from the base into the head and constituted of a plurality of molded annular filled polymer elements of varying sizes and shapes having a weight distribution such that the pin meets the standards set by the American Bowling Congress by mounting said molded filled polymer elements on an internal core holder extending substantially the desired length of said pin;

(b) injection-molding a plastic material shell directly on the core, the shell bonding to and being formed integrally with the core and providing the side walls, belly, neck and head of the pin and providing a cavity adjacent the bottom of the core;

(c) removing the core holder from the composite molded article following step (b); and

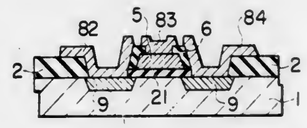
(d) fitting an independent, impact-resistant plastic material base element into the cavity to define the base of said pin.

4,210,993

METHOD FOR FABRICATING A FIELD EFFECT TRANSISTOR

Hideo Sunami, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Continuation of Ser. No. 806,531, Jun. 14, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,837
Claims priority, application Japan, Sep. 17, 1975, 50-111622
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—571 **7 Claims**



1. A method for fabricating a field effect transistor, comprising the steps of:

forming a silicon dioxide film having a region where said silicon dioxide film becomes thinner at that area on one surface of a silicon semiconductor substrate of a first conductivity type at which the field effect transistor is to be formed,

depositing on said silicon dioxide film a polycrystalline

silicon layer which has an impurity concentration higher than that of said silicon semiconductor substrate,

removing said polycrystalline silicon layer by selective etching so as to leave only a part which becomes a gate of said field effect transistor,

removing a surface part of said silicon dioxide film over the entire area by employing as a mask said part of said polycrystalline silicon layer to become said gate and to the extent that the surface of said silicon semiconductor substrate is exposed at the other part in said region,

simultaneously growing a silicon dioxide film on said exposed surface of said semiconductor substrate and said polycrystalline silicon layer to become said gate by thermally oxidizing the whole surface of said polycrystalline silicon layer to become said gate and the exposed surface on said semiconductor substrate, the silicon dioxide film thickness produced at said surface of said polycrystalline silicon layer being formed at a faster rate than the thickness at the exposed surface of said semiconductor substrate due to the higher impurity concentration of said polycrystalline silicon layer, whereby the silicon dioxide film produced at said surface of said polycrystalline silicon layer is thicker than the silicon dioxide film produced at said exposed surface of said semiconductor substrate,

forming windows for a source and a drain by removing said silicon dioxide films over the entire area by such thickness that said surface of said silicon semiconductor substrate is exposed at the part in said region other than said part covered by said polycrystalline silicon layer to become said gate, but that said polycrystalline silicon layer is not exposed due to the greater thickness of the silicon dioxide film on said polycrystalline silicon layer,

forming the source and the drain by doping surface portions of said semiconductor substrate with an impurity of a second conductivity type opposite to said first conductivity type through the windows formed by the preceding step,

removing a part of said silicon dioxide film by selective etching so as to expose a part of said polycrystalline silicon layer,

depositing an electric conductor over the entire area, and

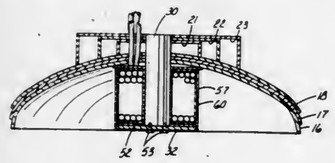
forming said electric conductor into a predetermined pattern by selective etching, thereby to form source, gate and drain electrodes.

4,210,994

METHOD OF MANUFACTURING A COOLED LIFTING MAGNET WITH DAMPED EDDY CURRENTS

Charles A. Schwartz, 23366 Commerce Park, Beachwood, Ohio 44122

Division of Ser. No. 720,256, Sep. 3, 1976, Pat. No. 4,103,266.
This application Jul. 24, 1978, Ser. No. 927,302
Int. Cl.² H01F *41/02*
U.S. Cl. 29—606 **2 Claims**



1. A process for fabricating an electromagnet for lifting scrap ferromagnetic material, comprising welding plural dished shells in nesting relationship one with another to form a dome-shaped metal case having a hollow interior, said nesting relationship being characterized by contact of the exterior surface of an inner dished shell with the interior surface an outer dished shell, so that said inner dished shell and said outer dished shell are in unimpeded magnetic communication with each other;

cutting at least one radial slot in said metal case, said slot extending from near the center of said case to near its periphery;

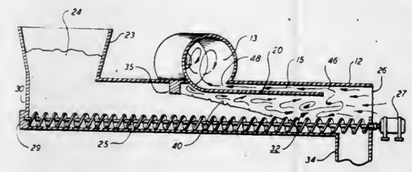
welding a central core extending longitudinally within said metal case, and removably disposing an internally coolable conducting coil on said core.

4,210,995

METHOD OF CONSTRUCTING A BURNER

Richard W. Heimburg, 831 Ackerman Ave., and Donald M. Stewart, 104 Robert Dr., both of Syracuse, N.Y. 13210

Division of Ser. No. 832,191, Sep. 12, 1977, Pat. No. 4,132,179.
This application Nov. 3, 1978, Ser. No. 957,548
Int. Cl.² B23P *15/00*; F23G *3/00*
U.S. Cl. 29—157 R **5 Claims**



1. The method of constructing a self-sustaining burner for efficiently processing a wide variety of fuels including

positioning an open ended, generally tubular primary burning section in a horizontal plane so that fuel is able to enter the primary chimney section through one end and combustion air through the opposite end thereof,

obliquely joining a tubular afterburner section on top of said primary burning section with the axes of both sections crossing at about the midlength region of the primary burning section,

forming a common opening between the sections at about the crossover region of the axes whereby combustion gases generated in the primary burner section are able to flow into the afterburner section, and

positioning an elongated duct in the primary burning section that encloses the common opening and which extends axially toward said opposite end of the primary burning section whereby combustion gases are accelerated as they move toward said opening.

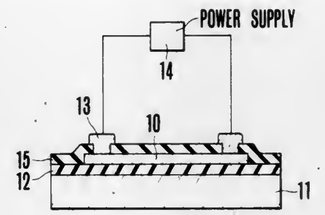
4,210,996

TRIMMING METHOD FOR RESISTANCE VALUE OF POLYCRYSTALLINE SILICON RESISTORS ESPECIALLY USED AS SEMICONDUCTOR INTEGRATED CIRCUIT RESISTORS

Yoshihito Amemiya, Fuchu, and Kotaro Kato, Chofu, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Filed Apr. 26, 1978, Ser. No. 900,300
Claims priority, application Japan, May 4, 1977, 52/51388
Int. Cl.² H01H *10/00*
U.S. Cl. 29—610 R **11 Claims**

1. A method of trimming the resistance value of a polycrystalline silicon resitor, especially the initial resistance value of a polycrystalline silicon resistor utilized as a resistance element of a semiconductor integrated circuit, said method comprising the steps of forming a resistor having a predetermined initial resistance value by doping an impurity into polycrystalline silicon at a concentration higher than 1×10^{20} atoms/cm^3, and passing current through said resistor from an external power supply at a current density higher than 1×10^6 A/cm^2 so as to decrease said initial resistance value, thereby correcting the resistance value of the resistor.

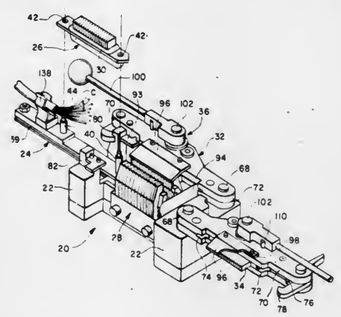


4,210,997

CONDUCTOR TERMINATING APPARATUS

Harley R. Holt, Forest Park, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 735,955, Oct. 27, 1976, abandoned.
This application Sep. 15, 1978, Ser. No. 942,855
Int. Cl.² H01R *43/04*
U.S. Cl. 29—566.3 **28 Claims**



1. An apparatus for simultaneously terminating a plurality of insulated conductors in the contacts of an electrical connector, said connector having at least one row of contacts defining a contact plane, said apparatus comprising:

a frame;

means supported on said frame for mounting said connector in conductor receiving position;

means for aligning individual conductors adjacent respective contacts of said connector;

at least one arm mounted on said frame and including means for rotatably moving said arm from an open position remote from said connector to a closed position immediately adjacent said row of contacts:

insertion means carried by said arm for engaging and pressing said insulated conductors into the individual contacts of said connector, said insertion means comprising an elongated insertion member having a plurality of insertion blades and means for accommodating movement of said insertion member both laterally and longitudinally with respect to said arm;

means for guiding said insertion member to thereby facilitate the proper alignment of said insertion member; and

means for applying an operating force to said insertion means to effect a reciprocal and non-arcuate movement of said insertion member substantially perpendicular to said contact plane, thereby terminating each conductor in an individual contact of the connector.

4,210,998

TOUGHENING OF PVC-SEPARATOR-ENVELOPED BATTERY PLATES

Conrad L. Gaunt, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 4, 1978, Ser. No. 966,056
Int. Cl.² H01M *2/16*
U.S. Cl. 29—623.4 **3 Claims**

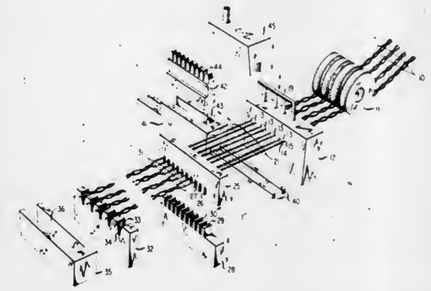
1. In the process of making PVC-separator-enveloped battery plates, including the principal steps of enfolding the plate along the bottom edge thereof within a sheet of sintered microporous polyvinyl chloride separator material and cohesively bonding the sheet to itself around the lateral edges of the plate, the improvement comprising: wicking a PVC plasticizer into the fold and up the separator portions contiguous said fold to toughen said fold against damage during subsequent in-plant handling of said enveloped plate.

4,210,999

METHOD FOR WIRING ELECTRICAL BAYS

Arnold R. Smith, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 801,587, May 31, 1977, Pat. No. 4,117,585.
This application Jul. 13, 1978, Ser. No. 924,153
Int. Cl.² H01R *43/04*
U.S. Cl. 29—857 **6 Claims**



1. A method of wiring electrical apparatus with twisted pairs of insulated electrical conductors sequentially comprising the steps of:

(a) selectively indexing one end of each of said pairs and the members of each of said pairs in a preselected orientation;

(b) mass-terminating said one end of all of said conductors in an electrical connector;

(c) advancing said one mass-terminated end for a predetermined length; and

(d) selectively indexing each of said pairs and the members of each of said pairs in said preselected orientation at said predetermined length, thereby to facilitate individually terminating each of said conductors at said predetermined length in said electrical apparatus.

4,211,000

DEVICE FOR PRODUCING A SPRING MANOMETER MEASURING SYSTEM

Kurt Neubeck, Miltenberg, and Hermann Julien, Klingenberg, both of Fed. Rep. of Germany, assignors to Alexander Wiegand GmbH, Klingenberg, Fed. Rep. of Germany

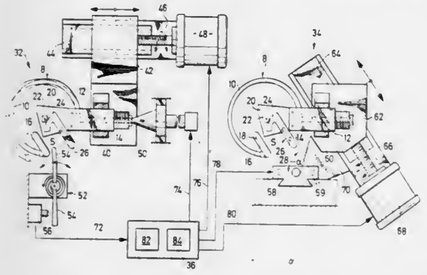
Division of Ser. No. 854,645, Nov. 25, 1977, Pat. No. 4,148,123.
This application Jan. 24, 1979, Ser. No. 5,968
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1976, 2654279; Nov. 30, 1976, 2654270; Sep. 25, 1977, 2743785
Int. Cl.² G01F *1/38*
U.S. Cl. 29—714 **18 Claims**

1. A device for producing a spring manometer measuring system consisting of an indicator, a spring serving as a devia-

tion detector and a tie rod connecting the indicator to the spring and also articulating on bearings on the indicator on the one hand and on the end of the spring on the other hand, comprising

(a) a measuring device including a clamping chuck for clamping said spring into position and a pressure medium connection through which the spring can be supplied with a pressure medium,

(b) a measuring means belonging to said measuring device for measuring the deflection of said spring when subjected



to pressure which includes a detector which supplies signals corresponding to the positions of the end of the spring under pressure and not under pressure when there is a relative movement between the detector and the end of said spring,

(c) a device for forming one of said bearings on the spring and on the indicator, and

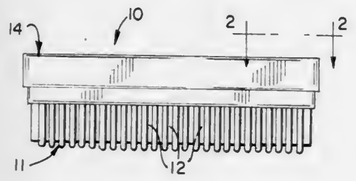
(d) a control device for controlling said forming device for forming the bearings in accordance with the signals from the detector.

4,211,001

CONTACT LOADING APPARATUS

William G. White, Burbank, Ill., and Verle D. Johnson, Corydon, Ind., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Apr. 13, 1978, Ser. No. 895,836
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—747 **11 Claims**



1. Apparatus for loading discrete electrical contacts into a plurality of pockets in an electrical connector, said apparatus comprising:

contact assembly means for assembling a plurality of contacts in proper orientation for insertion into said pockets;

contact transfer means for transferring said contacts from said contact assembly means into said pockets; and

contact seating means for seating said contacts in a final mounted position within each connector pocket;

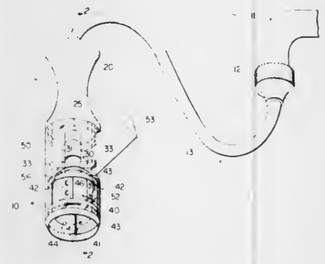
said assembly means including contact feeding means and contact spacing means, said feeding means transporting said contacts to said spacing means and said spacing means automatically separating adjacent contacts to coincide with the spacing of the connector pockets, said spacing means comprising a rotating member positioned adjacent said feeding means and having radial extensions which engage and direct individual contacts into cooperation with said contact transfer means.

4,211,002

HAND-HELD PEELER

Norbert A. Kirk, 43 E. Ohio St., Room 930, Chicago, Ill. 60611

Filed Feb. 27, 1979, Ser. No. 15,723
Int. Cl.[2] A47J *17/14*
U.S. Cl. 30—123.3 **10 Claims**



1. A hand-held peeler for peeling vegetables and the like comprising:

an elongate housing, including a handle portion having a bore therethrough, and a body portion coaxially aligned with and detachably mounted to said handle, and in communication with said bore, said body portion having an orifice therein;

a flexible hose attached to said handle portion and in fluid communication with said bore;

means to attach said hose to a source of pressurized water;

a water motor, mounted in said body portion and driven by pressurized water conducted through said hose and said bore to rotate about the longitudinal axis of said housing; and

a bladed drum removably attached coaxially to said water motor for rotation about the longitudinal axis of said housing and exposed and accessible through said body portion orifice such that a vegetable which is inserted in said body portion orifice can be peeled by said bladed drum.

4,211,003

ADAPTABLE KNIFE SHEATH

Walter W. Collins, Rock Hill, S.C., assignor to Jenkins Metal Corporation, Gastonia, N.C.

Filed Jul. 26, 1978, Ser. No. 928,280
Int. Cl.[2] B26B *29/02;* **F41B** *13/04*
U.S. Cl. 30—162 **2 Claims**



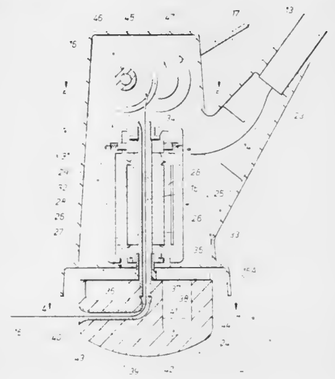
1. A knife including a blade and a handle and a sheath having an open end to receive the knife blade, means for normally positively locking the knife and sheath together, means supporting the sheath and its knife upside down with the knife handle below the sheath, said means including a buckle fastened to one surface of the sheath remote from its open end, a shoulder harness including a strap engagable with said buckle to support the sheath with its open end down, and an adapter comprising a band encircling the sheath and a strap extending from the band toward the buckle for connection with the buckle, whereby a belt receiving loop is defined by the sheath, the band, the strap and the buckle.

4,211,004

STRING-TYPE WEED CUTTER WITH MECHANICAL LINE FEED

Donald M. Woods, Houston, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 22, 1975, Ser. No. 624,928
Int. Cl.[2] B26B *27/00*
U.S. Cl. 30—276 **29 Claims**



1. Apparatus for cutting vegetation and the like, comprising:

(a) a rotatable head member having a tubular passageway extending therethrough between its periphery and a point adjacent its axis;

(b) driving means axially interconnected with said head member for rotating said head member in a cutting plane, and said driving means including a hollow rotatable shaft member interconnecting at one end to said passageway in said head member;

(c) a flexible non-metallic line member having a coiled portion positioned independently of rotation of said head member, and from said coiled portion, an unwound portion extending through said hollow shaft and said passageway and radially from adjacent the periphery of said head member to provide a free-traveling cutting end arcuately movable in said cutting plane;

(d) feed means for selectively unwinding and extending additional lengths of said line member from said periphery of said head member and for anchoring said line member against being drawn from said head member;

(e) said feed means including storage spool means for supporting said coiled portion of said line member and rotatably positioned adjacent said hollow shaft of said driving means;

(f) a revolvable flexible shaft member;

(g) actuator means interconnecting said flexible shaft member and said storage spool means and rotatable in response to rotation of said flexible shaft member; and

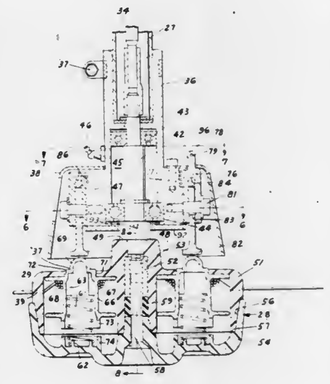
(h) said actuator means further being non-rotatable in response to rotation of said spool means independently of rotation of said flexible shaft member.

4,211,005

APPARATUS FOR CUTTING VEGETATION

Donald M. Woods, Houston, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 818,626, Jul. 25, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,381
Int. Cl.[2] A01G *3/06;* **A01D** *35/26*
U.S. Cl. 30—276 **48 Claims**



1. An apparatus for cutting vegetation and the like, comprising:

(a) a head member arranged for rotation about an axis generally perpendicular with a cutting plane;

(b) driving means for rotating said head member;

(c) at least one spool member containing a coiled portion of a flexible non-metallic line member and each said spool member mounted for rotation within said head member;

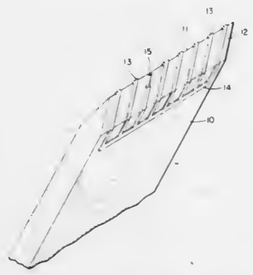
(d) said head member having for each line member a line member exit provided therein at a location spaced from the axis of rotation;

(e) feed means adapted for feeding an uncoiled portion of said line member from each said spool member outwardly from said line member exit into the cutting plane by the rotation of each said spool member within said head member and the feeding of said line members being assisted by centrifugal forces generated by rotating said head member, and said feed means including complementary toothed surfaces on each said spool member and head member with said complementary toothed surfaces controlling angular movement of each said spool member to a predetermined angular displacement within said head member;

(f) actuating means for selectively placing said feed means in response to an actuating signal into an operate condition by moving said complementary toothed surfaces into engagement while complementary locking surfaces provided on each said spool member and head member are moved out of engagement to rotate each said spool member within said head member for feeding each said line member from said feed means outwardly from one of said line member exits; and

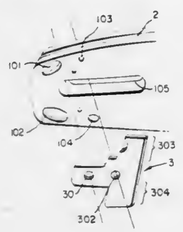
(g) restoring means for returning said feed means into a locked condition for holding each said spool member against rotation by moving said complementary toothed surfaces out of engagement while moving said complementary locking surfaces into engagement thereby securing each said line member against additional feeding from said line member exit upon a substantially certain discrete length of each said line member being extended from each said line member exit responsively to said actuating signal.

4,211,006
GUARDED RAZOR BLADE
Sami A. Halaby, Trumbull, and Edward S. Caco, Danbury, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Jan. 2, 1979, Ser. No. 411
Int. Cl.[2] B26B *21/54*
U.S. Cl. 30—346.55 **15 Claims**



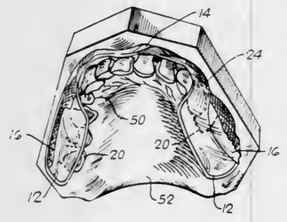
1. A razor blade having a sharpened edge, flanking surfaces on either side of said edge extending rearwardly therefrom, and a plurality of small guard elements fixedly deposited in guard seats recessed in said blade, said guard seats being located at spaced intervals along said edge and extending rearwardly from said edge in at least one said surface and serving to securely retain said elements, said guard elements extending upwardly from said guard seats to beyond at least one of said edge and said surfaces.

4,211,007
CHAIN SAW GUIDE BAR AND SAWDUST PLATE
Earl W. Gibson, Rte. 5, Box 69, Lucedale, Miss. 39542
Filed Feb. 16, 1979, Ser. No. 12,898
Int. Cl.[2] B27B *17/12*
U.S. Cl. 30—383 **4 Claims**



1. In a power chain saw including:
a guide bar having a guide groove therearound for receiving and guiding a cutting chain, said guide groove having sidewalls on both sides thereof,
a chassis said chassis having bolts therein to which said guide bar is secured, and
lubricating means in said chassis for supplying a lubricant into said guide groove of said guide bar,
an improvement comprising:
an improved guide bar having at the rear portion thereof at least one sawdust kick-out hole extending completely through said sidewalls and said guide groove and a plurality of lubricating holes extending perpendicularly through said sidewalls and said guide groove, said lubricating holes being countersunk at the outer ends thereof, and at least one of said lubricating holes being in communication with said lubricating means, whereby lubricant from said lubricating means is delivered into said guide groove through said lubricating holes; and
a bar plate adapted to be positioned adjacent said guide bar and attached to said chassis on said bolts connecting said guide bar to said chassis, said bar plate spacing said guide bar from said chassis, and said plate covering said lubricating holes not in communication with said lubricating means.

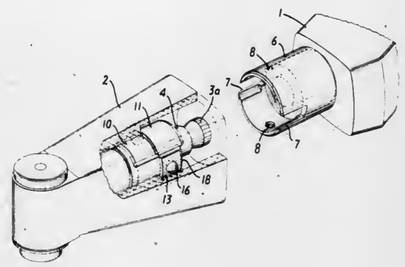
4,211,008
ORAL DEVICE
Martin D. Lerman, 144 Ravine Dr., Highland Park, Ill. 60035
Filed Oct. 20, 1978, Ser. No. 952,943
Int. Cl.[2] A61C *7/00*
U.S. Cl. 433—229 **10 Claims**



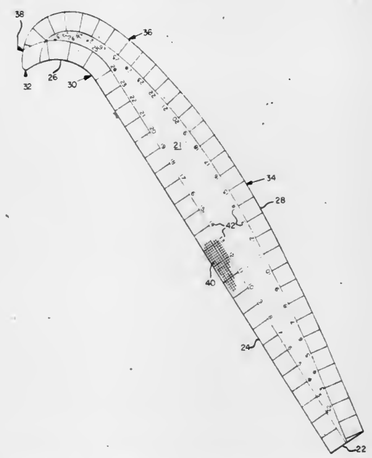
1. A device adapted to be placed in the human mouth for treating among other things temporomandibular joint dysfunctions comprising: an enlongated, flexible body having a continuous fluid-containing passage therein, said body including occlusal portions at the extremities thereof adapted to be positioned between the posterior teeth on each side of the mouth, the fluid-containing passage of the body being enlarged along substantially the entire length of the occlusal portions to provide occlusal pressure responsive means in the body for hydrostatically compensating for differences in pressure resulting from occlusal forces applied thereto by the posterior teeth of the mouth, and a labial portion for the body having a fluid-containing passage in communication with the enlarged fluid-containing passage in each of the occlusal portions of the body, said labial portion being joined at its ends to the forward end of each of the occlusal portions of the body and extending outwardly and laterally thereof, said labial portion being shaped to enable it to be comfortably received along the labial regions of the mouth, the fluid-containing passage of the labial portion being of reduced cross-section along substantially the entire length thereof to enable the labial regions of the mouth to easily conform to the labial portion of the body while permitting ready flow of fluid between the occlusal portions of the body to be achieved whereby any differences in the occlusal forces exerted by the posterior teeth can be readily hydrostatically equalized.

4,211,009
DENTAL HANDPIECE
Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., Besancon, France
Filed Jan. 5, 1978, Ser. No. 867,099
Claims priority, application France, Feb. 3, 1977, 77 04027
Int. Cl.[2] A61C *1/10*
U.S. Cl. 433/126 **11 Claims**

1. A dental handpiece comprising a rear portion and a front portion, and means for coupling said portions to each other, said coupling means comprising a female member secured to one of said two portions and comprising a socket having a pair of longitudinal slots opening to the free end of said socket, with arcuate wall portions between said slots and inwardly facing recesses in said wall portions spaced from the free end of said socket, and a male member secured to the other of said two portions and comprising a pair of resilient arms positioned to be received in said slots of said socket and a radially outwardly projecting protuberance on each of said arms positioned to be received in said recesses of said socket when said male member is rotated with respect to said female member, said resilient arms being flexible in a radial direction to press said protuberances into said recesses, whereby said female member and male member are coupled with one another by inserting said arms of said male member into said slots of said socket and then rotating said male member relative to said female member to bring said protuberances into said recesses.

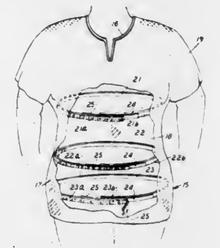


4,211,010
MULTIPLE-CURVED FASHION DESIGN TOOL
Roger W. Burke, 200 SW. Market St., Suite 961, Portland, Oreg. 97201, and Sheila T. Boone, 1129 SE. 34th, Portland, Oreg. 97204
Filed Aug. 4, 1978, Ser. No. 930,897
Int. Cl.[2] A41H *1/00*
U.S. Cl. 33—11 **6 Claims**



1. A multiple-curved fashion design tool for adapting both ready-made and home-sewn articles of clothing to particular contours and configurations of a particular subject comprising:
(a) an article of substantially transparent plastic material having an irregular elongate outer configuration, a predetermined thickness and opposing major faces;
(b) each major face being characterized by having a substantially linear end, an upper perimeter being substantially linear for substantially two-thirds its length beginning at the linear end, and thereafter curing upwardly for the remainder of its length thereby defining an inner curvature, and a lower perimeter which curves outwardly downward from the linear end for substantially about one-half its length, thereafter curves inwardly until it reaches the maximum tool length and thence defines an arc one end of which substantially converges with the upper perimeter thereby defining an outer curvature and providing the tool with an approximated substantially semi-circular end;
(c) means defining regularly spaced-apart numerical indices at predetermined locations arranged substantially all along both the upper and lower perimeters of each major face thereby defining means for performing linear measurements with the tool; and
(d) means defining thereon a grid pattern correlated to said numerical indices, the grid pattern extending substantially all along the upper and lower perimeters of each major faces.

4,211,011
SELF MEASURING GARMENT ASSEMBLY
Ilamae W. Jacobson, 316 A Trenton La., Minneapolis, Minn. 55441
Filed May 7, 1976, Ser. No. 684,102
Int. Cl.[2] A41H *1/02*
U.S. Cl. 33—15 **6 Claims**

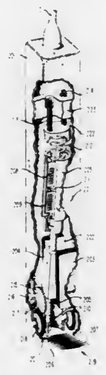


1. A garment assembly specifically constructed for regular use by a wearer and indicating to only the wearer the wearer's measurements whenever the garment is put on, the garment assembly comprising,
a garment for surrounding a portion of the wearer's body,
at least one elongated body surrounding measuring strip, having portions thereof attached to an interior surface of said garment at the elevation of the circumferential portion of the body to be measured,
said strip including at least one normally free end portion with connecting means for connection to the other end in overlapping body surrounding relation,
said free end portion being calibrated with measuring indicia on a surface not exposed to others to automatically indicate the circumferential measurement of the selected body portion whenever the garment is put on.

4,211,012
ELECTRIC-SIGNAL CONTROLLED HAND-HELD PRINTER
Harold G. Alles, Bridgewater, and Peter S. Kubik, South Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 23, 1978, Ser. No. 889,267
Int. Cl.[2] B41J *3/04*; G01D *15/24*
U.S. Cl. 33—18 R **3 Claims**

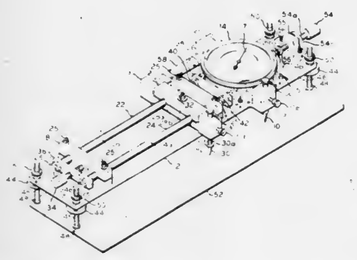
1. An electrical signal responsive printer for marking information characters represented by received electric signals on a predetermined surface as said printer is moved across such surface, said printer comprising
a marking device,
electromagnetic motor means for moving said device to trace a recurrent pattern in a plane parallel to the plane of said surface, said motor means including means for generating an alternating magnetic field, and a magnetic mem-

ber coupled to said marking device and mounted in said field to be driven thereby in linear reciprocating motion,
means, responsive to said received electric signals, for actuating said device into or out of marking engagement with said surface to interrupt selectable parts of successive markings of said pattern on said surface for thereby forming said characters, and
means for limiting the extent of said reciprocating motion, such limiting means comprising



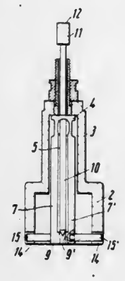
a coil spring disposed in longitudinal compression and coupled to an end of said member so that the longitudinal axis of said coil spring is nominally colinear with a longitudinal axis of said member as it is pivoted in said reciprocating motion, and
means for selecting the compression force exerted upon said string for correspondingly altering the extent of pivotal motion of said member.

4,211,013
GAUGE
Clarence R. Bresson, and William E. Thornberry, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sep. 12, 1978, Ser. No. 941,696
Int. Cl.[2] G01B *5/00*
U.S. Cl. 33—147 R **9 Claims**



1. A gauge comprising:
(a) a micrometer having a plunger which has a first end, said micrometer being mounted in a fixed position on a first base;
(b) a first probe mounted in a fixed position with respect to said micrometer;
(c) a second probe adjustably mounted on a second base, said second base being movable with respect to said micrometer and with respect to said first probe and said second base being slidably mounted to a supporting means which is attached to said first base, said second base having a first end and a second end, wherein the first end of the plunger of said micrometer can be positioned against said first end of said second base so that a change in the position of said second probe is measured by said micrometer;
wherein said second base comprises at least two parallel rods, wherein said first end of said second base comprises a first end plate to which one end of each of said rods is fastened, wherein said second end of said second base comprises a second end plate to which the other end of each of said rods is fastened, and wherein said supporting means attached to said first base comprises a first rigid support and a second rigid support, said two rigid supports being spaced apart a distance less than the length of said rods, said first rigid support being positioned near said first plate and said second rigid support being positioned near said second plate, and each of said two rigid supports containing orifices through which each rod is passed, each of said orifices having a diameter approximately equal to the diameter of the rods.

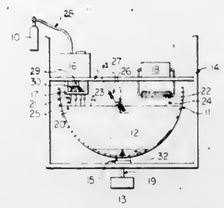
4,211,014
DEVICES FOR INSPECTING BORES
Hermann Költgen, Schottener Weg 6, D-61 Darmstadt, Fed. Rep. of Germany
Filed Nov. 7, 1978, Ser. No. 958,466
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1977, 7734751[U]
Int. Cl.[2] G01B *5/12*
U.S. Cl. 33—178 R **9 Claims**



1. A device for inspecting bores, the device comprising a hollow plug gauge which can be inserted into a bore to be inspected, at least one opening in the plug gauge housing a radially-disposed sensing pin mounted for longitudinal movement against spring pressure, a needle arranged axially in the plug gauge and capable of being axially displaced, and movement translation means operative to translate movement of the sensing pin in the radial direction into axial displacement of the needle, the movement translation means comprising a sensing head having a resilient limb acted upon by the sensing pin and providing said spring pressure on the sensing pin, and a surface on an end region of the needle contacting an inner edge of the limb, said needle surface being inclined to the longitudinal axis of the needle whereby radial movement of the pin produces displacement of the needle, the needle having a second and end surface capable of being contacted, in use, by a measuring pin of an indicator device to enable indication of the axial position of the needle.

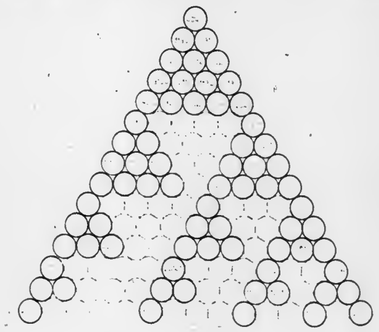
4,211,015
METHOD AND APPARATUS FOR MAKING NOVEL PARTICULATE COMPOSITIONS
Thomas H. Adams, Mission Viejo; James P. Beck, Garden Grove, and Robert C. Menson, Newport Beach, all of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Jan. 18, 1978, Ser. No. 870,537
Int. Cl.[3] F26B *5/06*
U.S. Cl. 34—5 **25 Claims**

5. A method for producing a quality control material, comprising passing a continuous stream of said material through a gaseous zone and into a freezant liquid to form frozen particles



of said material, recovering said lyophilizing the particles, filling a predetermined mass of the particles into a container and hermetically sealing said container.

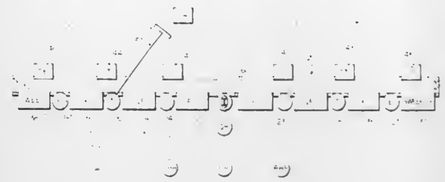
4,211,016
METHOD AND CHART FOR ORGANIZING AND PRODUCING COLORS
Meir Eldar, 47 Uziel St., Jerusalem, Israel
Filed Jan. 26, 1979, Ser. No. 7,004
Claims priority, application Israel, Jan. 27, 1978, 53906
Int. Cl.[2] G09B *19/00*
U.S. Cl. 35—28.3 **8 Claims**



2. A chart for organizing, developing and depicting a multipigment scale of colors based on at least five basic colors (m) and any chosen number (n) of subdivisions therebetween comprising a two dimensional array of a plurality of planar triangular groupings of distinct color points wherein the apices of each triangular grouping represents the color extremes of said grouping and the remaining color points within said grouping are arranged in equidistant transitional color intervals between said apices and between the apices of any sub-triangles definable within the groupings and wherein said groupings represent planar cuts of an m − 1 dimensional pyramid the apices of which pyramid represent the basic colors chosen.

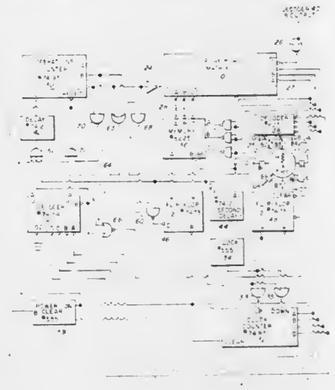
4,211,017
FOOTBALL TRAINING AID
Michael R. Meatheringham, 955 Stovall Blvd., N.E., Atlanta, Ga. 30319
Filed Nov. 16, 1978, Ser. No. 961,278
Int. Cl.[2] A63B *69/00*
U.S. Cl. 35—29 R **6 Claims**

1. A device for instructing the playing of football comprising:
an elongated strip of material which represents the line-of-scrimmage and includes first securing means along at least a portion thereof;
a plurality of player mats which indicate the particular offensive and defensive players and which include second securing means along at least a portion thereof;
said material representing a line-of-scrimmage being adapted to removably secure the plurality of player mats by interreaction of the first and second securing means; and



said defensive and offensive player mats being readily adjustable relative to the material representing the line-of-scrimmage to indicate a plurality of offensive and defensive formations.

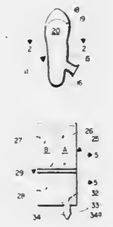
4,211,018
APPARATUS AND PROCEDURE FOR TESTING PREREQUISITE SKILLS FOR READING BY USE OF A DYNAMIC LINE PATTERN
Robert R. DeVoid, Box 593 Tower Hill Farm, Hinsdale, N.H. 03451, and William A. Hodson, Box 413 Putney, Putney, Vt. 05346
Filed Aug. 26, 1977, Ser. No. 827,876
Int. Cl.[2] G09B *17/00*
U.S. Cl. 35—35 R **24 Claims**



1. Apparatus for testing the prerequisite reading capabilities of a subject comprising;
means defining a display,
control means coupled to the display for selectively generating on the display a plurality of different moving line patterns, one pattern at a time, with each pattern comprising at least one line segment,
said control means comprising a control member manually controlled by an operator disposed remote from the display but in a position to note the accuracy of the reproduction by the subject,
like ones of said line patterns being consistently generated from one display time to the next,
said line patterns adapted to be copied by the subject being tested to assess prerequisite reading capabilities,
means used by the subject disposed separate from the display, in non-overlying relationship with the display, and upon which the subject, after observation of the moving line pattern, copies the line pattern,
and means for correlating the skills of the subject to repro-

duce the line pattern with prerequisite capabilities for reading of the subject.

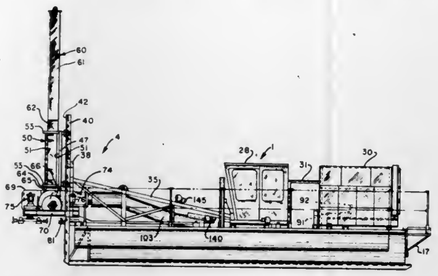
4,211,019
ACCOMMODATIVE FOOT BED
Donald F. McCafferty, Denver, Colo., assignor to Orthopedic Contour Systems, Inc., Denver, Colo.
Filed Nov. 8, 1978, Ser. No. 958,549
Int. Cl.[2] A43B *13/38*; B65D *25/08*
U.S. Cl. 36—43 **12 Claims**



1. An accommodative foot bed system, comprising:
a flexible bladder configurated as an innersole with an injection port on one edge;
a resin pack including:
a pair of storage chambers for containing respective components of a two component plastic resin system;
a flexible mixing chamber associated with said storage chambers constituting means for receiving the components from said storage chambers for mixing to produce an uncured filling material;
removable barrier means arranged to isolate said components from each other when in place and to permit passage of said components into said mixing chamber when removed;
discharge means associated with said mixing chamber for ejecting said filling material from said mixing chamber; and
sealing means associated with said discharge means; and
means cooperatively adapted between said injection port and said discharge means to effect a connection between said discharge means and said injection port so that said filling material may be injected into the interior of said bladder from said mixing chamber when said sealing means is removed.

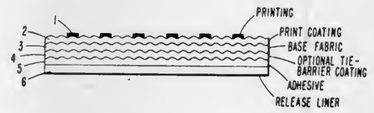
4,211,020
VERTICALLY ADJUSTABLE MAST ASSEMBLY FOR A DREDGE
Malcolm L. Holekamp, 344 Gray Ave., St. Louis, Mo. 63119
Division of Ser. No. 739,541, Nov. 8, 1976, Pat. No. 4,170,079.
This application Jul. 17, 1978, Ser. No. 924,947
Int. Cl.[2] E02F *3/90*
U.S. Cl. 37—65 **4 Claims**

1. In a vessel-mounted dredging device in which material freed by revolving cutters is pumped through a suction mouth and discharge pipe to a place remote from said cutters, the improvement comprising a vertically adjustable mast, a platform mounted on and supported by a lower end of said mast, a pump mounted on said platform and cutters carried by and beneath said platform, and a mast guide carrying said mast, said mast guide including a carriage, vertical carriage guide posts mounted on said vessel and providing a support for said carriage, each of said carriage guide posts having a track and said carriage having rollers mounted in longitudinally and transversely spaced relation on said carriage and running on said tracks and an elongated bearing, carried by said carriage, in



which said mast is slidably journalled for movement up and down with respect to the vessel.

4,211,021
ENGINE COMPARTMENT LABEL
Lawrence Amprim, Farmington, Mich., and Frederick P. Williams, Kettering, Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Feb. 15, 1978, Ser. No. 878,097
Int. Cl.[2] A44C *3/00*
U.S. Cl. 40—2 R **5 Claims**

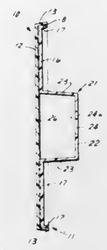


1. A label comprising
(a) a woven or non-woven fabric core where the fabric comprises a synthetic organic polymer fiber having a melting point of at least about 230° C., and which fabric core has less than about 10% dimensional change after 20 minutes at 300° F.,
(b) said fabric core being coated on at least one side thereof with an adherent film of an ink receptive coating penetrable by a non-volatile printing ink which dries by penetration,
(c) said fabric core being coated on the other side thereof with an adherent layer of an initially tacky pressure sensitive thermosetting acrylic adhesive which maintains significant bond strength at temperatures between about 300° F. and 400° F.

4,211,022
PICTURE FRAME
Nicholas Angelakos, 676 Sinclair Ave., Staten Island, N.Y. 10312
Filed Sep. 29, 1978, Ser. No. 947,140
Int. Cl.[3] G09F *1/12*
U.S. Cl. 40—152.1 **8 Claims**

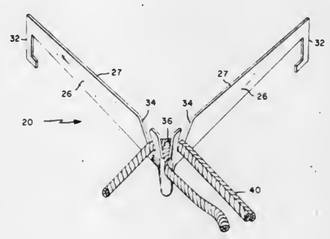
1. A picture frame comprising
(a) a front member including a main transparent panel and a peripheral lip projecting rearwardly from said panel, and
(b) a rear member including a main panel and a peripheral lip projecting rearwardly from said rear member panel, said rear member lip being shaped and sized to frictionally engage said front member lip so as to hold the front and rear members together, said members being separable to permit a picture to be placed between said main panels, and
(c) a support element projecting rearwardly from said rear member main panel beyond the rear edges of said peripheral lips, said support element having a mounting panel for

mounting the picture frame on a wall of a room, said mounting panel being spaced behind said rear member main panel a distance at least twice as great as the depth of



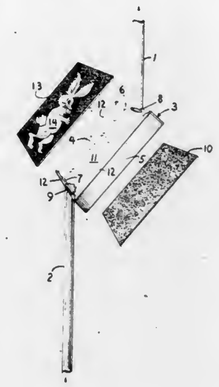
the peripheral lip of said front member, and the area of said mounting panel being no greater than about 25% of the area of said rear member main panel.

4,211,023
PICTURE FRAME
Joseph P. Eubank, Jr., c/o Eubank Frame Co., P.O. Box 582, Inverness, Calif. 94937
Filed Sep. 20, 1978, Ser. No. 944,088
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—155 **11 Claims**



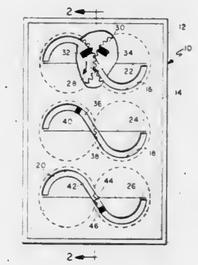
1. A picture frame comprising:
a corner clip for each corner of a rectangular picture assembly and adapted to be engaged therewith,
each corner clip comprising a pair of legs extending at right angles to each other and joined at a vertex portion with each leg extending from said vertex portion along the back of the picture assembly to an end portion,
said end portion of each leg extending around an associated edge of the picture assembly to the front thereof for engaging the same,
each leg and associated end portion being comprised of a flat thin strip of material extending in a plane perpendicular to the picture assembly, the dimension of said strip in said plane being several times greater than the thickness of said strip,
said end portion of each leg presenting the edge of said thin strip of material to the front of the picture assembly,
each corner clip having a cord engaging means, and
a cord means extending between each of said corner clips and engaging the cord engaging means thereof to urge said corner clips toward a central location of the picture assembly with said end portion of each leg of each corner clip being urged into securing engagement with an associated edge of the picture assembly.

4,211,024
MAGIC DRINKING STRAW
Joe H. Nickell, 377 Prestonsburg St., West Liberty, Ky. 41472
Filed Mar. 22, 1978, Ser. No. 889,094
Int. Cl.[2] G09F *19/00*; A47G *21/18*
U.S. Cl. 40—406 **3 Claims**



1. A magic drinking straw comprising:
two open-ended hollow tubes, each having first and second ends;
a hollow enclosed connecting member having a rear wall of black or other dark-color material, and opposed thereto a front wall of transparent material, said connecting member having apertures in opposite ends, the top said aperture receiving the second end of the first said tube, and the bottom said aperture receiving the first end of the second said tube; and
a pictorial pattern borne upon said transparent front wall of said connecting member, said pattern being rendered in black or other dark-color for its negative areas, and the positive areas of said pictorial pattern remaining transparent.

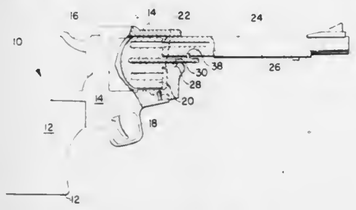
4,211,025
BIORHYTHM CYCLE DISPLAY APPARATUS
George F. Metz, 4712 Berwick Dr., San Diego, Calif. 92117
Filed Oct. 6, 1978, Ser. No. 949,142
Int. Cl.[2] G09F *11/04*
U.S. Cl. 40—495 **8 Claims**



1. A time based multicycle display apparatus comprising:
a housing having at least one transparent display window having a shape substantially that of a period of a sine curve arranged to designate the extremes of a cycle;
a pair of rotatable discs disposed in a common plane on parallel axis drivingly connected to rotate together;
indicia means on each of said discs positioned to cooperate within said window to be visible therein to indicate a time related variable of said cycle between the extremes of said

cycle, one of said indicia means indicating one portion of said cycle and the other of said indicia means indicating another portion of said cycle.

4,211,026
CENTER PIN LOCK FOR SINGLE-ACTION REVOLVER
Austin F. Behlert, 33 Herning Ave., Cranford, N.J. 07016
Filed Oct. 2, 1978, Ser. No. 947,628
Int. Cl.[2] F41C *1/00*
U.S. Cl. 42—59 **9 Claims**



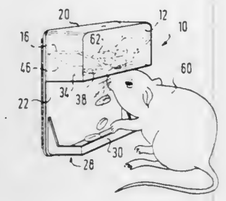
1. A single-action revolver comprising:
a frame including a cylinder frame and a cylinder to be mounted in said cylinder frame, and a barrel removably connected to said cylinder frame;
a center pin extending through said cylinder frame for rotatably mounting said cylinder within said cylinder frame;
first means for removably retaining said center pin in engagement with said cylinder frame;
and second means for removably retaining said center pin in engagement with said cylinder frame including means interlocking said center pin and said barrel.

4,211,027
ELONGATED FLEXIBLE FISHING LURE WITH HELICAL SHAPE
Francis N. Viscardi, 6109 Wheatland Rd., Baltimore, Md. 21228
Filed Oct. 11, 1978, Ser. No. 950,408
Int. Cl.[3] A01K *85/00*
U.S. Cl. 43—42.24 **4 Claims**



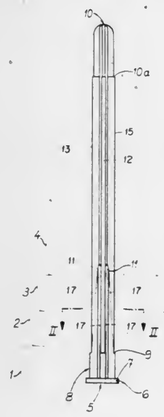
1. A fishing lure comprising:
an elongated flexible helix of resilient material having substantially no space between adjacent coils of the helix and defining an elongated tube at least 7" long curved along its entire length;
a swivel connector projecting from one end of the tube for connection to a fishing line;
a hook projecting from the other end of the tube, the hook including a barbed end;
a metallic wire extending within the tube for a substantial portion of the length of the tube and connecting the swivel connector to the hook; and
camouflage means also projecting from said other end of the tube.

4,211,028
RODENT POISON DISPENSER WITH PROTECTIVE CLOSURE PLATE OF ATTRACTIVE ODOR OR TASTE
Fritz Roberling, Buhnstrasse 82, Vlotho, Fed. Rep. of Germany
Filed Oct. 3, 1978, Ser. No. 948,627
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745407
Int. Cl.[2] A01M *25/00*
U.S. Cl. 43—131 **10 Claims**



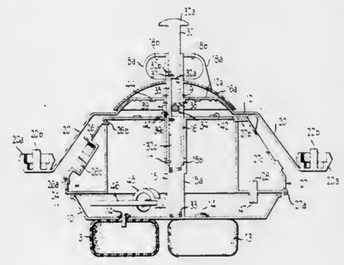
1. Rodent poison dispenser comprising a housing with an upper chamber suitable for holding poison bait, which is separated by a separating wall from a lower chamber into which rodents can enter, wherein the separating wall has an opening which is capable of being closed by a consumable protective plate of an odor or taste attractive to rodents, the poison bait is supported by the consumable protective plate and when the rodent eats through the protective plate the poison falls through the opening, wherein the separating wall is inclined downwardly to the opening and wherein there are provided at sides of the opening guiding means for insertion of the protective plate.

4,211,029
SAFETY PYRAMID TOY SPINDLE
Michel Cretin, Maisod, 39260 Moirans-en-Montagne, France
Filed Jan. 17, 1978, Ser. No. 870,122
Claims priority, application France, Jan. 21, 1977, 77 02339
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—17 **8 Claims**



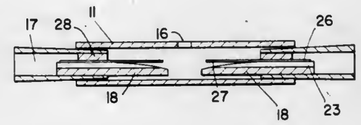
1. A safety toy comprising a base having a central hole with an annular recess around said hole on the lower face of said base, and a flexible spindle of non-toxic resilient material snugly received in said hole of the base and having a flange received in said recess, said spindle having a rounded tip and tapering from said base to said tip, with a cross sectional shape comprising a central core portion and a plurality of arms radiating from said core portion, said arms having rounded extremities, the flexibility of said spindle being sufficient to permit bending the tip of said spindle down to the level of the base and the resiliency of the material being sufficient to cause said spindle to resume its initial position substantially normal to the base when released.

4,211,030
SPACE TOY
Howard J. Morrison, Deerfield; Denise Gardner, Downers Grove, and Palmer J. Schoenfield, Evanston, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 9, 1979, Ser. No. 10,830
Int. Cl.[2] A63H *1/06*
U.S. Cl. 46—67 **14 Claims**



1. A toy space vehicle comprising a base, a vehicle body rotatably supported on said base, a carrier rotatably supported on said base, said body and said carrier being independently rotatable about a common axis, a manually operable reciprocator movable in two directions, and drive means responsive to movement of said reciprocator in one direction for rotating said body relatively to said base and responsive to movement of said reciprocator in the other direction for rotating said carrier relatively to said base and independently of said body.

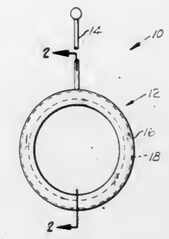
4,211,031
WILD GOOSE AND DUCK CALL
Nate J. Gambino, 1224 Westland Dr., Modesto, Calif. 95350
Filed Sep. 29, 1978, Ser. No. 947,084
Int. Cl.[2] A63H *5/00*
U.S. Cl. 46—177 **9 Claims**



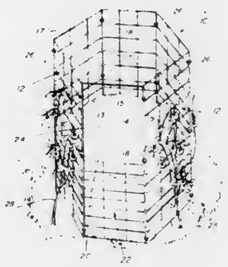
1. A bird call comprising a hollow tubular body open at both ends, a blowhole in said tubular body intermediate of said ends, a pair of reed assemblies, each disposed in one of said ends of said tubular body, each of said reed assemblies including a reed having a freely vibrating end extending inwardly into said tubular body and adapted to be actuated by an airstream introduced through said blowhole.

4,211,032
TOY HOOP DEVICE
Ross Robinett, 882 Summerland Ave., San Pedro, Calif. 90731
Filed Sep. 1, 1978, Ser. No. 938,852
Int. Cl.[2] A63H *33/02*
U.S. Cl. 46—220 **2 Claims**

1. A toy hoop device, which comprises:
(a) a hoop having an outer peripheral surface adapted for rolling along another surface and means defining a central channel formed around said peripheral surface, and inwardly therefrom;
(b) a bearing cage displaced in said central channel for rotational movement relative to said hoop, an outer surface of said cage being recessed below said outer peripheral surface, said cage including means defining at least one recess formed into the cage from said outer surface; and
(c) a guide handle having one end configured for being releasably received into said bearing cage recess, to thereby enable a user to control movement of the hoop.



4,211,033
PLANT SUPPORT AND COMPOST ENCLOSURE
Charles J. Ringer, Long Lake, Minn., assignor to Judd Ringer Corporation, Eden Prairies, Minn.
Filed Dec. 18, 1978, Ser. No. 970,629
Int. Cl.[2] A01G *9/12*
U.S. Cl. 47—45 **6 Claims**

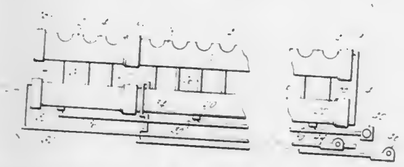


1. A combination plant support and compost enclosure apparatus comprising:
a plurality of substantially vertical rigid panels, each panel including a set of generally vertical spaced rods and a set of generally horizontal spaced rods, said rods being secured to each other at their junction points, one of said panels acting as a front panel and having vertical and horizontal rods omitted in the upper portion thereof to provide an opening therethrough, substantially larger than the opening defined by said vertical and horizontal rods for the introduction of compost into the enclosure; and
means pivotally connecting each said panel to adjacent panels to form a rigid structure that can stand without support and be collapsed to a substantially flat form.

4,211,034
HYDROPONIC GROWING SYSTEMS
Barry J. Piesner, 1146 E. 23rd St., Brooklyn, N.Y. 11210
Filed Feb. 23, 1978, Ser. No. 880,692
Int. Cl.[2] A01G *31/02*
U.S. Cl. 47—62 **10 Claims**

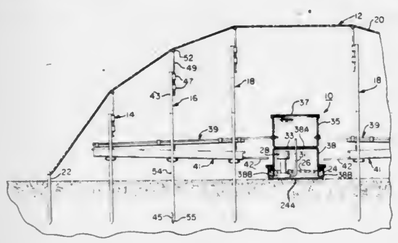
1. A hydroponic growing system including, in combination, an elongated growing container constructed to hold a porous

solid growing medium wherein plant roots are to be disposed, said growing container provided with relatively extensive aperture means located at the upper surface of said growing container and through which plant foliage is to extend outside of said growing container, a separate supply tank constructed to hold a fluid growing solution, supply and drain tube means extending from said supply tank near the bottom thereof and outwardly from said supply tank into said growing container, and supply means connected to said supply tank, said supply means when activated furnishing pressurized air to said supply



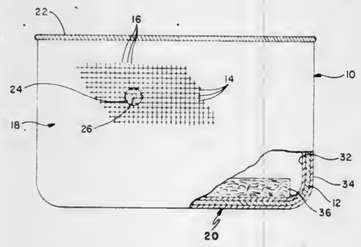
tank to initially force a fluid growing solution from said supply tank upwardly through said tube means into said growing container and immediately thereafter supplying air which bubbles through a growing medium and growing solution in said growing container for a predetermined interval of time, said supply means when deactivated permitting growing solution in said growing container to flow through said tube means back to said supply tank, and means connected at the upper end of the supply and drain tube means for distributing air delivered through said tube means along the length of said growing container.

4,211,035
HYDROPONIC GARDENING APPARATUS
William Small, 7256 South Coles, Chicago, Ill. 60649
Filed Jul. 27, 1978, Ser. No. 928,752
Int. Cl.[2] A01G *9/00*
U.S. Cl. 47—62 **10 Claims**



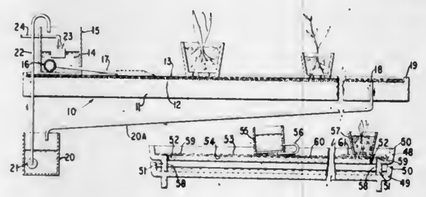
1. In hydroponic gardening apparatus, the combination comprising:
- means defining a lower reservoir containing a liquid nutrient;
- means defining an upper reservoir;
- pumping means for flowing liquid nutrient from said lower reservoir to said upper reservoir;
- a plurality of opened top containers having growing media disposed in the interior thereof and being adapted to support and to nourish plants therein;
- a plurality of inclined feed conduits connected in fluid communication with the interior of said upper reservoir above said containers for guiding under the force of gravity liquid nutrient from said upper reservoir to said containers;
- return conduit means connected in fluid communication with said containers for guiding liquid nutrient therefrom back to said lower container;
- a shelter construction having a series of upright posts arranged in concentric circles and directly on the top portions of at least some of said posts supporting a translucent cover, said conduit means and said containers being supported above the ground by said posts, each one of said conduit means and each one of the elongated containers being supported by a plurality of said posts disposed on different ones of said circles; and
- said plurality of containers being similar to one another and being arranged in a spaced-apart manner, said plurality of similar feed conduits being disposed above individual ones of said containers.

4,211,036
PLANTER BASKET
Shirley R. Dalitz, 1828 Millbank Rd., Leucadia, Calif. 92024
Filed May 5, 1977, Ser. No. 793,919
Int. Cl.[2] A01G *9/02, 27/00*
U.S. Cl. 47—66 **2 Claims**



1. An open-topped decorative basket having wall and bottom portions;
- (a) said portions being constructed of linear elements in basketweave pattern with portions of said elements overlaid and with interstices defined between said elements in both said wall and bottom portions;
- (b) a sealing material coating said elements and completely filling said interstices;
- (c) said material being transparent and therefore substantially invisible so that the appearance of the decorative basket, with the basketweave pattern and interstices as such, is retained;
- (d) said material being waterproof so that said elements are preserved against deterioration and the basket is waterproofed as a container for use as a planter;
- (e) said bottom portion having an essentially porous structure attached on the inside of said bottom portion and being held in place on said bottom portion by said sealing material for storage of a limited quantity of drainage water within the waterproofed container.

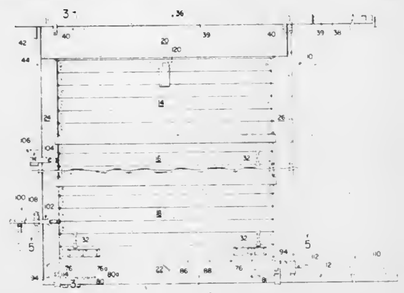
4,211,037
METHOD AND APPARATUS FOR IRRIGATING CONTAINER-GROWN PLANTS
Evert S. Green, 14 Kenneth Ave., N. Bellmore, N.Y. 11710
Filed Mar. 12, 1979, Ser. No. 19,563
Int. Cl.[2] A01G *27/00*
U.S. Cl. 47—80 **24 Claims**



1. In a method of irrigating with an aqueous liquid soil within a plant container through an opening in the bottom thereof that rests on a capillary sheet having capillary openings

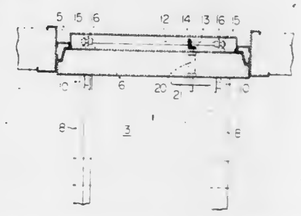
therein that are about 0.045 to about 0.145 inch in diameter by capillary travel upwardly through said capillary openings and said opening in the bottom of said container, the improvement of which comprises feeding water into the interface between an undersurface of said capillary sheet that is wettable and that is in face-to-face unbonded contacting relation with an essentially continuous and substantially smooth wettable upper surface presented by a support bed for said plant container with attendant lateral spreading while confined in said interface to an area of said capillary sheet underneath a plant container the bottom of which is in contacting relation with the upper surface of said capillary sheet and with further travel through capillary openings in said area of the capillary sheet and thence through said opening in the bottom of the plant container and into soil within the container.

4,211,038
ROLLER DROP DOOR
Glenn L. Wright, Canfield, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio
Filed Apr. 20, 1978, Ser. No. 895,987
Int. Cl.[2] E05D *15/56*
U.S. Cl. 49—234 **2 Claims**



1. In a railway house car having a door supporting track on a car side beneath a door opening, a door formed with a lower edge surface for support of said door on the top of said track in engagement with said track when said door is in position to close said opening,
- said lower edge surface extending substantially throughout the width of said door and having a plurality of at least three intermediate openings with portions of a plurality of at least three longitudinally spaced rollers extending therefrom,
- said track being in sealed contact with the car side beneath said door opening substantially throughout the length of said track and having a plurality of at least three corresponding intermediate copes of enlarged longitudinal dimension in the top of said track located to receive said rollers when said door is supported on said lower edge surface in position to sealingly engage said track to close and seal said opening,
- said copes' enlarged dimensions, during closing and just prior to the final movement of said door into position to close and seal said opening, permitting a final longitudinal sliding movement of said lower door edge surface on the top of said track to close and seal said opening, and during opening, permitting an initial relatively short longitudinal sliding movement of said lower door edge surface on said track to initially open said opening, and also permitting at least two of said rollers to engage the top of said track and support said door with the lower edge surface removed from said track for longitudinal movement when the door is in other positions on said track,
- said lower edge surface being located so as to define the inwardmost portion of the door adjacent said track such that in the closed position of the door a seal is provided with said track and potential damage to said track tending to move it closer to said car side cannot clamp any portion of said door between said track and said car side and thereby hinder selective door movement.

4,211,039
DOOR ASSEMBLY
Genshi Taniwaki, Kumamoto, Japan, assignor to Kongo Co., Ltd., Japan
Filed May 17, 1978, Ser. No. 906,740
Int. Cl.[2] E05F *11/00*
U.S. Cl. 49—361 **12 Claims**

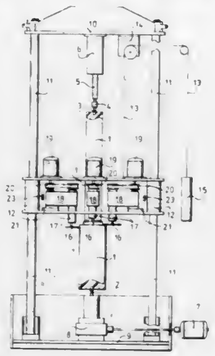


1. A vault door assembly of the type used for closing the opening to a bank vault, comprising guide means disposed so as to extend in a direction normal to the plane of the opening, a door for defining a closure for said opening, guide follower means connected to said door, said guide follower means being engaged with said guide means and being disposed to follow along said guide means, said door being displaceable relative to said opening by a force acting in a direction normal thereto to move said door to an open position spaced from said opening and in a plane parallel to the plane of said opening, and by an opposite force acting normal to said door to move said door to a closed position, whereby in said open position one can enter the vault through a space between said door and said opening and whereby the interior of the vault is blocked from view by said door in its open position, drive means operatively connected to said guide follower means for driving the follower means to effect normal displacement of said door relative to said opening along said guide means, said drive means including a driver rotatably journalled to said door, a drive shaft connected to said driver, a transmission having a driven shaft, means for coupling said drive shaft and said driven shaft, and means for coupling said driven shaft to said guide follower means.

4,211,040
PROCESS FOR MACHINING SILICON RODS AND TUBES BY ABRASION
Friedrich Steudten, Burghausen, and Franz Köppl, Altotting, both of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany
Filed Oct. 27, 1978, Ser. No. 955,429
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758887
Int. Cl.[2] B24B *5/04*
U.S. Cl. 51—42 **2 Claims**

1. Apparatus for machining silicon rods and tubes by abrasion, comprising:
- a metal frame having an upper cover plate and a lower base plate, and an upper and lower holder, disposed one above the other and secured, respectively, to said cover plate and said base plate, for accommodating a generally cylindrically silicon workpiece in a vertical orientation; and
- a vertically-movable tool carriage, supported on said frame, having a plurality of tools mounted thereon, for machining said workpiece, said tools being positioned on said carriage so as to be uniformly arranged about the circumference of said workpiece, so that the contact pressures of each tool are mutually substantially compensated, said

tool carriage also having a ring rotatably mounted thereon which is coaxially disposed relative to said workpiece, a plurality of rocker arms each of which has a head end portion and a base end portion and which is pivotable about its base end portion for pivotable movement in a



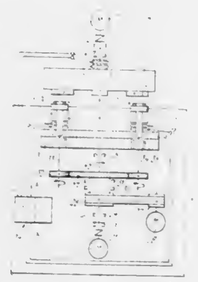
horizontal plane generally towards and away from the axis of the workpiece and a plurality of joints which are adjustable in length and which couple said rocker arms to said ring and wherein said tools each include a grinding disc which is attached to the head end portion of one of said rocker arms.

4,211,041

ROTOR-TYPE MACHINE FOR ABRASIVE MACHINING OF PARTS WITH FERROMAGNETIC ABRASIVE POWDERS IN MAGNETIC FIELD

Faddei J. Sakulevich, pereulok Dalny, 3; Lev N. Kravchenko, ulitsa Kalinovskogo, 72, kv. 17; Lev M. Kozhuro, ulitsa Instrumentalnaya, 4, kv. 33, and Vladimir A. Shimansky, ulitsa Knorina, 10a, kv. 19, all of Minsk, U.S.S.R.

Filed Jun. 16, 1978, Ser. No. 916,256
Int. Cl.² B24B *7/04*
U.S. Cl. 51—131.3 **2 Claims**



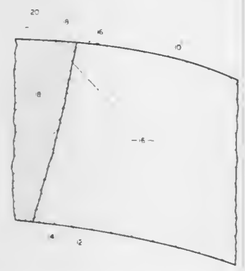
1. A rotor-type machine for abrasive machining of the surfaces of parts with ferromagnetic abrasive powders in a magnetic field created by two electromagnetic systems, comprising: an inductor constituting one of said two electromagnetic systems, having an even number of alternating-polarity poles and installed rotatably around its axis to define a first rotation plane; the coils of said inductor installed on its poles; a rotor constituting the other one of said two electromagnetic systems, installed rotatably around its axis so as to define a second rotation plane parallel to but displaced from said first rotation plane, and having an even number of alternating-polarity poles which is equal to the number of poles of said inductor, the poles of said inductor and said rotor being counteropposed to one another to define an air gap therebetween; the coils of said rotor being installed on its poles; a workpiece secured on the pole of said rotor and located in the air gap between the counteropposed poles of said inductor and said rotor, and filled with a magnetic abrasive powder which creates a cutting "brush" on the poles of said inductor; said poles having a face surface corresponding to the profile of the surface being machined, the distance between the adjacent poles being greater than the size of the air gap; a power pack connected with said coils of said inductor and rotor; a drive intended to rotate each pole of said rotor around its axis; a control unit connected to said power pack and coupled with said coils of said inductor and with said coils of said rotor for controlling said coils so as to ensure that each pair of the counteropposed poles has a different polarity in the course of workpiece machining.

4,211,042

CONTROLLED WELD AREA GRINDING TO PREVENT THE INITIATION OF INTERGRANULAR CORROSION

Harry E. Deverell, Natrona Heights, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1978, Ser. No. 972,557
Int. Cl.² B24B *1/00*
U.S. Cl. 51—281 R **4 Claims**



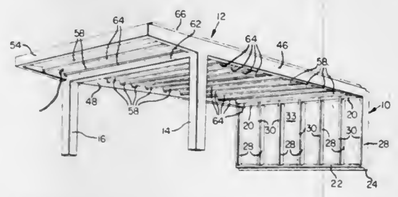
1. A method of treating the weld area of a welded ferritic stainless steel article to increase the resistance to intergranular corrosion comprising the step of grinding the torch side surface of the welded article at a substantially uniform depth along the length of the weld after the material has solidified in the weld area, with a cross sectional dimension of the grind extending beyond the weld-base metal interface on both sides of the weld area, and with the depth of grind being uniformly controlled within the range of from at least 0.0005 inch as measured at the weld-base metal interface to less than 10% of the unground article thickness.

4,211,043

PRECAST CONCRETE BUILDING MODULE FORM

Jerry F. Coday, 3580 Eola Dr., N.W., Salem, Oreg. 97304

Filed Jan. 6, 1978, Ser. No. 867,452
Int. Cl.² E04B *1/342*; E04H *1/00*
U.S. Cl. 52—79.1 **7 Claims**



1. A building module comprising:

a precast monolithic concrete building element including an upright wall means, roof means projecting outwardly in a first direction from the upper end of said wall means and roof support means spaced from said wall means;

said wall means including a wall panel, said wall means also including plural spaced apart generally parallel upright wall ribs projecting outwardly in said first direction from one surface of said wall panel and defining channel like recesses therebetween bounded by exposed concrete surfaces of said ribs and one surface;

said roof means including a roof panel having an inner end at the upper edge of said wall means and an outer end spaced from said wall means, said roof means also including plural spaced apart generally parallel roof ribs projecting outwardly in a second direction from a lower surface of said roof panel and defining channel like recesses therebetween bounded by exposed concrete surfaces of said roof ribs and lower surface of said roof panel;

a plurality of wall stud means of a nonconcrete structural material for supporting wall covering materials, each said wall stud means including an anchoring portion cast into the free side of an associated wall rib and a projecting portion which projects outwardly away from such free side a sufficient distance to permit the placement of electrical wiring openings through which projecting portion; and

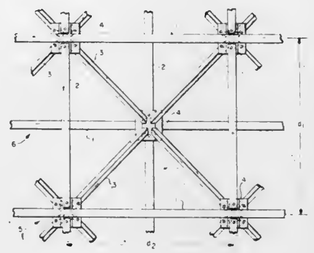
a plurality of roof stud means of a nonconcrete structural material for supporting roof covering materials, each said roof stud means including an anchoring portion cast into the free side of an associated roof rib and a projecting portion which projects outwardly away from such free side a sufficient distance to permit the placement of electrical wiring openings through such projecting portion.

4,211,044

TUBE SPACE FRAME SYSTEM

Paul F. Gugliotta, 39 E. 20th St., New York, N.Y. 10003, and David Hoffmann, 117 Jefferson St., Milwaukee, Wis.

Filed Jul. 28, 1978, Ser. No. 928,942
Int. Cl.² E04B *7/18*
U.S. Cl. 52—200 **21 Claims**



1. In a plural grid modular space frame system of the type including at least two uniform dimensioned substantially rectangular grid planar chord frames held apart and substantially parallel by diagonal struts, one frame being out of registration with the other frame by one-half grid dimension in each substantially rectangular direction so that each chord intersection point on one frame is substantially apart from and opposite an open center of a grid rectangle of the other frame, each of said diagonal struts being one of a group of four struts extending from each said chord intersection point on one frame to each of the four nearest chord intersection points bounding said grid rectangular of the other frame to form a grid module, the improvement comprising:

a plurality of continuous chords;

a plurality of tie chords, said tie chords and said continuous chords being disposed in two substantially uniform dimensioned substantially rectangular grid planar chord frames, in each one of which all of said chords lie in a single plane for disposing any associated chord forces in said single plane, said continuous chords extending in one direction of said substantially rectangular grid with said tie chords extending in the other substantially rectangular direction at an angle to said one direction, each of said tie chords being a substantially discontinuous chord and extending one grid dimension from the intersection point with one of said continuous chords to the intersection point with the next continuous chord, said tie chords and said continuous chords being comprised of elongated hollow substantially rectangular tubes having four substantially flat side walls;

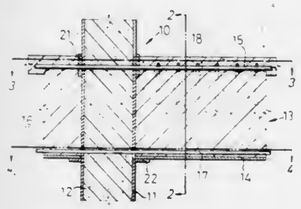
a plurality of diagonal struts, each extending from one of said chord intersection points on one of said chord frames to one of the four nearest chord intersection points on the other of said frames, said diagonal struts being elongated hollow tubes having side walls; and

interconnection means for joining said continuous chords, said tie chords and said diagonal struts together at each of said intersection points, said interconnection means comprising threaded bolt means, threaded nut means threadably engageable with said threaded bolt means, and a plurality of bent plate connectors substantially uniformly modularly spaced apart along the longitudinal axis of each of said continuous chords throughout the length thereof and secured thereto at each of said interconnection points, each of said bent plate connectors being a substantially continuous member having a substantially straight portion secured to said continuous chord and a plurality of angulated portions extending therefrom to substantially define the planes of said diagonal struts in said space frame, said straight portion bearing against an external area of one of said flat side walls of each of said chords with said angulated portions being in load bearing relation with said struts, said bent plate connectors each having apertures through each of said portions within said load bearing area to receive said threaded bolt means, said continuous chords, said tie chords and said diagonal struts each having tube wall apertures, within said load bearing area alignable with said bent plate connector apertures for receiving said threaded bolt means disposed through said bent plate connector apertures, each of said threaded bolt means being disposed through said aligned bent plate connector and tube wall apertures and engaged with said threaded nut means so that each of said tie chords and diagonal struts is secured to said respective bent plate connector at each of said intersection points, said interconnection means further comprising means for fixedly securing each of said respective bent plate connector straight portions to said continuous chords at said intersection points, said continuous chords being concentrically loaded in said space frame and said substantially discontinuous tie chords being eccentrically loaded in said space frame, said continuous chords in said space frame having said bent plate connectors secured thereto being substantially stronger in compression and local bending than said substantially discontinuous tie chords in said space frame, said continuous chords being common for a plurality of said grid modules with said spaced apart bent plate connectors secured to each of said common continuous chords defining said intersection points for said plurality of grid modules, whereby enhanced strength in column activity and transverse bending for said modular space frame is provided.

4,211,045
BUILDING STRUCTURE

Hajime Koizumi, Tokyo; Kozo Toyama, Tama; Mikio Kobayashi; Hajime Hatano, both of Hachiooji; Toshio Saeki, Tama; Kaoru Mizukoshi, Hino; Shinichi Tamanaga; Keizo Miyakawa, both of Kodaira, and Tomoyasu Kato, Tokyo, all of Japan, assignors to Kajima Kensetsu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1977, Ser. No. 858,198
Claims priority, application Japan, Jan. 20, 1977, 52-5198; Mar. 17, 1977, 52-30112; May 24, 1977, 52-66452[U]; May 24, 1977, 52-66453[U]; May 24, 1977, 52-66454[U]
Int. Cl.² E04B 5/19
U.S. Cl. 52—251 **2 Claims**

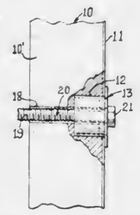


1. A building structure comprising:
(a) a concrete filled steel tube column;
(b) a first ring stiffener connected to the outer periphery of said column to project horizontally therefrom;
(c) a vertical gusset plate projecting from said column above said first ring stiffener;
(d) a U-shaped channel connected to said gusset plate above said first ring stiffener, said U-shaped channel having cut-away portions defined in the ends of its upper side portions;
(e) steel reinforcing rods positioned in said channel and extending through said column;
(f) a steel reinforcing rod ring encircling the outer periphery of said column within said cut-away portions;
(g) said first ring stiffener and the bottom portion of said channel being securely connected to each other; and
(h) concrete filled in said channel and concrete embedding said steel reinforcing rod ring.

4,211,046
ACOUSTICAL PANEL MOUNTING ELEMENT

James E. Shahan, Chicago, Ill., assignor to Transco, Inc., Chicago, Ill.

Filed Aug. 15, 1977, Ser. No. 824,826
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742466
Int. Cl.² E04B 1/38
U.S. Cl. 52—506 **1 Claim**

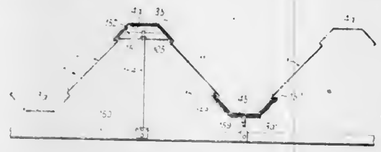


1. An acoustical panel mounting for isolating the metallic facing of the panel from vibration and noise of its supporting structure with the panel providing a pocket in one wall for the panel mounting and having a passage extending therefrom throughout the width of the panel comprising
(a) an outer hollow circular body carried in the pocket formed in the panel and exposed through its metallic facing,
(b) a radially extending collar-forming flange formed on one end of said body and adapted to have facial abutment with the metallic facing surrounding the pocket formed therein,
(c) a cylindrical connector-receiving inner sleeve within said body and of a length equal to that of said body so as to extend coaxially thereof and of the passage formed through the panel,
(d) a ring of resilient material of a size to embrace said inner sleeve and extending inwardly from the other end of said body and terminating short of said collar-forming flange so as to form an air space about one end of said sleeve and to isolate said sleeve from said body and the metallic facing of the panel, and
(e) a connector having an enlarged head in contact with said one end of said inner sleeve within the periphery of said body and out of contact with said ring and having an elongated threaded shank freely journalled through said sleeve and the passage formed in said panel for mounting the panel to a supporting structure.

4,211,047
STRUCTURAL SPANNING MEMBER

Martin H. Briggs, The Mound, White Hill, Caterham, England

Filed Mar. 7, 1978, Ser. No. 884,196
Claims priority, application United Kingdom, Mar. 23, 1977, 12228/77
Int. Cl.² E04D 1/00
U.S. Cl. 52—522 **14 Claims**

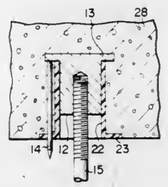


8. A structural spanning member for use as a beam or cross member which is capable of linearly extending as an unsupported span between end supports of a building structure, said member comprising
a generally planar elongated central web section which includes a plurality of spaced apart indentations formed along the elongated length thereof which each extend transversely across said central web section with respect to the elongated dimension thereof, said indentations forming elongated raised portions which project out of the general plane of said central web section so as to strengthen said central web section,
oppositely directed elongated chord sections extending away from opposite lateral sides of said elongated central web section, said chord sections being integral with said central web section, each of said chord sections including a planar main portion and a planar extension portion integral therewith, the planar main portions of said opposite chord sections being oppositely inclined with respect to the general plane of said central web section and mutually parallel, the planar extension portions of said opposite chord sections extending generally orthogonally with respect to the general plane of said central web section, said opposite chord sections being dimensioned relative to one another such that when two such spanning members are placed together to form a trunicated inverted V-configuration they will snap fit together, with a smaller chord section of one such member snap fitting within a larger chord section of the other, to thus form together a single pitch of a building structure.

4,211,048
CONCRETE ANCHOR

Kozaburo Naka, Tokyo, Japan, assignor to Kabushiki Kaisha Mikado, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,781
Int. Cl.² E04B 1/41
U.S. Cl. 52—700 **4 Claims**

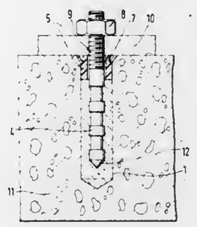


1. An anchor adapted to be embedded into a concrete construction for suspension of a ceiling panel, duct or the like, comprising a metallic suspension member including a cylindrical body having an axial thread bore which is open at its lower end, a head flange disposed on the top end of the body, and a plurality of the needles having their one end secured to the head flange and extending in parallel and spaced relationship with the body, and a support member formed of a synthetic resin material and including a sleeve which surrounds the body and a pedestal disposed at the lower end of the sleeve and extending diametrically of the sleeve, the sleeve having an axial length which is the same as or greater than that of the body, the pedestal being formed with a plurality of openings for receiving the needles, each of the needles having a length such that its free end projects downwardly beyond the associated opening formed in the pedestal.

4,211,049
ARRANGEMENT FOR AND A METHOD OF ANCHORING A MOUNTING ELEMENT IN A HOLE OF A SUPPORT STRUCTURE

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,660
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746482
Int. Cl.² E04B 1/41; F16B 39/00
U.S. Cl. 52—704 **9 Claims**

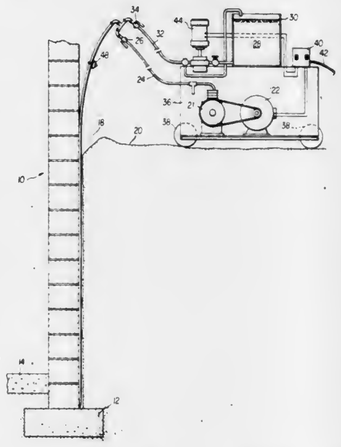


1. In an arrangement for anchoring a mounting element in a hole of a support structure by use of a hardenable binding material, a combination comprising a feeding device having an outlet section which is insertable into the hole of the support structure so as to introduce the hardenable binder material into the latter, and thereafter withdrawable from the hole; and a mounting element having a portion which is insertable into the hole after withdrawing said outlet section of said feeding device from the hole, so as to be anchored in the hole when the binding material is hardened in the latter, said insertable portion of said mounting element having a predetermined volume, and said insertable outlet section of said feeding device having a volume which corresponds to the volume of said insertable portion of said mounting element so that due to the presence of said insertable portion only enough binder material can enter the hole to anchor the mounting element, whereby the expulsion of excess binder material from the hole upon introduction of said mounting element is prevented.

4,211,050
SEALING PROCESS FOR UNDERGROUND WALLS

Daniel S. Cvacho, 241 Kirkley Cir., Forest, Va. 24551

Filed Oct. 24, 1978, Ser. No. 954,290
Int. Cl.² E02D 31/02
U.S. Cl. 52—742 **14 Claims**



1. A process for sealing an underground wall from a footing beneath the ground to a grade level which comprises the steps of
(a) inserting a hollow pipe substantially vertically at a first position closely adjacent said wall to a depth adjacent said wall footing and the base of the wall with the aid of compressed air pumped through said hollow pipe,
(b) injecting a sealant material under a pressure of from about 20 to about 150 pounds per square inch through said hollow pipe to effect a seal between said footing and the bottom of said wall,
(c) withdrawing said pipe vertically and progressively while injecting additional sealant material under said pressure until said wall is sealed from said footing to grade level in a first vertical position,
1. said compressed air serving to expose the surface of the wall which is then contacted by said sealant material under pressure whereby said wall is pressure treated from the outside at high pressure so that holes and cracks that may exist in the walls are filled,
(d) indexing said hollow pipe laterally and repeating steps (a), (b), and (c),
(e) and continuing said lateral indexing and the repetition of steps (a), (b), and (c) until said entire underground wall is sealed externally from said footing to grade level.

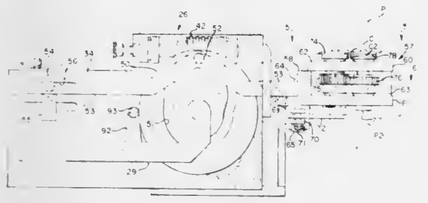
4,211,051
CUT-OFF DEVICE FOR CHUB MACHINES

Phillip C. Tucker, Bettendorf, Iowa, assignor to The Kartridg Pak Co.

Filed Jan. 19, 1978, Ser. No. 870,606
Int. Cl.² B65B 51/04, 9/06
U.S. Cl. 53—138 A **4 Claims**

1. In a chub machine for forming chub packages and having, means for continuously forming a web of packaging material

into a tube, means for continuously feeding said tube downwardly over a hollow vertical mandrel, means for delivering a flowable product to said mandrel so as to continuously discharge product from the bottom end thereof into said tube, voider means for voiding product from short lengths of said tube at predetermined intervals, vertically reciprocating head means having a passageway through which said tube descends and containing means to gather said short lengths of voided tube and apply a pair of spaced clips to each said gathered length, and means operatively interconnecting said voider



means and said reciprocating head means in timed operating relationship, the improvement, comprising: means for severing said gathered tube intermediate said pairs of clips comprising, a shears mechanism in vertical alignment with and below said head means passageway, vertically reciprocable carrier means for said shears mechanism separate from said head means, drive means operatively interconnecting said carrier means and said voider means whereby said carrier means reciprocates in coordination with said head means, and activating means for said shears mechanism for activating the same in coordination with said head means.

4,211,052

PACKAGING PAPER CONFIRMING DEVICE IN A COIN PACKAGING MACHINE

Yorizo Miyazaki; Hideshi Sentoku, and Katusuke Furuya, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1979, Ser. No. 21,703
Claims priority, application Japan, Mar. 23, 1978, 53-33325
Int. Cl.[2] B65B *57/00, 11/04*
U.S. Cl. 53—77 **1 Claim**



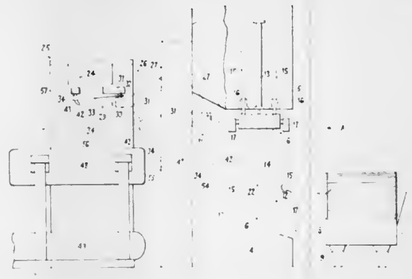
1. A packaging paper conforming device in a coin packaging machine which comprises a group of selection switches provided on a coin kind setting mechanism selectable by a coin kind setting operation in accordance with the kind of coin to be packaged, a group of setting switches provided on an adjustment mechanism set at a predetermined angle of rotation in accordance with relation between the selection switches and the setting switches and a packaging paper switch operable by the mounting and the removing of a removable charging stand, and in which non-conformity signal produced from the selection of the selection switches and the setting of the setting switches is put into and stored in a memory to indicate the non-conformity of the packaging paper and to disenable the operation of the machine, and the memory is reset through the packaging paper switch by the inspection of the packaging paper attendant on the removing and mounting of the charging stand to eliminate the non-conformity signal and to enable the operation of the machine.

4,211,053

MACHINES FOR APPLYING BAGS OR SACKS TO THE DISCHARGE SPOUTS OF BAG-FILLING MACHINES

Peter J. Niccolls, 15c Martlesham Heath, Ipswich, Suffolk, England

Filed Oct. 6, 1978, Ser. No. 949,034
Int. Cl.[2] B65B *43/30*
U.S. Cl. 53—386 **11 Claims**



1. In a machine for applying a bag to the discharge spout of a bag filling machine, including a transfer device for advancing the bag to the discharge spout, said transfer device comprising opposed suction means for engaging opposite sides of the bag adjacent its mouth, and means for parting said opposed suction means so as to open the bag mouth for placing over the discharge spout, improved suction means comprising:

(a) opposed main suction members arranged to engage the bag adjacent one end of its mouth and pivotally mounted so as to be rockable apart to open said bag mouth,

(b) opposed auxiliary suction members pivotally mounted coaxially with the pivot axes of said main suction members and arranged to engage said bag adjacent its mouth at positions spaced from said main suction members, said auxiliary suction members being rockable apart together with said main suction members to assist opening of said bag mouth.

4,211,054

CARTONER FOR ELONGATED ARTICLES AND COMPONENTS THEREOF

Elmer D. Sramek, Cicero, Ill., assignor to Redington Inc., Chicago, Ill.

Filed Sep. 5, 1978, Ser. No. 939,249
Int. Cl.[2] B65B *1/32, 63/02*
U.S. Cl. 53—502 **34 Claims**



1. Handling mechanism for predetermined unshaped bundles

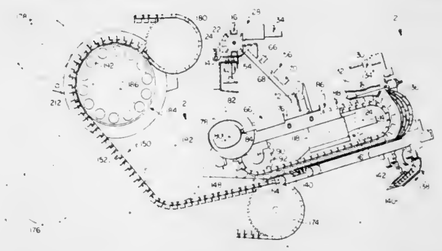
of elongated articles comprising a source of a series of predetermined unshaped bundles of elongated articles, a first continuous conveyor having a set of first article buckets thereon, said first conveyor having a first reach adjacent to said source of unshaped bundles of articles, said set of first article buckets while traveling along said first reach of said first conveyor each receiving an unshaped bundle of articles therein, a second continuous conveyor having thereon a set of second article buckets each including a bottom wall and two opposed side walls, each of said second article buckets having at least one of said side walls shiftable with respect to the other side wall between a retracted receiving position and a closed shaping position, said second conveyor having a first reach adjacent to said first reach of said first conveyor, said set of second article buckets while traveling along said first reach of said second conveyor each receiving an unshaped bundle of articles therein from an associated one of said first buckets, and control mechanism for said second article buckets for placing said one side wall in the retracted receiving position while receiving an unshaped bundle of articles in the associated second article bucket and for thereafter moving said one side wall to the closed shaping position thereof to arrange the unshaped bundle into a bundle having a predetermined desired shape.

4,211,055

MACHINE FOR FEEDING, CUTTING, SPACING AND ACCUMULATING ARTICLES

Marshall Long, Man-O-War Cay, The Bahamas; Lewis F. Alley, Kansas City, Mo., and James E. White, Overland Park, Kans., assignors to Marlen Research Corporation, Overland Park, Kans.

Filed Aug. 30, 1978, Ser. No. 938,038
Int. Cl.[2] B65B *35/24*
U.S. Cl. 53—517 **22 Claims**



1. In a machine for packing clusters of side-by-side sausages into containers wherein the individual sausages are obtained from initial sausage pencils having lengths several times greater than the length of each sausage, the improvement comprising:

means for severing end-to-end segments from each pencil, collecting the end-to-end segments into side-by-side relationship, and grouping side-by-side segments into clusters so that at least several of the segments in each cluster are obtained from the same pencil,

said means including mechanism for processing the pencils into a line of side-by-side segments and apparatus for receiving the line of segments from the mechanism and for grouping the same into multi-segment clusters having generally cylindrical configurations,

said apparatus including a turret having a series of cylindrical, cluster-maintaining chambers and transfer structure for receiving side-by-side segments from said mechanism and depositing the same by groups into said chambers, thereby forming said clusters,

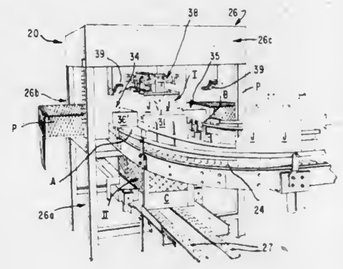
said turret being rotatable about a certain axis and being provided with an arcuate periphery, said chambers having longitudinal axes that extend in parallel relationship to said axis of rotation of the turret and being spaced apart in a circumferential series about said axis of rotation, said chambers each being provided with a transverse inlet from said periphery rendering the latter discontinuous, said transfer structure including an endless, flexible conveying element looped around said periphery of the turret and operable to move segments along the periphery and into said inlets as the elements and the turret are driven at relatively differing speeds.

4,211,056

CASE FILLING APPARATUS

Edward W. Birk, Fort Atkinson, Wis., assignor to Crepaco, Inc., Lake Mills, Wis.

Filed Oct. 26, 1978, Ser. No. 954,872
Int. Cl.[2] B65B *21/06, 21/18*
U.S. Cl. 53—543 **9 Claims**



1. A high-speed apparatus for use in filling cases with a plurality of containers arranged in side-by-side relation and forming a predetermined pattern, said apparatus comprising a supporting frame having a first station disposed at one level, relatively spaced staging areas disposed at substantially said one level and adjacent said one station and at which predetermined numbers of containers are simultaneously assembled, and a second station disposed at a second level beneath said first level; first means for conveying the containers to said staging areas; second means for conveying a predetermined number of empty cases to said second station; third means for simultaneously transferring the assembled predetermined number of containers from the staging areas to the first station and simultaneously therewith arranging thereon the transferred containers in side-by-side relation forming the predetermined pattern; and fourth means for lowering as a unit the containers while in the predetermined pattern from the first station into the predetermined number of cases at the second station; all of said means being actuated in a predetermined timed sequence.

4,211,057

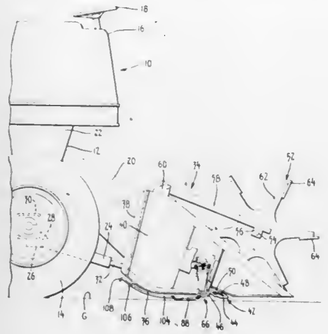
COMBINE HARVESTER AUTOMATIC TABLE HEIGHT CONTROL

Robert S. Dougherty, Oakville; Walter Hirsch, Don Mills, and Rene March, Ballinafad, all of Canada, assignors to Massey-Ferguson Industries Limited, Toronto, Canada

Filed Mar. 20, 1978, Ser. No. 888,277
Int. Cl.[2] A01D *67/00*
U.S. Cl. 56—10.2 **5 Claims**

1. An improved combine harvester automatic table height control including a combine harvester frame, driven wheels supporting the frame above the ground, drive means on the frame connected to the driven wheels, an elevator housing pivotally attached to the frame, a crop harvesting table attached to the free end of the elevator housing, a hydraulic cylinder attached to the frame and the elevator housing operable to raise and lower the crop harvesting table, a hydraulic valve capable of directing hydraulic fluid to and from the hydraulic cylinder, a height sensing assembly attached to the crop harvesting table, and a control system operably attached to the height sensing assembly and to the hydraulic valve, characterized by the drive means connected to the driven

wheels including a reversible transmission, and the control system including a switch connected to the reversible transmission and to the hydraulic valve capable of raising the crop harvesting table upon the reversible transmission being reversed, and wherein the control system also includes a timer connected to the switch connected to the reversible transmission, and to the hydraulic valve operable to limit the time during which the crop harvesting table is raised in response to closing the switch connected to the transmission.



4,211,058

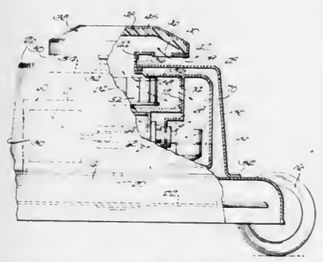
LAWN MOWER INCLUDING A CARBURETOR ENCLOSURE

Robert T. Larsen, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 14, 1978, Ser. No. 933,667

Int. Cl.[2] A01D *35/20*

U.S. Cl. 56—17.5 **7 Claims**



1. A lawn mower comprising a blade housing, wheels supporting said blade housing for movement along the ground, a rotary cutting blade supported within said blade housing, an engine supported by said blade housing and rotatably driving said rotary cutting blade, a carburetor mounted on said engine, means for enclosing said engine including an engine housing surrounding said engine and including therein a first air intake opening, and means for shielding said carburetor from air heated by said engine within said engine housing, said shielding means including a carburetor enclosure surrounding said carburetor and located within said engine housing, said carburetor enclosure including a second air intake opening communicating with said first air intake opening.

4,211,059

ROW CROP ATTACHMENT

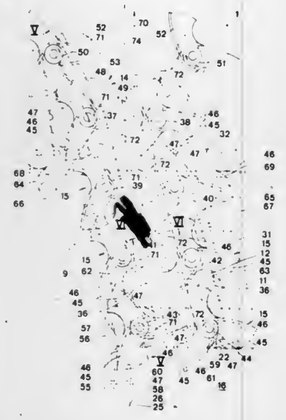
Frans J. G. C. Decoene, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 1, 1978, Ser. No. 956,710

Claims priority, application United Kingdom, Oct. 24, 1978, 46542/77

Int. Cl.[3] A01D *45/02*

U.S. Cl. 56—94 **16 Claims**



1. A row crop attachment for a harvesting machine comprising: a generally fore-and-aft extending frame having a forward inlet end and an opposing outlet end with a discharge opening therein, said frame including first and second guide members each having a first guide surface, the first guide surfaces of said first and second guide members spaced apart and defining an elongated stalkway therebetween terminating rearwardly adjacent said discharge opening;

a plurality of conveyor element pairs rotatably mounted on separate axes in opposing fashion on said first and second guide members along the length of said stalkway from said inlet end toward said outlet end, each said conveyor element including a plurality of outwardly extending crop engaging members, the path generated by rotation of each conveyor element overlapping that of the adjacent conveyor elements; and

drive means to rotate said conveyor element pairs so as to move crop material along said stalkway from said inlet end to said outlet end.

4,211,060

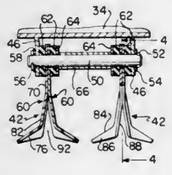
MOWING ROTOR

Keith H. Rhodes, Winneconne, Wis., assignor to Hesston Corporation, Hesston, Kans.

Filed Jun. 21, 1978, Ser. No. 935,677

Int. Cl.[2] A01D *55/20, 55/22*

U.S. Cl. 56—294 **21 Claims**



1. A flail-type mowing blade comprising:

a planar mounting portion adjacent one end of the blade;

a transverse cutting portion adjacent the opposite end of the blade projecting outwardly from the plane of said mounting portion and having a transversely disposed cutting edge along the normally leading side thereof and extending inwardly from said opposite end; and

an offsetting portion joining said cutting portion to the mounting portion in laterally offset relationship thereto, both the inner and outer terminal ends of said cutting edge being located wholly to one side of said mounting portion in spaced relationship to said plane thereof.

4,211,061

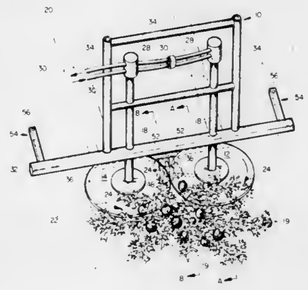
FLEXIBLE DISC CROP PICK-UP DEVICE

Clarence B. Richey, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Oct. 10, 1978, Ser. No. 949,805

Int. Cl.[2] A01D *45/00*

U.S. Cl. 56—327 R **13 Claims**



1. A harvester pick-up device for harvesting agricultural products, said device including at least one movable means that is a flexible disc having sufficient pliability for substantial deforming of said disc, said disc having a portion positioned below agricultural products to be harvested and contacting, but not invading, the ground surface upon which said products are located, the said movable means operating to lift and convey said products toward the rear of said device.

4,211,062

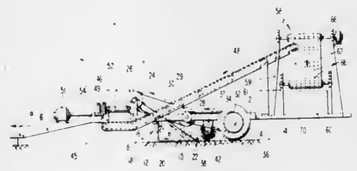
MACHINE FOR HARVESTING AGRICULTURAL PRODUCE

Yoav Sarig, 64 Henkin St., Holon; David Nahir, 19 KKL St., Bat Yam, and Yekutiel Alper, 35 Har Zion St., Rishon Le Zion, all of Israel

Continuation-in-part of Ser. No. 667,587, Mar. 17, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,974

Int. Cl.[2] A01D *51/00*

U.S. Cl. 56—328 R **6 Claims**



1. A machine for picking-up produce from the ground including a carriage movable over the ground in a specified direction of travel, said carriage being provided with an inclined endless conveyor having at any given time sections constituting an inclined receiving and conveying section and a returning section adjoining said inclined section, drive means for moving the conveyor with said inclined section moving in the specified direction of travel of said carriage, means for guiding a portion of said returning section of said conveyor to lie loosely on the ground and to fold back upon itself to constitute a part of the inclined section, with a small turning radius at a point where said returning section joins said inclined section and with the beginning of the inclined section in close proximity to the ground, and means for propelling produce from the ground onto said inclined section of said conveyor.

4,211,063

METHOD AND DEVICE FOR CLEANING SPINNING ROTORS IN OPEN-END SPINNING MECHANISM

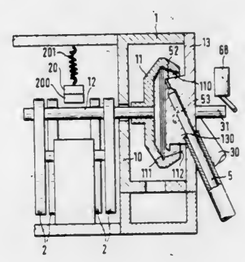
Erich Bock; Erwin Braun, and Burkhard Wulfhorst, all of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,284

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735113

Int. Cl.[2] D01H *1/12, 11/00*

U.S. Cl. 57—302 **18 Claims**



1. A method of cleaning a rotor in an open-end spinning machine which is rotated at a running r.p.m. during the spinning operation, said rotor having a collecting groove and an inner periphery, said method comprising the following steps:

reducing the speed of rotation of said rotor below its running r.p.m.;

directing a first flow of cleaning air at said collecting groove of said rotor at a first angle;

directing a second flow of cleaning air at said inner periphery of said spinning rotor at a second angle;

said first and said second flows of air being directed into said spinning rotor in divergent directions so that one of said flows is directed in the direction of rotation of the spinning rotor and the other of said flows is directed against the direction of rotation of the spinning rotor;

whereby said first and second flows of air dislodge trash from said rotor.

4,211,064

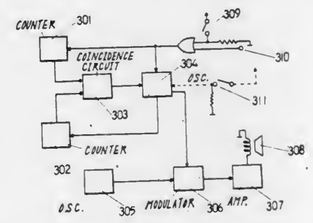
TIME SIGNAL TIMEPIECE

Masayuki Ikeda, and Takahiro Naka, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Suwa, Japan

Filed Sep. 20, 1978, Ser. No. 944,158

Int. Cl.[2] G04B *21/08;* **G04C** *21/00*

U.S. Cl. 368—272 **2 Claims**



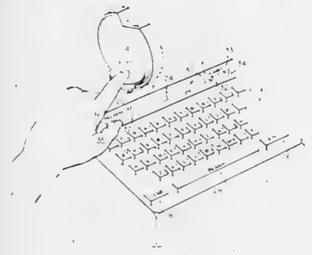
1. A time signal timepiece having a time-keeping portion for producing a signal every hour and a time signal sound generat-

ing portion which consists of a first counter for counting the number of said signals; a first oscillator circuit operated by said signal and determining an interval of a time signal sound; a second counter for counting the number of signals from said first oscillator circuit; a coincidence circuit for stopping an oscillation of said first oscillator circuit by detecting a coincidence of contents of said first counter with that of said second counter; a second oscillator circuit for determining the frequency of the time signal sound; a modulator for modulating a signal from said second oscillator circuit and determining the number of the signals of time information according to the signal from said first oscillator circuit; an amplifier and an electro-acoustic transducer for amplifying the signal from said modulator and generating the time signal sound; and a switch for correcting the contents of said first counter so that it may coincide with the display time of a timepiece.

4,211,065
AUTOMATIC SYSTEM FOR SETTING DIGITAL WATCHES

Lawrence S. Schmitz, Costa Mesa; Curtis E. Dodds, Stanton, and John Whipple, Santa Ana, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 26, 1977, Ser. No. 827,991
Int. Cl.² G04B *1/00*
U.S. Cl. 368—47 **19 Claims**



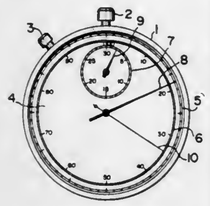
1. A system for setting a digital watch having a divider chain including a plurality of counter registers and having an energy responsive means for receiving setting pulses comprising:
a data entry unit including processing means for generating pulse bursts of a calculated number of pulses for selectively causing said counter registers to count a predetermined number of times from a reset count, a reference watch for time setting, a keyboard for entering messages to be set in said digital watch and means for providing commands as a pulse width modulated code, and
an energy source responsive to said processing means for emitting said commands and said pulse bursts for reception by said energy responsive means.

4,211,066
STOP WATCH

Yasuo Kusumoto, and Joichi Miyazaki, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Sep. 29, 1978, Ser. No. 947,199
Int. Cl.² G04F *7/00, 10/04*
U.S. Cl. 368—113 **11 Claims**

1. A stop watch, comprising;
a first clock pulse having a period of 1 second;
a switch circuit for producing each of instruction signals of start, stop, reset and midway notice in response to the switch operation;
a first control circuit for generating a plurality of control signals in response to said midway notice instruction signal;
a first drive controlling circuit for generating first driving pulses based on said first clock pulse in response to said start and stop instruction signal, and said control signals;
a first stepping motor driven by said first driving pulses, and a first display mechanism having a second hand moved by said first stepping motor;
a second clock pulse having a period shorter than that of said first clock pulse; –
a second control circuit for generating a plurality of control signals in response to the midway notice instruction from said switch circuit;

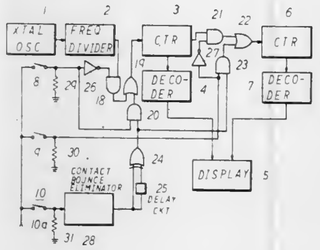


a second drive controlling circuit for generating second driving pulses based on said second clock pulse in response to the start, the stop and the reset signals generated in said switch circuit and the control signal from said second control circuit; and,
a second stepping motor driven by said second driving pulse and a second display mechanism having a subsecond hand which is moved by said second stepping motor and displays the measured time less than the unit of second.

4,211,067
TIME ADJUSTING DEVICE FOR ELECTRONIC TIMEPIECE

Hajime Oda; Toshihide Samejima; Toshio Matsumura; Nakanobu Moritani, and Masanori Fujita, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Apr. 21, 1978, Ser. No. 898,770
Claims priority, application Japan, Apr. 22, 1977, 52/46389
Int. Cl.² G04B *27/00*
U.S. Cl. 368—185 **8 Claims**

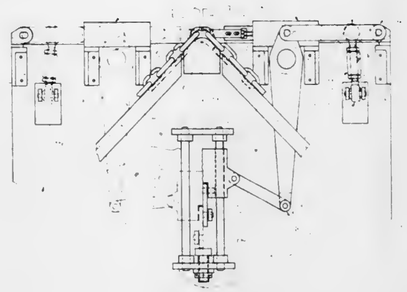


1. Time adjusting device for an electronic timepiece comprising: first means adapted to rotate in accordance with a manual operation; second means for generating pulses corresponding in frequency and number with the speed and extent of rotation of said first means; third means for converting each pulse from said second means into a plurality of pulses; fourth means for generating periodic time pulses; time counting means for counting time in response to the receipt of pulses; manually actuatable fifth means for normally applying the periodic pulses to said time counting means and for applying the plurality of pulses from said third means to the counting means upon actuation to adjust the time count therein.

4,211,068
CHAIN WELDING MACHINE

Gerhard Lange, Reutlingen, Fed. Rep. of Germany, assignor to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG), Reutlingen, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,098
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758243
Int. Cl.² B21L *3/02*
U.S. Cl. 59—31 **12 Claims**

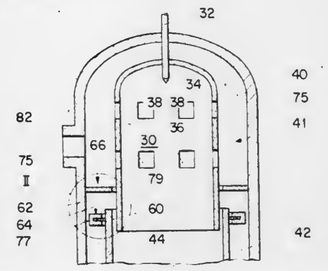


1. A chain welding machine comprising:
(a) first and second upsetting dies;
(b) first means for rapidly moving said upsetting dies into abutment with opposed ends of a chain link to be welded;
(c) second means for applying upsetting force to said upsetting dies; and
(d) fluid-controlled means for varying said upsetting force during the welding of a chain link.

4,211,069
COMBUSTION CHAMBER FOR A GAS TURBINE

Richard Kalbfuss, Mannheim, Fed. Rep. of Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jun. 22, 1978, Ser. No. 918,157
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1977, 2728399
Int. Cl.² F02C *7/12*
U.S. Cl. 60—39.02 **19 Claims**

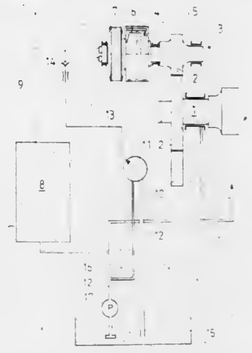


1. A combustion chamber for a gas turbine engine, comprising:
combustion cowl means for admitting an oxidizing fluid to a fuel fluid within the combustion cowl;
transition means for receiving hot power gases from the combustion cowl means;
first cooling jacket means for substantially surrounding the combustion cowl means with the oxidizing fluid;
second cooling jacket means for substantially surrounding the transition means with a gaseous medium;
at least one air gap provided between the combusiton cowl means and the transition means;
an intermediate chamber in fluid communication with the at least one air gap;
first throttle means for separating the intermediate chamber from the first cooling jacket means; and
second throttle means for separating the intermediate chamber from the second cooling jacket means.

4,211,070
START-UP MOTOR ASSEMBLY FOR ROTATIONAL MACHINES

Alexandre Portmann, Nussbaumen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jun. 26, 1978, Ser. No. 919,417
Claims priority, application Switzerland, Jun. 24, 1977, 7754/77
Int. Cl.² F01B *19/00, 25/34*
U.S. Cl. 60—39.08 **3 Claims**



1. Turbine rotating apparatus for use with a turbine of the type including a drive shaft mounted for rotation in bearings, and an auxiliary shaft arranged in spaced parallel relationship with said turbine drive shaft, said turbine drive shaft connected to said auxiliary shaft by means of step down gear means, the turbine rotating apparatus comprising:
drive means including a hydrostatic motor and clutch means mounted on said auxiliary shaft,
first conduit and pump means for supplying oil to said hydrostatic motor, and
second conduit and pump means to deliver oil from an oil supply to the bearings of the drive shaft, said second conduit means connecting said second pump means to said hydrostatic motor for supplying oil to continuously rotate said motor at reduced speed after the turbine has been started.

4,211,071
VAPOR GENERATORS

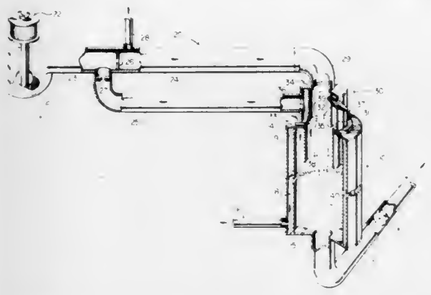
William G. Wyatt, Dallas, Tex., assignor to Vapor Energy, Inc., Grand Prairie, Tex.

Filed May 19, 1978, Ser. No. 907,694
Int. Cl.² F02C *7/00*
U.S. Cl. 60—39.55 **5 Claims**

1. A vapor generator comprising:
an upright cylindrical jacketed vessel having a product stream conduit connected to the bottom thereof and a flame inlet at the top thereof;
means for introducing water into the jacket of said vessel adjacent the bottom thereof;
means for delivering water from said jacket to the interior of said vessel adjacent the top thereof;
a precombustion chamber mounted atop said vessel in a position to deliver a flame through said flame inlet said precombustion chamber comprising a cylindrical housing having a cylindrical depending first shield positioned therein;

means for delivering a stream of fuel and combustion supporting gas into said precombustion chamber connected to deliver said stream into the top of said precombustion chamber within said first shield;

means for delivering a stream of excess combustion supporting gas into the top of said vessel connected to deliver said stream into said precombustion chamber exteriorly of said



first shield and thence past the lower edge of said first shield into the top of said vessel; and

a second cylindrical shield depending from said flame inlet downwardly into said vessel to bring said water delivered into the interior of said vessel into conductive contact with said flame while shielding it from radiative and conductive contact with said flame.

4,211,072

DEVICE FOR THE THERMAL DECOMPOSITION OF LIQUID FUELS

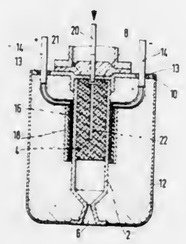
Harald Twardy, Müden, and Roger Lo, Möckmürl-Zuttlingen, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Feb. 7, 1978, Ser. No. 875,927

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706679

Int. Cl.² F02K *9/02*

U.S. Cl. 60—203 **7 Claims**



1. A device for the non-catalytic thermal decomposition of liquid fuels comprising a substantially closed housing, a porous non-catalytic body of a regular geometric configuration having opposite axially separated end faces and composed of metallic foam material having a specific surface greater than 2500 m^2/m^3 disposed in said housing, an inlet for introducing such liquid fuel into said porous body passing through said housing and into said body, said body including a shallow recess disposed within one of said outer end surfaces of said body and in which said fuel inlet terminates, a centrally disposed elongated slot extending from said recess into the interior of said porous body, and an outlet, proximal the other of said end faces for directing the decomposition products from said body.

4,211,073

COMBUSTION CHAMBER PRINCIPALLY FOR A GAS TURBINE

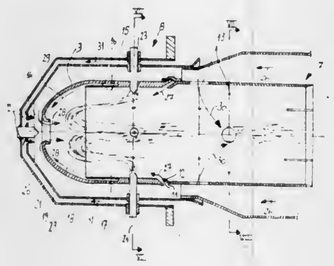
Jack Guillot, Juvisy sur Orge, France, assignor to Guidas, Loire, France

Filed Feb. 27, 1978, Ser. No. 881,538

Claims priority, application France, Feb. 25, 1977, 77 06339

Int. Cl.² F02C *7/22*

U.S. Cl. 60—746 **8 Claims**



1. A combustion chamber device wherein a source of air and fuel is combined with an ignition source for combustion, said device comprising:

an external case having a hollow wall defining a first air flow passage means, said passage means having an inlet and an outlet;

an internal case mounted concentric with and juxtaposed said external case, said internal and external case defining a second passage therebetween, said internal case further comprising:

an axial inlet passage and an outlet passage, said axial inlet passage and second passage defining a secondary air flow passage means communicating with said first passage means; and

primary air flow passage means located in said internal case interposed said axial inlet passage and said outlet passage for establishing a primary air flow, said primary air flow passage means communicating with said second passage such that a primary air flow is provided from said second passage into said internal case, said primary air flow being directed towards said axial inlet passage;

means for injecting fuel into said internal case mounted to said internal and external case between said primary air flow passage means and said axial inlet passage;

means for igniting injected fuel mounted to said internal and external case proximate said means for injecting fuel, said igniting means communicating with said injecting fuel means and primary air flow to establish a combustion flame in said internal case, said primary air flow directing said combustion flame towards said axial inlet passage of the internal case, said primary air flow further diverting said flame down towards the center of said internal case and communicating with said secondary air flow through said axial inlet passage to further divert the direction of said combustion flame towards said outlet passage such that the flame forms a vortex along the axial center of said internal case and the burnt gases are diverted towards said outlet passage along said axial vortex; and

means for cooling said internal case, said cooling means interposed said injecting fuel means and said axial inlet passage such that air flow from said second passage through said cooling means cools the walls of said internal case substantially between said injecting means and said axial inlet passage.

4,211,074

SECONDARY AIR SUPPLY SYSTEM FOR THE EXHAUST SYSTEM OF AN INTERNAL COMBUSTION ENGINE

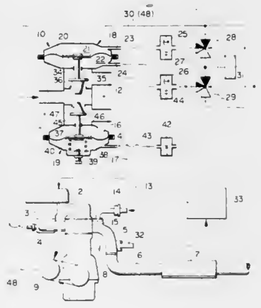
Kyo Hattori, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 2, 1978, Ser. No. 902,244

Claims priority, application Japan, Feb. 6, 1978, 53/12156

Int. Cl.² F01N *3/10*

U.S. Cl. 60—276 **5 Claims**



1. A secondary air supply system for the exhaust system of an internal combustion engine, comprising a source of compressed air, an air control valve which supplies a part of the air delivered from said source to the exhaust system of the engine while relieving the rest of the air, an oxygen detector for detecting residual oxygen contained in the exhaust gases flowing through the exhaust system, a source of actuating fluid pressure, a change-over valve for said actuating fluid pressure, and a controller which changes over said change-over valve in accordance with the output of said oxygen detector, said air control valve having an inlet port for receiving air from said source of compressed air, an outlet port for supplying a part of the air received to the exhaust system, a relief port for relieving the rest of the air received, a first passage which connects said inlet port and said outlet port, a second passage which connects said inlet port and said relief port, a first valve element which controls said first passage, a second valve element which controls said second passage, first, second, and third diaphragm chambers, said first and second diaphragm chambers being reciprocally supplied with either said actuating fluid pressure or atmospheric pressure by way of said change-over valve, a passage means including a throttling means and connecting said third diaphragm and one of said first and second diaphragm chambers, at least one first diaphragm which defines said first and second diaphragm chambers and is connected with said first valve element, a second diaphragm which defines said third diaphragm chamber and is connected with said second valve element, wherein said first diaphragm is adapted so as to shift said first valve element in the direction to increase the opening of said first passage when the fluid pressure in said first diaphragm chamber is lower than the fluid pressure in said second diaphragm chamber, and said second diaphragm responds to the fluid pressure in said third diaphragm chamber which varies in accordance with the duty ratio of changing over of said change-over valve and is adapted so as to shift said second valve element in the direction to decrease the opening of said second passage when the duty ratio of the mode of changing-over for supplying lower fliud pressure to said first diaphragm chamber and higher fluid pressure to said second diaphragm chamber increases.

4,211,075

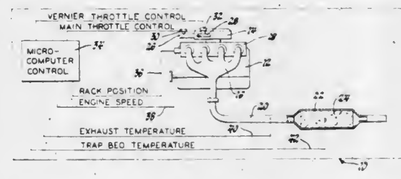
DIESEL ENGINE EXHAUST PARTICULATE FILTER WITH INTAKE THROTTLING INCINERATION CONTROL

Otto A. Ludecke, and Theodore L. Rosebrock, both of Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1978, Ser. No. 952,710

Int. Cl.² F01N *3/10*

U.S. Cl. 60—285 **6 Claims**



1. A diesel engine exhaust filter and particulate incineration system in combination with a diesel engine having a normally unthrottled air induction system for admitting combustion air to the engine and an exhaust system for carrying off spent combustion products exhausted from the engine, said filter and incineration system comprising:

a combustion resistant filter disposed in the exhaust system and operative to collect and retain portions of the largely carbonaceous particulate matter contained in the engine exhaust products, said filter being capable of withstanding without substantial damage internal temperatures sufficient to burn the collected particulate matter,

a throttle in the induction system and operable to restrict air flow into the engine to reduce the admittance of excess combustion air and thereby increase engine exhaust gas temperature, and

means to actuate said throttle periodically during engine operation to an air flow restricting burn mode capable of raising the particulates in said filter to their combustion temperature under certain engine operating conditions and to maintain said throttle mode for an interval adequate to burn retained particulates in the filter.

4,211,076

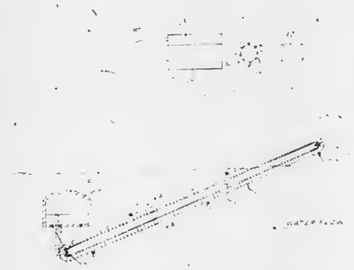
ENERGY CONVERTION ENGINE

Magnar J. Grande, P.O. Box 491, Metairie, La. 70004

Filed Jun. 19, 1978, Ser. No. 917,099

Int. Cl.² F03B *13/12;* **E01H** *5/02*

U.S. Cl. 60—398 **5 Claims**

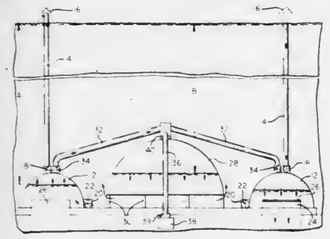


1. Fuelless means of obtaining energy comprising:

(a) Cellular conveyor means for carrying air at atmospheric pressure down to great water depths and converting it to stored energy in the for: of compressed air;

(b) Open bottom bell type container means for capturing the compressed air; and
(c) Means for converting the stored energy to practical use by driving a turbine wheel through the use of a pressure container and a nozzle arrangement.

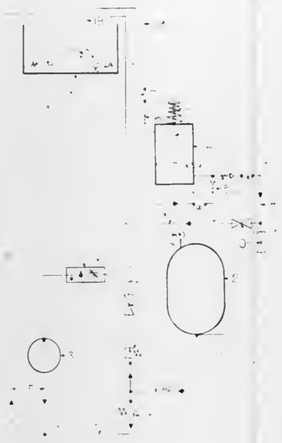
4,211,077
HYBRID HYDROSTATIC-PNEUMATIC POWER GENERATION SYSTEM
Joseph C. Cassidy, Springfield, Oreg., assignor to Energy Kinematics, Inc., Eugene, Oreg.
Continuation-in-part of Ser. No. 920,456, Jun. 29, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,034
Int. Cl.² F15B *11/06*
U.S. Cl. 60—398 **13 Claims**



1. The method of utilizing the kinetic energy associated with the hydraulic head created by a dam having fluid stored behind its upstream side and open on its downstream side, comprising:
(a) providing a transfer tank proximate the base of said dam, having air inlet means passing out of said fluid;
(b) emptying the fluid from said transfer tank on the downstream side of said dam while simultaneously filling said transfer tank with air through said air inlet means;
(c) refilling said transfer tank with fluid from the upstream side of the dam, through a water inlet in said transfer tank while isolating said air inlet means, thereby pressurizing the air located in said transfer tank;
(d) storing said pressurized air in a storage tank which is interconnected to said transfer tank; and
(e) withdrawing said pressurized air from said storage tank to perform work.

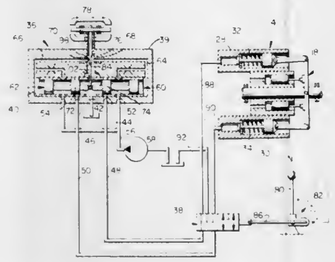
4,211,078
DYNAMIC POWER SOURCE
Robert F. Bass, 428 A St., Myrtle Point, Oreg. 97458
Filed Feb. 22, 1979, Ser. No. 14,238
Int. Cl.² F15B *1/02, 15/18*
U.S. Cl. 60—413 **3 Claims**

1. A dynamic power source comprising a cylinder, a piston movable in said cylinder, an hydraulic accumulator, a cylinder discharge conduit connecting said cylinder with said accumulator to convey hydraulic fluid displaced by said piston into said accumulator, a check valve in said conduit to prevent backflow into said cylinder, said accumulator having a compressed gas space in its upper portion to maintain pressure on said hydraulic fluid in the accumulator, an hydraulic fluid supply reservoir, a cylinder supply conduit from said reservoir to said cylinder discharge conduit, a check valve in said supply conduit to prevent backflow therein, an accumulator bypass conduit from said cylinder discharge conduit to said reservoir, valve means in said bypass conduit and cylinder discharge conduit to direct hydraulic fluid from said cylinder either to said accumulator or to said reservoir, an hydraulic motor, a motor supply conduit from said accumulator to said motor, an adjustable valve in said motor supply conduit to control the flow of hydraulic fluid to said motor, a low pressure relief valve in said motor supply conduit, a motor discharge conduit from said motor to said reservoir, a motor bypass conduit from



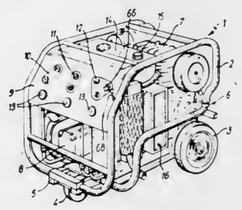
said motor supply conduit to said motor discharge conduit, and a high pressure relief valve in said motor bypass conduit.

4,211,079
POSITIVE NEUTRAL CONTROL FOR HYDROSTATIC TRANSMISSION
Arvid H. Saele, Dubuque, and Donald O. Johannsen, Sherrill, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Apr. 27, 1979, Ser. No. 33,769
Int. Cl.² F16H *39/46*
U.S. Cl. 60—433 **4 Claims**



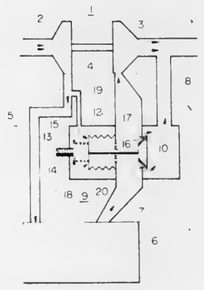
1. In combination with a hydrostatic transmission and control therefor including a reversible, variable displacement pump having an angularly adjustable swashplate, servo-actuator means coupled to the swashplate, a pilot-operated displacement control valve coupled to the servo-actuator means by forward and reverse control fluid lines, biasing means urging the swashplate to a centered, zero-displacement effecting position, said actuator means being responsive to forward and reverse control fluid pressure for respectively effecting angular movement of the swashplate in opposite directions from its centered position, a command signal responsive means forming a part of the displacement control valve and being responsive to command signals for routing fluid to one or the other of the forward and reverse control fluid lines, and a control lever mounted for movement to opposite sides of a neutral position for respectively effecting transmission of common signal to the command signal responsive means, a positive neutral control for ensuring the swashplate will be in its neutral position whenever the control lever is in its neutral position, comprising: a neutral control valve fluidly connected to the forward and reverse control fluid lines and to a sump; said valve including a valve element operable between a neutral position connecting the forward and reverse fluid lines to the sump and a working position blocking the forward and reverse fluid lines from each other and from the sump; and connection means connecting the control lever to the valve element for retaining the latter in its neutral position only when the control lever is in its neutral position.

4,211,080
HYDRAULIC POWER PACKS
Gordon D. White, Tewkesbury, England, assignor to Bredon Hydraulics Limited, Tewkesbury, England
Filed Nov. 27, 1978, Ser. No. 963,766
Claims priority, application United Kingdom, Nov. 30, 1977, 49792/77
Int. Cl.² F15B *15/18*
U.S. Cl. 60—458 **4 Claims**



1. A hydraulic power pack comprising a prime mover, at least one hydraulic pump, a reservoir and associated valving and hydraulic circuitry and in which each of the components thereof is mounted on one of two parts of a frame which parts are hinged together at one side thereby enabling the frame to be opened to allow access to said components for maintenance.

4,211,081
EXHAUST BYPASSING SYSTEM FOR A TURBOCHARGER
Koichiro Yamada, Ibaraki, Japan, assignor to Hitachi, Ltd., Japan
Filed Nov. 14, 1978, Ser. No. 960,565
Claims priority, application Japan, Nov. 21, 1977, 52/140479
Int. Cl.² F02B *37/00*
U.S. Cl. 60—602 **7 Claims**



1. An exhaust bypassing system for a turbocharger, the turbocharger having a compressor which is driven through a shaft by a turbine, including:
an engine which is arranged between an outlet of the compressor and an inlet of the turbine,
an exhaust passage which is disposed between an exhaust port of the engine and the inlet of the turbine,
an exhaust bypass passage which is disposed between the exhaust passage and an outlet of the turbine, and
a valve assembly which opens and closes the exhaust bypass passage,
the valve assembly being composed of a diaphragm which forms a first pressure chamber for introducing a pressure of the compressor outlet thereinto, a rod which is mounted on one end of the diaphragm and which extends across the exhaust passage, and a valve body which is mounted on a fore end of the rod and which opens and closes an opening provided in the exhaust bypass passage, characterized in that said valve assembly is formed with a second pressure chamber which is partitioned by said diaphragm and located on a side opposite to said first pressure chamber and into which an exhaust pressure of said engine is introduced.

4,211,082
INTERNAL COMBUSTION ENGINE WITH FREE FLOATING AUXILIARY PISTON
Robert D. Bristol, P.O. Box 377, Beulah, Mich. 49617
Filed Oct. 11, 1978, Ser. No. 950,368
Int. Cl.² F02B *13/22*; F04C *1/00*
U.S. Cl. 60—605 **15 Claims**



1. An internal combustion engine comprising:
a cylinder block defining a power cylinder;
a power piston reciprocating within said power cylinder and means defining a combustion chamber with said power cylinder and power piston;
an output crank connected to said power piston by a connecting rod;
an auxiliary cylinder having a first and a second end;
a free floating double acting auxiliary piston disposed within said auxiliary cylinder for reciprocation therein;
means defining an intake passage connecting said first end of said auxiliary cylinder to a source of air;
means defining a transfer passage for connecting said first end to said combustion chamber;
means defining an exhaust transfer passage for connecting said combustion chamber with said second end of said auxiliary cylinder;
means defining an atmospheric exhaust passage for connecting said exhaust transfer passage to atmosphere;
a return cylinder coaxially aligned with said auxiliary cylinder and opening into said auxiliary cylinder;
a return piston coaxially aligned with and connected to said auxiliary piston, said return pistion extending from said auxiliary piston into said return cylinder;
a cushioning cylinder opening into said auxiliary cylinder at the second end thereof and being coaxially aligned with said auxiliary cylinder;
a cushioning piston connected to and coaxially aligned with said auxiliary piston, said cushioning piston extending

toward said second end and entering said cushioning cylinder during reciprocation of said auxiliary piston;

a gas transfer passage connecting said return cylinder with said exhaust transfer passage;

check valve means within said gas transfer passage for permitting flow only from said exhaust transfer passage to said return cylinder through said gas transfer passage; and

valving means disposed within said intake passage, said exhaust transfer passage and said atmospheric exhaust passage for controlling the flow of gases through said passages so that said auxiliary piston intakes, compresses and transfers a gas to said combustion chamber and exhaust from said combustion chamber passes to said auxiliary cylinder to move said auxiliary piston from said second end to said first end and for opening said exhaust transfer passage to said atmospheric exhaust passage when said auxiliary piston moves from said first end to said second end.

4,211,083

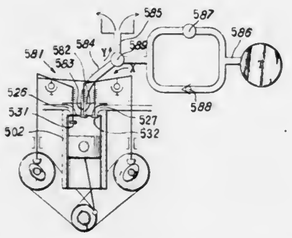
METHOD FOR DRIVING A VEHICLE DRIVEN BY AN INTERNAL COMBUSTION ENGINE

Takahiro Ueno, 5-11, 4-Bancho, Wakayama City, Japan

Continuation-in-part of Ser. No. 369,119, Jun. 11, 1973, which is a continuation-in-part of Ser. No. 182,613, Sep. 22, 1971, which is a continuation-in-part of Ser. No. 873,881, Nov. 4, 1969. This application Feb. 17, 1976, Ser. No. 658,601

Int. Cl.[2] F01B *29/04*; F02N *9/04*

U.S. Cl. 60—626 **9 Claims**



1. A method for driving a vehicle driven by an internal combustion engine having a plurality of compression chambers divided into a first set and a second set, each of said sets being able to be separately operated and to be convertible in operation so as to take a two-step compression action, comprising starting the engine by making at least said first set take an engine action, making the vehicle run with said first and second sets taking an engine action, putting said second set into an unloaded state during the vehicle running and controlling the engine by making at least said second set take a two-step compression action.

4,211,084

CONVERSION OF ENERGY BY MEANS OF TETHERED WHIRLWINDS

Volney Wallace, Terra, Box 1 West, Dugway, Utah 84022

Filed Aug. 25, 1978, Ser. No. 936,793

Int. Cl.[2] F03G *7/04*

U.S. Cl. 60—641 **18 Claims**

1. A process for transforming heat contained in superadiabatic air at or near ground level into useful wind energy in the form of a tethered artificial whirlwind which comprises

(a) initiating a tethered whirlwind column,

(b) powering said whirlwind column by causing said superadiabatic air to flow into the base of the whirlwind column, and

(c) utilizing the wind energy contained in said whirlwind column.

4,211,085

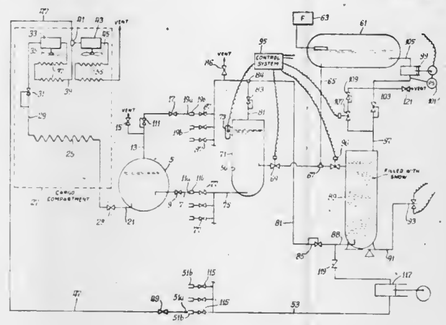
SYSTEMS FOR SUPPLYING TANKS WITH CRYOGEN

Lewis Tyree, Jr., 145 Briarwood Ave., North, Oak Brook, Ill. 60521

Continuation-in-part of Ser. No. 737,440, Nov. 1, 1976, Pat. No. 4,127,008, and a continuation-in-part of Ser. No. 737,439, Nov. 1, 1976, Pat. No. 4,100,759. This application Jul. 14, 1978, Ser. No. 924,685

Int. Cl.[2] F17C *7/02*

U.S. Cl. 62—48 **10 Claims**



1. A method for supplying tanks with liquid CO_2, which method comprises

creating a low-temperature coolant reservoir of solid carbon dioxide in a chamber at the triple point pressure or below,

providing a source of liquid CO_2 at a higher pressure than said triple point pressure,

supplying said higher pressure liquid CO_2 to a tank,

removing CO_2 vapor from the tank as said higher pressure liquid CO_2 is being supplied and

transferring said removed CO_2 vapor from the tank to said chamber and condensing said vapor by melting said solid CO_2 in said reservoir.

4,211,086

CRYOGENIC BREATHING SYSTEM

Rex D. Leonard, Indianapolis, Ind., and Jan Hulstyn, Redondo Beach, Calif., assignors to Beatrice Foods Company, Chicago, Ill.

Continuation of Ser. No. 840,916, Oct. 11, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,450

Int. Cl.[2] F17C *7/02*

U.S. Cl. 62—50 **19 Claims**

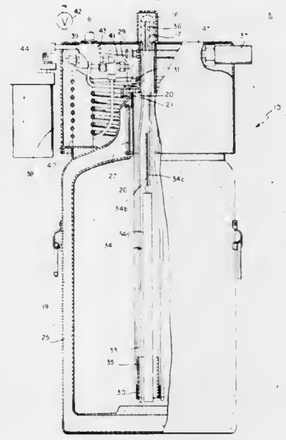
1. A cryogenic breathing system comprising a first storage container including a first outer casing and a first inner container, the first casing and first container each having a small opening, a first tubular connection between the openings of the first casing and first container, and means between the first casing and first container inhibiting heat transfer therebetween, said storage container providing an evacuable space between its outer casing and its inner container,

a first gas-tight closure for said openings fastened to the first outer casing and carrying within the first inner container a first withdrawal tube, the first gas-tight closure carrying outside the first outer casing a first connecting means in communication with the first withdrawal tube and including a first complementary surface, and first means to control flow through the first withdrawal tube and first connecting means, and

a second portable container including a second outer casing and a second inner container, the second outer casing and second inner container having a small opening, a second tubular connection between the openings of the second outer casing and second inner container, and further means between the second casing and second inner container inhibiting heat transfer therebetween, said portable

container providing an evacuable space between the second outer casing and the second inner container,

a second gas-tight closure for said second openings carrying within the second inner container a liquid level indicating means, a withdrawal tube, and means encircling the liquid level indicating means, the second gas-tight closure carrying outside the second outer casing a transparent sight gauge into which the liquid level indicating means extends, a second connecting means including a normally closed check valve in communication with the second inner container and including a second complementary surface adapted to engage the first connecting means of



the first storage container, a breathing coil in communication with the second withdrawal tube and a second means to control flow through the second withdrawal tube and breathing coil,

said portable container being connectable to and fillable from said storage container through said first and second connecting means by rotating the portable container and engaging the first and second complementary surfaces of the two connecting means and allowing the portable container to return to its vertical position, to open the check valve of the second connecting means, and to lock the second portable container to the first storage container for filling.

4,211,087

DEVICE FOR MAINTAINING A VACUUM IN A COMPARTMENT OF A ROTATING MEMBER

Pierre H. Burnier, Longjumeau, France, assignor to BBC Brown Boveri & Cie., Baden, Switzerland

Filed Mar. 1, 1978, Ser. No. 882,093

Claims priority, application France, Mar. 3, 1977, 77 06188

Int. Cl.[2] F17C *7/02*

U.S. Cl. 62—55.5 **11 Claims**

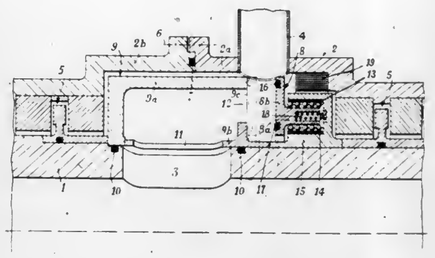
1. A device for maintaining a vacuum in a compartment of a rotating cryostat with a fixed source of vacuum, comprising:

a rotating member of the rotating cryostat having a compartment and an orifice in communication with the compartment;

a fixed member, concentric with the rotating member and connected to the fixed source of vacuum;

valve means for releasably providing communication between the orifice and the fixed source of vacuum through the fixed member; and

collector means for providing an axially extending aperture in communication with the orifice of the rotating member, the valve means releasably closing the aperture of the collector means to prevent communication between the



orifice of the rotating member and the fixed source of vacuum.

4,211,088

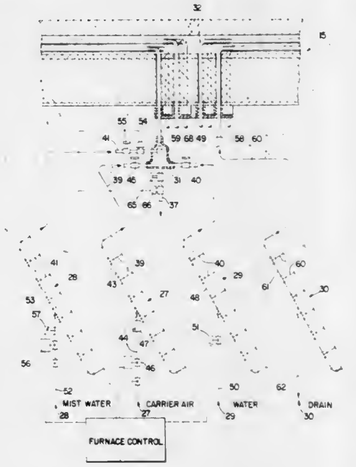
INTERNAL COOLING OF HEAT EXCHANGER TUBES

Richard R. Mayers, Delta; Steven R. Huebner, and Dennis A. Chojnacki, both of Toledo, all of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 13, 1978, Ser. No. 969,116

Int. Cl.[2] F17C *7/02*

U.S. Cl. 62—64 **6 Claims**



1. A method of injection of cooling media into a heat exchanger tube which comprises:

injecting a controlled flow rate of gas into the heat exchanger tube;

spraying a controlled flow rate of a fluid mist into each heat exchanger tube while maintaining a controlled gas flow rate into the heat exchanger tube;

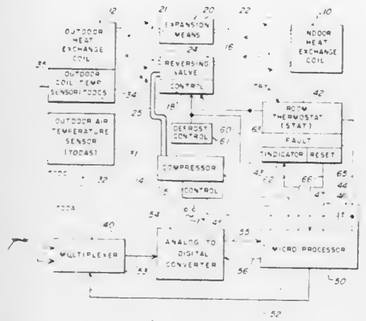
injecting a controlled flow rate of liquid into each heat exchanger tube.

4,211,089

HEAT PUMP WRONG OPERATIONAL MODE DETECTOR AND CONTROL SYSTEM

Dale A. Mueller, St. Paul, and Stephen L. Serber, New Hope, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 27, 1978, Ser. No. 964,221
Int. Cl.² F25B *13/00, 41/00, 49/00*
U.S. Cl. 62—209 **6 Claims**



1. A wrong operational mode detector and control system (hereinafter "control system") for a reverse cycle refrigeration system (hereinafter "system") for heating and cooling a building wherein said system comprises refrigerant compression means, an indoor coil, an outdoor coil, and refrigerant conduit means connecting said compression means and said coils, said control system comprising:

outdoor air temperature sensing means (hereinafter "TODAS") having an output indicative of outdoor air temperature (hereinafter "TODA");

outdoor coil temperature sensing means (hereinafter "TODCS") having an output indicative of the temperature of said outdoor coil (hereinafter "TODC");

building temperature sensing means (hereinafter "STAT") having outputs indicative of demands for heating and cooling of said building; and

means connecting said STAT outputs to said refrigerant compression means so as to cause operation thereof upon said demands for heating and cooling; and

controlling means having operative connections to said TODAS, TODC, and STAT so as to receive the outputs thereof and to said refrigerant compression means so as to selectively control the operation of said refrigerant compression means, said controller means being effective to inhibit the operation of said refrigerant compression means as controlled by said STAT upon the following conditions being satisfied:

(1) STAT demanding heating, and

(2) TODC is greater than TODA by a predetermined amount.

4,211,090

HOUSEHOLD REFRIGERATOR WITH AIR CIRCULATION AND COOLING ARRANGEMENT

Robert B. Gelbard, and James R. Griffin, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 6, 1978, Ser. No. 966,911
Int. Cl.² F25B *5/00;* **F25D** *21/06, 11/02*
U.S. Cl. 62—283 **5 Claims**

1. In a refrigerator cabinet including a first food storage compartment to be maintained at a temperature above freezing and a second food storage compartment to be maintained at a temperature below freezing, an air circulating and cooling arrangement comprising:

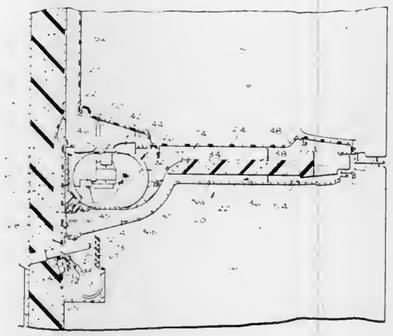
(a) a partition dividing said compartments including a first wall portion defining the upper wall of said first compartment, and a second wall portion defining the lower wall of said second compartment;

(b) a divider element arranged intermediate said first and second wall portions;

(c) a chamber in the rear portion of said partition intermediate said second wall and said divider;

(d) an evaporator in said chamber mounted in heat exchange relationship with at least a portion of said divider element;

(e) means defining a first passage arranged between said second wall portion and divider;



(f) means defining a second passage arranged between said first wall portion and said divider;

(g) means for circulating air over said evaporator and through said compartments; and

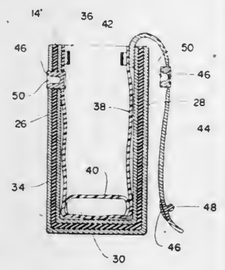
(h) means for directing air from said first compartment to said second passage and thereafter over said evaporator in said chamber, whereby moisture is removed from the air recirculating from said first compartment air as it scrubs against said colder divider element portion in heat exchange relationship with said evaporator.

4,211,091

INSULATED LUNCH BAG

June H. Campbell, P.O. Box 4162, Foster City, Calif. 94404

Filed Feb. 23, 1979, Ser. No. 14,488
Int. Cl.² F25D *3/08*
U.S. Cl. 62—372 **7 Claims**



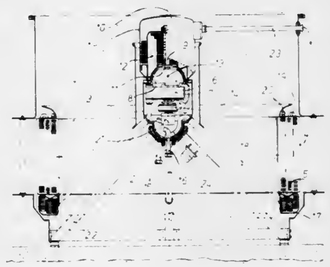
1. A durable, flexible insulated lunch bag comprising a top, a front wall, a rear wall, a bottom wall, a pair of side walls, each of said walls comprising an outer wall and an inner wall, a layer of an insulating material disposed substantially evenly between the outer and inner walls, said inner walls including a liner disposed in the interior of said bag, means for opening and closing the bag adjacent the top thereof, and a carrying means affixed to the upper portion of said bag, wherein said bag is of the open top type construction and said means for opening and closing the bag comprises a pliable adhesive tape fastener secured to said bag around the periphery thereof to at least one side and rear wall and being detachably adherent to the fastener disposed on the opposite wall of said bag, and wherein the overall length of said bag is reducible to about one third when the empty bag is folded on itself.

4,211,092

SPACE HEATING INSTALLATION

Ludwig Ludin, Kesselackerweg, CH 5611 Anglikon-Wohlen, Switzerland; Nikolaus Laing, Hofener Weg 37, D 7148 Remseck 2; Oliver Laing, Hofener Weg 37, D 7148 Remseck 2, and Karsten Laing, Hofener Weg 37, D 7148 Remseck 2, all of Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,289
Claims priority, application Austria, Sep. 22, 1977, 6810/77; Sep. 22, 1977, 6811/77
Int. Cl.² F25B *3/00*
U.S. Cl. 62—499 **19 Claims**



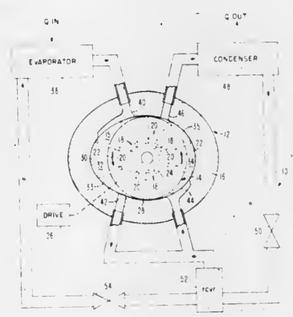
1. A heat pump comprising a compressor having a rotatable casing and a rotatable impeller; a liquid heat exchanger and an air heat exchanger combined with said rotatable casing to form a rotatable unit; a bearing rotatably mounting said rotatable unit with the center of gravity of said unit being located above said bearing; a magnetically active rotor connected to said impeller; a stator spaced from and providing a drive torque to said rotor whereby when said rotor is rotated, said unit will rotate by the reaction moment of said impeller; and a magnetically pervious separation wall situated between said stator and said rotor.

4,211,093

VAPOR CYCLE COOLING SYSTEM

Lawrence L. Midolo, 1475 Black Oak Dr., Centerville, Ohio 45459

Filed Apr. 4, 1979, Ser. No. 26,865
Int. Cl.² F25B *31/00*
U.S. Cl. 62—505 **3 Claims**



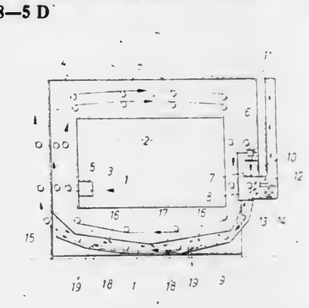
1. A rotary vane cooling system including a two phase coolant, comprising: a vaporizable liquid working medium within said cooling system; an evaporator having an inlet and an outlet; a condenser having an inlet and an outlet; a two stage rotary vane compressor, including means for connecting the outlet of a first compressor stage to the inlet of a second compressor stage; said two stage rotary vane compressor being connected between the outlet of said evaporator and the inlet at said condenser; an expansion device connected between the outlet of said condenser and the inlet of said evaporator; said two stage compressor including a housing having a chamber therein, a rotor on a rotatable shaft; said rotor being positioned within said chamber; said rotor having a plurality of slidable vanes which form a plurality of cells, within said chamber, which change in volume as the rotor rotates; said plurality of cells including a plurality of cells on one side of said rotor which corresponds to said first compressor stage and a plurality of cells on the other side of said rotor which corresponds to said second compressor stage; said cells corresponding to said first compressor stage having a greater maximum volume than the cells corresponding to said second compressor stage; and means for supplying at least a portion of the vapor resulting from the expansion in said expansion device to the inlet of the second compressor stage for providing cooling in the inlet of said second compressor stage.

4,211,094

STEAMING PLANT FOR THE TREATMENT OF CONTINUOUS WEBS OF TEXTILE MATERIAL CONTAINING THERMOPLASTIC SYNTHETIC FIBERS

Klaus Meisen, Krefeld, Fed. Rep. of Germany, assignor to Kleinewefers Gesellschaft mit beschränkter Haftung, Krefeld, Fed. Rep. of Germany

Continuation of Ser. No. 660,358, Feb. 23, 1976, abandoned. This application Oct. 6, 1977, Ser. No. 840,030
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1975, 7505591[U]
Int. Cl.² D06B *3/10, 23/14*
U.S. Cl. 68—5 D **6 Claims**



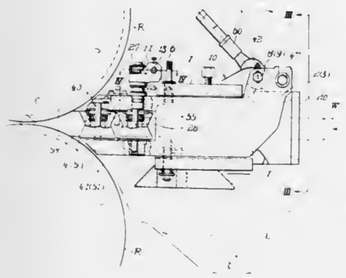
1. A steaming plant for the treatment of a continuous web of pile textile material containing thermoplastic synthetic fibers, especially polyacrylicnitrile fibers, which includes in combination: a steaming chamber adapted to be connected to a supply of steam, a cooling device arranged to receive outside air as cooling medium, supporting and conveying means arranged to said steaming chamber and said cooling device for supporting and conveying the web of textile material to be treated through said steaming chamber and said cooling device, said cooling device being located past said steaming chamber when viewed in the direction of the movement of a web of textile material and having air circulated in the opposite direction to movement of said web, an intermediate chamber between said cooling device and steam chamber through which said web passes and open to flow of air from said cooling device, exhaust means including a flue stack with a passage thereafter from said intermediate chamber and a control flap for fine adjustment in said passage to regulate air flow from said intermediate chamber to said stack for controlling flow of air from said cooling device, and a second exhaust passage in strongly different suction relationship and in immediate vicinity of said control flap from said intermediate chamber and a blower in said second passage.

4,211,095

STOCK RESTRAINING EFFECT ADJUSTING MECHANISM OF A STOCK GUIDE FOR USE WITH A ROLLING MILL

Hiroaki Shimada, Sapporo, Japan, assignor to Kotobuki Sangyo Kabushiki Kaisha, Sapporo, Japan

Filed Jan. 8, 1979, Ser. No. 1,887
Int. Cl.² B21B *39/16*
U.S. Cl. 72—250 **3 Claims**



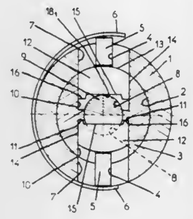
1. In a roller type stock guide for a rolling mill which includes a guide box (**1**), a pair of roller holders (**2, 3**) pivotally mounted on the guide box by means of respective vertically extending fulcrum pins (**6, 7**), a pair of guide rollers (**4, 5**) rotatably mounted on the respective roller holders at the forward ends thereof and movable toward and away from each other with pivotal movement of the roller holders, a pair of pivot studs (**8, 9**) mounted on the respective roller holders adjacent to the rear ends of the latter in aligned opposite relation to each other, and spring means (**49**) arranged between the two roller holders to serve the purpose of normally urging the pivot studs toward each other, a mechanism for adjusting the stock restraining effect of the guide rollers which is characterized in that it comprises: an internally screw-threaded tubular member which is held against axial movement between the pair of right and left support brackets (**10, 10**) formed on said guide box in relation to said pivot studs (**8, 9**) coaxially therewith and including a first tubular section (**45**) internally formed with lefthand screw-threads, a second tubular section (**46**) internally formed with righthand screw threads, and a ratchet wheel (**44**) formed between said first and second tubular sections (**45, 46**) and being integral therewith; a pair of lefthand and righthand screw-threaded shafts (**15, 16**), each of them being supported against rotation but being slidable in relation to said pair of support brackets, threadably fitted in said first and second internally screw-threaded tubular sections (**45, 46**) and held in abutting engagement with the abutting points (P_1, P_2) of the respective pivot studs (**8, 9**) a pair of ratchet pawls (**17, 18**) pivotally movable into and out of meshing engagement with said ratchet wheel (**44**) in an alternate fashion, a manually operable control cam (**19**) for actuating said ratchet pawls alternately into and out of meshing engagement with said ratchet wheel, and a notching lever handle (**60**), extending in tolerable length above the top of said guide box along a plane including the longitudinal axis of said stock guide, and being manually operable to intermittently rotate said ratchet wheel (**44**) through the intermediary of either one of said ratchet pawls.

4,211,096

SECURITY LOCK WITH PISTONS AND CYLINDRICAL KEY

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., France

Filed Jan. 30, 1978, Ser. No. 873,621
Claims priority, application France, Jan. 31, 1977, 77 02553
Int. Cl.² E05B *29/06*
U.S. Cl. 70—364 R **3 Claims**



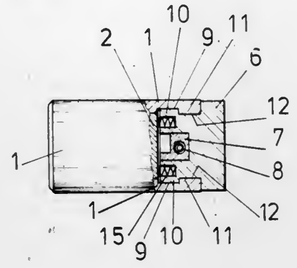
1. A security lock operable by a cylindrical key, comprising:
(a) a body provided with an axial bore,
(b) a cylinder of cylindrical form rotatable within said axial bore and having an axial cylindrical key passage therein,
(c) piston means sliding in radial bore formed in said body,
(d) springs for urging said pistons towards the said axial bore and
(e) pistons means radially sliding within said cylinder and each co-operating, in one angular position of the cylinder in relation to the body, with the extremity of a piston means of the body, said pistons of the cylinder being constituted by flat pieces the peripheral extremity of which is shaped in accordance with a portion of the generating circumference of the said cylinder, the lateral edges of the said piece being rectilinear and parallel and its internal edge comprising a central line tangentially contacting the cylindrical key when inserted and the notches which the latter comprises, the said central line being surrounded by two abutment lines, the said flat pieces being slidable in radial slots of the cylinder of width slightly greater than that of the said flat piece, the said radial slots being of such depth that they cease in the vicinity of a diametrical plane of the cylinder, the cylinder further comprising radial cylindrical holes superimposed upon the said slots in their peripheral zone and having a diameter slightly greater than that of the pistons of the body and the body having radial slots superimposed upon the said radial bores, the internal extremities of the pistons of the cylinder being capable of penetrating line axial cylindrical passage to co-operate with notches of coded depth of a cylindrical key coupled in rotation with the said cylinder, whereupon on entry of the correct key the external extremities of the pistons of the cylinder lie flush with the external surface of the cylinder in such manner as to permit rotation of the cylinder in relation to the body, and upon entry of an incorrect key where the corresponding notch is insufficiently deep the external extremities of the piston of the cylinder enter said radial slots in said body to effect locking of the cylinder relative to the body, and upon entry of an incorrect key where the corresponding notch is too deep the internal extremities of the pistons in the body enter said cylindrical holes in said cylinder to effect locking.

4,211,097

CYLINDER LOCK ASSEMBLY

Jaakko Martikainen, Joensuu, Finland, and Kurt Pousar, Glenview, Ill., assignors to Oy Wartsila AB, Helsinki, Finland

Filed Dec. 15, 1978, Ser. No. 969,838
Int. Cl.² E05B *9/04*
U.S. Cl. 70—373 **6 Claims**



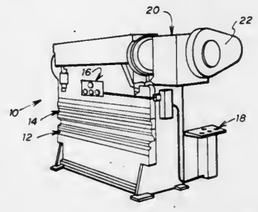
1. A cylinder lock assembly comprising an outer cylinder having a front end with a key hole and a rear end with an end member, said outer cylinder enclosing a rotatable inner cylinder, said end member and said outer cylinder being provided with mutually corresponding groove arrangements forming an axially fully interlocking attachment means, said end member being insertable in radial direction into said outer cylinder for attaching it thereto, said assembly including an attachment locking member engaging said outer cylinder and said end member for locking said end member to said outer cylinder in a radial direction.

4,211,098

SOLID STATE CONTROL SYSTEM FOR MECHANICAL PRESS

Kurt K. Luenser, Desoto, Tex., assignor to Verson Allsteel Press Company, Dallas, Tex.

Filed Sep. 5, 1978, Ser. No. 939,653
Int. Cl.² B21J *9/20*
U.S. Cl. 72—21 **42 Claims**



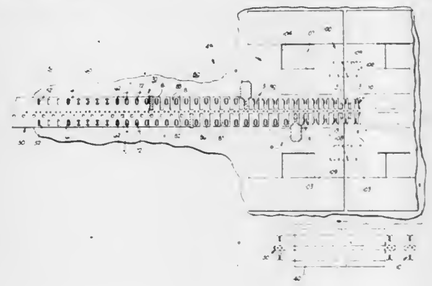
1. A control system for a machine having a drive system, a mechanism selectively driven by the drive system, and selectively engageable clutch for mechanically connecting the drive system to the mechanism, said control systems comprising:
input means for producing a plurality of command signals;
a first clutch control system responsive to the command signals for selectively producing a first clutch engage signal;
a second clutch control system responsive to the command signals for selectively producing a second clutch engage signal; and
output means responsive to the simultaneous presence of the first and second clutch engage signals for engaging the clutch,
wherein said output means comprises:
first gate means for producing first gate signals in response to the first clutch engage signal;
second gate means for producing second gate signals in response to the second clutch engage signal;
gate check means responsive to the first and second gate signals for producing a false signal and response to the presence of a predetermined combination of the first and second gate signals;
said first and second clutch control systems being disabled by the fault signal to prevent the production of the first and second clutch engage signal; and
output means responsive to the first and second gate signals for engaging the clutch.

4,211,099

APPARATUS FOR MAKING SLOTTED BEAM CONTACT ELEMENTS

Charles McGonigal, Grayson, and James E. Voytko, Atlanta, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 822,969, Aug. 8, 1977, Pat. No. 4,136,628, which is a continuation-in-part of Ser. No. 710,358, Jul. 30, 1976, abandoned. This application Nov. 30, 1978, Ser. No. 965,538
Int. Cl.² B21D *28/10*
U.S. Cl. 72—47 **12 Claims**



1. An apparatus for making a slotted beam content element, which comprises:
means for forming an opening in a metallic strip;
means for applying forces to at least one portion of the strip adjacent the opening to reshape said portion;
means for forming a bifurcated beam in the strip with at least portions of the furcations of the beam encompassing the reshaped opening; and
means for moving the furcations toward each other to cause the portions encompassing the opening to define a slot of predetermined width characteristics suitable for receiving a conductor and for establishing electrical contact between the furcations and the conductor.

4,211,100

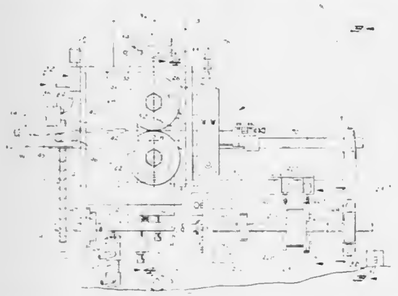
WIRE SPRING FORMING MACHINE

Willard D. Sykes, 5613 152nd St. North, Hugo, Minn. 55038

Filed Nov. 24, 1978, Ser. No. 963,192
Int. Cl.² B21F *3/02*
U.S. Cl. 72—131 **9 Claims**

1. A wire spring forming machine, having in combination
a support structure,
driving means carried by said support structure,
a wire guide member carried by said support structure,
endless rotary wire feeding means running continuously in a wire feeding direction being normally in a non-wire-feeding position,
said first mentioned means driving said wire feeding means,
an electronic control device predetermining the length of wire fed for each spring formed,
a hydraulic valve in operative relationship with said wire feeding means and in circuit with a hydraulic pump,
an control member providing communication between said pump and said valve,
said control device being in circuit with said electric control member normally causing said valve to move said wire feeding means into wire feeding position,

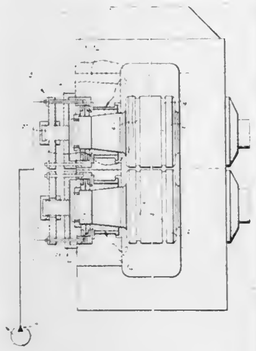
a wire cutting member in operative relationship with said wire guide member,
a hydraulic valve in circuit with said pump and being in operative relationship with said wire cutting member,
said electric control member providing communication between said valve and said hydraulic pump,
said control device being in circuit with said electric control member to cause said first mentioned valve to release said wire feeding means to non-wire-feeding position and to actuate said second mentioned valve to cause said wire cutting member to cut the wire fed through said wire guide as each predetermined length of said wire is fed through said wire guide,
means carried by said structure having a wire forming tool mounted thereon,
a third hydraulic valve in circuit with said hydraulic pump,
said electric control member providing communication between said third hydraulic valve and said pump,



means having a cam hub mounted thereon, and being driven by said driving means,
means carrying a pair of switches in operative relationship with said cam hub,
a cam lobe carried on said hub engaging one of said switches, said one of said switches being in circuit with said control device to re-set the same, said lobe being arranged and constructed to engage said switch as each predetermined length of said wire is cut,
the other of said switches being in circuit with said control member and said third mentioned valve,
a cam lobe carried by said hub engaging said other of said switches to operate said third mentioned valve to engage said means having said wire forming tool mounted therein for engagement of said wire fed through said wire feed guide, and
said last mentioned cam lobe being designed to have said tool engage said wire to provide a particular form of spring.

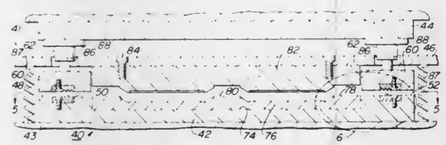
4,211,101
MILL STAND ROLL ASSEMBLY
Nikolai I. Krylov, 1 Novokuzminskaya ulitsa, 25, kv. 26, Moscow; Ilya A. Toder, Oktyabrsky proezd, 339a, kv. 8, Ljubertsy; Leonid I. Danilov, ulitsa Vereschagina, 51, kv. 8, and Gennady I. Pinsky, ulitsa Parkovaya, 38, kv. 37, both of Cherepovets, all of U.S.S.R.
Filed Feb. 5, 1979, Ser. No. 9,523
Int. Cl.[2] B21B *31/18*
U.S. Cl. 72—247 **10 Claims**

1. A mill stand roll assembly comprising: a mill stand roll housing; chocks secured to said housing and each having a hole for supporting a grooved roll; two washers, disposed between spacer rings, are provided in a bearing housing on each of said chocks and are disposed in a parallel and spacial relationship with one another and said washers are on both sides of a hole of said housing; one of said spacer rings being centrally disposed between said two washers and having a plurality of radial holes communicating with said hole in said housing; a thrust, hydrostatic bearing mounted in said housing and placed in each of said chocks; said grooved rolls comprising two and each having a neck, mounted in said hydrostatic bearings, a drive for said grooved rolls; a pair of thrust shoulders on each of said necks of said grooves rolls and having end faces; annular slots or gaps formed on each side of said thrust shoulders and being substantially coaxially with a respective grooved roll; one of said annular slots being between said pair of thrust shoulders and accommodating two said washers; a



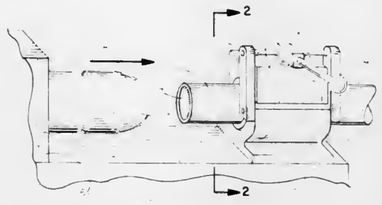
source of liquid having an adjustable flow as a function of the displacement of said grooved rolls; and thrust disks for each of said thrust hydrostatic bearings disposed at the outer end faces of each pair of said shoulders and being substantially in parallel therewith and forming with said thrust shoulders said annular slots or gaps which are in communication with said source of liquid through said holes in said housings, whereby a hydrostatic pressure field of said liquid is developed on a thrust shoulder for balancing an applied axial load on said grooved rolls during use of said assembly.

4,211,102
METHOD AND MEANS FOR PROCESSING METAL SHEETS
Arnold Hurvitz, 327 Rosemary La., Narberth, Pa. 19072
Filed Nov. 3, 1978, Ser. No. 957,656
Int. Cl.[2] B21D *22/00*
U.S. Cl. 72—304 **26 Claims**



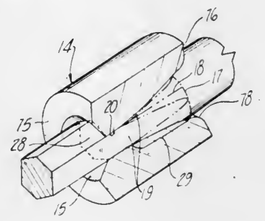
1. A method of processing flat metal sheets which may have apparent or latent defects for providing embossed sheets with flat regions which includes the steps of
applying tensile stress to an intermediate region of a substantially flat sheet of metal by engaging the sheet on opposite sides of said region while maintaining the sheet flat and its ends fixed with respect to each other,
deforming a portion of the intermediate region of said sheet while the remaining undeformed portion of the sheet is maintained flat and the tensile stress is applied, and
removing the tensile stress applied to said sheet to provide a metal sheet with intermediate deformed and undeformed flat portions with the undeformed portion being substantially in the same plane.

4,211,103
DOUBLE TAPER CLAMP
Samuel Grimaldo, Thousand Oaks, Calif., assignor to American Machine & Hydraulics, Inc., Newbury Park, Calif.
Filed Dec. 8, 1978, Ser. No. 967,701
Int. Cl.[3] B21D *41/02*
U.S. Cl. 72—316 **5 Claims**



1. A pipe clamp including, in combination:
(a) fixed means surrounding at least a portion of a pipe to be clamped; and
(b) axially movable means engaging said portion of said pipe in a position sandwiched between said fixed means and said portion of the pipe, the opposing respective exterior and interior surfaces of said movable means and fixed means being sloped relative to the longitudinal axis of said pipe in a first direction along one axial portion and in an opposite direction along a second axial portion, whereby either pulling or pushing of said pipe in an axial direction moves said movable means axially to result in a camming action on said movable means by said opposing surface of said fixed means to urge the pipe engaging portion of said movable means into tighter engagement with said pipe and thus prevent further axial movement of said pipe.

4,211,104
COLD DRAWING DIE FOR DRAWING POLYGONAL SHAPES
Robert E. Barnabo, Bloomfield Hills, and Karl J. Hyslop, Westland, both of Mich., assignors to Barnabo Steel Corporation, Canton, Mich.
Continuation of Ser. No. 866,129, Dec. 30, 1977, abandoned.
This application Mar. 14, 1979, Ser. No. 20,376
Int. Cl.[2] B21C *3/04*
U.S. Cl. 72—467 **7 Claims**



1. A cold drawing die for deforming a solid round bar into a desired polygonal shape wherein a drawing force is applied by pulling the bar through the die and wherein the improvement comprising: a body of high hardness material having opposite faces and adapted to be fixed in a die holder, an axial passage formed in said body between said faces and having an entry zone, and exit zone and a polygonal bearing zone mediate said entry and exit zones; said entry zone being characterized by an initially circular cross-section of such size as to make full circumferential contact with the bar, said entry zone further having at least one semi-elliptical shaping plane, the number of said shaping planes being equal to the number of straight sides in the desired shape, said shaping planes being tangent on one end to said initial circular cross-section and increasingly gradually in width, but angled inwardly from said circular cross-section toward said bearing zone; each said angled shaping plane being configured to provide a gradually decreasing angle of contact with a bar being deformed thereby and taken relative to the axis of said passage, the angularity of said shaping plane lying in the range of about 0° to 12° throughout the effective length thereof; said bearing zone having straight sides contiguous to the ends of said semielliptical shaping planes; said exit zone being angled radially outward from said bearing zone, whereby continuous full circumferential contact is maintained between the die and the stock throughout the drawing process.

4,211,105
METHOD FOR MEASURING THE DAMPING COEFFICIENT OF TORSIONAL-VIBRATION DAMPERS
Imre Z. Szabó; Kornél Nagy, and Csaba Finta, all of Györ, Hungary, assignors to Magyar Vagon-és Gépgyár, Györ, Hungary
Division of Ser. No. 789,095, Apr. 20, 1977, Pat. No. 4,166,377.
This application Nov. 17, 1978, Ser. No. 961,568
Claims priority, application Hungary, Apr. 27, 1976, 2765
Int. Cl.[2] G01M *13/00*
U.S. Cl. 73—11 **4 Claims**

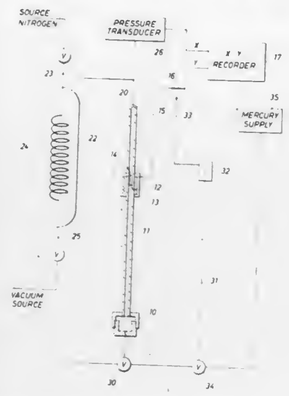


1. A method for quickly checking the damping coefficient of torsional-vibration dampers that are filled with a viscous liquid and are provided with a swing ring, for purposes of quality control of a damper of a given nominal geometry that is being tested, comprising the steps of: determining permissible limit values β'min and β'max of a torsional-vibration damping coefficient, between which values the quality of the damper is acceptable; establishing a characteristic curve of a relation between the damping coefficient and the number of vibrations of the decay from a determined initial amplitude to a second determined amplitude within a freely oscillating torsional-vibration system into which the damper is fitted for the testing, having one degree of freedom, i.e. which system includes a disc that constitutes a mass and a torsional shaft that constitutes a spring with a given stiffness; tuning the system by changing one of the mass of the disc and the spring stiffness of the torsional shaft to achieve a well measurable relation within the range of interest between the damping coefficient and the number of vibrations; producing free oscillation with damping within the system with the damper fitted in so that the free oscillation takes place with the determined initial amplitude; measuring the number of the vibrations in the system upon the characteristic curve and taking the measured number as a basis between permissible limit values n_{min} and n_{max} to verify an acceptable quality of the damper, while an inferior quality is being declared at measured values that lie outside the limit values.

4,211,106
ESTIMATES OF PERMEABILITY FROM CAPILLARY PRESSURE MEASUREMENTS
Benjamin F. Swanson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Sep. 20, 1978, Ser. No. 944,046
Int. Cl.[2] G01M *3/00*
U.S. Cl. 73—38 **10 Claims**

1. A method for determining the permeability of a small rock sample comprising:

obtaining a series of measurements of mercury saturation as a percentage of the bulk volume of the sample versus the mercury capillary pressure applied to the same;
plotting said series of measurements on a log-log scale chart;
determining the brine permeability of the sample using a



nomograph formed by obtaining a large number of log-log plots of mercury capillary pressure versus mercury saturation for various types of rock samples;
plotting the tangent point of a 45-degree line on each plot;
using the coordinates of the tangent point to determine the brine permeability from the emperical formula

$$K_w = 355 \frac{(S_b)}{P_c A} 2.005$$

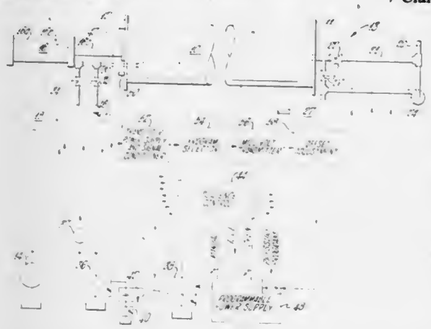
where K_w is the brine permeability and S_b and P_c are the saturation and capillary pressure at the tangent point; and, plotting said 45-degree tangent lines on a nomograph having coordinates of capillary pressure versus saturation on two sides and brine permeability on the two opposite coordinates.

4,211,107

PIPE TESTING MACHINE WITH CLAMPING PRESSURE KEYED TO HYDROSTATIC TEST PRESSURE

Michael R. Sleeter, Millbury, Ohio, and James C. Dehring, Tecumseh, Mich., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 17, 1977, Ser. No. 759,619
Int. Cl.² G01M *3/04*
U.S. Cl. 73—49.6 **7 Claims**



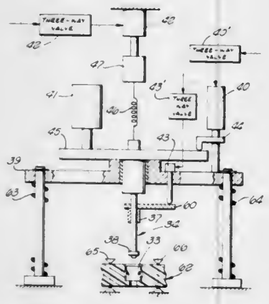
1. A pipe testing machine comprising a pair of spaced clamping plates, means for applying clamping pressure to the clamping plates to seal opposite ends of a test pipe against internal test pressure, means for subjecting the test pipe to internal fluid pressure, means for continuously sensing the magnitude of the internal pressure in the pipe and providing an electrical signal varying in magnitude in accordance with the magnitude of the internal pressure in the pipe, and electrically adjustable modulating valve means for receiving the electrical signal and proportioning the clamping pressure to the sensed internal pressure.

4,211,108

ELECTRICAL CONNECTOR TEST EQUIPMENT

Lamont J. Seitz, Huntington Beach, and Geza Fort, Costa Mesa, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,619
Int. Cl.² G01N *3/10*
U.S. Cl. 73—141 AB **4 Claims**



1. Apparatus for investigating the resistance to separation of electrical connector parts including an insulator havin a bore, and an electrical contact retention clip fixed relative to the insulator inside the bore, said apparatus comprising: releasable means actuable to hold the insulator in a fixed position; means to engage the clip; tension means to pull said engagement means in a direction to urge said clip out of said insulator bore, said tension means including a spring having one end connected with said engagement means; first analog means for producing an electrial output signal as a first predetermined function of the tensile stress on said clip, said spring having its other end connected with said first analog means; utilization means connected from said first analog means; second analog means for producing an electrical output signal which is a function of the tensile strain on said clip; and third analog means connected from said first and second analog means to actuate said utilization means in accordance with a second predetermined function of said signals.

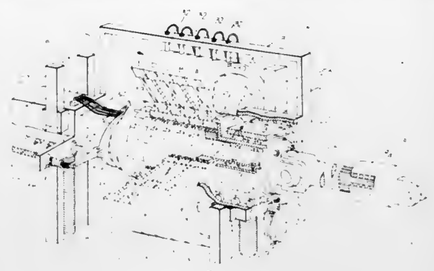
4,211,109

MULTIPLE PLANE ROAD WHEEL FOR USE WITH TIRE MEASURING AND CORRECTING APPARATUS

Theodore Ongaro, Columbus, Ohio, assignor to Ongaro Dynamics, Ltd., Columbus, Ohio

Filed Jan. 18, 1979, Ser. No. 4,462
Int. Cl.² G01M *17/02*
U.S. Cl. 73—146 **9 Claims**

1. A multiple plane road wheel for use in apparatus for correcting rubber tires and the like wherein the periphery of the rotating tire being corrected is in contact with the road wheel throughout the width of the tire tread, said road wheel comprising a series of uniform diameter wheel discs, means mounting said wheel discs in side-by-side relation for independent rotation about a common axis of rotation, sensor means associated with each of said wheel discs, said sensor means being positioned to sense forces generated by the rotating tire



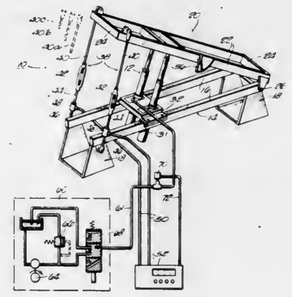
and transmitted to the wheel discs in the peripheral areas of the tire contacted by each of said wheel discs.

4,211,110

METHOD AND APPARATUS FOR CERTIFYING THE OUTPUT TORQUE CURVE OF A HYDRAULIC HOIST FOR USE IN DUMP BODY APPLICATIONS

Norman J. Glomski, New Berlin, Wis., assignor to The Heil Company, Milwaukee, Wis.

Filed Mar. 9, 1979, Ser. No. 19,105
Int. Cl.² G01M *19/00*
U.S. Cl. 73—168 **16 Claims**



1. Test apparatus for determining the output torque exerted by a hydraulic hoist mechanism suitable for use in dump body applications, comprising
base frame means for simulating a truck chassis,
upper frame means for simulating the under-structure portion of a dumping body,
hinge means for pivotally connecting said upper frame means to said base frame means, said pivotally connected base and upper frame means being adapted for allowing mounting of the hoist mechanism to said base and upper frame means so that the hoist mechanism can be rendered operative to pivot said upper frame means relative to said base frame means through a predetermined range of dump angles, and
longitudinally adjustable restraining means displaced from said hinge means and connected to said base and upper frame means for restraining pivotal movement of said upper frame means to selected incremental dump angles within said predetermined range of dump angles, and including transducer means for providing an output proportional to the longitudinal force exerted on said restraining means.

4,211,111

INFILTRATION-INFLOW SEWER LINE ANALYZER

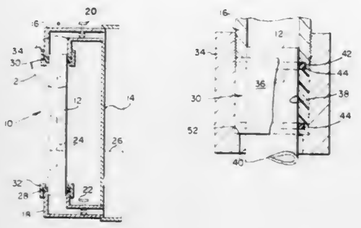
Peter D. Petroff, 4102 Piedmont Dr., Huntsville, Ala. 35802

Division of Ser. No. 811,557, Jun. 30, 1977, Pat. No. 4,116,061.
This application May 12, 1978, Ser. No. 905,196
The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.
Int. Cl.² G01F *1/00*
U.S. Cl. 73—195 **2 Claims**



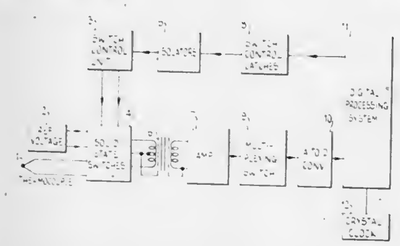
1. The method of identification of, and measurement of magnitude and location of, inflow and infiltration into a first sewer pipe line having an entrance end connected to, and receiving flow from, a first manhole, and said first sewer pipe line having an exit end connected to a second manhole, and wherein there is a second sewer pipe line having an exit pipe line supplying flow to said first manhole comprising:
(A) making a first series of time identified measurements of the magnitude of flow out of said second pipe line into said first manhole for a series of discrete times during an average dry, no rainfall, period of a day;
(B) making a like time related series of flow measurements out of said second pipe line for a like period of a day during which rainfall occurs, including measurements from the time that a rainfall commences and extending for a period beyond the end of the rainfall;
(C) subtracting like timed measurements obtained with respect to paragraph (A) from those obtained with respect to paragraph (B);
(D) making a like timed and time identified series of magnitude of flow measurement out of said first pipe line into said second manhole for an average dry day;
(E) making a like timed and time identified series of magnitude of flow measurements out of said first pipe line into said second manhole for the period of measurement defined in paragraph (B);
(F) subtracting like timed measurements obtained in paragraph (D) from those obtained from measurements of paragraph (E) for (1) a period during said rainfall, and (2) a selected period following a rainfall;
(G) subtracting like timed quantities obtained with respect to computations made in paragraph (C) from those obtained in accordance with paragraph (F), whereby differences for a rain period are representative of "inflow" into said first sewer pipe line, and differences for the period following a rain are measurements of "infiltration" into said first pipe line; and
(H) said flow measurements comprise a measurement of liquid heights within the exit end region of each said pipe line at a point from the exit end of that pipe line equal to at least the interior diameter of a said pipe line, and the region between the point of measurement and exit end of the pipe line in which said height is being measured is unobstructed by a weir.

4,211,112
GASKETS FOR LIQUID LEVEL GAGES
Orlin R. Norris, 36 Reservoir Rd., Parsippany, N.J. 07054
Filed Feb. 5, 1979, Ser. No. 9,199
Int. Cl.[2] G01F *23/02*
U.S. Cl. 73—328 **10 Claims**



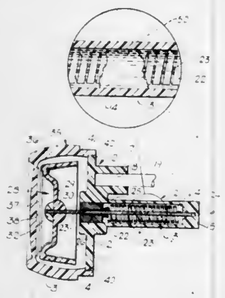
1. A liquid level sight gage system for determining the level of liquid in a system utilizing the combination of liquids and gases at pressures exceeding atmospheric pressure comprising:
(a) a transparent tubular sight gage;
(b) first and second tubular connecting means, said first connecting means being connected at one end thereof to said system, at a level above the liquid level and at the other end thereof to said tubular sight gage, said second connecting means being connected at one end thereof to said pressure system at a level below the normal liquid level and at the other end thereof to the other end of said tubular sight gage;
(c) first and second sealing means for substantially preventing the leakage of gas disposed between both ends of said tubular sight gage and said first and second connecting means; said sealing means including:
(i) a toroidally-shaped first member circumscribing said tubular sight gage, the inner diameter of said toroidally-shaped first member being in intimate contact with the circumference of said tubular sight gage prior to compression by said first and second connecting means; and
(ii) a second member circumscribing said tubular sight gage, said second member being retained by means provided by said first member and coming into intimate contact with the circumference of said tubular sight gage upon compression by said connecting means.

4,211,113
TEMPERATURE MEASUREMENT
Peter G. Harrison, Redbourne, England, assignor to Hawker Siddeley Dynamics Engineering, Ltd., Hatfield, England
Filed Mar. 28, 1979, Ser. No. 24,718
Claims priority, application United Kingdom, Apr. 5, 1978, 13260/78
Int. Cl.[2] G01K *7/02*
U.S. Cl. 73—359 R **6 Claims**



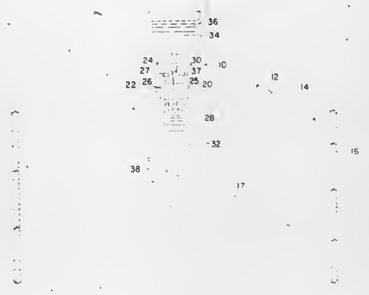
1. A temperature measuring system comprising a temperature sensing element delivering a signal voltage representative of temperature, a reference voltage source, a transformer, switches controlling the application of said signal voltage and the reference voltage to a primary winding of the transformer, a digital processing unit, an analogue-to- digital converter converting signal voltages appearing on a secondary winding of the transformer to digital signals and applying them to said digital processing unit, and a switch control channel whereby said switches are controlled by periodic outputs from the digital processing unit, said control channel including transducers that electrically isolate the switches from the digital processing unit.

4,211,114
INDICATING THERMOMETER
Stanley R. Hood, 11568 Sorrento Valley Rd., Suite 10, San Diego, Calif. 92121
Filed Nov. 6, 1978, Ser. No. 957,690
Int. Cl.[2] G01K *5/64*
U.S. Cl. 73—363.9 **13 Claims**



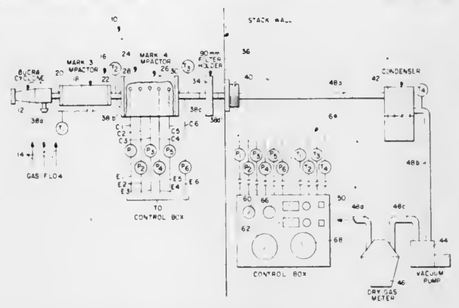
1. An indicating thermometer comprising a single piece main member including an annular disc like portion having an enlargement at the center thereof, a stem like portion extending from the enlargement axially of the disc like portion, a cylindrical opening extending through the enlargement and partially through the stem like portion to provide the stem like portion with a relatively thin tubular wall and an end wall, and a hole extending centrally from the opening partially through the end wall to provide a bearing in the end wall of the stem like portion, a temperature responsive assembly including a shaft, a plug having a central hole therethrough slidably and rotatably receiving the shaft to provide a bearing therefor, and a bimetallic helical coil secured at one end to the shaft adjacent one end thereof and secured at its other end to the plug, said temperature responsive assembly being inserted in the opening in the single piece main member at the enlargement of the disc like portion thereof and located therein with the bimetallic helical coil adjacent the tubular wall of the stem like portion, with said one end of the shaft journalled for sliding and rotation in the bearing in the end wall of the stem like portion, with the plug secured in the opening in the enlargement of the disc like portion, with the shaft journalled for sliding and rotation in the bearing of the plug, and with the other end of the shaft extending beyond the plug, an indicator member secured to said other end of the shaft adjacent the annular disc like portion of the main member to be rotated by the shaft in accordance with temperature conditions affecting the bimetallic helical coil, and a single piece annular cover member secured to the annular disc like portion of the single piece main member for enclosing the indicator member.

4,211,115
DEVICE FOR PROTECTING WINE AGAINST EXCESSIVE EXPOSURE TO AIR
Roald N. Engebreth, 15900 Sonoma Hwy., Sonoma, Calif. 95476
Filed Mar. 8, 1979, Ser. No. 18,854
Int. Cl.[2] G01N *1/10*
U.S. Cl. 73—421 B **7 Claims**



1. A device for protecting wine being aged in a wooden container comprising:
a closure adapted to cover an opening in the container;
a fill duct extending through said closure to terminate in inner and outer ends displaced from the inner and outer surfaces of said closure;
An inflatable bladder the interior of which is in communication with the inner end of said fill duct;
a reservoir of liquid of a specific gravity higher than that of wine;
means for positioning said reservoir above said container; and
a tube for connecting said reservoir to the outer end of said fill duct;
said tube and said fill duct being open to provide continuous communication between said reservoir and said bladder.

4,211,116
ASSEMBLY FOR AND METHOD OF SAMPLING PARTICLE-LADEN FLUIDS AND A CASCADE IMPACTOR USED THEREWITH
Michael J. Pilat; Edward B. Powell, Jr., both of Seattle, and John F. Thielke, Richmond Beach, all of Wash., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Jun. 21, 1978, Ser. No. 917,645
Int. Cl.[2] G01N *15/02*
U.S. Cl. 73—421.5 A **8 Claims**

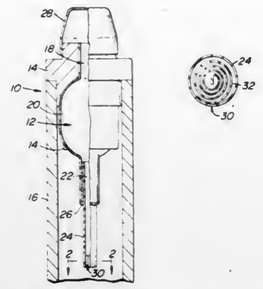


1. An assembly for sampling particleladen fluids for particulate content and particle size distribution, said assembly comprising:
(a) At least one cascade impactor adapted to be placed within a fluid stream to be sampled, said impactor including
(i) a longitudinally extending tubular body having a fluid inlet at one end and a fluid outlet at the other end, and
(ii) a plurality of longitudinally spaced, successive particle collection stages located within said tubular body between said inlet and outlet and, together with said body, defining a fluid flow path from said inlet through successive particle collection stages to said outlet, said stages being constructed and positioned so as to cause successive drops in pressure between said stages as said stream of fluid moves along said path from said inlet to said outlet each of said collection stages including a gas jet plate fixedly located within and extending entirely across said tubular body and having a predetermined number of apertures of predetermined size extending therethrough, and an impactor plate fixedly located within said body adjacent to and downstream of said gas jet plate, said impactor plate including particle collection surface in confronting relationship with and a predetermined distance from said gas jet plate, each of said apertures in any given gas jet plate being designed to provide a ratio of the pressure at its upstream side as compared to the pressure at its downstream side, said ratio being selected below the critical pressure ratio of approximately 1.71 such that the gas stream flowing through said apertures does so at a rate which does not reach its critical flow rate above which the velocity of said fluid through said apertures does not increase with a drop in pressure from said upstream side to said downstream side;
(b) an arrangement for simulataneously monitoring the pressure at all of said stages, said arrangement including
(i) a plurality of first means, each of which includes a relatively inflexible tube associated with and having a first end located at and in fluid communication with a corresponding one of said stages for continuously sampling the pressure at that stage during the operation of said assembly, each of said tubes including a second end located in close proximity to its first end,
(ii) a plurality of second means, each of which is connected with and located in close proximity to the second end of a corresponding one of said tubes and responsive to its continuous sample of pressure for transducing said pressure sample to a corresponding electrical signal,
(iii) flexible conduit means for carrying said electrical signals from said transducing means to a location remote from said impactor, and
(iv) third means positioned at said remote location from said impactor, said third means being connected with all of said second means by said flexible conduit means and responsive to said electrical signal for indicating the pressure at each of said stages during operation of said assembly; and
(c) a control housing positioned at said remote location and including said pressure indicating third means.

4,211,117
MOLTEN METAL SAMPLING DEVICE
Omer P. I. Curé, Diepenbeek, Belgium, assignor to Electro-Nite Co., Philadelphia, Pa.
Filed Dec. 18, 1978, Ser. No. 970,583
Claims priority, application France, Mar. 30, 1978, 78 09327
Int. Cl.[2] G01N *1/12*
U.S. Cl. 73—425.4 R **6 Claims**

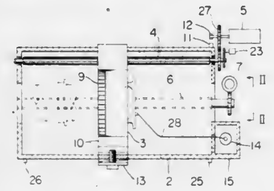
1. A molten metal sampling device comprising a mold having an inlet and an outlet, a barrier means partially obstructing said outlet for solidifying molten metal on contact therewith while permitting escape of gases, said barrier means having a plurality of air passages whose total area is at least 50% of the

area of the outlet at the location of the barrier means, said barrier means being a pretensioned wound metallic strip exert-



ing pressure radially outwardly against the inner surface of said outlet.

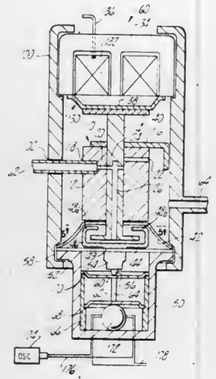
4,211,118
ULTRASONIC FAULT DETECTOR
Yoshishige Sakurai; Hiroshi Yamada; Kuniharu Uchida, all of Yokohama; Kanekichi Suzuki, Tokyo, all of Japan; Ryoichi Ishii, deceased, late of Yokohama, Japan, and by Kyoko Ishii, administrator, Tendo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan
Filed May 16, 1978, Ser. No. 906,699
Claims priority, application Japan, May 18, 1977, 52-56322
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—592 **2 Claims**



1. An ultrasonic fault detector comprising a casing containing contact medium, an arm movable in said casing along the longitudinal axis thereof, a movable member rotatably secured to said arm, said movable member being divided into two or more parts, a plurality of probe heads mounted on the inside surface of said movable member, and means for feeding the contact medium to the operating surfaces of said probe heads.

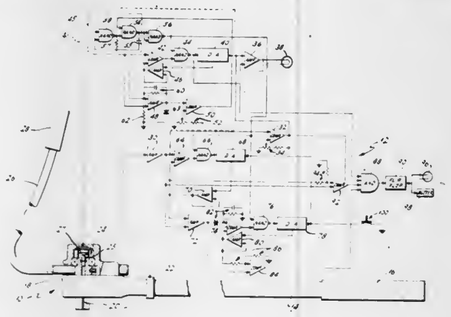
4,211,119
SELF-STANDARDIZING PRESSURE SENSOR FOR USE IN AN ELECTRONIC FUEL CONTROL SYSTEM
William G. Wolber, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Oct. 2, 1978, Ser. No. 948,076
Int. Cl.[2] G01L *7/08*
U.S. Cl. 73—721 **17 Claims**

1. A pressure sensor for sensing a first and second pressure for use with an electronic fuel control system having control logic comprising:
a sensor body defined by a substantially hollow member having an internal chamber and first and second external ports formed therein in communication with the first and second pressure, respectively, the internal chamber having a displaceable wall responsive to the pressure therein;
valve means, disposed within said internal chamber and movable between registering positions with the first and second external ports, for communicating a selected one of the ports with said internal chamber upon actuation into a registering position therewith;
actuator means, responsive to a command signal from the control logic selecting one of the external ports, for actuating the valve means into registry with the selected port; and



transducer means, responsive to displacement of the displaceable wall of said internal chamber, for producing an output signal representative of the displacement of the wall.

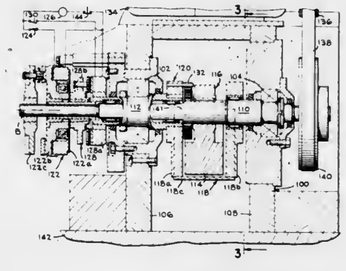
4,211,120
TIGHTENING APPARATUS
Angelo L. Tambini, Manor Kilbride, Ireland, assignor to SPS Technologies, Inc., Jenkintown, Pa.
Filed Aug. 8, 1978, Ser. No. 932,061
Int. Cl.[2] B25B *23/14*
U.S. Cl. 73—761 **99 Claims**



21. Apparatus for tightening a joint assembly including a fastener assembly, said apparatus comprising wrench means including a driver head adapted to be rotated and to tighten a fastener, and potentiometer means associated with said driver head for providing a signal representative of the rotation thereof, said potentiometer means including a resistor portion and a wiper arm portion, one of said portions being arranged to rotate with said driver head and the other of said portions being associated with retaining means for attaching said other portion to a fixed reference member for holding said other portion from rotating.

25. A control system usable in apparatus for tightening a joint assembly including a fastener assembly to its yield point wherein the tightening force is applied incrementally in the form of torque, comprising:
control means formed to be operatively associated with the tightening apparatus for providing a control signal and including means for detecting a phenomena indicative of the yield point of the joint assembly and for providing a first indicating signal when said phenomena is detected; said control means further including checking means for determining that the fastener assembly is being tightened during an increment of tightening force application and for providing a second indicating signal indicative thereof, wherein said checking means receives said first indicating signal and further includes gate means responsive to said first and second indicating signals for providing said control signal.

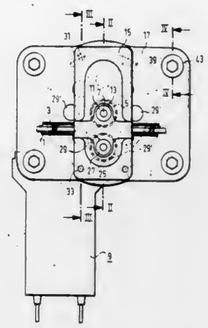
4,211,121
VIBRATOR WITH ECCENTRIC WEIGHTS
William R. Brown, Blairsville, Pa., assignor to FMC Corporation, San Jose, Calif.
Division of Ser. No. 719,634, Sep. 1, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,042
Int. Cl.[2] B06B *1/16*
U.S. Cl. 74—87 **8 Claims**



1. A vibrator comprising two members rotatable about a common axis, an eccentric weight connected to each of said members, means to drive one of said members, a clutch means connectable between said members in any angular relationship therebetween for rotation of both members when said one member is driven and said clutch means is engaged, means to disengage said clutch means while said one shaft is driven, and a brake means to retard the rotation of the other member when said clutch means is disengaged and said brake is applied to change from one angular relationship between said members to any desired different angular relationship between the members.

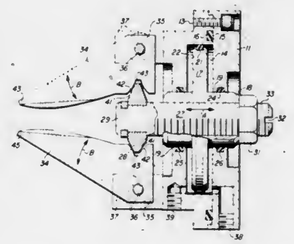
4,211,122
DRIVE ARRANGEMENT FOR AN AUTOMOTIVE WINDOW OPERATING MECHANISM
Peter Hess, Coburg, and Hans Rampel, Eicha, both of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany
Filed Jan. 20, 1978, Ser. No. 871,021
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1977, 2705627
Int. Cl.[2] E05F *11/48*; F16C *1/10*
U.S. Cl. 74—89.2 **30 Claims**

1. A window operating mechanism particularly for motor vehicles comprising:
a threaded cable adapted to have a window in driven engagement therewith;
drive means including a drive pinion in driving engagement with said cable;
shell means including first and second shell members defining therebetween duct means through which said threaded cable passes;
fastening means connecting said shell members together, said fastening means being arranged to surround the axis of said drive pinion;
said duct means being defined by complementary duct halves, each formed respectively in opposite ones of said first and second shell members;
with at least one of said shell members being provided with a plurality of said duct halves arranged with a generally equivalent spacing relative to the axis of said drive pinion;



said fastening members being arranged in such a manner that each of said duct halves may be selectively brought into coincident relationship with a complementary duct half in the opposite shell member.

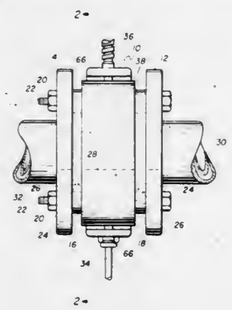
4,211,123
MOTION CONVERSION MECHANISM
James F. Mack, Flagstaff, Ariz., assignor to Mack Corporation, Flagstaff, Ariz.
Filed Mar. 13, 1978, Ser. No. 885,557
Int. Cl.[2] F16H *21/44*
U.S. Cl. 74—99 A **1 Claim**



1. In a motion conversion mechanism including
a housing,
spaced levers pivotally mounted on said housing at their respective inner ends and movable about said pivots toward and away from each other to grasp objects therebetween,
a reciprocal lever-drive member mounted in said housing, and
means operatively connecting said drive member and said lever for causing said levers to move about their respective pivotal mountings in response to reciprocal movement of said drive member,
the improvements in said motion conversion mechanism in which said means for operatively connecting said drive member to said levers comprise a pair including
(a) a tooth member extending perpendicularly to the axis of reciprocation of said reciprocable lever drive member,
(b) means defining a slot for receiving said tooth member and in driving engagement therewith,
said reciprocal lever-drive member carrying one of said pair and each of said spaced levers carrying the other of said pair,

(c) one of said pair having a convex cam surface formed integrally thereon,
(d) the other of said pair having a flat cam engaging surface formed thereon,
to provide rolling contact therebetween when said drive member is actuated for reciprocal movement, free of relative movement between the cam surface and the member on which it is integrally formed.

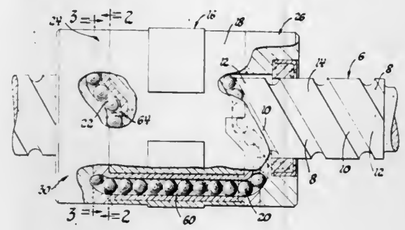
4,211,124
INSTRUMENTATION COUPLING
Wahling H. Ng, Rockaway, and Andrew Zaycer, Dover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 30, 1979, Ser. No. 43,877
Int. Cl.[2] G01K *1/14*; G01L *7/02*
U.S. Cl. 73—345 **8 Claims**



1. An instrumentation flange assembly for measuring temperature and pressure in a jacketed conduit carrying molten high explosives material which comprises:
pipe flange means for axially self-aligning and fixedly holding said instrumentation flange assembly connected with said jacketed conduit;
body housing means operatively disposed intermediate said pipe flange means for operatively holding oppositely disposed sensors therein to measure temperature and pressure of molten explosive material carried by said conduit;
gasket means disposed intermediate said pipe flange means and said body housing means for aligning and sealing said pipe flange means to said body housing means;
temperature sensor means removably operatively disposed in said body housing means for measuring temperature of said molten high explosive material in said conduit;
pressure sensor means removably operatively positioned in said body housing diametrically opposite from said temperature sensor means, for measuring pressure of said molten high explosive material in said conduit;
insert adaptor means slidably disposed in said body housing means for operatively holding and sealing said temperature and pressure sensor means in said body housing means, said insert adaptor means preventing leakage of said molten high explosive material through said body housing; and
retainer member means for removably and fixedly holding said insert adaptor means in juxtaposition with said body housing means.

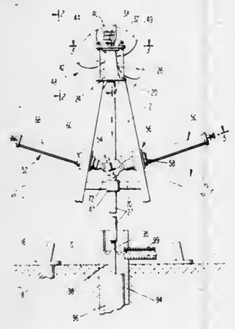
4,211,125
PLURAL LEAD BALL NUT SCREW ACTUATOR
Robert L. Benton, Bay City, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 8, 1978, Ser. No. 913,869
Int. Cl.[2] F16H *1/18*
U.S. Cl. 74—424.8 R **2 Claims**

1. An actuator comprising a ball nut, an elongated screw having a pair of helical grooves in the outer surface thereof providing double leads and extending through said nut, said nut and screw forming a pair of separate helical ball races therebetween, said screw and ball nut being operatively connected by first and second separate endless ball trains respectively active in said races so that relative rotation of said screw and nut will produce smooth relative linear movement therebetween, a pair of intermediate ball passages transversing the major longitudinal dimension of said nut, ball return fixture means secured to opposite ends of said nut, each of said fixture



means having a ball deflector plate and a cooperating guide plate to provide a pair of discrete cylindrical ball passages therein, each passage having a diameter to facilitate the movement of the balls of said associated train therethrough and each including a ball ramp portion for moving the balls of the associated ball train exiting from the end of the nut in an axial path away from said ball nut and an arcuate track portion communicating with the outer end of said ramp portion for guiding said balls into said intermediate passage to thereby prevent said balls of said separate trains from mixing with one another.

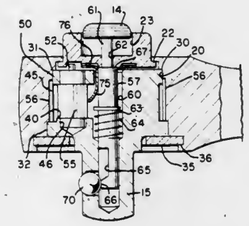
4,211,126
WIND MACHINE SYSTEM FOR PUSHING AND LIFTING LOADS AND HAVING IMPROVED COUNTERBALANCING
Richard K. Sutz, 19359 Dunbridge Way, Gaithersburg, Md. 20760
Filed Jun. 28, 1978, Ser. No. 919,763
Int. Cl.[2] F03D *11/00*; F04B *17/02*
U.S. Cl. 74—590 **10 Claims**



1. A wind machine system adapted for both lifting up and pushing down external loads, comprising:
a stationary elevated support;
transmission means mounted on said support and arranged for converting rotary motion to reciprocating motion;
a multiple blade rotor driven by wind and connected to said transmission means to drive the same;
a vertical shaft connected to said transmission means and cyclically reciprocated thereby for lifting up and pushing down said loads when said rotor rotates; and

mounting means arranged to retain and restrain said transmission means on said support in such a way that said transmission means pushes said shaft down and pulls said shaft up with equal maximum forces during each cycle of reciprocation of said shaft.

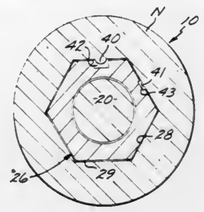
4,211,127
RATCHET WRENCH REVERSING MECHANISM
Tito R. D'Oporto, Costa Mesa, and Delo K. K. Chun, Mission Viejo, both of Calif., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jan. 19, 1979, Ser. No. 4,693
Int. Cl.[3] B25B *13/46*
U.S. Cl. 81—63 **8 Claims**



1. A ratchet wrench comprising:
a body having a core member rotatable therein;
cooperating ratchet means carried by said body and said core member and relatively adjustable to effect selectively clockwise and counterclockwise rotation of said core member in relation to said body to thereby accommodate the wrench to tightening and loosening of a threaded fastener or the like;
coupling means attached to said core member for releasably securing a drive means for a threaded fastener;
push button means extending through said core member for releasably securing a drive means to said coupling means;
a reversing knob operatively associated with said ratchet means to effect its relative adjustment;
said reversing knob being independent in operation of said release means;
a finger spring operated by said reversing knob for adjusting said ratchet means by rotation of said reversing knob;
said push button release means further comprises a push button disposed in a pocket of said reversing knob;
said push button is attached to a shaft which extends through said reversing knob and said core member and operatively contacts said ball retention member; and
said push button and said shaft are free to reciprocate in said reversing knob and said core member and said coupling means and said push button and said shaft are further free to rotate in said reversing knob and said core member.

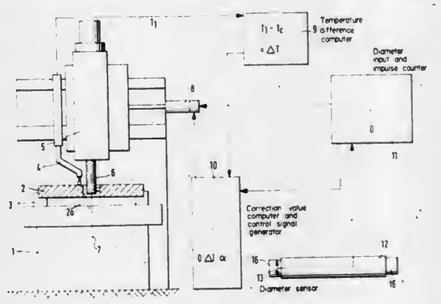
4,211,128
VEHICLE WHEEL LUG NUT APPARATUS
Mark J. Plumer, 4265 Marina City Dr., Marina Del Rey, Calif. 90291
Filed Jul. 17, 1978, Ser. No. 925,186
Int. Cl.[2] B25B *13/48*
U.S. Cl. 81—71 **7 Claims**

1. In combination, a threaded fastener for vehicle wheels having a head formed with a coaxial driving recess defined by polygonal straight sides; a wrench for engagement with said fastener to apply and remove said fastener with respect to a cooperating threaded member, said wrench having a coaxial post axially insertable within said recess to effect rotation of said fastener, said post having straight sides of polygonal configuration complimentary to said recess that drivingly engage said straight sides; and axially extending coding spline and groove means formed between the abutting surfaces of the straight sides of said driving recess and said post, a first clearance between said spline and groove means being greater than a second clearance between adjacent side edges, the straight



sides of said post drivingly engaging the straight sides of said recess before said spline and groove means can be engaged whereby said spline and groove means function solely to code said wrench to said fastener.

4,211,129
METHOD FOR PRODUCING A BORE
Helmut Wittkopp, Erkelenz; Heinz vom Dorp, and Theodor Lindgens, both of Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany
Filed Oct. 13, 1978, Ser. No. 951,075
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747883
Int. Cl.[2] B23B *3/00, 35/00, 39/06*
U.S. Cl. 82—1 C **2 Claims**



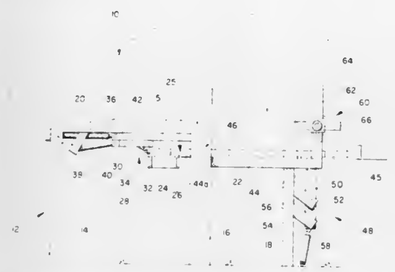
1. A method for producing a finish dimension of a prebored bore in a work piece, comprising the steps of: measuring the temperature in the immediate vicinity of said prebored bore directly prior to the finish machining to provide a measured temperature value representing the temperature of the prebored work piece directly before the finish machining; providing a reference temperature value; determining the difference temperature between said measured temperature value and said reference temperature value, determining the sign (positive or negative) of said difference temperature, producing a tool positioning control signal from the difference temperature and its sign, and correcting the position of a finishing tool solely in response to said control signal to provide said bore with a smooth, uninterrupted finish surface of the correct size.

4,211,130

METHOD AND APPARATUS FOR HANDLING AND STACKING BRICK

John G. Buckner, Rte. 2, Box 83, Ramseur, N.C. 27315; Cletus E. Lineberry, Rte. 1, Box 106, Staley, N.C. 27355, and Jimmy W. Harris, 618 Circle Dr., Siler City, N.C. 27344

Filed Oct. 26, 1978, Ser. No. 954,997
Int. Cl.[2] B28B *11/14*
U.S. Cl. 83—23 **9 Claims**



1. A method of handling and stacking brick in at least two high courses with respective faces of the brick being stacked face to face, said method comprising: delivering on an off bearing belt one brick slug after another to a brick cutting assembly disposed adjacent said off bearing belt; pushing each brick slug from said off bearing belt through said brick cutting assembly onto a receiving table so as to cut each individual slug into a plurality of bricks; continuing to push slugs from said off bearing belt through said brick cutting assembly such that accumulated cut brick are advanced across said receiving table; transferring selective brick, one course at a time, from said receiving table to an inverter by sliding cut brick from said receiving table onto an adjacent elevator, moving the elevator upwardly to a position adjacent said inverter where an outer gripping frame of said inverter surrounds the brick on said elevator assembly; closing the outer gripping frame about said brick on said elevator and lowering the elevator from the position adjacent said inverter so as to effectuate the transfer; inverting the selected one course of brick transferred to said inverter by rotating said inverter approximately 180 degrees; transferring the inverted one course of brick from said inverter onto another single course of brick situated on said receiving table so as to form an at least two course high stack of brick with the face edge of the bricks comprising the stack disposed in face to face relationship; and transferring the at least two course high stack of brick from said receiving table to an adjacent area where the stacked brick can be ultimately transferred onto kiln cars.

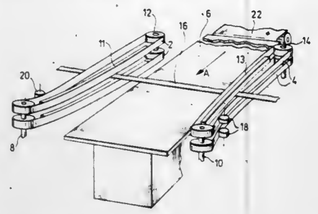
4,211,131

CUTTING OF CORRUGATED MATERIAL

Cyril P. Fenn, and William H. Thelwell, both of St. Helens, England, assignors to Fibreglass Limited, St. Helens, England

Filed May 3, 1978, Ser. No. 902,283
Claims priority, application United Kingdom, May 4, 1977, 18677/77
Int. Cl.[2] B23D *53/08, 55/04*
U.S. Cl. 83—56 **16 Claims**

1. A method of cutting a corrugated material into a plurality of channel-shaped bodies, comprising conveying the corrugated material along a conveyor path by means of moving guide members extending substantially parallel to the conveyor path, and which hold the transverse edges of the corrugated material, the conveyor path extending substantially perpendicular to the plurality of channels defined by the corrugations in the corrugated material, and severing the walls of



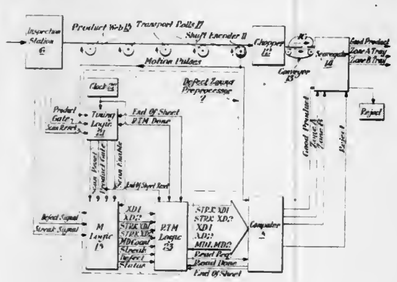
the channels whilst the corrugated material is held by the guide members.

4,211,132

APPARATUS FOR ON-LINE DEFECT ZONING

Lee H. Nichols, III, and Edmund H. Smith, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 21, 1977, Ser. No. 853,420
Int. Cl.[2] B26D *5/30*
U.S. Cl. 83—71 **7 Claims**



1. An apparatus for obtaining sheet product from a web running at on-line speeds including inspection means for determining the existence and location of anomalies in said web and generating corresponding anomaly output signals, classifying means responsive to said anomaly output signals for classifying, by generating reject signals, preselected rectangular areas of said web as acceptable or rejectable, means for chopping said web into sheets of said preselected areas, and means responsive to said reject signals for segregating said unacceptable sheets from said acceptable sheets, the improvement wherein:

said classifying means including logic means responsive to said anomaly output signals for generating region signals defining a closed region containing all of said anomalies in each said preselected area, and

computer means for comparing said region signals with reference signals defining acceptable product to classify said preselected areas as acceptable or rejectable for optimizing the yield of sheet product.

4,211,133

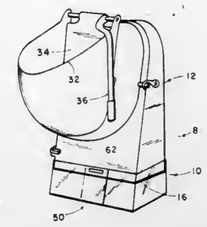
SLICER OUTLET EXTENDER

William J. Muth, 6342 Charles St., Omaha, Nebr. 68132

Filed Feb. 15, 1979, Ser. No. 12,324
Int. Cl.[2] B26D *7/06*
U.S. Cl. 83—162 **6 Claims**

1. A slicer outlet extender and slicing assembly comprising a slicing machine having an outlet housing provided with an outer side which is larger in a lower portion than above said lower portion as seen in a horizontal plane, and an outlet extender, said extender having a body portion which is an elongated piece of material wrapped horizontally around the outside of the lower end of said outlet housing and said body portion

having end portions which lap each other as seen in top plan view, and connecting means comprising two elements respec-



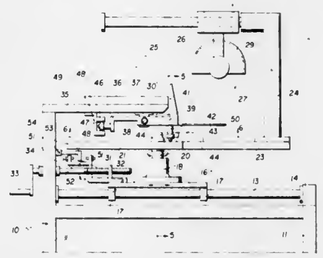
tively disposed on and secured to the respective lapping ends of said body portion, said two elements being secured together for interconnecting said lapping ends of said body portion.

4,211,134

SELF-ALIGNING FENCE FOR RADIAL ARM SAW

Roland H. Thorsell, and Stoddard H. Pyle, both of Corvallis, Oreg., assignors to Excor, Inc., Corvallis, Oreg.

Filed Mar. 26, 1979, Ser. No. 24,174
Int. Cl.[3] B27B *5/20;* **B23D** *47/02*
U.S. Cl. 83—471.3 **12 Claims**



1. In a radial arm saw, a supporting base, a carriage means on the base and being adjustable along a linear path relative to the supporting base, an upright axis turntable structure on the carriage means and bodily movable therewith and including a radial arm saw, a second carriage means on the supporting base is superposed relation to the first-named carriage means and turntable structure and being movable in a linear path across the path of movement of the first-named carriage means, a work-engaging fence fixed to the second carriage means and movable therewith along the second-named linear path, and coacting means on the turntable structure and second-named carriage means to drive the second-named carriage means and said fence along the second-named linear path in response to rotation of the turntable structure around said upright axis, the movement of the second-named carriage means and fence being proportional to the spacing between said upright axis and a plane in which the working face of said fence lies.

4,211,135

CUTTING WIDTH MODIFYING MEANS FOR A LONGITUDINAL WEB CUTTING MACHINE

Friedrich Wehde, Bomlitz, Fed. Rep. of Germany, assignor to Firma Erwin Kampf GmbH & Co. Maschinenfabrik, Wiehl, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,469
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741908
Int. Cl.[2] B23D *19/04*
U.S. Cl. 83—499 **4 Claims**

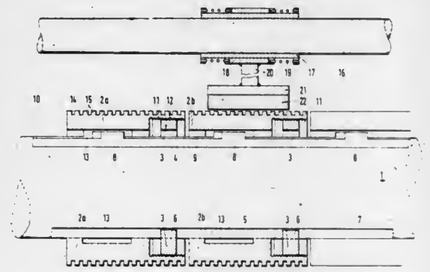
1. Apparatus for adjustably controlling the width of cut of a web of material, comprising

(a) a bottom blade shaft having at least one longitudinal groove formed in the surface thereof,

(b) a plurality of bottom blade sleeves positioned around said shaft, each sleeve containing an internally threaded part, an annular recess, and a plurality of arcuately spaced longitudinal grooves,

(c) an externally threaded ring threadedly connected to said internally threaded part of each of said sleeves, and means for releasably but non-rotatably mounting said ring on said shaft,

(d) a key retainer mounted for axial movement in said longitudinal groove in said shaft, said key retainer being formed with at least one cam surface adapted to engage one of said longitudinal grooves formed in one of said sleeves,



(e) retaining means for permitting relative rotation between said plurality of sleeves, said retaining means including means for frictionally pressing against the associated sleeve for preventing rotary movement thereof relative to said shaft prior to adjustment of the width of cut,

(f) drive means for driving said shaft while said retaining means is frictionally pressing against said associated sleeve whereby said associated sleeve is adjusted axially relative to said shaft by virtue of engagement of its internally threaded part with said threaded ring, and

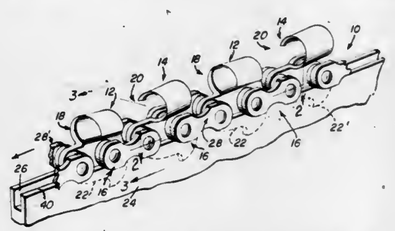
(g) control means operatively connected to said key retainer and axially displaceable on said shaft for axially moving said key retainer for retaining said associated sleeve in its adjusted position.

4,211,136

CUTTER ASSEMBLY FOR SAW CHAIN

Grady O. Geurian, 1305 N. Front, Dardanelle, Ark. 72834

Filed May 8, 1978, Ser. No. 903,545
Int. Cl.[2] B27B *33/14*
U.S. Cl. 83—830 **4 Claims**



1. A cutter assembly for a saw chain for making a cut to a predetermined given depth, comprising, in combination:

(a) a first cutter member;

(b) a second cutter member arranged sequentially with respect to the first cutter member; and

(c) attachment means attached to the first cutter member and the second cutter member for connecting together the first cutter member and second cutter member in sequential disposition, wherein the first cutter member and the second cutter member each include a cutter and a driver,

with the latter being receivable in a peripheral groove of a cutter bar, and the cutter of the first cutter member extending away from the cutter of the second cutter member along an extent of the sequential disposition of the first cutter member and the second cutter member for forming an alternate bite for the cutter assembly, wherein the cutter of the first cutter member is a right-hand circular-edged cutter and the cutter of the second cutter member is a left-hand circular-edged cutter, respectively, looking along the assembly in an intended forward direction of movement of a chain in which the assembly is incorporated, wherein both the first and second cutter members are required to make a cut to the given depth, the right-hand cutter being adapted for making approximately one-half the depth, and the left-hand cutter being adapted for completing the cut, the cutter members being sharpenable with a round file or a round power-driven hone, wherein each of the first cutter member and the second cutter member is provided with a pair of openings, and the attachment means includes, in combination:

(1) a pair of opposed, spaced, substantially parallel, coextensive, longitudinally extending links, with the first cutter member and the second cutter member being disposed partly between the links and extending in opposite directions therefrom, each of the links being provided with a pair of longitudinally spaced apertures; and

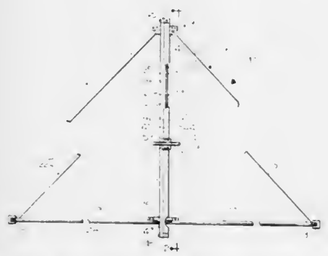
(2) a pair of pins arranged in opposed ones of the apertures and in one of the openings of an associated one of the first cutter member and the second cutter member for pivotally attaching the cutter member to the links and tying the links to one another, wherein the attachment means further includes a plurality of rollers mounted in pairs on each of the pins between an associated one of the links and a respective one of the first cutter member and the second cutter member and arranged for engagement with an associated cutter bar for providing rolling friction between the cutter assembly and the cutter bar, each pair of rollers riding on parallel ridges of the grooved cutter bar.

4,211,137

APPARATUS FOR CUTTING STIFF SHEET MATERIAL

Donald C. Pierce, 1253 C Redwood Blvd., Novato, Calif. 94947

Filed Jan. 29, 1979, Ser. No. 7,007
Int. Cl.² B26D *3/08, 1/20*
U.S. Cl. 83—864 **23 Claims**



1. A device for cutting stiff sheet material, including in combination:

a straightedge barrier for alignment of said sheet material,

a back support for said sheet material, said back support including a first bar perpendicular to said straight-edge barrier,

a strip blade secured along one edge of said first bar perpendicular to said straightedge barrier and having a shearing face with an acute-angle cutting edge projecting beyond said first bar,

a second bar spaced from and parallel to said first bar, and

a carriage mounted on said second bar in low-friction rolling engagement with said second bar, for movement therealong,

said carriage having mounted thereon a series of rotatably supported shearing rollers opposite said cutting edge of said blade and to one side thereof, said rollers comprising a first roller, at least one intermediate roller and a last roller, all said rollers being substantially coplanar, all said rollers being identical and having a vertical shear face and a sharp edge,

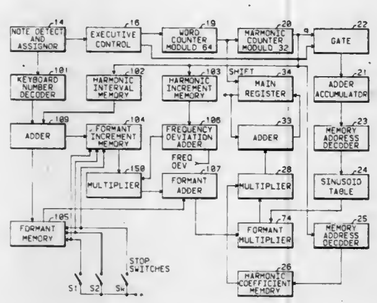
the axes of said rollers being successively closer to said cutting edge of said blade, so that during movement of the carriage, the first roller urges the sheet material against said cutting edge and seizes it there, the succeeding rollers forcing the material into progressive shearing action against said cutting edge and said shearing face, said rollers never passing beyond said cutting edge except for said last roller which extends beyond said cutting edge.

4,211,138

HARMONIC FORMANT FILTER FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Japan

Filed Jun. 22, 1978, Ser. No. 917,920
Int. Cl.² G10H *1/06*
U.S. Cl. 84—1.01 **6 Claims**



1. A tone generator having a fixed formant filter characteristic for generating a tone having a pitch selected by operating a key on a keyboard comprising a harmonic counter for counting the harmonic components of the tone being generated, means initiating a plurality of harmonic component calculation cycles, said means advancing the harmonic counter at the start of each calculation cycle, means storing a plurality of harmonic coefficient values, means reading out a different coefficient value from the storing means with each advance of the harmonic counter, means storing a plurality of sinusoid values, means reading out a sequence of sinusoid values with each setting of the harmonic counter, adder-accumulator means, means multiplying the coefficient value for each harmonic calculation cycle with a sequence of sinusoid values and adding the product values to the adder-accumulator, addressable means storing a plurality of scale factors corresponding to the relative amplitude values of the fixed formant filter characteristic at predetermined frequencies corresponding to the musical notes of the keyboard, means for addressing the addressable storage means in response to the selected key on the keyboard and the state of the harmonic counter, means multiplying each of said product values added to the adder-accumulator by the associated scale factor read out of the storage means, and means converting each of the values stored in the adder-accumulator at the completion of said calculation cycles to an analog voltage in sequence at a rate determined by the pitch of the tone being generated, whereby the set of values stored in the adder-accumulator is converted to an audio voltage signal having a fundamental frequency corresponding to the desired pitch of tone being generated, means for modifying the scale factor read out of the addressable scale factor storing means including means for generating the incremental difference between successive scale factors read out of the scale factor storing means, means generating a frequency deviation value, means multiplying said incremental difference by said deviation value, and means adding the content of the multiplying means to the scale factor from the scale factor storing means.

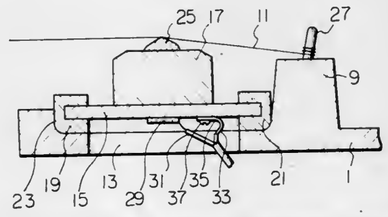
5. A polyphonic digital tone synthesizer, comprising: a keyboard having keys for initiating one or more musical notes, a main register for storing a set of coded values corresponding to the relative amplitudes of a set of points defining one cycle of a periodic musical waveform, a digital-to-analog converter, means responsive to operation of a selected key for transferring the coded values in sequence from the main register to the converter at a rate proportional to the pitch of the note initiated by the selected key, means for computing the set of coded values and storing them in the main register including means storing a set of harmonic coefficients, means storing a set of orthogonal function values, means multiplying each harmonic coefficient in succession with a set of orthogonal values to produce a succession of computed sets of values defining respectively each harmonic of the desired waveform, and means for adding the successive sets of values and accumulating the sums in the main register, addressable storage means storing at least one set of scale factors defining the gain characteristic of the fixed formant filter over the audio frequency range, means generating addresses for addressing the addressable storage means including means generating a unique address for each key on the keyboard and means adding a unique incremental value to said address for each harmonic being computed, and means applying the scale factor addressed in said addressable storage means to said scaler means to apply a different scale factor for each computed set of values defining each harmonic of the desired waveform, said means applying the scale factor including means for adjusting the scale factor read out of the addressable storage means, said adjusting means including means for providing the incremental difference between the scale factor read out of the storage means and the scale factor at the next successive address of the storage means, means for multiplying said incremental difference by a frequency deviation signal, and means for adding the output of the multiplying means to the scale factor read out of the storage means.

4,211,139

PICKUP MECHANISM

Kazuo Murakami, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 18, 1978, Ser. No. 897,405
Claims priority, application Japan, Apr. 20, 1977, 52-48873; Apr. 21, 1977, 52-45123; Apr. 21, 1977, 52-49578; Jun. 24, 1977, 52-83714; Jun. 24, 1977, 52-83716; Jun. 24, 1977, 52-83717
Int. Cl.² G10H *3/00*
U.S. Cl. 84—1.14 **16 Claims**



1. An improved pickup mechanism for electric pianos comprising a bridge for engaging a string,

a piano plate having a front face and being provided with an opening formed at a position corresponding to said bridge,

a vibration transmitter plate having a front face and an opposite back face and the vibration transmitter plate covering the front of said opening and carrying said bridge on said front face of said vibration transmitter plate,

a vibration absorbing means arranged on said front face of said piano plate on two sides of said opening and carrying said transmitter plate on said piano plate,

a pickup unit disposed on said back face of said transmitter plate, and

lead wires for electrically coupling electrodes of said pickup unit to an electric circuit.

7. An improved pickup mechanism for electric pianos comprising a bridge,

a piano plate having a front face and being provided with at least a through opening formed at a position corresponding to said bridge,

a vibration transmitter plate having a front face and a back face and covering the front of said opening and carrying said bridge on said front face of said vibration transmitter plate,

vibration absorbing means arranged on said front face of said piano plate on two sides of said opening and carrying said transmitter plate on said piano plate,

a pickup unit arranged in pressure contact with said back face of said vibration transmitter plate,

means for elastically urging said pickup unit into said pressure contact with said back face of said transmitter plate, and

lead wires for electrically coupling said pickup unit to an electric circuit.

4,211,140

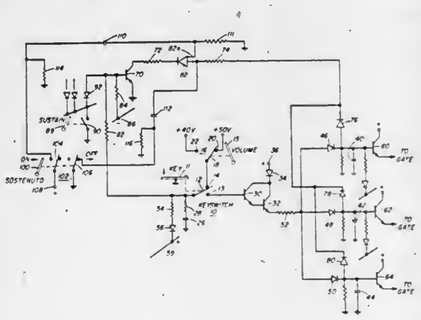
Patent Not Issued For This Number

4,211,141

PEDAL CONTROL CIRCUITS FOR ELECTRONIC PIANO

Richard W. Jensen, 583 Fay Ave., Elmhurst, Ill. 60126, and Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill. 60464

Continuation of Ser. No. 887,696, Mar. 17, 1978, abandoned, which is a division of Ser. No. 753,144, Dec. 21, 1976, Pat. No. 4,129,056. This application Apr. 9, 1979, Ser. No. 28,615
Int. Cl.² G10H *1/02, 5/00*
U.S. Cl. 84—1.27 **9 Claims**



1. In an electronic musical instrument, the combination comprising:

a plurality of playing keys each adapted to be operated between a normal position and an operated position,

a single pole-double throw key switch operatively associated with each playing key with its movable contactor arranged to engage a first contact when said playing key is in the normal position to engage a second contact when said playing key is in its operated position,

first circuit means including a first capacitor associated with each of said playing keys for producing a tone signal having a peak amplitude determined by the level of a voltage appearing across said first capacitor,

pulse generating means associated with each of said playing keys including a second capacitor connected to the movable contactor of the associated keyswitch operative in response to movement of a playing key from its normal position to its operated position for generating a voltage pulse having a peak amplitude determined by the magnitude of a voltage applied to said second capacitor,

means for coupling a voltage pulse from said pulse generating means to said first capacitor for rapidly charging said first capacitor to a level determined by the amplitude of said voltage pulse,

player-operated volume control pedal means adapted to be moved from a first position to at least one other position, and

second circuit means connected to the first contact of said key switch and operatively associated with said control pedal means for applying to said second capacitor a voltage having a first predetermined amplitude when said control pedal means is at said first position and for applying to said second capacitor a second different predetermined voltage when said pedal control means is at said at least one other position.

4,211,142

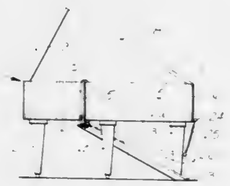
SOUND REFLECTOR FOR GRAND PIANOS

Harold A. Conklin, Jr., Cincinnati, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Dec. 29, 1978, Ser. No. 974,217

Int. Cl.[2] G10C *3/06*

U.S. Cl. 89—189 **14 Claims**



1. A sound reflecting system for a grand piano having a case including a vertically disposed rim defining a contoured front side wall and an essentially planar rear side wall, a lid hingedly connected to the rear side wall of the rim, and a horizontally disposed soundboard mounted within said rim, said lid being elevated so as to lie at an inclined angle with respect to said case, a sound reflector underlying the case of the piano, said sound reflector comprising a panel of sound reflecting material of a size to underlie the soundboard, said reflective panel lying at an inclined angle with its uppermost side edge adjacent the undersurface of the front side wall of the rim and with its lowermost side edge underlying the rear side wall of the rim at floor level, and means for mounting the reflective panel beneath the piano case , said elevated lid reflecting sound forwardly from the top of the case and said sound reflector reflecting sound rearwardly from the bottom of the case, whereby to enhance the distribution in all directions of sound radiated by the soundboard.

4,211,143

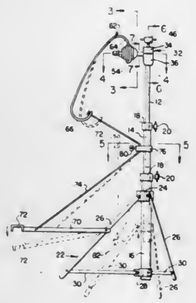
MUSICAL INSTRUMENT

Robert J. Cote, 9692 E. Outer Dr., Detroit, Mich. 48213

Filed Apr. 16, 1979, Ser. No. 30,105

Int. Cl.[3] G10D *13/08*

U.S. Cl. 84—402 **8 Claims**



1. A musical instrument comprising an elongated member, a base on one end of the elongated member holding it in an upright position, a flat flexible member, connecting means attaching the flat flexible member to the upper end of the elongated member, an operator lever pivotally connected to the base, and an elongated flexible member connecting the operator lever to the flat flexible member so that the latter said member can be selectively flexed to produce different tones when it is struck.

4,211,144

ADJUSTABLE PITCH DRUM

Randall L. May, 8312 Seaport Dr., Huntington Beach, Calif. 92646

Filed Dec. 21, 1978, Ser. No. 971,857

Int. Cl.[2] G10D *13/02*

U.S. Cl. 84—411 A **1 Claim**

1. An adjustable pitch drum assembly comprising,

an imperforate hollow drum shell having an open end,

an exteriorly threaded annular ring member supported on the exterior of said drum shell,

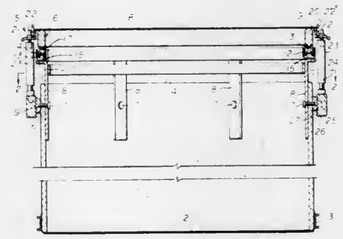
a second annular ring member, interiorly threaded and threadedly supported on said first named ring member,

a plurality of rod members, supported in substantially parallel relation with their lower ends equally spaced and supported in said second ring member,

a drum head assembly comprising a supporting hoop and a clamping hoop and a drum head secured therebetween in normally stretched relation,

said clamping hoop being supported on the upper ends of said rod members in spaced relation to the open end of said drum shell,

a plurality of supporting members equally spaced around the open end of said drum shell and supported on the inside of



said shell and extending outwardly therefrom in parallel relation to each other and to said supporting rods,

an annular member of channel-shaped cross section supported on the upper ends of said supporting members,

a plurality of equally spaced roller bearing members supported in said channel shaped annular member,

a tensioning hoop of a plastic material of a low coefficient of friction supported on said bearing members and abutting said drum head, and

said second annular member being rotatable around said first named annular member to adjust the position of said clamping hoop and drum head relative to said tensioning hoop to vary the tension of said drum head while maintaining the same in a predetermined spaced relation to the open end of said drum shell.

4,211,145

BLIND RIVET

Gernot Dolch, Heidelberg, Fed. Rep. of Germany, assignor to Mecano-Simmonds GmbH, Heidelberg, Fed. Rep. of Germany

Filed Sep. 2, 1975, Ser. No. 609,775

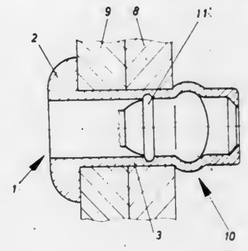
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1974, 2442292

Int. Cl.[2] F16B *13/06*

U.S. Cl. 85—72 **1 Claim**

1. A blind rivet for coupling two work pieces having aligned through-holes, being comprised of a tubular rivet with a through-hole and a set head and a mandrel having a pull shank, a thickened head which forms a snap head at the free end of the tubular rivet when the mandrel is retracted, and the pull shank of the mandrel breaks away at the preset breaking point after the formation of the snap head, one of said work pieces being adjacent the rivet set head and the other said work piece being adjacent said thickened head, the improvement comprising:

said rivet being fabricated out of thermoplastic synthetic material and said mandrel having a conical part spaced from said thickened head, and a cylindrical part between said thickened head and said conical part, said conical part tapering down to a break joint with said pull shank, an integral sealing ring at the juncture of the said conical part and said cylindrical part and located between said break joint and the greatest diameter of the head, the outer diameter of said ring being greater than said conical part and said cylindrical part so that the ring projects radially all along its circumference from the conical part and the



cylindrical part, the diameter of the ring being also larger than the through-hole of the tubular rivet, and the distance between the greatest diameter of the head and the sealing ring is chosen so that the sealing ring is disposed inside the through-hole of said other work piece when the rivet is set, said break joint being inside the through-hole of the rivet when it is broken whereby to have no part of the draw shank extending from the rivet after the rivet is set and the draw shank broken off.

4,211,146

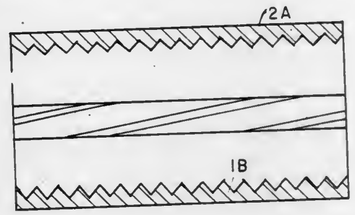
RIFLE GUN BARREL

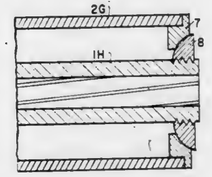
Richard L. Bradley, 6602 Bowie Dr., Springfield, Va. 22150

Filed Dec. 28, 1977, Ser. No. 865,226

Int. Cl.[2] F41F *17/08*

U.S. Cl. 89—16 **5 Claims**





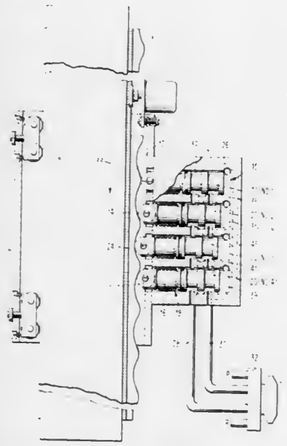
1. A composite rifle gun barrel formed of a rifled inner tube and an outer sleeve, with the rear of the outer sleeve bearing on the rifle receiver and the front of the outer sleeve bearing on a bushing and a spherical nut threaded to the muzzle of the inner tube, so that the outer sleeve is in compression and the inner tube is in tension.

4,211,147

SERVO-CONTROL VALVE FOR A LINEAR HYDRAULIC MOTOR

Hugo A. Panissidi, Peekskill; Glenmore L. Shelton, Jr., Carmel, both of N.Y., and Peter M. Will, Norwalk, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,760
Int. Cl.² F15B *13/02*
U.S. Cl. 91—184 **4 Claims**



1. A servo-control valve for a linear hydraulic motor that drives a linear cam, comprising:

a hydraulically actuated control valve piston contained in a motor cylinder block, each said control valve piston having a groove which is in fluid communication with a source of fluid pressure for driving said piston;

a cylindrical cam follower plunger interposed in axial alignment between said valve piston and a linear cam, said cam follower plunger not being attached to said valve piston but being maintained in linear contact with said valve piston by means of hydraulic back pressure on the control valve piston, said cam follower plunger including a cam follower roller bearing being supported by a yoke at one end of said plunger for engagement with said linear cam, said yoke supporting said cam follower roller bearing by means of a guide pin providing its shaft axis and serving to prevent the cylindrical plunger from rotative movement; and

ball bearing means preloaded between said cam follower plunger and said motor cylinder block such that said ball bearing means experience only a rolling friction.

4,211,148

HOT GAS MOTOR

Raymond E. Boss, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1978, Ser. No. 945,951
Int. Cl.² F01B *13/04*
U.S. Cl. 91—499 **6 Claims**

1. A gas powered motor comprising:

a housing having a central cavity, a pressurized gas inlet, an exhaust gas outlet and an outlet aperture;

an inner body mounted within said central cavity for rotation about a first axis relative to said housing, said inner body having two ends, an output shaft on one end extending along said first axis through said output aperture, and a plurality of open cylindrical chambers on the other end, said cylindrical chambers being arranged in a circular pattern centered around and aligned parallel with said first axis, and each of said cylindrical chambers being evenly spaced from adjacent cylindrical chambers;

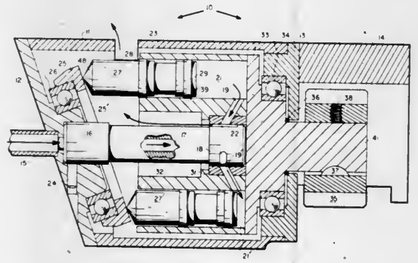
a plurality of pistons, each having a conical end and a flat end, and each piston being sealingly slidable between first and second positions within one of said cylindrical chambers, said conical ends on said pistons extending respectively from each of said cylindrical chambers;

a pivot plate mounted within said housing central cavity for rotation about a second axis, said pivot plate having a flat annular contact surface which is perpendicular to and centered around said second axis and in confronting opposed relationship with the conical ends of said pistons, wherein said second axis intersects said first axis at a point;

a rod having first and second ends and a central passageway which is open on said first end, said rod being aligned with said first axis, said first end being adjacent said pressurized inlet, and said second end being adjacent said inner body, said rod attached to said housing and cooperating with said pressurized gas inlet for conducting a pressurized gas from the exterior of said housing to a point within said central cavity;

a graphite interface located adjacent to said rod and said inner body, said graphite interface being penetrated by said separate passages and containing said terminal points;

valving means cooperating between said rod and said inner body for selectively delivering said pressurized gas from said rod to each of said cylindrical chambers according to a predetermined sequential order, where said rod has a lateral passageway communicating between said central



passageway and a point on the surface of said rod adjacent said inner body, and said inner body has a plurality of separate passages, each communicating between a different one of said cylindrical chambers and a different terminal point on the surface of said inner body adjacent said rod wherein said terminal points are spaced from one another and located momentarily adjacent each of said lateral passageways as said inner body rotates relative to said housing, whereby said lateral passageway aligns and communicates with each of said separate passages according to a foresaid predetermined sequential order; and

venting means cooperating among said rod, said inner body and said exhaust gas outlet for exhausting gas from said cylindrical chambers to the exterior of said housing according to said predetermined sequential order, said rod has a relieved portion spaced from said lateral passageway and aligned with each of said inner body passage terminal points according to aforesaid predetermined sequential order as said inner body rotates relative to said housing, whereby exhaust of gas within said cylindrical chambers to said central cavity and out through said exhaust gas outlet is enabled; and

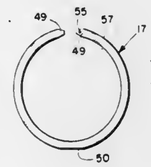
whereby pressurized gas within said rod is selectively distributed to each cylindrical chamber, in order, driving the conical end of each respective piston into contact with said pivot plate flat annular contact surface, resulting in uncountered reaction forces which cause rotation of said inner body and pivot plate around said first and second axes respectively, thereby enabling stroking of said pistons from said first position to said second position, said pivot plate returning said pistons from said second position to said first position thereby exhausting gas from said cylindrical chambers.

4,211,149

SPLIT LOCK RING FOR LOCKING ACTUATOR AND METHOD FOR MANUFACTURING THE SAME

Louis C. Hrusch, Chesterland, Ohio, assignor to Pneumo Corporation, Boston, Mass.

Filed Oct. 13, 1977, Ser. No. 841,936
Int. Cl.² F15B *15/26*
U.S. Cl. 92—27 **4 Claims**



1. A lock ring assembly for a piston cylinder actuator comprising a split lock ring having ends of reduced thickness formed by inwardly tapering the radially outer surface and outwardly tapering the radially inner surface uniformly to distribute the bending loads therealong and a flat on the outer diameter thereof diametrically opposite the reduced thickness ends to provide load carrying symmetry, means radially to expand and contract said lock ring selectively to lock the piston to the cylinder to fix their relative axial positions or to unlock the piston from the cylinder to permit relative axial movement therebetween with peripheral sliding contact between one axial surface of the lock ring and one diametrical surface of the piston or cylinder, such sliding surface of the lock ring by being lapped in its sliding configuration has a uniform periphery conforming to the cylinder or piston diametrical surface about substantially its entire periphery during the sliding movement.

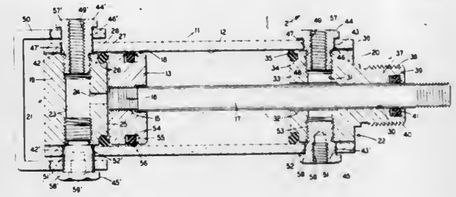
4. A method for assembling a split lock ring selectively to lock and unlock a piston and cylinder actuator by radial expansion and contraction comprising the steps of selecting a generally smoothly contoured, initially flat split lock ring having sufficient diameter to cross sectional configuration reliably to undergo the necessary radial movements, tapering the inner and outer surfaces of the ring to form reduced thickness ends, bending the split lock ring into a generally circular configuration having a diameter intermediate the diameters describing the minimum and maximum radial extremes for the split locking ring, forming a flat on one lock ring surface diametrically opposite the tapered ends by removing a volume of material generally equal to the material removed for the reduced thickness ends, holding the split lock ring body in the configuration corresponding to its unlocked condition, lapping one diametrical surface of the split lock ring when thus held, and assembling the thus lapped split lock ring on means radially to expand and contract the same in the piston and cylinder actuator so that the lapped surface will be received in one of the piston or cylinder parts while locked and will be in substantially uniform peripheral sliding contact with said one part while unlocked.

4,211,150

AIR CYLINDER

Norman S. Framberg, Glenview, Ill., assignor to Abex Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 845,836, Oct. 26, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 937,161
Int. Cl.² F01B *15/04;* **F16J** *15/18*
U.S. Cl. 92—119 **8 Claims**



1. A fluid operated cylinder comprising a tube having a blind end and a rod end;

a piston disposed within said tube for reciprocal movement therein;

a rod attached to and movable with the piston;

a blind end closure disposed in the blind end of said tube to close the blind end;

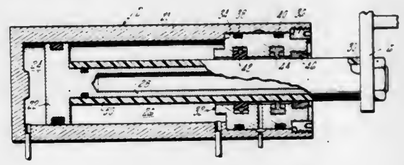
a rod end closure disposed in the rod end of said tube, an axial bearing bore in said rod end closure to receive said rod therethrough for reciprocation relative thereto, the diameter of said rod end closure being less than an inside diameter of the tube to allow slight movement of the rod end closure relative to the tube, wherein said rod end closure can move to align said bearing bore with said rod when the rod is axially misaligned with the tube to prevent binding between said rod and said bearing bore and between said piston and said tube, radial bores formed in the tube adjacent the rod end of the cylinder, a porting bore formed in said rod end closure, said porting bore being aligned with said radial tube bores, a pair of plugs inserted through said tube bores to engage opposite ends of said porting bore to thereby secure said rod end closure within said tube, a fluid passageway formed in one of said plugs, said one plug being adapted to receive a working fluid line to provide working fluid to and receive working fluid from the rod end of the cylinder, a first seal for preventing fluid from passing between the inside surface of the tube and the rod end closure and a second seal for preventing fluid from passing between the inside surface of the tube and the head end closure.

4,211,151

JAM PROOF PISTON

Karl H. Wallischeck, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 800,766, May 26, 1977, abandoned. This application Nov. 14, 1978, Ser. No. 960,521
Int. Cl.² F01B *1/00*
U.S. Cl. 92—146 **7 Claims**



1. A control including:

(1) a cylinder-piston assembly comprising:

a. a cylinder having a bore portion,

b. a piston positioned in said cylinder bore for reciproca-

tion therewithin and defining a pressure chamber on at least one side thereof within said bore,

c. a piston rod extending from said piston longitudinally along said bore and terminating at a station external thereof,

d. a fixed wall member supported from said cylinder and having an aperture enveloping said piston rod and constituting the structural end wall of said pressure chamber,

e. a nonstructual, frangible sleeve snugly enveloping said piston rod and being snugly enveloped by said wall member aperture and being of selected wall thickness and frangibility so that when said sleeve and piston rod are subjected to sharp impact, the piston rod will deform and the sleeve will disintegrate, at least in the vicinity of the sharp impact and the piston rod deformation, and the piston rod so deformed will be able to pass through the wall member aperture with the sleeve so disintegrated,

(2) a fluid pressure source connected to said pressure chamber to cause said piston to move within said cylinder during normal operation, and

(3) a fluid actuator means operatively connected to said cylinder-piston assembly to cause said piston to reciprocate within said cylinder when said piston rod is so deformed and said sleeve so disintegrated due to sharp impact.

5. A control including:

(1) a cylinder-piston assembly comprising:

a. a cylinder having a bore portion,

b. a piston positioned in said cylinder bore for reciprocation therewithin and defining a pressure chamber on at least one side thereof within said bore,

c. a piston rod extending from said piston longitudinally along said bore and terminating at a station external thereof,

d. a fixed wall member supported from said cylinder and having an aperture enveloping said piston rod and constituting the structural end wall of said pressure chamber,

e. a nonstructural, deformable sleeve snugly enveloping said piston rod and being snugly enveloped by said wall member aperture and being of selected wall thickness and deformability so that when said sleeve and piston rod are subjected to sharp impact, the sleeve will deform and the piston rod so deformed will be able to pass through the wall member aperture with the sleeve so deformed,

(2) a fluid pressure source connected to said pressure chamber to cause said piston to move within said cylinder during normal operation, and

(3) a fluid actuator means operatively connected to said cylinder-piston assembly to cause said piston to reciprocate within said cylinder with said piston rod and said sleeve so deformed due to sharp impact, and

(4) wherein said sleeve is fabricated of soft material so as to deform upon sharp impact and so as to deform upon contact with said wall member aperture in response to the actuating pressure of said actuator means causing said piston to reciprocate to permit said piston rod and hence said piston to continue to reciprocate.

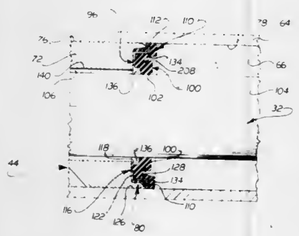
4,211,152

POWER STEERING MOTOR SEAL

John B. Colletti, Grosse Pointe Park, and Forrest W. Howell, Rochester, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 17, 1978, Ser. No. 897,038
Int. Cl.² F16J *15/18*
U.S. Cl. 92—168 **16 Claims**

1. A power steering apparatus for use in turning a steerable vehicle wheel, said apparatus comprising a tubular motor cylinder wall partially defining a motor chamber which receives fluid under pressure, a housing, said housing having an end section which is telescopically received in said tubular motor cylinder wall to further define said motor chamber, said end section of said housing having a cylindrical inner surface which at least partially defines a passage extending through said housing, said end section of said housing including an axially extending annular rim section, said rim section having an outer side surface area disposed in engagement with an inner side surface of said tubular motor cylinder wall, said rim section of said housing including a generally radially inwardly facing inner side surface area, said end section of said housing further including an annular end surface, said annular end surface cooperating with said radially inwardly facing inner side surface area to at least partially define a seal cavity, said rim section of said housing further including a circular end surface area interconnecting said inner and outer side surface areas of said rim section, said apparatus further including an axially movable rack bar extending axially through said motor chamber and said passage in said housing, a piston fixedly connected with said rack bar and cooperating with said tubular motor cylinder wall to further define the motor chamber, and seal means for sealingly engaging said rack bar and said tubular motor cylinder wall for preventing exposure of said end section of said housing to the fluid pressure in said motor chamber, for preventing leakage of fluid between said rack bar and housing through said passage, and for preventing leakage of fluid between said tubular motor cylinder wall and said housing, said seal means including an annular body section at least partially disposed in said seal cavity and a flange section ex-



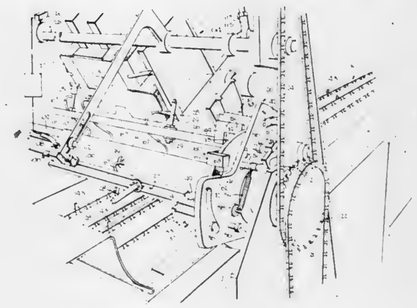
tending generally radially outwardly from said body section and across said end surface area of said rim section of said housing, said body section of said seal means including a circular inner surface area disposed in sealing engagement with said rack bar to prevent fluid leakage from said motor chamber through said passage in said housing, said flange section of said seal means including a circular outer surface area disposed in sealing engagement with the inner side surface of said tubular motor cylinder wall to prevent fluid leakage between said housing and said tubular motor cylinder wall, said seal means including elastomeric material which at least partially defines said body and flange sections of said seal means and a reinforcing member disposed in said elastomeric material, said reinforcing member having an annular main section extending between said body and flange sections of said seal means and a retaining section which extends radially outwardly from said main section and is disposed in said flange section of said seal means, said main section of said reinforcing member being at least partially disposed radially inwardly of said inner side surface area of said housing rim section, said retaining section of said reinforcing member extending across said end surface area of said housing rim section to at least partially support said flange section of said seal means, said reinforcing member further including an annular support section extending axially outwardly from said retaining section in a direction away from said main section and generally parallel to the inner side surface of said tubular motor cylinder wall to support said circular outer surface area of said flange section in sealing engagement with the inner side surface of said tubular motor cylinder wall.

4,211,153

CARTON ERECTING APPARATUS

Robert W. Walters, Caldwell, and James Nylander, Budd Lake, both of N.J., assignors to Container Equipment Corporation, Cedar Grove, N.J.

Filed Aug. 15, 1978, Ser. No. 933,823
Int. Cl.² B31B *1/76*
U.S. Cl. 93—53 SD **22 Claims**



1. A cartoner comprising

a conveyor for conveying a series of carton blanks sequentially from an input end to a packaging station;

a hopper for supplying blanks to said conveyor;

a feeder for sequentially feeding blanks from said hopper through an arcuate path to said input end of said conveyor; said feeder including a rotatable shaft, a support bar extending parallel to and in radially spaced relation to said shaft, at least one set of suction cups mounted on said bar for rotation with said shaft, and means for moving said suction cups radially of said shaft between a rest position and a radially extended position during rotation of said shaft to pick up a carton blank from said hopper, said means including a pair of cams on said shaft at respective ends thereof for rotation therewith, each said cam having at least one arcuate slot and at least one shaped cam slot therein, a pair of discs, each said disc being mounted on a respective cam for relative rotation therewith and being secured to a respective end of said support bar for rotation therewith, a pair of cam followers, each cam follower being secured to a respective end of said support bar and projecting into a respective cam slot of a respective cam, at least one stop pin secured to at least one of said discs and projecting through said arcuate slot of a respective one of said cams for movement in an endless path, and a pawl disposed on a fixed axis in said endless path of said stop pin for engaging said stop pin during rotation of said shaft and said cam to prevent rotation of said discs and said support bar whereby said cam slots direct said cam followers and said support bar radially outwardly of said shaft; and

breaking means disposed in said arcuate path for breaking a carton blank impinging thereon on itself.

4,211,154

APPARATUS FOR IMPROVING THE COLLECTION OF GASES INTO A SUCTION ORIFICE

Marion L. Eakes, 2618 W. Vandalia Rd., Greensboro, N.C. 27407

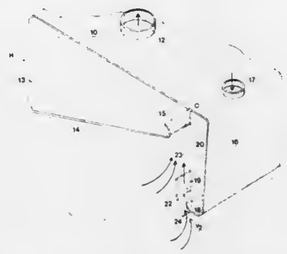
Filed Sep. 20, 1978, Ser. No. 943,791
Int. Cl.² F21C *15/08*; F23J *11/00*
U.S. Cl. 98—115 LH **2 Claims**

1. Apparatus for use with a suction orifice which has a source of negative pressure associated therewith and into which air from an air space is exhausted comprising:

(a) an air having a wall forming an outlet therefor, said nozzle being connected to a source of positive pressure, said air nozzle being spaced from and directed toward said suction orifice for establishing a first venturi to aid in the directing of air from said space into said orifice;

(b) an auxiliary plate extending in substantially parallel, spaced relation to the wall of said air nozzle adjacent the air space affected by the suction orifice;

(c) the edge of said auxiliary plate furthermost from said



intake orifice being spaced from said intake orifice a distance greater than the corresponding distance between said intake orifice and the outlet of said air nozzle for establishing a second venturi;

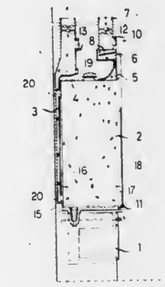
(d) whereby the capture point of air from said air space is effectively moved further from said orifice and less contaminated gases are allowed to escape.

4,211,155

LABORATORY HOOD

Kurt Stoll, Steinfurt; Herbert Hinder, Günterod, and Nikolaus Corpus, Schönbach, all of Fed. Rep. of Germany, assignors to Heinrich Prinkmann Anlagenvernachtung, Dreieich, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,921
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758348
Int. Cl.² F23J *11/00*
U.S. Cl. 98—115 LH **8 Claims**



1. A laboratory hood comprising:

an at least partially closed housing having

an elongated interior,

an elongated top housing wall formed with an inlet opening extending generally the full length of said top wall,

an upright back housing wall substantially of said length, and

an openable front wall also substantially of said length, said inlet opening having a front edge immediately adjacent said front side and a back edge spaced backwardly therefrom;

a conduit having

a width generally equal to said length,

an outlet end connected to said inlet opening,

a generally planar front conduit wall terminating at said front edge, and

a forwardly and downwardly convexly curved back conduit wall curving from its upper end generally parallel to said front conduit wall to its bottom end generally parallel to said top housing wall at said back edge; and

means for feeding a gas under superatmospheric pressure to said conduit for introduction of said gas into said interior as a curtain extending said full length and flowing generally parallel to said front and top housing walls at said inlet mouth.

4,211,156

APPARATUS FOR MAKING A COFFEE BEVERAGE

Jürgen Zimmermann, Mulle 5, 3321 Salzgitter, Fed. Rep. of Germany

Filed Apr. 4, 1978, Ser. No. 893,507

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715582

Int. Cl.[2] A47J *31/00*

U.S. Cl. 99—287 **2 Claims**



1. Apparatus for the production of a coffee beverage from dry coffee powder contained in a filter bag comprising a hollow cylindrical housing closed at one end and open at the other end for the receipt of the filter bag, handle means extending from the closed end of said cylinder, and a series of tongues extending generally radially inward along the open end for the retention of said filter bag, the walls of said cylindrical housing being corrugated along circumferential fold lines to form a bellows permitting the closed end to the pumped relative to the open end, said walls having at least one opening therein to thereby provide a passage with the open end for a current of water created by pumping said housing in a body of water.

4,211,157

COFFEE MAKER

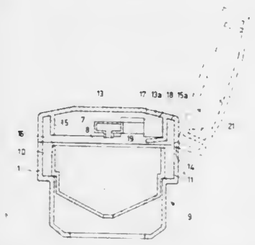
Koichi Sakai, and Kazunori Ikeyama, both of Suita, Japan, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 7, 1978, Ser. No. 884,373

Claims priority, application Japan, Mar. 8, 1977, 52-24341

Int. Cl.[2] A47J *27/52*

U.S. Cl. 99—306 **1 Claim**



1. A coffee maker including a housing having an open top; a cover normally closing the top of the housing and hingedly connected to the housing; a filter holder for ground coffee arranged in the housing underneath the cover; an arcuate flange extending downwardly from the inner surface of the cover in its closed position, said arcuate flange being situated adjacent the hinged side of the cover and above the top edge of the filter holder; and a flange extending radially inwardly and obliquely downwardly from the lower edge of the arcuate flange to form a receptacle; condensation water on the inner surface of the cover flowing into the receptacle when the cover is moved into its opened position, said condensation water flowing into the filter holder when the cover is returned to its closed position.

4,211,158

HOLDING DEVICE

DeLong Rice, Jr., 2140 Victoria Ave., Memphis, Tenn. 38116

Filed Jul. 23, 1979, Ser. No. 59,973

Int. Cl.[3] A47J *37/12*

U.S. Cl. 99—403 **7 Claims**



1. A holding device for use with an article of food that is impaled on a stick, said holding device comprising:

(a) body means having a pair of small vee-shaped grooves extending transversely thereacross and a central larger vee-shaped groove extending transversely thereacross; and

(b) spring clamp means having a first portion attached to said body means and having a second portion extending across said grooves for clamping the stick to said body means to hold the article of food from said body means.

4,211,159

PORTABLE BARBECUE GRILL

Ovidiu Coatu, 1314 W. 111th St., Cleveland, Ohio 44102

Filed Oct. 6, 1977, Ser. No. 840,106

Int. Cl.[2] A47J *37/04*

U.S. Cl. 99—421 V **1 Claim**



1. A portable barbecue grill comprising:

a continuous tube frame formed having a horizontal V-shaped base portion with the arms of the V continuing upwardly as two vertical portions and continuing outwardly to form a V-shaped horizontal top portion with the point of the V extending vertically downward for a distance substantially one-half the height of said barbecue grill, forming a handle means for grasping and transporting said barbecue grill;

a pair of detachable supporting legs attached to said vertical frame portion, said legs being removable to permit said grill to be supported on a surface by said V-shaped base portion;

a pair of vertically arranged fire containers each having a front grill and mounted on one of said vertical frame portions;

a pair of spits each being rotatably suspended from one of the two arms of said top portion and being arranged in front of said fire containers;

a pair of grease collector pans each being rotatably mounted on one of the arms of said V-shaped base portion and each being disposed beneath one of said two spits;

an electric motor mounted on said V-shaped base portion at the point of the V; and

a sprocket and chain drive means operably connecting said electric motor and said pair of spits and said pair of grease collector pans, wherein said sprocket and chain drive means comprise a first sprocket wheel affixed to an output shaft of said motor, a second sprocket wheel rotatably mounted on said frame and being operably connected to said pair of spits and to said pair of grease collector pans for mutual rotation therewith, and a chain operably connecting said first and second sprocket wheels; whereby said electric motor rotates said spits and said grease collector pans in front of said fire containers.

4,211,160

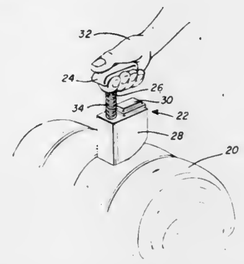
METHOD AND APPARATUS FOR INTERNALLY SEASONING MEAT PRIOR TO COOKING

Dennis W. D. Bieser, Box 144, R.F.D. 2, Iola, Wis. 54945

Filed Jun. 5, 1978, Ser. No. 912,246

Int. Cl.[2] A23B *4/02;* **A23L** *1/22*

U.S. Cl. 99—494 **12 Claims**



1. In a device for introducing a composition of flowable seasoning internally into meat, the improvement comprising a piercing tube, a rod enclosed by the tube and tapered means fittable against an end of said tube, the rod being joined at one end to the tapered means, and a body portion being attached around said tube, said tube holding a predetermined quantity of said seasoning and being insertable in unison with said tapered means substantially vertically into said meat, said body portion including a reservoir for holding said seasoning and dispensing therefrom said predetermined quantity of seasoning, said tube being retractable from said meat by longitudinal movement of the tube with respect to said rod, the tapered means being adapted for piercing and penetrating the meat free of problems of plugging the piercing tube and excessive pressure required to force the piercing tube into the meat, whereby said seasoning is introduced into the meat from the piercing tube under the influence of gravity without application of pressure on the seasoning.

4,211,161

MACHINE TOOLS AND MACHINE FOR REMOVING STEM FROM VEGETABLE, SUCH AS CABBAGE OR CAULIFLOWER

Louis J. Jourdan, 36, rue de Dinan, 35120 Dol de Bretagne, and Jean M. Saillour, Lieu dit "Beauregard", Plouenan, both of France

Filed Mar. 17, 1978, Ser. No. 887,544

Int. Cl.[2] A23N *15/02;* **A47J** *21/00*

U.S. Cl. 99—638 **12 Claims**



1. A cauliflower stump-removing and floweret-separating tool comprising a lower cylinder having an upper cutting edge, a conical nose piece positioned above the upper cutting edge of said cylinder and having a point with a plurality of downwardly dependent separating blades affixed thereto, the cylinder and the nose piece being coaxially arranged so that the blades and the point of the nose piece are directed along the central axis of the cylinder, means for supporting said nose piece and the cutting edges of the nose piece blades for movement toward and within the cylinder, whereby a cauliflower may be placed on the cylinder with the stump thereof being positioned inside the cylinder with the cutting edge of the cylinder positioned to engage the cauliflower along the circumferential periphery of the stump thereof when the head of the cauliflower is pressed into the cylinder, and means for lowering the nose piece with the nose piece blades moving toward, penetrating, and cutting an initial passageway through, the top of the head and continuing into the stump of the cauliflower so that the conical nose piece follows the initial passageway cut by said blades, whereby said nose piece spreads, separates, and cuts the flowerets of the said top, the blades penetrating into said cylinder with the tapered side of said conical nose piece engaging the cutting edge of the cylinder and thereby detaching the stump which falls through the cylinder while the flowerets of the individual sections scatter around the outside cylinder.

4,211,162

PROCESS FOR THE BATCH FILTERING OF SUSPENSIONS

Wendel Bastgen, Betzdorf, Fed. Rep. of Germany, assignor to Alb. Klein & Co. GmbH KG, Niederfischbach, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,039

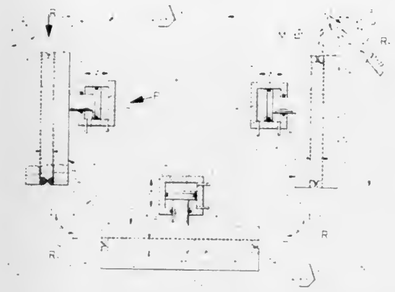
Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720178

Int. Cl.[2] B30B *5/06, 15/30*

U.S. Cl. 100—36 **14 Claims**

1. A method of discontinuously filtering suspensions, comprising advancing a suspension stepwise along a path of travel through discrete separated first and second pressure chambers, applying external pressure to said suspension to effect filtering

of the suspension by compression in said first pressure chamber to form a filter cake, the suspension being stationary in said first pressure chamber during said compression of said suspension, applying shearing forces to the surface of the resulting filter cake to alter its structure in the travel of said filter cake



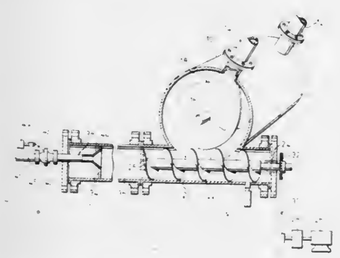
from the first filter chamber to the second filter chamber and applying external pressure to the filter cake to effect filtering of the cake by compression in said second pressure chamber, said filter cake being stationary in said second pressure chamber during said compression of said cake.

4,211,163

APPARATUS FOR DISCHARGE OF PRESSURE COOKED PARTICULATE OR FIBROUS MATERIAL

Douglas B. Brown, 2104 Prince Charles Rd., Ottawa, Ontario, Canada (K2A 3L3), and Robert Bender, 488 Denbury Ave., Ottawa, Ontario, Canada (K2N 2N7)

Filed Nov. 7, 1978, Ser. No. 958,515
Int. Cl.² B30B *3/00*
U.S. Cl. 100—145 **5 Claims**



1. Apparatus for discharging cooked particulate or fibrous material from a pressurized vessel, which comprises:

a discharge conduit adapted to receive material from the pressurized vessel and being in pressure communication therewith, the discharge conduit having an upstream end, a downstream end and a materials compaction zone adjacent its downstream end;

a feed conveyor in said discharge conduit, adapted to feed material therein towards the downstream end of the discharge conduit and to cause compaction thereof in the compaction zone;

a materials outlet at the downstream end of the discharge conduit, said materials outlet comprising an exit passage of small cross-sectional area as compared with that of the discharge conduit so as to cause compaction of material in the compaction zone by said feed conveyor;

valve means in said exit passage, said valve means being movable rapidly between a fully open position and a fully closed position to permit passage of said material therethrough;

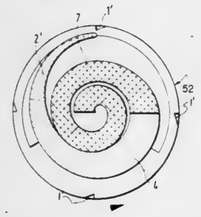
operating means for said valve means adapted to move the valve means rapidly between its fully open and fully closed position, at predetermined intervals, to allow intermittent passage therethrough of cooked materials.

4,211,164

ROTARY DRUM-TYPE COLLECTING VESSEL WITH A RAKING AND PRESSING SCREW

Karl Fichtl, Augsburg; Rudolf Berger, Friedberg; Otto Dürnfelder, Augsburg, and Erich Pilz, Gersthofen, all of Fed. Rep. of Germany, assignors to Industrie-Werke Karlsruhe-Augsburg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,340
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1978, 2802653
Int. Cl.² B30B *3/02*
U.S. Cl. 100—145 **5 Claims**



1. A rotary drum-type collecting vessel for receiving and transporting refuse or other bulk material, comprising, a hollow rotary collecting drum having an inside wall and an end opening, a hollow cover plate covering said opening with a frusto conical interior surface which projects into the collecting drum, said surface terminating in a frustum plane within said drum, and having a lower portion with a charge opening and carrying a spirally extending feed blade on said surface, pushing element means provided on the inside surface of the rotary drum and rotating therewith so as to force the bulk material, as by a raking worm, into the collecting drum and pressed therein, as by a thrust worm, in a zone between said inside wall of the rotary drum and said frustum plane, said pushing element means comprising ribs, said feed blade extending from the upper vertex point of said frusto conical surface up to over the entire charge opening at the inside plane of said surface and enlarging radially to such an extent as to keep its outer border uniformly space from said ribs, and additional compressing means associated with said drum and effective in the zone of said frustum plane.

4,211,165

APPARATUS FOR THE COMPRESSIVE HANDLING OF A STRIP OF MATERIAL

Gottlob Schill, Reutlingen, Fed. Rep. of Germany, assignor to Bruderhaus Maschinen GmbH, Reutlingen, Fed. Rep. of Germany

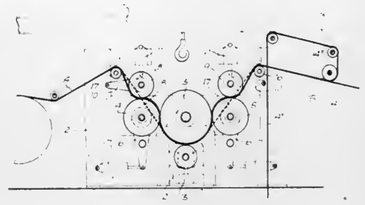
Filed Nov. 13, 1978, Ser. No. 960,441
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2752034
Int. Cl.² D21F *3/08*; D21G *1/02*
U.S. Cl. 100—162 R **10 Claims**

1. An apparatus for the compressive handling of a strip of material, especially a strip of paper, comprising:

at least five rollers arranged on substantially parallel axes, said rollers being arranged to cooperate with each other in pairs;

means for movably mounting at least one roller of each pair so as to change the size of a compressive zone between two rollers;

said rollers being arranged to form at least two successive steps; and



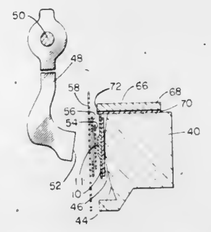
cable means for guiding the strip between rotational axes of each pair of rollers.

4,211,166

PRINT BAND ONE EDGE GUIDE

Thomas T. Hardt, Mount Clemens, Mich., assignor to Computer Peripherals, Inc., Minneapolis, Minn.

Continuation of Ser. No. 799,843, May 23, 1977, abandoned.
This application Sep. 1, 1978, Ser. No. 939,154
Int. Cl.³ B41J *1/20*
U.S. Cl. 101—111 **9 Claims**



1. A guide assembly for maintaining the position of a print band in a band printer, said print band being trained around a drive pulley and an idler pulley and along a print line, said drive pulley and said idler pulley being floatably mounted in said band printer for movement normal to the length of said printing line, said band printer having a plurality of print hammers mounted for impact with the print band along said printing line, said assembly comprising:

a platen positioned along said printing line and having a surface slidably engaging a surface of said print band;

an elongated guide member extending along an edge of said platen adjacent to the region of said printing line, said guide member having a face extending along the region of said printing line and beyond the surface of said platen and the print band slidably engaged thereagainst; and

bias means continually biasing said drive and idler pulleys, and the print band trained thereon, in a direction normal to the length of said printing line and toward said face of said guide member to maintain one edge of said print band in sliding engagement with the face of said guide member to retain said print band in precise position along the printing line during travel therealong.

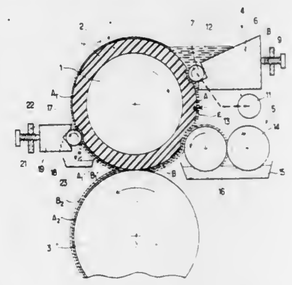
4,211,167

INKING DEVICE FOR PRINTING WITH GREASY INK

Louis G. Corse, Chaumont-sur-Tharonne, France, assignor to Machines Chambon, Orleans, France

Filed Jul. 12, 1978, Ser. No. 923,898
Claims priority, application France, Jul. 22, 1977, 77 22525
Int. Cl.² B41F *7/26, 7/36, 31/06*
U.S. Cl. 101—148 **10 Claims**

1. An inking device for a printing machine using greasy ink, comprising an inking roller with a soft surface layer tangential to a printing cylinder and rotating at the tangential speed of the latter, in the opposite rotational direction, and a small-diameter rod-shaped doctor roller made of hard material extending parallel to the inking roller applied under pressure against the inking roller, a mass of greasy ink being housed in a space lateral upstream, with reference to the direction of rotation of the inking roller, of the zone of contact of the inking roller and printing cylinder, a dampening device engaging and applying a film of dampening liquid, such as water, to the previously inked surface of the inking roller downstream of the zone of



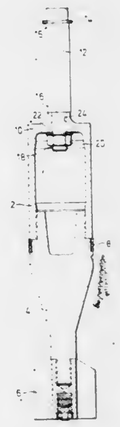
contact of the inking roller with the doctor roller and upstream of the zone of contact of the inking roller and the printing cylinder, wherein said inking device comprises, downstream of the zone of contact of the inking roller and the printing cylinder, a second rod extending parallel to the inking roller, applied under strong pressure against the soft surface layer of the inking roller and forming a barrier solely against the dampening liquid while allowing all the residual film of ink remaining in the periphery of the inking roller to pass and return to the mass of ink in said space.

4,211,168

FIN-STABILIZED PRACTICE MISSILE

Heinz Häep, Duesseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 26, 1978, Ser. No. 946,052
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 7732971[U]
Int. Cl.² F42B *13/20*
U.S. Cl. 102—41 **7 Claims**



1. A fin-stabilized unarmed practice missile for impact diagram target shooting, comprising an essentially cylindrical

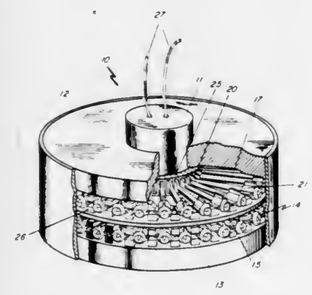
missile body having a rearwardly tapered rear end, a winged tail unit affixed to the tapered rear end, the body having a front end portion extending normal to the axis thereof, the front end portion having an axially extending opening therein, a forwardly extending pin formed separately from the missile body disposed axially of the missile body, the pin having its rear end received in the opening in the front end portion of the missile body, means securing the pin to the front end portion of the missile body, and a radially outwardly extending annular flange on the pin disposed normal to the axis of the pin and adjacent to the forward end thereof to create pressure equalization about the missile as the missile travels through the air.

4,211,169

SUB PROJECTILE OR FLECHETTE LAUNCH SYSTEM

Jack Brothers, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 168,504, Jul. 30, 1971. This application Dec. 12, 1973, Ser. No. 421,894
Int. Cl.[3] F42B *13/48*
U.S. Cl. 102—67 **6 Claims**



1. An explosive launcher for and including flechettes which comprises:

means for explosively generating a radially directed explosive plane wave including selective initiating means;

a plurality of spaced apart plate members extending radially from and coaxial with said generating means;

each of said flechettes comprising a thin elongated body having a pointed forward end and a plurality of fins at the rear end, and said flechettes being disposed about said plane wave generating means and positioned intermediate adjacent of said plates, said flechettes being oriented in a direction transverse to their intended direction of flight; and

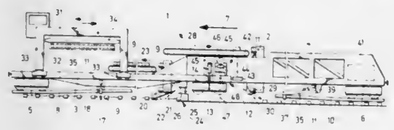
means for supporting said plates and said flechettes.

4,211,170

MOBILE APPARATUS FOR THE CONTINUOUS REPLACEMENT OF AN OLD TRACK BY A NEW TRACK

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH, Vienna, Austria

Filed Aug. 18, 1978, Ser. No. 934,997
Claims priority, application Austria, Sep. 2, 1977, 6345/77
Int. Cl.[2] E01B *27/11*
U.S. Cl. 104—2 **14 Claims**



1. A mobile apparatus for the continuous replacement of an old track by a new track, the track consisting of two rails and ties supporting the rails on ballast, which comprises a train assembly of track-bound freight and work cars arranged for movement in an operating direction along a right of way during the replacement, the right of way consisting of a section of the old track, a section of the new track and an intermediate section wherein the old track is replaced by the new track, a main one of the work cars being mounted at respective ends thereof on two undercarriages running respectively on the old and new track sections, and the main work car carrying means for lifting and spreading the rails of the old track means for receiving the ties of the old track, means for laying the ties of the new track, means for laying the rails of the new track on the laid ties of the new track, and means for guiding the rails substantially without friction along the intermediate section, the improvement of

(a) the main work car comprising a carrier frame supported on the two undercarriages and extending therebetween, the carrier frame being comprised of

(1) two carrier frame parts and

(2) a pivot intermediate the undercarriages linking the two carrier frame parts,

(b) a third undercarriage vertically adjustably mounted on the carrier frame in the range of, and below, the pivot for adjustment between an inoperative, raised position and a lowered position wherein it is capable of traveling on the track,

(c) a vertically adjustable ballast smoothing plow arrangement mounted on the carrier frame between the means for receiving the ties of the old track and the means for laying the ties of the new track, and

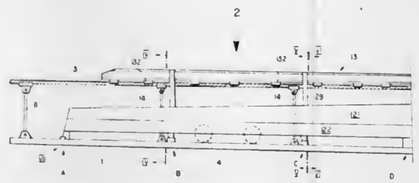
(d) a hydraulic drive for vertically adjusting and supporting the vertically adjusted plow arrangement.

4,211,171

STATION FOR SUSPENDED TRACK-TYPE RAILWAY

Rudolf Baltensperger, Kaiserstuhlstr. 157, CH-8181 Höri, and Hans B. Pfister, Frohhaldenstr. 20, CH 8180 Bülach, both of Switzerland

Filed Nov. 1, 1978, Ser. No. 956,443
Claims priority, application Switzerland, Nov. 14, 1977, 13832/77
Int. Cl.[2] E01B *25/24*
U.S. Cl. 104—123 **10 Claims**



1. In a suspended railway having

a substantially fixed tower;

a substantially fixed station;

a suspension cable slung between said tower and said station;

a plurality of horizontally spaced upright hangers depending from said cable;

a horizontally extending track having a suspended section secured in said station; and

a car travelable along said track, said track being vertically deflectable from an upper unloaded position into a lower loaded position as said car travels along it;

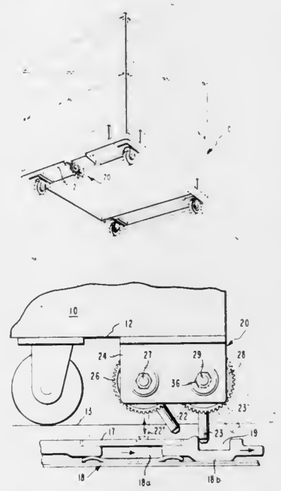
the improvement comprising a substantially rigid guide beam projecting from said station between said track and said cable toward said tower and having a lower guide surface bearing downwardly on said track in said unloaded position therof, whereby as said car approaches said fixed section of said track at said station said suspended section is pulled down from said guide beam.

4,211,172

APPARATUS FOR CONNECTING TOW CARTS TO A CONVEYOR

Walter H. Chapman, Beachwood, N.J.; David E. Hiland, Seaford, Del.; Erwin B. Knies, Norristown, Pa., and Robert E. Oberlin, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1978, Ser. No. 892,404
Int. Cl.[2] B61B *13/12*; B65G *17/42*
U.S. Cl. 104—172 BT **4 Claims**



1. In a system for propelling wheeled carts, that includes a moving conveyor and a wheeled cart positioned over said conveyor and adjacent thereto for movement by said conveyor, an apparatus for transmitting force between said conveyor and said cart, said apparatus comprising: a frame attached to said cart between the cart and the conveyor; a pair of hubs mounted to said frame on axes transverse to the movement of the conveyor; means for providing counter rotary movement to one hub with respect to the other; each hub having a pin extending radially from its axis with the pins being slideably mounted to the hubs for radial movement with respect to said axes, one of said pins at a time being placed to act as a force transmitting member between the conveyor and the cart by rotary movement of the other; means for applying a predetermined force to one of said pair of hubs to resist rotary movement of said hubs, said hubs having rotary movement imparted thereto when said cart meets an obstruction overcoming the predetermined force applied to the hubs, said pins moving toward and away from said axes according to the profile of the conveyor when rotary movement is imparted to the hubs.

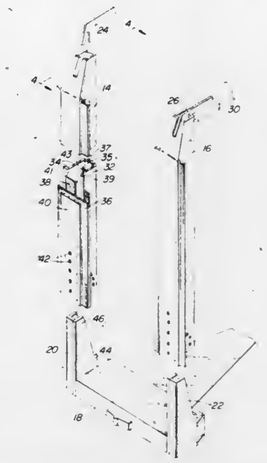
4,211,173

END CONSTRUCTION FOR A RAILWAY CAR

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jan. 16, 1978, Ser. No. 869,759
Int. Cl.[2] B61D *17/06*
U.S. Cl. 105—402 **6 Claims**

6. In a collision post for an end wall structure extending between a roof and a buffer sill of a railway car, a vertically extending rectangular cross-sectioned anchor member for said collision post, said anchor member being secured to said buffer sill and having a lower portion adjacent the buffer sill and an upper portion extending upward from said lower portion, said lower portion and said buffer sill forming an open rectangular box structure, and said upper portion being a tapered channel member consisting of one of the shorter sides of the rectangle and the two adjacent longer sides, said longer sides being



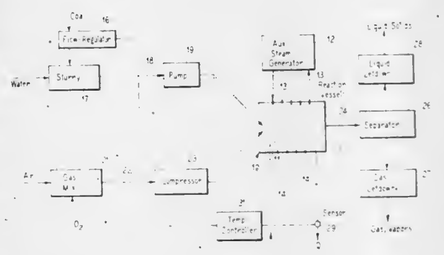
tapered toward said shorter side as they extend upwardly from said box structure.

4,211,174

WET OXIDATION OF COAL FOR GENERATION OF HEAT ENERGY

William J. Martin, Watervliet, Mich., and Kwang-Tzu Yang, South Bend, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 7, 1978, Ser. No. 931,570
Int. Cl.[2] F23D *19/00*
U.S. Cl. 110—263 **35 Claims**



1. A process for oxidizing coal to produce recoverable heat energy without generating gaseous sulfur-containing by-products comprising the steps of simultaneously and continuously:

(A) maintaining a reaction zone at a temperature ranging from about 475° to 650° F. and at a pressure ranging from about 1400 to 3000 psig,

(B) charging to said reaction zone an aqueous slurry containing from about 0.5 to about 50.0 weight percent of coal on a 100 weight percent total slurry basis, said coal being substantially in the form of small particles, at a pressure of from about 1400 to 3000 psig,

(C) charging to said reaction zone a gas containing from about 10 to 100 weight percent of oxygen on a 100 weight percent total gas basis at a pressure ranging from about 1400 to 3000 psig,

(D) admixing said slurry and said gas in said reaction zone,

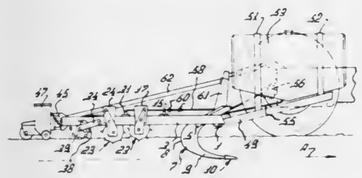
(E) removing the resulting reactant mixture from said reaction zone,

(F) controlling the respective rates of said slurry charging,

said gas charging, and said removing to produce in said reaction zone a residence time for the components present in said reaction zone which is at least sufficient for generation therein of an approximately equilibrium composition of oxidizable components and oxidized components at said reaction zone temperature and said reaction zone pressure, and

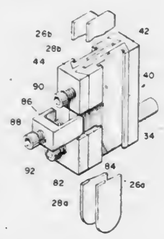
(G) removing from said reaction zone the heat energy produced in said reaction zone which is in excess of that needed to sustain in said reaction zone said reaction zone temperature and said reaction zone pressure.

4,211,175
AGRICULTURAL IMPLEMENTS
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland
Filed Aug. 8, 1978, Ser. No. 931,999
Claims priority, application Netherlands, Aug. 15, 1977, 7708956
Int. Cl.[2] A01C *23/02*
U.S. Cl. 111—6 **15 Claims**



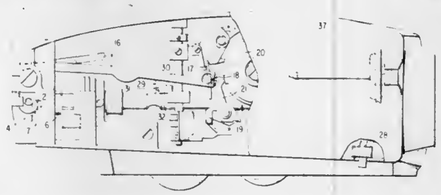
1. An agricultural implement comprising a frame having elongated beam means extending transverse to the direction of normal implement travel, forward coupling means on said beam means between the lateral ends thereof and said coupling means being connectable to a three-point lifting hitch of a prime mover, fluid dispensing means on said frame and said dispensing means comprising a pair of fluid tanks means to enable said tanks to assist in movement of said implement to a raised position, said enabling means comprising supports that extend forwardly from said beam means in the direction of implement travel, with said tanks being positioned at relative opposite sides of said coupling means and each tank being located on one of said supports in front of said beam means and said coupling means, whereby the weight of said tanks tends to counter balance the weight of the implement and assist the hitch in raising the implement to a transport position.

4,211,176
KNIFE BLOCK FOR TUFTING MACHINES
Herbert B. Price, Hixson, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.
Filed Nov. 15, 1978, Ser. No. 960,734
Int. Cl.[2] D05C *15/00*
U.S. Cl. 112—79 R **6 Claims**



1. A knife block for a tufting machine comprising an elongated body member having a pair of longitudinally extending spaced flange portions, said flange portions being connected together by a longitudinally entending substantially centrally disposed web having a pair of laterally spaced faces, each said face with the adjacent inner faces of the flange defining a cavity on each side of the web, a pair of longitudinally extending inserts each having a configuration adopted to be slidably received in each cavity and having first and second laterally spaced faces, each insert having a first groove formed in the first face adapted to abut said faces of the web, said groove and the face of the web together defining a first knife receiving channel, a second groove formed in each insert substantially parallel to the first groove undercut from the second face to define a second knife receiving channel, and locking means for securing each insert in the respective cavity.

4,211,177
AUTOMATIC SLOW SPEED FOR SKIP STITCH MODE
Thomas G. Graham, Emerson, N.J., assignor to The Singer Company, Stamford, Conn.
Filed Apr. 30, 1979, Ser. No. 34,794
Int. Cl.[2] D05B *3/02, 69/18*
U.S. Cl. 112—221 **5 Claims**

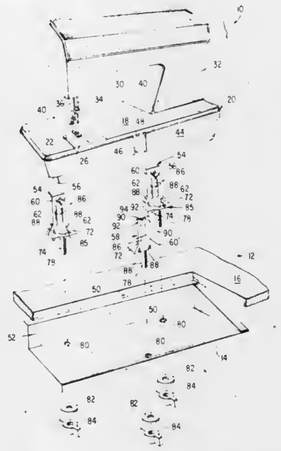


1. A sewing machine having a frame, stitch forming instrumentalities including a skip stitch mechanism having a needle bar supported for endwise reciprocation and for lateral jogging movement for the formation of zigzag stitches, pitman means for influencing the lateral jogging movement of said needle bar beyond a predetermined range of laterally jogged positions, and interrupting means for said endwise reciprocation of said needle bar effective only during lateral jogging movement of said needle bar beyond said predetermined range, a drive shaft journalled in said frame for driving said stitch forming instrumentalities, a work feed mechanism actuated in timed relation with said drive shaft, an electric motor supported on said frame for rotatably driving said drive shaft, said motor capable of operating at full rated speed when connected to a source of AC current and operating at a reduced speed when connected to a source of half wave rectified current, a half wave rectifier connected in series with the armature circuit of said electric motor to effect said reduced speed operation of said motor and a first electric switch means connected in parallel with said half wave rectifier for providing a current path around said half wave rectifier when said switch is closed to effect operation of said electric motor at full rated speed, wherein the improvement comprises:

a. sensing means responsive to the lateral position of said needle bar for determining that said lateral jogging movement of said needle bar is beyond said predetermined range, and

b. override means responsive to said sensing means for overriding the effect of said first electric switch means and effecting said reduced speed operation of said motor when said lateral jogging movement of said needle bar is beyond said predetermined range.

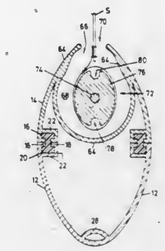
4,211,178
SEWING MACHINE MOUNT
Wesley R. Peterson, Boundbrook, N.J., assignor to The Singer Company, Stamford, Conn.
Filed Feb. 28, 1979, Ser. No. 16,057
Int. Cl.[2] D05B *75/00, 75/02*
U.S. Cl. 112—258 **21 Claims**



1. A sewing machine mount system for mounting to a machine supporting surface or shelf of a sewing machine cabinet, table, or the like, a sewing machine having a pair of hinge pin sockets provided in a side of the machine bed adjacent and specifically spaced from an edge of the work support surface thereof comprising, in combination, a pair of uniform height generally rigid mounting brackets structurally adapted, constructed and arranged to be affixed to the machine bed through cooperation with the hinge pin sockets to depend downwardly thereof to rest on and be also affixed to such machine supporting surface or shelf, together with a flat topped machine rest member structurally adapted, constructed and arranged to be fixedly carried by said machine supporting surface or shelf for extending upwardly thereof to engage a shoulder or flange of such machine bed on a side thereof adjacent an edge of the machine bed work support surface opposite the edge adjacent the pin sockets and sized so as to maintain such work supporting surface of said machine bed parallel such machine supporting surface or shelf with the machine being located automatically thereby with the machine work supporting surface a fixed and specified distance from the machine supporting surface or shelf independent of the depth of the machine bed beneath the pin sockets.

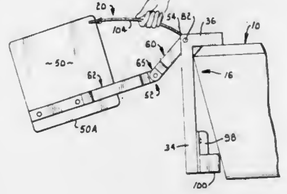
4,211,179
COLUMNAR STRUCTURE
Louie G. Saunders, 3 Turnberry Ave., Bunkers Hill, East London, Cape Province, South Africa
Filed Jun. 12, 1978, Ser. No. 914,687
Claims priority, application South Africa, Jun. 15, 1977, 77/3603; Sep. 12, 1977, 77/5464; Oct. 20, 1977, 77/6268
Int. Cl.[2] B63H *9/10;* **E04H** *12/00*
U.S. Cl. 114—90 **10 Claims**

1. A longitudinally split hollow columnar structure comprising first and second extruded relatively thin-walled sections, having inwardly directed longitudinal edges, the longitudinally extending edges of the first section being juxtaposed to longitudinally extending edges of said second section, each of said sections including a slot extending in the direction of elongation of the section, each slot, in cross-section, having a narrow entrance portion leading to a wider portion and said sections being arranged with said narrow entrance portions of the slots continuous, and a fastening member having a cross-sectional shape compatible with the configuration of the longitudinally extending cavity constituted by said co-operating slots, said fastening member extending in the direction of elongation of said sections and inter-engaging with faces to both



sections in radial and peripheral directions to releasably lock said sections to prevent separation thereof radially and peripherably.

4,211,180
COMPENSATING TROLLING FIN
James C. Brooks, Jr., 2108 S. Kathleen, Jonesboro, Ark. 72401
Filed Jul. 3, 1978, Ser. No. 921,313
Int. Cl.[2] B63H *25/00*
U.S. Cl. 114—144 R **2 Claims**



1. A drift resisting trolling fin comprising:

a generally J-shaped, frame adapted to be rigidly secured to a boat, said frame including an upper hook portion of predetermined length attachable over a transom and a vertical channel portion extending downwardly from said hook portion and adapted to be positioned adjacent a stern of said boat;

linkage means pivotally secured to said frame and snugly receivable within said channel portion, said linkage means including:

a first linkage section having a length substantially equal to or greater than said frame hook portion; and

a second linkage section pivotally coupled to said first linkage section;

blade means rigidly secured to said second linkage section for selective deployment in either an operable position in water or in an inoperable position substantially within said boat; and

frame slot means defined within said frame channel portion for receiving at least a portion of said blade means when in an operable position for reinforcing said trolling fin against twisting forces.

4,211,181

APPARATUS FOR APPLYING ADHESIVE TO OPPOSED SURFACES OF SHAPED MEMBERS

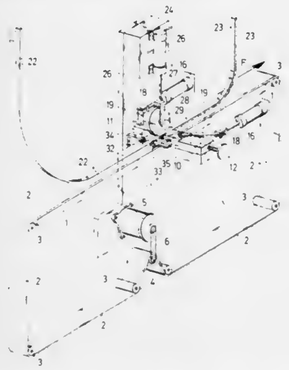
Achim Mueller, Herzogenrath; Hans-Dieter Peetz, Aachen; Peter Scheeren, Wuerselen; Helmut Sistig, Aachen, and Andreas Schallenberg, Cologne, all of Fed. Rep. of Germany, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

Filed Jul. 15, 1977, Ser. No. 816,163

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632337

Int. Cl.[2] B05C *5/02*

U.S. Cl. 118—411 **5 Claims**



1. An apparatus for simultaneously coating opposed lateral faces of a curved part with an adhesive material as the curved part travels along a predetermined curved path lying in a vertical plane, said adhesive material being applied at a lower run portion of the curved path, comprising:

(a) conveying means for advancing the curved part through the curved path, said path having a predetermined approximately straight section along the lower run of the path;

(b) a pair of spaced apart extrusion nozzles located along the approximately straight section of said path, each nozzle having a port laterally aligned to the other and being disposed on opposite lateral sides of the advancing curved part for applying adhesive material to each of the corresponding lateral faces of the curved part;

(c) means for setting the lateral spacing between the portions of the extrusion nozzles to a spacing complementary to the lateral width of the curved part;

(d) pressing means for pressing the curved part independently of the nozzles in a direction perpendicular to a line extending between the extrusion nozzle ports and into firm engagement with said conveying means when disposed along the straight section of said path; and

(e) lateral guiding means for maintaining the curved part in a centered position between said extrusion nozzles independently of the nozzles as the part passes therebetween, said guiding means being located only immediately adjacent the point of application of said adhesive material and being the sole lateral guiding means along said path so as to leave the curved part free of said guiding means along substantially most of the curved path.

4,211,182

DIFFUSION APPARATUS

Wojciech Rosnowski, Summit, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 5, 1978, Ser. No. 903,118

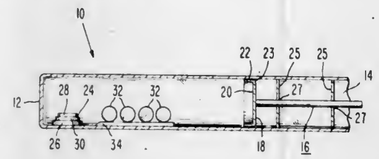
Int. Cl.[2] C23C *13/08*

U.S. Cl. 118—725 **6 Claims**

1. A diffusion apparatus comprising:

a hollow diffusion tube having a length, a closed end and an open end, said tube including a diffusion chamber for containing (1) a source of dopant vapors and (2) semiconductor material into which said dopant is to be diffused;

carrier means positioned within said diffusion chamber for restrictor means positioned within said diffusion tube comprising a plate having substantially the same shape as the cross-section of said hollow portion of said diffusion tube, said cross-section taken perpendicular to the length of said diffusion tube, said plate being oriented perpendicular to said length of said tube



means for positioning said restrictor means within said diffusion tube said restrictor means being located between said diffusion chamber and said open end of said diffusion tube for partially obstructing said diffusion tube to limit the escape of dopant vapors from said diffusion chamber through said open end of said diffusion tube in an amount which is small enough to be negligible in comparison to the generation rate of the dopant vapors generated by said source of dopant vapors.

4,211,183

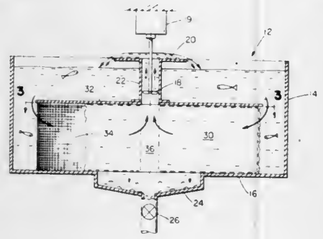
FISH RAISING

David P. Hoult, 39 Norwich Rd., Wellesley, Mass. 02181

Continuation of Ser. No. 822,884, Aug. 8, 1977, abandoned. This application Mar. 2, 1979, Ser. No. 17,070

Int. Cl.[2] A01K *63/00*

U.S. Cl. 119—3 **22 Claims**



14. Apparatus for raising food fish, comprising

a fish tank for maintaining said fish in a volume of water

bacteria-supporting water treating means submerged in said volume of water,

said treating means having

an inlet

an outlet and

a plurality of bacteria-supporting wall means extending between said inlet and outlet providing a plurality of horizontally extended unobstructed passageways having a minimum cross sectional dimension of about one centimeter for free flow of water generally horizontally therethrough in contact with bacteria supported on said wall means, said passageways being vertically unobstructed for gravity removal of sludge therefrom

sludge collection means beneath at least a portion of said passageways, and

water recirculation means for recirculating said volume of water through said fish tank and said treating means.

4,211,184

MILKING

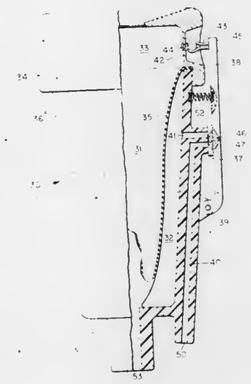
John H. Abrahamson, R.D., Cambridge, New Zealand

Filed Mar. 6, 1978, Ser. No. 883,847

Claims priority, application New Zealand, Mar. 28, 1977, 183708

Int. Cl.[2] A01J *5/04*

U.S. Cl. 119—14.02 **19 Claims**



1. A method of milking an animal including applying a teat cup to a teat to be milked; the teat cup having an inflation and a mouth piece; the interior of the inflation being in communication with a milk line connected to a source of vacuum; the exterior of the inflation being in communication with a pulsating vacuum source; characterised in that the level of vacuum within the mouth piece is monitored and is used to control the level of vacuum applied to the exterior of the inflation.

4,211,185

FLOOR MAT FOR STALLS OR CRIBS

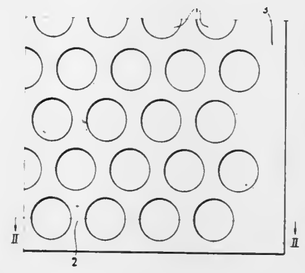
Rune Karlsson, Blacksta, POB 5133, Nyköping, Sweden (611 00)

Filed Jun. 23, 1978, Ser. No. 918,518

Claims priority, application Sweden, Jun. 27, 1977, 7707394

Int. Cl.[2] A01K *29/00*

U.S. Cl. 119—28 **6 Claims**



1. A floor mat having top and bottom surfaces, a given area dimension and being made throughout of a compressible material for use in animal stalls, the improvement comprising a plurality of recesses in a predetermined pattern having parallel walls and being located in the bottom surface of the mat and an undivided bottom surface formed of a continuous land of the bottom material having a continuous, lower surface in a plane coincident with the bottom-most level of the mat and extending in all directions surrounding said recesses, said recess parallel walls being substantially vertical and in planes normal to said continuous land, said recesses having a diameter of at least 20 mm, said continuous land between adjacent recesses having a minimum distance of between about 6 to 12 mm, said recesses having a continuous lower edge in a plane coincident with the bottom-most level of the mat, whereby hoofs of animals standing on the mat are distinctly depressed in the mat with the area dimension of the mat being unchanged thereby.

4,211,186

FLUIDIZED BED COMBUSTERS

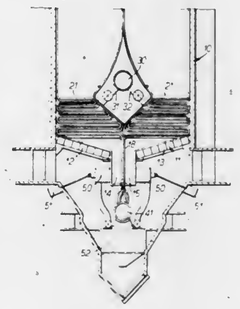
Arnold P. Pearce, London, England, assignor to Flameless Furnaces Limited, London, England

Filed May 1, 1978, Ser. No. 901,656

Claims priority, application United Kingdom, May 2, 1977, 18354/77

Int. Cl.[2] F22B *1/02*

U.S. Cl. 122—4 D **21 Claims**



1. A fluidized bed combustion apparatus comprising in a common structure a plurality of fluidized bed modules arranged side by side in a bank of modules and a plurality of generally vertical walls arranged to separate the bed material of modules in said bank, each such module comprising:

a diffuser bed support arranged to support and fluidize a bed of granular material by means of air diffusion into the bed,

feed means for supplying material to be burnt to a bed supported on the bed support, and

control means for controlling the operation of the bed independently of the operation of the other modules.

4,211,187

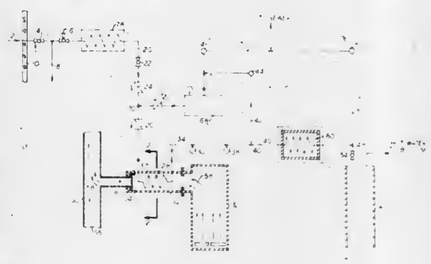
ENERGY CONSERVATION SYSTEM FOR HOT WATER HEATERS AND STORAGE TANKS

William C. Farris, 3109 Debera Way, Louisville, Ky. 40220

Filed Apr. 10, 1978, Ser. No. 894,801

Int. Cl.[2] F22B *33/00*

U.S. Cl. 122—20 B **8 Claims**



1. In combination with a furnace for heating a building and a water heater, an energy conservation system comprising a first coil of water pipe disposed within a chamber or duct of said furnace for absorbing heat from said furnace to heat water

in said first coil, said pipe being connected between a pressurized source of cold water for said building and a cold water inlet of said heater, said system further comprising

a spurge tank for storing a quantity of water therein selectively connectable across said first coil,

means for diverting water flowing between said first coil and heater inlet to said spurge tank when the pressure of the water flowing between said first coil and heater increases to a first pre-selected maximum pressure value,

means for diverting water flowing between said first coil and heater inlet to said spurge tank when the temperature of the water flowing between said first coil and heater inlet increases to a first pre-selected maximum temperature value,

first check valve means for restraining the back-filling of said spurge tank with water flowing from said source and from the upstream end of said first coil,

second check valve means for restraining the back flow of water to said source from said spurge tank and said first coil,

means for venting water and steam from said spurge tank to a sewer line when the pressure of water in said spurge tank reaches a second pre-selected pressure valve, and

means for venting water and steam from said spurge tank when the temperature of water in said spurge tank reaches a second pre-selected temperature value.

4,211,188

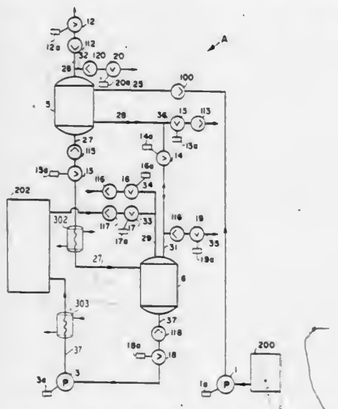
METHODS AND APPARATUS FOR FEEDING LIQUID INTO APPARATUS HAVING HIGH PRESSURE RESISTANCE

Thomas Y. C. Chen, 5509 King Arthur Ct., Westmont, Ill. 60559

Continuation-in-part of Ser. No. 841,490, Oct. 12, 1977, Pat. No. 4,165,718. This application Mar. 23, 1979, Ser. No. 23,334

Int. Cl.[2] F22D *5/28*

U.S. Cl. 122—451 R **63 Claims**



1. A high efficiency energy saving condensate feeding system for feeding condensate into a high pressure vapor generator of more than 85 psig vapor pressure, comprising:

a first and a second energy saving high pressure vessel filled with the same kind of vapor as is generated by said generator and said vapor in said first vessel being high pressure vapor of which most of the energy content is to be restored to said generator;

means for charging condensate into said second vessel to fill said second vessel up to a substantial liquid level in said second vessel;

means for selectively isolating said second vessel;

at least two levels of high pressure vapor distributing tubes with multiple openings under said liquid level in said second vessel, and some of the openings of said tube at upper level are directed to inject vapor to lower level to slow down the upward motion of a portion of vapor released from a vapor distributing tube at lower level for effective vapor condensing;

means for releasing said high pressure vapor in said first vessel into said second vessel and to inject said vapor from said vapor distributing tubes at various elevations into the condensate in said second vessel for reducing the vapor pressure by condensing a portion of said vapor and to preserve the energy content of said condensed vapor;

means for charging said condensate from said second vessel into said first vessel;

means for isolating said first vessel from said second vessel;

means for bleeding high pressure vapor from said high pressure vapor generator into said first vessel to build up a pressure head in said first vessel for assisting condensate feeding into said generator;

means for charging said condensate from said first vessel into said generator until said first vessel is selectively drained while said vapor bleeding means is selectively in operation;

and means for selectively isolating said first vessel from said high pressure vapor generator.

4,211,189

INTERNAL COMBUSTION ENGINE WITH DUAL INDUCTION SYSTEM AND MORE PARTICULARLY TO COMBUSTION CHAMBER DESIGN THEREOF

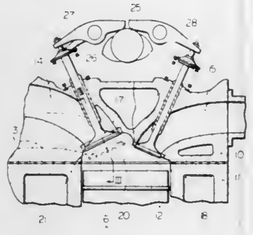
Kyugo Hamai, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 15, 1978, Ser. No. 961,044

Claims priority, application Japan, Jan. 12, 1978, 53/2274

Int. Cl.[2] F02B *19/16, 19/10*

U.S. Cl. 123—308 **7 Claims**



1. An internal combustion engine comprising:

a cylinder block having a cylinder formed therein;

a piston reciprocably mounted within said cylinder;

a cylinder head positioned over one end of said cylinder, said cylinder head having a surface and a cavity formed therein and arranged within said surface;

a main chamber formed by the clearance volume between said surface of said cylinder head and said piston;

an auxiliary chamber formed by said cavity;

a primary intake valve reciprocably mounted within said cylinder head and arranged within said surface;

a secondary intake valve reciprocably mounted within said cylinder head and arranged within said cavity;

said cylinder head having therein a primary intake port passage leading to said primary intake valve and adapted to direct a first fluid charge into said cylinder to swirl in said main chamber under all of the operating conditions of the engine; and

said cylinder head having therein a secondary intake port passage leading to said secondary intake valve and adapted to direct a second fluid charge into said cylinder in such a direction as to impede the swirling motion of the first fluid charge under predetermined operating conditions of the engine.

4,211,190

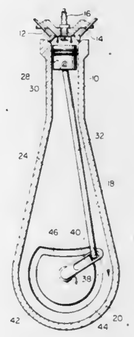
GROOVE GUIDED PISTON LINKAGE FOR AN INTERNAL COMBUSTION ENGINE

Robert Indech, 37 Mendon St., Worcester, Mass. 01604

Continuation-in-part of Ser. No. 881,192, Feb. 27, 1978, abandoned. This application Jun. 5, 1978, Ser. No. 912,385

Int. Cl.[3] F02B *75/04, 75/32*

U.S. Cl. 123—48 B **6 Claims**



1. In an internal combustion engine having a cylinder, a piston reciprocable in said cylinder, and a connecting rod pivotally connected at one end to said piston, a housing wall extending integrally from said cylinder, said wall tapering outwardly and terminating in an annular bottom end, a drive shaft extending through said annular wall portion with its axis at right angles to the stroke of said piston in alignment therewith and linkage means between said connecting rod and said drive shaft for rotating said drive shaft, said linkage means positioning said connecting rod out of alignment with the axis of the piston stroke at the period of highest compression and ignition, said piston being motionless at the period of highest compression, said connecting rod moving out of alignment with the axis of the piston stroke during the motionless period of said piston, the power stroke and exhaust stroke of said linkage being identical and centered about the axis of said drive shaft; wherein said linkage includes a slotted crank arm at the end of said drive shaft, said connecting rod being linked to said crank arm, and means for guiding the lower end of said connecting rod around the end of said drive shaft, and said connecting rod is provided with a pin at right angles to it lower end said pin extending through said crank arm slot; and wherein said guide means comprises a groove cut into said housing wall, said groove comprising a lower first circle portion and a truncated upper portion formed by the arc of a second circle curving in the direction of the center of the first circle portion wherein curvature of the second circle portion is less than that of the first circle portion.

4,211,191

FUEL SUPPLYING DEVICE FOR INTERNAL COMBUSTION ENGINE

Yoshihisa Kawamura, Fujisawa, and Masaaki Saito, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 6, 1978, Ser. No. 940,096

Claims priority, application Japan, Oct. 14, 1977, 52/123757

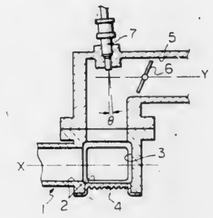
Int. Cl.[2] F02B *19/10, 75/18*

U.S. Cl. 123—52 M **8 Claims**

1. In an internal combustion engine having a combustion chamber

means defining an air induction passageway leading to said combustion chamber, said induction passageway including an upstream portion having a first longitudinal axis and a downstream portion having a second longitudinal axis, said upstream portion and said downstream portion interconnecting at a first predetermined angle to define an elbow;

a fuel injector disposed in said elbow to inject a jet of fuel through said downstream portion in the direction of said combustion chamber, said injector being oriented to inject said jet of fuel at a second predetermined angle with



respect to said second longitudinal axis which is directed back toward said upstream portion so that the flow of air entering said downstream portion from said upstream portion tends to deflect said jet of fuel so that it tends to follow said second longitudinal axis and substantially none of the fuel impinges on the walls of said downstream portion.

4,211,192

CAMSHAFT FOR AN INTERNAL COMBUSTION ENGINE

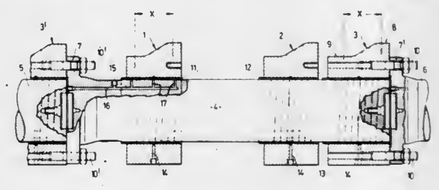
Peter Baumgartner, Wiesendangen, and Robert Kuhne, Frauenfeld, both of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Dec. 1, 1977, Ser. No. 856,487

Claims priority, application Switzerland, Dec. 10, 1976, 15565/76

Int. Cl.[2] F01L *1/04*

U.S. Cl. 123—90.6 **1 Claim**



1. A cam shaft comprising

a plurality of coaxially disposed elongated cam shaft portions, each shaft portion having an integral flange at one end;

a discoid cam member releaseably secured at an opposite end of each shaft portion;

a plurality of screws releaseably securing said flange of one shaft portion to a discoid member of an adjacent shaft portion; and

a plurality of sleeves shrunk-fit on each shaft portion, each said sleeve having a conical outer surface;

a plurality of cams mounted on each shaft portion, each said cam being shrunk-fit on a respective outer surface of a respective sleeve;

an oil pressure line in each shaft portion communicating with an inside surface of at least one sleeve to deliver pressurized oil thereto to permit turning of said one sleeve on said shaft portion; and

a radial bore in each respective cam for passage of a pressurized medium to an inner surface thereof to permit removal of said respective cam from said shaft portion.

4,211,193
SPEED REGULATING SYSTEMS

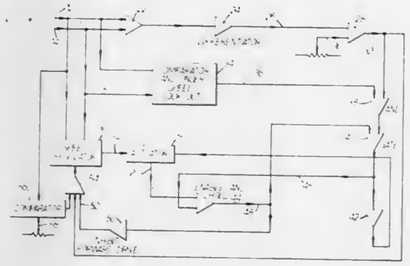
Michael D. Cox; Norman Hunt, and Kenneth W. Colver, all of Rugby, England, assignors to Associated Engineering Limited, England

Filed Jan. 16, 1978, Ser. No. 869,649

Claims priority, application United Kingdom, Feb. 10, 1977, 05611/77

Int. Cl.² B60K *31/00*

U.S. Cl. 123—352 **5 Claims**



1. A speed regulating system for regulating the speed of an engine-driven vehicle, comprising

engine power control means for controlling the power of the engine of the vehicle,

means responsive to the actual vehicle speed to produce an input signal representing actual vehicle speed,

means producing a speed reference signal representing a pre-set value of vehicle speed,

speed regulating means connected to respond to the two said signals and to produce an output signal when the actual vehicle speed exceeds the pre-set value,

means feeding the output signal to the engine power control means whereby to tend to prevent the vehicle from being driven by the engine at a speed in excess of the pre-set value,

override control means connected to receive the input and speed reference signals and to detect therefrom when the vehicle is decelerating at at least a predetermined rate and that, simultaneously, the vehicle speed exceeds the pre-set value, and to produce an override signal in response to such detection, and

means feeding the override signal to the engine power control means to override the effect thereon of the speed regulating means and to cause the engine power control means to tend to increase the engine power.

4,211,194
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Tadashi Hattori, Okazaki; Daisaku Sawada, Susono; Kenji Goto, Susono; Takashi Shigematu, Susono; Yuji Takeda, Susono; Hiroaki Yamaguchi, Aichi, and Minoru Nishida, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 2, 1977, Ser. No. 847,812

Claims priority, application Japan, Nov. 10, 1976, 51/135501; Japan Nov. 11, 1976, 51/135548

Int. Cl.² F02P *5/04*

U.S. Cl. 123—417 **2 Claims**

1. An ignition system for internal combustion engines comprising:

an angular position detector for detecting a predetermined angular position of an engine to produce an angular position signal;

a pressure detector for detecting pressures in a cylinder of said engine to produce a pressure signal varying with said pressures;

a knock detection circuit, connected to said pressure detector and including filter means, for producing a knock signal when said filter means, receiving said pressure signal, produces an output signal having frequencies much higher than that of said pressure signal equal to the rotational speed of said engine;

an advance/retard control circuit connected to said knock detection circuit, for increasing and decreasing a retard angle quantity in accordance with the presence and absence of said knock signal;

an ignition timing computer circuit, connected to said angular position detector, said knock detection circuit and said advance/retard control circuit, for starting computation of an ignition timing of said engine in response to said angular position signal and determining said ignition timing depending on an ignition timing pattern preset in accordance with operating conditions of said engine, said ignition timing computer circuit retarding said ignition timing computed depending on said ignition timing pattern in proportion to the retard angle quantity determined by said advance/retard control circuit to thereby prevent the knock of said engine;

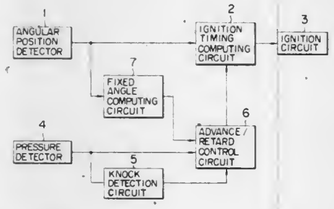
wherein said ignition timing computer circuit includes:

a capacitor;

charging means for charging said capacitor during a predetermined rotational angles of said engine in response to said angular position signal;

discharging means, for discharging said capacitor after the termination of charging said capacitor to determine said ignition timing at the completion of discharging said capacitor; and

current control means for controlling the current for either charging or discharging said capacitor in response to an



output of said advance/retard control circuit to thereby retard said ignition timing; and wherein said advance/retard control circuit includes:

another capacitor and resistors; and

charge/discharge control means for charging and discharging through said resistors said another capacitor in accordance with absence and presence of said knock signal.

2. An ignition system for internal combustion engines comprising:

an angular position detector for detecting a predetermined angular position of an engine to produce an angular position signal;

a pressure detector for detecting pressures in a cylinder of said engine to produce a pressure signal varying with said pressures;

a knock detection circuit, connected to said pressure detector and including filter means, for producing a knock signal when said filter means, receiving said pressure signal, produces an output signal having frequencies much higher than that of said pressure signal equal to the rotational speed of said engine;

an ignition timing computer circuit, connected to said angular position detector and to said knock detection circuit, for starting computation of an ignition timing of said engine in response to said angular position signal and determining said ignition timing depending on an ignition timing pattern preset in accordance with operating conditions of said engine, said ignition timing computer circuit retarding said computed ignition timing depending on said ignition timing pattern in response to said knock signal to

thereby prevent the knock of said engine; and further including

a fixed angle computer circuit connected to said angular position detector, for determining a predetermined reference angular position of said engine based on said angular position signal;

reference pressure memory means, connected to said pressure detector and said fixed angle computer circuit, for memorizing the pressure detected by said pressure detector at said reference angular position;

a maximum pressure memory means, connected to said pressure detector, for memorizing the maximum pressure detected by said pressure detector; and

ignition timing pattern setting means for presetting said ignition timing pattern in accordance with two pressures memorized by said two memory means so that the ratio between said two pressures is kept at a constant value.

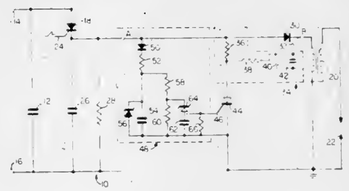
4,211,195
OVERSPEED IGNITION SYSTEM

Richard Zechlin, Beloit, Wis., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Oct. 12, 1977, Ser. No. 841,584

Int. Cl.² F02P *1/00*

U.S. Cl. 123—335 **7 Claims**



1. An ignition system for an internal combustion engine comprising spark ignition means including an ignition transformer, an electrical energy source means operative to energize said spark ignition means by providing electrical energy to said ignition transformer, controlled switching means operatively connected between said electrical energy source means and said spark ignition means to selectively pass energy from said electrical energy source means to energize said spark ignition means, trigger means operative in timed relation to the speed of said internal combustion engine to activate said controlled switching means, said controlled switching means operating under the control of said trigger means to pass pulses of energy from said electrical energy source means to said ignition transformer in timed relation to engine speed, and overspeed cutout means connected between said controlled switching means and said ignition transformer, said overspeed cutout means operating to sense the time interval between pulses of energy passed by said controlled switching means and to open the circuit between said controlled switching means and said ignition transformer to prevent a pulse of energy from reaching said ignition transformer when the time interval between said pulse of energy and the next preceding pulse of energy is less than a predetermined time.

4,211,196
CARBURETOR

Emmanuel J. H. Poirier d'Ange d'Orsay, Toulouse, France, assignor to Societe pour l'Equipement de Vehicules, Issy-les-Moulineaux, France

Filed May 5, 1978, Ser. No. 902,915

Claims priority, application France, May 12, 1977, 77 14558

Int. Cl.² F02M *7/12*

U.S. Cl. 123—439 **11 Claims**

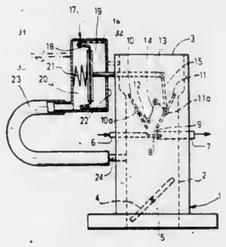
1. A device for feeding a fuel/air mixture for fuelling an internal combustion engine, comprising:

(a) fluid jet carburettor means having a combustion air path, a mixing zone in said combustion air path for fuel/air contact, a fuel inlet to said mixing zone and a fuel outlet for recycled fuel from said mixing zone whereby, in use, a flow of fuel passes from said fuel inlet to said fuel outlet across the flow of combustion air at said mixing zone in direct contact with the combustion air;

(b) fuel/air mixture flow rate control means interposed between the said mixing zone and the outlet end of the device;

(c) sensor means responsive to at least one parameter of at least one of said device and said internal combustion engine;

(d) means in said combustion air path, upstream of said mixing zone, for concentrating the flow of combustion air to a greater or lesser extent onto said mixing zone for



maintaining the richness of the fuel/air mixture leaving said fluid jet carburettor means at a desired value in response to signals from said sensor, the means for concentrating the combustion air at the zone of direct contact being a movable concentrating vane means, a suction tapping in the combustion air path between said zone of direct contact and the control vane means, and said sensor means comprising an aneroid capsule comprising first and second chambers and a flexible diaphragm which separates said first and second chambers, said first chamber being connected to said suction tapping, said first chamber of the aneroid capsule being also connected to atmosphere, and wherein a solenoid valve operated in response to engine operating parameters is included between said first chamber and the atmosphere.

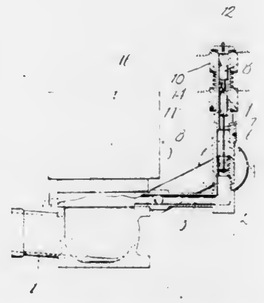
4,211,197
COMPRESSIVE PRESSURE AUGMENTATION DEVICE

Mitsuji Kawai, No. 26, 1-chome Kaname-cho, Toshima-ku, Tokyo, Japan

Filed Jul. 19, 1978, Ser. No. 925,979

Int. Cl.² F02N *23/04*

U.S. Cl. 123—585 **7 Claims**



1. A compressive pressure augmentation device for an engine of a vehicle, comprising:

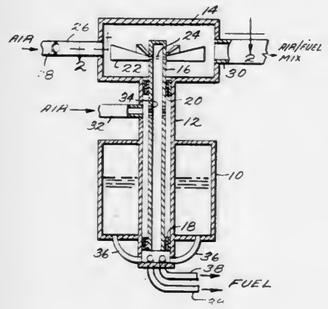
air supply means for supplying air to said engine;

air cleaning means for cleaning said air supplied to said engine;
suction means disposed between said air supply means and said air cleaning means, and operably connecting said air cleaning means to said air supply means;
valve means for controlling the amount of said air supplied to said engine in accordance with the speed of said vehicle, said valve means comprising an adjusting valve which includes a cylindrical valve and a valve rod;
said valve means being operably connected with said suction means;
iron cores mounted about said valve rod at vertically-spaced positions along said valve rod;
a cylindrical guide member connected to said adjusting valve surrounding said iron cores in a peripherally spaced relationship thereto;
electromagnetic means operably connected to said valve means for controlling the operation of said valve means, said electromagnetic means being adapted to selectively open said adjusting valve fully or partially;
said electromagnetic means including electromagnetic coils mounted about said cylindrical guide member at different heights along said cylindrical guide member;
one of said electromagnetic coils being adapted to open said adjusting valve fully; and
the other of said electromagnetic coils being slidably mounted about said cylindrical guide member and being adapted to open said adjusting valve partially.

4,211,198
AIR/FUEL MIXING ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Charles W. Thomas, Jr., Flatwoods, Ky., assignor to Leonard Furman, Bexley, Ohio, a part interest

Filed Jul. 5, 1978, Ser. No. 922,054
Int. Cl.[2] F02M *17/18*
U.S. Cl. 123—592 **9 Claims**

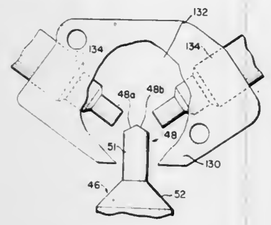


1. An air/fuel mixing arrangement for an internal combustion engine comprising:
a fuel storage container;
a rotatably mounted hollow shaft oriented to have an open lower end positioned within said container;
an impeller secured to an upper end of the shaft for rotation therewith, said impeller including a plurality of blades radially disposed with respect to the shaft in proximity to radially arranged openings provided in the shaft;
a chamber for housing said impeller;
means for introducing air within the chamber, said means being oriented to cause the air to be directed towards the impeller blades;
an adapter joined to said internal combustion engine;
a throttle plate positioned within an aperture in said adapter, said throttle plate being selectively movable to vary the effective opening of said aperture; and
passage means connecting the chamber and the aperture whereby in response to the positioning of the throttle to open said aperture, fuel is drawn from the lower end of the shaft, is atomized within the shaft by said pressurized air and then is passed through the openings in the shaft so as to be mixed by the impeller with the air introduced within the chamber, the mixture being transported to said engine via the passage means and the adapter.

4,211,199
COMPUTER CONTROLLED SONIC FUEL SYSTEM

Arthur K. Thatcher, Merritt Island, Fla. 32952, and Ed R. McCarter, Maitland, Fla., assignors to Arthur K. Thatcher, Merritt Island, Fla.

Division of Ser. No. 593,001, Jul. 3, 1975, which is a division of Ser. No. 293,377, Sep. 29, 1972, Pat. No. 4,100,896. This application Feb. 2, 1978, Ser. No. 874,522
Int. Cl.[2] F02H *5/00*
U.S. Cl. 123—445 **11 Claims**



1. In an internal combustion engine having an intake manifold, an air source for providing an airstream for entry into said intake manifold and a fuel source for said internal combustion engine, a fuel system for providing fuel from said fuel source to the airstream for the intake manifold at a point before said intake manifold reaches the combustion area for said engine, comprising fuel input means connected to supply fuel from said fuel source, fuel dispersion means mounted adjacent the path of said airstream for receiving fuel at a point adjacent the path of the airstream and redirecting said fuel as a fuel dispersion at an angle relative to the direction of the flow of said airstream and toward the center of the airstream at a point before the airstream reaches the combustion area for said engine, said fuel dispersion means having at least one inclined fuel receiving surface extending toward said airstream, the outermost end of said fuel receiving surface terminating at an apex directed toward and spaced from the center of said airstream, and fuel directing means connected to receive the fuel from said fuel input means for directing fuel against said fuel receiving surface, said fuel directing means being mounted in spaced relationship to said fuel receiving surface, said fuel receiving surface being angularly inclined relative to said fuel directing means to redirect fuel from said fuel directing means past said apex toward the center of said airstream.

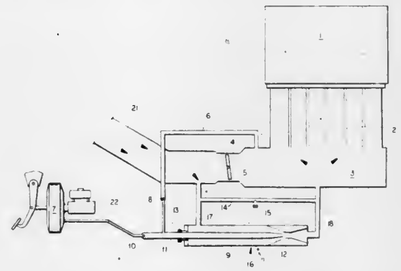
4,211,200
VACUUM FORCE AMPLIFIER FOR INTERNAL COMBUSTION ENGINE

Rodolfo Rocchio, Ingolstadt; Fritz Naumann, Stammham, and Heinrich Strotkötter, Ingolstadt, all of Fed. Rep. of Germany, assignors to Audi Nsu Auto Union Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,417
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717685
Int. Cl.[2] F02M *39/00;* **B60T** *13/00*
U.S. Cl. 123—445 **7 Claims**

1. A system comprising:
an internal-combustion engine having a throttle through which intake air passes and having an upstream side and a downstream side;

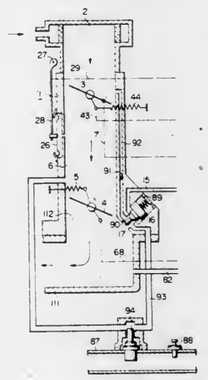
an idle-speed circuit shunting said upstream and downstream sides of said throttle;
an injector-type jet pump in said idle circuit having an output connected to said downstream side, a high-pressure input connected to said upstream side, and a low-pressure input; and
a vacuum-actuated auxiliary device having a vacuum line connected to said low-pressure input.



4,211,201
FUEL SUPPLY APPARATUS FOR INTERNAL COMBUSTION ENGINES

Masaharu Sumiyoshi; Setsuro Sekiya; Katsuhiko Motosugi, all of Toyota; Junzo Uozumi, Nagoya; Tsuneo Ando, Chiryu; Yuzo Takeuchi, and Mikio Minoura, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Asian Industry Co., Ltd., Ohbu, both of, Japan

Filed Apr. 27, 1978, Ser. No. 900,506
Claims priority, application Japan, May 4, 1977, 52/51554
Int. Cl.[2] F02M *69/00*
U.S. Cl. 12—463 **14 Claims**

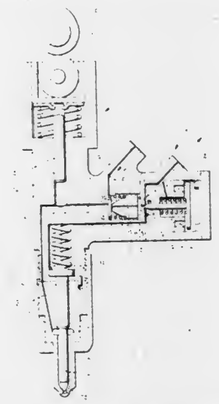


1. A fuel supply apparatus for an internal combustion engine, comprising an intake conduit leading to the internal combustion engine; a throttle valve disposed in said intake conduit; an air valve disposed in said intake conduit upstream of said throttle valve so as to define an air pressure chamber within said intake conduit in cooperation with said throttle valve; feedback control means for controlling said air valve including means for generating a signal of a magnitude proportional to pressure prevailing within said air pressure chamber and means responding to said signal for operating said air valve so that the pressure in said air pressure chamber be maintained at a substantially constant preset value; a fuel feed conduit for supplying fuel to a fuel discharge nozzle opened in said intake conduit; variable throttle means interlocked with said air valve and controlled so as to provide a flow area proportional to the opening degree of said air valve; means for maintaining a pressure difference produced across said variable throttle means at a substantially constant level; and means for automatically varying proportional ratio of said signal magnitude to the pressure in said air pressure chamber in dependence on at least one of a plurality of environmental and operating conditions of said internal combustion engine, wherein air-fuel ratio of air-fuel mixture supplied to the internal combustion engine is corrected to an optimum value for the environmental and/or operating conditions of said engine through variation of said preset value of the pressure within said air pressure chamber.

4,211,202
PUMP NOZZLE FOR AIR-COMPRESSING INJECTION INTERNAL COMBUSTION ENGINE

Günther Häfner, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 14, 1978, Ser. No. 942,162
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742466
Int. Cl.[2] F02M *57/02, 39/00;* **B05B** *1/30*
U.S. Cl. 123—457 **8 Claims**



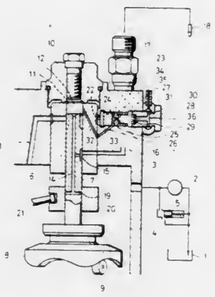
1. A pump nozzle for an air-compressing internal combustion engine, the pump nozzle including a nozzle body means, a nozzle needle arranged in the nozzle body means, a mechanically actuated pump piston means for delimiting a pump working space, an inlet bore means operatively connected with the pump working space for feeding fuel to the nozzle needle, return bore means for returning leakage fuel, and a control means for influencing a delivery of fuel by the pump nozzle, characterized in that a discharge bore means communicates with the return bore means, the control means includes a valve means longitudinally displaceably guided in a chamber means arranged in a flow path of the inlet bore means at a position upstream of the pump working space for controlling a pressure of fuel in the pump working space, means are provided for actuating said valve means in accordance with a rhythm of the engine and for controlling an opening of the discharge bore means so that, with an increase in fuel pressure, said valve means is displaced into a closed position separating the inlet bore means from the pump working space, said control means are operable to displace the valve means to an open position by opening of the discharge bore means, and in that a substantially uninterrupted throttle bore is provided in the valve means for operatively connecting the inlet bore means with the return bore means by way of the discharge bore means when said discharge bore means is open, and in that the valve means includes a forward part which projects into the inlet bore means in a cross-section-reducing manner when the valve means is in the open position.

4,211,203

FUEL INJECTION PUMP

Masayoshi Kobayashi, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1978, Ser. No. 971,914
Claims priority, application Japan, Dec. 29, 1977, 52-176249
Int. Cl.³ F02M *39/00, 41/08*
U.S. Cl. 123—406 **2 Claims**



1. In a fuel injection pump for an internal combustion engine, including: a housing, a barrel mounted within said housing; a plunger mounted within said barrel for axial and rotary motion therein; a pump working chamber defined by the housing, the barrel and the plunger; a suction chamber formed within said housing; and outlet pressure lines for connecting said pump working chamber with associated fuel injection nozzles;

the improvement which comprises:

a relief passage having one end thereof opening in said pump working chamber and the other end communicating with a zone under a lower pressure, said relief passage extending from said barrel through said housing;

a valve means arranged for blocking said relief passage; and

an actuating means for actuating said valve means in response to a fuel supply pressure varying as a function of engine rotational speed, said actuating means being arranged to actuate said valve means to permanently keep said relief passage closed except in a predetermined low engine speed range;

said valve means comprising a bore formed within said pump housing and communicating on one side with said relief passage and on the other side with a zone under a lower pressure; a piston slidably received with said bore, said piston including an annular groove formed in an outer periphery thereof, and a restriction passage having one end thereof radially opening in said annular groove and the other end communicating with said lower pressure zone; and

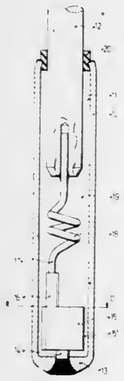
said actuating means comprising a passage means having one end thereof communicating with one end of said bore and the other end thereof with a fuel pump arranged for rotation at a speed which is a function of the rotational speed of the engine; said pressure means comprising a fuel supply line having two ends, one end of said fuel supply line communicating with said suction chamber formed within said pump housing, which is supplied with a fuel pressure which is a function of the engine speed from said fuel pump, and the other end of said fuel supply line being arranged for communication with said pump working chamber; a further annular groove formed around an outer periphery of said barrel and intersecting with said fuel supply line; and a communicating port formed within said housing and providing communication between said further annular groove and said bore.

4,211,204

GLOW PLUG ARRANGEMENT

Jens Glauner, Tamm; Günther Kauhl, Affalterbach; Hannes Pflug, Gerlingen; Leo Steinke, Waiblingen-Hegnach, and Helmut Weyl, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 942,078
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746496
Int. Cl.² F02M *57/00*
U.S. Cl. 123—145 A **10 Claims**



1. Glow plug arrangement comprising

a tubular housing (**10**) closed at one end thereof;

a spiral heating element (**15**) formed as a heating band or ribbon wound in an essentially co-planar spiral winding, positioned adjacent the closed end of the glow plug;

an insultating layer or coating on one side of the ribbon to insulate the turns of the ribbon from each other;

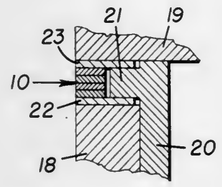
and an electrically insulating, good heat-conductive material (**19**) filling the closed tubular housing and embedding said spiral heating element therein.

4,211,205

LAMINATED SPACER PLATE FOR ENGINES AND METHOD FOR MAKING THE SAME

David A. Lockhart, Bartonville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 26, 1978, Ser. No. 955,083
Int. Cl.² F02F *1/00;* **F16J** *15/06*
U.S. Cl. 123—193 CH **10 Claims**



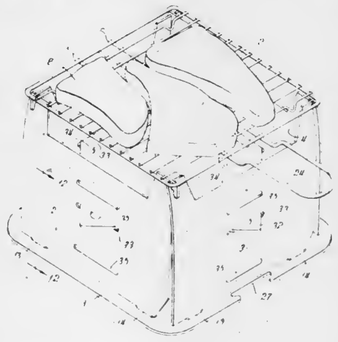
1. In an apparatus of the type having a block (**18**), a liner (**20**) defining a bore therein, an annular flange (**21**) formed on said liner (**20**) and supported on said block (**18**), a head (**19**) disposed on said block (**18**) to cover said bore, a spacer plate (**10**) having a thickness substantially the same as the thickness of said flange and disposed in sandwiched relationship between said block (**18**) and said head (**19**), and a sealing gasket (**22,23**) disposed between said spacer plate (**10**) and each of said block (**18**) and said head (**19**), the improvement comprising, said spacer plate (**10**) being laminated to comprise a plurality of superimposed flat sheets (**11-14**) secured together in sealed relationship at contacting surfaces thereof to form a composite spacer plate (**10**), each of said sheets (**11-14**) having at least one opening (**16**) pre-formed therethrough prior to securance of said sheets (**11-14**) together.

4,211,206

PORTABLE COOKING GRILL

Rolf E. Darbo, Madison, Wis., assignor to Portable Cookery, Inc., Wheaton, Ill.

Filed Apr. 14, 1976, Ser. No. 676,699
Int. Cl.² F24B *3/00;* **A47J** *33/00*
U.S. Cl. 126—9 R **13 Claims**



1. In a portable cooking grill having a rectilinear base plate and four identical side walls respectively hinged to the respective sides thereof and means for fastening adjoining side walls together in upright position, the hinge structures which respectively join the respective side walls to the base plate each comprising a pair of slots in said base plate spaced apart and equally spaced inwardly from and oriented parallel with one edge of the base plate, a tongue extending from the associated side wall through each of said slots in said base plate, and means for retaining each said tongue in its associated slot, said slots being sufficiently wide and said side wall being sufficiently resilient to permit the side wall to hinge inwardly to overlie the base plate in a folded position at which it is in contact with the underlying structure throughout at least most of the confronting areas, the improvement wherein the width of the sidewalls is less than the distance between opposite sets of slots in said base plate whereby in folding the grill the four walls may be hinged inwardly in any sequence.

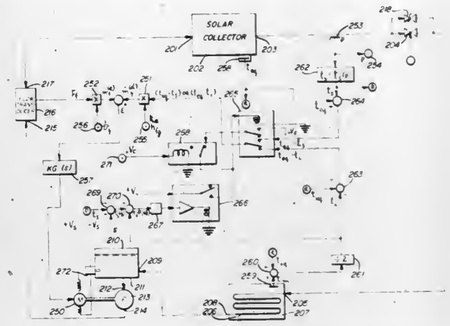
4,211,207

HEATING AND COOLING SYSTEMS

Stephen Molivadas, 2800 Upton St., NW., Washington, D.C. 20008

Filed Apr. 2, 1974, Ser. No. 457,271
Int. Cl.² F24J *3/02*
U.S. Cl. 126—433 **50 Claims**

1. A heating system comprising radiant heat collector means for absorbing radiant heat and evaporating liquid-vapor working fluid and means for transferring the absorbed heat to a medium to be heated when the saturated vapor temperature of said fluid in said absorbing and evaporating means is below the temperature of said medium; said heat transfer means comprising means for compressing working fluid vapor exiting said absorbing and evaporating means, means for condensing the compressed working fluid vapor and releasing heat to said medium, and throttling means for expanding or metering the condensed working fluid before said fluid is evaporated in said absorbing and evaporating means; and means for selecting and maintaining the saturated vapor temperature of said fluid in said collector means independently of the temperature of said



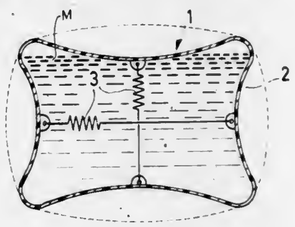
medium and of the heating load imposed by said medium on said heating system.

4,211,208

CONTAINER FOR A HEAT STORAGE MEDIUM

Friedrich Lindner, Stuttgart, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Dec. 13, 1977, Ser. No. 860,076
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658720
Int. Cl.² B65D *25/18, 89/02;* **F28F** *9/00*
U.S. Cl. 126—400 **11 Claims**



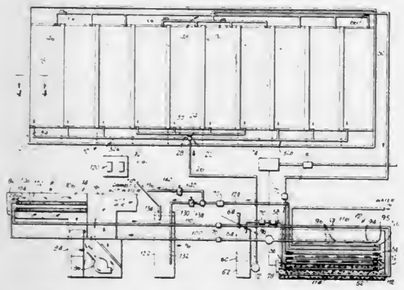
7. Apparatus for storing a heat storage medium which changes between solid and fluid states to store and release heat, comprising

(a) flexible wall means defining an enclosed hollow container, said wall means being relatively displaceable between contracted and expanded conditions in which said container assumes smaller and larger volumes, respectively;

(b) means connected with and biasing said wall means toward the contracted condition; and

(c) a quantity of a latent heat storage medium filling said container when said wall means is in the contracted condition, said medium having the property of being successively changeable, upon initial removal of heat, from a fluid state to a solid state, and upon subsequent removal of heat, to a condition of greater density, thereby resulting in a decrease in the volume of said solid medium with said wall means remaining in the contracted condition, whereby upon addition of heat to said solid medium, the density of said solid medium decreases, thereby resulting in an increase in the volume of said solid medium and an attendant expansion of said wall means to the expanded condition.

4,211,209
METHOD AND APPARATUS FOR COLLECTING AND DOMESTIC USE OF SOLAR HEAT
Larry T. Gay, Rte. 1, Box 278, Frankfort, Ky. 40601
Filed Dec. 21, 1977, Ser. No. 862,752
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—422 **4 Claims**



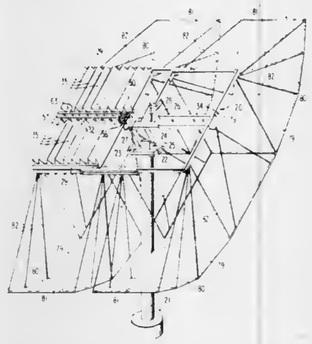
1. A solar heating collecting and storing system comprising:
a thermal storage tank having a top and a bottom effective to contain a heat storage liquid;
a horizontally disposed heat exchanger elevated above said bottom;
a body of porous material between said bottom and said heat exchanger;
at least one solar heat collecting means for collecting solar heat;
means for circulating a collecting liquid through said collecting means for transferring collected heat to said heat exchanger;
pick-up distributor means horizontally disposed at the top of said heat storage liquid extending along substantially all of at least one horizontal dimension of said thermal storage tank;
said pick-up distributor means having means for admitting said heat storage liquid uniformly along it whereby turbulence and mixing of said heat storage liquid remaining in said thermal storage tank during removal of a portion of said heat storage liquid through said pick-up distributor means is minimized;
return means for returning said heat storage liquid to said thermal storage tank within said body of porous material below said heat exchanger, said porous body being effective to restrict the flow of heat storage liquid upward therethrough whereby turbulence and mixing of heat storage liquid due to heat storage liquid being returned by said return means is minimized;
said return means including discharge distributor means horizontally disposed at the bottom of said thermal storage within said body of porous material extending substantially all of at least one horizontal dimension of said thermal storage tank;
said discharge distributor means having means for discharging returned heat storage liquid uniformly along it;
a hot air furnace having a hot air conduit and a cold air return;
a liquid-to-air heat exchanger in said cold air return;
means for directing cold air in said cold air return a plurality of passes through said liquid-to-air heat exchanger;
means for passing said heat storage liquid from said pick-up distributor means through said liquid-to-air heat exchanger and for returning it to said return means whereby air returning to said hot air furnace is warmed by said liquid-to-air heat exchanger;
first thermostat means responsive to an air temperature below a first air temperature for operating said means for passing; and
second thermostat means responsive to an air temperature below a second air temperature lower than said first air temperature for operating said hot-air furnace to add furnace heat to the air heated by said liquid-to-air heat exchanger.

4,211,210
HIGH TEMPERATURE SOLAR ABSORBER COATING AND METHOD OF APPLYING SAME
Adolf H. Muenker, Somerset, and Archie R. Young, II, Montclair, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 764,851, Feb. 2, 1977, abandoned. This application Mar. 1, 1978, Ser. No. 882,438
Int. Cl.[2] F24J *3/02;* **B32B** *15/04*
U.S. Cl. 126—438 **17 Claims**



1. In a solar energy collector system of the type operable at temperatures above about 550° F. including a heat transfer member and wherein means are provided for concentrating incident solar radiation by a factor of from about 40 to 2000 to impinge on said heat transfer member, the improvement comprising a nonselective radiation absorbing surface coating on said heat transfer member, said surface coating being selected from ferrites, oxides of nickel, cobalt, iron, strontium and molybdenum and mixtures thereof having a solar absorptance greater than about 0.90 at wavelengths of from about 0.35μ to about 3.0μ.

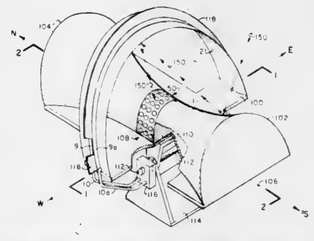
4,211,211
SOLAR ENERGY COLLECTOR AND TRANSFER APPARATUS
Gerald P. Toomey, Warfordsburg; John L. Grove, Greencastle, and John R. Fries, Meadowbrook, all of Pa., assignors to JLG Industries, Inc., McConnellsburg, Pa.
Filed Mar. 16, 1978, Ser. No. 887,358
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—439 **15 Claims**



1. A solar energy collector and transfer apparatus comprising a main support frame, a plurality of spaced parallel solar energy absorber-transfer tube units mounted on said main support frame and arranged in a common plane, solar energy

intercepting and concentrating panels mounted on said main support frame and arranged in tandem relationship on opposite sides of said tube units, said panels comprising coacting pairs of parabolically curved reflector panels on opposite sides of said tube units and projecting on opposite sides of said plane in which said tube units are located and longitudinally of the tube units in parallel relationship thereto, each side-by-side pair of reflector panels defining a receiving aperture and an exit aperture, a tube unit disposed in each exit aperture between tandemly arranged pairs of said panels; and back reflector means supported from said main support frame and spaced from said tube units, whereby solar rays impinging directly on the parabolic reflectors on one side of the tube units are concentrated on the sun side of the tube units, and the parabolic reflectors on the opposite side of the tube units receive sun rays reflected from the back reflector means to thereby concentrate the reflected rays on said opposite side of the tube units, whereby the concentration of solar radiation is substantially equalized on both sides of the tube units to thereby heat fluid flowing through said tube units.

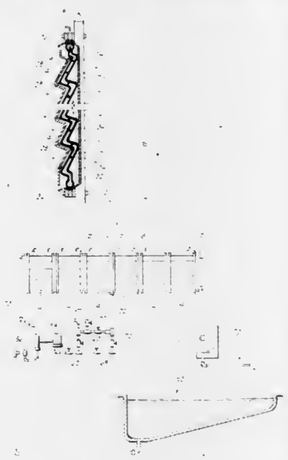
4,211,212
SOLAR REFRIGERATION SYSTEM
Raymond J. Braun, 1641 Church St., Oakland, Calif. 94621
Continuation-in-part of Ser. No. 839,598, Oct. 5, 1977, abandoned. This application Dec. 29, 1978, Ser. No. 974,439
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—439 **7 Claims**



1. A solar energy refrigeration system comprising
a base support,
a first reflector defining a concave parabola of revolution having first and second flared ends, an axis of revolution and a central saddle region, said reflector mounted on said base support,
means for absorbing solar energy mounted on said base support and located proximate said central saddle region of said first reflector,
said means for absorbing solar energy having means defining an arcuate housing having a solar radiation absorbing surface,
a second reflector defining an arc located proximate the focus of said first reflector and adapted to reflect solar energy received from said first reflector on to said means for absorbing solar energy, and
means for cooling a space, said means connected to said means for absorbing solar energy.

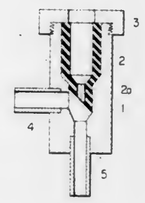
4,211,213
SOLAR PANEL
Roland N. Nissen, 4904 Sullivan, Wichita, Kans. 67204, and Lyle H. Soldan, 2815 Wilmohr Dr., Wichita, Kans. 67223
Filed Sep. 21, 1978, Ser. No. 944,546
Int. Cl.[2] F24J *3/02;* **F28F** *3/14*
U.S. Cl. 126—452 **11 Claims**

1. A process for heating water in a swimming pool, or the like, comprising:
(a) dimpling at least one of at least two corrugated heat retention surfaces at a depth between about $\frac{1}{4}$ inch and $\frac{1}{2}$ inch;
(b) mating said heat retention surfaces; said mated surfaces being retained at a distance from each other depending on the depth of said dimpling step (a);
(c) orificing one end of said mated surfaces of step (b) to control the flow of water between said mated surfaces of step (b);
(d) installing at least one pair of said mated surfaces of step (c) on a means for exposing said mated surfaces to the sun in proximity to the swimming pool, or the like;
(e) pumping water from the swimming pool, or the like, to the orificed end of said mated surfaces of step (d);



(f) flowing the water of step (e) through said mated surfaces of step (e) toward an outlet therein at a rate of between about 10 lbs./sq. ft. of mated heat retention surface/min. and about 200 lbs./sq. ft. of mated heat retention surface/min. such as to form a water film exposed to the sun, said flow rate being determined by said orificing step (c);
(g) absorbing into said flowing water film of step (f) between about 1250 BTU's/day/sq. ft. of mated heat retention surface and 2500 BTU's/day/sq. ft. of mated heat retention surface; and
(h) returning said BTU absorbed water of step (g) from said outlet to said swimming pool, or the like.

4,211,214
END PLUG FITTING FOR AN ENDOSCOPE
Kiyoshi Chikashige, Tsurugashima, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 27, 1977, Ser. No. 810,462
Claims priority, application Japan, Jul. 1, 1976, 51-78278
Int. Cl.[2] A61B *1/00*
U.S. Cl. 128—4 **4 Claims**



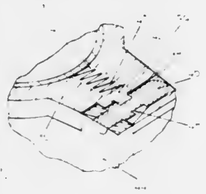
1. An end plug fitting for an endoscope adapted for the insertion and removal of a medical instrument, such as a forceps, therethrough, comprising:

(a) a mouthpiece member having a central passage therethrough defining an instrument insertion opening at one end and an instrument guide channel at the other end,
(b) a suction passage defined in the mouthpiece member intersecting the central passage, and
(c) a tubular sealing member disposed in the central passage in the insertion opening end thereof and including a nozzle portion adjacent the suction passage intersection,
(d) the nozzle portion having an inner diameter substantially equal to the diameter of a medical instrument to be inserted therethrough and smaller than the inner diameter of the guide channel, and an end face formed such that the angle between said end face and the axis of the central passage is oblique, said end face defining an oval central passage opening, the sealing member being rotationally oriented in the central passage such that the oval opening in the oblique end face of the nozzle portion confronts the suction passage.

4,211,215
ENDOSCOPE HOUSING COVER HINGE CONSTRUCTION UTILIZING A SPRING, BALL AND BORE ARRANGEMENT IN COMBINATION WITH A HINGE PIN

Helmut A. Heine, Herrsching; Helmut W. Rosenbusch, Weilheim, and Otto H. Schmidt, Herrsching, all of Fed. Rep. of Germany, assignors to Heine Optotechnik GmbH & Co. KG, Herrsching, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,774
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738203
Int. Cl.[2] A61B *1/00*
U.S. Cl. 128—4 **6 Claims**



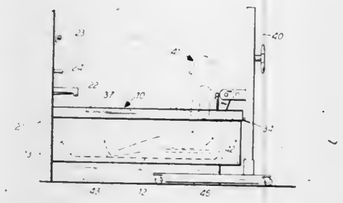
1. An endoscope, especially a rectoscope, comprising a tube, a head housing and a detachable cover, said tube being connected to said head housing, said housing being adapted to be closed at the end opposite said tube by said cover, and releasable hinge means for attaching said cover to said housing,
a lug attached to said housing and an axial pin attached to said cover,
said hinge means comprising said axial pin with an annular groove, a first bore in said lug, a stop-ball mounted in projecting relation into said first bore, and spring means for loading said stop-ball to engage in said annular groove when said axial pin is inserted in said first bore.

4,211,216
WHIRLPOOL BATH

John D. Burgess, Loretto, and Virgil J. Jacuzzi, Islington, both of Canada, assignors to Jacuzzi Bros., Incorporated, Little Rock, Ark.

Filed Nov. 7, 1978, Ser. No. 958,333
Int. Cl.[2] A61H *9/00*
U.S. Cl. 128—66 **12 Claims**

1. In a whirlpool bath comprising:
a tub having a base, sides, and a rim;
a frame supporting said tub;
a circulating pump;
outlet port means connected to said pump and disposed in said sides of said tub to expel a mixture of air and water into said tub in the form of a hydrotherapeutic jet;
inlet port means connected to said pump through which water from said tub is returned to said pump for recirculation;
the improvements of:

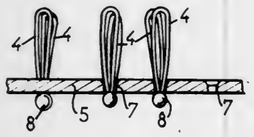


a base disposed beneath said frame elevating said tub and having dimensions on all sides less than said frame such that a continuous U-shaped recess is formed between said frame and a floor for accommodating patient care and for receiving patient handling accessories to allow the accessories to be moved adjacent said frame.

4,211,217
BRUSH FOR BRUSHING THE HAIR OR MASSAGING THE CUTANEOUS COVERING

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Apr. 23, 1979, Ser. No. 32,686
Claims priority, application France, Apr. 24, 1978, 78 12062
Int. Cl.[2] A61H *7/00*
U.S. Cl. 128—67 **8 Claims**



1. A brush for massaging the cutaneous covering or for brushing the hair, and comprising, at least one assembly of bristles on a perforated support having plural perforations, each bristle being bent to form a loop and having two ends, said loops projecting from a front face of the perforated support, and the two ends of a bristle extending into a perforation of the support and projecting from a rear face of said support, said ends of bristles threaded into the same perforation being fused together to comprise a ball whose section is greater than that of the perforations of the support, to secure the bristles in the perforations.

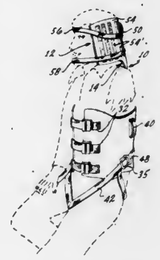
4,211,218
SPINAL RESTRAINT DEVICE

Richard L. Kendrick, 835 Taft St., El Cajon, Calif. 92020

Filed Aug. 14, 1978, Ser. No. 933,460
Int. Cl.[2] A61F *5/04*
U.S. Cl. 128—87 R **8 Claims**

1. A spinal restraint device comprising:
a body member having a front sheet-like layer of flexible material and a rear sheet-like layer of flexible material.
means forming a plurality of longitudinal sleeves between said front sheet-like layer of flexible material and said rear sheet-like layer of flexible material, stiffener members located within said longitudinal sleeves,
said body member having a head support portion, a neck support portion and a back support portion, said head support portion being located adjacent the top of said neck support portion and said back support portion being

located adjacent the bottom of said neck support portion, the longitudinal dimension of said head support portion being greater than the longitudinal dimension of said neck portion but less than the longitudinal dimension of said back support portion.
the lateral dimension of said head support portion being greater than the lateral dimension of said neck support portion but less than the lateral dimension of said back support portion,

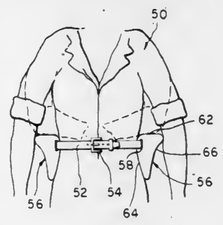


said back support portion having wrap-around arm portions that extend laterally a predetermined dimension such that they pass substantially around the patient's torso and their longitudinal dimension is such that they extend substantially between the waist and the chest to provide rib area support, and
a plurality of leg loop straps, each having one of their ends fixedly secured to the rear face of said back support portion, leg loop strap attaching means fixedly secured to the rear face of said back support portion for detachably receiving the free ends of said leg loop straps.

4,211,219
PREVENTIVE MEDICAL BODY BRACE FOR A PERSON LIFTING OR CARRYING WEIGHTS

Frank B. Alvey, 1215 Garvin Pl., Louisville, Ky. 40203

Filed Jan. 30, 1978, Ser. No. 873,379
Int. Cl.[2] A61F *5/24;* **B43L** *15/00;* **A45C** *1/04;* **A45F** *3/00*
U.S. Cl. 128—95 **1 Claim**

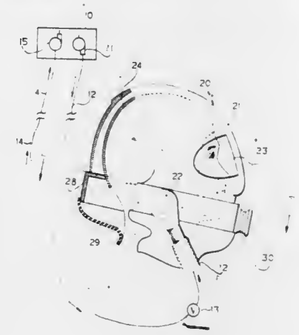


1. A body brace adapted to be positioned in operative relation with the pelvic girdle of a person and to serve as a functional extension of the pelvic girdle so as to provide a load bearing rest for the elbow of the person and to assist in lifting or carrying heavy weights by increasing the forces transferred through the person's pelvic structure and reducing the forces transferred through the suprapelvic structure, which comprises:
A. a pair of braces, in which:
1. each of said brace members has a profile that is generally of a right triangle, and
2. the body engaging side of each of the brace members is curvilinear to conform to the person's body curviture in the vicinity of the waist, and,
3. the top surface of each of said base members forms a generally wide and horizontal planar surface to serve as a load bearing rest for each elbow of the person;
B. attachment means in the form of wide belt upon which both brace members are slidably mounted so that the brace members may be variably located.

4,211,220
DIVING HELMET ASSEMBLY

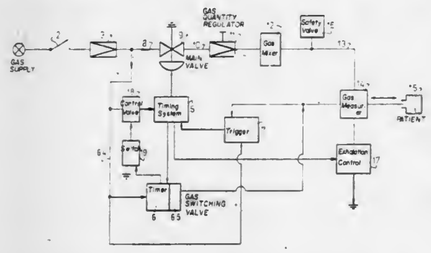
Wilbur J. O'Neill, W. Severna Park, Md., assignor to Diver's Exchange, Inc., Harvey, La.

Filed Feb. 2, 1979, Ser. No. 8,930
Int. Cl.[2] B63C *11/06*
U.S. Cl. 128—201.27 **10 Claims**



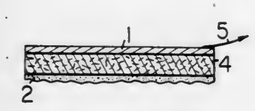
1. In a helmet of the type worn by a diver for underwater breathing, said helmet being characterized as having a shell provided with an internal cavity and access opening thereto through which and into which a portion of a diver's body can be fitted, a breathing gas supply inlet through which a breathing gas can be introduced into the helmet for inspiration into the diver's lungs, and exhaust gas outlet through which gas can be exhausted from the helmet, valve means controlling the flow of gas from said inlet to said outlet, and a flexible diaphragm provided with an opening therethrough which is secured in the access opening to the helmet cavity, the diaphragm adapted to cover and seal the annular space between the body of the diver and the helmet to provide an interface between the water and the diver's breathing gas supply, one side of the diaphragm, when the diver is submerged, being in contact with ambient water while the other is in contact with gas supplied to the inside of the helmet,
the improvement which comprises
a means associated with said flexible diaphragm for sensing changes in the physical position of said diaphragm with respect to said helmet caused by the differential pressure between said ambient water pressure and said helmet gas pressure; and
an actuating means responsive to said sensing means for opening and closing said valve means as a function of said pressure differential
whereby the ingress or egress of gas to or from the helmet is regulated, and directly proportioned to the differential pressure sensed by the flexible diaphragm forming said seal.

4,211,221
RESPIRATOR
Erik Schwanbom; Hans-Joachim Hartwig, both of Lübeck, and Detlef Warnow, Gross Grönau, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany
Filed Oct. 13, 1978, Ser. No. 951,036
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746924
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—204.26 **10 Claims**



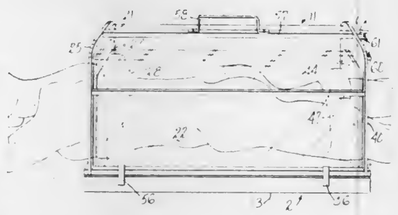
1. A synchronized intermittent mandatory ventilation respirator for providing selected timed inhalation and exhalation cycles to a patient while permitting the patient to carry out a complete spontaneous inhalation and exhalation on its own comprising, gas supply means adapted to be connected to a patient for supplying a breathing gas under pressure, a main line connected to said gas supply means for supplying breathing gas to the patient, a main valve in said main line, a supplemental line connected to said main line upstream of said main valve, automatic ventilation timing means connected to said supplemental line and said main valve for opening said main valve for a first selected timed inhalation cycle to supply breathing gas to the patient and closing said main valve for a selected timed exhalation cycle to permit the patient to exhale, gas measuring means connected to said main line for sensing a patient induced pressure change in said main line formed by a spontaneous inhalation and a spontaneous exhalation of the patient, trigger means connected to said supplemental line, to said gas measuring means and to said timing means for switching said timing means from an exhalation cycle to an inhalation cycle in response to a spontaneous inhalation of the patient, and spontaneous breathing timer means connected to said supplemental line, to said gas measuring means and to said automatic ventilation timing means for blocking the connection between said automatic ventilation timing line and said supplemental means and stopping the cycling of said automatic ventilation timing means in response to a spontaneous inhalation and exhalation of the patient and for supplying breathing air to the patient from said supplemental line for a second selected timed inhalation cycle, and permitting the exhalation of the patient.

4,211,222
IONTOPHORETIC BURN-PROTECTION METHOD
Robert Tapper, 175 Acari Dr., Los Angeles, Calif. 90012
Continuation-in-part of Ser. No. 717,791, Aug. 25, 1976, abandoned. This application Sep. 8, 1978, Ser. No. 940,777
Int. Cl.[2] A61N *1/30*
U.S. Cl. 128—207.21 **4 Claims**



1. A method of applying electricity to a selected area of a living body while minimizing concomitant iontophoretic burn, said method including the steps of;
applying a first electrode to the skin of said body at said selected area, with an electrically conductive, porous intervenor having a thickness very large in relation to the thickness of said skin, said intervenor interposed between said first electrode and said skin;
applying a second electrode to said skin spaced from said first electrode; and
applying direct current to said electrodes with a limitation on the amplitude of said direct current multiplied by the duration of applying said direct current, said limitation being proportional to the thickness of said intervenor associated with said first electrode.

4,211,223
PULSED OXYGEN CHAMBER
Rocco W. LoPiano, 26 Journal Sq., Jersey City, N.J. 07306
Filed Apr. 18, 1979, Ser. No. 31,052
Int. Cl.[2] A61M *13/00*
U.S. Cl. 128—207.26 **7 Claims**

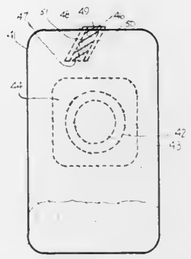


1. A closable chamber for use in gas treatment of areas on a human body between the knees and shoulders, the chamber having a body end and a leg end, comprising separable lower and upper portions and end closure assemblies, the lower portion including a flat tray with body end and leg end walls, the upper portion including body end and leg end walls, said upper portion end walls defining, with the lower portion end walls, an opening at the body end adapted to accommodate the trunk of a human body and an opening at the leg end adapted to accommodate the legs of a human body, the body end closure assembly including a first frame adapted to surround a human body and a sleeve mounted on the first frame and adapted to fit sealingly against a human body in the chamber, the leg end closure assembly including a second frame adapted to surround both legs of a human body, the second frame being provided with sleeve means mounted in the frame and adapted to fit sealingly against said legs.

4,211,224
FILTER VENTING DEVICES FOR OSTOMY APPLIANCES
John S. Kubach, 1406 Milan Rd., and Richard D. Stanley, 164 W. Sprucewood, both of Sandusky, Ohio 44870
Filed Jun. 12, 1979, Ser. No. 47,724
Int. Cl.[3] A61F *5/44*
U.S. Cl. 128—283 **26 Claims**

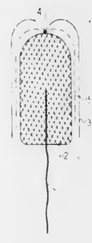
1. A filter venting device for use with post-surgical ostomy appliances providing for the continuous and automatic release of odorless gas, with no increase in gas pressure or distension of said ostomy appliance and providing for the deodorization of gaseous, liquid and solid waste materials deposited and collected in said ostomy appliance, comprising:
a section of plastic tubing;
fibrous filtering material, packed inside said section of plastic tubing;
a molecular altering deodorizing agent impregnating the strands of said fibrous filtering material;
an air-tight sealing means between said ostomy appliance and the outer surface of said section of plastic tubing,

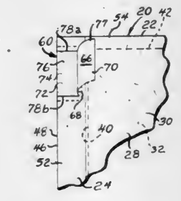
whereby one orifice, the exterior orifice, of said section of plastic tubing is open to the atmosphere and the exterior of said ostomy appliance and the other orifice, the interior orifice, of said section of plastic tubing is open to the interior of said ostomy appliance; and

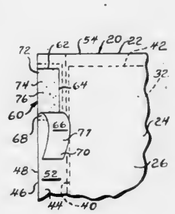


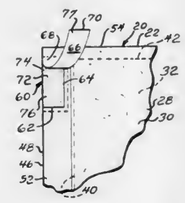
a closure means whereby deodorizing properties of said deodorizing agent are preserved until said filter venting device is ready for use.

4,211,225
TAMPON WITH A COLLAPSIBLE AND INVERTIBLE SHROUD
Dan Sibalis, c/o Link Controls, Inc., 2111 Lakeland Ave., Ronkonkoma, N.Y. 11779
Filed Jul. 19, 1978, Ser. No. 925,938
Int. Cl.[2] A61F *13/20*
U.S. Cl. 128—285 **5 Claims**









1. A tampon having a main body (**12**) and a withdrawal cord (**11**) affixed thereto, characterized in that said tampon further includes a collapsible and invertible shroud (**13**) affixed to said main body opposite said withdrawal cord and a smoothly gliding layer (**15**) included between said main body and said shroud, said layer (**15**) being configured so that the frictional forces between said main body and said layer are less than frictional forces between said shroud and the surrounding body tissue, to cause said main body to slide out from said shroud on withdrawal, progressively inverting and collapsing said shroud.

4,211,226
DISPOSABLE DIAPER WITH FLAP COVERED TAPE FASTENER
Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.
Continuation of Ser. No. 745,273, Nov. 26, 1976, abandoned. This application Apr. 16, 1979, Ser. No. 30,493
Int. Cl.[3] A61F *13/16*
U.S. Cl. 128—287 **4 Claims**

1. A disposable diaper, comprising:
an absorbent pad assembly having a pair of side edges, a pair of end edges connecting the side edges, a pair of opposed waistline portions adjacent said end edges and a crotch portion therebetween, an absorbent pad having a side edge spaced inwardly from one of the pad assembly side edges, and a backing sheet of thermoplastic material covering a back surface of said pad and having a doubled side margin extending past the side edge of said pad, said side margin comprising first and second facing sections of the backing sheet extending inwardly from a fold line of the side margin defining the one side edge of the pad assembly, with the first and second sections being fused together in one waistline region adjacent one of the pad assembly end edges, the other side margin being allochirally related to said side margin, said side margins in the one waistline region having a first elongated slit means generally aligned with and spaced inwardly from the fold line of said side margin, and a second slit means extending from the first slit means to the fold line of the side margin, with said first and second slit means defining hinged flaps adjacent the side edges of the pad assembly, said flaps each having a release surface formed by the first and second fused sections; and
a pressure-sensitive tape strip secured to a surface of said side margin and covering said flap, said tape strip having adhesive facing toward the flap, with said flap being releasably attached to said adhesive and being peeled from the tape strip to expose the adhesive for use in securing the diaper about an infant.

4. A disposable diaper, comprising:
an absorbent pad assembly having a pair of side edges, a pair of end edges connecting the side edges, a pair of opposed waistline portions adjacent said end edges and a crotch portion therebetween, an absorbent pad having a side edge spaced inwardly from one of the pad assembly side edges, and a backing sheet of thermoplastic material covering a back surface of said pad and having a doubled side margin extending past the side edge of said pad, said side margin comprising first and second facing sections of the backing sheet extending inwardly from a fold line of the side margin defining the one side edge of the pad assembly, with the first and second sections being fused together in one waistline region adjacent one of the pad assembly end edges, the other side margin being allochirally related to said side margin, said side margins in the one waistline region having first and second spaced slit means extending inwardly from the fold line of said side margin, with said first and second slit means defining hinged flaps adjacent the side edges of the pad assembly, said flaps having a release surface formed by the first and second fused sec-

tions and hinging along a line connecting the medial ends of said first and second slit means; and

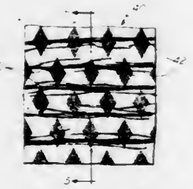
a pressure-sensitive tape strip secured to a surface of said side margin and covering said flap, said tape strip having adhesive facing toward the flap, with said flap being releasably attached to said adhesive and being peeled from the tape strip to expose the adhesive for use in securing the diaper about an infant.

4,211,227

SURGICAL SPONGE MATERIAL

Gary C. Anderson, Framingham; Jon A. Howey, Mansfield, both of Mass., and Harish A. Patel, Crystal Lake, Ill., assignors to The Kendall Company, Boston, Mass.

Filed Jul. 3, 1978, Ser. No. 921,544
Int. Cl.² A61F *13/00*
U.S. Cl. 128—296 **9 Claims**



1. A nonwoven fabric comprising:

an inner layer of substantially hydrophilic textile-length fibers; and,

outer layers of substantially hydrophobic textile-length fibers disposed on both sides of said inner layer;

said inner layer and said outer layers being bonded together at a set of discrete and spaced apart rhomboidal highly compacted areas, each of said highly compacted areas being fully bounded on each of its four sides by a rhomboidal area of intermediately compacted fibers, and each of said highly compacted areas being contiguous at each of its four apices with a rhomboidal area of substantially uncompacted fibers;

said thusly bonded fabric further arranged in a repeating series of wave-like undulations substantially throughout its length, said indulations running across the width of the fabric and causing major portions of said intermediately compacted areas and said substantially uncompacted areas, and minor portions of said highly compacted areas, to become more open and porous by opening the interfiber relationships therein without substantially breaking said rhomboidal compacted areas.

4,211,228

MULTIPURPOSE TIBIAL TEMPLATE

Jean-Marie Cloutier, 12 Aberdeen, Montreal, Quebec, Canada (H3Y 3A4)

Filed Jan. 24, 1979, Ser. No. 6,073
Int. Cl.² A61B *17/00;* **A61F** *1/24*
U.S. Cl. 128—303 R **4 Claims**

1. A multipurpose tibial template for use in the implantation of an adjustable total knee prosthesis including a femoral component and a tibial component comprising a platform member consisting of two spaced apart, elongated sections connected by a bridge section, and two removable and replaceable condylar bearing members lying on and retained by the two elongated sections respectively, said tibial template comprising:

a Y-shaped element comprising a flat handle integrally extended at one end by two flat, elongated prongs, said elongated prongs being symmetrically arranged with respect to a vertical plane passing through the axis of the Y-shaped element perpendicularly to the plane thereof, each prong having substantially the same contour as each of the elongated section of the tibial component to be implanted, respectively, and comprising a central hole extending perpendicularly to the plane of the Y-shaped element;

an alignment rod fixable onto said flat handle near its integrally extended end, said alignment rod being substantially perpendicular to the plane of the Y-shaped element; and



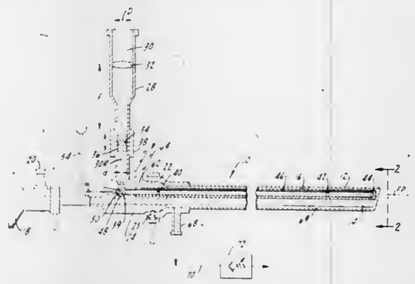
a set of provisional plateaus of different thicknesses for each prong, for determining the thickness of the condylar bearing members to be used in the total knee prosthesis, each provisional plateau comprising an upper concave surface having substantially the same shape and contour as the upper surface of the condylar bearing member of the knee prosthesis to which it corresponds, and a lower flat surface downwardly extended by a central projection insertable in the central hole of the prong corresponding to said plateau to retain the latter onto said prong.

4,211,229

LASER ENDOSCOPE

Helmut Wurster, Oberderdingen, Fed. Rep. of Germany, assignor to Richard Wolf Medical Instruments Corp., Rosemont, Ill.

Filed Dec. 1, 1977, Ser. No. 856,227
Int. Cl.² A61B *17/36*
U.S. Cl. 128—303.1 **3 Claims**



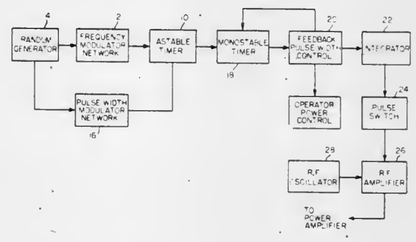
1. In an endoscope having an elongated outer sheath which houses an observation telescope for observing internal body tissue at a site where surgery is being performed, said sheath having a distal end and a proximal end, a housing offset from and extending laterally of the axis of the sheath and capable of conducting a laser beam therethrough, said housing containing a first large diameter laser beam collecting lens for receiving and transmitting a laser beam therethrough, said housing also containing a second lens of considerably smaller diameter than said first lens positioned such that it receives the laser beam directly from said collecting lens and being of a shape such that it reduces the diameter of the laser beam to a fraction of its original diameter, a tube in the sheath extending parallel to the telescope, said tube containing a laser lens relay system and a laser objective lens at the distal end of the tube for concentrating the laser beam at a working focal point on the body tissue, said tube being attached to said housing, a deflecting mirror in said housing adjacent the proximal end of said tube and located on the side of the lens relay system opposite the laser objective lens in position to intercept the reduced diameter laser beam and redirect it to the laser lens relay system, said tube and housing being so oriented that the laser beam conducted by the housing will impinge on the mirror and be deflected by the mirror to the laser lens relay system, the deflecting mirror being tiltable universally in any direction whereby the laser beam may be caused to laterally scan the body tissue along any axis, said second lens being supported for axial adjusting movement along the axis of the laser beam relative to said mirror and said first collecting lens to vary axially the working focal point of the laser beam, said sheath at its proximal end being separably fitted to said housing, and means between said sheath and housing to permit coupling and uncoupling of the housing and sheath so that by uncoupling the housing and sheath said housing together with said tube attached thereto may be detached from the sheath and said tube removed along the housing to permit another instrument to be inserted into the sheath.

4,211,230

ELECTROSURGICAL COAGULATION

Stanley N. Woltosz, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,730
Int. Cl.² A61N *3/04*
U.S. Cl. 128—303.17 **10 Claims**



1. A method for the electrosurgical coagulation of tissue comprising the steps of:

(a) modulating RF energy into a series of pulses having random pulse widths and random time between the start of individual pulses; and

(b) applying the modulated RF energy to tissue so that said tissue is coagulated in response to the modulated RF energy.

8. Apparatus for electrosurgical procedures comprised of:

means for providing a modulated RF signal characterized by having random pulse widths and random times between the start of individual pulses;

means for amplifying said modulated RF signal characterized by having random pulse widths and random times between the start of individual pulses;

means for amplifying said amplified modulated RF signal to a electrosurgically acceptable peak power level;

means for the peak power level amplified modulated RF signal to be in electrical communication with electrosurgical electrodes; and

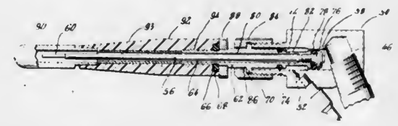
means for controlling the ratio of the average pulse width to the average time between the start of pulses thereby controlling the average power of the peak power level amplified modulated RF signal.

4,211,231

CRYOSURGICAL INSTRUMENT

Ronald P. Rzasa, Fairfield, Conn., assignor to Cryomedics, Inc., Bridgeport, Conn.

Filed May 15, 1978, Ser. No. 906,213
Int. Cl.² A61B *17/36;* **A61F** *7/12*
U.S. Cl. 128—303.1 **5 Claims**



1. A cryosurgical instrument comprising:

means defining a body having opposing extremities and provided with an elongate bore therein extending through the surface of said body means to define a receiving opening in one extremity of said body means,

said body means including a refrigerant fluid inlet passageway therein communicating with said bore at a first point spaced from said receiving opening and adjacent the opposite extremity of said body means, said refrigerant fluid inlet passageway being adapted to be coupled with a source of refrigerant fluid,

said body means further including a refrigerant effluent outlet passageway therein communicating with said bore at a second point between said receiving opening and said first point;

a kit including first and second, unitary, integrated cryotip assemblies,

said first cryotip assembly having a distal and a proximal end and comprising

(1) an outer, elongate, hollow tube having a distal and a proximal end, the distal end thereof being closed to define a gas expansion chamber, said outer tube having an exhaust opening therein adjacent the proximal end thereof, and

(2) an inner, elongate, hollow tube for supplying refrigerant to said expansion chamber, having a distal and a proximal end and being concentrically disposed within said outer tube such that the distal end of the inner tube opens into said expansion chamber and the proximal end of said inner tube is located adjacent the proximal end of said outer tube, said inner tube being radially spaced from the outer tube to define an annular exhaust channel between said inner and outer tubes communicating with said exhaust opening in said outer tube, said inner tube being secured to said outer tube and having both ends thereof essentially open,

said second cryotip assembly having a distal and a proximal end and comprising

(1) an outer, elongate, hollow tube having a distal and proximal end a refrigerant fluid delivery opening in the distal end thereof, the proximal end of said last named tube being closed, and

(2) an inner, elongate, hollow tube for supplying refrigerant to said delivery opening, having a distal and a proximal end, said last named inner tube being disposed within said last named outer tube such that the distal end of the inner tube opens into said delivery opening and the proximal end of said inner tube is located adjacent the proximal end of said outer tube and having each end thereof essentially open, said last named inner tube being secured to said last named outer tube; the proximal end of each of said cryotip assemblies being sized such that each of said cryotip assemblies may be received within said bore,

manipulable means for selectively securely either of said first and second cryotip assemblies on said body means, said manipulable securing means including a first portion carried by each said first and second cryotip assemblies, and

a second portion carried by said body means adjacent said receiving opening,

the proximal ends of each of said cryotip assemblies being such that when either of said cryotip assemblies is secured to said body means said proximal end of said inner tube extends to a position within said bore between said first and second points, first means for providing a fluid seal between said inner tube and said body means at an area in said bore between said first and second points such that when either of said cryotip assemblies is secured to said body means refrigerant fluid entering said bore from said inlet passage is directed into said proximal end of said inner tube,

the outer tube of said first cryotip assembly being such that when said first cryotip assembly is secured to said body means and said outer tube of said first cryotip assembly extends to a position within said bore between said receiving opening and said first fluid seal means such that said exhaust opening in said outer tube of said first cryotip assembly is in fluid communication with said outlet passage, second means for providing a fluid seal between said outer tube of said first cryotip assembly and said body means at an area in said bore between said second point and said receiving opening such that refrigerant fluid exhausted through said exhaust opening is directed to said outlet passage,

said first and second portions of said manipulable securing means being releasably engagable with each other for releasably securing the corresponding one of said first and second cryotip assemblies on said body means, with said open end of said outer tube of said first cryotip assembly extending into said bore through said receiving opening when said first cryotip assembly is secured to said body means, and with the closed end of said outer tube of said second cryotip assembly extending into said bore through said receiving opening when said second cryotip is secured to said body means,

each of said first and second cryotip assemblies being removable as an integral unit from said body means by operation of said manipulable securing means to permit interchangeably securing either of said first and second cryotip assemblies to said body means.

4,211,232

MUCOUS MEMBRANE CUTTER FOR MUCOGINGIVAL MEMBRANE SURGERY

Werner Mörmann, Zürich, Switzerland; Gerhard Bofinger, Immendingen-Hattingen, and Wilfried Wölfie, Bad Dürrheim, both of Fed. Rep. of Germany, assignors to Aesculap-Werker Aktiengesellschaft, vormals Jetter & Scheerer, Tuttlingen, Fed. Rep. of Germany

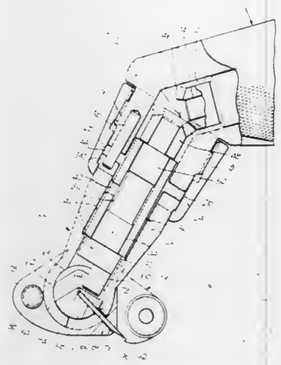
Filed Jan. 31, 1978, Ser. No. 873,935

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1977, 2707523

Int. Cl.² A61B *17/322*

U.S. Cl. 128—305.5 **12 Claims**

1. In a mucotome having a handle and a cutting head arranged at one end of the handle, said cutting head including a blade holder carrying a cutting blade with a cutting edge and a cutting shoe for determining the cutting depth of the blade, said cutting head having a guide for the blade holder along which the blade holder is reciprocally movable parallel to the cutting edge of the cutting blade by means of a rotatable drive shaft having an eccentric crank pin engageable in a cross groove in the blade holder, the improvement comprising said blade holder comprising a circular cylindrical blade-holding roller having a longitudinally extending radial slit for receiving the cutting blade, said cutting blade projecting out of said radial slit, said cutting head having a guide slit through which said cutting blade projects, said cutting head being pivotable about the longitudinal axis of the circular cylindrical blade-



holding roller, whereby the cutting blade may be reoriented to cut in the opposite direction.

4,211,233

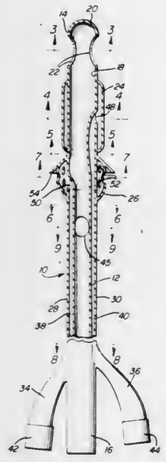
URETHRAL CATHETER

Edward D. Lin, 3663 Grand Ave., Apt. 706, Des Moines, Iowa 50312

Filed Jan. 5, 1978, Ser. No. 867,095

Int. Cl.² A61M *25/00*

U.S. Cl. 128—349 B **11 Claims**



1. A urethral catheter for thorough irrigation of a bladder, outward flushing from prostatic urethra and lubrication closely proximal to the tip during both insertion and withdrawal, said catheter comprising an elongated tube having forward and rearward ends and defining an internal longitudinal passage therein and having a tip at its forward end, said tube including a lateral opening formed therein closely spaced rearward of said tip and opening into said passage, an inflatable body supported from and encircling said tube and spaced rearward therealong from said lateral opening, an axially short partially inflatable ring supported from and encircling said tube and closely spaced along said tube rearward of said body, said ring having outwardly facing openings formed therein at points spaced thereabout, said elongated tube including means defining first and second longitudinal passageways extending therealong independent of said passage and opening, at their forward ends, into said body and ring, respectively, said elongated tube intermediate said ring and said inflatable body, including circumferential seal means extending completely thereabout and projecting outwardly therefrom for preventing upward fluid flow therepast, whereby irrigating fluids discharged from said outwardly facing ring openings will be directed downwardly therefrom for eradicating or eliminating ascending infections.

4,211,234

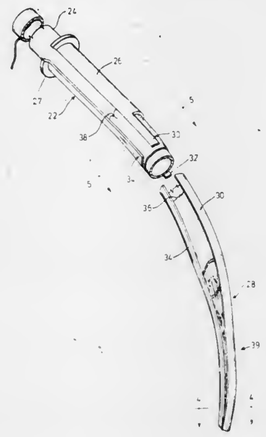
ENDOTRACHEAL TUBE INTRODUCER

Joseph Fisher, 67 Tanjoe Ct., Willowdale, Ontario, Canada

Filed Aug. 24, 1978, Ser. No. 936,536

Int. Cl.² A61M *25/00*

U.S. Cl. 128—200.26 **20 Claims**



1. An endotracheal tube introducer comprising a hollow mouth piece of greater diameter than the endotracheal tube being inserted thereinto, and an elongated member secured to and extending longitudinally away from the mouth piece, for insertion thereof past the epiglottis into the trachea, the elongated member comprising at least one guide rib extending longitudinally along the length of the elongated member away from the mouth piece and relatively thin pliable material pleated longitudinally and secured to the at least one guide rib and forming with the at least one guide rib, when the material is unfolded an enclosed tubular structure for guiding the endotracheal tube into the trachea.

4,211,235

PROGRAMMER FOR IMPLANTED PACER

John W. Keller, Jr., Miami, Fla.; Dennis Digby, Brooklyn Park, and Alan Coombes, New Hope, both of Minn., assignors to Biotronik Mess- und Therapiegerate GmbH & Co., Berlin, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 917,139

Claims priority, application United Kingdom, Aug. 19, 1977, 34912/77

Int. Cl.² A61N *1/36*

U.S. Cl. 128—419 PG **5 Claims**

1. An external programmer for generating an output signal comprising a fixed number of pulses each having a preselected duration, said output signal being supplied to an implanted, programmable body function apparatus for varying given operational functions thereof, comprising:

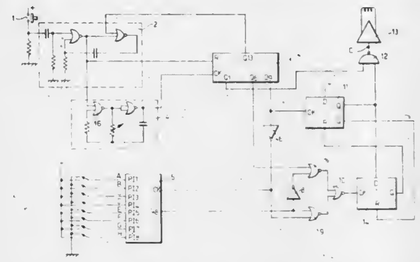
register means for receiving and storing a fixed number of logic bits, each of said logic bits determining the duration of one of the fixed number of pulses in said output signal;

pulse generation means for generating a pulse signal at a predetermined frequency;

counter means coupled to said pulse generation means having a plurality of pulse outputs of different fixed durations, the duration of one of said pulse outputs being less than that of the remaining pulse outputs, the durations of the remaining pulse outputs corresponding to preselected durations of the pulses comprising said output signal as determined by said logic bits;

output means for transmitting said output signal to said implanted apparatus;

control means coupling said counter means to said output



means for periodically enabling said output means to transmit the fixed number of pulses in said output signal at a rate corresponding to the duration of said one pulse output of said counter means; and

logic means coupled to said counter means and said register means for disabling said output means after each periodic enabling thereof, the duration of each pulse in said output signal being determined by said remaining pulse outputs from said counter means.

4,211,236

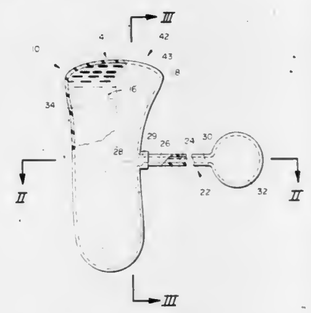
ORTHOPEDIC CUSHION AND METHOD FOR FITTING THEREOF

Martin S. Krinsky, 545 Saratoga Ave., Santa Clara, Calif. 95050

Filed Nov. 24, 1978, Ser. No. 963,906

Int. Cl.² A61F *5/14*

U.S. Cl. 128—594 **17 Claims**



1. An orthopedic cushion, useful for fitting to a user's foot or against other portions of a user's body, comprising:

a unitary structure including:

a flexible envelope, the envelope defining an interior volume;

an elongated member outwardly extending form the envelope, the elongated member including a narrow passageway communicating at one end with the envelope interior volume; and

a diverticulum, the diverticulum opening off of the passageway at the passageway other end and being spaced outward of the flexible envelope and away from that portion of the envelope against which the user's foot or other portions of the user's body will bear, the divertic-

ulum, the passageway, and the envelope volume all under partial vacuum; and

a non-set and flowable, highly viscous material, the viscous material of a predetermined amount overfilling the envelope volume and within the passageway.

4,211,237

METHOD AND APPARATUS FOR IDENTIFYING RECURRING SIGNAL PATTERNS

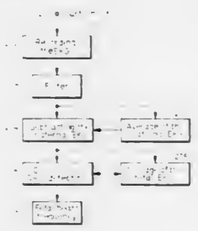
Joachim Nagel, Beckingen, Fed. Rep. of Germany, assignor to Biotronik Mess- und Therapiegeräte GmbH & Co., Berlin, Fed. Rep. of Germany

Filed Apr. 14, 1978, Ser. No. 896,771

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1977, 2716739

Int. Cl.[2] A61B *5/04*

U.S. Cl. 128—698 **43 Claims**



1. A method for identifying a periodically recurring signal pattern contained in a signal mixture which also contains interference components, comprising: detecting the amplitude pattern of a segment of the signal mixture according to a first criterion; storing the detected pattern in a memory, where the stored pattern constitutes a sample; continuously matching the amplitude pattern of the stored sample to subsequently occurring signal mixture segments having a similar amplitude pattern; and determining the degree of coincidence between the amplitude pattern of subsequently occurring signal segments and that of the sample in order to identify such subsequently occurring segments according to a second criterion, which is different from the first criterion.

4,211,238

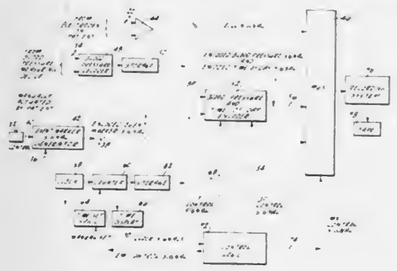
APPARATUS AND METHOD FOR RECORDING AND PLAYING BACK ELECTROCARDIAL SIGNALS

Stephen K. Shu, Fountain Valley, and W. David Squires, Huntington Beach, both of Calif., assignors to Del Mar Avionics, Irvine, Calif.

Filed Jun. 23, 1978, Ser. No. 918,698

Int. Cl.[2] A61B *5/04*

U.S. Cl. 128—700 **42 Claims**



1. A tape recorder for use in ambulatory monitoring of a cardiac patient, said tape recorder having recording head means for recording on a single track in a tape an ECG signal obtained continuously from a patient, and recording on the same single track several intermittent signals including blood pressure signal received intermittently from a portable blood pressure measuring device affixed to the patient, an event marker signal generated in response to actuation of an event marker control from time to time by the patient, and a periodic time of day signal, said tape recorder comprising in combination:

recording means operatively associated with the tape and responsive to an applied electrical signal for recording the applied electrical signal on a single track in the magnetic tape;

multiplexer means connected to said recording means and providing to said recording means the applied electrical signal to be recorded, the latter including an ECG signal and an intermittent signal selected by said multiplexer means under control of an applied MX control signal from a set of signals including an encoded time of day signal, an encoded blood pressure signal, and an encoded event marker signal;

time of day encoder means for generating and storing an encoded time of day signal representing the time of day, said time of day encoder means connected to said multiplexer means and providing said encoded time of day signal to said multiplexer means under control of an applied T control signal;

blood pressure encoder means to which the blood pressure signals received intermittently from the blood pressure measuring device are applied for converting the blood pressure signals into a form suitable for storage, for storing the converted blood pressure signals, and in response to an applied BP control signal to read out the stored converted blood pressure signals and to encode them into a predetermined format, said blood pressure encoder means connected to said multiplexer means and providing said encoded blood pressure signals to said multiplexer means;

event marker signal generator means for generating an encoded event marker signal having a predetermined format in response to an EM control signal applied after the patient has actuated the event marker control, said event marker signal generator means connected to said multiplexer means and providing said encoded event marker signal to said multiplexer means;

control logic means connected to said time of day encoder means for generating and providing to said time of day encoder means said applied T control signals, connected to said blood pressure encoder means for generating and providing thereto said applied blood pressure control signals, connected to said event marker signal generator means for generating and providing thereto said applied EM control signal, and connected to said multiplexer means and generating and providing to said multiplexer means said applied MX control signal for controlling the selection by said multiplexer means from said set of signals of an intermittent signal to be recorded.

4,211,239

NEONATAL OXYGEN CONSUMPTION MONITOR

Daniel B. Raemer; Dietrich K. Gehmlich; Dwayne R. Westenskow, all of Salt Lake City, Utah, and Curtis C. Johnson, deceased, late of Salt Lake City, Utah (by Charles W. Whitehead, Wilma W. Johnson, personal representatives), assignors to University of Utah, Salt Lake City, Utah

Filed May 3, 1978, Ser. No. 902,471

Int. Cl.[2] A61H *1/00;* **A61M** *16/00*

U.S. Cl. 128—716 **12 Claims**

1. An oxygen consumption monitor system suitable for use in measuring oxygen uptake in neonates, comprising:

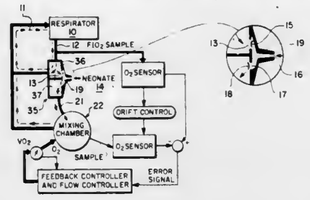
(a) a respirator for supplying a high volume, controlled flow of oxygen;

(b) a flow duct for conducting said oxygen from the respirator, said flow duct having a primary flow line and a secondary outlet communicating with said primary flow line;

(c) a respiration duct having one end adapted for communication with the lungs of said neonate;

(d) an expiration duct for receiving expired gas from the neonate;

(e) an inlet and outlet check valve combination coupled jointly on one side of said valves to said respiration duct and on the other side respectively to said secondary outlet and said expiration duct, said valve combination coupling providing an intermittent inspiration passageway from



said primary flow line, through said inlet check valve and into the respiration duct and lung region, and an exiration passageway through said respiration duct and outlet check valve to said expiration duct, each of said inlet and outlet valves being biased in a closed position, the valve combination coupling having minimal deadspace; and

(f) means coupled to said primary flow line and said expiration duct for comparing the oxygen concentration of inspired gas versus that of corresponding expired gas for a determination of the amount of oxygen consumed.

4,211,240

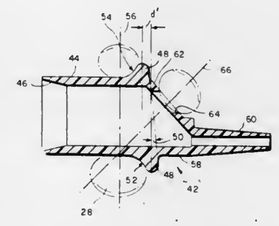
INSPIRATORY FORCE ADAPTOR

Stephen F. Gallagher, 23 Eisenhower Dr., Norton, Mass. 02766

Filed Oct. 10, 1978, Ser. No. 949,864

Int. Cl.[2] A61B *19/00*

U.S. Cl. 128—725 **3 Claims**



1. An inspiratory force adapter comprising:

(a) an elongated hollow tubular body member having first and second ends and an air passage extending therethrough adapted to be grasped between the thumb and a finger of an operator;

(b) said tubular body being provided with a finger port adapted to be closed by an index finger of said operator; said finger port constituting an opening from said air passage to the outside atmosphere;

(c) the exterior of said tubular body member being provided with opposing finger positioning surfaces, the first of said surfaces being a thumb locating surface adapted to be engaged by the side of the thumb of said operator and the second of said surfaces being a finger locating surface adapted to be engaged by the side of said first named finger; the perpendicular central axes of said surfaces being aligned, with respect to each other and being transverse to the longitudinal axis of said body member, a ridge encircling said body member and abutting said surfaces, said surfaces being located along the peripheral surface of said body member between said first end and said ridge, said ridge being disposed with its transverse plane being oriented at an angle with respect to said perpendicular central axes of said surfaces, such that the difference between the distance from the ridge to said central axis of the thumb locating surface and the distance from the ridge to said central axis of said finger locating surface is substantially one tenth of an inch, said finger port being located on said tubular body member between said ridge and said second end and opposite said thumb locating surface.

4,211,241

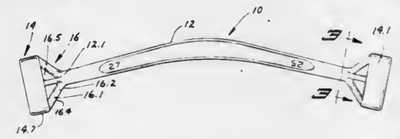
HEART VALVE SIZING GAUGE

Robert L. Kaster, Wayzata, and Donald N. Mehl, Minnetonka, both of Minn., assignors to Kastec Corporation, Plymouth, Minn.

Filed Mar. 3, 1978, Ser. No. 882,971

Int. Cl.[2] A61B *5/10;* **G01B** *5/12*

U.S. Cl. 128—774 **14 Claims**



1. A heart valve sizing gauge comprising a slightly curved handle, a right circular cylindrical sizing ring having a smooth continuous exterior wall of a width, as measured parallel to the ring axis, substantially greater than the wall thickness and a hollow interior, and connector means connecting the handle and the sizing ring, wherein the connector means is connected rearwardly to the handle and includes exterior surface means diverging forwardly and smoothly, unbrokenly blending into the exterior surface of the sizing ring to facilitate removal of the sizing gauge ring from the heart orifice, and so constructed and arranged for providing direct visual observation through the interior of the sizing ring of heart tissue beyond the sizing ring.

4,211,242

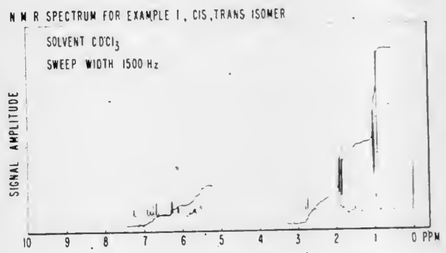
COMPOSITION OF MATTER COMPRISING MORE THAN 50% TRANS, TRANS-Δ-DAMASCONE FOR AUGMENTING OR ENHANCING THE AROMA AND TASTE OF A SMOKING TOBACCO

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Richard A. Wilson, Westfield; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Edward J. Granda, Englishtown; Joacquin Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and William L. Schreiber, Jackson, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Nov. 15, 1977, Ser. No. 851,727

Int. Cl.[2] A24B *3/12*

U.S. Cl. 131—17 R **5 Claims**



3. A smoking tobacco product comprising (i) smoking tobacco and (ii) intimately mixed with said smoking tobacco a

composition suitable for augmenting or enhancing the organoleptic properties of said smoking tobacco which composition consists essentially of 80 to 85 percent of a synthetically produced trans, trans-Δ-damascone and 20–15 percent of a synthetically produced cis, trans-Δ-damascone.

4,211,243

PROCESS FOR PRODUCING EXPANDED TOBACCO STEMS

Masayuki Ohno, Hiratsuka; Kazuhiko Akutagawa, Hadano; Hiroo Inui, Tokyo; Yoshihiko Nishizawa; Naoshi Tsukada, both of Noda, and Takeshi Akao, Abiko, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda and The Japan Tobacco & Salt Public Corporation, Tokyo, both of, Japan

Filed Feb. 21, 1978, Ser. No. 880,008
Claims priority, application Japan, Feb. 22, 1977, 52-17709
Int. Cl.[2] A24B *3/18*
U.S. Cl. 131—140 P **4 Claims**

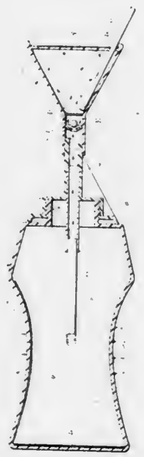
1. A process for producing expanded tobacco stems, which comprises heating under a pressurized atmosphere in the presence of superheated steam tobacco stems separated from tobacco leaves at a temperature of 190° to 260° C. and a pressure of 3 to 10 kg/cm^2 (gage) for 1 to 30 seconds and suddenly bringing the pressure to atmospheric pressure to effect expansion of the stems.

4,211,244

SMOKING DEVICE

Shane Williams, Rte. 1, Box 23, Muldrow, Okla. 74948

Filed Nov. 20, 1978, Ser. No. 962,347
Int. Cl.[2] A24F *1/04, 47/00*
U.S. Cl. 131—194 **5 Claims**



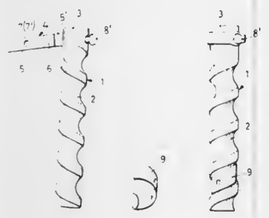
1. A smoking apparatus for use with a smoke generator having a smoke producing source therein and means for operating the smoke generator, comprising a container, means for connecting said container to the smoke generator, said container having a first opening providing communication between the smoke generator and the interior of said container so that when said smoke generator is operated, the smoke is discharged from the smoke producing source into said container, valve means in said container for substantially preventing the return of the smoke to the generator, at least one second opening in said container to vent the air therefrom while smoke is being introduced, said container defining a pocket in which particles of smoke may settle and be concentrated, and means for selectively removing the concentrated smoke particles from said container.

4,211,245

HAIR-WAVING DEVICE

Aldo Coppola, and Antonio Coppola, both of Milan, Italy, assignors to Coiffeurs i Coppola, di Aldo e Antonio Coppola, s.n.c., Milan, Italy

Filed Oct. 5, 1978, Ser. No. 948,741
Claims priority, application Italy, Oct. 7, 1977, 22442/77[U]
Int. Cl.[3] A45D *2/00*
U.S. Cl. 132—40 **7 Claims**



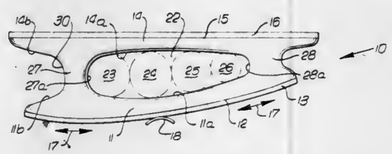
1. A hair-waving device comprising, in combination:
(a) an axonic body having a proximal end and a distal end;
(b) an uninterrupted helical groove formed on the surface of said axonic body, starting from said distal end and terminating near said proximal end;
(c) a gutter-like groove arranged on the surface of the proximal end of said axonic body in an axial direction and as an upward extension of said helical groove;
(d) two trunnion-like, diametrically opposite knob-topped pins, each on either side of said gutter-like groove and extending outwardly from the axonic body;
(e) a strap of resiliently yielding material having end holes for inserting the knob-like ends of said trunnion-like pins therethrough, and a ridge matching the outline of said gutter-like groove for clamping the proximal end of a lock of hair therebetween, and,
(f) a short helical clip of a snappingly resilient material having a configuration substantially corresponding to the helical groove in the axonic body and adapted to engage the distal end of said axonic body for clamping the free end of said lock of hair, the latter having been helically wound in the helical groove of said axonic body.

4,211,246

MANICURE NAIL SMOOTHING AND BUFFING

Yosh Hokama, Torrance, Calif., assignor to International Beauty Distributor, Gardena, Calif.

Filed Oct. 10, 1978, Ser. No. 949,625
Int. Cl.[2] A45D *29/04*
U.S. Cl. 132—76.4 **1 Claim**



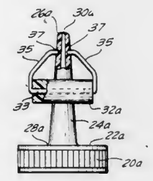
1. In a manicure nail processing apparatus, the combination comprising:
(a) a lower endwise elongated support to carry a first fingernail processing element at the lower side thereof,
(b) an upper endwise elongated support above the lower support to carry a second fingernail processing element on the upper side thereof,
(c) two horizontally spaced posts extending vertically between said two supports and interconnecting said supports and holding them in vertically spaced relation, thereby to provide a space vertically between the supports and horizontally elongated between the two posts to closely receive a manicurist's fingers whereby the lower support may then be endwise reciprocated over a fingernail, said two supports extending continuously between said posts,
(d) one of said posts and portions of said two supports defining an endwise openly facing recessed shoulder to be gripped by a manicurist's thumb when the manicurist's fingers received in said space are folded to invert said upper support into position below the lower support thereby allowing the manicurist's hand to form a fist gripping said apparatus, whereby the inverted upper support may then be endwise reciprocated over said fingernail.

4,211,247

DEVICES FOR USE IN SELECTIVELY ALTERING HAIR COLOR

Shila Morganroth, 1225 Waterbury Rd., Highland, Mich. 48031

Continuation-in-part of Ser. No. 481,695, Jun. 25, 1974. This application Jul. 2, 1975, Ser. No. 592,764
Int. Cl.[2] A45D *40/26*
U.S. Cl. 132—88.7 **29 Claims**



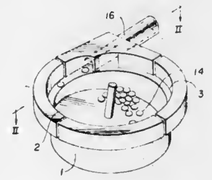
1. A device for use in selectively altering hair color comprising closure means adapted to be removably secured to a squeeze bottle to close an open end thereof, an elongated slender hair parting means secured at its base to and extending upwardly from said closure means having a frustoconical tip at the upper end with a rounded smooth end adapted to penetrate and part the hair, a liquid passageway through said device having a discharge orifice in the surface of said device adapted to deliver liquid from a squeeze bottle when said device is secured thereto, and liquid spreading means on said device having a transversely extending spreading surface spaced from and at an intermediate position between the base and upper end of said hair parting means for spreading liquid into hair after discharge from said orifice without preventing use of said parting means to part the hair.

4,211,248

DISPENSING MACHINE, IN PARTICULAR FOR COINS

Guy Lafon, 41 Chemin des Semailles, Grand-Lancy, Geneva, Switzerland

Filed Jun. 24, 1975, Ser. No. 573,137
Int. Cl.[2] G07D *9/06*
U.S. Cl. 133—1 R **9 Claims**



1. In a dispensing machine for coins and the like, comprising a coin receiving vat rotatable about its vertically directed axis of revolution, a revolvable, inclined, circular plate positioned inside said vat and revolvable about an axis which lies at an acute angle to said axis of revolution of said vat, and a rim extending along at least a portion of the periphery of said vat adapted to draw the coins with it in its rotatory motion to eject said coins through a side opening, according to a common direction, the improvement wherein the inner wall of said vat appear from bottom to top as including two portions, to wit:
a first portion in the shape of a frustum of cone, which flares upwards and a cylindrical portion having the same diameter as the greater base of said frustum of cone,
while the center of the upper surface of said plate lies in the plane of said greater base, at a small distance from said axis of revolution of said vat towards the highest point of said inclined plate, said distance being a function of the dip of said plate, so that the clearance between the outer diameter of said plate and said inner wall of said vat is substantially uniform.

4,211,249

LIQUID LEVEL CONTROL SYSTEM

George B. Richards, Lake Forest, Ill., assignor to Fluid Device Corporation, Highland Park, Ill.

Filed Sep. 7, 1978, Ser. No. 940,067
Int. Cl.[2] F16K *21/18*
U.S. Cl. 137—393 **19 Claims**



1. A liquid level control system for use with a swimming pool or the like, comprising:
a pool reservoir;
outlet means from the pool reservoir;
inlet means to the pool reservoir;
water circulation means between said outlet means and said inlet means;
means including a fluid amplifier positioned relative to said pool reservoir in communication with said water circulation means for sensing an interface between liquid and gas at the surface level of water in said pool reservoir, said interface sensing means producing a fluid pressure signal when said interface falls below a predetermined water level;
means including a fluid valve which is responsive to said signal produced by said interface sensing means, said signal responsive means being normally closed in an inoperative position and movable to an operative open position when said fluid pressure signal is produced by said interface sensing means; and
means associated with said signal responsive means for supplying water from an external water supply to said reservoir when said signal responsive means is moved to said operative position.

4,211,250

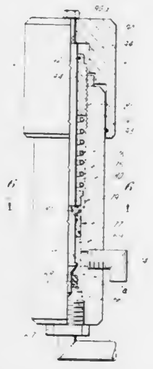
PRESSURE RELIEF VALVE

David E. Snyder, Longview, Tex., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,514
Int. Cl.[2] F16K *21/10*
U.S. Cl. 137—514 **6 Claims**

1. A pressure relief valve, comprising a body having a chamber therein with an inlet thereto and an outlet therefrom, the inlet comprising a passageway including an annular sealing member of resilient sealing material having a sealing lip about its inner diameter adjacent its outer end, a valve element slid-

ably reciprocable within the sealing member between a closed position in which its end extends through and beyond the lip of the sealing member so as to contain fluid from a source to which the inlet is connected and an open position in which its lower end is removed from within the annular sealing member so as to permit said fluid from the inlet to be exhausted through the outlet, a stem on the valve element guidably reciprocable within the body, a spring surrounding the stem and contained at one end, and detent means providing a connection between the stem and the opposite end of the spring to maintain the spring in a compressed condition and thereby oppose opening movement of the valve element due to fluid acting on the valve



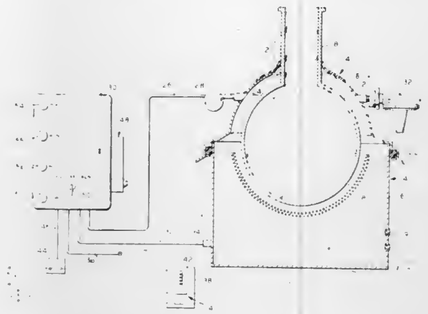
element within the sealing member, the connection of said detent means to the stem being releasable, upon movement of the valve element toward its open position but prior to withdrawal of its end from the lip of the sealing member, whereby further opening movement of said element is unopposed by the spring, said detent means automatically reconnecting the stem to the sleeve upon movement of the stem in a direction to return the valve element to its closed position, said spring and detent means being enclosed with said body, and said stem having a part thereon movable into engagement with the detent means, following the release of its connection to the spring, so that the spring absorbs shock of the opening movement of the valve element.

4,211,251
AUTOMATIC PURGING SYSTEM

Raymond E. Rickert, Terre Haute, and Billy J. Swalls, Lewis, both of Ind., assignors to Templeton Coal Co., Inc., Terra Haute, Ind.

Division of Ser. No. 899,412, Apr. 24, 1978, Pat. No. 4,169,225. This application Dec. 13, 1978, Ser. No. 969,012
Int. Cl.[2] E03B *5/00*; H05B *3/58*
U.S. Cl. 137—565 **4 Claims**

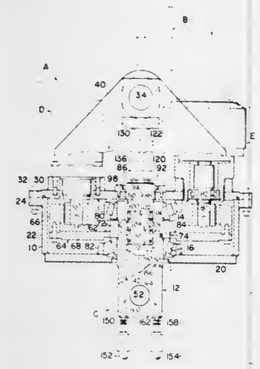
1. A fluidic control system for purging an enclosure for electrical equipment and the like comprising:
- a purging gas inlet,
- a purging gas outlet adapted to be connected to the enclosure,
- condition sensing means for sensing a condition within the enclosure and providing a first control pressure at a control inlet when the sensed condition has exceeded a predetermined limit,
- a control pressure outlet,
- first fluidic logic means responsive to said first control pressure for providing a deactivating control pressure at said control pressure outlet,
- second fluidic means for flowing a predetermined volume of said purging gas from said purging gas inlet through said purging purging gas outlet in response to said first control signal,
- third fluidic logic means for continuously providing low pressure purging gas from purging gas inlet at said purging gas outlet at least in the absence of said first control pressure at said control inlet.



4,211,252
HYDRAULIC COUPLER

Mario Pezzini, Baton Rouge, and Elmer P. Myers, Greenwell Springs, both of La., assignors to The Yaun-Williams Bucket Co., Baton Rouge, La.

Filed Feb. 1, 1978, Ser. No. 874,102
Int. Cl.[2] B25B *1/00*; B66C *1/00*
U.S. Cl. 137—580 **6 Claims**



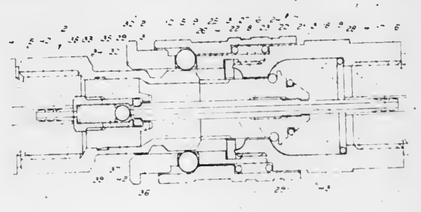
1. A coupler for connecting two members for rotation through three hundred and sixty degrees (360°) and having conduits therein for conducting hydraulic fluid from one to the other, said coupler comprising: a first assembly including spaced parallel plate-like parts; a second assembly having a cylindrical part extending through an aperture in one of said plate-like parts of said first assembly with one end thereof adjacent to another of said plate-like parts; tapered roller bearings located in the space between said plate-like parts of said first assembly connecting said assembly for rotation relative to one another; an internal gear located between said plate-like parts of said first assembly and keyed to said cylindrical part of said second assembly; a motor connected to said another of said plate-like member of said first assembly with its driven shaft extending into the space between said plate-like parts of said first assembly and having a pinion gear thereon in mesh with said internal gear; said first assembly having a cylindrical manifold part extending downwardly from said another of said plate-like member of said first assembly into a centrally located cylindrical aperture in the end of said cylindrical part of said second assembly adjacent to said another of said plate-like member of said first assembly; said cylindrical manifold part

having a plurality of axially spaced circumferential grooves in its outer surface with hydraulic fluid seals in alternate grooves; conduits in the form of apertures in said manifold part of said first assembly each having one end adapted for the connection of a flexible conduit and the other end communicating with different of said grooves in said manifold part; and conduits in the form of apertures in said cylindrical part of said second assembly each having one end adapted for the connection of a flexible conduit and the other end communicating with different of said grooves in said manifold part of said first assembly with which said conduits in said manifold part of said first assembly communicates.

4,211,253
COUPLING DEVICE

Kjell R. Ekman, Zug, Switzerland, assignor to Ekman Engineering AG, Zug, Switzerland

Continuation of Ser. No. 688,795, May 21, 1976, abandoned. This application Dec. 8, 1977, Ser. No. 858,875
Claims priority, application Switzerland, May 30, 1975, 62018/75
Int. Cl.[2] F16L *37/28*
U.S. Cl. 137—594 **11 Claims**

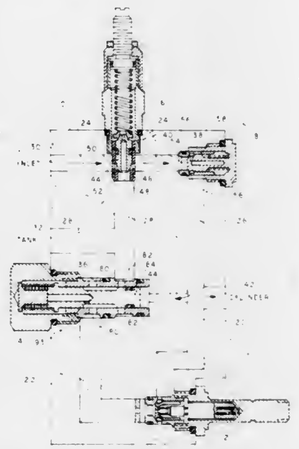


1. A quick-connect coupling device for supplying a plurality of separate fluids from respective pressurized fluid sources to separate output conduits for said fluids without admixing of the fluids in the coupling device, said coupling device comprising:
- a first coupling part having first and second axial fluid flow passages extending therethrough,
- a second coupling part also having first and second axial fluid flow passages extending therethrough,
- said first and second coupling parts each having on a respective first end thereof means to permit the detechable coupling of said parts with their respective first and second fluid flow passages aligned to permit fluid flow therefrom,
- means responsive to the attainment by said first and second coupling parts of a first predetermined coupling relationship for completing a continuous fluid flow path only through the respective first fluid flow passages of said first and second parts,
- said responsive means being also responsive to the attainment by said first and second parts of a second predetermined coupling relationship to provide a continuous fluid flow path through the respective second fluid flow passages of said parts,
- wherein said responsive means comprises an elongated tubular member supported within said first coupling part, and a hollow holder member supported within said second coupling part, said holder surrounding and supporting a hollow cylinder-shaped lining member which, in turn, supports a first valve member and a first spring member such that the first valve member is pressed by said first spring against a seat formed at an end of said lining member, a sealing ring compressed between an inwardly protruding edge of said holder and said lining member, a recess formed in an outer edge of said elongated tubular member, whereby said lining member positions said sealing ring and also provides the seat against which the first valve member is biased by the first spring.

4,211,254
NORMALLY CLOSED PRESSURE COMPENSATED FLOW CONTROL VALVE

Elton E. Dyal, Wood Dale, Ill., assignor to Modular Controls Corporation, Villa Park, Ill.

Filed Oct. 30, 1978, Ser. No. 955,938
Int. Cl.[2] F15B *13/04*
U.S. Cl. 137—596.12 **13 Claims**



1. A normally closed pressure compensated fluid flow control valve assembly for metering fluid from a cylinder port at a desired rate for lowering a load at a corresponding desired rate said valve assembly comprising: a valve means coupled to the cylinder port and selectively actuable for permitting fluid to flow from the cylinder; a normally closed pressure compensating valve means coupled to said valve means and disposed downstream from said valve means with respect to the fluid flow from the cylinder for maintaining a desired fluid flow pressure and a desired fluid flow rate, said normally closed pressure compensating valve means including a control input adapted to be directly coupled to the cylinder through said cylinder port for continuously sensing the fluid pressure within the cylinder; and means between said valve means and said normally closed pressure compensating valve means for restricting the rate of fluid flow from said valve means to said normally closed pressure compensating valve means; said normally closed pressure compensating valve means being arranged to gradually open upon the actuation of said valve means for gradually increasing the fluid flow rate to a desired fluid flow level and to maintain the desired fluid flow rate thereafter responsive to the cylinder pressure sensed by said control input.

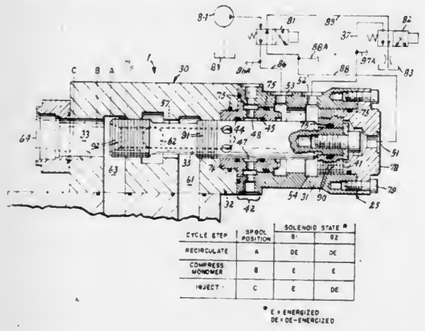
4,211,255
SLIDE VALVE

Jerry D. Wisbey, and Kirby L. Stone, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 14, 1978, Ser. No. 969,483
Int. Cl.[3] F16K *31/124*
U.S. Cl. 137—625.48 **14 Claims**

1. A reciprocating slide valve having a spool valve member that is slidably movable among at least three positions (first, intermediate, and injection, respectively) and comprising
- an elongated body having therein a bore constituting a valve chamber;
- a spool valve slidably mounted in said bore for reciprocating among said three positions;
- drive means to move and position said spool valve at selected ones of said positions;
- first, second, third, and fourth valve chamber ports through

said body and arranged serially in the walls of said chamber progressing from one end to the other of said chamber; first and second lands spaced by a groove on said spool valve; said groove and first and second chamber ports being axially located and sized to connect said first and second chamber ports when said spool valve is in said intermediate position and to be in communication with at least said second chamber port when said spool valve is in said injection position; said second land establishing a



CYCLE STEP	SPOOL POSITION	SOLENOID STATE *	
		S1	S2
RECIRCULATE	A	DE	DE
COMPRESS MONOMER	B	E	E
INJECT	C	E	DE

* E = ENERGIZED
DE = DE-ENERGIZED

communication path between said third and fourth chamber ports when said spool valve is in said first position and blocking said path in the other two positions; and

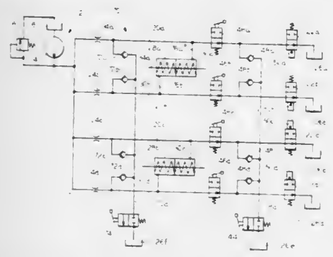
axially extending passage means in said spool valve body extending between said lands for establishing communication when said spool valve is positioned at said injection position between said fourth chamber port and a predetermined one of said other chamber ports but to block the last said communication at the other position.

4,211,256

CIRCULATING FLOW HYDRAULIC PILOT SYSTEM

Charles R. Sturtz, Jr., St. Joseph, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 14, 1977, Ser. No. 860,360
Int. Cl.[2] F15B *13/043*
U.S. Cl. 137—625.64 **11 Claims**



1. A hydraulic system of the type which includes a directional control valve having a stand-by position and an operating position, source means for supplying pressurized fluid, means for limiting the maximum fluid pressure of said source means, sump means for receiving fluid, and a pilot hydraulic system for actuating said directional control valve to said operating position, in which said pilot system comprises:

a first conduit receiving pressurized fluid from said source means and establishing a first fluid flow path to said sump means;

a second conduit receiving pressurized fluid from said source means and establishing a second fluid flow path to said sump means;

first and second fluid restrictors being interposed into respective ones of said first and second fluid flow paths;

first and second pilot valves, each having a free-flow and a flow blocking position, and each being interposed into respective ones of said fluid flow paths in series flow relationship with respective ones of said fluid restrictors;

a fluid actuator, operatively connected to said directional control valve, having a first actuator port that communicates with said first fluid flow path intermediate of said first fluid restrictor and said first pilot valve, and having a second actuator port that communicates with said second fluid flow path intermediate of said second fluid restrictor and said second pilot valve, said actuator ports being subject to substantially equal fluid pressures when said pilot valves are in said free-flow position;

bias means for resiliently urging said directional control valve to said stand-by position;

operating means for moving one of said pilot valves from said free-flow position to said flow blocking position so that unequal fluid pressures are applied to said actuator ports;

override means for reestablishing substantially equal fluid pressures applied to said actuator ports when said one pilot valve is in the blocking position; and

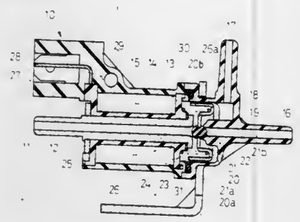
means for reapplying unequal fluid pressures to said actuator ports when said override means is in operation.

4,211,257

SOLENOID VALVE

Naoji Sakakibara, Chiryu, and Nobuyuki Hashimoto, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 22, 1978, Ser. No. 944,674
Claims priority, application Japan, Oct. 26, 1977, 52-128273
Int. Cl.[2] F16K *31/06*
U.S. Cl. 137—625.65 **2 Claims**



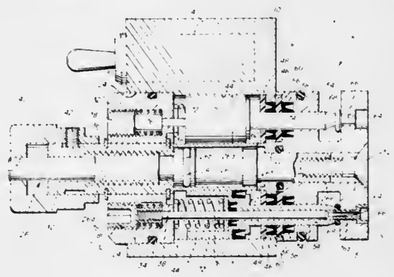
1. A solenoid operated fluid control valve comprising an armature assembly, an electromagnetic assembly, valve chamber, fluid passageways and magnetic path assembly, said armature assembly including a platelike magnetic valve member having an opening therethrough reciprocally movable in said valve chamber, a seal element of resilient material loosely retained by the valve member for pivotal movement only and a spring urging the valve member in a first direction of its reciprocal movement in said valve chamber, said electromagnet assembly including a coil and a magnetic core fixed with respect to the coil and having a tapered valve seat at its end which faces toward the opening in said valve member, said seal element having at least one tapered projection, which extends toward the tapered valve seat, said seal element having an annular recess having a bottom portion spaced from said opening and outwardly diverging side walls in constant engagement with the peripheral edges of said opening at each end of the opening respectively thereby allowing said seal element to pivot in said opening, one of said fluid passageways communicating with said tapered valve seat, the other of said fluid passageways communicating with the valve chamber, said magnetic path assembly including magnetic members which form a magnetic flux path from an outer end of said magnetic core to the vicinity of the edge of said valve member.

4,211,258

SPRAY DAMPENING SYSTEM FOR OFFSET PRINTING WITH PAGE CONTROL ASSEMBLY

Thomas G. Switall, Chicago, Ill., assignor to Ryco Graphic Manufacturing, Inc., Wheeling, Ill.

Division of Ser. No. 794,257, May 5, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,866
Int. Cl.[2] F16K *31/143;* **B05B** *1/14*
U.S. Cl. 137—862 **19 Claims**



1. A compound valve assembly, comprising:

a solid body with a central axis defined therein;

a plurality of chambers forming cylinders defined in said body, each extending parallel to said central axis and spaced radially about said central axis at approximately the same axial location;

a plurality of valves having respective inlet orifices radially spaced about said central axis and aligned with respective ones of the cylinders;

manifold means for communicating each of said orifices with a fluid;

a plurality of piston members slidably received in respective ones of said cylinders, each piston member having a closure sleeve extending from one end thereof toward a respective orifice and formed such that engagement of the end of the closure sleeve with the orifice closes the respective valve while retraction of the closure sleeve from the orifice opens the respective valve;

a circular fluid chamber formed about said central axis intersecting each of said cylinders;

ductwork formed in said body communicating said circular chamber with a source of pressurized fluid for operating said piston members;

a plurality of needle elements each extending in parallel through said piston members and closure sleeves and having a tapered tip at one end axially introducible into the orifice of a respective valve to restrict the flow of fluid into the orifice;

a common drive member surrounding said central axis, the opposite ends of said needle elements being attached to said drive member; and

a screw drive mounted to said body coaxial with said central axis for advancing and retracting said common member to introduce and withdraw all of said needle elements at once.

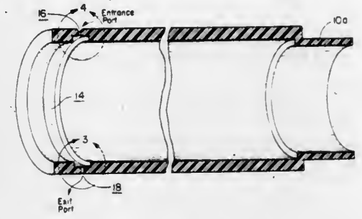
4,211,259

PLASTIC TUBE

James L. Butler, Westlake Village, Calif.

Filed Apr. 14, 1978, Ser. No. 896,343
Int. Cl.[2] F16L *47/02*
U.S. Cl. 138—109 **5 Claims**

1. A pipe having an internal peripheral channel at one end thereof displaced inwardly from said end, an entrance port extending through said pipe into said channel to permit an adhesive to be injected into the channel through the port to form a ring of adhesive around the end of an adjacent pipe inserted into said one end of said first-named pipe to bond the first-named pipe and the adjacent pipe to one another, an exit port extending through said first-named pipe from said channel angularly displaced from said entrance port to permit excess



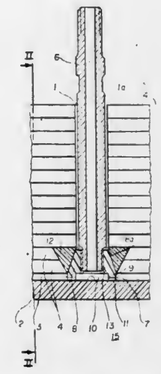
adhesive to be discharged therethrough, and a rupturable film extending across the exit port to prevent discharge of the adhesive therethrough until a predetermined adhesive pressure is reached in the channel.

4,211,260

MULTILAYER VESSEL OR TUBE CONSTRUCTION

Karl H. Prischmann, Hattingen, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 823,501, Aug. 10, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,265
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636710
Int. Cl.[2] F16L *9/16*
U.S. Cl. 138—143 **4 Claims**



1. A multilayer vessel, comprising, an inner core tube and a plurality of supporting layer tubes disposed around and associated with said inner core, each of said supporting layer tubes having degassing bores, a blind layer provided between said core tube and the innermost supporting layer tube, a plurality of core plugs resting on said core tube and provided in a number corresponding to the number of degassing bores, said blind layer having a plurality of openings therethrough provided in a number corresponding to the number of said core plugs, each of said core plugs being disposed in one of said openings of said blind layer and each of said core plugs being welded by its upper portion only to a relatively few of said support layers, each of said core plugs having a threaded bore communicating with the atmosphere, and a degassing pipe threaded into said threaded bore and having a passage defined therethrough, each of said core plugs having an underside resting on said core tube with a plurality of grooves therein.

4,211,261

FABRICS FOR PROTECTIVE GARMENTS HAVING STRANDS OF REFLECTIVE MATERIALS

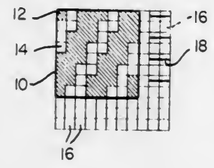
Parvez Mehta, Leeds, and Anthony M. Warnes, Ilkley, both of England, assignors to I.W.S. Nominee Company Limited, London, England

Filed Aug. 30, 1977, Ser. No. 829,251

Claims priority, application United Kingdom, Sep. 2, 1976, 36448/76

Int. Cl.[2] D03D *15/12;* **D04B** *21/00*

U.S. Cl. 139—425 R **9 Claims**



1. A protective, reflective dual ply fabric having radiant heat reflective properties for use in construction of protective garments for persons working in close proximity to fire and other heat sources composed of textile yarns intermeshed with strands of heat reflective and protective materials, in which a major proportion of one face of the dual ply fabric is composed of the textile yarns and a major proportion of the other face of the dual ply fabric is composed of the heat reflective and protective strands.

4,211,262

Patent Not Issued For This Number

4,211,263

DUAL FILL RATE LIQUID FILLER APPARATUS HAVING A SINGLE CONTROL VALVE

Harry L. Kennedy; Prakash M. Kesaree, both of Freeport, and Robert H. Reeves, Jr., Lake Jackson, all of Tex., assignors to Velasco Scale Company, Houston, Tex.

Filed Oct. 16, 1978, Ser. No. 951,991

Int. Cl.[3] B65B *3/28*

U.S. Cl. 141—83 **9 Claims**

1. An apparatus for filling a container to a predetermined weight with a liquid at a first and a second fill rate, the apparatus being of the type having

(a) a conduit having an emission end adapted to introduce a liquid from a source into the container,

(b) a scale adapted to generate a first and a second control signal when the weight of the liquid within the container equals a first and a second cut-off weight, respectively, and

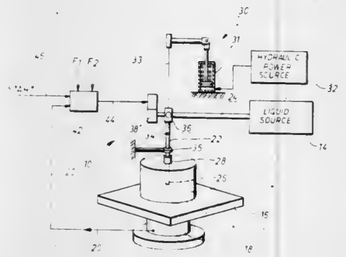
(c) an intiating signal generator for generating an initiating signal to initiate filling of the container,

wherein the improvement comprises:

a single control valve interposed in a flow control relationship between the liquid source and the emission end of the conduit, the control valve being of the type that has a valve element therein that is movable from a closed to a first open position and from the closed to a second open position wherein the valve element respectively defines first and second liquid flow cross section areas, the first and the second cross section areas being respectively sized to pass a liquid from the source through the conduit and into the container at a first and second fill rate;

an actuator operatively associated with the control valve and responsive to a first and a second actuating force to move the valve element against a biasing force to the first open position and to the second open position, respectively;

an interface arrangement operatively associated with the scale and adapted to apply the actuating forces to the actuator, the interface arrangement being responsive to the intiating signal to apply the first actuating force to the actuator to move the valve element from the closed to the



first open position to permit introduction of liquid into the container at the first fill rate until the first cut-off weight is reached,

the interface arrangement being responsive to the first control signal to terminate application of the first actuating force to permit the valve element to respond to the biasing force and return to the closed position and to thereafter apply the second actuating force to the actuator to move the valve element from the closed to the second open position to permit introduction of liquid into the container at the second fill rate until the second cut-off weight is reached, the interface being responsive to the second control signal to terminate application of the second actuating signal to the actuator.

4,211,264

LOG SPLITTER

Robert M. Cross, 8927 Greiner Dr., Houston, Tex. 77080

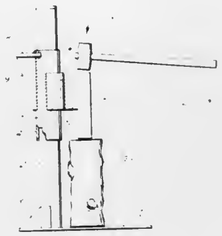
Filed Dec. 4, 1978, Ser. No. 966,118

Int. Cl.[2] B27L *7/00*

U.S. Cl. 144—193 D **2 Claims**

1. In a log splitter having a base plate, a pole vertically mounted on said base plate, a wedge vertically movable on said pole and means on said wedge to receive blows, the improvement comprising said wedge being mounted on a cylindrical

member for movement on said pole, and a plate means extending laterally from said member on the opposite side of said



member from said wedge for recieving blows to complete a split.

4,211,265

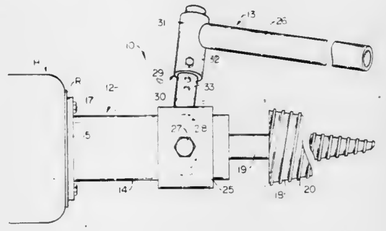
LOG SPLITTING APPARATUS

Russell H. Thackery, 2376 Brentwood Rd., Columbus, Ohio 43209

Filed Feb. 2, 1978, Ser. No. 874,414

Int. Cl.[2] B27L *7/00;* **A47J** *49/02*

U.S. Cl. 144—194 **18 Claims**



1. A log splitting apparatus comprising

a splitter head assembly including a splitter head having a spiral thread formed on a conical surface, an elongated supporting drive shaft projecting axially from a base of the splitter head, and shaft coupling means provided on said drive shaft in relatively remote relationship to said splitter head for mechanical coupling thereof with a power source,

a support housing assembly including an elongated tube having bearing means in which said drive shaft is journalled in axially extending relationship with the splitter head projecting axially with respect to one end of said tube and the shaft coupling means at the opposite end thereof, and mounting means attached to said tube for mounting thereof on a power source and effecting engagement of said drive shaft coupling with the power source in driving relationship, and

a log stop bar assembly including an elongated bar and support means for said bar, said support means being rotatably mounted on said support housing tube for angular displacement relative thereto and supporting said bar in axially extending, laterally spaced relationship to said splitter head for defining a throat in combination with said splitter head for passage of a log therethrough, and securing means on said support means and said support housing respectively for locking the same in selective relative angular positions.

4,211,266

FLEXIBLE CONTAINER WITH DISCHARGE TUBE

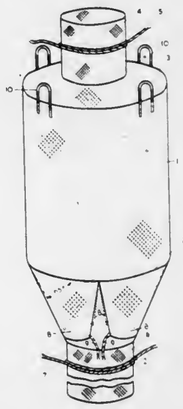
Frederick Massey, Cleethorpes, England, assignor to Tioxide Group Limited, Billingham, England

Filed Feb. 21, 1979, Ser. No. 13,682

Claims priority, application United Kingdom, Feb. 23, 1978, 07192/78; Sep. 16, 1978, 37087/78

Int. Cl.[2] B65D *33/38*

U.S. Cl. 150—1 **14 Claims**



1. A container comprising a closed sidewall, a cover and a base; said sidewall, base and cover being of flexible material, said base being provided with a flexible discharge tube and said cover being provided with a flexible filling tube, said flexible tubes having releaseable closure means, said base and sidewall being constructed in such a manner that said base assumes an angle of between 55° and 75° to the horizontal plane across the base of the sidewall of said container during discharge of its contents; a plurality of flaps attached externally to said base by one side and the free sides of which are provided with releasable connecting means whereby said flaps can be secured over said flexible discharge tube; and means for lifting said container.

4,211,267

THERMAL INSULATING AND CUSHIONED BAG, ESPECIALLY A CARRYING BAG

Leif O. Skovgaard, Jaegumvej 4, Vrogum, DK-6840 Oksbol, Denmark

Filed Sep. 25, 1978, Ser. No. 945,110

Claims priority, application Denmark, Sep. 23, 1977, 4212/77

Int. Cl.[2] A61F *7/00;* **B65D** *33/00*

U.S. Cl. 150—2.1 **11 Claims**

1. A thermal insulating and shock absorbent carrying bag comprising

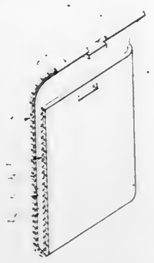
opposed walls each formed of an outer layer and inner layer of thermoplastic sheet material, and an intermediate layer of thermal insulating material disposed between and separating said inner and outer layers,

said outer layer comprising a thin, flexible film of thermoplastic polyethylene foam having insulating properties,

said inner layer comprising at least one thin flexible sheet of thermoplastic polyethylene film,

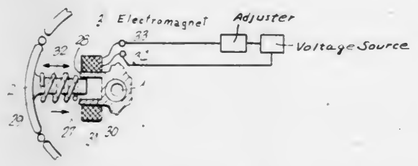
said intermediate layer comprising a soft, flexible and com-

pressible padding of thermoplastic polyester fibers having high insulating properties,



said inner, outer and intermediate layers being joined together by welded seams along the edges of said walls.

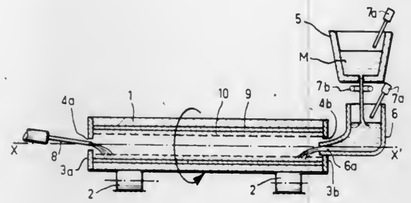
4,211,268
WHEEL
Borut Ravnikar, Pod Topoli 19, Ljubljana, Yugoslavia
Filed Apr. 28, 1978, Ser. No. 901,118
Int. Cl.[2] B60B *9/28*
U.S. Cl. 152—5 **1 Claim**



1. A wheel having a hub and a rim encircling the hub and spaced therefrom, said wheel comprising
a plurality of controlled variable length spokes extending radially from the hub to the rim and supporting said rim coaxially around said hub, each of the spokes being divided into two aligned parts of ferromagnetic material spaced from each other; and
spoke length varying means for varying the lengths of the spokes by electromagnetic force, said spoke varying means comprising a cup formed in a first of the parts for accommodating the second of the parts, an electromagnet having a coil coaxially positioned around said cup and a spring coaxially mounted around the second of the parts.

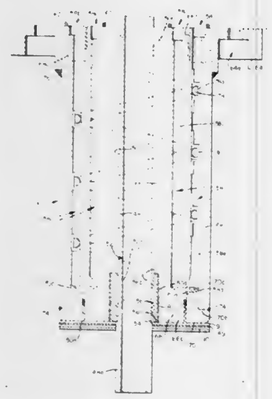
4,211,269
METHOD OF CENTRIFUGALLY CASTING METAL UNDER AN INERT ATMOSPHERE
Gerard Bentz, Elancourt-Trappes; Jean Galey, Voisins-Bretonneux, and Serge Devalois, Fourqueux, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et L'Expoitation des Procedes Georges Claude, Paris, France
Filed May 16, 1978, Ser. No. 906,553
Claims priority, application France, Jun. 1, 1977, 77 16675
Int. Cl.[2] B22D *13/02, 21/02, 23/00*
U.S. Cl. 164—67 **4 Claims**

1. In a method of casting metal in a rotary mold, the steps of:
continuously rotating the mold;
introducing inert liquified gas into the rotating mold to spread the liquid over the inner surface of said mold;
directing a first molten metal into the rotating mold, the first metal being urged by centrifuging against the inner surface of the mold and solidifying therein to form a first metallic layer;
continuing the introduction of inert liquified gas into the rotating mold as the first molten metal is directed thereto and during the solidification of the first metal, the gas filling the cavity formed by said first metallic layer;
said inert liquified gas being introduced into said mold during the insertion of said first molten metal at a rate corresponding to a volume of gas in the gaseous phase equal to at least five times the volume of the cavity to be filled, to



maintain in the cavity an atmosphere having an oxygen content of less than 0.1%; and
directing a second molten metal into the rotating mold after the solidification of the first metal, the second metal being urged by centrifuging against the inner surface of the cavity formed by said first layer and solidifying therein to form a second metallic layer.

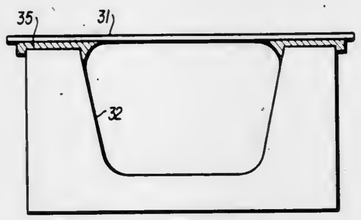
4,211,270
METHOD FOR CONTINUOUS CASTING OF METALLIC STRANDS AT EXCEPTIONALLY HIGH SPEEDS
George Shinopulos; M. Ronald Randlett, both of Burlington, and Terry F. Bower, Needham, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.
Filed Jul. 28, 1978, Ser. No. 928,881
Int. Cl.[2] B22D *11/00*
U.S. Cl. 164—83 **80 Claims**



1. A method for continuously casting a metallic strand from a metallic melt comprising:
providing a die having a first end with a coolerbody having a first end surrounding a portion of said die to enable portions of said die to be cooled and with an insulating member located between a portion of said die and said coolerbody to insulate a portion of said die from the cooling of said coolerbody, the location of said insulating member being at the first end of the coolerbody and extending between said die and said coolerbody a first distance;
immersing said first end of said coolerbody in the melt a distance greater than said first distance to produce a solidification front within the die below the level of the melt

when the melt is withdrawn through said coolerbody; and,
withdrawing molten metal from the melt through said die while cooling said die through said coolerbody, said cooling completely solidifying the molten metal into a strand within a portion of the die below the level of the melt and above the insulating member, the solidified strand being withdrawn from said melt in a cycled pattern of forward and reverse strokes.

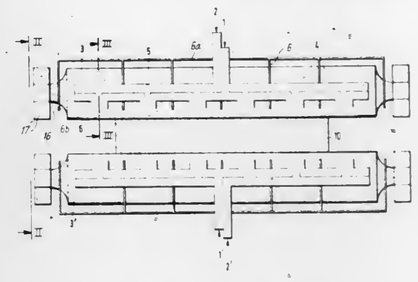
4,211,271
CONTINUOUS CASTING MOLD GEOMETRY IMPROVEMENT
George C. Ward, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.
Filed Dec. 14, 1977, Ser. No. 860,648
Int. Cl.[3] B22D *11/06*
U.S. Cl. 164—87 **12 Claims**



1. An improved process for the prevention of corner cracking during the continuous casting of metals of the type wherein molten metal is cast into a mold, formed by a peripheral groove in a rotating casting wheel and a band which seals a length of said groove, and wherein the molten metal is solidified in the shape of said mold to form a solid continuous length of cast bar which is subsequently extracted for further processing, wherein the improvement comprises introducing into said mold additional mold defining means for reducing the high heat transfer rates and for eliminating the sharp corners of the mold which both would otherwise occur at the junction of the wheel groove and the band, said means providing a thermal and physical barrier between the molten metal and said junction, reducing the solidification stress therein and forming a nonsharp edge on the solid length of cast bar with a radius of at least ten percent of the mold depth.

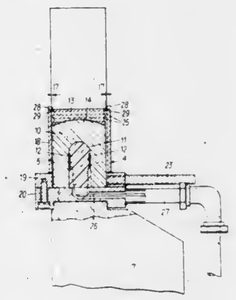
4,211,272
COOLING OF INGOTS OR CASTINGS
Hans Schrewe, Duisburg, and Fritz-Peter Pleschiutschnigg, Düsseldorf-Angermund, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany
Filed Dec. 20, 1978, Ser. No. 971,406
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2757694
Int. Cl.[2] B22D *11/124*
U.S. Cl. 164—89 **1 Claim**

1. Method of cooling ingots or castings moved and supported by means of roller tracks, there being a plurality of spaces, each bounded by a surface portion of an ingot or casting between lines of contact with respective two adjacent rollers of one of the tracks, chamber means and adjacent surface portions of these rollers, comprising the steps of:
atomizing a coolant by means of air in order to produce a coolant fog or mist within each of said spaces;
retaining the fog or mist in the space in a stagnant flow, so that essentially only air with vaporized water in the gaseous phase escapes from said space and liquid coolant droplets constituting the fog or mist stagnate and float in said space, filling it completely and being exposed to radiation from said surface portions; and
wherein the coorresponding amount of latent heat of vaporization of the atomized coolout fed to said space per unit



time is larger than the amount of heat radiated by said surface portion of the ingot or casting into said space plus the amount of heat transferred by conduction out of said surface portion into at least one of the two rollers.

4,211,273
ARRANGEMENT AT A CONTINUOUS CASTING PLANT
Werner Scheurecker, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria
Filed Mar. 27, 1979, Ser. No. 24,305
Claims priority, application Austria, Apr. 5, 1978, 2381/78
Int. Cl.[2] B22D *11/128*
U.S. Cl. 164—150 **11 Claims**



1. In an arrangement at a continuous casting plant strand guiding rollers, supporting means supporting said strand guiding rollers relative to said strand guiding stand, and load measuring means interposed between at least some of said supporting means between at least some of said strand guiding stand, the improvement which is characterized in that:
bushings are mounted on said strand guiding stand adjacent each supporting means with an interposed measuring means, each of said bushings being open towards the roller pertaining to its supporting means;
each of said load measuring means includes a measuring body and a supporting head, each load measuring means being inserted in one of said bushings with its supporting head directed toward the pertaining roller and being peripherally surrounded by said bushing so as to leave free a narrow annular gap, a space communicating with said annular gap is provided between each one of said bushings and its pertaining load measuring means; and
grease is pressed in said space between said bushings and said load measuring means, said grease extending into said narrow annular gap and emerging from said annular narrow gap to form a grease ring.

4,211,274

EQUIPMENT FOR COOLING AND SEPARATION OF CASTINGS AND MOULDING SAND

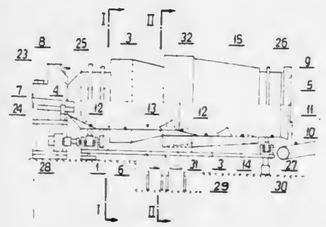
Stanislaw Slowinski; Stanislaw Vasina; Jerzy Pasich; Jerzy Kosek, and Stanislaw Glownia, all of Cracow, Poland, assignors to Przedsiegiorstwo Projektowania I Wyposazania Odlewni "Prodlew", Warsaw, Poland

Filed May 10, 1978, Ser. No. 905,179

Claims priority, application Poland, May 12, 1977, 198090; Jun. 13, 1977, 198820

Int. Cl.² B22D *29/00*

U.S. Cl. 164—401 **14 Claims**



1. Apparatus for cooling and separating castings from moulding sand, comprising in combination: a rotary container of longitudinal axis substantially horizontal, said container having on one side thereof an inlet opening for introducing the moulding sand together with the castings said inlet opening is enclosed with a casing connected by means of a suction duct having an exhaust system associated therewith, and, on another side, an outlet opening to remove castings; a sieve wall located between the said openings to remove moulding sand; said apparatus being further defined by at least one slot (**6**, **38**) over the circumference of the side surface of the container (**1**, **2**, **3**, **20**) wherein said slot being located before the sieve wall (**14**) on the side of the inlet opening (**4**) for ensuring inflow of air into the container and said outlet opening (**5**) having a stationary cover (**9**) provided at its bottom part with an opening (**10**) for removal of castings.

4,211,275

DEVICE FOR CONTINUOUS HORIZONTAL CASTING

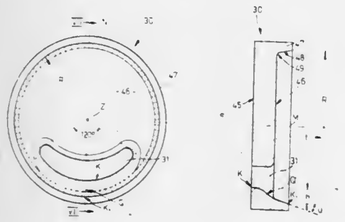
Josef V. Morianz, Illnau, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 19, 1978, Ser. No. 971,005

Claims priority, application Switzerland, Dec. 19, 1977, 15604/77

Int. Cl.² B22D *11/00*

U.S. Cl. 164—440 **15 Claims**



1. An improved apparatus for use in the continuous horizontal casting of molten metal comprising, in combination, a molten metal holding means having a floor and an outlet; a mold in line with said holding means and nozzle means disposed between said holding means outlet and said mold the improvement comprising:

said nozzle means comprising a plate having a first surface facing said holding means and a second surface facing said mold, said plate being provided with an elongated substantially arc-shaped opening lying in a plane substantially perpendicular to the flow of said molten metal and communicating said holding means outlet with said mold, wherein said elongated opening varies in size along the entire length with the greatest cross-section at the midpoint and substantially symmetrically tapering toward both ends so as to provide for preferential metal flow to said mold, said opening having a lower surface provided at least in part with a downwardly sloping run out surface extending from said first surface of said plate to said second surface of said plate.

4,211,276

METHOD OF MAKING FIN ELEMENTS FOR HEAT EXCHANGERS

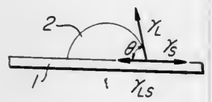
Masaaki Itoh, Tsuchiura; Tsuneyoshi Takasuna, Hitachi; Yuichi Ishikawa, Sakuramura; Hideyuki Kimura, Chiyodamura, and Masanori Musoh, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 22, 1978, Ser. No. 918,274

Claims priority, application Japan, Jun. 29, 1977, 52-76511

Int. Cl.² F28F *13/18*

U.S. Cl. 165—1 **9 Claims**



1. A method of making a fin element for use in a heat exchanger which in use is contacted on its surface by a specific liquid medium, comprising:

selecting sheet material,

placing droplets of said liquid medium on an unroughened surface of said sheet material,

determining the contact angle θ which said droplets make with reference to the plane of the unroughened surface,

roughening the surface of the sheet material to have a coefficient of surface roughness R which is approximately equal to an amount $1/\cos\theta$, in which R is a ratio of surface area of the fin element after and before roughening, and θ is a contact angle of a liquid droplet formed from said liquid medium which adheres to the surface of the fin element sheet material before roughening.

4,211,277

HEAT EXCHANGER HAVING INTERNAL FITTINGS

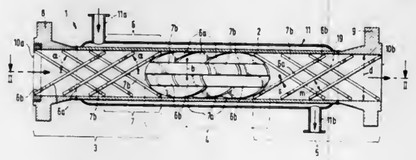
Friedrich Grosz-Röll, Zurich; Gerhard Schutz, and Felix Streiff, both of Winterthur, all of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed May 23, 1978, Ser. No. 908,696

Claims priority, application Switzerland, May 31, 1977, 6641/77; Feb. 16, 1978, 1686/78

Int. Cl.² F28F *13/12*

U.S. Cl. 165—109 T **16 Claims**



1. A heat exchanger comprising

means defining a flow passage having a predetermined diameter (d) along a longitudinal axis of said passage; and

a plurality of fittings disposed in said flow passage, each said fitting including at least two groups of webs, each group including a plurality of webs, said webs of each group being disposed in parallel relation to each other at a predetermined spacing (m), in angular relation to said flow passage axis and in crossing relation to said webs of the other group, at least some of said webs being interconnected to each other at points of intersection thereof wherein at least two of said fittings are disposed in consecutive relation in said passage and in 90° relation to each other along said longitudinal axis.

4,211,278

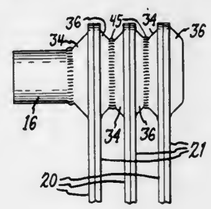
HEADER STRUCTURE FOR A PANEL-TYPE RADIATOR AND METHOD OF MAKING SAID STRUCTURE

Moreland P. Bennett, Hickory; Philip A. Cacalloro, Newton, and Albert J. McCloy, Hickory, all of N.C., assignors to General Electric Company, Philadelphia, Pa.

Filed Sep. 28, 1978, Ser. No. 946,893

Int. Cl.² F28F *9/26*

U.S. Cl. 165—130 **3 Claims**



1. In a panel-type radiator,

(a) a pair of panels disposed in side-by-side relationship, each comprising two thin dished sheets of steel joined together around their perimeters, said perimeters defining the outer edge of the panel and the sheets defining spaced walls of the panel,

(b) a first sheet of one panel being disposed immediately adjacent a first sheet of the other panel,

(c) each of said first sheets being provided with a thin-walled embossment of generally truncated conical form having a centrally-disposed opening extending through the outer end of said embossment,

(d) each of said embossments further comprising a flange surrounding said opening and extending generally radially with respect to said opening and an annular portion of rounded cross-sectional form joining said flange and the generally conical portion of said embossment,

(e) said flanges of said embossments being disposed in juxtaposed relationship with said openings generally aligned, thus providing externally of said flanges a groove of generally V-shaped cross-section between said annular portions of the two embossments,

(f) a deposit of silicon bronze forming a brazed joint between said embossments comprising an annular filet of silicon bronze disposed in said V-shaped groove and bonded to said annular portions and a film of silicon bronze between said juxtaposed flanges and bonded to said flanges.

4,211,279

PLUNGER LIFT SYSTEM

Kenneth M. Isaacks, North Glenn, Colo., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 20, 1978, Ser. No. 971,537

Int. Cl.² E21B *43/00, 43/16*

U.S. Cl. 166—64 **6 Claims**

3. In a plunger lift system for wells having a tubing string extending downward from a wellhead, a plunger catcher and trip assembly, comprising:

(a) tubular means adapted for engagement with the wellhead and having a bore aligned with the bore of the tubing string;

(b) housing means extending radially from the tubular means;

(c) means disposed within the housing means for engaging the plunger when the plunger is within the tubular means;

(d) a piston slidably disposed within the housing means;

(e) an operating shaft slidably disposed within the housing means and attached to the piston;

(f) the operating shaft haviang a sufficient length that one end thereof can contact the engaging means;

(g) the operating shaft and piston having a first position in which the one end of the operating shaft contacts the engaging means and holds the engaging means whereby the plunger is trapped and held within the tubular means;

(h) means for supplying operating fluid to the housing means to move the piston and operating shaft to the first position.

5. A plunger catcher and trip assembly, comprising:

(a) tubular means adapted for engagement with a wellhead and having a bore which can be aligned with the bore of a tubing string;

(b) housing means extending radially from the tubular means;

(c) means for engaging a plunger when the plunger is within the tubular means;

(d) the tubular means having an opening surrounded by said housing means through which the engaging means can be partially projected into the bore of the tubular means;

(e) a piston slidably disposed within the housing means;

(f) an operating shaft slidably disposed within the housing means and attached to the piston;

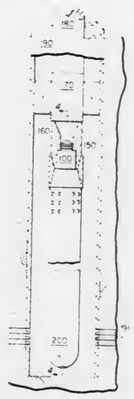
(g) the operating shaft having a sufficient length that one end thereof can contact the engaging means and hold the engaging means partially projected through the opening in the tubular means;

(h) the operating shaft and piston having a first position in which the one end of the operating shaft contacts the engaging means and holds the engaging means partially extended into the bore of the tubular means whereby the plunger is trapped and held within the tubular means;

(i) means for supplying operating fluid to the housing means to move the piston and operating shaft to the first position.

4,211,280
DOWNHOLE SURGE TOOLS, METHOD AND APPARATUS

Robert D. Yeates, 3217 High Sky Dr., Midland, Tex. 79703
Division of Ser. No. 947,049, Sep. 29, 1978, Pat. No. 4,182,419.
This application May 15, 1979, Ser. No. 39,156
Int. Cl.[2] E21B *21/00*
U.S. Cl. 166—311 **2 Claims**



1. For use with a well having a bore, a casing, and production perforations, a method of well completion comprising the steps of:

(A) installing, on the downhole end of production tubing, below a production packer, a tubular nipple, said nipple having an ejectable non-frangible surge plug sealably disposed in the lower end thereof;

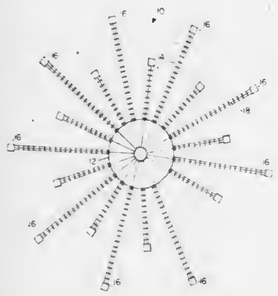
(B) lowering the assembly of step (A) into the well bore, positioning said surge plug above the perforations;

(C) positioning and setting the packer above said assembly;

(D) drop bar ejecting said surge plug to provide a substantially instantaneous full opening at the bottom of the tubing, whereby a maximum pressure differential into the well bore is substantially instantaneously created, whereby fluid and particulate matter from the well bore and formation surge inwardly and upwardly through the tubing.

4,211,281
ARTICULATED PLURAL WELL DEEP WATER PRODUCTION SYSTEM

John E. Lawson, Houston, Tex., assignor to Armco, Inc., Middletown, Ohio
Filed Feb. 22, 1979, Ser. No. 14,036
Int. Cl.[2] E21B *33/035*
U.S. Cl. 166—345 **21 Claims**



19. Apparatus for subsea production of fluids through a manifold and central riser from a plurality of individual wells drilled in different parts of a field in deep water, which comprises:

a central manifold base having flow line connectors thereon;

an elongated boom for each well to be produced in a field, each boom being rigidly attached to the manifold base;

a temporary guide base mounted to the other end of each boom for establishing a well site; and

a flow line extending along each boom from a flow line connector on the central manifold base.

21. A method of producing well fluids from a number of individual wells drilled in different parts of a field located in deep water to a production platform via a central riser, which comprises the steps of:

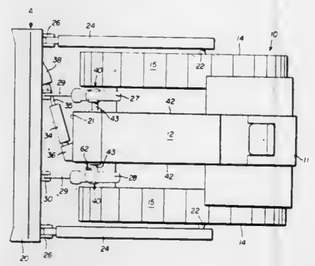
submerging to the ocean floor a subsea production apparatus which includes a central manifold base having an elongated boom for each well articulated thereto at one end and mounting a temporary guide base at the other end of the boom for establishing a well site, and a preinstalled flow line extending along each boom from the manifold base;

landing a manifold section on the manifold; and

landing a subsea tree on each temporary guide base.

4,211,282
ADJUSTABLE BLADE STABILIZER AND CONTROLS

Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed Oct. 23, 1978, Ser. No. 953,740
Int. Cl.[2] E02F *3/76*
U.S. Cl. 172—7 **9 Claims**



1. In an earth-working vehicle having a frame, a pair of push arms pivotally secured at one of their ends to said frame and a blade pivotally secured to the push arms at their other ends, a pair of lift cylinders pivotally interconnected between said frame and said blade, the improvement comprising:

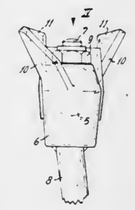
an extensible and retractable blade stabilizer pivotally secured to the frame front end and operatively connected to said blade;

control means operably connected with at least one of said lift cylinders and responsive to lateral movement of said blade to extend or retract said blade stabilizer thereby resisting relative lateral movement between said blade and said frame front end;

means for mounting said lift cylinders on opposed sides of said frame front end, said mounting means permitting pivotal movement by said lift cylinders about two mutually perpendicular axes, each lift cylinder being pivotal about a first axis perpendicular to the longitudinal axis of said vehicle and each lift cylinder being pivotal about a second axis perpendicular to said first axis, said lift cylinders being pivotal about said second axes in response to lateral movement of said blade, and said control means being responsive to pivotal movement by one of said lift cylinders for actuating said blade stabilizer to resist lateral movement of said blade.

4,211,283
SOIL CULTIVATING IMPLEMENTS

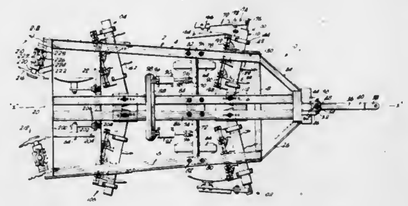
Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands
Filed Dec. 12, 1977, Ser. No. 859,850
Claims priority, application Netherlands, Dec. 16, 1976, 7613949
Int. Cl.[2] A01B *33/12*
U.S. Cl. 172—59 **13 Claims**



1. A soil cultivating implement comprising a frame and at least one soil working member rotatably mounted on a portion of said frame, said member including a substantially horizontal support and a downwardly extending tine on said support, said tine having an upper fastening portion that is connected to said support with fastening means located adjacent an upper side of that support, upwardly extending screening means being positioned on top of said support, immediately adjacent and in front of said fastening means with respect to the normal direction of rotation of said soil working member leaving a space on top of said support, between said fastening means and said screening means, an upwardly extending, rib-like protecting element being located in said space directly above said support, substantially centrally in front of said fastening means and said element extending from said screening means towards said fastening means.

4,211,284
SUGARCANE CULTIVATOR

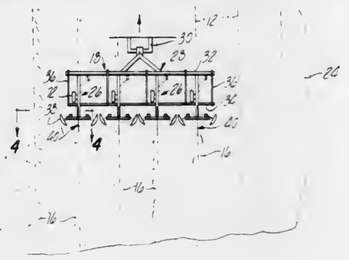
Hugo Collado, 502 Cypress La., Palm Springs, Fla. 33461
Continuation-in-part of Ser. No. 791,722, Apr. 28, 1977, abandoned. This application May 2, 1978, Ser. No. 902,035
Int. Cl.[2] A01B *39/08*
U.S. Cl. 172—151 **25 Claims**



1. In a row crop cultivator having a trailer, a hitching means for connecting the trailer with a towing vehicle, a retractable wheel assembly, and one or more pluralities of cultivator disc assemblies which are individually angularly adjustable relative to the longitudinal axis of the cultivator, the improvement which comprises: arranging three pairs of cultivator disc assemblies on the trailer in tandem relationship to each other, each of the forward four pluralities of cultivator disc assemblies having a central earth working element of larger diameter than the other disc earth working elements of the cultivator disc assembly and each of the forward four pluralities of cultivator disc assemblies having a deflector disc positioned somewhat rearwardly therefrom; positioning the disc earth working elements of the successive tandemly arranged cultivator disc assemblies so that said elements have an alternating inwardly-and outwardly-opening saucer configuration; and positioning the deflector disc so that its saucer configuration alternates with the associated cultivator disc assembly.

4,211,285
AGRICULTURAL METHOD AND IMPLEMENT

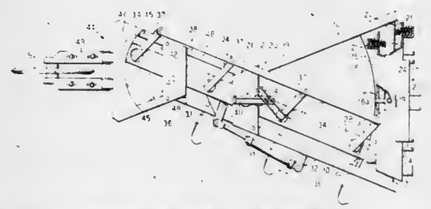
Michael S. Pajtas, 11575 Riley Rd., Flushing, Mich. 48433
Filed Apr. 19, 1978, Ser. No. 897,702
Int. Cl.[2] A01B *39/08*
U.S. Cl. 172—156 **5 Claims**



1. An apparatus for fostering the germination of crop seeds sown in rows in tilled soil and inhibiting the growth of weeds adjacent the sown seeds by depositing a layer of loose soil over and immediately adjacent the row of sown seeds prior to sprouting of the sown seeds, the apparatus comprising a frame, a deflector shield carried by said frame and having a generally flat plate constructed and arranged to overlie and extend generally vertically above and longitudinally of a row of sown seeds with its lower edge disposed closely adjacent the soil as the deflector shield is traversed generally longitudinally of the row of sown seeds, a pair of discs carried by said frame, disposed on opposite sides of said flat plate, and constructed and arranged to break up the soil adjacent both sides of the row of sown seeds and to propel at least a portion of the broken up soil onto each side of said flat plate such that at least a portion of the broken up soil is deflected by the deflector shield and deposited in a layer of loose soil overlying and adjacent the row of sown seeds as the frame is traversed generally longitudinally of the row of sown seeds.

4,211,286
REVERSIBLE DISC PLOUGH

William S. Allen, Tinaroo Falls Dam Rd., Kairi, Queensland 4872, Australia
Filed Aug. 3, 1978, Ser. No. 930,795
Claims priority, application Australia, Aug. 11, 1977, PD1197
Int. Cl.[2] A01B *3/16, 3/40*
U.S. Cl. 172—222 **4 Claims**



1. A reversible multi-disc plow comprising:

(a) a main frame,

(b) means for mounting said main frame at its front end to a three point lifting system of a tractor, said mounting means comprising a mounting frame including a trans-

verse pivot box and a transverse front pivot bar passing through and centrally pivotally mounted to said pivot box about a vertical axis, said pivot bar being secured at its opposite ends to said main frame, whereby said main frame is mounted for pivotal movement relative to said mounting means about a substantially vertical axis,

(c) a beam pivoted to said main frame about a substantially vertical axis,

(d) means for swinging said beam to right and left hand plowing positions,

(e) a furrow wheel operatively connected to the rear of said beam,

(f) a plurality of hangers operatively connected to said beam and carrying plow discs,

(g) means for simultaneously pivoting said hangers relative to said beam when said beam is swung to either of its positions, and

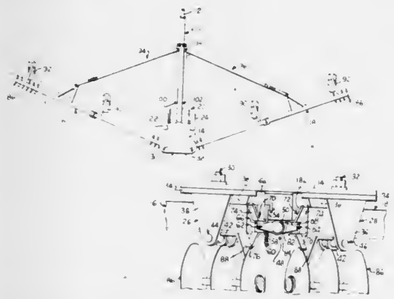
(h) spring means adapted to resist pivotal movement of said frame relative to said mounting means, said spring means comprising compression springs mounted on said pivot box and bearing against said pivot bar on the front and back surfaces thereof and to both sides of the pivotal connection of said pivot bar to said pivot box.

4,211,287

FOLDING TOOL BEAMS WITH LEVEL EQUALIZER THEREBETWEEN

Harold K. Garrison, Newton, Kans., assignor to Hesston Corporation, Heston, Kans.

Filed Jun. 9, 1978, Ser. No. 914,075
Int. Cl.[2] A01B *73/00, 5/06*
U.S. Cl. 172—311 **10 Claims**



1. In an implement having a pair of horizontal tool beams with inner ends disposed in normally mutually opposed relationship, the improvement comprising:

a vertical pivot for each of said beams respectively enabling said ends to be swung horizontally into and out of said opposed relationship;

a horizontal pivot for each of said beams, respectively,

said ends being spaced inwardly beyond said vertical and horizontal pivots when said ends are in said opposed relationship;

a rigid frame associated with said pivots and maintaining the same at fixed distances from one another; and

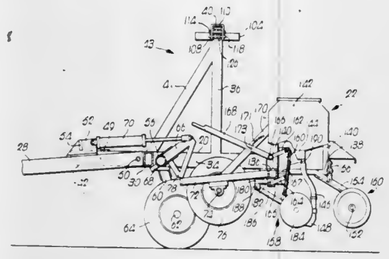
a pivotal coupling between said ends of the beams maintaining said ends at substantially the same relative vertical position when said ends are in said opposed relationship notwithstanding relative swinging of the beams about said vertical and horizontal pivots.

4,211,288

RAISABLE IMPLEMENT FRAME WITH OPERABLY CONNECTED WHEEL AND DRAFT FRAMES

Roy E. Applequist, Salina, Kans., assignor to Great Plains Manufacturing Incorporated, Salina, Kans.

Division of Ser. No. 836,719, Sep. 26, 1977, Pat. No. 4,171,022.
This application Oct. 10, 1978, Ser. No. 950,247
Int. Cl.[3] A01B *63/22*
U.S. Cl. 172—328 **3 Claims**



1. An implement carrier shiftable between a ground conditioning position and a transport position including:

a longitudinally extending, vertically swingable draft frame having the forward extremity thereof adapted to be drawn by a draft vehicle;

an implement supporting frame pivotally connected to said draft frame for movement about a transverse axis between a lowered, generally horizontal ground conditioning position and a raised, generally horizontal transport position;

wheel means;

wheel frame means for rotatably carrying said wheel means on said supporting frame,

said wheel frame means including a transversely extending, essentially horizontal support shaft journalled for rotation in said supporting frame;

linkage means for shiftably mounting said wheel means on said supporting frame for movement of said wheel means into supporting engagement with the ground when the carrier is in its transport position and out of engagement with the ground when the carrier is in its ground conditioning position,

said wheel frame means being pivotally mounted on said supporting frame and connected to said linkage means for control by the latter;

an extendable motor assembly operably connected between said draft frame and said linkage means,

said motor assembly being selectively actuatable for operating said linkage means to move said wheel means into engagement with the ground and to raise said supporting frame into its transport position, and to move said wheel means out of contact with the ground whereby to allow said supporting frame to descend to its said ground conditioning position,

said linkage means including a link element connected to said shaft and to one extremity of said motor assembly, the other extremity of the latter being connected to said draft frame,

said motor assembly functioning to rotate said shaft by shifting said link element, whereby to cause said wheel means to move into and out of engagement with the ground,

there being a stop element secured to said shaft and rotatable along with the latter for engaging said supporting frame whereby to limit the rotation of said shaft;

an implement tool section pivotally mounted on the rear of said supporting frame and spaced behind said wheel means; and

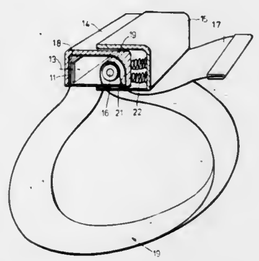
structure secured to said shaft and rotatable along with the latter for engaging a portion of said tool section when said shaft is rotated during shifting of said carrier from its ground conditioning position to its transport position.

4,211,289

SLEEVE WITH ARMBAND

Johann Klein, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 6, 1977, Ser. No. 857,964
Int. Cl.[2] A61B *5/02*
U.S. Cl. 172—686 **9 Claims**



1. A device for use in measuring blood pressure comprising: a cuff which is windable around a portion of a body and clamp fastening means for maintaining the cuff in the wound position during use comprising a box-shaped outer part having an open side wall parallel to the longitudinal axis of the outer part and a box-shaped inner part which is movable therein perpendicularly with respect to the longitudinal axis of the outer part and has slots in the end faces thereof perpendicular to the longitudinal axis of the outer part, a pressure rod fastened to two opposite sides of the outer part and arranged to pass through the slots in the end faces of the inner part to be parallel to the longitudinal axis of the outer part, and the cuff being fixed to a side face of the inner part parallel to the longitudinal axis of the outer part and looping the pressure rod in the manner of a hairpin.

4,211,290

DRILLING STRING SHOCK-ABSORBING TOOL

Leonard Mason, 9230 - 58 Ave., and Clifford Anderson, 6024 - 87 St., both of Edmonton, Alberta, Canada

Division of Ser. No. 633,414, Nov. 19, 1975, abandoned, which is a continuation of Ser. No. 487,564, Jul. 11, 1974, Pat. No. 3,949,150. This application Nov. 21, 1977, Ser. No. 853,660
Int. Cl.[2] E21B *17/00*
U.S. Cl. 175—321 **14 Claims**

1. A tool for use in a drill string adapted to circulate pumped drilling fluid to drill a well bore, said tool having utility for absorbing shock loading arising from axial movement of the drilling bit, said tool comprising:

telescopically arranged tubular parts comprising an outer barrel and an inner mandrel received in the barrel, said parts forming an annular space between them which includes a deformable element chamber, said parts being movable longitudinally relative to each other;

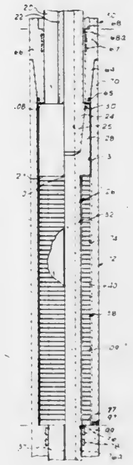
means at the outer ends of the parts for threadably connecting them into the drill string whereby the tool forms part of the drill string;

means carried by the parts for limiting their relative longitudinal movement;

said parts comprising means connecting them so that they rotate together but may move longitudinally relative to each other;

solid resilient deformable element means disposed in the chamber and extending substantially throughout its length, said element means having a spring rate of less than 100,000 pounds per inch and being substantially out of contact with the adjacent barrel or mandrel side wall which is movable by the axial movement of the drilling bit, whereby said element means, in use, experiences throughout its length substantially the total axial shock load;

a pair of opposed compression means, one such means being carried by the mandrel and extending into the chamber adjacent one end thereof, the other such means being carried by the barrel and extending into the chamber adjacent the other end thereof, said compression means being operative to act against the ends of the element means;



a body of operating liquid disposed in the space together with the element means;

seal means disposed in the space above and below the chamber for sealing that portion of the space between said seal means against the entry of well bore drilling fluid thereinto; and

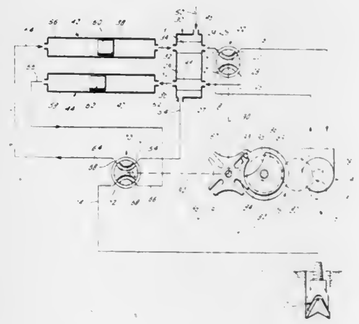
means for pressurizing the operating liquid to substantially equalize it with the pressure of the circulated pumped drilling fluid internal of the tool.

4,211,291

DRILL FLUID POWERED HYDRAULIC SYSTEM

Jackson M. Kellner, Midland, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Mar. 6, 1978, Ser. No. 883,482
Int. Cl.[2] E21B *7/00*
U.S. Cl. 175—17 **8 Claims**



1. A rotary drill shaft driving system, adapted to be connected to drill pipe providing a source of drill fluid to the

system and useful for rotating a drill shaft having a bit connected at one end of the shaft, through the use of drill fluid supplied to said system, comprising:

a motor driven by hydraulic fluid flowing in only one direction and connected to such shaft means for rotation of such shaft;

drive means for supplying said hydraulic fluid flowing in said one direction;

actuation means adapted to receive drill fluid from said source and responsive to flow of said drill fluid for acutating said drive means; and

coordination means responsive to rotation of such shaft for synchronizing flow of drill fluid to said actuation means with supply of hydraulic fluid to said drive means,

said drive means including:

first supply means for holding and supplying only a fixed amount of said hydraulic fluid, and

a first valve actuated by said coordination means for causing said flow of said fixed amount of said hydraulic fluid to be substantially smooth and unidirectional;

said first supply means being in fluid flow communication with said first valve,

said actuating means including:

reciprocating sealed piston means,

second supply means for receiving and supplying a fixed amount of said drill fluid, said piston means being located between said first and second supply means; and

a second valve actuated by said coordination means and in fluid flow communication with said source of drill fluid and said second supply means, said second valve including an outlet and means for converting such discrete amounts of such drill fluid to a continuous flow of such drill fluid at said outlet.

4,211,292

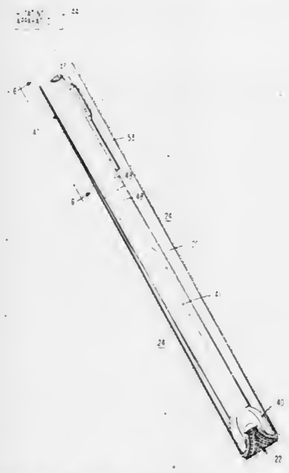
BOREHOLE ANGLE CONTROL BY GAGE CORNER REMOVAL EFFECTS

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Jul. 27, 1978, Ser. No. 928,703

Int. Cl.² E21B *7/08*

U.S. Cl. 175—61 **64 Claims**



1. A method of controlling the angle of advancement of a borehole formed in material by a rotary drill bit having cutting elements for cutting the material and defining an axially extending cylindrical sidewall of the borehole, a drill face of the borehole extending essentially transversely with respect to the sidewall and a gage corner of the borehole extending circumferentially from the drill face radially outward at an inclination to the cylindrical sidewall comprising operations of:

continuously rotating said drill bit with the cutting elements in contact with the material, and simultaneously during at least one complete drill bit revolution

removing a different amount of material over a preselected partial arc of the circumference of the gage corner than the amount of material removed over the remaining partial arc of the circumference of the gage corner, and

controlling the borehole advancement angle predominantly by interacting cutting elements of said drill bit with the material defining the whole gage corner circumference.

4,211,293

VARIABLE ORIFICE SLEEVE VALVE HYDRAULIC JAR TOOL

James R. Blanton, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 21, 1979, Ser. No. 12,940

Int. Cl.² E21B *1/10*

U.S. Cl. 175—297 **1 Claim**



1. A hydraulic jar tool connectable to drill string components, comprising:

an outer mandrel having one end attachable to a drill string component;

an inner mandrel extending into said outer mandrel and having an end portion attachable to a drill string component, said outer and inner mandrels having a splined connection permitting non-rotative reciprocating movement of said mandrels;

an anvil and hammer means for producing a jarring action;

means forming a substantially confined annular working fluid chamber between said outer and inner mandrels for reception of a working fluid;

a sleeve in said chamber slidingly mounted between said outer mandrel and said inner mandrel;

said sleeve having a restricted fluid passage extending therethrough;

an adjustable orifice plate that connects with said fluid passage;

a multiplicity of restricted orifice passages in said plate of different sizes to provide an adjustable fluid passage past said sleeve; and

means for rotating said orifice plate to provide a fluid passage past said sleeve.

4,211,294

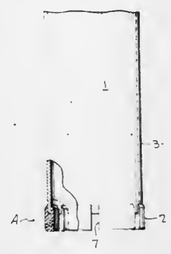
IMPREGNATED DIAMOND DRILL BIT

Leonid Multakh, Scranton, Pa., assignor to Acker Drill Company, Inc., Clarks Summit, Pa.

Filed Apr. 21, 1978, Ser. No. 898,697

Int. Cl.² E21B *9/16*

U.S. Cl. 175—330 **9 Claims**



1. An impregnated diamond drill bit comprising: a crown containing diamond particles dispersed within a fused metallic matrix having a hardness of no greater than 10 Rockwell C and containing a metal alloy having a relatively low melting temperature and capable of preparing the surfaces of the diamond particles so that said surfaces have a greater affinity for the metallic matrix and a metal shank attached to said crown, said metal alloy being formed essentially of nickel and manganese so as to give a nickel-manganese alloy.

4,211,295

METHOD AND A SCALE FOR MANUAL OR AUTOMATIC WEIGHING OF OBJECTS OF SAME NOMINAL WEIGHT

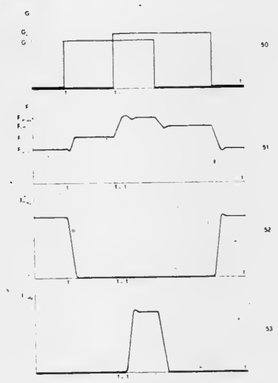
Mario Gallo, Zurich, Switzerland, assignor to Wirth, Gallo & Co., Zurich, Switzerland

Filed Jul. 10, 1978, Ser. No. 923,377

Claims priority, application Switzerland, Jul. 28, 1977, 009331/77

Int. Cl.² G01G *23/10, 7/00*

U.S. Cl. 177—185 **5 Claims**



1. Method for manual or automatic weighing of objects of same nominal weight by means of a scale locked over its measuring system, having a computing device for establishing the weight of the objects to be weighed from the digital output signals of mechanical-electrical converters, characterized in that if the load on the measuring system is lower or higher than pre-determined limits of the load corresponding to said nominal weight, an electromagnetically generated transitory force acts upon the load support of the scale and prevents overshooting of said pre-determined load limits, said transitory force being removed when the load on the measuring system is within the pre-determined limits.

4,211,296

SCALE

Bernhard Lötscher, Mühlebergstrasse 88, 8450 Andelfingen, Switzerland

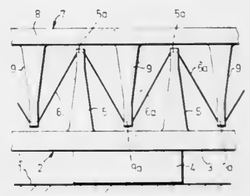
PCT No. PCT/CH78/00011, § 371 Date Apr. 5, 1979, § 102(e) Date Mar. 12, 1979, PCT Pub. No. WO79/00136, PCT Pub. Date Mar. 22, 1979

This PCT application Filed Mar. 12, 1979, Ser. No. 24,861

Claims priority, application Switzerland, Aug. 5, 1977, 9626/77

Int. Cl.² G01G *3/14*

U.S. Cl. 177—211 **8 Claims**



1. In a scale, especially for weighing humans, possessing a pedestal, a movably retained table and at least one measuring element possessing an electrical conductor, wherein the table is operatively connected with the conductor, in order to elongate the conductor as a function of the weight loading of the table and to alter its electrical resistance, the improvement which comprises:

said pedestal possessing a number of holders, each of which holder defines a holding location for the conductor;

said table possessing a number of holders, each of which holders defines a holding location for the conductor;

said table having a table edge;

said holders of both said pedestal and said table being located at the region of said table edge;

said holders of the pedestal and table being arranged in alternating relationship, so that a holder of the table generally follows a holder of the pedestal;

said holding locations being electrically insulated with respect to one another;

said holding locations of the holders of the pedestal being located above the holding locations of the holders of the table, so that said at least one conductor extends in a substantially zig-zag configuration from one holder to the next holder and at the same time serves as both the measuring element and for supporting the table.

4,211,297

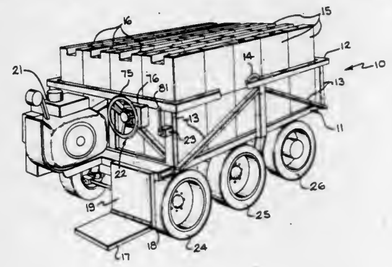
WEIGHT VEHICLE APPARATUS

Glenn G. Dunbar, 2608 Overbrook Dr., Toledo, Ohio 43614

Filed Aug. 8, 1978, Ser. No. 931,995

Int. Cl.² B62D *21/02*

U.S. Cl. 180—24.02 **7 Claims**



1. A scale testing vehicle for selectively positioning scale

calibration weights on platform scales, comprising, in combination, a frame forming a weight bed, said frame having a longitudinal axis, at least one weight positioned on said bed, and a suspension system having a first axle pivotally secured to said frame for movement about such longitudinal axis of said frame, said first axle having two ends, a first pair of rotatable wheels, means attaching said first wheels to said ends of said first axle, a subframe having a longitudinal axis, means pivotally securing said subframe to said frame for movement about a transverse axis of such vehicle, a second pair of rotatable wheels, means securing said second pair of wheels to said subframe on a transverse axis of such vehicle, a second axle having two ends, means pivotally attaching said second axle to said subframe for movement about the longitudinal axis of said subframe, a third pair of rotatable wheels attached to said ends of said second axle, and wherein said first, second and third wheels are located to uniformly distribute on a platform scale the load of the scale testing vehicle.

4,211,298

OFFSET TRACTOR

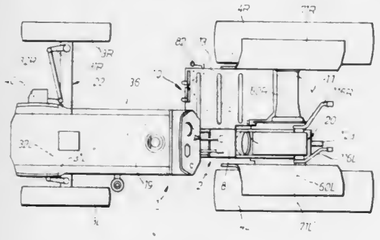
Tomio Tanaka, and Rinzo Yamano, both of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Nov. 8, 1977, Ser. No. 849,671

Claims priority, application Japan, Nov. 11, 1976, 51-136468; Nov. 12, 1976, 51-152675

Int. Cl.² B60K *17/00*

U.S. Cl. 180—75 **6 Claims**



1. In a two-axle four-wheel offset tractor including a tractor body composed of a transmission case as its structural element and offset to one side with respect to the center of the tread of the wheels, steering means disposed on one side of the tractor body opposite to its offset side and including a driver's seat, a steering wheel, brake and clutch pedals and a step, and hydraulic means for raising and lowering a working implement and working implement connecting means mounted on a top rear portion of the tractor body, the improvement comprising:

a long rear wheel drive shaft and a short rear wheel drive shaft outwardly extending from differential means in the transmission case and covered with a long rear axle case and a short rear axle case respectively, each of the axle cases being provided with a rear wheel brake device between its inner end and the side wall of the tractor body opposite thereto and with a downwardly extending case housing a terminal speed reduction gear;

the step of the steering means being attached to the transmission case and supported at its rear portion by the long rear axle case, seat support means being mounted on the long rear axle case beside the hydraulic means and supporting the driver's seat with cushioning means provided therebetween;

the hydraulic means having a pair of lift arms pivoted to its side walls and mounted directly on the top of the transmission case beside the seat support means, the pair of lift arms being bent toward the seat from the hydraulic means and extending rearwardly of the seat toward one side opposite to the offset side of the tractor body, the pair of lift arms having free ends respectively disposed on opposite sides of a line through the center of the tread; and

the working implement connecting means including a pair of opposite lower links pivoted at their base ends to opposite sides of a lower rear portion of the transmission case and supported at intermediate portions thereof by lift rods attached to the free ends of the lift arms, the lower links having free ends opposed to each other between the opposite wheels with the midpoint between the lower link free ends offset with respect to the tractor body, a top link mounting being attached to a rear portion of the transmission case and positioned closer to one side thereof toward the midpoint.

4,211,299

PARKING APPARATUS FOR LATERALLY SHIFTING A VEHICLE

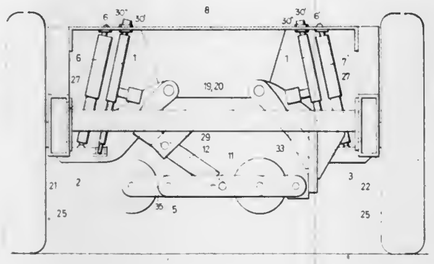
Juergen Schulte, Herrlinghausen 56, 5632 Wermelskirchen 1, Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 912,039

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805635

Int. Cl.² B60S *9/00*

U.S. Cl. 180—200 **9 Claims**



1. An apparatus for shifting an automobile substantially at right angles relative to its longitudinal axis, especially for parking a vehicle having chassis means, floating rear axle means and longitudinally extending frame members as well as shock absorber means arranged between said chassis means and said floating rear axle means for cooperation with said floating rear axle means, comprising cross-piece means (**35**), auxiliary wheel means (**36**, **37**) rotatably secured to said cross-piece means and oriented substantially at right angles to said longitudinal vehicle axis, transverse frame means (**19**, **20**) rigidly secured to said frame members adjacent said rear axle means, support means for securing said cross-piece means to said transverse frame means, said support means comprising piston cylinder means, first journalling means tiltably securing said piston cylinder means to said transverse frame means and to said cross-piece means, second journalling means tiltably securing said cross-piece means to said transverse frame means, said piston cylinder means and said second journalling means being arranged to cross each other when said auxiliary wheels are lowered, said apparatus further comprising arresting means operatively connected in parallel to each shock absorber means between said chassis means and said floating rear axle means for temporarily neutralizing the function of said floating rear axle means and said shock absorber means when the latter are relieved of their normal load, said arresting means comprising pipe means, rod means operatively inserted in said pipe means for relative axial movement between said pipe means and said rod means, locking means including bolt means extending movable to extend through said pipe means and said rod means, said locking means comprising bushing means secured to said pipe means, said locking bolt means extending through said bushing means, hole means in said pipe means and in said rod means for cooperation with said locking bolt means in its locking position, and operating means connected to said locking bolt means for moving said locking bolt means into and out

of a locking position relative to said pipe means and relative to said rod means.

4,211,300

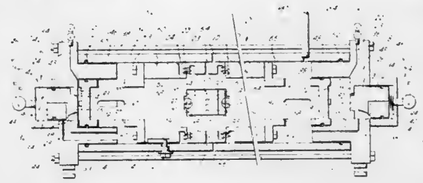
AIR GUN WITH RECIPROCATING SHUTTLE

Adrian D. Miller, Galveston, Tex., assignor to Western Geophysical Co. of America, Houston, Tex.

Filed Jan. 22, 1979, Ser. No. 5,654

Int. Cl.² G01V *1/38*

U.S. Cl. 181—120 **7 Claims**



1. In an improved air gun for use in underwater acoustic signalling, the air gun being of a type having an elongated housing for containing a volume of compressed air, and having at least one exhaust port, each end of the housing being closed by an end wall, a hollow shuttle type air-releasing means having opposite end faces and having an opening alignable with said exhaust port mounted concentrically within the housing to slide linearly from one end to the other of said housing, and means for introducing a volume of compressed air at a first pressure into said housing, the improvement comprising:

means for forming shuttle-actuation control chambers at each end of said housing between the respective shuttle end faces and a corresponding housing end wall, said shuttle-actuation control chambers being normally sealed from fluid communication with the interior of said housing;

a permanent air leak having a preselected air leakage rate in each said control chamber for maintaining the residual air pressure therein at a preselected second pressure substantially lower than said first pressure when said shuttle is at rest;

means for momentarily diverting some of the compressed air from inside said housing into one of said shuttle-actuation control chambers at one end of the housing in sufficient volume that the inrush of compressed air exceeds said air leakage rate from that chamber and drives said shuttle to the other end of said housing, releasing a jet of air when said opening passes said exhaust port.

4,211,301

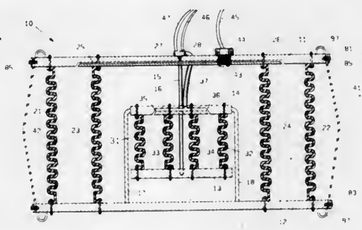
MARINE SEISMIC TRANSDUCER

Joseph F. Mifsud, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Feb. 12, 1979, Ser. No. 11,341

Int. Cl.² G01V *1/38*

U.S. Cl. 181—120 **12 Claims**



1. An apparatus for imparting seismic energy into a body of water comprising:

two transducer plates spaced apart from each other;

a first bellows;

a second bellows;

means for connecting said first bellows between said two transducer plates so that expansion of said first bellows pushes said two transducer plates apart; and

means for connecting said second bellows to said two transducer plates so that expansion of said second bellows pulls said two transducer plates towards each other;

means for alternately applying pressure to said first and second bellows such that said two transducer plates reciprocate with respect to each other.

4,211,302

SOUND ABSORBING DEVICE

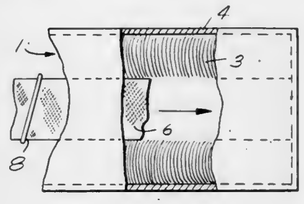
Carl Matthews, 102 Gloucester Rd., and Elizabeth de Recourt Martyn, 37, Stanhope Gardens, both of London, England

Continuation-in-part of Ser. No. 763,547, Jan. 28, 1977, abandoned. This application Mar. 22, 1978, Ser. No. 888,871

Claims priority, application United Kingdom, Feb. 3, 1976, 4258/76

Int. Cl.² F01N *1/24*

U.S. Cl. 181—248 **12 Claims**



1. A device for absorbing acoustic energy from a moving fluid stream, said device comprising:

a conduit having an interior surface,

a plurality of flexible uni-directional, closely woven fibers operatively attached at one end thereof to said conduit interior surface the free ends of said fibers extending generally inwardly from said conduit interior, so that the free ends of said fibers define a generally regular geometrical surface, and

a liner of closely-woven textile-like acoustically transmitting material in contact with but not secured to the free ends of said flexible fibers defining an unobstructed fluid flow passage.

4,211,303

SOUND ABSORBING DEVICE

Carl Matthews, 102 Gloucester Rd., and Elizabeth de Recourt Martyn, 37, Stanhope Gardens, both of London, England

Continuation-in-part of Ser. No. 763,547, Jan. 28, 1977, abandoned. This application Mar. 22, 1978, Ser. No. 888,872

Claims priority, application United Kingdom, Feb. 3, 1976, 4258/76; Apr. 28, 1977, 17796/77

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.² F01N *1/24*

U.S. Cl. 181—248 **13 Claims**

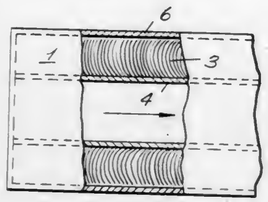
1. An exhaust system for an internal combustion engine comprising:

an exhaust pipe,

conduit means operatively attached to said exhaust pipe for effectively absorbing the acoustic energy of fluid flowing through said exhaust pipe while allowing passage of the fluid therethrough so that negligible back pressure is provided under operating conditions, said conduit means having an inner and outer surface,

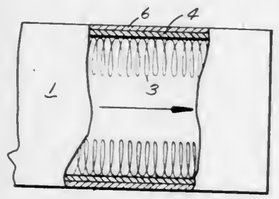
said means comprising an inner liner of closely-woven tex-

tile-like acoustically transmitting material defining a fluid passageway having an inlet and an outlet therein disposed within said conduit and in line with said exhaust pipe, said liner provided with a plurality of fibers operatively attached to the outside surface of said inner liner and having the free ends of said fibers extending from said inner liner



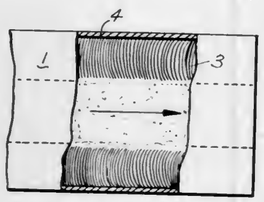
to which they are attached to the inner surface of said conduit, so that the free ends of said fibers are substantially parallel to, in operative contact with and flexibly engage the inner surface of said conduit means, said liner of generally the same cross-sectional area as the cross-sectional area of said exhaust pipe.

4,211,304
SOUND ABSORBING DEVICE
Carl Matthews, 102 Gloucester Road, and Elizabeth de Recourt Martyn, 37, Stanhope Gardens, both of, London, England
Continuation-in-part of Ser. No. 763,547, Jan. 28, 1977, abandoned. This application Mar. 22, 1978, Ser. No. 888,874
Claims priority, application United Kingdom, Feb. 3, 1976, 4258/76; Mar. 13, 1978, 9918/78
Int. Cl.² F01N *1/24*
U.S. Cl. 181—248 **16 Claims**



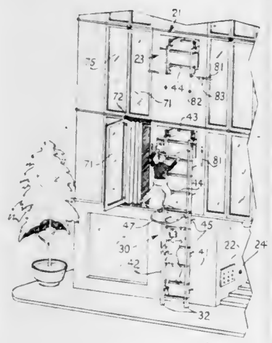
1. A device for absorbing acoustic energy from a moving fluid stream, said device comprising:
a conduit having an interior surface,
means for absorbing acoustic energy from fluid stream flowing through said conduit without providing substantial surface resistance to the fluid flow, said means comprising
a plurality of flexible fiber loops, each such loop having a fixed end thereof operatively attached to a backing and, in turn to at least a portion of said conduit interior surface, and having a free end portion thereof extending inwardly from the conuuit interior surface while extending parallel to and trailing in the fluid stream, said free end portions defining a generally regular geometrical surface therein providing an unobstructed fluid flow passage within said conduit.

4,211,305
SOUND ABSORBING DEVICE
Carl Matthews, 102 Gloucester Rd., and Elizabeth de Recourt Martyn, 37, Stanhope Gardens, both of, London, England
Continuation-in-part of Ser. No. 763,547, Jan. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 888,873, Mar. 22, 1978, abandoned. This application Nov. 9, 1978, Ser. No. 959,365
Int. Cl.² F01N *1/24*
U.S. Cl. 181—248 **16 Claims**



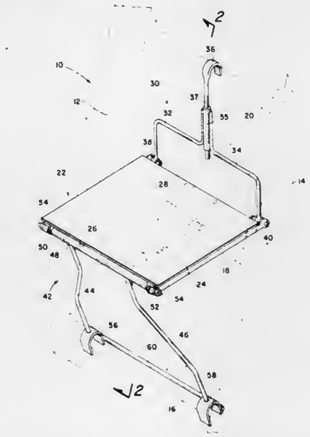
1. A device for absorbing acoustic energy from a moving fluid stream, said device comprising:
a conduit having an interior surface, and
a plurality of flexible, unidirectional closely spaced fibers operatively attached at one end thereof to said conduit interior surface, the free ends of said fibers extending generally inwardly from said conduit interior and into the moving fluid stream, said free ends extending generally parallel to and in the direction of fluid flow in said conduit so that the moving fluid stream impinges upon said free ends of said flexible fibers and that the free ends of said fibers define a generally regular geometrical surface providing an unobstructed fluid flow passage.

4,211,306
EMERGENCY BUILDING ESCAPE LADDER
Robert Brenner, P.O. Box 4837, Incline Village, Nev. 89450, assignor to Robert Brenner and Margaret A. Brenner, both of Crystal Bay, Nev.
Filed Aug. 10, 1976, Ser. No. 713,138
Int. Cl.² E06C *9/14*
U.S. Cl. 182—76 **7 Claims**



1. The method for providing escape capability for multistory building comprising: (1) installing a ladder intermediate each floor of the building in a horizontal position; (2) covering each ladder segment so installed from the exterior of the building with a removable building opening cover; (3) removing each said cover when an emergency occurs requiring exterior building exit; (4) extending each stored ladder segment sequentially so that the lower segment is fully extended prior to the segment above it being fully extended; (5) fully extending each subsequent higher ladder and causing the same to interlock with the lower previously extended segment; (6) causing an exit to be opened adjacent the ladder for each floor of the building; and, (7) removing the ladder from the exterior of the building when an emergency situation has been completed.

4,211,307
REMOVABLE STEP OR SHELF FOR LADDER
Frank W. Ethridge, 4737 S. Harvard,#B, Tulsa, Okla. 74135
Filed Mar. 5, 1979, Ser. No. 17,349
Int. Cl.² E06C *7/16, 7/14*
U.S. Cl. 182—121 **4 Claims**



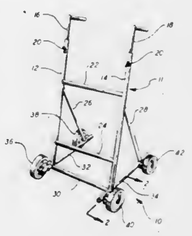
1. For use with a ladder having opposed side rails and spaced apart rungs extending between the side rails, a removable shelf comprising:
a base member of length less than the spacing between the ladder side rails, the base member providing a flat upper surface, the width being sufficient to afford a step, seat or shelf, the base portion having a forward edge and a rearward edge;
an upward extending hanger member having an upper end and a lower end, the lower end being pivotally attached to said base member adjacent the rearward edge thereof, the upper end having a hook portion for removably and pivotally engaging a ladder rung;
a downwardly extending support member having an upper end and a lower end, the upper end being pivotally attached to said base member adjacent the forward edge thereof, the lower end having means for removably and pivotally engaging and ladder rung; and
a retaining bar having a forward end and a rearward end, the bar being pivotally attached below the base member and adjacent the rearward edge thereof, the retaining bar having means intermediate the ends thereof for removably engaging a ladder rung and for disengaging the ladder rung when the forward end is upwardly pivoted,
the apparatus being dimensioned whereby the base member may be supported immediately above a ladder rung with the upper end of the hanger member attached to the next adjacent upper ladder rung and lower end of the support member attached to the next adjacent lower ring, said support bar serving to retain the base member in at least one preselected position relative to the rung immediately below it.

4,211,308
DEVICE FOR ABSORBING TENSION LOADS IN AN ELONGATE FLEXIBLE MEMBER
Tom C. Reuterskiöld, stra Kyrkogatar 51, S-593 00 Västervik, Sweden
Filed Nov. 8, 1978, Ser. No. 958,740
Int. Cl.² F16F *7/12*
U.S. Cl. 188—1 C **7 Claims**



1. A device for absorbing tension loads in an elongate flexible member, said device comprising a bent tube having a curved central axis, said tube having free end portions which are generally directed away from each other, said tube having an inner diameter wide enough to allow a flexible member to be run through said tube, said tube being elastically deformable so as to resist straightening of a tensioned flexible member inserted through said tube, said tube having a shape such that at each said free end, a tangent to the curved central axis of said tube forms, in a non-loaded condition for said tube, an acute angle with a straight line through the centers of said tube free ends, said tube having such an elasticity that, for an increasing tensional load on a flexible member inserted through said tube, said acute angle is gradually reduced so as to become essentially zero at a fully loaded condition of that flexible member.

4,211,309
INVALID WALKER WITH IMPROVED BRAKE MEANS
Anthony M. Ruggiero, 1338 67th St., Brooklyn, N.Y. 11319
Filed Apr. 12, 1978, Ser. No. 895,548
Int. Cl.² F16D *63/00*
U.S. Cl. 188—83 **4 Claims**



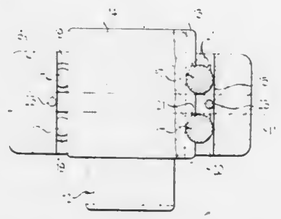
1. A walker device for assisting an invalid comprising a substantially upright portion and a carriage portion, means to mutually support said upright portion and said carriage portion, a plurality of wheel means, said wheel means spaced to stablely support said walker, brake means, said brake means including brake drum means, said brake drum means operatively associated with each said wheel means, said brake means including brake band means, said brake band means including a brake lining, said brake band means and brake lining adapted to substantially surround said brake drum means, spring tensioning means, said spring tensioning means being resilient and adapted to continuously tension said brake band means with said brake lining in contact with said brake drum means allowing slippage whereby said walker may move with said brakes on, and individual means to adjust each said spring tensioning means whereby said walker may be adjusted to the needs of an individual.

4,211,310

SPOT-TYPE DISC BRAKE

Hans-Henning Lüpertz, Darmstadt, Fed. Rep. of Germany, assignor to ITT Industries, Incorporated, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 964,862
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757392
Int. Cl.² F16D *65/224*
U.S. Cl. 188—73.3 **10 Claims**



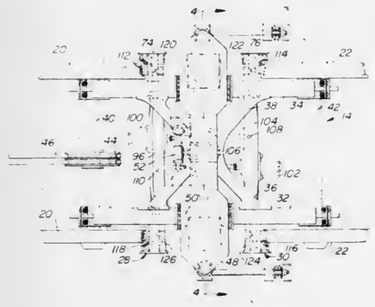
1. A spot-type disc brake comprising:
a caliper straddling a brake disc, said caliper being actuated by an actuating device to directly control one brake shoe disposed on one side of said disc and another brake shoe disposed on the other side of said disc;
a caliper carrier rigidly mounted to a brake carrier, said caliper carrier having a pair of oppositely disposed guiding surfaces each adjacent one of a pair of oppositely disposed front surfaces of said caliper; and
a pair of rollers disposed between each of said pair of guiding surfaces and said pair of front surfaces for axially, slidably guiding said caliper relative to said caliper carrier, each of said rollers having a longitudinal axis parallel to said disc and perpendicular to an imaginary line interconnecting said pair of front surfaces.

4,211,311

RAILWAY CAR TRUCK AND BRAKE SUPPORT STRUCTURE

John C. McMullen, Broomall, Pa., assignor to The Budd Company, Troy, Mich.

Filed Oct. 25, 1978, Ser. No. 954,344
Int. Cl.² B61H *13/36*
U.S. Cl. 188—209 **10 Claims**



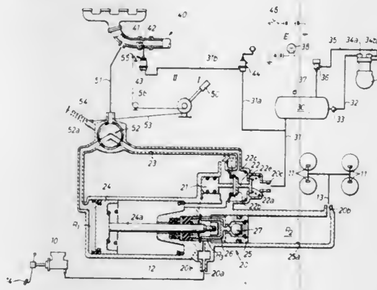
1. A railway car truck for supporting a pair of brake units for front and rear sets of wheels comprising:
a. a pair of side frames,
b. a pair of front and rear brake beam guide support assemblies disposed between said sets of wheels and connected to said side frames to support said pair of brake units,
c. each of said brake beam guide support assemblies including a main tubular member fixedly secured at one end to said sideframes of said truck with a plate secured to its free end,
d. a separate second plate attachable to each of said plates in a first position to accommodate a first given wheel size, said second plates being constructed and arranged such that they can be movable to a second position to accommodate a wheel size different from said first wheel size, and
e. angle guide members detachably mounted to each of said second plates to receive and guide the movements of said brake units.

4,211,312

EMERGENCY BRAKE SYSTEM FOR VEHICLES

Takahiro Nogami, Mishima; Hidetoshi Shimizu, Susono; Mitsuyuki Horie, Susono, and Yuji Yaji, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 28, 1978, Ser. No. 928,865
Claims priority, application Japan, Aug. 2, 1977, 52-92732
Int. Cl.² F02D *9/06*
U.S. Cl. 188—273 **4 Claims**



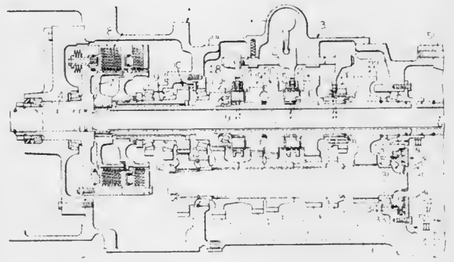
1. An emergency brake system for a vehicle having a brake booster to increase braking pressure applied to wheel brake cylinders from a master cylinder, said brake booster including a servo-chamber and a power piston operated by pneumatic pressure applied to said servo-chamber from a source of pneumatic pressure in response to operation of said master cylinder; the system comprising:
a manual shift lever arranged to be normally held in a first position and emergently shifted to a second position from the first position;
a cut-off valve provided within an exhaust pipe of an internal combustion engine for said vehicle and operatively connected to said shift lever, said cut-off valve being normally opened when said shift lever is in the first position and being closed upon shifting of said shift lever to the second position from the first position to create back pressure acting on said engine;
a communication passage connecting said servo-chamber of said brake booster to an upstream of said cut-off valve; and
a selector valve disposed within said communication passage to normally provide fluid communication between said pneumatic pressure source and said servo-chamber, said selector valve being switched-over upon shifting of said shift lever to the second position from the first position to apply the back pressure from said exhaust pipe into said servo-chamber through said communication passage.

4,211,313

TRANSMISSION BRAKE WITH LUBRICATING AND COOLING MEANS

David C. Quick, New Berlin, and James E. Marsch, Brookfield, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 22, 1977, Ser. No. 863,451
Int. Cl.² B60K *41/20;* **F16D** *65/82*
U.S. Cl. 192—4 A **10 Claims**



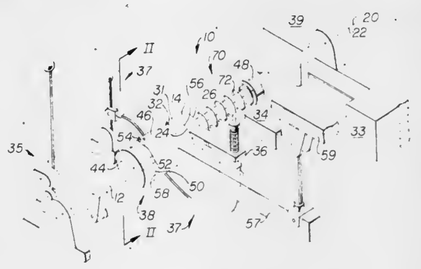
1. A vehicle transmission including a hydraulic brake comprising, a vehicle transmission including a driving shaft, a transmission brake including a brake disk connected to said shaft, a hydraulic actuator defining a pressurizing chamber for actuating the brake, a hydraulic piston for engaging said brake disk and defining restricted flow passage means from said pressurizing chamber to said brake disk, a brake housing defining a peripheral fluid chamber around said brake disk for receiving fluid from said restricted flow passage means, a reaction plate for frictionally engaging said brake disk, friction material on said disk defining groove means for radial flow of hydraulic fluid from said peripheral fluid chamber during brake actuation, a fluid venting means in communication with the peripheral chamber for venting the fluid from said brake thereby providing cooling of said brake with actuating fluid when said brake is actuated.

4,211,314

INTERLOCK MECHANISM

Frank L. Clason, Newbury, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Dec. 14, 1978, Ser. No. 5,637
Int. Cl.² B60K *41/26;* **F16D** *67/00*
U.S. Cl. 192—4 A **14 Claims**



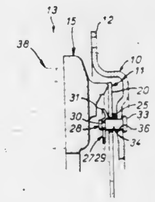
1. In a rotating assembly (**10**) having a first member (**12**) having an axis of rotation (**20**) and being rotatable between first and second positions (**16,18**), a second annular member (**14**) having an axis of rotation (**22**) and first and second ends (**24,26**) and being positioned about the first member (**12**), said second annular member (**14**) being rotatable between first and second positions (**28,30**) relative to the first member (**12**), the improvement comprising:
first means (**38**) for maintaining the first member (**12**) against rotation and freeing the second annular member (**14**) for rotation at a first position (**40**) of said first means (**38**) and freeing the first member (**12**) for rotation and maintaining the second annular member (**14**) against rotation at a second position (**42**) of said first means (**38**) for selectively interlocking the first member (**12**) relative to the second annular member (**14**).

4,211,315

COVER ASSEMBLY FOR A DIAPHRAGM SPRING CLUTCH HAVING DIAPHRAGM SPRING CENTERING MEANS INDEPENDENT AND DISTINCT FROM ASSEMBLY MEANS THEREFOR

Jean-Claude Fenart, Fourqueux, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Nov. 1, 1977, Ser. No. 847,599
Claims priority, application France, Nov. 12, 1976, 76 34089
Int. Cl.² F16D *13/71*
U.S. Cl. 192—70.27 **7 Claims**



1. A cover assembly for a diaphragm spring clutch comprising a diaphragm spring including an outer Belleville washer-like peripheral portion and a central portion having radial fingers, and an annular cover member assembly means for rockably mounting the diaphragm spring on said cover member, and a plurality of centering studs for radially centering the diaphragm spring with respect to the axis of the cover assembly, a corresponding plurality of apertures in said diaphragm spring; said centering studs being independent and distinct from said assembly means, rigidly fixed to said cover member, and extending from said cover member parallel to the axis of the cover member assembly into said corresponding plurality of said diaphragm spring apertures.

4,211,316

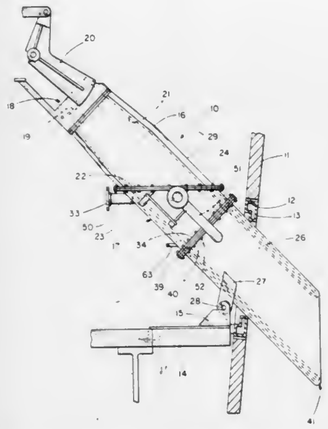
CHUTE FOR CHARGING STEEL MAKING VESSELS

Nicholas M. Rymarchyk, Wexford, Pa., and Charles T. Smith, New Buffalo, Mich., assignors to Pullman Berry Company, Harmony, Pa.

Filed Dec. 28, 1978, Ser. No. 973,828
Int. Cl.² B65G *11/00*
U.S. Cl. 193—2 R **10 Claims**

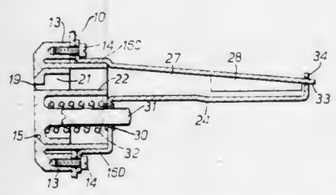
1. A chute for conveying materials into a vessel containing a molten bath including a first tubular chute portion having a material receiving opening, the improvement of a liquid cooled second chute communicating with said first chute comprising,
a first upper pipe assembly including first and second concentric upper pipes,
said second concentric upper pipe being positioned within said first upper pipe and providing an annular first water inlet chamber,
water inlet connection for said first inlet chamber,
a second lower pipe assembly including first, second and third concentric lower pipes,
said second lower pipe being positioned within said first lower pipe and said third lower pipe being positioned intermediate said first and second lower pipes and providing with said second lower pipe a second water inlet chamber communicating with said first water inlet chamber and providing with said first lower pipe a water outlet

chamber isolated at its upper ends from said water inlet chamber,
an annular tip portion connected to the lower ends of said first and second lower pipes,
said intermediate third pipe having a lower portion thereat spaced from said tip providing communication between said second water inlet chamber and said water outlet chamber and providing a tip coolant chamber proximate to the tip.



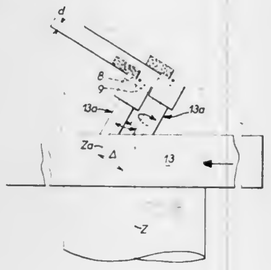
a tip coolant injection pipe positioned between said first and second pipes, said injection pipe having an upper water inlet connection and a lower outlet end portion opening to said tip coolant chamber,
a water outlet connection connected to said water outlet chamber, and
coupling means releasably connecting said first and second pipe assemblies.

4,211,317
COIN CHUTE
Robert D. Bellis, Delph near Oldham, England, assignor to Coin Controls Limited, Royton, England
Filed Sep. 9, 1977, Ser. No. 831,854
Claims priority, application United Kingdom, Oct. 7, 1976, 41780/76
Int. Cl.² G07F *1/02*
U.S. Cl. 194—1 D **6 Claims**



1. Coin feeding means for feeding a coin to coin-validating means (**50**) operable to a first condition upon the receipt of a valid coin, said coin-validating means including reject means (**51**) for ejecting a coin retained in said coin-validating means, comprising
(a) a hollow body member (**11**) adapted for connection adjacent said coin-validating means, said body member including wall portions (**16A**, **16B**) defining a guide tunnel (**17**);
(b) a coin-receiving member (**18**) containing a coin entry slot (**19**) extending longitudinally therethrough, said coin-receiving member being slidably mounted for longitudinal reciprocation in said tunnel; and
(c) resilient means (**32**) biasing said coin-receiving member toward a first position relative to said body member;
(d) said coin-receiving member including a projecting portion (**31**) for operating said reject means when said coin-receiving member is displaced against the biasing force of said resilient means toward a second position relative to said body member.

4,211,318
PLATE WITH TILTED REVERSAL HEADS FOR A DEVICE FOR ORIENTATING CIGARETTES
Jean Verjux, Pavillons sous Bois, France, assignor to Arenco-Decoufle, Societe Anonyme, Paris, France
Continuation of Ser. No. 838,477, Oct. 3, 1977, abandoned. This application Feb. 14, 1979, Ser. No. 12,113
Claims priority, application France, Oct. 20, 1976, 76 31502
Int. Cl.² B65G *29/00, 47/24*
U.S. Cl. 198—377 **9 Claims**

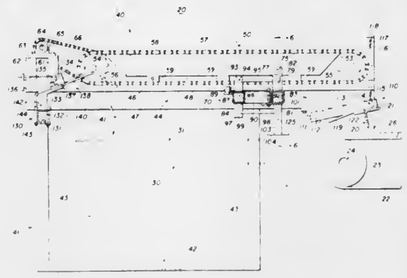


1. A rotatable plate for orienting cylindrical objects such as cigarettes and adapted to cooperate with a drum rotatable about an axis perpendicular to the rotational axis of the plate for taking up said objects from a first channel portion of said drum and placing said objects after orientation in a second channel portion of said drum, said taking up and placing of said objects being carried out substantially simultaneously, said plate comprising reversal heads mounted on said plate, each reversal head comprising a shaft having an integral tip provided with two apertures opening into two recesses, said shaft having two slots and rotatable in a spreader mounted in a support in which two passages are provided for the intake of suction air, means for rotating said plate, and means for rotating said reversal heads such that they effect a half revolution while the plate effects a complete revolution in an opposite direction, each of the reversal heads effecting no other movement but its rotation in relation to said plate and being rotatable about an axis fixed in relation to said plate and forming with the rotational axis of the plate an angle whose tangent is greater than the ratio of the diameter of the objects to be oriented to the distance separating the rotational axes of two adjacent reversal heads.

4,211,319
OVEN UNLOADER
W. Clark Pulver, Burbank, Ill.; Maynard R. Euverard, Williamsburg, Va.; Henry A. Heide, Addison, and Ronald P. Ziolkowski, South Holland, both of Ill., assignors to Velten & Pulver, Inc., Chicago Ridge, Ill.
Filed Oct. 20, 1977, Ser. No. 843,979
Int. Cl.² B65G *47/26*
U.S. Cl. 198—432 **10 Claims**

1. Apparatus for transferring elongated rows of articles from a transfer station along a continuously moving infeed conveyor to a depositing station spaced from the infeed conveyor, said apparatus comprising an endless transfer conveyor traveling between said transfer station and said depositing station,

pickup means carried by said transfer conveyor and engageable with a row of articles at the transfer station for lifting the entire row of articles from the infeed conveyor and carrying it in a level upright condition to the depositing station, unloading mechanism at the depositing station movable between a pass position out of the path of the articles carried by said transfer conveyor and an unloading position disposed in the path of the articles carried by said transfer conveyor for engagement therewith, control means coupled to said unloading mechanism and responsive to movement of said pickup means to the



depositing station for moving said unloading mechanism to the unloading position thereof for engagement with the row of articles carried by said pickup means and for cooperation with said pickup means to insure removal of the row of articles therefrom, said control means being responsive to movement of said pickup means from the depositing station for moving said unloading mechanism to the pass position thereof, and means for synchronizing the operation of said transfer conveyor with that of the infeed conveyor so that said pickup means and the row of articles to be picked up thereby arrive essentially simultaneously at the transfer station.

4,211,320
APPARATUS FOR COMBINING SHEET MATERIAL ASSEMBLAGES
Michael S. Yautz, Jr., Easton, and Richard N. Winslow, Media, both of Pa., assignors to Harris Corporation, Cleveland, Ohio
Filed Jun. 26, 1978, Ser. No. 919,440
Int. Cl.² B65G *47/68*
U.S. Cl. 198—450 **7 Claims**



1. Apparatus for combining separate streams of sheet material assemblages into a single stream comprising a rotatable wheel, a plurality of first and second guide means spaced about the periphery of said wheel, said second guide means being movable relative to said first guide means, each of said first guide means receiving assemblages from a first stream at a first angular position in the path of said wheel and guiding said assemblages to a release station at a second angular position in the path of said wheel, each of said second guide means receiving assemblages from a second stream at a third angular position in the path of said wheel and guiding said assemblages to said release station, first means adjacent said rotatable wheel for feeding assemblages to said first guide means, second means adjacent said rotatable wheel for feeding assemblages to said second guide means, means at said release station for receiving assemblages alternately from said first and second guide means, and means for pivoting each of said second guide means between two peripherally adjacent a first position where said second guide means extends between said first guide means for receiving assemblages from said second stream and a second position where said second guide means is positioned more closely to the adjacent upstream first guide means to provide a clear path for an adjacent downstream first guide means to receive an assemblage from said first stream.

4,211,321
COMPACT LOW FORCE ECONOMICAL GENERAL PURPOSE WALKING BEAM CONVEYOR
Ralph S. Mosher, Elnora, N.Y., assignor to Robotics, Inc., Ballston Spa, N.Y.
Filed Apr. 26, 1978, Ser. No. 900,297
Int. Cl.² B65G *25/00*
U.S. Cl. 198—774 **23 Claims**



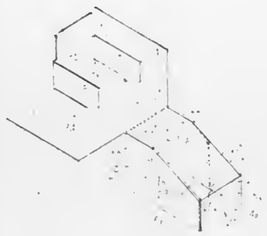
1. A walking beam conveyor comprising:
(a) a supporting truss and walking beam member for transporting loads in a straight-line path between two points comprising pick-up and discharge stations for the load:
(b) said supporting truss and walking beam member comprising first and second orthogonally arrayed interconnected supporting truss arms:
(c) said first and second truss arms each including guide means thereon extending along the longitudinal axis of the truss arms;
(d) first and second guide means engaging devices for engaging the guide means on said first and second truss arms, respectively, and for physically supporting and moving said supporting truss and walking beam member along two orthogonal axes of movement;
(e) first and second rotatable crank arm means having said first and second guide means engaging devices secured to respective ends thereof for driving said guide means engaging devices;
(f) first and second intermittor drive means;
(g) means interconnecting the output of said first and second intermittor drive means with said first and second rotatable crank arm means, respectively, for intermittently rotating the respective first and second crank arm means in a predetermined intermittent manner;
(h) base frame means supporting said intermittor drive means and said first and second crank arm means together with their respective interconnecting means and guide means engaging devices which in turn physically and movably support the supporting truss and walking beam member in a compact structure; and
(i) spring biased counter-balancing means mounted on said base frame means and including a spring actuated lever arm and counter torque coupling means for applying a counter-balancing torque to at least one of the rotatable crank arm means to assist the same in developing a load supporting force and thereby minimize the forces demanded of the intermittor drive means.

4,211,322

SELF-JOINED INTERLOCKING CONTAINER

Donald Crescenzi, Killingworth, and Barry A. Bridges, Bloomfield, both of Conn., assignors to Leigh Products, Inc., Coopersville, Mich.

Filed Nov. 20, 1978, Ser. No. 962,372
Int. Cl.[2] B65D *5/22*
U.S. Cl. 206—44 R **6 Claims**



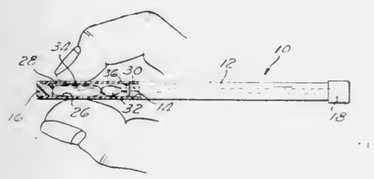
1. A self-joined interlocking container comprising a base panel, two side panels extending upwardly from the base panel, each including an inwardly directed tab along the front thereof, a lower front panel including a flap overlying and locking with said side panel tabs to hold the side panels and lower front panel upright, a rear panel including two forwardly directed tabs, each directed along the inside surface of a side wall, said side panels further including interior flaps overlying and interlocking said rear panel tabs to maintain said rear panel upright, a top panel removably joined to said rear panel and having outer side panels joined thereto adapted to overlay said side panels, an upper front panel extending from said top panel, said upper front panel including side tabs each adapted to be folded rearwardly between a side panel and an outer side panel and a front tab adapted to lie rearwardly of the lower front panel.

4,211,323

DISPOSABLE DIAGNOSTIC SWAB HAVING A STORED CULTURE MEDIUM

C. Eric Olsen, Ventura, Calif., assignor to California Medical Developments, Inc., Ventura, Calif.

Filed Dec. 1, 1978, Ser. No. 965,564
Int. Cl.[2] A61B *10/00, 25/00*
U.S. Cl. 206—210 **2 Claims**



1. A disposable diagnostic swab having a stored culture medium comprising:

an elongated tubular member having an internal chamber, said chamber having an inner end and an outer end, said inner end being permanently closed, said outer end being normally closed by a removable cap, the wall of said elongated tubular member being substantially rigid but readily deflectable upon incurring a small amount of localized manual pressure;

a pouch completely enclosing a quantity of culture medium, the wall of said pouch being constructed of a thin readily breakable material upon incurring a small amount of manual pressure, said pouch being located within said internal chamber at said inner end;

a swab having a tip and and an aft end interconnected by an elongated swab body, said swab located within said internal chamber with said aft end located at said outer end and said tip located directly adjacent said pouch, whereby said pouch may be ruptured causing immersion of said tip by said culture medium;

said internal chamber including an internal separating wall assembly to closely confine said swab, a portion of said internal separating wall assembly cooperating with said tubular member to substantially totally enclose said pouch, said internal separating wall assembly including a pair of spaced-apart wall members with each said wall member being substantially parallel to said swab body, said swab body being located between said wall members; and

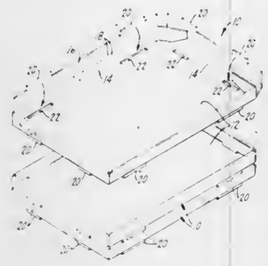
a flexible sealing member mounted on said swab adjacent said tip, said flexible sealing member to be in physical, liquid tight contact with said wall members which results in totally enclosing said pouch, said flexible sealing member to prevent the flow of culture medium longitudinally along said swab and therefore insure that said culture medium is confined to said tip of said swab.

4,211,324

ASSEMBLY PROTECTING AND INVENTORYING PRINTED CIRCUIT BOARDS

Ralph C. Ohlbach, 417 Green Park Ct., Deerfield, Ill. 60015

Filed Aug. 7, 1978, Ser. No. 931,866
Int. Cl.[2] B65D *85/00, 85/42*
U.S. Cl. 206—328 **6 Claims**



1. A stack of containers each encompassing at least one printed circuit board contained therein, one container being supported atop an identical container constructed entirely of one-piece paper board, either folding carton board or corrugated board at least of E-flute strength for minimum strength, said container beneath and each container having an open top, a bottom wall and enclosing side walls attached to the bottom wall, all inside surfaces of each container opposite outside surfaces thereof being coated with conductive carbon black particles contained in a printing ink vehicle for capturing a static electricity charge originating outside the container.

3. A method of inventorying printed circuit boards susceptible to being ruined by a discharge of static electricity and comprising: placing individual printed circuit boards each in a container having an open top, a bottom wall and enclosing side walls attached to the bottom wall, each container being constructed of paper board with all inside surfaces thereof opposite outside surfaces being coated with conductive carbon black particles contained in a printing ink vehicle for capturing a static electricity charge originating outside the container, stacking one container containing a printed circuit board atop another which contains a printed circuit board, and topping off the stack with a cover.

4,211,325

HEART VALVE HOLDER

John T. M. Wright, Huntington Beach, Calif., assignor to Hancock Laboratories, Inc., Anaheim, Calif.

Filed Jun. 7, 1979, Ser. No. 46,535
Int. Cl.[2] B65D *85/50, 85/02, 81/24*
U.S. Cl. 206—438 **17 Claims**



11. In combination with a natural tissue heart valve stent assembly including an external sewing ring, commissure support struts and a peripheral surface between said sewing ring and said support struts, a device for holding said heart valve stent assembly comprising

a valve support ring member circumscribing said valve assembly and engaging said stent about said peripheral surface;

an outer case comprising an open-ended cylinder having integral internal support means adapted to support said valve support ring and valve assembly; and

a retainer secured within said outer case and engaging said valve support ring;

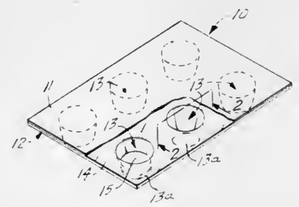
whereby said valve support ring and said valve assembly are immobily retained within said outer case between said retainer and said internal support means of said case.

4,211,326

BLISTER PACKAGE

Carl C. Hein; Harold K. Silver; Joseph J. Spitz, all of Neenah, and Donald W. Seidler, Appleton, all of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 10, 1978, Ser. No. 950,077
Int. Cl.[2] B65D *83/04*
U.S. Cl. 206—484 **14 Claims**



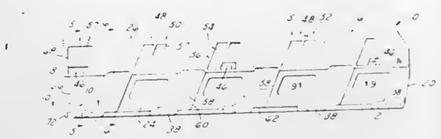
1. Thermoformable laminate package structure adapted for blister packaging comprising: a first, outer lamina of polyvinyl chloride, an intermediate lamina of fluid compression rolled, partially oriented polymeric material, and a second, outer lamina of polyvinyl chloride.

4,211,327

STACK AND NEST CONTAINER

Edward L. Stahl, Richmond, Mich.; Ellsworth E. Sanders, Naples, Fla., and George C. Blair, Kansas City, Mo., assignors to Pinckney Moided Plastics, Inc., Pinckney, Mich.

Filed Jun. 29, 1978, Ser. No. 920,484
Int. Cl.[2] B65D *21/02*
U.S. Cl. 206—505 **10 Claims**



1. A stack and nest container having a bottom, side walls projecting upwardly from opposite side edges of said bottom, said side walls each having a lower section and an upper section spaced outwardly from said lower section joined thereto by a ledge, said upper wall sections being spaced apart sufficiently farther than said lower wall sections to permit said container to nest in a lower container of identical construction, said container having a plurality of feet spaced from one another along the outer side of the lower edge portion of the lower section of each side wall, said ledges having nesting saddle portions directly above said feet adapted to support the feet of an upper identical container nested therewith, and a plurality of stacking saddles directly above said feet along the inner side of the upper edge portion of the upper section of each side wall to support the feet of an upper identical container stacked thereon, said stacking saddles along each upper edge portion being spaced from one another sufficiently to clear the feet of an upper identical container for nesting, said side walls having guide means for guiding the feet of an identical container down to said nesting saddle portions, said guide means including upper ribs projecting inwardly from the inner surface of the upper section of each side wall, said upper ribs having upper ridges respectively extending downwardly from points adjacent the rear ends of certain of said stacking saddles to points adjacent the front ends of certain of said nesting saddle portions, said guide means also including lower ribs projecting outwardly from the outer surface of the lower section of each side wall, said lower ribs having lower ridges respectively extending upwardly from points adjacent the front ends of certain of said feet to points adjacent the front ends of certain of said nesting saddle portions, said upper ridges cooperating with the lower ridges of an identical upper container to guide the latter during movement thereof to a nesting position.

4,211,328

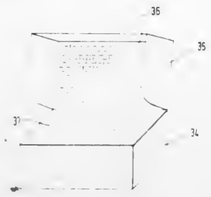
PACKAGE FOR SOLID OR PASTY GOODS

Pál I. Petranyi, Hamburg, Fed. Rep. of Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,634
Claims priority, application Netherlands, Feb. 7, 1978, 7801366
Int. Cl.[2] B65D *85/74*
U.S. Cl. 206—525 **10 Claims**

1. A package with pasty contents, comprising a container having an open top and a closure detachably covering said open top, said container being filled with a substantially solid, pasty material, said pasty material terminating with an upper surface at a prescribed level of and proximate said open top of said container, and a self-shape-sustaining flexible closure operatively associated with said container, said closure being impervious to air and said pasty material and including a plurality of ribs terminating in a plane and defining a pattern of independent and separate non-communicating cavities, with said closure closing said open top of said container said ribs being

engaged with said upper surface of said pasty material and cooperating with the latter to seal air in each of said cavities



and exclude the full ingress of said pasty material into said cavities.

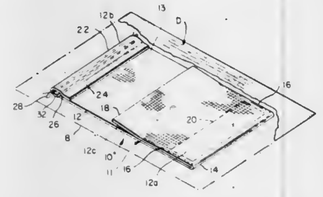
4,211,329
EXTENDER AND HEADER CARD FOR MEDICINAL DISPENSING DEVICE
Milton Braverman, Philadelphia, Pa.
Filed Apr. 27, 1979, Ser. No. 33,923
Int. Cl.[2] B65D *73/00, 83/04, 85/56*
U.S. Cl. 206—534 **9 Claims**



1. A header card for a medicinal dispensing device having a row of article holding units therein, each unit having flanges detachably connected along predetermined weakened lines so that each unit can be separated from other units, said card comprising a planar panel having a front face, a rear face, a lower edge and adhesive securement means disposed on the rear face contiguous with the lower edge, said panel including a transverse weakened line extending across the panel spaced from the lower edge and a plurality of longitudinal weakened lines extending parallel to one another from said edge to the transverse line to form a plurality of separable sections, the front face of said card including a first area for receipt of prescription indicia, said card being arranged for securement to said dispensing device with the adhesive securement means contacting portions of said row of units, which each of the sections of said card being disposed over a portion of the flange of a respective unit and with the weakened longitudinal lines of the card being aligned with the weakened flange lines.

5. An extender for a medicinal dispensing device, said device including a plurality of article holding units, each having flanges detachably connected along predetermined weakened lines so that each unit can be separated from other units, a chamber for holding an article therein depending from each flange and having an opening for the chamber, a cover sheet having interesecting weakened lines corresponding to the flange lines and forming a plurality of closures sealing respective openings in said units, said extender including a row of article-holding units, each with flanges detachably connected along predetermined weakened lines so that each unit can be separated from the other units, a chamber for holding an article therein depending from each flange, and closure means in the form of plural closures, each being coextensive in size with a respective article holding unit and adapted to seal the opening in a said unit, said closures being formed by a cover sheet having an exterior surface and an interior surface having a adhesive thereon said cover sheet including plural weakened lines defining said closures and corresponding to the flange lines and including a tab portion extending beyond the flanges forming said row, said tab including a transversely extending weakened line contiguous with said flanges, and adhesive securement means on the interior surface thereof for securement to the exterior surface of the cover sheet of the medicinal dispensing device.

4,211,330
ORAL HEALTH AND HYGIENE KIT
Alvin E. Strock, 647 Commonwealth Ave., Newton Center, Mass. 02159
Filed Feb. 1, 1979, Ser. No. 8,612
Int. Cl.[2] A45B *15/00;* **A61C** *15/00,*
U.S. Cl. 206—581 **6 Claims**



1. An oral health and hygiene kit including a periodontal massaging pad comprising a length of liquid pervious, flexible, textured material, means defining a pocket in said material length for engaging over a finger of a user, means defining an integral flap extending exteriorly of said pocket for gripping by a thumb to retain the pad on the finger during inserting and manipulation of said pad within the mouth of a user, said periodontal pad further including means defining an open ended receptacle in said integral flap and wherein said kit further includes means for removing food particles retained within said receptacle, said means for removing food particles comprises a length of dental floss and a rigid dental stimulator.

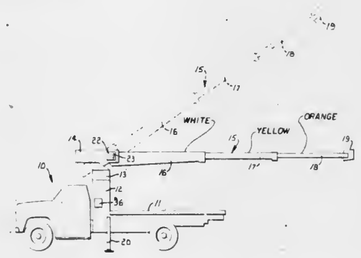
4,211,331
MERCHANDISING DISPLAY
Peter C. Salmon, and Christopher Kidd, both of Port Washington, N.Y., assignors to Consumer Promotions, Inc., White Plains, N.Y.
Filed Nov. 30, 1977, Ser. No. 855,651
Int. Cl.[2] A47F *5/02*
U.S. Cl. 211—13 **14 Claims**

1. A merchandising display comprising:
(a) a vertical post having an angle-shaped cross section,
(b) at least two vertically spaced apart support members mounted on said post,
(c) bearing means mounting each of said support members on said post for rotation of each support member in a horizontal plane, each bearing means being non-rotatably secured to said post and at least the lower of said bearing means being spaced from a surface of said post,
(d) a plurality of merchandise-holding cases carried by said support members in spaced relation to said post,
(e) an electric light fixture fixed to one of the flat surfaces of said angle-shaped post, and

(f) an electric wire from said light fixture extending along the length and externally of said post and through the space between the lower of said bearing means and said post.

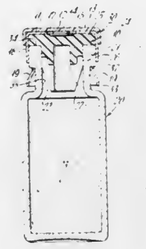


4,211,332
COLOR CODED BOOM AND CHART SYSTEM
Raymond F. Pitman, Johnson County, Kans., assignor to R O Corporation, Olathe, Kans.
Filed Apr. 3, 1978, Ser. No. 892,948
Int. Cl.[2] G01D *21/00;* **B66C** *13/14*
U.S. Cl. 212—157 **6 Claims**



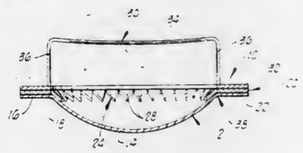
1. In combination with a multiple stage boom mounted to pivot about a substantially horizontal axis and including a plurality of relatively extensible and retractable boom stages, the improvement comprising:
means marking the exteriors of said boom stages in a manner visibly distinguishing each stage from the other stages, said marking means for each boom stage being visible when the stage is extended:
a pendulem pointer pivotally secured to a boom glove of the boom;
a boom extension chart presenting thereon a plurality of separate arcuate sections corresponding to the respective boom stages, each said section of the chart providing by the position of said pointer, when the corresponding boom stage is extended relative to said boom glove, an indication of the effective horizontal moment arm length of said boom at various pivotal positions thereof; and
means marking each section of said boom extension chart in a manner correlated with the marking means of the corresponding boom stage, thereby facilitating location of the sections of said boom extension chart corresponding to the boom stages that are extended.

4,211,333
TAMPERPROOF CONTAINER
Miguel Villarejos, Clermont-Ferrand, France, assignor to Merck & Co., Inc., Rahway, N.J.
Filed Jun. 5, 1978, Ser. No. 912,792
Int. Cl.[2] B65D *47/36, 47/38, 41/50*
U.S. Cl. 215—249 **1 Claim**



1. In an improved tamperproof package for biological material in lyophilized form comprising a container portion and a cap assembly, the container portion having an opening, a neck below the opening, in the neck a flange about the opening and a shoulder spaced apart from the flange to define therebetween a groove; the cap extending over the flange and about the neck to form a skirt, a portion of the skirt extending inwardly in gripping relation to the groove, said skirt having a plurality of ratchets attached to the wall of the skirt and extending upwardly and inwardly from said skirt whereby the overcap is limited in its removal by the flange and can only be removed with the destruction of the structural integrity of the package; the improvement consisting of a sealing stopper in the opening, and the stopper having a capping flange portion and a stem portion; the capping flange portion sealingly engaged with the flange of the container; the stopper having in the stem portion ventilation ribs so that when the capping flange is in spaced apart relation from the container flange, the ventilation ribs allowing fluid communication between the interior of the container and the exterior; the sealed portion of the skirt extending inwardly to engage the juncture of the groove and the container flange; the top of the cap engaging the capping flange in sealing relation; and a sealable opening in the cap for introducing a syringe needle therethrough to introduce reconstituting liquid and for withdrawing the biological material after reconstitution.

4,211,334
SAFETY PRESSURE RELIEF APPARATUS
John E. Witten; Loren E. Wood, and Edward H. Short, III, all of Tulsa, Okla., assignors to B S & B Safety Systems, Inc., Tulsa, Okla.
Continuation of Ser. No. 832,417, Sep. 12, 1977, Pat. No. 4,158,422. This application Nov. 24, 1978, Ser. No. 963,267
The portion of the term of this patent subsequent to Jun. 19, 1996, has been disclaimed.
Int. Cl.[2] F16K *17/40*
U.S. Cl. 220—89 A **4 Claims**



1. A safety pressure relief apparatus comprising:
a reverse buckling rupture disk including a concave-convex

portion connected to an annular flat flange portion by a curved transition connection; and

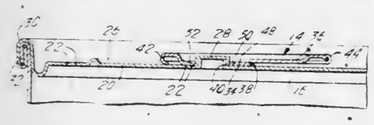
a thin support member having an annular flat flange portion attached to said annular flat flange portion of said rupture disk and for supporting said transition connection thereof, said support member including a serrated cutting edge, the serrations of which are inclined towards and into said concave-convex portion of said rupture disk and positioned interiorly of said transition connection forming a circular opening in said support member so that when said concave-convex portion of said rupture disk reverses, a circular center section thereof is severed from the remaining portion of said disk by said cutting edge which passes through said opening in said support member.

4,211,335

FRACTURE RESISTANT RETAINED LEVER TAB AND METHOD OF MANUFACTURE

Neal E. Langseder, Hoffman Estates, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Jun. 21, 1979, Ser. No. 50,649
Int. Cl.² B65D *41/32*
U.S. Cl. 220—269 **8 Claims**



1. An easy open closure for a container comprising:

(a) a central panel wall including a peripheral flange for joining said closure to said container and an integral rivet;

(b) a displaceable panel in said central panel wall disposed outwardly of said rivet and substantially defined by scoring; and

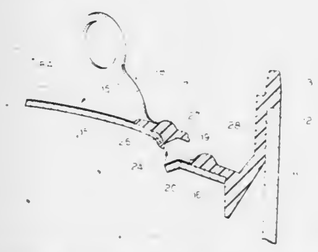
(c) a lever tab with a tab nose and a tab lift and a central web disposed therebetween and wherein said tab web is lanced to form a tongue with said tongue joined to said central panel wall by means of said rivet and wherein a portion of said tongue is coined to a maximum depth and wherein adjacent portions of said web are coined in transitional planes of graduated depth, whereby said tongue is cooperatively urged to bend in said portion of maximum coining when said tab is pivoted forward and subsequently rebent to a position of repose.

4,211,336

CONTAINER CLOSURE

Charles R. Helms, Collegeville, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Aug. 15, 1979, Ser. No. 66,577
Int. Cl.² B65D *41/32*
U.S. Cl. 220—270 **4 Claims**



1. A container closure for securement along a rim of a container body at an end thereof, said closure being characterized by a closure panel extending between said rim and closing an open end of said body, said closure panel comprising:

(a) a central panel element having a tear strip formed thereon extending along the periphery of said element;

(b) a fracturable line of weakness in said element disposed between said tear strip and said rim;

(c) said tear strip being formed of resinous material and having a line of protrusions extending through said central panel element spaced from the periphery thereof to separate said element into a central portion adhered to said tear strip and a rim portion adhered to said rim.

4,211,337

MULTIPLE-POINT HINGE FOR DOUBLE-WALL PLASTIC BOX

Mark W. Weavers, Little Canada, and Anthony W. Konkler, Lakeland, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 8, 1979, Ser. No. 47,346
Int. Cl.² B65D *43/14, 51/04*
U.S. Cl. 220—341 **4 Claims**



1. A two-part, double-wall plastic box having a hinge comprising upstanding spine means extending along the rear of one part of the box and terminating in a pair of hinge pins, each fitting into a hole in the other part of the box, characterized by a feature that:

the spine means comprises at least two spaced spines, the spine-carrying part of the box is of substantially normal double-wall thickness at the spacing between the spines, a projection from said other part fits into the spacing between said spines, and the adjacent ends of the projection and spines have mating convex and concave surfaces which provide additional hinge points and lateral stability.

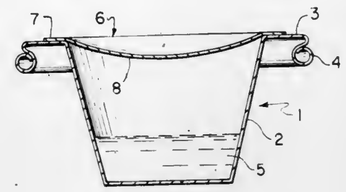
4,211,338

CONTAINER CLOSURE STRUCTURE

Robert F. Bublitz, Chester, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 37,036, May 8, 1979, abandoned. This application Jun. 11, 1979, Ser. No. 47,358
Int. Cl.² B65D *41/00*
U.S. Cl. 220—359 **16 Claims**

1. A container closure for use on a container body having a planer sealing surface comprising a flexible sheet material having a planer peripheral sealing portion and a shaped central portion, said shaped central portion being initially concave with respect to said container body onto which said closure is to be sealed and said shaped central portion being capable of being deformed under internal pressure within said container body after sealing of said closure onto said container body without damage to the seal between said planer sealing surface of said container body and said planer peripheral sealing portion of said closure.

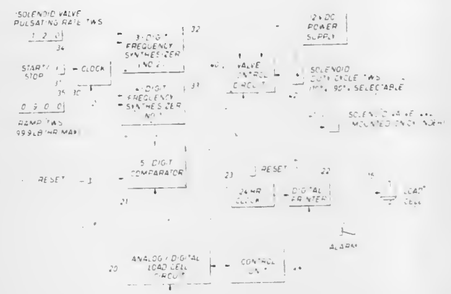


4,211,340

CATALYST REGENERATION

Julius J. Szakasits, Houston, and Thomas C. Wadham, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 21, 1978, Ser. No. 935,196
Int. Cl.² B67D *05/34*; B01J *37/24*
U.S. Cl. 222—3 **8 Claims**



1. A system for controlling the addition of small amounts of material to a process comprising:

a container for said material, said container being connected to said process to supply the material thereto;

weighing means disposed to weigh said container and material;

a valve means disposed in the connection between said container and said process to control the flow of material to said process; and,

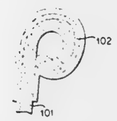
a control system, said control system being coupled to said weighing means and said valve means to intermittently open and close the valve means at a preselected modulation frequency to provide a controlled flow of said material to said process and further suspending operation of the valve means in response to sensing a predetermined change in weight of said container and material.

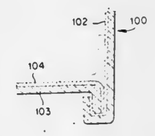
4,211,339

LAMINATED PAPER CONTAINER WITH SEALED SEAMS

Tsutomu Itoh, Tokyo, Japan, assignor to Onoda Cement Co., Ltd., Onoda, Japan

Division of Ser. No. 858,738, Dec. 8, 1977, Pat. No. 4,168,676. This application Dec. 11, 1978, Ser. No. 967,988
Claims priority, application Japan, Dec. 13, 1976, 51-148728
Int. Cl.² B65D *3/04, 3/14*
U.S. Cl. 220—450 **2 Claims**





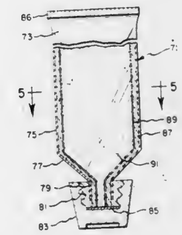
1. A paper container having sidewalls formed from a laminate material which material includes a lamina of paper and an inner lamina of non-porous material forming the inside surface of said container; said sidewalls having a sidewall seam where the edges of said laminate material are overlapped and bonded together, a bottom panel having a moisture impervious inner surface closing one end of said container; a folded seam joining said sidewalls and bottom, means for preventing contact between the contents of the container and the exposed edge of the paper lamina at said sidewall and folded seams, said means comprising: a strip-like layer of water impervious resin covering said sidewall seam on the inside of said container and bonded to said inner lamina; a layer of water impervious resin filling the channel between the sidewalls and bottom panel where they converge adjacent said folded seam and bonded to both said inner lamina of the sidewalls and the inner surface of said bottom; said layers, where said sidewall seam joins said folded seam, being bonded together to form an integral seal for said seams; the end of said container opposite said bottom being open, said sidewalls at said open end being rolled outwardly to form a lip; a layer of moisture impervious resin encasing said lip and sealing the edge of the laminate material forming the lip.

4,211,341

DISPENSING CONTAINER OF STABILIZED EXTRUDABLE DENTIFRICE CONTAINING NORMALLY CHEMICALLY REACTIVE COMPONENTS

Hendrik F. Weyn, Le Chesnay, France, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 714,736, Aug. 16, 1976, Pat. No. 4,098,435. This application Feb. 10, 1978, Ser. No. 876,709
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.
Int. Cl.² B65D *35/22*
U.S. Cl. 222—94 **27 Claims**



1. A dispensing container of stabilized, extrudable cream, paste or gel dentifrice comprising at least two components which are normally reactive with each other and which are maintained separate from each other in the dispensing container during normal repeated uses of the dentifrice, which

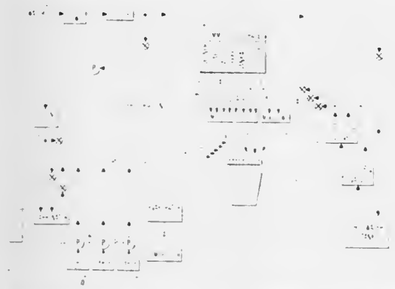
container is of a deformable or collapsible tube type, having a closable opening through which the dentifrice is pressure dispensable in response to squeezings of the tube, with the normally reactive components being dispensed together during initial and subsequent dispensings, and in which said components are maintained separate from each other until each dispensing or until shortly before such dispensings by a barrier of extrudable separating material between them, which separating material remains at least in part between the reactive dentifrice components remaining in the container after repeated dispensings and is extrudable through the dispensing opening of the dispensing container together with and as a part of at least some of the dentifrice being dispensed in response to squeezing of the tube.

4,211,342

COMBINATION HOT AND COLD DRINK MACHINE

Ralph Jamgochian, Dallas; Leonard Oley, Hunlock Creek; Joseph Stachnik, Moscow, and Alfred L. Tutella, Plains, all of Pa., assignors to ARA Services, Inc., Philadelphia, Pa.

Filed Feb. 22, 1978, Ser. No. 881,640
Int. Cl.[2] B67D *3/00*
U.S. Cl. 222—129.4 **2 Claims**



1. In a combination hot and cold beverage vending machine having a fixed total number of selectable beverages and at least one selector button, switching means for varying the numbers of hot beverage selections and cold beverage selections offered for sale by said machine, said switching means comprising at least one double pole double throw switch, said switch being operable from within the housing of said machine, said switch directing the signal from said selector button to motor means for vending the hot or cold beverage chosen by said selector button.

4,211,343

BULK DRY FOOD PRODUCT STORAGE, DISPLAY AND DISPENSING APPARATUS

Peter I. Hughes, 2501 Spring St., Redwood City, Calif. 94063; Robert J. Lynch, P.O. Box 1191, Santa Cruz, Calif. 95060, and James J. Ahrens, 26081 Mocine Ave., Hayward, Calif. 94544

Filed May 19, 1978, Ser. No. 907,547
Int. Cl.[2] G01F *11/10*
U.S. Cl. 222—130 **19 Claims**

1. A bulk dry food product storage, display and dispensing apparatus comprising:

means forming a hopper comprising a pair of side wall members and a curved bottom, the curved bottom comprising a front portion and a rear portion, the front and rear portions each comprising a continuously changing radius of curvature, the continuously changing radius of curvature of the front portion being different from the continuously changing radius of curvature of the rear portion whereby fresh product being added to the hopper from the rear thereof by being dumped on the rear portion of the curved bottom slides down the rear portion, moves existing product forwardly, and displaces existing product being supported on the front portion causing the displaced product to move upwardly and fall on top of the fresh product moving therebeneath; and



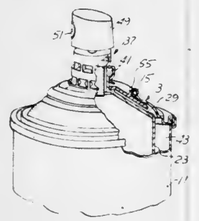
means forming a spout extending from the front of the hopper through which product is moved for removing product from the hopper.

4,211,344

SACK RETENTION AND PRESSURIZING FOR AEROSOL TYPE DISPENSERS

William R. Stoody, 5008 County Line, New Haven, Mich. 48048

Filed Jul. 26, 1978, Ser. No. 928,056
Int. Cl.[2] B67D *5/60*
U.S. Cl. 222—131 **22 Claims**



1. In an aerosol type container or dispenser having an apertured lid and a pressure chamber, a collapsible sack containing material to be dispensed nested within said chamber and having a neck projected through and suspended from said lid;

and a valve assembly nested, sealed and retained within said neck and projecting therefrom, the mounting of said neck within said lid including an annular flexible collar upon said neck spaced from said sack;

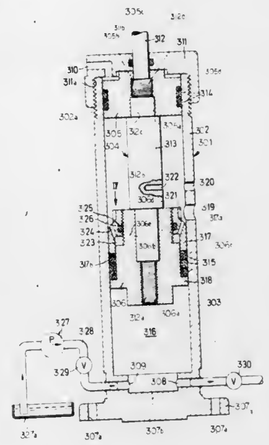
and an annular retainer projection upon said collar retainingly extending through and interlocked with an outer portion of said lid, said collar yieldably and sealingly bearing against the inside of said lid in a relationship that upon application of a pressurizing agent to said container, said collar is displaced inwardly permitting inward passage of the agent through the lid aperture and into said pressure chamber, said collar upon interruption of the application of the pressurizing agent automatically returning to sealing engagement with said lid under the action of said agent in said pressure chamber and the flexibility of the collar preventing outward passage of the pressurizing agent.

4,211,345

APPARATUS FOR THE FEEDING (METERING) OF LIQUID SYNTHETIC-RESIN COMPONENTS

Peter Taubenmann, Munich, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 782,962, Mar. 30, 1977, Pat. No. 4,167,236. This application Apr. 21, 1978, Ser. No. 898,775
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736177
Int. Cl.[2] B67D *5/46*
U.S. Cl. 222—134 **7 Claims**



1. In a device for metering a quantity of a flowable material, especially an abrasive-filled synthetic resin, the improvement which comprises in combination:

a cylinder;

a pair of pistons coupled together through a piston rod within said cylinder, one of said pistons constituting a drive piston and defining a pressurizable compartment in said cylinder, the other of said pistons defining a metering compartment in said cylinder;

means for feeding flowable material to said metering compartment, said other piston having a seal cooperating with a wall of said cylinder to seal said metering compartment; and

means on said other piston operable from the exterior of said cylinder for compensating for wear of said seal, said means for compensating for wear of said seal including a sleeve threaded onto said other piston and defining an outwardly open space therewith receiving said seal, said sleeve being formed along an outer peripheral portion thereof with an array of axially projecting teeth, said wall of said cylinder being formed with an opening for admitting a tool into engagement with said teeth whereby said sleeve can be rotated relative to said other piston, and a window in addition to said opening to admit a tool into engagement with said piston rod to retain said other piston against rotation while said sleeve is rotated.

4,211,346

VARIABLE VOLUME DISPENSING BOTTLE WITH PUSH-PULL CLOSURE

Ravinder C. Mehra, and James T. Hepinstall, Jr., both of Fairport, N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,896
Int. Cl.[2] B67D *5/06*; B65D *37/00*
U.S. Cl. 222—205 **5 Claims**

5. A variable volume dispenser bottle and integral closure comprising in combination:

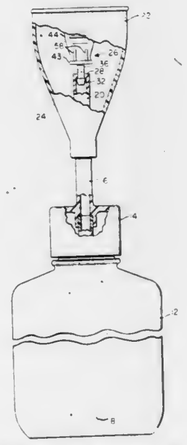
(a) a hand deformable bottle which is compressed to express a liquid from the bottle;

(b) a dispenser tube having an inlet end disposed adjacent the bottom of said bottle and an outlet end extending outside of said bottle;

(c) a measuring chamber carried by and upstanding from said dispenser tube adjacent said outlet end, said dispenser tube providing the sole communication between the interior of said bottle and said measuring chamber wherein squeezing said deformable bottle forces liquid from said bottle through said dispenser tube and into said measuring chamber;

(d) closure means for said outlet end including a first portion within said dispenser tube, a second portion outside of said dispenser tube and a stem connecting said portions, said closure means being axially movable with respect to said dispenser tube between an open and a closed position;

(e) said first and second portions cooperating with said outlet end to maintain said closure means captured to said dispenser tube as said means is moved axially between said open and closed positions;



(f) said stem being in sliding, fluid tight engagement with said outlet end and having an axial bore therein, said bore communicating at one end with the interior of said discharge tube and at its other end with a port which opens outwardly through said stem to said measuring chamber, said port being positioned on said stem so as to locate said port within said dispenser tube when said closure means is at said closed position and to locate said port outside of said dispenser tube when said closure means is at said open position;

(g) said second portion having a thin profile so it may be conveniently gripped between the thumb and index finger for moving said closure means between said open and closed position; and

(h) a horizontal flange between said stem and said second portion and ribs upstanding from said flange and extending outward from said second portion, said ribs extending generally up to about the middle of said second portion to prevent gripping said second portion adjacent said flange.

4,211,347

VALVE

William D. Mildern, 1121 W. McNab Rd., Pompano Beach, Fla. 33060

Filed Dec. 22, 1978, Ser. No. 972,260
Int. Cl.[3] B65D *83/14*
U.S. Cl. 222—402.18 **22 Claims**

1. In a valve for use with a pressurized aerosol dispensing

container having a mouth and containing pressurized product, said valve having:

hollow annular mounting means for sealed attachment to the mouth of the container and having an annular inside surface;

a tubular valve body extending down through said mounting means and axially displaceable therein between a normal upper position and a downwardly displaced lower position, said valve body having an internal transverse wall intermediate its length and a longitudinal eduction passageway below said wall and a longitudinal product discharge passageway above said wall, said valve body having a transverse orifice opening directly into the upper end of said eduction passageway below said wall and a transverse orifice opening directly into the lower end of said product discharge passageway above said wall;

and a first annular, elastomeric sealing gasket extending circumferentially around said valve body transverse to the latter, said gasket having an annular inside edge which defines a central opening therein which snugly receives said valve body and closes said orifices in said normal position of the valve body;

the improvement which comprises:

a second annular, elastomeric sealing gasket extending circumferentially around said valve body transverse to the latter contiguous to said first gasket, said second gasket having an annular inside edge which defines a central opening therein which snugly receives said valve body in said normal position of the valve body;



means on the valve body for flexing the lower of said gaskets downward adjacent its central opening, when the valve body is displaced downward from said normal position, to provide a first connecting passageway between the two gaskets adjacent their respective central openings;

a transverse, annular, outwardly extending, upwardly-facing shoulder on the valve body extending below said lower gasket, said shoulder moving down away from said lower gasket to form between them a second connecting passageway adjacent the central opening in the lower gasket when the valve body is displaced downward to flex said lower gasket;

said valve body, when displaced downward from its normal position, positioning said orifices in registration with one of said connecting passageways to connect the upper end of said eduction passageway to the lower end of said product discharge passageway in the valve body;

means providing one or more restricted passageways extending from outside said mounting means in the container into the other of said connecting passageways for passing gaseous propellant into the latter when the valve body is displaced downward;

means defining a propellant discharge passageway extending up from said internal transverse wall separate from said product discharge passageway;

and means defining a lateral passage at the lower end of said propellant discharge passageway for registration with said other connecting passageway to pass propellant therefrom up into said propellant discharge passageway when the valve body is displaced downward;

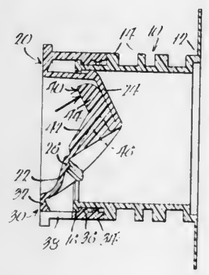
said second gasket sealingly engaging said valve body in the latter's normal position to block said lateral passage from fluid communication with said one or more restricted passageways.

4,211,348

DISPENSER SPIGOT

William R. Scholle, 3000 Via Mondo, Compton, Calif. 90224

Filed Jan. 30, 1978, Ser. No. 873,366
Int. Cl.² B65D *47/20*
U.S. Cl. 222—498 **7 Claims**



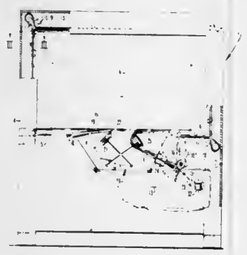
1. A dispensing spigot for a container having a spout comprising an integral elastomeric member of generally cup shape having a peripheral wall complementary to and adapted to fit within the spout axially inwardly of the lip of the spout, said peripheral wall having at least one sealing bead on the outer surface thereof for sealing engagement with the inner surface of the spout axially inwardly from the lip thereof, a transverse wall at the inner end of said peripheral wall for closing the spigot and the spout, and manipulatable means extending from said transverse wall for flexing said transverse wall and a portion of said peripheral wall and sealing bead in a toggle effect to move said portion of said peripheral wall and sealing bead radially inwardly away from the spout to permit the dispensing of the contents of the container while other portions of said seal remain against said spout.

4,211,349

METHOD AND A DEVICE FOR APPLYING AN ENLACING TAPE AROUND AN OBJECT

Auke van der Wal, Oss, Netherlands, assignor to Vereenigde Metaalverpakking en Hecktdraad Industrie B.V. MVM-ENDRA

Filed Dec. 8, 1978, Ser. No. 967,638
Claims priority, application Netherlands, Dec. 8, 1977, 7713625
Int. Cl.² B65H *17/18*
U.S. Cl. 226—171 **21 Claims**



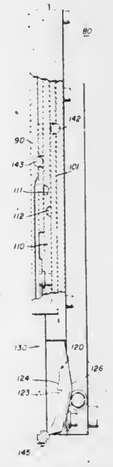
1. A device for applying an enlacing tape around an object comprising means for supporting an object adapted to be enlaced by a tape, endless conveyor belt means generally surrounding said supporting means for moving the tape along a path around the object from an entrance end toward an exit end of said path, means for continuously moving said endless conveyor belt means during the introduction of an end of the tape at the entrance end of said path until the departure of said tape end at said exit end, means for continuously driving the tape at the speed of movement of said endless conveyor belt means during the movement of the tape between said entrance and exit ends whereby the continuous driving movement of said continuous driving means and the continuous movement of said endless conveyor belt means at commensurate speeds results in the enlacing of the tape around the object, and means for urging the tape against the endless conveyor belt means along the length of said path between said entrance and exit ends.

4,211,350

WIRE STITCHING MACHINE

Bernard P. Kunka, and George B. Simonelic, both of Racine, Wis., assignors to Interlake, Inc., Oak Brook, Ill.

Filed Nov. 8, 1978, Ser. No. 958,715
Int. Cl.² B27F *7/12, 7/24*
U.S. Cl. 227—8 **31 Claims**



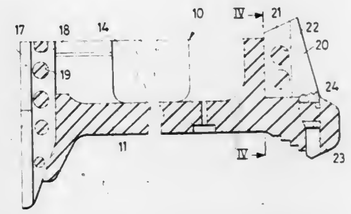
1. In a wire stitching machine including a head frame and staple-forming and driving mechanism and operating means therefor, the combination comprising a support adapted for movement with respect to the head frame, an anvil member coupled to said support for movement therewith and adapted for holding an associated length of wire, and coupling means coupling the operating means to the staple-forming and driving mechanism and to said support for effecting movement thereof, said coupling means being responsive to an initial movement of the operating means for effecting simultaneous movement of the staple-forming and driving mechanism and said support, said coupling means being responsive to further movement of the operating means for arresting movement of said support with respect to the head frame while permitting continued movement of the staple-forming and driving mechanism with respect to said support and the head frame.

4,211,351

MAGAZINE MEMBER FOR HOLDING FASTENING STAPLES AND THE LIKE

Umberto Monacelli, Via Parini 6, Monza (Milan), Italy

Filed Dec. 5, 1978, Ser. No. 967,257
Claims priority, application Italy, Dec. 13, 1977, 23010/77[U]
Int. Cl.² B25C *5/16*
U.S. Cl. 227—120 **4 Claims**



1. A pistol-grip driving tool employing a bench for guiding an array of fasteners to be driven, such as metal staples; including: an ejection runway; a bench-retaining means; said bench being further defined by a central portion and first and second end portions, said central portion being of a plastic material and forming a guideway for row-like arranged fasteners being acted upon by a pusher; said first end portion comprising a first metal inset adapted to form a wall portion of said ejection runway, and said second end portion comprising a second metal inset, adapted for engagement by said bench-retaining means.

4,211,352

NAILING MACHINE

Thomas J. Zilka, 15 Escalon Dr., Mill Valley, Calif. 94941

Filed Feb. 26, 1979, Ser. No. 14,843
Int. Cl.² B25C *1/04*
U.S. Cl. 227—130 **9 Claims**



1. A pneumatic linear thrust hand tool comprising:

a main cylinder;

a ram reciprocable in said main cylinder;

a firing chamber above said main cylinder;

a large main valve operable when opened to bring said main cylinder and said firing chamber into communication;

a charging chamber;

supply valve means for bringing said charging and firing chambers into communication when said main valve is closed;

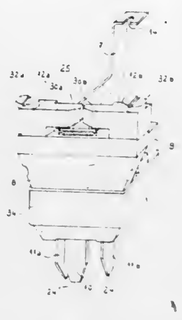
control valve means operative in one position to connect said charging chamber to a source of pressurized gas; and,

a main valve actuator operative in response to flow of gas into said charging chamber to open said main valve.

4,211,353
SAFETY DEVICE FOR FASTENER DRIVING APPARATUS

Jean-Marie Aunis, Bourg-Achard, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Mar. 15, 1979, Ser. No. 20,736
Claims priority, application France, Mar. 20, 1978, 78 07936
Int. Cl.³ B25C *7/00*
U.S. Cl. 227—156 **6 Claims**



1. A safety device for use with an apparatus for driving fasteners, such as pneumatic nailing hammers and stapling guns, the apparatus including an ejection passage for ejecting fasteners, and control means including a trigger for controlling ejection of fasteners, said device comprising:
- a body connectable to said apparatus, said body including an opening alignable with the ejection passage of the apparatus; and
- feeler means operatively associated with said body and substantially circumscribing the ejection passage for preventing actuation of the apparatus by the control means, said feeler means being connected to the control means of the apparatus so that the trigger is released only when said feeler means engages with pressure a surface receiving a fastener, said feeler means including:
- a plurality of independent feeler points interconnected in such manner that actuation of the apparatus can occur only upon simultaneous depression of all of said feeler points, one of said feeler points being connected to the trigger in such manner that the trigger can be actuated only upon depression of the one feeler point;
- locking means for preventing depression of the one feeler point, the locking means being releasable upon simultaneous depression of the remaining of said feeler points; and
- resilient means for urging said feeler points to outermost projecting positions.

4,211,354
METHOD FOR ALLEVIATING THERMAL STRESS DAMAGE IN LAMINATES

Charles A. Hoffman; John W. Weeton, both of Rocky River, and Norman W. Orth, Cleveland, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 6, 1978, Ser. No. 893,857
Int. Cl.² B23K *1/20*
U.S. Cl. 228—118 **9 Claims**

1. A method for making metallic composites comprising at least two alternating layers of metals and metal alloys having different coefficients of thermal expansion and defining an interface therebetween, said method comprising
- providing a plurality of tungsten reinforcement layers,
- providing a plurality of a nickel-chromium alloy matrix layers,
- positively introducing discontinuities into the alloy matrix layers at said interface in said composite so as to reduce thermal stress produced by the unequal thermal expansion of said alternating layers,
- assembling said tungsten reinforcement layers and said metal alloy matrix layers into alternating layers,

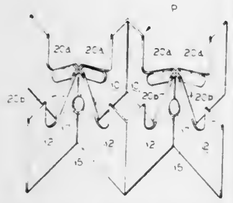


- hot pressing said assembled reinforcement and matrix layers at about 1800° F. for about four hours to form said composite, and
- cooling said composites to ambient temperature.

4,211,355
PARTITION

Boyd T. Skaggs, Louisville, Ky., assignor to Container Corporation of America, Chicago, Ill.

Filed Jul. 30, 1979, Ser. No. 61,697
Int. Cl.² B65D *5/48*
U.S. Cl. 229—15 **2 Claims**

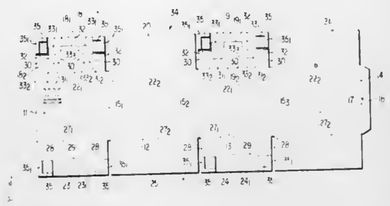


1. A readily erectable, multi-cell partition formed from a generally rectangular unitary blank of foldable sheet material, such as paperboard, comprising:
- (a) a first pair of generally rectangular walls disposed in intersecting planes normal to each other and foldably joined to each other along a first fold line disposed normal to a side edge of said blank;
- (b) a second pair of generally rectangular walls disposed in intersecting planes normal to each other and aligned with said first mentioned planes and foldably joined to each other along a second fold line disposed parallel to and adjacent said first fold line;
- (c) first and second gusset means foldably joining a first wall of said first pair to an adjacent first wall of said second pair and a second wall of said first pair to an adjacent second wall of said second pair;
- (d) each of said gusset means including a pair of gusset elements foldably joined to each other along another fold line disposed parallel to and adjacent said first and second fold lines and being foldably joined to respective adjacent walls of said pairs along fold lines which converge inwardly toward the intersection of planes of said walls.

4,211,356
BUFFERED PACKAGE

Yoichiro Tsuchiya, and Kazuhiro Kyoya, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,207
Claims priority, application Japan, Oct. 20, 1977, 52-141078
Int. Cl.² B65D *5/00*
U.S. Cl. 229—16 R **18 Claims**

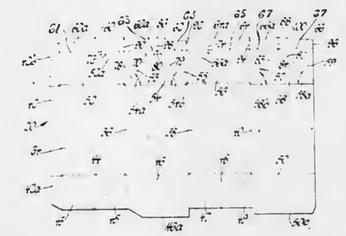


1. In combination
- a generally rectangular blank of stiff, foldable material having
- top and bottom edges and two side edges,
- three fold lines generally extending between the top and bottom edges so that said blank can be folded along the three fold lines and said two side edges placed adjacent one another to thereby form an open, four-sided article,
- two fold lines in the top and bottom portions of each of the first and third of said four sides which respectively define upper and lower inner flaps in said first and third sides; and
- fold lines in each of said lower inner flaps which define a fore-end in each said lower inner flap, each said fore-end being adjacent said bottom edge of the blank; and
- at least one buffer means so attached to a predetermined side of each of said fore-ends that said open, four-sided article can be collapsed flat to form a flat article suitable for storage, said buffer means (a) being on the outside of the flat article to facilitate said storage and (b) being adapted to protect an article placed within a package formed from said open, four-sided article.

4,211,357
CONTAINER AND BLANK FOR CONSTRUCTING SAME

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 755,404, Dec. 29, 1976, abandoned. This application Nov. 3, 1978, Ser. No. 957,393
Int. Cl.² B65D *5/72*
U.S. Cl. 229—17 G **26 Claims**

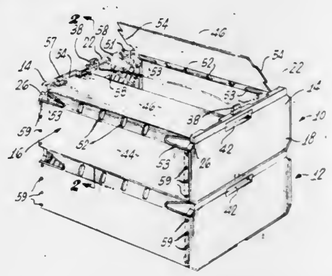


1. In a coated paperboard container including a body portion having top and bottom ends and constructed from a pair of side panels and a front panel connecting the side panels as well as a back panel connected to one of the side panels, and a bottom end closure including folded panels connected to the panels of the body portion at the bottom end thereof, a slant top end closure comprising the combination of: a folded gable roof connected to the panels of the body portion at the top end thereof; a slant top seal for sealing the roof while projecting upwardly and laterally therefrom at an inclined angle so as to be deflectable to permit stacking thereof in a manner that lessens the required storage space; said roof including outer roof panels connected to the side panels extending at inclined orientations therefrom to cooperatively define an upper ridge from which the slant top seal projects; the roof also including front and back triangular gable panels connected to the front and back panels of the body portion and having triangular inner roof panels connecting the gable panels with the outer roof panels; the gable panels including intersecting inclined edges extending from the front and back panels with the angles defined therewith just slightly greater for the inclined edges adjacent the side panel toward which the slant top seal projects than for the inclined edges adjacent the other side panel; the roof outer panels including triangular spout portions adjacent the front panel so as to cooperate with the front gable panel and the inner roof panels connected thereto to provide a pouring spout; said slant top seal including outer seal lips sealed to each other respectively projecting from the outer roof panels and also including folded front and back inner seal lips projecting from the inner roof panels between the outer seal lips respectively above the front and back gable panels; said outer seal lips including straight terminal edges spaced from their associated outer roof panels; one outer seal lip and the outer roof panel connected thereto on the side of the roof ridge toward which the slant top seal projects having a combined height that projects from the associated body portion side panel a shorter distance than the other outer seal lip and outer roof panel on the opposite side of the roof ridge so that said one outer seal lip does not project beyond the straight terminal edge of the other outer seal lip; said inner seal lips including unsymmetrical V-shaped terminal edges having respective vertices and terminating short of the straight terminal edges on the outer seal lips extending generally parallel therewith; the inner seal lips also including opposite ends connected to the outer seal lips; and each inner seal lip having the end thereof connected to said one outer seal lip projecting from the associated inner roof panel a shorter distance than the other end thereof connected to the other outer seal lip so that the slant top seal has a cross section along the roof ridge including folded inner seal lip edge portions that terminate adjacent each other in the inclined orientation thereof to lessen the likelihood of leakage occurring along the seal.

4,211,358
LUG BOX HAVING CORED-OUT PLASTIC END WALLS

Walton B. Crane, Sherman Oaks, Calif., assignor to Industrial Designs and Services, Encino, Calif.

Continuation-in-part of Ser. No. 836,612, Sep. 26, 1977, Pat. No. 4,147,289. This application Jan. 10, 1979, Ser. No. 2,295
Int. Cl.² B65D *5/02, 85/34*
U.S. Cl. 229—23 C **19 Claims**



1. A lug box for holding produce and the like comprising:
- a pair of parallel end walls defining opposite ends of said box, each of said end walls being generally rectangular and cored-out, having top, bottom and side edges, at least one horizontal nailing rib adjacent said bottom edge and at

least one vertical nailing rib adjacent each of said side edges;

a wrapper having a bottom panel extending between and overlappng said bottom edges, a pair of side panels extending between and overlapping said side edges, and at least one lid flap extending between said top edges; and

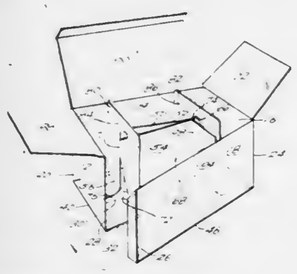
a plurality of nails driven through said wrapper into said ribs to secure said wrapper to said end walls, said nails being substantially perpendicular to at least some of said nailing ribs.

4,211,359

AUTOMATIC MULTICELL CARTON

Richard Chaffin, Port Clinton, Ohio, assignor to Clevepak Corporation, White Plains, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,243
Int. Cl.[2] B65D *5/48*
U.S. Cl. 229—28 R **19 Claims**



1. A collapsible multicell rectangular carton having a collapsed state and an assembled state and being slidably transformable being said states, and formed from an integral blank, said carton comprising:

four side panels including first, second, third and fourth rectangular side panels each having opposing top and bottom edges and two opposing end edges consecutively hingedly connected together in linear end-to-end relation; the distance between the side edges of said first and third side panels and being substantially equal and the distance between the side edges of said second and fourth side panels being substantially equal;

means for hingedly securing together the free ends of said first and fourth side panels;

first, second, third and fourth bottom panels are first, second, third and fourth interior panels respectively corresponding to said first, second, third and fourth side panels to form a rectangular enclosure when said carton is in its assembled state.

said first and third bottom panels each having an outside face, and having opposing inside and outside edges and opposing free side edges, said first and third bottom panels respectively hingedly connected at their inside edges to said first and third side panel bottom edges;

said first and third interior panels each having opposing free side edges and opposing top and bottom edges, respectively hingedly connected at their bottom edges to said first and third bottom panel inside edges;

said second and fourth bottom panels each having opposing an inside edge and an outside edge, said second and fourth bottom panels being respectively hingedly connected at said outside edge to said second and fourth bottom side panel bottom edges, said second and fourth bottom panels being disconnected to said first and third bottom panels, said second and fourth panels each having angled side edge means for pressing different ones of said first and third inside panel outside faces upward when said carton is being collapsed;

said second and fourth interior panels each having an inside and an outside portion, each said inside portion having an inside edge, each said outside portion having a free outside edge, each said portion having a lower edge and a free upper edge, said outside portion lower edge comprising a free edge, said second and said fourth interior panels being respectively hingedly connected at their inside portion lower edges to said second and fourth bottom panel inside edges;

each of said hinged interior panel inside edges being longitudinally aligned when said carton is in its unfolded blank state;

said first and third interior panels each having a corresponding slot, each of said slots respectively having a portion extending across said first and third interior panel bottom edges into said first and third bottom panels, said slots extending sufficiently into said first and third bottom panels to permit said second and fourth interior panel outside portions to slide outwardly of said slots without substantially bending when said carton side panels are collapsed;

said first panel slot slidably receiving one of said second and fourth interior panel outside portions, and said third panel slot slidably receiving the other of said second and fourth interior panel outside portions, when said rectangular side panels are hingedly folded in generally vertical rectangular relation to form the sides of said carton, each of said bottom panels are hingedly folded inwardly, perpendicular to its corresponding side panel and each of said interior panels are hingedly folded into confronting parallel relation to its corresponding side panel;

means for hingedly fixing said second interior panel at its inner portion inside edge to that one said first and third interior panels having the slot means for slidably receiving said fourth interior panel outside portion;

and means for hingedly fixing said fourth interior panel at its inner portion inside edge to that one said first and third interior panels having the slot means for slidably receiving said second interior panel outside portion.

4,211,360

OPENABLE CONTAINER COVER (III)

Raymond G. Scott, Oak Brook, and Lawrence S. Wysocki, Chicago, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,510
Int. Cl.[2] B65D *5/64, 47/04*
U.S. Cl. 229—43 **3 Claims**



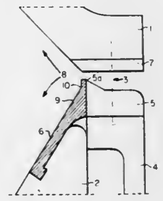
1. An openable cover adapted to span and be marginally secured to a container comprising in combination: a substantially flat paperboard sheet having a first cut score on the upper surface thereof, a second cut score on the lower surface thereof, said cut scores extending therearound and being substantially uniformly spaced from each other and from the edge of the sheet, a third cut score spaced inwardly from the first cut score on the upper surface of the sheet, a fourth cut score spaced inwardly from the second cut score on the lower surface of the sheet, said first and third cut scores defining a pull tongue therebetween, the combined depth of the said first and second cut scores and respectively of said third and fourth cut scores being approximately the thickness of the sheet, a cutout area provided between said first and second cut scores to define a free end edge of the pull tongue, a fifth cut score spaced apart from and extending substantially parallel to said free end edge of said pull tongue, two short cuts provided between said end edge and said fifth cut score to define an easy lift tab, and a protective flat piece at least partially glued to a surface portion of the sheet and covering said cutout area and said easy lift tab.

4,211,361

ANNULAR SEAL FOR SELF-CLEANING SLUDGE CENTRIFUGES

Martin Baram, 13 Svanholmvej, 2660 Brondby Strand, Denmark

Filed Oct. 2, 1978, Ser. No. 948,032
Claims priority, application Denmark, Oct. 14, 1977, 4570/77
Int. Cl.[2] B04B *1/14*
U.S. Cl. 233—20 A **20 Claims**



1. A displaceable annular seal for a self-cleaning sludge fluid centrifuge where the sludge fluid contents are ejected through a peripheral slit which is defined upwardly by an upper bowl part and downwardly by the lower bowl part and by the annular seal, said annular seal being mounted on a ring piston and comprising a relatively soft and elastic sealing part and a relatively stiff and hard reinforcement part, said soft sealing part being fixedly fastened to said reinforcement part at the surface which faces the inner space of said centrifuge with said hard reinforcement part having an upper edge which directly touches said upper bowl part, said soft sealing part and said hard reinforcement part forming a substantially inseparable unit with said soft sealing part facing said fluid in said centrifuge and being deformable upwardly against said upper bowl part by the fluid pressure in said centrifuge, whereby the sealing of said centrifuge is dependent on the flow of said soft sealing part under the fluid pressure in said centrifuge.

4,211,362

SMOKE DETECTING TIMER CONTROLLED THERMOSTAT

Lonnie G. Johnson, 2923 N. Casitas Ave., Altadena, Calif. 91001

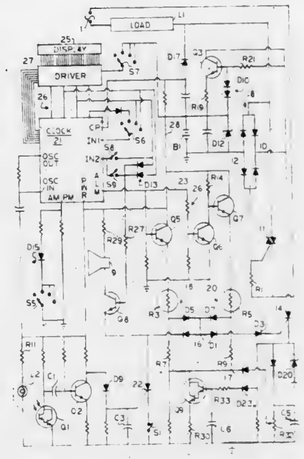
Filed Mar. 27, 1978, Ser. No. 890,825
Int. Cl.[2] G05D *23/00;* **F24F** *7/00*
U.S. Cl. 236—47 **6 Claims**

1. A smoke-detecting, timer-controlled thermostat for controlling the flow of electrical power from a power source to a heat exchanger device used for conditioning the air in an area to be controlled, said thermostat comprising:

a. a temperature control circuit means connected between said heat exchanger device and power source for controlling the flow of power to said heat exchanger device, said temperature control circuit including at least two temperature responsive means that can be alternatively actuated to selectively control the temperature at which said temperature control circuit means will allow full power to flow to said heat exchanger device and a duty cycle control means for determining the temperature change at which said temperature control means will discontinue the flow of full power to said heat exchanger device and for determining the rate at which on-off cycles of said heat exchanger device occur,

b. an adjustable timing circuit means connected to said temperature control circuit means actuating during predetermined time periods a selected one of said temperature responsive means employed in said temperature control circuit means, whereby at predetermined times a selected temperature will automatically be maintained in the controlled area and at least two different temperatures can be selected for alternate times,

c. a smoke detector means connected to said temperature



control circuit means for sounding an alarm in response to the presence of smoke and inhibiting the flow of power to said heat exchanger device by disabling said temperature control circuit means,

d. said timing circuit means further including an output means for supplying a pulsating voltage at an audiable frequency to said smoke detector means, said smoke detector means using said pulsating voltage to produce an alarming sound when smoke is detected.

4,211,363

FLUIDICALLY-CONTROLLED AIR-CONDITIONING SYSTEM

Gene W. Osheroff, Las Vegas, Nev., assignor to McQuay-Perflex, Inc., Minneapolis, Minn.

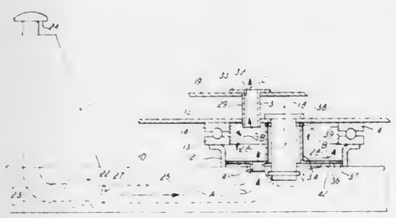
Filed Feb. 11, 1976, Ser. No. 657,200
Int. Cl.[2] F24F *3/06*
U.S. Cl. 236—49 **9 Claims**



1. An air-conditioning system mounted between input and output ducts, the conditioned air entering the system via the input duct and exiting the system for the room or zone to be conditioned via the output duct, said system having hot-water

coils mounted therein and a valve for regulating the flow of hot water thereto, said system comprising: first pure fluid amplifier means for varying the volume of the conditioned air exiting the system according to the air-conditioning requirements of the room or zone, the greater the requirement the greater the volume and vice versa; second pure fluid amplifier means operable to variably open the close the valve according to the air-conditioning requirements of the room or zone, the greater the requirement the less the valve opening and vice versa; and third means coupled between said first and second means, said third means including first apparatus coupled to said first means to limit the variations in the volume of conditioned air to between full and half volume, said third means including second apparatus to activate said second means when said first means has reduced the flow of conditioned air to substantially half volume.

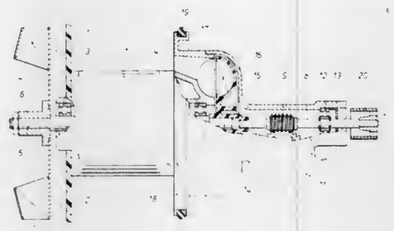
4,211,364
HEATING SYSTEM FOR A REVOLVING CAB
Emory J. Sickler, Wausau, Wis., assignor to J. I. Case Company, Racine, Wis.
Filed Mar. 7, 1978, Ser. No. 884,256
Int. Cl.[3] B60H *1/02*
U.S. Cl. 237—12.3 A **2 Claims**



1. A heating system for a revolving cab, comprising a support structure, a heat source on said support structure, a cab rotatably supported on said support structure, a rotation bearing interposed between said support structure and said cab for rotatably supporting said cab and being annular in shape and defining an air-tight enclosed space, said enclosed space extending around the axis of rotation of said cab and being in air-flow communication with said heat source and with said enclosed spaced being further defined by said support structure and said cab and located therebetween, a blower in flow-communication with an air passageway for blowing heated air from said heat source and into said enclosed space, an air-flow duct extending between said cab and said enclosed space for conducting heated air into said cab, said air-flow duct being offset from the axis of rotation of said cab and extending into said enclosed space to thereby have said air-flow duct in air-flow communication with said enclosed space in all rotated positions of said cab, said air-flow duct and said air passageway having their air blower axes parallel to the axis of rotation for air flow in the axial direction, and air-flow seals interposed between said support structure and said cab and sealing said enclosed space while allowing for rotation of said cab.

4,211,365
MOTOR VEHICLE AUXILIARY HEATER
Reiner Friedl, Starnberg; Karl Dworschak, Munich, and Werner Hornfeck, Unterpfaffenhofen, all of Fed. Rep. of Germany, assignors to Webasto Werk W. Baier GmbH & Co., Fed. Rep. of Germany
Filed Mar. 16, 1978, Ser. No. 887,368
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 7708511[U]
Int. Cl.[2] B60H *1/22*
U.S. Cl. 237—12.3 C **8 Claims**

5. In an auxiliary heater for motor vehicles with a burner assembly for liquid fuels of the type which is provided with a motor having a motor shaft for driving auxiliary assemblies such as a combustion air blower, a fuel pump, rotational atomizer or the like, the improvement comprising a drive shaft having a distal end with respect to said motor mounted in a radial bearing which is supported in a housing of said burner assembly and which has its proximal end with respect to the motor connected to the motor shaft by way of a flexible elastic coupling, such that auxiliary assemblies may be driven by said



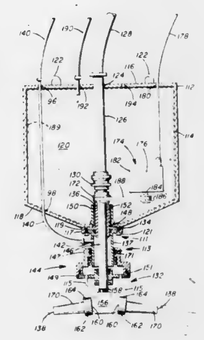
motor by way of said drive shaft, wherein the burner assembly is provided with a combustion air blower fan disposed between the motor and a fuel pump, said combustion air blower fan being mounted upon said motor shaft so as to be rotated thereby, and said combustion air blower fan having a hub formed of a flexible elastic material which serves as said flexible elastic coupling between the motor shaft and the drive shaft.

4,211,366
VEHICLE TIRE TRACTION STRIP
John J. Czarnota, 1614 Scoville Ave., Berwyn, Ill. 60402
Filed Aug. 21, 1978, Ser. No. 935,364
Int. Cl.[2] E01B *23/00*
U.S. Cl. 238—14 **7 Claims**



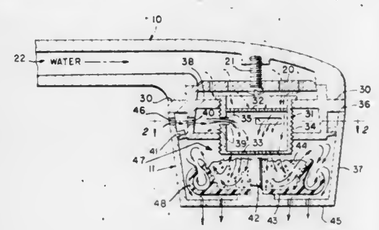
1. A traction strip for driving wheels of motor vehicles comprising
an integrally formed flat and flexible sheet having predetermined size and shape,
a plurality of metal channels contiguously spaced and mounted on each side of said sheet, said channels being equal in size and having side walls substantially perpendicular to their base, and
means for mounting said channels on said sheet,
said channels being secured to said sheet in a back to back position such that the side walls of upper channels register with respective side walls of lower channels, the upwardly directed channels engaging a driving wheel and the downwardly directed channels gripping the road surface, and
the predetermined values of the spacing between adjacent channels and the height of each channel being related to each other such as to exert a limiting effect on the maximum bending of the traction strip in response to the load.

4,211,367
GUNNING APPARATUS FOR IN SITU SPRAYING OF REFRACTORY MATERIAL
Ralph E. Allison, Wheelersburg, Ohio, assignor to BMI, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 780,268, Mar. 23, 1977, abandoned. This application Aug. 16, 1978, Ser. No. 934,327
Int. Cl.[2] B05B *3/02*
U.S. Cl. 239—226 **14 Claims**



1. Gunning apparatus for spraying a refractory product in situ upon the interior surface of a refractory body comprising,
a housing having an interior chamber with an inlet and outlet thereto,
a feed conduit extending through said inlet for conveying a stream of dry refractory material,
a nozzle assembly rotatably supported in said housing outlet, said nozzle assembly having an inlet positioned within said housing and an outlet extending from said housing,
a supply conduit for conveying a wetting agent to said nozzle assembly for mixture with the stream of dry refractory material to form a spray of refractory product from said nozzle assembly outlet,
said nozzle assembly having a mixing chamber portion for receiving the wetting agent and air entrained dry refractory material to form the refractory product,
said mixing chamber being positioned adjacent to said nozzle assembly outlet,
swivel means for connecting said supply conduit to said nozzle assembly to permit rotation of said nozzle assembly relative to said supply conduit as the wetting agent is conveyed to said nozzle assembly,
conduit means connected at one end to said mixing chamber for conveying the wetting agent thereto,
said conduit means being rotatably connected at the opposite end to said swivel means to permit rotation of said conduit means relative to said swivel means,
said supply conduit being connected to said swivel means such that the wetting agent is conveyed to said swivel means and therethrough to said conduit means and said mixing chamber for mixture with the dry refractory material, and
drive means supported within said housing and connected to said nozzle assembly for rotating said nozzle assembly at a preselected speed in a preselected rotary direction to apply the refractory product onto a preselected area of the interior surface of the refractory body.

4,211,368
DEVICE FOR AERATING AND CHEMICALLY ACTIVATING SHOWER WATER
Francis R. Legros, 64, rue Compans, and Alain L. Tourman, 60, rue de Babylone, both of Paris, France
Continuation-in-part of Ser. No. 694,375, Jun. 9, 1976, abandoned. This application Apr. 19, 1978, Ser. No. 897,905
Claims priority, application France, Jun. 9, 1975, 75 17860
Int. Cl.[2] B05B *7/24*
U.S. Cl. 239—315 **1 Claim**



1. A device for physically aerating and chemically activating the waters flowing from a shower having a screen which comprises:
(a) a device including an aerator which fits in fluid tight relationship over the screen of the shower;
(b) said device having an aperture at its periphery to draw air into the aerator;
(c) said aerator having a cylindrical mixing cartridge axially aligned;
(d) said mixing cartridge receiving water from the shower screen at its inlet end;
(e) said mixing cartridge having circumferential apertures to introduce the air to the cartridge;
(f) said mixing cartridge having a screen over its exit end to direct a plurality of fine jets of aerated water downwardly;
(g) magazine attached to said aerator;
(h) said magazine of generally circular shape and attached to said aerator to receive the water jets leaving the screen of the aerator;
(i) said magazine having a screen below the exit screen of the aerator;
(j) said magazine screen directing the water out of the aerator and magazine;
(k) a holder for holding solid hydrofusable chemical for chemically altering the waters flowing from the aerator to the magazine; and
(l) said holder suspended below the aerator to receive the jets of water leaving the screen of the aerator,
whereby a stream of water leaving a shower is simultaneously aerated and chemically activated.

4,211,369
TUMBLING MILLS
Erich Eigner, Lödersdorf, Austria, assignor to Waagner-Biro Aktiengesellschaft, Vienna, Austria
Filed May 3, 1978, Ser. No. 904,915
Claims priority, application Austria, May 5, 1977, 3187/77
Int. Cl.[2] B02C *17/22*
U.S. Cl. 241—182 **5 Claims**

1. In a tumbling mill, such as a ball or tube mill, outer cylindrical shell means having a central axis and inner liner means situated within and carried by said shell means, said liner means including a series of rings distributed along and each surrounding said axis with each ring being made up of a series of plates circumferentially distributed about said axis, said liner means defining therein a hollow interior space surrounded by said liner means and having in a plane normal to said axis a

star-shaped cross-sectional configuration defined by a plurality of concavely rounded outer corners and a plurality of inner corners, said inner corners each defining a sharp point extending inwardly toward said central axis, said outer and inner corners being distributed in an alternating manner circumferentially about said axis, and wherein each ring surrounds a space having said cross-sectional configuration and is angularly offset with respect to an adjoining ring so that the angular orientation of the rounded star corners provided by one ring is different from the angular orientation of the star corners provided by an adjoining ring such that said star-shaped cross-sectional configuration is formed by a pair of squares defining said rounded corners and which are angularly offset one with respect to the other with the rounded corners of one of said squares alternating with the rounded corners of the other of said squares to provide the configuration of an eight-pointed star having said rounded outer corners and said sharply pointed inner corners, the rounded corners of one of said squares all having equal radii of curvature and the rounded corners of the other of said squares also having equal radii of curvature, with the latter radii of curvature being different from the radii of curvature of said one square.

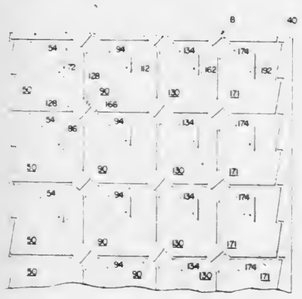


4,211,370

LINING FOR GRINDING MILLS

Clive J. Wilson, Scottsdale, Ariz., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 24, 1978, Ser. No. 963,379
Int. Cl.[2] B02C *17/22*
U.S. Cl. 241—183 **4 Claims**



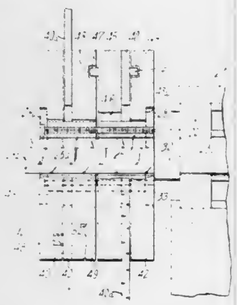
1. A generally rectangular liner plate for grinding mills, said plate having an integral raised lifter bar extending across diagonally opposite corners, bolt receiving holes through said plate and lifter bar for receiving bolts to secure the plate within a grinding mill, and said lifter bar having at least one end extending outwardly beyond one of said diagonally opposite corners.

4,211,371

DEVICE FOR THE BALANCED FIXING AND MOUNTING OF BLADES IN MACHINES PROVIDED TO CUT, CRUSH AND HASH

Eric P. L. Hotimsky, 24 allee des Chalets, Pavillons-sous-Bois, France

Continuation of Ser. No. 808,917, Jun. 22, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,765
Claims priority, application France, Jun. 24, 1976, 76 19231; Apr. 19, 1977, 77 11758
Int. Cl.[2] B02C *18/16*
U.S. Cl. 241—282.1 **13 Claims**



1. A structure for adjustably mounting blades on a drive shaft in industrial machines adapted to cut, crush and hash food products, said structure comprising at least two blades separated by at least one adjusting washer, at least one of said blades having an elongate opening with a median axis accepting therethrough said drive shaft for driving by said drive shaft while permitting radial displacement of said blade relative to said drive shaft, said blade comprising on one side thereof a protruding portion substantially aligned with said median axis, said adjusting washer having a substantially circular aperture accepting therethrough said drive shaft and an arcuate channel in the shape of a spiral in which penetrates the protruding portion of said blade, and means adjustably rotating said adjusting washer relative to said blade for moving the protruding portion in said arcuate channel for radially displacing said blade relative to said shaft, said blades and washers being mounted on said shaft and held thereon by means of conventional tightening means such as nuts and counternuts mounted on said shaft.

4,211,372

FORK ACCESSORY FOR WINDING SPAGHETTI

Janos Zapomel, Oetlingerstrasse 5, 4057 Basel, Switzerland

Filed Nov. 6, 1978, Ser. No. 957,697
Claims priority, application Switzerland, Nov. 15, 1977, 14026/77
Int. Cl.[2] A47J *43/28*
U.S. Cl. 242—1 **2 Claims**

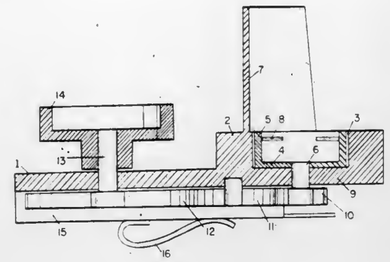
1. A fork accessory for attachment to a dish for winding spaghetti on the fork comprising:

a generally rectangular base having a thickened portion at one edge and a relatively thin portion at the other edge including clamping means to detachably secure said base to a dish, said thickened portion of said base having a circular recess

a rotatable collar in said recess fitted with a plurality of pins protruding inwardly from the circumference of said collar for engaging the forks a shaft joined to the base of said collar, said shaft protruding from the bottom of said base below said recess;

a driving mechanism connected to said shaft;

a hand wheel means connected to said driving mechanism for rotating said collar and wrapping spaghetti about the fork; and



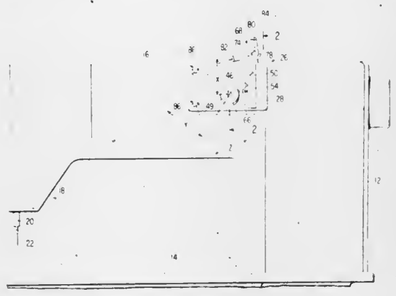
a vertical guiding wall alongside said recess, said guiding wall projecting above said recess to guide the wrapped spaghetti about said fork.

4,211,373

THREAD GUIDING SYSTEM FOR SEWING MACHINE BOBBIN WINDERS

Reinhold Papajewski, Stutenesee; Helmar Holl, and Ulrich Schmedtkord, both of Karlsruhe, all of Fed. Rep. of Germany, assignors to The Singer Company, Stamford, Conn.

Continuation-in-part of Ser. No. 834,206, Sep. 19, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,621
Int. Cl.[3] B65H *54/18, 63/08*
U.S. Cl. 242—20 **2 Claims**



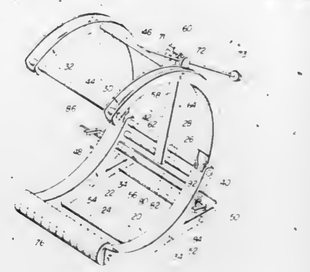
1. In a sewing machine having a drive means for driving sewing instrumentalities, a thread supply, a thread guide having a thread constraining aperture for constraining the thread from the supply, a winding mechanism including a winder shaft with a bobbin receiving spindle of a finite bobbin supporting length and means operatively and selectively connecting the winder shaft to the drive means for rotating the winder shaft and the spindle, the improvement comprising, means for mounting said thread guide relative to said winder such that said thread constraining aperture is disposed in a plane substantially normal to the axis of said spindle intermediate the length thereof, and a plurality of spaced guide members each having a low friction thread engaging surface, said surface being straight, substantially parallel to the axis of said spindle, and of a length at least equal to that of said bobbin supporting length for folding the thread path, said thread path originating at said thread constraining aperture, folding about said guide members in seriatim and terminating at said spindle, the total length of said thread path bearing a predetermined proportion or ratio to the bobbin supporting length of said bobbin receiving spindle, the distance from said thread constraining aperture to said bobbin receiving spindle being equal to or less than the distance from any said guide member to said bobbin receiving spindle.

4,211,374

PORTABLE DEVICE FOR SUPPORTING A ROLL OF ALUMINUM SHEETING FOR DISPENSING

Lawrence P. Salvino, 285 Milton Rd., Waucanda, Ill. 60084

Filed Mar. 1, 1979, Ser. No. 16,450
Int. Cl.[2] B65H *75/02*
U.S. Cl. 242—55 **4 Claims**



1. In a device of the class described comprising:

(a) a pair of stationary, concaved, inverted U-shaped channels fixedly secured together in spaced relationship;

(b) a pair of elongated, convexly shaped, U-shaped channels pivotally affixed one to each of said concave channels at one end thereof and secured in spaced relationship;

(c) an upwardly extending bracket positioned medially between said channels;

(d) adjusting means cooperating with said bracket for fixedly securing said convex channels in variable position relative to said concave channels; and

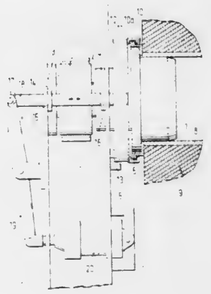
(e) shiftable means on said concave channels to secure a roll of aluminum sheeting in said device to prevent lateral movement of said roll.

4,211,375

CHUCK FOR WEBS OF MATERIAL WOUND ONTO SPOOLS

Peter Weiss, Neuss, and Karl Thievessen, Düsseldorf, both of Fed. Rep. of Germany, assignors to Jagenberg Werke Atkiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,511
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1978, 2814338
Int. Cl.[2] B21C *47/00;* **B65H** *17/02*
U.S. Cl. 242—81 **5 Claims**



1. In an apparatus for rotatably mounting a web on a spool including two chucks, each carried by a shaft which is rotatably mounted in a mounting frame, and each having a mandrel axially delimited by a stop flange and on which the spool is releasably clamped, the improvement comprising for each chuck: a stripping ring disposed about the mandrel between the stop flange and a spool to be received and configured to be

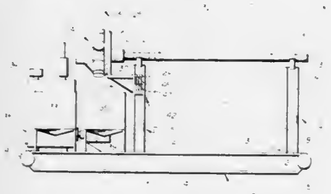
axially slidable therealong, wherein the ring comprises an axially extending collar, and actuating means mounted on the mounting frame and coactive with the stripping ring to effect the axial displacement thereof away from the stop flange so as to strip the spool from the mandrel, said actuating means comprising a pressure member mounted for movement from a rest position to an operative position and having means for grasping the collar of the ring at at least two points uniformly distributed over its periphery and pushing it away from the stop flange when in the operative position, and permitting the free rotation of the ring when in the rest position.

4,211,376

PORTABLE CABLE SPOOLER FOR WELLS

Lloyd E. Martin, 5418 Bridge Forrest Dr., Houston, Tex. 77088

Filed Jul. 20, 1979, Ser. No. 59,456
Int. Cl.[2] B65H *75/40*
U.S. Cl. 242—86.5 R **8 Claims**



1. A portable, field-powered cable spooler for oil wells comprising

a supporting skid comprising a rectangular framework constructed of structural steel members joined in rectangular form and including laterally extending support members at each end extending beyond the sides of said skid with end portions adapted to be secured by lifting apparatus for transporting the same,

a pair of vertically extending supports extending from and secured on said skid in longitudinally spaced relation thereon,

open-top trunnion bearings supported on said supports,

a support member secured on one of said supports adjacent to the trunnion bearing thereon,

a hydraulic motor supported on said support member,

an axle member adapted to support and drive a well cable spool for feeding and winding power cable,

said axle member being removably supported in and operated by said hydraulic motor and supported on said trunnion bearings,

a hydraulic pump supported on said skid and hydraulically connected to said hydraulic motor for reversibly driving the same, and

motor means supported on said skid and operatively connected to said pump to drive the same to operate said hydraulic motor to rotate a cable spool supported on said axle.

4,211,377

LOCKING DEVICE FOR A SEATBELT SYSTEM

Jun Yasumatsu, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

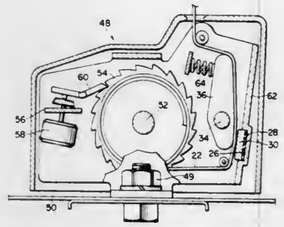
Filed Jan. 4, 1979, Ser. No. 873
Claims priority, application Japan, Mar. 24, 1978, 53-38186[U]
Int. Cl.[2] A62B *35/02*; **B65H** *75/48*
U.S. Cl. 242—107.2 **6 Claims**

1. A locking device for seatbelt systems for vehicle comprising:

a base;

a receiving part provided on said base;

a pressing part which is normally separated from the receiving part so that it allows the passenger-restraining seatbelt to pass freely between the pressing part and the receiving part and clamps the seatbelt between the pressing part and the receiving part during a vehicular emergency; and



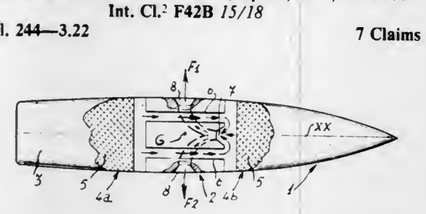
a shock-absorbing part interposed between the base and the receiving part, and which is deformed by the pressing force of the pressing part so that the receiving part is caused to face in the direction from which the pressing force is received.

4,211,378

STEERING ARRANGEMENT FOR PROJECTILES OF THE MISSILE KIND, AND PROJECTILES FITTED WITH THIS ARRANGEMENT

Roger Crepin, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Apr. 6, 1978, Ser. No. 894,209
Claims priority, application France, Apr. 8, 1977, 77 10755
Int. Cl.[2] F42B *15/18*
U.S. Cl. 244—3.22 **7 Claims**



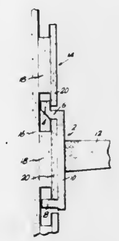
1. A piloting arrangement for a guided missile having a body comprising, in combination, two gas generators in said missile body for providing a source of gas flow, said two gas generators being coupled in parallel and disposed symmetrically at either side of the center of gravity of said missile body, a nozzle having a throat disposed between said two gas generators coaxially with the longitudinal axis of said missile, conduit means in said missile for conducting said gas flow from said gas generators to said nozzle throat, a plurality of peripheral ejection openings in said missile body localized in the vicinity of a plane perpendicular to the longitudinal axis of said missile body containing the center of gravity of said missile, a plurality of divergent conduits in said missile body for connecting said nozzle to said peripheral ejection openings, said divergent conduits having a curvature whereby the lateral force resulting from the flow of gas through said ejection openings passes effectively through the center of gravity of said missile, a pivotally mounted mounted blade having sides disposed partially in the neck of said nozzle, said blade sides forming part of the walls of said divergent conduits and means for pivoting said blade into a selected position for controlling the distribution of said gas flow through said divergent conduits and said ejection openings.

4,211,379

PANELBOARD AND MOUNTING FIXTURE COMBINATION

Myron B. Morgan, 15200 SW. 78 Ct., Miami, Fla. 33157, and Steven F. Sharloe, 18101 NW. 68 Ave., Miami Lakes, Fla. 33015

Filed Nov. 20, 1978, Ser. No. 961,881
Int. Cl.[2] A47G *29/02*
U.S. Cl. 248—222.2 **4 Claims**



1. A panelboard structure and mounting member combination, comprising,

an upstanding back plate,

a plurality of elongated, horizontally aligned spacing members in equi-distance relationship fixedly secured to said back plate,

a front plate having a plurality of elongated, horizontally aligned grooves disposed therethrough in equidistance relationship,

said grooves thereby defining a plurality of elongate, horizontally aligned front plate portions,

each said groove disposed on said front plate substantially intermediate of said spacing members,

said grooves having a width less than the spacing between said spacing members,

a mounting member configured and dimensioned to be received in sliding engagement against an associated one of said front plate portions,

said mounting member having a body portion having an outer base rectangular flat member for positioning against one of said front plate portions,

one guide member extending perpendicularly from said body portion as one of a pair of opposed locking jaws secured to one end of said rectangular member,

an opposite locking jaw member terminating in an offset locking piece,

said locking piece extending perpendicularly from said opposite locking jaw member so that it is disposed rearwardly of said front wall portion when said mounting fixture is in position,

said outer base rectangular flat member having a breadth substantially greater than the width of said grooves so that wobble of the rectangular member against the front plate portion is made minimal,

whereby positioning the mounting fixture on said panelboard provides a laterally movable, non-wobbling sliding face across said front plate portion.

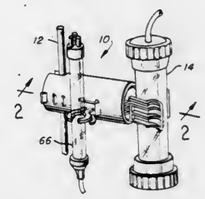
4,211,380

UNIVERSAL HOSPITAL BRACKET

Thomas R. Lillegard, Crystal Lake; Richard A. Rollins, Mundelein, and Ronald C. Stauber, Hawthorn Woods, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Sep. 28, 1978, Ser. No. 946,590
Int. Cl.[2] A47B *96/06*
U.S. Cl. 248—229 **15 Claims**

1. A universal clamp assembly for use in supporting and grasping a medical appliance which includes: an elongated unitary housing having means for securing said assembly to a pole or other support; a pair of opposed arms having outer ends extending outwardly from said housing and which define a jaw for grasping an appliance, each of said arms having pivot point means for pivotally securing said arms to said housing and said arms pivotally movable between an open position and a closed or grasping position; means cooperating with said arms for permitting said arms to be rotated about the axis of the housing; and rotatable biasing means carried in said housing and cooperating with said arms so as to resiliently bias said arms toward a closed or grasping position with a force sufficient to grasp a medical appliance placed between said arms and wherein each of said arms includes an inner portion extending inwardly into said housing and rearwardly from said pivot point means, and said biasing means including cam means for camming cooperation with the inner portion of each of said arm means, and spring means for urging said cam means against said inner portions of said arm means and causing said arm means to pivot and thereby cause said jaw to close and grasp said appliance.

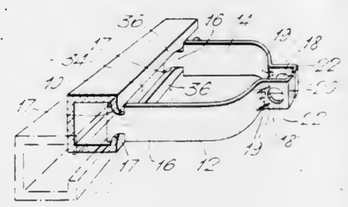


4,211,381

MOUNTING DEVICE

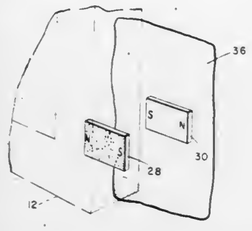
Robert A. H. Heard, Church Farm, 63 Church La., Backwell, Bristol BS19 3JJ, England

Filed May 26, 1978, Ser. No. 909,960
Claims priority, application United Kingdom, May 31, 1977, 23038/77
Int. Cl.[2] A47B *96/06*
U.S. Cl. 248—231 **8 Claims**



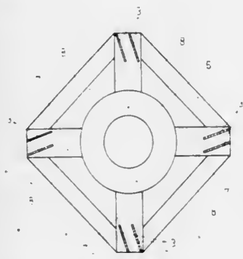
1. An attachment member for use in fixing an article to a channel-shaped member, the mouth of the channel being restricted by inturned lips, the attachment member comprising a head part to be located within the channel and be retained by the lips thereof, a narrower neck part connected to the head part for extending through the restricted mouth of the channel, and a body part connected to the neck part and attached or adapted for attachment to a strap to be fastened around said article to hold it to the channel-shaped member, the neck part of the attachment member widening in the region of the head part, but with at least the initial widening being spaced from the head part, to provide shoulders between the neck part and the head part to bear edgewise upon the inside surfaces of the channel lips when the strap is tightened around the post and locally deform the lips so as to key the attachment member against movement along the channel.

4,211,382
PICTURE FRAME RETAINER
Robert J. Bonfils, 6750 Alamo Way, La Mesa, Calif. 92041
Filed Oct. 20, 1977, Ser. No. 843,975
Int. Cl.² A47F 7/14; A47G 1/16
U.S. Cl. 248—467 1 Claim



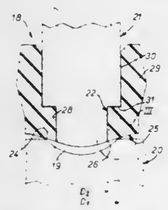
1. An adjustable retaining apparatus in combination with a picture frame for adjustably securing said picture frame into vertical alignment when hanging on a wall, said combination comprising:
a picture frame for hanging on a wall,
at least a pair of magnetically attracting retaining members for securing the lower edge of a picture frame into preselected aligned positions on a wall and permitting infinite lateral adjustment thereof, one of said members being a first strip of generally flat rectangular magnetic tape and including mounting means defined by an adhesive backing for mounting on said frame, the other of said members being a second generally flat rectangular strip of magnetic tape and including mounting means defined by an adhesive backing for mounting said member on said wall in opposed attracting relationship and oriented to permit infinite lateral sliding movement between said pair of retaining members while maintaining said attracting relationship.

4,211,383
ARRANGEMENT FOR SUPPORTING VERTICAL-AXIS MACHINE HOUSING
Mihailo Starcevic, Mellingen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland
Filed Apr. 22, 1977, Ser. No. 789,885
Int. Cl.² F16M 13/00
U.S. Cl. 248—603 7 Claims



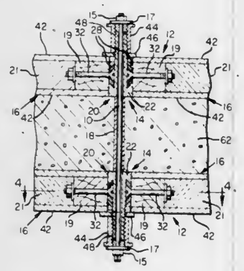
1. In a support structure for a component of a vertical-axis machine which expands under operating conditions due to generation of heat, an improved support structure for maintaining a stabilized circularity of said component during thermal expansion, said improved support structure comprising:
a plurality of plate springs arranged in substantially vertical planes, said plate springs each being individually secured between said component and a support member to support the component of the vertical axis machine, each of said plate springs being skewed relative to a radial projection both extending from the vertical axis of said machine and intersecting said plane in which each of said plate springs is arranged so that an acute angle between 0° and 90° is formed between the vertical plane in which each of the plate springs is arranged and the radial projection extending from the vertical axis of the machine.

4,211,384
MOLDING ASSEMBLY FOR CASTING SOFT CONTACT LENSES
Claude Bourset, Creteil, and William Lenne, Gagny, both of France, assignors to Essilor International (Cie Generale d'Optique), Creteil, France
Filed Feb. 6, 1979, Ser. No. 9,788
Claims priority, application France, Feb. 7, 1978, 78 03323
Int. Cl.² B29C 5/00; B29D 11/00
U.S. Cl. 249—160 11 Claims



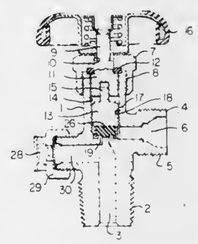
1. A molding assembly for casting soft contact lenses, comprising a concave die and a convex die disposed opposite each other and a resilient material gasket establishing a junction between the peripheries of the dies defining together a molding cavity, the outer perimeter of the molding cavity being defined by line contact between a sealing ridge and a bearing surface, the sealing ridge being part of one of the concave die and the annular gasket and the bearing surface being part of the other of the concave die and the resilient material gasket.

4,211,385
CONCRETE FORM STRUCTURE
Ronald C. Johanson, Vancouver, Wash., and Bill W. McDonald, Lake Oswego, Oreg., assignors to Foam-Ply, Inc., Portland, Oreg.
Filed Nov. 16, 1978, Ser. No. 961,122
Int. Cl.² E04G 11/08
U.S. Cl. 249—192 14 Claims



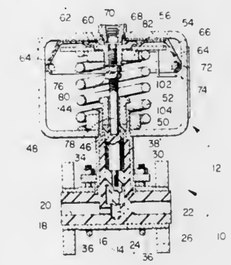
1. In a concrete form,
a plurality of panel members fitting together edgewise,
a plurality of arcuate segments secured to the edges of the panel members and forming a sleeve when the panel members are fitted edgewise together,
a first fastening member having a shank portion extending through the sleeve and also having an undercut head at one end thereof for overhanging one end of each of the segments,
and a second fastener member for drawing the head over the ends of the segments to hold the segments against separation.

4,211,386
SLOW OPENING CYLINDER VALVE
William C. Yocum, Mt. Lebanon Township, Allegheny County, and David E. Hughes, Whitehall Borough, both of Pa., assignors to Superior Valve Company, Washington, Pa.
Filed Mar. 28, 1979, Ser. No. 24,560
Int. Cl.² F16K 1/52
U.S. Cl. 251—122 8 Claims



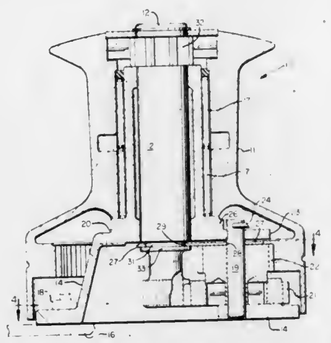
1. A cylinder valve comprising a valve body having a projecting raised annular valve seat surrounding a gas passage, a stem in threaded relation to the valve body whereby rotation of the valve stem in the valve body moves the valve stem toward and away from the valve seat, a circumferential shroud extending from the end of the valve stem and surrounding the valve seat when the valve is closed and partially open, a resilient seal member positioned within the recess on the end of the valve stem formed by the shroud, said resilient seal member having a tapered projection which extends into the gas inlet passage when the valve is in closed position and provides a gas tight seal between the valve stem and the valve seat.

4,211,387
VALVE CONSTRUCTION
Williams G. Getchell, and Norman A. Lambert, both of Warren, R.I., assignors to G. W. Dahl Company, Inc., Bristol, R.I.
Filed Mar. 13, 1978, Ser. No. 886,625
Int. Cl.² F16K 41/10, 31/365
U.S. Cl. 251—335 B 9 Claims



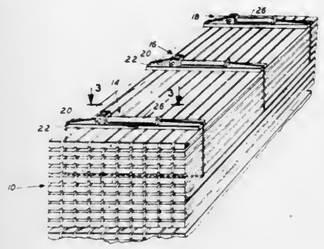
1. A valve and valve actuation assembly for controlling the flow of fluids therethrough, said valve assembly comprising a housing including a bonnet and a valve chamber, a longitudinal bore within said bonnet and communicating with said valve chamber, a longitudinally extendable hollow bellows assembly positioned in said bore, means at a first upper end of said bellows for simultaneously positioning the upper end of said bellows in fixed relationship to said bonnet and for sealing said bore, a plug positioned at the opposite end of said bellows and forming an end closure therefor whereby the outer surface of said bellows is substantially fluid impervious, said plug adapted for movement within said chamber between open and closed positions thereof, said actuator assembly including a frame in turn having an actuator rod extending through a fframe opening into the hollow interior of said bellows through an opening positioned above said sealing means in said first end thereof, said rod alternatively extends or contracts said bellows within said bore and moves said plug between said open and closed positions of said valve whereby fluid within said chamber and said bore is prevented from cc ntacting said actuator rod, said bellows assembly comprising a member including a lower plug portion, an intermediate bellows portion having a plurality of accordion pleats and an upper head portion including an outwardly extending sealing and positioning flange, said actuation assembly connected to said bonnet and including actuation drive means including a return motion coil spring housed therein for moving said rod longitudinally with respect to said bore, said bore terminating in an upper inwardly directed seat, an internally threaded bore extension positioned above said seat, said bore extension extending into the interior of said spring and adapted to receive a first threaded nut therein, lower surface portions of said flange adapted to engage said seat and said first nut adapted to engage upper surface portions of said flange whereby said bellows member head is sealingly and fixedly retained within said bore, and said bore extension also having an outer threaded surface portion extending into said actuator assembly frame through said frame opening for receipt of a second nut, said second nut also positioned within the hollow interior of said coil spring and adapted for contact therewith so as to simultaneously position said spring and attach said actuation assembly to said bonnet.

4,211,388
REMOVABLE MAIN SHAFT RETAINER FOR DECK WINCH
Jesus Guangorena, Atherton, Calif., assignor to Barient Company, Menlo Park, Calif.
Filed Sep. 1, 1978, Ser. No. 938,808
Int. Cl.² B66D 1/30
U.S. Cl. 254—344 12 Claims



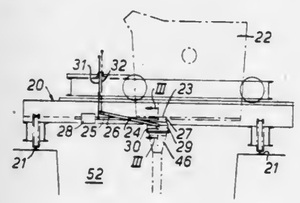
1. In a deck winch having a base, a main shaft disposed centrally within the base, a pinion assembly including a pinion shaft mounted in the base and a plurality of gears disposed about the pinion shaft, and an exterior drum driven by the pinion assembly, an improved main shaft retaining means permitting removal of the main shaft without removing the winch from the deck, comprising:
a circumferential ridge on the main shaft;
a generally flat keeper member oriented horizontally within the winch, having a retaining edge engaging the main shaft, positioned above the upper side of the main shaft ridge in the assembled winch; and
means associated with the pinion assembly for retaining the keeper member in position in engagement with the main shaft when the winch is assembled, and for permitting removal of the keeper member after the drum is removed.

4,211,389
RESILIENT ARTICLE STACK BINDER
Lawrence A. Frey; Robert E. Harrison, both of Portland, and James E. McGriff, Oregon City, all of Oreg., assignors to Timber Conversion, Inc., Portland, Oreg.
Filed Apr. 27, 1978, Ser. No. 900,473
Int. Cl.[2] B60P *7/12;* **B61D** *45/00;* **B66D** *1/48*
U.S. Cl. 24—269 **3 Claims**



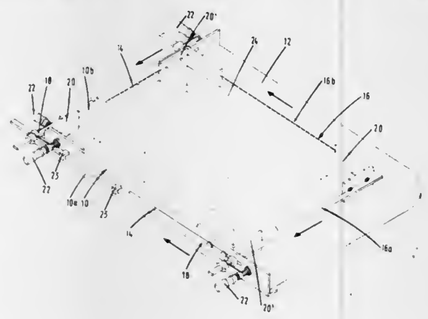
1. Apparatus for binding a group of articles comprising
an elongate flexible element which may extend about such articles,
a takeup device for taking up a portion of such flexible element to reduce the effective length of said element,
an elongate spring,
an elongate spring guide, one end of which is operatively connected to said takeup device, within which said spring is mounted,
an abutment, formed at the other end of said guide, which one end of said spring engages,
a head secured to the other end of said flexible element, which head extends into said guide to engage the end of said spring opposite its abutment-engaging end to compress said spring when urged toward said abutment, and
limiting means interposed between said head and said abutment operable to limit the deflection of said spring.

4,211,390
APPARATUS FOR SHIELDING MOLTEN METAL DURING TEEMING
Brian Poole, South Leverton, and Philip J. Young, Tuxford, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed May 7, 1979, Ser. No. 36,487
Int. Cl.[2] B22D *11/10, 23/00;* **C22B** *9/00*
U.S. Cl. 266—207 **7 Claims**



1. Apparatus for shielding molten metal during teeming which apparatus comprises a first arm pivotably mountable on a carriage for carrying a ladle, a second arm pivotably mountable on said carriage, a first cylinder open at both ends, connected to said first arm and having one end which, during teeming, is urged against the pouring spout on the bottom of a ladle mounted on said carriage, a second cylinder open at both ends, connected to said second arm, and moveable relative to said first cylinder to vary the distance between said first and second cylinders, and means to introduce a shielding gas into the interior of said cylinders, the arrangement being such that, in use, after the pouring spout of a ladle is arranged over a pouring trumpet, said arms can be moved so that said first and second cylinders define a passageway between the pouring spout on the ladle and the pouring trumpet into which shielding gas can be introduced via said means to inhibit air coming into contact with molten metal as it passes through said passageway.

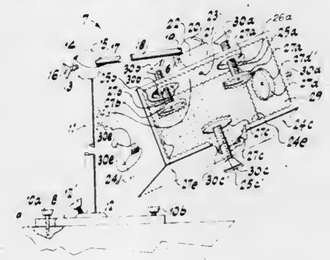
4,211,391
CLAMPING FRAME FOR MAKING RECTANGULAR FRAMES, PARTICULARLY PICTURE FRAMES
Peter Strasser, Münchner Strasse 31, D-8184 Gmund, Fed. Rep. of Germany
Filed Jun. 13, 1979, Ser. No. 48,043
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827772
Int. Cl.[2] B25B *5/14*
U.S. Cl. 269—41 **6 Claims**



1. A clamping frame for making rectangular frames, particularly picture frames, characterised in that a first frame portion (**10**) comprising two limbs (**10***a*, **10***b*) at right-angles to each other and a second frame portion (**16**) comprising two limbs (**16***a*, **16***b*) at right-angles to each other together define a closed rectangular clamping frame, the second frame portion (**16**) being displaceable relatively to the first frame portion (**10**) and the limbs (**16***a*, **16***b*) of the second frame portion (**16**) project outwardly beyond the limbs (**10***a*, **10***b*) of the first frame portion (**10**), that pull rods (**18**) are provided parallel to the limbs (**10***a*, **10***b*) of the first frame portion on the outside thereof, which rods intersect at the corner of the first frame portion (**10**) and engage the projecting limb sections of the second frame portion (**16**), and that clamps (**22**) are provided for tightening the second frame portion (**16**) to the first frame portion (**10**), which clamps can be applied to the sections of the limbs of the second frame portion (**16**) projecting beyond the limbs of the first frame portion (**10**) as well as to the pull rods (**18**) and which are supported on the outside of the limbs of the first frame portion (**10**).

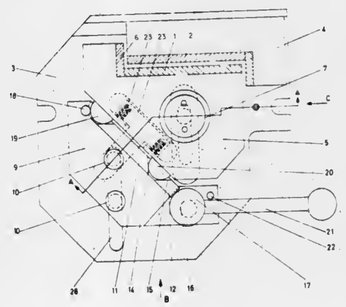
4,211,392
ADJUSTABLE HOLDER FOR MOLDING DENTURES
Richard De Santis, 3533-12th Ave., Brooklyn, N.Y. 11218
Filed Jan. 22, 1979, Ser. No. 5,166
Int. Cl.[2] B25B *1/20*
U.S. Cl. 269—75 **2 Claims**

1. An adjustable dental mold flask holder device comprising in combination: base means for anchoring securely base structure to a substrate surface; first rod-mounting means for mounting a first rod revolvably onto an upper portion of said base means; a first rod extending longitudinally uprightly having a lower rod end thereof revolvably mounted by said first rod-mounting means onto said base means; first swivel means mounted on an upper rod end of said first rod, for swivelly-mounting a second rod onto said upper rod end, and for alternately securing immovably and releasing for adjusting movement of the second rod; the second rod extending longitudinally away from and having a second rod lower and mounted swivelly on said upper rod end of said first rod by said first swivel means; second swivel means mounted on a second upper rod end of the second rod, and for alternately securing immovably and releasing for adjusting movement of and swivelly mounting a holder structure; and a holder means including the holder structure, for alternately clamping securely onto an object to be held and releasing for removal of or receipt of an object, said holder means including opposing supports extending substantially parallel to one-another and permanently rigidly fixed in spaced-apart relationship to one-another, at least one of said opposing supports having mounted thereon an



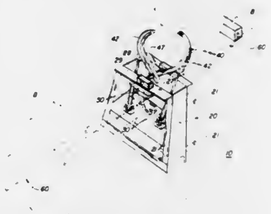
adjustable clamp movable between alternate clamping positions toward and away from the other one of the opposing supports, the opposing supports and all of said adjustable clamps being jointly positioned and having gripping surfaces such that an object may be securely releasably gripped, said holder means being mounted on said second upper rod end by said second swivel means, said holder means including two of said adjustable clamps in at-least two sets of said opposing supports arranged with the opposing supports of one set extending substantially transversely to another set of the opposing supports and thereby the two sets of opposing supports substantially circumscribing a space within which an object is to be gripped and supported by said adjustable clamps.

4,211,393
VISE
Terence B. Olivant, 17 Evington Close, Leicester, England
Filed Dec. 22, 1978, Ser. No. 972,203
Claims priority, application United Kingdom, Dec. 22, 1977, 53377/77
Int. Cl.[2] B25B *5/14*
U.S. Cl. 269—111 **11 Claims**



1. A vise for holding a row of discrete articles, comprising:
a base plate;
a front vise jaw:
a first side jaw fast to one end of the front vise jaw;
a rear vise jaw spaced from the front jaw;
a second side jaw fast to one end of the rear vise jaw and facing the first side jaw across the space between the front and rear jaws, the rear vise jaw and second side jaw being secured fast to the base plate;
means mounting the front jaw and first side jaw to be linearly and angularly movable relative to the rear jaw and second side jaw, the mounting means being slidable over the base plate but retained in close contact with the base plate by means of a stud on the base plate overlying an upper surface of the mounting means; and
means for moving the mounting means towards the rear jaw and the second side jaw to effect clamping of a row of articles simultaneously between the front and rear jaws and along the length of the row between the first and second side jaws.

4,211,394
LOG CLAMPING APPARATUS
Harold J. Sampson, 636 California Way, Space 111, Longview, Wash. 98632
Filed Jun. 11, 1979, Ser. No. 47,034
Int. Cl.[2] B25B *1/04*
U.S. Cl. 269—239 **5 Claims**

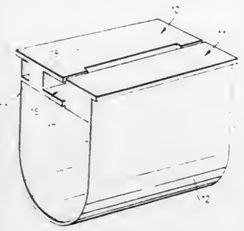


1. A log clamping device comprising:
base support means;
jack means pivotally mounted to said support means;
log clamping means including at least two jaws pivotally connected to said jack means, each of said jaws including an upper substantially arcuate clamping portion and a rectilinear lower portion provided with a smooth upper, substantially planar, log-bearing surface operable to slidingly engage and lift a log received thereon, said jaws each pivotally engaging one another adjacent the terminal free end of said lower portion; and
control means for activating said jack means.

4,211,395
CONNECTOR TOOL
Ernest Edwards, Basingstoke, and Michael K. Jukes, Reading, both of England, assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Sep. 22, 1978, Ser. No. 944,709
Claims priority, application United Kingdom, Nov. 22, 1977, 48616/77
Int. Cl.[2] H01R *43/00;* **B25B** *9/02*
U.S. Cl. 269—254 R **4 Claims**

1. A tool for use in terminating a multi-conductor flat cable to a multi-way electrical connector, said tool comprising: two generally parallel jaws mounted adjacent to and parallel with each other, one of said jaws having a recess for receiving said connector therein and at least one of said jaws having a notch for receiving said cable therein; and a U-shaped spring strip

having each end secured to one of said jaws, said spring strip for urging said jaws toward each other thereby clamping said



connector in said recess and said cable together prior to and during termination of said cable on said connector.

4,211,396

WEB-FED ROTARY PRINTING PRESS

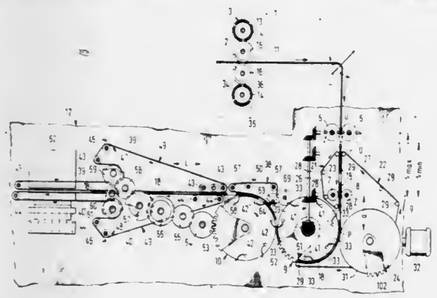
Horst B. Michalik, Hochberg, and Otto T. Weschenfelder, Wurzburg, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,342

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2737858

Int. Cl.² B41F *13/64*

U.S. Cl. 270—13 **1 Claim**



1. A web-fed rotary printing press assembly for printing a web, for severing the web at the proper locations after it has been printed, and for folding various sized printed products, said assembly comprising:

a printing press having one or more forme cylinders, each of said forme cylinders being of an evenly divisible peripheral size to receive varying numbers of printing formes, said varying numbers of printing formes being of different sizes to allow the printing of various sized products, the number of said printing formes secured to said peripheral surfaces of said forme cylinders defining the size of the printed product printed by the printing press;

a folder assembly to cut and fold the various sized products, said folder assembly including cross cutting cylinders, a first take over cylinder, a transfer cylinder, an accelerating conveyor and a longitudinal folding device; said take over cylinder being capable of alternatingly being switched between a collecting mode for collecting a plural number of said printed products together thereon and a non-collecting mode;

means for varying the distance between the axes of said cross cutting cylinders and said first take over cylinders, said distance depending on the size of the printed product;

a switchable gear unit for varying the peripheral speeds of said cross cutting cylinders, take over cylinder, and transfer cylinder in response to the number of printing formes secured to the peripheries of said forme cylinders, said cross cutting cylinders, take over cylinder and transfer cylinder all operating at the same selected peripheral speed with the selected peripheral speed being increased with increasing numbers of printing formes secured to said forme cylinders; and

means for varying the peripheral speed of said accelerating conveyor between a first speed which is the same as the peripheral speed of said cross cutting cylinders, take over cylinder and transfer cylinder when said take over cylinder is collecting and a second speed which is twice the peripheral speed of said cross cutting cylinders, take over cylinder and transfer cylinder when said take over cylinder is non-collecting, said accelerating conveyor delivering said printed products to said longitudinal folding device in a spaced array whereby said various sized printed products from said printing press may be severed from the web at the proper locations and folded.

4,211,397

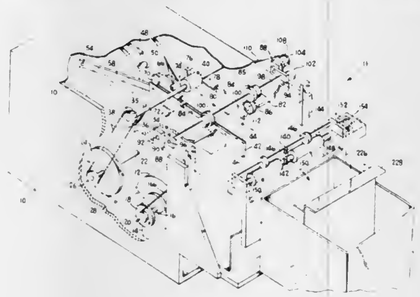
UNIT DOCUMENT FEEDING MECHANISM

Gary G. Hansen, Byram; Leonard M. Pengue, Huntington, and Theodore Watkin, Stamford, all of Conn., assignors to Pitney Bowes, Inc., Stamford, Conn.

Division of Ser. No. 712,233, Aug. 6, 1976, Pat. No. 4,143,981. This application Oct. 10, 1978, Ser. No. 950,081

Int. Cl.² B65H *5/06*

U.S. Cl. 271—4 **5 Claims**



1. Unit document conveying apparatus for conveying documents to and from a work station, the combination comprising:

A. a housing having:

1. a platform;
2. a first motor supported by said housing;
3. document drive means located at said platform;
4. means connected to said motor for selectively operating said drive means to convey a document across said platform upon actuation thereof;

B. means for feeding documents individually onto said platform; and

C. a work station operative to perform work on a document secured to said housing downstream from said platform and having:

1. a document receiving surface parallel to and in tandem with said platform;
2. a shaft having a drive roller thereon located adjacent said surface and having first and second drive members connected thereto, said first drive member being operative to drive said shaft faster than said second drive member, said second drive member having a one way clutch associated therewith that allows said faster rotating drive member to override said slower rotating drive member to rotatably drive said shaft, said drive roller engaging documents to transport the same across said document receiving surface at one speed when driven by said first drive member and at a slower speed when driven by said second drive member;

3. a second motor;
4. first drive connection for selectively connecting said first drive member to said first motor; and
5. second drive connection connecting said second drive member to said second motor.

4,211,398

FEEDERS FOR CARDBOARD AND LIKE BLANKS

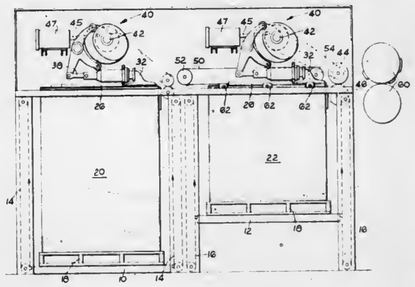
Thomas D. Bishop, Birmingham, England, assignor to The Deritend Engineering Company, Birmingham, United Kingdom

Continuation-in-part of Ser. No. 786,991, Apr. 13, 1977. This application Sep. 14, 1978, Ser. No. 942,465

Claims priority, application United Kingdom, Apr. 22, 1976, 16297/76

Int. Cl.² B65H *3/08*

U.S. Cl. 271—9 **2 Claims**



1. A pair of feeders arranged in line and adapted to the use alternately, each feeder comprising

(a) a platform supporting a stack of blanks to be fed, (b) means for raising the platform to maintain the top of the supported stack at about a predetermined height, (c) a stationary head located above the platform and stack and provided with inlet openings connected to a negative pressure source for sucking a blank into contact with the head, and (d) a reciprocating suction box provided in the head and having its surface substantially co-planar with the surface provided with the stationary inlet openings, for feeding the blanks onwards the mechanism being provided with additional means for transferring blanks one by one in the onward feed direction when the rear of the stacks is in use.

4,211,399

MULTIPLE SIZE PLATE REGISTRATION APPARATUS AND METHOD

Norman L. McGowan, Romoland, Calif., assignor to Eocom Corporation, Tustin, Calif.

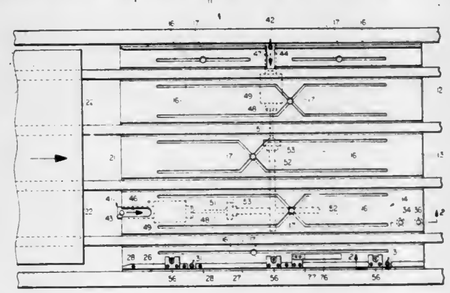
Filed Jun. 9, 1978, Ser. No. 914,283

Int. Cl.² B65H *9/04, 9/06, 9/08*

U.S. Cl. 271—232 **8 Claims**

1. In a multiple size plate registration apparatus for precisely registering plates, a platen having a planar surface of an area which is sufficiently large to support only one of said plates at a time, channels formed in the platen and opening through said planar surface in area of said platen which would be covered by any one of said plates, grooves formed in the platen spaced transversely of the platen, extending longitudinally of the platen and opening through the top planar surface, endless belts traveling in the grooves for carrying a plate onto the planer surface, first and second stop pins mounted in the platen on the forward extremity of the same, means for causing said stop pins to be selectively movable between a retracted position below said planar surface and an extended position above said planar surface, guide means extending longitudinally of the platen on one side of the platen and snubbing means for snubbing a plate on said platen against said guide means and against any one of said first and second pins extending above said surface whereby at least two different sizes of plates can be precisely positioned on said platen and means for supplying a vacuum to the grooves after the plate has been precisely positioned on the platen to permit operations to be carried out on the plate.

5. In a method for registering multiple sizes of plates on a planar surface of a platen having first and second stop pins mounted therein with each being movable between a retracted position below the planar surface and a position above the



planar surface and having a side guide, selectably positioning one of said stop pins to a position above the surface in accordance with a plate to be positioned on the platen, advancing a plate onto the platen and into engagement with the stop pin which has been raised above the surface, snubbing the plate against the stop pin and against the side guide for registering the plate, applying a vacuum to the plate to hold it firmly in place after it is registered, performing additional operations on the plate while it is held in place under a vacuum, retracting the stop pin and advancing the plate off of the platen.

4,211,400

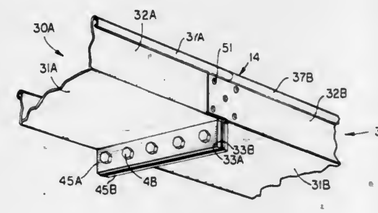
MODULARIZED SLIDE

Sunnie Ray, Litchfield, Mich., assignor to Game Time, Inc., Fort Payne, Ala.

Filed Aug. 11, 1978, Ser. No. 932,703

Int. Cl.² A63G *21/02*

U.S. Cl. 272—56.5 R **9 Claims**



8. A playground slide, comprising:

a plurality of bedway sections and an exit section each having an upwardly facing and smooth bedway floor and laterally spaced sidewalls each having smooth inwardly facing surfaces and a rounded upper edge;

modularized connecting means for connecting said plurality of bedway sections into an end-to-end relation and said exit section to the lowermost one of said bedway sections along the length of said playground slide, said connecting means each including integral flange means at the opposite longitudinal ends of each of said bedway sections which are identical to each other to facilitate the interchanging of said end-to-end order of said bedway sections, said flange means including at least a pair of flanges defined by an integral, longitudinal extension of said sidewalls be-

yond the opposite terminal ends of said bedway section, said end-to-end relation comprising the placement of said flanges into side-by-side overlapping relation, the innermost one of said flanges being integral with the uppermost one of said bedway sections along the length of said playground slide and fastening means defining a plurality of axially aligned holes in each of said side-by-side flanges and a plurality of fasteners received in said holes to fasten said flanges together, the portion of said fasteners on the inside of said bedway having a smooth contour along the inside wall of each of said flanges; and

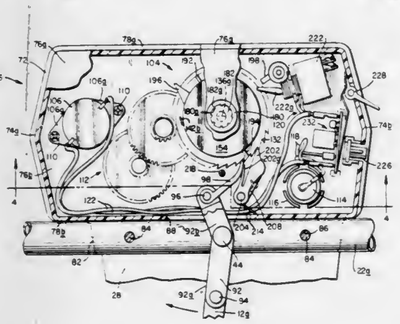
support means for supporting said bedway sections in close proximity to and in close parallelism to the ground.

4,211,401

SWING HAVING ELECTRICALLY REWOUND SPRING MOTOR DRIVE

Joel C. Cunard, Bedford, Pa., assignor to Hedstrom Co., Bedford, Pa.

Filed Nov. 13, 1978, Ser. No. 960,053
Int. Cl.[2] A63G *9/16*; F03G *1/08*
U.S. Cl. 272—86 **23 Claims**



16. In a motorized swing the improvement wherein the motor comprises

A. a housing,

B. a mechanical wind-up escapement-type spring motor mounted in the housing, said motor including

1. a ratchet wheel,
2 a retainer pawl,
3. means for biasing the retainer pawl against the teeth of the ratchet wheel, and
4. a mainspring for urging the ratchet wheel into toothed engagement with the pawl during the winding cycle of the motor,

C. means for periodically rotating the ratchet wheel in the opposite direction to wind up said motor, said winding means including

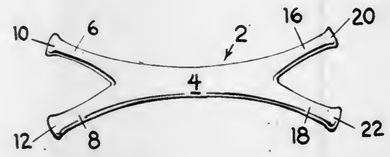
1. a battery,
2. a DC electric motor,
3. means including a clutch for coupling torque between said electric motor and said ratchet wheel only during each said winding cycle, and
4. means including a switch for electrically connecting the electric motor to the battery at the beginning of each winding cycle and for disconnecting the electric motor from the battery at the end of each winding cycle.

4,211,402

GAME AND EXERCISING DEVICE, METHOD OF EXERCISING, AND METHOD OF PLAYING A GAME

Kevin T. Carroll, 747 Marietta Ave., Lancaster, Pa. 17603

Filed Jan. 20, 1978, Ser. No. 870,878
Int. Cl.[2] A63B *21/28*
U.S. Cl. 272—93 **16 Claims**



1. A game and exercising device comprising:

a longitudinal body having a center portion and end portions,

said center portion extending along a longitudinal axis,

said body being substantially rigid for transmitting pushing, pulling, and turning forces, and

four handles,

a first pair of said four handles extending away from each end portion of the longitudinal body and extending away from said longitudinal axis in the same direction and the same degree,

a second pair of said four handles extending away from each end portion of the longitudinal body and extending away from said longitudinal axis in the same direction and degree and opposite to the direction and degree of said first pair of handles,

all of said handles being rigidly fixed with respect to each other and the body,

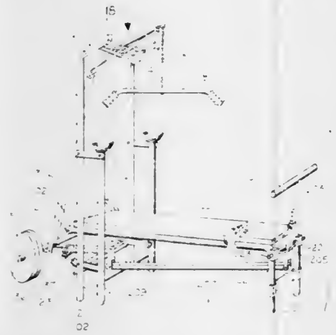
each handle being large enough to accommodate a hand, whereby a person can grasp a handle at each end of said longitudinal body.

4,211,403

WEIGHT LIFTING LEG EXERCISE DEVICE

Matthew Coffaro, 4190 Sierra Chapita, Tucson, Ariz. 85715, and Ronald L. Pelton, 7402 E. Thirty-eighth St., both of Tucson, Ariz. 85730

Filed Jul. 28, 1978, Ser. No. 929,124
Int. Cl.[2] A63B *21/00*
U.S. Cl. 272—134 **3 Claims**



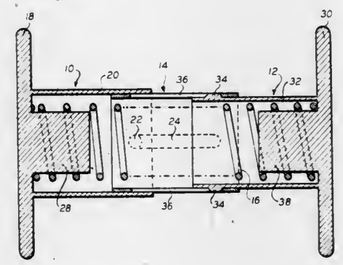
1. In combination, a weight exercise device for attaching to a weight-lifting bench, the weight exercise device comprising cross arm means to receive a person's members; first lever means attaching at a first end to said cross arm means, said first lever means including first fulcrum means operably attached to a first end of the weight-lifting bench for receiving an intermediate portion of the first lever means, said cross arm and a portion of said first lever means extending above the bench; and weight-lifting means adapted to receive associated weights, said weight lifting means also including second lever means pivotally attached to the weight-lifting bench adjacent the second end thereof, said second lever means first end pivotally attached to said first lever means second end through a substantially rigid connecting member, the first lever means and said second lever means comprising, respectively, only one single member each, and said second lever means second end being attached to the associated weights whereby when a person pivotes said cross arms means, the movement of the cross arms means is transmitted through the first lever means, the connecting member and through the second lever means to the attached associated weights to raise or lower the associated weights by pivoting of the second lever means in response to movement of the connecting member and thus provide exercises for the person's members.

4,211,404

TELESCOPING PHYSICAL EXERCISING DEVICE

Frank C. Blowsky, 46-16 195th St., New York, N.Y. 11358, and Kenneth B. Glickman, 11 Waverly Pl., New York, N.Y. 10003

Filed May 12, 1978, Ser. No. 905,235
Int. Cl.[2] A63B *21/00*
U.S. Cl. 272—141 **4 Claims**



1. A physical exercising device comprising: an outer member having a handle portion; an inner member having a handle portion; a compression spring connected between the outer member and the inner member and in cooperative relation with the outer member and the inner member whereby the compression spring will be compressed when the outer member and inner member are caused to be moved with respect to each other; an intermediate member located between the outer member and the inner member which is of smaller cross section than the outer member and of larger cross section than the inner member; and said outer member having means which cooperate with the intermediate member and said inner member having means which cooperate with the intermediate member so that the outer member may slide over the intermediate member and the inner member may slide within the intermediate member.

4,211,405

PHYSICAL EXERCISING DEVICE

Frank C. Blowsky, 46-16 195th St., New York, N.Y. 11358; Kenneth B. Glickman, 11 Waverly Pl., New York, N.Y. 10003, and Alan D. Iscoe, 154-36 Horace Harding Blvd., Flushing, N.Y. 11367

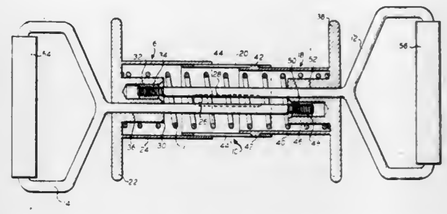
Filed May 12, 1978, Ser. No. 905,236
Int. Cl.[2] A63B *21/00*
U.S. Cl. 272—141 **16 Claims**

1. A physical exercising device comprising:

a first member;

a second member;

a compression spring located between the first and second members so that the compression spring will be compressed when the first member and second member are caused to be moved with respect to each other; a first pull member having one free end and the other end secured to



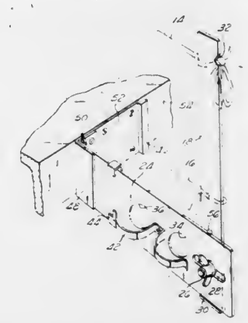
the second member, and a second pull member having one free end and the other end secured to the first member.

4,211,406

TABLE TENNIS NET HOLDER

Layton S. Roesler, and Patricia I. Roesler, both of 3515 Mound, Ventura, Calif. 93003

Filed Jun. 23, 1978, Ser. No. 918,397
Int. Cl.[2] A63B *39/00*
U.S. Cl. 273—30 **8 Claims**



1. A table tennis net holder comprising:

an attaching plate adapted to be secured to the side edge of a table tennis table;

an extension plate having an inner end and an outer end, said inner end being connected to said attaching plate, said extension plate having a first longitudinal center axis, said extension plate being pivotable in respect to said attaching plate from a stowage position directly adjacent said attaching plate to a net supporting position approximately ninety degrees displaced from said stowage position;

an upstanding arm connected by connecting means to said extension plate at said outer end, said upstanding arm having a second longitudinal center axis, said second longitudinal center axis to be located approximately ninety degrees to said first longitudinal center axis with said extension plate in said net supporting position, said upstanding arm to be connectable to a table tennis net; and

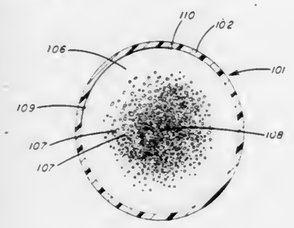
said upstanding arm being adjustably mounted in respect to said extension plate by adjustment means so as to vary the established position of said upstanding arm in a direction along said first longitudinal center axis, said adjustment means being movable to fix said upstanding arm in an established position, and locking means connected to said upstanding arm for locking said upstanding arm in said established position.

4,211,407

GAME BALL

Julius Tomar, Port-au-Prince, Haiti, assignor to Home of Champions, Port-au-Prince, Haiti

Division of Ser. No. 858,415, Dec. 7, 1977, Pat. No. 4,144,297. This application Sep. 18, 1978, Ser. No. 943,145
Claims priority, application Haiti, Dec. 28, 1976, 139
Int. Cl.³ A63B *37/06*
U.S. Cl. 273—60 B **5 Claims**



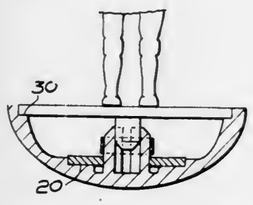
1. In a baseball comprised of a spherical core and a cover, the improvement wherein said core consists essentially of a single spherical mass of partially blown ethylene vinyl acetate copolymer thermoplastic resin having 12% to 30% by weight polymerized vinyl acetate units therein, with foam in the center of said core gradually reducing in cell size radially outwardly to a skin having a density substantially equal to the density of said copolymer; said baseball having essentially the same playing characteristics as a conventional baseball.

4,211,408

FIGURE UNIT FOR SPORTS GAMES

Roy P. Tickle, Tunbridge Wells, England, assignor to Subbuteo Sports Games Limited, United Kingdom

Continuation of Ser. No. 826,313, Aug. 22, 1977, abandoned. This application Mar. 23, 1979, Ser. No. 23,258
Int. Cl.² A63H *15/06*
U.S. Cl. 273—85 R **4 Claims**



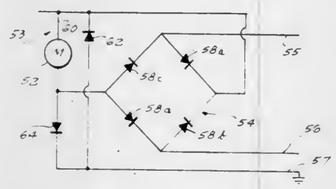
1. In a figure unit for a game where the figure unit is of the type having a figure disposed on a self righting mounting comprised of a base cup whose top is closed by disc means on which the figure stands, the improvement wherein the disc means is secured to the base cup by a concealed connection within that cup, the concealed connection comprising components extending upwardly from the bottom of the base cup and downwardly from the underside of the disc means, said components comprising a spigot, a socket and a ring, said spigot being engaged in the socket, said socket being axially split into resiliently yielding segments, and said ring surrounding the split socket and limiting the resilient yielding of the segments.

4,211,409

TOY VEHICLE GAME AND DRONE VEHICLE

Edwin A. Nielsen, Oceanside, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Division of Ser. No. 824,668, Aug. 15, 1977, Pat. No. 4,141,552, which is a continuation-in-part of Ser. No. 747,442, Dec. 6, 1976, Pat. No. 4,078,798. This application Oct. 10, 1978, Ser. No. 952,893
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.² A63F *9/14*; **A63H** *18/12*
U.S. Cl. 273—86 B **4 Claims**



4. In a toy vehicle game including a guide track defining a pair of lanes along which two toy vehicles may move in side-by-side relation and having a pair of laterally spaced current supply contact strips and a ground strip similarly arrayed in each lane thereof, each of said current supply strips being electrically connected to a corresponding strip in the other and to which current of varying value and reversible polarity is supplied, wherein the improvement comprises a drone vehicle for use on the track including a drive wheel, a drive motor, transmission means drivingly connecting the motor to the drive wheel, three current collectors positioned on the vehicle to be respectively associated with the current supply strips and the ground strip, a four diode rectifier bridge in the vehicle having two input junctions and two output junctions, said input junctions being respectively connected to the two current collectors associated with the current supply strips and said output junctions being respectively connected to opposite sides of the motor; and a pair of additional oppositely arranged diode rectifiers respectively connected between said third current collector and opposite sides of said motor whereby current of predetermined polarity is supplied to the motor regardless of the polarity collected by said first and second collectors to always drive the vehicle in the same direction.

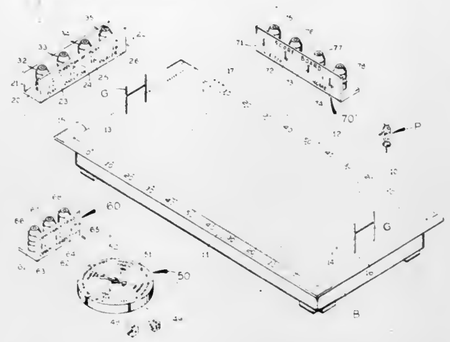
4,211,410

SIMULATED FOOTBALL GAME

William Smith, 7724 Lucerne, Cleveland, Ohio 44130

Filed Feb. 21, 1979, Ser. No. 13,788
Int. Cl.² A63F *3/00*
U.S. Cl. 273—94 **9 Claims**

1. In a simulated football game having:
a game board displaying a football field and having openings spaced apart at predetermined intervals both longitudinally and laterally of the field;
and a plurality of player pieces which are insertable in and removable from said game board openings to simulate football players making up offensive and defensive teams on the field;
the improvement which comprises:
a play selector having a plurality of manually changeable selection devices for designating respectively
(a) any one of a plurality of possible plays by the offensive team;
(b) any one of a plurality of possible directions of the designated play on the playing field; and
(c) any one of a plurality of players on the offensive team who will have the ball upon successful completion of the designated play;



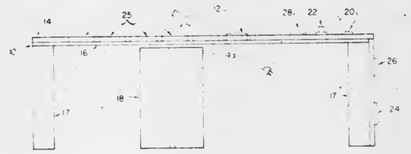
and numerical chance means for determining the yardage of the designated play.

4,211,411

APPARATUS FOR ELECTROMAGNETICALLY GENERATING FIELDS FOR REPELLING OR ATTRACTING PERMANENT MAGNETIC FIELDS FOR THE PURPOSE OF ENTERTAINMENT

Charles E. McDaniel, and Yvonne McDaniel, both of 4300 Alexander St., Bakersfield, Calif. 93307

Filed May 19, 1977, Ser. No. 798,586
Int. Cl.² A63B *67/00*
U.S. Cl. 273—345 **9 Claims**



1. An apparatus suitable for playing a game comprising:
(a) movable permanent magnets;
(b) a mold on which the permanent magnets are placed, the mold being of a non-magnetic material, the mold including recesses into which the magnets can be positioned; and
(c) a movable electromagnetic generator for dispersing a magnetic field, the generator being provided with means for momentarily energizing the generator and means for reversing the polarity of the generator, wherein the electromagnetic generator is capable of being moved to a position relative to a selected one of said permanent magnets that when the electromagnetic generator is momentarily energized it repels the selected permanent magnet so that the selected permanent magent can become attached to an adjacent permanent magnet.

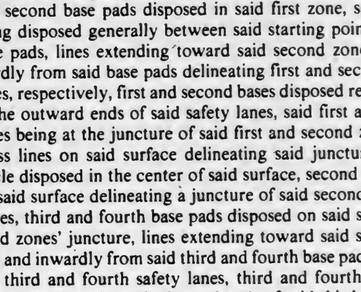
4,211,412

FIGHTING U.F.O'S

Gordon A. Barlow, Skokie, and Anthony T. Janiszewski, Elmwood Park, both of Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Sep. 1, 1978, Ser. No. 938,809
Int. Cl.² A63B *67/00*; **A63F** *9/00*
U.S. Cl. 273—424 **10 Claims**

1. A game device featuring opposing players manipulating flying saucers and attempting to "shoot down" the opposing flying saucers,
said game device comprising:
a base unit;
air compressor means for generating air streams within said base unit;
air tube means for directing said air stream;
flying saucer means,
said flying saucer means rendered mobile by said air stream;



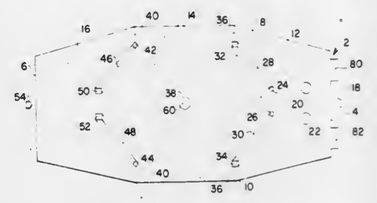
ceiling structure for limiting the upward movement of said flying saucer means; and
means for moving said air tube means to control the direction of movement of said flying saucers.

4,211,413

FIELD GAME

Alberto H. Arzola, 40A Charles St., Jersey City, N.J. 07307

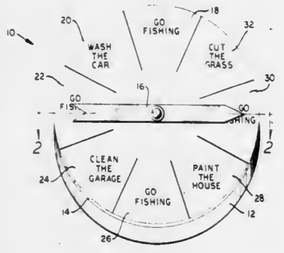
Filed Aug. 15, 1978, Ser. No. 933,717
Int. Cl.² A63B *71/02*
U.S. Cl. 273—411 **10 Claims**



1. A game comprising a ball field and playing apparatus, said ball field comprising a substantially flat surface having first and second end lines parallel to each other and spaced from each other by about three hundred feet and connected to each other at each end thereof by first and second side lines, said surface including first, second and third playing zones, each of said zones being of a length of about one hundred feet, lines proximate said first end line delineating a starting point for a pair of offensive team runners, first and second circles disposed in said first zone delineating stations for defensive team members, first and second base pads disposed in said first zone, said circles being disposed generally between said starting point and said base pads, lines extending toward said second zone and outwardly from said base pads delineating first and second safety lanes, respectively, first and second bases disposed respectively at the outward ends of said safety lanes, said first and second bases being at the juncture of said first and second zones, first cross lines on said surface delineating said juncture, a third circle disposed in the center of said surface, second cross lines on said surface delineating a juncture of said second and third zones, third and fourth base pads disposed on said second and third zones' juncture, lines extending toward said second end line and inwardly from said third and fourth base pads delineating third and fourth safety lanes, third and fourth bases disposed respectively at the inward ends of said third and fourth safety lanes and in said third zone, and a delineation of "home" disposed beyond said second end line and aligned with the center of said second end line, and said playing apparatus comprising a flexible pole upstanding from the center of said third circle, a game ball, said pole being at its free and adapted to releasably retain said ball thereon, and barrier means dis-

posed at said second end line and between said third and fourth bases and said delineation of "home".

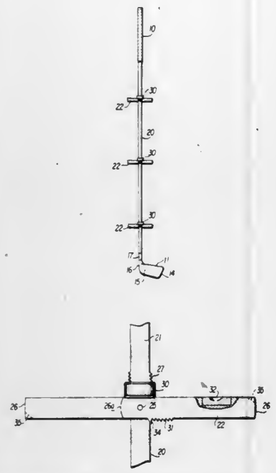
4,211,414
WHEEDLE WHEEL GAME APPARATUS
John C. Moodt, 101 Loyola Cir., Enterprise, Ala. 36330
Filed Mar. 12, 1979, Ser. No. 19,304
Int. Cl.² A63F *5/04*
U.S. Cl. 273—141 A **4 Claims**



1. Apparatus for playing a game comprising:
a base having a central portion and a top surface, said top surface being marked with indicia to divide said top surface into a plurality of first segmented areas and a plurality of second segmented areas, said first and second segmented areas being alternately disposed about said central portion;
pointer means rotatably attached to said central portion of said base for selectively indicating one of said plurality of said first and second segmented areas, said pointer means having a first orientation and an inverted orientation; and
a plurality of magnets, each having opposite poles of magnetic flux, said magnets being operatively disposed on said base and said pointer means such that said pointer means indicates only said first segemented areas when said pointer means is in said first orientation and said pointer means indicates only said second segmented areas when said pointer means is in said inverted orientation.

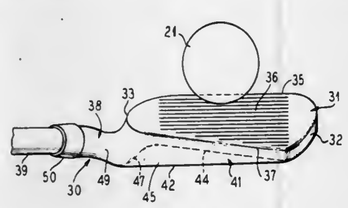
4,211,415
GOLF CLUB COMBINED WITH FOLDABLE EXTENSIONS FOR SURVEYING GREENS
Calvin E. Lindo, 4615 Hillside Rd., SE., Washington, D.C. 20019
Filed Jan. 22, 1979, Ser. No. 5,227
Int. Cl.² A63B *69/36*
U.S. Cl. 273—162 B **10 Claims**

9. A golf club which comprises a grip, a shaft means extending from said grip, and a club head connected to said shaft means opposite said grip, said shaft means being provided with a plurality of ribs which are connected thereto and are movable from a first position wherein said ribs are substantially



aligned with said shaft means to a second position wherein said ribs extend at a right angle relative to said shaft means.

4,211,416
GOLF CLUB
Arthur P. Swanson, 1454 Estate La., Glenview, Ill. 60025
Filed Nov. 22, 1978, Ser. No. 962,880
Int. Cl.² A63B *53/04*
U.S. Cl. 273—164 **3 Claims**

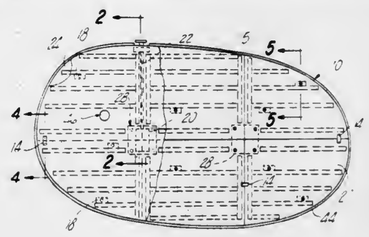


1. A lofted golfing iron which comprises a blade having a heel, a toe of greater height than the heel, a bottom sole having a front edge, an inclined striking face between the heel and the toe extending upwardly and rearwardly from the front edge of the sole, an inclined back face extending upwardly and rearwardly from the sole, a hosel extending rearwardly from the back face of the blade at the heel end thereof and thence curved upwardly and forwardly of the heel, a shaft secured to the upper end of the hosel, the axis of said shaft lying in a plane extending through the longitudinal mid-portion of the blade, and an integral ledge extending rearwardly from the back face of the blade along the top thereof and level with the top of the blade increasing in width from the toe to the heel and defining a rear sighting edge parallel with the front edge of the sole.

4,211,417
PRACTICE PUTTING GREEN
Glen Brown, 1316 Brook La., Rochester, Mich. 48063
Filed Aug. 21, 1978, Ser. No. 935,162
Int. Cl.² A63B *69/36*
U.S. Cl. 273—176 H **6 Claims**

1. A putting green which is contourable relative to a reference surface, comprising a playing surface composed of a plurality of planar members of sufficient rigidity to support the weight of a player, means supporting said playing surface

above the reference surface, said planar members being disposed in adjacent contacting relationship, connecting elements joining said planar members together along the boundaries of said planar members, said connecting elements having a coefficient of elasticity in the direction tangential to said planar members sufficient to resist relative horizontal movement of said planar members, said connecting elements also having a coefficient of rigidity which is substantially constant in the area where said boundaries between said planar members intersect, said coefficient of rigidity of said connecting elements being of



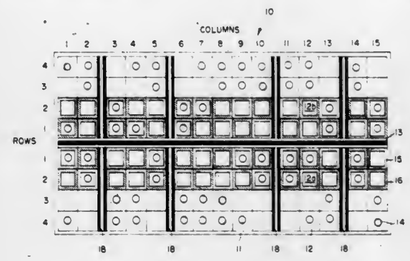
a value such that the effective coefficient of rigidity of said playing surface along said boundaries between adjacent planar members is less than the coefficient of rigidity of said adjacent planar members, a resilient covering on said planar members to form a continuous playing surface, and means to movably and forcibly deflect said planar members at selected locations thereon, said deflecting means acting to deflect said playing surface at said boundaries a greater amount than the planar members adjacent thereto to vary the contour of said playing surface.

4,211,418
UNATTACHED SWING TEACHING APPARATUS
Jess Oppenheimer, 549 Moreno Ave., Los Angeles, Calif. 90049
Filed Feb. 9, 1979, Ser. No. 10,554
Int. Cl.² A63B *69/36*
U.S. Cl. 273—186 R **14 Claims**



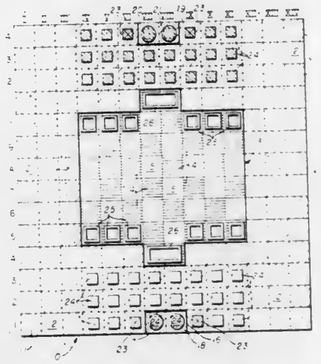
1. An unattached swing teaching apparatus rotatable in response to the swinging of a generally rod-like object, the swing teaching apparatus being adapted for guiding the object through a predefined arcuate path, the swing teaching apparatus comprising:
support means;
rotating means rotatably attached to and supported by the support means; and
guide rod means fixed for rotating with the rotating means, the guide rod means positioned for being intermittently contacted and rotated as the object is swung for guiding the object through the predefined arcuate path.

4,211,419
GAME BOARD AND APPARATUS
Russell E. Larsen, 7034 Etiwanda, Apt. #8, Reseda, Calif. 91335
Filed Dec. 5, 1977, Ser. No. 857,586
Int. Cl.² A63F *3/00*
U.S. Cl. 273—248 **18 Claims**



9. In a game apparatus, a gameboard comprising a side-by-side arrangement of pairs of columns, at least some of said pairs of columns being grouped and segregated into side-by-side column combinations having differing numbers of columns, each pair member being aligned with its corresponding pair member and being separated therefrom by a dividing line, which dividing line, in combination with other dividing lines for other pairs of columns separates said board into opposing sides for use by opposing players, each column member having a forward section and a rearward section, said forward section being positioned in proximate location to said dividing line and having highlighting means for distinguishing it from the rearward section, each of said sections being further divided into segments in column-like arrangement, said gameboard further comprising chance means for selecting a particular column combination.

4,211,420
CHESS-LIKE BOARD GAME
Luis E. Quiroz, 901 W. Cavalcade, Houston, Tex. 77009
Filed Aug. 21, 1978, Ser. No. 935,127
Int. Cl.² A63F *3/02*
U.S. Cl. 273—260 **8 Claims**



1. A chess-like board game for two players comprising:
a checkered board with rows and columns of bilaterally colored dark and light squares,
said board having a central area wherein the dark squares are of a different color from the color of the dark squares of the surrounding area designating a sea,
a plurality of chess-like pieces for each player for movement on said board, all the said chess-like pieces having bases of substantially the same size,

a plurality of boat pieces for each player for movement only in the sea of said board and incapable of indepentent movement,

said boat pieces being initially positioned at the boundary of said sea area, said boat pieces being bowl shaped with a single central recess in the top surface thereof, said recess being of a shape capable of receiving the bases of said chess-like pieces, and being constructed to receive and support at least one of said chess-like pieces,

at least one of said boat pieces sized larger than one of said colored squares and adapted to be placed over a plurality of said squares simultaneously, the single central recess in said at least one boat piece being of a size corresponding to the size of the bases of a plurality of said chess-like pieces placed side by side, such that said at least one boat piece is capable of supporting a plurality of side by side said chess-like pieces within said single recess in an upright manner,

said chess-like pieces including a plurality of different shaped pieces,

each different shaped chess-like piece having a different predetermined mode of movement and being moveable only in said surrounding area and into said boat pieces,

said boat pieces being moveable only when supporting one of said chess-like pieces and taking the mode of movement of the piece supported and thus providing the means for movement of said playing pieces across said sea area,

said boat pieces supporting a plurality of said chess-like pieces taking the mode of movement of each different shaped piece supported thereon, and

said board having marked areas on opposite sides thereof as target areas, the occupation of which by an opponent's pieces being the objective of the game.

4,211,421

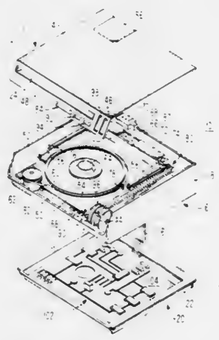
VIDEO DISC PLAYER HAVING ADJUSTABLE END-OF-PLAY SWITCH

Leslie A. Torrington, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,633

Int. Cl.[2] G11B *3/06*

U.S. Cl. 274—9 B **5 Claims**



1. A player for use with a disc record subject to removable occupancy of a protective caddy; said player comprising:

(A) a housing into which an occupied caddy is inserted to load the enclosed record into the player for playback;

(B) a turntable mounted in said housing for supporting and centering said inserted record;

(C) means for rotating said turntable;

(D) a signal pickup for recovering prerecorded information from a turntable-supported record during playback;

(E) a carriage for supporting said signal pickup;

(F) means for translating said carriage during playback along a first path toward the center of said turntable in correlation with the speed of rotation of said turntable;

(G) a movable member mounted in said housing for motion along a second path;

(H) a stop element;

(I) a switch element; wherein one of said elements is secured to said carriage, and the other of said elements is secured to said movable member;

(J) means, subject to engagement with said caddy during a caddy insertion, for selectively positioning said movable member along said second path for varying the point at which the carriage-secured element engages the member-secured element during translation of said carriage toward said turntable center along said first path; and

(K) means responsive to said engagement of said elements for causing cessation of rotation of said turntable.

4,211,422

DAMPING APPARATUS FOR DAMPING THE RESONANCE OF DISC RECORD TONE ARMS

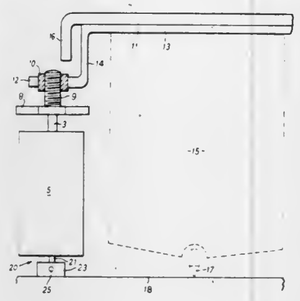
Alexander R. Rangabe, Portsmouth, England, assignor to Zerostat Components Limited, Huntingdon, England

Filed May 17, 1978, Ser. No. 906,865

Claims priority, application United Kingdom, Jun. 1, 1977, 23258/77; Jan. 11, 1978, 1097/77

Int. Cl.[2] G11B *3/10*

U.S. Cl. 274—23 R **11 Claims**



1. In a damping apparatus for damping the resonance of a disc record tone arm, comprising first and second relatively movable elements in engagement with energy absorbing material therebetween, and skid means mounted on one of said elements for engagement, when in use, with the disc record surface, the improvement wherein said skid means comprises:

a cantilever arm anchored at one end thereof to said one element and having a longitudinal axis, wherein said cantilever arm has substantial stiffness both in the direction of the longitudinal axis thereof and in the plane, containing the longitudinal axis of said cantilever arm, normal to the record surface when in use, and further wherein said cantilever arm has substantial compliance transversely to said cantilever arm in the plane, containing the longitudinal axis thereof, parallel to the record surface when in use; and

a skid pad connected to said cantilever arm at the end thereof opposite that end anchored to said one element, said skid pad having a first axis which extends transversely of the longitudinal axis of said cantilever arm, wherein said skid pad has substantial stiffness in the direction normal to the first axis thereof in the plane parallel to the surface of the record when in use,

wherein said skid means has torsional compliance sufficient to enable one end of the longitudinal dimension of said skid pad to surmount material projecting slightly above the record surface while exerting only a small force at the point of anchoring of said cantilever arm to said one element.

4,211,423

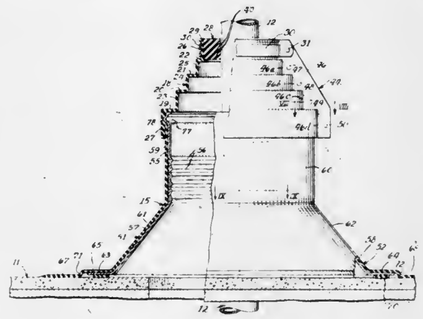
ROOF SEAL DEVICE

Raymond W. Resech, La Grange Park, Ill., assignor to Portals Plus, Inc., La Grange Park, Ill.

Continuation-in-part of Ser. No. 881,186, Feb. 27, 1978, abandoned. This application Dec. 29, 1978, Ser. No. 974,435

Int. Cl.[2] F16J *15/02;* **E04D** *13/14*

U.S. Cl. 277—212 FB **16 Claims**



1. In a device for providing a weather-tight seal on a roof around an object projecting upwardly therefrom, a pair of complementary base sections adapted to be joined together along a generally vertical plane in approximate alignment with said object and together providing an upstanding generally tubular portion for surrounding the object and a peripheral flange portion extending outwardly from the lower end of said tubular portion for engaging the upper surface of roofing material about said object, seal means secured to the upper end of said tubular portion for sealing engagement with said object, each of said complementary base sections including a supporting part of a molded, strong and substantially rigid plastic material and a skirt part of a flexible elastomeric material on said support part, each of said skirt parts having edge portions arranged for overlapping interfitting engagement with edge portions of the skirt part of the other section, said skirt parts having peripheral edge portions together providing a downwardly facing surface adapted to engage an annular portion of the upper surface of roofing material about said object, and an adhesive material for sealing and bonding said downwardly facing surface of said skirt parts to said upper surface of said roofing material.

4,211,424

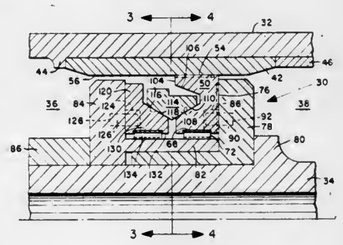
CENTRIFUGALLY COMPENSATED SEAL FOR SEALING BETWEEN CONCENTRIC SHAFTS

Philip C. Stein, c/o Stein Seal Company, 20th St. & Indiana Ave., Philadelphia, Pa. 19132

Filed Apr. 16, 1979, Ser. No. 30,212

Int. Cl.[2] F16J *15/42*

U.S. Cl. 277—25 **12 Claims**



1. A seal between a hollow outer shaft and an inner shaft concentric with the outer shaft having a seal ring having a plurality of segments extending around the inner shaft, an outer circumferential face confronting the inner surface of the outer shaft, a first side face exposed to a region of high pressure between the shafts and a second side face having a portion thereof confronting a mating ring secured to the inner shaft and a portion thereof exposed to a region of lower pressure, and means for urging the outer face of the seal ring into conact with the inner surface of the outer shaft, characterized in that:

a segmented compensating ring extends around the inner shaft and is spaced from the seal ring in the region of high pressure,

a flange is secured to the inner shaft for limiting the axial movement of the compensating ring away from the seal ring,

said seal ring and said compensating ring each have a conical face with the said conical faces facing toward each other;

a continuous balancing ring lies between the seal ring and the compensating ring and has a conical face mating with the conical face of the seal ring and a conical face mating with the conical face of the compensating ring,

Whereby the centrifugal loading of the compensating ring urges the balancing ring towards the seal ring creating a radially inwardly force on the seal ring compensating for a portion of the centrifugal loading of the seal ring.

4,211,425

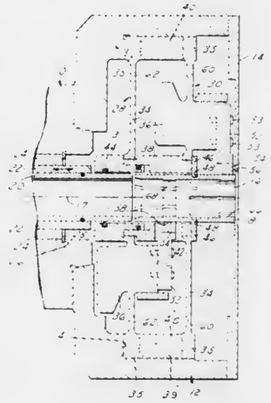
REPLACEABLE COLLET IN DOUBLE DIAPHRAGM CHUCK

James V. Halvorsen, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Division of Ser. No. 845,092, Oct. 25, 1977, Pat. No. 4,133,544. This application Aug. 21, 1978, Ser. No. 934,753

Int. Cl.[3] B23B *31/20*

U.S. Cl. 279—46 R **2 Claims**



1. A work holding collet, comprising:

(a) an elongated tubular body;

(b) a circumferential channel means on the outer diameter of said tubular body approximately midway between the ends of said tubular body for independent deflections of said front and rear ends of said collet;

(c) a plurality of slots extending from the front end of said body extending approximately midway to a point beyond said circumferential channel;

(d) a plurality of slots extending from the rear end of said body extending approximately midway to a point beyond said circumferential channel; and

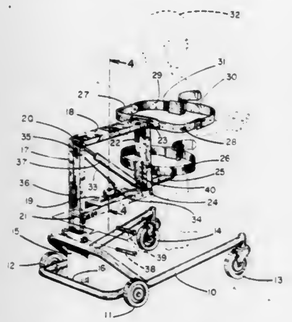
(e) said channel comprising a pair of opposing parallel sidewalls connected by an annular wall parallel to said outer diameter of said tubular body and normal to said pair of opposing parallel sidewalls.

4,211,426

WEIGHT RELIEVING AMBULATOR

Wallace M. Motloch, Menlo Park, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.

Filed Jul. 31, 1978, Ser. No. 929,651
Int. Cl.[2] A47D *13/04;* **A61H** *3/04*
U.S. Cl. 280—87.02 W **13 Claims**



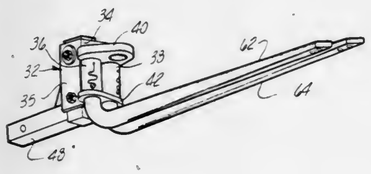
1. A weight relieving ambulator for aiding a patient to walk including, in combination:
(a) a wheel-supported frame;
(b) a body supporting harness;
(c) a parallelogram structure lying essentially in a vertical plane having rear and front portions connected to said frame and supporting harness respectively; and
(d) force providing means providing a tension force between points adjacent to the upper rear and lower front vertices of said parallelogram structure for applying a lifting force on the front portion of said parallelogram structure to oppose the downward weight of a patient held in said supporting harness and thereby relieve at least a part of the weight of the patient on the patient's legs to facilitate walking by the patient.

4,211,427

TRAILER HITCH

David A. Young, Plymouth, and Bruce S. Kimball, Ann Arbor, both of Mich., assignors to Hoover Universal, Inc., Saline, Mich.

Filed Oct. 10, 1978, Ser. No. 949,777
Int. Cl.[2] B60D *1/00*
U.S. Cl. 280—406 A **10 Claims**



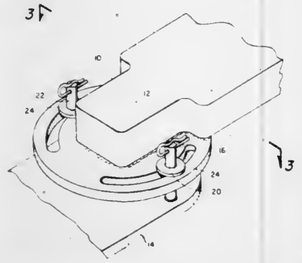
1. A trailer hitch having a ball for use with a socket of a trailer tongue to provide an articulated joint between an automobile on which the hitch is mounted and a trailer on which the trailer tongue is mounted, comprising a pair of substantially vertical-axis pivot means mounted adjacent to said ball at laterally opposite sides thereof, said hitch including a support member having a generally upright mounting face, each of said pivot means comprising a socket tube affixed along its length to said mounting face in a side-by-side relationship with the other socket tube, a pair of normally straight spring rods each having an angular end portion rotatably mounted in an associated one of said socket tubes for lateral pivotal movement of said rods, each of said end portions having a tapered terminal end, a pair of generally vertically disposed flexible suspension members having the corresponding ends thereof attached to the free ends of said rods, and means for mounting on the trailer tongue above said rods engaged by said flexible suspension members for bending said spring rods, said pivot means and said angular end portions having cooperating means preventing axial displacement of said angular end portions, the cooperating means of each pivot means and its associated angular end portion including a circumferentially extending groove near the terminal end of said end portion, an opening in the associated socket tube, a retaining clip having a leg extending through said opening and radially into said groove for preventing axial displacement of the angular end portion relative to its associated socket tube, said clip biasing said leg toward said end portion, said leg being displaced radially outwardly during insertion of said end portion into said socket tube as said leg is engaged by the tapered terminal end of said end portion, said clip biasing said leg into said groove when said end portion is moved to a position in which said leg and said groove are in substantial alignment.

4,211,428

TRAILER SAFETY HITCH

Nolla L. Barcus, 301 Spring Rd., Bartlesville, Okla. 74003

Filed Nov. 21, 1977, Ser. No. 853,222
Int. Cl.[2] B80D *1/06*
U.S. Cl. 280—511 **5 Claims**



1. Auxiliary safety apparatus for a trailer hitch of the type wherein a vehicle frame mounted ball cooperates with a trailer tongue mounted socket, which comprises:
a substantially horizontal plate rigidly secured to the trailer tongue and having a pair of oppositely disposed arcuate slots therethrough in concentric relationship with the socket axis;
a pair of vertical pins having diameter less than the slot width mounted to the frame and extending upwardly through the respective arcuate slots; and
means separate from the frame for retaining the pins in said slots.

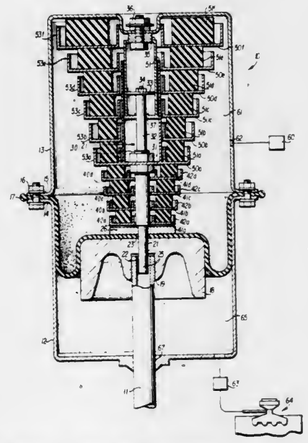
4,211,429

ADJUSTABLE SUSPENSION ASSEMBLY

Durrell U. Howard, 306 Krameria Dr., San Antonio, Tex. 78205

Filed Apr. 19, 1978, Ser. No. 897,891
Int. Cl.[2] B60G *11/22*
U.S. Cl. 280—716 **28 Claims**

1. An assembly for progressively cushioning the transmission of shock forces between first and second relatively movable, spaced members, and comprising:
a first support assembly mounted on said first member and a second support assembly mounted on said second member;
a stack of separate elastomeric members arranged between said first and second support assemblies, with individual elastomeric members increasing in size between opposite ends of said stack of elastomeric members;
retaining means for sequentially deforming said individual elastomeric members a predetermined amount in response to relative movement of said first and second support assemblies toward one another to progressively cushion the transmission of shock forces between said first and second spaced members;
said retaining means comprising a plurality of separate cup-shaped retaining members each positioned between a pair



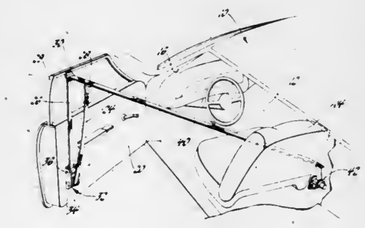
of adjacently disposed elastomeric members with each retaining member including an end portion surrounding and initially spaced from an edge surface of one of said respective elastomeric members, with said end portion extending at a substantially perpendicular angle to a remaining portion of said retaining member;
whereby each respective retaining member deforms an elastomeric member into abutting contact with the end portion of said respective retaining member to cushion a compressive force prior to transmission of said compressive force to an adjacently disposed retaining member.

4,211,430

PASSIVE LAP AND SHOULDER BELT SYSTEM

Richard E. Fancy, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1979, Ser. No. 24,108
Int. Cl.[2] B60R *21/02*
U.S. Cl. 280—802 **3 Claims**



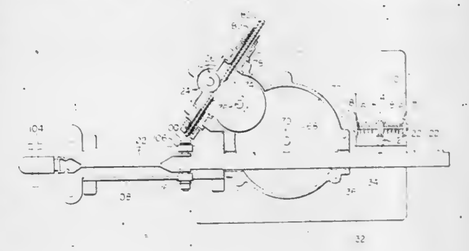
1. In combination with the vehicle body having an occupant compartment in which an occupant seat is accessible through a door opening selectively opened and closed by a movable door, a passive occupant restraining belt arrangement comprising:
a lap belt and shoulder belt having inboard ends joined together at a juncture and outboard ends;
first means retractably mounting the outboard lap belt end on the door generally adjacent the occupant hip;
second means retractably mounting the outboard shoulder belt end on the door substantially at occupant shoulder height, said second retracting means having a relatively greater retracting effort than the first retracting means so that the juncture of the lap and shoulder belts is normally established at shoulder height to stow the lap belt vertically along the door;
a control belt connected to the juncture of the lap and shoulder belts;
third means retractably mounting the control belt on the vehicle body inboard the occupant seat and having a retracting effort relatively less than the retracting effort of the second means so that the control belt extends diagonally between the third means and the shoulder height location of the lap and shoulder belt juncture;
and drive means associated with the third means to forcibly retract the control belt against the bias of the first and second means when the door is closed so that the juncture of the lap and shoulder belts is positioned inboard the occupant to establish the lap and shoulder belts in their respective occupant restraining positions.

4,211,431

ACTUATOR DEVICE FOR SEAT BELT MECHANISM FOR MOTOR VEHICLE

Takeshi Awano, and Toshiyuki Komizo, both of Okazaki, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,866
Int. Cl.[2] B60R *21/02*
U.S. Cl. 280—804 **12 Claims**



1. An actuator device for a seat belt mechanism for a motor vehicle, comprising a rack member slidably received in either one of a door and a vehicle body pivotally supporting the door to allow the door to be opened and closed, at least one link member connecting said rack member with the other of said door and body, a pivoting point of said link member relative to said other of the the door and body being offset from a pivoting axis of said door relative to said body, a seat belt support member operatively connected to said rack member so as to interlock with the latter and responsive to a relative movement between said one of the door and body and said rack member to move a seat belt into a restraining position and an unrestraining position with respect to a passenger, and at least one resilient member provided in said one of the door and body and operatively engaging with at least one of said rack and link members to provide a reaction force counteracting a movement of said rack and link members relative to said one of the door and body, whereby said door is held in a given open position by said reaction force.

4,211,432

WEBBING GUIDE

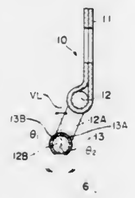
Haruki Furukawa, Toyota; Susumu Usami, Nagoya, and Junichi Nakaho, Ichinomiya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

Filed Dec. 28, 1978, Ser. No. 974,064

Claims priority, application Japan, Dec. 28, 1977, 52/176871[U]

Int. Cl.² A62B *35/00*

U.S. Cl. 280—808 **2 Claims**



1. A webbing guide provided with a contact portion having a center and side portion for receiving and guiding a webbing, wherein: a tape having two opposite ends made of low friction material bonded to the outer periphery of said contact portion, the region of said low friction material bonded to said contact portion covers respective side portions each extending over an angle at least equal to 90° from a vertical line passing the center of said contact portion with the ends of the tape adjacent to each other; and the opposite ends are chamfered at an angle D set at

$$D \leqq \tan^{-1} F/S$$

where S is an internal stress of said low friction material and F is the bonding strength of the bonding agent used.

4,211,433

TWIN SKI

Alec Pedersen, Vancouver, Canada, assignor to Pedersen Industries Ltd., Vancouver, Canada

Filed Jul. 21, 1978, Ser. No. 926,818

Int. Cl.² A63C *5/00*

U.S. Cl. 280—601 **39 Claims**



1. A twinski comprising: an integral mononose section and bifurcated tail sections separated by a longitudinal slot, the tail sections being at least five times as long as the integral nose section, the integral nose section including an upwardly curved forward tip region, the tail sections including a pair of central waist segments comprising a central waist portion, and a pair of terminal tail segments comprising a tail portion, said monoski having its greatest thickness at the central waist portion, and being reduced in thickness both towards the tail portion and the forward tip, the minimum thickness being adjacent to said forward tip region; ski bindings adapted to be mounted on each of said tail sections of said ski adjacent said central waist portion for holding the feet of a skier in side-by-side relation; and bridge means at the tail portion adjustably and floatingly holding the tail sections in predetermined spaced apart relation, so that the lateral spacings are predetermined but yet the tail sections are allowed to move vertically.

4,211,434

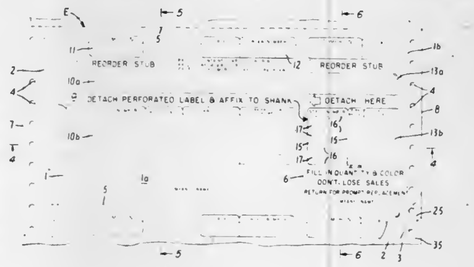
COMBINATION CONTAINER AND CONTROL FORM FOR SHIPPING, IDENTIFYING AND REORDERING MERCHANDISE

Jonathan Reese, 604 NE. 25th Ave., Hallandale, Fla. 33009

Continuation of Ser. No. 588,068, Mar. 13, 1975, abandoned, which is a division of Ser. No. 348,066, Apr. 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 207,249, Dec. 13, 1971, abandoned. This application Mar. 3, 1977, Ser. No. 774,120

Int. Cl.² B41L *1/26*

U.S. Cl. 282—11.5 A **14 Claims**



1. A continuous manifold comprising three continuous bands of paper superposed on one another to form a three-ply structure, means defining feed holes in at least one of the plies adjacent each of the side edges of the manifold, longitudinally spaced transverse lines of perforations through all of said plies dividing said manifold into a succession of contiguous like rectangular units extending across said manifold, a line of perforations through all of said plies extending longitudinally of said manifold between the side edges thereof and positioned farther from a first side edge than from a second side edge, said longitudinally extending line of perforations dividing each of said rectangular units into a larger rectangular portion and a smaller rectangular portion, means bonding the first and second plies of the larger rectangular portion of each of said rectangular units together along said transverse and longitudinal lines of perforations to form a merchandise receiving container open at the edge disposed at said first side edge of the manifold and closed at the other three edges of the container, means on the first ply of said container forming portion identifying merchandise received in said container, the customer to whom said merchandise is to be shipped and an order number, perforations in the smaller rectangular portion of the first ply defining a plurality of severable identification labels for attachment to individual articles of merchandise received in said container, means on each of said labels for identifying said articles of merchandise, said larger rectangular portion of the second ply forming the back of said container, the smaller rectangular portion of the second ply and the underlying portion of the third ply constituting severable duplicate reorder stubs, means on each of said stubs indentifying the customer and the merchandise and providing space for filling in the quantity of the merchandise reordered, duplicating means between the smaller rectangular portions of the first, second and third plies for transferring information imprinted on said first ply to said second and third plies, said third ply being narrower than said second ply and having an edge spaced inwardly from said first side edge of the second ply, means bonding the second and third plies of each of said rectangular units together along said transverse lines of perforations and along a line extending longitudinally of said manifold between

the side edges thereof to define a pocket open at one end to receive a card for controlling the filling of the order for merchandise to be shipped in said container.

4,211,435

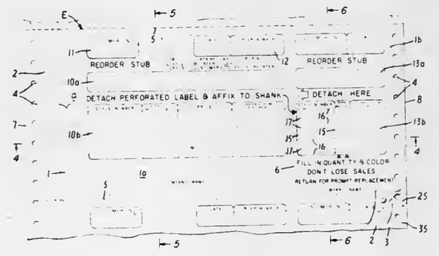
COMBINATION CONTAINER AND CONTROL FORM FOR SHIPPING, IDENTIFYING AND REORDERING MERCHANDISE

Jonathan Reese, Hallandale, Fla.

Continuation of Ser. No. 348,066, Apr. 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 207,249, Dec. 13, 1971, abandoned. This application May 26, 1976, Ser. No. 690,077

Int. Cl.² B41L *1/26*

U.S. Cl. 282—25 **16 Claims**



1. An assembly for stocking, shipping, recording and reordering merchandise, comprising first, second and third separate plies of sheet material, each of said plies comprising a separate individual sheet of material not integral with any other of said plies, coincident separation lines in said superposed separate plies dividing each of said plies into a first portion and a second portion, means adhesively joining marginal portions of said first portions of said first and second plies to form a container receiving said merchandise, means on said first portion of said first ply identifying the merchandise in the container, the customer to whom the merchandise is to be shipped and an order number, means for closing said container to retain the merchandise therein, means joining marginal portions of said first portions of said second and third plies to form a pocket external of said container and accessible when said container is closed, coincident means on said second portions of two of said separate plies identifying the merchandise in said container and the customer to whom the merchandise is to be shipped and providing coincident blanks for filling in the quantity of like merchandise to be reordered, duplicating means between said second portions of said plies for transferring information entered on one of said plies to the other, said second portions of said two plies constituting first and second reorder forms, whereby a customer can reorder like merchandise by filling in the desired quantity in said blank on said first reorder form, said quantity being thereby automatically duplicated in said coincident blank on said second reorder form, sending one of said reorder forms to the supplier and keeping the other of said reorder forms for his records.

4,211,436

PRESSURE-SENSITIVE RECORDING MATERIAL

Hans-Peter Kühlthau; Hubertus Psaar, and Roderich Raue, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

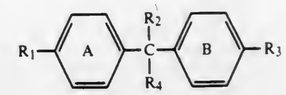
Filed Nov. 8, 1978, Ser. No. 958,609

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1977, 2750283

Int. Cl.² B41M *5/16, 5/22*

U.S. Cl. 282—27.5 **10 Claims**

1. Pressure-sensitive recording material, characterised in that it contains a substrate coated with an acidic color developer and a substrate coated with a colour-forming agent of the formula



wherein

R_1 denotes hydrogen or a non-ionic radical which is free from amino groups,

R_2 denotes hydroxyl, alkylamino, dialkylamino, acylamino, aralkylamino, arylamino, a saturated heterocyclic radical, alkoxy, alkenyloxy, aralkoxy, cycloalkoxy, aryloxy, acyloxy or a direct bond to R_4,

R_3 denotes hydroxyl, alkoxy, aralkoxy, alkenyloxy, cycloalkoxy, aryloxy, alkylthio, arylthio or a radical of the formula



R_5 and R_6 independently of one another denote hydrogen, alkyl, aralkyl, cycloalkyl or aryl or, together with the nitrogen atom, form a ring, or R_5 forms a ring with the ring B in the o-position relative to the nitrogen atom, and R_4 denotes an aryl radical which is free from amino groups or a heterocyclic radical, and further rings can be fused to the rings A, B and R_4 and the cyclic and acylic radicals and the rings A and B can contain non-ionic substituents, said color forming agent being dissolved or dispersed in a non-volatile organic solvent.

4,211,437

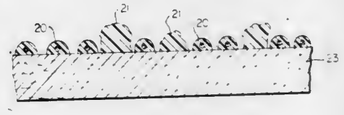
STILT CAPSULES FOR PRESSURE-SENSITIVE RECORD MATERIAL

Hugh K Myers, and Donald E. Hayford, both of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Filed Apr. 25, 1978, Ser. No. 899,847

Int. Cl.² B41M *5/16, 5/22*

U.S. Cl. 282—27.5 **19 Claims**



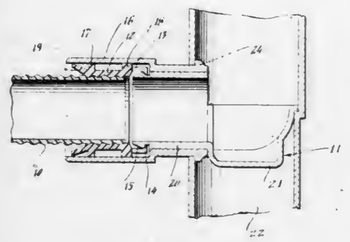
1. A pressure-sensitive record material which comprises a substrate, and a coating on at least one surface of the substrate comprising minute pressure-rupturable capsules containing a liquid solution of colorless chromogenic material and non-pressure-rupturable capsules containing a plurality of agglomerated kaolin particles, the kaolin-containing capsules being produced by coacervation of a water-soluble polymer and being present in an amount of at least 1/5 of the weight of the liquid-containing capsules, said kaolin-containing capsules having an average diameter of about 2 to 12 times greater than the liquid-containing capsules and being substantially uniformly sized and randomly interspersed in the coating with the liquid-containing capsules.

4,211,438

COUPLING ARRANGEMENT FOR TWO CO-AXIAL VACUUM CLEANER CONDUITS

Gustaf A. Asberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Apr. 11, 1978, Ser. No. 895,442
Claims priority, application Sweden, Apr. 18, 1977, 7704397
Int. Cl.² A47L *9/24*
U.S. Cl. 285—7 **8 Claims**



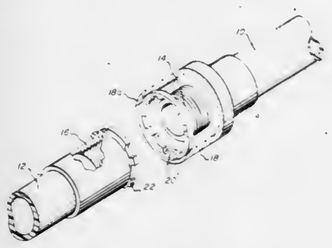
1. A connection between two coaxially arranged conduit portions of a vacuum cleaner in which one of said conduit portions is a coupling member to an air channel of said vacuum cleaner and having a projection part, and the other conduit portion is a hose comprising: an inner sleeve connecting part firmly secured to said hose and provided with means coacting with means on said coupling member for mounting said hose against axial movement and allowing rotatable movement relative to said coupling member, and an outer sealing sleeve surrounding said inner sleeve for obtaining an air tight connection between said hose and coupling member and to join said coupling member to said vacuum cleaner air channel, said inner sleeve having at least one projection on its outer peripheral surface thereof, which coacts with a portion of inner surface of said surrounding outer sleeve for sealing said inner sleeve within said outer sealing sleeve and for guiding said inner sleeve within said outer sealing sleeve when said hose and coupling are joined, and said outer sleeve having a portion thereof at one end which fits over and tightly engages the outer surface of said projecting part of the coupling member, and means on the free end of said portion of the outer sleeve for securing said outer sleeve to said air channel to thereby lock said coupling member to said vacuum cleaner air channel.

4,211,439

SAFETY DEVICE FOR HOSE CONNECTIONS

Jon P. Moldestad, 1015 Cadillac Way, #213, Burlingame, Calif. 94010

Filed Jul. 26, 1978, Ser. No. 928,097
Int. Cl.² F16L *19/02*
U.S. Cl. 285—27 **3 Claims**



1. In a fluid handling system having first and second fluid lines for handling the fluids, the improvement comprising:
a male threaded connector connected to the first fluid line;
a female threaded connector connected to the second line;
a cup shaped shield means connected to and surrounding the male threaded connector and extending forward of a most forward end of the male threaded connector, the cup shaped shield means providing a shield against fluid sprayed from the male and female threaded connectors when they are joined together;
a female type cam plate carried within the cup shaped shield means forward of the male threaded connector, the female type cam plate having an open central portion and a plurality of keys spaced about its inner periphery surrounding the open portion in a first pattern indicating characteristics of fluids which may be safely carried by the first fluid line;
a male type cam plate connected to the female threaded connector proximate a most forward end of the female threaded connector, the male type cam plate having a plurality of keys circumferentially spaced about its outer periphery in a second pattern indicative of characeteristics of fluids which may be safely carried by the second fluid line;
a locating lip portion of the shield means extending forward of the female type cam plate for axially locating the male type and female type cam plates; and
wherein the distance from the most forward portion of the female threaded connector and a most rearward portion of the male type cam plate is less than the distance from a most rearward portion of the female type cam plate to the most forward portion of the male threaded connector such that the male and female threaded connectors cannot be even partially engaged unless the first and second patterns match one another in the complementary manner sufficient to permit the male and female type cam plates to pass one another, thereby indicating compatibility of the first and second fluid lines.

4,211,440

COMPENSATED BLAST JOINT FOR OIL WELL PRODUCTION TUBING

Arthur E. Bergstrom, 5410 Bergstrom La., Houston, Tex. 77088

Continuation-in-part of Ser. No. 600,616, Jul. 31, 1975, Pat. No. 4,141,386. This application Jan. 3, 1977, Ser. No. 756,251
Int. Cl.² F16L *55/00*
U.S. Cl. 285—45 **6 Claims**



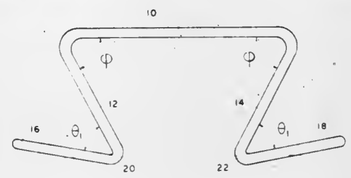
1. A carbide-sheathed blast joint comprising a length of oil well tubing having threaded opposed ends,
a series of axially short carbide rings embracing said tubing between its ends, said carbide rings each having parallel opposed end surfaces which are continuously planar from their inner periphery to their outer periphery and are at right angles to the longitudinal axis of the tubing, the end surfaces of said carbide rings being in contiguous relation, and,
a wave spring embracing said tubing at one end of said series of carbide rings,
a first clamping collar fixed about said tubing at one end thereof against which the other end of said series of carbide rings engages, and
a second clamping collar fixed about said tubing at the other end thereof which holds the wave spring in compression therebetween and the carbide rings to maintain the end surfaces of the carbide rings in close contiguous relation,
said wave spring being yieldable axially in response to endwise and angular motions of the carbide rings so as to accomodate stretching and flexing of the tubing at down hole positioning and temperature.

4,211,441

SPRING CLASP

Jakhin B. Popper, Kyriat Motzkin, Israel, assignor to Popper Engineering Ltd., Kyriat Motzkin, Israel

Filed May 31, 1978, Ser. No. 911,179
Claims priority, application Israel, Jun. 6, 1977, 52260
Int. Cl.² E05C *19/06*
U.S. Cl. 292—259 R **10 Claims**



1. An over-center fastening device for fastening a first member in a predetermined orientation with respect to a second member comprising:
an elongated element having a central region, constituting a handle, of a first length;
first and second intermediate regions arranged in a first plane having respective second and third lengths and being angularly disposed with respect to the central region; and
first and second end regions forming respective first and second vertices with the outer ends of the first and second intermediate regions and having respective fourth and fifth lengths disposed at an acute angle with respect to the axes joining the first and second vertices;
said device further comprising a pair of pivotal support means at least one of which is formed integrally with a second member for pivotally supporting said end regions at a predetermined height above a surface of said first member so as to permit pivotal displacement of said elongated element and so that said element exerts a force at said first and second vertices on said surface when in engagement therewith.

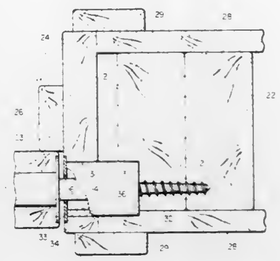
4,211,442

LOCK STRIKE

John D. Hansen, 2136 Grahn, Santa Rosa, Calif. 95404

Filed Jan. 8, 1979, Ser. No. 2,074
Int. Cl.² E05C *13/00*
U.S. Cl. 292—340 **5 Claims**

1. In a lock strike for use with a door mounted in a frame having a door jamb spaced from the structural member of a wall and a lock having a retractable bolt extending from one edge of the door: an elongated body extending through the jamb and into the structural member behind the jamb, said body having an axially facing shoulder toward the inner end thereof in abutting engagement with the structural member, a screw extending axially from the shoulder into the structural member to anchor the body to the structural member, and a socket formed in the body toward the outer end thereof in



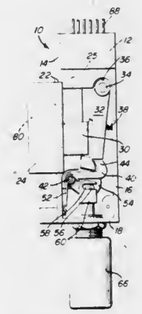
position to receive the lock bolt when said bolt is in an extended position.

4,211,443

ELECTRIC STRIKE

Lawrence D. Butts, and Raymond V. Kambic, both of Joliet, Ill., assignors to Folger Adam Co., Division of Telkee, Inc., Joliet, Ill., a part interest

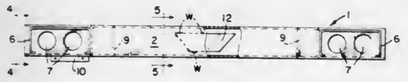
Filed Jan. 17, 1978, Ser. No. 870,087
Int. Cl.² E05B *15/02*
U.S. Cl. 292—341.16 **7 Claims**



1. An electric strike comprising a casing, a keeper movably mounted with respect to said casing and including an abutment portion movable in a predetermined path, a locking member movably supported with respect to said casing and movable from a position in the path of movement of the abutment portion to block movement of the keeper to a position out of the path of movement of the abutment portion to permit movement of the keeper, a locking cam being pivotally supported with respect to the casing and including a surface thereon engaging a surface on the locking member to prevent movement of the locking member when the surfaces are engaged, electrically operated means operatively associated with said cam for moving the cam to a position with the surface thereon disengaged from the surface on the locking member to enable movement of the locking member to a position out of the path of movement of the abutment portion on the keeper, said surfaces on the locking cam and locking member being arcuately curved in an arc generally coinciding with the arcuate movement of the locking cam in a manner that force exerted on the locking member by force exerted on the keeper will move the surfaces on the locking member and locking cam towards more effective engagement rather than toward disengagement, said locking member being in the form of a pivotal lever having an arcuate surface formed on the swinging end thereof for engagement by the curved surface on the locking cam for reducing wear on the surfaces during relative movement therebetween, said electrically operated means including a solenoid

having an extendible and retractable core, said locking cam being spring biased in one pivotal direction whereby operation of the solenoid will overcome the spring bias to move the locking cam in the opposite direction, said locking cam being spring biased into engagement with the locking lever, said locking cam including a plate thereon having a transverse pin projecting therefrom, said solenoid core including a yoke having a laterally opening slot engaged wth said pin so that upon longitudinal movement of the core in response to energization of the solenoid, the locking cam will be disengaged from the locking lever.

4,211,444
IMPACT RESISTANT BUMPER FOR VEHICLES
John J. Glassmeyer, Glenwood, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Filed Jun. 5, 1978, Ser. No. 912,684
Int. Cl.² B60R *19/04*
U.S. Cl. 293—150 **11 Claims**



1. An impact-resistant bumper adapted for mounting on the chassis of a motor vehicle, comprising:
- a bumper beam having inner and outer generally vertical wall portions and upper and lower generally horizontal wall portions extending therebetween to form a generally closed box beam construction of generally rectangular cross-section,
- longitudinally extending means rigidly affixed to said vertical wall portions,
- said means including plates having stress-attenuating shapes of tapered configuration toward each end, each plate being rigidly affixed to one of said vertical wall portions at the longitudinal central portion thereof.

4,211,445
SOAP BAR HOLDER
Ivan D. Woods, 18119-3 Camino Bello, Rowland Heights, Calif. 91745
Filed Aug. 28, 1978, Ser. No. 937,595
Int. Cl.² A47G *35/00*
U.S. Cl. 294—25 **20 Claims**



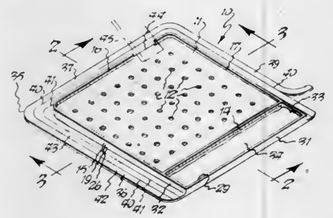
1. A soap bar holder comprising:
- a thin, flexible, elongated soap-holding pad;
- a plurality of mutually spaced apart resilient suction cups on a first face of the soap-holding pad;
- an elongated, laterally flexible, narrow stem having a first end secured to a second face of the soap-holding pad opposite the first face thereof; and
- a stop pad secured to a second end of the stem opposite the first end thereof, the stem having sufficient lateral flexibility to move the soap-holding pad longitudinally and laterally relative to the stop pad.

4,211,446
SEAL PULLER
William E. Shultz, Sr., 442 W. St. Charles Rd., Villa Park, Ill. 60181
Filed Sep. 27, 1978, Ser. No. 946,352
Int. Cl.² B65G *7/12*
U.S. Cl. 294—26 **31 Claims**



1. A tool for pulling and removing ring-shaped seals from an automobile transmission housing or the like comprising: an elongated body means having first and second ends, and a hook member pivotally mounted proximate said second end, said hook member including an elongate portion with hook means at one end thereof which hook means includes a broad relatively flat end surface portion, and said hook member being adapted to pivot with respect to said body means from a first position substantially perpendicular to said body means to a second position substantially in line with said body means to thereby provide a means by which said hook means may engage the seal when said hook member is in said first position and wrap around the seal as said hook member is pivoted from said first position to said second position, such that said broad relative flat end surface portion will engage said seal whereby upon the application of force to said body means as required in removing said seal, said force will be applied over a relatively large area, and the danger of rupturing said seal before removal is completed is lessened.

4,211,447
CAR FLOOR TRAY
Joseph DiVincenzo, 110 Burke Dr., Buffalo, N.Y. 14215
Filed Sep. 7, 1978, Ser. No. 940,322
Int. Cl.² B62D *25/20*
U.S. Cl. 296—1 F **14 Claims**



1. A car floor tray comprising a floor portion for receiving the footwear of a vehicle occupant, opening means in said floor portion for permitting liquid to pass downwardly through said floor portion, a tray portion including a bottom underlying said floor portion for receiving liquid which drains through said openings in said floor portion, a compartment in communication with said tray portion for receiving absorbent material for absorbing liquid from said tray portion, and selectively replaceable absorbent material in said compartment.

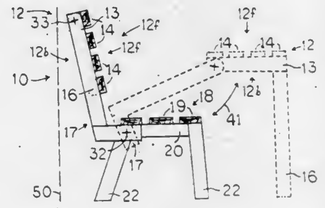
4,211,448
ADJUSTABLE RACK ASSEMBLY
Robert M. Weston, P.O. Box 812, Bayou La Batre, Ala. 36509
Filed Oct. 26, 1977, Ser. No. 846,226
Int. Cl.² B60D *3/00*
U.S. Cl. 296—3 **2 Claims**



1. An adjustable rack assembly for use with a truck having truck panel sides and a cab, the panel sides having a series of sockets therein, said sockets being arranged in laterally aligned pairs, the rack assembly comprising:
- a plurality of vertical posts, each having a base end section, and removable upper end section, the base end sections being engaged in said sockets in transversely aligned pairs;
- the removable upper end sections each including a pair of vertically spaced, substantially horizontal top and bottom sleeves on each of said removable upper end sections, said sleeves being longitudinally aligned on each side of the truck, and including leading end sleeves on the pair of vertical posts adjacent said cab;
- an inwardly projecting horizontal stub shaft fixedly secured to said removable upper end sections in substantially right angular relation to said sleeves;
- transverse rail members slidably engaged with said stub shafts of said removable upper end sections between said transverse pairs;
- releasable screw connection means, including blocks fixedly secured to the rail members and sleeves, securing the rail members and stub shafts together;
- elongated longitudinally extending bar members slidably engaged in an extending through the aligned horizontal sleeves and having open leading ends projecting forwardly of the leading end sleeves;
- an overcab rack assembly comprising a pair of U-form brackets with upper and lower bracket arms, a leading bight section, and trailing reduce shafts;
- said reduce shafts being telescopically engaged in said open leading ends of said longitudinally extending bar members;
- an inwardly extending foot member on the lower bracket arm of each of said brackets; and
- a forward cross bar spanning said brackets over the cab and engaged with said foot member.

4,211,449
CONVERTIBLE AND COLLAPSIBLE BENCH/TABLE COMBINATION
Larry D. Richardson, 5755 Wade Rd., and Annette M. Sobolewski, 5695 S. Wade Rd., both of Coleman, Mich. 48618
Filed May 26, 1978, Ser. No. 909,636
Int. Cl.² A47B *85/04*
U.S. Cl. 297—126 **10 Claims**

1. As an article of convertible and collapsible furniture, which is a bench/table combination comprising:
- a bench seat section having front, rear and side edges and under support legs depending therefrom;
- a changeable surface component with horizontal, opposed longitudinal edges, one of which depending on assembled position of the said article is an inward or upward pivotally secured edge with the other being an arcuately movable edge and
- also on said component side edges connecting said longitudinal edges with front and back surfaces on said component between all of said edges
- which component is adapted to function as a bench seat back with its front surface facing the front edge of said bench section when upright and a table and the like top with said front surface uppermost when at least substantially horizontally disposed;
- a pair of hinged swing arms mounted pivotally towards the rear edge along each of the side edges of said bench section and rotatably movable about their pivot mountings in a direction frontwards and rearwards with respect to said bench section;
- said changeable surface component being hingedly mounted

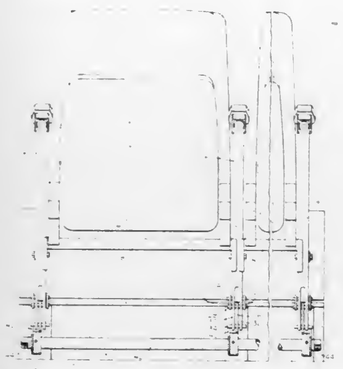


along each of its side edges towards its inward or upward, depending on positioning, longitudinal edge to and at pivot ponts on the upper extremities of both of said swing arms so that its arcuately-movable longitudinal edge is freely movable through an upwardly and downwardly directed arcuate movement about the center line of said pivot points; and
- a pair of foldable legs mounted respectively along the arcuately-movable longitudinal edge and towards the side edges on the back side of said changeable surface component, said legs being adapted to lie flatly in retracted storage against the back side of said component when it is disposed upright as a seat back and to be unfolded downwardly outwardly from the back side of said component to provide leading edge table leg support for said component when it is swung out to substantially horizontal disposition as a table and the like top.

4,211,450
RELEASE MECHANISM FOR ROWS OF COLLAPSIBLE SEATS
David L. Sutter, Kennebunkport, Me., assignor to Hussey Manufacturing Company, Inc., North Berwick, Me.
Filed Apr. 5, 1979, Ser. No. 27,465
Int. Cl.² A47C *1/12*
U.S. Cl. 297—232 **3 Claims**

1. Apparatus for supporting a plurality of adjoining seats in an upright position on a base and for releasing them to pivot into a collapsed position, comprising:
- side stanchions for said seats,
- means for adjoining said seats to form an extended row;
- means for pivoting said stanchions to said base comprising:
  - a link pivoted to each stanchion and to said base,
  - a guide plate mounted on said base,
  - a slot in said guide plate,
  - a pin on the lower end of each stanchion below said link and sliding in said slot, and
  - said link, slot, and pin arranged to guide the pivotal motion of said stanchions from an upright position to a collapsed position parallel to said base;
- means for releasing said stanchions from the upright position comprising:
  - a torsion bar, journalled to said base running parallel to

said seats in the vicinity of the lower ends of said stanchions;



a cam mounted on said bar adjacent each stanchion in position to strike and lift each said pin when the torsion bar is rotated, and

means for rotating said bar.

4,211,451

SEAT RECLINING MECHANISM

Philip C. Shephard, Coventry, England, assignor to I. H. W. Engineering Limited, Warwick, United Kingdom

Continuation-in-part of Ser. No. 781,103, Mar. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 653,659, Jan. 30, 1976, abandoned. This application Sep. 8, 1978, Ser. No. 940,965

Claims priority, application United Kingdom, Feb. 7, 1975, 05235/75

Int. Cl.² A47C *1/025*

U.S. Cl. 297—362 **15 Claims**



1. A seat reclining mechanism comprising:

first and second hinge plates for mounting on a seat and a backrest respectively, said first and second hinge plates in rotatable contact with each other;

a pair of internally toothed ring gears spaced axially apart from each other, one of said internally toothed ring gears being carried on one of the hinge plates and the other being carried on the other of the hinge plates, one of said internally toothed ring gears having more teeth than the other ring gear;

a shaft extending through said pair of ring gears;

a drive gear being in the space within said pair of ring gears, said drive gear being mounted on said shaft;

a plurality of planetary gears in mesh with both of said ring gears and said drive gear;

a pair of carrier members each having a central aperture complementary to said shaft so that said shaft can rotate within each of said carrier members, said carrier members each having a plurality of partially circular, equiangularly spaced openings thereby providing a plurality of radially extending arms with substantially concave surfaces extending between neighboring arms, each of said carrier members being at an opposite side of said drive gear with each of said planetary gears snugly received between neighboring arms and in contact with said concave surface, said concave surfaces constructed to urge said planetary gears into mesh with said ring gears; and

means to rotate said shaft and said drive gear to effect relative angular adjustment of the two hinge plates through concurrent meshing of said planetary gears with both of said ring gears.

4,211,452

INERTIA WHEEL

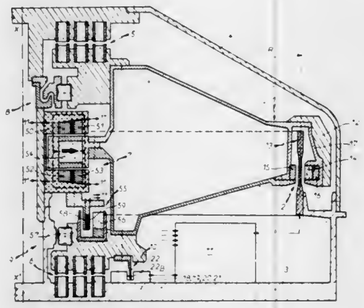
Pierre Poubeau, Le Pecq, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 14, 1978, Ser. No. 886,496

Claims priority, application France, Mar. 15, 1977, 77 07685

Int. Cl.² F16C *39/00*

U.S. Cl. 308—10 **7 Claims**



1. An inertia wheel comprising

a flywheel having an adaptable rim of variable mass;

a motor for peripherally driving said flywheel including

a rotor fast with said flywheel and formed on said rim with a magnetic field of flux from said rotor formed across an air gap within which is a ring of an even number n of permanent magnets p of radial magnetization with alternating polarities, having a peripheral magnet width P_p and a magnet pitch Pm linked by the relationship $Pm=3P_p/2$, and

a stator including a winding having sets of coils interconnected in pairs of ascending and descending turns of width $P_p/2$ with the number of coils being three times the even number n of permanent magnets p divided by two and thereby the expression of number of coils equals 3np/2,

said rotor located relative to said stator to place said winding of said stator where the radial magnetic field of flux of said rotor crosses the active turns of width $P_p/2$ of said winding of said stator,

switching means connected to said stator for switching the current on said sets of coils of said stator winding causing rotation of said rotor;

a control means associated with said switching means for detecting the angular position of said rotor and said flywheel;

magnetic bearings of the radially passive and axially active type mounted on said flywheel and said rotor and suspending said rotor on said flywheel; and

an axial rate detector means for detecting the axial rate of said rotor connected to said stator relative to said rotor and an actuator connected between said rotor and said stator and associated with said detector means, each having redundant coils.

4,211,453

ROCK DRILL BIT LUBRICATION SYSTEM

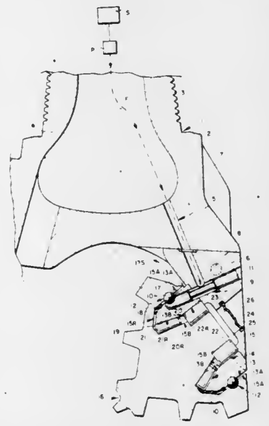
Carl E. Johansson, Le Lavandou, France, assignor to SKF Industrial Trading and Development Co. B.V., Nieuwegein, Netherlands

Continuation of Ser. No. 786,804, Apr. 12, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,273

Claims priority, application Netherlands, Apr. 12, 1976, 7603835

Int. Cl.² F16C *19/49*

U.S. Cl. 308—8.2 **13 Claims**



1. In a drill bit including a body part, a first chamber in said body part for containing a fluid lubricant under pressure higher than atmospheric during operation of the drill bit, at least one bit segment extending from said body part, a generally conical cutting element mounted on said bit segment and freely rotatable thereon thus forming a cutting element assembly, the improvement in combination therewith, wherein: said bit segment includes an annular part having inner and outer circumferential bearing surfaces, said conical cutting element has corresponding bearing surfaces adjacent those of said annular part thereby forming two pairs of bearing surfaces defining first and second raceways, the second raceway being radially outward of the first raceway, said second raceway further includes a plurality of ball bearing elements distributed therein, this second raceway and ball bearing elements forming a locking bearing for retaining said conical cutting element coupled to said annular part of said bit segment, said cutting element assembly further comprising a plurality of rolling bearing elements distributed in said second raceway forming an inner bearing, and lubrication means for lubricating said raceways and bearing elements therein.

4,211,454

ANTIFRICTION BEARING SUPPORT

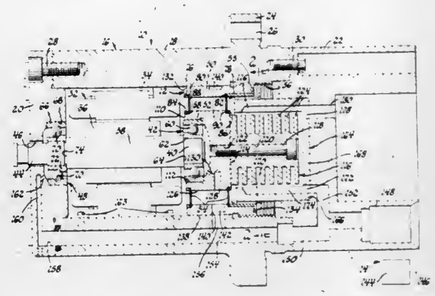
William A. Mitchell, and John S. Clark, both of Springfield, Vt., assignors to Bryant Grinder Corporation, Springfield, Vt.

Filed Oct. 16, 1978, Ser. No. 952,028

Int. Cl.² F16C *27/08*

U.S. Cl. 308—26 **18 Claims**

1. An antifriction bearing support comprising: an outer support member for mounting the support on a spindle housing; an inner support member for mounting an antifriction bearing which is adapted to rotatably support a spindle; at least one diaphragm that extends between the inner and outer support members in order to radially fix the inner support member and the antifriction bearing mounted thereby; said diaphragm being flexible to allow preloading of the antifriction bearing axially with respect to the axis of spindle rotation such that the preloading permits high speed spindle rotation; and adjustable means for mounting the outer support member on the spindle



housing to flex the diaphragm and axially preload the antifriction bearing in an adjustable manner.

4,211,455

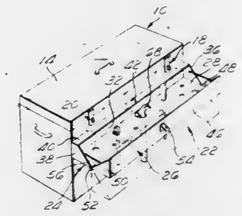
TOOL BOX ACCESSORY CABINET

Joe E. Tedrow, 15900 Osborne St., Sepulveda, Calif. 91343

Filed May 21, 1979, Ser. No. 40,547

Int. Cl.² A47B *81/00, 53/00;* **E05B** *73/00*

U.S. Cl. 312—198 **5 Claims**



1. In combination with a tool box, having a vertical sidewall a cabinet secured to said vertical sidewall, said cabinet comprising:

sidewalls connected to an elongated horizontal planar base having a leading edge and a trailing edge, a back attached at said trailing edge, said back being in contact with said vertical sidewall of said tool box, said base being in contact with said tool box, said base having a plurality of spaced-apart openings, each of said openings to connect with an elongated handle of a tool having an enlarged head with the enlarged head to be located against said base; and

a top hingedly connected to said base at said leading edge, said top being movable between a closed position and an open position, said top having a front wall and a top wall, whereby with said top in said closed position, removal of a tool from a said opening is prevented while with said top in said open position the tools are capable of being removed.

4,211,456

MAGNETIC ELECTRICAL CONNECTORS

Hartley M. Sears, Costa Mesa, Calif., assignor to Schick Laboratories, Inc., Los Angeles, Calif.

Filed Jan. 31, 1979, Ser. No. 8,060

Int. Cl.² H01R *11/30*

U.S. Cl. 339—12 R **6 Claims**

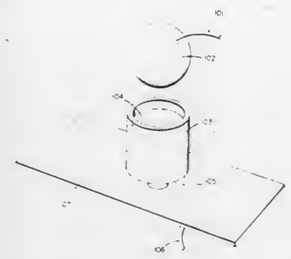
1. A device for electrically coupling a first and second portion of an electrical circuit, comprising:

a cylindrical housing, having a axial end and a cylinderical cavity in said axial end, said housing being electrically

conductive and electrically coupled to said first circuit portion;

a magnet of size to fit within said cavity a spaced distance below said housing axial face, and so positioned; and

a sphere of magnetically attracted and electrically conductive material, electrically coupled to said second circuit



portion, with diameter greater than the diameter of said cavity, and, when positioned to contact said housing axial face around the lip of said cavity, magnetically retained against said lip by said magnet, thereby forming an electrical coupling between said first and second circuit portions.

4,211,457

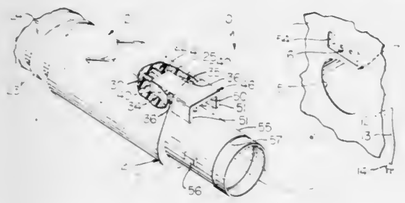
VACUUM CLEANING APPARATUS

Roger D. Meadows, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Sep. 14, 1978, Ser. No. 942,235

Int. Cl.[2] H01R *3/04*

U.S. Cl. 339—15 **12 Claims**



1. In a current-carrying vacuum hose having a polymeric hose connector defining at least one end thereof and a female electrical connector embedded in said hose connector; said hose connector having a cavity therein and at least one shoulder defining a wall portion of said cavity; said shoulder being disposed transverse the longitudinal axis of said hose connector; said female electrical connector having a pair of tubular members embedded in said hose connector which serves as a matrix therefor; the improvement comprising an electrical connector assembly which comprises, a support structure having a cooperating shoulder provided thereon which is adapted to be urged in locking engagement against said one shoulder, said shoulders defining locking means for locking said electrical connector assembly to said hose connector, a first male electrical connector having a pair of pins each received in an associated tubular member of said female electrical connector, and a second male electrical connector extending outwardly of said support structure which is adapted to be operatively associated with another female electrical connector, said assembly comprising a shield fixed to said support structure for shielding said second male electrical connector, said shield having an axial length measured substantially parallel to said longitudinal axis which is at least equal to the axial length of said second male electrical connector, said shield also having a roughly U-shaped cross section at each axial position thereof along its axial length, said shield and support structure being made of an electrically insulating polymeric material as a single piece, said electrical connector assembly with its shield, support structure, and first and second male elecrical connectors being a single unit which is locked to said hose connector by said locking means.

4,211,458

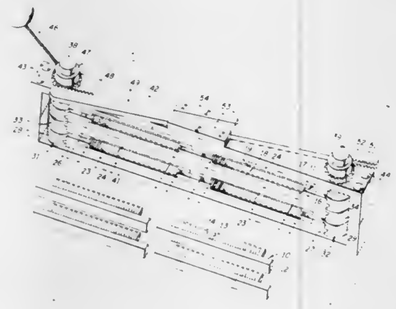
ZERO INSERTION FORCE CONNECTOR

William C. Kent, Garland, Tex., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 2, 1979, Ser. No. 35,175

Int. Cl.[3] H01R *13/629*

U.S. Cl. 339—74 R **6 Claims**



1. A zero force connector for engaging a multi-tiered bank of plugs each having pairs of opposed terminal contact elements mounted thereon, which comprises:

a plurality of pairs of associated spaced bar-like connector halves, each having a series of contact elements arrayed in a tier facing a tier of the contact elements on the other connector half; and

means for simultaneously moving each connector half of each pair of connector halves toward and away from the associated connector half of each pair to engage and disengage the connector contact elements with the terminal contact elements on each tier of a bank of plugs positioned between the connector halves.

4,211,459

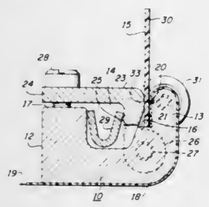
CIRCUIT BOARD INTERCONNECTION APPARATUS

James J. Madden, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 26, 1979, Ser. No. 14,877

Int. Cl.[2] H01R *13/54*

U.S. Cl. 339—75 MP **10 Claims**



1. Interconnection apparatus comprising a flat, flexible cable (**18**) having a plurality of conductors, a circuit board (**15**) having a plurality of terminals (**30**) corresponding to said plurality of conductors, and a base (**10**) for supporting said cable and said board and for aligning and connecting said conductors and said terminals characterized in that said base (**10**) is provided with a slot (**14**) to present a first and a second flange (**13, 12**) having opposing faces, and in that a clamping means is provided for clamping the end of said cable between a circuit board (**15**) and one face of said first flange (**13**), said clamping means comprising an inverted, substantially "L" shaped force bar (**23**) pivotally mounted (**26, 27**) at each end of said base, one leg (**25**) of said bar having a knee (**33**) opposite said one face of said first flange (**13**), spring means (**29**) operating between the face of said second flange (**12**) and said one leg (**25**) of said force bar (**23**) for urging said knee (**33**) against said circuit board (**15**), and means (**28**) for adjusting the travel of the other leg (**24**) of said force bar (**23**) for controlling the force of said knee (**33**) on said circuit board (**15**).

4,211,460

ADAPTER FOR CONNECTING A LOAD TO A BUS BAR

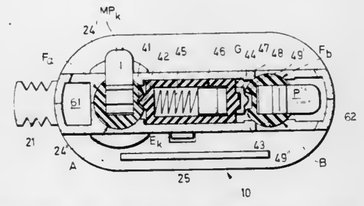
Heinz Seelbach, Kierspe, and Gerhard Eversberg, Lüdenscheid, both of Fed. Rep. of Germany, assignors to Erco Leuchten GmbH, Lüdenscheid, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,648

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810681

Int. Cl.[2] H01R *13/54*

U.S. Cl. 339—75 M **10 Claims**



1. An adapter for connecting a two-wire load circuit across two supply conductors accessible through a longitudinal channel of a bus bar of generally U-shaped profile, comprising:

a housing with an insertion part receivable in said channel;

a first and a second shaft juxtaposed in said housing having parallel axes and extremities in said insertion part respectively provided with first and second contact blades substantially perpendicular to said axes, each of said shafts having a disengagement position facilitating introduction of said insertion part into said channel and an engagement position angularly offset from said disengagement position, said blades being withdrawn into said housing in said disengagement position and projecting therefrom for contact with a respective supply conductor in said engagement position;

first and second operating means respectively connected with said first and second shafts for individually rotating same between said disengagement and engagement positions thereof;

detent means on said first shaft projecting from said housing in said engagement position thereof for coaction with retaining elements of said bus bar to prevent untimely withdrawal of said insertion part from said channel; and

locking means in said housing having first and second holding formations positioned to mate with respective coupling formations on said first and second shafts for enabling rotation of said second shaft into its engagement position only in the engagement position of said first shaft and enabling rotation of said first shaft into its disengagement position only in the disengagement position of said second shaft.

4,211,461

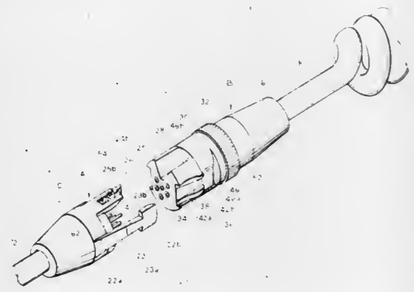
AXIALLY MATING CABLE CONNECTOR

Ronald O. Wescott, Edison, N.J., assignor to Industrial Electronic Hardware Corp., New York, N.Y.

Filed Nov. 27, 1978, Ser. No. 963,927

Int. Cl.[3] H01R *13/62;* **F16L** *19/00*

U.S. Cl. 339—91 R **9 Claims**



1. An axially mating cable connector comprising first and second parts carrying interengageable contact members, means for locking said parts to prevent disengagement of said contact members, and means for releasing said locking means, said locking means comprising a flexible locking arm mounted on and axially extending from said first part and having a lobe thereon, an axially extending recess and a shoulder on a surface of said second part, said arm being adapted to be at least partially received within said recess with said lobe engaging said shoulder to lock said parts, said releasing means comprising an actuating member and a circumferential groove on the exterior surface of said second part into which said actuating member is at least partially received, said actuating member being rotatable about the axis of said second part to engage said arm and move same radially outwardly relative to said surface of said second part to disengage said lobe from said shoulder, means for biasing said actuating member towards a position wherein said member does not operatively engage said arm, said biasing means comprising a torsion spring operably connected between said second part and said actuator member.

4,211,462

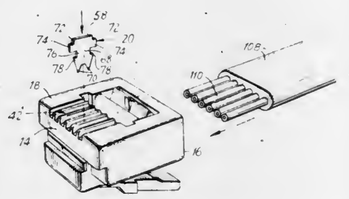
ELECTRICAL CONNECTOR FOR TERMINATION CORDS WITH IMPROVED LOCKING MEANS

Maurice Wolfthal, Ossining, N.Y., assignor to Stewart Stamping Corporation, a division of Insilco Corp., Yonkers, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,559

Int. Cl.[2] H01R *13/58*

U.S. Cl. 339—103 M **5 Claims**



1. An electrical connector housing for terminating a cord adapted to receive a plurality of insulated conductors enclosed within a jacketed cord and for making electrical contact external to the conducto:, comprising: a unipartite dielectric housing having a forward free end and a rearward cord input end having an aperture formed therein opening into a cord-receiv-

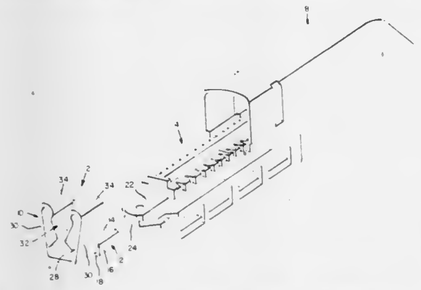
ing cavity formed within the housing, said cord-receiving cavity having a forward conductor-receiving portion and a rearward jacket-receiving portion; a plurality of parallely extending conductor-receiving troughs extending in a longitudinal direction in said forward conductor-receiving portion of said cavity; a plurality of openings adapted to receive terminal members, each of said openings being aligned and communicating with a respective conductor-receiving trough; and at least one anchoring member extending transversely across said housing connected through a hinge portion at one transversely extending end thereof and through a severable web at the other end thereof to said housing, said anchoring member having a surface which is movable at least partially into the cavity for engaging portions of the cord to secure the cord within the housing and to prevent unintended lateral and longitudinal movement thereof, a plurality of longitudinally extending, mutually parallel concave channels defined by said cord-engaging surface of said anchoring member, each of said concave channels communicating with said cavity and being substantially aligned with a respective one of said conductor-receiving troughs, whereby upon said web being separated from the housing and said anchoring member being pivotally moved into said cavity, said cord-engaging surface engages said cord in a manner such that each of said concave channels applies a locking pressure along a peripherally extending portion of a respective one of said insulated conductors.

4,211,463

METAL STRAIN RELIEF CLAMP

Curtis S. Chandler, Walkertown, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 12, 1979, Ser. No. 11,338
Int. Cl.² H01R *13/58*
U.S. Cl. 339—103 M **2 Claims**



1. A one-piece metal strain relief clamp, comprising:

a base portion for secure connection with a plastic connector housing having terminals for electrical connection to the wires of a multiple wire electrical cable, and

a pair of arm portions each extending from said base portion and being doubled back upon itself by an enlarged loop portion so that an end portion of said arm portion is opposite the other end portion to define therebetween a cable receiving space of hour-glass section having one end closed by said base portion and an opposite open end closed off by convergence of said loop portions upon deflection of said arm portions toward each other,

said end portions being between the remainder of said arm portions separating said cable receiving space from said remainder of said arm portions, and

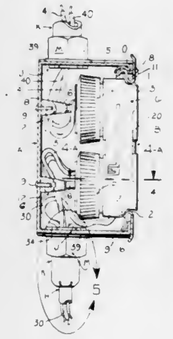
said loop portions being engageable with each other to prevent excessive closure against said cable.

4,211,464

ELECTRIC OUTLET BOX CONTAINING TWIN ELECTRIC SOCKETS

Hop Lee, 2455 - 24th Ave., San Francisco, Calif. 94116

Filed Apr. 23, 1979, Ser. No. 32,545
Int. Cl.² H01R *9/16*
U.S. Cl. 339—122 R **2 Claims**



1. An electric outlet box comprising:

(a) a box having a bottom wall with pins extending into the box for positioning a twin socket mounting received in the box;

(b) each socket in the mounting supporting a plurality of electrodes and a wire supporting member removably receivable in each socket, each member having a base with bores for receiving the bare wire strands of the wires and the portions of the wire strands extending beyond the bores contacting the base and being forced into electrical connection with their associate electrode when the wire supporting member is received in the socket;

(c) each wire supporting member having an extension with a bore therein for receiving the socket positioning pin when the twin socket mounting is mounted in the box; and

(d) a cover for closing the box, said cover pressing against said twin socket mounting for forcing the extensions of the wire supporting members against the box bottom wall for positioning and anchoring the mounting in the box, the bases of said members being forced into positions for clamping the bare wire strands to their associate electrodes for forming an electrical connection therewith.

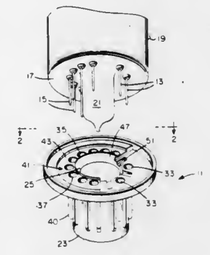
4,211,465

MEANS FOR CONTROLLING DIELECTRIC FLOW IN AN ELECTRON TUBE BASE

Peter G. Puhak, Seneca Falls; John D. Bilynsky, Auburn, and Fred L. Sorensen, Waterloo, all of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 23, 1979, Ser. No. 23,352
Int. Cl.³ H01R *13/46*
U.S. Cl. 339—144 T **8 Claims**

1. In an electron tube base employing a dielectric material therein contiguous to the closure portion of the tube wherefrom a sealed exhaust tubulation and a plurality of surrounding connective leads extend in parallel relationship, said base having an axial hollow thimble-like crown formed of a substantially cylindrical wall evidencing open and opposed terminal ends and an annular flange extending outwardly in a manner normal to said crown at said open end thereof, said crown defining an internal cavity dimensioned to spatially encompass said tubulation, the terminal end of said crown having an aperture therethrough to provide means for introducing said dielectric material into said cavity, said flange being traversed by an array of apertures to accommodate the positioning of said leads therethrough, said flange having an interfacial surface adjacent said tube closure portion, said interfacial surface having a floor wherefrom a raised annular seating ledge is formed to extend at least partially circumferentially thereabout in the region beyond said aperture array to provide seating means for said closure portion, said interfacial surface being further configurated in a manner comprising: barrier means formed adjacent certain designated lead-receiving aperture positions to prevent the flow of said dielectric material



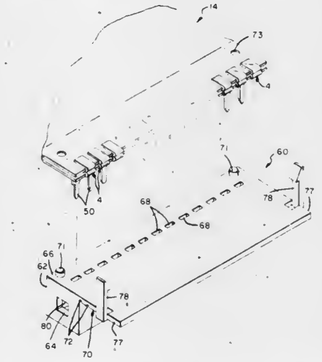
from said cavity to the vicinity of said certain designated aperture positions; and in the region devoid of said barrier at least one channel means formed in the floor of said interfacial surface adjacent other designated lead-receiving aperture positions to facilitate the flow of said dielectric material from said cavity to the vicinity of said other designated aperture positions.

4,211,466

CRIMPED ELECTRICAL CONNECTIONS FOR CONDUCTORS ON THIN SUBSTRATES

Charles E. Reynolds, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 21, 1978, Ser. No. 962,736
Int. Cl.² H01R *13/54;* **H05R** *1/12*
U.S. Cl. 339—176 MF **11 Claims**



1. The combination of first and second insulating films having conductors thereon and electrical connecting devices crimped onto said films, said films having parallel spaced-apart edges, said conductors extending to said edges, said conductors on said first film being laterally offset from said conductors on said second film, said electrical connecting devices being characterized in that:

each of said connecting devices comprises two crimped portions, each of said crimped portions comprising opposed cantilever beams connected to each other by an arcuate bight portion, said two crimped portions being in side-by-side relationship and being connected to each other at the outer ends of the cantilever beams of the two crimped portions which are adjacent to each other,

said first film being between said cantilever beams of one of said crimped portions of each of said crimped connecting devices with said edge of said first film adjacent to said bight portion and with one of said conductors of said first film against one of said cantilever beams of said one crimped portion, said second film being between said cantilever beams of the other one of said crimped portions of each of said crimped connecting devices with said edge of said second film adjacent to said bight portion and with one of said conductors of said second film against one of said cantilever beams of said other crimped portion,

said cantilever beams of each crimped portion being resiliently flexed against said films and being maintained in a flexed condition by said bight portions whereby,

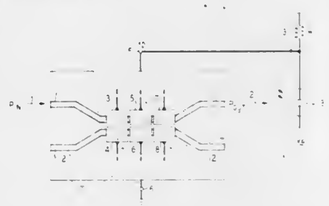
said films are clamped between said cantilever beams of said crimped portions and said cantilever beams are resiliently maintained against, and in electrical contact with, said conductors and each of said conductors is in electrical contact with one of said electrical connecting devices.

4,211,467

OPTICALLY-CONTROLLED TWO-CHANNEL INTEGRATED OPTICAL SWITCH

Peter S. Cross, Middletown, and Ronald V. Schmidt, Matawan, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 13, 1978, Ser. No. 869,364
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.14 **8 Claims**



1. An optical switch comprising a pair of waveguides having mutually parallel portions in sufficient proximity for $\Delta\beta$-switched directional coupling therebetween, and control means comprising at least two sets of electrode elements disposed about adjacent sections of said parallel portions of said waveguides, said control means having an input connected to said at least two sets of electrode elements in a way such that a voltage connected to said input results in opposite electric fields in said adjacent sections of said waveguides, characterized in that said optical switch further includes means for detecting optical energy at an output port of one of said waveguides to develop a control voltage, and means for coupling said control voltage to the input of said control means, whereby optical power present at an input port of one of said waveguides is coupled primarily through to an output port of one of said waveguides, the particular one being dependent on the previous optical powers present at said input port.

4,211,468

METHOD AND APPARATUS TO PROVIDE A SECURE OPTICAL COMMUNICATION SYSTEM

Peter D. Steensma, Midland Park, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 31, 1975, Ser. No. 627,584
Int. Cl.² G02B *5/14;* **H04B** *9/00*
U.S. Cl. 350—96.10 **15 Claims**

1. A method for rendering intelligence in an optical communication system secure comprising the steps of:

launching an intelligence modulated optical beam into one end of an optical waveguide at a small angle with respect to the axis of said waveguide;

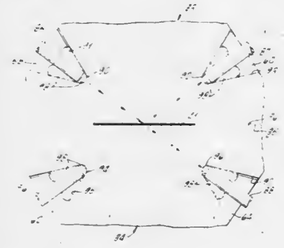
launching a masking signal modulated optical beam into said

one end of said waveguide at a high angle with respect to the axis of said waveguide; and



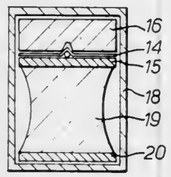
recovering only said intelligence modulated optical beam at the other end of said waveguide.

4,211,469
OPTICAL COUPLING DEVICE
Melvyn A. Holzman, Boulder, Colo., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.
Filed Sep. 5, 1978, Ser. No. 939,275
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.16 **13 Claims**



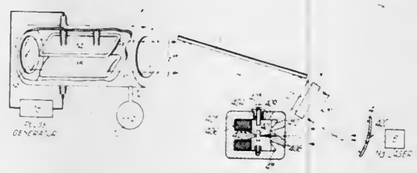
8. An optical coupling device comprising
a light-transmissive member of predetermined index of refraction,
said light-transmissive member having first, second, third, and fourth lens cavities therein,
each of said lens cavities including a tapered entrance wall and a smoothly rounded unpointed inner end wall of predetermined contour formed by a surface of revolution, whereby said lens cavities are adapted to receive light-emitting and light-receiving means,
said first and said second lens cavities being opposite from each other with their axes in alignment,
said third and said fourth lens cavities being opposite from each other with their axes in alignment,
a partial mirror positioned between said first and said second lens cavities and between said third and said fourth lens cavities,
an extension of the axes of said first and said second cavities, and an extension of said axes of said third and said fourth cavities intersecting at said partial mirror,
said partial mirror being planar and at equal angles to said axes of said first, second, third, and fourth lens cavities,
said axes of said first, second, third, and fourth lens cavities falling in a single plane which is perpendicular to the plane of said partial mirror,
whereby light emitted by a light-emitting means in one of said lens cavities is transmitted through said light-transmissive member and to said partial mirror with a portion of said light being transmitted through said partial mirror to the one of said lens cavities opposite therefrom, and another portion of said light being reflected by said partial mirror and transmitted to another of said lens cavities, while the fourth of said lens cavities receives none of said light,
light-emitting and light-receiving means in at least some of said cavities, said light-emitting and light-receiving means including
a cylindrical optical fiber having a substantially flat end face perpendicular to the axis thereof received in at least one of said cavities, with the edge of said fiber between said end face and the cylindrical surface thereof engaging said tapered entrance wall so as to align said optical fiber with the axis and lens cavity receiving the same, and an optical material of predetermined index of refraction entirely filling the space between said end face and said inner end wall of said cavity receiving said optical fiber.

4,211,470
OPTICAL FIBRE CONNECTOR
William J. Stewart, Fritwell, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland
Filed Oct. 11, 1978, Ser. No. 950,445
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.21 **10 Claims**



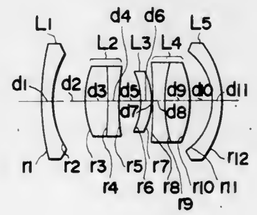
1. An optical fibre connector comprising two base portions, two layers of metallic foil, each respective layer of metallic foil being secured to a respective one of said base portions to entrap a respective optical fibre between said respective layer of metallic foil and said respective one of said base portions, a plate member having a groove formed longitudinally in a surface thereof, said two base portions being adapted to engage said surface of said plate member and to abut each other, each said respective layer of metallic foil being arranged between its respective base portion and said plate member and being deformed around its respective optical fibre within said groove so that said fibres are axially aligned with said groove, and means for releasably holding said two base portions and said plate member together.

4,211,471
MODE CONVERTERS FOR CONVERTING A NON-CONFINING WAVE INTO A CONFINING WAVE IN THE FAR INFRARED RANGE
Georges R. P. Marie, 17, Avenue R. Croland, Fontenay-aux-Roses, France (92260)
Filed Dec. 27, 1978, Ser. No. 973,600
Claims priority, application France, Dec. 28, 1977, 77 39448
Int. Cl.[2] G02B 5/00
U.S. Cl. 350—147 **4 Claims**



1. A laser device emitting a confining wave beam in the far infrared range for confining charged particles originating from a target impacted by said beam, said laser device comprising:
a laser producing a beam of a linear polarized wave having a non-confining mode for charged particles;
a polarization conversion device converting the linear polarization of the laser wave beam into a circular polarization wave beam, said converting device including a parallel sided plate of dielectric material having a metal coated face forming a mirror, said plate receiving the linear polarized laser wave beam at an incidence near the Brewster incidence and with its polarization direction at 45° with respect of the incidence plane, the thickness and index of refraction of the plate material being selected so that the component of the incident beam polarized perpendicular to said incidence plane is, at the outlet of said parallel sided plate, in phase quadrature with the component polarized parallel to said incidence plane;
a device receiving the beam output by said polarization conversion device for converting the circular polarized, non-confining wave beam into a circular polarized, confining wave beam;
means for producing a magnetic field coaxial with said circular polarized, confining wave beam; and
means for concentrating said circular polarized, confining wave beam on to said target.

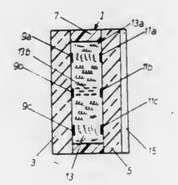
4,211,472
WIDE ANGLE OBJECTIVE LENS SYSTEM
Akiyoshi Nakamura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Sakai, Japan
Filed Nov. 7, 1978, Ser. No. 958,427
Claims priority, application Japan, Nov. 16, 1977, 52-138101
Int. Cl.[2] G02B 11/30
U.S. Cl. 350—216 **7 Claims**

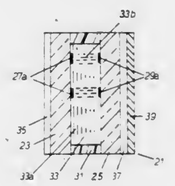


1. A wide angle objective lens system of five-group, seven-elements comprising, consecutively from the object to the image side:
a first lens group consisting of a negative meniscus single lens convex to the object side;
a second lens group consisting of a positive doublet having a cemented surface concave to the object side;
a third lens group consisting of a negative meniscus single lens concave to the object side;
a fourth lens group consisting of a positive doublet; and
a fifth lens group consisting of a negative meniscus single lens concave to the object side.

4,211,473
LIQUID CRYSTAL DISPLAY DEVICES
Ian A. Shanks, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Apr. 12, 1979, Ser. No. 29,412
Claims priority, application United Kingdom, Apr. 12, 1978, 14425/78
Int. Cl.[2] G02F 1/13; C09K 3/34
U.S. Cl. 350—337 **10 Claims**

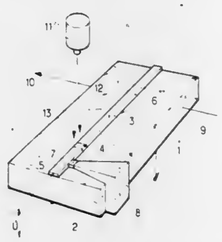
1. A liquid crystal display device comprising:
a liquid crystal cell including front and rear insulating substrates arranged in parallel, each with an inwardly facing surface bearing an electrode structure, and contained between the substrates, a layer of liquid crystal material, the cell being arranged so that the device is capable of being divided into dark and bright optical state regions upon application of an appropriate electric field across the layer when a potential difference is applied between the electrode structures;
a reflector arranged for reflecting light incident upon the cell and propagated therethrough;
pleochroic means, including at least one pleochroic material;
fluorescent means, including at least one fluorescent material, the fluorescent means having an optical absorbtion band lying approximately within the optical transmission





band of the pleochroic means, the fluorescent means also having a corresponding fluorescence emission band lying approximately within the optical absorbtion band of the pleochroic means; and wherein, the pleochroic means and the fluorescent means are capable of co-operating and are arranged to co-operate so that when light is incident upon the cell and an appropriate electrical field is applied across the layer, light propagated to an observer from any bright state region of the device is of approximately neutral tint.

4,211,474
ULTRA-RAPID ELECTRO-OPTICAL SHUTTER
Denis Le Goff, St Cyr L'Ecole, France, assignor to Compagnie Generale d'Electricite, Paris, France
Filed Jan. 24, 1978, Ser. No. 871,883
Claims priority, application France, Jan. 31, 1977, 77 02577
Int. Cl.[2] G02F 1/03
U.S. Cl. 350—356 **5 Claims**



1. An electro-optical shutter comprising an electro-optical crystal plate capable of transmitting through its thickness an incident light beam when an electric field is applied to opposed first and second plate faces, said shutter comprising:
a first electrode disposed on said first plate face, said first electrode comprising an elongated strip, disposed on said first plate face, said strip being separated into two aligned parts and forming a gap therebetween,

a second electrode opposed to said first electrode and disposed on said second plate face,

a first joint made of a material capable of being rendered conductive to electrons under the influence of light and disposed between said two parts, and within said gap, and

means for applying a voltage between one of the parts of said first electrode and said second electrode to thereby create said electric field.

4,211,475

ELECTRO-OPTIC DISPLAY DEVICE USING A VITREOUS SOLID ION-CONDUCTIVE MATERIAL

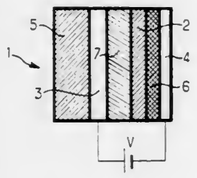
Jean-Pierre Malugani; Alain Wasniewski; Michel Doreau; Guy Robert; Odile Hubert, and Michel Massin, all of Besancon, France, assignors to Centre Technique de l'Industrie Horiogere "Ceterhor" Laboratoire d'Electrochimie-Faculte des Sciences et des Techniques, Besancon, France

Filed Jun. 22, 1978, Ser. No. 918,103

Claims priority, application France, Jun. 29, 1977, 77 19989

Int. Cl.² G02F *1/17, 1/19, 1/23*

U.S. Cl. 350—357 **11 Claims**



1. An electro-optic display device comprising: a silver ion conductive vitreous solid electrolyte; a transparent electrode in contact with one face of said solid electrolyte; a silver metal electrode in contact with another face of said solid electrolyte; a transparent substrate supporting said transparent electrode; and means for applying an electrical potential between said transparent electrode and said silver metal electrode, said solid electroylyte being a member selected from the group consisting of the binary systems:

40 to 57.5 mol % AgI-60 to 42.5 mol % AgPO;

16 to 19.5 mol % PbI_2-84 to 80.5 mol % $AgPO_3$;

25 mol % NaI-75 mol % $AgPO_3$; and

25 mol % KI-75 mol % $AgPO_3$,

said solid electrolyte having an electical conductivity at 25° C. of about 10^{-2} to 10^{-3} $ohm^{-1}cm^{-1}$;

said transparent electrode being a member selected from the group consisting of electronically conductive doped metallic oxides and noble metal films.

3. An electro-optic display device as claimed in claim **1**, further comprising an opaque solid electrolyte layer intercalated between said vitreous solid electrolyte and said silver metal electrode, said opaque solid electrolyte being a member selected from the group consisting of the binary systems:

19.5 mole % PbI_2-80.5 mole % $AgPO_3$;

25 mole % NaI-75 mole % $AgPO_3$; and

25 mole % KI-75 mole % $AgPO_3$.

5. A display device as claimed in claim **1**, further comprising an electrochromic layer intercolated between said transparent electrode and said solid electrolyte, said electrochromic layer being a transition metal oxide capable of forming an insertion compound with silver ions.

4,211,476

CONTACT LENSES WITH ANGULAR ORIENTATION AND STABILIZATION

Allan J. Brummel, 44W121 Empire Rd., St. Charles, Ill. 60174; Neil R. Hodur, Chicago, Ill., and Richard Synkoski, Paxton, Mass., assignors to Allan J. Brummel, Chicago, Ill.

Filed Dec. 29, 1978, Ser. No. 974,232

Int. Cl.² G02C *7/04*

U.S. Cl. 351—160 R **6 Claims**



1. A rotationally stabilized contact lens having a posterior surface comprising a prescription zone and an intermediate curved, lens support region between said prescription zone and the edge of said lens on the posterior surface of said lens, said intermediate region being substantially parallel to an adjacent toric surface on the cornea when said lens is in place on the eye of a patient, and means located in said intermediate region of said lens for forming a control meniscus with the tear layer of the eye, said means being positioned so that the resultant vector of the fluid forces created by said means falls within an arcuate area defined by the gravity vector passing through the geometrical center of the lens and 15° on either side of said vector, whereby said lens resists angular rotational about the cornea during normal wear.

4,211,477

LIGHT EXPOSING PRISM SYSTEM FOR USE IN FORMING PHOSPHOR PLANE OF COLOR PICTURE TUBE

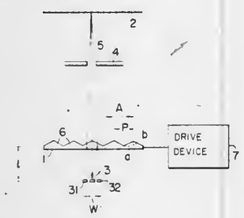
Takehiko Ueyama; Masahiro Nishizawa, both of Mobara; Yoshiyuki Odaka, Isumimachi, and Hiromi Matsuda, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 7, 1978, Ser. No. 931,542

Claims priority, application Japan, May 26, 1978, 53-62335

Int. Cl.² G03B *41/00*

U.S. Cl. 354—1 **4 Claims**



1. A light exposing prism system for use in a light exposure process for forming a phosphor plane of a color picture tube, said prism system being arranged between a panel of said color picture tube and a linear exposing light source and including a plurality of small prisms arranged in a plane substantially perpendicular to an axial line extending through a center of said panel and a center of said light source, each of said small prisms having a longitudinal axis substantially parallel with an axis of said linear light source and two sloped surfaces elongated in parallel with said longitudinal axis and inclined in a direction

perpendicular to said longitudinal axis and parallel with said perpendicular plane, said sloped surfaces having the same inclination with opposite directions with respect to said perpendicular plane, said small prisms being arranged at a pitch of between 0.05 mm and 3.0 mm in said direction perpendicular to said longitudinal axis.

4,211,478

CIRCUIT FOR INDICATING THE CONDITION OF THE BATTERY IN A PHOTOGRAPHIC CAMERA

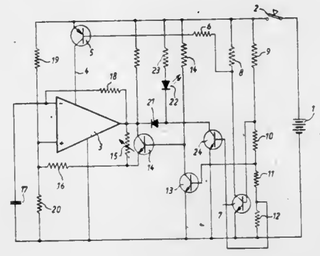
Theodor Huber, Munich; Kurt Borowski, Aschheim, and Gerhard Egger, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Apr. 19, 1978, Ser. No. 898,314

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717191

Int. Cl.² G03B *17/18*

U.S. Cl. 354—60 L **13 Claims**



1. In a still or motion-picture photographic camera having a battery, a battery-monitoring circuit operative for monitoring the condition of the battery and indicating battery condition to the user, the circuit comprising an indicator element; a controllable-conductivity semiconductor element connected to the battery and to the indicator element and operative when conductive for carrying energizing current for the indicator element to cause the indicator element to generate a indication having a first character; an astable multivibrator also connected to the battery and to the indicator element and operative when switched on for causing the indicator element to be energized to generate an indication having a different second character; and means connected to the battery, the semiconductor element and the astable multivibrator operative for maintaining the semiconductor element conductive when the battery voltage is in a first range and operative for preventing and permitting oscillation of the astable multivibrator when the battery voltage is outside or in a second range, respectively, the astable multivibrator comprising an operational amplifier having inverting and non-inverting inputs, and RC-stage connected to the inverting input and a reference voltage divider connected to the battery and having a tap connected to the non-inverting input, said means including a semiconductor switch having a main-electrode path connected to the astable multivibrator to prevent and permit oscillation of the multivibrator in dependence upon the conduction state of the semiconductor switch and a voltage divider connected to the camera battery and having a tap connected to the control electrode of the semiconductor switch.

11. In a still or motion-picture photographic camera having a battery, a battery-monitoring circuit operative for monitoring the condition of the battery and indicating battery condition to the user, the circuit comprising an indicator element, and means operative when the battery voltage is in a high range for effecting simple steady illumination of the indicator element, when the battery voltage is in a lower range effecting a pulsating illumination of the indicator element with a frequency which progressively increases as the battery voltage progressively declines, and ceasing to illuminate the indicator element at all when the battery voltage has declined to a predetermined value.

4,211,479

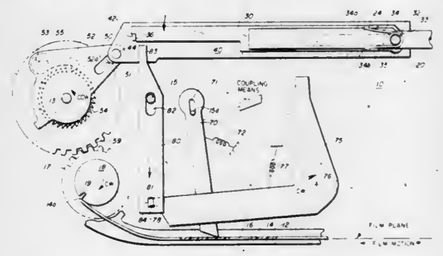
FILM ADVANCE MECHANISM

Arthur Zawodny, Budd Lake, N.J., assignor to Keystone Camera Corporation, Clifton, N.J.

Filed Mar. 23, 1978, Ser. No. 889,240

Int. Cl.² G03B *1/08*

U.S. Cl. 354—213 **15 Claims**



1. In a photographic camera, particularly in a still camera for use with (**1**) photographic roll film to be advanced along a film plane and having a row of perforations, one for each film frame, and (**2**) metering means movable between a retracted position and an extended position, said retracted position on one side of an exposure plane and said extended position traversing said exposure plane by extending through one of the film perforations to detect its presence, a film advance mechanism comprising:

(a) reciprocating drive means comprising at least two adjacent and substantially collinear members, said first member movable with respect to said second member from an enabled position to a disabled position, said enabled position causing said second member to move in unison with said first member and said disabled position allowing said first member to reciprocate independently of said second member;

(b) drive disabling means movable from a rest position to an extended position, said extended position causing movement of said first member of said reciprocating drive means to said disabled position in response to the movement of said metering means to its extended position, whereby said film advance mechanism is disabled allowing said first member to reciprocate independently of said second member; and

(c) drive reenabling means to move said drive disabling means to a rest position and allow said first member of said reciprocating drive means to move to said enabled position, whereby said film advance mechanism is enabled causing said second member to move in unison with said first member.

4,211,480

ELECTROMAGNETIC SHUTTER CONTROLLING DEVICE FOR CAMERA

Kiyoshi Kitai; Masaru Kobayashi; Tomoo Yonemoto, and Shogo Kato, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Sep. 21, 1978, Ser. No. 944,245

Claims priority, application Japan, Sep. 27, 1977, 52/115891

Int. Cl.² G03B *9/62, 9/64, 9/66*

U.S. Cl. 354—234 **4 Claims**

1. An electromagnetic shutter controlling device for a camera for releasing the shutter to start exposure of a shutter aperture when said device is energized and completing exposure when said device is deenergized comprising: at least one shutter blade for opening and closing the shutter aperture, a first driving spring for driving said shutter blade to close the

aperture, an electric delay circuit for controlling the exposure time, an electromagnetic device including an armature attracted by the magnetic force produced by energization of the electromagnetic device and being connected to said electric delay circuit, a second driving spring connected so as to be strained during the course of attraction of said armature so as to drive said shutter blade to open the aperture, and a retaining member for keeping the shutter blade at the aperture closing position until it is actuated to release the shutter blade by the



attraction of the armature, said armature being attracted upon energization of said electromagnetic device and operative during the course of attraction for charging said second driving spring and then releasing said shutter blade by releasing said retaining member, said armature being returned when said electromagnetic device is deenergized, said first driving spring driving said shutter blade to close the aperture while returning said armature to the original position when said electromagnetic device is deenergized.

4,211,481

TANK FOR DEVELOPING COLOR FILMS

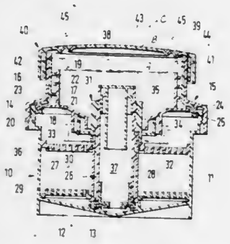
Rainer Bernhardt, Bergneustadt, Fed. Rep. of Germany, assignor to Johannes Bockemuehl, Gummersbach, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 946,450

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743791

Int. Cl.² G03D *13/04*

U.S. Cl. 354—312 **13 Claims**



1. In a tank for developing film, a combination comprising a housing having an interior; a first cover on said housing and having passage means communicating with said interior for respectively introducing a developing liquid into and withdrawing the same from said interior; a second cover normally mounted on and closing said passage means of the first cover so as to prevent leakage of the developing liquid from the interior of said housing, said second cover being removable from said first cover to open said passage means for entry and exit of the developing liquid; and means for preventing the entry of light through said passage means into said interior of the housing upon removal of said second cover from said first cover, said second cover including a first circumferential portion operative to firmly embrace the wall of said first cover defining an opening communicating with said passage means and a second portion closing said opening, said second portion of the said cover being adapted to be bulged relative to said first portion when said cover is in assembly with said housing and subject to an internal pressure thus varying the interior volume of said housing.

4,211,482

ELECTROPHOTOGRAPHIC COPYING APPARATUS EQUIPPED WITH SCANNING SYSTEM CONTROL DEVICE

Kenichi Arai, Nakano; Kenji Shibazaki, Aichi; Tsuneo Kitagawa, Toyohashi; Tomoji Murata, Toyokawa, and Kenzo Nagata, Okazaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1979, Ser. No. 22,363

Claims priority, application Japan, Apr. 5, 1978, 53-40735

Int. Cl.² G03G *15/28*

U.S. Cl. 355—8 **6 Claims**

1. An electrophotographic copying apparatus which comprises an original platform of transparent plate material, an optical system having a light source for illuminating an original to be copied from under surface of said original platform and reflecting mirrors and lens assembly for directing light-wise image of the original illuminated by said light source onto a photoreceptor, means for scanning the original including means for relatively moving said optical system and said original platform, means for selecting copying magnifications at least including mechanism for varying moving speed of said original scanning means, copy paper loading section capable of loading thereon copy paper of at least more than two different sizes, and control device for controlling scanning movement at least of said original scanning means, said control device further comprising:

(a) means for detecting the copying magnification selected by said copying magnification selecting means;

(b) means for detecting size of the copy paper loaded on said copy paper loading section;

(c) means for setting time required for said scanning means to move over area available for the copying at the moving speed to be determined by said copying magnification, so as to correspond to the area available for the copying on said original platform to be determined by the detected magnification and copy paper size;

(d) means for starting the scanning movement of said scanning means at predetermined speed to be determined by said copying magnification;

(e) means for measuring time started to function following starting of the scanning of said scanning means,

(f) means for comparing the time measured by said time measuring means with the time preliminarily set by said time setting means, and

(g) means for emitting signal to stop the scanning movement of said scanning means when said measured time becomes equal to said set time as a result of the comparison by said comparing means.

4,211,483

COPY PRODUCTION MACHINES HAVING JOB SEPARATION AND COLLATION CAPABILITIES

Noreen A. Hannigan, Farmington Hills, Mich., and Terence Travis, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,726

Int. Cl.² G03G *15/00*

U.S. Cl. 355—14 R **11 Claims**

1. A copy production machine having a copy producing portion, plural output portions for receiving produced copies from said copy production portion, and an image input section for supplying images to said copy producing portion for use in producing copies of said supplied images on copy sheets, one of said output portions having a given number of copy receiving bins (capacity) having different images carried thereby, for receiving said produced copies, means indicating an end of a copy producing run, means storing copy sheets, said copy producing portion having copy producing and standby modes, and capable of switching between said modes;

the improvement including in combination:

a control means having,

a copy select register for indicating a first number of copies to be produced, said first number capable of indicating a number of copies greater than said given capacity,

a copy count register for indicating the total number of copies of one image produced in a given copy production job; said copy production job being one or more copy producing runs of each image to be reproduced as said copies,

separation initiating means indicating completion of a job segment, said job segment including one or more of said copy producing runs,



separation sheet transporting means responsive to said separation initiating means to activate said copy production portion to transfer from said means for storing copy sheets as job segment separation sheets intermediate any two successive copy runs of a given copy producing job to said one output portion in accordance with a number of copies of each said image to be produced in a next successive given one of said job segments, and

accumulating means operative in response to said separation indicating means indicating a job segment for accumulating a count from all prior job segments and supplying same to said copy count register whereby said total number of copies indicated is for all job segments produced.

4,211,484

DRUM CLEANING BLADE FOR IMAGE TRANSFER TYPE ELECTROPHOTOGRAPHIC COPYING MACHINE

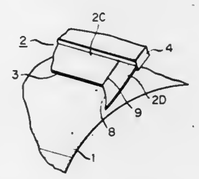
Fumio Iwai; Masakazu Kokiso; Junichi Koiso, and Tamio Ogino, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1978, Ser. No. 965,025

Claims priority, application Japan, Dec. 8, 1977, 52-146639

Int. Cl.² G03G *21/00*

U.S. Cl. 355—15 **2 Claims**



1. A drum cleaning blade for an electrophotographic copying machine which has a rotatable drum having a photo-sensitive cylindrical surface in which an electrostatic latent image of an original to be copied is produced and developed by a toner, comprising a sheet-like major portion having a straight lower edge, a pair of generally coplanar projections extending forwardly at both sides of said major portion and having respective slanted inner edges facing inwardly in opposition to each other, the inner edges being continuous to and inclined laterally outwardly relative to the straight lower edge of the major portion so that the projections are tapered forwardly, and cuts formed in said major portion each starting from a junction between the straight lower edge and each of the slanted inner edges, whereby the straight lower edge and the slanted inner edges formed in the projections together are adapted to bear on the cylindrical surface of the drum thereby to scrape off toner particles deposited on the surface of the drum which is rotated relative to said cleaning blade.

4,211,485

DEVICE FOR SUPPRESSING VERY CLOSE INTERFERENCE ECHO SIGNALS IN OPTICAL PULSE COMPRESSION RADARS

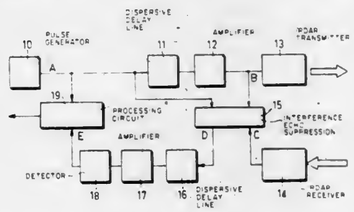
Wladimir Koreicho, Chilly Mazarin, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jun. 12, 1978, Ser. No. 914,412

Claims priority, application France, Jun. 16, 1977, 77 18556

Int. Cl.² G01C *3/08*; **G01S** *7/28*

U.S. Cl. 356—5 **3 Claims**



1. An optical pulse compression radar device, comprising a circuit for generating electrical signals of determined duration and with a frequency variable as a function of time, called chirps, an optical transmitter comprising a continuous transmission source modulated by the chirps, a receiver for deriving chirps from the light signals received and a processing circuit for the chirps supplied by the receiver, first mixer means having a first input connected to said receiver and a second input operable to be connected to said chirp generation circuit, said first mixer means delivering a signal of a frequency equal to the difference of the frequencies of the signals applied to its inputs, a filter connected to the output of said first mixer means, second mixer means having a first input connected to said filter and a second input operable to be connected to said chirp generation circuit, the output signal of said second mixer means having a frequency equal to the difference of the frequencies of the signals applied at its inputs, said output signal being fed to said processing circuit, an oscillator, switch means for connecting said second inputs of said first and second mixer means either to said chirp generation circuit or to said oscillator, and timer means for controlling said switch means thereby to connect said mixer means to said chirp generation circuit during the generation of a chirp by said circuit.

4,211,486

SPECTROPHOTOMETER

Haakon T. Magnussen, Jr., Pinole, and Roy P. Moeller, Hayward, both of Calif., assignors to Altex Scientific, Inc., Berkeley, Calif.

Filed Mar. 20, 1978, Ser. No. 888,229

Int. Cl.² G01J *3/06*, *3/42*

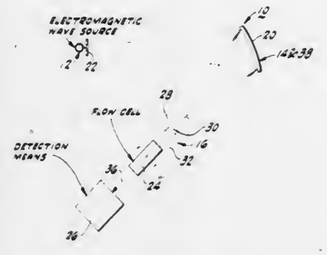
U.S. Cl. 356—328 **25 Claims**

1. A spectrophotometer comprising:

a. a multiple wavelength electromagnetic wave source;

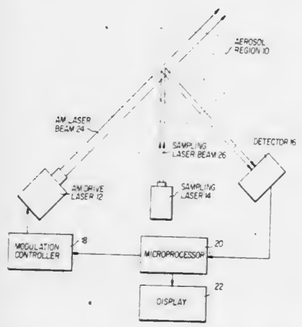
b. means for intercepting waves from said source and dis-

persing said waves into a spectrum of said electromagnetic waves;
c. means for detecting a selected portion of said spectrum of said electromagnetic waves;
d. means for directing a selected portion of the spectrum of said electromagnetic waves to said detecting means;
e. closed loop servo positioning means for moving said directing means and selected portions of the spectrum of said electromagnetic waves simultaneously to said detecting means, said closed loop servo positioning means including sensor means for discerning the position of said directing means and transforming said position of said directing means into a signal;



f. position setting means for generating a selected signal representing a desired position of said directing means;
g. comparitor means for comparing as input signals, said sensor means signal and said position setting means signal, said comparitor means producing an output error signal therefrom; and
h. servo motor means for moving said directing means comprising means for transforming said error signal into a movement inducing signal, means for transmitting said movement inducing signal, and means for imparting movement to said directing means in accordance with said transmitted movement inducing signal.

4,211,487
METHOD AND APPARATUS FOR DETERMINING AEROSOL SIZE DISTRIBUTIONS
Clyde A. Morrison, Wheaton; Nick Karayianis, and Donald E. Wortman, both of Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 22, 1979, Ser. No. 4,979
Int. Cl.[2] G01N *15/02*
U.S. Cl. 356—336 **4 Claims**



1. An apparatus for determining the size distribution of aerosol droplets in an aerosol region, comprising:
drive means for generating an undirectional electric field and directing said field toward said aerosol region such that said field penetrates said aerosol region;
means for amplitude modulating said electric field such that said field is defined by the following relationship,

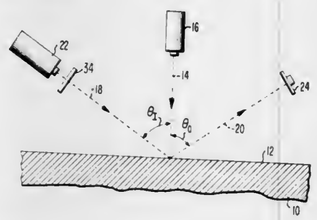
$$E(t) = E_0 \cos\omega t[1 = \epsilon_M \cos\omega_M t]$$

1 where
E_0 = peak amplitude
ω = carrier frequency
ϵ_M = modulation depth
ω_M = modulating frequency;
t = time
whereby the modulation of said electric field produces resonant elongations and contractions in the form of mechanical oscillations of selectively sized droplets, where the oscillating frequency of said mechanical oscillations is defined by the following relationship,

$$\omega_n = \sqrt{\frac{n(n-1)(n+2)\tau}{\rho a^3}} = \omega_M$$

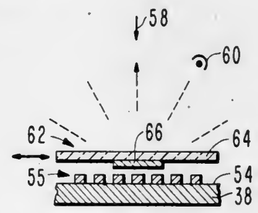
where
ω_n = mechanical oscillation frequency
n = oscillation mode number
τ = droplet surface tension
ρ = droplet density
a = droplet radius;
whereby for a known τ and ρ, and an assumed oscillation mode n, only those droplets having a radius a oscillate at a preselected oscillation frequency ω_n;
sampling means for directing a light beam against the mechanically oscillating aerosol droplets, said sampling means arranged such that said light beam is scattered by said aerosol region with the scattered light beam exhibiting a time varying intensity produced as a result of reflection of said light beam off a time varying droplet reflection surface of each of said oscillating droplets;
detector means in the path of the scattered light beam for measuring the time varying intensity of said scattered light;
data processing means coupled to said amplitude modulating means and said detector means for sequentially selecting the oscillation frequencies ω_M and for determining an aerosol size distribution based on the intensity of the time varying portion of the scattered light beam at each oscillating frequency ω_n as measured by said detecting means.

4,211,488
OPTICAL TESTING OF A SEMICONDUCTOR
Hans P. Kleinknecht, Bergdietikon, Switzerland, assignor to RCA Corporation, New York, N.Y.
Filed Oct. 3, 1978, Ser. No. 948,107
Int. Cl.[2] G01N *21/32*
U.S. Cl. 356—369 **10 Claims**



1. A method of optically testing electrical parameters of a surface of a semiconductor including carrier mobility and recombination time comprising the steps of:
irradiating said surface with a first beam of monochromatic light having a wavelength less than the wavelength corresponding to the band-gap energy of said semiconductor, whereby the energy of said light beam is substantially absorbed by said surface resulting in the excitation of electrons and holes at said surface,
simultaneously irradiating said surface with a second beam of monochromatic light having a wavelength larger than the wavelength corresponding to the band-gap energy of said semiconductor, whereby part of said second beam is reflected from said surface,
measuring the intensity of said reflected beam, whereby the magnitude thereof is a measure of the carrier mobility and recombination time at said semiconductor surface.

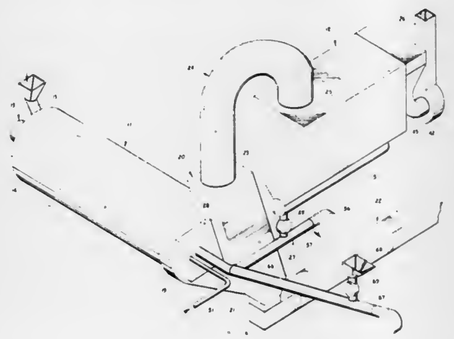
4,211,489
PHOTOMASK ALIGNMENT SYSTEM
Hans P. Kleinknecht, Bergdietikon, Switzerland, and Wolfram A. Bösenberg, Monmouth Junction, N.J., assignors to RCA Corporation, New York, N.Y.
Filed Jan. 16, 1978, Ser. No. 869,637
Int. Cl.[2] G01B *11/26, 9/02*
U.S. Cl. 356—400 **23 Claims**



1. An automatic apparatus for aligning a photomask with a substrate comprising:
(a) a substrate having a diffraction pattern formed thereon;
(b) a monochromatic light source adapted to have a beam directed onto said diffraction pattern;
(c) a completely opaque key on the photomask, said completely opaque key being adapted to block portions of said diffraction pattern from the beam of said monochromatic light source;
(d) at least two photosensitive elements adapted to receive light from said monochromatic light source after it has been reflected from said diffraction pattern;
(e) mounting means for mounting said substrate and said photomask such that the photomask and substrate can be moved relative to one another; and
(f) a feedback mechanism including said photosensitive elements and said mounting means for aligning said photomask to said substrate by relative movement between said photomask and said substrate in response to the intensities of light detected by said photosensitive elements.

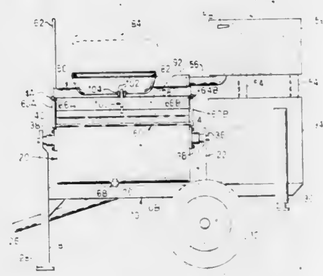
4,211,490
DRUM MIX ASPHALT PLANT WITH FIBER FILTER DUST COLLECTOR
James D. Brock, and Erbie G. Mize, both of Chattanooga, Tenn., assignors to Astec, Industries, Inc., Chattanooga, Tenn.
Continuation of Ser. No. 685,087, May 10, 1976, abandoned. This application Jan. 22, 1979, Ser. No. 5,339
Int. Cl.[2] B28C *5/06*
U.S. Cl. 366—11 **12 Claims**

4. Drum asphalt plant with reduced airborne emission, comprising in combination:
means providing a heated combined drying and mixing drum which is operative to receive and agitate a quantity of aggregate material, so as to produce airborne particulate material within the drum;
means for supplying liquid asphalt material to said drying and mixing drum so as to apply said asphalt material to the aggregate material within said drum, whereby hydrocarbon smoke particles are formed in the drum as a consequence of exposing the asphalt material to the heat within the drum,
exhaust means in communication with said drying and mixing drum and operative to withdraw air including the airborne particulate matter and hydrocarbon smoke particles from said drum;
air filtering means connected to receive said withdrawn air and having at least one porous fiber filter medium through which the withdrawn air is passed, so as to form on said filter member a dust cake of said particulate matter which absorbs said hydrocarbon smoke particles;



means operative to remove said dust cake from said filter medium; and
means operative to receive said removed dust cake, which comprises separated nonairborne particulate matter and absorbed hydrocarbon smoke particles, and to return said dust cake to said drying and mixing drum by mixing the dust cake with said liquid asphalt material that is supplied to said drum, so that the dust cake forms part of the mixture of aggregate and asphalt material within the drum without again becoming airborne.

4,211,491
COVERED MIXING MACHINE, OR THE LIKE, AND METHOD OF LOADING THE SAME
Robert F. Chaney, and Gene N. Connell, both of San Francisco, Calif., assignors to Quad C Corporation, San Francisco, Calif.
Filed Nov. 13, 1978, Ser. No. 959,692
Int. Cl.[2] B28C *5/06*
U.S. Cl. 366—30 **19 Claims**



16. A cover for a mixer, or the like, to prevent dust particles of material dumped into the mixer from escaping through a material loading opening in the mixer into the surrounding atmosphere while material is being dumped from a sack into the mixer through the material loading opening, said cover comprising,

a cover member of solid material attached to the mixer for closing the material loading opening therein,

an aperture formed in said cover member through which dry material to be mixed may be dumped from a sack into the mixer, and

a funnel-shaped member at said aperture into which a sack to be emptied fits in substantially sealing engagement therewith for plugging said aperture by the sack and preventing escape of particles of material into the surrounding atmosphere through said aperture.

4,211,492

DOUGH PORTIONING MACHINE

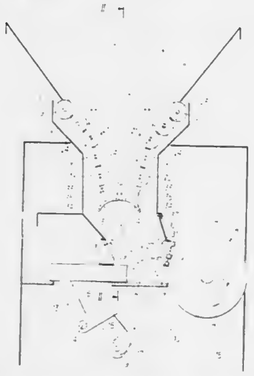
Helmut König, and Karl Schnider, both of Graz, Austria, assignors to Maschinenfabrik Dipl. Ing. Helmut König, Austria

Filed May 5, 1978, Ser. No. 903,133

Claims priority, application Austria, May 6, 1977, 3264/77

Int. Cl.[2] A21C *5/00, 7/00*

U.S. Cl. 366—76 **13 Claims**



1. A dough portioning machine, comprising a machine frame, a drum rotatably mounted in said frame, a dough supply station having a hopper to supply the dough to a chamber forming a dough reservoir, pocket openings arranged on the circumference of said drum to receive the dough from said chamber, a plunger means guided in said chamber and serving for feeding the dough into said pocket openings, a first drive means for imparting a stepwise rotating movement to said drum, a second drive means for imparting a reciprocating movement to said plunger, a preportioning means arranged within said hopper and having two rotary members rotatably mounted on horizontally disposed axes, each of said rotary members having arms on its circumference for cutting off the dough and for feeding same into said chamber, a third drive means for imparting a unison rotational movement with the same angular velocity but in opposite directions to said rotary members, two sets of feed rollers arranged in said hopper above said rotary members, and defining an intake gap between the respective sets, said gap tapering towards said rotary members, one of said feed roller sets being disposed near a side wall of said hopper with the axes thereof being parallel to and above the axis of one of the rotary members, the other of said feed roller sets being disposed near an opposite side wall of said hopper with the axes thereof being parallel to and above the axis of the other of the rotary members, a fourth drive means for imparting a rotational movement to all of the feed rollers, the fourth drive means being arranged to drive the feed rollers of the one set in the opposite direction to the feed rollers of the other set, the direction of rotation of each set of feed rollers being the same as that of the rotary member arranged below the respective set, a dough sensing means responsive to the quantity of dough in said dough reservoir and connection means between said sensing means and said third and fourth drive means for operating said third and fourth drive means responsive to signals received from said sensing means to control the quantity of dough in said dough reservoir.

4,211,493

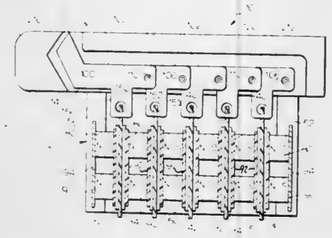
IMPACT PRINTING APPARATUS

Matthew J. Costello, and Norman K. Gallagher, both of Bethel, Conn., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 30, 1978, Ser. No. 937,932

Int. Cl.[2] B41J *3/12*

U.S. Cl. 400—121 **8 Claims**



1. Impact printing apparatus comprising

a plurality of insulating cards disposed parallel to each other in an array,

electromagnetic means coupled to each card for use in driving the cards individually into and out of printing position, and

a plurality of thin printing plates disposed parallel to each other and transverse to said cards, each plate being secured to one of said cards whereby each card can drive its printing plate to perform a printing operation,

each printing plate including an elongated portion having a printing means at one end and a pivot point at the opposite end, the printing plate also including a hammer portion which extends from the elongated portion and is secured to its card so that the plate can be driven by the card.

4,211,494

DEVICE FOR GUIDING THE PRINTER NEEDLES IN A MOSAIC NEEDLE PRINTER

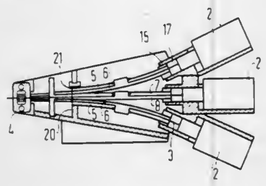
Philipp-Josef Fischer, and Richard Reier, both of Holzkirchen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich

Filed Mar. 22, 1978, Ser. No. 888,849

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713886

Int. Cl.[2] B41J *3/12*

U.S. Cl. 400—124 **9 Claims**



1. A device for guiding print needles in a mosaic needle printer print head assembly from adjacent a needle movement power means of a drive head assembly to adjacent a print zone where the needles are to be brought together in at least one row comprising: a print head assembly having a drive head assembly with power means affixed thereto and a print zone end spaced from the drive head assembly, a plurality of sets of guide plates formed of two guide plates having opposed surfaces, needle guiding tracks formed in at least one of the opposed surfaces and being closed by a portion of the other opposed surface, each such plate having a power end and a print end, the track diverging from the print end to the power end, means for removing the guide plates from the print head assembly including each of the guide plate sets being removable from the print head assembly and being easily disassemblable to separate the plates of each set from one another, and the sets being mountable on the print head intermediate the drive head assembly and the print zone end, each of the plates in each set being attached to the other plate through a snap together connection whereby the individual plates may each be removed from the print head assembly without disassembly of the drive head assembly.

4,211,495

HEAD FOR A MOSAIC PRINTER

Robert E. Einem, Glendale; Joseph A. Richards, Tarzana, and Jerzy R. Gassowski, Burbank, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 875,305, Feb. 6, 1978, Pat. No. 4,158,909, which is a continuation-in-part of Ser. No. 825,409, Aug. 17, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 965,296

Int. Cl.[3] B41J *3/12*

U.S. Cl. 400—124 **6 Claims**



1. A mosaic printing head comprising: first means including a first plurality of wire impact members each with an associated first electromagnetic thrust drive device, said first means including a first generally planar wire guide plate containing open grooves guiding said first wire impact members into general convergence in the plane of said first guide plate, said first drive devices being arranged with axes in a plane along an edge of said first guide plate; second means including a second plurality of wire impact members each with an associated second electromagnetic thrust drive device, said second means including a second generally planar wire guide plate containing open grooves in one surface guiding said second wire impact members into general convergence in the plane of said second guide plate, said second drive devices being arranged with axes in a plane and along an edge of said second guide plate; a wedge having an apex and side surfaces; and third means for holding the grooved surfaces of said first and second plates against respective side surfaces of said wedge, closing all of said grooves, said first and second wire impact members having substantially the same direction of convergence toward the apex of said wedge.

4,211,496

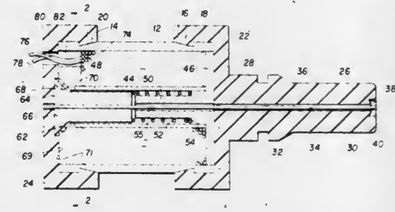
PRINTING SOLENOID

James E. Naylor, Cazenovia, N.Y., assignor to Small Business Administration, Elmira and Data Machines International, Inc., Ithaca, both of, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,569

Int. Cl.[2] B41J *3/10*

U.S. Cl. 400—124 **11 Claims**



1. A wire printer solenoid assembly particularly adapted for low voltage, typically 12 volt DC operation, comprising, in combination:

a generally cylindrical solenoid housing having end cap retaining means fore and aft on the outer surface thereof;

a front and rear end cap, each having at least one distal projection, engageable with said retaining means on said housing;

said front end cap including a forwardly projecting nose section and additionally including an axial bore therein adapted to operate as a guide for an axially moveable print wire;

a three piece bobbin located in said housing intermediate said end caps and consisting of front and rear end pieces secured to opposite ends of a non-magnetic stainless steel cylindrical core having a wire solenoid in the form of an electrical coil wound thereon;

said front end piece having a cylindrical portion projecting into said cylindrical core and having an axial bore therein also adapted to operate as a guide for said print wire and having a reduced diameter portion with respect to the inner diameter of said core to provide a space for a compression spring and terminating in a larger diameter portion for acting as an abutment for a compression spring;

a compression spring located in said core around said projecting cylindrical portion of said front end piece and having one end contacting said larger diameter portion;

a length of print wire;

an armature secured in a predetermined manner to said length of print wire and being located partially at least in said cylindrical core and reciprocally moveable therein and being in contact with said compression spring which acts to bias said armature against said rear cap when the wire solenoid is unenergized, said armature however being moved forward until stopped by the rear end piece of said bobbin when the wire solenoid is energized whereupon said print wire projects from the nose portion of said front end cap and thereby makes an impacted impression of a dot upon a given media.

4,211,497

DATA INPUT SYSTEM

Edward B. Montgomery, 6720 Greenwich La., Dallas, Tex. 75230

Continuation-in-part of Ser. No. 670,686, Mar. 29, 1976, abandoned, which is a continuation of Ser. No. 447,218, Mar. 1, 1974, abandoned. This application Mar. 13, 1978, Ser. No. 886,102

Int. Cl.[2] B41J *5/10*

U.S. Cl. 400—486 **13 Claims**

1. A keyboard apparatus comprising:

means defining a plurality of keys including at least one key individual to each of selected ones of the letters compris-

ing the standard 26 letter alphabet arranged in a plurality of rows;

the keys being positioned in a predetermined array characterized by the positioning of selected keys individual to selected letters that are frequently used in sequence adjacent one another and in accordance with such sequence, and including the following groupings:

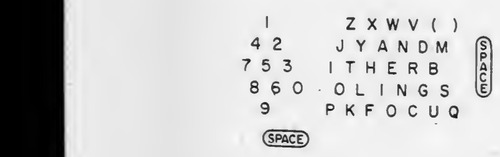
the positioning of keys individual to the letters T, H and E adjacent one another and in sequence;

the positioning of keys individual to the letters I, N and G adjacent one another and in sequence;

the positioning of keys individual to the letters A, N and D adjacent one another and in sequence;

the positioning of keys individual to the letters I, O and N adjacent one another and in sequence; and

the positioning of keys individual to the letters O, N and E adjacent one another and in sequence;



the keys having actuating surfaces each normally positioned for cooperation with the actuating surfaces of the remaining keys to define a predetermined surface configuration; means extending between the keys and comprising a generally regular continuation of the predetermined surface configuration for facilitating sliding movement of the fingers of an operator between adjacent keys, the sliding movement being substantially parallel to the predetermined surface configuration without requiring substantial movement of the fingers of the operator in direction generally normal to the predetermined surface configuration thereby providing for the sequential actuation of one of the predetermined array of keys by a sliding action of a single finger of the operator across the keys comprising the predetermined array of keys; and

each of the keys being adapted for actuation in response to minimum movement of the fingers of an operator perpendicular to the predetermined surface configuration.

4,211,498

PAPER CUTTING AND PERFORATED LINE FORMING DEVICE OF PRINTER

Munetaka Shimizu, Kawagoe, and Yoshimasa Takeda, Tokyo, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

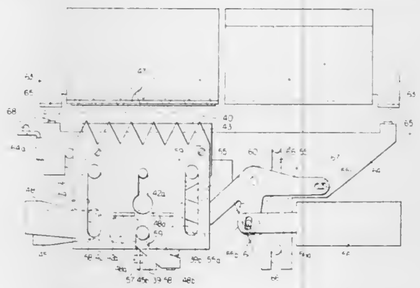
Filed Jan. 18, 1979, Ser. No. 4,600

Claims priority, application Japan, Jan. 20, 1978, 53-4610; Jan. 20, 1978, 53-4611

Int. Cl.[2] B41J *3/24*

U.S. Cl. 400—621 **7 Claims**

1. A paper cutting and perforated line forming device for a printer comprising a slide plate mounted on the machine frame of said printer for one reciprocal movement by a predetermined stroke in relation to the printing operation in the printer, a paper cutting lever device pivoted to said printer machine frame and operatively connected to the paper cutting device of said printer, said paper cutting lever device being normally biased in one direction by a spring and adapted to move said paper cutting device to the operative position when the lever device is rocked in the opposite direction against the action of said spring, a slide plate connection lever pivoted to said paper cutting lever device for selectively engaging said slide plate, said slide plate connection lever being adapted to rock said paper cutting lever device when the slide plate connection lever is engaged by said slide plate as the slide plates moves on the outward stroke of the reciprocal movement, a slide plate connection lever operation member engaging said slide plate connection lever and adapted to be operated by an electromagnetic device to cause said slide plate connection lever to selectively engage said slide plate, a switching lever so disposed that when operated, said switching lever is moved out of the operation paths of both said paper cutting device and paper cutting lever device and when not operated, the switching lever moves into the operation path of one of said paper cutting device and paper cutting lever device to regulate the operation stroke of the paper cutting device to a distance just sufficient to form a perforated line on a paper and an electromagnetic device for selectively operating said switching lever, said paper cutting lever device comprising a first lever having said



slide plate connection lever pivoted thereto and pivoted to said printer machine frame and a second lever pivoted to said printer machine frame and connected to said paper cutting device to be resiliently urged toward said first lever in the paper cutting direction by a spring and resiliently restrained in a predetermined angular position with respect to the first lever by a stop, whereby the operation stroke distance of said slide plate connection lever as said slide plate moves is set constant so that said first lever rocks by a constant angle and the rocking movement angle of said second lever is selectively regulated by the selective operation of said switching lever to make it possible to selectively cut said paper and form a perforated line on the paper.

4,211,499

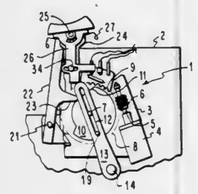
PAPER FEEDING CONTROL APPARATUS

Ronald E. Hunt, and Ernest G. Souliere, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,360

Int. Cl.[3] B41J *13/02*

U.S. Cl. 400—637.6 **10 Claims**



1. Apparatus for controlling the feeding of paper about a printer platen, said apparatus comprising;

(a) means operable for initiating a paper feeding cycle to position a sheet of paper about said platen for printing;

(b) means for effecting front and rear roller feeding of said sheet and aligning said sheet;

(c) cam means coupled to said effecting means for operating said effecting means;

(d) drive means coupled to said cam means for operating said cam means; and

(e) switch means coupled to said initiating means when operated for initiating a paper feeding cycle for starting said drive means.

4,211,500

TIP-PUSHED TYPE MECHANICAL PENCIL

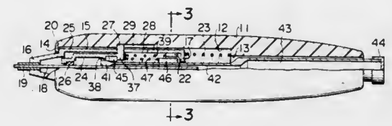
Junichi Hashimoto, Saitama, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1978, Ser. No. 973,718

Claims priority, application Japan, Dec. 27, 1977, 52-156726

Int. Cl.[2] B43K *21/16*

U.S. Cl. 401—65 **10 Claims**



1. A tip pushed type mechanical pencil in which a lead is fed forward by pressing the front end of a pencil against a writing surface or the like and then releasing it; comprising an outer cylinder, a first inner cylinder fitted inside the outer cylinder so as to be axially movable and having a ferrule on its front end, first spring means for urging the first inner cylinder to cause the ferrule to project out of the front end of the outer cylinder, a second inner cylinder fitted inside the first inner cylinder to be axially movable and carrying a packing in its front end portion which grasps a lead, the second inner cylinder being adapted to cooperate with the first inner cylinder for movement therewith as the latter moves in a direction away from the front end, second spring means for urging the second inner cylinder towards the front end, delay means for moving the second inner cylinder towards the front end in delayed relationship with respect to the movement of the first inner cylinder as a force which urges the first inner cylinder to move away from the front end is removed, a lead passage tube fitted within the second inner cylinder for axial movement and carrying a chuck assembly on its forward end, the lead passage tube being adapted to cooperate with the movement of the first inner cylinder toward the front end for movement in the same direction, third spring means for urging the lead passage tube in a direction away from the front end, and a chuck ring slidably mounted within the second inner cylinder.

4,211,501

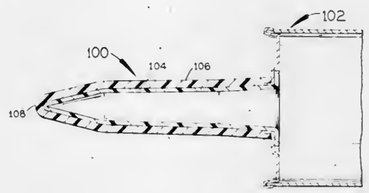
SPREADING TOOL

Rosa M. Pedroso, and Raul I. Pedroso, both of 4120 S.W. 96th Ave., Miami, Fla. 33165

Filed Nov. 3, 1978, Ser. No. 957,571

Int. Cl.[2] E04F *21/30, 21/32*

U.S. Cl. 401—261 **7 Claims**



1. A tool for use in spreading soft, malleable material along an inner corner formed by angular surfaces, comprising:

a hard core with an elastomeric covering, having a durometer hardness in the range from 20 to 70 Shore A, on said core together forming a spreading nose for said tool;

a handle for said spreading nose;

said elastomeric covering tapering inwardly and longitudinally, forming an apex angle in the range from 20 to 90 degrees, to a narrow tip;

said elastomeric covering having a working edge with longitudinally converging portions for engaging the angular surfaces of the inner corner;

said working edge having a blunt tip to form a bead of soft malleable material at said corner;

said elastomeric covering supporting said working edge having substantially uniform thickness of up to substantially $\frac{1}{8}$ inch and said core providing substantially uniform support to said working edge such that said elastomeric covering compresses and said working edge conforms and seals against the angular surfaces, even if said angular surfaces are somewhat irregular, when said spreading nose is pressed and pulled along the inner corner for substantially confining said soft malleable material to said spreading nose and a uniform bead formed by the blunt tip of said working edge at the inner corner.

4,211,502

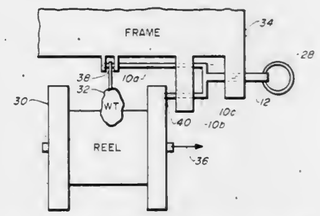
BREAKAWAY PIN RELEASE

Wayne R. Tausig, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1979, Ser. No. 55,923

Int. Cl.[2] B25G *3/18*

U.S. Cl. 403—324 **6 Claims**



1. A breakaway pin release assembly comprising:

a collar having a bore therein;

a release pin slidably mounted in said collar, said release pin having a first end adapted for coupling to a release mechanism, the release mechanism being actuated by linear movement of said release pin along its longitudinal axis, said release pin having a mating portion adapted for interlocking with another pin within said collar;

a pull pin having a first end adapted to be pulled and a mating portion adapted for interlocking with the mating portion of said release pin within said collar, said release pin and said pull pin slidable as a unit through said collar as long as the mating portions of said pull pin and said release pin are interlocked within said collar, said pull pin being free to separate from said release pin when said mating portions are not within said collar.

4,211,503

BIMETALLIC CORROSION RESISTANT STRUCTURAL JOINT AND METHOD OF MAKING SAME

Marvin L. Peterson, and Orwin G. Maxson, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Nov. 13, 1978, Ser. No. 960,348

Int. Cl.[2] E02D *5/60*

U.S. Cl. 405—216 **20 Claims**

1. A corrosion resistant bimetallic structure comprising:

a steel structural element;

a corrosion resistant, non-ferrous metal overlay joined to

said steel structural element and positioned over, and in contact with, a surface area to be protected on the element, said non-ferrous metal including a terminal edge;

at least one corrosion resistant non-ferrous metal bridging element secured to an exposed surface of said non-ferrous metal overlay on the opposite side thereof from its side in



contact with the steel structural element, and including a portion projecting beyond said terminal edge and spaced from said steel structural element; and

sealing means in the space between said bridging element portion and said steel structural element for preventing ingress of a corrosive fluid through said space to said terminal edge.

4,211,504

HIGH STRENGTH CORRUGATED METAL PLATE AND METHOD OF FABRICATING SAME

Eugene W. Sivachenko, 6851 Waverly, Redding, Calif. 96001

Division of Ser. No. 699,289, Jun. 24, 1976, Pat. No. 4,099,359. This application Apr. 26, 1978, Ser. No. 900,383

Int. Cl.[2] E02D *5/00*

U.S. Cl. 405—284 **5 Claims**



1. A load-supporting structure comprising at least one wall defined by a corrugated metal plate having a plurality of generally sinusoidal undulations defined by alternating, contiguous convex portions and concave portions, the spacing between adjacent concave and convex portions in a direction transverse to the plate being at least about four inches and the spacing between adjacent concave portions and between adjacent convex portions parallel to the plate being at least about 12 inches, a corrugated anchoring plate disposed transversely to the longitudinal extent of the undulations for anchoring an end of the first mentioned plate, the anchoring plate being shaped and dimensioned complementarily to the corrugated plate of the wall and oriented transversely with respect thereto, means securing lower ends of the wall to the anchoring plate bracing means connecting an upper portion of the wall with a portion of the anchoring plate remote from the lower end of the wall and comprising a corrugated bracing plate dimensioned complementarily to the wall and the anchoring plate and positioned perpendicular with respect to both, and means for securing the bracing plate to the wall at least adjacent an upper end of the wall.

4,211,505

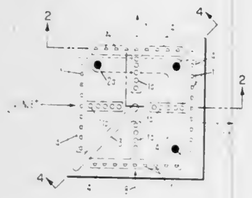
FLUIDIC TRANSPORT INTERSECTION

John P. Babinski, Essex Junction; Bruce I. Bertelsen, Essex; Karl H. Raacke, Essex Junction, and Valdeko H. Sirgo, Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 618,655, Oct. 1, 1975, abandoned. This application Dec. 23, 1976, Ser. No. 753,672

Int. Cl.[2] B65G *51/02*

U.S. Cl. 406—19 **9 Claims**



6. Transport apparatus for guiding a moving wafer comprising

a track,

vacuum means disposed in said track for stopping said wafer at a given location in said track when said wafer is moving in a first direction,

means having a plurality of units disposed in said track for directing fluid toward said given location, said units being arranged to maintain said wafer in substantially said given location when all of said units are directing fluid toward said given location,

means for detecting the presence of said wafer at said given location, and

means responsive to said detecting means for controlling the fluid of one of said units to move said wafer in a second direction from said given location.

4,211,506

METHOD AND APPARATUS FOR THE METERED CONVEYING OF PULVERULENT SOLIDS

Ferdinand List, Marl; Julius Klos, Recklinghausen, and Helmut Alfs, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Apr. 4, 1978, Ser. No. 893,460

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1977, 2717920

Int. Cl.[2] B65G *53/48*

U.S. Cl. 406—55 **1 Claim**

1. An eccentric screw pump for the metered conveying of pulverulent solids comprising:

(a) a rotatable horizontal elongated pump shaft having a first end and a second end and means connecting said first end for rotation thereof;

(b) a receiving chamber at said first end of said pump shaft;

(c) a storage container open to atmospheric pressure above said receiving chamber for delivering said pulverulent solids;

(d) a cylindrical pump chamber connected to said receiving chamber and surrounding said pump shaft at said second end;

(e) an elastomer stator lining the inside of said cylindrical pump chamber and having a helical configuration with an elongated cross section and a double pitch;

(f) a rotor on said pump shaft at said second end having a helical configuration with a circular cross section working in said stator;

(g) an apparatus in which there is superatmospheric pressure of a gaseous system;

(h) a transition section having means for cooling connecting said apparatus and said cylindrical pump chamber;

(i) means for flushing said transition section with an inert gas; and



(j) means for pneumatically loosening said pulverulent solids located in said receiving chamber comprising a bottom sintered metal plate and means for delivering an inert gas under pressure therethrough.

4,211,507

ROTARY CUTTING TOOL WITH RADIALLY ADJUSTABLE, REVERSIBLE TOOL BITS

Dieter Kress, Aalen, and Friedrich Häberle, Lauchheim, both of Fed. Rep. of Germany, assignors to MAPAL Fabrick für Präzisicnswerkzeuge Dr. Kress KG, Aalen, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,726

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741130

Int. Cl.[2] B26D *1/12*

U.S. Cl. 407—37 **6 Claims**

1. In a rotary cutting tool defining an axis of rotation and including a cutter head, at least one reversible tool bit having a cutting edge projecting from said cutter head, and fastening means releasably fastening said bit to said head, the improvement in the fastening means which comprises:

(a) an abutment member,

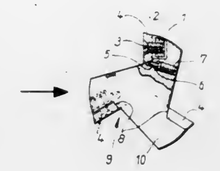
(1) said cutting head being formed with a first recess receiving said abutment member and a second recess receiving said bit, said cutting head having a surface facing in the direction of rotation of the cutting head and extending radially of the axis of rotation with said second recess formed in said surface and said first recess spaced from said second recess in the direction trailing said second recess in the direction of rotation of the cutting head,

(2) a wall portion of said cutter head separating said first and second recesses;

(b) threaded fastening means extending through said bit and said wall portion and into said abutment for clamping said bit to said wall portion;

(c) said bit being plate-shaped and multi-sided and having two major faces and an edge face extending around the peripheral multi-sided edge of each said major face and connecting said major faces, said edge face having a portion corresponding to each side of said major faces and each said portion extending at an oblique angle to said major faces;

(d) said wall portion forming a base surface of said second recess and one of the major faces of said bit being in juxtaposition to said base surface and said cutter head forming at least two lateral side surfaces of said second recess, each lateral side surface being in abutting relation to one of said portions of said edge face, one of said portions of said edge face projecting from said second recess radially outwardly from said cutting head relative to the axis of rotation thereof and including said cutting edge; and



(e) backing means mounted in said cutting head and engaging one of said portions of said edge face disposed in abutting relation to one of said lateral side surfaces of said second recess for shifting said bit in the radial direction relative to the axis of rotation of said cutter head.

4,211,508

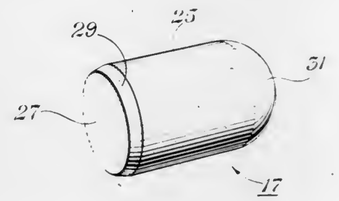
EARTH BORING TOOL WITH IMPROVED INSERTS

Herbert C. Dill, and Stanley R. Scales, both of Houston, Tex., assignors to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 485,658, Jul. 3, 1974, abandoned. This application Feb. 13, 1976, Ser. No. 657,990

Int. Cl.[2] B26D *1/00*; **B21K** *5/02*

U.S. Cl. 407—120 **2 Claims**



1. An improved earth boring tool of the type having at least one sintered tungsten carbide insert with a substantially cylindrical retaining surface interferringly secured to the wall of a retaining hole, the improvement comprising said retaining surface roughened such that in any lineal increment of at least 0.010 inch, there are at least three asperities at least 0.001 inch long and at least 0.00005 inch deep when measured with a stylus point with a 0.0005 inch radius.

2. An improved method of retaining tungsten carbide inserts in an earth boring tool, said method comprising the steps of:

drilling and reaming a plurality of holes in selected locations on the earth boring tool;

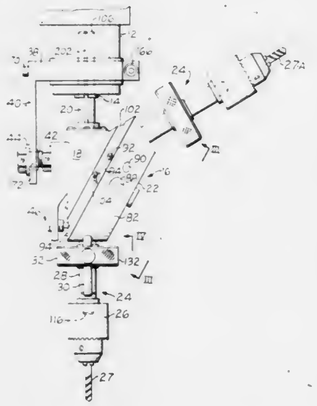
sintering a plurality of tungsten carbide inserts with a binder selected from the group consisting of cobalt, nickel or iron;

grinding a substantially cylindrical wall surface on the inserts that are nominally larger in diameter than the drilled and reamed holes;

roughening the wall surface of the inserts such that any lineal increment of at least 0.010 inch has at least three asperities which are at least 0.001 inch long and at least

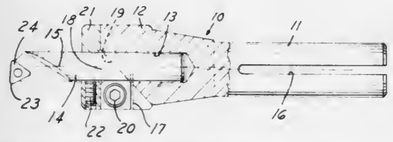
0.00005 inch deep when measured with a stylus point with a 0.0005 inch radius;
and forcing the inserts interferringly into the mating drilled and reamed holes.

4,211,509
WEAR AND ALIGNMENT SLEEVE FOR POWER TOOL
Otto E. Dietrich, 617 W. Jackson St., Morton, Ill. 61550
Filed Nov. 16, 1978, Ser. No. 961,399
Int. Cl.[2] B23B *39/20*
U.S. Cl. 408—35 **5 Claims**



1. A tool driving attachment of the type including a turret rotatably mounted on a hub, a first shaft rotatably mounted in the hub and a second shaft mounted for rotation in the turret and for aligned rotating engagement with the first shaft in the hub, the improvement comprising:
a sleeve extending through the hub and having a first end connected to the first shaft; and
means for venting between the first and second shafts, said means including a bore extending between first and second ends of the first shaft.

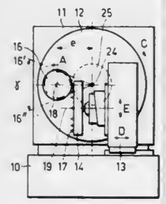
4,211,510
ADJUSTABLE BORING HEAD
David A. Hopkins, Troy, Mich., assignor to The Valeron Corporation, Oak Park, Mich.
Filed Sep. 5, 1978, Ser. No. 939,444
Int. Cl.[2] B23B *31/04*
U.S. Cl. 408—186 **9 Claims**



1. An adjustable boring tool comprising an axially extending shank, an integral socket extending from one end of said shank having a cylindrical bore with an axis parallel and offset relative to the axis of said shank, a transverse slot extending through a wall of said socket intersecting said bore and a longitudinal slot extending through one side of said socket wall from the end thereof to an intersection with an intermediate portion of said transverse slot, a cylindrical boring bar having a rotationally adjustable fit within said cylindrical bore, and means for clamping the slotted segments of said socket wall against said cylindrical boring bar in adjusted position.

4,211,511
METHOD OF MANUFACTURING PAIRS OF SPUR GEARS
Erich Kotthaus, Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle, Zürich, Switzerland
Division of Ser. No. 729,351, Oct. 4, 1976, Pat. No. 4,183,703. This application May 12, 1977, Ser. No. 796,401
Int. Cl.[2] B23F *9/10, 5/20*
U.S. Cl. 409—26 **10 Claims**

1. A method of manufacturing a pair of mating spur gear elements by cutting out tooth gaps with an end cutter head element wherein one of two elements—one of said mating spur gear elements having an axis and the end cutter head element having an axis—is mounted on a rolling cradle having an axis, comprising the steps of:
(I) imparting to the one of said two elements, mounted on the rolling cradle, an arcuate-shaped generating movement,
(II) (a) arranging and maintaining the axis of the one mating spur gear element being cut parallel to the axis of the rolling cradle, and
(II) (b) simultaneously arranging and maintaining the axis of the end cutter head element substantially perpendicular to the axis of the rolling cradle during said arcuate-shaped generating movement,

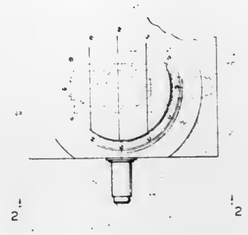


(III) moving one of the axis of the one mating spur gear element and the axis of the end cutter head element relative to the other axis through said arcuate-shaped generating movement around the axis of the rolling cradle,
(IV) coinciding the center of the arcuate-shaped generating movement with the center of the other mating spur gear element to be produced, and
(V) fabricating the other mating spur gear element by a plunge cut operation without any generating movement to produce gear teeth having a straight tooth depth profile in a radial direction.

4,211,512
ROTARY TABLE WITH BALLSCREW DRIVE
Frank Zankl, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.
Filed Dec. 20, 1978, Ser. No. 971,341
Int. Cl.[2] B23Q *1/16, 17/18*
U.S. Cl. 409—221 **6 Claims**

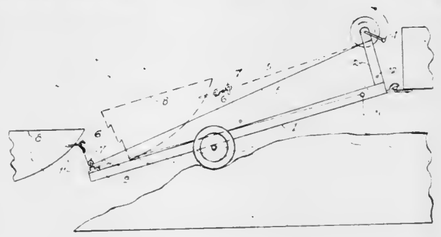
1. A rotary table drive comprising:
a frame;
a tabel journaled to said frame for rotation about a first axis;
a first linear slide slidably mounted on said frame for movement along a second axis perpendicular to said first axis;
a second linear slide slidably mounted on said first linear slide for movement along a third axis perpendicular to both said first and second axes;

a rotary crank coupling said second linear slide to said table; and



means for simultaneously moving said first and second linear slides at variable linear speeds to cause rotary movement of said table.

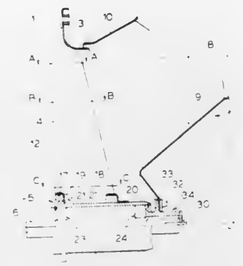
4,211,513
BOAT LOADING DEVICE
Alistair M. Hosie, 219 Superior St., Victoria, B.C., Canada (V8V-1T4)
Filed Jun. 16, 1978, Ser. No. 886,523
Int. Cl.[2] B60P *3/10*
U.S. Cl. 414—559 **5 Claims**



1. In combination with a boat trailer adapted to be towed and having an elongated bed provided with support means for cradling a boat in centered position loaded on the trailer, and further provided with a loading winch stationed at its forward end including a loading line extendable therefrom to be fastened to the bow of the boat for loading the same from the water onto the trailer, guide means in running engagement with the loading line by which to draw the bow of the boat to the after end of the trailer in transversely centered loading position, said guide means comprising a captive line guide through which the line is free to run and that remains captive on the line, and line guide mounting means fixed in transversely centered position on the trailer bed adjacent the after end thereof, said line guide being engageable with the mounting means for locating the line guide substantially at the level of the bed while drawing the boat into loading position, and being selectively releasable from such mounting means thereafter to permit loading of the boat onto the trailer from such loading position.

4,211,514
MIXED FLOW FAN
Stanley P. Hawes, Walton-on-Thames, England, assignor to Airscrew Howden Limited, Weybridge 2, England
Filed Dec. 14, 1977, Ser. No. 860,650
Claims priority, application United Kingdom, Dec. 22, 1976, 53468/76
Int. Cl.[2] F04D *29/44*
U.S. Cl. 415—191 **3 Claims**

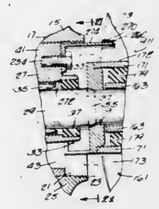
1. A mixed flow unducted direct discharge fan comprising:
(a) a direct discharging mixed flow rotor,
(b) a support ring,
(c) bearing support means for the rotor,





(d) a plurality of vanes positioned to extend between support ring and the bearing support means,
(e) the vanes being angled to impose on air entering the fan a swirl in the opposite direction to swirl produced by the rotor in operation.

4,211,515
MARINE PROPELLER FISH LINE AND WEED CUTTER
Donald A. Henrich, Lake Villa, and Edgar Rose, Glencoe, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Division of Ser. No. 878,323, Feb. 16, 1978. This application Mar. 7, 1979, Ser. No. 18,122
Int. Cl.[2] B63H *1/26*
U.S. Cl. 416—146 R **4 Claims**

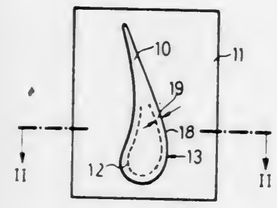


1. A marine propulsion device including a lower unit having a gear case including a bearing retainer having a radially extending rib, a propeller shaft rotatably supported by said bearing retainer and including a portion extending rearwardly of said lower unit, a propeller mounted on said rearward portion of said propeller shaft for common rotation therewith and including a radially outwardly extending blade with a leading edge having therein a forwardly open slot, and cutter means comprising an L-shaped cutter including a radially extending leg fixedly mounted on said rib and a radially outer tooth element having a tooth portion which extends rearwardly for passage through said slot so as to provide a shearing action in response to rotation of said propeller.

4,211,516
BLADE STRUCTURE FOR FLUID FLOW ROTARY MACHINE

Peter Speil, Heidelberg, Fed. Rep. of Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 20, 1977, Ser. No. 789,245
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617927
Int. Cl.² F01D *5/22*
U.S. Cl. 416—191 **7 Claims**



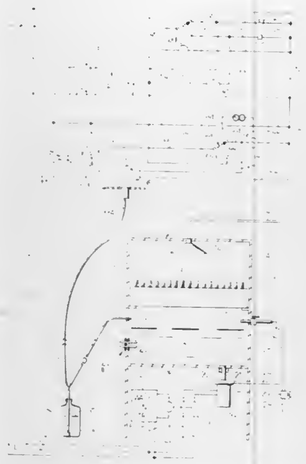
1. A blade structure for use in a fluid flow rotary machine comprising:
- a blade having a profile which is thickened at least within an enlarged leading edge; and
- a cover plate connected to the blade at the blade head thickened region by at least one welded joint, the welded joint forming a substantially closed loop and having an elliptical configuration with the major axis of the elliptical welded joint extending approximately in the direction of the longitudinal axis of the thickened region of the blade profile, the welded joint including at least one looping welded seam arranged substantially within a periphery of the blade profile;
- said looping welded seam being formed over only a portion of the blade profile and at least a portion of said looping welded seam being spaced from the periphery of the blade profile by a distance sufficient to prevent any detrimental influence thereon.

4,211,517
DETERGENT SUPPLY CONTROL FOR AUTOMATIC DISHWASHER

Rolyn A. Schmid, Hayward, Wis., assignor to Bender Machine Works, Inc., Hayward, Wis.

Filed Nov. 27, 1978, Ser. No. 963,795
Int. Cl.² F04B *49/06;* **F16R** *31/42;* **B08B** *3/00*
U.S. Cl. 417—12 **11 Claims**

1. In combination:
- a motor-driven supply pump for supplying a substance to a liquid solution which changes the conductivity of said solution;
- and control means for operating said supply pump and comprising a timer and a conductivity sensor,
- said timer being operable to enable said conductivity sensor to effect operation of said timer and said supply pump in response to a low conductivity level,
- said timer being further operable to prevent said conductivity sensor from effecting operation of said timer and said supply pump in response to a low conductivity level after

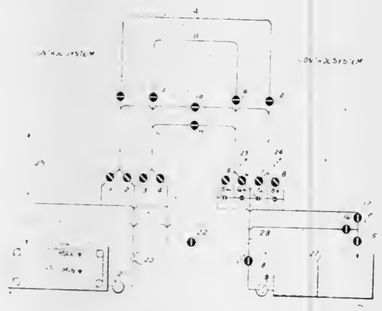


said timer has operated for a predetermined interval of time.

4,211,518
METHOD AND ARRANGEMENT FOR HYDRAULIC CONVEYING OF SOLIDS

Werner Kortenbusch, Lünen, Fed. Rep. of Germany, assignor to Ruhrkohle AG, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 847,916, Oct. 27, 1977, abandoned, which is a continuation of Ser. No. 768,352, Feb. 14, 1977, abandoned, which is a continuation of Ser. No. 638,483, Dec. 8, 1975, abandoned. This application May 15, 1978, Ser. No. 906,846
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1974, 2457942
Int. Cl.² F04F *11/00*
U.S. Cl. 417—54 **8 Claims**



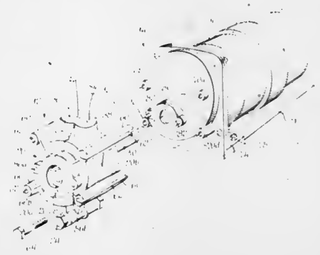
1. An arrangement for hydraulically conveying solids of different specific weights in form of slurries comprising, in combination, at least two elongated chambers lack having a different volume; a source of slurry; a source of pressurized hydraulic fluid; conduit means including slurry supply conduits communicating said source of slurry with said chambers for admission of slurry into the latter, a discharge conduit communicating with said chambers, and fluid conduits communicating said source of hydraulic fluid with said chambers for expulsion of admitted slurry from the chambers; valve means operative for selectively cyclically establishing and interrupting communication of said conduits with said chambers; means for detecting the specific weight of the solid component in the slurry supplied by said slurry source; and means for selecting one of the chambers as a function of the detected specific weight of the solid component of the slurry.

8. A method of hydraulically conveying solids of different specific weights in form of slurries, with an arrangement having at least two chambers each having a different effective volume, comprising the steps of sensing the specific weight of a slurry to be conveyed to determine whether it is below or above a predetermined limit; selecting the chamber with the maximum chamber length when the specific slurry weight is below said predetermined limit, and selecting the chamber with the minimum chamber volume when the specific slurry weight is above said predetermined limit; admitting the slurry into one of the chambers having the selected chamber volume hydraulically expelling the slurry from said one chamber so as to convey the expelled slurry to a remote location and simultaneously with the step of expelling also admitting slurry into the other of said chambers having the selected chamber volume; and repeating the preceding steps.

4,211,519
FLUID PUMP AND QUICK RELEASE MOUNTING ARRANGEMENT THEREFOR

Lawrence R. Hogan, Lake Villa, Ill., assignor to Cole-Parmer Instrument Company, Chicago, Ill.

Filed Aug. 29, 1977, Ser. No. 828,482
Int. Cl.² F04B *43/12*
U.S. Cl. 417—360 **18 Claims**

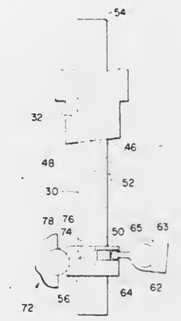


1. In a peristaltic pump which includes a housing defining a longtiudinal axis, said housing having an internal chamber and an opening communicating with said chamber, a length of tube extending through said opening and having a portion looped internally of said chamber so as to form a cntinuous flow passage through said tube, and displacement means supported within said chamber and operatively associated with said tube to facilitate a peristaltic pumping action within said tube; the improvement wherein said housing comprises two housing sections hingedly connected to each other for relative movement between open and closed positions about a hinge axis substantially coplanar with and spaced from said longitudinal axis in substantially parallel relation therewith, said two housing sections defining a parting plane therebetween substantially coplanar with said longitudinal and hinge axes when said housing sections are in relatively closed positions wherein said housing sections define said internal chamber and enclose and support said displacement means, said housing sections in their said open positions facilitating removal of said displacement means and manipulation and replacement of said tube, each of said housing sections defining a tube receiving opening communicating with said chamber and opening externally of said housing, said parting plane passing through said openings in the longitudinal direction thereof such that when said housing sections are in their said open positions, said tube may be inserted within each of said openings by movement of said tube in a direction substantially transverse to its longitudinal axis, said housing sections being adapted to retain said tube in assembled relation therewith when said housing sections are moved between their said open and closed positions.

4,211,520
TIMING CONTROL FOR SLEEVE METERING FUEL SYSTEM

Stanley J. Kranc, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 20, 1978, Ser. No. 871,053
Int. Cl.² F02M *59/28*
U.S. Cl. 417—494 **18 Claims**

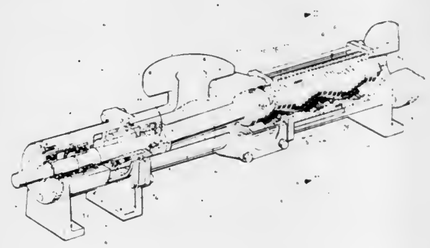


1. In an engine fuel pump having a fill port in a plunger closed and opened during plunger strokes by a face of a relatively stationary barrel surrounding the plunger, a spill port in said plunger closed and opened during plunger strokes by a relatively stationary collar surrounding the plunger and linkage means operable by a governor or the like for adjusting the collar axially on said plunger to vary the separation of the barrel face from the collar and thereby the volume of fuel delivered per plunger stroke, an improvement comprising:
- an oblique surface serving as said barrel face; and
- means for engaging said collar and plunger for adjustably setting the angular position of said plunger about its cylindrical axis to adjust injection timing of said fuel pump.

4,211,521
ECCENTRIC DISC PUMP

Max Streicher, Wangen im Allgäu, Fed. Rep. of Germany, assignor to Fördertechnik Streicher GmbH, Wangen im Allgäu, Fed. Rep. of Germany

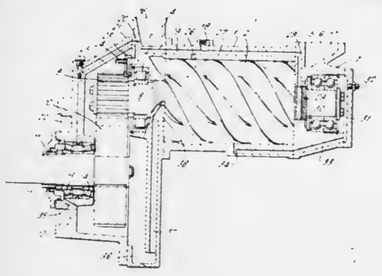
Filed Mar. 14, 1978, Ser. No. 886,356
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712121
Int. Cl.² F04C *1/06, 29/04*
U.S. Cl. 418—48 **21 Claims**



1. An eccentric disc pump having a plurality of individual axially interconnected pump stages of predetermined width, a stator disc in each pump stage enclosing a central cavity, a shaft carried in said central cavities, a rotor disc mounted in each pump stage for rotation eccentrically in said central cavity, successive rotor discs being angularly offset relative to the rotor disc of a preceding pump stage and adjacent stator and

rotor discs being angularly offset relatively to each other at angles of displacement, coupling means respectively engaging each stator disc with that of an adjacent pump stage and positively locating such adjacent stator disc in positions offset by a second angle one half of the first mentioned angular displacement between corresponding adjacent rotor discs whereby in each pump stage the cavity of the stator disc forms an enveloping curve for the path of the rotor disc rotatable therein, coupling means are provided for a plurality of different second angles of displacement.

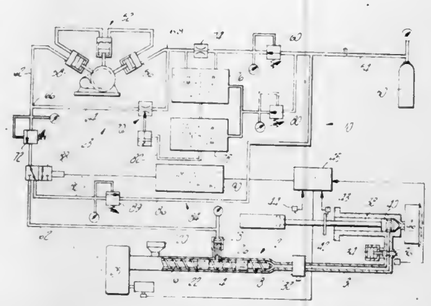
4,211,522
OIL-INJECTED ROTARY COMPRESSORS
Howard H. J. Pidgeon, Camborne, England, assignor to Compair Construction & Mining Limited, Cornwall, England
Filed Jul. 3, 1978, Ser. No. 921,499
Claims priority, application United Kingdom, Jul. 5, 1977, 28163/77
Int. Cl.² F04C *29/02*
U.S. Cl. 418—99 **4 Claims**



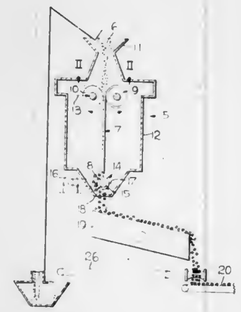
1. A method of draining oil from a transmission housing, of a rotary compressor comprising a compressor housing containing rotor means and having an inlet for gas to be compressed and a transmission housing, a shaft of the compressor extending into the transmission housing from the compressor housing, in which method the first portion of the compressor intake stroke, or rotation, is prevented from being filled with intake gas such that a depression of lower pressure than inlet pressure is created, said depression being applied via a bore to a sump portion of the transmission housing, so that the absolute pressure differential between the sump and the suction portion of the rotor means draws oil out of the sump and into the rotor means spaces.

4,211,523
GAS-FLOW CONTROL APPARATUS FOR EQUIPMENT FOR PRODUCING FOAMED PLASTIC
Edward C. Hunerberg, Wilbraham, Mass., assignor to Hoover Universal, Inc., Saline, Mich.
Filed Nov. 29, 1978, Ser. No. 964,744
Int. Cl.² B29D *27/00*
U.S. Cl. 425—4 C **13 Claims**

1. Gas-flow control apparatus for delivering a selected constant volumetric flow of gas to a plasticating means for dispersion in a polymer being fed through said plasticating means, said gas-flow control apparatus comprising a supply of compressible gas, a compressor having an intake and a discharge and operable to produce a constant volumetric gas flow output with a selected pressure value, supply conduit means connecting said gas supply with said compressor intake to deliver gas from said gas supply to said compressor at a pressure value less than said selected pressure value of said compressor output, discharge conduit means connecting said compressor discharge with said plasticating means, and a feedback loop system including feedback conduit means connected to said compressor discharge and to said compressor intake, said feedback loop system including regulating means controllable to divert a selected fraction of said compressor output to said compressor intake to thereby control the delivery to said plasticating means of said selected constant predetermined volumetric flow of gas.



4,211,524
ROLLS FOR COMPACTING MILL
George J. Jennrich, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Oct. 10, 1978, Ser. No. 949,538
Int. Cl.² A23G *1/20*
U.S. Cl. 425—296 **3 Claims**



1. Apparatus by which agglomerative material (6) is compacted into a sheet (7) that can be broken in tablet-like bodies (8) of substantially uniform size and shape, said apparatus being of the type comprising a pair of opposing substantially cylindrical rolls (9, 10) that have parallel axes, and means (11) for feeding agglomerative material into the nip of said rolls while said rolls rotate in opposite directions and while one of said rolls is urged bodily towards the other with a force that causes the material to be compacted as it passes between the rolls (9, 10), said apparatus comprising:

A. each of said rolls (9, 10) having radially outwardly projecting ridges (21) thereon that are spaced apart by substantially uniform distances to define grooves (22) between the ridges (21);

B. all of the ridges (21) on a first one of said pair of rolls (9) being both parallel to each other and extending thereon solely in a circumferential direction around said first roll (9), and all of the ridges (21) on the other of said pair of rolls (10) being parallel to each other and extending thereon solely in a direction transverse to the direction in which the ridges (21) on the said first one of said pair of rolls (9) extend; and

C. each of said ridges (21)

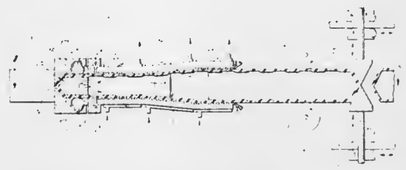
(a) having a depth in the direction radial to the roll that is substantially greater than its width,

(b) having a root portion that joins the body of the roll at opposite concave fillets (25) of substantially large radius so that the bottom surface of each of said grooves (22) merges into its side surfaces around such fillets, and

(c) having it radially outermost portion (24) substantially tapered in cross-section,

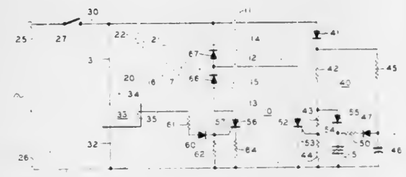
so that each ridge (21) defines a slot (23) in a sheet (7) compacted by the rolls, which slot (23) opens to one surface of the sheet, extends transversely to slots (23) opening to the opposite surface of the sheet, and encourages the sheet to break substantially along the slot.

4,211,525
APPARATUS FOR MAKING STRETCHED, HOLLOW SHAPED STRANDS HAVING CORRUGATED INTERMEDIATE SUPPORTS
Heinz Vetter, Rossdorf, Fed. Rep. of Germany, assignor to Röhm GmbH, Darmstadt, Fed. Rep. of Germany
Filed Dec. 5, 1978, Ser. No. 966,738
Int. Cl.² B29C *17/07;* **B29D** *23/03;* **B29F** *3/012*
U.S. Cl. 425—326.1 **4 Claims**



1. Apparatus for making a hollow non-circular tube of a transversely expanded and longitudinally stretched synthetic resin, said tube having two opposing tube walls with a plurality of support members joined thereto and extending therebetween, said support members extending longitudinally through said tube and being corrugated in the longitudinal direction; which apparatus comprises extruding means including an extrusion nozzle for extruding a tube of unstretched resin in thermoplastic condition, said extrusion nozzle having a plurality of paired opposed extrusion channels for forming said two opposing tube walls by extrusion, adjacent pairs of said extrusion channels being separated laterally to form said support members by extrusion, and flow control means for rhythmically increasing and decreasing the resistance to flow of resin through each extrusion channel whereby the extruded thickness of the two opposing tube walls is alternately increased and decreased, said apparatus further comprising calibration means, directly adjacent said extrusion nozzle and into which the extruded tube is passed, said calibration means including temperature-adjusting means for adjusting the temperature of said extruded tube until the resin is in a thermoelastic condition, forming means for laterally expanding and longitudinally stretching the temperature-adjusted resin tube while in a thermoelastic condition whereby alternately thicker and thinner portions of the opposing tube walls are differently transversely stretched and said support members are deformed into a longitudinally-corrugated condition, said calibration means further including cooling means for cooling the expanded and stretched tube to a temperature below the softening point of the resin.

4,211,526
CONTROL SYSTEM FOR REDUNDANT VALVES
Roger A. Schilling, West St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 6, 1978, Ser. No. 957,956
Int. Cl.² F23N *5/00*
U.S. Cl. 431—69 **9 Claims**



1. An electronic control system for redundant fluid flow valves that are adapted to be energized from an alternating current potential, including: condition responsive means adapted to be connected to a source of alternating current potential and capable of generating an initial timed output signal simulating the presence of a sensed condition, and then responding to the presence or absence of said sensed condition; said condition responsive means having an output signal when said condition is sensed timing circuit means energized concurrently with said condition responsive means with said timing circuit means including solid state switch means which is immediately caused to be conductive and subsequently is timed to a non-conductive state; said solid state switch means adapted to energize a first of said fluid flow valves to open said first valve when said solid state switch means conducts; second solid state switch means controlled by said condition responsive means with said second solid state switch means being conductive whenever said condition responsive means has either of said output signals; and said second solid state switch means adapted to connect a second of said fluid flow valves in a series circuit with said first fluid flow valve and current responsive safety means across said alternating current potential to maintain said valves in an energized state.

4,211,527

PROCESS FOR DYEING POLYESTER MATERIALS

Jean P. Luttringer, Rixheim, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 9, 1977, Ser. No. 858,997

Claims priority, application Switzerland, Dec. 14, 1976, 15705/76

Int. Cl.[2] D06P *5/00, 7/00*

U.S. Cl. 8—526 14 Claims

1. Process for dyeing polyester fibers, or mixtures thereof with other fibers, by the exhaust method from an aqueous liquor, in which process the liquor contains 0.2 to 8.0 percent by weight, relative to the polyester fibers, of at least one alkaline-earth metal salt, aluminium salt or organic ammonium salt of a mono- or polyvalent aliphatic organic acid or of a mono- or polyvalent inorganic acid.

4,211,528

SOLUTIONS OF SUBLIMABLE DYES FOR THE PREPARATION OF SPECIAL INKS FOR FELT TIP MARKERS OR PENS

Georges Cuvelier, Lille, France, assignor to Dollfus-Mieg & Cie, Paris, France

Filed Jan. 20, 1978, Ser. No. 870,998

Claims priority, application France, Jan. 20, 1977, 77 01515

Int. Cl.[2] C09B *67/00;* D06P *1/667*

U.S. Cl. 8—471 3 Claims

1. A dye solution consisting essentially of one or more sublimable, water insoluble dyes capable of use in transfer printing, one or more liquid aliphatic hydrocarbons having 1 to 3 carbon atoms and in which at least one hydrogen atom is substituted by chlorine, and hexamethylphosphorotriamide in an amount of between 2 and 10% by weight of the liquid aliphatic hydrocarbon .

4,211,529

CHROME-TANNING

Heinrich Spahrkäs; Josef Müller; Ernst Komarek, and Wolfhard Luck, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 936,279

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739844

Int. Cl.[2] C14C *3/06, 9/00*

U.S. Cl. 8—94.26 6 Claims

1. In the chrome-tanning of animal skins and hides by pretanning the pickled pelts with chromium(III)salts and acid-binding agents and thereafter full tanning, the improvement which comprises effecting full tanning with the reaction product of at least one of formic acid and a formate with a basic chromium (III) sulphate, at least 2 moles of formate plus formic acid being used per mole of Cr_2O_3 for full tanning, the total input of chromium oxide being from about 1.0 to 1.8%, based on the weight of the pelts, and tanning being carried out with a liquor volume of at most 100%, based on the weight of the pelts, up to a final pH-value of at least 4.0.

4,211,530

TEST-KIT AND METHOD FOR THE ESTIMATION OF LP-X

Bastiaan C. Goverde; Peter S. L. Janssen, both of Oss, Netherlands, and Gerhard M. Kostner, Graz, Austria, assignors to Akzo N.V., Arnhem, Netherlands

Filed Feb. 8, 1978, Ser. No. 876,133

Claims priority, application Netherlands, Feb. 18, 1977, 7701800

Int. Cl.[2] G01N *33/16*

U.S. Cl. 23—230 B 10 Claims

1. A method for the demonstration and determination of the lipoprotein LP-X in serum, comprising

initially removing the interfering apo-B-containing lipoproteins from serum,

subsequently adding to the remaining serum substances that reduce the solubility of lipoproteins, thus forming a suspension of LP-X, and

measuring and determining the amount of LP-X by visual or photo-optical methods.

4,211,531

COLORIMETRIC CHOLESTEROL ASSAY

Manik L. Das, Ballwin, Mo., assignor to Sigma Chemical Company, St. Louis, Mo.

Filed Apr. 20, 1979, Ser. No. 31,773

Int. Cl.[2] G01N *33/16, 21/22, 31/02*

U.S. Cl. 23—230 B 11 Claims

1. In a method of determining cholesterol in a biological sample comprising a precipitation step for precipitating protein in the sample, a color forming step for forming in the resulting supernatant a color proportional to the concentration of at least one form of cholesterol in the sample, and a step of determining the depth of color formed, the improvement wherein said precipitation step is carried out by means of a reagent comprising colorimetric amounts of propionic acid and ferric ion.

11. A reagent kit for determination of total cholesterol, said reagent kit comprising a first container containing a colorimetric amount of ferric chloride and propionic acid and a second container containing a reagent comprising colorimetric amount of propionic acid and sulfuric acid.

4,211,532

TEST COMPOSITION, METHOD AND A TEST STICK FOR DETECTION OF CHLORIDE ION IN COW'S MILK

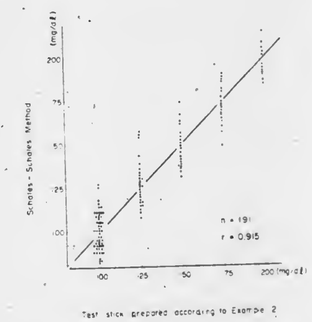
Shizen Tobari, Tachikawashi, and Mariko Nakano, Hokkaido, both of Japan, assignors to Toyo Roshi Kaisha Ltd., Tokyo, Japan

Filed Jul. 13, 1978, Ser. No. 924,376

Claims priority, application Japan, Oct. 27, 1977, 52-128167

Int. Cl.[2] G01N *33/04*

U.S. Cl. 23—231 10 Claims



Test stick prepared according to Example 2

1. A composition for detecting chloride ion in cow milk, comprising a protected silver chromate colloidal substance, a surface active agent and a buffer agent having a pH value from 2 to 7.

4,211,533
METHOD OF HOT-BRIQUETTING MIXTURES OF COAL AND COKE

Gerd Nashan, Oberhausen; Josef Langhoff, Dinslaken; Joachim Lehmann, Essen-Haarzopf; Kurt Kleisa, Hattingen, and Dieter Makrutzki, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Ruhrkohle AG, both of Essen, Fed. Rep. of Germany

Filed Apr. 10, 1978, Ser. No. 894,846
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715977
Int. Cl.[2] C10L 5/00
U.S. Cl. 44—10 C 7 Claims

1. In a method of making briquettes in which coke and coking coal are admixed to form a briquetting mixture having a temperature in the range between about 400°–500° C., the improvement wherein the coke temperature is adjusted, prior to mixing of the coke with the coking coal, to a temperature level which will, upon mixing of the coke with the coking coal, result in the mixture having a temperature within ±5% of a predetermined briquetting temperature lying within said range.

4,211,534
COMBINATION OF ETHYLENE POLYMER, POLYMER HAVING ALKYL SIDE CHAINS, AND NITROGEN CONTAINING COMPOUND TO IMPROVE COLD FLOW PROPERTIES OF DISTILLATE FUEL OILS

Nicholas Feldman, Woodbridge, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 909,441, May 25, 1978, abandoned. This application Aug. 30, 1978, Ser. No. 938,050
Int. Cl.[2] C10L 1/22
U.S. Cl. 44—62 19 Claims

1. A wax-containing petroleum fuel oil comprising a major proportion of a distillate oil boiling in the range of 120° to 500° C., which fuel oil has been improved in its low temperature flow properties, containing in the range of about 0.001 to 0.5 wt. %, based on the weight of the total composition, of a flow improving combination of:

(A) one part by weight of an oil-soluble ethylene backbone distillate flow improving polymer having a number average molecular weight in the range of about 500 to 50,000;

(B) 0.1 to 10 parts by weight of a second oil-soluble polymer of monomers other than ethylene, having a molecular weight in the range of about 1000 to 200,000 wherein at least 10% by weight of said polymer is in the form of straight chain alkyl groups having 6 to 30 carbon atoms, said polymer comprising unsaturated ester, or unsaturated ester and olefin, monomer moieties, said moieties comprising a major weight proportion of said polymer; and

(C) 0.01 to 10 parts by weight of an oil soluble nitrogen compound containing a total of about 30 to 300 carbon atoms and having at least one straight chain alkyl segment of 8 to 40 carbons, and selected from the class consisting of amine salts and/or amides of hydrocarbyl carboxylic acids or anhydrides having 1 to 4 carbonyl groups.

4,211,535
GASOLINE FUEL COMPOSITIONS CONTAINING ANTIKNOCK ADDITIVE

Robert J. Hartle, Gibsonia, Pa., assignor to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Aug. 7, 1978, Ser. No. 931,612
Int. Cl.[2] C10L 1/18
U.S. Cl. 44—68 6 Claims

1. A gasoline motor fuel composition comprising a major amount of gasoline and a small amount, sufficient to improve the antiknock characteristics of the gasoline, of a free β-diketone and a chelate of cerium(IV),

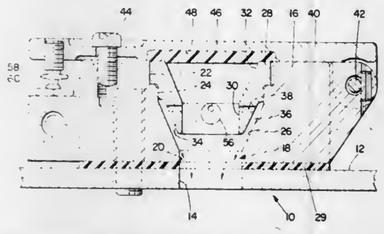
a. said free β-diketone represented by the formula $R_1CO—CH_2—CO—R_2$ where R_1 and R_2 are alkyl radicals with at least one being branched, each having from 1 to about 8 carbon atoms and having a total of at least 5 carbon atoms, and

b. said chelate of cerium(IV) is the tetrakis chelate with a β-diketone represented by the formula $R_3—CO—CH_2—CO—R_4$ where R_3 and R_4 are alkyl, aralkyl or cycloalkyl radicals, each containing from 1 to 12 carbon atoms and the sum of the carbon atoms in said radicals is 5 to about 20.

4,211,536
POKE HOLE CLOSURE APPARATUS

Wallace Hamilton, Chagrin Falls, Ohio, assignor to McDowell-Wellman Company, Cleveland, Ohio

Filed Oct. 16, 1978, Ser. No. 951,337
Int. Cl.[2] C10J 3/72
U.S. Cl. 48—87 2 Claims



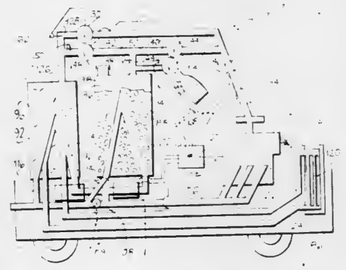
1. A poke hole closure assembly for a gas producer to minimize the escape of noxious or volatile gas from the producer during a poking operation, comprising closure means for a poke hole of a gas producer, said closure means comprising a block having an aperture therethrough, means attaching said block to a gas producer so that said aperture is in substantial alignment with a poke hole, a closure plate hinged to said block to block said aperture and poke hole during normal operating conditions and being openable to enable a poker to be inserted therethrough, and nozzle means responsive to the opening of said closure means to direct an inert gas into said poke hole, said nozzle means including passage means communicating with the interior of said aperture for conducting said inert gas to said aperture, said nozzle further including a hollow, conical insert mounted in said aperture, said insert having an opening therethrough to permit passage of said poker and having an outer conical wall spaced from an inner conical wall of said aperture, said passage means opening through said inner conical wall and into the space between said conical walls so that the inert gas will be directed downwardly and radially into said poke hole to block the outward passage of noxious or volatile gas from said poke hole when said closure plate is opened, means to prevent the entrainment of air in the downwardly and inwardly directed flow of inert gases comprising a plurality of ports extending through said insert from the space between said inner and outer conical walls to the opening through the insert to provide a blanket of inert gas which is sucked into the poke hole; to thereby prevent the entrainment of air.

4,211,537
HYDROGEN SUPPLY METHOD

Robert J. Teitel, 13944 Boquita Heights, Del Mar, Calif. 92014

Filed Jul. 24, 1978, Ser. No. 927,203
Int. Cl.[2] F17D 3/01
U.S. Cl. 48—191 7 Claims

1. A process of supplying hydrogen from a hydrogen storage system including a storage means for containing hydrogen; said storage means including at least one hydrogen withdrawal conduit connected to said storage means for discharging said hydrogen from said storage means, a first compartment means, a second compartment means and a connecting means for connecting said first compartment means to said second compartment means, a microcavity hydrogen storage means located in said first compartment, said microcavity hydrogen storage means including a porous structure having a plurality of microcavities defined by closed pores surrounded by hydrogen permeable walls, said microcavities containing hydrogen under pressure encapsulated within the interior of their walls, said microcavities upon being heated capable of releasing the pressurized hydrogen encapsulated within their interiors; a quantity of a composition capable of forming at least one metal hydride when exposed to hydrogen located in said second compartment means, said metal hydride capable of releasing hydrogen when heated and absorbing hydrogen when cooled in the presence of hydrogen which comprises:



heating said microcavities to cause said pressurized hydrogen to diffuse through said permeable walls from the interior of said microcavities to the exterior of said microcavities;

allowing hydrogen to transfer between said first and said second compartments through said connecting means;

regulating the temperature of said composition in accordance with the pressure of said hydrogen in said second compartment means so that the pressure of hydrogen within said second compartment means remains substantially constant;

withdrawing hydrogen through said hydrogen withdrawal conduit for use external said hydrogen storage system.

4,211,538
PROCESS FOR THE PRODUCTION OF AN INTERMEDIATE BTU GAS

James M. Eakman; Nicholas C. Nahas, both of Baytown, and Charles A. Euker, Jr., Houston, all of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 771,504, Feb. 25, 1977, Pat. No. 4,118,204. This application Jun. 28, 1978, Ser. No. 920,045
The portion of the term of this patent subsequent to Oct. 3, 1995 has been disclaimed.
Int. Cl.[2] C10J 3/54
U.S. Cl. 48—197 R 10 Claims



1. A process for the production of an intermediate Btu product gas from a carbonaceous feed material and steam which comprises:

(a) reacting said steam with said carbonaceous feed material in a reaction zone at a reaction temperature between about 1000° F. and about 1500° F. and at a reaction pressure in excess of about 100 psia, in the presence of a carbon-alkali metal catalyst and sufficient added hydrogen and carbon monoxide to provide substantially equilibrium quantities of hydrogen and carbon monoxide in said reaction zone at said reaction temperature and said reaction pressure;

(b) withdrawing from said reaction zone an effluent gas containing substantially equilibrium quantities, at said reaction temperature and pressure, of methane, carbon dioxide, steam, hydrogen and carbon monoxide;

(c) recovering a portion of said effluent gas as said intermediate Btu product gas;

(d) contacting at least a portion of the remainder of said effluent gas with steam in a steam reforming zone under conditions such that the methane in said effluent gas reacts with said steam to produce hydrogen and carbon monoxide; and

(e) passing the effluent from said steam reforming zone into said reaction zone without substantial cooling, thereby supplying said added hydrogen and carbon monoxide required in said reaction zone and wherein said reforming zone is operated at conditions such that the heat content of said effluent from said steam reforming zone is sufficient to supply substantially all of the heat needed to preheat said carbonaceous feed material to said reaction temperature.

4,211,539
PRODUCING PURE GAS OF HIGH CALORIFIC VALUE FROM GASIFICATION OF SOLID FUEL

Herbert Bierbach, Frankfurt am Main; Rudolf Kohlen, Wehrheim, and Carl Hafke, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 790,368, Apr. 25, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,508
Claims priority, application Fed. Rep. of Germany, May 26, 1976; 2623489
Int. Cl.[2] C10J 3/16
U.S. Cl. 48—197 R 6 Claims



1. A process of producing and then using a gas of high calorific value and low dust content comprising contacting a solid fuel with water vapor and free oxygen in a gasification reactor at a pressure of about 5 to 150 bars and a temperature sufficient to produce a gas containing hydrogen and carbon monoxide, containing at least about 8 grams of dust per standard cubic meter and having a temperature of about 350° to 800° C., subjecting the gas to a dry coarse purification to reduce the solids content thereof, intensely scrubbing the gas at about 150° to 350° C. with a scrubbing liquid predominantly comprising hydrocarbons and including less than 2% of water by weight, after said dry coarse purification and before said

scrubbing spraying water into the gas thereby to cool it to below 350° C. so as to prevent cracking of constituents of said scrubbing liquid, at least about 70% of said hydrocarbons of the scrubbing liquid having a boiling point above about 350° C., said scrubbing liquid being supplied to the scrubbing stage at a rate of about 0.5 to 6 liters per standard cubic meter of raw gas, withdrawing a purified gas with a solids content not exceeding 10 milligrams per standard cubic meter and having an enhanced calorific value and employing it as a fuel for the operation of at least one turbine, withdrawing used scrubbing liquid from said intense scrubbing stage and cooling it by indirect heat exchange in a cooling zone, separating the liquid from said cooling zone in a tar separator into a high-solids heavy phase and a low solids lighter phase, and using said lighter phase as said scrubbing liquid in the intense scrubbing stage.

4,211,540

PROCESS FOR THE MANUFACTURE OF FUEL GAS

David Netzer, Stafford, Tex., assignor to Fluor Corporation, Irvine, Calif.

Filed Dec. 29, 1978, Ser. No. 974,221
Int. Cl.² C10J *3/08, 3/16, 3/46*
U.S. Cl. 48—202 **8 Claims**



1. A process for the manufacture of fuel gas from coal which comprises sizing a coal feed to produce a first portion of larger particle sizes and a second portion of fine particles; gasifying (a) said first portion of coal feed in a moving bed slagging gasifier; quenching the gas thus produced to form a water phase comprising water, phenolic compounds, ammonia, CO_2, HCN, and H_2S and a liquid organic phase comprising tar, oil and naphtha; separating and recovering said liquid organic phase; separating the water phase and mixing it with (a) said second portion of said coal feed to form a slurry; gasifying the coal in said slurry in an entrained bed gasifier; blending the gases generated by said gasifiers, and purifying the blend by removing CO_2, sulfur compounds and higher hydrocarbons, whereby fuel gas is produced and environmentally unsafe byproducts such as phenolic compounds are eliminated.

4,211,541

POLLUTION CONTROL SYSTEM

Alberto C. Fernandez, Mexico City, Mexico, assignor to Harry W. O. Kinnard, Arlington, Va.

Filed Jun. 26, 1978, Ser. No. 919,521
Int. Cl.² B01D *47/12, 53/04*
U.S. Cl. 55—68 **6 Claims**

1. A method of treating combustion products to remove gaseous and solid polluting components comprising the steps in order of:

passing the combustion products through a screen to allow gases and particles of smaller size than mesh size to pass through the screen while retaining particles larger than mesh size in the combustion area, then

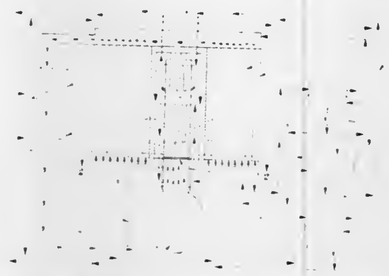
washing combustion products with steam, then

passing a mixture of steam and combustion products through granulated carbon, then

washing combustion products with an aqueous solution of potassium aluminum sulfate, aluminum sulfate, aluminum hydroxide, chlorine, and quicklime, and removing any precipitants, then

washing combustion products with an aqueous solution of kerosene and naphthalene and removing any precipitants, and then

washing combustion products with an aqueous solution of



aluminum hydroxide, aluminum sulfate, chlorine, quicklime, and sodium carbonate, and removing any precipitants.

4. A method of treating combustion products to remove polluting components comprising the step of:

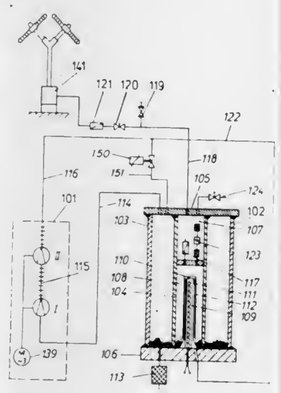
washing combustion products with an aqueous solution of potassium aluminum sulfate, aluminum sulfate, aluminum hydroxide, chlorine, and quicklime.

4,211,542

METHOD AND APPARATUS FOR PRODUCING DRY, COMPRESSED AIR FOR ELECTRICAL SWITCH GEAR

Wilhelm Kramer, Sandhausen, Fed. Rep. of Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jan. 23, 1978, Ser. No. 871,339
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 2702767
Int. Cl.² B01D *53/04*
U.S. Cl. 55—179 **9 Claims**



1. A drying apparatus for removing moisture from air for use in electric switchgear comprising:

a compressor having an inlet for pre-dried air and an outlet for compressed air;

a housing including:

an outer annular cylindrical housing portion in fluid communication with the inlet of the compressor;

means disposed within said outer annular cylindrical housing portion to pre-dry at least atomspheric air;

an inner cylindrical housing portion in fluid communication with the outlet of the compressor;

heating means for heating the compressed air within said inner cylindrical housing portion to a temperature sufficient to render moisture within the air to a steam phase; and

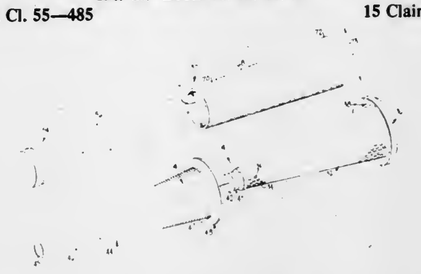
means within said inner cylindrical housing portion to dry said heated compressed air.

4,211,543

AIR CLEANER WITH REPLACEABLE FILTER ELEMENT

Joseph C. Tokar, Apple Valley, and Frank A. Janezich, Richfield, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Apr. 24, 1978, Ser. No. 898,906
Int. Cl.² B01D *46/02, 46/52*
U.S. Cl. 55—485 **15 Claims**



1. An improved filter element assembly for use in an air cleaning device having a filter body which defines a filter chamber, said filter element assembly being releasably contained in said filter body, wherein said filter element assembly comprises:

(a) an elongated perforated liner assembly, said liner assembly being made from a material which is sufficiently durable to enable said liner assembly to be reused during successive air cleaning operations over the life of the air cleaning device;

(b) a disposable and elongated filter element which includes a filter medium having a plurality of pleats, said filter medium being made from a material which is substantially porous to air and substantially nonporous to predetermined particulate matter suspended in the air, whereby said filter medium removes the particulate matter from the air;

(c) a porous safety sleeve assembly positioned between said liner assembly and said filter element;

(d) locking means for releasably coupling said filter element to said liner assembly with said filter medium surrounding said liner assembly in a face-to-face relationship, whereby said filter element may be detached from said liner assembly when said filter medium becomes plugged with the particulate matter to allow said liner assembly to be reused; and

(e) an elongated porous outer liner surrounding and engaging said filter medium, wherein said outer liner is resilient and is shaped to apply a radially inward force to said filter medium to press said pleats into engagement with said liner assembly.

11. A replacement kit for an improved filter element assembly, said replacement kit having component parts capable of being assembled in the field for association with a conically shaped perforated liner for providing a reconditioned filter element assembly, said assembly being received in a filter body of an air cleaning device, said replacement kit comprising the combination of:

(a) a filter element, said filter element having a pleated filter medium which is integrally attached at one end to an end cap, said end cap having means for releasably locking said filter element to one end of said liner, said filter medium and said end cap having an interior bore which receives said liner therein;

(b) a safety sleeve assembly which comprises a porous safety filter having a gasket at one end, said safety filter being suitable for being positioned between said filter element and said liner when said filter element is releasably coupled to said liner, said gasket being received between one end of said pleated filter medium and one end of said liner to seal said one end of said filter medium relative to said one end of said liner; and

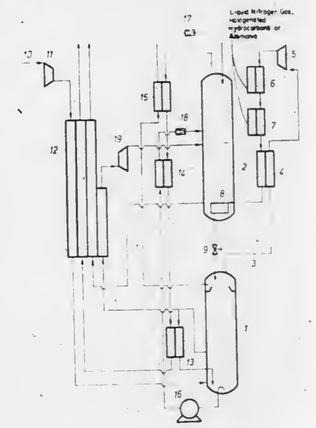
(c) a resilient and porous outer liner which is to be received around said pleated filter medium, said outer liner being configured to apply inward pressure on said pleats of said filter medium to force said pleats into contact with said liner.

4,211,544

COMPRESSION OF NITROGEN OVERHEAD FROM HIGH PRESSURE COLUMN IN TRACTIONATION OF AIR

Helmut Springmann, Geretsried, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 897,073
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717107
Int. Cl.² F25J *3/04*
U.S. Cl. 62—30 **7 Claims**



1. In a process for the low-temperature fractionation of air by two-stage rectification comprising separate high and low pressure rectification columns, wherein nitrogen is withdrawn in the gaseous phase from the upper portion of the high-pressure column, warmed, compressed, cooled, liquefied, pressure reduced, and recycled as reflux into the upper portion of the high-pressure column, the improvement which comprises withdrawing the gaseous nitrogen from the high pressure column and without heat exchange with the liquid bottoms of the low pressure column, compressing the gaseous nitrogen, and then liquefying the compressed nitrogen in heat exchange with evaporating oxygen in the lower portion of the low-pressure column.

4,211,545

METHOD AND APPARATUS FOR PREPARING HIGH GRADE FERTILIZER

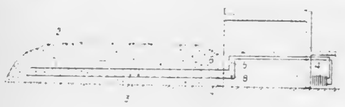
Gernot Graefe, Bergstrasse 6, A-7082 Donnerskirchen, Austria

Filed Jul. 5, 1977, Ser. No. 812,856

Claims priority, application Austria, Jul. 7, 1976, 4977/76; May 18, 1977, 3581/77

Int. Cl.² C05F *11/08, 5/00, 11/00*

U.S. Cl. 71—9 **11 Claims**



1. A process for the preparation of a high grade fertilizer from organic materials comprising storing pressing residues obtained from wine and fruit juice production temporarily under anaerobic conditions and then loosely mixing the residues with air to produce a mass whereby intense aerobic degradation takes place to produce heat, carbon dioxide and moisture and a finely divided high quality fertilizer and wherein any seeds and pits are separated from the decayed residues and the separated seeds and pits are ground and then subjected to aerobic decay.

4,211,546

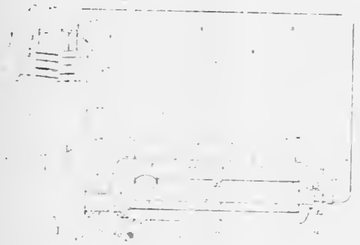
PROCESS FOR PREPARATION OF AMMONIUM POLYPHOSPHATE

William C. Jensen, Concord, Calif., assignor to Western Farm Services Inc., Walnut Creek, Calif.

Filed Oct. 5, 1978, Ser. No. 948,722

Int. Cl.² C05B *7/00*

U.S. Cl. 71—34 **5 Claims**



1. A process for the production of ammonium polyphosphate having a high proportion of the total P_2O_5 in the polyphosphate form which comprises reacting wet-process phosphoric acid having a low polyphosphate content with anhydrous ammonia under anhydrous conditions by:

(a) introducing a portion of the anhydrous ammonia, as a preheated vapor, into the wet-process phosphoric acid thereby forming an ammoniation reaction mass in a first reaction stage comprising a reaction tube or pipe contained in and completely enclosed by a tubular jacket, said reaction tube being positioned in the tubular jacket such that its inlet end terminates inside the jacket, and its outlet end extends through and is affixed to the jacket, said anhydrous ammonia being introduced into the reaction tube downstream from its inlet end by means of an injection tube which extends through the tubular jacket and is disposed along the same longitudinal axis as the reaction tube, said injection tube having a smaller diameter than the reaction tube end extending into the reaction tube thereby forming an annular opening to the jacket between the injection tube and the reaction tube, said wet-process phosphoric acid being introduced without external preheating into the tubular jacket at a point remote from the inlet end of the reaction tube such that it contacts a sufficient portion of the external surface of the reaction tube to be preheated by indirect heat exchange with the ammoniation reaction mass and flows, in preheated form, through the annular opening between the ammonia injection tube and the reaction tube into the reaction tube,

(b) passing the ammoniation reaction mass from the first reaction stage into a second reaction stage comprising a vertically oriented reaction chamber, said ammoniation mass being introduced into the lower portion of said reaction chamber, and adding to said ammoniation reaction mass sufficient anhydrous ammonia in a liquid or vapor form to bring the total nitrogen content of the amnoniation reaction mass to the final desired nitrogen to phosphate ratio, said anhydrous ammonia being introduced into the ammoniation reaction mass by means of a sparger extending from the top of the vertically oriented reaction chamber down into the ammoniation reaction mass whereby the pH of the ammoniation reaction mass is increased and the reaction mass is agitated, cooling said ammoniation reaction mass in said second reaction stage by indirect heat exchange with a second portion of anhydrous ammonia passed through a heat exchange coil or tube which is disposed inside the reaction chamber affording shell-side contact with the reaction mass, wereby said second portion of anhydrous ammonia is vaporized and preheated to a temperature desired for the preheated ammonia vapor reactant charge to the first reaction stage;

(c) transfering the second portion of anhydrous ammonia which has been vaporized and preheated by indirect heat transfer in the second reaction stage to the ammonia injection tube of the first reaction stage thereby providing substantially all of the preheated ammonia reactant required for that reaction stage;

(d) recycling a portion of the reaction product, which has been cooled by outside means, to the lower portion of the second stage reaction chamber to control the temperature of the ammoniation mass in the chamber and the temperature of the second portion of anhydrous ammonia.

4,211,547

N-PHOSPHONOMETHYLIMINODIACETONITRILE AND CERTAIN DERIVATIVES THEREOF

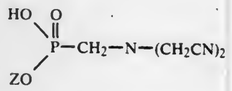
Van R. Gaertner, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1978, Ser. No. 972,547

Int. Cl.² C07C *121/43;* **A01N** *9/36*

U.S. Cl. 71—86 **9 Claims**

1. A compound of the formula



wherein Z is hydrogen or a herbicidally acceptable cation.

4,211,548

ESTERS OF N-PHOSPHINOTHIOYLMETHYLGLYCINE AND HERBICIDAL METHOD

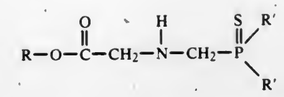
John E. Franz, Crestwood, and Robert J. Kaufman, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1978, Ser. No. 974,184

Int. Cl.² C07F *9/40;* **A01N** *9/36*

U.S. Cl. 71—87 **36 Claims**

1. A compound of the formula



wherein R is a member of the class consisting of alkyl of from 1 to 10 carbon atoms, chloroalkyl of from 1 to 4 carbon atoms and from 1 to 3 chlorine atoms and alkoxyalkyl groups containing from 3 to 7 carbon atoms and each R′ is a member of the class consisting of thioalkyl of from 1 to 6 carbon atoms, phenoxy, phenylthio and said phenoxy and phenylthio groups substituted with from 1 to 2 members of the class consisting of halo, lower alkyl of from 1 to 4 carbon atoms and lower alkoxy of from 1 to 4 carbon atoms and the strong acid salts thereof.

25. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a compound of claim 1.

4,211,549

SUBSTITUTED OXIRANE COMPOUNDS

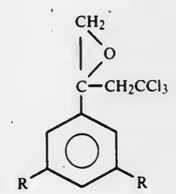
Lowell D. Markley, and Elizabeth J. Norton, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 771,055, Feb. 27, 1977, abandoned, which is a continuation of Ser. No. 638,740, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 466,567, May 3, 1974, abandoned. This application Jul. 17, 1978, Ser. No. 925,487

Int. Cl.² A01N *9/00*

U.S. Cl. 71—88 **15 Claims**

1. A compound of the formula



(I)

wherein each R group represents bromo, chloro or methyl.

4,211,550

USE OF ISOUREA DERIVATIVES AND TRIAZINE DERIVATIVES IN COMBINATION WITH GIBBERELLINS AS PLANT GROWTH REGULATORS

Kozo Oyamada; Takashi Matsui; Junzo Tobitsuka, all of Hiromachi; Yoshio Yamazaki, and Masami Ogawa, both of Yasumachi, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 703,963, Jul. 9, 1976, abandoned. This application Mar. 28, 1978, Ser. No. 891,027

Claims priority, application Japan, Jul. 16, 1975, 50/87030; Sep. 5, 1975, 50/107823; Sep. 22, 1975, 50/114473

Int. Cl.² A01N *9/12, 9/22*

U.S. Cl. 71—89 **2 Claims**

1. A method for stimulating the growth of plants comprising administering a growth stimulating effective amount of a mixture of a gibberellin and 4-ethoxy-1,3-dihydro-1-(p-tolyl)-1,3,5-triazine-2,6-dione in an amount from 0.1 to 100 parts by weight of gibberellin.

4,211,551

HERBICIDE

Kurt Thiele; Quazi Ahmed, both of Zofingen; Walter Schären, Vordemwald, and Jacques Meyer, Zofingen, all of Switzerland, assignors to Siegfried AG, Zofingen, Switzerland

Filed Nov. 10, 1977, Ser. No. 850,468

Claims priority, application Switzerland, Nov. 15, 1976, 014340/76

Int. Cl.² A01N *9/24*

U.S. Cl. 71—116 **1 Claim**

1. A method for destroying dicotyledonous weeds in a crop area comprising treating said crop area with an effective amount of at least one active ingredient selected from the group consisting of 4-(4′-chlorobenzyl)-phenoxy acetic acid and the agriculturally acceptable salts of said acid with a base selected from the group consisting of inorganic and organic bases.

4,211,552

METHOD FOR PROCESSING MOLTEN SLAG

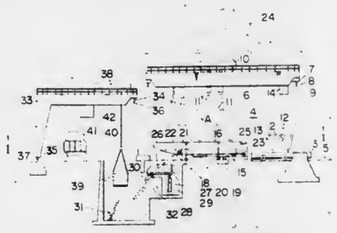
Yoshio Tanaka, Fukuoka; Tatsuo Shibata, Kitakyushu; Tatsuo Matsuo, Oita; Tadao Takashima, Oita, and Sankichi Hori, Oita, all of Japan, assignors to IRI-E Kosan Corporation, Fukuoka and Nippon Steel Corporation, Tokyo, both of, Japan

Division of Ser. No. 693,443, Jun. 7, 1976, Pat. No. 4,082,252. This application Oct. 31, 1977, Ser. No. 846,865

Claims priority, application Japan, Jun. 13, 1975, 50-72217; May 11, 1976, 51-54168

Int. Cl.² C21B *3/04*

U.S. Cl. 75—24 **13 Claims**



1. A method for processing molten slag from a steel making plant to produce solidified slag of practical use consisting essentially of spreading said molten slag which is discharged from said steel making plant into a substantially level disposition on a substantially horizontal surface of a tiltably mounted slag receiving means which is disposed in a substantially horizontal position, air cooling said molten slag while in said level disposition on said slag receiving means until the slag is substantially solidified, spraying water onto said slag while in said level disposition to effect further cooling and solidification of said slag on said slag receiving means while also preventing adhesion of the slag to said slag receiving means, disposing said solidified and cooled slag in a generally inclined disposition and sliding downwardly said solidified and cooled slag by tilting said slag receiving means from said horizontal position, discharging downwardly said sliding slag into a slag bucket means, submerging said slag in a cooling water pit to effect quenching of the slag, and transferring said quenched slag from said cooling water pit, whereby said solidified and quenched slag is suitable for practical use.

4,211,553

METHOD OF REFINING OF MELTS BY MEANS OF A PULVEROUS SOLID MATERIAL AND/OR A GAS

Matti E. Honkaniemi, Tornio; Helge J. Krogerus, Pori; Launo L. Lilja, Pori; Juho K. Mäkinen, Pori; John H. Relander, Tornio, and Frans H. Tuovinen, Ulvila, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Jun. 9, 1978, Ser. No. 914,216
Claims priority, application Finland, Jun. 21, 1977, 771947
Int. Cl.² C22B 9/00
U.S. Cl. 75—53 6 Claims



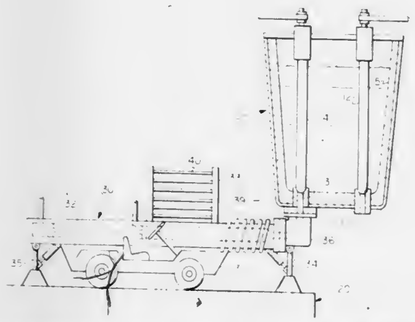
1. A method for refining a melt by means of a reagent consisting essentially of a solid pulverous material and a gas, employing a reactor having side walls and a bottom comprising pouring the melt into the reactor close to one side wall thereof and simultaneously injecting the reagent under the melt surface from a side of the reactor opposite to the one near which the melt is poured in a direction substantially parallel to the reactor bottom and thereby causing the flow of the injected reagent and the flow of the melt being poured to impinge against each other from substantially opposite directions in the reactor and utilizing the kinetic falling energy of the melt for mixing the reagent with the melt and alternating agitation of the melt surface.

4,211,554

METHOD OF INTRODUCING ADDITION AGENTS INTO A VESSEL OF MOLTEN METAL

Eldon D. Miller, Zelienople, Pa., assignor to Lava Crucible Refractories, Co., Pittsburgh, Pa.

Filed Jul. 12, 1978, Ser. No. 924,079
The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.
Int. Cl.² C22C 33/08
U.S. Cl. 75—53 8 Claims



1. A method of treating molten metal with addition agents in a cup-shaped vessel having a bottom and side walls and lower portion adjacent to and including the bottom comprising steps of

introducing molten metal to the vessel,

heating a comsumption comprising a mixture of said addition agent and a nonalloying and vaporizable metal carrier to a temperature at which it may be extruded, and

extruding the composition through a die into the molten metal in the lower portion of the vessel,

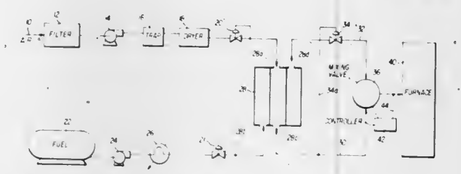
the temperature of said molten metal in the vessel being above the temperature at which the metal carrier is vaporizable.

4,211,555

METHOD OF CONTROLLING COMBUSTION IN A METAL MELTING FURNACE

Milton E. Berry, and Ronald L. Pariani, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Feb. 21, 1978, Ser. No. 879,034
Int. Cl.² C22B 15/00, 15/14
U.S. Cl. 75—72 30 Claims



1. A method for preparing a combustible gaseous fuel mixture having a predetermined constant mass ratio of its component gases for combusting in a metallurgical melting furnace, said method comprising the steps of:

providing a first oxygen-containing gaseous fuel component having a given temperature and pressure;

providing a second hydrocarbon-containing gaseous fuel component having a given temperature and pressure;

substantially equalizing the temperatures of said first and second gaseous fuel components without mixing of said components;

substantially equalizing the pressures of said first and second gaseous fuel components without mixing of said components; and

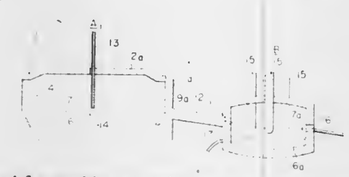
then mixing said first and second gaseous fuel components at a predetermined volume ratio to thereby obtain a combustible gaseous fuel mixture having a predetermined constant mass ratio of said components for combusting in a metallurgical melting furnace.

4,211,556

REVERBERATORY SMELTING OF NON-FERROUS METAL SULFIDE ORES

Takeshi Nagano, Tokyo; Motoo Goto, Kagawa, and Yoshiyuki Tsuji, Iwaki, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 971,834
Claims priority, application Japan, Dec. 30, 1977, 52-160076
Int. Cl.² C22B 15/04
U.S. Cl. 75—74 12 Claims



1. A method for smelting a nonferrous metal sulfide ore, a substantial portion of which is in a green state, to produce matte enriched with the metal by means of a series of furnaces comprising (A) a reverberatory furnace having a main structure having refractory sidewalls and transverse refractory end walls, a roof covering the main structure, burners at one end wall, feeding hoppers disposed in rows parallel to and near the sidewalls, at least one lance for introducing an oxygen-containing gas, a matte tapping port, a slag-and-matte overflow weir and means for conducting exhaust gas out of the furnace, and (B) a separation furnace combined with the reverberatory furnace through the slag-and-matte overflow weir and having inlet means, heating means, a matte tapping port and a slag tapping port, which method comprises the steps:

(a) in the reverberatory furnace, of

(i) charging the portion of the metal sulfide ore which is in the green state through the feeding hoppers into the furnace thereby to form ore piles as banks along the sidewalls,

(ii) burning a fuel by means of the burners thereby to melt the ore piles and to form a melt bath comprising a matte layer and a slag layer overlying the matte layer,

(iii) tapping a mixture of the slag and a portion of the matte out of the furnace through the slag-and-matte overflow weir thereby to maintain the slag layer within the furnace at a small thickness,

(iv) introducing the oxygen-containing gas through the lance into the melt bath thereby to oxidize the matte and to increase the content of the metal in the matte,

(v) tapping the remainder of the matte out of the furnace through the matte tapping port, and

(vi) discharging the exhaust gas formed by the combustion of the fuel and the oxidation of the sulfur through said means for conducting exhaust gas out of the furnace; and

(b) in the separation furnace, of

(i) introducing the mixture of slag and matte which has overflowed from the reverberatory furnace through the inlet means into the separation furnace,

(ii) separating, by settling, the mixture as it is heated thereby to form matte and slag layers,

(iii) tapping the matte out of the furnace through the matte tapping port, and

(iv) tapping the slag out of the furnace through the slag tapping port.

4,211,557

METHOD FOR PROCESSING LEAD STORAGE-BATTERY SCRAP

Anatoly P. Sychev, prospekt Lenina, 60, kv. 16; Georgy V. Kim, ulitsa Ushanova, 92, kv. 54; Valentin F. Larin, ulitsa Burova, 24, kv. 45; Galina D. Sidorova, prospekt Lenina, 19/1, kv. 52; Ivan G. Vikharev, ulitsa Belinskogo, 42, kv. 27; Vyacheslav P. Kuur, ulitsa Stakhanovskaya, 59, kv. 18, all of Vostochno-Kazakhstanskaya oblast, Ust-Kamenogorsk; Raul S. Akhmetov, Kurmangazy, 33, kv. 32, Alma-Ata; Georgy L. Moiseev, prospekt Lenina, 15, kv. 34, Leninogorsk; Vladimir I. Maslov, prospekt Gagarina, 38, kv. 66, Leninogorsk; Vladimir G. Kabachek, 3 Mikroraion, Leninogorsk, and Igor M. Cherednik, prospekt Lenina, 60, kv. 36, Vostochno-Kazakhstanskaya oblast, Ust-Kamenogorsk, all of U.S.S.R.

Filed Jun. 9, 1978, Ser. No. 914,300
Int. Cl.² C22B 13/00
U.S. Cl. 75—77 3 Claims

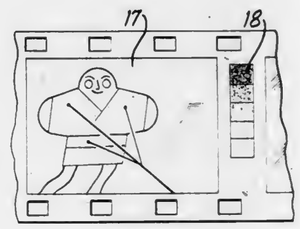
1. A method for reprocessing lead storage-battery scrap, comprising: crushing said scrap; separating large-size metallic lead parts from said crushed scrap; separating chlorine-containing organic substances from said crushed scrap; grinding sulphate-oxide portion of said scrap, containing lead compounds, and battery cases formed of organic substances free from chlorine; subjecting the finely ground part of the scrap to smelting in an oxidizing atmosphere at a temperature of 1300° to 1500° C. until an oxidizing melt having a slag layer is obtained which contains lead oxide; reducing said lead oxide to metallic lead; and melting said large-size metallic lead parts separated after crushing separately or under the layer of slag in the oxidizing melt resultant from the smelting of the finely ground portion of the storage battery scrap.

4,211,558

COLOR PRINTING METHOD

Masanobu Oguchi; Hidehiko Ishikawa; Haruyoshi Okuyama, all of Nihonbashi-Muro; Yasuo Uchida, Hachioji, and Kiyoshi Izawa, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Continuation of Ser. No. 701,018, Jun. 30, 1976, abandoned.
This application May 22, 1978, Ser. No. 908,558
Claims priority, application Japan, Jul. 23, 1975, 50-90479
Int. Cl.² G03C 7/04
U.S. Cl. 430—359 2 Claims



1. A method of printing a color positive print in which a negative to be printed on said color positive print is measured in color to make determination of an exposure time or amount of exposure, comprising the steps of effecting a photographic exposure on a predetermined picture area of a photosensitive color film to photograph an object; introducing ambient light illuminating said object into a small area portion of said color film outside of said predetermined picture area along an optical path different from that for said exposure for photographing said object and for an interval of time equal to interval of time of said exposure to photograph said object: developing said film to make visible said object and said small area portion; detecting the optical color density of said small area portion to measure three color components thereof; and effecting an exposure color correction on the basis of a ratio of said color components for printing of a color positive film.

4,211,559

PHOTOGRAPHIC PROCESSES AND COMPOSITIONS EMPLOYING THIOETHER CONTAINING SILVER HALIDE SOLVENTS

Richard B. Greenwald, Cambridge, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

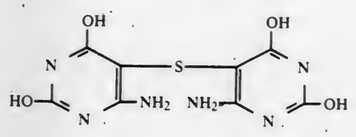
Continuation of Ser. No. 728,127, Sep. 30, 1976, Pat. No. 4,126,459, which is a continuation-in-part of Ser. No. 686,587, May 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 563,306, Apr. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 463,263, Apr. 23, 1974, abandoned. This application Aug. 4, 1978, Ser. No. 930,996
The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.
Int. Cl.² G03C 5/54, 5/38, 1/48
U.S. Cl. 430—211 16 Claims

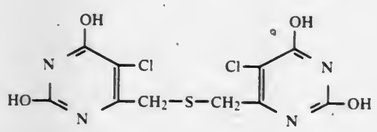
2. A photographic process comprising the steps of

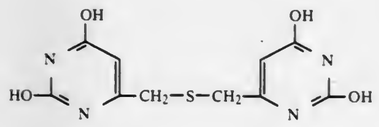
(1) developing exposed silver halide of an imagewise ex-

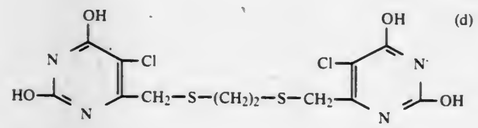
posed photosensitive silver halide emulsion layer carried on a support with a silver halide developing agent in aqueous alkaline solution;

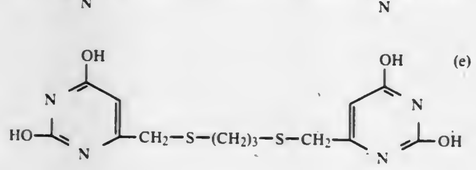
(2) reacting unreduced silver halide of said photosensitive emulsion with a silver halide solvent which forms a silver complex soluble and diffusible in said aqueous alkaline solution, said silver halide solvent being a compound selected from the group consisting of

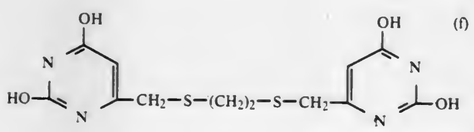

(a)


(b)

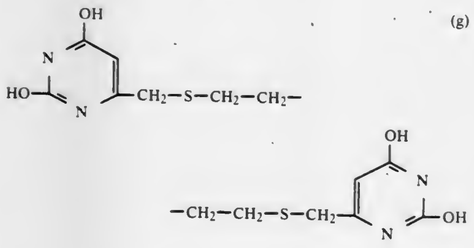

(c)


(d)


(e)


(f)

and


(g)

(3) transferring said complex silver salt to a superposed image-receiving layer; and

(4) reducing said transferred complex silver salt to provide a silver image.

4,211,560

PROCESS FOR PRODUCING IMAGE USING LAMINATED ORIENTED COVER FILM

Tadashi Taguchi, Kawasaki; Noboru Fujikawa, Tokyo; Mitsuo Kohno, Yokohama; Katsumi Yoshitake, Yokosuka, and Kunio Satake, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1978, Ser. No. 923,763

Claims priority, application Japan, Jul. 12, 1977, 52/82573; Dec. 26, 1977, 52/157091

Int. Cl.² G03C *5/00, 1/76*

U.S. Cl. 430—313 **27 Claims**

1. A process for producing an image, which comprises the steps of:

(1) applying to the surface of a substrate the surface of a photosensitive composition layer having adherence to the substrate, while the other surface of the photosensitive composition layer has laminated to it a substantially transparent oriented film support which is soluble or dispersible in a developer consisting essentially of a liquid capable of substantially dissolving or dispersing therein the areas of the layer other than those having a polymeric image produced by imagewise exposure in the step (2) below and capable of transmitting actinic rays, the application of the surface of the photosensitive composition layer to the surface of the substrate being effected after stripping of a protective film in case the protective film has been provided on the surface of the photosensitive composition layer remote from the film support;

(2) exposing the photosensitive composition layer, imagewise, to actinic radiation to form a polymeric image in the layer; and

(3) washing away with the developer the film support and the areas of the layer other than those having the polymeric image to form an image of a polymeric material on the substrate.

4,211,561

METHOD OF PRODUCING CROSS-LINKED POLYMERIC IMAGES

Louis Plambeck, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 8, 1978, Ser. No. 968,031

Int. Cl.² G03C *5/00, 7/00*

U.S. Cl. 430—306 **19 Claims**

1. A method for producing a cross-linked polymeric image on a substrate which comprises:

(a) imagewise exposing a photosensitive element to actinic radiation, said element comprising a substrate coated with a photosensitive layer containing dispersed silver halide in operative association with a continuous film-forming phase of hydrophilic polymeric coupler having a number average molecular weight of 5,000 to 100,000 and containing, per polymer chain, an average of at least two coupler groups capable of coupling with an oxidized p-aminodialkylaniline;

(b) swelling the polymeric coupler, and developing the exposed layer with a developing agent containing at least two functional groups capable of selectively reducing a silver halide latent image and, in their oxidized state, capable of coupling with the coupler groups of the swollen polymeric coupler, whereby the polymeric coupler is insolubilized by cross-linking, thereby forming an image; and

(c) removing the undeveloped, noncross-linked areas of the polymeric coupler by washing with a solvent in which the noncross-linked areas are soluble.

4,211,562

PHOTOGRAPHIC COMPOSITIONS WITH SILVER HALIDE SOLVENTS CONTAINING THIOETHER GROUPS

Richard B. Greenwald, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

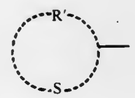
Division of Ser. No. 728,127, Sep. 30, 1976, Pat. No. 4,126,459, which is a continuation-in-part of Ser. No. 686,587, May 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 563,306, Apr. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 463,263, Apr. 23, 1974, abandoned. This application Aug. 4, 1978, Ser. No. 930,995

The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.

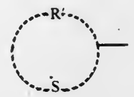
Int. Cl.² G03C *5/38*

U.S. Cl. 430—456 **20 Claims**

1. A photographic processing composition comprising an aqueous alkaline processing solution including a silver halide developing agent and a silver halide solvent which forms a silver complex soluble and diffusible in said aqueous alkaline solution, said silverr halide solvent being a compound of the formula $M—[(X)_n—T]_m$ wherein M represents an aliphatic or aromatic moiety, Y—A, wherein A is an atom selected from O, N and C ionizable in said alkaline solution to the corresponding $O^{\ominus}$, $N^{\ominus}$ and $C^{\ominus}$ anion and Y represents the residue of said moiety; T is an —S— containing moiety excluding —SH and moieties that form $—S^{\ominus}$ in alkaline solution selected from R—S— or



wherein R is a monovalent hydrocarbon radical and R′ represents the carbon atoms necessary to complete an aromatic or aliphatic ring; X represents a methylene group; n is a whole number from 0 to 5; and m is 1 or 2, said —S— of said R—S— and said



being positioned alpha, beta, gamma, delta, epsilon or zeta to said anion, said M being selected from a 2-amino-4-hydroxy-1,3,5triazine, a 1,2,3,4-tetrazole, a 1,2-disulfonylalkane, a sulfonamido derivative of an amino acid, a 2,4-dihydroxypyrimidine and a 4,6-dihydroxypyrimidine moiety.

4,211,563

AQUEOUS PHOTORESIST OF CASEIN AND N-METHYLOL ACRYLAMIDE

Abraham Goldman, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 877,481, Feb. 13, 1978, Pat. No. 4,158,566. This application Mar. 23, 1979, Ser. No. 23,391

Int. Cl.² G03C *1/68, 1/66*

U.S. Cl. 430—286 **4 Claims**

1. A photoresist composition comprising an aqueous solution containing from about 4–12 percent by weight of the composition of casein, sodium borate in an amount of from about 8–20 percent by weight of the casein and so that the final pH is from about 6.7 to 7.3; from about 2–20 percent by weight of the casein of a dichromate salt and from about 5–30 percent by weight of the casein of N-methylol acrylamide.

4,211,564

CHEMICAL COPPER PLATING SOLUTION

Hitoshi Oka, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 904,322, May 9, 1978, abandoned. This application Apr. 18, 1979, Ser. No. 31,160

Int. Cl.² C23C *3/02*

U.S. Cl. 106—1.23 **5 Claims**

1. In an aqueous chemical copper plating solution which consists essentially of a water soluble copper salt, a complex agent, a reducing agent, a hydroxide of alkali metal, surfactant, 2,2′-dipyridyl the improvement consisting of silver sulfide in an amount sufficient to provide a chemical copper plating solution having a better stability and higher plating speed and to provide a tougher plating film than conventional chemical copper plating solutions.

4,211,565

IRON OXIDE-BASED ANTI-CORROSION PIGMENTS

Franz Hund; Günter Linde, and Peter Kresse, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 713,480, Aug. 11, 1976, Pat. No. 4,140,538. This application Jul. 10, 1978, Ser. No. 923,517

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1975, 2537684

Int. Cl.² C09D *5/08;* **C09C** *1/04, 1/24, 1/02*

U.S. Cl. 106—14.05 **8 Claims**

1. A process for the production of chromium-free anti-corrosion pigment consisting essentially of about 30 to 70 mole % of an oxide of at least one metal selected from the group consisting of magnesium, calcium and zinc, and about 70 to 30 mole % of Fe_2O_3, which comprises calcining the corresponding metal oxides or starting materials which yield metal oxides upon calcination at a temperature of 400° to 600° C.

4,211,566

ANTIFOULING METHOD

Sumio Matsuda, Osaka, and Hajime Kudara, Shiga, both of Japan, assignors to Chugoku Marine Paints Ltd., Hiroshima, Japan

Continuation-in-part of Ser. No. 768,654, Feb. 14, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,366

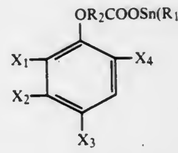
Int. Cl.² C09D *5/16*

U.S. Cl. 106—16 **9 Claims**

1. In a method for preventing the adhesion of both marine animals and plants to the bottoms of ships comprising applying to the bottoms of ships a coating composition comprising

at least one coating resin, at least one solvent, a pigment and an antifouling agent; the improvement comprising, as said agent,

an antifouling effective amount of at least one organotin compound having the general formula [I]


[I]

wherein R_1 is an alkyl group having from one to eight carbon atoms or an aryl group having from six to eight carbon atoms, R_2 is an alkylene group having from one to four carbon atoms, and each of X_1, X_2, X_3 and X_4 is a component selected from the group of hydrogen, bromine, chlorine, iodine and methyl radical; provided that at least one of X_1, X_2, X_3 and X_4 is bromine, chlorine or iodine.

4,211,567

PROCESS FOR THE MANUFACTURE OF REFRACTORY CERAMIC PRODUCTS

Werner Dittrich, Herten; Walter Josten, Rheinfelden; Heinz Nestler, Niederkassel, and Friedhelm Schnippering, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 760,060, Jan. 17, 1977, which is a continuation of Ser. No. 326,624, Jan. 26, 1973, abandoned. This application Jun. 22, 1978, Ser. No. 919,334

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1972, 2204531

Int. Cl.[2] **B28B** *7/34*

U.S. Cl. 106—38.35 **10 Claims**

1. In a process for the manufacture of a ceramic mold comprising the steps of coating a model with a ceramic molding composition, shaping said composition about said model, hardening said composition removing the model and firing the resulting mold; the improvement comprising a ceramic molding composition, substantially free of silica or siliceous materials consisting essentially of:

(1) a refractory metal oxide; and

(2) a non-silicious binding agent which is liquid at room temperature, said binding agent consisting essentially of:

(A) an uncondensed liquid metal alcoholate of aluminum or a metal of the Fourth Sub-Group of the Periodic System, and

(B) a liquid polyvalent alcohol, in an amount between 2 and 25% by weight of the metal alcoholate and in such amount that when in admixture with said metal alcoholate precipitation of solids does not occur.

4,211,568

STORABLE GLASS BATCH COMPOSITION

Douglas H. Davis, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 476,647, Jun. 5, 1974, abandoned. This application Feb. 13, 1978, Ser. No. 877,538

Int. Cl.[2] **C03B** *1/00*

U.S. Cl. 106—52 **10 Claims**



1. A glass batch that is storable and free-flowing at a temperature within the temperature range of 12° C. to 65° C. for use in making soda-lime-silica glass having a Na_2O content of from 10 percent to 20 percent by weight, said batch comprising a moist, uniform, unpelletized, homogeneous mixture of silica source material, alkaline earth metal oxide source material and Na_2O source material wherein an aqueous sodium hydroxide solution is used as a Na_2O source material to provide at least 50 percent of the Na_2O requirement of the batch, said aqueous sodium hydroxide containing a percent by weight of NaOH as in FIG. 1, Region 12 and consisting of a solid phase having the composition $NaOH.H_2O$ and a solution phase at the temperature within said range at which the batch is stored, said batch having a bulk density of from 55 to 70 pounds per cubic foot.

6. In a process for preparing a storable, free-flowing glass batch for use in making soda-lime-silica glass having a Na_2O content of from 10 percent to 20 percent by weight comprising uniformaly mixing a silica source material, an alkaline earth metal oxide source material, and a Na_2O source material wherein sodium hydroxide is used as a Na_2O source material, the improvement comprising using an aqueous sodium hydroxide solution containing a percent by weight of NaOH as in FIG. 1, Region 12 and consisting of a solid phase having the composition $NaOH.H_2O$ and a solution phase at a temperature within the range of 12° C. to 65° C., and mixing sufficient of said sodium hydroxide solution with the other constituents of the batch, said aqueous sodium hydroxide being at a temperature above its liquidus point during mixing, to provide a batch having a bulk density of from 55 to 70 pounds per cubic foot and having at least 50 percent of its Na_2O requirement provided by sodium hydroxide and maintaining the moist, uniform, unpelletized, homogeneous batch at a storage temperature below the liquidus point of the sodium hydroxide solution whereat the aqueous sodium hydroxide in the batch will consist of said solid and solution phases.

4,211,569

HIGH INDEX OPHTHALMIC GLASSES

George B. Hares, and David L. Morse, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,247

Int. Cl.[2] **C03C** *3/10, 3/30, 3/08*

U.S. Cl. 106—53 **6 Claims**

1. An ophthalmic glass having a refractive index between about 1.58–1.71, a softening point between 620°–645° C., a strain point between 445°–480° C., a coefficient of thermal expansion (0°–300° C.) between $61.3–65.6\times10^{-7}$/°C., and a weight loss of no more than 0.03 mg/cm^2 with no visible surface imperfection after immersion into a 10% by weight aqueous solution of HCl for 10 minutes at 25° C., said glass consisting essentially, in weight percent on the oxide basis, of 0–2% Li_2O, 0–3% Na_2O, 1–4% Li_2O+Na_2O, 4–9% BaO, 25–50% PbO, 4–8% B_2O_3, 4–7% Al_2O_3, 30–50% SiO_2, and 0.5–3% TiO_2, the sum of those constituents constituting at least 95% by weight of the total composition.

4,211,570

METHOD OF MANUFACTURING BETA ALKALINE ALUMINA PARTS

Gerard Desplanches, la Poitevine, and Jacques Leboucq, Saint-Genevieve-des-Bois, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Mar. 22, 1979, Ser. No. 22,768

Claims priority, application France, Mar. 31, 1978, 78 09498; Jan. 29, 1979, 79 02200

Int. Cl.[2] **C04B** *35/02, 35/10*

U.S. Cl. 106—65 **13 Claims**

1. In a method of manufacturing beta sodium alumina parts in which the following successive steps are carried out:

A. alumina powder and an alkaline carbonate powder are intimately mixed together in quantities such that a predetermined ratio Al_2O_3/Na_2O is obtained;

B. said intimate mixture is heated in an open crucible;

C. said mixture is allowed to cool freely;

D. the powder thus obtained is crushed;

E. said parts are shaped; and

F. said parts are sintered; said parts being disposed for this purpose in a sintering chamber made of a refractory material with at least a portion of the inside of the chamber being constituted so as to generate an atmosphere rich in sodium in the immediate vicinity of the parts during sintering, the improvement wherein said chamber is at least partially made of a refractory material which consists essentially of a mixture of three ingredients, namely beta alumina fire clay obtained by melting and crushing into grains with a grain size of about 0.5 mm, beta alumina cement or binding agent obtained from an alpha alumina and sodium carbonate mixture by reaction in the solid state and at a temperature of about 1200° C., such a cement having a grain size of about 10 microns and lastly a sodium salt, the respective proportions by weight of these three ingredients being such that during sintering said chamber generates an atmosphere rich in sodium in the immediate vicinity of the parts.

4,211,571

METHOD OF PRODUCING GAS CONCRETE

Armin Hartmann, Rheinau, and Dieter Hums, Schrobenhausen, both of Fed. Rep. of Germany, assignors to Intong AB, Kumla, Sweden

Filed Aug. 29, 1978, Ser. No. 937,832

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739188

Int. Cl.[2] **C04B** *15/04, 31/02*

U.S. Cl. 106—87 **14 Claims**

1. In a method of producing gas concrete in which a castable mass suitable for the production of gas concrete, said castable mass comprising water, a lime component, and a sand component, is cast into a mold where it is permitted to rise and harden into a mass capable of being cut into a desired shape and wherein the hardened material is hydrothermally cured to form a gas concrete product, the improvement wherein said castable mass is prepared by the steps of:

pre-mixing water, a lime component comprising pulverized lime having a t_{60}-value of under 10 minutes, and a sand component to form a homogeneous lime-sand pre-mixture;

mixing a calcium sulphate-containing component with said homogeneous lime-sand pre-mixture to form a homogeneous calcium sulphate-containing mixture; and

mixing a rising agent with said homogeneous calcium sulphate-containing mixture to form said castable mass.

4,211,572

DRY-SET MORTARS AND METHOD FOR IMPROVING THE WATER RETENTIVITY THEREOF

Herman B. Wagner, Perkasie, Pa., and Jeffrey R. Ellis, Hightstown, N.J., assignors to Tile Council of America, Inc., Princeton, N.J.

Filed Apr. 17, 1978, Ser. No. 897,148

Int. Cl.[2] **C04B** *7/35, 7/352, 7/353*

U.S. Cl. 106—90 **28 Claims**

1. A dry composition capable of being mixed with water to form a dry-set mortar, said dry composition comprising, in percentages by weight of the dry composition

a hydraulic cement,

0 to 90 percent of an inert filler,

0.05 to 3.0 percent of a water retentive agent having a viscosity of 1,500 cps to 100,000 cps in 2 percent solution, and

a water retentivity promoter which is an organic material having at least one polar functional group capable of associating with water, which material alone does not have appreciable thickening properties for water, but which is capable of increasing the Index of Water Retentivity of the composition when mixed with water,

wherein the weight ratio of water retentive agent to promoter is in the range 20:1 to 1:2.

4,211,573

METHOD AND APPARATUS FOR THE PRODUCTION OF CEMENT CLINKER LOW IN ALKALI FROM ALKALI-CONTAINING RAW MATERIAL

Andris Abelitis, Rösrath, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,757

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712239

Int. Cl.[2] **C04B** *7/02*

U.S. Cl. 106—100 **5 Claims**

1. A method for the production of low alkali-cement clinker in a kiln from alkali-containing raw material comprising the steps:

pre-heating said raw material before introducing the material into the kiln;

de-acidifying said raw material prior to introduction into said kiln, and thereby producing deacidified combustion gases;

introducing the pre-heated, deacidified material into a kiln and sintering the material therein, thereby producing hot alkali-containing exhaust gases;

cooling a pre-determined portion of said hot alkali-containing gases from said sintering steps by mixing the pre-determined portion with a quantity of said pre-heated raw material bringing the temperature level of the gases from the sintering step to the temperature level of the gases from the deacidification step;

mixing the predetermined portion of the cooled alkali-containing gases with the combustion gases from the deacidification step and using the mixture for heating and calcining the material in the pre-heating step; and

removing the remaining portion of the alkali-containing gases from said sintering step for disposal.

4,211,574

PROCESS FOR MAKING A SOLID IMPREGNATED PRECURSOR OF A SOLUTION OF CELLULOSE

Clarence C. McCorsley, III, and Julianna K. Varga, both of Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed Jul. 26, 1977, Ser. No. 819,080

Int. Cl.[2] **C08L** *1/02*

U.S. Cl. 106—163 R **19 Claims**

1. A process for making a precursor of a solution containing cellulose dissolved in a tertiary amine oxide solvent for cellulose which comprises impregnating cellulose with a liquid tertiary amine oxide solvent containing water in an amount whereby the cellulose does not dissolve in the solvent under the conditions of impregnation but the cellulose becomes impregnated with the solvent in an amount which will dissolve the cellulose after water is removed and the impregnated cellulose is heated in the absence of additional solvent.

4,211,575

ASPHALT-SULFUR EMULSION COMPOSITION

Michael V. Burris, 1760 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 726,946, Sep. 27, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 1,536

Int. Cl.[2] **C08L** *95/00;* **C09D** *3/24*

U.S. Cl. 106—274 **5 Claims**

1. An asphalt-emulsion composition comprising:

an asphalt phase consisting essentially of between about 40 and about 70% paving grade asphalt, between about 10 and about 50% sulfur, and between about 5 and about 30% of a liquid petroleum hydrocarbon having a boiling point above about 350° F., and

a water phase having between about 0.2 and about 4.0 % by weight based on the total composition of an emulsion selected from the group consisting of a cationic and anionic emulsifiers and mixtures thereof,and

whereinsaid asphalt phase is over 50% , by weight, of the total composition.

4,211,576
PITCH AND ASPHALT COMPOSITIONS
Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.
Continuation of Ser. No. 658,985, Feb. 18, 1976, abandoned.
This application Aug. 2, 1977, Ser. No. 821,255
The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.
Int. Cl.[2] C08L *95/00*; C09D *3/36*
U.S. Cl. 106—278 **12 Claims**

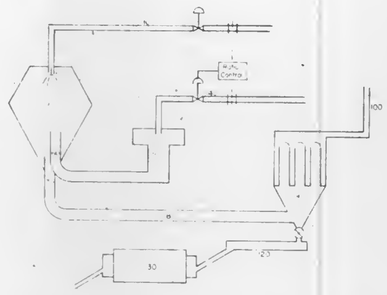
1. A process for producing an improved pitch composition which comprises forming a slurry by admixing comminuted scrap rubber with a petroleum solvent selected from thermally stable highly refractory petroleum refinery FCC main column bottoms and TCC syntower bottoms having a boiling point between about 650° F. and 1100° F., wherein the petroleum solvent has a labile hydrogen content of about 0.3 percent or more, a benzyl hydrogen (α) content of about 1.5 percent or more, an aromatic hydrogen content of about 2 percent or more, and a content of β,γ and other hydrogen of about 4 percent or less; and heating said slurry at a temperature in the range between about 350° F. and 850° F. for a period of time between about 0.2 and 3 hours sufficient to convert the slurry into a homogeneous composition having a soft pitch-like consistency at temperatures in the range of −20° F. up to about 200° F.

4,211,577
PROCESS OF PURIFYING PLANT ANTHOCYANIN COLORS
Bruce K. Wallin, Sherman, N.Y., assignor to Welch Foods Inc., Westfield, N.Y.
Filed Sep. 13, 1977, Ser. No. 832,814
Int. Cl.[2] B01D *31/00*
U.S. Cl. 106—288 Q **26 Claims**

1. In a process for separating anthocyanin components from macromolecular components such as proteins, tannins, pectins and complexes thereof, the improvement comprising ultrafiltering a 500 to 2,000 ppm sulfur dioxide aqueous solution of said components through a membrane that passes said anthocyanins and retains said macromolecular components, whereby said anthocyanins are maintained in a discrete monomeric state in said sulfur dioxide solution and substantially separated from said macromolecular components in a single step process.

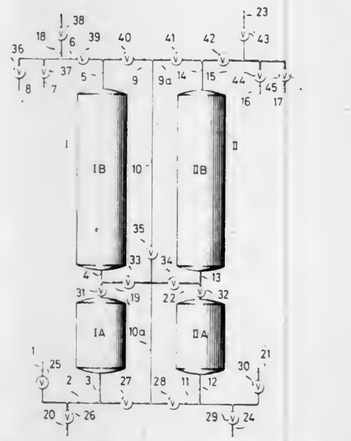
4,211,578
METHOD OF PRODUCING A CARBON BLACK SILICA PIGMENT
Oscar T. Scott, IV, Borger, Tex., assignor to J. M. Huber Corporation, Rumson, N.J.
Filed Jun. 8, 1979, Ser. No. 46,738
Int. Cl.[2] B01J *2/04*; C09C *1/28, 1/56, 1/60*
U.S. Cl. 106—307 **6 Claims**

1. A method of producing a combined carbon black silica pigment comprising the steps of:
(a) forming a slurry selected from the group consisting of silica slurry and sodium alumino silicate slurry;
(b) producing a carbon black exhaust gas in a carbon black furnace by the incomplete combustion of a hydrocarbon feedstock;



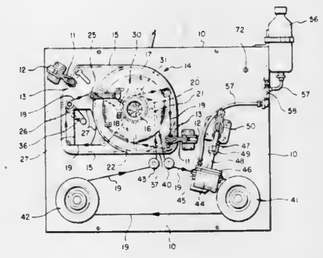
(c) spray drying the silica slurry in a spray dryer with the carbon black exhaust gas as the drying gas to form a combined carbon black silica pigment; and
(d) collecting the combined carbon black silica pigment.

4,211,579
METHOD OF PURIFYING INDUSTRIAL SUGAR SOLUTIONS
Gerhard Quentin, Pomona 134, 4040 Neuss, Fed. Rep. of Germany
Filed Aug. 2, 1978, Ser. No. 930,548
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2735995
Int. Cl.[2] C13D *3/14*
U.S. Cl. 127—46 A **8 Claims**



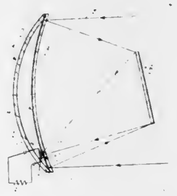
1. A method of purifying an industrial sugar solution by adsorption of non-sugar substances using an ion exchanger, comprising supplying said solution to said ion exchanger through a lower portion of said ion exchanger, thereby displacing a volume of water contained in said ion exchanger; withdrawing a purified sugar solution through an upper portion of said ion exchanger; eluting said ion exchange through an upper portion of said ion exchanger; displacing remaining industrial sugar solution in said ion exchanger; and withdrawing said non-sugar substances through a lower portion of said ion exchanger.

4,211,580
METHOD AND APPARATUS FOR CLEANING AN ENDLESS STRIP OF FILM, TAPE, OR THE LIKE
Jaren P. Vowles, 445 E. 400 North, Centerville, Utah 84014
Filed Jan. 15, 1979, Ser. No. 3,268
Int. Cl.[2] B08B *1/02*
U.S. Cl. 134—9 **11 Claims**



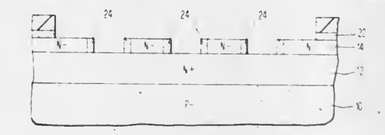
1. A method for cleaning an endless strip of motion picture film, magnetic tape, magnetic film, or the like contained in a reel formed on a rotatable hub housed in a casing, wherein the strip is withdrawn from the center of the reel, directed through guide means within said casing past an operational opening in said casing and is then returned to the ouside of the reel, said method comprising withdrawing the strip from the center of the reel, feeding the strip through an access opening in said casing, said access opening being separate and apart from said operational opening in said casing; forming the strip into a loop outside of said casing; passing the strip in said loop through brushing and cleaning means; feeding the strip from said loop back into said casing through said access opening; returning the strip to the guide means in said casing to be directed past said operational opening and back to the outside of the reel; and continuously advancing successive portions of the endless strip from the center of the reel through said access opening to said brushing and cleaning means back through said access opening, past said operational opening, and then returned to the outside of said reel.

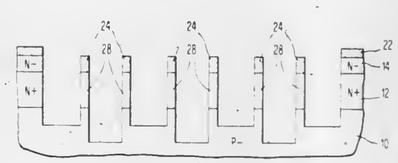
4,211,581
SOLAR PHOTOELECTRIC CONVERSION APPARATUS WITH COOLING MEANS
Olga V. Vasilinina, ulitsa Maslova 6, kv. 49, Monino Moskovskoi oblasti; Jury K. Kidyashev, ulitsa Bazhova, 15, korpus 1, kv. 195, Moscow; Valery N. Potapov, ulitsa Timiryazevskaya, 13, kv. 213, Moscow; Stanislav V. Ryabikov, pereulok Vasnetsova, 12, kv. 64, Moscow; Anatoly M. Stepanov, 1 mikroraion, ulitsa Repina, 10, kv. 18, Ashkhabad, and Dmitry S. Strebkov, Kirovogradsky proezd, 3, korpus 1, kv. 17, Moscow, all of U.S.S.R.
Filed Apr. 10, 1979, Ser. No. 28,900
Int. Cl.[2] H01L *31/04*
U.S. Cl. 136—89 CA **1 Claim**



1. A solar photoelectric conversion apparatus comprising a hollow hermetically sealed reservoir; a transparent liquid heat carrier within said reservoir and occupying the lower portion of the cavity formed by the reservoir; a light converter immersed in said heat carrier and having an active surface; a solar concentrator adapted to be in the optical path of a beam of a solar radiation incident on said active surface of said light converter; and power leads of said light converter running out of said reservoir without disturbing its hermetic condition, whereby during operation of the apparatus vapors of the heat carrier condense on the inner walls of said reservoir and return by gravity to said liquid in said lower portion of said cavity, thereby cooling said liquid and said light converter immersed therein by "thermal siphon" action.

4,211,582
PROCESS FOR MAKING LARGE AREA ISOLATION TRENCHES UTILIZING A TWO-STEP SELECTIVE ETCHING TECHNIQUE
Cheng T. Horng, Fishkill, N.Y., and Robert O. Schwenker, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1979, Ser. No. 52,997
Int. Cl.[2] H01L *21/76, 21/306*
U.S. Cl. 148—1.5 **7 Claims**







1. A method for making wide, deep recessed oxide isolation trenches in a semiconductor substrate comprising:
forming a spaced succession of narrow, shallow trenches in said substrate, said shallow trenches having substantially vertical sidewalls and being saparated by semiconductor mesas,
depositing a predetermined thickness of a masking material on the sidewall and on the bottom surfaces of said shallow trenches and on the top surfaces of said mesas,
etching said coating to remove said coating substantially only from said bottom surfaces of said shallow trenches and from the top surfaces of said mesas,
reactively ion etching said substrate using said coating on said sidewalls of said shallow trenches as a reactive ion etching mask to produce a spaced succession of narrow, deep trenches separated by narrow semiconductor mesas,
the thickness of said narrow semiconductor mesas being substantially equal to and determined by the thickness of said coating, and
thermally oxidizing said substrate so as to completely oxidize the semiconductor material of said narrow semiconductor mesas.

4,211,583

CARD-CLOTHING WIRE

Brian K. M. Eadie, Johnstone, and William H. C. Parker, Glasgow, both of Scotland, assignors to Eadie Bros. & Co. Limited, Paisley, Scotland

Filed Sep. 20, 1978, Ser. No. 944,025

Claims priority, application United Kingdom, Oct. 11, 1977, 42209/77

Int. Cl.[2] D01G *15/84*

U.S. Cl. 148—6.35 **4 Claims**

1. A method of producing card-clothing wire for use on a roller in a textile fibre processing machine, comprising providing wire of carbon steel with a longitudinally extending rib and saw teeth projecting therefrom at spaced intervals along the wire; forming the wire into a helical coil having an attitude similar to that it is required to adopt in use when mounted on said roller, with the teeth projecting from the rib in a direction that is substantially radial with respect to the roller on which it is to be mounted, and then subjecting the surface of the coil of wire to a high temperature chromium diffusion process such that a surface layer of the wire is enriched with chromium to an extent which provides the surface of the wire with a hardness in excess of 1500 HV (i.e. 1500 Kg/mm^2) as measured on the Vickers hardness scale so that the hard coating is not subjected to bending strains during subsequent application of the wire to the roller.

4,211,584

METHODS OF HEAT-TREATING STEEL

Mathurin L'Hermite, and François Pierrard, both of Versailles, France, assignors to L'Air Liquide, Societe Anomyme pour l'Etude et l'Explotion des Procedes, Paris, France

Continuation of Ser. No. 605,286, Aug. 18, 1975, abandoned. This application Apr. 6, 1977, Ser. No. 785,092

Claims priority, application France, Sep. 20, 1974, 74 31744

Int. Cl.[2] C21D *1/48*

U.S. Cl. 148—16.7 **6 Claims**

1. In the method of heat-treating steel, without altering the composition of the surface of the steel, comprising heating the steel in a furnace while causing substantially non-reacting carrier gas consisting of nitrogen and 0–10% hydrogen to continuously flow therethrough, the improvement whereby the decarburizing activity of wet hydrogen is avoided, comprising:

heating the steel in the furnace to within a range between 650° and 900° C.;

determining the water content of the flowing atmosphere by measuring the dew-point at the outlet of the furnace; and

varying the composition of the atmosphere by mixing with the carrier gas an amount of hydrocarbon which is sufficient to reduce the water content of the atmosphere in the furnace, and therefore the dew-point of said atmosphere, to a sufficiently low level to avoid decarburization of the steel, but which amount of hydrocarbon is insufficient to cause carburization of the steel.

4,211,585

SAMARIUM-COBALT-COPPER-IRON-TITANIUM PERMANENT MAGNETS

Koichiro Inomata, and Masakazu Yamada, both of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

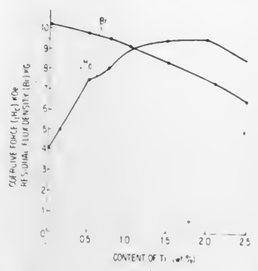
Filed Mar. 8, 1977, Ser. No. 775,471

Claims priority, application Japan, Mar. 10, 1976, 51-24992

Int. Cl.[2] H01F *1/04*

U.S. Cl. 148—31.57 **2 Claims**

1. A permanent magnet, which comprises a composition containing a Sm-Co compound and consisting essentially of 23 to 30 wt.% of Sm, 0.2 to 1.5 wt.% Ti, 9 to 13 wt.% Cu, 3 to 12 wt.% Fe and the balance Co, said magnet having a residual flux density (Br) of about 10 (KG), a coercive force (I^HC) of about 8 (KOe) and a maximum energy product (BH max) of



about 25 (MGOe), having the aforesaid magnetic properties without the necessity of an ageing treatment.

4,211,586

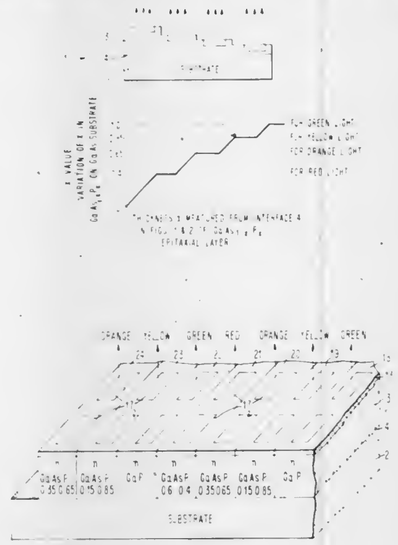
METHOD OF FABRICATING MULTICOLOR LIGHT EMITTING DIODE ARRAY UTILIZING STEPPED GRADED EPITAXIAL LAYERS

Frank F. Fang, and Kwang K. Shih, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 835,097, Sep. 21, 1977, Pat. No. 4,148,045. This application Nov. 6, 1978, Ser. No. 957,966

Int. Cl.[2] H01L *21/20; 29/205*

U.S. Cl. 148—175 **5 Claims**



1. In the process of fabrication of light emitting diode arrays wherein color is determined by the concentration of the variable x in an $AB_{1-x}C_x$ semiconductor at each diode, the improvement comprising:

providing on a semiconductor substrate of the type AB an epitaxial body of monocrystalline semiconductor material of the type $AB_{1-x}C_x$ with variations in the concentration of x that progress from a major surface through the crystal body in regions of incremental change followed by regions of cumulatively higher but constant value of x;

exposing for each diode a portion of said body at a particular region of cumulative higher constant value of x; and

forming a diode at each said exposed portion.

4,211,587

PROCESS FOR PRODUCING A METAL TO COMPOUND SEMICONDUCTOR CONTACT HAVING A POTENTIAL BARRIER OF PREDETERMINED HEIGHT

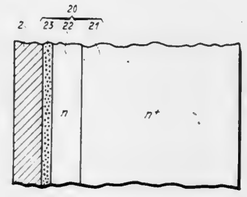
Jean Massies, and Tronc L. Nuyen, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 29, 1978, Ser. No. 974,547

Claims priority, application France, Dec. 29, 1977, 77 39609

Int. Cl.[2] H01L *21/26, 21/66*

U.S. Cl. 148—187 **9 Claims**



6. A process for producing a Schottky contact on a compound semiconductor specimen, comprising the following steps:

(a) operating in a vacuum chamber, cleaning the surface of said specimen to remove the impurities including oxygen traces;

(b) creating ultra-vacuum conditions in said chamber, then introducing hydrogen sulphide or selenide in gaseous phase until the pressure rises to about 10^{-6} Torr;

(c) after a space of time Δt_1, pumping the gaseous phase so as to restore the ultra-vacuum conditions, then introducing pure oxygen until the pressure rises to about 10^{-6} Torr and maintaining this gas in contact with the specimen for a time Δt_2, then pumping the gas to restore the ultra-vacuum conditions;

(d) depositing a metal layer onto the specimen by a conventional method;

(e) heat treating the specimen.

4,211,588

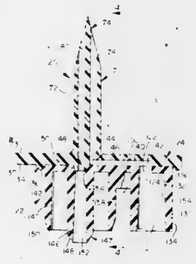
METHOD OF MANUFACTURING A VENTED PIERCING DEVICE FOR INTRAVENOUS ADMINISTRATION SETS

Kenneth C. Raines, Bethlehem, Pa., assignor to National Patent Development Corporation, New York, N.Y.

Filed May 10, 1978, Ser. No. 904,542

Int. Cl.[2] A61M *5/00; B32B 31/16*

U.S. Cl. 156—73.1 **11 Claims**



1. A method of manufacturing a vented piercing device for use with small volume parenteral containers, the method including the steps of:

injection moldng a first portion of the piercing device;

forming a fluid passage and an air passage in said first portion;

injection molding a second portion of the piercing device including a step of forming a pair of separate passages one of which is part ofa fluid path for discharging parenteral fluid from a small volume container and the other of which is part of an air path for venting such small volume container, said first portion passages being positioned to fluidly connect with said second portion passages when said portions are connected together; and

welding said first portion to said second portion to form an integral vented piercing device for use with small volume containers.

4,211,589

SHAFT AND UNIVERSAL JOINT ASSEMBLY

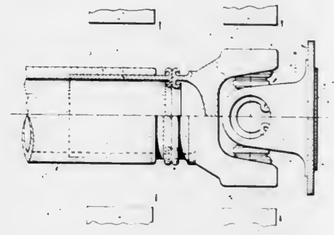
Leslie G. Fisher, Birmingham, and Bertram J. Palmer, Burton on Trent, both of England, assignors to GKN Transmissions Limited, Birmingham, England

Filed Feb. 9, 1978, Ser. No. 876,264

Claims priority, application United Kingdom, Feb. 15, 1977, 6354/77

Int. Cl.[2] B29C *27/00; B32B 31/16; F16C 1/26; F16L 27/06*

U.S. Cl. 156—73.5 **7 Claims**



1. A method of making an assembly of a universal joint member and a shaft formed of fibre reinforced synthetic resin material comprising establishing an adhesive connection between the shaft and a connecting member formed of a material capable of being welded to the universal joint member, and subsequently welding the connecting member to the universal joint member.

4,211,590

METHOD OF MAKING PERFORATED CONTOURED TRIM PANEL

Raymond G. Steward, Port Huron; Stuart G. Boyd, North Street, both of Mich., and Frank P. Civardi, Wayne, N.J., assignors to Inmont Corporation, Clifton, N.J.

Filed Jul. 21, 1978, Ser. No. 926,898

Int. Cl.[2] B32B *5/18*

U.S. Cl. 156—79 **14 Claims**



1. The method of making a smooth contoured resilient panel comprising a composite laminar sheet consisting of a pair of thermoplastic films tenaciously bonded to the face surfaces of an intervening thermoplastic foam core having closed cells containing residual blowing agent and air which comprises the steps of providing a substantially flat section of said sheet, perforating said sheet to impart a plurality of apertures therethrough over at least a portion of the surface thereof, heating said sheet to an elevated temperature sufficient to effect a heat softening thereof and a post-blow and expansion of said foam core producing an expanded sheet incorporating local dimpled recesses in the faces thereof in the vicinity surrounding the apertures defining thin sections of reduced thickness relative to

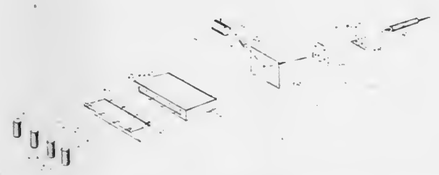
that of the adjacent non-perforated areas of said sheet, thermoforming the heated expanded said sheet between mold surfaces to effect contouring thereof and compaction of said foam core to a thickness of at least equal to the thickness of said thin sections forming a contoured sheet having substantially smooth exterior faces, and thereafter cooling the contoured compacted said sheet to effect rigidification thereof and retention of the compacted contoured configuration.

4,211,591

PRODUCTION OF OPTICAL FIBER CABLES

Kenneth M. Stiles, San Dimas, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.

Division of Ser. No. 600,202, Jul. 30, 1975, Pat. No. 4,113,349.
This application Aug. 23, 1978, Ser. No. 936,094
Int. Cl.[2] B29D *11/00;* **G02B** *5/14*
U.S. Cl. 156—83 **20 Claims**



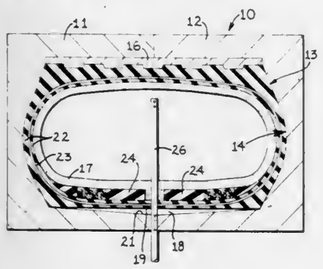
1. A process for the production of optical fiber cables which comprises:
(a) surface coating an elongate optical fiber with an elastomer having a high coefficient of thermal expansion;
(b) applying to the elastomer a settable resin having a low coefficient of thermal expansion to form an outer resin shell surrounding said elastomer coated optical fiber, the ratio coefficients of thermal expansion of the elastomer coating to said resin being from about 3:1 to about 30:1;
(c) setting the applied resin forming the shell when said elastomer is in a thermally expanded state to form a resultant optical fiber cable having a solidified resin shell surrounding a thermally expanded elastomer coating; and
(d) cooling the resultant optical fiber cable to contract by the differential of coefficients of thermal expansion of said solidified resin shell and elastomer coating, the elastomer coating more than the resin shell to remove compressive loads from optical fiber.

4,211,592

METHOD OF BUILDING A CLOSED TUBE-TIRE

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 14, 1978, Ser. No. 933,314
Int. Cl.[2] B29H *3/00, 17/00*
U.S. Cl. 156—123 R **2 Claims**



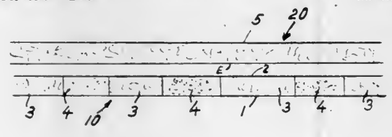
1. In a method of building a tube-tire in which a green tube-tire carcass (**13**) is constructed by laying up layers of uncured elastomer (**22**) and at least one ply of reinforcing elements (**23**) on a disintegratable core (**17**) and then placing the green tube-tire carcass (**13**) into a mold cavity (**14**) of a curing mold (**10**), heating the mold (**10**) to a preselected temperature and circulating heated fluid under pressure through the disintegratable core (**17**) and inside of the carcass thereby curing the elastomer, the improvement comprising:
constructing the green tube-tire carcass (**13**) so that it is smaller in cross section than a cross section of the mold cavity (**14**) and providing a space (**18**) between the inner circumferential wall (**19**) of the green tube-tire carcass (**13**) and an adjacent surface (**21**) of the mold cavity (**14**);
positioning an excess of uncured elastomer (**24**) at the inner surface of the inner circumferential wall (**19**); and
flowing heated elastomer into said space under the influence of the heated fluid circulated under pressure through the inside of the carcass during the step of curing the uncured elastomer.

4,211,593

METHOD OF MAKING A NEEDLED AND ORNAMENTALLY PATTERNED FLEECE MATERIAL

Herbert Lochner, Kempen, Fed. Rep. of Germany, assignor to Cikalon Vliesstoffwerk GmbH, Kempen, Fed. Rep. of Germany

Continuation of Ser. No. 788,232, Apr. 18, 1977, abandoned.
This application May 31, 1978, Ser. No. 911,330
Int. Cl.[2] B32B *7/08, 7/14*
U.S. Cl. 156—148 **13 Claims**



1. A method of making a needled fleece fabric material, which includes the steps of: preparing at least one first preneedled web of fibrous fleece material including fibers and binding together at least partially the fibers of said first web by adhering the fibers of certain areas, preparing a second pre-needled web of fleece material free from adhering fibers in certain areas, placing said first web of fleece material in face-to-face contact with said second web of fleece material in such manner that the back side of the first web of fleece material provided with adhering fibers is in contact with the front side of the second web of fleece material free from adhering fibers in certain areas, and commonly needling said first and second webs of fleece material from the back side of said second web in areas which have no adhering fibers through the two webs and through the areas of said first web which have adhering fibers to form a solid connection of material all over from the back side of said second web through the entire first web in areas both with and without adhering fibers over the entire surface of fleece material needled with each other to form a pile visible on the front side of said first web of fleece material having fibers from said second web.

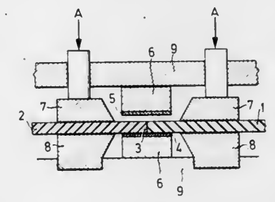
4,211,594

JOINING TOGETHER SHAPED BODIES OF POLYTETRAFLUOROETHYLENE

Günter Freitag, Frankfurt am Main; Alfred Krahl, Eschborn; Gerhard Ullmann, Gross-Gerau, and Günter Wenzel, Kelkheim, all of Fed. Rep. of Germany, assignors to Sigri Elektrographit Gesellschaft mit Beschränkter Haftung, Meitingen bei Augsburg, Fed. Rep. of Germany

Continuation of Ser. No. 733,073, Oct. 18, 1976, abandoned.
This application Jan. 9, 1978, Ser. No. 867,773
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1975, 2549571
Int. Cl.[2] B65H *69/08;* **B29D** *23/01;* **B32B** *31/20*
U.S. Cl. 156—158 **1 Claim**

1. Method for joining together edge surfaces of polytetrafluoroethylene material by a butt joint which comprises the steps of:
(a) placing the polytetrafluoroethylene edges to be joined in a butting relationship in a confining chamber defined as an upper heating element above a strip of the polytetrafluoroethylene material along both sides of the abutting surfaces, a lower heating element below the strip of polytetrafluoroethylene material along both sides of the abutting surface, wherein the distance between the two heating elements is greater than the thickness of the polytetrafluoroethylene strip before heating and less than the expanded polytetrafluoroethylene during heating, and a clamping jaw on each side of the abutting surfaces holding the polytetrafluoroethylene material adjacent the strip of material between said upper and lower heating elements;



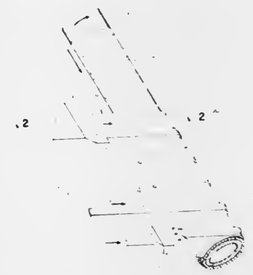
(b) pressing together the abutting surfaces in the absence of other material therebetween;
(c) heating the abutting surfaces to a temperature above the crystallite melting temperature of the polytetrafluoroethylene;
(d) generating a pressure within said chamber by the expending polytetrafluoroethylene which braces itself against the chamber walls;
(e) maintaining the heated abutting surfaces at a temperature between 340° and 430° C. at a contact pressure and welding time of 60 to 300N/cm^2 and 10 to 120 minutes, respectively, to weld abutting surfaces; and wherein the heated polytetrafluoroethylene material is cooled down and during the cooling-down phase an additional pressure is exerted on the butt joint by moving at least one clamping jaw in a direction toward the butt joint.

4,211,595

METHOD OF COATING PIPE

Carlos M. Samour, Wellesley, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Oct. 10, 1978, Ser. No. 949,698
Int. Cl.[2] F16L *11/16;* **B65H** *81/00;* **B32B** *15/08*
U.S. Cl. 156—187 **9 Claims**



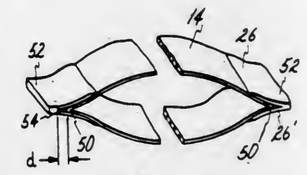
1. A method of coating pipe which comprises the steps of adhering a layer of corrosion protective material to the surface of the pipe to form a cooling thereon, and extruding directly onto said coating a layer comprising polyolefin in overlapping spiral wrapping to form a protective outer sheath over said coating.

4,211,596

METHOD OF FABRICATING TUBULAR CASING FOR PROCESSED FOODS

Stanley Lustig, Park Forest, and Ganapathy Vasudevan, Bolingbrook, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 753,818, Dec. 23, 1976, Pat. No. 4,131,137.
This application Oct. 13, 1978, Ser. No. 951,003
Int. Cl.[2] B29D *7/02*
U.S. Cl. 156—244.12 **7 Claims**



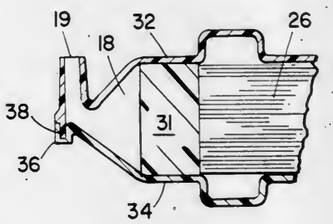
1. A method of forming a composite tubular casing from a substantially flattened tubular substrate of cellulosic material having two longitudinal edges and two relatively flat sides, comprising the steps of:
melt extruding a first layer of thermoplastic material over one of said relatively flat sides with the width of said first layer extending a predetermined minimum distance beyond each longitudinal edge;
melt extruding a second layer of thermoplastic material over the other of said relatively flat sides such that the width of the second layer extends beyond each longitudinal edge and in overlapping engagement with said first layer to form a longitudinal seam adjacent each longitudinal edge;
trimming a portion of each seam extending beyond each longitudinal edge; and
forming a longitudinal bead in the remaining portion of each longitudinal seam in sufficient proximity thereto to eliminate void space between said layers of thermoplastic material and each longitudinal edge.

4,211,597

METHOD FOR MAKING ARTIFICIAL KIDNEY

Bennie J. Lipps, Walnut Creek, Calif.; William P. Murphy, Jr., Miami, Fla., and Frank W. Mather, III, Lafayette, Calif., assignors to Cordis Dow Corp., Miami, Fla.

Filed Jun. 10, 1977, Ser. No. 805,601
Int. Cl.[2] B29C *6/04;* **B01D** *31/00*
U.S. Cl. 156—245 **12 Claims**



1. A production line method for making a one-piece integral non-disassembleable, hollow fiber device having a pair of fluid-tight end chambers separated from each other and joined into an integral unit by a fluid-tight intervening chamber, said intervening chamber containing therein a plurality of capillary hollow fibers providing communication between the interiors

of said end chambers through the passageways in said fibers, which comprises the steps of:

(1) feeding a tow comprising a plurality of hollow fibers in substantially parallel array along a line,

(2) providing means capable of forming a tubesheet around said tow and sealing said fibers therein,

(3) forming a first tubesheet on said tow at a first location,

(4) forming a second tubesheet on said tow at a second location spaced longitudinally from said first location,

(5) transversely severing each of said first and said second tubesheet and said hollow fibers therein to thereby form a fiber bundle assembly,

(6) forming a first portion of a jacket member,

(7) forming a second portion of a jacket member, said first and said second jacket portions being shaped to house said fiber bundle assembly and to sealingly mate with said first and said second tubesheets and with each other to thereby define a pair of fluid-tight chambers separated from each other by an intervening fluid-tight chamber,

(8) positioning said fiber bundle assembly between said first and said second jacket portions, and

(9) bonding said jacket portions to said tubesheets and to each other to thereby form said one-piece integral hollow fiber device.

4,211,598

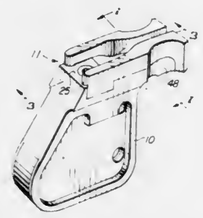
FOIL APPLICATOR FOR FOLDING AND APPLYING ADHESIVE BACKED FOIL TO THE EDGE OF A WORK PIECE

Herbert F. Diegel, 1524 E. Culver, Phoenix, Ariz. 85006

Filed Apr. 20, 1979, Ser. No. 32,004

Int. Cl.[2] B31F *1/00;* **B44C** *7/00;* **B32B** *31/00*

U.S. Cl. 156—468 **8 Claims**



1. A foil applicator, for folding and applying adhesive-backed foil to the edge of a substantially flat work piece, and to the flat surfaces of the work piece adjacent the edge, comprising:

a. a base having a platform with a planar work surface for contacting a non-adhesive side of said foil and urging the adhesive side of said foil against the edge of said work piece;

b. said platform having a foil entrance end and a foil exit end, said foil exit end terminating in a smoothly curved surface extending from the plane of said platform to form a smoothly rounded corner at the platform exit edge;

c. a pair of spaced apart work piece guide arms;

d. attaching means for attaching said arms to said base adjacent said planar work surface;

e. said guide arms and said planar work surface forming a guide channel to receive and guide the work piece edge relative to said applicator, said guide arms extending along said planar work surface from said foil entrance end to said foil exit end and continuing adjacent said smoothly curved surface at the foil exit end, said channel tapering from said foil entrance end to said foil exit end;

f. said guide arms movable toward and away from each other; and

g. biasing means urging said guide arms toward each other so as to grip a work piece positioned in said channel and force said foil into contact with the surfaces of said work piece adjacent the work piece edge.

4,211,599

CUT-AND-WELD DEVICE FOR SUPERIMPOSED FOILS ADVANCED IN THE FORM OF STRIPS

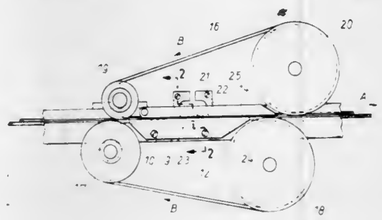
German Bolter, Neuffen; Herbert Helmle, and Hans Beck, both of Nurtingen, all of Fed. Rep. of Germany, assignors to Hans Beck, Nurtingen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,836

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751118

Int. Cl.[2] B32B *31/18*

U.S. Cl. 156—494 **4 Claims**



1. Apparatus for cutting and welding a pair of superimposed foil layers, comprising

(a) first and second laterally spaced pairs of adjacent endless belts each having adjacent horizontal runs for gripping and conveying the superimposed foil layers in a given horizontal direction in a common generally horizontal plane defined between said horizontal runs;

(b) heated cutting means arranged between and extending parallel with said spaced pairs of belts above and generally normal to said plane and extending downwardly therethrough for cutting the foil layers and simultaneously welding together the cut edges of the superimposed foil layers; and

(c) tension rail means arranged between and extending parallel with said spaced pairs of belts below and generally normal to said plane, said rail means extending continuously from a position upstream of said cutting means to a position downstream of said cutting means, the upper edge of said rail means being inclined and extending upwardly through said plane in said given direction, whereby as the superimposed foil layers are gripped and conveyed by said spaced pairs of belts along said tension rail means, the transverse tension on the foil layers increases along the length of said rail means to prevent the folding of the superimposed foil layers, and said heated cutting means cuts and welds the superimposed foil layers together.

4,211,600

CRYSTAL GROWTH

Michael Cole, Sandy, England, assignor to Metals Research Limited, Hertfordshire, England

Filed Dec. 3, 1975, Ser. No. 637,309

Claims priority, application United Kingdom, Dec. 4, 1974, 52379/74

Int. Cl.[2] B01J *17/18*

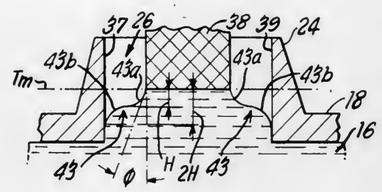
U.S. Cl. 156—608 **56 Claims**

1. In a method of growing a crystal in the form of a thin strip, wherein the growing crystal is pulled from a melt of the crystallisable material through a narrow slit whose walls are not wetted by the melt, the freezing interface between the crystal and the melt is within said slit, the improvement that the pressure of the melt adjacent said interface is at a level of at least

$$2S/b+\sqrt{2Szg}$$

where

S is the surface tension of the crystallisable material
b is the thickness of the slit
z is the density of the melt



g is the acceleration due to gravity
and the depth of the slit is at least $(2S/zg)^{\frac{1}{2}}$.

4,211,601

DEVICE FABRICATION BY PLASMA ETCHING

Cyril J. Mogab, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 31, 1978, Ser. No. 929,569

Int. Cl.[2] H01L *21/306;* **C23F** *1/02*

U.S. Cl. 156—643 **18 Claims**

1. Process for fabrication of an article comprising at least one operation during which the article undergoing fabrication comprises a surface of material to be etched, wherein the said article is etched within a plasma environment contained within an apparatus, the plasma resulting from imposition of an electrical field across gaseous reactant between two electrodes, the material to be etched comprising a silicon-containing composition, etching being primarily due to chemical reaction with the said material to be etched, CHARACTERIZED IN THAT the said gaseous reactant comprises the equivalent of a mixture of at least one halide and a halogen which in the said plasma results in the said chemical reaction in which the said halide is a fluorocarbon and in which the said gaseous reactant has an equivalent fluorocarbon/atomic halogen ratio greater than that contained in CF_3Cl.

4,211,602

SURFACE TREATMENT FOR BLOOD DIALYSIS CARTRIDGES

Robert C. Brumfield, 455 S. Oakland Ave., Pasadena, Calif. 91101

Filed May 4, 1978, Ser. No. 902,970

Int. Cl.[2] B01D *13/00, 39/16;* **B01K** *1/00*

U.S. Cl. 156—644 **7 Claims**

1. In the manufacture of blood dialysis equipment having hollow dialysis fibers whose ends are embedded in a plastic tube sheet which is then cut to form a manifold surface providing access to the interior of the fibers, a method which comprises minimizing the negative effects of rough edges at the fiber ends produced by the cutting process by causing the radii of the fiber ends to increase through heat treatment, chemical reaction, solvent action or chemical composition deposit.

4,211,603

MULTILAYER CIRCUIT BOARD CONSTRUCTION AND METHOD

Douglas A. Reed, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 1, 1978, Ser. No. 901,904

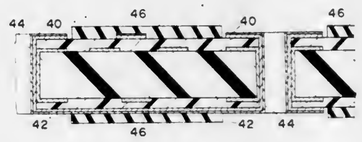
Int. Cl.[2] C23F *1/02*

U.S. Cl. 156—659.1 **7 Claims**

1. A method of manufacturing a multilayer circuit board that includes a plurality of superimposed conductor patterns supported on an insulating substrate and interconnected electrically by multilayer metal-lined through-holes, comprising the subsequential steps of:

(a) providing an insulating substrate having at least one through-hole, a metal sleeve lining said through-hole, and a first conductor pattern on a major surface of the substrate, said pattern including a pad area surrounding an opening of said through-hole and joined to said sleeve,

(b) applying a permanent coating of an insulating resin to the pattern-bearing surface, leaving said pad and the opening of said through-hole uncovered,



(c) depositing a continuous layer of metal on the resulting structure, completely covering said coating and any exposed metal surface, including said pad area and sleeve, and

(d) selectively removing portions of said metal layer to form a second conductor pattern overlying said first pattern and joined to it by a rivet-like multilayer electrical interconnection formed by said pad area, through-hole sleeve and the metal deposited on them in step c).

4,211,604

APPARATUS FOR THE MECHANICAL SEPARATION OF SOLIDS FROM DRYING GAS IN SPRAY DRIERS

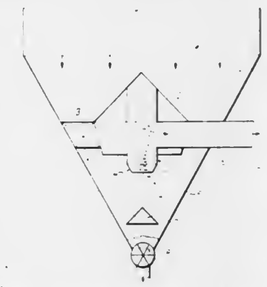
Edgar Muschelknautz, Leverkusen; Heiko Herold, Dormagen; Kunz Brunner, Cologne, and Walter Horstmann, Schildgen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 4, 1976, Ser. No. 655,319

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1975, 2508266

Int. Cl.[2] B01D *1/18*

U.S. Cl. 159—4 D **12 Claims**



1. An apparatus for the mechanical separation of solids from drying gas in spray driers comprising an axial guide means for causing gas leaving the drying chamber to rotate arranged in the lower conical part of the drier and connected by a rotationally symmetrical cowl to a vertical central down pipe having a downwardly disposed open inlet end within the lower conical part for receiving gas from the lower conical part, and at least one radial outflow conduit having an open inlet end communicated with the down pipe for receiving gas therefrom and extending from its inlet end radially outwardly to without the drier at the level of the guide means for discharge of gas from the drier.

4,211,605

HIGH YIELD CHEMIMECHANICAL PULPING PROCESSES

William R. Saxton, l'Orignal, and William H. Lawford, Hawkesbury, both of Canada, assignors to Canadian International Paper Company, Quebec, Canada

Filed Aug. 3, 1978, Ser. No. 930,793
Int. Cl.² D21C *3/06, 3/12*
U.S. Cl. 162—64 **13 Claims**

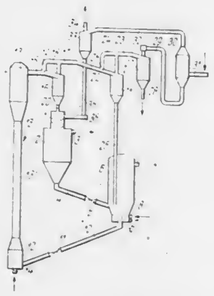
1. A high yield chemimechanical pulping process for producing pulp from woody lignocellulosic material, which process comprises treating said woody lignocellulosic material with sulfur dioxide in an amount of at least about 1 percent by weight based on weight of said woody lignocellulosic material, sulfonating the resulting woody lignocellulosic material for a time sufficient to allow the suffur dioxide to diffuse throughout the lignocellulosic material while still containing at least 1 percent by weight of sulfur dioxide in aqueous solution of a mixture of sulfite and bisulfite wherein the amount of sulfite and bisulfite in said aqueous solution is between 2 and 7 percent by weight calculated as sodium sulfite at a temperature of between about 100° C. and 150° C. for a period of between about 10 and 90 minutes, said aqueous solution having a pH of between about 6 and 8.5 at end of said sulfonating, without reducing the yield of pulp below about 90 percent by weight, and subsequently subjecting the resulting sulfonated woody lignocellulosic material to mechanical defibration.

4,211,606

METHOD FOR THERMAL PROCESSING BITUMEN-CONTAINING MATERIALS AND DEVICE FOR REALIZATION OF SAME

Jury V. Ponomarev, ulitsa Chkalova, 39, kv. 15; Alexandr S. Smirnov, Leninsky prospekt, 73/8, kv. 149; Boris I. Tyagunov, ulitsa Panferova, 8, kv. 22; Vitaly I. Chikul, ulitsa Panferova, 8, kv. 170, all of Moscow; Mark Y. Gubergrits, ulitsa Lomonosova, 17, kv. 12, Tallin; Mart A. Marguste, ulitsa Rebase, 3, Tallin Nymme; Viktor M. Efimov, ulitsa Vyidu, 4, kv. 5; Evgeny F. Petukhov, Narvskoe shosse, 53, kv. 14, both of Kokhtla-Yarve; Yalmar S. Ulanen, ulitsa Kuuze, 3, kv. 3, and Olga S. Chikul, ulitsa Uus, 13, kv. 5, both of Estonskaya SSR, Kiviyli, all of U.S.S.R.

Filed Aug. 19, 1975, Ser. No. 605,816
Int. Cl.² C10B *49/18*
U.S. Cl. 201—12 **2 Claims**



1. A continuous method of thermally processing a solid bitumen-containing material, comprising:
(a) subjecting a mixture containing air and a heat-carrier consisting essentially of hot coke and hot fine ash particles from a previously combusted solid bitumen-containing material to complete thermal destruction in an aerofountain-type furnace at a temperature of about from 700° C. to 1100° C. generated by said mixture of heat-carrier and air, to obtain an air suspension consisting essentially of air, flue gas, and hot, relatively fine ash particles;
(b) separating the air suspension containing the hot fine ash particles into an air suspension carrying a heavier fraction of the fine particles and an air suspension carrying a lighter fraction of the fine particles;
(c) separating the air suspension carrying the heavier fraction of the fine particles from step (b) into an ash for further use as a solid carrier and a residual air suspension containing flue gas and a residue of said heavier fraction of the fine particles;
(d) mixing the solid carrier from step (c) with a fresh, dry, and hot solid bitumen-containing material;
(e) subjecting the resulting mixture of step (d) to distillation at a temperature of about from 450° C. to 650° C. generated by said mixture until the fresh bitumen-containing material is converted into semicoke and liberated volatiles are removed;
(f) subjecting the resulting product from step (e) to gasification by means of steam-air or steam-oxygen whereby the temperature of said mixture containing the distillation residue is raised to about from 600° C. to 900° C. as a result of the exothermic reaction which occurs in gasifying the combustible components of the semicoke liberating volatiles which are removed and converting the semicoke into coke;
(g) recycling the gasification residue as a heat carrier and consisting of hot coke and the hot fine ash particles from the previously combusted solid bitumen-containing material into said aerofountain-type furnace where it is admixed with air and subjected to complete thermal destruction as in step (a) to produce the air suspension of fine particles corresponding to that produced in step (a) which is then recycled as a heat carrier;
(h) mixing the air suspension carrying the lighter fraction of the fine particles from step (b) with the residual air suspension containing flue gas and the residue of the heavier fraction of the fine particles from step (c);
(i) separating the resulting air suspension from step (h) into an air suspension carrying a second heavier fraction of the fine particles and an air suspension carrying a second lighter fraction of the fine particles;
(j) separating the air suspension carrying the second heavier fraction of the fine particles from step (i) into an ash for further use as a second solid carrier and a second residual air suspension containing flue gas and a residue of said second heavier fraction of the fine particles; and
(k) mixing the second solid carrier from step (j) with the distillation residue resulting from step (e).

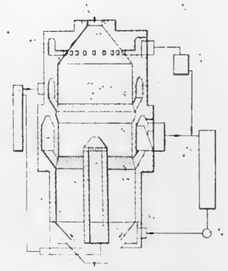
4,211,607

DRY COKE QUENCHING PROCESS

Vasily E. Privalov, ulitsa Galana, 5, kv. 13; Ivan G. Zubilin, ulitsa 23 avgusta, 18, kv. 15; Zoltan-Ivan I. Todavchich, ulitsa Nijutona, 123/22, kv. 48; Nikolai K. Kulakov, ulitsa Akademika Pavlova, 132, kv. 223; Adolf N. Silka, ulitsa Kostomarovskaya, 5/7, kv. 15; Alexandr N. Minasov, ulitsa Ivanova, 12/16, kv. 59, all of Kharkov; Mikhail G. Ananievsky, ploschad Metallurgov, 5, kv. 15, Cherepovets; Naum E. Temkin, ulitsa Vologodskaya, 4, kv. 15, Cherepovets, and Vyacheslav I. Solodkov, ploschad Metallurgov, 2, kv. 22, Cherepovets, all of U.S.S.R.

Filed Feb. 28, 1978, Ser. No. 882,159
Claims priority, application U.S.S.R., Mar. 1, 1977, 2463246
Int. Cl.² C10B *39/02*
U.S. Cl. 201—39 **3 Claims**

1. A dry coke quenching process comprising the steps of preheating said coke to a temperature of not lower than 1200° C., cooling said coke to a temperature of not lower than 700° C. by way of passing therethrough a flow of a mixture consisting essentially of hydrocarbons and water vapor, subsequently



cooling said coke to a temperature of not higher than 200° C. by passing therethrough a flow of inert gas.

4,211,608

COKE PUSHING EMISSION CONTROL SYSTEM

Daniel Kwasnoski, Hellertown, and Carl R. Symons, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 837,071, Sep. 28, 1977, abandoned. This application Oct. 19, 1978, Ser. No. 952,917
Int. Cl.² C10B *39/14, 45/00, 57/00*
U.S. Cl. 201—41 **99 Claims**

1. A method for controlling coke oven emissions comprising the steps of:
(a) aligning a one-spot, open-top coke quenching car with the coke oven,
(b) providing a coke guide from the coke oven to the car,
(c) positioning a fume hood over the car, with the fume hood having a length about equal to the length of the car,
(d) pushing hot coke from the coke oven through the coke guide and into the car,
(e) withdrawing gases from the fume hood during step (d) and passing said gases to gas cleaning equipment at a gas flowrate of between about 1000 and about 3500 scfmd per ton of coke pushed under step (d), and
(f) substantially upon completion of step (e) moving the car from under the fume hood to a quenching station with the hot coke in the car exposed to the atmosphere and without further withdrawal of gases from the hot coke to the gas cleaning equipment.

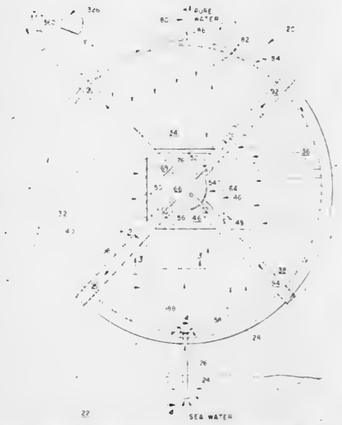
4,211,609

APPARATUS FOR DESALINATING WATER

Richard E. Diggs, 12A Road, Carthage, Mo. 64836

Division of Ser. No. 625,850, Oct. 28, 1975, Pat. No. 4,118,283. This application Jan. 12, 1978, Ser. No. 869,000
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.² C02B *1/04;* **B01D** *3/10;* **F24J** *3/02*
U.S. Cl. 202—176 **4 Claims**

1. A distillation device comprising:
a first water transfer means for withdrawing contaminated water from a body of water having solid contaminants dissolved therein;
a grid connected to said first water transfer means so that contaminated water received from said body of water flows across said grid, said grid having an outer peripheral edge and an inner peripheral edge and comprising a header located on said grid outer peripheral edge and fluidly connected to said first water transfer means so that contaminated water flows into said header from the body of water, said header being fluidly attached to said grid so that contaminated water flows from said header onto said grid whereby contaminated water flows from the body of water to said grid via said header, and a trough located on said grid inner peripheral edge and fluidly attached to said grid so that contaminated water flows into said trough from said grid, and means for transferring solar energy to said water flowing across said grid;
a water storage means having a side wall attached to said grid trough so that contaminated water flowing on said grid flows into said water storage means via said trough;
second water transfer means connected with said water storage means for removing contaminated water from said storage means;
a third water transfer means located in said trough and connected to said water storage means for transferring water from said trough to said water storage means and temperature control means connected to said third water transfer means for actuating said third water transfer means when the temperature of said water in said trough reaches or exceeds said predetermined temperature so that only water having a temperature which equals or exceeds said predetermined temperature is transferred to said water storage means;
a heat exchange structure connected to said water storage means;
a recirculation apparatus mounted in said trough and connected to said header for recirculating said water from said trough back to said header prior to transferring water



from said trough into said water storage means and temperature control means connected to said recirculation apparatus for actuating said apparatus when the temperature of said water in said trough falls below a predetermined temperature;
a vaporizer means connected to said heat exchange structure for separating said water from said solid contaminants dissolved therein, said vaporizer means having a solar concentrator means for transferring solar energy to said contaminated water flowing from said heat exchange structure into said vaporizer means;
vacuum producing means for producing a vacuum in said vaporizer means so that said contaminated water is vaporized under vacuum conditions to form water vapor and thereby separate said water from said solid contaminants, and solid removing means connected to said vaporizer means for removing said solid contaminants from said vaporizer means;
water vapor transfer means connected to said vaporizer means for removing said water vapor from said vaporizer means;
condenser means connected to said water vapor transfer means for condensing said water vapor to form distilled water which is free of solid contaminants; and
distillate transfer means connected to said condenser means

for withdrawing condensed water from said condenser means; and

mounting means on the distillation device for mounting the solar concentrator adjacent the distillation device;

first reflecting means attached to said mounting means;

second reflecting means attached to said mounting means; and

said first and second reflector means being oriented to reflect solar energy to the vaporizing means for raising the temperature of the water contained in the vaporizing means.

4,211,610

APPARATUS FOR HEAT AND MASS TRANSFER

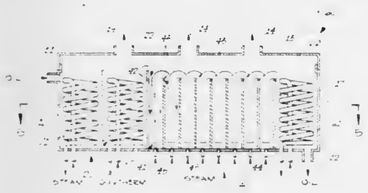
Raymond J. McGowan, Markham, Canada, assignor to The Cambrian Engineering Group Limited, Mississauga, Canada

Filed Sep. 26, 1973, Ser. No. 400,767

Claims priority, application Canada, Oct. 12, 1972, 153753

Int. Cl.[2] B01D *3/02*

U.S. Cl. 202—177 **2 Claims**



2. Apparatus for simultaneous heat and mass transfer between a first fluid predominantly in the vapor phase and a second fluid predominantly in the liquid phase, wherein the apparatus is adapted for the deodorizing of oil and fat which constitutes said second fluid and wherein said first fluid is steam, the apparatus comprising a vessel having first, second and third sections for sequential overflow of said second fluid from one section to the other, liquid heating means in said first section and liquid cooling means in said third section, means introducing said second fluid into said first section, vertical walls and conduit members in said second section defining an extended serpentine flow path, said path including an alternating sequence of (a) channels for upward flow formed between spaced apart walls of a plurality of said conduit members each terminating in a portion directing fluid longitudinally forward in said vessel and (b) channels for downward flow formed between the walls and conduit members, and steam injection means located adjacent the foot of the channels to cause upward flow of said second fluid in said path with a major component of said flow therein being in a vertical direction.

4,211,611

COKE OVEN COAL CHARGING DEVICE

Janos Bocsanczy, and Dieter Stalherm, both of Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still, Recklinghausen, Fed. Rep. of Germany

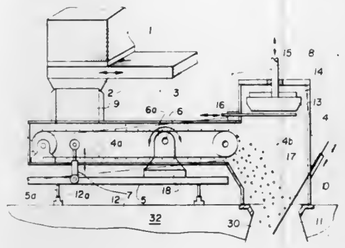
Filed Feb. 1, 1979, Ser. No. 8,517

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2804935

Int. Cl.[2] C10B *31/04*

U.S. Cl. 202—262 **8 Claims**

1. A device for charging coke into a plurality of coke ovens arranged in a coke oven battery having a roof, each of said coke ovens having a chamber and a charging chute which is openable at the roof wherein coal is supplied above the roof through a transferring chute which is openable to discharge the coal, comprising a transfer conveyor housing having a coal receiving connection adapted to be aligned with the transferring chute and a coal discharge connection alignable with the charging chute of the oven and which is located at a laterally spaced location from said coal receiving connection, conveyor means in said housing between said coal receiving connection and said discharge connection for conveying coal therebetween, pivot means supporting said housing for pivotal movement at least about a substantially horizontal axis, and drive



means connected to said housing for moving said housing to simultaneously align and sealingly connect said coal receiving connection of said housing with said transferring chute and said coal discharge connection of said housing with said coal charging chute.

4,211,612

DEVICE FOR COLLECTING EMISSIONS RISING FROM A QUENCHING CAR OF A BATTERY OF COKE OVENS

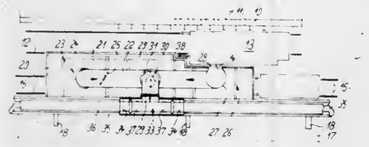
Wilhelm Stog, Waltrop, Fed. Rep. of Germany, assignor to WSW Stahl- und Wasserbau GmbH, Waltrop, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,380

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 7722885

Int. Cl.[2] C10B *27/04, 39/00*

U.S. Cl. 202—263 **7 Claims**



1. In combination with a displaceable quenching car of a battery of coke ovens disposed side by side in a row with doors in their front ends and having a coke guide car for selective positioning in front of the ovens to receive coke therefrom, and a collecting main for collecting smoke and gases emitted during the door removal and pushing of coke from said battery, said collecting main extending coextensively with said battery and including a continuous flexible belting forming a portion of one side thereof, a device which includes: a first elongated hood for receiving emissions rising from said quenching car, a collector mounted above said first hood and extending in the longitudinal direction of said first hood, duct means arranged at one end portion of said first hood and extending from said first hood to said collector for conveying emissions from said first hood to said collector, an adjustable throttle valve associated with said duct means for controlling the passage of emissions therethrough, a connecting piece connected to the other end portion of said collector, a second hood extending over said coke mass transporting carriage, and provided with an opening adapted to be aligned with said connecting piece, and wighdrawal duct means connected to said collector at an intermediate portion between said duct means and said connecting piece which withdrawal duct means are adapted to communicate with said collecting main and provided with a shut-off flap operable to control the communication between said collector and said collecting main.

4,211,613

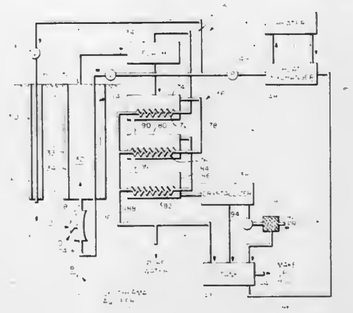
GEOTHERMAL MINERAL EXTRACTION SYSTEM

Milton Meckler, 16348 Tupper St., Sepulveda, Calif. 91343

Filed Nov. 28, 1977, Ser. No. 855,358

Int. Cl.[2] C02B *1/04*

U.S. Cl. 203—11 **25 Claims**



1. A system for recovering geothermal brines comprising in combination:

a geothermal well having a first end adjacent the surface and a second end disposed within a wet geothermal aquifer containing hot saline geothermal brine;

brine eductor means disposed at said second end comprising a venturi having a first inlet receiving a high velocity flow of dilute saline carrier solution, a nozzle inlet into which a flow of said geothermal brine is educted, mixing means receiving said flow of solution and flow of geothermal brine from said inlets to form a recovery mixture having a saline content lower than that of said brine and an outlet communicating the mixture with the interior of said well;

first conduit means within said well for delivering said high velocity flow of solution to said first inlet; and

second means within said well for delivering said mixture from said outlet to the surface.

11. A method of recovering geothermal brine from a geothermal aquifer comprising the steps of:

establishing a high velocity flow of a carrier solution having a lower salt concentration than the brine from the surface into a geothermal well having a lower end disposed within the aquifer;

flowing the solution through the well through a venturi having a nozzle communicating with the aquifer so that brine is educted from the aquifer into the solution to form a recovery mixture; and

delivering the mixture through the well to the surface.

4,211,614

ENDPOINT DRIFT CORRECTION FOR AUTOMATIC TITRATIONS

Lee B. Eppstein, Northport, N.Y.; James K. Kroeger, Glen Ridge, N.J., and Kenneth A. Lindblom, Harrison, N.Y., assignors to Photovolt Corporation, New York, N.Y.

Filed May 30, 1978, Ser. No. 910,174

Int. Cl.[2] G01N *27/44*

U.S. Cl. 204—1 T **10 Claims**

1. In an automatic titrator comprising titration means for introducing a titrant into a titration mixture, endpoint detection means for detecting the endpoint of the titration, means responsive to the endpoint detection means for controlling the titration means to introduce titrant when the titration mixture is not at the endpoint, and titrant measuring means for measuring the amount of titrant introduced, the improvement which comprises;

(a) timer means for measuring the titration time until the titration mixture first reaches an initial endpoint,

(b) means responsive to one of the endpoint detection means and the titration means for detecting introduction of titrant during a predetermined post-titration time period after the initial endpoint;

(c) means for measuring the amount of titrant introduced during a subsequent post-titration time period after the initial endpoint, said subsequent time period beginning with the detection of titrant introduction by means (b), and ending with a predetermined subsequent introduction of titrant; and

(d) means including a timer for measuring the duration of said subsequent post-titration period, said time and amount measurements by means (c) and (d) being indicative of the drift rate during the titration, and the drift rate and the titration time measured by means (a) being indicative of the amount of drift.

7. A method for correcting positive drift in a titration or a titration mixture, comprising

generating a signal Q corresponding to the amount of titrant introduced into the titration mixture;

generating a time signal T corresponding to time elapsed from beginning of the titration;

introducing titrant continuously until a predetermined endpoint condition is detected, and thereafter reintroducing titrant periodically as needed to maintain the reaction mixture at the endpoint condition;

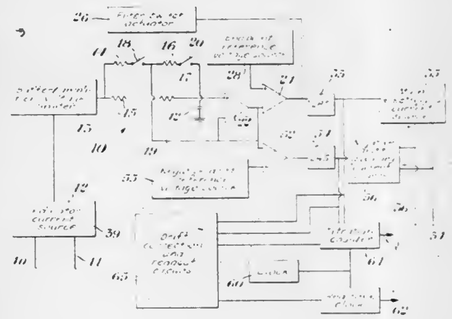
storing the Q and T signals as Q_{titr} and T_{titr} at the time the endpoint is first reached;

when no additional titrant is introduced during a predetermined time interval after the endpoint is first reached. determining the titration result from Q_{titr}; and

when additional titrant is introduced during said interval, generating a drift rate signal DR corresponding to the difference between (i) the Q signal at the time T_{Co} of an additional titrant introduction (Q_{Co}) and the Q signal at the time T_{C1} of a predetermined later additional titrant introduction (Q_{C1}) divided by (ii) the difference in time ($T_{C1}-T_{Co}$) between said introductions;

generating a correction signal Q_{corr} corresponding to the product of the drift rate signal DR and the stored T_{titr} signal, said correction signal thus corresponding to the amount of titrant consumed by drift during the initial titration; and

determining the titration result from the difference between the stored T_{titr} signal and the T_{corr} signal.

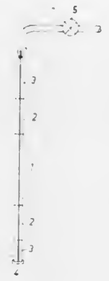


4,211,615

PROCESS AND A MEASURING CELL FOR THE COULOMETRIC DETERMINATION OF THE CONTENT OF A COMPONENT DISSOLVED IN WATER

Rolf O. Hallberg, Skolvagen 11A, 135 00 Tyreso; Carl H. M. Lindstrom, Sandelsgatan 10, 115 33 Stockholm, and Hakan Westerberg, Paskvagen 32, 421 53 Vastra Frolunda, all of Sweden

Filed May 2, 1979, Ser. No. 35,383
Int. Cl.² G01N 27/42
U.S. Cl. 204—1 T **3 Claims**



1. A process for the coulometric determination of the content of a component dissolved in water, in which process a definite constant voltage is applied across the electrodes of a coulometer cell filled with a water sample, said constant voltage being maintained for a period of time sufficient for a complete reaction of the dissolved component in a desired electrode reaction, the quantity of electricity passing through the cell being measured by integration, and the content of the dissolved component being calculated on the basis of said integration, characterized by employing an elongated three-part coulometer cell composed of a central measuring cell and two auxiliary cells which are directly connected to each end of the measuring cell, and by performing electrolysis simultaneously in the measuring cell and the auxiliary cells under such conditions that the concentration of the dissolved component will decrease at the same rate in all three cell elements, two such electrolyses being performed with the same integration time in order to correct for temperature and salt content dependence and for charging of the electric double layer.

2. A coulometer cell for the coulometric determination of the content of a component dissolved in water, characterized in that it consists of an elongated central measuring cell which has both of its ends directly connected each to one of two elongated auxiliary cells, each of the measuring and auxiliary cells being provided with an anode and a cathode in the form of electrically conducting wires, said wires being parallel inter se and extending in the longitudinal direction of the respective cell elements.

4,211,616

ELECTROCHROMIC PRINTING SYSTEM

Carlos J. Sambucetti, Croton-on-Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1979, Ser. No. 42,177
Int. Cl.² G01D 15/06, 15/34
U.S. Cl. 204—2 **18 Claims**

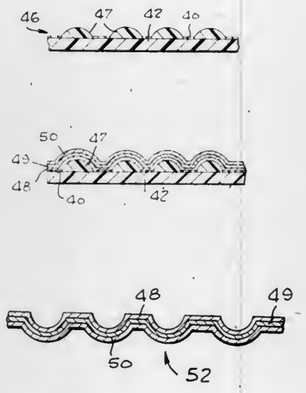
1. An aqueous electrochromic printing fluid comprising
(a) an iodide compound as a color forming agent;
(b) a bromide compound to catalyze an electro-oxidation of said iodide compound;
(c) a compound which forms a clathrate complex with iodine formed from the electro-oxidation of said iodide compound; and
(d) a discoloration inhibiting compound.

4,211,617

PROCESS FOR PRODUCING A STAMPER FOR VIDEODISC PURPOSES

Csaba K. Hunyar, Los Angeles, Calif., assignor to MCA DiscoVision, Inc., Los Angeles, Calif.

Continuation of Ser. No. 552,249, Feb. 24, 1975, abandoned. This application Sep. 21, 1978, Ser. No. 944,499
Int. Cl.² C25D 1/10, 1/20
U.S. Cl. 204—5 **2 Claims**



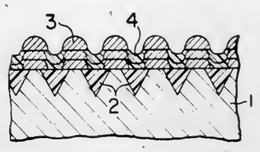
1. A process for producing a video disc member from which a plurality of replica video discs can be formed, and for producing a video disc member for use as an intermediate product from which additional stamper and die members can be formed, said process comprising the steps of:
providing a body having an upper surface carrying indicia of the video information to be produced, and said upper surface being substantially flat for establishing a substantially planar surface in the resulting replica member suitable for reflecting light incident thereupon, and said upper surface having discontinuities out of the plane of the surface for scattering light incident thereupon, and each of said discontinuities being separated by a flat portion of said upper surface, and said discontinuities and flat surface portions being arranged in a video information track, each discontinuity having a constant dimension in the radial direction and a constant maximum dimension in the direction perpendicular to said surface, the length of each discontinuity in the circumferential direction and the distance between adjacent discontinuities in the circumferential direction representing the video information to be reproduced;
forming a silver layer upon said upper surface and said discontinuities to a thickness sufficient to support electroconductivity in a subsequent electroplating bath and said thickness lying within the range of 0.01 mil to 2 mils;
electroplating a copper layer upon said exposed surface of said silver layer to a thickness sufficient for forming a self supporting member having a thickness lying within the range of 2 mils to 10 mils;
electroplating a nickel layer upon said copper layer for greater strength and support and having a thickness lying within the range of 1 mil to 10 mils; and
separating said combined first, second and third layers from said body for providing a first video disc member having a silver interface surface carrying said video information in a form complementary to the form of said video information carried by said upper surface of said body and suitable for use in reproducing replica video discs having video information in a form identical to the form carried by said body.

4,211,618

METHOD FOR MAKING SCREENS

Yoshio Ohno, Tokyo, Japan, assignor to Kabushiki Kaisha Kenseido and Toppan Printing Co. Ltd., both of Tokyo, Japan

Filed May 16, 1978, Ser. No. 906,611
Claims priority, application Japan, May 24, 1977, 52-59395
Int. Cl.² C25D 1/08
U.S. Cl. 204—11 **6 Claims**



1. A method for producing screens by a plating process comprising the steps of:
(1) plating a master roll or plate, having a pattern of conductive metal and non-conductive areas on the surface thereof, with a plurality of separate coats of a metal coating on said conductive areas in order to build up a plurality of spaced projecting metal parts having a required thickness;
(2) between each of the separate platings, applying a non-electrically conductive resin onto the entire surface of a said separate metal coating; and
(3) removing said non-electrically conductive resin from the top of each of said separate metal coatings on said projecting parts while said non-electrically conductive resin is in an undried state, said removal being performed by means of a roll comprised of a natural or synthetic rubber receptive to said non-electrically conductive resin, so as to expose the surface of said metal coating.

4,211,619

PROCESS FOR ANODICALLY OXIDIZING ALUMINUM AND USE OF THE MATERIAL SO PREPARED AS A PRINTING PLATE SUPPORT

Gerhard Usbeck, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,076
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811396
Int. Cl.² C25D 11/16, 11/18
U.S. Cl. 204—33 **4 Claims**

1. In the process for anodically oxidizing materials in the form of strips, foils, or sheets comprised of aluminum or aluminum alloys in an aqueous electrolyte containing sulfuric acid and aluminum ions, if appropriate, after a foregoing mechanical, chemical, or electrochemical roughening,
the improvement comprising anodically oxidizing the material in an electrolyte having a concentration of sulfuric acid in the range of about 25 to 100 g per liter and of aluminum ions in the range of about 10 to 25 g per liter, at a current density in the range of about 4 to 25 A/dm², and a temperature in the range of about 25° to 65° C.

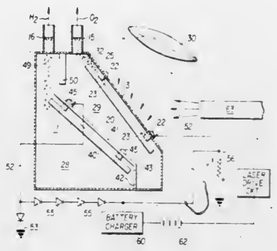
4,211,620

METHOD OF AND APPARATUS FOR PRODUCING HYDROGEN AND OXYGEN BY PHOTOELECTRICALLY-INDUCED ELECTROLYSIS

Herbert Fowler, Lexington, Ky., assignor to Childers-Fowler Research and Development Company, Lexington, Ky.

Filed Jun. 1, 1979, Ser. No. 44,650
Int. Cl.² C25B 1/04, 9/00, 9/04
U.S. Cl. 204—129 **20 Claims**

1. A method of producing hydrogen and oxygen from an electrolytic solution in an electrolytic cell comprising the steps of:
forming a relatively thin layer of the electrolytic solution on an anode;
passing light through the relatively thin layer to ionize the electrolytic solution in the relatively thin layer to form oxygen adjacent the anode and to heat the solution in the layer;



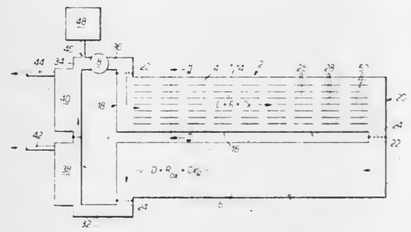
circulating the fluid in the electrolytic cell due to heating of the relatively thin layer to move the solution past a cathode electrically connected to the anode,
preventing current from flowing from between the cathode and anode until the potential reaches a predetermined threshold thereby generating hydrogen gas at the cathode, and
collecting the hydrogen gas as the gas forms at the cathode.

4,211,621

METHOD AND APPARATUS FOR PRODUCING HYDROGEN USING SOLAR ENERGY

George Porter, London, England, assignor to National Research Development Corporation, London, England

Filed Jun. 9, 1978, Ser. No. 914,241
Claims priority, application United Kingdom, Jun. 10, 1977, 24404/77
Int. Cl.² B01J 1/10
U.S. Cl. 204—157.1 R **26 Claims**



22. A method for the collection of solar energy by photo-oxidation of water and for the conversion of such energy into a chemical fuel, which method comprises: (i) forming an aqueous solution of an absorbing substance D, a reducing substance R and an oxidising substance Ox, the substances D R and Ox being chosen so that upon irradiation by sunlight dissociation and photo-oxidation of water takes place as a result of D absorbing light and the resultant excited state of D reacting with R, Ox and water to oxidise to R to R_{Ox} and reduce Ox to Ox_R; (ii) causing the said aqueous solution to circulate in one direction around the closed loop of a unidirectional, continuous flow solar energy collection apparatus while irradiating the solution with incident sunlight to thereby cause said photo-oxidation of water; the said solar energy collection apparatus comprising a closed loop through which, in use, an aqueous solution is continuously circulated in one direction only and is impinged upon by incident sunlight while circulating the aque-

ous solution continuously in one direction around the closed loop, an inlet for introducing reactants into the closed loop, at least one first station comprising means for regenerating Ox from Ox_R with liberation of hydrogen as chemical fuel, an optional at least one second station comprising means for regenerating R from R_{Ox} with concomittant release of oxygen, the said first and second stations being interposed in the closed loop in a manner such that the said aqueous solution flows through the first and second stations, and an outlet for withdrawing products from the closed loop; (iii) at the said first station in the closed loop, regenerating Ox from Ox_R with liberation of hydrogen as the chemical fuel; (iv) optionally at the said second station in the closed loop, regenerating R from R_{Ox} with concomitant release of oxygen; and (v) introducing water into the closed loop to replace dissociated water.

4,211,622

PROCESS FOR IMPARTING DURABLE FLAME RETARDANCY TO FABRIC, FIBERS AND OTHER MATERIALS AND IMPROVED PRODUCT PRODUCED THEREBY

Sam V. Nablo, Lexington, Mass., assignor to Energy Sciences Inc., Burlington, Mass.

Continuation of Ser. No. 535,856, Dec. 23, 1974, abandoned. This application Jan. 13, 1977, Ser. No. 759,024

Int. Cl.² C08L *3/00, 5/00*

U.S. Cl. 204—159.12 **6 Claims**

1. A process for grafting a fire-retarding additive selected from the group consisting or phosphorus-rich and halogen-rich fire-retarding compounds to a flammable fibrous fabric selected from the group consisting of nylon, polyester, and cellulosic materials, that comprises, applying to the fabric a solution of the additive and an effective amount of a copolymerization-grafting compound for effecting copolymerization with the additive, with the solids content of the solution selected to correspond to a predetermined desired add-on level within the range of substantially 15–40% by weight, at least partly drying the fabric by evaporating moisture therefrom to improve the graft efficiency, irradiating the fabric, so treated, with an electron curtain beam substantially perpendicular to the fabric for uniformity of irradiation, with the energy of the beam adjusted to an energy level within the range of substantially 50–250 keV and considerably below the energy required for the electrons of the beam to penetrate the average thickness of the material constituting the fabric, scattering the electrons of the beam between the fabric fibers to extend the effective range of electron penetration, moving the fabric past the beam at a speed within the range of about 7–50 meters per minute, and adjusting the dose of the electron beam radiation delivered to the fabric to a level within the range of substantially 2–5 megarads.

4,211,623

HALIDE ELECTRODE

James W. Ross, Jr.; Charles E. Amass, both of Cambridge; Charles S. Baer, Lynn, and Martin H. Thomae, Watertown, all of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Filed Dec. 27, 1978, Ser. No. 973,567

Int. Cl.² G01N *27/30;* **B22F** *3/02*

U.S. Cl. 204—195 M **11 Claims**

1. An electrochemical electrode sensitive to halide ion X^- in solution and comprising:

a substantially imporous membrane composed of a mixture of a solid amalgam of gold and mercury with a finely divided mercurous halide salt in the form Hg_2X_2; and

means for forming an electrical contact with one surface of said membrane at a substantially fixed potential.

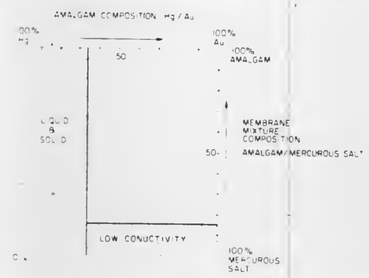
8. A method for producing an ion-sensitive membrane for an electrochemical electrode comprising the steps of:

intimately mixing a solid amalgam of gold and mercury with a finely divided mercurous halide salt selected from the group consisting of mercurous chloride, mercurous bromide, and mercurous iodide; and

compressing said mixture with sufficient force to render it a substantially imporous mass.

11. A method of producing an electrochemical electrode sensitive to halide ions in solution comprising the steps of:

intimately mixing a solid amalgam of gold and mercury with



a finely divided mercurous halide salt selected from the group consisting of mercurous chloride, mercurous bromide, and mercurous iodide;

compressing said mixture with sufficient force to render it a substantially imporous mass;

forming a membrane from said mass; and

forming an electrical contact with one surface of said membrane at a substantially fixed potential.

4,211,624

MATERIAL FOR PRODUCING PYROMETRIC REFRACTORY COMPONENTS, PYROMETRIC REFRACTORY COMPONENT, AND PROCESS FOR PRODUCING SAME

Novella V. Semkina, ulitsa Bljukhera, 71, korpus 1, kv. 38, Sverdlovsk; Galina S. Bokach, ulitsa Borovaya, 13, kv. 7, Kamyshlov Sverdlovskoi oblasti, and Ivan V. Zinkovsky, Sevastopolsky prospekt, 12, korpus 3, kv. 9, Moscow, allof, U.S.S.R.

Filed Mar. 2, 1979, Ser. No. 16,967

Int. Cl.² C05B *35/48;* **G01N** *27/58*

U.S. Cl. 204—195 S **4 Claims**

1. A material for producing pyrometric refractory components, comprising the following ingredients in, % by weight with the total percentage of such ingredients adding up to 100%:

alumina	65 to 83
titanium dioxide	60 to 10
zirconium dioxide	11 to 25

2. A pyrometric refractory component produced from said material claimed in claim **1**.

3. A pyrometric refractory component as claimed in claim **2**, made in the form of a tube with a sealed end, the outside diameter-to-length ratio being 1:10 to 1:13 and the inside diameter-to-outside diameter ratio being 1:2 to 1:4.

4. A process for producing pyrometric refractory components, comprising the following steps:

mixing of finely divided ingredients taken in the following ratio, % by weight:

alumina	65 to 83
titanium dioxide	6 to 10
zirconium dioxide	11 to 25;

with the total percentage of such ingredients adding up to 100%;

introduction of a plasticizing additive into the resulting mixture;

moulding of said components;

initial firing at a temperature of 1,200° to 1,300° C. to completely remove said plasticizing additive and partially strengthen said components;

final firing at a temperature of 1,650° to 1,720° C. to impart the required strength to said components.

4,211,625

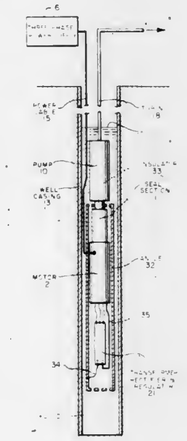
IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM FOR SUBMERSIBLE DOWNHOLE PUMPING ASSEMBLY

Joseph E. Vandevier, Broken Arrow, and Larry E. Hocutt, Tulsa, both of Okla., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 11, 1978, Ser. No. 941,629

Int. Cl.² C23F *13/00*

U.S. Cl. 204—197 **1 Claim**



1. An impressed current cathodic protection system for a deep well submersible downhole pumping assembly having a pump, a seal section and a three-phase motor each of which is encased in a respective one of three metal housings in contact with the fluid in the well, the pump having internal metal surfaces also in contact with the well fluid, and wherein a three-phase AC power supply, located at the surface above the well, couples to and energizes the three-phase motor in the downhole pumping assembly, said protection system comprising:

DC supply means, mounted below the downhole pumping assembly and having positive and negative terminals, and including a three-phase transformer for coupling the windings of the three-phase motor to a rectifier in order to rectify AC voltages derived from the motor windings to provide a DC voltage across said positive and negative terminals;

means for electrically connecting said negative terminal of said DC supply means to the three metal housings, in which the pump, seal section and motor are encased, and also to the internal metal surfaces of the pump;

a tubular shaped sacrificial anode mounted to said downhole pumping assembly and encompassing and spaced from the seal section and the three-phase motor, said anode being constructed to permit the well fluid to flow within said anode and over the metal housings of the seal section and motor;

and means for electrically connecting said positive terminal of said DC supply means to said sacrificial anode, current thereby flowing from said anode and through the well fluid to the three metal housings and to the internal metal surfaces of the pump to protect the metal housings and metal surfaces against corrosion.

4,211,626

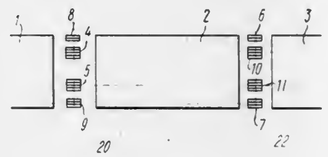
DUAL CURRENT SUPPLY SYSTEM FOR ALUMINUM-PRODUCING ELECTROLYZERS

Nikolai A. Kaluzhsky, Sredny prospekt, 6, kv. 23; Ilya G. Kil, ulitsa Gavanskaya, 37, kv. 61; Vladimir P. Nikiforov, ulitsa Nalichnaya, 49, kv. 8; Vasily I. Nosikov, Moskovsky prospekt, 205, kv. 455; Alexandr N. Smorodinov, ulitsa Bukharestskaya, 31, korpus 3, kv. 55; Mikhail V. Yazev, Kirovksy prospekt, 42b, kv. 65, and Igor K. Tsybukov, Tikhoretsky prospekt, 9, korpus 10, kv. 54, all of Leningrad, U.S.S.R.

Filed Jun. 7, 1978, Ser. No. 913,328

Int. Cl.² C25C *3/16*

U.S. Cl. 204—243 M **4 Claims**



1. A dual system of current supply buses for aluminum-producing electrolyzers arranged transversely in a row in spaced relation with each other, said system having a plurality of anode risers in each space between next-adjacent electrolyzers, anode systems and anode buses electrically connected to the anode risers for supplying current from said anode risers to said anode systems,

at least two anode risers of one of a pair of next-adjacent electrolyzers being coplanarly positioned in the space between said next-adjacent electrolyzers, and

at least two anode risers of the other of said pair of next-adjacent electrolyzers being positioned in said space between said next-adjacent electrolyzers in coplanar relation with the anode risers of said one of said next-adjacent electrolyzers.

4,211,627

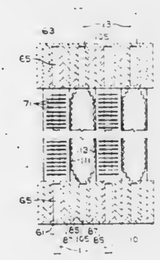
PERMIONIC MEMBRANE ELECTROLYTIC CELL

Hugh Cunningham, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 27, 1978, Ser. No. 928,645

Int. Cl.² C25F *9/00*

U.S. Cl. 204—252 **15 Claims**



8. An electrolytic cell comprising;

a cathodic unit;

an anode unit substantially parallel to said cathode unit and having anodic elements therein; and

a permionic membrane therebetween;

said cathode unit having a plurality of parallel, elongate, vertical blade-like cathodic elements, the cathodic elements being of greater surface area than the anode elements, said permionic membrane being nearer the anodic elements than the cathodic elements—and spaced from said anodic elements by a spacing element interposed between said anodic elements and said permionic membrane.

4,211,628

ELECTROLYTIC BATH ASSEMBLY

Kanichiro Obata, Matsudo; Yoshikazu Kokubu, and Isao Okazaki, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1978, Ser. No. 944,356

Claims priority, application Japan, Oct. 21, 1977, 52/126476

Int. Cl.² C25B *9/00, 11/03*

U.S. Cl. 204—252 **5 Claims**



1. An electrolytic bath vessel assembly, characterized by the provision of two electrode groups as an anode and a cathode arranged at the both sides of a fine-pored separating membrane, each of said groups comprising a number of equidistantly parallely arranged bar electrodes, preferably round bars, said two electrode groups being positioned in an opposed state relative to each other, wherein the anodic and cathodic bar electrodes are arranged in a zigzag arrangement.

4,211,629

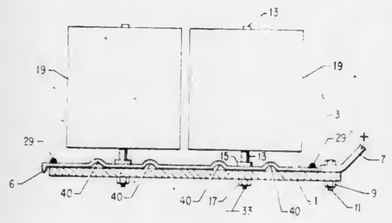
ANODE AND BASE ASSEMBLY FOR ELECTROLYTIC CELLS

Hugh L. McCutchen, Florence Ala., and James W. Bess, Sr., Painesville, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Feb. 12, 1979, Ser. No. 11,415

Int. Cl.² C25B *9/04, 11/02, 11/10*

U.S. Cl. 204—252 **10 Claims**



1. In an electrolytic cell for the electrolysis of alkali metal halide solutions of the type comprising an anode and cell base assembly and a cathode cell can, the improvement in the anode and cell base assembly which comprises:

(a) A conducting and supporting cell base means having perforations disposed therein for receipt of anode risers;

(b) A substantially electrically nonconductive metal cell base cover having an outer surface and an inner surface facing said cell base, said cell base cover covering the entire upper surface of said cell base, having perforations disposed therein corresponding to said perforations in said cell base;

(c) Dimensionally stable anodes, each of said anodes comprising an electrically conductive surface, a material supporting said electrically conductive surface and an anode riser having a downwardly facing annular surface on the lower portion thereof at least a portion of said annular surface in contact with said outer surface of said cell base cover and a connecting post extending past said annular surface and through said perforations in said metal cell base cover and said cell base, and

(d) A circumferential weld bead extending between each said annular surface and the periphery of each said perforation in said cell base cover, whereby said flange, anode riser and metal cell base cover comprise a unitary structure and a hydraulically impermeable seal is created between each said annular surface and said metal cell base cover by said weld bead.

4,211,630

ELECTROLYTIC RECOVERY OF SILVER FROM PHOTOGRAPHIC BLEACH-FIX BATHS

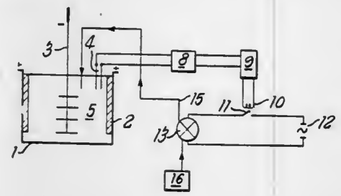
Colin C. Blake, Rochford, and Ivan C. Payne, Brentwood, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 934,302, Aug. 17, 1978, which is a continuation-in-part of Ser. No. 586,836, Jun. 13, 1975, abandoned. This application Apr. 23, 1979, Ser. No. 32,813

Claims priority, application United Kingdom, Jun. 26, 1974, 28330/74

Int. Cl.² C25C *7/06, 1/20;* **G05D** *11/08;* **G03C** *5/38*

U.S. Cl. 204—275 **4 Claims**



1. Apparatus for recovering metallic silver from bleach-fix baths which comprises an electrolytic cell having a cathode on which reduced silver ions can deposit, a platinum plus calomel pair of electrodes for measuring the redox potential of the bleach-fix solution, a milli-volt meter connected to the platinum plus calomel pair of electrodes for indicating the redox potential of the bleach-fix solution in milli-volts, a potentiostat connected to the milli-volt meter and to which is connected a solenoid, together with an electrical circuit which comprises a relay which can be actuated by the said solenoid, a source of electric voltage and a pump which operates continuously when the said circuit is made but stops when the circuit is broken, a tank for holding an aqueous solution of a reducing agent and supply means joining the tank to the pump and the pump to the electrolytic cell.

4,211,631

COAL LIQUEFACTION PROCESS EMPLOYING MULTIPLE RECYCLE STREAMS

Norman L. Carr, Allison Park; Ronald Schleppy, Jr., Pittsburgh, and Yatish T. Shah, Pittsburgh, all of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Jul. 3, 1978, Ser. No. 921,339

Int. Cl.² C10G *1/00, 1/06;* **C10J** *3/00, 3/16*

U.S. Cl. 208—8 LE **24 Claims**

1. A combination coal liquefaction-gasification process comprising passing hydrogen and a liquefaction zone feed slurry comprising mineral-containing feed coal, recycle dissolved liquid coal solvent, recycle dissolved coal which is solid at room temperature and recycle mineral residue to a coal liquefaction zone to dissolve hydrocarbonaceous material from mineral residue and to hydrocrack said hydrocarbonaceous material to produce a liquefaction zone effluent mixture comprising hydrocarbon gases, dissolved liquid coal, solid dissolved coal and suspended mineral residue; recycling to said liquefaction zone feed slurry a portion of said dissolved liquid coal, solid dissolved coal and mineral residue; recycling to said liquefaction zone an other portion of said solid dissolved coal and mineral residue independently of said liquefaction zone feed slurry; said liquefaction zone producing a greater net yield on a weight basis after recycle of 450° to 850° F. dissolved liquid coal as compared to the net yield on a weight basis after recycle of 850° F.+ solid dissolved coal; separating dissolved liquid coal and hydrocarbon gases from non-recycled solid dissolved coal and mineral residue to produce a gasifier feed slurry comprising substantially the entire net yield of solid dissolved coal and mineral residue of said liquefaction zone; passing said gasifier feed slurry to a gasification zone including an oxidation zone for the conversion of the hydrocarbonaceous material therein to synthesis gas; converting at least a portion of said synthesis gas to a gaseous hydrogen-rich stream and passing said hydrogen-rich stream to said liquefaction zone to supply process hydrogen thereto; the amount of hydrocarbonaceous material passed to said gasification zone being sufficient to enable said gasification zone to produce at least the entire hydrogen requirement of said liquefaction zone.

4,211,633

SEPARATION OF ASPHALTIC MATERIALS FROM HEPTANE SOLUBLE COMPONENTS IN LIQUIFIED SOLID HYDROCARBONACEOUS EXTRACTS

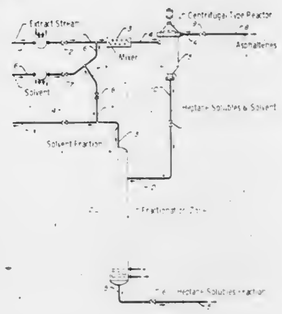
William K. T. Gleim, Seattle, Wash., assignor to Energy Modification, Inc., Gainesville, Fla.

Continuation-in-part of Ser. No. 873,115, Jan. 30, 1978, Pat. No. 4,155,833. This application Mar. 22, 1979, Ser. No. 22,818

The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.

Int. Cl.² C10C *3/00, 3/08*

U.S. Cl. 208—45 **6 Claims**



1. An improved method for maximizing the separation of the heat labile fraction of asphaltic materials in a liquified solid hydrocarbonaceous extract, which comprises the steps of:

(a) adding a solvent having a boiling range of from about 50° C. to 200° C. for the heptane solubles of said extract,

(b) effecting a mixing of said solvent and said extract and providing a pressurized centrifuging action of the combined stream in a confined pressure-tight powered centrifuging zone at a temperature in the range of about 100° C. to about 200° C. while at an elevated pressure at least sufficient to maintain the solvent material in a liquid state, whereby to separate the heavier heat labile asphaltic materials fraction from the mixture, and

(c) effecting the withdrawal of the asphaltic fraction from the centrifuging zone substantially free of the resulting solution of the heptane soluble liquified fuel extract.

4,211,632

METHOD FOR HEAT PROCESSING OF PULVERIZED BROWN COAL

Zinovy F. Chukhanov; Anatoly M. Nikolaev; Vadim A. Karasev; Elizaveta A. Shapatina; Zinovy Z. Chukhanov; Galina P. Zybalova; Nikolai A. Fedorov, and Sergei A. Tsuprov, all of Moscow, U.S.S.R., assignors to Gosudarstvenny Nauchno-Issledovatelsky Energeticheskiy Institut Imeni G.M. Krzhizhanovskogo, U.S.S.R.

Filed Aug. 14, 1978, Ser. No. 933,526

Int. Cl.² C10G *1/00*

U.S. Cl. 208—8 R **5 Claims**

1. Method of heat processing pulverized brown coal, which comprises heating pulverized brown coal in a first stage by a gaseous heat carrier in less than one second to a temperature of 200°–500° C. at which thermal decomposition thereof begins, separating the gaseous heat carrier from the thus heated brown coal, further heating the thus heated brown coals in a second stage in less than one second to a temperature of 500°–800° C. at which temperature thermal decomposition of the brown coal takes place by means of a stream of gaseous heat carrier which has been supplied with air oxygen and low grade products from the processing of pulverized brown coal, thus forming a vapour-and-gas suspension, breaking the thus formed vapour-and-gas suspension into a solid matter and a vapour-and-gas portion, condensing the vapour-and-gas portion to obtain gas, usable liquid products and to separate low-grade products including heavy tars and pyrogenic water therefrom, thereby obtaining thermally processed brown coal of high caloric capacity.

4,211,634

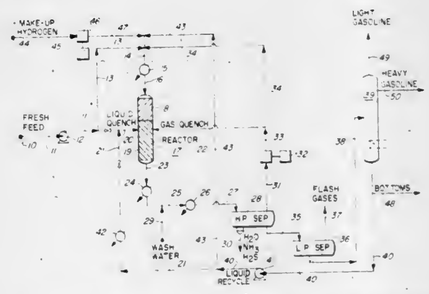
TWO-CATALYST HYDROCRACKING PROCESS

Ralph J. Bertolacini, Chesterton, Ind., and Albert P. Yu, Taipai, Taiwan, assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 13, 1978, Ser. No. 960,237

Int. Cl.² C10G *13/04, 37/02*

U.S. Cl. 208—59 **45 Claims**



1. A process for the hydrocracking of a hydrocarbon stream boiling above a temperature of about 300° F. (149° C.) and

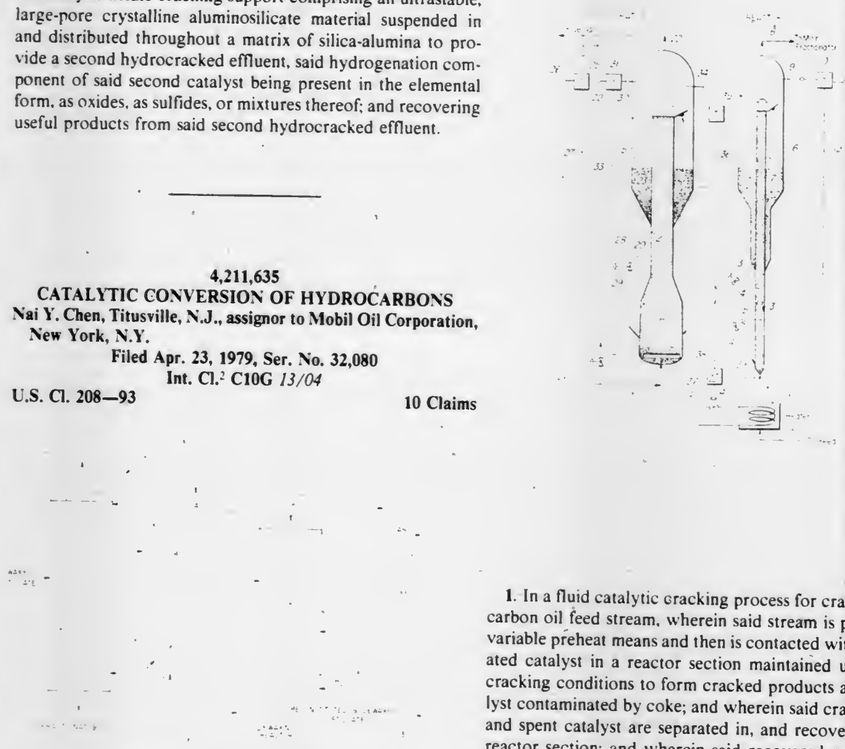
containing a substantial amount of organic nitrogen-containing compounds, which process comprises: contacting said stream in a first reaction zone under hydrocracking conditions and in the presence of hydrogen with a first catalyst comprising a hydrogenation component comprising nickel and molybdenum or nickel and tungsten and a co-catalytic acidic cracking support comprising an ultrastable, large-pore crystalline aluminosilicate material suspended in and distributed throughout a matrix of silica-alumina to provide a first hydrocracked effluent, said hydrogenation component of said first catalyst being present in the elemental form, as oxides, as sulfides, or mixtures thereof; contacting said first hydrocracked effluent in a second reaction zone under hydrocracking conditions and in the presence of hydrogen with a second catalyst comprising a hydrogenation component comprising cobalt and molybdenum and a co-catalytic acidic cracking support comprising an ultrastable, large-pore crystalline aluminosilicate material suspended in and distributed throughout a matrix of silica-alumina to provide a second hydrocracked effluent, said hydrogenation component of said second catalyst being present in the elemental form, as oxides, as sulfides, or mixtures thereof; and recovering useful products from said second hydrocracked effluent.

4,211,635

CATALYTIC CONVERSION OF HYDROCARBONS

Nai Y. Chen, Titusville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,080
Int. Cl.² C10G *13/04*
U.S. Cl. 208—93 **10 Claims**



1. A process for improved shape selective catalytic hydrodewaxing of distillate lubricating oil stock which comprises fractionally distilling said stock to provide at least two fractions thereof boiling at different temperature ranges, introducing the highest boiling said fraction to the upper portion of a vertical column of a zeolite having a silica/alumina ratio above 12 and a constraint index between about 1 and about 12 maintained at hydrodewaxing conditions to flow downwardly therethrough, introducing hydrogen to the lower portion of said column for flow upwardly in said column, introducing a lower boiling said fraction to said column at a point intermediate the said introduction of said highest boiling fraction and said introduction of hydrogen to flow in admixture with said highest boiling fraction downwardly as liquid countercurrent to said hydrogen at conversion conditions resulting in shape selective dewaxing conversion of said highest boiling fraction at higher level of severity, and withdrawing from the bottom of said column reconstituted dewaxed distillate lubricating oil stock of improved viscosity index.

4,211,636

FCC CATALYST SECTION CONTROL

Benjamin Gross, and Wooyoung Lee, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 769,638, Feb. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 608,353, Aug. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 608,352, Aug. 27, 1975, abandoned. This application Aug. 7, 1978, Ser. No. 931,573
Int. Cl.² C10G *11/18*
U.S. Cl. 208—164 **11 Claims**

1. In a fluid catalytic cracking process for cracking a hydrocarbon oil feed stream, wherein said stream is passed through variable preheat means and then is contacted with hot regenerated catalyst in a reactor section maintained under catalytic cracking conditions to form cracked products and spent catalyst contaminated by coke; and wherein said cracked products and spent catalyst are separated in, and recovered from, said reactor section; and wherein said recovered spent catalyst is continuously circulated through a regenerator section operating in the complete CO-burning mode thereby burning said contaminating coke by contact with air and forming hot regenerated catalyst having a temperature substantially higher than said spent catalyst, said regenerator section being provided with adjustable means for recycling a portion of hot regenerated catalyst to said recovered spent catalyst; and wherein hot regenerated catalyst is recirculated to said reactor section, the method for controlling the process, whereby improving its adaptive behavior, which comprises:

comparing the temperature of the hot regenerated catalyst with a predetermined temperature to obtain a regenerated catalyst temperature deviation; and,

adjusting, within the regenerator section, the recycle of hot regenerated catalyst to spent catalyst to change the recycle ratio in a direction to reduce said temperature deviation, said recycle ratio being in the range of greater than about 1.5 to about 5 before and after said change; and

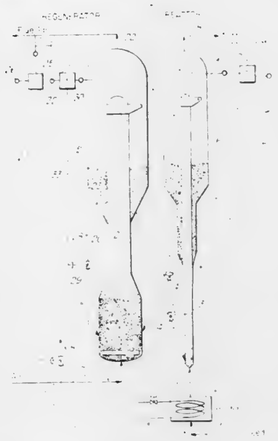
adjusting the oil preheat temperature in a direction to reduce said regenerated catalyst temperature deviation.

4,211,637

FCC CATALYST SECTION CONTROL

Benjamin Gross, and Wooyoung Lee, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 769,485, Feb. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 608,352, Aug. 27, 1975, abandoned. This application Aug. 7, 1978, Ser. No. 931,600
Int. Cl.² C10G *11/18*
U.S. Cl. 208—164 **8 Claims**



1. In a fluid catalytic cracking process for cracking a hydrocarbon feed stream, wherein said stream is contacted with hot regenerated catalyst in a reactor section maintained under catalytic cracking conditions to form cracked products and spent catalyst contaminated by coke; and wherein said cracked products and spent catalyst are separated in, and recovered from, said reactor section; and wherein said recovered spent catalyst is continuously circulated through a regenerator section operating in the complete CO-burning mode thereby burning said coke by contact with an oxygen containing gas and forming hot regenerated catalyst having a temperature substantially higher than said contaminated catalyst, said regenerator section being provided with adjustable means for recycling a portion of hot regenerated catalyst to said recovered spent catalyst; and wherein hot regenerated catalyst in recirculated from said regenerator section to said reactor section, the method for controlling the process, whereby improving its adaptive behavior, which comprises:

comparing the temperature of the hot regenerated catalyst with a predetermined temperature to obtain a regenerated catalyst temperature deviation; and,

adjusting, within the regenerator section, the recycle of hot regenerated catalyst to spent catalyst to change the recycle ratio in a direction to reduce said temperature deviation, said recycle ratio being in the range of greater than 1.5 to about 5 before and after said change.

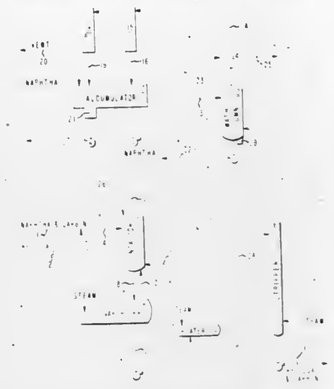
4,211,638

NAPHTHA STRIPPING

Robert B. Akell, Wilmington, Del.; Werner C. Muller, Dobbs Ferry, N.Y., and Rudolph Pick, Metuchen, N.J., assignors to Syngas Company, Deer Park, Tex.

Filed Feb. 10, 1978, Ser. No. 876,678
Int. Cl.² C10G *7/00, 21/00*
U.S. Cl. 208—180 **8 Claims**

1. In a process for recovering a light hydrocarbon liquid from a slurry of the light liquid with soot by mixing the slurry with a heavy hydrocarbon liquid, then heating and distilling the mixture in a naphtha stripper with the light liquid taken off overhead and condensed while drawing off a bottom stream composed of the heavy liquid and soot, the improvement comprising, after mixing the slurry with the heavy hydrocarbon liquid but prior to distilling the mixture in the naphtha stripper, feeding the mixture under pressure into a direct liquid-vapor contactor where the mixture is contacted with superheated, overhead vapors from the naphtha stripper, thereby converting part of the light hydrocarbon liquid into vapor, the vapors being taken off overhead and condensed, and removing the remainder of the liquid mixture from the bottom of the contactor and feeding it to the stripper.



4,211,639

METHOD FOR REMOVING IMPURITIES AND RESIDUAL MOISTURE FROM PETROLEUM FUELS

Herman R. Jackson, 1981 San Marco Blvd., Jacksonville, Fla. 32207

Filed Nov. 3, 1978, Ser. No. 957,504
Int. Cl.² C10G *33/04, 33/06*
U.S. Cl. 208—188 **7 Claims**



1. A method for removing impurities and residual moisture from a petroleum fuel comprising:

(a) adding to said fuel a solid organic acid or a chromate compound; and

(b) circulating said fuel from step (a) through a filter apparatus containing a cellulosic material and the acid or chromate compound which was not added in step (a), said filter apparatus being electrically grounded or attached to an electric ground via a DC power supply.

4,211,640

PROCESS FOR THE TREATMENT OF OLEFINIC GASOLINE

William E. Garwood, Haddonfield, and Wooyoung Lee, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 24, 1979, Ser. No. 41,844
Int. Cl.² C10G *25/04*
U.S. Cl. 208—255 **16 Claims**

1. In the process of contacting olefinic gasoline with an

acidic crystalline aluminosilicate zeolite having a pore diameter greater than about 5 Angstroms, a silica-to-alumina ratio of at least 12, and a constraint index within the range of 1–12 at elevated temperatures, the improvement which comprises utilizing an olefinic gasoline having an olefin content of at least 50 weight percent and (a) carrying out said contact at a temperature of from about 350°–600° F., a pressure of from about 100–1,000 psig and at a space velocity ranging from about 0.2 to 10 LHSV; (b) said temperature, space velocity and pressure being chosen so as to produce no more than 5 weight percent of aromatics, and (c) obtaining a product comprising both fuel oil and gasoline having enhanced gum stability.

4,211,641

CIRCULATING AIR CLASSIFIER OR SEPARATOR

Heinz Jäger, Nevelstrasse 40, 4630 Bochum 1, Fed. Rep. of Germany

Filed Oct. 27, 1978, Ser. No. 955,623

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748336

Int. Cl.² B04C *5/30*

U.S. Cl. 209—144 **4 Claims**



1. Circulating air classifier with vertical axis having a separator chamber in which coarse matter is separated from fine material, an impeller rotatable about the vertical axis disposed in the separator chamber to aid in separating the coarse matter from the fine material suspended in air rising up through the separator chamber, an opening in the bottom of the separator chamber through which the coarse matter discharges, at least another opening in the separator chamber above the bottom through which the fine material suspended in air is discharged, at least one cyclone for receiving said fine material suspended in air and separating the fine material from the air, connecting means for conducting the fine material suspended in air from the opening in the separator chamber to the cyclone, an air blower with an air suction inlet and a pressure discharge outlet, an air return line connecting the cyclone to the suction inlet for recirculating air separated in the cyclone, the improvement comprising

(A) a funnel-shaped pre-separator chamber disposed underneath and in open communication with the separator chamber which latter extends downwardly thereby directing any air and suspended matter from the pre-separator chamber upwardly through said rotatable impeller in the separator chamber,

(B) a compressed air-line with one end connected to the pressure discharge outlet of the air blower and the other end opening into the upper part of the funnel-shaped pre-separator with air from the air-line flowing tangentially into the pre-separator,

(C) inlet means in the compressed air-line upstream from the funnel-shaped pre-separator for the introduction of feed matter, which together with air flowing from the air blower enters the pre-separator tangentially causing coarse matter to be separated from the feed matter, said air and feed matter after separation of coarse matter passing upwardly through the separator chamber to said cyclone for separating the fine material from the air, and

(D) outlet means in the lower part of the pre-separator for the discharge of the coarse matter.

4,211,642

BENEFICIATION OF COAL AND METALLIC AND NON-METALLIC ORES BY FROTH FLOTATION PROCESS USING POLYHYDROXY ALKYL XANTHATE DEPRESSANTS

Vojislav Petrovich, 1935 W. Schiller St., Chicago, Ill. 60622

Filed Jan. 5, 1979, Ser. No. 1,945

Int. Cl.² B03D *1/06*

U.S. Cl. 209—167 **2 Claims**

2. In the concentration of metallic and non-metallic minerals by froth flotation with a high content of pyrite and the like iron sulfides, which includes the subjecting of such ores when finely ground and sized to substantially liberate particles of pyrite, to froth flotation process in the presence of any suitable and adequate collector and frother for desired metallic and non-metallic mineral for the recovery of the same, and in the presence of a polyhydroxy alkyl xanthate wetting and depressing agent for pyrite, the step of adding to a pulp of mineral slurry an amount of the order of 0.01 to 0.10 kg per metric ton of a non-collecting polyhydroxy alkyl xanthate, of which hydroxyl groups of said polyhydroxy alkyl xanthates contain from 3 to 4, and having the following general formula:

$$HOCH_2(CHOH)_mCH(CHO)OCSSK$$

wherein m is an integer from 2 to 3; said polyhydroxy alkyl xanthates, react with pyrite and said iron sulfides of the pulp of mineral slurry to yield a water soluble or insoluble hydrophilic coating depressing the pyrite and said iron sulfides, said polyhydroxy alkyl xanthates being selected from the group consisting of potassium pentose, and potassium hexose xanthates, such as potassium arabinose xanthate, potassium xylose xanthate, potassium glucose xanthate, potassium fructose xanthate.

4,211,643

HYDROCYCLONE SEPARATOR

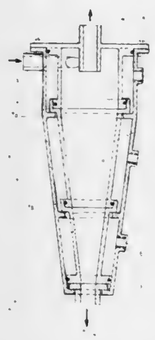
Rune H. Frykhult, Huddinge, and Lars-Göran Rundqvist, Tumba, both of Sweden, assignors to AB Celleco, Tumba, Sweden

Filed Feb. 16, 1979, Ser. No. 13,197

Claims priority, application Sweden, Feb. 22, 1978, 7802042

Int. Cl.² B04C *5/08*

U.S. Cl. 209—211 **7 Claims**



1. A hydrocyclone separator for separating a material mixture into two fractions and comprising means forming a separation chamber having an upper portion and a downwardly tapering lower portion and also having a tangential inlet for in-feed of said material to said upper portion, means centrally located with respect to said chamber forming a first outlet from said upper portion for one of said fractions, said lower portion of the chamber tapering to a second outlet for the other of said fractions, said chamber-forming means including imperforate cylindrical wall means surrounding said upper chamber portion and imperforate conical wall means surrounding said lower chamber portion, and means for detecting leakage from the separation chamber through said wall means including an outer shell surrounding only a single said chamber-forming means and defining therewith at least one compartment surrounding both said cylindrical and said conical wall means, said compartment being closed from said inlet and from said first and second outlets of the separation chamber, the detecting means also including means for maintaining said compartment at a lower pressure than that at the outer periphery of the separation chamber when the separator is in operation, whereby said compartment can receive leakage from both said upper and said lower portions of the separation chamber.

4,211,644

FROTH FLOTATION PROCESS AND COLLECTOR COMPOSITION

Adriaan Wiechers, Pretoria, South Africa, assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 17, 1977, Ser. No. 852,413

Claims priority, application South Africa, Nov. 26, 1976, 76/7089

Int. Cl.² B03D *1/02*

U.S. Cl. 209—166 **26 Claims**

1. In the method for the recovery of copper values by froth flotation from copper ores wherein an alkyl mercaptan having the formula C_nH_{2n+1}—SH wherein n is an integer of from 12 to 16 is used as a collector, the improvement which includes the step of, prior to addition of the mercaptan collector to the copper ore pulp, thoroughly mixing said mercaptan with a polyglycol selected from the following:

(a) a polyglycol having the general formula:

(I) R_1—$(OR_2)_m$—OH in which R_1 is selected from the group consisting of phenyl, alkyl substituted phenyl, alkyl, hydrogen and a saturated heterocyclic group, R_2 is an alkylidene group, m is an integer of at least 2 and said polyglycol has a molecular weight between 50 and 2000; and

(b) a polyglycol having the general formula:

(II) R_1—$(OR_3)_n$—$(OR_4)_p$—OH in which R_1 is as defined for formula I herein, R_3 is —CH_2CH_2—, R_4 is

$$-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-,$$

and n and p are integers ranging from 2 to 5, and the mixture containing greater than 50 percent by volume of said mercaptan.

4,211,645

FOAM FLOTATION ACTIVATED SLUDGE PROCESS

James E. Zajic; Martha A. Hill, both of London; Donald F. Manchester, Oakville, and Karel Muzika, Ottawa, all of Canada, assignors to Abitibi Paper Company Ltd., Toronto, Canada

Filed Apr. 25, 1977, Ser. No. 790,852

Claims priority, application Canada, Jul. 16, 1976, 257177

Int. Cl.² C02C *1/06, 5/10*

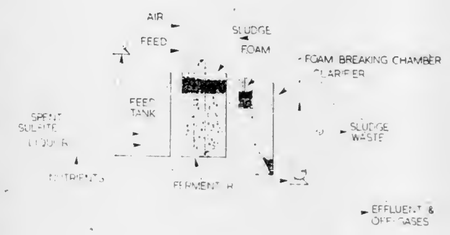
U.S. Cl. 210—7 **44 Claims**

1. A method of biodegrading a spent sulfite liquor having a dissolved solids content of 6 to 14% by an autolytic mixed fungal (yeast and yeast-like) system, consisting essentially of the steps of

(a) feeding said liquor to a mixed fungal (yeast and yeast-like) inoculated fermentor with agitation and with aeration, resulting in foaming of the mixture, said foam carrying with its fungus and sludge resulting from the fermentation, the suspended solids content of the foam when collapsed being lower than the suspended solids content of the fermentor broth,

(b) undertaking material transfer only by conducting said foam to a means for separation into a sludge and a clarified effluent,

(c) separating said foam into a sludge and a clarified effluent, and



(d) recycling at least a portion of the separated sludge to step (a).

44. A method for removing BOD and COD from a process waste liquor comprising

treating said process waste liquor with a microbial culture system, said microbial culture system being acclimatized to SSL and having at least one of the following fungal components, which have been identified through isolation and accepted taxonomical procedures:

1. *Phialophora jeanselmei* (Langeron) Emmons (ATCC 20,482)
2. *Phialophora richardsiae* (Nannfeldt apud Melin & Nannf.) Conant (ATCC 20,483)
3. *Hyalodendron lignicola* Diddens (ATCC 20,484)
4. *Trichosporon infestans* (Moses & Vianna) Ciferri & Radaelli (ATCC 20,485)
5. *Candida tropicalis* (Castellani) Berkout (ATCC 20,486).

4,211,646

WASTE WATER PROCESS

Clifton W. Westbrook, Groves; Lloyd J. Parcell, Beaumont, both of Tex.; Gary L. Claytor, Richmond, Va., and Byron V. Klock, Beaumont, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 31, 1977, Ser. No. 847,192

Int. Cl.² C02B *1/20;* **C02C** *5/02, 5/10*

U.S. Cl. 210—15 **33 Claims**

1. A method for treating a waste water stream characterized by having toxic and corrosive properties due to the presence of cyanides, formates, and a halide of a metal or ammonia which consists essentially of adding ferrous ions to said waste water, the amount of ferrous ions in moles being in excess of the total moles of cyanides present, while maintaining said waste water

at a pH in the range from about 7 to 9 and at a temperature from about 125° to 200° F. to effect the conversion of a substantial portion of said cyanides to iron cyanides and form a treated waste water, adding a base to said treated waste water until a pH of said waste water is in the range from about 9 to 11 to precipitate a sludge containing said iron cyanides, separating said waste water from said sludge, feeding said waste water to a biological reactor to effect the conversion of said formates to carbon dioxide and a biological residue, and recovering an environmentally upgraded waste water from said biological reactor.

4,211,647
ANAEROBIC METHOD OF TREATING HIGH-STRENGTH WASTE-WATER
Alexander A. Friedman, 163 Brookside La., Fayetteville, N.Y. 13066, and Scott J. Tait, B-14 Slocum Heights, Syracuse, N.Y. 13210
Filed Feb. 12, 1979, Ser. No. 11,097
Int. Cl.² C02C *1/04, 5/10*
U.S. Cl. 210—17 **5 Claims**

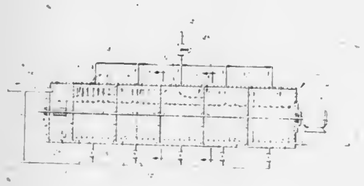
1. The process of treating a high strength wastewater containing anaerobic digestible nutrients and organic substrates including the steps of

rotatably supporting a plurality of contactors within an enclosed airtight housing upon a common shaft that passes horizontally through the housing,

partitioning the housing into separate horizontally aligned treatment stages, each of which contains a number of contactors therein,

passing a stream of high strength wastewater in series through each of the stages to partially wet each of said contactors,

mixing the influent prior to its entering the first stage in the series,



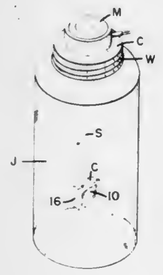
establising a colony of anaerobic organisms upon each of the contactors for feeding upon the nutrients and organic substrates contained in the wastewater to produce methane and carbon dioxide gases,

creating an anoxic atmosphere over the wastewater contained in the housing,

rotating said shaft at a predetermined rate to immerse the organisms into the wastewater for a first period of time wherein the organisms feed upon said nutrients and said organic substrates and to expose the organisms to the atmosphere over the fluid for a second period of time to permit the organisms to release the process gases into said atmosphere in response to the digestion of said nutrients and organic substrates.

4,211,648
Patent Not Issued For This Number

4,211,649
METHOD OF AND APPARATUS FOR TREATING WATER
Boris Sway, 7201 W. Aracoma Dr., Cincinnati, Ohio 45237
Filed Jun. 12, 1978, Ser. No. 914,569
Int. Cl.² C02B *1/16*
U.S. Cl. 210—37 R **13 Claims**



1. An apparatus for treating a given quantity of tap water for improving the taste thereof and removing undesirable ions therefrom which comprises:

(a) an open top vessel for receiving a quantity of water-to-be treated;

(b) at least one water-pervious housing which contains a quantity of granular material characterized by its ability to absorb those components of water which contribute to its off-taste or which remove the anions and cations from the water;

(c) a shaft extending axially into said vessel from the open top thereof;

(d) an open framework secured to and carried by said shaft for removably receiving the housing;

(e) means for producing relative rotary movement between water in the vessel contacting the housing and the water-pervious housing so as to provide a continuous recirculation of the water relative to the granular material;

(f) a lid for closing the open top of the vessel, said shaft rotatably secured to and depending from said lid;

(g) a motor secured to and carried by said lid in driving relationship with said shaft; and

(h) means securing said housing to said shaft wherein rotation of said housing causes the water within said vessel to be continuously recirculated through said framework, the housing, and its contents.

4,211,650
WATER RECLAMATION PROCESS
Robert C. Thomas, 3740 Campus Dr., Newport Beach, Calif. 92660
Continuation of Ser. No. 575,381, Jun. 9, 1975, abandoned. This application Aug. 21, 1978, Ser. No. 935,680
Int. Cl.² C02B *1/20;* **C02C** *5/02*
U.S. Cl. 210—44 **20 Claims**

1. A process for the purification of waste water by the removal of suspended solid waste therefrom comprising the steps of:

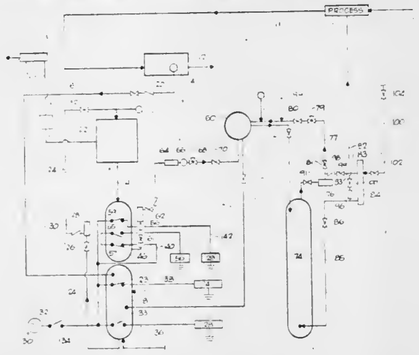
(a) accumulating the waste water in a waste water holding vessel to obtain a first predetermined initiating threshold quantity thereof;

(b) introducing waste water from the waste water holding vessel into a flotation cell at a continuous and predetermined rate after the first predetermined initiating threshold quantity is present in the waste water holding vessel, the continuous and predetermined rate corresponding to the rate and quantity requirements of the flotation cell, such waste water introduction into the flotation cell reducing the quantity of waste water in the waste water holding vessel to a first predetermined small quantity of waste water;

(c) agglomerating said suspended solid waste from the water in the flotation cell to produce partially treated water;

(d) removing the agglomerated suspended solid waste from the flotation cell;

(e) terminating waste water introduction into the flotation cell when the first predetermined small quantity of such water is present in the waste water holding vessel, the first predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the flotation cell, the first predetermined small quantity corresponding to an insufficient quantity of waste water for the flow rate and quantity requirements of the cell;



(f) accumulating partially treated water from the flotation cell in a partially treated water holding vessel to obtain a second predetermined initiating threshold quantity of partially treated water;

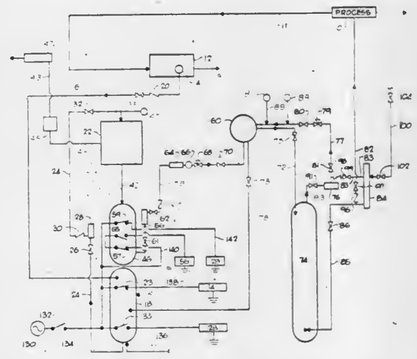
(g) introducing partially treated water from the partially treated water holding vessel into a filter at a second continuous and predetermined rate after the second predetermined initiating threshold quantity is present in the partially treated water holding vessel, such partially treated water introduction into the filter reducing the quantity of partially treated water in the partially treated water holding vessel to a predetermined second small quantity of partially treated water, the second continuous and predetermined rate corresponding to the rate and quantity requirements of the filter and being different from the first continuous and predetermined rate;

(h) filtering water treated in the flotation cell in the filter to remove additional suspended solid waste;

(i) terminating partially treated water introduction into the filter when the predetermined second small quantity of such water is present in the partially treated water holding vessel, the second predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the filter, the second predetermined small quantity corresponding to an insufficient quantity of partially treated water for the flow rate and quantity requirements of the filter; and

(j) recycling the filtered water to the source of the waste water.

4,211,651
WATER RECLAMATION PROCESS
Robert C. Thomas, 3740 Campus Dr., Newport Beach, Calif. 92660
Continuation of Ser. No. 724,568, Sep. 20, 1976, abandoned, which is a continuation of Ser. No. 585,455, Jun. 9, 1975, abandoned. This application Aug. 23, 1978, Ser. No. 935,882
Int. Cl.² C02B *1/20;* **C02C** *5/02*
U.S. Cl. 210—44 **21 Claims**



1. A process for the purification of waste water by the removal of suspended solid waste therefrom comprising the steps of:

(a) accumulating said waste water in a waste water holding vessel to obtain a first predetermined initiating threshold quantity thereof;

(b) introducing waste water from the waste water holding vessel into a flotation cell at a first continuous and predetermined rate after the first predetermined initiating threshold quantity is present in the waste water holding vessel, the first continuous and predetermined rate corresponding to the rate and quantity requirements of the flotation cell, such waste water introduction into the flotation cell reducing the quantity of waste water in the waste water holding vessel to a first predetermined small quantity of waste water;

(c) agglomerating said suspended solid waste from the water in the flotation cell to produce partially treated water;

(d) removing the agglomerated suspended solid waste from the flotation cell;

(e) terminating waste water introduction into the flotation cell when the first predetermined small quantity of waste water is present in the waste water holding vessel, the first predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the flotation cell, the first predetermined small quantity corresponding to an insufficient quantity of waste water for the flow rate and quantity requirements of the cell;

(f) accumulating partially treated water from the flotation cell in a partially treated water holding vessel to obtain a second predetermined initiating threshold quantity of partially treated water;

(g) sterilizing the partially treated water;

(h) introducing partially treated water from the partially treated water holding vessel into a filter at a second continuous and predetermined rate after the second predetermined initiating threshold quantity is present in the partially treated water holding vessel, such partially treated water introduction into the filter reducing the quantity of partially treated water in the partially treated water holding vessel to a predetermined second small quantity of

partially treated water, the second continuous and predetermined rate corresponding to the rate and quantity requirements of the filter and being different from the first continuous and predetermined rate;

(i) filtering water treated in the flotation cell in the filter to remove additional suspended solid waste;

(j) terminating partially treated water introduction into the filter when the predetermined second small quantity of partially treated water is present in the partially treated water holding vessel, the second predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the filter, the second predetermined small quantity corresponding to an insufficient quantity of partially treated water for the flow rate and quantity requirements of the filter; and

(k) recycling the filtered water to the source of the waste water.

4,211,652

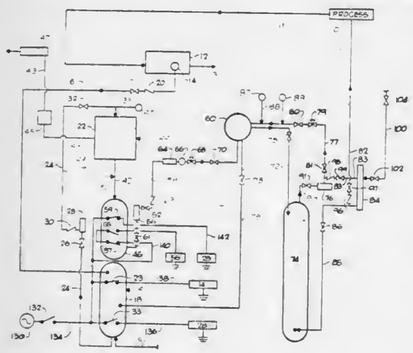
WATER RECLAMATION PROCESS

Robert C. Thomas, 3740 Campus Dr., Newport Beach, Calif. 92660

Continuation of Ser. No. 744,170, Nov. 22, 1976, abandoned, which is a continuation of Ser. No. 585,062, Jun. 9, 1975, abandoned. This application Aug. 23, 1978, Ser. No. 936,064

Int. Cl.[2] C02B *1/20;* **C02C** *5/02*

U.S. Cl. 210—44 **14 Claims**



1. A process for the purification of waste water by the removal of suspended solid waste therefrom comprising the steps of:

(a) accumulating the waste water in a waste water holding vessel to obtain a first predetermined initiation threshold quantity thereof;

(b) introducing waste water from the waste water holding vessel into a flotation cell at a first continuous and predetermined rate after the first predetermined initiating threshold quantity is present in the waste water holding vessel, the first continuous and predetermined rate corresponding to the rate and quantity requirements of the flotation cell;

(c) dissolving air in makeup water at a temperature below that of the waste water in the flotation cell;

(d) introducing the makeup water into the flotation cell and releasing air from solution in the makeup water by the warming of makeup water by the waste water, the released air being released as bubbles, such waste water introduction into the flotation cell reducing the quantity of waste water in the waste water holding vessel to a first predetermined small quantity of waste water;

(e) agglomerating said suspended solid waste from the water in the flotation cell to produce partially treated water by adherence of the suspended solid waste to the air bubbles;

(f) removing the agglomerated suspended solid waste from the flotation cell;

(g) terminating waste water introduction into the flotation cell and the first predetermined small quantity of such water is present in the waste water holding vessel, the first predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the flotation cell, the first predetermined small quantity corresponding to an insufficient quantity of waste water for the flow rate and quantity requirements of the cell;

(h) accumulating partially treated water from the flotation cell in a partially treated water holding vessel to obtain a second predetermined initiating threshold quantity of partially treated water;

(i) introducing partially treated water from the partially treated water holding vessel into a filter at a second continuous and predetermined rate after the second predetermined initiating threshold quantity is present in the partially treated water holding vessel, such partially treated water introduction into the filter reducing the quantity of partially treated water in the partially treated water holding vessel to a predetermined second small quantity of partially treated water, the second continuous and predetermined rate corresponding to the rate and quantity requirements of the filter and being different from the first continuous and predetermined rate;

(j) filtering water treated in the flotation cell in the filter to remove additional suspended solid waste;

(k) terminating partially treated water introduction into the filter when the predetermined second small quantity of such water is present in the partially treated water holding vessel, the second predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the filter, the second predetermined small quantity corresponding to an insufficient quantity of partially treated water for the flow rate and quantity requirements of the filter; and

(l) recycling the filtered water to the source of waste water.

4,211,653

METHOD FOR VACUUM FILTRATION

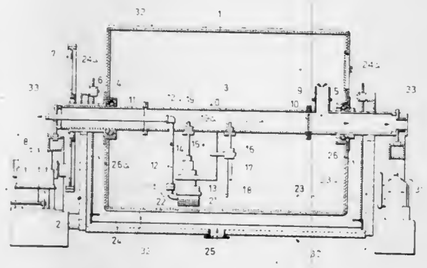
Eberhard Koppe, Johannesburg, South Africa; Peter Schonteich, Cologne, and Wolfgang Epper, Bergheim-Zieverich, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 5, 1979, Ser. No. 27,470

Claims priority, application South Africa, Apr. 7, 1978, 78/1999; Fed. Rep. of Germany, Aug. 17, 1978, 2835967

Int. Cl.[2] B01D *33/10*

U.S. Cl. 210—77 **4 Claims**



1. A method for the separation of solids-liquid mixtures which are subject to oxidation which mixed with air, comprising the steps of:

supporting a filter drum having a filter in a tank containing a mixture to be separated;

providing a fixed suction pump within said drum;

rotating said filter drum;

creating a vacuum inside said filter drum to draw said mixture through said filter means to and interior of said drum;

rotating said filter drum;

operating said suction pump having a suction head to suck filtrate from the interior of said drum;

maintaining a filtrate level inside said filter drum such that said suction head is constantly disposed beneath said filtrate level so as to prevent the mixing of said filtrate with air; and

discharing said filtrate from said interior of said filter drum.

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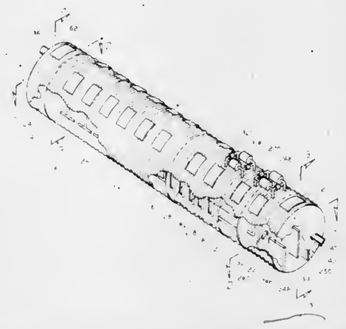
APPARATUS FOR AEROBIC TREATMENT OF CONTAMINATED LIQUID

Raymond C. Weber, Box 108, Ligonier, Ind. 46767, and Leslie A. Weber, R.R. #3, Albion, Ind. 46701

Filed Aug. 4, 1978, Ser. No. 930,899

Int. Cl.[2] C02C *1/02*

U.S. Cl. 210—104 **9 Claims**



1. Apparatus for aerobic treatment of contaminated liquids such as domestic sewage, comprising: an elongated fluid-tight means for conveying such contaminated liquid, a plurality of means forming interior chambers within said carrier means, at least one of said interior chambers including aerating chamber means for diffusing air through the contaminated liquid, means forming a clarifier chamber, means interconnecting said aerator chamber and said clarifier chamber to provide, in series, a flow of liquid therebetween for successive fluid treatment commencing in said aerator chamber and progressing to said clarifier chamber, means forming a plurality of filter chambers, each including a filtration medium, means for selectively transferring fluid in series from said clarifier chamber tosaid filter chambers as a successive flow for progressive treatment therein, sensor means for sensing both flow and time for the contamination treatment period, and including means for directing successive filtration and backwash modes for a respective one of said filter chambers in such manner that at least one of said filtration chambers is in filtration mode while at least one of the other filtration chambers is in a backwash mode, means for receiving a filtered flow of fluid and for shunting such flow as a counterflow to a selected one of said filter chambers to effect a backwash mode therein, and control means responsive to said sensor means to impart backwash flow to successive filter chambers in a backwash mode while the other filter chambers continue in primary filtering mode.

4,211,655

UPFLOW FILTER CONSTRUCTION

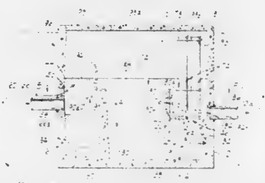
Edward J. Jordan, Willoughby, Ohio, assignor to Jet Aeration Company (Jet Inc.), Cleveland, Ohio

Filed Nov. 14, 1977, Ser. No. 851,044

Int. Cl.[2] B01D *23/16, 23/18*

U.S. Cl. 210—108 **19 Claims**

1. An upflow filter including in combination a generally rectangular-shaped, one piece, concrete container, having an open top, a bottom wall, and four side walls, said container comprising a concrete dividing wall extending between two opposed side walls of said container thereby forming first and second filtering chambers, said dividing wall having first and second end portions and an intermediate portion therebetween, said first end portion and said intermediate portion each having a top edge portion which is at a higher vertical level than a top edge portion of said second end portion, said dividing wall comprising a generally L-shape in side elevational view with said top edge portion of said first end portion and said intermediate portion being on the high part of the L-shape and the top edge portion of said second end portion being on the low part of the L-shape, said first end portion having a vertical opening extending therethrough from said top edge portion substantially to the bottom of said container and having first and second lateral exit portions communicating with said first and second filtering chambers adjacent the bottoms thereof, a liquid inlet in said container communicating with said vertical opening, a grating positioned in each of said first and second filtering chambers and dividing each into top and bottom portions, filtering material on said grating for filtering liquid passing between said bottom and top portions of each chamber, a liquid outlet from said container, conduit means on the top edge portion of said second end portion of said dividing wall and defining a liquid flow passage, removable means in said conduit means to provide for the entrance of liquid from said first and second chambers into said passage, said intermediate portion having a vertical well therein extending from said top edge portion thereof to a level below said passage, other removable means coacting between said conduit means and said well, and between said conduit means and said outlet, to selectively connect said passage either directly to said well or directly to said outlet, removal of at least certain of said removable means permitting liquid from said first and second chambers to flow into said passage and then via said passage to either said well or said outlet.



4,211,656

LIQUID TREATING SYSTEM

John J. Cochrane, 418 Lewis Wharf, Boston, Mass. 02110

Filed Jun. 26, 1978, Ser. No. 919,178

Int. Cl.[2] B01D *23/24*

U.S. Cl. 210—149 **32 Claims**



1. A liquid treating system comprising:

a tank,

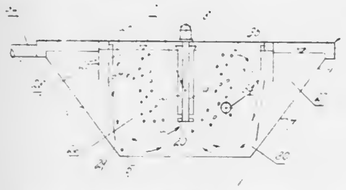
an influent conduit communicating with said tank adjacent the top thereof,
a reservoir downstream of said tank,
an effluent conduit disposed away from said influent conduit and communicating between said tank and said reservoir,
a backwash conduit communicating between said reservoir and said tank, and
means adjacent the top of said tank for carrying backwashing liquid therefrom,
said tank comprising a multiplicity of transversely extending contiguous cells, each having at least one centrally located drain above the bottom thereof communicating with said backwash and effluent conduits, the bottom of each said cell converging downwardly around said drain,
said drain being surrounded by filter media, and said drains having openings too small to pass any of the filter media,
whereby when at least one of said cells operates in the normal mode, liquid to be treated flows downwardly from said influent conduit through said cell, converges toward said drain, and exits through said drain to said effluent conduit, and when at least one of said cells operates in the backwashing mode, influent is shut off to each said backwashing cell and liquid from said reservoir is pumped through said backwash conduit, diverges from said drain throughout the filter media, and flows upwardly to the top of said cell to said means for carrying the backwashing liquid out of said cell thereby cleaning said entire cell.

4,211,657

MEANS FOR BIOLOGICAL TREATMENT OF WATER

Vladimir N. Etlin, 7403 Lisle Ave., Falls Church, Va. 22043

Continuation of Ser. No. 768,993, Feb. 16, 1977, abandoned. This application Mar. 29, 1978, Ser. No. 891,261
Int. Cl.[2] C02F *3/20*
U.S. Cl. 210—195.4 **2 Claims**



1. In a device for the biological treatment of waste water comprising a chamber for the aeration of said waste water and the exposure of said waste water to activated sludge, said aeration chamber having a horizontal sectional area which generally increases in size from a relatively smaller horizontal sectional area at the lower end thereof to a relatively larger horizontal sectional area at the upper end thereof, said aeration chamber having a waste water inlet in the lower area thereof so that the water moves generally from bottom to top of the aeration chamber, an aerator positioned in the lower part of said aeration chamber to aerate said waste water and cause said waste water to circulate in said aeration chamber, and a plurality of chambers for the settling of said sludge, at least one wall separating each of said settling chambers from said aeration chamber and said settling chambers positioned in approximately the same horizontal plane, and surrounding said aeration chamber, a passageway for waste water from the upper part of said aeration chamber to one of said settling chambers providing for a first step of the activated sludge settling and having the water level slightly lower than in the aeration chamber, trough means for conducting effluent from the first step settling chamber to another of said settling chambers providing a second step of sludge settling and having the water level slightly lower than in the first step sludge settling chamber, a conduit for sludge return from the second step sludge settling chamber to the aeration chamber, said conduit having a sludge inlet from the lower part of said second step settling chamber and a sludge outlet into said aeration chamber above said aerator in a zone of rising air bubbles emanating from said aerator, so that the pressure at said sludge outlet aspirates the sludge through the conduit without the use of pumps and is lower than at the port for sludge return from the first step sludge settling chamber, and a port in the lower part of the wall separating the first step settling chamber from the aeration chamber providing for the return of sludge from the said first step settling chamber to the aeration chamber, said port opening into said aeration chamber at a location which will be aspirated by said circulation of waste water, and the second step settling chamber having an outlet for removal of treated clarified waste water from the top thereof.

4,211,658

TRIAXIALLY COMPRESSED PACKED BEDS

Patrick D. McDonald, Holliston; Richard V. Vivilecchia, Hopkinton, and David R. Lorenz, Milford, all of Mass., assignors to Waters Associates, Inc., Milford, Mass.

Continuation of Ser. No. 867,442, Jan. 6, 1978, abandoned. This application Nov. 17, 1978, Ser. No. 961,747
Int. Cl.[2] B01D *15/08*
U.S. Cl. 210—198 C **12 Claims**



1. A chromatography cartridge comprising:
a volume of particulate chromatographic packing material, said volume having
a first surface through which fluid enters during use,
a second surface through which fluid exits during use, said first and second surfaces being substantially normal to an axial flow direction, and
a third surface with normals extending in generally radial directions perpendicular to the axial direction,
a first porous element contacting said first surface
a second porous element contacting said second surface,
a tube of solid heat-shrinkable plastic material shrunk
so as to fit tightly around said third surface of said volume and thereby radially compress said bed and
so as to fit tightly around portions of said first and second porous element to urge said porous elements toward each other to thereby axially compress said packing material,
said heat shrunk tube extending axially beyond said porous elements with a cross-sectional area less than that of said porous elements to form an inlet and outlet for said cartridge.

4,211,659

DEVICE FOR COLLECTING MATERIALS AS FOR EXAMPLE OIL FLOATING ON A WATER SURFACE

Knud H. Nyfeldt, Hus 235, Box 20, S-430 82 Donsö, Sweden, and Klas T. Y. Bernhardsson, Hus 81, S-430 92 Fotö, Sweden

Filed Jan. 24, 1979, Ser. No. 6,170
Claims priority, application Sweden, Feb. 2, 1978, 7801236
Int. Cl.[2] B01D *29/10, 33/00*
U.S. Cl. 210—242 S **3 Claims**

1. A device for collecting materials, including oil floating on water, said device having two upright floating walls converging on a collecting means to guide the materials into said collecting means during towing of the device, said collecting means comprising detachably interconnected hose-shaped sections capable of retaining collected material and including a forward section and a last trailing section constructed of a mesh dimensioned sufficiently small to retain said oil therewithin, the most forward section being connected to said floating walls and the last trailing section being pursed and sealed at



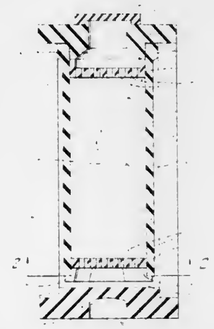
the trailing end thereof during towing, means for coupling said hose-shaped sections in succession, including means for pursing and sealing the last trailing section and its contiguous section when the last trailing section has collected sufficient material to be removed, and means for separating said last trailing section after pursing and sealing thereof, designed to enable complete disconnection of said last trailing section from the remainder of said device after said pursing and sealing.

4,211,660

FILTER-PURIFIER CARTRIDGE

Isadore Turetsky, 23940 Welby Way, Canoga Park, Calif. 91307

Filed Mar. 26, 1979, Ser. No. 24,156
Int. Cl.[2] B01D *29/26*
U.S. Cl. 210—315 **7 Claims**



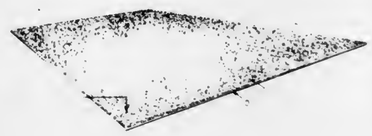
1. A filter-purifier cartridge for liquids having manually separable and assembled elements and adapted to be inserted in a filter apparatus, comprising: a self-contained purifier element having inlet and outlet means for flow of fluid therethrough, said purifier element being assembled and disassembled by manual means, and having an integral top wall, an integral collar and external flange at the upper end section of its hollow cylinder, inlet means at the lower end section of said hollow cylinder, a concentric discharge passage through said top wall, and purifying medium confined between two foraminous members within said hollow cylinder, the fluid stream within said purifier element communicating with the concentric discharge passage through said top wall; said hollow purifier cylinder and integral collar inserted into a tubular filter element having a manually separable cartridge end closure joined to its lower end section, the upper end section of said tubular filter joined to said integral collar, said collar maintaining the tubular filter in spaced relationship with said purifier cylinder to form an annular channel intermediate their sidewalls, said annular channel communicating with the inlet of said purifier element.

4,211,661

FILTER MEDIUM

Gerald N. Perry, Nashville, Tenn., assignor to Chave & Earley, Inc., New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,717
Int. Cl.[2] B01D *25/02, 29/04*
U.S. Cl. 210—491 **7 Claims**



1. A filter medium comprising a relatively strong substrate, said substrate being a laminate of a spun bonded material and a melt blown plastic material, a fibrous thermoplastic felt layer on the spun bonded surface of the substrate upstream to the flow of fluid to be filtered, means bonding the fibrous felt layer to the substrate by fibers needle punched through the fibrous felt layer and the substrate and fused on the downstream surface of the substrate, filtration perforations in the substrate formed by the needle punching and fibers protruding through the perforations on the melt down downstream surface of the substrate and fused on said downstream surface, the spun bonded material imparting the necessary strength, stability and integrity to the filter medium and having the ability to deform and retain discrete defined perforations formed therein for the free passage of fluids while preventing the flow therethrough of oversized particles, the fibrous felt layer collecting, trapping and retaining dirt and debris on the upstream surface of the substrate and the melt blown material and protruding fibers providing a downstream layer capable of retaining and filtering fine particles which pass through the perforations.

4,211,662

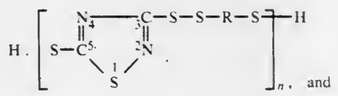
SYNERGISTIC LUBRICATING COMPOSITIONS

James P. King, Upper Gwyneed Township, Montgomery County, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 6, 1978, Ser. No. 912,915
Int. Cl.[2] C10M *3/18*
U.S. Cl. 252—21 **9 Claims**

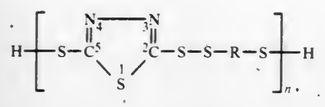
1. A synergistic lubricating composition comprising a lubricant selected from the group consisting of base lubricating oils and greases having admixed with the lubricant a friction reducing amount of a synergistic mixture of 1 to 99% weight molybdenum disulfide and 99 to 1% weight of a polymer of thiadiazoledithiols selected from the group consisting of:

Poly(1,2,4-thiadiazole-3,5 dithiol)



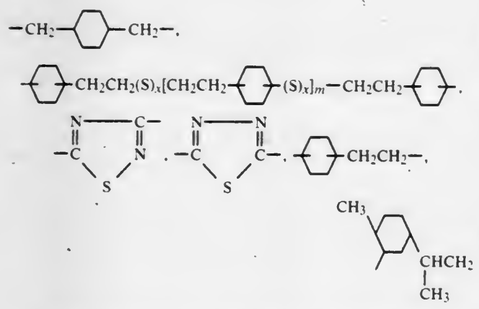
, and

Poly(1,3,4-thiadiazole-2,5 dithiol)



wherein:

R is selected from the group consisting of



phenylene, biphenylene, and alkylene or substituted alkylene of 2–50 carbons, cyclic alkylene or substituted cyclic alkylene of 5–50 carbons, wherein the alkylene or cyclic alkylene can contain in the chain or ring sulfur atoms, or $(S)_x$-groups;

m is an integer of 0–10,

n is an integer of 5–100, and

x is an integer of 1–5.

7. The lubricating composition of claim **1** in which the lubricant is a base lubricating grease selected from the group consisting of lithium grease, clay grease, silicone grease and aluminum complex grease.

4,211,663

ALKALI METAL CONTAINING TRANSITION METAL COMPLEXES OF THIOBIS (ALKYLPHENOLS) AS STABILIZERS FOR VARIOUS ORGANIC MEDIA

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

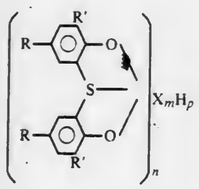
Filed May 1, 1978, Ser. No. 901,875

Int. Cl.² C10M *1/54, 3/48, 5/28, 7/52*

U.S. Cl. 252—42.7 **85 Claims**

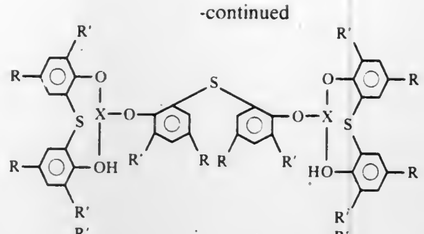
1. A mixed alkali metal-transition metal organosulfur-containing complex derived from transition metal complexes having the following general structures:

I

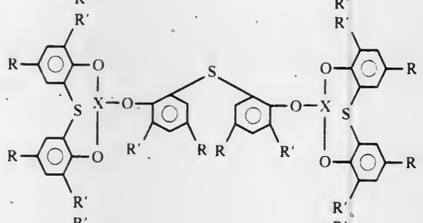


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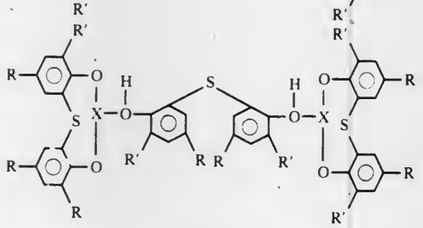
II



III or



IV



in which R is either hydrogen or an alkyl group having from 1 to about 30 carbon atoms in any isomeric arrangement and R′ may be the same as R except that isomers in which the carbon atom attached to the ring is connected to more than two carbon atoms are excluded, and wherein the alkali metal is selected from sodium, potassium and lithium, X is a transition metal selected from nickel, iron, copper and cobalt and n is 1 to 3, m is 1 to 2 and p is 0 to 2.

57. A composition comprising a major proportion of an organic medium normally susceptible to oxidative degradation and a minor amount sufficient to impart antioxidant properties and/or ultraviolet stabilization thereto of an organosulfur-containing alkali metal-transition metal complex as described in claim **1**.

4,211,664

PROCESS FOR MAKING COMPOSITE MAGNETIC MATERIAL

David R. Dixon, Keilor; Jack Lydiate, East Rosanna, and Frederick J. Lubbock, Beaumaris, all of Australia, assignors to ICI Australia Limited, Melbourne and Commonwealth Scientific and Industrial Research Organization, Campbell, both of, Australia

Filed Oct. 2, 1978, Ser. No. 947,401

Claims priority, application Australia, Oct. 7, 1977, 1980/77

Int. Cl.² B01D *39/00*

U.S. Cl. 252—62.54 **13 Claims**

13. A dimensionally-stable composite capable of selectively adsorbing dissolved materials according to the molecular size of said materials, said composite consisting essentially of adsorbent particles and magnetic particles in a porous, crosslinked polymeric matrix.

4,211,665

ELECTRICAL APPARATUS INSULATED WITH A HIGH FIRE POINT SYNTHETIC ALKYLAROMATIC FLUID

John P. Pellegrini, Jr., O'Hara Township, Allegheny County, Pa., assignor to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Oct. 26, 1978, Ser. No. 954,924

Int. Cl.² H01B *3/22*

U.S. Cl. 252—63 **8 Claims**

1. An electrical apparatus comprising an electrical component, an insulating fluid surrounding the electrical component and means for containing said insulating fluid, the improved insulating fluid consisting essentially of the mono- or dialkylate reaction product or a mixture thereof of a preformed oligomer fraction consisting essentially of between about 30 and about 60 carbon atoms or a mixture thereof of an alpha-olefin selected from 1-butene, 1-hexene, 1-octene, 1-decene and 1-dodecene and mixtures thereof with an aromatic composition selected from aromatic hydrocarbons having from six to eight carbon atoms, chlorobenzene, bromobenzene, diphenyl, diphenyl ether, naphthalene or a mixture thereof and characterized by a maximum 98.9° C. (210° F.) viscosity of about 20 cs., a viscosity index of at least about 110, a maximum pour point of about −25° F. (−31.7° C.), a fire point of at least about 300° C. (572° F.) and a negative gassing tendency.

4,211,666

LIQUID CRYSTAL COMPOUNDS

Takashi Inukai; Hiromichi Inoue, and Hideo Sato, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

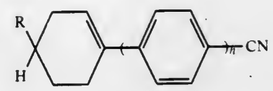
Filed Nov. 14, 1978, Ser. No. 960,710

Claims priority, application Japan, Nov. 21, 1977, 52-139610; Jun. 6, 1978, 53-67938

Int. Cl.² C09K *3/34;* **C07C** *121/64;* **C02F** *1/13*

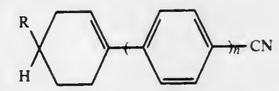
U.S. Cl. 252—299 **6 Claims**

1. 4-Alkylcyclohexenes having at the 1-position thereof p-cyanophenyl group or 4′-cyano-4-biphenylyl group, expressed by the general formula



wherein R represents a straight alkyl group having 1∼9 carbon atoms and n represents 1 or 2.

6. A nematic liquid crystal composition containing at least one member selected from the group consisting of 1-(p-cyanophenyl)-4-alkylcyclohexenes and 1-(4′-cyano-4-biphenylyl)-4-alkylcyclohexenes, expressed by the general formula



wherein R represents a straight alkyl group having 1∼9 carbon atoms and n represents 1 or 2.

4,211,667

PROCESS FOR PRODUCING ALUMINA SOLS

Koichi Yamada; Masao Yoshihara; Takahiro Ishida, all of Niihama, and Kazuo Sato, Nara, all of Japan, assignors to Sumitomo Aluminium Smelting Company, Limited, Osaka, Japan

Filed Mar. 1, 1978, Ser. No. 882,889

Claims priority, application Japan, Mar. 2, 1977, 52/23183

Int. Cl.² B01J *13/00*

U.S. Cl. 252—313 R **7 Claims**

1. A process for producing an alumina sol which comprises neutralizing a water-soluble basic aluminium salt of the formula,

$$Al_2(OH)_xX_yY_z$$

wherein X is Cl or NO_3, Y is SO_4, and x, y and z are numbers satisfying the equations $x+y+2z=6$, $0<x<6$, $0\leqq y<6$, $0\leqq 2z<6$, provided that y and z are not zero at the same time, with an alkali to produce an alumina gel and then subjecting said alumina gel to a hydrothermal treatment in the presence of a monovalent organic acid at a molar ratio of the organic acid to aluminum of from 0.001 to 0.15 to produce an alumina sol containing alumina particles of a plate-like or rod-like form.

4,211,668

PROCESS OF MICROENCAPSULATION AND PRODUCTS THEREOF

Clarence R. Tate, Fairfield, Ill., assignor to Thalatta, Inc., Fairfield, Ill.

Continuation-in-part of Ser. No. 775,203, Mar. 7, 1977, abandoned. This application Apr. 24, 1978, Ser. No. 899,580

Int. Cl.² B01J *13/02*

U.S. Cl. 252—316 **14 Claims**

1. A process of making microcapsules having transparent capsule shells containing a hydrophobic liquid which is characterized by:

1. forming an emulsion comprising an outer hydrophilic phase and droplets of a hydrophobic liquid suspended therein as the inner hydrophobic phase, said outer hydrophilic phase comprising a hardenable wall forming polymeric material dissolved in an aqueous solvent;
2. contacting said emulsion with a break-up fluid which is not a solvent for said polymeric material, which is substantially immiscible with the polymeric material solvent, and which is capable of dividing said emulsion into separate capsules having an inner hydrophobic phase and an outer hydrophilic phase;
3. then hardening the hydrophilic phase of said capsules with a hardening liquid which is substantially miscible with the break-up bath, which is not a solvent for said polymeric material, and which is, of itself or in combination with another liquid, substantially immiscible with said polymeric material solvent.

4,211,669

PROCESS FOR THE PRODUCTION OF A CHEMICAL SYNTHESIS GAS FROM COAL

James M. Eakman, Houston, Tex.; Harry A. Marshall, Madison, and Theodore Kalina, Morris Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 9, 1978, Ser. No. 959,266

Int. Cl.² C01B *2/14, 2/16, 2/02*

U.S. Cl. 252—373 **11 Claims**

1. A process for the production of a chemical synthesis product gas from a carbonaceous feed material and steam which comprises:

(a) reacting said steam with said carbonaceous feed material in a reaction zone at a reaction temperature between about 1000° F. and about 1500° F. and at a reaction pressure in excess of about 100 psia, in the presence of a carbon-alkali metal catalyst and sufficient added hydrogen and carbon monoxide to provide substantially equilibrium quantities of hydrogen and carbon monoxide in said reaction zone at said reaction temperature and said reaction pressure;

(b) withdrawing from said reaction zone an effluent gas containing substantially equilibrium quantities, at said reaction temperature and pressure, of methane, carbon dioxide, steam, hydrogen and carbon monoxide;

(c) treating said effluent gas for the removal of steam and acid gases to produce a treated gas containing primarily carbon monoxide, hydrogen and methane;

(d) recovering substantially all of the carbon monoxide and hydrogen from said treated gas as a chemical synthesis product gas, thereby producing a gas comprised substantially of methane;
(e) contacting the gas produced in step (d) comprised substantially of methane with steam in a steam reforming zone under conditions such that at least a portion of the methane present reacts with said steam to produce hydrogen and carbon monoxide; and
(f) passing the effluent from said steam reforming zone into said reaction zone without substantial cooling, thereby supplying said added hydrogen and carbon monoxide required in said reaction zone and wherein said reforming zone is operated at conditions such that the heat content of said effluent from said steam reforming zone is sufficient to supply substantially all of the heat needed to preheat said carbonaceous feed material to said reaction temperature.

4,211,670

TITANIUM TRICHLORIDE CATALYST COMPONENT FOR PROPYLENE POLYMERIZATION

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 25, 1979, Ser. No. 6,970
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—429 B **10 Claims**

1. A process for preparing a titanium trichloride composition of improved stereospecificity for use as a catalyst component in the polymerization of propylene, said process consisting essentially of the steps of 1) washing a crude titanium trichloride composition, prepared by reducing titanium tetrachloride with an organoaluminum compound, with an inert diluent, 2) suspending the washed titanium trichloride solids in an inert diluent containing a first electron donor compound, 3) maintaining said solids in suspension at a temperature of from about room temperature up to the boiling point of the diluent or the donor compound for a period of from about 15 minutes to about 100 hours, 4) separating the solids from the inert diluent containing the electron donor compound, 5) washing the separated solids with an inert diluent, and then 6) repeating steps 2, 3, 4 and 5 using a second electron donor compound in place of said first electron donor compound, said first electron donor compound being selected from the group consisting of dialkyl, diaryl and alkyl aryl ethers and thioethers wherein each alkyl group contains from one to ten carbon atoms and each aryl group contains from six to 12 carbon atoms, said second electron donor compound being selected from the group consisting of aromatic carboxylic acids containing seven to 12 carbon atoms; alkyl and aryl esters of aliphatic carboxylic acids, said esters containing four to 24 carbon atoms; alkyl and aryl esters of aromatic carboxylic acids, said esters containing eight to 24 carbon atoms; alkyl alkanesulfonates; alkyl arylsulfonates; ketoesters; chloroesters; ortho esters; N,N-dialkyl amides of aliphatic carboxylic acids, said amides containing four to 24 carbon atoms; N,N-dialkyl amides of aromatic carboxylic acids, said amides containing nine to 24 carbon atoms; N-alkyl lactams containing five to 15 carbon atoms; aliphatic ketones containing three to 15 carbon atoms; aromatic ketones containing eight to 15 carbon atoms; halogenated dialkyl ethers containing two to 20 carbon atoms; diethers containing three to 20 carbon atoms; dialkyl thioethers, sulfoxides, sulfones and disulfides containing two to 20 carbon atoms; aromatic sulfides or diaryl thioethers containing 12 to 20 carbon atoms; sulfoxides, sulfones and disulfides corresponding to said diaryl thioethers; phosphines and phosphite and phosphate esters containing three to 21 carbon atoms; metal coordinating hydrocarbons having multiple double bonds and containing seven to 28 carbon atoms; aliphatic nitriles containing two to 12 carbon atoms; aromatic nitriles containing seven to 12 carbon atoms; aliphatic amines containing one to 20 carbon atoms; and heterocyclic amines possessing aromatic characteristics and containing three to 15 carbon atoms, said inert diluent being selected from the group consisting of a) saturated aliphatic hydrocarbons having from three to 20 carbon atoms, b) aromatic hydrocarbons having from six to 20 carbon atoms, said aromatic hydrocarbons being either unsubstituted or substituted by alkyl radicals having from one to 20 carbon atoms, aralkyl radicals having from seven to 15 carbon atoms or aryl radicals having from six to eight carbon atoms, c) halogenated aromatic hydrocarbons having from six to 16 carbon atoms, and d) mixtures thereof, with the proviso that, when a thioether is used as either the first or the second electron donor compound in said process, a thioether is not also used as the other electron donor compound in the process.

4,211,671

OLEFIN POLYMERIZATION CATALYST

Glen R. Hoff, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 27, 1978, Ser. No. 964,034
Int. Cl.[2] C08F *4/64, 4/68*
U.S. Cl. 252—431 N **18 Claims**

1. An alpha-olefin polymerization catalyst comprising (A) a solid component which is the reaction product of components comprising (1) an alkyaluminum halide and (2) a reaction product prepared by reacting components comprising a magnesium (II) compound and Group IVB or VB amide compound of the general formula $M(NR_2)_nL_{4-n}$ wherein M is the Group IVB or VB metal, R is an alkyl or aryl group, L is a non-amine ligand and is halogen and n is a number from 1 to 4; and (B) an organometallic promotor selected from the group consisting of Group IA, IIA, IIB, IIIA and IVA metal alkyls, hydrides, alkylhydrides and alkyl halides in an amount which is effective to promote the polymerization activity of said solid component, wherein said solid component is prepared at a temperature within the range of from about 0° to about 250° C. and in relative proportions such that the molar ratio of elemental IVB or VB metal to elemental magnesium ranges from about 0.1:1 to about 10:1.

4,211,672

SUPPORTED CATALYST FOR PURIFYING GAS AND METHOD OF MANUFACTURING THE SAME

Kazunori Sonetaka, Hirakata; Atsushi Nishino, Neyagawa, and Kunio Kimura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 24, 1978, Ser. No. 936,507
Claims priority, application Japan, Aug. 26, 1977, 52-102971
Int. Cl.[2] B01J *21/12, 21/58, 23/78*
U.S. Cl. 252—455 R **5 Claims**

1. A catalyst for use in purification of a gas which comprises a catalyst carrier composed of alumina cement having a CaO component of less than 40% by weight, an Al_2O_3 component of more than 35% by weight and a Fe_2O_3 component of less than 20% by weight and at least one aggregate selected from the group consisting of silica aggregate, silica-alumina aggregate, and alumina aggregate, and a platinum group metal supported on said catalyst carrier in an amount of 0.001 to 0.1% by weight, said catalyst being produced by the steps comprising:
a. molding a molded body from a mixture comprising alumina cement and said aggregate;
b. curing said molded body for the hardening thereof,
c. subsequently heat treating said hardened molded body at a temperature range from 250° to 700° C. to obtain a catalyst carrier; and
d. causing a platinum group metal to be supported on said catalyst carrier by steps comprising:
1. contacting said carrier with a solution of a salt of said platinum group metal to impregnate said solution on the surface of said carrier; and
2. subsequently heat treating said catalyst impregnated carrier at a temperature below 700° C. to convert said platinum group metallic salt into a platinum group metal.

4,211,673

CATALYTIC METAL-RARE EARTH METAL HYDRIDE FOR REDUCTION OF CARBON MONOXIDE IN HYDROGEN

Philip C. Lewellen, Albuquerque, N. Mex.; Walter C. Gates, Jr., Newburgh, N.Y., and Roger G. Duranleau, Georgetown, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,260
Int. Cl.[2] B01J *23/10, 23/74*
U.S. Cl. 252—462 **2 Claims**

1. A catalyst of the formula:

$$RT_5(H)_x$$

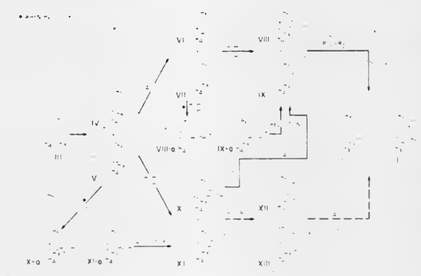
wherein R is a rare earth metal, T is a Group VIII transition metal, x is a number ranging from 0.1 t 6, determined by the pseudo-saturation pressure of RT_5 at the temperature at which a given catalytic reaction is to take place wherein small changes in applied H_2 partial pressure below the pseudo-saturation pressure cause x to decline rapidly and large changes in applied H_2 partial pressure above the pseudo-saturation pressure cause x to increase only slightly.

4,211,674

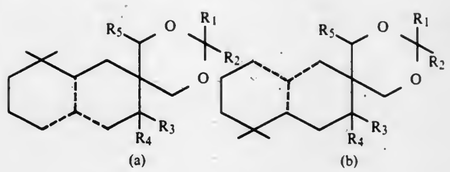
CYCLIC ACETALS AND KETALS AND THEIR USE IN PERFUME COMPOSITIONS

Willem Lenselink, Voorthuizen, Netherlands, assignor to Polak's Frutal Works B.V., Amersfoort, Netherlands

Filed Mar. 23, 1979, Ser. No. 23,481
Claims priority, application United Kingdom, Apr. 10, 1978, 13958/78
Int.Cl.[2] C11B *9/00*
U.S. Cl. 252—522 R **36 Claims**



1. A compound selected from the class of compounds having the structural formulae



wherein R_1 is hydrogen or an alkyl, alkenyl or alkoxy group and wherein R_2, R_3, R_4 and R_5 are hydrogen or alkyl groups and the total number of carbon atoms of R_1, R_2, R_3, R_4 and R_5 combined is 6 or less and the dotted lines indicate carbon-to-carbon double or single bonds with the limitation that only one of the dotted lines can be a double bond.

4,211,675

DETERGENT BARS WITH IMPROVED SLIP PROPERTIES

David Machin, South Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,011
Claims priority, application United Kingdom, Jan. 19, 1978, 2218/78
Int. Cl.[2] C11D *1/12, 3/22, 17/00*
U.S. Cl. 252—557 **8 Claims**

1. A detergent bar containing from about 20% to about 70% by weight of water soluble salts of acyl (C_8 to C_{22}) isethionates and an amount of sucrose ester (C_6 to C_{22}) effective to increase the slip properties of the bar.

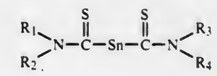
4,211,676

PROCESS FOR RECLAIMING SCRAP VULCANIZED RUBBER

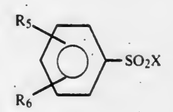
Yoji Watabe, Akikawa; Yoshihiko Fujii; Shiro Anzai, both of Higashi Murayama, and Junji Furukawa, Kyoto, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed May 31, 1978, Ser. No. 911,197
Claims priority, application Japan, Jun. 7, 1977, 52-66277; Jun. 10, 1977, 52-67824; Jun. 17, 1977, 52-70971; Jul. 12, 1977, 52-82567
Int. Cl.[2] C08L *17/00;* C08J *11/04*
U.S. Cl. 260—2.3 **14 Claims**

1. A process for reclaiming scrap vulcanized diene rubber which comprises mixing 100 parts by weight of scrap vulcanized diene rubber with 0.05 - 10 parts by weight of at least one reclaiming agent selected from the group consisting of:
(a) 1,8-diazabicyclo-[5, 4, 0] undecene-7,
(b) unsubstituted or substituted phenol salts of 1,8-diazabicyclo-[5, 4, 0] undecene-7,
(c) carboxylic acid salts of 1,8-diazabicyclo-[5, 4, 0] undecene-7,
(d) thiuramsulfide compounds of the formula



where R_1, R_2, R_3 and R_4 are, similar or dissimilar, hydrocarbon group having 1–6 carbon atoms, and R_1 and R_2, taken together, may form a ring including the nitrogen atom to which R_1 and R_2 are bonded, and R_3 and R_4, taken together, may form a ring including the nitrogen atom to which R_3 and R_4 are bonded, and n is 1 or 2,
(e) aromatic disulfides, and
(f) benzene sulfinic acid compounds or benzene sulfonyl hydrazides of the formula



where X is selected from the group consisting of H, Li, Na, K, and $-NHNH_2$, and R_5 and R_6 are, similar or dissimilar, selected from the group consisting of H and alkyl of C_{1-4}, provided that the compound (e) is not used alone.

4,211,677

POLYPHOSPHAZENE COPOLYMERS WITH PHENOXY AND WITH PHENYLPHENOXY AND/OR NAPHTHOXY GROUPS, AND AQUEOUS DISPERSIONS

Selwyn H. Rose, Highland Park, and Ashok Chattopadhyay, Mt. Prospect, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 12, 1977, Ser. No. 859,748
Int. Cl.² C08G 73/00; C08K 5/09, 5/36
U.S. Cl. 260—13 15 Claims

1. A hologen-free polyphosphazene copolymer having at least one phenoxy substituent and a second substituent selected from phenyl phenoxy, naphthoxy and mixtures thereof in a ratio of 30:70 to 95:5.

4,211,678

COPOLYESTER YARNS AND FIBERS DYEABLE WITHOUT CARRIER AT ATMOSPHERIC PRESSURE

Charles L. Henry, Asheville, and James E. White, Candler, both of N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed Sep. 12, 1978, Ser. No. 941,621
Int. Cl.² C08G 63/18; D01F 6/62, 9/08
U.S. Cl. 260—22 D 15 Claims

1. A copolyester of terephthalic acid, ethylene glycol, dimer acid and polyoxyethylene glycol containing from about 2 to about 4% by weight of dimerate units based on the weight of the polymer and from about 1 to about 3% by weight of polyoxyethylene units based on said polymer weight.

4,211,679

ORGANOBORON PLASTICIZED POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., and Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 28, 1978, Ser. No. 946,539
Int. Cl.² C08K 3/38, 5/55
U.S. Cl. 260—29.1 R 7 Claims

1. A plasticized polycarbonate composition comprising an admixture of a high molecular weight aromatic polycarbonate and a plasticizing amount of an organoboron plasticizer selected from one of the following general formulae:

I. $B(OR)_3$
II. $ArB(OR)_2$
III. $(ROBO)_3$

wherein R is a member selected from the group consisting of C_1 to C_{20} alkyl, cycloalkyl of 4 to 14 carbon atoms, alkenyl of 2 to 20 carbon atoms, aryl, and substituted aryl of 6 to 14 carbon atoms wherein the substituents on said substituted aryl can be halogen, alkoxy of 1 to 20 carbon atoms, alkaryl of 7 to 36 carbon atoms, and aralkyl of 7 to 36 carbon atoms; Ar is an aromatic radical or substituted aromatic radical wherein the substituents on said substituted aromatic radical can be halogen, alkyl of 1 to 20 carbon atoms, and alkoxy of 1 to 20 carbon atoms.

4,211,680

QUICK-SET COMPOSITIONS OF HYDRAULIC CEMENT, SILICA, WATER, POLYISOCYANATE AND POLYOL

Herbert J. Shearing, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 649,483, Jan. 15, 1976, abandoned, which is a continuation of Ser. No. 463,137, Apr. 22, 1974, abandoned, which is a continuation of Ser. No. 226,301, Feb. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 818,083, Apr. 21, 1969, abandoned. This application Jun. 1, 1978, Ser. No. 911,518
Claims priority, application United Kingdom, May 13, 1968, 22624/68
Int. Cl.² C08L 75/06, 75/08
U.S. Cl. 260—29.2 TN 8 Claims

5. An unfoamed cement product suitable for use as a flooring composition obtained by mixing together and allowing to cure components consisting essentially of a portland cement, a silica filler, water, an organic polyisocyanate and a polyol, the organic polyisocyanate being employed in an amount sufficient to provide an excess of isocyanate groups over the hydroxyl groups of the polyol wherein the ratio of organic polyisocyanate and polyol taken together to water ranges from 0.98:1 to 8.4:1, the amount of water ranging from about 15 to 25% by weight to that of said portland cement.

4,211,681

POLY(ETHYLENE OXIDE) COMPOSITIONS

David B. Braun, Ridgefield, Conn., and Stephen Drap, Pawling, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 16, 1978, Ser. No. 934,265
Int. Cl.² C08L 71/02
U.S. Cl. 260—29.2 R 8 Claims

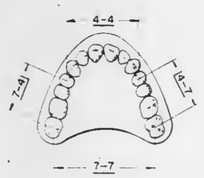
1. A composition comprising:
(a) from 25 to 98 weight percent, of a poly(ethylene oxide) having an average molecular weight of from 600,000 to 10,000,000;
(b) from 1 to 50 weight percent of water;
(c) from 1 to 50 weight percent of propylene glycol; and
(d) from 0.01 to 1 weight percent of a stabilizer from the group consisting of ascorbic acid, monobutylated hydroxyanisole, and tertiary butyl hydroquinone;
wherein the concentrations of (a), (b), (c) and (d) are based on the total weight of the composition.

4,211,682

DENTAL HYDRAULIC INVESTMENT

Taro Suminoe, Tokyo; Tetsuo Ito, Machida, and Eiichi Masuhara, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1978, Ser. No. 885,129
Claims priority, application Japan, Mar. 18, 1977, 52-29994
Int. Cl.² C08L 61/10
U.S. Cl. 260—29.3 31 Claims



1. A dental hydraulic investing material comprising (A) an aqueous polyvinyl alcohol solution, (B) a water-soluble metallic compound, (C) a water-soluble thermosetting resin precondensate and (D) a powdery filler-containing filler, wherein said investing material contains essentially no gypsum.

4,211,683

PROCESS FOR THE PREPARATION OF AQUEOUS DISPERSIONS OF POLYURETHANES

Wolfgang Wenzel, and Dieter Dieterich, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1977, Ser. No. 821,268
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637690
Int. Cl.² C08L 61/28, 75/12
U.S. Cl. 260—29.4 R 9 Claims

1. A process for the preparation of aqueous dispersions of polyurethanes which have urea end groups and which contain non-ionic hydrophilic segments and which may be cross-linked by means of cross-linking agents which are reactive with urea groups comprising reacting in a reaction vessel a prepolymer which has isocyanate end groups and which

(i) has a stoichiometrically calculated average molecular weight of less than about 10,000; and
(ii) contains from about 2 to 30%, by weight, of ethylene oxide units corresponding to the following formula;

$$-CH_2-CH_2-O-$$

arranged within a polyether chain containing ethylene oxide units, at from about 10° to 70° C. with an aqueous solution of ammonia or with a monoprimary amine, optionally dissolved in water, the aqueous solution of ammonia or the monoprimary amine, optionally dissolved in water, being added to the prepolymer previously introduced into the reaction vessel, the quantity of water used for dissolving the ammonia or primary amine being at the most about 10%, by weight, based on the total quantity of the reaction mixture, and finally, after completion of the addition reaction between the free isocyanate groups of the prepolymer and the added ammonia or monoprimary amine, the desired reaction product is stirred with water at from about 10° to 70° C. to form a from about 5 to 65%, by weight, aqueous dispersion.

4,211,684

VINYLIDENE CHLORIDE POLYMER LATEX

Masaoki Koyama, Yokohama, and Hiroyuki Kigo, Nobeoka, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Aug. 18, 1978, Ser. No. 934,919
Claims priority, application Japan, 1977, 52-102623
Int. Cl.² C08L 23/14
U.S. Cl. 260—29.6 TA 3 Claims

1. An aqueous polymer latex coating composition comprising the product obtained by emulsion polymerizing a monomer mixture consisting essentially of

(a) about 50 to 95 parts by weight of vinylidene chloride;
(b) about 0.5 to 30 parts by weight of propylene;
(c) about 4.5 to 20 parts by weight of at least one comonomer selected from the group consisting of alkyl esters of acrylic and methacrylic acids, glycidyl esters of acrylic and methacrylic acids, nitriles of ethylenically unsaturated carboxylic acids, vinyl chloride, and styrene; and, optionally,
(d) not more than about 5 parts by weight of at least one polar comonomer selected from the group consisting of unsaturated carboxylic acids, unsaturated amides, and hydroxyalkyl esters of unsaturated carboxylic acids.

4,211,685

ADHESIVE COMPOSITION

Grigory M. Konovenko, ulitsa Posmitnogo, 25, kv. 15; Svetlana L. Slipchenko; Vladimir M. Markus, both of Proletarsky bulvar, 12, kv. 13, and Nina N. Kasjura, ulitsa Segedskaya, 3, kv. 44, all of Odessa, U.S.S.R.

Filed Aug. 16, 1978, Ser. No. 934,072
Int. Cl.² C08K 5/15
U.S. Cl. 260—30.4 EP 4 Claims

1. An adhesive composition, comprising the following ingredients (wt.%):

low molecular dianic epoxy resin as a binder: 20.0 to 50.0
a mixture of phenyl-glycidyl ether and aliphatic epoxy resin taken in the weight ratio of (0.5 to 1.5):1.0 used as a plasticizer: 2.0 to 15.0
polyethylene polyamine as a hardener: 2.0 to 8.0
finely divided aliminium oxide modified with chromium oxide in single crystal form: 25.0 to 60.0.

4,211,686

UNSATURATED POLYESTER RESIN COMPOSITION FOR USE IN PRESSURE MOLDING

Akio Nishikawa; Junichi Katagiri; Noriyuki Kinjo, all of Hitachi; Hitoshi Yokono, Katsuta; Tamotsu Ikeda, Hitachi, and Tsuguo Kobayashi, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 10, 1977, Ser. No. 767,322
Claims priority, application Japan, Feb. 12, 1976, 51-13200
Int. Cl.² C08K 7/14
U.S. Cl. 260—40 R 19 Claims

1. An unsaturated polyester resin composition for use in pressure molding, which comprises:

(I) a liquid mixture comprising an unsaturated polyester resin of a polycondensate or condensate synthesized from an unsaturated or saturated polybasic acid or anhydrides thereof, and hydroxyl compounds, or precursors thereof, an ethylenically unsaturated compound monomer in an amount of 20 to 50% by weight, based on the mixture, and a curing catalyst in an amount effective for the polymerization reaction between the polyester resin and the compound monomer, said mixture having a viscosity of 50 to 50,000 centipoises at 25° C., and
(II) a filler consisting essentially of,
(a) a calcium carbonate powder,
(b) a silica sand having a particle size larger than said powder and smaller than 1500 μm and
(c) a chopped glass fiber wherein the ratio by weight of (a) to (b) is within a range of from 0.3 to 10, the ratio of (a) and (b) to (I) is within a range of from 2.5 to 6, and the ratio of (c) to the total weight of (I) and (II) is within a range of from 0.01 to 0.25.

4,211,687

POLYMER BLENDS WITH IMPROVED FLAME RETARDANCE

Gideon Salee, Williamsville, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 819,539, Jul. 27, 1977. This application Dec. 22, 1977, Ser. No. 863,556
Int. Cl.² C08K 7/14; C08L 67/02
U.S. Cl. 260—40 R 15 Claims

1. In a thermoplastic polymeric composition comprising a mixture of (a) a linear aromatic polyester of components consisting essentially of a bisphenol and a dicarboxylic acid, and (b) polyphenylene sulfide, the improvement wherein the composition contains an effective flame retardant proportion of a halogen-containing Diels Alder adduct of

(A) a cyclopentadiene wherein all of the hydrogen atoms of the carbon atoms joined by carbon-to-carbon double bonds have been replaced by halogen, selected from the group consisting of fluorine, chlorine, and bromine, and
(B) an ethylenically unsaturated organic compound containing one or two carbon-to-carbon double bonds;

the molar proportion of the cyclopentadienyl residue to unsaturated compound residue in said adduct being 1:1 when the unsaturated compound contains one carbon-to-carbon double bond, and 2:1 when the unsaturated compound contains two carbon-to-carbon double bonds, said composition being substantially free of an antimony constituent.

4,211,688

PROCESS FOR DYEING HIGH-MOLECULAR ORGANIC MATERIAL IN THE MELT

Hans Altermatt, Reinach, and Arnold Wick, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

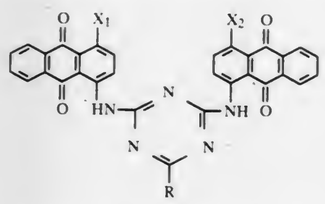
Filed Jun. 6, 1978, Ser. No. 913,159

Claims priority, application Switzerland, Jun. 14, 1977, 7297/77

Int. Cl.[2] **C08K** *5/08, 5/34*

U.S. Cl. 260—40 P **10 Claims**

1. A process for the dyeing of high molecular organic material in the melt which comprises incorporating, as a colouring substance, an anthraquinone compound of the formula



(1)

wherein R represents straight-chain or branched-chain alkyl having 1 to 17 C atoms, X_1 and X_2 represent hydrogen or benzoylamino, X_1 represents hydrogen and X_2 represents benzoylamino or mixtures thereof into said high molecular organic material.

4,211,689

COPOLYESTERS OF POLYBUTYLENE TEREPHTHALATE

Willem F. H. Borman, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 6, 1978, Ser. No. 966,880

Int. Cl.[2] **C08K** *7/14;* **C08L** *67/02*

U.S. Cl. 260—40 R **13 Claims**

1. A thermoplastic copolyester which is linear or branched and which consists essentially of units derived from:

(a) a terminally-reactive poly(1,4-butylene terephthalate); and

(b) a terminally-reactive polymeter of (i) a cycloaliphatic 1,2-dicarboxylic acid or a derivative thereof, and mixtures thereof and (ii) 1,4-butanediol.

9. A thermoplastic composition as defined in claim 1 which also includes (c) an effective amount of a reinforcing agent and/or a filler.

4,211,690

POLYPROPYLENE RESIN COMPOSITIONS AND MOLDINGS THEREOF

Hideki Asano; Hiroyoshi Kokaku, both of Hitachi; Katsuhito Suzuki, Mito, and Kenichi Saida, Shiranuka, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 30, 1978, Ser. No. 937,980

Claims priority, application Japan, Sep. 5, 1977, 52-105871

Int. Cl.[2] **C08L** *53/00, 23/12, 23/08, 23/14*

U.S. Cl. 260—42.46 **15 Claims**

1. A polypropylene resin composition comprising (A) 100 parts by weight of propylene homopolymer having an intrinsic viscosity in tetralin at 135° C. of no less than 1.9; and (B) 40–150 parts by weight of ethylene/propylene copolymer having an intrinsic viscosity in tetralin at 135° C. of 1.4–1.7 and an ethylene content of 2–15 molar % and (C) 40–150 parts by weight of a block ethylene/propylene copolymer having an intrinsic viscosity in tetralin at 135° C. of no less than 1.9 and an ethylene content of 2–20 molar %.

4,211,691

THERMOPLASTIC POWDER COATING SYSTEMS

Emerson B. FitzGerald, Wilmington, Del., and Walter C. Meyer, Lake Orion, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 771,066, Feb. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 576,633, May 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 405,627, Oct. 11, 1973, abandoned. This application Nov. 6, 1978, Ser. No. 957,915

Int. Cl.[2] **C08L** *63/10*

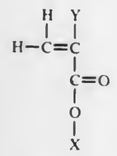
U.S. Cl. 260—42.21 **3 Claims**

1. A thermoplastic powder coating composition for coating substrates comprising particles of polymeric material consisting essentially of a mixture of polymer (A) and polymer (B), polymer (A) and polymer (B) being a polymer of ethylenically unsaturated monomers and having reactive groups, the reactive groups on polymer (A) being coreactive in a condensation reaction with the reactive groups on polymer (B) and said reaction taking place on the substrate to which the powder coating composition is applied to form a thermoplastic coating on the substrate of a condensation polymer having a weight average molecular weight of 40,000–200,000;

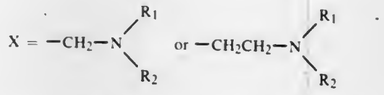
wherein said particles have an average diameter of about 5–300 microns; wherein said polymer (A) and polymer (B) have a glass transition temperature of about 45°–115° C., a weight average molecular weight of about 5,000–180,000; wherein said polymer (A) and polymer (B) are compatible as indicated by the miscibility of their solutions; wherein said reactive groups are selected from the class consisting essentially of carboxyl, acid chloride, isocyanato, amino, hydroxyl, epoxy, and aziridinyl groups, and wherein the product of said condensation reaction has a weight average molecular weight of about 40,000–200,000;

wherein there is presennt a sufficient number of equivalents of either of polymer (A) or polymer (B) that contains an average of about 0.9–1.1 reactive groups per molecule to react with at least about 50% of the reactive groups on the other of polymer (A) or polymer (B) that contains an average of at least one reactive group per molecule, and

wherein polymer (A) and polymer (B) are formed from unsaturated monomers selected from at least one of esters of acrylic acid or methacrylic acid with alkanols of C_1–C_{18}, amides of acrylic or methacrylic acid, nitriles of acrylic acid or methacrylic acid, styrene, C_1–C_6 alkyl styrenes, vinyl esters of fatty acids having 2–20 arbon atoms, vinyl chloride,



wherein Y=—H, —CH_3 or —CH_2CH_3 and



wherein R_1 and R_2 are H or C_1–C_4 alkyl and one of acrylic acid, methacrylic acid, itaconic acid, maleic anhydride, crotonic acid, allyl alcohol, hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate vinyl alcohol, 2-isocyanato ethyl methacrylate, glycidyl methacrylate aziridinyl methacrylate, methacryl chloride, and ethacryl chloride in each of polymer (A) and polymer (B), such that the

reactive groups on polymer (A) are coreactive in a condensation reaction with the reactive groups on polymer (B).

2. The composition of claim 1 wherein the particles contain pigment in an amount of about 0.5–60% by volume based on the combined volume of the pigment and polymer (A) and polymer (B).

4,211,692

EXTRUSION COATING COMPOSITIONS FOR WOVEN AND NON-WOVEN POLYOLEFIN SUBSTRATES AND ARTICLES THEREOF

Edward Barkis; Robert R. Crummer, both of Marietta, and James M. Joyner, East Point, all of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 29, 1976, Ser. No. 671,068

Int. Cl.[2] **C08K** *3/32;* **C08L** *23/04, 23/16*

U.S. Cl. 260—45.7 P **8 Claims**

1. An extrusion coating composition for woven and nonwoven polyolefin substrates comprising:

(a) about 50–90% by weight of a terpolymer containing reacted ethylene, propylene, and a diene, said terpolymer having a flow rate in the range of about 0.5 to 1.0 g/10 min., wherein the diene is in a low concentration up to a maximum concentration in percent by weight of about 3% and is a monomer selected from the group consisting of 1,3-butadiene, isoprene, chloroprene, cyclooctadiene-1,5, dicyclopentadiene, cyclododecatriene-1,5,9, cyclododecadiene-1,7, cycloheptadiene-1,4, cyclohexadiene-1,4, norbornadiene, methylene-norbornene, methyl-tetrahydroindene, dimethyl-tetrahydroindene, 6-methyl-heptadiene-1,5, hexadiene-1,4, 6-methyl-4,7,8,9-tetrahydroindene, and ethylidene-norbornene, and wherein the reacted ethylene and propylene are in a ratio by weight of about 3:1;

(b) about 50–10% by weight of a high density polyethylene having a flow rate of about 0.2–30 g/10 min., an unannealed density in the range of about 0.956–0.965, and a weight average molecular weight in the range of about 50,000–200,000;

(c) about 0.5–5% by weight of an opacifier;

(d) about 0.5–15% by weight of a fire retardant composition comprising at least one polyhalogenated organic compound and antimony trioxide;

(e) about 0.5–3% by weight of an ultraviolet light stabilizer for polyolefins; and

wherein said composition has a shear independent melt viscosity at 190° C. of above about 2.9×10^6 centipoise.

4,211,693

PEPTIDES WITH PARA-SUBSTITUTED PHENYLALANINE

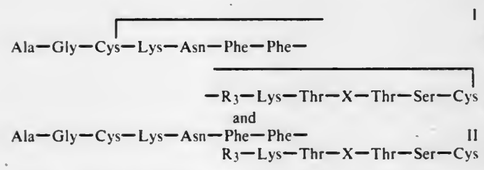
Jean E. F. Rivier; Marvin R. Brown, and Wylie W. Vale, Jr., all of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 834,221, Sep. 20, 1977, abandoned. This application Dec. 7, 1978, Ser. No. 967,505

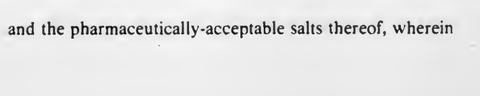
Int. Cl.[2] **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 S **9 Claims**

1. A peptide selected from the group consisting of



I



II

and the pharmaceutically-acceptable salts thereof, wherein

R_3 is selected from the group consisting of Trp and D-Trp; and

X is selected from the group consisting of parahalogenated Phe and para-methoxylated Phe.

4,211,694

DEFLAVORING VEGETABLE SEED MATERIALS

Rudolph W. Youngquist, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 7, 1978, Ser. No. 922,921

Int. Cl.[2] **A23J** *1/14*

U.S. Cl. 260—123.5 **10 Claims**

1. A process for deflavoring vegetable seed material, comprising:

(a) suspending comminuted vegetable seed material in an aqueous solution comprising an electrolyte selected from the group consisting of alkali metal halides and alkali metal phosphates, at a concentration greater than about 1%, and a carbohydrate, at a concentration greater than about 1%, said solution having a water activity of less than about 0.90, and

(b) separating the vegetable seed material from the solution.

4,211,695

PROCESS FOR THE TREATMENT OF COMMINUTED OATS

Richard W. Oughton, Odessa, Canada, assignor to Du Pont of Canada, Limited, Montreal, Canada

Continuation-in-part of Ser. No. 747,734, Dec. 6, 1976, abandoned. This application Jan. 26, 1979, Ser. No. 6,766

Claims priority, application United Kingdom, Dec. 16, 1975, 51498/75

Int. Cl.[2] **A23J** *1/12*

U.S. Cl. 260—123.5 **25 Claims**

1. A process for the separation of comminuted oats into fractions differing in composition, said process comprising:

(a) admixing comminuted dehulled oats or matter derived therefrom with an organic solvent in the form of a slurry, said solvent being selected from the class consisting of pentane, hexane, heptane, cyclohexane, alcohols having 1–4 carbon atoms, and mixtures thereof capable of extracting oat oil from said oats;

(b) forming a slurry of said admixture of comminuted oats and solvent; and

(c) subjecting the slurry to the influence of centrifugal force whereby the comminuted oats in said slurry are separated into at least two fractions, said fractions differing in composition.

4,211,696

DISPERSE MONOAZO DYESTUFFS DERIVED FROM 3,5-DINITRO-2-AMINO THIOPHENE AS DISAZO COMPONENT AND AN ARYLAMINE COUPLING COMPONENT

David B. Baird; Alan T. Costello; Brian R. Fishwick; Robert D. McClelland, and Peter Smith, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

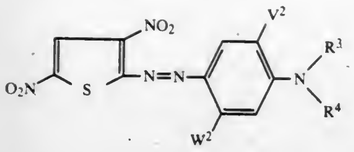
Continuation-in-part of Ser. No. 488,242, Jul. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 324,189, Jan. 16, 1973, abandoned. This application Feb. 9, 1976, Ser. No. 656,593

Claims priority, application United Kingdom, Jan. 28, 1972, 4046/72; Dec. 14, 1972, 57675/72

Int. Cl.[2] **C09B** *29/08, 29/26;* **D06P** *1/18, 3/54*

U.S. Cl. 260—152 **3 Claims**

1. A disperse monoazo dystuff, free from carboxylic and sulphonic acid groups, which is of the formula:



wherein V^2 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy;

W^2 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, chlorine, bromine and trifluoromethyl;

R^3 is selected from the group consisting of hydrogen, lower alkyl, cyano lower alkyl, lower alkyl carbonyloxy lower alkyl, lower alkoxycarbonyl lower alkyl, lower alkoxy lower alkoxycarbonyl lower alkyl, lower alkoxy lower alkyl and phenyl lower alkyl;

and R^4 is selected from the group consisting of lower alkyl, hydroxy lower alkyl, cyano lower alkyl, lower alkyl carbonyloxy lower alkyl, lower alkoxy carbonyl lower alkyl, lower alkoxy lower alkoxy carbonyl lower alkyl, lower alkoxy lower alkoxy lower alkoxycarbonyl lower alkyl, lower alkoxy lower alkyl and phenyl lower alkyl.

4,211,697

AZOANILINO-TOLUENE SULFONAMIDOALKYLENEAMINE CATIONIC DYES FOR PAPER

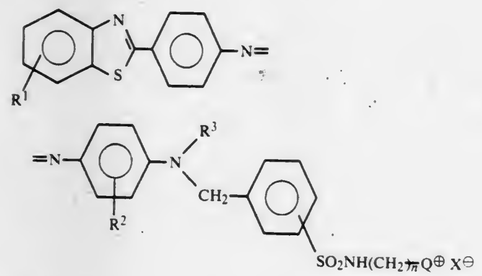
Kishor A. Desai, Lock Haven, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

Filed Jan. 18, 1979, Ser. No. 4,444

Int. Cl.² C09B *29/08*

U.S. Cl. 260—158 **2 Claims**

1. A cationic dye characterized by outstanding affinity for paper pulp, and having the structural formula:



wherein

R^1 is H or CH_3;

R^2 is H, lower alkyl, lower alkoxy, chloro or bromo;

R^3 is lower alkyl or cyano lower alkyl;

Q is $N(R^4)_3$, where R^4 is lower alkyl, or is



n is an integer of 2–4; and

X is chloro, bromo, methosulfate, ethosulfate, or methanesulfonate.

4,211,698

DISAZO DYES CONTAINING AN ACETOACETANILIDE MIDDLE COMPONENT

Rudolf Hurter, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

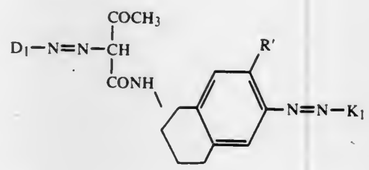
Filed Aug. 17, 1978, Ser. No. 934,551

Claims priority, application Luxembourg, Aug. 23, 1977, 78014

Int. Cl.² C09B *31/02, 33/02, 62/08, 62/50*

U.S. Cl. 260—176 **5 Claims**

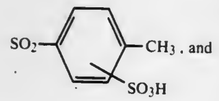
1. Azo dyes of the formula



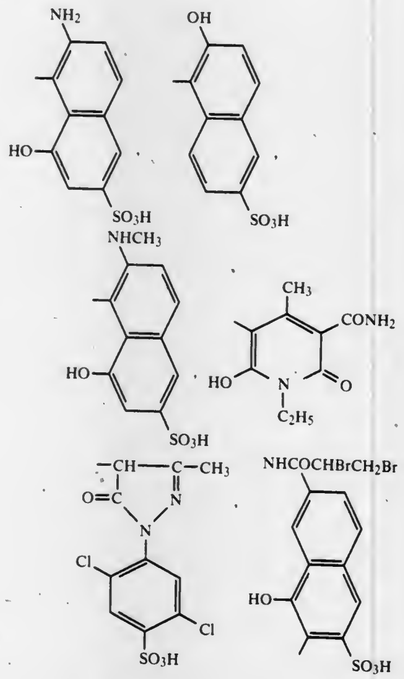
wherein

D_1 represents a phenyl radical which is further substituted by one or more of CH_3, SO_3H, COOH, OCH_3, OH, Cl, NO_2, SO_2NH_2 $NHCOCHBrCH_2Br$,

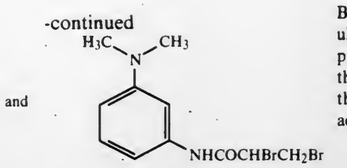
R′ represents SO_3H, COOH or



K_1 represents one of the following formulae:



-continued



4,211,699

ISOCYANATE ADDUCT DIOLS

Hans D. Winkelmann; Karlheinz Wolf, both of Cologne; Harald Oertel, Odenthal, and Norbert Weimann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

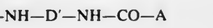
Filed Feb. 21, 1978, Ser. No. 879,740

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 2707660

Int. Cl.² C07D *223/10*

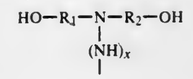
U.S. Cl. 260—239.3 R **12 Claims**

1. An isocyanate adduct diol corresponding to the formula



in which

M corresponds to the formula

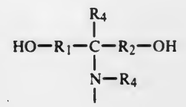


where

R_1 and R_2 may be the same or different and represent a straight chain or branched alkylene radical with up to 12 carbon atoms or a cyclohexylene radical, and

x=0 or 1 or

M corresponds to the formula



in which

R_1 and R_2 are the same or different and each represents a straight chain or branched alkylene radical with up to 12 carbon atoms or a cyclohexylene radical, and

R_4 represents hydrogen and/or C_1–C_4 alkyl

D′ represents a divalent radical derived from diphenyl methane-4,4′-diisocyanate, tolylene-2,4-diisocyanate, tolylene-2,6-diisocyanate, phenylene-1,3-diisocyanate, phenylene-1,4-diisocyanate or diphenyl ether-4,4′-diisocyanate and

A is an isocyanate masking group derived from pyrrolidone, α-piperidone, ϵ-caprolactam, methyl caprolactam, γ-ethyl caprolactam or γ-tert.-butyl caprolactam.

4,211,700

PROCESS FOR THE PREPARATION OF LACTAMES THROUGH OXIME ISOMERIZATION

Jean-Claude Michel, Orthez, and Philippe Potin, Billere, both of France, assignors to Ato Chimie, Courbevoie, France

Filed Feb. 15, 1979, Ser. No. 12,495

Claims priority, application France, Feb. 17, 1978, 78 04571

Int. Cl.² C07D *201/04*

U.S. Cl. 260—239.3 A **8 Claims**

1. A process for preparing lactames through oxime isomerization in a sulfuric solution, said reaction being called the Beckmann rearrangement, which process may be more particularly applied to sulfuric solutions of oximes obtained through photonitrozation and in which during the rearrangement stage the acid index of the mixture is raised to a level above that of the sulfuric solution feed, wherein the increase of the sulfuric acid index is effected by:

(a) evaporating part of the water contained in the reaction medium;

(b) adding sulfuric anhydride or oleum to the reaction medium; or

(c) evaporating a part of the water contained in the reaction medium and adding sulfuric anhydride or oleum to the reaction medium.

4,211,701

SPIRONOLACTONE PROCESS

Joseph M. Timko, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

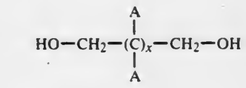
Filed Apr. 13, 1979, Ser. No. 29,553

Int. Cl.² C07J *21/00*

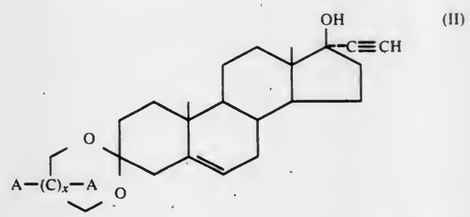
U.S. Cl. 260—239.57 **40 Claims**

1. A process for producing spironolactone (VIII) which comprises

(1) reacting ethisterone (I) with a glycol of the formula:

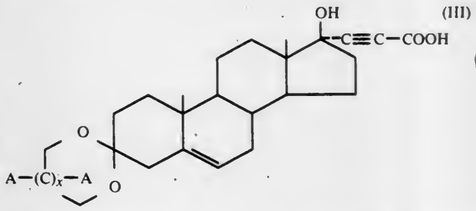


to give the hydroxy glycol (II)



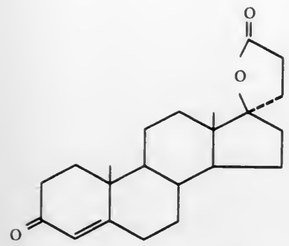
(II)

(2) carboxylating the hydroxy glycol (II) by reaction with carbon dioxide in the presence of R-Metal to give the acid glycol (III)

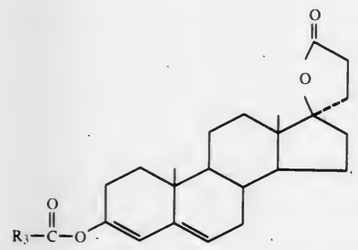


(III)

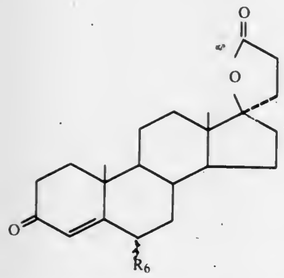
(3) reducing and cyclizing the acid glycol (III) by hydrogenation in the presence of a hydrogenating catalyst followed by acidification to give the lactone (IV)

(IV)


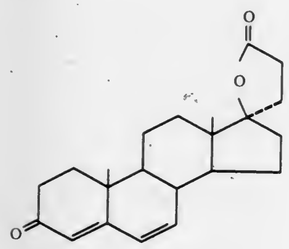
(4) esterifying the lactone (IV) by reaction with an esterifying agent selected from the group consisting of an anhydride of the formula $(R_3—CO)_2O$ or a compound of the formula $CH_3—C(CH_2)—OCOR_3$ to give the ester (V)

(V)


(5) halogenating the ester (V) by reaction with a halogenating agent to give the halo lactone (VI)

(VI)


(6) heating the halo lactone (VI) in a temperature range of 20°–150° in the presence of a base to give the Δ4,6-lactone (VII)

(VII)


and

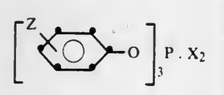
(7) thiolacetylating with thiolacetic acid to give spironolactone (VIII) where A, x, R, Metal, R_3 and R_6 are defined in the specification.

4,211,702
PROCESS FOR PREPARATION OF PENICILLIN AND CEPHALOSPORIN IMINO HALIDES

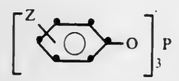
Lowell D. Hatfield, Bargersville; Larry C. Blaszczak, and Jack W. Fisher, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 1, 1979, Ser. No. 8,470
Int. Cl.[2] C07D *499/10, 501/02, 265/12*
U.S. Cl. 260—239.1 **24 Claims**

1. A process for preparing penicillin or cephalosporin imino halides which comprises reacting a C-6 acylamino penicillin or a C-7 acylamino cephalosporin with about 1.0 to about 2.0 equivalents of a halogenating compound of the formula



wherein X is Cl or Br, and Z is hydrogen, halo, C_1–C_4 alkyl or C_1–C_4 alkoxy, which is the kinetically controlled product of the reaction of equivalent amounts of a triaryl phosphite of the formula



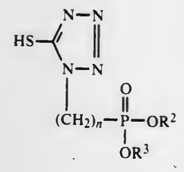
and chlorine or bromine in an inert organic solvent, in the presence of about 1.0 to about 1.2 equivalents of a tertiary amine base per equivalent of halogenating compound employed, in a substantially anhydrous inert organic solvent at a temperature of about 30° C. or below, with the proviso that when the C-6 acylamino penicillin or C-7 acylamino cephalosporin is substituted by hydroxy, amino or carboxy groups those groups are first protected with conventional hydroxy, amino or carboxy protecting groups.

4,211,703
PHOSPHONOALKYL AND ESTERIFIED PHOSPHONOALKYL SUBSTITUTED TETRAZOLE THIOLS

David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 737,971, Nov. 2, 1976, Pat. No. 4,112,086.
This application Aug. 14, 1978, Ser. No. 933,362
Int. Cl.[2] C07D *257/04*
U.S. Cl. 548—112 **7 Claims**

1. A compound of the formula:



in which:

n is one to five; and

R^2 and R^3 are each hydrogen or alkyl of from one to four carbon atoms.

4,211,704
METHOD FOR PRODUCING 2,3,3-TRIMETHYLINDOLENINE

Nobumasa Ohtake, Yokohamashi; Ryo Yoshizawa, Yokoshukashi, and Isao Koga, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Aug. 2, 1978, Ser. No. 930,387
Claims priority, application Japan, Aug. 29, 1977, 52-103381
Int. Cl.[2] C07D *209/08*
U.S. Cl. 260—319.1 **1 Claim**

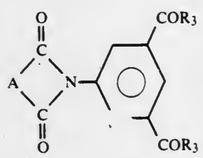
1. A method for producing 2,3,3-trimethylindolenine which comprises mixing aniline with 3-chloro-3-methylbutane-2-one in a mol ratio of 3:1–10:1; reacting the resulting mixture at a temperature of 60°–120° C. for 2–20 hours; thereafter elevating the temperature of the reaction liquid; and maintaining the liquid at the reflux temperature of aniline for 0.5–2 hours to complete the reaction.

4,211,705
IMIDYL-BENZENEDICARBOXYLIC ACID DERIVATIVES

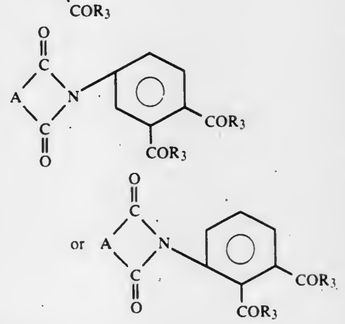
Martin Roth, Basel; Vratislav Kvita, Muttenz, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 696,347, Jun. 15, 1976, Pat. No. 4,134,895.
This application Oct. 24, 1978, Ser. No. 954,277
Claims priority, application Switzerland, Jun. 18, 1975, 7952/75
Int. Cl.[2] C07D *209/04, 209/96*
U.S. Cl. 260—326 C **6 Claims**

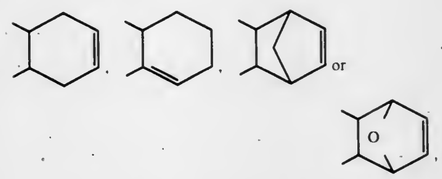
1. A compound of the formula

(Ia)


or

(Ib)


wherein A denotes



and

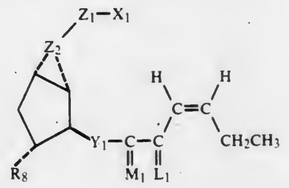
R_3 denotes chlorine, hydroxyl, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two to five halogen atoms; alkoxy with 1 to 18 carbon atoms or an $—O^-M^+$ group, in which M^+ represents an alkali metal cation, a trialkylammonium cation with 3 to 24 carbon atoms or a quaternary ammonium cation.

4,211,706
9-DEOXY-9α,6-NITRILO OR 6,9α-IMINO-17,18-DIDEHYDRO-PGF COMPOUNDS

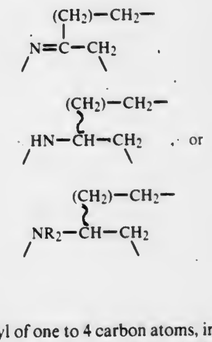
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 13, 1978, Ser. No. 951,095
Int. Cl.[2] C07D *209/52*
U.S. Cl. 260—326.27 **2 Claims**

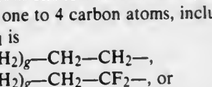
1. A prostacyclin analog of the formula

II


wherein Z_2 is



or



wherein

R_2 is alkyl of one to 4 carbon atoms, inclusive, or alkylcarbonyl of one to 4 carbon atoms, inclusive;

wherein Z_1 is

(1) $—(CH_2)_g—CH_2—CH_2—$,

(2) $—(CH_2)_g—CH_2—CF_2—$, or

(3) trans$—(CH_2)_g—CH=CH—$,

wherein g is the integer zero, one, or 2;

wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;

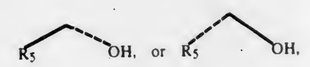
wherein Y_1 is

(1) trans—CH=CH— or

(2) $—CH_2CH_2—$,

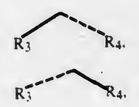
wherein

M_1 is

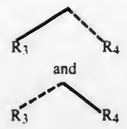


wherein

R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive, wherein L_1 is



a mixture of

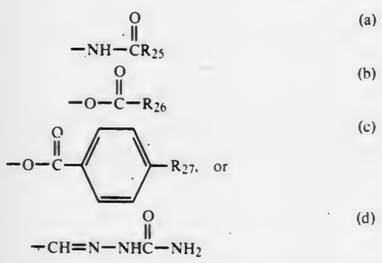


and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein X_1 is

(1) -$COOR_1$ wherein R_1 is hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position



(a)

(b)

(c)

(d)

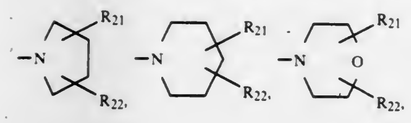
wherein R_{25} is methyl, phenyl, acetomidophenyl, benzamidophenyl, or $-NH_2$; R_{26} is methyl, phenyl, $-NH_2$, or methoxy; and R_{27} is hydrogen or acetamido; inclusive, or a pharmacologically acceptable cation;

(2) $-CH_2OH$; or

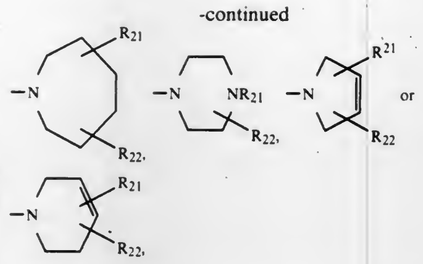
(3) $-COL_4$, wherein L_4 is

(a) amino of the formula-$NR_{21}R_{23}$, wherein $R_{21}$and R_{22} are hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro; carboxyalkyl of one to four carbon atoms, inclusive; carbamoylalkyl of one to four carbon atoms, inclusive; cyanoalkyl of one to four carbon atoms, inclusive, acetylalkyl of one to four carbon atoms, inclusive; benzoylalkyl of one to four carbon atoms, inclusive; benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms inclusive; hydroxy, alkoxy of one to 3 carbon atoms, inclusive; carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive; or nitro; pyridyl; pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; or alkoxy of one to 3 carbon atoms, inclusive; pyridylalkyl of one to 4 carbon atoms, inclusive; pyridylalkyl of one to 4 carbon atoms, inclusive; pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; hydroxy, alkoxy of one to 3 carbon atoms, inclusive; hydroxyalkyl of one to 4 carbon atoms, inclusive; dihydroxyalkyl of one to 4 carbon atoms, and trihydroxyalkyl of one to 4 carbon atoms, with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

(b) cycloamino selected from the group consisting of



-continued



wherein R_{21} and R_{22} are as defined above;

(c) carbonylamino of the formula $-NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is as defined above; or

(d) sulphonylamino of the formula $-NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined above; and the pharmacologically acceptable acid addition salts thereof when R_2 is not alkylcarbonyl and R_1 is not a pharmacologically acceptable cation.

4,211,707

PROCESS FOR HYDROLYTICALLY CLEAVING O-SULFO THIENAMYCINS

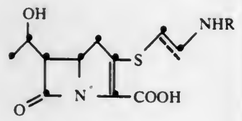
Ronald W. Ratcliffe, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 10, 1978, Ser. No. 932,739

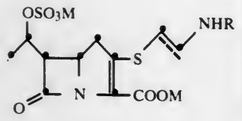
Int. Cl.² C07D *487/04*

U.S. Cl. 260—326.31 **1 Claim**

1. A process for preparing a compound having the structure:



and its pharmaceutically acceptable salts and esters which comprises hydrolyzing a compound having the formula:



wherein M is $H^{\oplus}$, an alkali or alkaline earth metal cation or an organic cation; R is hydrogen or acetyl and the dotted line indicates provision for both saturated and unsaturated species; the hydrolyzing is conducted in a solvent selected from the group consisting of: dioxane, dimethylformamide, dimethylsulfoxide, or pyridine in the presence of 0.1 to 1% water at a temperature of from 25° to 100° C.

4,211,708

AMINOPYRROLE DERIVATIVES

Giorgio Tarzia, Rome, and Gianbattista Panzone, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

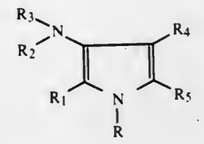
Division of Ser. No. 750,759, Dec. 15, 1976, Pat. No. 4,140,696, which is a continuation-in-part of Ser. No. 716,749, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 492,564, Jul. 29, 1974, abandoned. This application Nov. 13, 1978, Ser. No. 960,385

Claims priority, application United Kingdom, Aug. 22, 1973, 39790/73

Int. Cl.² C07D *207/44*

U.S. Cl. 260—326.46 **8 Claims**

1. A compound of the formula



wherein:

R is selected from hydrogen, (C_{1-4})alkyl, benzyl and chlorobenzyl;

R_1 is selected from hydrogen, (C_{1-4})alkyl, phenyl and phenyl substituted by a radical selected from methyl, ethyl, methoxy, ethoxy, benzyloxy, fluoro, chloro and bromo;

R_2 and R_3 individually represent hydrogen, (C_{1-4})alkyl or, taken together, represent an isopropylidene, a benzylidene or a chlorobenzylidene radical;

R_4 is selected from carbo(C_{1-3})alkoxy; carbamoyl, methylcarbamoyl and phenylcarbamoyl;

R_5 represents carbo(C_{1-3})alkoxy or carbamoyl; or a salt thereof with a pharmaceutically-acceptable acid.

4,211,709

AMINOPYRROLE DERIVATIVES

Giorgio Tarzia, Rome, and Gianbattista Panzone, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

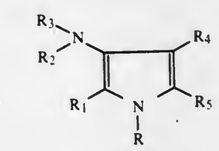
Division of Ser. No. 750,759, Dec. 15, 1976, Pat. No. 4,140,696, which is a continuation-in-part of Ser. No. 716,749, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 492,564, Jul. 29, 1974, abandoned. This application Nov. 13, 1978, Ser. No. 960,386

Claims priority, application United Kingdom, Aug. 22, 1973, 39790/73

Int. Cl.² C07D *207/44*

U.S. Cl. 260—326.47 **4 Claims**

1. A compound of the formula



wherein:

R is selected from hydrogen, (C_{1-4})alkyl, benzyl and chlorobenzyl;

R_1 selected from hydrogen, (C_{1-4})alkyl, phenyl and phenyl substituted by a radical selected from methyl, ethyl, methoxy, ethoxy, benzyloxy, fluoro, chloro and bromo;

R_2 and R_3 individually represent hydrogen, (C_{1-4})alkyl or, taken together, represent an isopropylidene radical;

R_4 is selected from carbamoyl, methylcarbamoyl and phenylacarbamoyl;

R_5 represents hydrogen, (C_{1-4})alkyl or trifluoromethyl or a salt thereof with a pharmaceutically-acceptable acid.

4,211,710

PROCESS OF PREPARING 3-BROMOPHTHALIDE

Klaus-Dieter Steffen, Hennef, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf bez. Cologne, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 901,917

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721142

Int. Cl.² C07D *307/88*

U.S. Cl. 260—343.3 R **9 Claims**

1. Process of producing 3-bromophthalide which comprises contacting o-toluic acid with bromine or a substance supplying bromine at a temperature of 70° to 260° C. and for a time sufficient for formation of the 3-bromophthalide and HBr, the molar ratio of o-toluic acid to bromine being 1:2 to about 1:2.2, to produce the 3-bromophthalide from the o-toluic acid and bromine or substance supplying bromine in a single step.

4,211,711

METHOD OF PREPARING PHTHALIDE

Helmut aus der Fünten, Niederkassel, and Wilhelm Vogt, Köln-Ste,uml/u/ lz, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 931,074

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735600

Int. Cl.² C07D *307/88*

U.S. Cl. 260—343.3 R **6 Claims**

1. Method for preparing phthalide, which comprises reacting phthalide substituted in position 3 with hydroxyl, methoxy or acetoxy groups in an inert organic solvent with hydrogen in the presence of a hydrogenation catalyst.

4,211,712

COMPLEX COMPOUND FOR THE TREATMENT OF DISEASES DISCLOSING ABNORMAL BLOOD PICTURES

Even Marstrand, Humlebaek, Denmark

Filed Dec. 29, 1977, Ser. No. 865,416

Claims priority, application United Kingdom, Jan. 17, 1977, 01861/77

Int. Cl.² C07D *307/62*

U.S. Cl. 260—343.7 **2 Claims**

1. A compound being a complex combination of ascorbic acid, trivalent titanium, and divalent copper, the ratio of the constituents of the complex compound being 36 mol ascorbic acid to 1 mol Ti^{+++} to 6 mol Cu^{++}.

4,211,713

AROMATIC ANALOGS OF 4,5,13,14-TETRADEHYDRO-PGI$_1$ COMPOUNDS

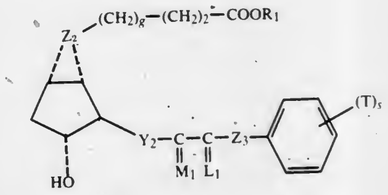
Herman W. Smith, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 821,536, Aug. 3, 1977. This application Jun. 14, 1978, Ser. No. 915,347

Int. Cl.² C07D *307/93*

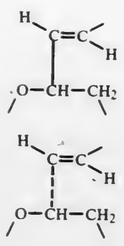
U.S. Cl. 260—346.73 **43 Claims**

1. A prostacyclin analog of the formula

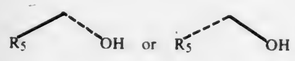


wherein Y_2 is $-C\equiv C-$;

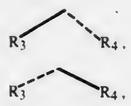
wherein Z_2 is



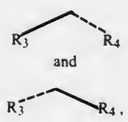
wherein g is the integer zero, one, or 2;
wherein M_1 is



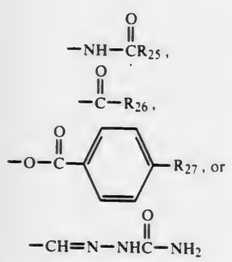
wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive,
wherein L_1 is



or a mixture of

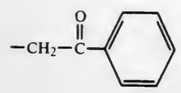


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position by



(a) (b) (c) (d)

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $-NH_2$; R_{26} is methyl, phenyl, $-NH_2$, or methoxy; and R_{27} is hydrogen or acetamido; inclusive, i.e.,



phenacyl substituted in the para position by chloro, bromo, phenyl, or benazmido; or a pharmacologically acceptable cation; and
wherein Z_3 is oxa or $-(CH_2)_h-$,
wherein h is the integer zero to 3, inclusive;
wherein s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl.

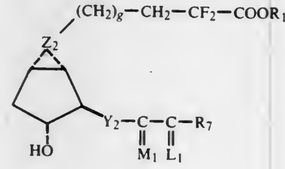
4,211,714

2,2-DIFLUORO-TRANS-4,5,13,14-TETRAHYDRO-PGI$_1$ COMPOUNDS

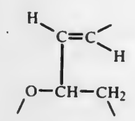
Herman W. Smith, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 821,536, Aug. 3, 1977. This application Jun. 14, 1978, Ser. No. 915,349
Int. Cl.^{2} C07D *307/93*
U.S. Cl. 260—346.73 **27 Claims**

1. A prostacyclin analog of the formula

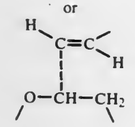


wherein Y_2 is $-C\equiv C-$.
wherein Z_2 is



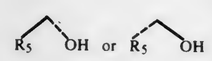
(1)

or

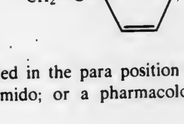


(2)

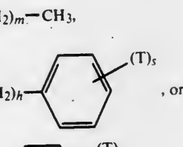
wherein g is the integer zero, one, or 2;
wherein M_1 is



wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive;
wherein L_1 is

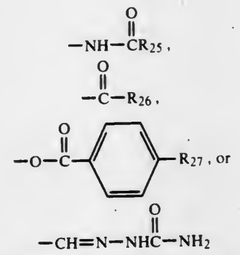


or a mixture of



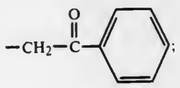
and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position by



(a) (b) (c) (d)

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $-NH_2$; R_{26} is methyl, phenyl, $-NH_2$, or methoxy; and R_{27} is hydrogen or acetamido; phenacyl, i.e.,



phenacyl substituted in the para position by chloro, bromo, phenyl, or benzamido; or a pharmacologically acceptable cation;
wherein R_7 is

(1) (2) (3)

wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl.

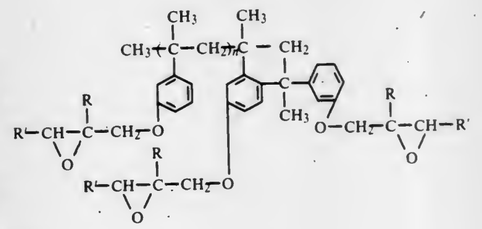
4,211,715

EPOXY RESINS AND PROCESS FOR PRODUCING THE SAME

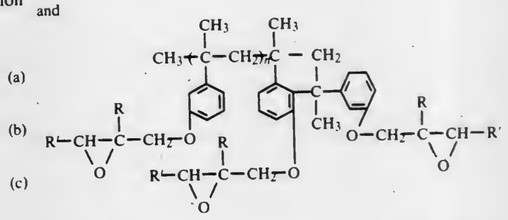
Shuichi Kanagawa, Osaka; Shinji Nakao, Sakai; Kiyoshi Nakai; Kunimasa Kamio, both of Toyonaka; Shunsuke Matsushima, Otsu; Kazuhiko Hata, Niihama, and Kentaro Mashita, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 26, 1978, Ser. No. 909,785
Claims priority, application Japan, May 27, 1977, 52-62407
Int. Cl.^{2} C07D *303/28*
U.S. Cl. 260—348.64 **2 Claims**

1. An epoxy resin of the formulae,



and



(a) (b) (c)

(d) wherein R and R′ are each a hydrogen atom or an alkyl group having 1 to 3 carbon atoms and n is a mean value satisfying the equation, $0<n\leqq 2$.

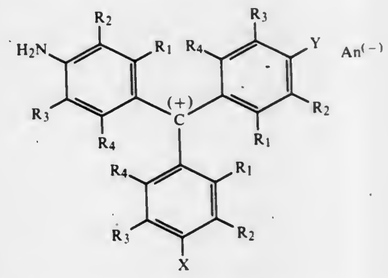
4,211,716

PROCESS FOR ISOLATING TRIARYLMETHANE DYESTUFFS

Karl H. Hermann, Leverkusen, and Hans-Lothar Dorsch, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 909,190
Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723774
Int. Cl.^{2} C09B *11/10, 11/22*
U.S. Cl. 260—391 **8 Claims**

1. In a process for preparing and isolating a dyestuff of the formula

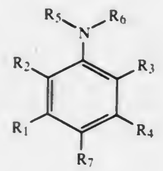


in which
R_1, R_2, R_3, and R_4, independently of each other, are hydrogen, alkyl, halogenoalkyl, halogen, alkoxy, alkylmer-

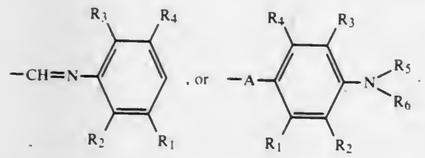
capto, alkylsulphonyl, alkoxysulphonyl, alkylcarbonyl, alkoxycarbonyl, nitro, or cyano;
X and Y, independently of each other, are



R_5 and R_6, independently of each other, are hydrogen, alkyl, halogenoalkyl, cyanoalkyl, cycloalkyl, aryl, or aralkyl; the adjacent substitutents
X and R_2, Y and R_2, NH_2 and R_2, and R_1 and R_2, in addition to the above definitions are, a 5-membered or 6-membered ring; and
$A^{(-)}$ is an anion;
said dyestuff being prepared by the reaction of 2 or 3 mols of identical or different amines of the formula



in which
R_1, R_2, R_3, R_4, R_5, and R_6 have the meaning indicated above
and
R_7 is hydrogen, methyl, halogenomethyl with 1-3 halogen atoms, hydroxymethyl, formyl,



wherein
A is CO, CH_2 or CH-R_8; and
R_8 is hydroxyl, C_1-C_4-alkoxy, amino, mono- or di-C_1-C_4-alkylamino, or halogen;
in the presence of an oxidizing agent and an oxidation catalyst at temperatures between 110° C. and 190° C. over a period of 4 to 24 hours, and under catalysis by mineral acids or Lewis acids, whereby the central C atom or the triarylmethane dyestuff is provided either by R_7 or one mol of an additional substance which provides the central C atom; the improvement in the isolation process comprising introducing the hot reaction melts obtained by this process at 0°-80° C. into a two-phase system consisting of water and an organic solvent, which is water-immiscible or is barely water-miscible and separating the dyestuff in a purified form.

4,211,717
MANUFACTURE OF ALKYL SILICATES
Harold G. Emblem, Mirfield; Anup K. Das, Bromley, and Kenneth Jones, Tyldesley, all of England, assignors to Zirconal Processes Limited, Bromley, England
Filed Mar. 23, 1979, Ser. No. 23,243
Int. Cl.[2] C07F *7/04*
U.S. Cl. 556—470 **20 Claims**

1. A method of manufacturing tetraalkoxysilane comprising the steps of:
preparing a reaction mixture comprising a catalytic solution, a silicon or silicide, and an alkanol,
maintaining a high thermal capacity in said reaction mixture by maintaining a large volume of catalytic solution relative to the silicon or silicide present in said reaction mixture,
raising the temperature of said reaction mixture and maintaining the temperature of said reaction mixture at a level effective to discharge tetraalkoxysilane as a vapour together with alkanol vapour and hydrogen gas.

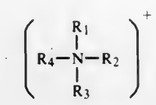
4,211,718
METHANATION PROCESS
Jack N. Finch, and Forrest L. Poska, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jul. 24, 1978, Ser. No. 927,080
Int. Cl.[2] C07C *1/04*
U.S. Cl. 260—449 M **9 Claims**

1. A process comprising contacting a sulfur-containing feedstream comprising carbon monoxide and hydrogen with a catalytically effective amount of a supported catalyst consisting of at least one of iridium and rhodium under methanation conditions and in the presence of a finite, effective, small amount of steam sufficient to increase methanation activity when said activity is affected by sulfur poisoning so that a predominant amount of carbon monoxide and hydrogen in the feedstream is converted to methane.

6. In a process comprising contacting a sulfur-containing feedstream of carbon monoxide and hydrogen with a supported catalyst consisting of at least one of iridium and rhodium under methanation conditions such that said carbon monoxide and hydrogen in said feedstream are converted to methane, and in which there is a loss of methanation activity caused by entry of sulfur into the feed and poisoning of said catalyst, the improvement for restoring methanation activity in situ of the sulfur-poisoned catalyst which comprises
contacting said sulfur-poisoned catalyst under methanation conditions with a sulfur-free feed of carbon monoxide and hydrogen in the presence of steam in an amount ranging from about 1 to about 30 mole percent of the synthesis feed for a period of time sufficient to substantially restore the activity of said catalyst and
continuing methanation by contacting said catalyst having restored methanation catalytic activity with carbon monoxide and hydrogen under methanation conditions such that a predominant amount of said carbon monoxide and hydrogen is converted to methane.

4,211,719
CATALYTIC PROCESS FOR POLYHYDRIC ALCOHOLS AND DERIVATIVES
Wellington E. Walker, Charleston; David R. Bryant, and Earle S. Brown, Jr., both of South Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.
Continuation of Ser. No. 877,589, Feb. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 712,152, Aug. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 488,139, Jul. 12, 1974, abandoned. This application Feb. 5, 1979, Ser. No. 9,352
Int. Cl.[2] C07C *27/06, 29/16*
U.S. Cl. 260—449 L **10 Claims**

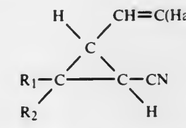
1. In the process of making alkane polyols which comprises reacting at a pressure of from 1000 psia to about 15,000 psia and a temperature of about 100° C. to about 375° C., a mixture consisting essentially of oxides of carbon and hydrogen in the presence of a quaternary ammonium cation and a rhodium carbonyl complex, said complex being provided to the reaction as a rhodium carbonyl cluster which possesses an infrared spectrum which exhibits three intense wavelength bands between about plus and minus 10 cm^{-1} of about 1868 cm^{-1}, about 1838 cm^{-1}, and about 1785 cm^{-1}, wherein the improvement comprises providing to the reaction mixture about 0.8 to about 2.5 moles of the quaternary ammonium cation for every six atoms of rhodium present in the reaction mixture, and said quaternary ammonium cation has the formula



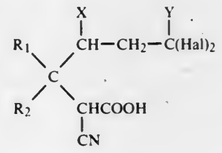
where R_1, RHd 2, R_3 and R_4 is a straight or branched chain alkyl having from one to 20 carbon atoms, a cycloaliphatic, aryl, alkylaryl or aralkyl group, or a polyalkylene ether group of the formula, $-(C_nH_{2n}O)_x-OR$, wherein n has an average value from 1 to 4, x has an average value from 2 to about 150, and R is hydrogen or alkyl having from 1 to 12 carbon atoms.

4,211,720
PREPARATION OF CYANO-SUBSTITUTED CYCLOPROPANE DERIVATIVES
Helena Austermühle-Bertola, Amsterdam, Netherlands, assignor to Shell International Research Maatschappij B.V., Netherlands
Filed May 30, 1978, Ser. No. 910,779
Int. Cl.[2] C07C *120/00, 121/48*
U.S. Cl. 260—464 **7 Claims**

1. A process for preparing cyano-substituted derivatives of general formula



wherein Hal represents a flourine, chlorine or bromine atom and R_1 and R_2 each independently represent an alkyl group of one to four carbon atoms, which comprises contacting a compound of general formula



wherein X and Y each independently represents a chlorine or bromine atom under anhydrous conditions with a base and a polar aprotic solvent at temperatures from about 100° C. to about 150° C.

4,211,721
PROCESS FOR THE PREPARATION OF AROMATIC NITRILES
Byron R. Cotter, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.
Filed Dec. 4, 1978, Ser. No. 966,433
Int. Cl.[2] C07C *120/04*
U.S. Cl. 260—465 G **6 Claims**

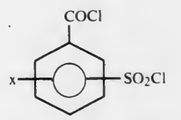
1. A method of producing aromatic nitriles which comprises the steps of reacting a nuclearly halogenated carbocyclic compound of the benzene or naphthalene series having from 1 to 4 halogen atoms substituents selected from the group of chlorine, bromine and iodine, to a temperature of at least 100° C. with potassium cyanide in the presence of a catalyst composition comprised of:
(a) an ether component selected from the group consisting of 18-crown-6 ether, polyethers, alkyoxypolyethers and mixtures thereof having a molecular weight between about 200 and about 25,000, and
(b) a palladium salt complex comprised of:
(1) a palladium salt selected from palladium iodide, chloride, bromide and mixtures thereof, and
(2) an organophosphine selected from the group consisting of alkyarylphosphines and triarylphosphines containing from about 8 to about 80 carbon atoms.

4,211,722
FORMALDEHYDE STABILIZATION OF ACRYLONITRILE AGAINST COLOR
Robert A. Smiley, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.
Filed Mar. 7, 1979, Ser. No. 18,405
Int. Cl.[2] C07C *120/14; 121/32*
U.S. Cl. 260—465.3 **10 Claims**

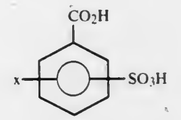
1. A process for stabilizing oxazole-containing acrylonitrile prepared by the ammoxidation of propylene against oxazole-induced color formation, comprising adding thereto an effective color-inhibiting amount of formaldehyde.

4,211,723
PROCESS FOR PRODUCING CHLOROSULFONYLBENZOYLCHLORIDE
Wataro Koike; Takahiro Kimoto, both of Shizuoka, and Sadayoshi Matsui, Shimizu, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 674,178, Apr. 6, 1976, abandoned. This application Jun. 20, 1978, Ser. No. 917,255
Claims priority, application Japan, Jun. 11, 1975, 50-70311; Nov. 19, 1975, 50-138988
Int. Cl.[2] C07C *63/14, 143/52*
U.S. Cl. 260—544 K **9 Claims**

1. A process for producing chlorosulfonylbenzoylchloride having the formula



wherein x is hydrogen, halogen, or nitro, which comprises reacting phosgene with an aromatic sulfocarboxylic acid having the formula



or an alkali metal salt or akaline earth metal salt thereof in the presence of 0.01-0.3 mole of dimethylformamide per mole of said aromatic sulfocarboxylic acid.

4,211,724

16-SUBSTITUTED PROSTAGLANDINS

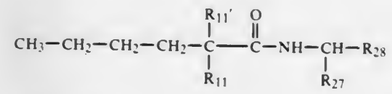
George W. Holland, North Caldwell; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 847,881, Nov. 2, 1977, which is a continuation-in-part of Ser. No. 745,257, Dec. 8, 1976, Pat. No. 4,112,225, which is a continuation-in-part of Ser. No. 683,576, May 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 480,458, Jul. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Jun. 19, 1979, Ser. No. 50,039

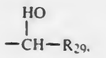
Int. Cl.[2] C07C *103/58, 103/34*

U.S. Cl. 260—562 B 6 Claims

1. Diastereomeric isomers of the formula



wherein R_{11} is fluoro, lower alkyl or trifluoromethyl; R_{11}' is hydrogen, fluoro or lower alkyl; with the proviso that R_{11} and R_{11}' are not the same substituents or n-butyl; R_{27} is



tolyl, naphthyl or phenyl or naphthyl or phenyl substituted with amino, nitro or halo; R_{29} is tolyl, phenyl or naphthyl substituted with halo, amino or nitro; R_{28} is $-CH_2R_{31}$; and R_{31} is hydrogen, lower alkyl, hydroxy or lower alkoxy.

4,211,725

NITROGEN CONTAINING COMPOSITIONS

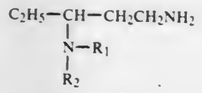
Edward W. Kluger, Pauline; Tien-Kuei Su, and Teresa J. Thompson, both of Spartanburg, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 850,456, Nov. 10, 1977. This application Dec. 7, 1978, Ser. No. 967,391

Int. Cl.[2] C07C *87/14*

U.S. Cl. 260—583 P 2 Claims

1. A nitrogen containing compound represented structurally as



wherein R_1 is H and R_2 is $C_2H_5-CH-CH_2-CH_2NH_2$.

4,211,726

SYNTHESIS OF SUBSTITUTED 9,10-ANTHRACENE-DICARBOXALDEHYDES AND 9,10-DIHYDRO-9,10-ANTHRACENEDICARBOXALDEHYDES

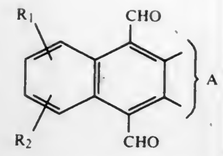
Yang-I Lin, Nanuet, and Stanley A. Lang, Jr., Stony Point, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 16, 1979, Ser. No. 12,678

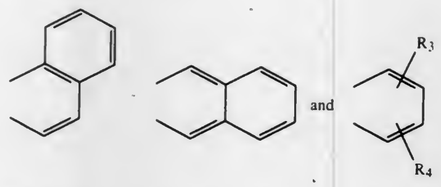
Int. Cl.[2] C07C *45/00*

U.S. Cl. 568—424 2 Claims

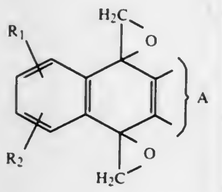
1. A process for the preparation of 9,10-anthracenedicarboxaldehydes of the formula:



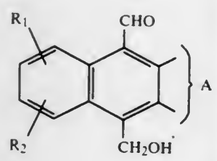
wherein A is a divalent moiety selected from the group consisting of those of the formulae:



and R_1, R_2, R_3 and R_4 are each individually selected from the group consisting-of hydrogen, halogen, hydroxy, nitro, amino, sulfonamido, alkyl having up to 4 carbon atoms and alkoxy having up to 4 carbon atoms which comprises rearranging a dispiro[oxirane-2,9'(10'H)-anthracene-10',2''-oxirane] of the formula:



wherein A, R_1, R_2, R_3 and R_4 are as hereinabove defined with lithium bromide, lithium perchlorate, boron trifluoride, magnesium bromide, trifluoroacetic acid or methanesulfonic acid in an aprotic organic solvent at 25°–74° C. in the dark for a period of time sufficient for a substantial degree of rearrangement to occur forming an intermediate 9-formyl-10-hydroxymethylanthracene of the formula:



wherein A, R_1, R_2, R_3 and R_4 are as hereinabove defined and oxidizing said intermediate with 2–8 mole equivalents of an oxidizing agent in an inert solvent at 0°–100° C. for a period of time sufficient for a substantial degree of oxidation to occur.

4,211,727

REDUCTION OF CARBOXYLIC ACID HALIDES TO ALDEHYDES

Ian D. Entwistle, Sittingbourne, and Robert A. W. Johnstone, Liverpool, both of England, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 15, 1979, Ser. No. 20,782

Int. Cl.[2] C07C *45/00*

U.S. Cl. 568—437 7 Claims

1. A process for the reduction of a carboxylic acid chloride to the corresponding aldehyde which comprises reducing the acid chloride using a complex of cadmium borohydride prepared by mixing a solution or suspension of a cadmium salt with a solution or suspension of sodium borohydride as the reducing agent and at a temperature in the range of from about 35° C. to 0° C.

4,211,728

METHOD OF PREPARING CARBON TETRACHLORIDE

Jean G. Guerin, Grenoble, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation-in-part of Ser. No. 598,739, Jul. 24, 1975, abandoned. This application Dec. 18, 1975, Ser. No. 642,186

Claims priority, application France, Jul. 29, 1974, 74 26228; Jan. 8, 1975, 75 00400

Int. Cl.[2] C07C *17/00*

U.S. Cl. 260—658 R 11 Claims

1. A method for preparing carbon tetrachloride of high purity from a crude mixture of lower aliphatic hydrocarbons or their chlorinated or oxygenated derivatives or mixtures of any of these which method includes the steps of

(i) chlorinating said crude mixture at a pressure between about 1 and 10 atmospheres and at a temperature lower than about 160°–200° C. with sufficient chlorine to form a perchlorinated product containing greater than 70% by weight chlorine,

(ii) heating said perchlorinated product at a temperature higher than 250° C. in the presence of excess chlorine to form a first vapor mixture,

(iii) admixing this first vapor mixture further with from 2 to 10 times its weight of the vapors of chlorinated products having the formula C_xCl_y wherein x is equal to not more than 6 and y is equal to not more than 12, to form a second vapor mixture,

(iv) chlorolyzing the second vapor mixture by heating it for at least two seconds at about 450°–600° C. in the presence of molybdenum pentachloride catalyst under a pressure of about 1 to 10 atmospheres, to convert about 9–33% by weight of the second vapor mixture to carbon tetrachloride,

(v) quenching the thus chlorolyzed vapor at about 50° C. to condense the unreacted high-boiling substances and to permit the carbon tetrachloride, gaseous hydrogen chloride and excess unreacted chlorine to pass on in the gaseous state, and

(vi) condensing and collecting the carbon tetrachloride.

4,211,729

COMPOSITIONS CONTAINING DIORGANOPOLYSILOXANES

Klaus Marquardt, Krailling, and Franz-Heinrich Kreuzer, Munich, both of Fed. Rep. of Germany, assignors to Consortium fur Elektrochemische Industrie, GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 25, 1977, Ser. No. 827,502

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1976, 2641201

Int. Cl.[2] C08L *43/04*

U.S. Cl. 525—106 13 Claims

1. A composition containing a diorganopolysiloxane and a copolymer derived from monomers consisting of at least ethylene and vinyl acetate in which the copolymer consists of from 30 to 40 percent by weight of units derived from ethylene, from 56.5 to 70 percent by weight of units derived from vinyl acetate and from 0 to 3.5 percent by weight of units derived from a monomer other than ethylene and vinyl acetate which is capable of being polymerized in the presence of a free radical initiator, said copolymer is prepared in the presence of the diorganopolysiloxane and is present in the composition in an amount of from 65 to 85 percent by weight based on the weight of the copolymer and the diorganopolysiloxane.

4,211,730

ACRYLATE-BASED POLYMERS AND COPOLYMERS AND THEIR USE AS FLAMEPROOFING AGENTS

Norbert Vollkommer, Troisdorf; Egon N. Petersen, Neunkirchen-Seelscheid; Herbert Klinkenberg, Troisdorf-Eschmar, and Werner Schmidt, St. Augustin-Niederberg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 697,190, Jun. 17, 1976, Pat. No. 4,128,709. This application Jul. 10, 1978, Ser. No. 923,425

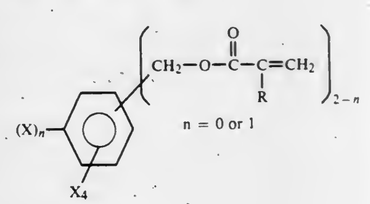
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1975, 2527802; Jun. 21, 1975, 2527803; Oct. 1, 1975, 2543746

The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.

Int. Cl.[2] C08F *18/00, 4/32;* C08L *67/06*

U.S. Cl. 260—45.75 B 12 Claims

1. An acrylate or methacrylate copolymer of a monomer having the following formula



(1)

n = 0 or 1

wherein

X is bromine or chlorine,

R is hydrogen or methyl.

4,211,731

FLUORENE PHOSPHONITES AND THIOPHOSPHONITES AS ANTIOXIDANTS FOR ORGANIC MATERIALS

Kurt Hofer, Münchenstein; Rudolf Moesch, Stein, and Guenther Tscheulin, Frick, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

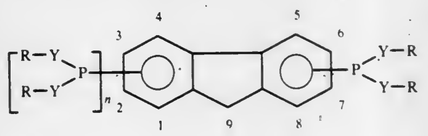
Filed Sep. 11, 1978, Ser. No. 941,300

Claims priority, application Switzerland, Sep. 16, 1977, 11352/77

Int. Cl.[2] C07F *9/48;* C08K *5/53*

U.S. Cl. 260—932 5 Claims

1. A compound of formula,



in which

each R, independently, is (C_{1-18})alkyl; unsubstituted phenyl; or phenyl substituted by 1 to 4 substituents selected from (C_{1-9})alkyl, chloro and bromo, with the provisos that: (1) the maximum number of alkyl substituents is three, said alkyl substituents having an aggregate of carbon atoms not exceeding 12; and (2) the maximum number of substituents selected from chloro and bromo is one;

each Y, independently, is oxygen or sulfur; and

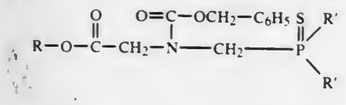
n is 0 or 1.

4,211,732
N-CARBOBENZOXY-N-PHOSPHINOTHIOYLMETHYLGLYCINE ESTERS

John E. Franz, Crestwood, and Robert J. Kaufman, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1978, Ser. No. 973,318
Int. Cl.[1] C07F 9/40; A01N 9/36
U.S. Cl. 260—938 9 Claims

1. A compound of the formula



wherein R is a member of the class consisting of alkyl of from 1 to 10 carbon atoms, chloroalkyl of from 1 to 4 carbon atoms and 1 to 3 chlorine atoms, alkoxyalkyl groups containing from 3 to 9 carbon atoms and each R′ is selected from the class consisting of alkoxy or alkylthio of from 1 to 6 carbon atoms, phenoxy, phenylthio and such phenoxy or phenylthio groups substituted with from 1 to 5 substituents selected from the class consisting of halo, methoxy and methyl.

4,211,733
GAS-LIQUID MIXING PROCESS AND APPARATUS

Shih-chih Chang, 1725 Davison Ave., Richland, Wash. 99352

Filed Dec. 26, 1978, Ser. No. 972,885
Int. Cl.[2] B01F 3/04
U.S. Cl. 261—36 R 8 Claims



1. A process for mixing gas with liquid in a vessel comprising process steps:

a. affecting an external circulating flow of said liquid in a flow conduit from an inlet of said flow conduit communicating with said liquid in said vessel;

b. admitting said gas to said circulating flow to affect entraining said gas into said flow conduit and forming a gas-liquid mixture therein;

c. separating said gas-liquid mixture into gas phase and liquid phase in a closed chamber disposed substantially below the liquid level of said vessel, thereby the pressure of the separated gas in said chamber being substantially higher than the gas pressure of said vessel;

d. injecting said separated gas of said chamber into said liquid body of said vessel by using the available high pressure of said chamber;

e. returning said separated liquid of said chamber to said liquid body of said vessel by a pump means to form at least one liquid jet stream in said vessel;

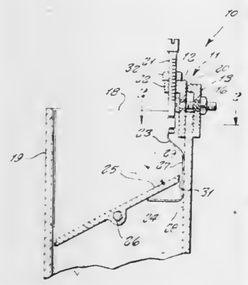
f. agitating said injected gas with said jet stream to accomplish an effective gas-liquid mixing action.

8. A vessel for containing said liquid and said gas, at least one flow conduit for guiding a external circulating flow of said liquid; the inlet of said flow conduit communicating with said liquid of said vessel and the outlet of said flow conduit extending to a predetermined depth below the liquid level of said vessel, a gas conduit communicating said gas of said vessel with said flow conduit for admitting gas to the flowing liquid to form a gas-liquid mixture in said flow conduit, a separating chamber connected to said outlet of said flow conduit for separating said gas-liquid mixture into gas phase and liquid phase, a pump means for circulating said liquid phase of said chamber to said vessel through a second flow conduit and at least one jet nozzle to generate at least one jet stream in said vessel, a second gas conduit communicating the gas space of said separating chamber with said liquid of said vessel at a predetermined depth for injecting said gas phase of said chamber to said liquid of said vessel; said liquid jet agitating said injected gas and thereby accomplishing an efficient gas-liquid mixing in said vessel.

4,211,734
AUTOMOTIVE ANTI-CHOKING DEVICE

Sheng-Hsiung Cheng, P.O. Box 17092, West Hartford, Conn. 06117

Filed Feb. 21, 1979, Ser. No. 13,562
Int. Cl.[2] F02M 1/10
U.S. Cl. 261—39 B 1 Claim



1. An automotive anti-choking device, comprising in combination, a clamp securable to a carburetor air intake pipe, a rotatable screw supported on said clamp, and stop means on said screw for abutting against one side of a pivotable chokeplate of said carburetor, so to limit pivotal travel thereof; said stop means comprising a thin strip of flat stiff steel secured rotatably free on said screw and which extends around an end edge of said chokeplate, and which is hook-shaped at its end to form a stop for said chokeplate, and a pair of oppositely extending, sideward wings on said strip for resting against an inner side of said pipe and prevent rotation of said strip; and said clamp comprising a pair of jaws adjustably held together by screws.

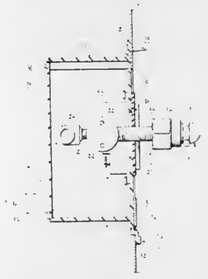
4,211,735
HUMIDIFIER NOZZLE MOUNTING

Gary L. Berlin, Manheim, Pa., assignor to Herrmidifier Company, Inc., Lancaster, Pa.

Filed Jan. 16, 1979, Ser. No. 3,888
Int. Cl.[2] B01F 3/04
U.S. Cl. 261—116 7 Claims

1. A humidifier for universal mounting on a furnace plenum to accommodate different plenum and duct shapes wherein the plenum has an opening in one wall thereof comprising a support adapted to be mounted on said wall adjacent to and overlying said opening in a selected one of four indexed positions relative to the opening, a separate mounting strip adapted to be

mounted on said wall across said opening and near and along one selected edge of the opening defining a longitudinal slot between an edge of said mounting strip and the adjacent one edge of said opening corresponding to the selected indexed position, cooperative means along one side of said support engagable through the slot forming a hinged connection between said wall and said support and enabling the support to be swung away from said wall in one direction while remaining attached thereto, a mounting portion connected substantially normal to and extending away from said support, a solenoid actuated valve, a humidifier nozzle rigidly connected to and

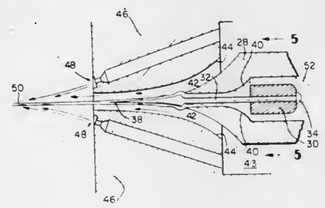


extending from said solenoid actuated valve through said support and said opening and into said furnace plenum, a water supply means coupled with said valve and extending exteriorly of said support, selectively adjustable and lockable rotational connection means between said mounting portion and said solenoid actuated valve through which the angle of said humidifier nozzle is adjusted in a plane normal to said support by rotation of said solenoid actuated valve and locked in selected angular positions relative to said support for optimum efficiency of the humidifier nozzle inside the plenum in the selected indexed position.

4,211,736
PROCESS FOR FORMING AND TWISTING FIBERS

Rexford H. Bradt, Warsaw, Ind., assignor to Albert L. Jeffers, Fort Wayne, Ind., a part interest

Continuation of Ser. No. 608,881, Aug. 29, 1975, abandoned, and Ser. No. 440,983, Feb. 11, 1974, Pat. No. 3,920,362, which is a continuation of Ser. No. 301,611, Oct. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 96,305, Dec. 9, 1970, abandoned. This application Jan. 31, 1977, Ser. No. 763,890
Int. Cl.[2] B22D 23/08
U.S. Cl. 264—8 26 Claims



1. The method of forming fibers from a flowable thermoplastic fiber forming material comprising the steps of:

(a) feeding the flowable fiber forming material onto the outer surface of at least one spinning element which tapers inwardly to a terminal point in one axial direction,

(b) establishing the flow of the fiber forming material along and substantially encasing the outer surface of the spinning element,

(c) sweeping the fiber forming material with a flow of a heated fluid adjacent to and along the surface of the tapered spinning element toward its terminal point,

(d) spinning the fiber forming material from the terminal point of the spinning element into uncongealed fibers under the continued influence of the sweeping fluid,

(e) attenuating the uncongealed fibers under the continued influence of the sweeping fluid, and

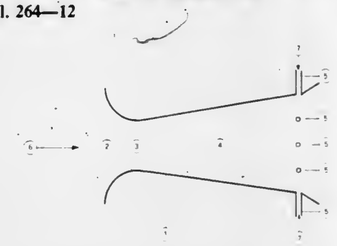
(f) cooling the uncongealed fibers to stabilize and form a uniform suspension in the sweeping fluid, and

(g) collecting the congealed fibers.

4,211,737
PROCESS FOR PRODUCING SYNTHETIC FIBERS FOR USE IN PAPER-MAKING

Giovanni Di Drusco, Milan, and Deoscaride Zaffagnini, S. Biagio, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 754,639, Dec. 27, 1976, abandoned, which is a continuation of Ser. No. 633,116, Nov. 18, 1975, abandoned. This application Oct. 31, 1977, Ser. No. 847,172
Claims priority, application Italy, Nov. 19, 1974, 29594 A/74
Int. Cl.[2] B22D 23/08
U.S. Cl. 264—12 7 Claims



1. Process for preparing fibrils or microfibers of synthetic polymers, suitable for use in the manufacture of paper, in which solutions, emulsions or dispersions of fiber-forming thermoplastic polymers in a liquid medium are extruded through a nozzle under conditions such that instantaneous vaporization of the liquid medium occurs in the ambient of extrusion, and are caused to be impacted, in said ambient of extrusion, by a highspeed gaseous fluid jet having an angular direction with respect to the extrusion direction of such solution, emulsion or dispersion, characterized in that said fluid is initially made to expand through a convergent-divergent nozzle of the DeLaval type, and in that the polymeric solution, emulsion or dispersion is extruded into the divergent portion of such convergent-divergent nozzle.

4,211,738
LIGHTWEIGHT AGGREGATE

Gerhard Genis, P.O. Box 12178, Benoryn, South Africa (1504)

Filed Jul. 25, 1977, Ser. No. 818,547
Int. Cl.[2] B01J 2/12
U.S. Cl. 264—44 6 Claims



1. A method of making a lightweight aggregate for preparing lightweight concrete comprising the steps of:

(a) providing a bed of a ground, powdered sand and cement

(b) coating nucleus particles selected from the group consisting of expanded plastics material, combustible vegetable material and coal having a diameter between about ¼″ to

about 1 3/16" with an adhering agent selected from the group consisting of molasses, aqueous starch suspension, and water;

(c) introducing said coated nucleus particles into said bed of powdered sand and cement and rolling said nucleus particles in said bed to cause accretion of said sand and cement mixture upon said nucleus particles to form a layer on said wetted particles.

(d) removing said coated particles from said ground mixture and;

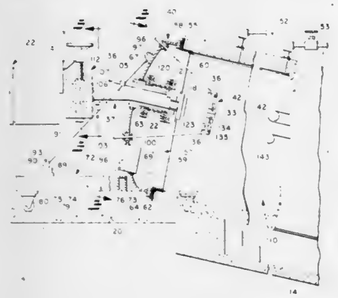
(e) allowing said coated particles to dry causing said cement to cure to form said lightweight aggregate.

4,211,739

FOAM EXTRUSION APPARATUS AND METHOD

Arthur L. Phipps, Los Osos, Calif., assignor to Condec Corporation, Old Greenwich, Conn.

Filed Jul. 10, 1978, Ser. No. 922,542
Int. Cl.² B29D *27/00*; B29F *3/02*
U.S. Cl. 264—51 **53 Claims**



1. In a method of extruding a foamable material into a vacuum chamber comprising the steps of mounting an extruder, a die, and a closure for such chamber therebetween for movement toward and away from such chamber, moving said extruder, die and closure as a unit or separately toward such chamber to close the same, creating a vacuum in such chamber, and extruding such foamable material through the die into the chamber for expansion therein.

4,211,740

FUEL PELLETS AND PROCESS FOR PRODUCING FUEL PELLETS FROM BOTANICAL MATERIALS

John J. Dean, 1888 Scot Rd., and Lloyd M. Wetzig, 465 N. 22nd St., both of Springfield, Oreg. 97477

Continuation of Ser. No. 590,511, Jun. 26, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,990
Int. Cl.² B29C *19/02*
U.S. Cl. 264—68 **1 Claim**

1. A process for producing pelletized fuel from aboreal material having a moisture content in its preprocessed form substantially in excess of 12 percent, said material being selected from the group consisting of tree bark and wood fibers, including the steps of:

(a) drying the material to be processed to a moisture content of approximately 12 percent;

(b) grinding the dried material to a size sufficiently small to pass through a screen having openings no greater than 0.95 cm.;

(c) pre-heating the dried and ground material to within the range of 93° C. to 121° C. but limiting the preheating and drying so as to preclude the material from reaching the flash point in the subsequent compaction and extrusion of the material;

(d) continuously passing the dried, ground and preheated material through an extrusion die of a pelletizing mill having passageways whose diameter is approximately 0.635 cm.;

(e) rotating said mill to cause compaction and extrusion of the material into and through the extrusion dies and thereby creating sufficient compression and friction to generate heat sufficient to heat the in situ resin and thermoplastics throughout the mass of extruded material to a plasticized state;



(f) cooling the extruded material so that it will be relatively rigid; and

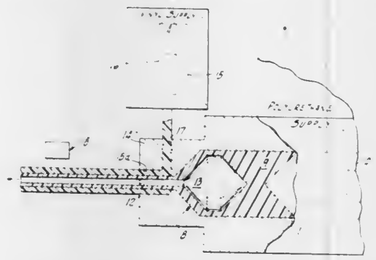
(g) breaking the extruded and cooled material into random lengths to form pellets.

4,211,741

EXTRUSION PROCESS FOR LAMINATED MEDICAL-SURGICAL TUBING

Eli Ostoich, Greenfield, Wis., assignor to Sunlite Plastics, Inc., Milwaukee, Wis.

Division of Ser. No. 785,440, Apr. 7, 1977, abandoned. This application Feb. 8, 1978, Ser. No. 875,929
Int. Cl.² B29F *3/10*
U.S. Cl. 264—173 **5 Claims**



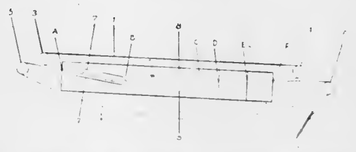
1. The method of forming a non-migratory medical-surgical tubing including a first tube of a first thermoplastic intimately secured onto a second tube of a second thermoplastic, said first and second thermoplastics having distinctly different curing temperatures and the lower temperature cured thermoplastic being adversely effected by the temperature of the higher temperature cured thermoplastic, comprising separately heating said first and second thermoplastics to the corresponding curing temperatures, simultaneously extruding the heated first and second thermoplastics at essentially said temperatures in an extruding apparatus, and cooling the extruded laminated tubing as it emerges from the extruding apparatus for said extruding.

4,211,742

PROCESS FOR THE CONTINUOUS CASTING OF LIQUID POLYMERIZABLE COMPOSITIONS

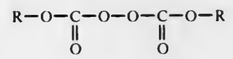
Yasuyuki Kato, and Masahiko Moritani, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 28, 1977, Ser. No. 865,180
Int. Cl.² B29D *7/02*
U.S. Cl. 264—216 **12 Claims**



1. A process for the continuous casting of liquid polymerizable compositions, which comprises:

continuously feeding a liquid polymerizable composition, which is prepared by dissolving a polymerization initiator of the formula:



wherein R is an alkyl or alkoxyalkyl group having 4 to 10 carbon atoms, in a syrup of methyl methacrylate having a polymer content of 15 to 35% by weight, into a space enclosed with a pair of upper and lower moving endless belts and continuous gaskets between the belts, both of said belts travelling in the same direction at the same speed and said gaskets being arranged at each side of the belt in opposed relationship and travelling in intimate contact with said belts,

driving or running the belts through a hot-water polymerization zone, during which the liquid polymerizable composition becomes polymerized, wherein both the amount of the initiator, expressed in parts by mole based on 100 parts by weight of the syrup, and the temperature in °C. of the zone are present within the region enclosed with the straight lines passing successively through the five points in FIG. 1, said points being I (2×10^{-5}, 90), II (1.5×10^{-3}, 90), III (1.5×10^{-3}, 60), IV (1.8×10^{-4}, 60) and V (2×10^{-5}, 85),

driving or running the belts through a heat treatment zone, during which the polymerization is completed,

and then removing the resulting plate-like polymer article at the other end of the moving belts.

4,211,743

APPARATUS AND METHOD FOR EMBOSSING WEB MATERIAL

Jan P. Nauta, New Britain, and Jacob J. Kos, Plainville, both of Conn., assignors to Nauta Roll Corporation, Kensington, Conn.

Filed May 24, 1978, Ser. No. 909,013
Int. Cl.² B29C *17/00*
U.S. Cl. 264—284 **16 Claims**

1. In an apparatus for embossing a thermoplastic web material and including a first embossing member having a resilient embossing surface providing a primary embossing pattern of a first depth; a second embossing member having a resilient surface providing a secondary embossing pattern of a lesser depth than said first depth of said primary embossing pattern; means mounting said first and second embossing members for relative movement to define a roll nip therebetween; means to pass a heated thermoplastic web material through said nip to form an embossed pattern thereon, the improvement wherein said resilient surface of said first embossing member has a hardness of about 50 to 85 durometer on the Shore A scale and is at least about 5 durometer on the Shore A scale harder than said resilient surface of said second embossing member, the resilient surface of said second member having a hardness of about 45 to 80 durometer on the Shore A scale and said roll nip exerting sufficient pressure to temporarily deform both said resilient surfaces thereat, the associated web material being pressed in said nip between said resilient surfaces into surface-conforming contact with said first embossing member and



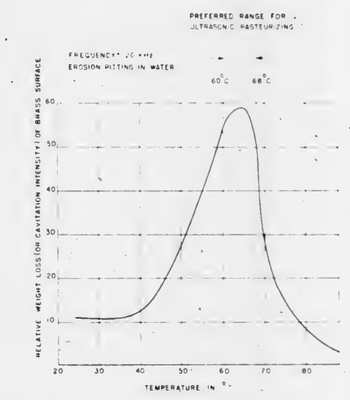
remaining in contact with said primary embossing pattern thereof upon passage from said nip; and means for stripping the associated web material from said primary embossing pattern of said first embossing member at a point spaced from said nip in the direction of rotation of said first embossing member.

4,211,744

PROCESS FOR ULTRASONIC PASTEURIZATION

Raymond M. G. Boucher, New York, N.Y., assignor to Biophysics Research & Consulting Corporation, New York, N.Y.

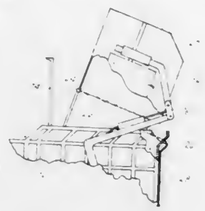
Filed May 24, 1978, Ser. No. 908,964
Int. Cl.² A61L *1/00*
U.S. Cl. 422—20 **10 Claims**



1. A method for pasteurizing, decontaminating, or disinfecting medical, dental, and surgical instruments or other objects in liquid phase without the use of chemosterilants consisting essentially of placing said objects in a hot aqueous solution at a temperature of from 58° to 68° C. for a time of from about 15 to 20 minutes while creating at the same time an ultrasonic field having an acoustic energy density from about 5 to about 55

watts per liter and an ultrasonic frequency below about 150 kHz in said aqueous non-chemosterilant solution.

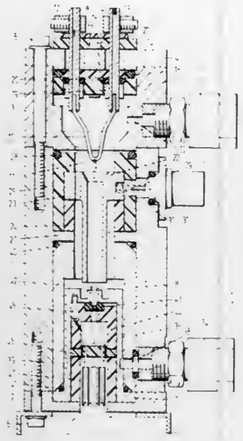
4,211,745
REFUSE CONTAINER SPRAYER
Leroy Boyd, 1932 Texas Ave., Lubbock, Tex. 79405
Filed Jun. 24, 1976, Ser. No. 699,534
Int. Cl.[2] **A61L** *3/02, 11/00;* **B08B** *3/00;* **B65F** *3/02*
U.S. Cl. 422—28 **2 Claims**



1. In a solid refuse gathering system including
a. a refuse container, and
b. a truck having thereon
(i) a refuse containing body and
(ii) arm means for picking up the refuse container and inverting it over the body, thus dumping the contents of the container into the body,
c. said container having a hinged lid thereon;
d. the improved method of spraying the container comprising the steps of:
e. spraying the interior of the container while it is inverted over the truck after the contents of the container have been dumped,
f. timing the spraying operation to coincide with a period of time when the lid of the container is open because of the inverted position of the container,
g. the spray contains a rust preventive lubricant for the hinge on the lid of the container.

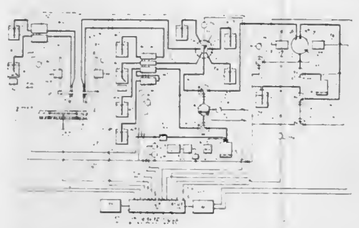
4,211,746
FLAME IONIZATION DETECTOR
Rudolf A. Mees, Nieuwkoop, Netherlands, assignor to WTI Wetenschappelijk Technische Instrumentatie B.V., 's-Gravenzande, Netherlands
Filed Mar. 28, 1978, Ser. No. 890,929
Claims priority, application Netherlands, Apr. 1, 1977, 7703583
Int. Cl.[2] **G01N** *27/62, 31/12*
U.S. Cl. 422—54 **10 Claims**

1. A flame ionization detector comprising:
a housing having an upper portion and a lower portion;
an electrically-conductive burner disposed within the housing and having a hairpin-shaped bend formed therein;
a first electrode, the first electrode comprising the electrically-conductive burner;
an aperture disposed in the hairpin-shaped bend of the burner;
means for supplying fuel gas and for feeding materials to be investigated to the burner and for causing the fuel gas and the materials to issue from the aperture;
a second electrode adjacent the aperture;
a lead electrically connected to the second electrode and passing in an electrically-insulated manner through a wall of the housing to provide access external to the housing of a signal collected at the second electrode;
an air supply conduit to supply air to the burner;
a discharge conduit coupled to the housing for discharging air and waste products therefrom;
means adapted for providing a flow of current through the burner to cause the burner to incandesce and to ignite the fuel gas to provide a flame on the burner; and



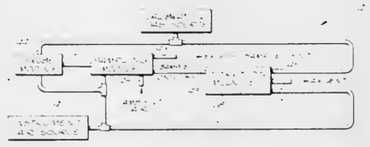
means adapted for applying a voltage differential between the first electrode and the second electrode.

4,211,747
SYSTEM FOR MEASURING RADIOACTIVITY OF LABELLED BIOPOLYMERS
Valery N. Gross, ulitsa Poddubnogo, 6, Alma-Ata, U.S.S.R.
Filed Aug. 22, 1977, Ser. No. 826,664
Claims priority, application U.S.S.R., Aug. 23, 1976, 2398268; Sep. 1, 1976, 2419312
Int. Cl.[2] **G01N** *33/16, 1/14*
U.S. Cl. 422—81 **16 Claims**



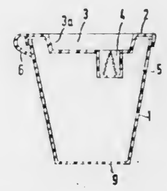
1. A system for measuring radioactivity of labelled biopolymers, comprising:
a set of containers adapted for receiving aqueous solutions of biological samples containing biopolymers which are subsequently precipitated in said containers on particles of diatomite in the presence of a coprecipitator, then filtered, dissolved, and mixed with a scintillator;
radioactivity measuring means including a detection chamber to which is fed the mixture produced in said set of containers;
an electric drive for moving said set of containers in a stepwise manner;
means for proportioned feeding of said coprecipitator and a suspension of diatomite in an acid solution to said containers which contain the biological sample for forming an acid precipitation of bipolymers;
means for the removal of precipitated samples from said containers;
precipitated biopolymer filtering means for successively filtering the precipitate, suspending the precipitate, dissolving the biopolymers mixed with said scintillator for feeding of the mixture to said detection chamber;
a system of pipelines interconnecting said above-recited means; and said means for measuring radioactivity of labelled biopolymers including,
a measuring cell arranged in a detection chamber and communicating with said means for filtering precipitated biopolymers through one pipeline of said system of pipelines;
a program unit electrically connected to said electric drive, said means for acid precipitation of biopolymers, said means for the removal of precipitated samples from said containers, said filtering means, and said radioactivity measuring device; said program unit adapted to periodically switch on and off the above-recited means and check the sequence of the radioactivity measuring operations; and
a control unit for controlling the initiation of the system and for selecting programs, said control unit being electrically coupled to said program unit, said electric drive, said means for acid precipitation of biopolymers, said means for the removal of precipitated samples from said containers, said means for filtering precipitated biopolymers, and said radioactivity measuring device whereby said means for forming an acid precipitation of biopolymers is activated by initiation of said program unit so that said coprecipitator and suspension of dialomite in an acid solution are proportionately fed to said biological sample containing container to form said precipitate samples at which time said program unit activates said electric drive for moving said set of containers in a stepwise manner, whereupon said precipitate samples are removed from said containers by said removal means and transferred through said pipeline system to said precipitated biopolymer filtering means whereupon the precipitate is filtered, suspended, dissolved in a solvent, and mixed with said scintillator, whereupon the biopolymer containing suspension is conducted to said measuring cell whereupon the radioactivity thereof is measured.

4,211,748
STACK GAS ANALYZER AND THERMAL OXIDATION DEVICE THEREFOR
Arthur L. Vincent, Monrovia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jan. 23, 1978, Ser. No. 871,195
Int. Cl.[2] **G01N** *31/16, 31/06*
U.S. Cl. 422—90 **4 Claims**



1. A stack gas analyzer for connection from a recovery stack, said stack gas analyzer comprising: first means including a first outlet for producing a flow of a dehydrated mixture of the gases flowing in said recovery stack, said dehydrated mixture including sulfur dioxide, total reduced sulfur (TRS), and oxygen remaining after combustion utilizing an oxygen rate a few percent in excess of the stoichiometric rate; a scrubber having an inlet and an outlet, said scrubber inlet being connected from said first outlet to receive said dehydrated mixture, said scrubber having a composition to remove sulfur dioxide from said dehydrated mixture without removing the said TRS, said scrubber outlet having a flow therethrough of a TRS sample mixture the same as said dehydrated mixture except for the removal of sulfur dioxide therefrom and including at least some of said oxygen; a coulometric titrator having a cell including an inlet and an outlet, and having second means to produce an electrical output signal proportional to the concentration of sulfur dioxide in an oxidized gas mixture passing through said cell from said cell inlet to said cell outlet; a conduit connected from said scrubber outlet to said cell inlet, said conduit having a flow of said TRS sample therein; and third means to heat said TRS sample in said conduit to a predetermined temperature such that said TRS is oxidized to sulfur dioxide.

4,211,749
LIQUID CONTAINER FOR URINE COLLECTION
Hans-Joachim Kantner, Fichtwenweg 5, D-6072 Dreieichenhain, Fed. Rep. of Germany
Filed Dec. 16, 1976, Ser. No. 751,157
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2556636
Int. Cl.[2] **G01N** *33/16, 1/10;* **E03D** *13/00*
U.S. Cl. 422—102 **34 Claims**



1. A stackable beaker for laboratory purposes, particularly a urine container, having a cover which is provided in the vicinity of its edge with a spout, said cover on its outward side, from which said spout is projecting, having a surface corresponding generally in size and shape to the beaker jacket edge area near the beaker base to facilitate nesting and stacking of one beaker on top of another beaker when the beakers are closed by the covers thereof, the spout in the stacking position being contained in a chamber provided on said cover or said beaker base, and means being provided for releasably fixing the angular association of beakers stacked or stored, respectively, over each other.

4,211,750
BRUSH AND DEODORANT HOLDER
Dorie Gillespie, 507 E. Taber, Fort Wayne, Ind. 46803
Filed Feb. 1, 1979, Ser. No. 8,593
Int. Cl.[2] **A61L** *3/00, 9/04*
U.S. Cl. 422—123 **6 Claims**



1. A brush and deodorant holder comprising a base, a wall defining an elongated chamber for receiving the brush, said chamber having a lower end removably supported by said base in upwardly extending relation therefrom, said base having a cavity therein for receiving an air freshner substance; the lower end of said chamber having an opening therein providing communication between said cavity and said chamber; passage means on said wall for providing a contained vapor flow exteriorly of said chamber from said cavity to the upper portion of said wall; and a cap removably supported on said wall at the upper end of said chamber and having an opening

therein for receiving and supporting a brush handle, said cap having vent openings in communication with said passage means; said base having vent openings in communication with said cavity whereby a flow path is provided for ambient air through said base vent openings to said cavity, through said passage means, and outwardly through said cap vent openings.

4,211,751

USE OF AN APPARATUS FOR CONTINUOUS PHOTOPOLYMERIZATION

Berthold Keggenhoff; Eberhard Bandtel, and Hans J. Rosenkranz, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,826

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709606

Int. Cl.² B01J *1/10;* **C08F** *2/48*

U.S. Cl. 422—134 **5 Claims**



1. An apparatus for the continuous photopolymerisation of ethylenically unsaturated monomeric liquids, comprising at least one reactor, each reactor comprising an elongated vertically disposed glass cylinder having an inlet and an outlet at opposite ends thereof forming a straight liquid path therebetween, a heat exchanger located within the cylinder, along the straight liquid path, means for feeding liquid into the reactor under pressure, irradiating means disposed around the exterior of the cylinder adapted to irradiate the interior of the cylinder with light all along the straight liquid path from the inlet to the outlet to initiate photopolymerisation of material within the cylinder and stirring means disposed within the cylinder along the straight liquid path to continuously bring different molecules of the liquid into contact with the light during the travel thereof along the liquid path.

4,211,752

HINGED LOAD DUMPING DOOR FOR MULTI-CELL EXTRACTORS

Arthur F. Saxon, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Jun. 16, 1978, Ser. No. 916,205

Int. Cl.² B01D *11/00*

U.S. Cl. 422—268 **6 Claims**



5. A bottom door for use with a multi-cell continuous rotary extractor where a continuous succession of cells which are wider at one end than the other, being of trapezoidal shape, with a door at the bottom of each cell of substantially corresponding size and shape is hinged along one edge with respect to the following cell of the series whereby it may swing in a vertical arc to open and close the door, and there is a concentric track alongside the wider ends of the cells of the series and there is a roller on the wider end of the door positioned to roll on and be supported by said track when there is relative movement between the cells and the track, the track having a gap to allow each door to swing downwardly to dump the contents of the cell when its roller loses the support of the track as its encounters the gap, the invention wherein: the door has a rigid peripheral frame of trapezoidal shape having hinge points adjacent each end of one side thereof cooperating with fixed hinge points along the corresponding edge of the cell, the door frame supporting the edges of a bottom panel forming the bottom closure of the cell against which the frame is fitted, said frame characterized by a rigid structural member secured to the underside of the frame and extending diagonally of the frame from that corner of the narrower end of the frame where it joins the hinged side of the frame to the opposite corner in such position as to constitute the common hypotenuse of two opposed complementary triangles of unequal areas, the larger of which is bounded other than by the hypotenuse by the length of the hinged side frame member and the longer of the end frame members.

4,211,753

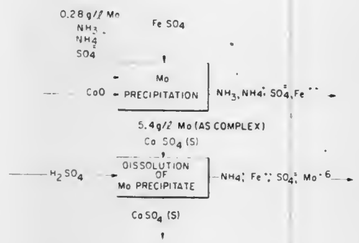
RECOVERY OF MOLYBDENUM VALUES FROM DILUTE SOLUTIONS

J. Paul Pemsler, Lexington, and John K. Litchfield, Bedford, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,158

Int. Cl.² C01G *39/00*

U.S. Cl. 423—54 **12 Claims**



1. A process for concentrating the molybdenum values in an aqueous ammoniacal leach liquor, said process comprising the steps of:

A. adding ferrous ions to the liquor in sufficient quantities to saturate the leach liquor and provide an excess sufficient to precipitate a solid complex whose approximate Fe/Mo ratio is 3.5 or greater and precipitating the molybdenum values therein as a ferrous hydroxide ammonium molybdate complex;

B. separating the molybdenum containing precipitate from the aqueous liquor; and

C. adding acid to the separated molybdenum containing precipitate to resolubilize the molybdenum values.

4,211,754

PROCESS FOR THE PRODUCTION OF A TANTALUM AND NIOBIUM BEARING CONCENTRATE FROM A TANTALUM AND NIOBIUM BEARING FERRO-ALLOY

Michel C. F. Van Hecke, Aartselaar, and Jean Deweck, Brussels, both of Belgium, assignors to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Filed Oct. 13, 1978, Ser. No. 951,113

Claims priority, application Luxembourg, Oct. 19, 1977, 78341

Int. Cl.² C01G *33/00, 35/00*

U.S. Cl. 423—62 **9 Claims**

1. In a process for the production of a tantalum and niobium bearing concentrate from a tantalum and niobium bearing ferro-alloy containing tantalum and niobium as carbide, by treating the ferro-alloy in molten state with a controlled amount of an oxidizing agent in order to slag at least most of the tantalum and at least part of the niobium and by separating the so obtained slag phase from the metal phase, the improvement which comprises using air, oxygen enriched air or oxygen as oxidizing agent and adjusting the iron content of the ferro-alloy by adding at least 70% by weight of iron prior to the step of forming the slag so that at least most of the tantalum carbide is dissolved in the molten ferro-alloy.

4,211,755

PROCESS FOR BENEFICIATING TITANIFEROUS ORES

Wendell E. Dunn, Jr., 68 Arthur St., Sidney, Australia

Continuation-in-part of Ser. No. 351,554, Apr. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 138,467, Apr. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 4,563, Jan. 21, 1970, abandoned. This application Mar. 3, 1975, Ser. No. 554,456

Int. Cl.² C01G *23/04*

U.S. Cl. 423—74 **1 Claim**

1. A process for beneficiating titaniferous ores into a substantially pure titanium dioxide product comprising:

(a) continuously subjecting, in a gas-solids reactor with chlorine under fluidizing conditions and at a temperature of 900°-1100° C., a reactor bed mixture of 10-30%, by weight, of carbon and a particulate titaniferous ore wherein said particulate titaniferous ore is a mixture comprising (i) a larger particle size fraction having up to 90%, by weight, of titaniferous ore particles having a gangue content of up to 5%, by weight, and having particle size of −60 to +120 mesh and (ii) a smaller particle size fraction having up to 90%, by weight, of titaniferous ore particles having a gangue content of at least 7%, by weight, and a particle size of −120 to +200 mesh, wherein the amount of titanium values in said smaller sized fraction is equal to or less than the amount of titanium required to replace the iron values in said larger size fraction;

(b) continuously withdrawing a portion of the reactor bed and separating said withdrawn portion into the substantially pure titanium dioxide product containing 3 to 4%, by weight, of gangue and a partially beneficiated titaniferous ore product, recycling to the reactor said partially beneficiated titaniferous ore product mixed with sufficient fresh reactor bed mixture to maintain a constant reactor bed depth whereby the smaller particle size fraction is converted within the reactor bed to form vaporized iron chloride and titanium tetrachloride and freeing gangue associated with said smaller particle size fraction and said titanium tetrachloride reacts with the larger particle size ore thereby replacing iron values in said larger particle size titaniferous ore with titanium values and forming thereby vaporized iron chloride; and

(c) withdrawing freed gangue and vaporized iron chloride.

4,211,756

SYNTHESIS OF ZEOLITE S

George C. Johnson, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,068

Int. Cl.² C01B *33/28*

U.S. Cl. 423—118 **4 Claims**

1. A process for preparing crystalline aluminosilicate zeolite S comprising reacting in a suitable Pyrex flask an aqueous solution of sodium carbonate and sodium bicarbonate with glass having from about 81% SiO_2, about 1 to 4% alumina, about 13% B_2O_3 and about 4% Na_2O wherein the temperature is controlled at from about 80 to about 120° C. and the time required for synthesis varied from 24 to 168 hours and wherein the glass is supplied solely from said flask.

4,211,757

ACTINIDE SULFITE TETRAHYDRATE AND ACTINIDE OXYSULFITE TETRAHYDRATE

George W. Watt, Austin, Tex., and Daniel W. Baugh, Jr., Baton Rouge, La., assignors to Exxon Nuclear Company, Inc., Bellevue, Wash.

Continuation of Ser. No. 673,733, Apr. 5, 1976, abandoned, which is a division of Ser. No. 579,494, May 21, 1975, Pat. No. 4,012,489. This application Sep. 6, 1977, Ser. No. 830,751

Int. Cl.² C01G *56/00, 43/00*

U.S. Cl. 423—251 **4 Claims**

1. A compound comprising an actinide sulfite tetrahydrate selected from the group consisting of uranium (IV) sulfite tetrahydrate and plutonium (IV) sulfite tetrahydrate.

3. A compound comprising an actinide oxysulfite tetrahydrate selected from the group consisting of uranium (IV) oxysulfite tetrahydrate and plutonium (IV) oxysulfite tetrahydrate.

4,211,758

CERAMIC COMPOSITIONS AND ARTICLES PREPARED THEREFROM

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 26, 1978, Ser. No. 973,332

Int. Cl.² C04B *35/50, 35/44*

U.S. Cl. 423—263 **11 Claims**

1. An article of manufacture comprising a high density polycrystalline body substantially transparent to visible light, said body consisting essentially of a compound having a perovskite structure and the formula:

$$ABO_3$$

wherein A is selected from the group consisting of lanthanum, cerium, praseodymium, neodymium and mixture thereof and B is selected from the group consisting of aluminum, scandium, lutecium and mixture thereof.

4,211,759

HIGH-DENSITY SODIUM PERBORATE AND METHOD OF PREPARATION

Paul Mollard, Sainte-Foy-les-Lyon, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 852,750, Nov. 18, 1977, abandoned, which is a continuation of Ser. No. 678,205, Apr. 19, 1976, abandoned, which is a continuation of Ser. No. 468,878, May 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 217,039, Jan. 11, 1972, abandoned. This application Mar. 12, 1979, Ser. No. 19,614

Claims priority, application France, Jan. 13, 1971, 71.00900

Int. Cl.² C01B *15/12*

U.S. Cl. 423—281 **18 Claims**

1. The method for preparing granules of sodium perborate $NaBO_2.H_2O_2.3H_2O$ characterized by approximately spherical shape having apparent density between about 0.74 and 0.83 Kg/liter, having an average granule size between about 380

and 440 microns and having superior resistance to abrasion and impact, wherein in the absence of stabilizers like alkaline metal silicates, the method comprises seeding an aqueous solution free from residual surfactants with sodium perborate, introducing into said aqueous solution (a) hydrogen peroxide, (b) sodium metaborate, and (c) a surface active anionic composition containing at least one sulfate and/or sulfonate group bonded to at least one hydrocarbon chain having 2 to 22 carbon atoms and of a sufficient hydrophobicity to impart surfactant properties to the composition and to cause the crystallization of the sodium perborate, and separating said granules from the aqueous solution to produce the granules of sodium perborate and the mother liquor.

16. A method of preparing granules of sodium perborate, $NaBO_2.H_2O_2.3H_2O$, characterized by approximately spherical shape, an apparent density between about 0.74 and 0.83 Kg/liter, an average granule size between about 380 and 440 microns and a superior resistance to abrasion and impact, which method comprises

(a) preparing a supersaturated aqueous solution of sodium perborate $NaBO_2.H_2O_2.3H_2O$ without the presence of surfactants;

(b) then adding to said supersaturated solution, an effective amount of a surface active anionic composition containing at least one sulfate and/or sulfonate group bonded to at least one hydrocarbon chain having 2 to 22 carbon atoms and sufficient hydrophobicity to impart surfactant properties thereto and causing crystallization of the sodium perborate granules in the presence of the anionic surfactant in the absence of stabilizers like alkaline metal silicates, and separating the granules from the water to recover the granules and mother liquor.

4,211,760

CRYSTALLINE ZEOLITE UPSILON AND PROCESS FOR PREPARING SAME

Robert W. Grose, Mahopac, and Edith M. Flanigen, White Plains, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 432,137, Jan. 10, 1974, abandoned. This application Mar. 6, 1979, Ser. No. 18,074

Int. Cl.[2] **C01B** *33/28*

U.S. Cl. 423—328 **4 Claims**

1. A synthetic crystalline zeolitic molecular sieve having a composition expressed in terms of mole ratios of oxides as follows:

$$0.9\pm0.1M_{2/n}O:Al_2O_3:2.4\text{-}3.4SiO_2:0\text{-}4.5H_2O$$

wherein "M" is at least one or a mixture of two or more of hydrogen, ammonium or metal cations having a valence of "n," said zeolitic molecular sieve in its sodium cation form having an X-ray powder diffraction pattern containing at least those d-spacings set forth in Table B.

4,211,761

PROCESS FOR REMOVAL OF SULFUR DIOXIDE FROM GASEOUS MIXTURES

Shao E. Tung, 91 Blake Rd., Brookline, Mass. 02146

Continuation-in-part of Ser. No. 728,174, Sep. 30, 1976, Pat. No. 4,101,643, which is a continuation-in-part of Ser. No. 499,582, Aug. 22, 1974, Pat. No. 3,984,529. This application Oct. 3, 1977, Ser. No. 838,913

The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.

Int. Cl.[2] **C01B** *17/48, 17/00*

U.S. Cl. 423—539 **6 Claims**

1. A process for removing sulfur dioxide from a gaseous mixture comprising:

contacting the gaseous mixture in a scrubbing zone with a removal reactant consisting essentially of an aqueous solution of a first salt of an alkali metal to form an aqueous solution of an alkali metal hydrosulfite salt, said first salt being derived from a weak acid having a pKa value which is at least 3.5;

contacting, in a transfer reaction zone, the aqueous solution of said alkali metal hydrosulfite salt with a transfer reactant consisting of an organic phase which does not form a stable emulsion with water, and includes at least one aliphatic amine salt containing from about 8 to about 45 carbon atoms, and having a solubility in water of less than about 5 gms of the amine salt per 100 gms of water at 25° C., and having a transfer capability, G, which is greater than 0.15, said amine salt being derived from the reaction of an amine with a weak acid having a pKa value which is



at least 3.5, to yield an organic liquid phase containing, by a transfer reaction, at least one sulfur-containing amine salt, and an aqueous solution phase containing a second alkali metal salt differing from said first alkali metal salt and reactable with free amine derived from said sulfur-containing amine salt to yield said first alkali metal salt;

heating the organic liquid phase to decompose the sulfur-containing amine salt to yield sulfur dioxide and a free amine; then

contacting at least a portion of said free amine with at least a portion of said second alkali metal salt to reconstitute said amine salt and concurrently reconstitute said first alkali metal salt.

4,211,762

SPECIFIC BINDING ASSAY TECHNIQUES

Keith G. Huggins, 44 Berkley Rd., Hillingdon, Middlesex, and Ivan M. Roitt, 995 Finchley Rd., London, both of England

Filed Jan. 26, 1978, Ser. No. 872,668

Int. Cl.[2] **G01N** *33/16;* **A61K** *43/00*

U.S. Cl. 424—1 **24 Claims**

1. A method of standardizing a labelled constituent, which is a conjugate of a first labelling substance and a binding component and which is capable of reacting with a ligand, against a ligand reference substance for use in a specific binding assay method which comprises the steps of:

(a) incubating substrates having anti-light chain antibodies bound thereto with varying concentrations of a ligand which is labelled with a second labelling substance, wherein both the amount of ligand protein present in the labelled ligand, represented by the second labelling substance, and the amount of ligand reference substance equivalent to the labelled ligand protein, in terms of the amount of labelled ligand present, are known, for a time sufficient to form a series of products which are substrates having anti-light chain-antibodies attached thereto, and varying amounts of labelled ligand attached to the anti-light chain antibodies;

(b) incubating the products of step (a) with the labelled constituent whereby the labelled consitituent is bound to the labelled ligand;

(c) measuring the products of step (b), and determining the amount of the labelled ligand and the labelled constituent;

(d) determining the ligand protein present in the products of step (b), based on the amount of labelled ligand present, by means of the relationship known from (a); and

(e) determining in the products of step (b) the amount of ligand protein present, expressed in terms of the ligand reference substance, whereby the labelled constituent is standardized in terms of the ligand bound thereto, for use in a specific binding assay technique.

4,211,763

ANION EXCHANGE RESIN IN THE DETERMINATION OF THYROID FUNCTION

David L. Marshall, Carmel, and William C. Herndon, Indianapolis, both of Ind., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 822,457, Aug. 8, 1977, abandoned. This application Feb. 8, 1978, Ser. No. 876,074

Int. Cl.[2] **G01N** *33/16;* **A61K** *43/00*

U.S. Cl. 424—1 **3 Claims**

1. In a method for measuring the binding capacity of the proteins in a body fluid for triiodothyronine wherein a known quantity of radioactive labeled triiodothyronine is mixed with a sample of the body fluid so as to bind to the thyroid hormone-binding-proteins in the fluid sample, separating the bound and unbound radioactive triiodothyronine in different fractions by adding a secondary binding agent, and measuring the amount of radioactivity present in either or both fractions, the improvement comprising using a tabletted secondary binding agent that contains a powdered compressible strong base anion exchange resin having pyridinium active ion exchange groups, said resin having a dry mesh size of from about 50 to 400 and being capable of binding at least 90% of the unbound triiodothyronine within three minutes following the disintegration of the tablet.

4,211,764

GASTRIC SECRETION STIMULATION WITH 2-AMINO-5-(2-AMINOETHYL)-1,3,4-THIADIOZOLE

Leonid L. Grechishkin; Ljudmila K. Gavrovskaya, and Vadim L. Goldfarb, all of Leningrad, U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Experimentalnoi Meditsiny, U.S.S.R.

Filed Mar. 13, 1978, Ser. No. 885,367

Int. Cl.[2] **A61K** *29/00, 31/41, 31/415*

U.S. Cl. 424—9 **8 Claims**

1. Gastric secretion stimulator composition, comprising a gastric secretion stimulating effective amount of a salt of 2-amino-5-(2-amino-ethyl)-1,3,4thiadiazole of a pharmaceutically acceptible acid, and a pharmaceutical carrier therefor.

6. Method for stimulating gastric secretion, which comprises administering to a patient requiring the same a gastric secretion stimulating effective amount of a salt of 2-amino-5-(2-amino-ethyl)-1,3,4-thiadiazole of a pharmaceutically acceptible acid.

4,211,765

METHOD FOR CONTROLLING OBESITY

John H. Johnson, Kirkwood, and Joseph E. Fields, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 572,799, Apr. 29, 1975, Pat. No. 4,117,111, which is a division of Ser. No. 353,832, Apr. 23, 1973, Pat. No. 3,923,972, which is a continuation-in-part of Ser. No. 188,577, Oct. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 789,081, Jan. 2, 1969, abandoned. This application Sep. 25, 1978, Ser. No. 945,720

Int. Cl.[2] **A61K** *31/74*

U.S. Cl. 424—78 **4 Claims**

1. A method of countering a tendency toward obesity in a subject in need thereof which comprises orally administering to such subject an effective amount of non-absorbable polymerized unsaturated carboxylic acid or pharmaceutically acceptable derivative thereof sufficient to cause increased fat excretion, the polymer being a cationic derivative of an olefin-maleic acid copolymer of molecular weight of about 3000 to about 1,000,000 which is an effective pancreatic lipase inhibitor.

4,211,766

CANCER ASSOCIATED POLYPEPTIDE ANTIGEN COMPOSITIONS

Knut B. Björklund, Bromma, Sweden, assignor to AB Bonnierföretagen, Sweden

Division of Ser. No. 664,258, Mar. 5, 1976, Pat. No. 4,160,018, which is a division of Ser. No. 373,004, Jun. 25, 1973, Pat. No. 3,960,827, which is a continuation-in-part of Ser. No. 270,273, Jul. 10, 1972, abandoned. This application Mar. 30, 1979, Ser. No. 25,351

Int. Cl.[2] **A61K** *37/00, 39/00;* **C07G** *7/00;* **G01N** *31/00*

U.S. Cl. 424—88 **3 Claims**

1. An antigenic composition, comprising an antigenic amount of an active ingredient CAPA, said CAPA being defined as follows:

a cancer associated polypeptide antigen, obtained from a source selected from the group consisting of human tumor tissue, a culture of cancerous cells grown in vitro, and human placental tissue, having a molecular weight of 23,200±2,500 (S.D.) and showing a spectrophotometric peak absorption at a wave length within the range from about 229 nm to about 233 nm, said polypeptide being based on a single peptide chain as shown by treatment with performic acid, said single peptide chain comprising the following amino acids: Alanine, Arginine, Aspartic acid, Cysteine, Glutamic acid, Glycine, Histidine, Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Serine, Threonine, Tyrosine, and Valine, said polypeptide antigen comprising also a fluorescent group which emits fluorescent light at about 350 nm when activated at a wavelength of about 288 nm, and, if not protected by complexing with albumen, denaturating irreversibly at pH's exceeding about 5.

2. A composition according to claim **1** comprising an oil emulsion wherein an aqueous solution of a pH lower than about 3 containing CAPA constitutes the enclosed phase so as to be protected by the surrounding oil phase.

4,211,767

METHOD OF CONTROLLING THE SECRETION OF SEBUM IN HUMANS

Edmund Klein, 1325 N. Forest Rd., Williamsville, N.Y. 14221

Division of Ser. No. 843,053, Oct. 17, 1977, Pat. No. 4,129,647. This application Dec. 11, 1978, Ser. No. 968,170

Int. Cl.[2] **A61K** *31/04, 31/505, 37/00*

U.S. Cl. 424—92 **1 Claim**

1. A method for reducing the rate of secretion of sebum in humans which comprises administering to a sensitized human an antimitotic adjuvant agent in an amount sufficient to reduce the formation of sebum and thereby preclude formation of comedones and cysts together with a pharmaceutically acceptable carrier, said adjuvant agent being selected from the group consisting of 5-fluorouracil and uracil and said human having been sensitized by administering thereto an immunogen selected from the group consisting of dinitrochloro-benzene and Bacillus Calmette-Guerin Vaccine which induces or potentiates an immune response on local administration in an amount sufficient to reduce a delayed hypersensitivity reaction.

4,211,768

DIETETIC FOODSTUFF AND ITS PRODUCTION

Roland Vogel; Heinrich J. Nikolaus; Peter Müller, and Winfried Trinkaus, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 824,194, Aug. 12, 1977, Pat. No. 4,139,642.
This application Dec. 22, 1978, Ser. No. 972,591
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637426
The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.
Int. Cl.[2] A61K *35/12, 35/56*
U.S. Cl. 424—95 6 Claims

1. A method of suppressing appetite in a patient in need of such treatment which comprises ingesting an amount of 20–60 grams effective to suppress appetite of a granulated dietetic foodstuff having a low rate of decomposition in the digestive tract consisting essentially of a dried mixture of fat-free or low fat milk curds and casein in a dry solids ratio of about 1:1 to about 1:5, and having a particle size between about 0.5 and 5 mm, which is prepared by a process which comprises the steps of incorporating 2–5 parts of casein into 6 parts of moist milk curds; allowing the mixture to stand for a period of time sufficient to bind the excess water in the curds by swelling of the casein; whereby formation of a granulated and dried product is facilitated compared to milk curds alone.

4,211,769

PREPARATIONS FOR VAGINAL ADMINISTRATION

Hiroaki Okada, Suita; Iwao Yamazaki, and Takatsuka Yashiki, both of Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 17, 1978, Ser. No. 934,594
Claims priority, application Japan, Aug. 24, 1977, 52-101945; Apr. 3, 1978, 53-39337
Int. Cl.[2] A61K *37/00*
U.S. Cl. 424—177 9 Claims

1. A preparation for vaginal administration which contains 0.0001 to 5 percent by weight of a peptide having LH-RH activity homogeneously dispersed in an oleaginous or aqueous base, said preparation further containing homogeneously dispersed therein a water-soluble aliphatic polybasic carboxylic acid of 2 to 6 carbon atoms said polybasic carboxylic acid being present in an amount within the range of about 2 to 20 percent by weight when the preparation contains oleaginous base, or within the range of about 1 to 10 percent by weight when the preparation contains an aqueous base.

4,211,770

TREATMENT OF PSORIASIS INTRALESIONALLY WITH N^6-2'-O-DIBUTYRYL CYCLIC AMP

John J. Voorhees, Ann Arbor, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 425,340, Dec. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 324,012, Jan. 16, 1973, abandoned. This application Nov. 7, 1975, Ser. No. 629,914
Int. Cl.[2] A61K *31/70, 31/705*
U.S. Cl. 424—180 1 Claim

1. A method for treating psoriasis in humans comprising the administration to a human suffering from psoriasis of an effective dose for treating psoriasis of N^6-2'-O-dibutyryl cyclic AMP in a suitable pharmaceutical carrier wherein the administration is to the psoriatic lesion intralesionally.

4,211,771

TREATMENT OF HUMAN VIRAL DISEASES WITH 1-B-D-RIBOFURANOSYL-1,2,4-TRIAZOLE-3-CARBOXAMIDE

Joseph T. Witkowski, 5 Martha Dr., Morris Township, Morris County, N.J. 07960, and Roland K. Robins, 1131 Doven Dr., Provo, Utah 84602

Continuation-in-part of Ser. No. 690,912, May 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 617,432, Sep. 29, 1975, Pat. No. 3,976,545, which is a division of Ser. No. 340,332, Mar. 12, 1973, Pat. No. 3,927,216, which is a continuation-in-part of Ser. No. 240,252, Mar. 31, 1972, Pat. No. 3,798,209, which is a continuation-in-part of Ser. No. 149,017, Jun. 1, 1971, abandoned. This application Feb. 13, 1978, Ser. No. 877,313
Int. Cl.[2] A61K *31/41, 31/70;* C07H *19/12*
U.S. Cl. 424—180 20 Claims

1. A process of treating viral diseases in humans which comprises administering to the human patients an antiviral agent which has as its active component the compound 1-B-D-ribofuranosyl-1,2,4-triazole-3-carboxamide.

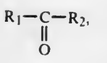
4,211,772

BENZOPYRAN GLYCOSIDE ACETALS AND KETALS

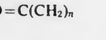
Francois Fauran, Castanet-Tolosan; Claude Feniou, Pessac; Jacqueline Mosser, St-Medard-en-Jalles; Annie Thibault, Le Bouscat; Claude Andre, Fontaine, and Gisele Prat, Talence, all of France, assignors to Laboratoires Sarget, Merignac, France

Filed Jun. 1, 1978, Ser. No. 911,634
Claims priority, application France, Jun. 2, 1977, 77 16817; May 10, 1978, 78 13807; May 10, 1978, 78 13808
Int. Cl.[2] A61K *31/70;* C07H *17/06*
U.S. Cl. 424—180 9 Claims

1. A benzopyran glycoside acetal or ketal at the sugar portion of the glycoside of a benzopyran glycoside selected from the group consisting of myricitrin, esculin, hesperidin, narigin, diosmin and glycosides of quercitin, and a carbonyl compound selected from the group consisting of



wherein R_1 and R_2 are the same or different and R_1, R_2=H, lower alkyl, phenyl, phenyl substituted by one or more substituents selected from the group consisting of hydroxyl, lower alkoxyl, halogen, nitro, amino, lower alkyl, and carboxyl, but excluding $R_1=R_2$=H;



wherein n=4–7; 2-adamantanone, 1-decalone, 2-decalone, said benzopyran glycoside acetal or ketal and said benzopyran glycoside containing phenolic hydroxyl.

8. A medicament comprising an acetal or ketal of claim 1 as its active principle, in combination with a pharmaceutically acceptable vehicle.

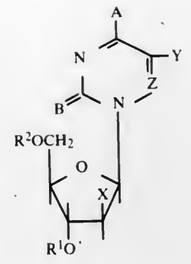
4,211,773

5-SUBSTITUTED 1-(2'-DEOXY-2'-SUBSTITUTED-β-D-ARABINOFURANOSYL)PYRIMIDINE NUCLEOSIDES

Carlos Lopez, New York; Kyoichi A. Watanabe, Portchester; Uri Reichman, and Jack J. Fox, both of White Plains, all of N.Y., assignors to Sloan Kettering Institute for Cancer Research, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,189
Int. Cl.[2] A61K *31/70;* C07H *17/00*
U.S. Cl. 424—180 10 Claims

1. Pyrimidine nucleosides having the formula



wherein

A is OR^3, SR^3, NR^{3}R^4 or NHacyl wherein R^3 and R^4 are the same or different and are hydrogen, lower alkyl of 1 to 7 carbon atoms, aralkyl containing 1 to 20 carbon atoms in the alkyl portion and 6–18 carbon atoms in the aryl portion, or aryl containing 6–18 carbon atoms;

NHacyl is alkanoyl containing 1–20 carbon atoms in the alkyl portion or aroyl amide selected from the group consisting of benzoyl and naphthoyl amide wherein the aromatic group may be substituted by alkyl or alkoxy of 1–20 carbon atoms, halo or nitro;

B is oxygen or sulfur;

X is halogen, alkylsulfonyl containing 1–20 carbon atoms in the alkyl portion or arylsulfonyl containing 6–18 carbon atoms in the aryl portion;

Y is halogen, amino, monoalkyl- containing 1–20 carbon atoms in the alkyl portion or monoaralkylamino containing 1 to 20 carbon atoms in the alkyl portion and 6–18 carbon atoms in the aryl portion, dialkylamino containing 1–20 carbon atoms in the alkyl portion, aminomethyl, hydroxymethyl, lower alkyl, aryl containing 6–18 carbon atoms, aralkyl containing 1 to 20 carbon atoms in the alkyl portion and 6–18 carbon atoms in the aryl portion, vinyl and substituted vinyl or ethynyl and substituted ethynyl;

Z is methyne or nitrogen;

R^1 and R^2 are the same or different and are hydrogen alkanoyl containing 1–20 carbon atoms in the alkyl portion or aroyl selected from the group consisting of benzoyl and naphthoyl wherein the aromatic group may be substituted by alkyl or alkoxy of 1–20 carbon atoms, halo or nitro.

9. Method of producing an anti-viral effect in a test animal which comprises administering to said animal an effective amount of a nucleoside of the formula defined in claim 1 or a pharmaceutically acceptable acid addition salt thereof.

10. Method of producing anti-tumor effect in a test animal which comprises administering to said animal an effective amount of a nucleoside of the formula defined in claim 1 or a pharmaceutically acceptable acid addition salt thereof.

4,211,774

BACTERIAL POLYSACCHARIDE S-21 AND COMPLEX THEREOF

Kenneth S. Kang, La Jolla, and George T. Veeder, III, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 842,646, Oct. 17, 1977, abandoned. This application Mar. 23, 1978, Ser. No. 889,163
Int. Cl.[2] A61K *31/715;* C08B *37/00*
U.S. Cl. 424—181 5 Claims

1. Heteropolysaccharide S-21, the heteropolysaccharide containing from about 30% to about 37% mannose, from about 26% to about 32% glucose, from about 19% to about 23% galactose and from about 15.3% to about 18.8% glucuronic acid, and having an acetyl content of from about 5.1% to about 6.3% and a pyruvate content of from about 4.5% to about 5.4%.

3. An aqueous composition containing from about 0.1% to about 2% of S-21 gum according to claim 1.

4,211,775

RONNEL COMPOSITION AND USE TO PROMOTE NUTRITIONAL RESPONSE

Robert M. Ioset, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 766,283, Feb. 7, 1977, abandoned. This application Jan. 18, 1979, Ser. No. 4,420
Int. Cl.[2] A61K *31/66*
U.S. Cl. 424—225 16 Claims

1. The method of promoting a nutritional response, evidenced by at least one of increased average daily weight gain and greater feed conversion efficiency, of livestock and poultry selected from cloven hoof ruminant animals, swine and poultry which are substantially free of internal parasites, which comprises: introducing into the diet of an animal of the designated class from about 0.5 to about 2.5 milligrams of ronnel, bromophos, iodofenphos or a mixture of at least any two of such phosphate esters per kilogram of body weight per day substantially daily over a period of (a) at least about 28 days in the case of cloven hoof ruminant animals; (b) at least about 7 days in the case of swine; and at least 3 days in the case of poultry, the dietary addition of phosphate ester being at a nutritionally effective but substantially nonparasiticidal dosage level.

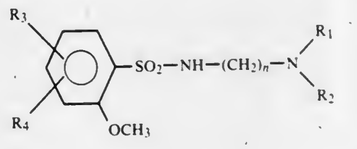
4,211,776

N-SUBSTITUTED 2-METHOXYBENZENESULPHONAMIDES, PROCESS FOR PREPARING THEM AND MEDICAMENTS CONTAINING THEM

Robert C. Moreau, Clichy, and Jean-Paul Fournier, Paris, both of France, assignors to Choay S.A., Paris, France

Division of Ser. No. 693,896, Jun. 8, 1976, Pat. No. 4,132,786.
This application Oct. 2, 1978, Ser. No. 947,623
Claims priority, application France, Jun. 9, 1975, 75 17973
Int. Cl.[2] A61K *31/32, 31/40;* C07D *207/00, 209/00*
U.S. Cl. 424—228 18 Claims

1. An N-substituted benzenesulphonamide wherein the benzene ring is substituted in the 2-position by a methoxy group, which has the following general formula (I)



(I)

in which

n is 2 or 3

R_1 and R_2 jointly form with the nitrogen a heterocyclic ring having 5 or 6 members,

R_3 is a hydrogen atom, an NO_2 group, an NH_2 group or a halogen,

R_4 is a hydrogen atom, NH_2, a halogen or a sulphonamide group,

or the addition salts of (I) with a physiologically acceptable mineral or organic acid.

4,211,777

COMPOSITIONS COMPRISING A COMPOUND HAVING SODIUM CROMOGLYCATE ACTIVITY AND AMINOSALICYLIC ACID

Albert Chambers, Loughborough, England, assignor to Fisons Limited, London, England

Filed May 17, 1978, Ser. No. 906,974
Claims priority, application United Kingdom, Nov. 25, 1977, 49105/77
Int. Cl.[2] A61K *31/625*
U.S. Cl. 424—232 17 Claims

1. A pharmaceutical composition suitable for oesophageal or

rectal administration comprising one part by weight of 1,3-bis(2-carboxychromon-5-yloxy)propan-2-ol or a pharmaceutically acceptable salt thereof, as active ingredient, in combination with 0.8 to 35,000 parts of an aminosalicylic acid or a pharmaceutically acceptable salt or ester thereof.

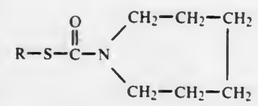
4,211,778

USE OF CARBOTHIOLATES AS INSECTICIDES

Carrol D. Steelman, Baton Route, and Doyle M. Chambers, Lake Charles, both of La., assignors to Louisiana State University Board of Supervisors, Baton Rouge, La.

Filed Sep. 14, 1978, Ser. No. 942,382
Int. Cl.² A01N *9/00*
U.S. Cl. 424—244 **8 Claims**

1. A process for killing insects by applying to said insects and to substrates susceptible to infestation by said insects or their larvae an insecticidally effective amount of a compound having the formula:



wherein R is a lower alkyl group.

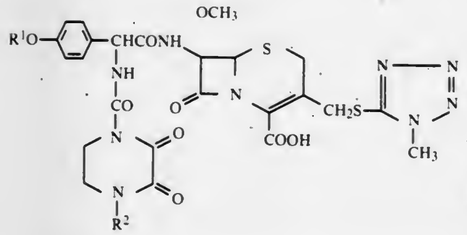
4,211,779

7α-METHOXY SUBSTITUTED CEPHALOSPORINS

Masayuki Narisada, Ibaraki; Teruji Tsuji, Takatsuki; Hiromu Matsumura, Ashiya, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Aug. 2, 1977, Ser. No. 821,314
Claims priority, application Japan, Aug. 17, 1976, 51-98376
Int. Cl.² A61K *31/545;* **C07D** *501/36*
U.S. Cl. 424—246 **31 Claims**

1. A member selected from the group consisting of
(a) a compound of the formula:



wherein
R^1 represents hydrogen, carbamoyl, acetyl, propionyl, butyryl, benzoyl, thiocarbamoyl, methylthiocarbamoyl, dimethylcarbamoyl, trichloroacetylcarbamoyl, acetylcarbamoyl, methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, or isopropoxycarbonyl;
R^2 represents methyl, ethyl, propyl, isopropyl, butyl, isobutyl, secondary-butyl, or tertiary-butyl;
(b) a lithium, sodium, potassium, magnesium, calcium or aluminum salt thereof at the 3-carboxy, and (c) an acetoxymethyl, pivaloyloxymethyl, methoxycarbonyloxymethyl, ethoxycarbonyloxyethyl, butoxycarbonyloxymethyl, phenacyl, phenyl, indanyl or phthalidyl ester thereof at the 3-carboxy.

30. An antibacterial composition which comprises an antibacterially effective amount of a member of the group as defined in claim **1** and a pharmaceutically acceptable carrier.

31. A method for the treatment of a bacterial infection which comprises administering orally or parenterally to a human or animal subject suffering from said infection an antibacterially effective amount of a composition as defined in claim **30**.

4,211,780

2,2-(THIOBIS(NITROMETHYLIDYNE))BIS(TETRAHYDRO-2H-1,3-THIAZINE) AND USE

Charles H. Tieman, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 27, 1979, Ser. No. 33,934
Int. Cl.² A01N *9/12;* **C07D** *279/06*
U.S. Cl. 424—246 **3 Claims**

1. 2,2'-(Thiobis(nitromethylidyne))bis(tetrahydro-2H-1,3-thiazine).

2. A composition adapted for controlling corn earworms which comprises an effective dosage of the compound of claim **1** together with an adjuvant therefor.

4,211,781

PROCESS FOR THE PREPARATION OF DUSTLESS QUINOXALINE-1,4-DIOXIDE ANIMAL FEED SUPPLEMENT PREMIXES

Kenneth G. Chapman, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 508,056, Sep. 23, 1974, abandoned. This application Aug. 19, 1975, Ser. No. 605,805
Int. Cl.² A61L *13/00;* **A23L** *3/36*
U.S. Cl. 424—250 **7 Claims**

1. A process for the production of a substantially dustless animal feed supplement premix containing an anti-bacterial quinoxaline-1,4-dioxide, said process comprising:
(a) blending about 0.5 to about 2.0% of a non-toxic oil with about 80 to about 95% of an edible carrier;
(b) mixing said blend with about 2 to about 12% of a pharmaceutically acceptable quinoxaline-1,4-dioxide antibacterial agent; and
(c) adding to and blending into the mixture obtained in step (b) about 1.5 to about 6.0% of said oil so that the total amount of oil added is in the range of about 2 to about 8% wherein all percentages refer to the weight percentage of said component in said premix.

4,211,782

PHARMACEUTICAL COMBINATION

John R. Vane, 7 White Angles, Beech Dell, Keston, Kent, and Salvador Moncada, 17 St. David's Close, West Wickham, Kent both of England

Filed Oct. 11, 1977, Ser. No. 841,049
Claims priority, application United Kingdom, Oct. 12, 1976, 42280/76
Int. Cl.² A61K *31/44, 31/47, 31/455, 31/415*
U.S. Cl. 424—263 **38 Claims**

1. A combination of substances which are in an amount effective to promote an anti-aggregatory action on blood platelets comprising:
(a) an anti-platelet aggregatory substance, an
(b) one or more of (i) an anti-oxidant able to minimize formation of lipid peroxides, and (ii) an inhibitor of thromboxane A_2 synthetase.

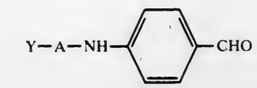
4,211,783

HYPOLIPIDEMIC AND ANTIATHEROSCLEROTIC NOVEL 4-(ARALKYL- AND HETEROARYLALKYLAMINO)PHENYL COMPOUNDS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 20, 1978, Ser. No. 890,569
Int. Cl.² C07C *95/08;* **A61K** *31/11*
U.S. Cl. 424—263 **8 Claims**

1. The method of inhibiting atherosclerotic lesion development in a mammal comprising the administration of an effective lesion-development inhibiting amount of a compound of the formula:



wherein A is a saturated or unsaturated alkylene group of 1-18 carbon atoms which may be branched or unbranched and Y is selected from the group consisting of phenyl, 1-naphthyl, 4-biphenylyl, 2-furyl, 2-thienyl, 3-thienyl, 4-thiazolyl, 2-imidazolyl, 4-imidazolyl, 2-pyridyl, 3-indolyl, 2-oxazolyl and each of the preceding moieties monosubstituted or disubstituted with alkyl, alkoxy or halogen with the proviso that the total number of carbon atoms in Y and A shall not exceed 24; and the pharmaceutically acceptable non-toxic acid-addition salts thereof to said mammal.

4,211,784

BIS(DITHIOCARBAMATE) SALTS

Charles W. Martin, Lake Jackson, and Eldon L. Ward, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 951,915, Oct. 16, 1978. This application May 21, 1979, Ser. No. 41,160
Int. Cl.² A01N *9/12;* **C07C** *155/08*
U.S. Cl. 424—267 **8 Claims**

1. A zinc amine complex of the formula

$$O-(CH_2CH_2NHCSS^{\ominus})_2Zn^{+2}.(HNR'R'')_y$$

wherein R' and R'' are, individually, either $CH_2CH_2NH_2$ or CH_2CH_2OH and R' and R'', taken together, is $-(CH_2)_5-$; and y has a value of from about 0.10 to about 2.

4,211,785

FUNGICIDAL COMPOSITION FOR USE IN AGRICULTURE AND HORTICULTURE AND ITS USE

Taizo Nakagawa, Ageo; Yutaka Watanabe, Saitama, and Kaoru Ohmori, Okegawa, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1979, Ser. No. 893
Claims priority, application Japan, Jan. 19, 1978, 53-3737
Int. Cl.² A01N *9/02*
U.S. Cl. 424—272 **5 Claims**

1. A fungicidal composition for use in agriculture and horticulture comprising a synergistic fungicidally effective amount of 4-methylsulfonyloxyphenyl-N-methylthiolcarbamate and 3-hydroxy-5-isoxazol in a weight ratio of 1:10-10:1 and an adjuvant therefor.

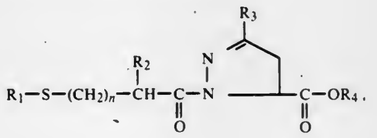
4,211,786

MERCAPTOACYLDIHYDROPYRAZOLE CARBOXYLIC ACID DERIVATIVES

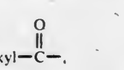
George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 8, 1979, Ser. No. 18,548
Int. Cl.² C07D *231/06;* **A61K** *31/415*
U.S. Cl. 424—273 P **19 Claims**

1. A compound having the formula

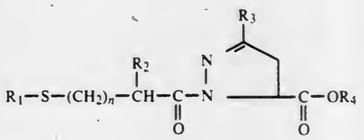


or a basic salt thereof, wherein R_1 is hydrogen, alkyl, aryl or arylalkyl;
R_2 is hydrogen or alkyl;
R_3 is aryl;
R_4 is hydrogen, alkyl or arylalkyl; and
n is 0, 1 or 2;
wherein the term "aryl" refers to phenyl or phenyl substituted with one, two or three halogen, alkyl, alkoxy, hydroxy,

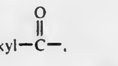


nitro, amino, alkylamino, dialkylamino, trifluoromethyl, cyano or carboxyl groups, and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

19. A method for reducing blood pressure in mammals which comprises administering to a mammal in need thereof, an effective amount of a compound having the formula



or a basic salt thereof, wherein R_1 is hydrogen, aryl, or arylalkyl;
R_2 is hydrogen or alkyl;
R_3 is aryl;
R_4 is hydrogen, alkyl or arylalkyl; and
n is 0, 1 or 2;
wherein the term "aryl" refers to phenyl or phenyl substituted with one, two or three halogen, alkyl, alkoxy, hydroxy,



nitro, amino, alkylamino, dialkylamino, trifluoromethyl, cyano or carboxyl groups, and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

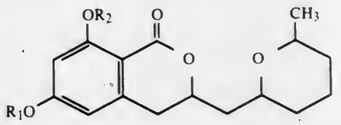
4,211,787

ANTIBACTERIAL AGENTS EFFECTIVE IN GROWTH PROMOTION AND INCREASED FEED UTILIZATION

Martin Scheer, Wuppertal; Heidrun Anke, Tuebingen; Wilfried König, Pinneberg, and Hans Zähner, Tuebingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,206
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753513
Int. Cl.² A61K *31/335*
U.S. Cl. 424—279 **7 Claims**

1. A method of promoting and accelerating the growth and improving the feedstuff utilization of animals which comprise administering to the animals a compound of the formula



(I)

in which R_1 and R_2 independently denote a hydrogen atom or a methyl or acetyl group in an amount effective for providing or accelerating growth or for improving feedstuff utilization.

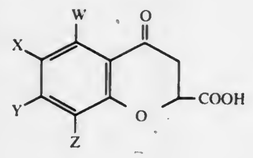
either alone, in admixture with a diluent, in the form of a medicament, or in the form of a treated animal feed.

4,211,788
COMPOUNDS

Hugh Cairns, Loughborough, and Anthony R. Payne, Castle Donington, both of England, assignors to Fisons Limited, London, England

Filed May 11, 1978, Ser. No. 904,794
Claims priority, application United Kingdom, May 21, 1977, 21545/77
Int. Cl.[2] A61K *31/355;* **C07D** *311/22*
U.S. Cl. 424—283 **8 Claims**

1. A compound having the formula



in which
W is hydrogen or hydroxy,
an adjacent pair of X, Y and Z form a pentamethylene chain, the remaining substituent X or Z is hydrogen or alkyl C_1 to C_{10}.
and pharmaceutically acceptable derivatives thereof.

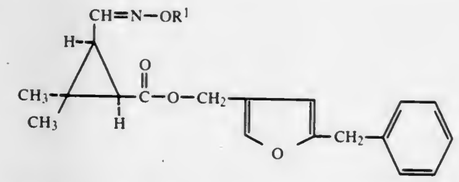
8. A method of treating asthma, hay fever, trachoma, alimentary allergy or gastrointestinal allergy which comprises administering an effective amount of a compound according to claim 1 to a mammal suffering from such a condition.

4,211,789
OXYIMINO-SUBSTITUTED (1R,CIS)-CYCLOPROPANECARBOXYLATE PESTICIDES

Steven A. Roman, Oakdale, and Samuel B. Soloway, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 911,743, Jun. 2, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,842
Int. Cl.[2] A01N *9/28;* **C07D** *307/54*
U.S. Cl. 424—285 **10 Claims**

1. A (1R,cis)cyclopropane compound, substantially free of other stereoisomers, of the formula



wherein R^1 is an alkyl, (cycloalkyl)alkyl or cycloalkyl group containing from 4 to 5 carbon atoms.

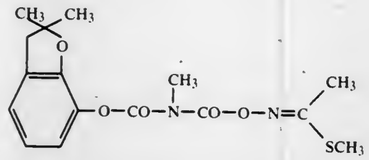
10. A method of controlling pests of the order Acarina at a locus which comprises applying to the pests or to the locus an acaricidally effective amount of an oxyimino-substituted (1R,cis)-cyclopropane compound according to claim 1.

4,211,790
COMBATING ARTHROPODS WITH AN OXIME ESTER OF N-CARBOXYLATED-CARBAMATE

Alfons Hartmann, Beckingen; Engelbert Kühle, Bergisch-Gladbach, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 18, 1979, Ser. No. 31,097
Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820360
Int. Cl.[2] C07D *307/86;* **A01N** *9/12*
U.S. Cl. 424—285 **4 Claims**

1. The compound of the formula



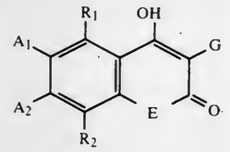
3. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of the compound according to claim 1.

4,211,791
INDANEDIONES

Derek R. Buckle, Redhill, and Harry Smith, Maplehurst, near Horsham, both of England, assignors to Beecham Group Limited, England

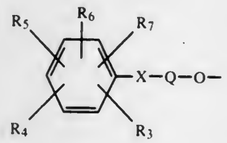
Division of Ser. No. 780,246, Mar. 22, 1978, Pat. No. 4,136,192, which is a continuation-in-part of Ser. No. 722,868, Sep. 13, 1976, abandoned. This application Nov. 27, 1978, Ser. No. 963,965
Claims priority, application United Kingdom, Sep. 23, 1975, 39041/75; Sep. 23, 1975, 39042/75; Feb. 4, 1976, 4321/76; May 22, 1976, 21276/76; May 22, 1976, 21277/76; Jun. 12, 1976, 24450/76; Feb. 11, 1977, 5833/77; Feb. 11, 1977, 5840/77; Feb. 11, 1977, 5856/77
Int. Cl.[2] C07C *79/36, 121/52;* **A61K** *31/275, 31/12*
U.S. Cl. 424—304 **98 Claims**

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof wherein one of A_1 or A_2 is a group of the formula (II)



(II)

and R_1, R_2 and the one of A_1, or A_2 which is not a group of the formula (II) are the same or different and each is hydrogen, lower alkyl, lower alkoxy, lower alkenyl, or lower alkynyl; provided that at least one of R_1, R_2, A_1 and A_2 is hydrogen, E is covalent bond; G is nitro or cyano; X is methylene; and Q is alkylene of 1 to 8 carbon atoms, 1 methylene group within the group Q, other than a methylene covalently bound to an ether

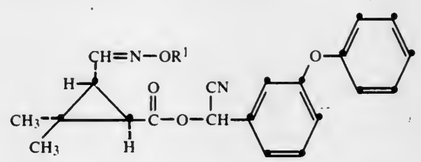
oxygen, being unsubstituted or substituted by hydroxyl, and R_3, R_4, R_5, R_6 and R_7 are each hydrogen, halogen, nitro, hydroxy, cyano, carboxyl, amino, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower alkoxy carbonyl, lower alkanoyl, lower alkanoyloxy, mono- or di-lower alkyl amino, mono- or di-lower alkanoyl amino, phenyl, lower alkylphenyl, phenoxycarbonyl, or benzyloxycarbonyl.

4,211,792
OXYIMINO-SUBSTITUTED (1R,TRANS)-CYCLOPROPANECARBOXYLATE PESTICIDES

Steven A. Roman, Oakdale, and Samuel B. Soloway, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 911,743, Jun. 2, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,778
Int. Cl.[2] A01N *9/24;* **C07C** *131/02, 131/04*
U.S. Cl. 424—304 **10 Claims**

1. A (1R,trans)-cyclopropanecarboxylate, substantially free of other stereoisomers, of the formula



wherein R^1 is a (cycloalkyl)alkyl group containing from 3 to 6 carbon atoms and 4 to 8 total carbon atoms and the alcohol moiety is in the R,S-racemic or S-optical configuration.

7. A method of controlling pests at a locus which comprises applying to the pests or to the locus a pesticidally effective amount of an oxyimino-substituted (1R,trans)-cyclopropane carboxylate according to claim 1.

4,211,793
TRIETHYL CITRATE SOLUTIONS OF PGE-TYPE COMPOUNDS

Shahid A. Lodhi, Spring Valley, and Bernard Sims, Monsey, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 19, 1979, Ser. No. 21,859
Int. Cl.[2] A61K *31/215, 31/225, 31/19*
U.S. Cl. 424—305 **5 Claims**

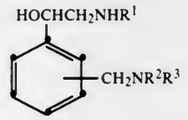
1. A method for preserving the E-type prostaglandins during storage by dissolving the E-type prostaglandins in triethyl citrate.

4,211,794
N,N-DISUBSTITUTED AMINOMETHYLPHENYLETHANOLAMINES

Allen R. Kraska, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,989
Int. Cl.[2] A61K *31/135;* **C07C** *91/16, 91/22*
U.S. Cl. 424—330 **11 Claims**

1. An N,N-disubstituted aminomethylphenylethanolamine of the formula



or its pharmacologically acceptable mineral acid or organic acid salt wherein:
R^1 is hydrogen or alkyl having 1 to 4 carbon atoms;
R^2 and R^3 are the same or different, each being normal alkyl of from 12 to 20 carbon atoms; and
the benzene ring is meta or para disubstituted.

10. A method of prophylactically controlling an interferon sensitive viral infection in a mammal, which comprises administering to the mammal an antivirally effective amount of an aminomethylphenylethanolamine of claim 1.

4,211,795
ANIMAL FEEDS

Francoise A. J. Leroy, St. Leu la Foret; Zelmen Zelter; Andre' C. Francois, both of Paris; Andre' Chassin, Saint-Junien, and Jacques Rodeaud, Chabanais, all of France, assignors to Institut National de la Recherche Agronomique and Aussedat-Rey, Paris, France

Continuation-in-part of Ser. No. 845,902, Jul. 29, 1969, and Ser. No. 524,837, Feb. 3, 1966, Pat. No. 3,507,662. This application Dec. 24, 1974, Ser. No. 532,153
Claims priority, application France, Feb. 3, 1965, 65.4208; Feb. 3, 1965, 65.4787
The portion of the term of this patent subsequent to Apr. 21, 1987, has been disclaimed.
Int. Cl.[2] A23K *1/04, 1/14*
U.S. Cl. 426—2 **7 Claims**

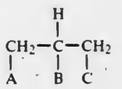
1. A modified nutritive proteinaceous dry feed for ruminant animals which serves as a digestible source of utilizable nitrogen comprising a complex of a proteinaceous animal feed and a short chain aldehyde, said modified feed being in the form of fine particles to facilitate homogeneous incorporation into other feed mixtures, said complex being relatively stable in respect to bacterial degradation leading to deammination as determined in an artificial rumen, but substantially completely accessible to proteolytic enzymes of the compartments of the animal's alimentary tract which follow the rumen and readily susceptible to enzymatic digestion in vitro by said proteolytic enzymes, the quantity of aldehyde employed in respect to the proteinaceous feed being not in excess of that required to produce resistance to bacterial deammination in the artificial rumen.

4,211,796
FEED INTAKE LIMITING COMPOSITION FOR CATTLE

Kent J. Lanter, Belleville, Ill.; Norman L. Betz, St. Louis, and Danny L. Williams, Manchester, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Nov. 9, 1977, Ser. No. 849,740
Int. Cl.[2] A23K *1/00*
U.S. Cl. 426—2 **19 Claims**

1. A feed supplement for cattle containing an intake limiting composition, said feed supplement comprising grain, said intake limiting composition being present in an amount effective to limit intake of said supplement said composition comprising at least one member of a group of compounds having the formula:



wherein
A is a hydroxyl or R
B is a hydroxyl or R
C is a chlorine or C is a hydroxyl if B is also a hydroxyl and A is R
wherein



and R^1 is a C_9-C_{18} alkyl.

4,211,797

DRY DOG FOOD OF IMPROVED PALATABILITY

Charles J. Cante, St. Anne; Russell Downhour; Lee P. Randall, both of Kankakee, and Jeffrey D. Morgan, Peotone, all of Ill., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,757
Int. Cl.[2] A23K *1/00*
U.S. Cl. 426—2 **7 Claims**

1. In an improved, nutritionally balanced dry dog food comprising from 30 to 65% by weight of the food of farinaceous materials and from 25 to 40% of the total food of proteinaceous materials, the improvement which comprises:

a coating of a palatability improving composition comprising 0 to 4 parts tallow, 1 to 3 parts of enzyme lipolyzed tallow, and from 1 to 3 parts of a proteolytic enzyme digest of beef adjusted to approximately pH 4.0 the palatability improving composition being present at a level of from 4 to 8% based on the total weight of the dog food, the amount thereof being effective to significantly improve the palatability of the food when consumed by dogs.

4,211,798

PREPARATION OF PROTEIN ENRICHED YEAST PRODUCTS DEVOID OF CARBOHYDRATES

Allen W. Cater, Edina, Minn., assignor to CRS Co., St. Paul, Minn.

Filed Nov. 25, 1977, Ser. No. 854,718
Int. Cl.[2] A23J *1/18;* **A23L** *1/28;* **C12C** *11/18*
U.S. Cl. 426—41 **3 Claims**

1. The method of producing carbohydrate-free protein enriched yeast products from cheese whey including the steps of:

(a) preparing a growth medium comprising cheese whey containing yeast growth nutrients;

(b) heating said growth medium to a temperature of about 93° C. and maintaining said temperature for approximately 25 minutes to precipitate whey proteins;

(c) adding yeast to the growth medium;

(d) permitting the yeast to ferment at about 30° C. with aeration whereby lactose and lactic acid in the growth medium are essentially consumed by the yeast and converted into carbon dioxide and yeast cell substance;

(e) subjecting the fermented growth medium from step (d) to a centrifugal operation to separate therefrom a slurry containing substantially all of the yeast cells;

(f) adding to the slurry from step (e) a carbohydrate containing protein enriching ingredient;

(g) permitting the yeast in the slurry from step (f) to undergo further fermentation at about 30° C. with aeration whereby the carbohydrate of the protein enriching ingredient is essentially consumed by the yeast and converted into carbon dioxide and yeast cell substance;

(h) concentrating the slurry from step (g); and

(i) drying the resultant concentrate to obtain said carbohydrate-free protein enriched yeast product.

4,211,799

METHODS FOR MAKING FLOCCULATION-RESISTANT CITRUS JUICE

Ekkehard Grampp, Egelsbach; Reinhold Schmitt, Zwingenberg, and Helmut Uhlig, Rossdorf, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,697
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 274688
Int. Cl.[2] A23L *2/30*
U.S. Cl. 426—50 **7 Claims**

1. The method of making citrus juice resistant to flocculation on storage, which method comprises treating naturally turbid citrus juice having a pH below 2.5 with a pectinase of the polygalacturonase-pectinesterase type at a temperature below 30° C. until the alcohol test for pectin is negative, adding sodium-calcium-bentonite to the juice as a decantation auxiliary after the pectinase treatment, and then decanting the supernatant juice after settling, whereby a flocculation-resistant stably-turbid juice is obtained.

4,211,800

FLAKE CEREAL PROCESS AND PRODUCT

Rudolph K. Scharschmidt, and Lynn Murphy, both of Battle Creek, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 749,486, Dec. 10, 1976, abandoned. This application Dec. 30, 1977, Ser. No. 865,804
Int. Cl.[2] A23L *1/164*
U.S. Cl. 426—93 **12 Claims**

1. A package of cereal flake product of improved storage stability without added stabilizers consisting of toasted cereal flakes substantially uniformly coated with an edible fat at a level of from about 3% to about 10% by weight of said flake, said fat having an iodine number of less than about 25, the matrix of said flake being substantially free of added fat.

4,211,801

PROCESS FOR THE TREATMENT OF COMMINUTED OATS

Richard W. Oughton, Odessa, Canada, assignor to Du Pont of Canada Limited, Montreal, Canada

Continuation of Ser. No. 695,206, Jun. 11, 1976, abandoned. This application Sep. 28, 1978, Ser. No. 946,716
Claims priority, application United Kingdom, Jun. 17, 1975, 25804/75
Int. Cl.[2] A23L *1/36*
U.S. Cl. 426—430 **13 Claims**

1. A process for the separation of a substantially gum-free flour from oats, said process comprising:

(a) admixing comminuted dehulled oats with an organic solvent capable of extracting oil from said oats for a time sufficient to substantially de-oil said oats, said solvent being selected from the group consisting of pentane, hexane, heptane, cyclohexane, and alcohols of 1-4 carbon atoms, and mixtures thereof; and

(b) separating the admixture of comminuted oats and solvent into at least two fractions, one fraction having bran as a substantial part of the solid component and a second fraction having substantially gum-free flour as the major solid component, the amount of flour separated from the admixture being at least 20% by weight of the comminuted oats, said admixture being separated by agitating the admixture under mixing conditions adjusted to cause a nonuniform distribution of the fractions of the comminuted oats in the solvent thereby causing the fractions to settle at different rates, whereby separation of the fractions is effected.

4,211,802

METHOD OF MAKING A COOKING VESSEL RELEASE MATERIAL

Wayne C. Carey, 71 Salt St., Rittman, Ohio 44270

Continuation-in-part of Ser. No. 462,787, Apr. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 341,400, Mar. 15, 1973, Pat. No. 3,821,007. This application Dec. 21, 1978, Ser. No. 971,725
Int. Cl.[2] A23D *5/00*
U.S. Cl. 426—609 **8 Claims**

5. A process for making a cooking vessel release paste consisting essentially of the steps of:

adding to a blending container 50 parts by weight of clear flour,

23-30 parts by weight of a soybean flour,

from 95-110 parts by weight of a hydrogenated soybean oil having a capillary melting point of approximately 117° F.,

from 118-140 parts by weight of a soybean oil stabilized against oxidation, and

from 5-10 parts of lecithin,

heating and mixing said ingredients in said blending container to a temperature of from about 70° F. to about 130° F.,

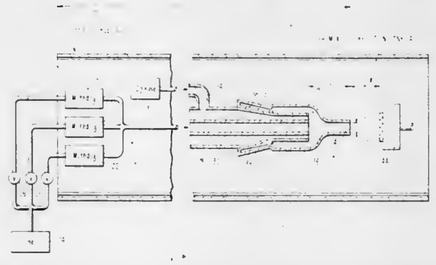
and placing said mixed ingredients into a carrier container.

4,211,803

CVD GROWTH OF MAGNETIC OXIDE FILMS HAVING GROWTH INDUCED ANISOTROPY

Melvyn E. Cowher, Sturbridge, Mass., and Thomas O. Sedgwick, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 824,689, Aug. 15, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 947,388
Int. Cl.[2] H01F *10/02*
U.S. Cl. 427—128 **17 Claims**



1. A CVD process for depositing single crystal magnetic oxide films on substrates, said films exhibiting growth induced magnetic anisotropy, comprising the steps of:

volatilizing organometallic compounds containing elements of said film to be deposited onto said substrate and passing said volatilized compounds in a gas stream toward said substrate,

combining said volatilized compounds with a gas stream containing about 30-50 mole percent O_2 to produce a mixture of gaseous O_2 and said volatilized compounds, said combining occurring at a temperature sufficiently low that said O_2 does not break up said organometallic compound during said mixing,

blowing said mixed gases to said substrate, said substrate being in a plane which is transverse to the direction of movement of said mixed gases and being heated to a temperature at which said O_2 breaks up said organometallic compounds to free said elements for reaction with O_2 and deposition onto said substrate to produce said film having sufficient growth induced anisotropy to support stable magnetic domains therein, said substrate temperature being less than that which would substantially anneal out said growth induced anisotropy to reduce said anisotropy to a level which is insufficient to support stable bubble domains therein.

4,211,804

POLYISOCYANATE COMPOSITIONS

Donald F. Brizzolara, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1978, Ser. No. 970,229
Int. Cl.[2] B05D *3/02*
U.S. Cl. 427—377 **12 Claims**

1. A composition consisting essentially of a solution in an aliphatic diisocyanate of the reaction product of at least two moles of said aliphatic diisocyanate with the addition product formed from one mole of a diprimary aliphatic diamine and at least one mole of an activated monoethylenic compound.

8. A polyurethane prepolymer prepared by a reaction of a composition of any of the claims **1-7** and a polyhydroxy compound in such proportions that the product has pendant—NCO end groups.

9. A moisture-curable polyurethane prepolymer consisting essentially of a prepolymer of claim **8** and of a moisture cure catalyst.

10. A composition of claim **9** in which the catalyst is a tetravalent organotin compound, which is present at a concentration equivalent to about 0.01-2% by weight of dibutyltin dilaurate based on nonvolatiles.

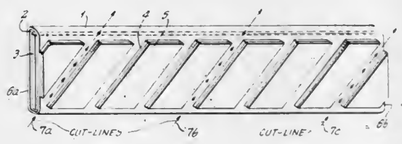
12. A method of protecting a surface by applying to the surface a coating of a composition of claim **10** and allowing the coating to moisture-cure in the air.

4,211,805

SELF-ADHESIVE LABELING ARTICLE

Coleman R. Chamberlin, Thompson Ridge, N.Y., assignor to Cel-U-Dex, Inc., New Windsor, N.Y.

Continuation of Ser. No. 801,090, May 27, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,267
Int. Cl.[2] G09F *3/20*
U.S. Cl. 428—40 **6 Claims**



1. A label holder device for holding substantially rectangular labels, comprising: an elongated tubular element having at least one open end for receiving a given label therein and having a substantially planar longitudinal rear surface, wherein the tubular element is cuttable at different points along the length thereof to obtain a label holder having a desired length substantially equal to the length of the given label; and means for guiding the cutting of the tubular element to configure at least one end of the holder to effect exposure of only one corner of the given label when same is completely inserted in the holder, while imparting the desired length to the holder comprising a plurality of spaced apart adhesive elements disposed on the planar rear surface for affixing the holder to a given plane.

4,211,806

TREATED FABRIC STRUCTURE

Frank P. Civardi, Wayne, and Frederic C. Loew, Ridgewood, both of N.J., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 545,548, Jan. 30, 1975, Pat. No. 4,122,223, and a continuation-in-part of Ser. No. 474,406, May 30, 1974, abandoned, and Ser. No. 398,696, Sep. 19, 1973, abandoned, said Ser. No. 545,548, is a continuation-in-part of Ser. No. 474,406, , which is a continuation-in-part of Ser. No. 398,696, , abandoned. This application Dec. 27, 1977, Ser. No. 864,836

The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.

Int. Cl.[2] D06C *11/00*

U.S. Cl. 428—91 **36 Claims**



1. An artificial leather sheet material for lasted shoe uppers comprising a backing layer of permeable fabric of interlaced multifilament yarns and a continuous cellular layer of blown plasticized polyvinyl chloride on its upper face wherein the improvement comprises that the lower face of said fabric has a nap of fibers teased from said yarns and bonded together, said bonded nap being open and compressible, having a void volume about 50% and a thickness of about 0.1 to 1 mm, said shoe upper sheet material having a thickness of at least about 1.2 mm, said bonded nap comprising said teased-out fibers and an elastomeric bonding agent.

4,211,807

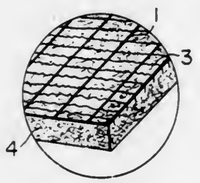
REINFORCED NON-WOVEN FABRICS AND METHOD OF MAKING SAME

Masahide Yazawa, and Kazuhiko Kurihara, both of Tokyo, Japan, assignors to Polymer Processing Research Institute Ltd. and Sekisui Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 603,206, Aug. 8, 1975, abandoned. This application May 15, 1978, Ser. No. 906,004

Int. Cl.[2] B32B *5/10*; D04H *1/62, 1/74*

U.S. Cl. 428—109 **4 Claims**



1. A non-woven product comprising

(a) a fleece layer of short fibers in random arrangement,

(b) one surface of said fleece layer having affixed thereto a plurality of elongated yarn members that are spaced apart from each other at regular intervals in generally parallel rows, all of said yarn members extending only in a longitudinal direction with respect to said fleece layer, and

(c) said surface of said fleece layer containing a plurality of essentially continuous lines of joined short fibers of the fleece layer by heat meltable adhesive material almost entirely penetrating down into the fleece layer, said adhesive lines being disposed generally parallel to each other and transversely with respect to said plurality of yarn members, said adhesive lines consisting of thicker lines which are composed of joined short fibers of the fleece layer by adhesive material that has penetrated almost entirely through the fleece layer in the thickness direction and at least one thinner line disposed between every adjacent pair of said thicker adhesive lines, said thinner lines being composed of short fibers of the fleece layer joined by adhesive material penetrating into said fleece layer a lesser distance than that of said thicker lines.

3. The method for producing a non-woven product which comprises:

(a) providing a network composed of

(1) a plurality of elongated yarn members disposed in a plane, said yarn members being spaced apart from each other at regular intervals in generally parallel rows in the longitudinal direction of the network, and

(2) a plurality of adhesive filaments consisting solely of heat meltable adhesive material in a solid state, said adhesive filaments being disposed generally parallel to each other and transversely to said plurality of yarn members, said arrangement of adhesive filaments including thick adhesive filaments at spaced apart intervals and at least one thin adhesive filament disposed between each sequence of two thick adhesive filaments,

(b) providing a fleece layer of short fibers in random arrangement,

(c) causing one surface of said fleece layer to adhere to said network by heat pressing the network to cause said adhesive filaments to melt completely and penetrate down into said fleece layer to an extent corresponding to the respective thickness of each of the adhesive filaments, and

(d) allowing said penetrated adhesive to set in the fleece layer.

whereby said fleece layer will be reinforced in the longitudinal direction by said yarn members and will be reinforced in the transverse direction only by the plurality of lines of short fibers of the fleece layer joined by adhesive that has melted from said adhesive filaments and penetrated into the fleece layer and set therein.

4,211,808

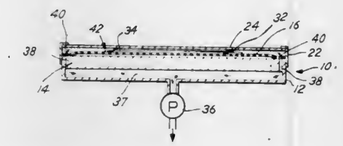
BACKING SHEET

Richard A. Trankle, Chicago, Ill., assignor to Roberts & Porter, Inc., Chicago, Ill.

Filed Nov. 10, 1977, Ser. No. 850,080

Int. Cl.[2] B32B *7/00*

U.S. Cl. 428—131 **16 Claims**



1. A backing sheet for use in the exposure of photosensitive materials under vacuum conditions comprising

a first layer of porous material for receiving the photosensitive materials for exposure thereon,

a second layer of flexible, but substantially rigid, material beneath said first layer and attached directly thereto, and

a third layer of a flexible material beneath said second layer, said layers being attached together to form said backing sheet.

4,211,809

SELF-ADHERING, TRANSFERABLE LAYER OF VARNISH (LACQUER) OR COLOR

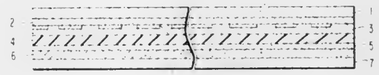
Franz Barta, Vienna, Austria, assignor to BSB Aktiengesellschaft fur Mechanische Beschriftung und Dekoration, Basel, Switzerland

Continuation of Ser. No. 730,508, Oct. 7, 1976, abandoned. This application Nov. 20, 1978, Ser. No. 961,909

Claims priority, application Austria, Oct. 7, 1975, 7658/75

Int. Cl.[2] B32B *3/10, 7/00*

U.S. Cl. 428—201 **7 Claims**



1. In a self-adhering transfer material comprising in descending order an upper foil-like or paper-like carrier layer, one or more transferable designed layers, releasably connected to the carrier layer and a lower adhesive layer, wherein the improvement comprises an intermediate layer between the adhesive layer and the one or more design layers, the intermediate layer consisting essentially of a polyester resin hardenable into a permanently elastic formstable layer, said polyester resin being adhesively bondable and compatible with both the adhesive layer and the one or more design layers.

4,211,810

SELF-ADHERING, TRANSFERABLE LAYER OF VARNISH (LACQUER) OR COLOR

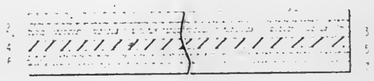
Franz Barta, Vienna, Austria, assignor to BSB Aktiengesellschaft fur Mechanische Beschriftung und Dekoration, Basel, Switzerland

Division of Ser. No. 730,508, Oct. 7, 1976, abandoned. This application Nov. 20, 1978, Ser. No. 961,910

Claims priority, application Austria, Oct. 7, 1975, 7658/75

Int. Cl.[2] B41M *3/12*; B05D *3/02*

U.S. Cl. 428—201 **11 Claims**



1. A process for the production of a self-adhering transfer material comprising in descending order an upper foil-like or paper-like carrier layer, one or more transferable design layers which are releasably connected to the carrier layer and a lower adhesive layer, which process comprises applying an intermediate layer consisting essentially of a polyester resin hardenable to a permanently elastic form-stable layer, said polyester layer being adhesively bondable and compatible with both the adhesive layer and the one or more design layers, said polyester layer applied in a hardenable state to the underside of the one or more transferable design layers and prior to the complete hardening or drying out of said intermediate layer, applying the adhesive layer to the intermediate layer.

4,211,811

LAMINATED OLEFINIC POLYMER SHEETS FOR PACKAGING

Fosco Bordini, and Luigi Mauri, both of Terni, Italy, assignors to Moplefan S.p.A., Milan, Italy

Filed Dec. 19, 1977, Ser. No. 861,945

Claims priority, application Italy, Dec. 20, 1976, 30637 A/76

Int. Cl.[2] B32B *27/06*

U.S. Cl. 428—220 **8 Claims**

1. A bonded sheet for packaging, having a thickness ranging from 20 to 200 microns and consisting essentially of two films, a first film and a second film, prepared from substantially crystalline polyolefin polymers, or mixtures thereof, wherein at least the first film of the two films is a film oriented by the stretching of polypropylene essentially constituted by isotactic macromolecules and having a melt index between 0.5 and 5, and wherein at least one of the two films is coated, on the surface thereof which is in contact with the other film, with a metallized layer having a resistivity between 1 and 5 Ohms.

4,211,812

OPENWORK TEXTILE STRUCTURE AND PROCESS FOR MANUFACTURE THEREOF

Daniel Braconnier, Ecully; Jean Joly, Craponne, and Michele Renault, Venissieux, all of France, assignors to Rhone-Poulenc-Textile, Lyon, France

Filed Apr. 14, 1977, Ser. No. 787,586

Claims priority, application France, Apr. 22, 1976, 76 13078

Int. Cl.[2] D03D *3/00*

U.S. Cl. 428—224 **7 Claims**



3. A three-dimensional openwork textile structure comprising at least two two-dimensional openwork textile structures, each two-dimensional openwork textile structure formed from at least one textile web and including a plurality of open areas distributed over its surface, each open area defined by at least one compressed zone of the textile materials forming the at least one textile web, wherein in each compressed zone the textile materials are parallel to each other, and by at least one zone of said textile materials which has a greater apparent diameter, and wherein the at least two two-dimensional openwork textile structures are secured to each other at a plurality of compressed zones containing parallel textile materials from each of at least two adjacent two-dimensional openwork textile structures.

4,211,813

PHOTOLUMINESCENT TEXTILE MATERIALS

Philippe E. Gravisse, Paris, France, and Jacques F. Van Schoote, Ghent, Belgium, assignors to B.R.I.C. (Burea de Recherche pour l'Innovation et la Convervence, France and N.V. Anciens Etablissements Alsberge et Van Oost, Belgium

Filed Mar. 20, 1978, Ser. No. 888,037

Claims priority, application France, Mar. 25, 1977, 77 09042

Int. Cl.[2] C09K *11/00, 11/10*

U.S. Cl. 428—263 **16 Claims**

1. A photoluminescent flexible sheet material having an enhanced premability to water vapor comprising:

a flexible substrate of sheet material having at least one coating film adhering to a surface of said substrate;

said film comprising at least one synthetic resin compatible with said flexible substrate and having dispersed therethrough a photoluminescent complex having enhanced stability to ultraviolet energy and atmospheric moisture;

said photoluminescent complex comprising particles of at least one phosphorescent metal sulphide and an organic substance which absorbs radiant energy of short wavelengths and emits the energy on a wavelength lying within the absorption spectrum of said phosphorescent metal sulphide.

4,211,814

METHOD FOR THE FIREPROOFING OF SYNTHETIC FIBER MATERIAL

Hermann Nachbur, Dornach, and Peter Rohringer, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 809,824, Jun. 24, 1977, abandoned, which is a continuation of Ser. No. 638,227, Dec. 5, 1975, abandoned. This application Aug. 8, 1978, Ser. No. 932,082

Claims priority, application Switzerland, Dec. 6, 1974, 16252/74

Int. Cl.[2] C09K *3/28;* **B05D** *3/02;* **D06M** *13/08*

U.S. Cl. 428—265 **15 Claims**

1. A process for the fireproofing of synthetic textile fiber materials consisting of polyester or polyamide, which comprises: treating said materials after their manufacture with a fireproofing composition containing at least

(a) a bromine compound of the formula

$$Br_m-A_1-\underset{\displaystyle Br_{p-1}}{\overset{\displaystyle |}{R}}-A_2-Br_n$$

wherein

A_1 and A_2 each represent cycloalkyl having 5 to 8 ring carbon atoms,

R represents alkylene having 1 to 4 carbon atoms, m and n each represent an integer from 2 to 7, and

p represents an integer from 1 to 5, and

(c) a dispersing agent;

and then subjecting said materials to a heat treatment, the heat treatment being such that the deposit of constituent (a) after the heat treatment is 0.5 to 12 percent by weight, relative to the treated material.

4,211,815

WATERPROOFING OF TEXTILES

Hans Deiner, Hainhofen, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,779

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1973, 2359966

Int. Cl.[2] B32B *27/12*

U.S. Cl. 428—290 **8 Claims**

1. A process for making fibrous material water repellent, comprising the step of treating the fibrous material with an aqueous liquor which contains an emulsion of an organopolysiloxane, which contains hydrogen atoms bonded to silicon atoms, and an emulsion of oxidized polyethylene, wherein the dry weight ratio of organopolysiloxane to oxidized polyethylene is 100:3–152.

8. The fibrous material treated according to the process of claim 1.

4,211,816

SELFBONDED NONWOVEN FABRICS

Hazael E. Booker; Barrie L. Davies; Alfred J. Hughes, and Charles J. Shimalla, all of Charlotte, N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 776,565, Mar. 11, 1977, abandoned. This application Mar. 1, 1978, Ser. No. 881,472

Int. Cl.[2] D02G *3/00;* **D04H** *1/04*

U.S. Cl. 428—296 **10 Claims**



1. An improved selfbonded nonwoven fabric having a weight of at least 40 gm/meter[2] and consisting essentially of fibrous non-particulate material and comprising at least seventy percent, based on total weight of fibers in the fabric, of drawn continuous heterofilaments comprising at least two fiber-forming synthetic polymer components arranged in sheath/core manner, the core being isotactic polypropylene physically entrapped in a network of bonded sheaths having a melting point at least 10° C. lower than that of the core, wherein the improvement comprises:

said sheath is high density polyethylene having a solid state density in the range from 0.930 to 0.965 gm/cc and having a melt flow index from 1 to 50 as measured by ASTM D-1238; said high density polyethylene comprises from 5 to 30 weight percent of said heterofilaments; and said fabric has an Elmendorf tear strength (ASTM D-1424), T, of at least 6 lb and a normalized grab tensile strength, G, of at least 120 lb (ASTM D-1117) for a 140 gm/meter[2] fabric and the value of the product TxG is at least 1,200.

4,211,817

BONDED LAMINATED STRUCTURE AND METHOD FOR PRODUCING SUCH

George S. Buck, Jr., and R. G. Weyker, both of Memphis, Tenn., assignors to Fiberlok, Inc., Memphis, Tenn.

Filed Jun. 1, 1978, Ser. No. 911,536

Int. Cl.[2] B32B *3/26, 5/18*

U.S. Cl. 428—310 **20 Claims**



13. A bonded laminated flexible structure consisting essentially of fibers contacted with a copolymer of vinyl chloride and vinylidene chloride formed into a batt and a cellular material strongly adhered to the batt by means of first heating to the melting point of the copolymer and then compressing the batt and cellular material to form an adhered structure.

4,211,818

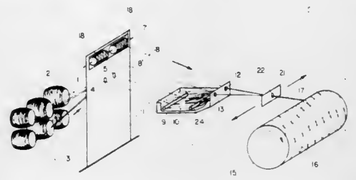
COMPOSITE STRANDS OF RESIN, CARBON AND GLASS AND PRODUCT FORMED FROM SAID STRANDS

Richard H. Ackley, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 856,149, Nov. 30, 1977, Pat. No. 3,167,429. This application Feb. 2, 1979, Ser. No. 8,671

Int. Cl.[2] B32B *9/00;* **D02G** *3/00*

U.S. Cl. 428—367 **19 Claims**



10. A fiber resin composite article comprising helically wound strands and resin wherein said helically wound strands comprise composite strands comprising resin, a plurality of continuous glass fiber strands and at least one continuous carbon fiber strand wherein said glass and carbon strands are coextensive.

4,211,819

HEAT-MELT ADHESIVE PROPYLENE POLYMER FIBERS

Kohichi Kunimune; Seigo Inadomi, and Satomi Yoshida, all of Moriyamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 23, 1978, Ser. No. 908,678

Claims priority, application Japan, May 24, 1977, 52-60016

Int. Cl.[2] D02G *3/00*

U.S. Cl. 428—374 **6 Claims**

1. Heat-melt adhesive fibers comprising a resin consisting of:

(a) 50–100% of a crystalline propylene random terpolymer consisting of

(1) 84–98% by weight of propylene,

(2) 1–15% by weight of butene-1, and

(3) 1–10% by weight of ethylene and

(b) 0–50% by weight of a substantially non-crystalline ethylene-propylene random copolymer,

said resin forming at least 50% of the cross-sectional circumference of said fibers.

4,211,820

BROWN GLASS-CERAMIC ARTICLES

Francis A. Cantaloupe, Horseheads, N.Y.; Robert W. Colegrove, Lawrenceville, Pa.; John E. Megles, Jr., and Hermann L. Rittler, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,480

Int. Cl.[2] C03C *3/22, 3/04*

U.S. Cl. 428—410 **1 Claim**

1. An essentially transparent glassceramic article having a coefficient of thermal expansion over the temperature interval of 25°–700° C. of about $-5–10\times10^{-7}$/°C., a modulus of rupture of about 8000–18,000 psi, a change of length of no more than about 900 PPM when exposed to a temperature of 700° C. for a period of 1000 hours, and which, in thickness of about 5 mm. will display a warm brown coloration and a transmittance of about 20–60%, when measured at 800 nm, consisting of a surface layer containing beta-quartz solid solution crystals as the predominant crystal phase with, optionally, a minor proportion of beta-spodumene solid solution crystals dispersed within a glassy matrix and an interior portion containing beta-spodumene solid solution crystals as the predominant crystal phase dispersed within a glassy matrix, said crystals constituting more than 50% by volume of said article and having diameters of less than one micron, said glass-ceramic article having an overall composition consisting essentially, an analyzed in weight percent on the oxide basis, of about 2.5–4.5% Li_2O, 1–2% MgO, 1–2% ZnO, 19.5–21% Al_2O_3, 66.5–68% SiO_2, 4–5% TiO_2, and 0.02–0.2% V_2O_5, the sum of those components constituting at least about 98% of said article.

4,211,821

MONOCRYSTALLINE LIKE LAYERS, PROCESSES OF MANUFACTURING SUCH LAYERS, AND ARTICLES COMPRISING SUCH LAYERS

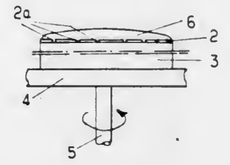
Armand Hadni, Nancy, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Jun. 13, 1977, Ser. No. 806,103

Claims priority, application France, Jun. 14, 1976, 76 17957

Int. Cl.[2] B32B *9/04;* **B01J** *17/00*

U.S. Cl. 428—411 **12 Claims**



1. Article comprising:

a first layer in contact with a face of a monocrystalline support, said first layer being made out of a second material which is different from the material constituting the support, said first layer comprising openings of small cross-section;

a second layer made out of a third material different from the support material and from the second material, said second layer being in contact with said first layer and with the parts of the monocrystalline support aligned with the openings in the said first layer, said second layer being of small thickness controlled within limits and having openings of small cross-section therein because of its thickness; and

a thin monocrystalline-like layer being disposed on said second layer, said thin monocrystalline-like layer being made out of a given material which is the same as or has a structure which is the same as or related to that of the support material.

3. Process of growing a thin monocrystalline-like layer of a given material which comprises:

depositing an intermediary layer having two superposed parts on a monocrystalline support made out of the said given material or out of a material having same or a related structure, said parts of this intermediary layer being made out of different materials which differ from the given material, the first of these parts being directly in contact with the support and having openings of small cross-section distributed over its surface, and the second part covering the first part and having a small thickness controlled within limits and presenting, because of its thickness, submicroscopic openings at least in front of the openings of the first part, and

growing said thin monocrystalline-like layer on said intermediary layer.

4,211,822

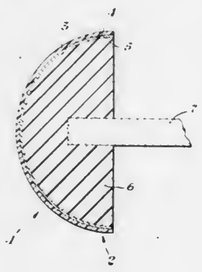
HIGHLY REFLECTIVE MULTILAYER METAL/POLYMER COMPOSITES

Virgil B. Kurfman, Midland, and Raymond E. Gransden, Jr., Beaverton, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 757,706, Jan. 7, 1977, Pat. No. 4,115,619. This application Dec. 8, 1977, Ser. No. 858,592

Int. Cl.[2] **B32B** *5/00, 15/08*

U.S. Cl. 428—412 **13 Claims**



1. A formed metal/organic polymer composite comprising a normally solid thermoplastic polymer layer and a normally solid, soft metal layer adhered to at least one surface of the polymer layer, at least a portion of said formed composite having been modified during forming such that the portion undergoes a cumulative surface dimensional change of at least 20 percent, without rupturing the metal layer or the polymer layer, said soft metal being a metal or an alloy of two or more metals that melts at a temperature or over a range of temperatures that is from about 80 to about 135 percent of the temperature used in forming, said temperatures being in °K.

4,211,823

TINTABLE COATINGS AND ARTICLES HAVING SUCH COATINGS

Masaharu Suzuki, Takatsuki; Takashi Taniguchi, Shiga, and Hideki Yamagishi, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 884,273, Mar. 7, 1978, abandoned. This application May 11, 1979, Ser. No. 38,205

Claims priority, application Japan, Nov. 3, 1977, 52/26109

Int. Cl.[2] **C08L** *83/04;* **B32B** *27/08, 27/30, 27/28*

U.S. Cl. 428—412 **19 Claims**

1. A coating composition comprising components A, B, C and D wherein

Component A is:

A hydrolysate of a silane compound containing an epoxy group and not less than two alkoxy groups which are directly bonded to an Si atom in the molecule;

Component B comprises fine particles of silica which particles have an average diameter of about 1 to 100 mμ, and wherein

Component C comprises an aluminum chelate compound having the formula AlX_nY_{3-n} wherein X is OL (wherein L is a lower alkyl group), Y is at least one ligand produced from the group consisting of:

(1) $M'COCH_2COM^2$ and (2) $M^3COCH_2COOM^4$

wherein (M', M^2, M^3 and M^4 are lower alkyl groups) and n is 0, 1 or 2, and wherein

Component D comprises a solvent comprising more than about 1 weight percent water, the amount of Component B being about 1 to 500 parts by weight per 100 parts by weight of Component A, and the amount of Component C being about 0.01 to 50 parts by weight per 100 parts by weight of Component A.

2. A coating composition comprising components A, B, C and D wherein

Component A comprises

(1) A hydrolysate of a silane compound containing an epoxy group and not less than two alkoxy groups which are directly bonded to an Si atom in the molecule, and

(2) at least one compound selected from the group consisting of:

(2.1) A compound containing a silanol and/or siloxane group in the molecule and

(2.2) an epoxy compound, and wherein Component B comprises fine particles of silica which particles have an average diameter of about 1 to 100 mμ, and wherein Component C comprises an aluminum chelate compound having the formula AlX_nY_{3-n} wherein X is OL (wherein L is a lower alkyl group), Y is at least one ligand produced from the group consisting of:

(1) $M'COCH_2COM^2$ and (2) $M^3COCH_2COOM^4$ wherein M', M^2, M^3 and M^4 are lower alkyl groups and n is 0, 1 or 2, and wherein Component D comprises a solvent comprising more than about 1 weight percent water, the amount of Component B being about 1 to 500 parts by weight of Component A, the amount of Component C being about 0.01 to 50 parts by weight per 100 parts by weight of Component A, the calculated weight percent of (1) in Component A in film being more than about 10, and the calculated weight percent of the sum of (1) and (2.2) in Component A in film being more than about 30.

4,211,824

BONDING RUBBER TO METAL

Shinichi Yoshida, Hamamatsu, Japan, assignor to Honny Chemicals Company, Ltd., Kobe, Japan

Division of Ser. No. 717,928, Aug. 26, 1976, Pat. No. 4,096,009. This application Mar. 21, 1978, Ser. No. 888,732

Claims priority, application Japan, Aug. 29, 1975, 50-104686

Int. Cl.[2] **B32B** *15/06, 15/08, 25/08;* **C25D** *3/38*

U.S. Cl. 428—462 **12 Claims**

1. A laminated article comprising a ferrous metal substrate having a tightly adherent deposit of copper thereon, a layer of adhesive over said copper and rubber bonded through said copper and adhesive to said ferrous metal substrate, said adhesive comprising an interpolymer containing about 50 to about 99% by weight of a conjugated diene, about 1–45% by weight of a heterocyclic nitrogen base and 0 to about 40% by weight of at least one additional copolymerizable monomer, the adhesion of the rubber to the metal having a bond strength of 40 to 90 kg/2 cm according to the H-test as defined in the above specification.

4,211,825

MULTILAYER COMPOSITE FILMS AND METHOD OF MANUFACTURE THEREOF

Gene H. Shipman, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 16, 1978, Ser. No. 951,597

Int. Cl.[2] **B32B** *27/06, 27/36*

U.S. Cl. 428—483 **13 Claims**

1. A multilayer composite film structure comprising

a support of polyester film;

a first layer on said support, said first layer comprising a polyolefin which is transparent to electromagnetic radiation in the wavelength range of about 1800 to 4000 angstroms and has a mass crystallinity of less than about 60% and a density less than about 0.94 g/cm^3; and wherein said support and said first layer have been placed in face-to-face contact with each other and heated and irradiated with said electromagnetic radiation to form a bond to each other which has an interfacial bond strength of at least about 90 grams per centimeter of width; and

a second layer on said first layer, said second layer comprising a polyolefin which is transparent to said electromagnetic radiation and has a mass crystallinity of greater than about 60% and a density greater than about 0.94 g/cm^3; and wherein said first and second layers have been placed in face-to-face contact with each other and heated to form an interfacial bond to each other which is so strong that said layers cannot be mechanically separated from one another.

4,211,826

PRESSURE SENSITIVE TRANSFER MEDIA

Elbert Du, 417 E. 7th St., Cincinnati, Ohio 45201

Continuation of Ser. No. 781,117, Mar. 25, 1977, abandoned. This application Oct. 2, 1978, Ser. No. 947,632

Int. Cl.[2] **B32B** *27/00;* **B41M** *3/12*

U.S. Cl. 428—497 **5 Claims**

1. A pressure sensitive image transfer medium formed of:

a planar flexible substrate film of synthetic resinous material and

a transfer layer comprising the solvent evaporated residue of an applied liquid dispersion adherently secured to one surface of said substrate film and from which localized portions are selectively and fully transferable to a copy surface in response to pressure application to the obverse surface of said substrate film

said layer consisting essentially of the uniformly dispersed intermixture of

about 9 to 20 parts of ethyl hydroxyl ethyl cellulose as a first resinous constituent thereof,

a substantially equal amount of a second resinous constituent that is incompatible with said first resinous constituent and selected from the group consisting of low to medium molecular weight methyl methacrylate and cellulose acetate butyrate,

about 30 to 55 parts of a mutually incompatible non drying vehicle modifier that is non-plasticizing with either said first or second resinous constituents selected from the group consisting of epoxidized soy bean oil and lard oil and

about 20 to 45 parts of image sensible material.

4,211,827

AL-SI-SN ALLOY CLAD COMPOSITE

Michael J. Pryor, Woodbridge; James M. Popplewell, Guilford, both of Conn., and William H. Anthony, Manchester, Mo., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 15, 1979, Ser. No. 20,800

Int. Cl.[2] **B32B** *15/20*

U.S. Cl. 428—654 **10 Claims**

1. An aluminum composite having improved resistance to intergranular corrosion comprising an aluminum base alloy core clad with a brazing alloy consisting essentially of from 4–14% silicon, 0.01–2% tin, and the balance aluminum.

4,211,828

THERMOELECTRIC ENERGY SYSTEM

Robert L. Peck, Windham Center, Conn., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 9, 1978, Ser. No. 959,058

Int. Cl.[2] **H01M** *6/36*

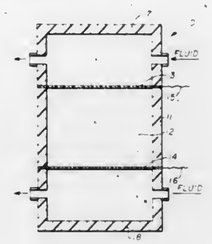
U.S. Cl. 429—11 **42 Claims**

1. A thermoelectric energy system comprising:

(a) at least first and second separated electrodes, said electrodes including copper;

(b) a liquid electrolyte comprising a source of copper ions and a material for complexing the ions, the complexing material being selected from the group consisting of one or a combination of a source of tartrate, a source of ethylenediaminetetraacetic acid, a source of gluconate, lactic acid, malic acid, citric acid, oxalic acid, and a source of silicon dioxide, the electrolyte being disposed between and in contact with the electrodes to provide a metal ion conduction path which extends substantially the entire distance between the electrodes;

(c) an electric circuit connected to the electrodes for removal of electrical energy from the system; and



(d) means for establishing a temperature gradient within said electrolyte whereby the average temperature of one of said electrodes will be greater than that of the other of said electrodes to thereby produce a voltage across the electrodes.

4,211,829

PROCESS FOR ASSEMBLING A POROUS MEMBRANE ON A SUPPORT AND ASSEMBLY PRODUCED IN THIS MANNER

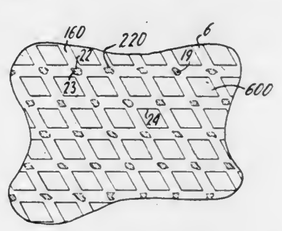
Alain Coulombeau, Le Cendre, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Apr. 18, 1978, Ser. No. 897,565

Claims priority, application France, Apr. 27, 1977, 77 13470; Mar. 31, 1978, 78 10010

Int. Cl.[2] **H01M** *4/00, 12/06*

U.S. Cl. 429—27 **17 Claims**



1. Assembly comprising at least one support, at least part of the surface of which conducts electrons, and at least one electrically insulating membrane, said membrane having pores at least a part of which are open pores, characterized by the fact that it comprises an electrolytic deposit of at least one metal in a part of the open pores, said electrolytic deposit adhering to at least a part of the electron-conductive surface of the support, the assembled membrane being porous due to the presence of open pores without deposit.

4,211,830

AIR-DEPOLARIZED PRIMARY CELL

Robert Chevet, Poitiers, France, assignor to Saft Leclanche, Poitiers and Campagnie Industrielle des Piles Electriques "Cipel", Levallois-Perret, both of, France

Filed Jul. 17, 1979, Ser. No. 58,349

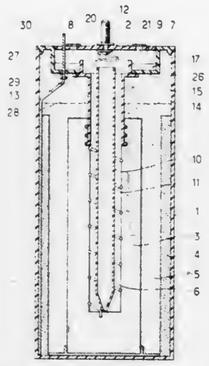
Claims priority, application France, Jul. 31, 1978, 78 22615

Int. Cl.[2] **H01M** *4/00*

U.S. Cl. 429—27 **2 Claims**

1. An air-depolarized primary cell which includes: a container; a negative electrode disposed against the walls of the container; a positive electrode disposed in the central portion of the container together with a ventilation circuit in the posi-

tive electrode; a gelled electrolyte between the electrodes; and a gas-filled space above the electrolyte and the negative electrode; said space being delimited by the walls of the container, the ventilation circuit and a wall which is impermeable to



oxygen, said wall being situated between the walls of the container and the ventilation circuit and partially covered with a layer of sealing material; the periphery of said impermeable wall including a rim having a step configuration and welded to the periphery of the walls of the container.

4,211,831

BATTERY VENT AND FILLER OPENING STRUCTURE

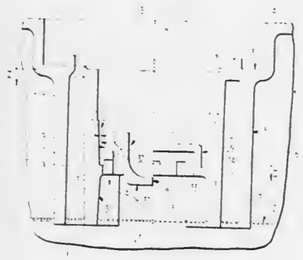
Werner Köhler, Stuttgart; Gerhard Drücker, Neuhausen; Ulrich Kiess, Esslingen, and Manfred Stotz, Aichwald, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,748

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1977, 2708531

Int. Cl.² H01M 2/36

U.S. Cl. 429—78 **25 Claims**



1. A battery, comprising at least one cell means containing an electrolyte liquid, in which the cell means is connected with the atmosphere by way of a fill-in vent connection determining its liquid level and by way of a separate fill-in connection means for filling in electrolyte liquid and for refilling distilled water as well as by way of a control opening means for the insertion of a testing device for checking the operating condition, and in which the free flow cross section of the separate fill-in connection means is dimensioned so narrowly that a liquid seal closing off the fill-in connection means gas-tight will form under the influence of the capillary action and of the excess pressure which will be established during the filling operation of the cell means when the liquid has entered into the opening of the fill-in vent connection terminating in the cell means, and in which a control opening means disposed in an elastic wall is operable to be enlarged, characterized in that the control opening means is separate from the fill-in connection means and is adapted to be essentially closed when the testing device is not inserted therein.

4,211,832

LITHIUM-HALOGEN CELL INCLUDING MONOMER CHARGE TRANSFER COMPLEX

Max A. Mueller, and Curtis F. Holmes, both of E. Amherst, N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,236

Int. Cl.² H01M 4/36, 6/18

U.S. Cl. 429—105 **10 Claims**



1. A lithium-halogen cell comprising an anode comprising solid lithium, a solid electrolyte comprising lithium halide, and a cathode comprising a charge transfer complex of a monomer and a halogen, said monomer comprising an aromatic tertiary amine which forms a complex with said halogen.

4,211,833

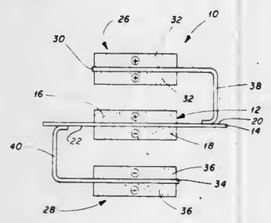
BIPOLAR BATTERY

Harry Einstein, Springfield, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 8, 1978, Ser. No. 967,625

Int. Cl.² H01M 6/48, 4/02

U.S. Cl. 429—149 **23 Claims**



1. A bipolar battery comprising at least two battery, cells, said battery cells each comprising a plurality of electrodes, said electrodes comprising at least two cellular end plate electrodes and at least two interstitially located single pole electrodes, said end plate electrodes and said single pole electrodes each provided in equal numbers of opposite charge and situated in alternate disposition to each other based upon said charge.

a continuous, sheet-like separator located in alternating, woven disposition within each of said cells, said separator passing between all adjacent electrodes to provide electrical separation thereof,

wherein contiguous end plate electrodes of adjacent cells are of opposite polarity and comprise a single, bipolar electrode, and

wherein all of said electrodes are adapted to conduct current internally between each other and said cells.

4,211,834

METHOD OF USING A O-QUINONE DIAZIDE SENSITIZED PHENOL-FORMALDEHYDE RESIST AS A DEEP ULTRAVIOLET LIGHT EXPOSURE MASK

Constantino Lapadula, Mahopac, and Burn J. Lin, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1977, Ser. No. 866,191

Int. Cl.² G03C 5/16

U.S. Cl. 430—326 **21 Claims**

1. A photolithographic method, comprising the steps of:

forming a positive-acting relief image mask from o-quinone diazide sensitized phenol-formaldehyde resist material;

flooding said relief image mask with light having wavelength components below about 3000Å and possibly also having wavelength components above about 3000Å;

imaging transmitted light from said flooded relief image mask onto a layer of photosensitive resist material which is sensitive to actinic light below about 3000Å and, when said flooding light has components above about 3000Å, said imaged layer of photosensitive resist material being insensitive to said components above about 3000Å; and

removing with a preferential solvent the portions of said layer which have been exposed to said actinic light below about 3000A.

4,211,835

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD OF PROCESSING THE SAME

Yoshio Nishina; Syunji Matsuo; Toshio Nagatani; Kazuo Takahashi, and Takeshi Habu, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

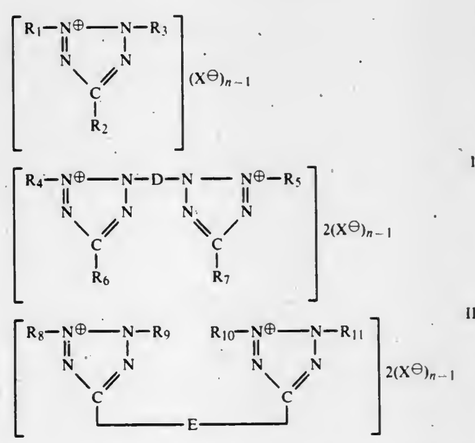
Filed Jan. 16, 1978, Ser. No. 869,609

Claims priority, application Japan, Jan. 27, 1977, 52-7274

Int. Cl.² G03C 5/30, 1/06

U.S. Cl. 430—403 **9 Claims**

1. A method of processing a light-sensitive silver halide black and white photographic material to obtain a high contrast black and white silver image, said material comprising a support, a silver halide emulsion layer containing silver halide grains having an average grain size between 0.25 and 0.5μ, at least 80% of said silver halide grains being of a grain size which falls within the range of 0.7 times said average grain size to 1.3 times said average grain size, said silver halide comprising (i) silver chlorobromide or silver chloroiodobromide, and (ii) at least 50 mol % silver chloride, and a tetrazolium compound selected from the group consisting of the compounds having the following general formulas I, II or III:



wherein R_1, R_3, R_4, R_5, R_8, R_9, R_{10} and R_{11} each represent an alkyl, alkenyl, aryl or heterocyclic group; R_2, R_6 and R_7 each represent allyl, phenyl, naphthyl, heterocyclic, alkyl or amino group, carboxyl or the salt thereof, an alkoxycarbonyl group, mercapto, nitro or hydrogen; D represents an arylene group; E represents an alkylene, arylene or aralkylene group; $X^{\ominus}$ is an anion; and n is 1 or 2, provided that the compound forms an intramolecular salt when n is 1,

comprising exposing said photographic material to an image and to light, and then

developing said exposed photographic material in a developing solution which does not contain hydroquinone selected from the group consisting of Metol, phenidone and Metol, p-aminophenol and catechol, and phenidone and p-aminophenol, to form said high contrast black and white silver image.

4,211,836

METHOD FOR DISPERSING OIL-SOLUBLE PHOTOGRAPHIC ADDITIVES

Masakazu Yoneyama; Yasuo Mukunoki; Takeshi Mikami, and Jun Sasaki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 18, 1979, Ser. No. 4,509

Claims priority, application Japan, Jan. 23, 1978, 53-6025

Int. Cl.² G03C 1/10, 1/40

U.S. Cl. 430—449 **12 Claims**

1. A method for dispersing an oil-soluble photographic additive into water or a hydrophilic colloid wherein a solution of an oil-soluble photographic additive in an organic solvent which is substantially immiscible in water and has a boiling point of at least 190° C. at atmospheric pressure is dispersed in water or a hydrophilic colloid in the presence of lecithin together with an anionic surface active agent having in its molecular structure a hydrophobic moiety containing from 8 to 30 carbon atoms and an $-SO_3M$ or $-OSO_3M$ group wherein M represents a cation capable of forming a salt with the sulfonic or sulfuric acid moiety.

4,211,837

PHOTOGRAPHIC SILVER HALIDE ELEMENT WITH OPAQUE BACKING LAYER

Ralph K. Blake, Westfield; James G. Morgan, Cranbury, both of N.J., and David W. Woodward, Kennett Sq., Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 506,725, Sep. 17, 1974, abandoned. This application Oct. 1, 1976, Ser. No. 728,736

Int. Cl.² G03C 1/76, 1/84

U.S. Cl. 430—502 **9 Claims**

1. In a photographic element comprising a support having on one side a photosensitive silver halide emulsion layer and on the other side an opaque backing layer containing a carbon black opacifying agent and a scavenging agent, the amount of scavenging agent being within the range of 0.01-50% by weight of the carbon black in the opaque backing layer, the improvement wherein said scavenging agent is a fine-grained photosensitive water-insoluble silver halide.

4,211,838

METHOD OF HIGH SENSITIVITY IMAGING AND IMAGING FILM THEREFOR

Masatsugu Izu, Birmingham, and Vincent D. Cannella, Detroit, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

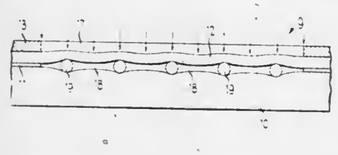
Filed Aug. 25, 1977, Ser. No. 827,470

Int. Cl.² G03C 1/00, 5/24; G01D 15/24, 15/10

U.S. Cl. 430—502 **34 Claims**

1. A dry process high sensitivity imaging film comprising a substrate, and a solid, high optical density and substantially opaque film of a dispersion imaging material deposited on said substrate and including at least two separate and different metal layers of different and substantially mutually insoluble

metal components having relatively high melting points and relatively low melting point eutectics and interfaces between said layers having relatively low melting points, the metal component of one of said metal layers being at least bismuth, tin, lead, cadmium or zinc, and the metal component of another of said metal layers being different from that of said one of said metal layers and being at least bismuth, tin, lead, cadmium or zinc, said film of dispersion imaging material, upon application of energy in an amount above a certain critical value



sufficient to increase the absorbed energy in the film material above a certain critical temperature value related to the relatively low melting points of the interfaces, changing to a substantially fluid state in which the surface tension of the film material acts to cause the substantially opaque film, where subject to said energy, to disperse and change to a discontinuous film comprising openings and deformed material which are frozen in place following said application of energy and through which openings light can pass for decreasing the optical density thereat.

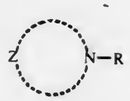
4,211,839

METHOD OF PRODUCING LIGHT-SENSITIVE COMPOSITION FOR USE IN THERMALLY DEVELOPABLE LIGHT-SENSITIVE ELEMENTS AND ELEMENTS SO PRODUCED

Nobuo Suzuki, Asaka; Kenji Sashihara, Minami-ashigara, and Takao Masuda, Asaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 791,447, Apr. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 724,197, Sep. 17, 1976, abandoned. This application Feb. 7, 1978, Ser. No. 875,727
Claims priority, application Japan, Sep. 17, 1975, 50-112452
Int. Cl.² G03C *1/02, 5/30*
U.S. Cl. 430—619 **12 Claims**

1. In a method of producing a composition for use in thermally developable light-sensitive photographic elements comprising mixing: (i) a composition comprising (a) an organic silver salt and (b) a light-sensitive silver halide and (ii) (c) a reducing agent which is present in an amount of from about 0.05 to about 10 mols per mol of said organic silver salt (a); the improvement wherein said composition comprising (a) and (b) is prepared by allowing a light-sensitive silver halide-yielding component present in an amount of from 0.001 to about 0.5 per mol of said organic silver salt (a) to react with said organic silver salt (a) in the presence of (d) an imino compound present in an amount of from about 1×10^{-6} to about 6×10^{-3} per mol of said organic silver salt (a) and being represented by the following general formula:



wherein R represents a hydrogen atom, a halogen atom a hydroxy group or a sulfonyl group; and Z represents the atoms necessary to complete a nucleus selected from the group consisting of pyrazoles, imidazoles, benzimidazoles, triazoles and benzotriazoles.

4,211,840

METHOD FOR PRODUCING D-α-AMINO ACID

Shigeru Nakamori, Yokohama; Kenzo Yokozeki, Kawasaki; Koji Mitsugi, Yokohama; Chikahiko Eguchi, and Hisao Iwagami, both of Kawasaki, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Apr. 17, 1978, Ser. No. 897,003
Claims priority, application Japan, Jun. 8, 1977, 52/67411; Oct. 3, 1977, 52/118928; Dec. 26, 1977, 52/157108
Int. Cl.² C12P *13/24, 13/04*
U.S. Cl. 435—107 **13 Claims**

1. A method for producing a D-α-amino acid, which comprises:

contacting a 5-substituted hydantoin with an effective amount of an enzyme capable of converting the 5-substituted hydantoin directly to the D-α-amino acid, produced by a microorganism belonging to the genus Pseudomonas, Achromobacter, Alcaligenes, Moraxella, Paracoccus or Anthrobacter, in an aqueous medium at a pH in the range from 4 to 9, said microorganism being capable of utilizing the D-isomer of said 5-substituted hydantoin as the sole nitrogen source, but substantially incapable of utilizing the L-isomer of said 5-substituted hydantoin as the nitrogen source and the substituent of said 5-position being such that upon reaction with said enzyme, an optically active D-α-amino acid isomer is produced; and

recovering the D-α-amino acid which accumulates in the aqueous medium.

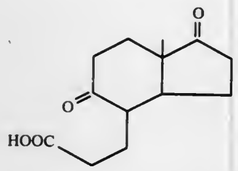
4,211,841

PROCESS FOR MICROBIAL TRANSFORMATION OF STEROIDS

Candice B. Biggs, Kalamazoo; Thomas R. Pyke, Portage, and Merle G. Wovcha, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 831,492, Sep. 8, 1977, abandoned, which is a division of Ser. No. 745,113, Nov. 26, 1976, Pat. No. 4,062,729. This application Nov. 20, 1978, Ser. No. 961,964
Int. Cl.² C12P *7/40*
U.S. Cl. 435—136 **8 Claims**

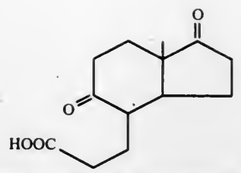
1. A process for preparing a compound, of the formula



I

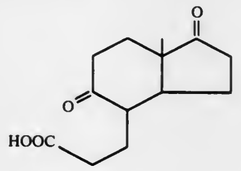
which comprises cultivating a mutant microorganism selected from the group consisting of Arthrobacter, Bacillus, Brevibacterium, Corynebacterium, Potaminobacter, Serratia, and Streptomyces, said mutant being characterized by its ability to selectively degrade steroids with or without a 17-alkyl side chain of from 2 to 10 carbon atoms, inclusive, and accumulate predominantly 3aα-H-4α-[3'-propionic acid]-7aβ-methylhexahydro-1,5-indanedione in the fermentation beer, in an aqueous nutrient medium at a pH of about 7 to about 9 under aerobic conditions in the presence of a steroid with or without a 17-alkyl side chain containing from 2 to 10 carbon atoms, inclusive.

5. A process for preparing a fermentation beer,



I

containing predominantly the compound of the formula



I

which comprises cultivating a mutant microorganism selected from the group consisting of Arthrobacter, Bacillus, Brevibacterium, Corynebacterium, Protaminobacter, Serratia, and Streptomyces, said mutant being characterized by its ability to selectively degrade steroids with or without a 17-alkyl side chain of from 2 to 10 carbon atoms, inclusive, and accumulate predominantly 3aα-H-4α-[3'-propionic acid]-7aβ-methylhexahydro-1,5-indanedione in the fermentation beer, in an aqueous nutrient medium at a pH of about 7 to about 9 under aerobic conditions in the presence of a steroid with or without a 17-alkyl side chain containing from 2 to 10 carbon atoms, inclusive.

4,211,842

STARCH-DEGRADING BENZYMES DERIVED FROM *CLACOSPORIUM RESINAE*

James J. Marshall, Miami, Fla., assignor to Lifeline Products, Inc., Plainfield, N.J.

Filed Apr. 3, 1978, Ser. No. 892,747
Int. Cl.² C12D *13/10*
U.S. Cl. 435—210 **11 Claims**

1. A method of producing a mixture of starch-degrading enzymes which comprises:

culturing a microorganism, *Cladosporium resinae* (Strain ATCC No. 20495), on a growth medium containing an assimilable carbon source and other nutrients until starch-degrading enzymes accumulate in the medium;

and recovering the mixture of starch-degrading enzymes from the medium.

4,211,843

STRAIN OF MEASLES VIRUS AND PROCESS OF PRODUCING THE SAME

Robert Dubreuil, deceased, late of Montreal, Canada (by Monique Dubreuil, heir); Orvo Ast, Pierrefonds, and Vytautas Pavilanis, Westmount, both of Canada, assignors to L'Institut Armand-Frappier, Laval, Canada

Filed Nov. 30, 1977, Ser. No. 856,202
Int. Cl.² A01N *1/02;* **A61K** *39/12*
U.S. Cl. 435—2 **9 Claims**

1. A process for the production of an attenuated strain of measles virus effective for the production of an attenuated measles virus vaccine, which comprises:

selecting an Edmonston strain of measles virus which has undergone a plurality of culture passages in various culture media, and taking a sample of the last culture passage;

effecting a plurality of culture passages of said sample in primary cultures of fibroblasts of chicken embryos;

inoculating a sample from the last culture passage and effecting a culture passage thereof in a primary culture of fibroblasts of chicken embryos thereby obtaining clones of said virus;

isolating clones of measles virus obtained in the preceding step, and selecting those which are thermosensitive at a temperature between about 32° C. and 37° C.;



among the thermosensitive clones which have been selected, making another selection of the ones with moderate cytopathogenic effect; and

finally isolating from the latest selection, the one which shows highest seroconversion on monkeys, thus producing an attenuated strain of measles virus.

4,211,844

BILIRUBIN-SPECIFIC FUNGAL ENZYME PREPARATION

Tai-Wing Wu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 19, 1978, Ser. No. 907,640
Int. Cl.² G01N *31/14;* **C07G** *7/028*
U.S. Cl. 435—25 **20 Claims**

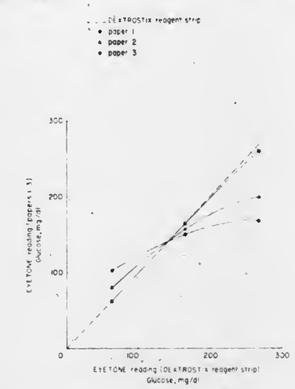
1. A bilirubin-specific enzyme preparation comprising a fungal enzyme which, in the presence of a bilirubin-containing aqueous liquid having a pH of about 7.4 and a temperature of about 37° C., degrades at least about 0.02 micromoles of bilirubin per minute per milligram of protein.

4,211,845

GLUCOSE INDICATOR AND METHOD

Marvin A. Genshaw, and William I. White, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 24, 1978, Ser. No. 963,332
Int. Cl.² G01N *33/16*
U.S. Cl. 435—14 **14 Claims**



1. A glucose indicator comprising glucose oxidase, a substance having peroxidase activity and a color-forming substance oxidizable by hydrogen peroxide in the presence of said peroxidase, said color-forming substance consisting of a mixture of 3,3',5,5',-tetramethylbenzidine and syringaldazine.

4,211,846
PROCESSES FOR THE MANUFACTURE OF D(-)-3-HYDROXYBUTYRIC ACID AND D(-)-3-HYDROXYBUTYRIC ACID PRODUCING MUTANTS

Robert M. Lafferty, Graz, Austria, assignor to Agroferm AG, Chur, Switzerland

Filed Aug. 4, 1977, Ser. No. 821,858
Claims priority, application Switzerland, Aug. 4, 1976, 9957/76; Aug. 5, 1976, 10010/76
Int. Cl.² C12D *13/02*
U.S. Cl. 435—141 **7 Claims**

1. A process for producing D(−)-3-hydroxybutyric acid which comprises cultivating a mutant microorganism on an aqueous nutrient medium containing trace elements, an assimilable nitrogen source and a carbon source selected from the group consisting of carbon dioxide, glucose, fructose, saccharose, lactose, molasses, whey, methanol, ethanol, glycerin and spent lye from caprolactam synthesis under conditions and for a time sufficient to produce said D(−)-3-hydroxybutyric acid and isolating said D(−)-3-hydroxybutyric acid from the medium, wherein said mutant microorganism does not form 3-hydroxybutyric acid dehydrogenase and produces at least 100 mg/liter of D(−)-3-hydroxybutyric acid when cultivated on said nutrient medium for 30 hours at a temperature between 25° and 40° C. and at a pH value between 4 and 8.

6. A process for producing a microorganism mutant capable of converting into D(−)-3-hydroxybutyric acid a maximum amount of a carbon source selected from the group consisting of carbon dioxide, glucose, fructose, saccharose, lactose, molasses, whey, methanol, ethanol, glycerin and spent lye from caprolactam synthesis within a minimum space of time, which comprises (1) subjecting a microorganism capable of excreting butyric acid or D(−)-3-hydroxybutyric acid, or of accumulating poly(D-3-hydroxybutyric acid), and which does not form the enzyme 3-hydroxybutyric acid dehydrogenase, to the action of a mutagenic agent, (2) selecting from the mutants thus obtained those which cannot metabolise D(−)-3-hydroxybutyric acid and (3) selecting from the thus obtained mutants those which are capable of producing at least 100 mg of D(−)-3-hydroxybutyric acid per liter of the nutrient medium within 30 hours when cultivated at a temperature of approximately 25°–40° C. and a pH value of approximately 4–8 in an aqueous nutrient medium which contains a carbon source as specified above.

4,211,847
POLYURETHANE FOAMS AND FOAM FORMING COMPOSITIONS CONTAINING AMINE SCAVENGERS

Clifton L. Kehr, Silver Spring; Louis L. Wood, Rockville, and James L. Guthrie, Ashton, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

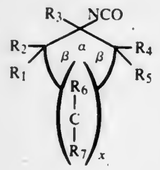
Continuation-in-part of Ser. No. 831,628, Sep. 8, 1977, abandoned, which is a continuation-in-part of Ser. No. 728,464, Sep. 29, 1976, abandoned. This application Nov. 20, 1978, Ser. No. 962,542
Int. Cl.² C08G *18/14, 18/71*
U.S. Cl. 521—121 **9 Claims**

1. A mixture for preparing polyurethane foams having a reduced aromatic amine content comprising an admixture of

(a) a member of the group consisting of

1. a urethane-containing prepolymer having polyether or polyester backbone segments end-capped with an aromatic isocyanate and
2. an aromatic polyisocyanate and a polyol selected from the group consisting of polyethers and polyesters;

(b) 0.01 to 15% by weight of said group member (a) of an aromatic amine scavenger selected from the group consisting of cyclohexyl monoisothiocyanate and a hindered cycloaliphatic monoisocyanate of the general formula:



wherein R_1–R_7 are members of the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl or mixtures thereof wherein the alkyl groups contain 1–18 carbon atoms, the cycloalkyl groups contain 4–8 carbon atoms and the aryl groups contain 6–14 carbon atoms with the proviso that where R_3 is a group member other than H, R_1, R_2, R_4 and R_5 can be H and with the further proviso that where R_3 is H at least two of R_1, R_2, R_4 and R_5 are group members other than H and x is 1 to 7; and

(c) about 0.4 to 1,000 moles of water for each mole of NCO.

7. A crosslinked hydrophilic foam having a three-dimensional network comprising the reaction product of

A. isocyanate capped prepolymers consisting of a mixture of

(1) an isocyanate capped hydrophilic polyoxyethylene diol, said diol having an ethylene oxide content of at least 40 mole percent; and

(2) an isocyanate capped polyol having a hydroxyl functionality in the range 3 to 8 prior to capping; said isocyanate capped polyol being present in an amount in the range 2.9 to 50% by weight of (1) and (2);

B. 0.5 to 10% by weight of A and B of an aromatic polyisocyanate having an isocyanate functionality in the range 2.0 to 3.0;

C. 0.01 to 15% by weight of A and B of an aromatic amine scavenger selected from the group consisting of cyclohexyl monoisothiocyanate and a hindered cycloaliphatic monoisocyanate of the general formula:

wherein R_1–R_7 are members of the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl or mixtures thereof wherein the alkyl groups contain 1–18 carbon atoms, the cycloalkyl groups contain 4–8 carbon atoms and the aryl groups contain 6–14 carbon atoms with the proviso that where R_3 is a group member other than H, R_1, R_2, R_4 and R_5 can be H and with the further proviso that where R_3 is H at least two of R_1, R_2, R_4 and R_5 are group members other than H and x is 1 to 7; and

D. 6.5 to 390 moles of water for each mole of unreacted isocyanate.

4,211,848
PROCESS FOR THE PRODUCTION OF POLYISOCYANATE-POLYESTER-SILICATE PLASTIC

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 911,829, Jun. 2, 1978, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,629, Sep. 11, 1970, abandoned. This application Jan. 26, 1979, Ser. No. 6,585
Int. Cl.² C08J *9/00*
U.S. Cl. 521—154 **16 Claims**

1. The process for the production of polyisocyanate-polyester silicate plastic by mixing the following components:

(a) 20 to 70 parts by weight of an organic polyisocyanate or polythiocyanate;

(b) 3 to 80 parts by weight of an unsaturated polyester resin;

(c) catalytic amount of a free-radical initiator to polymerize the unsaturated polyester resin;

(d) 0% to 100% by weight of an inorganic water-binding component, said water-binding component being capable of absorbing water to form a solid or a gel, and based on the total weight of components (a) and (b);

(e) 10% to 100% by weight of a polyisocyanate curing agent, based on the total weight of components (a), (b) and (d), but with the proviso that the polyisocyanate curing agent is added last.

4,211,849
PROCESS OF PRODUCING CROSS-LINKED URETHANE-GROUP COMPRISING FOAMS OF OPEN-CELL STRUCTURE

Hans-Joachim Kollmeier, Essen, and Gerd Rossmy, Essen-Werden, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Apr. 1, 1975, Ser. No. 564,052
Claims priority, application Switzerland, Apr. 8, 1974, 4894/74
Int. Cl.² C08G *18/32, 18/14*
U.S. Cl. 521—164 **11 Claims**

1. A process of producing cross-linked, resilient, urethane-group containing foams of open-cell structure which comprises foaming a mixture of

(a) di or trifunctional active hydrogen atom-comprising polyol of hydroxy equivalent weights of between about 700–5,000;

(b) a di or trifunctional polyisocyanate;

(c) a catalyst;

(d) a blowing agent; and

(e) a cross-linker, said cross-linker being sorbite, mannite, trimethylolmelamine, hexamethylolmelamine, glucose, sucrose, erythrite or partial esters or ethers of glucose or sucrose, and being used in quantities of 0.2 to 3.0 hydroxy equivalent weights calculated on one hydroxy equivalent weight of the polyol in the mixture.

4,211,850
POLYHYDROXY COMPOUNDS CONTAINING URETHANE ARYL SULFONIC ACID HYDROXYALKYL ESTER GROUPS

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 929,617, Jul. 31, 1978. This application Jun. 11, 1979, Ser. No. 47,510
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2735032
Int. Cl.² C08G *18/14*
U.S. Cl. 521—164 **1 Claim**

1. Polyurethanes obtained by a process comprising reacting:

(A) polyisocyanates; and

(B) compounds containing at least two hydroxyl groups and at least one sulfonic acid ester group and having an average molecular weight of from 300 to 12,000, wherein at least one of the hydroxyl containing compounds contains a urethane aryl sulfonic acid hydroxyalkyl ester group.

4,211,851
PROCESS FOR THE PREPARATION OF SELF-SWELLING LEAKAGE-PREVENTING MATERIALS

Hiroharu Sasayama, Ageo, Japan, assignor to C.I. Kasei Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 825,018, Aug. 16, 1977, Pat. No. 4,155,957. This application Nov. 30, 1978, Ser. No. 965,377
Claims priority, application Japan, Aug. 23, 1976, 51/100388
Int. Cl.² C08L *23/22, 23/26, 23/36, 35/00*
U.S. Cl. 525—108 **5 Claims**

1. A process for the preparation of a self-swelling leakage-preventing material comprising drying and heat-treating a liquid mixture composed of

(a) a copolymer of a lower olefin and maleic anhydride,

(b) 20-100 parts by weight as solid per 100 parts by weight of

(a) of an aqueous emulsion of an acrylic polymer having compatibility with the component (a) and containing at least one polymerized monomer selected from the group consisting of substituted and unsubstituted acrylic acids, acrylic acid esters, acrylamides, acrylonitriles and acrolein, and

(c) a compound having, in a molecule, at least two functional groups selected from the class consisting of a hydroxy group, amino group and epoxy group, until a crosslinked product having a swelling ratio in water of 5–40 times is obtained.

4,211,852
THERMOPLASTIC OLEFIN RESIN COMPOSITION AND LAMINATED FILM OR SHEET THEREOF

Akira Matsuda, Iwakuni; Tetsuo Tojo, Ohtake, and Kazuo Iwata, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 884,220, Mar. 7, 1978. This application Mar. 5, 1979, Ser. No. 17,803
Claims priority, application Japan, Sep. 26, 1977, 52-114690; Sep. 27, 1977, 52-115088; Jan. 13, 1978, 53-1876
Int. Cl.² C08L *23/12, 23/14, 23/18*
U.S. Cl. 525—240 **5 Claims**

1. A thermoplastic olefin resin composition composed of a blend of

(i) 5 to 95% by weight, based on the weight of the blend, of a random copolymer consisting essentially of 55 to 85 mole% of propylene and 45 to 15 mole% of 1-butene and having a heat of fusion of 10 to 80 joules/g determined by differential thermal analysis using a differential scanning calorimeter, and

(ii) 5 to 95% by weight, based on the weight of the blend, of an isotactic propylene resin containing 0 to 10 mole% of another α-olefin and having a melting point of 135° to 165° C. and a melt index, measured at 230° C., of 0.1 to 20.

4,211,853

FLAME RETARDANT HALOHYDROCARBON POLYMER COMPOSITION

Charles F. Raley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 765,142, Feb. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 168,756, Aug. 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 53,332, Jul. 8, 1970, abandoned. This application Jul. 31, 1978, Ser. No. 929,619

The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.

Int. Cl.[2] C08K *3/02*

U.S. Cl. 525—317 **5 Claims**

1. A halohydrocarbon polymer composition consisting essentially of (1) a halohydrocarbon polymer plasticized with from about 10 to about 250 weight parts of at least one polymerizable combustible monomer, said plasticized polymer being normally flammable, and (2) elemental red phosphorus having a specific gravity greater than two, said phosphorus being present in a flame retarding amount in the range from about 0.5 to about 20 weight parts, both of said weight parts being based on 100 weight parts of the halohydrocarbon polymer.

4,211,854

BLOCK POLYMERS OF POLY(TETRAMETHYLENE OXIDE) AND TETRAHYDROFURAN/ALKYLENE OXIDE COPOLYMERS

Ivan M. Robinson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 21, 1978, Ser. No. 935,508

Int. Cl.[2] C08L *37/00*

U.S. Cl. 525—410 **15 Claims**

1. A linear hydroxyl-terminated block polymer represented by the structure

A—B

or

A—B—A

where

the A block is a random copolymer of THF and one or more alkylene oxides containing two or three carbon atoms in its oxide ring, which block constitutes 5–95%, by weight, of the total polymer, and

the B block is poly(tetramethylene oxide), which block constitutes 5–95%, by weight of the total polymer, the polymer having a number average molecular weight of 500–20,000.

4,211,855

CATALYTIC DEHYDROHALOGENATION PROCESS FOR ALLYLICALLY HALOGENATED UNSATURATED HYDROCARBON POLYMERS

Irwin J. Gardner, Fanwood, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 775,389, Mar. 7, 1977, Pat. No. 4,145,492. This application Dec. 4, 1978, Ser. No. 966,396

Int. Cl.[2] C08F *8/26*

U.S. Cl. 525—344 **17 Claims**

1. A method for dehydrohalogenating an allylically halogenated unsaturated hydrocarbon polymer which comprises contacting said polymer in the liquid phase at a temperature of about 50° to 250° C. in the presence of a dehydrochlorination catalyst selected from the group consisting of $CuSO_4$ and activated alumina supported Ta_2O_5 and Nb_2O_5 catalyst compositions or a dehydrobomination catalyst selected from the group consisting of Ta_2O_5, Nb_2O_5, and $CuSO_4$ catalyst compositions.

4,211,856

PROCESS FOR PRODUCING ACID AGENT FROM SULFONATED PHENOL AND FORMALDEHYDE

Vasily D. Valgin, ulitsa Truda, 18, kv. 4; Alexandr M. Vasilenko, ulitsa Usti na Labe, 2, kv. 15, both of Vladimir; Anatoly Y. Morozov, ulitsa Geroev Pionerov, 11, kv. 6, and Vadim D. Chesnokov, ulitsa K. Marxa, 50, kv. 28, both of Rostovskaya oblast, Kamensk-Shakhtinsky, all of U.S.S.R.

Filed Jan. 5, 1978, Ser. No. 867,173

Int. Cl.[2] C08G *8/18*

U.S. Cl. 528—141 **4 Claims**

1. A process for producing an acid agent which comprises intermixing sulphonated phenol and formaldehyde in a ratio of from 1:0.3 to 1:0.5 and conducting the reaction at said constant reactant molar ratio in an "ideal displacement" apparatus at a temperature of from 50° to 120° C.

4,211,857

METHOD FOR PRODUCING POLYPHENYLENE OXIDES

Akitoshi Sugio, Ohmiya, and Takeo Kawaki, Tokyo, both of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,568

Claims priority, application Japan, Apr. 4, 1978, 53-39350

Int. Cl.[2] C08G *65/44*

U.S. Cl. 528—215 **6 Claims**

1. In the method for producing polyphenylene oxides from monohydric phenols by subjecting a monohydric phenol to an oxidation-polycondensation in a reaction vessel equipped with a reflux condenser, with an oxygen-containing gas in the presence of a complex catalyst comprising a copper compound and an amine, while passing said gas into the vessel,

an improvement which comprises adjusting the temperature of the oxygen-containing gas to be discharged through said reflux condenser within a range of 10°–25° C.

4,211,858

METHOD FOR PREPARING POLYESTER

Osamu Wada, and Naohiko Kusakari, both of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,608

Int. Cl.[2] C08G *63/18*

U.S. Cl. 528—272 **10 Claims**

1. In a method for preparing polyester by polycondensation reaction of polyester intermediate or precursor mainly composed of bis-(hydroxyalkyl)terephthalate or its oligomers continuously introducing said polyester intermediate or precursor into a polycondensation reaction vessel, an improvement in which the vapor of alkylene glycol is continuously blown into the gas phase in said polycondensation reaction vessel during said polycondensation reaction.

4,211,859

ANTISTATIC AGENTS, SYNTHESIS AND USE THEREOF

Sam K. Choi, CPO Box 150 Chung Ryang Ni, and Kee D. Lee, CPO Box 1780, both of Seoul, Rep. of Korea

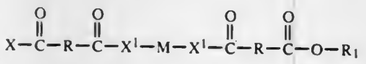
Filed Nov. 2, 1978, Ser. No. 957,213

Claims priority, application Rep. of Korea, Nov. 16, 1977, 77-2682

Int. Cl.[2] C08G *63/20*

U.S. Cl. 528—275 **3 Claims**

1. An antistatic agent useful for the manufacture of an antistatic polyester fiber having the structural formula of:



wherein

(1) X is selected from the group consisting of

(a) HO—,

(b) NH_2—,

(c) $OHSO_3$—, and

(d) Cl—, Br—, or I—;

(2) X^1's, which can be either identical or different, are selected from the group consisting of

(a) —O—,

(b) —NH—, and

(c) $—SO_3—$;

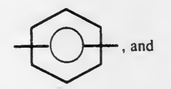
(3) R's, which can be either identical or different, are selected from the group consisting of

(a) $—(CH_2)_n—$ where n is an integer ranging from 1 to 8,

(b) $—(HC{=}CH)_k—$ wherein k is either 1 or 2,

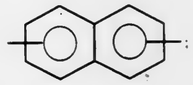
(c) $—(C{\equiv}C)—$,

(d)



, and

(e)



(4) R_1 is a polyalkylene glycol radical having the structural representation of

$$—[(CH_2)_m—O]_p—(CH_2)_m—OH$$

where p is a number ranging from about 10 to about 1,500 and m is either 2 or 3; and

(5) M is a divalent metal selected from the group consisting of Be, Mg, Ca, Sr, Ba, Zn and Cd.

4,211,860

THERMOSETTING IMIDE RESINS FROM DIHYDRAZIDE OF DICARBOXYLIC ACID

Horst Stenzenberger, Schriesheim, Fed. Rep. of Germany, assignor to Technochemie GmbH Verfahrenstechnik, Dossenheim, Fed. Rep. of Germany

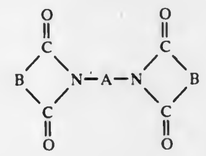
Filed Nov. 29, 1978, Ser. No. 964,665

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2754631

Int. Cl.[2] C08G *73/12*

U.S. Cl. 528—312 **17 Claims**

12. In a process of producing a thermosetting imide resin, the steps which comprises intimately mixing a finely divided N,N'-bisimide of an unsaturated dicarboxylic acid of the formula

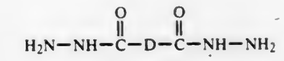


in which

A is a divalent organic group with at least two carbon atoms; and

B is a divalent group having a carbon to carbon double bond and being capable of addition polymerization

with a dihydrazide of a dicarboxylic acid of the formula



in which D is a divalent organic group

in a molar proportion between about 1.1 and about 10.0 and heating the resulting mixture to a temperature between about 70° C. and about 180° C. for a period of time to yield a moldable and curable, thermosetting prepolymerized imide resin.

4,211,861

THERMOSETTING IMIDE RESINS FROM AMINO ACID HYDRAZIDE

Horst Stenzenberger, Schriesheim, Fed. Rep. of Germany, assignor to Technochemie GmbH Verfahrenstechnik, Dossenheim, Fed. Rep. of Germany

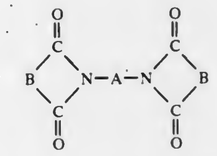
Filed Nov. 29, 1978, Ser. No. 964,664

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754632

Int. Cl.[2] C08G *73/12*

U.S. Cl. 528—322 **15 Claims**

1. A thermosetting imide resin obtained by reacting at least one N,N'-bisimide of an unsaturated dicarboxylic acid of the formula

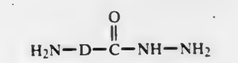


in which

A is a divalent organic group with at least two carbon atoms and

B is a divalent organic group having a carbon to carbon double bond and being capable of addition polymerization,

with at least one hydrazide of an amino acid of the formula



in which

D is a divalent organic group, the molar proportion of the reactants in said imide resin being between about 1.1 and 10.0 according to the equation

$$\frac{\text{Number of molecules of the N,N'-bisimide}}{\text{Number of molecules of the amino acid hydrazide}}$$

4,211,862

BLOCK POLYMERS OF HYDROQUINONE DI-(β-HYDROXYALKYL) ETHERS OR ISOMERS THEREOF AND TETRAHYDROFURAN/ALKYLENE OXIDE COPOLYMERS

Engelbert Pechhold, Chadds Ford, Pa., and Ivan M. Robinson, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 16, 1978, Ser. No. 951,387

Int. Cl.[2] C08L *37/00*

U.S. Cl. 528—405 **16 Claims**

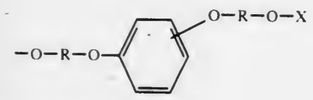
1. A linear hydroxyl-terminated block polymer represented by the structure

A—B

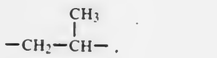
or

A—B—A

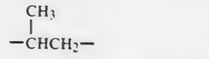
wherein the A block is a random copolymer of THF and one or more alkylene oxides containing two or three carbon atoms in its oxide ring, which block constitutes 60–99% of the weight of the total polymer, and the B block is represented by the structure



wherein R is —CH_2CH_2—,



or



and X is hydrogen when the polymer is in the A—B configuration, and not present when the polymer is in the A—B—A configuration, which block constitutes 1–40% of the weight of the total polymer,
the polymer having a number average molecular weight of 500–20,000.

4,211,863
POLYMER SLURRY CATALYST RESIDUE DEACTIVATION

Max P. McDaniel; John D. Hottovy, and Melvin B. Welch, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 17, 1979, Ser. No. 4,123
Int. Cl.² C08F 6/02
U.S. Cl. 528—483 **7 Claims**

1. A method for deactivating catalyst residues of a transition metal compound and an organometallic compound contained in a polymer product slurry said method comprising (1) contacting said residue-containing slurry with anhydrous CO_2 in a transfer line downstream of the outlet of a polymerization reaction zone and (2) sufficiently reducing pressure on said polymer slurry to flash at least a portion of the liquid in said slurry thereby producing a zone of turbulence in conjunction with said contacting to cause an action of mixing said polymer slurry and anhydrous CO_2.

4,211,864
DAUNORUBICIN AND DOXORUBICIN LABELLED WITH ^{14}C AT THE 14-POSITION AND PROCESSES FOR THEIR PREPARATION

Gian P. Vicario, Novara; Sergio Penco, and Federico Arcamone, both of Milan, all of Italy, assignors to Societa Farmaceutici Italia (Farmitalia Carlo Erba S.p.A.), Milan, Italy

Filed Feb. 14, 1978, Ser. No. 877,755
Claims priority, application United Kingdom, Feb. 16, 1977, 06372/77
Int. Cl.² C07H 15/24
U.S. Cl. 536—17 A **10 Claims**

1. A process for preparing [14-^{14}C]-daunorubicin which comprises reacting 9-desacetyl-9-formyl-N-trifluoroacetyl-daunorubicin dissolved in an inert aprotic organic solvent, with [^{14}C]-diazomethane to form a reaction mixture including [14-^{14}C]-N-trifluoroacetyl-daunorubicin separating the [14-^{14}C]-N-trifluoroacetyl-daunorubicin from said reaction mixture and treating same with an aqueous base to hydrolyze off the N-trifluoroacetyl protecting group and thereby obtain [14-^{14}C]-daunorubicin base.

4,211,865
NOVEL PROSTAGLANDIN PRECURSORS IN POLYMERIC FORM

Paolo Ferruti, V.le Cassiodoro, 24, and Rodolfo Paoletti, V.le Regina Margherita, 43, both of Milan, Italy

Filed Aug. 10, 1977, Ser. No. 823,500
Claims priority, application Italy, Aug. 10, 1976, 26172 A/76
Int. Cl.² C08B 31/02
U.S. Cl. 536—48 **13 Claims**

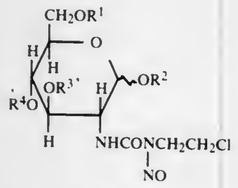
1. A non-toxic polymer having a molecular weight of between about 5,000 and 1,500,000 and consisting essentially of a macromolecular polysaccharide matrix selected from the group consisting of starch and dextran esterified with a polyunsaturated acid having 20 carbon atoms selected from the group consisting of 8,11,14-eicosatrienoic acid, 5,8,11,14-eicosatetraenoic acid and 5,8,11,14,17-eicosapentenoic acid.

4,211,866
ACYL DERIVATIVES OF 2-[3-(2-CHLOROETHYL)-3-NITROSOUREIDO]-2-DEOXY-D-GLUCOPYRANOSE

Shingo Matsumura; Masakuni Ozaki; Hisao Watanabe; Hiroyuki Kuroda; Teruya Nakamura, and Akira Obayashi, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd. and Takara Shuzo Co., Ltd., both of, Japan

Filed Oct. 3, 1978, Ser. No. 948,169
Claims priority, application Japan, Oct. 3, 1977, 52/119270
Int. Cl.² C07H 5/06
U.S. Cl. 536—53 **6 Claims**

1.



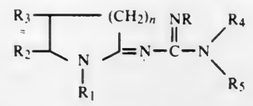
wherein R^1, R^2, R^3 and R^4 are the same or different and each is hydrogen or —$CO(C_nH_{2n})CH_3$ wherein n has a value of from 8 to 16, at least one of R^1, R^2, R^3 and R^4 being other than hydrogen.

4,211,867
NITROGEN HETEROCYCLIC CARBOXIMIDAMIDE COMPOUNDS

Chris R. Rasmussen, Ambler, Pa., assignor to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Continuation-in-part of Ser. No. 752,588, Dec. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 668,386, Mar. 19, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,561
Int. Cl.² A61K 31/54; C07D 417/12
U.S. Cl. 544—60 **48 Claims**

1. A chemical compound selected from the group consisting of a guanidine derivative having the formula:



and the pharmaceutically acceptable acid addition and quaternary salts thereof, wherein:
n is the integer 1, 2 or 3;
R_1 is a member selected from the group consisting of hydrogen, alkyl having from 1 to 8 carbons, cycloalkyl having from 3 to 6 carbons, alken-2-yl having from 3 to 5 carbons, hydroxyloweralkyl, benzyl and phenyl;
R_2 is a member selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbons and phenyl;
R_3 is a member selected from the group consisting of hydrogen, alkyl having from 1 to 8 carbons and phenyl;
R_4 is a member selected from the group consisting of hydrogen, methyl and ethyl;
R_5 is a member selected from the group consisting of alkyl having from 1 to 4 carbons, cycloalkyl having from 3 to 7 carbons, benzyl, and phenyl and phenyl substituted with from 1 to 3 substituents each selected from the group consisting of halo, loweralkyl and loweralkoxy;



taken together represents a 3- to 7-membered saturated azacarbocyclic ring; provided that when -NR_4R_5 represents a six-membered ring, (i) said ring may, if desired, be interrupted by an oxygen or sulfur atom or by an additional nitrogen atom, which additional nitrogen atom may be substituted with loweralkyl, phenyl, or benzyl, or (ii) said ring may be substituted with loweralkyl,
at a carbon atom other than one immediately adjacent the nitrogen atom which is bonded to the carboximidamide function, selected from the group consisting of aziridinyl, azetidinyl, pyrrolidinyl, piperidino, 2,3,4,5,6,7-hexahydro-azepinyl, morpholino, thiamorpholino, thiamorpholino-1-oxide, thiamorpholino-1, 1-dioxide, 2, 6-diloweralkyl-morpholino 4-loweralkyl-piperazinyl, 4-phenyl-piperazinyl, 4-
R is a member selected from the group consisting of:
alkyl having from 4 to 10 carbons;
cycloalkyl having from 5 to 8 carbons;
bicycloalkyl having from 7 to 10 carbons;
bicycloalkenyl having from 7 to 10 carbons;
tricycloalkyl having from 9 to 10 carbons;
1-adamantylmethyl;
tricycloalkenyl having from 9 to 10 carbons;
arylalkyl in which the aryl function is a member selected from the group consisting of phenyl and naphthyl and the alkyl function has from 1 to 4 carbons;
α,A-tetramethylene-phenethyl;
diphenylalkyl in which the alkyl function has from 1 to 2 carbons;
naphthyl;
fused diarylcycloalkenyl;
fused arylcycloalkyl;
phenylcycloalkyl in which the cycloalkyl function has from 5 to 7 carbons;
cycloalkylcycloalkyl in which each cycloalkyl function has from 5 to 7 carbons;
phenyl; methylenedioxyphenyl; phenyl substituted with from 1 to 3 substituents each selected from the group consisting of halo, loweralkyl and loweralkoxy; and phenyl substituted with a member selected from the group consisting of amino, dimethylamino, methylethylamino, diethylamino, loweralkanoylamino, thioloweralkyl, sulfinylloweralkyl, sulfonylloweralkyl, trifluoromethyl, hydroxy, benzyloxy, loweralkanoyloxy, loweralkanoyl and nitro; and
3-Pyridyl, and said 3-pyridyl substituted at the ring carbons with 1 to 2 members selected from the group consisting of halo, loweralkyl, and loweralkoxy.

4,211,868
PROCESS FOR MAKING A FLUOROELASTOMER GELLING AGENT PREPARATION OF 1,3,5-TRIS-(3,3-DIFLUORO-2-PROPENYL)-S-TRIAZINE-2,4,6-(1H,3H,5H)-TRIONE

John P. Erdman, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1979, Ser. No. 42,947
Int. Cl.² C07D 251/34
U.S. Cl. 544—221 **4 Claims**

1. A process for making hexafluorotriallylisocyanurate which comprises reacting 1,1-difluoro-1,3-dibromopropane with a compound selected from the group consisting of cyanuric acid and alkali metal salts thereof.

4,211,869
PROCESS FOR THE PREPARATION OF TETRACHLOROPYRIMIDINE

Gunther Beck, Leverkusen; Gerhard Dankert, Cologne, and Fritz Döring, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 964,049
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753204
Int. Cl.² C07D 239/30
U.S. Cl. 544—334 **6 Claims**

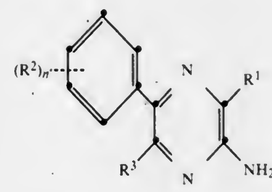
1. Process for the preparation of tetrachloropyrimidine, characterised in that 2-cyanoethyl isocyanide dichloride is reacted with chlorine in the gas phase in the temperature range from 200°–650° C.

4,211,870
PREPARATION OF SUBSTITUTED 2-AMINOPYRAZINES

Charles J. Barnett, Indianapolis; Thomas L. Emmick, Greenfield, and Richard C. Hoying, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

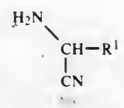
Filed Apr. 6, 1979, Ser. No. 27,630
Int. Cl.² C07D 241/20
U.S. Cl. 544—336 **12 Claims**

1. A method for the preparation of 2-aminopyrazines of the formula

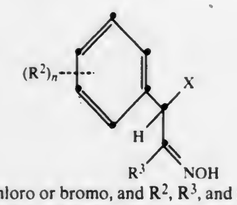


(I)

wherein
R^1 is hydrogen or C_1–C_4 alkyl;
R^2 is hydrogen, halo, C_1–C_3 alkyl, or trifluoromethyl;
n is 0, 1, or 2, with the proviso that when n=2, only one ortho position may be substituted; and
R^3 is C_1–C_4 alkyl,
which comprises (A) reacting an aminoacetonitrile of the formula

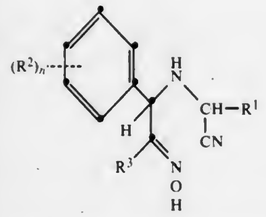


wherein R^1 has the same value as set forth hereinbefore, with an α-chloro or α-bromo oxime of the formula



wherein X is chloro or bromo, and R^2, R^3, and n have the same values as set forth hereinbefore, in a solvent in the presence of an acid-uptake agent, to yield a hydroxyimino-substituted aminoacetonitrile of the following formula (II)

(II)



wherein R^1, R^2, R^3, and n have the same values as set forth hereinbefore; (B), separating the hydroxyimino-substituted aminoacetonitrile; and (C), heating the thus obtained hydroxyimino-substituted aminoacetonitrile in an acid selected from the group consisting of polyphosphoric acid, 85% phosphoric acid, and a mixture of phosphoric acid with phosphorus pentoxide, at a temperature of from about 50° to about 140° C., for from about ½ to about 4 hours, and isolating the product.

4,211,871

HEAVY METAL DERIVATIVES OF MERCAPTOPYRIDINE-1-OXIDE

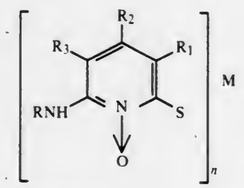
Miriam L. Douglass, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 791,613, Apr. 27, 1977, Pat. No. 4,122,084, which is a division of Ser. No. 629,436, Nov. 6, 1975, Pat. No. 4,048,181. This application Aug. 8, 1978, Ser. No. 932,065

Int. Cl.² C07D *213/89*

U.S. Cl. 546—6 **6 Claims**

1. A mercaptopyridine-1-oxide compound having the following structural formula:



wherein R is selected from the group consisting of the acyl radical $R_oC{=}O$ and the alkoxycarbonyl radical $R_oOC{=}O$, where R_O is a C_1-C_6 alkyl, aryl selected from the class consisting of phenyl, naphthyl, aralkyl where said alkyl portion has 1-6 carbons and halobenzyl; R_1, R_2 and R_3 are each independently selected from the group consisting of hydrogen, methyl, two of said terms may represent methoxy and the other hydrogen, one of said terms may represent ethyl, n-butyl, methoxy, ethoxy, phenyl, bromophenyl, chlorophenyl, trichlorophenyl, naphthyl, chlorobenzyl, dichlorobenzyl or furyl and the other two terms represent hydrogen; M is a mono-, di-, or trivalent metal selected from the group consisting of zinc, manganese, chromium, iron, copper, tungsten and nickel, and n is a whole number from 1 to 3.

4,211,872

SUBSTITUTED FUROPYRIDINONES AND FUROPYRAZINONES

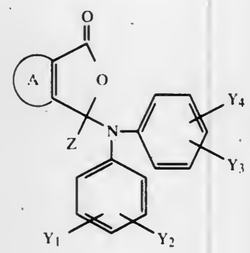
Paul J. Schmidt, 3590 Concerto Dr., Sharonville, Ohio 45241, and William M. Hung, 9176 Millcliff Dr., Cincinnati, Ohio 45231

Filed Dec. 11, 1978, Ser. No. 968,082

Int. Cl.² C07D *491/04*

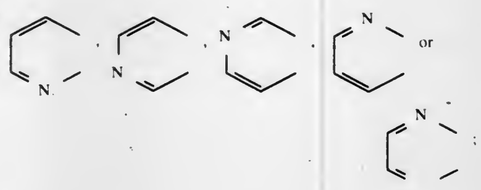
U.S. Cl. 546—116 **26 Claims**

1. A compound having the formula:



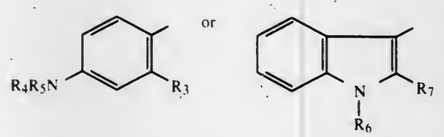
wherein

A is



Y_1, Y_2, Y_3 and Y_4 are the same or different and are selected from the group consisting of hydrogen, halo, lower alkoxy, alkyl having from 1 to 9 carbon atoms, phenyl-lower-alkyl and NR_1R_2 where R_1 is hydrogen or lower alkyl and R_2 is hydrogen, lower alkyl, lower alkanoyl, phenylsulfonyl or lower-alkyl-substituted phenylsulfonyl;

Z is



in which

R_3 is hydrogen, lower alkyl, lower alkoxy, halo or di-lower-alkylamino;

R_4 is lower alkyl;

R_5 is lower-alkyl or benzyl;

R_6 is hydrogen or non-tertiary alkyl having from 1 to 18 carbon atoms; and

R_7 is hydrogen, phenyl or non-tertiary lower alkyl.

4,211,873

PREPARATION OF CHLOROMETHYLPYRIDINES

R. Garth Pews, and Mezzie L. Ash, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 25, 1978, Ser. No. 927,718

Int. Cl.² C07D *213/26*

U.S. Cl. 546—346 **7 Claims**

1. A process for preparing 2- or 4-chloromethylpyridine comprising reacting by contacting a 2- or 4-methylpyridine-N-oxide with phosphoryl chloride in the presence of an organic base and an inert halogenated hydrocarbon solvent at a temperature between about 40° C. to about 80° C.

4,211,874

CONTINUOUS PROCESS FOR THE MANUFACTURE OF DINITROGLYCOLURILE

Jean-Marie L. Emeury, Sorgues, and Hubert H. Girardon, Villeneuve les Avignon, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jun. 6, 1979, Ser. No. 46,190

Claims priority, application France, Jun. 23, 1978, 78 18785

Int. Cl.² C07D *487/04*

U.S. Cl. 548—304 **4 Claims**

1. Process for the manufacture of dinitroglycolurile by nitrating glycolurile with absolute nitric acid, characterised in that the nitration is carried out continuously and in a cascade, a homogeneous liquid phase being produced by simultaneously and continuously introducing glycolurile and absolute nitric acid into a first stirred reactor, and a heterogeneous phase then being produced in a second stirred reactor.

4,211,875

PREPARATION OF 4-METHYL-5-CHLOROMETHYL-IMIDAZOLE

Klaus Halbritter, Mannheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,248

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1978, 2800148

Int. Cl.² C07D *233/64*

U.S. Cl. 548—342 **3 Claims**

1. A process for the preparation of 4-methyl-5-chloromethylimidazole hydrochloride, wherein 4-methylimidazole, in aqueous solution, is reacted with formaldehyde or a formaldehyde oligomer in the presence of an excess of hydrogen chloride, at from 25° to 160° C.

4,211,876

3-PYRAZOLIDINONE CARBOXAMIDES

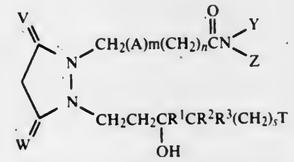
Richard M. Scribner, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 13, 1979, Ser. No. 48,228

Int. Cl.² C07D *231/08*

U.S. Cl. 548—367 **10 Claims**

1. A compound of the formula



and salts with pharmaceutically acceptable acids where V or W is O and the other is H_2;

A is CH=CH, C≡C or phenylene;

m is o-1;

n is 1-5, with the proviso that when m=0;

n is 5 and when m is 1 and A is CH=CH or C≡C,

n is 1, 2 or 3;

Y and Z are either the same or different and are selected from the group consisting of H, and C_1-C_{12} straight-chain or branched-chain alkyl;

R^1 is H, CH_3, C_2H_5, $CH{=}CH_2$ or C≡CH;

R^2 is H, F, Or CH_3;

R^3 is H, F, or CH_3, with the proviso that when $R^1{\neq}H$, R^2 and R^3 are H;

S is 3-6; and

T is H, CF_2CH_3 or CF_3.

4,211,877

METHOD OF PREPARATION OF ISOPROPYL 4,10-DIHYDRO-10-OXOTHIENO[3,2-c][1]BENZOXEPIN-8-ACETATE

Thomas B. K. Lee, Whitehouse Station, N.J., assignor to American Hoechst Corporation, Bridgewater, N.J.

Filed Feb. 13, 1979, Ser. No. 11,943

Int. Cl.² C07D *495/02*

U.S. Cl. 549—44 **7 Claims**

1. A method of synthesizing in situ isopropyl 4,10-dihydro-10-oxothieno[3,2-c][1]benzoxepin-8-acetate which comprises (a) halogenating 4-(2-carboxy-3-thienylmethoxy)-phenylacetic acid to form the diacid halide thereof; (b) treating said diacid halide with an aluminum halide to form a 4,10-dihydro-10-oxothieno[3,2-c][1]benzoxepin-8-acetylhalide; and (c) treating said acetylhalide with isopropyl alcohol to form the desired compound.

4,211,878

ALKANOLAMINE DERIVATIVES

Leslie H. Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

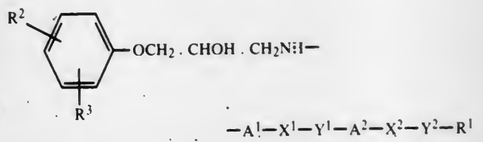
Filed Oct. 5, 1977, Ser. No. 839,568

Claims priority, application United Kingdom, Oct. 7, 1976, 41714/76

Int. Cl.² C07D *333/24, 307/12;* **A01N** *9/00, 9/28*

U.S. Cl. 549—78 **8 Claims**

1. An alkanolamine derivative selected from the group consisting of a compound of the formula:



wherein A^1 is alkylene of from 2 to 6 carbon atoms; wherein A^2 is a direct link or alkylene of up to 6 carbon atoms; wherein R^1 is thienyl or furyl unsubstituted or contains one or two substituents selected from alkyl and alkoxy each of up to 6 carbon atoms and, where the heterocyclic bears an appropriate degree of saturation, one or two oxo substituents; wherein R^2 and R^3, which may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro, carbamoyl, cyano or alkyl, alkenyl, alkoxy, alkylthio, alkenyloxy, alkanoyl or acrylamino each of up to 6 carbon atoms, or wherein R^2 and R^3 together form trimethylene, tetramethylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl or naphthyl; wherein X^1 and X^2, each is amidic of the formula —NHCO—; wherein Y^L is a direct link and wherein Y^2 is a direct link, or alkylene, oxyalkylene or alkyleneoxy each of up to 6 carbon atoms, or oxygen; and the non-toxic pharmaceutically-acceptable acid-addition salts thereof.

4,211,879

ESTERS OF PROSTACYCLIN-TYPE COMPOUNDS

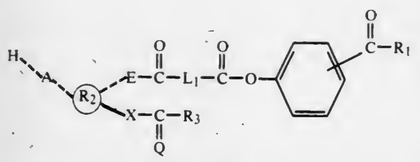
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 933,329, Aug. 14, 1978. This application Jun. 14, 1979, Ser. No. 48,497

Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—53 **21 Claims**

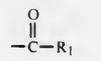
1. An acid ester of the formula



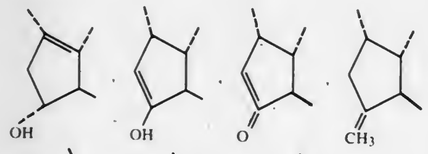
wherein A is (1) —O—(oxa) or, when E is $—CH_2—$, (2) $—CH_2—O—$ with $—CH_2$ bonded to (R_2),
wherein E is $—CH_2—$ or $—CH_2CH_2—$,
wherein L_1 is
(1) $—(CH_2)_n—$ wherein n is one to 5, inclusive,
(2) $—(CH_2)_p—CF_2—$ wherein p is 2, 3, or 4, or
(3) $—(CH_2)_v—CH=CH—$ wherein v is 1, 2, or 3,
wherein Q is



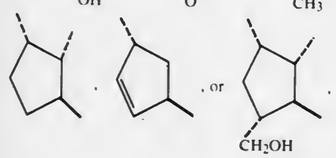
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, wherein R_1 is alkyl of one to 4 carbon atoms, inclusive, with the proviso that when R_1 is tert-butyl the group



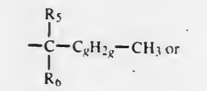
is in the 4-position,
wherein (R_3) is



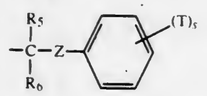
, or



wherein R_3 is



or



wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $—CR_5R_6—$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—);
wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between $CR_5R_6—$ and the phenyl ring;
wherein T is alkyl of one to 4 carbon atoms; inclusive, fluoro, chloro, trifluoromethyl, or $—OR_7—$ wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different, and
wherein X is
(1) trans-CH=CH—
(2) cis-CH=CH—
(3) —C≡C— or
(4) $—CH_2CH_2—$.

4,211,880

RESIN-METAL COMPOUND COMPLEX

Werner O. Haag, Lawrenceville, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 858,228, Dec. 7, 1977, Pat. No. 4,145,486, which is a continuation of Ser. No. 501,429, Aug. 29, 1974, Pat. No. 4,111,856, which is a continuation of Ser. No. 306,782, Nov. 15, 1972, Pat. No. 3,857,392, which is a continuation-in-part of Ser. No. 860,807, Sep. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 672,010, Oct. 2, 1967, abandoned. This application Dec. 4, 1978, Ser. No. 965,829

Int. Cl.[2] C07C *67/05;* **B01J** *31/12*

U.S. Cl. 560—243 **5 Claims**

1. A process for manufacturing vinyl acetate which comprises reacting ethylene and oxygen in the presence of liquid acetic acid at a temperature up to 250° C. and in the presence of an insoluble resin-metal coordinative complex compound comprising an insoluble weak base exchange resin having amine, phosphine, arsine, stibine, thiol or sulfide Lewis base substituents, coordinatively, nonionically bonded through said substituents to a metal atom of palladium, said metal atom having chemically bonded thereto at least one ligand and said complex containing on a weight basis 0.01 to 50% of metal, 39 to 99% of resin with the sum of the amount of the ligand and metal not exceeding 61%.

4,211,881

PREPARATION OF PHTHALIC ACID BY SINGLE STEP CONTINUOUS AIR OXIDATION OF LIQUID ORTHO-XYLENE

Sydney G. Horsfield, Wheaton; George E. Kuhlmann, and Alan G. Bemis, both of Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 17, 1978, Ser. No. 961,763

Int. Cl.[2] C07C *51/33*

U.S. Cl. 562—416 **6 Claims**

1. The preparation of o-phthalic acid by the air oxidation of liquid o-xylene at a temperature in the range of from 205° to
(1) 225° C. and a gauge pressure of from 28 to 30 kg/cm² in the presence of liquid ophthalic acid containing as solutes from 2 to 21 weight percent liquid water and for each gram mole of o-xylene from 1 up to 10 milligram atoms of cobalt, from 2 up
(2) to 20 milligram atoms of manganese and from 3 up to 40 milligram atoms of bromine derived from hydrogen bromide or elemental bromine as components of catalysis; the continuous operation comprising introducing into said liquid o-phthalic acid solution in a stirred oxidation zone in addition to air, o-xylene and said components of catalysis continuously and simultaneously in the relationship such that the air to xylene ratio provides at least 1.0 volume percent oxygen in the spent air portion of the exhaust from said zone and the ratio of components of catalysis to o-xylene are the 1 to 10 milligram atoms of cobalt, 2 to 20 milligram atoms of manganese and 3 up to 40 milligram atoms of bromine, the continuous and simultaneous introduction of from 5 up to 20 grams of acetic acid or benzoic acid per gram mole of o-xylene.

4,211,882

PROCESS FOR PRODUCING TEREPHTHALIC ACID

Makoto Komatsu; Tazuo Ohta; Toru Tanaka, and Kimiko Akagi, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 825,480, Aug. 17, 1977, abandoned, which is a continuation of Ser. No. 655,637, Feb. 5, 1976, abandoned. This application Feb. 23, 1979, Ser. No. 14,597

Claims priority, application Japan, Feb. 10, 1975, 50-17072; Feb. 10, 1975, 50-17073

Int. Cl.[2] C07C *51/33*

U.S. Cl. 562—416 **25 Claims**

1. A process for producing terephthalic acid, which comprises oxidizing p-tolualdehyde with a gas containing molecular oxygen in a liquid phase using a lower monocarboxylic acid as a solvent and at a temperature in the range of from 120° C. to 260° C. and a pressure in the range of from 0.5 to 50 kg/cm² gauge in the presence of a catalyst consisting of (1) a manganese compound, (2) a cobalt compound, (3) a bromine compound selected from the group consisting of hydrobromic acid, ammonium bromide, sodium bromide, potassium bromide, cesium bromide, magnesium bromide, barium bromide, tetraalkylammonium bromide, tetrabromoethane and tetrabromoparaxylene, and (4) at least one compound selected from the group consisting of chromium compounds, iron compounds, nickel compounds and compounds of metallic elements belonging to the lanthanide series; said at least one compound of component (4) of the catalyst being present in an amount such that the atomic ratio of chromium atoms, iron atoms or nickel atoms to manganese atoms of said manganese compound is from 0.7 to 30.0, or of the metallic element atoms of the lanthanide series to manganese atoms of said manganese compound is from 0.02 to 10.0.

4,211,883

PROCESS FOR THE PRODUCTION OF P-(N-METHYL)-AMINOBENZOYL-L-GLUTAMIC ACID

Enrico Catalucci, Arona, Italy, assignor to Lonza, Ltd., Gampel, Switzerland

Filed Jul. 19, 1978, Ser. No. 926,007

Claims priority, application Switzerland, Aug. 12, 1977, 9877/77

Int. Cl.[2] C07C *101/44*

U.S. Cl. 562—433 **4 Claims**

1. The process for the production of p-(N-methyl)-aminobenzoyl-L-glutamic acid which comprises:
(a) introducing a formyl group into p-(N-methyl) aminobenzoic acid by boiling the p-(N-methyl)-aminobenzoic acid in HCOOH, as a reaction medium, under reflux, whereby p-(N-methyl-N-formyl)-aminobenzoic acid in formed;
(b) chlorinating the p-(N-methyl-N-formyl)-aminobenzoic acid with a chlorinating agent, which is sulfonyl chloride or thionyl chloride, at 40° to 80° C., whereby p-(N-methyl-N-formyl)-aminobenzoic acid chloride is formed;
(c) reacting the p-(N-methyl-N-formyl)-aminobenzoic acid with L-glutamic acid in the presence of a base as an acid acceptor, whereby p-(N-methyl-N-formyl)-amino benzoyl-L-glutamic acid is formed; and
(d) converting the p-(N-methyl-N-formyl)-amino benzoyl-L-glutamic acid into p-(N-methyl)-amino benzoyl-L-glutamic acid by alkaline hydrolysis in a 2.5 to 3.5 normal caustic soda solution at 30° to 70° C.

4,211,884

2-DECARBOXY-2-HYDROXYMETHYL-3,7-INTER-m PHENYLENE-13,14-DIDEHYDRO-PGF COMPOUNDS

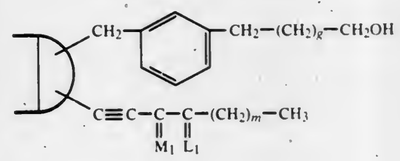
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 814,500, Jul. 11, 1977, Pat. No. 4,134,921, which is a division of Ser. No. 708,752, Jul. 26, 1976, Pat. No. 4,058,564. This application Feb. 24, 1978, Ser. No. 880,739

Int. Cl.[2] C07C *35/21*

U.S. Cl. 568—807 **60 Claims**

1. A prostaglandin analog of the formula



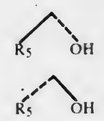
wherein D is



or

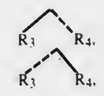


wherein R_8 is hydrogen or hydroxy;
wherein M_1 is

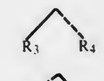


or

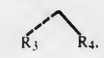
wherein R_5 is hydrogen or methyl;
wherein L_1 is



or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein g is one, 2, or 3; and
wherein m is one to 5, inclusive.

4,211,885

HIGH OCTANE GASOLINE COMPONENTS FROM CATALYTIC CRACKING GASOLINE, PROPYLENE, AND ISOBUTANE BY DISPROPORTIONATION, CLEAVAGE AND ALKYLATION

Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 15, 1979, Ser. No. 39,405
Int. Cl.[2] C07C *3/62, 3/50*
U.S. Cl. 585—316 2 Claims



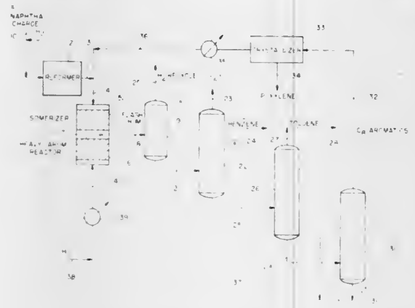
1. A process for producing high octane value gasoline which comprises in a disproportionation zone subjecting propylene and a mixture of propylene and ethylene obtained as hereinafter delineated to disproportionation conditions to produce a stream containing ethylene and a stream containing butenes, passing the ethylene-containing stream from said disproportionation zone together with a catalytic cracking gasoline to a cleavage zone under disproportionation conditions and subjecting the mixture of hydrocarbons therein to cleavage to produce said mixture of propylene and ethylene, a C_5^+ gasoline-containing product and butenes and wherein the butenes obtained in the overall operation of the disproportionation zone and the cleavage zone are passed to an alkylation zone wherein said butenes are used to alkylate an isoparaffin to produce additional high octane value product.

4,211,886

MANUFACTURE OF BENZENE, TOLUENE AND XYLENE

Samuel A. Tabak, Wenonah, and Roger A. Morrison, West Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,279
The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.
Int. Cl.[2] C07C *3/62, 5/30*
U.S. Cl. 585—321 37 Claims



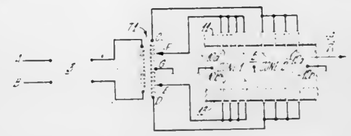
1. A new use of known apparatus for simultaneously isomerizing xylenes and converting ethylbenzene to products readily separable by distillation from the mixture of C_8 aromatics by contacting a mixture of C_8 aromatics and hydrogen with a catalyst at conversion conditions of elevated temperature and pressure in a loop comprising an isomerization reactor for the contact aforesaid, distillation means for separating C_8 aromatics from lower boiling and higher boiling hydrocarbons, means to transfer hydrocarbon effluent of said isomerization reactor to said distillation means, means for introducing fresh feed C_8 aromatics to said loop, a xylene separator for recovery of para xylene, means for transfer of mixed C_8 aromatics to said xylene separator, and means to transfer C_8 aromatics lean in para xylene from said xylene separator to said isomerization reactor, which new use comprises contacting, in the isomerization reactor of said known apparatus, a vapor phase mixture of hydrogen, said C_8 aromatics lean in para xylene and fresh charge material containing alkyl benzenes of more than eight carbon atoms with a zeolite catalyst at a temperature of about 800°-1000° F., a pressure of 150 to 300 pounds per square inch and a weight hourly space velocity between 1 and about 200; said zeolite catalyst having a constraint index of 1 to 12, a silica to alumina ratio greater than 12 and a reduced activity such that less than 2 weight percent of xylene is converted to other compounds when contacted with said catalyst at 900° F., 200 psig and LHSV of 5, mixing said hydrocarbons higher boiling than C_8 aromatics with hydrogen, contacting the mixture of hydrogen and said higher boiling hydrocarbons with a porous acidic solid catalyst at a temperature of 550° to 1000° F. and transferring the product of said contacting with a porous acidic solid catalyst to said distillation means.

4,211,887

ELECTRICAL FURNACE, ZONES BALANCED WITH A SYMMETRICALLY TAPPED TRANSFORMER

Michael Williamson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 25, 1978, Ser. No. 954,492
Int. Cl.[2] C03B *5/02*; H05B *3/60*
U.S. Cl. 13—6 17 Claims



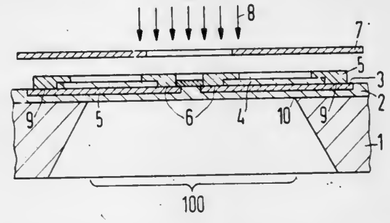
1. A furnace having a plurality of zones for melting and heating of material, said zones each having at least a pair of electrodes for creating a respective current path therebetween, said electrodes in each said zone being supplied by a common transformer secondary and wherein each of said electrode paths of said zones are symmetrically tapped from said transformer secondary with respect to each other.

4,211,888

ARRANGEMENT WITH SEVERAL THERMAL ELEMENTS IN SERIES CONNECTION

Karl-Ulrich Stein, Munich; Heiner Herbst, Haar, and Dietrich Widmann, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,827
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2733071
Int. Cl.[2] H01L *35/28*
U.S. Cl. 136—225 12 Claims



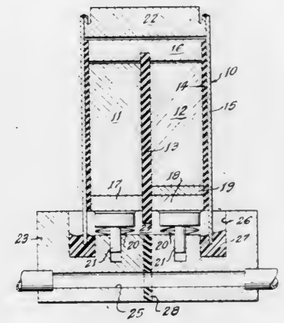
1. Thermal element arrangement having several thermal elements in series connection, in which an insulation layer having thereupon several metal conductor paths is situated on a semiconductor substrate, in which each thermal element has one of said metal conductor paths as a first leg, a semiconductor region as a second leg and, as a thermal contact, a metal semiconductor contact of said metal conductor paths with the respective semiconductor region, said semiconductor substrate being less than 10 μm thick in that region where said thermal contacts are to be heated during operation of said arrangement, and is more than 200 μm thick in that region in which are situated the contacts which are to be kept cold during operation of the arrangment, said semiconductor substrate having thereon an epitaxial semiconductor layer which is less doped vis-a-vis said substrate and which adjoins the surface of said substrate.

4,211,889

THERMOELECTRIC MODULE

William E. Kortier; John J. Mueller, and Philip E. Eggers, all of Columbus, Ohio, assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Sep. 16, 1968, Ser. No. 761,894
Int. Cl.[2] H01V *1/15*
U.S. Cl. 136—237 1 Claim



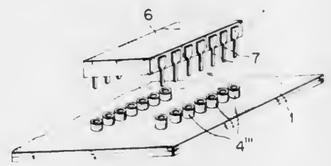
1. A thermoelectric module comprising an n-type lead telluride thermoelectric element doped with iodine and excess lead; a p-type lead telluride thermoelectric element doped with sodium and excess tellurium; a mica partition separating said n- and p-type thermoelectric elements; a tungsten hot strap abutting the hot ends of said thermoelectric elements; a hot platen mounted above the upper surface of said tungsten hot strap; an iron shoe metallurgically bonded to the cold end of each thermoelectric element with a barrier layer of tin telluride separating said p-type thermoelectric element from said iron shoe; a mica sleeve snuggly fitted against and surrounding said thermoelectric elements, iron shoes and tungsten hot strap; a copper cold sink situated adjacent to said iron shoes and containing a cavity; spring means disposed within said cavity so as to force said thermoelectric elements against said tungsten hot strap; an electrical insulating partition extending entirely through and electrically dividing said copper cold sink; and a hermetically sealed stainless steel casing compressively secured against said mica sleeve and encasing said thermoelectric elements in a gas-free environment, the top of said casing being welded to said hot platen and the bottom of said casing being embedded in an epoxy resin disposed within a rectangular well situated in said copper cold sink.

4,211,890

ELECTRONIC CIRCUIT BOARDS

Ryoichi Sado, Saitama, and Koichi Nei, Tokyo, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed May 17, 1978, Ser. No. 906,742
Claims priority, application Japan, May 25, 1977, 52-67413[U]
Int. Cl.[2] H05K *1/08*
U.S. Cl. 174—68.5 1 Claim



1. An electronic circuit board comprising an insulating

sheet-like base having flexibility, a printed circuit including at least one terminal contact point on one of its surfaces and an elastomer pad secured to the other surface of said base, said pad including a plurality of protrusions made of an elastic material and affixed to said base at areas in correspondence with said terminal contact point, each of said protrusions being in the form of a ring, said base being provided with a corresponding plurality of holes at positions corresponding to the void cores of said plurality of ring-shaped protrusions.

4,211,891

METHOD FOR SETTING CODE TEXT GENERATORS IN CIPHERING DEVICES

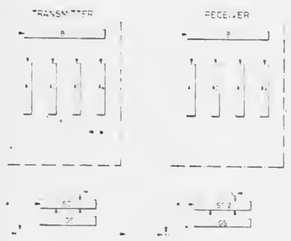
Ekkehard Glitz, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,442

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1977, 2706421

Int. Cl.[2] H04L *9/04*

U.S. Cl. 375—2 **8 Claims**



1. In a method for enciphering and deciphering the transmission of data between a transmitter including a code text generator and at least one receiver including a code text generator in which clear text data are linked with key data at the transmitting end and are recovered at the receiving end by linkage with identical key data and in which the same basic key is present in a stored state at the transmitter and at the receiver, each code text generator including a plurality of code text forming registers, the improvement comprising, before the transmission of data:

randomly jumbling, in the code text generator at the transmitter, with a fixed or a randomly changing formation rule, at least one code text forming register over a minimum period of time, with a nonperiodic continuous clock pulse which is different from the transmission clock pulse until a random bit sequence of elements has been generated in the code text forming registers;

retaining such random bit sequence to define the prime data for the code text generators at the transmitter and at the receiver;

transmitting such random bit sequence from the transmitter to the receiver while cyclically shifting the code text forming registers at the transmitter so that after said transmitting, the code text generators at the transmitter and at the receiver have the same prime data,

said step of transmitting including transmitting an identifying word indicating start of transmission of the prime data of the code text generators in the transmitter and then transmitting a representation of that prime data in an enciphered form with the basic key which is defined at the transmitter and at the receiver;

deriving the formation rule of each code text generator from the random bit sequence generated at the transmitter and transmitted in an enciphered form to the receiver,

and during the transmission of data effecting repeated synchronization by temporarily interrupting the flow of data and performing, during such interruption, the steps of:

retaining the bit sequence in the code text forming registers of the transmitter at the moment of interruption to define new prime data for the code text generator of each receiver connected to receive such data transmission; or to check the synchronization of such receivers which have synchronized any time before, marking the bit sequence retained at the transmitter at the moment of interruption by an identifying marker, transmitting this bit sequence in enciphered form by means of a basic key information which is identical at the transmitter and the receiver; and

deriving the formation rule of each code text generator from the retained bit sequence of the code text forming registers at the transmitter and the receiver.

4,211,892

SYNTHETIC-SPEECH CALCULATORS

Akira Tanimoto, Kashihara; Sigeaki Masuzawa, Nara; Shinya Shibata, Nara, and Shinzo Nishizaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 15, 1978, Ser. No. 877,883

Claims priority, application Japan, Feb. 15, 1977, 52/17798[U]; Feb. 21, 1977, 52/19660; Feb. 25, 1977, 52/20493

Int. Cl.[2] G10L *1/00;* **G06F** *3/16*

U.S. Cl. 179—1 SM **10 Claims**



1. A synthetic-speech calculator of the law-of-exponent type including means for entering numerical information, said numerical information including a mantissa portion and an index portion comprising:

register means for storing said mantissa portion and said index portion of the entered numerical information;

memory means for storing a set of sound related digital signals representative of said mantissa portion and said index portion of said numerical information stored in said register means; and

means responsive to said set of sound related digital signals stored in said memory means for producing audible sounds indicative of the mantissa portion of said numerical information, the index portion of said numerical information stored within said register means and the position of the most significant digit in the index portion of said numerical information.

4,211,893

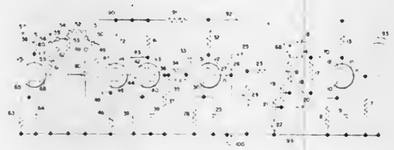
DUAL MODE MUSIC INSTRUMENT AMPLIFIER

Randall C. Smith, Lagunitas, Calif., assignor to Mesa Engineering, Inc., Lagunitas, Calif.

Filed Nov. 13, 1978, Ser. No. 959,705

Int. Cl.[2] G10H *1/06*

U.S. Cl. 179—1 A **12 Claims**



1. An electronic amplifier for audio frequency electrical signals generated by a musical instrument such as a guitar

including a plurality of preamplifier stages operating in substantially the linear mode and providing a high amplitude signal output from the final pre-amplifier stage,

a further amplifier stage comprising an electron discharge device having an anode, a cathode and a control electrode,

a first adjustable attenuation network,

a second adjustable attenuation network,

a pre-amplifier signal output terminal,

switch means for selectively coupling the output of the final pre-amplifier stage to the pre-amplifier signal output terminal through the first network to provide a signal having a preset amplitude to said terminal or coupling the final pre-amplifier stage to the control electrode to drive it into its non-linear saturated operating mode to provide a distorted signal at its anode electrode,

and said switch means including means operating to couple the output from said anode electrode to the pre-amplifier signal output terminal through said second network concurrently with the coupling of the control electrode to the output of said final pre-amplifier stage.

4,211,894

TRANSMITTER MULTIPLEXING SYSTEM FOR A LAND MOBILE COMMUNICATION SYSTEM

Kunio Watanabe, and Heiichi Yamamoto, both of Yokosuka, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Oct. 4, 1978, Ser. No. 948,544

Claims priority, application Japan, Oct. 14, 1977, 52-122469

Int. Cl.[2] H04Q *7/04*

U.S. Cl. 179—2 EB **10 Claims**



1. A transmitter multiplexing system for a land mobile communication system comprising

(a) an antenna system with a plurality of input terminals wherein the input signal from one of said input terminals is radiated to space, and is impedance mismatched with respect to the remaining input terminals and wherein the radiation characteristics as viewed from any of said input terminals are all the same;

(b) a transmitter group comprising a plurality of common antenna transmission multiplexers connected through a feed line system to said input terminals, respectively, of said antenna system, each of said common antenna transmission multiplexers comprising

a plurality of bandpass filters and a common interconnecting unit connected to said bandpass filters,

the pass band of each of said bandpass filters being equal to or greater than a value equal to the base station transmission bandwidth of said land mobile communication system divided by the product of

(i) the number of said common antenna transmission multiplexers and (ii) the number of said bandpass filters in each of said transmission multiplexers, the frequency separation interval between the bandpass filters closest to each other in pass band frequency in each of said common antenna transmission multiplexers being equal to or smaller than a value equal to said transmission bandwidth divided by said number of said bandpass filters in each of said common antenna transmission multiplexers, and the frequency separation interval between the bandpass filters in the adjacent transmission multiplexers being equal to or smaller than the pass band of each of said bandpass filters,

whereby when all of said bandpass filters are arrayed in the order of their frequencies or pass bands, any point in said transmission bandwidth is within the pass band of at least one bandpass filter; and

(c) said transmitter group including a plurality of multichannel transmitters are each capable of operating on any channels assigned to any corresponding bandpass filter in each of said transmission multiplexers.

4,211,895

ELECTRONIC TELEPHONE SYSTEM WITH TIME DIVISION MULTIPLEXED SIGNALLING

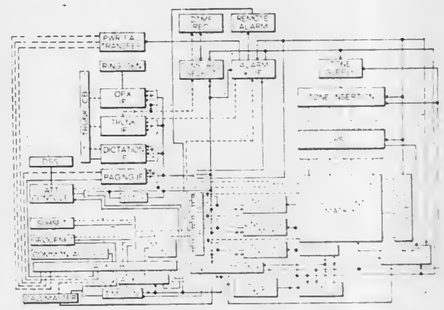
John C. H. Davis, Oak Ridges; Krishnaswamy Natarajan, Bramalea; Jan Cihal, Toronto; Motek Szpindel, Downsview, and Jeffrey Sidwell, Thornhill, all of Canada, assignors to Plessey Canada Ltd., Downsview, Canada

Filed Dec. 5, 1977, Ser. No. 857,744

Claims priority, application United Kingdom, Dec. 10, 1976, 51673/76

Int. Cl.[2] H04Q *1/30, 3/56*

U.S. Cl. 179—18 J **28 Claims**



1. An electronic telephone system having a plurality of terminal units which are connected radially to a central equipment by respective cables each including at least one conductor pair providing a transmission path for system signalling, said conductor pairs being connected to a common control unit at the central equipment, the common control unit including:

a timing generator for generating address signals and timing signals,

multiplexing means controlled by the timing generator in accordance with the generation of said address signals for placing the units sequentially in communication with the common control unit for exchanging information therewith, said terminal units being scanned in cyclic sequence, each unit being allotted a unique time slot within the scanning cycle, and

means responsive to timing signals from the timing generator for controlling the transmission of digital data over said system signalling paths, said means dividing each of said allotted time slots into distinct periods in which data is transmitted unidirectionally from the terminal unit to the common control unit and in which data is transmitted

from the common control unit to the terminal unit, respectively,

said conductor pairs being connected to transmit both system signals and d.c. power for consumption at the terminal units, and each said conductor pair being a balanced pair terminated by a matching impedance at the respective terminal unit.

24. In an electronic telephone system including a solidstate crosspoint matrix operable by a central control for selectively interconnecting calling and called parties in accordance with system signalling conditions, the system serving at least one trunk having tip and ring leads constituting a trunk pair, the system further including a trunk interface connected to the cross-point matrix by a conductor pair providing a speech transmission path and to the central control by conductors used for system signalling, the trunk interface comprising:

a first resistance hybrid network providing a first pair of network terminals connected to said tip and ring leads, and second and third pairs of network terminals, the network providing a matching impedance terminating the trunk pair,

a second resistance hybrid network having a first pair of network terminals connected to the conductors of said conductor pair, and second and third pairs of network terminals, the second resistance hybrid network providing a matching impedance terminating said conductor pair,

the second pair of network terminals of each resistance hybrid network being connected to the third pair of network terminals of the other network by respective circuits each providing a unidirectional path for speech transmission,

said circuits including control means responsive to trunk signalling connected to the central control, said control means including respective switching means responsive to incoming and outgoing call signals for rendering the circuits operable and inoperable in accordance with calling conditions.

4,211,896

SUBSCRIBER'S CIRCUIT WITH A SYMMETRICAL AMPLIFIER

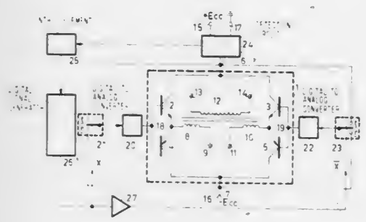
Gilbert M. M. Ferrieu, Bievres, France, assignor to Telecommunications Radioelectrique et Telephoniques T.R.T., Paris, France

Filed Oct. 10, 1978, Ser. No. 949,715

Claims priority, application France, Oct. 17, 1977, 77 31145; Dec. 20, 1977, 77 38404; Jan. 19, 1978, 78 01461

Int. Cl.[2] H04M *3/22*

U.S. Cl. 179—18 FA **8 Claims**



1. A subscriber's circuit for connecting a subscriber's line to a telephone exchange, comprising a symmetrical amplifier circuit arranged between two feed points having different potentials, the amplifier circuit having two input terminals and two output terminals, each one of the output terminals being connected to a wire of the subscriber's line, separate digital-to-analog converters having outputs connected to each input terminal of the symmetrical amplifier circuit, separate change-over switches connecting an input of each digital-to-analog converter to the one or to the other feed point, the change-over switches being controlled in phase opposition by a binary digital signal which characterizes a voltage desired for the subscriber's line, and a digital signal generator under the control of the telephone exchange providing said binary digital signal.

4,211,897

MULTIFREQUENCY SIGNAL RECEIVING SYSTEM

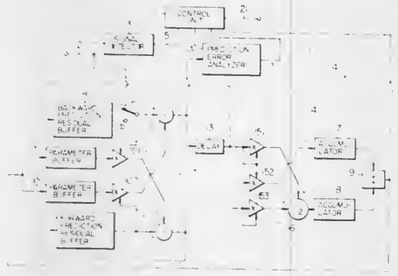
Akira Ichikawa, Kokubunji; Kazuo Nakata, Kodaira, and Kazuhito Hirose, Kamikuratamachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 15, 1978, Ser. No. 942,557

Claims priority, application Japan, Sep. 16, 1977, 52/110590; Jun. 14, 1978, 53/70905

Int. Cl.[2] H04M *1/50;* **G01R** *23/02*

U.S. Cl. 179—84 VF **12 Claims**



1. A multifrequency signal receiving system comprising means for extracting from a received signal a plurality of prediction coefficients the number of which is determined depending on the character of the received signal, and means responsive to the output of said extracting means for identifying the received signal by detecting frequencies included in the received signal.

4,211,898

HEADPHONE WITH TWO RESONANT PEAKS FOR SIMULATING LOUDSPEAKER REPRODUCTION

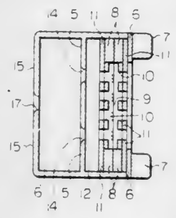
Nobuhisa Atoji; Takashi Matsumoto; Shoichi Kusumoto; Kazue Sato, and Mitsuhiro Hasegawa, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 10, 1978, Ser. No. 923,206

Claims priority, application Japan, Jul. 11, 1977, 52/83325; Jul. 11, 1977, 52/83326; Jul. 11, 1977, 52/83327

Int. Cl.[2] H04M *1/05;* **H04R** *1/28*

U.S. Cl. 179—156 R **4 Claims**



1. A headphone comprising:

a headphone case having a plurality of perforations provided through the front surface thereof;

a diaphragm rearwardly spaced from said perforations;

means for causing said diaphragm to vibrate in response to an electrical signal to generate acoustic waves in opposite directions;

said headphone case having a cavity rearwardly of said diaphragm to provide an acoustic compliance to the acoustic waves propagating in the rearward direction, and an aperture through the rear surface thereof for providing an acoustic mass reactance to coact with the acoustic compliance of said cavity to produce two resonant peaks in a frequency range from 1 kHz to 10 kHz; and

means for producing a phase advance in the vicinity of 1 kHz of said acoustic waves.

4,211,899

CIRCUIT ARRANGEMENT FOR AN INDIRECTLY CONTROLLED EXCHANGE, IN PARTICULAR A TELEPHONE EXCHANGE

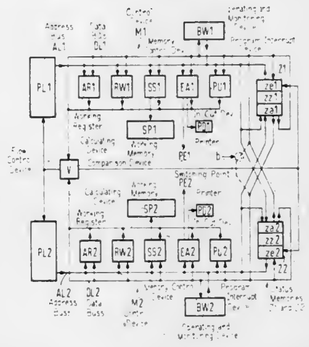
Edmund Ptacnik, Soecking, and Carl Trainer, Argelsried, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,290

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1977, 2733921

Int. Cl.[2] H04Q *1/22*

U.S. Cl. 179—175.2 C **11 Claims**



1. A circuit arrangement for an indirectly-controlled exchange, in particular a telephone exchange, which is provided with central control devices and in which, upon the occurrence of a fault signal, the operating status of the exchange is temporarily maintained and items of data concerning the electrical states prevailing at test points are input into a memory in order to retain the currently prevailing operating states, comprising

first and second parallel-operating control devices, said control devices including

first and second working memories, respectively,

first and second data buses, respectively,

first and second status memories, respectively, each including an input connected to its respective data bus and an output connected to the opposite respective data bus,

at least one fault device operable to supply fault signals connected to each of said data buses,

first and second terminals for receiving control signals connected to said data buses,

transfer means operable in response to a control signal which follows a fault signal to transfer the test data stored in said status memories into said working memories,

first and second output devices, and

comparison means for comparing the test data of the two control devices and feeding the test data and the comparison results to said output device.

4,211,900

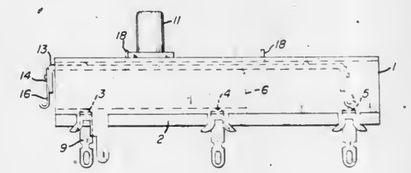
SLIDE SWITCH WITH SHORTING CONTACT

Thomas J. Quigley, Farmville, Va., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Dec. 7, 1978, Ser. No. 967,169

Int. Cl.[2] H01H *15/02, 9/00*

U.S. Cl. 200—5 R **4 Claims**



1. A slide switch comprising an elongated case formed from a housing provided in one side with a longitudinal slot and also provided with an insulating base member, two parallel rows of fixed electric contacts inside the case spaced apart lengthwise of said base member and rigidly mounted thereon, there being three contacts in each row, an insulating slider inside the case provided with an actuating button extending through said slot for moving the slider back and forth lenthwise of the base member, a pair of bridging contacts movable by the slider along said rows of fixed contacts from a position in which each bridging contact bridges the adjoining middle fixed contact and one of the end fixed contacts in the same row to a position bridging the same middle contact and the other end contact in the same row, and shorting contact means in the case extending lengthwise of said housing between the housing and slider, said shorting contact means being longer than the slider and having a pair of abutments spaced lengthwise of the case, one of the abutments being engageable by the slider when it is moved in one direction, the other abutment being engageable by the slider when it is moved in the opposite direction, and the distance between said abutments being such that after the slider has been moved toward one end of the case a predetermined distance the slider will push one of said abutments in the same direction far enough to pull said shorting contact means into engagement with the two fixed contacts at the opposite end of the case when said bridging contacts engage the other two end contacts.

4,211,901

PRESSURE SENSING SWITCH WITH CONDUCTIVE DEFLECTABLE DIAPHRAGM

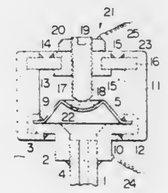
Akira Matsuda, Higashimurayama; Norio Goshima, Musashino; Shigeo Yasuda, Musashino, and Motoaki Iwasaki, Musashino, all of Japan, assignors to Bridgestone Tire Company Limited and Mitaka Instrument Company Limited, both of Tokyo, Japan

Filed Dec. 21, 1978, Ser. No. 972,059

Claims priority, application Japan, Dec. 29, 1977, 52-177386[U]

Int. Cl.[2] H01H *35/34*

U.S. Cl. 200—83 B **2 Claims**



1. A pressure sensing switch comprising; a diaphragm hav-

ing a ring-shaped peripheral portion, a frustoconical side wall portion being continuous to a radially inner edge of said peripheral portion and extending upward therefrom, and a deflectable portion constituting a portion of sphere and being continuous to a radially inner edge of said side wall portion and deflectable between one dead point and the other dead point in response to a pressure change within a predetermined pressure range; and a movable contact member positioned to face said diaphragm in such a way that a contact point of said contact member to be contacted with said deflectable portion of said diaphragm is positioned intermediate said one dead point and said other dead point of said deflectable portion; said diaphragm being made of a material having a Young's modulus E of 1.0×10^4–2.1×10^4 kg/mm^2, Poisson's ratio V of 0.3 and a thickness t of 0.02–0.2 mm, a diameter d measured at the radially inner edge of said side wall portion being 5–10 mm, a radius of curvature R of said deflectable portion being 18–44 mm, a ratio of the radius of curvature R of said deflectable portion to the diameter d measured at the radially inner edge of said side wall portion being 2.5–5, and a maximum deflection Dmax as expressed by a general formula of

$$Dmax = (3.1 \times 10^{-3} - 6.2 \times 10^{-3}) \times \frac{Pd^4}{16Et^3}$$

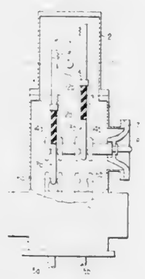
where P is a pressure (kg/cm^2) acting on said diaphragm, being 0.2–0.4 mm.

4,211,902

APPARATUS FOR PHASE SWITCHING IN PUMPING-UP POWER STATION

Hiroaki Tsuchida, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 20, 1977, Ser. No. 789,435
Claims priority, application Japan, Apr. 27, 1976, 51-48034
Int. Cl.² H01H *33/54*
U.S. Cl. 200—148 R **6 Claims**



1. An apparatus for phase switching between a pumping-up operation and a generating operation in a pumping-up power station, the improvement comprising:

a sealed casing filled with an insulating gas;

a pair of disconnecting switches having a stationary contact and a movable contact, the disconnecting switches being integrally accommodated in the sealed casing;

an actuating means for linearly actuating the movable contacts so as to cause reverse movement with respect to each other such that only one selected movable contact at any time contacts the stationary contact of the switch associated therewith to prevent shorting; said pair of disconnecting switches being connected in a configuration whereby one movable contact is opened while the other movable contact is still open during actuation thereof; and,

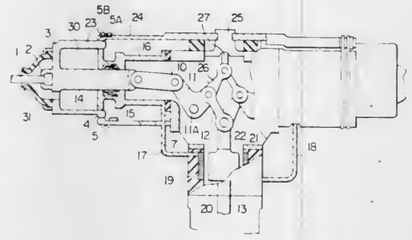
means for connecting the movable contacts; said means for connecting the movable contacts being a pair of intermediate contacts, integrally accommodated in the sealed casing, for establishing electrical connection between said pair of disconnecting switches and associated apparatus in said apparatus for phase switching, said pair of intermediate contacts being in sliding contact with each of the movable contacts.

4,211,903

ELECTROMAGNETIC PUFFER TYPE GAS CIRCUIT BREAKER

Masanori Tsukushi, Hitachi; Katsuichi Kashimura, Takahagi; Osamu Koyanagi, Hitachi; Yoshio Yoshioka, Hitachi, and Kunio Hirasawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 9, 1977, Ser. No. 805,173
Claims priority, application Japan, Jun. 21, 1976, 51-72182
Int. Cl.² H01H *33/88*
U.S. Cl. 200—148 D **7 Claims**



1. An electromagnetic puffer type gas circuit breaker comprising at least a pair of opposing puffer type circuit breaker units, support means disposed midway between said circuit breaking units for supporting the same, actuating means for driving said circuit breaking units, an electromagnetic actuating unit drivingly coupled to said actuating means, and current transfer means for transferring and applying the interrupting current to said electromagnetic actuating unit during a circuit breaking operation, characterized in that said current transfer means is located, in direct operative connection to said actuating means, on said midway support means and in a spaced relation to said electromagnetic actuating unit.

4,211,904

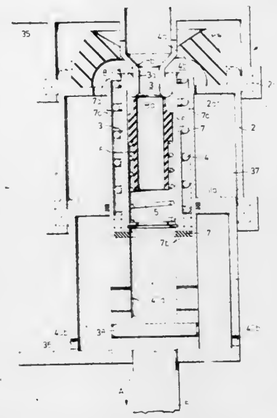
GAS-BLAST CIRCUIT BREAKER

Herbert Karrenbauer, Niestetal, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 27, 1978, Ser. No. 881,719
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1977, 2708546
Int. Cl.² H01H *33/70*
U.S. Cl. 200—148 A **21 Claims**

1. In a gas-blast circuit breaker including a stationary power contact, a movable power contact cooperating with the stationary power contact to assume an engaged or a disengaged state therewith; a stationary piston having a workface; a cylinder slidably arranged on the piston and defining, together with the workface of the piston, a compression chamber for compressing an arc extinguishing gas therein upon relative movement of the piston into the cylinder; an insulating nozzle affixed to one end of the cylinder and having a nozzle opening oriented towards the stationary power contact where an electric arc is generated between the stationary and movable power contacts during displacement of the movable power contact away from the stationary power contact, said nozzle opening communicating with the compression chamber; and a drive rod operatively connected to the cylinder and the movable power contact for displacing the cylinder with respect to the piston and for displacing the movable power contact with

respect to the stationary power contact; the improvement comprising a guide sleeve fixedly attached to said cylinder and being surrounded thereby; said movable power contact being slidably received in said guide sleeve for displacement with respect to said guide sleeve and said drive rod; a compression spring means for urging said movable power contact into said guide sleeve away from said stationary power contact; means for arming said compression spring means during an initial phase of the displacement of said cylinder and said guide sleeve away from said stationary power contact by said drive rod; locking means for maintaining said movable power contact immobilized and in engagement with said stationary power



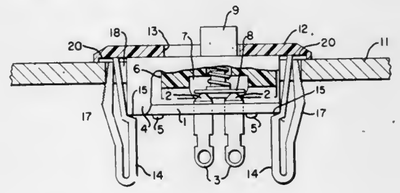
contact during said initial phase; and unlocking means for disengaging said movable power contact from said stationary power contact at the end of said initial phase for releasing the potential energy of said compression spring means, whereby said movable power contact is accelerated into said guide sleeve away from said stationary power contact; and further wherein the cross-sectional outline of said movable power contact is substantially identical to the outline of said nozzle opening, whereby said movable power contact is surrounded by said nozzle opening with a close fit in the course of said initial phase of displacement of said cylinder and said guide sleeve away from said stationary power contact by said drive rod.

4,211,905

SLIDE SWITCH ASSEMBLY FOR MOUNTING IN A PANEL

Thomas J. Quigley, Farmville, Va., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Feb. 14, 1979, Ser. No. 12,160
Int. Cl.² H01H *9/00*
U.S. Cl. 200—295 **3 Claims**



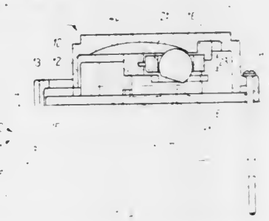
1. A slide switch assembly for mounting in a panel having a rectangular opening therein for receiving the assembly, comprising a rectangular slide switch housing having a top wall provided with a longitudinal slot therein and also provided with integral tabs projecting lengthwise from the opposite ends of said wall centrally thereof, a contact-actuating slide in said housing, and a button projecting from the slide out through said slot and movable lengthwise of the slot for moving said slide back and forth in combination with a switch holder for mounting said switch in a panel opening, said holder comprising a face plate overlying the top wall of the switch in engagement therewith and projecting laterally from the sides and ends of said housing, said plate being provided with a longitudinal slot through which said button extends, and a pair of laterally spaced resilient legs extending downwardly from said plate at each end of said housing, the upper ends of the legs being joined to the plate close to the ends of the housing but spaced inwardly from the ends of the plate, each leg having an intermediate shoulder underlying the adjoining end of the housing in engagement therewith for holding the switch against the plate, and a spring prong joined to the lower end of each leg and extending upwardly therefrom spaced outwardly from the leg and having a free upper end portion for pressing laterally against an end of said panel opening when said switch and legs and prongs are pressed down into that opening with said plate overlapping the panel around said opening, and said housing tabs extending out between said laterally spaced legs far enough to overlie the panel when the switch is inserted in the panel opening, whereby the tabs will be clamped between said face plate and the panel.

4,211,906

ROTARY ACTUATING DEVICE FOR LOW-VOLTAGE CIRCUIT BREAKERS WITH TOGGLE LEVER

Klaus-Dieter Habedank, and Werner Troebel, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 4, 1979, Ser. No. 27,159
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2815129
Int. Cl.² H01H *3/20, 3/00*
U.S. Cl. 200—330 **5 Claims**



1. An actuating device for attachment to a low-voltage circuit breaker having an insulating housing and a toggle lever protruding therefrom, comprising:

a housing,

a guide mechanism, actuable by rotary motion, for translating the rotary motion into rectilinear motion, and

a spherical head piece having an opening for receiving the end of the toggle lever,

said guide mechanism having fork arms and a slider guided therein for motion relative to the axis of rotation which contains a receiving opening for the end of the toggle lever.

4,211,907

SETTING MECHANISM WITH DETENT STEPS FOR TRIPPING DEVICES OF ELECTRICAL SWITCH GEAR

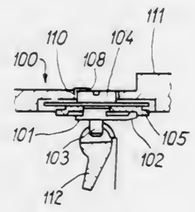
Werner Troebel, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,558

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2805181

Int. Cl.² H01H *9/20, 37/22*

U.S. Cl. 200—318 **7 Claims**



1. A setting mechanism with detent stops for use in a tripping device of a low voltage circuit breaker having a housing of insulating material comprising:

an outer setting member which is accessible from outside the breaker, and

an inner setting member connected to the outer setting member by means of an interrupted snap-in ring to form a shaft for supporting both members in a bearing part,

the inner setting member carrying an essentially radially extending detent arm which is resilient perpendicular to its longitudinal axis in the direction of the upper part of the bearing part, and

the outer setting member having a radially resilient post which is undercut with sharp corners for engaging the ring and a second post having an approximately radial protrusion for engaging a corresponding recess in the inner setting member.

4,211,908

APPARATUS FOR HIGH FREQUENCY DISCHARGE SHAPING OF A WORKPIECE BY MEANS OF A RECTANGULAR BIPOLAR PULSATING VOLTAGE

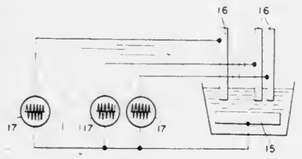
Yoshiei Niwa, Yokohama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 548,019, Feb. 7, 1975, abandoned. This application Feb. 7, 1977, Ser. No. 766,347

Claims priority, application Japan, Feb. 19, 1974, 49-19130; Feb. 19, 1974, 49-19131; Feb. 19, 1974, 49-19132; Feb. 19, 1974, 49-19133; Feb. 19, 1974, 49-19134; Mar. 6, 1974, 49-25309

Int. Cl.² B23P *1/08*

U.S. Cl. 219—69 P **2 Claims**



2. In a high frequency discharge shaping apparatus having an electrode and means for spacedly mounting said electrode and a workpiece to form a discharge gap therebetween,

a power supply including a plurality of transformer coil means, a plurality of sources of rectangular bipolar pulsating current signals, said plurality of sources respectively coupled to said plurality of transformer coil means, and a power accumulating coil electromagnetically coupled to said plurality of transformer coil means for accumulating the electrical power thereof and for supplying output power of a single phase; and

a coupling ring positioned around but spaced from said electrode and coupled to said power supply for capacitively supplying power to said electrode.

4,211,909

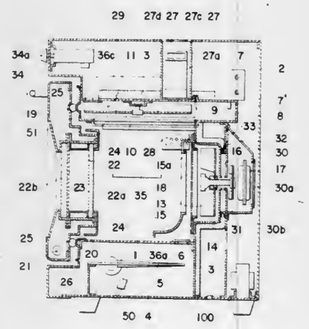
COMBINATION MICROWAVE AND GAS OVEN

Nagatoshi Yoshida, Moriguchi, and Yoshihito Taga, Tottori, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of, Japan

Filed May 15, 1978, Ser. No. 906,245

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 R **18 Claims**



1. A combination microwave and gas oven which comprises:

an outer casing, a heating cavity defined by walls within said outer casing, means for supplying microwave energy into said heating cavity, a combustion chamber positioned adjacent to said heating cavity within said outer casing, a door means adapted to selectively open and close an opening defined at one side of said heating cavity, a gas burner positioned within said combustion chamber for supplying heated air to said heating cavity, a circulation fan positioned within a housing and communicating with said heating cavity for circulating said heated air inside said heating cavity, first microwave screen means, positioned within said outer casing on the side thereof opposite said door means for preventing the leakage of microwave energy from said heating cavity through said housing, an exhaust passage positioned between said heating cavity and said outer casing, for allowing said heated air to flow out of said outer casing, and seal means interposed between said door means and a periphery of said opening of said heating cavity for preventing the leakage of microwave energy and heated air from inside of said heating cavity to outside of said heating cavity through the space between said door means and the periphery of said opening.

4,211,910

HIGH FREQUENCY HEATING APPARATUS WITH IMPROVED DOOR ARRANGEMENT

Shigeru Kusunoki, Yamatokoriyama, and Junzo Tanaka, Fujiidera, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 7, 1978, Ser. No. 958,448

Claims priority, application Japan, Dec. 21, 1977, 52/155210

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 D **9 Claims**

1. A high frequency heating apparatus which comprises:

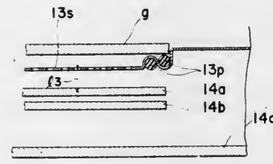
(a) an oven defining structure,

(b) a heating cavity defined by wall members within said oven defining structure,

(c) a door assembly adapted to selectively open and close an access opening defined at one side of said heating cavity, and

(d) means for supplying microwave energy into said heating cavity for dielectric heating of an object to be heated placed therein,

said door assembly further comprising a door shielding member and a plurality of glass plate members disposed in front of and on the outer side of said door shielding member, said shielding member having an impedance and said



plurality of glass plate members being of a material and having a thickness and being spaced from said shielding member and each other for making the composite impedance Z_T of said shielding member, said glass plate members and the space outside said heating cavity equal to or smaller than the composite impedance Z_S of the shielding member and the space outside the heating cavity without said glass plate member and also substantially different from the impedance of the space within said heating cavity.

4,211,911

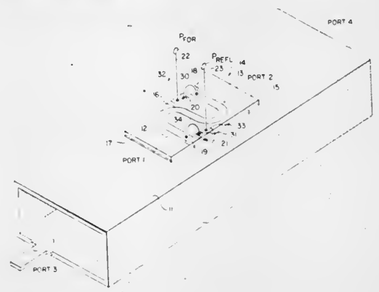
MICROWAVE DIRECTIONAL COUPLER AND DETECTOR MODULE

Rudolph A. Dehn, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 16, 1979, Ser. No. 3,866

Int. Cl.² H05B *9/06;* **G01R** *21/12;* **H01P** *5/18*

U.S. Cl. 219—10.55 F **9 Claims**



1. A directional coupler and detector in combination with wavewguide through which microwave energy propagates from a source to a load and vice versa and which has a pair of coupling apertures in one wall that are spaced apart in the direction of wave propagation one quarter wavelength as measured in the waveguide system;

said directional coupler and detector comprising a secondary transverse electromagnetic (TEM) transmission line intersecting said apertures which has a length of five quarters of a wavelength or an integral number of wavelengths longer as measured in the secondary line system between the intersections with said apertures, a portion of the microwave energy being coupled through said apertures into the secondary line;

a terminating resistance at either end of said secondary transmission line, and a diode detector and series bypass capacitor connected across each resistance for developing output signals respectively indicative of forward and reflected power flow in the waveguide.

4,211,912

INDUCTION HEATING APPARATUS

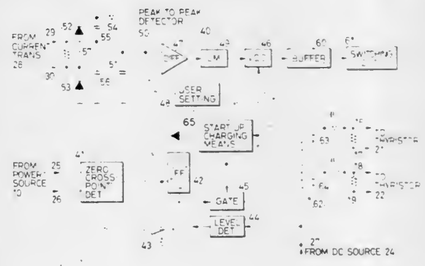
Mitsuyuki Kiuchi, and Shigeo Hamaoka, both of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 24, 1978, Ser. No. 927,649

Claims priority, application Japan, Jul. 27, 1977, 52/90723

Int. Cl.² H05B *5/04*

U.S. Cl. 219—10.77 **8 Claims**



1. An induction heating apparatus comprising a pair of gate-controlled semiconductor switching devices connected in inverse parallel relationship to each other to receive power from a source of low frequency energy, a commutation circuit including a capacitor and a work coil, a pulse generator for generating a train of control pulses at a high frequency in the ultrasonic frequency range for successively driving one of said switching devices into conduction depending on the polarity of said low frequency energy to supply a forward halfwave current in response to each conduction of said switching devices to said commutation circuit to permit same to generate a backward halfwave commutating current through the other switching device to thereby generate a high frequency alternating current in said work coil, each of said control pulses having a duration longer than the maximum duration of said forward current, and a pulse transformer having a pair of secondary windings connected to said switching devices respectively and a primary winding responsive to said control pulse to generate an induced voltage in each of said secondary windings, whereby the control gates of said switching devices are simultaneously supplied with a positive pulse of the same duration as said control pulse and are simultaneously supplied with a negative bias potential in response to the trailing edge of said control pulse.

4,211,913

AUTOMATIC WELDING OF RESISTANCE WIRES ON RESISTORS TERMINALS

Giuseppe Camardella, Saronno, Italy, assignor to Tekma Kinomat S.p.A., Caronno Pertusella, Italy

Filed Jan. 26, 1978, Ser. No. 872,500

Claims priority, application Italy, Jan. 27, 1977, 19689 A/77

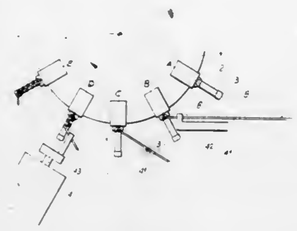
Int. Cl.² B23K *11/00*

U.S. Cl. 219—56.22 **17 Claims**

1. A method for electrically welding the ends of metal wires to metal terminals of electrical resistors formed from wire wound on an insulating rod, of the type in which said terminals have an essentially cylindrical surface on which the wire to be welded is rested obliquely and transversely to a generating or axial welding line, wherein:

at least one welding electrode is used, of thin, elongated arcuate profile with its convexity facing the wire to be welded,

one of the ends of said arcuate profile of said electrode is placed in contact with the surface of the metal terminal, the electrode is then given a rocking movement, the centre of instantaneous rotation of which coincides with the point of contact of the electrode with the surface of the



terminal, and is gradually moved along said generating or axial welding line, and

several electrical welding discharges are fed in rapid succession to said point of contact, through said electrode, during the rocking movement thereof.

4,211,914

ELECTRIC HAIR CURLING DEVICE HAVING A ROTATABLE CURLING BARREL

Larry D. Jackson, 1419 E. 111th St., Cleveland, Ohio 44106

Filed Jul. 29, 1977, Ser. No. 820,303
Int. Cl.[2] A45D *1/04, 2/36;* **H05B** *1/00*
U.S. Cl. 219—225 **1 Claim**



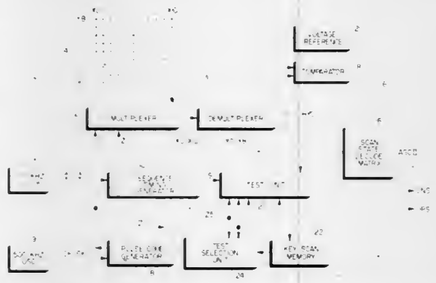
1. A hair curling device comprising an elongated handle having a front end forming a socket, said handle including a pair of side-by-side sections coupled together by fasteners, a hollow enlongated cylindrical hair curling barrel having a cylindrical enlarged rear end rotatably received in the socket of said handle front end, an annular cap-like coupling member secured to and surrounding said handle front end and coupling said curling barrel enlarged end in said handle socket while allowing rotation of said curling barrel relative to said handle, said curling barrel extending forwardly from the front end of said handle, stop means located in the socket of said handle front end and abutting the rear face of said barrel enlarged end when such end is received in the socket of said handle front end, said cap-like coupling member abutting the front face of said barrel enlarged end to retain the enlarged end in said socket, an electric heating element mounted in the hollow of said barrel for rotation therewith, said barrel being electrically insulated from said heating element, a thermally insulating tip end member on the other end of said barrel, said tip end member being a smooth extension of said curling barrel and including a heat insulating radially extending annulus between said tip end member and the other end of said curling barrel, said tip end member and annulus being made of heat insulating material, said radially extending annulus being adapted to contact the scalp during use of the device to prevent burning of the scalp by the curling barrel, a fractional horsepower electric motor fixed in said handle concentric with said barrel, said electric motor having a drive shaft drivingly directly connected to an electrically insulative drive coupling, said drive coupling being mounted in said handle and connected to said curling barrel enlarged end for rotating said curling barrel, said motor including built-in means limiting the top speed of said electric motor, said handle having a swivel electric connector on a rear end thereof, a pair of heating element slip rings electrically connected to the terminals of said heating element and mounted on said drive coupling for rotation therewith, a pair of heating element electrical shoes fixedly mounted in said handle and slidingly electrically connected to respective ones of said heating element slip rings, a motor control switch on said handle, electrical connections connecting said handle swivel electric connector to said motor via said motor switch, electrical connections connecting said handle swivel electrical connector to said heating element shoes thereby providing an electrical circuit which permits rotation of said heating element and said curling barrel relative to said handle, an electric power supply cord connected to said handle swivel electric connector for supplying power to said motor and said heating element while permitting rotation of said power cord relative to said handle a hair clip extending along and parallel to a major portion of said curling barrel but stopping short of said radially extending annulus, the end of said clip removed from said tip end member being pivotally mounted on said barrel for movement toward and away from said barrel and being provided with an operating handle for pivotally oscillating said clip relative to said barrel, said handle swivel electric connector having a pair of handle slip rings and a pair of handle shoes electrically and slidingly connected thereto, said electric cord being connected to said slip rings and said electrical connections being connected to said handle shoes so that said handle can rotate relative to said power supply cord without tangling said power supply cord, whereby said swivel connection supplies electric current to said electric motor and electric heating element, said handle sections forming an outer continuous shell extending from said handle rear end to said handle front end, and a control switch in said electric power supply cord for controlling the supply of power to said heating element and said motor switch.

4,211,915

KEYBOARD VERIFICATION SYSTEM

Donald E. Miller, Waynesboro, and John P. Painter, Grottoes, both of Va., assignors to General Electric Company, Waynesboro, Va.

Filed Dec. 4, 1978, Ser. No. 965,852
Int. Cl.[2] G01R *31/28*
U.S. Cl. 371—15 **33 Claims**



1. A system for verifying the actuation of the individual keys of a keyboard wherein signal coupling between selected lines of at least a first and a second set of signal lines is established when a corresponding selected key changes from its inactive to its active state;

said system comprising:

means for applying first and second clock signals;

a pulse signal generator controlled by said first clock signal;

means controlled by said second clock signal for periodically applying said pulse signal to respective ones of said first set of lines in succession;

means controlled by said second clock signal for periodically scanning respective ones of said second set of lines in succession, the scan duration for each of said second lines being substantially coextensive with the successive application of said pulse signal to all of said first lines, each of said scans being adapted to sense signals coupled through to said scanned second line from any of said first lines indicative of the active state of the corresponding keys;

memory means for storing signals representative of the state of each key;

first and second test means timed by said second clock signal and responsive to said sensed signal for determining the state of the key under test;

means responsive to the previously stored state of said key for selecting one of said test means;

means responsive to the selected test means and to said previously stored key state for generating an output signal indicative of the newly verified state of said key; and

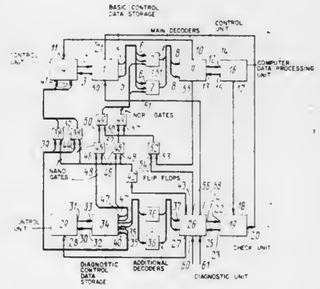
means responsive to said output signal for updating said previously stored key state in said memory means.

4,211,916

DEVICE FOR DIAGNOSING MICROPROGRAM COMPUTERS

Mark I. Baxansky, ulitsa Dekabristov, 127, kv. 222; Valery F. Gusev, ulitsa Karbysheva, 13a, kv. 35; Genrikh I. Krengel, ulitsa Ibragimova, 45, kv. 49; Viktor P. Mikhailov, ulitsa Kosmonavtov, 22, kv. 50; Ravil S. Kuramshin, ulitsa Soldatskaya, 7, kv. 1; German P. Sorokin, ulitsa Chernyshevskogo, 24/23, kv. 12, and Azat U. Yarmukhametov, ulitsa Adelya Kutuya, 12, kv. 23, all of Kazan, U.S.S.R.

Filed Dec. 14, 1977, Ser. No. 860,309
Claims priority, application U.S.S.R., Dec. 16, 1976, 2428151[I]
Int. Cl.[2] G06F *11/04*
U.S. Cl. 371—15 **1 Claim**



1. A device for diagnosing microprogrammed computers, comprising:

a basic control data storage having a first input, a second input, a first output, a second output, and a group of outputs;

a first control unit having a first input, a group of inputs, a second input, and an output, said first input and said output being connected, respectively, to said first output and said first input of said basic control data storage;

first decoders, each having a group of data inputs, an activate input and an output, said data inputs being connected to respective outputs of said group of outputs of said basic control data storage, the number of said first decoders being equal to the number of microorders executed within a machine cycle;

a second control unit having a group of inputs, an input, a first output, a second output, and a third output, said group of inputs being connected to said output of a respective first decoder, and said first output being connected to said second input of said first control unit;

a processing unit, for processing data of said computer, having an input, a first output, and a second output, said input and said first output being connected respectively to said second output and to said input of said second control unit;

a check unit having a first input, a second input, a third input, and an output, said first and second inputs being connected, respectively, to said second output of said processing unit and to said second output of said basic control data storage;

a diagnostic unit having an input, a group of inputs, an enabling input receiving a signal enabling operation of said diagnostic unit following an error signal arriving from said output of said check unit, an activating input receiving a signal activating said diagnostic unit at any moment, a first output, a second output, a third output, a fourth output, and a fifth output, said input and said first output being connected, respectively, to said output and to said third input of said check unit, and said fifth output being connected to said second input of said basic control data storage so that a signal arriving from said diagnostic unit at said storage discontinues the selection of basic control words from said basic control data storage;

a third control unit having a first input, a second input, and an output, said first input being connected to said second output of said diagnostic unit;

a diagnostic control data storage having an input, an output, a first group of outputs, a second group of outputs, and a third group of outputs, said input and said output being connected, respectively, to said output and said second input of said third control unit;

second decoders, each having an input and an output, said input being connected to a respective output of said first group of outputs of said diagnostic control data storage, and said output being connected to a respective input of said group of inputs of said diagnostic unit, the number of said second decoders being equal to the number of the diagnostic microorders executed within an operation cycle of said diagnostic unit;

a first group of NAND gates, each having a first input, a second input, and an output, said first input being connected to a respective output of said second group of outputs of said diagnostic control data storage, and said output being connected to a respective input of said group of inputs of said first control unit;

a first flip-flop having an input and an output, said input being connected to said third output of said diagnostic unit and said output being connected to said second input of each of said NAND gates so that the address flags of an individual basic control word of said basic control data are applied from said diagnostic control data storage, in the presence of an enable signal from said output of said first flip-flop, to said first control unit;

a second group of NAND gates, each having a first input, a second input, and an output, said first input being connected to a respective output of said third group of outputs of said diagnostic control data storage, and said second input of each of said NAND gates being connected to said output of said first flip-flop;

a group of NOR gates, each having a first input, a second input, and an output, said first input being connected to said output of a respective NAND gate of the second group of NAND gates, and said output being connected to said activate input of a respective first decoder so that the flags of the basic microorder contained in said selected basic control word and providing for execution of a predetermined diagnostic procedure are applied via said NAND gates of the second group, in the presence of an enable signal from said output of said first flip-flop, and via said NOR gates to a respective first decoder, thereby activating execution of a predetermined basic microorder;

a second flip-flop having a first input, a second input, and an output, said second input being connected to said fourth output of said diagnostic unit, said first input being connected to said third output of said second control unit, and

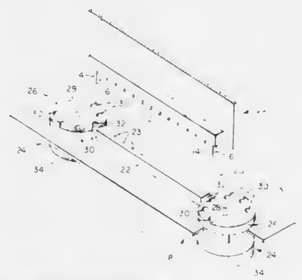
said output being connected to said second input of each of said NOR gates so that following the arrival, from said third output of said second control unit, of a signal to set said second flip-flop, the second flip-flop produces a signal which passes via said NOR gates to said activate input of each of said first decoders, the arrival of a signal from said fourth output of said diagnostic unit resetting said second flip-flip so that all of said first decoders are deactivated.

4,211,917

CIRCUIT BOARD TESTING APPARATUS AND METHOD

George F. Hofmann, Des Moines, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 17, 1978, Ser. No. 925,302
Int. Cl.[2] G06F *11/00*; G01R *15/12, 31/02*
U.S. Cl. 371—20 **17 Claims**



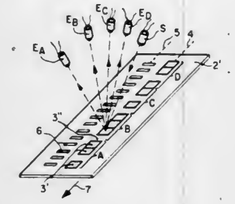
1. A testing system comprising:
a. a testing apparatus
b. a plurality of units which are to be tested by said testing apparatus,
c. a plurality of keying means, each keying means being mounted to a related one of said units, with each keying means having a predetermined mating orientation unique to the unit to which that keying means is mounted,
d. a unit inter-facing member adapted and arranged to be connected to said testing apparatus and selectively connected to said units, said unit inter-facing member comprising:
1. a movable mating means mounted to said unit inter-facing member in a manner to be moveable to a plurality of mating locations, each mating location corresponding to a related one of said keying means, such that at any one of said mating locations the mating means is able to be matched to the corresponding keying means to engage that keying means in mating relationship and permit the unit inter-facing member to be connected to that unit having the keying means for which the mating means is matched,
2. a plurality of identifying circuit means provided by said inter-facing member, each of said circuit means corresponding to a related one of said units, and being arranged to generate an identifying signal for the unit to which that circuit means corresponds,
3. switch means connected to the plurality of circuit means and said testing apparatus, in a manner that with movement of said mating means to any particular mating location, said switch means connects to the testing apparatus the circuit means which corresponds to the unit having the keying means corresponding to that particular mating location,
whereby when a particular unit is connected to said inter-facing member to be tested by said testing apparatus, said mating means is necessarily moved to a mating location corresponding to the keying means of that particular unit, with the result that the circuit means corresponding to that particular unit transmits to the testing apparatus the signal identifying that particular unit, thus ensuring that the testing apparatus is able to perform a testing procedure appropriate to that particular unit.

4,211,918

METHOD AND DEVICE FOR IDENTIFYING DOCUMENTS

Alex Nyfeler, Baar; David L. Greenaway, Oberwil, and Heinz Lienhard, Zug, all of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Jun. 6, 1978, Ser. No. 913,205
Claims priority, application Switzerland, Jun. 21, 1977, 7557/77
Int. Cl.[2] G06K *7/10*; G02B *5/18*; G06K *19/00*
U.S. Cl. 235—454 **15 Claims**



8. An apparatus for identifying documents, said documents having contained a multiplicity of machine-readable optical markings which characteristically modify incident light by either diffraction or refraction, said markings being of at least two different kinds each causing a different characteristic modification of incident light, and said markings being arranged at least in pairs in a characteristic configuration on the documents, whereby said configuration is the same for all documents, selected said markings having subsequently been cancelled whereby at least one of the markings of the same kind is not cancelled, the geometrical positions of the markings remaining on the document representing a piece of coded information, comprising:
checking means for serially checking the authenticity of said remaining markings, said checking means comprising at least one light source and at least one light receiver; and a storage means in which information about said characteristic configuration is stored, said checking means being controlled by said storage means in such a way that said checking means supplies a signal whenever a said marking scanned by said checking means causes a modification of the light emitted by said light source, which modification is characteristic for the kind of that marking, whose stored configuration coincides with the configuration of the scanned marking.

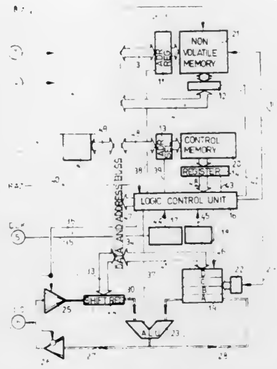
4,211,919

PORTABLE DATA CARRIER INCLUDING A MICROPROCESSOR

Michel Ugon, Saint-Ouen, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France

Filed Aug. 25, 1978, Ser. No. 936,694
Claims priority, application France, Aug. 26, 1977, 77 26107
Int. Cl.[2] G06K *19/06*
U.S. Cl. 235—487 **3 Claims**

1. A portable data carrier for storing and processing data, comprising:
a microprocessor,
a memory operatively associated with said microprocessor having a first zone to which access by devices external to said carrier is prevented, and in which reading and writing by circuits internal to said carrier are permitted;
said microprocessor including internal first means for reading and writing in said memory; second means for receiving external data to be written in said memory, and third means for externally transmitting data read from said memory,
said first means internal to said portable data including means for checking an enabling key received from a device external to said carrier,



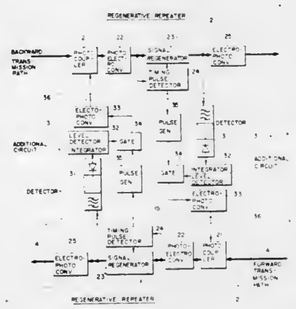
and said portable data carrier further comprising means associated with said reading element for storing error information in a zone of said memory in the event the received key is incorrect; and
means associated with said reading element for storing access information in another zone of said memory in the event the received key is correct.

4,211,920

FAULT LOCATION SYSTEM FOR OPTICAL REPEATING PATHS

Hiroharu Wakabayashi, Nakamura, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Jan. 3, 1979, Ser. No. 710
Claims priority, application Japan, Jan. 9, 1978, 53-523
Int. Cl.[2] H04B *9/00, 3/46*
U.S. Cl. 455—601 **3 Claims**



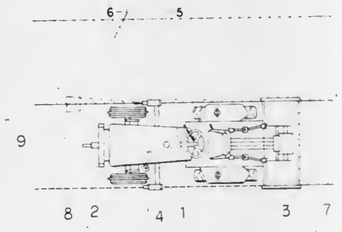
1. An optical repeating path fault location system for a PCM optical transmission system which is composed of a backward transmission path and a forward transmission path respectively formed of separated optical fibers and having disposed therein a plurality of PCM optical regenerative repeaters at the same repeating positions for the backward transmission path and the forward transmission path, wherein there are provided for each of the backward transmission path and the forward transmission path at each repeater position a detector for extracting from each one of the backward transmission path and the forward transmission path at least one of frequency signal components individually assigned to the repeaters to provide a detected output, and pulse generating means responsive to the detected output to generate a predetermined common test pattern pulse train for applying as an optical signal to the input portion of the corresponding repeater in each of the other of the backward transmission path and the forward transmission path, wherein repeater identify signals including the frequency signal components respectively assigned to the sequentially disposed PCM optical regenerative repeaters of each one of the backward transmission path and the forward transmission path are sequentially transmitted from a signal transmitting station of each one of the backward transmission path and the forward transmission path is monitored for a fault on the basis of the reception result of the test pattern pulse train received by the signal transmitting station via each of the other of the backward transmission path and the forward transmission path.

4,211,921

SENSOR FOR USE IN CONTROLLING OPERATION OF MOBILE FARMING MACHINE

Yuuji Kanetou, and Hirofumi Uetani, both of Matsuyama, Japan, assignors to Iseki Agricultural Machinery Mfg. Co. Ltd., Matsuyama, Japan

Filed Feb. 3, 1978, Ser. No. 874,879
Int. Cl.[2] G06K *11/02*
U.S. Cl. 250—202 **7 Claims**



1. In combination, a vehicle which is driven along a predetermined path in working a field, and a sensor for controlling the operation of said vehicle in working the field, said sensor comprising a camera mounted on said vehicle so as to optically view the image of the line defining the boundary of the worked and unworked portions of the field to define the path of travel of said vehicle, said camera including means for compressing said image, and photoelectric converting means comprising a plurality of photoelectric elements operatively associated with said camera, said photoelectric elements being arranged in a row disposed generally normal to the image of said boundary line whereby the direction of movement is controlled by detecting the degree of shifting of said line image on said array of photoelectric elements by comparing the photoelectric output from said photoelectric elements.

4,211,922

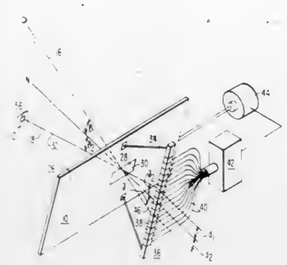
HELIOSTAT GUIDANCE

Eugene G. Vaerewyck, Murrysville; Robert C. Miller, Penn Hills, and Arthur E. Anderson, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 1, 1978, Ser. No. 956,778
Int. Cl.[2] G01J *1/20*
U.S. Cl. 250—203 R **6 Claims**

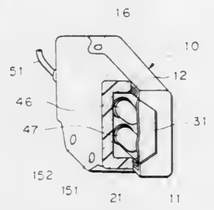
1. In a heliostat system wherein solar radiation is reflected from a mirror onto a receiver, apparatus for movably positioning the mirror comprising:
(a) a line image producing lens disposed through said mirror;
(b) a multi-element photosensor rigidly affixed behind said mirror disposed such that an image of the sun and an image of said receiver are focusable upon said photosensor, said photosensor having a preselected element dis-

posed along the normal to said mirror through the center of said lens; and



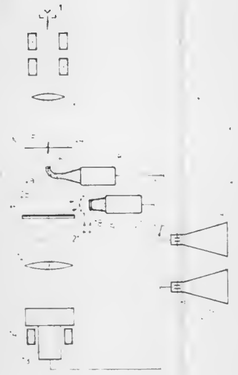
(c) means utilizing signals from said photosensor created by said images for positioning said mirror such that said images are predetermined distances from said preselected element.

4,211,923
FLUID TIGHT ULTRASONICALLY WELDED PHOTOELECTRIC DEVICE
Toshifumi Fukuyama, and Hideaki Hattan, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Mar. 17, 1978, Ser. No. 887,795
Claims priority, application Japan, Mar. 18, 1977, 52/29967
Int. Cl.[2] H01J *5/02*; **B29C** *27/08*
U.S. Cl. 250—239 **11 Claims**



1. A photoelectric switch comprising:
a housing consisting of two shells of opaque plastic material welded together by ultrasonic welding;
a window means of transparent plastic material welded to said shells by said ultrasonic welding, said window means being formed and attached to said shells in such a manner that it includes no peripheral portion which is in parallel with a welding pressure direction of said ultrasonic welding;
at least one electrooptical transducer disposed in said housing is a position to optically communicate with the exterior of said housing through said window means;
an electrical circuit means placed in said housing and connected to said at least one electrooptical transducer; and
an electric conductor connected to said electrical circuit means and led out of said housing.

4,211,924
TRANSMISSION-TYPE SCANNING CHARGED-PARTICLE BEAM MICROSCOPE
Karl-Heinz Müller; Burkhard Krisch; Volker Rindfleisch, and Hans F. R. Neuendorff, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Continuation of Ser. No. 827,027, Aug. 23, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,647
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2640260
Int. Cl.[2] G01M *23/00*
U.S. Cl. 250—311 **9 Claims**

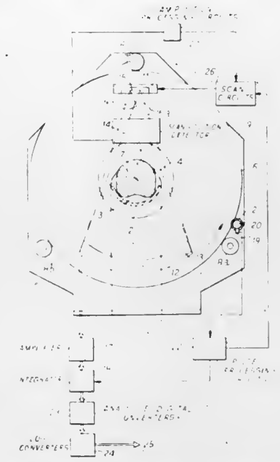


1. In a transmission-type, scanning, charged-particle beam microscope including a television camera tube and a television display tube for generating and displaying a diffraction image of a specimen to be examined, said beam comprising a primary ray cone and a scatter-ray cone which generate a bright-field image and a dark-field image of said specimen, respectively, said microscope further comprising means for detecting a bright-field image of said specimen generated by said beam, the improvement comprising,
a transparent fluorescent screen disposed behind said specimen along the beam path in said microscope;
means adapted to prevent said primary ray cone from striking said screen;
light-optical means adapted for imaging said fluorescent screen on a target of said television camera tube and thereby detecting a diffraction image of said specimen generated by said beam; and
detector means disposed adjacent said fluorescent screen for detecting radiation emitted by said fluorescent screen when said scatter-ray cone of said beam strikes said screen and thereby a dark-field image of said specimen generated by said beam.

4,211,925
CT SCANNER WITH ANODE SCAN MONITOR
Ian A. Fairbairn, Maidenhead, England, assignor to E M I Limited, Middlesex, England
Filed Apr. 19, 1978, Ser. No. 897,787
Claims priority, application United Kingdom, Apr. 28, 1977, 17744/77
Int. Cl.[2] A61B *6/00*
U.S. Cl. 250—445 T **6 Claims**

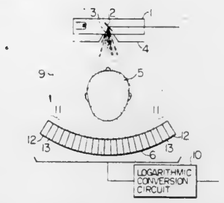
1. A radiographic apparatus for examining a slice of the body of a patient, including a source of a substantially planar fan-shaped distribution of radiation originating from an anode included in the source, means for scanning the origin of the radiation in relation to the anode and a scan position indicator including means for detecting the intensity of the radiation and

at least two gratings, disposed to shield the means for detecting, co-operating to modulate the intensity of the radiation



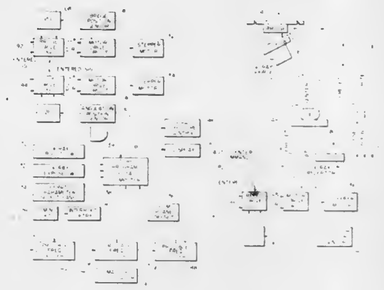
incident on the means for detecting in a manner related to the position of said origin.

4,211,926
TOMOGRAPHIC IMAGING SYSTEM
Chitose Nakaya, Hachioji; Hideki Kohno, Tokyo; Hidemi Shiono, Akikawa; Kensuke Sekihara, Tokyo; Shinji Yamamoto, Hachioji; Teruichi Tomura, Kunitachi, and Takayuki Hayakawa, Hachioji, all of Japan, assignors to Hitachi Medical Corporation, Japan
Filed Apr. 28, 1978, Ser. No. 901,241
Claims priority, application Japan, Sep. 2, 1977, 52-104922
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—445 T **5 Claims**



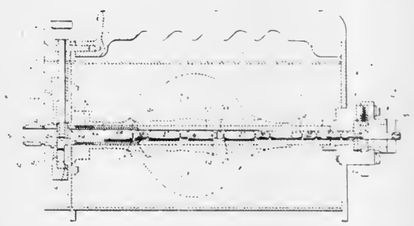
1. A tomographic imaging system comprising:
generating means for generating penetrating radiation toward an object under investigation;
detecting means including an array of radiation sensitive detectors for detecting the radiation from said generating means transmitted through the object and for providing an output indicative thereof, said detecting means including at at least one side of said detector array of radiation sensitive detectors, a checking detector being responsive to the radiation generated by said generating means which normally does not pass through the object under investigation for checking whether the object is positioned within a field of view of said detector array of radiation sensitive detectors, said checking detector providing an output indicative of the radiation generated which normally does not pass through the object;
means for comparing the output of said checking detector with a predetermined value for determining whether the object is positioned within the field of view of said detector array;
means for rotating said generating means and said detecting means while keeping a predetermined relative relationship in position with respect to each other; and
means for processing the output from said detector array to produce a tomographic image of the object.

4,211,927
COMPUTERIZED TOMOGRAPHY SYSTEM
Melbourne J. Hellstrom, Severna Park; Allen I. Perlin, and Edward Kutlik, both of Baltimore, all of Md., assignors to CGR Medical Corporation, Baltimore, Md.
Filed Nov. 24, 1978, Ser. No. 963,178
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—445 T **26 Claims**



1. A method for non-mechanically linking the motions of an X-ray source with an X-ray receptor during a tomographic procedure to produce a tomograph of a section of an object under examination comprising the steps of:
effecting motion of said source and receptor to respective reference positions;
thereafter during a tomographic procedural mode generating from at least one fixed frequency signal source first and second pulse trains, adapted to drive respective stepper motors, for effecting motion of said source and receptor, said pulse trains having a predetermined mathematical relationship dependent upon the desired fulcrum height of the tomographic section to be produced; and
applying said first and second pulse trains to the respective stepper motors for a predetermined number of pulse counts to effect motion with respect to said respective reference positions and effecting a tomographic sweep thereby.

4,211,928
LINEAR STORAGE PROJECTOR
George W. Parsons, Jr., North Reading, and John J. Munro, III, Westford, both of Mass., assignors to Technical Operations, Incorporated, Boston, Mass.
Filed Nov. 27, 1978, Ser. No. 964,079
Int. Cl.[2] G21F *5/02*
U.S. Cl. 250—497 **10 Claims**



1. In radiographic apparatus for manipulating a quantity of

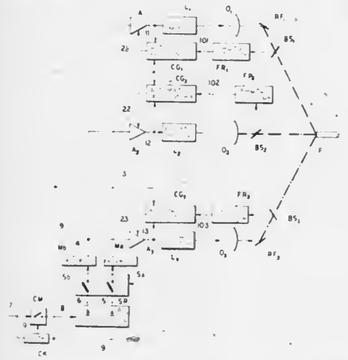
radioactive material between a stored position and a use position including a capsule of said radioactive material, a storage unit with means defining a passage through it, for storing the capsule in the passage and shielding the surrounding environment from the stored radioactive material, and manipulating means connectible to said storage unit at a first end of said passage for moving said capsule between a stored position within the passage and a use position outside the second end of said passage, the improvement comprising: a shutter mounted on said storage unit for sliding movement transverse to the second end of said passage between first and second limits, said shutter in said first limit blocking said second end, said shutter having a hole through it which registers with said passage when the shutter is in said second limit, shutter-retaining means associated with said passage means adjacent said second end and resilient means cooperating with said retaining means and said storage unit for urging said retaining means to project an end-part toward said shutter, means in said shutter for receiving said end-part when said shutter is in said second limit and thereby retaining said hole in register with said passage, and means coupled to said capsule for pulling said retaining means away from said shutter against the action of said resilient means under control of said manipulating means for withdrawing said end-part from said receiving means and thereby permitting said shutter to move toward said first limit.

4,211,929

FIBER-OPTICAL SYSTEM FOR TRANSMITTING MULTILEVEL SIGNALS

Giovanni Tamburelli, Turin, Italy, assignor to CSELT—Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Aug. 29, 1978, Ser. No. 937,816
Claims priority, application Italy, Sep. 5, 1977, 68972 A/77
Int. Cl.² G02B *27/00*
U.S. Cl. 250—55 **8 Claims**



1. A system for translating binary electrical signals into multilevel luminous signals, comprising:

sampling means connected to a source of said electrical signals and operable to convert same into a train of binary pulses;

memory means connected to said sampling means for temporarily storing successive groups of n binary pulses where n is a positive integer greater than zero;

a set of $2^n - 1$ emitters of incoherent light;

circuit means connected to said memory means for selectively energizing said emitters with a collective luminous intensity assuming one of 2^n possible levels depending upon the binary value of the pulse group stored in said memory means; and

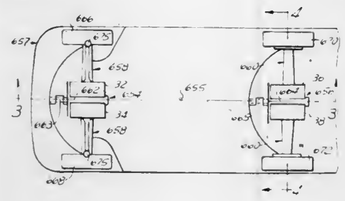
fiber-optical means positioned to receive light from all said emitters for transmission to a load.

4,211,930

VEHICLE PROPULSION SYSTEM BY INDIVIDUAL STEPPING MOTORS FROM CONTINUOUSLY-RUNNING ENGINE-DRIVEN ALTERNATOR AND/OR PULSATING BATTERY CURRENT

Werner H. Fengler, 23651 Fordson Dr., Dearborn, Mich. 48124

Filed Jul. 24, 1978, Ser. No. 927,353
Int. Cl.² B60L *11/02*
U.S. Cl. 290—15 **10 Claims**



1. An engine-driven-alternator individual-wheel-motorized electric propulsion system for a four-wheel motor vehicle provided with a steering mechanism, said system comprising

an engine-driven two-phase alternator having a two-phase alternator output,

a plurality of electric stepping motors adapted to be drivingly connected one to each vehicle wheel and having motor inputs,

each stepping motor having a rotor and also having a stator with a multiplicity of pole pieces arranged in first and second sets disposed in alternate sequence with the pole pieces of each set having alternate opposite windings imparting alternate opposite polarities to the stator pole pieces of each set upon energization thereof,

each stator pole piece having a first winding adapted to be energized by pulses of rectified alternating current and a second winding thereon adapted to be energized by pulses of direct current,

a storage battery,

a pulse-responsive electric power system including a plurality of gate-controlled rectifiers having power current input means and also having power current output means,

a stepping motor control circuit interposed between and connecting said alternator output to said motor inputs and including switching means connected to the gates of said gate-controlled rectifiers and responsive to the reception of positive or negative pulses for selectively energizing said first and second windings of said stator pole pieces separately and simultaneously and thereby effecting step-by-step rotation of said rotors,

variable frequency generating means electrically connected to said pulse-responsive electric power system including said plurality of gate-controlled rectifiers,

and a frequency control circuit for selectively controlling the frequency output of said variable frequency generator means.

4,211,931

ELECTRONIC SPEED ERROR SIGNAL PROCESSING CIRCUIT

Charles W. Eichelberger, Schenectady, and Edward S. Andrejko, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

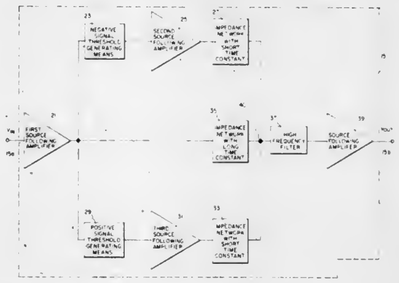
Filed Dec. 27, 1977, Ser. No. 864,519
Int. Cl.² H02P *9/04*
U.S. Cl. 290—40 A **6 Claims**

1. A signal processor comprising:

first channel means for providing a substantially unattenuated output signal in response to error signal fluctuations above a selected threshold level of one polarity regardless of frequency, said first channel means including a first signal threshold generating means operatively connected to a first impedance network with a predetermined time constant;

second channel means for providing a substantially unattenuated output signal in response to error signal fluctuations above a selected threshold level of opposite polarity regardless of frequency, said second channel means including a second signal threshold generating means operatively connected to a second impedance network with a predetermined time constant; and

third channel means for providing a substantially unattenuated output signal in response to error signal fluctuations below a selected frequency and substantial attenuation to error signal fluctuations above said selected frequency, said third channel means including a third impedance network with a predetermined time constant,



said first and second signal threshold generating means comprising a current source supplying current to a first resistor in series with a second resistor of equal value, the juncture between said current source and said first resistor maintaining a negative threshold level with respect to the juncture of said first and second resistors, and the remaining terminal of said second resistor maintaining a positive threshold level with respect to the juncture of said first and second resistors; and

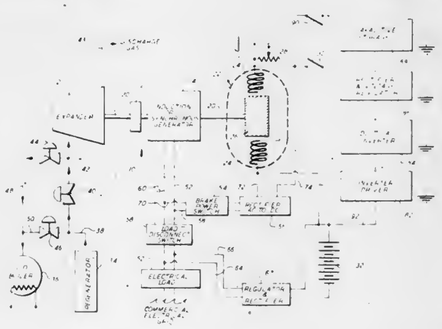
said first, second and third channel means including respective inputs operatively coupled together to comprise the input to said signal processor and said first, second and third channel means including respective outputs operatively coupled together to comprise the output of said signal processor.

4,211,932

POWER RECOVERY SYSTEM

Carl H. Geary, Jr., Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 8, 1978, Ser. No. 903,461
Int. Cl.² F02G *3/00*
U.S. Cl. 290—52 **10 Claims**



1. A system for recovering power from a relatively high temperature high mass flow, low pressure, low density, high specific volume waste heat fluid formed directly from the combustion of a process gas comprising:

expansion means to receive said relatively high temperature waste heat fluid;

electrical power generating means connected to said expansion means and operated thereby as a result of the expansion of the fluid therethrough; and

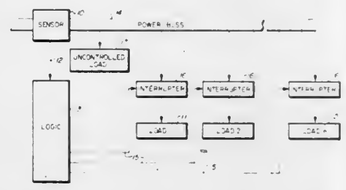
dynamic power absorbing means intermittently connected to said expansion means for applying a brake torque acting thereon for intercepting acceleration of said expansion means above a predetermined magnitude when said expansion means is operating other than at steady state conditions.

4,211,933

ELECTRICAL LOAD RESTORATION METHOD

Walter P. Hedges, Laveen, and C. Gardner Sullivan, II, Phoenix, both of Ariz., assignors to Cyborex Laboratories, Inc., Phoenix, Ariz.

Filed May 26, 1978, Ser. No. 909,850
Int. Cl.² H02J *3/14*
U.S. Cl. 307—35 **3 Claims**



1. In an energy management method employing apparatus for automatically limiting the total instantaneous consumption of electrical energy in a residence having a plurality of energy-consuming variable demand loads having different nominal current demands, said method including

measuring the total current to the loads which are then in operation, and

automatically interrupting the current, if any, to each of said loads in a predetermined sequence when the total current to the loads then in operation exceed the predetermined peak total current demand, until the total current is less than the predetermined peak total,

the improvement whereby current consumption is maintained as high as possible without exceeding said predetermined peak demand, said improvement comprising:

(a) establishing a predetermined load shedding sequence which is independent of the nominal current demands of said loads;

(b) measuring the actual consumption values of each load which is interrupted;

(c) selecting from among those loads which have been interrupted, the loads which, according to said actual values and independent of said nominal values, can be restored without causing said total current to exceed predetermined peak demand; and

(d) automatically restoring said selected loads to operation;

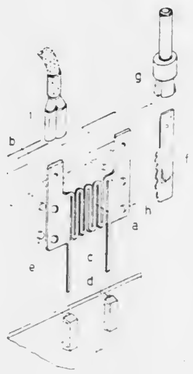
the measurement of said actual consumption values enabling load restoration selections based thereon without modification of said energy management apparatus to account for variations in the nominal demands of said loads.

4,211,934

CURRENT-MEASURING INPUT FOR AN ELECTRONIC RELAY

Burkhard Henle, Birr; Ivica Vukasovic, and Michael Fiorentzis, both of Wettingen, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 1, 1977, Ser. No. 812,600
Claims priority, application Switzerland, Jul. 8, 1976, 8742/76
Int. Cl.[2] G01R *15/08*
U.S. Cl. 307—98 1 Claim



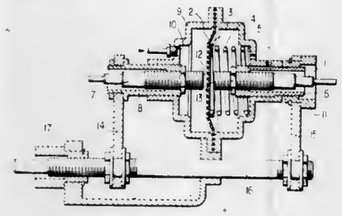
1. A current-measuring input for an electronic evaluation unit, especially for an electronic relay fed from the secondary wnding of a main current transformer, including: a shunt resistor made of flat sheet material which bridges the secondary winding of the main current transformer, the resistor having an impedance of a value such that the secondary winding is almost shortcircuited, and the voltage drop across the shunt resistor is sufficient for application to the electronic relay having adjustment means and tapping points; said shunt resistor being located in the base of a plug-in means; a miniature isolating transformer located between said shunt resistor and said electronic relay for isolating the electronics from a power section; said shunt resistor being stamped from a flat sheet; said shunt resistor being connected electrically by flat-pin connector means; said shunt resistor being formed so that the outgoing measuring contacts are connectable thereto by a socket soldered direct to circuit boards; said shunt resistor being fixed in the base by shapes provided during stamping; said shunt resistor being given a required resistance value by a serpentine shape; screw connections for electrical connection, said flat-pin connector for connecting said shunt resistor being fitted with an adapter allowing connection to be made to threaded pins; the value of the impedance of said shunt resistor being adjustable by perforations in said flat sheet material; said flat sheet material forming said shunt resistor having tape so that a voltage drop across different taps remains the same for different currents; said shunt resistor being contained in a housing corresponding substantially to a circuit board edge connector, cold parts of said resistor being against the housing while warm parts of said resistor being in a cavity; said shunt resistor with housing being usable in a card magazine; said housing being of one-piece, said shunt resistor being plugged into said housing and held in position by stamped retaining springs.

4,211,935

ELECTRONIC PRESSURE SWITCH

Ludwig Erben, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,214
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711346
Int. Cl.[2] H01H *35/34*
U.S. Cl. 307—118 6 Claims



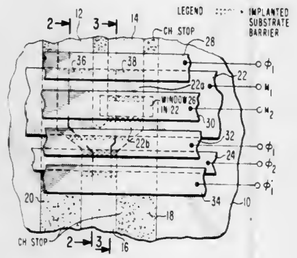
1. In an electronic pressure switch including a first axially displaceable electronic proximity switch member and a diaphragm carrying a metal plate oriented perpendicularly to the axis of, and at a distance from, the proximity switch member, the diaphragm being movable toward the member in response to the pressure of a medium to be monitored, and a compression spring arranged coaxially around the proximity switch member and bearing with one end on the metal plate to urge the plate and the diaphragm away from the switch member, the switch member being disposed to one side of the diaphragm and cooperating with the plate to be actuated when the distance between the plate and the switch member becomes less than a selected value, the improvement comprising: a second electronic proximity switch member disposed at the side of said diaphragm facing away from said first electronic proximity switch member, said second proximity switch member cooperating with said plate to be actuated when the distance between said plate and said second member becomes less than a selected value; and means supporting said first and second electronic proximity switch members for movement as a unit relative to said diaphragm in the direction of their axes in a manner to maintain the spacing therebetween in such axial direction constant.

4,211,936

CCD GATE ELECTRODE STRUCTURES AND SYSTEMS EMPLOYING THE SAME

Walter F. Kosonocky, Skillman, and Donald J. Sauer, Plainsboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,208
Int. Cl.[2] G11C *19/28;* H03K *5/00;* H01L *29/78*
U.S. Cl. 307—221 D 16 Claims



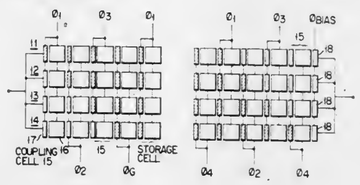
1. A charge-coupled device (CCD) comprising:
a semiconductor substrate formed with first and second CCD channels therein, said channels being defined by potential barriers in said substrate;
a first gate electrode insulated from the substrate and extending over both channels, said electrode being formed with an opening therein over said first channel;
a second gate electrode located over said opening for controlling the substrate potential of said first channel through said opening, said second gate electrode being shielded from said second channel by said first gate electrode;
means for applying a bilevel control voltage to said second gate electrode, one of said levels creating a potential barrier in said first channel through said opening in said first gate electrode for preventing the passage of charge in said first channel past said opening, and the other of said levels creating a potential well in said first channel through said opening in said first gate electrode for the storage of charge in the substrate region adjacent to said opening;
a second opening in said first gate electrode, said second opening being over said second channel;
a third gate electrode over said second opening for controlling the substrate potential of said second channel through said second opening, said third gate electrode being shielded from said first channel by said first gate electrode; and
means for applying a bilevel control voltage to said third gate electrode, one of said levels creating a potential barrier in said second channel through said second opening in said first gate electrode for preventing the passage of charge in said second channel past said second opening, and the other of said levels creating a potential well in said second channel through said second opening in said first gate electrode for the storage of charge in the substrate region of said second channel adjacent to said second opening.

4,211,937

MULTI-CHANNEL CHARGE COUPLED TRANSFER DEVICE

Susumu Kohyama, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 761,966, Jan. 24, 1977, abandoned. This application Oct. 27, 1978, Ser. No. 955,212
Claims priority, application Japan, Jan. 23, 1976, 51-586851; Mar. 8, 1976, 51-2421451; May 7, 1976, 51-5206251; May 10, 1976, 51-5214551; Aug. 2, 1976, 51-9220551
Int. Cl.[2] G11C *19/28;* H03K *5/00;* H01L *29/78*
U.S. Cl. 307—221 D 9 Claims



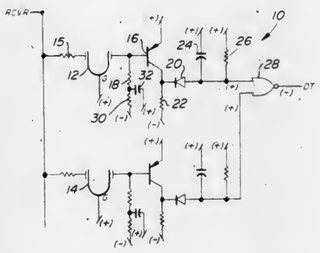
1. A charge transfer device comprising:
a semiconductor substrate of one conductivity type;
an insulation layer formed on said substrate;
N charge transfer channels arranged in parallel and having inputs connected to a common input node formed in said substrate and outputs to a common output node formed in said substrate and each channel including P transfer electrodes disposed on said insulating layer in a charge transfer direction, the N corresponding transfer electrodes of the respective charge transfer channels being arranged in the direction normal to the charge transfer direction and being electrically connected together;
means for forming a potential barrier in part at the charge incoming side of said semiconductor substrate under each of only M (<P) successive transfer electrodes of each of said N charge transfer channels in response to application of a potential of a storage level to the transfer electrode to form a storage cell under each of said M electrodes of each of said charge transfer channels for storing a signal charge packet, the N sets of said respective M transfer electrodes under which said potential barriers are to be formed being arranged such that the first electrodes of said respective M successive transfer electrodes are successively displaced by one transfer electrode in the charge transfer direction at the input side of said charge transfer channels and the last electrodes of said respective M successive transfer electrodes are successively displaced by one transfer electrode in the charge transfer direction at the output side of said charge transfer channels, and said storage cell being responsive to application of a potential of a transfer level on the associated transfer electrode to receive a signal charge packet from the adjacent preceding cell at the storage level;
means for applying N-phase non-overlapping offset clock pulse signals to said transfer electrodes of said N charge transfer channels, said clock pulse signals each being normally biased to the storage level and pulsed to the transfer level in order that N successive transfer electrodes in each of said charge transfer channels are successively set to the transfer level in the direction opposite to the charge transfer direction whereby input data from said input node are sequentially applied to said N transfer channels and parallel data from said charge transfer channels are applied sequentially to said output node by said N-phase clock signals and, in each of said charge transfer channels, a signal charge packet is shifted one storage cell in the charge transfer direction during one cycle period of said N-phase clock pulse signals while an empty storage cell is shifted one cell position in the direction opposite to the charge transfer direction each time a clock signal is pulsed; and,
means for forming a fat "O" potential barrier in part at the charge incoming side of said semiconductor substrate under each of transfer electrodes disposed between said input node and the first electrode of said respective M successive transfer electrodes of said charge transfer channels to store a fat "O" charge under the associated transfer electrode.

4,211,938

TONE DETECTOR

Duane R. Bolgiano, Bala Cynwyd; Joel M. Benjamin, Jr., Pottstown, and Victor Meyer, Jr., Telford, all of Pa., assignors to International Mobile Machines Incorporated, Bala Cynwyd, Pa.

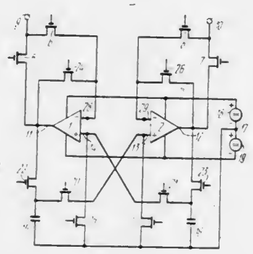
Division of Ser. No. 755,615, Dec. 29, 1976, Pat. No. 4,130,731. This application Oct. 16, 1978, Ser. No. 951,734
Int. Cl.[2] H03K *9/06, 17/28*
U.S. Cl. 307—233 R 5 Claims



1. A non-linear tone detector system comprising:
receiving means sensitive to at least one input frequency;

output means for providing an output in the form of turn-on and turn-off signals;
control means for controlling the output of said output means;
said control means being adapted to turn off the output means in the absence of a particular frequency or group of frequencies at said receiving means after a predetermined time period, and to turn on said output means after a predetermined time period in the presence of a particular frequency or group of frequencies at said receiving means;
said time periods being determined by independent actuating means.

4,211,939
OPERATIONAL AMPLIFIER WITH SWITCHING ERROR ELIMINATION
Anatoly V. Furman, ulitsa Chkalova, 21, kv. 6, Zhukovsky Moskovskoi oblasti, U.S.S.R.
Filed Mar. 9, 1978, Ser. No. 885,022
Int. Cl.² G06G 7/12
U.S. Cl. 307—229 **6 Claims**



1. A switching device, comprising:
two identical active switching components connected in series and each comprising an operational amplifier having a negative feedback circuit, an inverting input, a non-inverting input, an output, supply sources, and a keying element in said negative feedback circuit;
two identical operational amplifier bias voltage memory circuits each having an input and an output; said input of each of said memory circuits being connected to said output of said operational amplifier; said output of each of said memory circuit being connected to said non-inverting input of said operational amplifier so that said output of the first memory circuit is connected to said non-inverting input of the operational amplifier with output connected said second memory circuit, said output of the second memory circuit being connected to said non-inverting input of the operational amplifier with output connected to said first memory circuit.

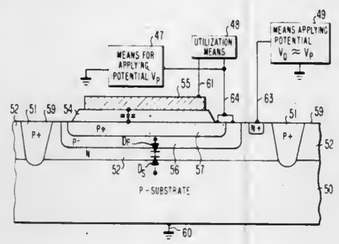
4,211,940
ELECTRONIC POWER CONTROL DEVICE
Shunji Minami, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 20, 1978, Ser. No. 898,186
Claims priority, application Japan, Apr. 27, 1977, 52-49569
Int. Cl.² H03K 17/60, 1/00
U.S. Cl. 307—251 **4 Claims**

1. An electronic power control device, comprising:
(a) a first R-S flip-flop with a set input terminal connected through an UP switch to a DC power source and a reset input terminal connected through a DOWN switch to said DC power source,
(b) a second R-S flip-flop with a set input terminal connected through first and second diodes to said set and reset input terminals of said first R-S flip-flop and a reset input terminal connected through a STOP switch to said DC power source,
(c) an analog memory comprising
an input resistor with one end connected to an output terminal of said first R-S flip-flop,
an analog switch one end of which is connected to the other end of said input resistor and which is enabled or disabled in response to the output from said second R-S flip-flop,
a nonpolarized capacitor interconnected between the other end of said analog switch and the ground, and
a MOS field-effect transistor with the gate connected to said other end of said analog switch, the drain con-



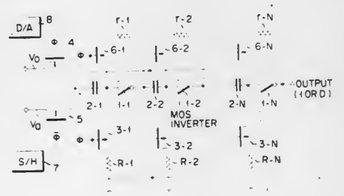
nected to A DC power source and the source connected to an output terminal and connected to a source of reference potential through an output resistor,
(d) a firing circuit coupled to said analog memory output terminal and connected in series with a control resistor and a firing capacitor, and means for interconnecting said firing circuit between a source of reference potential and a generally trapezoidal waveform power source in such a way that said firing circuit may be fired or rendered conductive in response to a predetermined level of voltage charged across said firing capacitor, and
(e) a semiconductor device for controlling the level of voltage charged across said firing capacitor in response to the output from said analog memory.

4,211,941
INTEGRATED CIRCUITRY INCLUDING LOW-LEAKAGE CAPACITANCE
Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 3, 1978, Ser. No. 930,791
Int. Cl.² H01L 27/04, 29/94
U.S. Cl. 307—303 **3 Claims**



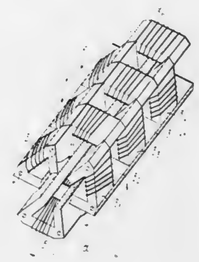
1. An integrated circuit including a low-leakage capacitance comprising:
a semiconductor substrate of a first conductivity type material;
a first supply terminal for receiving a reference potential;
means providing ohmic contact between said semiconductor substrate and said first terminal;
an MOS parallel plate capacitor having as its first plate a first electrode, having as its second plate a first semiconductor region of said first conductivity type with an ohmically contacting second electrode, and having a dielectric layer between its first and second plates, and having a second semiconductor region of a second conductivity type complementary to said first conductivity type, which second semiconductor region having an ohmically contacting third electrode and forming first and second isolating pn junctions, respectively, with said first semiconductor region and said substrate;
means connected to the first and second electrodes of said MOS capacitor for utilizing the capacitance therebetween;
means for causing a determinable potential, different from said reference potential, at said second electrode;
means for applying to the third electrode of said MOS capacitor a similar valued potential to said determinable potential thereby to eliminate a potential across said first pn junction and forestall appreciable leakage current through said first junction which means includes,
means exclusive of said first pn junction for supplying leakage current flow across said second pn junction.

4,211,942
VOLTAGE COMPARATOR PROVIDED WITH CAPACITIVELY CASCADE-CONNECTED INVERTING AMPLIFIERS
Kazuhide Aoki, and Kenji Kawagai, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Jul. 18, 1978, Ser. No. 925,801
Claims priority, application Japan, Jul. 18, 1977, 52-85869
Int. Cl.² H03K 5/20, 17/60
U.S. Cl. 307—355 **3 Claims**



1. A comparator for comparing a first input voltage signal with a second input voltage signal to provide at an output thereof an output signal of a logic level 1 or 0 depending on the relationship between magnitudes of the first and second input voltage signals comprising:
a plurality of capacitively cascade-connected inverting amplifier stages each including an inverter having an input and an output, a first series connection of a first resistive impedance element and a first switching device connected between said input and output of said inverter, a second series connection of a second resistive impedance element and a second switching device connected between said input of said inverter and a reference potential circuit point, and an input-coupling capacitive element connected to said input of said inverter, said first and second switching devices of said first and second series connections being simultaneously enabled or disabled at a predetermined time interval by a clock pulse signal applied thereto; and
input circuit means for alternately coupling the first and second input voltage signals to an input-coupling capacitive element of a first inverting amplifier stage, said input circuit means being arranged to couple the first input voltage signal to said input-coupling capacitive element of said first inverting amplifier stage when said first and second switching devices are enabled, and to couple the second input voltage signal to said input coupling capacitive element of said first inverting amplifier stage when said first and second switching devices are disabled.

4,211,943
LINEAR INDUCTION MOTOR
Alexandr D. Popov, ulitsa Koroleva, 12, kv. 154; Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu, and Dmitry A. Zvezdunov, ulitsa Estonskaya, 248-b, Bataisk Rostovskoi oblasti, all of U.S.S.R.
Filed May 8, 1979, Ser. No. 37,012
Claims priority, application U.S.S.R., May 10, 1978, 2618796
Int. Cl.² H02K 41/00
U.S. Cl. 310—13 **1 Claim**

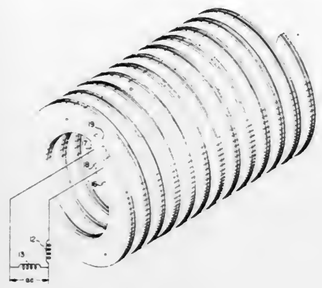


1. A linear induction motor comprising:
an inductor;
an electrically conducting secondary element disposed within said inductor and separated from the latter by an air gap;
said inductor including a multiphase concentrated winding and a magnetic circuit;
said magnetic circuit including groups of laminated cores;
each of said groups of laminated cores, including at least three laminated cores which have an inverted U-shape and are comprised of two legs coupled by a yoke;
said laminated cores whose lamination are located perpendicularly to the direction of movement of the magnetic field so as to establish a closed magnetic flux;
axes of symmetry of said laminated cores of each of said groups, positioned in a plane perpendicular to the direction of movement of the magnetic field and shifted with respect to one another by a given angle α;
said legs of said laminated cores of a subsequent group, mating said legs of said laminated cores of a preceding group so as to provide for even distribution of the magnetic field within said inductor;
said axes of symmetry of said laminated cores of a subsequent group, shifted with respect to the axes of symmetry of the laminated cores of a preceding group by an angle $\alpha/2$.

4,211,944
AMORPHOUS METAL ELECTRIC MOTOR WITH INTEGRAL CAPACITOR
Theodore R. Haller, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jun. 12, 1978, Ser. No. 914,444
Int. Cl.² H02K 11/00
U.S. Cl. 310—72 **12 Claims**

1. An electric machine comprising: a stator and a rotor mounted for relative rotation at least one of which has a laminated magnetic core that has a dual function as a capacitor and is constructed of multiple insulated turns of magnetic amorphous metal ribbon of relatively long length; an energizing winding on and magnetically coupled with said laminated

core; at least part of said winding also being electrically connected to the ribbon such that said insulated turns of amor-



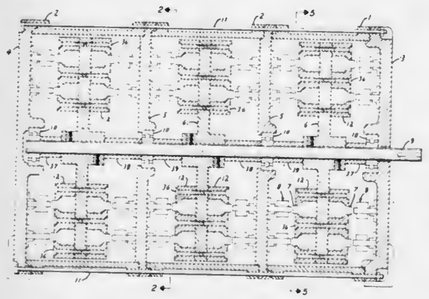
phous metal ribbon are said capacitor which is in circuit relationship with said winding.

4,211,945

MULTI-VOLTAGE AND MULTI-FREQUENCY ALTERNATOR/GENERATOR OF MODULAR CONSTRUCTION

Ian S. Tawse, Weston, Canada, assignor to Gen-Tech, Inc., Cape Coral, Fla.

Filed Oct. 20, 1977, Ser. No. 843,936
Int. Cl.² H02K *21/10*
U.S. Cl. 310—112 **6 Claims**



1. An alternator/generator of modular construction, comprising:

(a) a plurality of stator plates located in spaced-apart parallel planes, each stator plate carrying a series of pole pieces having fingers, said fingers carrying electrical output coils,

(b) a rotor disc located between, and parallel to, each two successive stator plates, each rotor disc carrying a series of field magnets cooperable with said output coils carried by adjacent stator plates, the number of said field magnets on each face of a rotor disc being equal to the number of said pole piece fingers on an opposite face of an adjacent stator plate, and each of the field magnets carried on each face of said rotor disc being aligned in the axial direction of said shaft with one of said pole piece fingers on an opposite face of an adjacent stator plate when said rotor disc is in a stationary position,

(c) a rotatable shaft carrying all said rotor discs, said shaft passing through said stator plates,

(d) bearing means carried by the two endmost stator plates and by at least some of said stator plates between the endmost plates, said shaft being rotatably supported by said bearing means,

(e) a plurality of individual casing sections, one of said casing sections being between each two successive stator plates, and

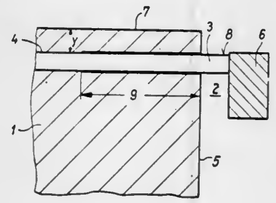
(f) means for securing said casing sections and stator plates together to define a housing enclosing all the rotor discs.

4,211,946

ASYNCHRONOUS ELECTRIC MACHINE

Joachim Eckert, and Franz Spirk, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,351
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1977, 2719326
Int. Cl.² H02K *17/20*
U.S. Cl. 310—212 **4 Claims**



1. In an asynchronous machine including a rotor of solid iron and a squirrel cage winding, the improvement comprising:

said rotor having closed slots of any cross-sectional shape enclosed within the iron in which the bars of said squirrel cage winding are arranged,

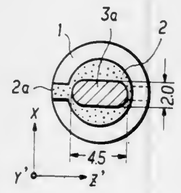
and the upper edge of said squirrel cage winding when said winding is disposed in said slots being spaced from the outer surface of said rotor by a distance which is equal to the depth of penetration of the eddy currents generated for a given starting voltage and for a slip $\geqq 0.8$.

4,211,947

THICKNESS-SHEAR MODE QUARTZ OSCILLATOR WITH AN ADDED NON-CIRCULAR MASS

Hitoshi Ikeno; Tetsuro Konno; Mitsuyuki Sugita, and Hirobumi Yanagi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Japan

Filed Feb. 8, 1978, Ser. No. 876,155
Claims priority, application Japan, Feb. 9, 1977, 52-13344
Int. Cl.² H01L *41/10*
U.S. Cl. 310—312 **21 Claims**



1. A thickness-shear mode quartz oscillator comprising: a thickness-shear mode quartz slice, driving electrodes formed on both surfaces of said quartz slice and an addition mass formed on at least one of said driving electrodes, the improvement wherein said addition mass has a non-circular shape and is suitably positioned so that the frequency f_O of the fundamental main vibration and the frequencies f_{ns} of a group of n-fold harmonics (where n is an odd number of 3 or more) always satisfy the following relation within the practical application ranges of temperature and load capacitance;

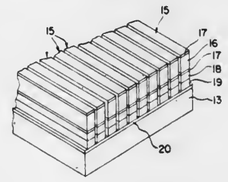
$f_O \neq f_{ns}/n$.

4,211,948

FRONT SURFACE MATCHED PIEZOELECTRIC ULTRASONIC TRANSDUCER ARRAY WITH WIDE FIELD OF VIEW

Lowell S. Smith, Schenectady, and Axel F. Brisken, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,654
Int. Cl.² H01L *41/10*
U.S. Cl. 310—322 **7 Claims**



1. An ultrasonic probe for use in steered beam imaging systems comprising:

a front surface matched linear transducer array for transmitting pulses of ultrasound with a preselected emission frequency along many radial scan lines to perform a wide angle sector scan with a total angle exceeding 60° and for detecting echoes reflected by an object being examined;

said matched array being comprised of substantially isolated and acoustically uncoupled transducer element and impedance matching layer unit assemblies each including a narrow element to which is secured at least one quarter-wavelength matching layer for transforming the high acoustic impedance of the element to a low acoustic impedance approximately equal to that of the human body, the element and matching layer in every unit assembly both having a width in the direction of the longitudinal axis of the array on the order of one wavelength or less at the ultrasound emission frequency whereby acoustic energy incident at any angle is guided through the matching layer to the element without being refracted; and

a continuous covering attached to the matching layer of all of said unit assemblies.

4,211,949

WEAR PLATE FOR PIEZOELECTRIC ULTRASONIC TRANSDUCER ARRAYS

Axel F. Brisken, Ballston Lake, and Lowell S. Smith, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

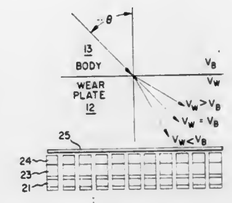
Filed Nov. 8, 1978, Ser. No. 958,655
Int. Cl.² H01L *41/10*
U.S. Cl. 310—322 **2 Claims**

1. A medical ultrasonic probe for use in a steered beam imaging system comprising:

a front surface matched linear transducer array comprised of narrow piezoelectric transducer elements to each of which is secured at least one quarter-wavelength impedance matching layer, every element and its associated matching layer having a width in the direction of the longitudinal axis of the array on the order of one wavelength or less at the ultrasonic emission frequency, said elements and associated matching layers being substantially acoustically isolated from one another;

said transducer array transmitting acoustic pulses along many radial scan lines to perform a wide angle sector scan with a total angle exceeding 60° and detecting echoes reflected by body structures;

a continuous wear plate attached to said impedance matching layers and giving mechanical support to said transducer array, said wear plate contacting the human body during an ultrasound examination and consisting of a



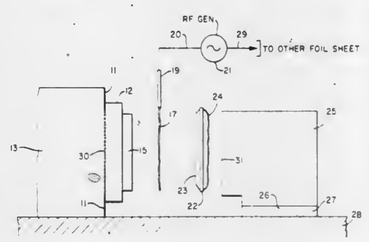
material in which the longitudinal sound velocity is equal to or less than that in the human body and in which the acoustic impedance for longitudinal acoustic waves is approximately equal to that of the human body, whereby any refraction of acoustic waves that occurs enhances the field-of-view of said transducer elements.

4,211,950

ARRANGEMENT FOR COUPLING RF ENERGY INTO PIEZOELECTRIC TRANSDUCERS

Edward V. Roos, Cocoa Beach, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Sep. 13, 1978, Ser. No. 941,910
Int. Cl.² H01L *41/10*
U.S. Cl. 310—327 **14 Claims**



1. An arrangement for coupling energy into a transducer comprising:

a transducer electrode disposed on a surface of said transducer by way of which electrical energy is applied to said transducer to cause said transducer to generate an output in accordance therewith;

first means, coupled to said transducer electrode, for imparting to said electrode and electric field uniformly distributed over substantially the entire area of contact between said transducer electrode and said transducer;

second means, coupled to said first means, for removing thermal energy away from said transducer; and

third means, disposed between said first means and said second means, for electrically insulating said first means from said second means and thermally coupling said first means to said second means, while effectively impeding the transfer of the output of said transducer in the direction of the removal of thermal energy via said second means.

4,211,951

SHEAR TYPE PRESTRESSED PIEZOELECTRIC FORCE TRANSDUCER

Joergen Jensen, Gentofte, Denmark, assignor to Bruel & Kjaer A/S, Naerum, Denmark

Continuation of Ser. No. 780,456, Mar. 23, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,060
Claims priority, application Denmark, Mar. 29, 1976, 1369/76
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—329 **4 Claims**



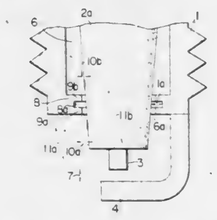
1. An electromechanical force transducer comprising: a base including a base piece and a rectangular stud, having opposed flat faces, fixed in the base piece; a plurality of shear sensitive transducing elements, with flat faces, and associated seismic masses, with flat faces, fixed to the opposing faces of the stud by means of a clamping force directed toward the axis of the stud, the flat faces of said measuring elements being disposed in planar abutment with associated said flat faces of said seismic masses and said stud, said measuring elements being subjected to shear by the forces to be measured, thereby displaying a change in electrical charge, voltage, current, or impedance; said stud having a rectangular cross-section and press fit into a complementary recess in the base piece, the part of the stud fixed in the base piece being wider but of the same thickness as the part of the stud carrying the measuring elements; all of the surfaces of said abutting flat faces of the stud, the elements and the seismic masses being precisely machined; and clip means embracing and engaging the seismic masses and providing said clamping force and sandwiching and maintaining under even pressure each element in flat precisely machined surface contact with and between its associated mass and an associated face of the stud.

4,211,952

SPARK PLUG

Toshiharu Iwata, Aichi, and Tadashi Hattori, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 28, 1978, Ser. No. 891,126
Claims priority, application Japan, Apr. 7, 1977, 52/40127; Apr. 11, 1977, 52/41236
Int. Cl.[2] H01T *13/20*
U.S. Cl. 313—143 **7 Claims**



1. In a spark plug having a metal plug body, an insulator fixedly positioned inside said plug body through the intermediary of a packing, a center electrode fixedly mounted in a leg portion of said insulator and disposed for exposure to the inside of an engine combustion chamber, and a ground electrode fixed to one end of said plug body and having one end thereof positioned opposite to said center electrode whereby a spark gap is provided between said ground electrode and said center electrode, the improvement wherein:

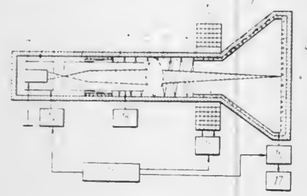
a space opening at one end thereof to said combustion chamber is defined by said plug body, said packing and said leg portion of said insulator, and restricting means having an annular groove is provided to form a plurality of restriction gaps between said plug body and said leg portion in the vicinity of the open end of said space to restrict entry of air-fuel mixture, said restriction gaps each being smaller than said spark gap.

4,211,953

ELECTRON BEAM DEVICE WITH VARIABLE BEAM ENERGY

Sergei A. Rybalko, ulitsa Sovetskaya, 8a, kv. 94, Fryazino Moskovskoi oblasti, U.S.S.R.

Filed Mar. 20, 1978, Ser. No. 888,563
Int. Cl.[2] H01J *29/56, 29/62*
U.S. Cl. 313—450 **1 Claim**



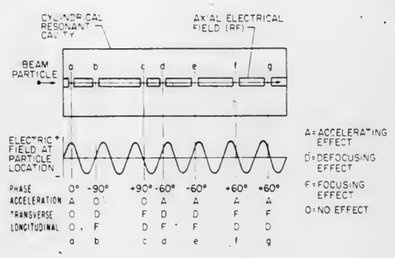
1. An electron beam device with variable electron beam energy comprising: a sealed casing; an electron source in said sealed casing for shaping an electron beam; a luminescent screen in said sealed casing; focusing means arranged within the sealing casing for maintaining an optimal diameter of said electron beam in the plane of said screen with changes in the energy of electrons of said electron beam; an accelerating electrode of said focusing means including an input aperture for also shaping said electron beam and arranged across the path of said electron beam, after said electron source; a first electrode of said focusing means arranged across the path of said electron beam, after the input aperture of said accelerating electrode, and electrically coupled to said accelerating electrode; a second electrode of said focusing means, said second electrode being axially symmetrical with said first electrode and arranged across the path of said electron beam, after said first electrode, and electrically coupled to said screen; a gap in said focusing means to form a variable focal power lens ensuring adequate compensation for the influence of changes in the energy of the electrons of said electron beam on the diameter of said electron beam in the plane of said screen, said gap being located between said accelerating electrode and the second electrode of said focusing means; and means for producing a distributed electric field, made from a resistive material, interposed between said first and second electrodes of said focusing means, and electrically connected to said first and second electrodes; said accelerating electrode having two end faces at least one of which, facing said screen, is interposed between said first and second electrodes, within a portion of said electron beam's path, confined by resistance magnitudes of 1/25 to 5/6 of the total resistance to electric current of said means for producing a distributed electric field, and forms, together with said first and second electrodes, said lens of variable focal power.

4,211,954

ALTERNATING PHASE FOCUSED LINACS

Donald A. Swenson, Los Alamos, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 5, 1978, Ser. No. 912,785
Int. Cl.[2] H01J *25/10*
U.S. Cl. 315—5.41 **1 Claim**



1. A linear accelerator structure comprising:

an evacuated tank structure;

radiofrequency generating means for providing a standing wave in said evacuated tank structure;

particle injection means for injecting a beam of charged particles into said evacuated tank structure;

a plurality of spaced apart drift tubes, adjacent halves of said drift tubes and the gaps therebetween forming cells aligned to cooperate with said beam of charged particles, the length of said cells being asymmetric and varying periodically with respect to the wavelength of the starting wave in said tank structure; and,

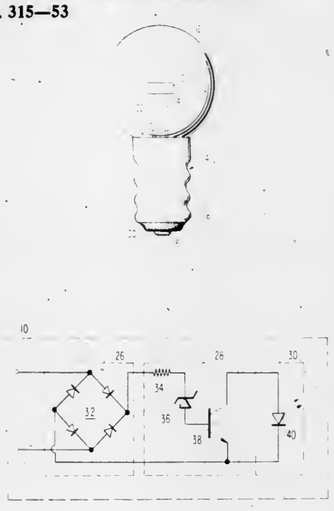
spacing said gaps successively at standing wave phase angles of 0°, −90°, +90°, −60°, −60°, +60° and +60°, respectively.

4,211,955

SOLID STATE LAMP

Stephen W. Ray, 616 Graydon Ave., Apt. 4, Norfolk, Va. 23507

Filed Mar. 2, 1978, Ser. No. 882,727
Int. Cl.[2] H05B *43/00*
U.S. Cl. 315—53 **2 Claims**



1. An area-illuminating solid state lamp comprising:

a light-diffusing encasement having a standard incandescent lamp base generally in the form of a cylinder;

a pair of electrical conductors whose lower ends are electrically secured to said base and whose upper ends extend into said encasement and mechanically support a discrete light-emitting solid state device;

said solid state device comprises an integrated circuit chip having a diode rectifier circuit, a plurality of series-interconnected light emitting diodes electrically coupled to said rectifier circuit by a voltage regulator circuit electrically connected between said rectifier and said plurality of light-emitting diodes;

said integrated circuit chip being electrically connected to and mechanically supported on said conductors within said encasement; and

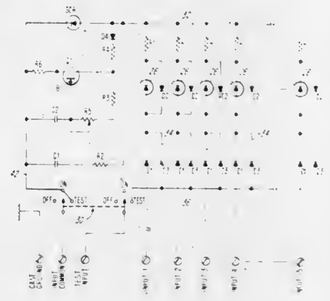
said encasement being solid translucent plastic.

4,211,956

LIGHT INDICATING SYSTEM HAVING LIGHT EMITTING DIODES AND POWER REDUCTION CIRCUIT

Jon A. Bloyd, Dayton, Ohio, assignor to Aero-Metric General, Inc., Dayton, Ohio

Filed Oct. 14, 1977, Ser. No. 842,410
Int. Cl.[2] H05B *43/00, 41/392*
U.S. Cl. 315—208 **8 Claims**



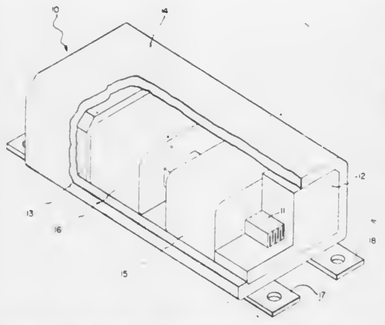
1. A light indicating system adapted for monitoring remotely controlled devices operated by alternating current electrical power, said system comprising a support panel, a plurality of light emitting diodes supported by said panel, a terminal block having a corresponding plurality of contacts for connecting each light emitting diode to a corresponding electrically controlled device to be monitored, rectifying means including a silicon controlled rectifier connected by a common conductor to all of said light emitting diodes, said rectifying means being effective to rectify the alternating current power received from each device into direct current power and for supplying the direct current power to the corresponding light emitting diode, each of said light emitting diodes being connected through a corresponding resistor to said common conductor for limiting the direct current through the light emitting diode, each of said light emitting diodes being connected to the corresponding said contact through a corresponding diode, and voltage phase control means for limiting conduction of the retified current through each said light emitting diode and the corresponding said resistor for limiting the power and the corresponding heat produced by the resistor.

4,211,957

AMORPHOUS METAL LAMP BALLAST HAVING A CAPACITOR INTEGRAL WITH THE MAGNETIC CORE

Robert P. Alley, Manlius; Theodore R. Haller, Schenectady, and Russell E. Tompkins, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 31, 1979, Ser. No. 7,918
Int. Cl.[2] H05B *41/16*
U.S. Cl. 315—276 14 Claims



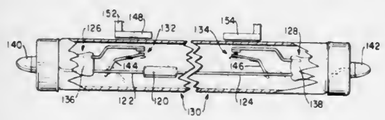
1. A magnetic lamp ballast comprising: a laminated magnetic core at least part of which has a dual function as a capacitor and is comprised of magnetic amorphous metal ribbon and associated dielectric layers that are assembled to be a continuous magnetic structure with alternating laminations and dielectric, at least one coil mounted on and magnetically coupled with said core, said coil being electrically connected to the amorphous metal ribbon separated by dielectric layers which functions as said capacitor in circuit relationship with said soil.

4,211,958

PHANTOM FLUORESCENT LAMP WITH SAFETY SWITCH

Elwood D. Bickford, Morris Plains, and Joel Shurgan, Westwood, both of N.J., assignors to Duro-Test Corporation, North Bergen, N.J.

Filed Feb. 28, 1977, Ser. No. 772,844
Int. Cl.[2] H05B *41/16*
U.S. Cl. 315—312 16 Claims



1. A safety device for a phantom fluorescent lamp which is adapted to be connected between a pair of spaced electrical voltage supply terminals of a series circuit comprising:

a lamp envelope in the form of a fluorescent lamp and having electrical contact means at each end thereof and electrical conducting means having first and second ends each electrically connected to a respective one of said pair of electrical contact means, each electrical contact means at a respective end of said envelope adapted to be connected to a respective one of said spaced terminals for completing said series circuit; and

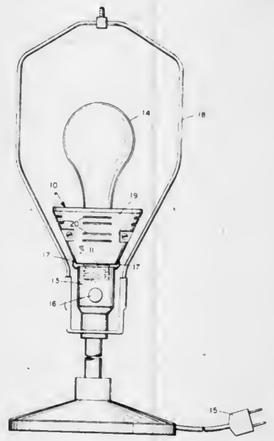
switching means located internally of the envelope and connected to said electrical conducting means interjacent said first and second ends for rendering said conducting means discontinuous when either of said electrical contact means at said ends of said envelope is not connected to a respective one of said spaced terminals and to render said conducting means continuous when each of said electrical contact means is electrically connected to a respective one of said spaced terminals.

4,211,959

TOUCH-CONTROL ADAPTER FOR ELECTRIC LAMPS

Joe E. Deavenport, San Diego, and John W. Roorda, El Cajon, both of Calif., assignors to Westek Corporation, San Diego, Calif.

Filed Sep. 5, 1978, Ser. No. 939,363
Int. Cl.[2] G05F *1/00*
U.S. Cl. 315—362 9 Claims



1. A control module adapter, to be used with any standard electric lamp having a metallic exterior portion, for turning said lamp on or off in response to a mere touching of said portion and for controlling by touch the brightness of light emitted from said lamp when it is turned on, said module comprising;

a male electrical receptacle means of the screw-in type for screwing said module into the light bulb socket on said lamp:

electronic mounting means fixedly connected to said male electrical receptacle means having an electronic circuit mounted thereon; said circuit including

a capacitive means,

coupling means for mechanically and electrically coupling said capacitive means to said metallic portion whenever said module is screwed into said light bulb socket;

means for charging said capacitive means at spaced apart intervals;

means for discharging said capacitive means at a first rate when no person is touching said metallic portion, and at a second rate when a person is touching said metal portion;

control means for detecting said first and second discharge rates and for generating logic control signals indicating said rates;

a female electrical receptacle means of the screw-in type for receiving a light bulb, and

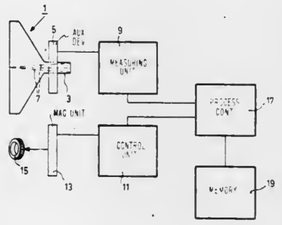
means for switching predetermined portions of power received from said male electrical receptacle means to said female electrical means in response to said control signals.

4,211,960

METHOD OF MANUFACTURING A STATIC CONVERGENCE UNIT, AND A COLOR DISPLAY TUBE COMPRISING A CONVERGENCE UNIT MANUFACTURED ACCORDING TO THE METHOD

Piet G. J. Barten, and Jan Bijma, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 668,487, Mar. 19, 1976. This application Oct. 7, 1977, Ser. No. 840,271
Int. Cl.[2] H01J *29/70, 29/76*
U.S. Cl. 315—368 11 Claims



1. A method of producing a magnetic convergence structure for the static convergence of electron beams which extend approximately in one plane in a neck of a color display tube of the kind in which the neck merges into a flared portion adjoined by a display screen, said method comprising providing around the neck of the color display tube an auxiliary device for generating variable magnetic fields in the neck of the color display tube, activating the color display tube, adjusting the auxiliary device to produce a magnetic field for converging the electron beams, determining from data derived from the adjustment of the auxiliary device the extent and the direction of the convergence error of each electron beam, and using such data to determine the polarity and the intensity of magnetic poles of said magnetic convergence structure for generating a permanent multi-pole static magnetic field for the correction of the convergence errors occuring in the color display tube.

4,211,961

CONTROL CIRCUIT FOR USE IN CONTROL OF CURRENT SUPPLY FOR ELECTRIC MOTOR WITH IMPROVED DUTY CONTROLLING OSCILLATOR CIRCUIT, PARTICULARLY FOR ELECTRICAL VEHICLE

Katsuji Marumoto, and Tsutomu Omae, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 15, 1978, Ser. No. 915,582
Claims priority, application Japan, Jun. 15, 1977, 52-69903
Int. Cl.[2] H02P *5/00*
U.S. Cl. 318—139 10 Claims



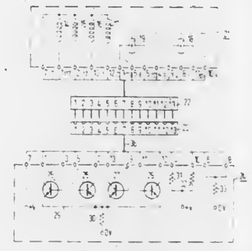
1. A control circuit for controlling supply of current for an electric motor, having a battery for producing an output and a control voltage; a chopper circuit series connected with said battery and for supplying current for the electric motor; means for producing a command signal from dividing the control voltage from said battery; a duty controlling oscillator circuit for generating an output signal on the basis of the command signal from said command signal producing means, by which the duty of the current supplied for the electric motor is determined, and a driving pulse generator for generating a driving pulse in response to the output signal from said duty controlling oscillator circuit, thereby the ON-OFF operation of said chopper circuit being controlled, wherein said duty controlling oscillator circuit comprises an integrator for integrating the command signal from said command signal producing means, a hysteresis comparator for comparing the integrated output from said integrator to a reference produced from dividing the control voltage from said battery and a feedback provided between the output of said hysteresis comparator and the input of said integrator.

4,211,962

BRUSHLESS D-C MOTOR

Hans Grünleitner, Nuremberg; Georg Kögler, Schwabach; Hans Köhnlein, and Peter Tschirner, both of Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,421
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1976, 2659233
Int. Cl.[2] H02K *23/00*
U.S. Cl. 318—254 29 Claims



1. A brushless d-c motor including an electric commutation circuit connected thereto and a mating connector for electrically inter-connecting the electric circuit to the motor, the connector comprising a plug having a plurality of symmetrically disposed connector pins and a jack having a plurality of symmetrically disposed connector jacks, each of the connector pins being uniquely electrically connected to one of the motor and the circuit and each of the connector jacks being uniquely electrically connected to the other of the motor and the circuit, the connector pins and the connector jacks being arranged and each of the connector pins and each of the connector jacks being electrically connected to the motor and circuit so that the plug and jack may be connected in only two configurations, one of the two configurations providing rotation of the motor in one direction and the other of the two configurations providing rotation of the motor in the opposite direction.

4,211,963

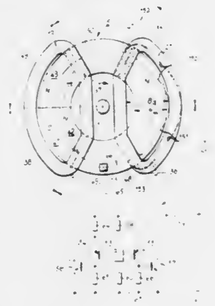
BRUSHLESS, PERMANENT MAGNET D-C PULSE CURRENT CONTROLLED, ESSENTIALLY UNIFORM TORQUE DYNAMO ELECTRIC MACHINE, PARTICULARLY MOTOR

Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Jun. 27, 1978, Ser. No. 919,702
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1977, 2730142
Int. Cl.[2] H02K *29/02*
U.S. Cl. 318—254 30 Claims

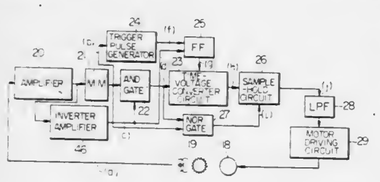
1. Brushless d-c motor having

a stator winding comprising two winding means (**19**, **20**; **75–78**; **104**, **105**; **110–113**);
a permanent magnet rotor having a plurality of poles (**6**, **91**) located in electromagnetic induction relation to the stator winding means;
current switching control means (**56**, **67**) alternately controlling current flow through the respective winding means;
sensing means (**53**) responsive to the position of the rotor with respect to the sensing means, connected to and controlling the switching state of the current switching control means and hence pulsed current flow through the respective winding means;
wherein, in accordance with the invention,



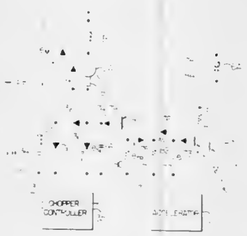
the rotor (**6**, **91**), in the area of each pole pitch and interacting with the winding means has, in a first angular zone, monopole magnetization and, in a second angular zone, dipole magnetization;
said second zone of dipole magnetization having two angular regions (**41**, **42**; **43**, **44**) which are located radially adjacent each other and extend perpendicularly to the direction of rotation of the rotor;
and wherein the dipole zones, with respect to adjacent pole pitch regions of the rotor, are located adjacent each other, whereby the permanent magnet rotor will be essentially continuously magnetized throughout its circumference with said angular first zones of one magnetic polarity and adjacent angular second zones of dual magnetic polarity.

4,211,964
SPEED CONTROL CIRCUIT
Toshiomi Yabu, Shimohonnojimaemachi; Tatsuo Wada, Osaka; Kouichi Yamada, Higashiosaka, and Tadashi Yoshino, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 29, 1979, Ser. No. 7,247
Claims priority, application Japan, Jan. 31, 1978, 53-10100; May 12, 1978, 53-56918; May 24, 1978, 53-62735
Int. Cl.[2] H02P *5/16*
U.S. Cl. 318—314 **8 Claims**



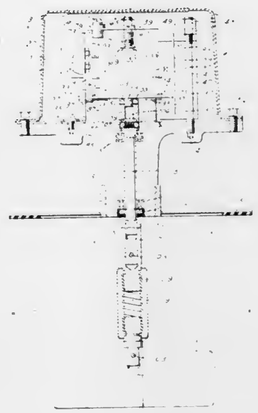
1. A speed control circuit for a rotating body comprising:
means for producing a first signal in response to the rotation of said rotating body,
a monostable multivibrator circuit adapted to be triggered by a front edge of said first signal to produce an output signal having a prescribed metastable period,
means for producing a second signal in response to the output signal of said monostable multivibrator circuit,
means for producing a third signal in response to a logical AND of an inverted signal of said first signal and said second signal,
a flip-flop circuit set in response to the front edge of said second signal and reset by a signal related to the rear edge of said first signal,
means for producing a fourth signal in response to the output signal of said flip-flop circuit,
a time-voltage converter circuit reset by said fourth signal and driven by said third signal,
means for producing a fifth signal in response to the output signal of said time-voltage converter,
means for producing a sixth pulse signal appearing in a period other than the metastable period of said second signal and sampling said fifth signal, and
a sample-hold circuit which holds the sampled fifth signal to produce a seventh signal thereby controlling the speed of said rotating body.

4,211,965
DEVICE FOR CONTROLLING ROTATIONAL SPEED OF ELECTRIC MOTOR
Jin-Ichi Toyama, Katsuta, and Masaki Kawai, Yokohama, both of Japan, assignors to Hitachi, Ltd., Japan
Filed May 25, 1977, Ser. No. 800,536
Claims priority, application Japan, Jun. 2, 1976, 51-63528
Int. Cl.[2] H02P *7/06*
U.S. Cl. 318—341 **8 Claims**



1. A device for controlling the speed of an electric motor, comprising a chopper connected between a power source and an electric motor; an accelerator; means for detecting the current through said motor; a controller for controlling the duty ratio of said chopper in accordance with the degree of actuation of said accelerator and said current through said motor and for controlling said current through said motor within a restricted range; a bypass contacor for connecting said motor directly with said power source by short-circuiting said chopper; and a bypass contactor control means for opening and closing said bypass contactor so that the contactor will be open whenever the duty ratio of the chopper is below a predetermined maximum value, wherein said bypass contactor control means includes therein a first means for detecting full actuation of said accelerator and a second means for continuously monitoring the duty cycle of the chopper for detecting every time the duty ratio of said chopper equals or exceeds a predetermined maximum value continuously throughout the operation of the motor by detecting every time when the value of the motor current reaches a predetermined value corresponding to the predetermined duty ratio so that said bypass contactor will be closed when said accelerator is actuated to the full extent and when said duty ratio approximately equals said predetermined maximum value, and said bypass contactor will be open whenever said duty ratio of the chopper is below the predetermined maximum value.

4,211,966
LEVEL CONTROL SENSOR SWITCH MECHANISM
Donald B. Sweet, Carsonville, Mich., assignor to Material Control, Inc., Aurora, Ill.
Filed Dec. 27, 1978, Ser. No. 973,825
Int. Cl.[2] H01H *35/00*
U.S. Cl. 318—482 **19 Claims**



1. In a level control sensor switch mechanism mountable upon a bin containing bulk material of varying levels, having a mounting plate secured to said bin, a housing base having an apertured neck secured to said mounting plate and a hollow housing top mounted on and secured to said base defining a chamber, a low torque low speed electric motor having a longitudinal central axis, within said chamber having an output shaft parallel to said axis, a drive shaft aligned with and coupled to said output shaft journalled and supported through said neck extending through a wall of said bin, and a paddle on the end of said drive shaft continuously rotatable within said bin when free of said bulk material, and non-rotatable in said bulk material at a predetermined level thereof, stalling said motor;
the improvement comprising:
an adjustment bracket mounted upon said base, having an end plate spaced from said base;
first means on said base adjustably supporting said end plate;
a torsion spring adapter secured to said end plate;
stub means on said motor aligned with said output shaft projected into and journalled within said adapter for limited rotary movement;
a bracket secured to said motor and extending transversely of said axis, projecting from opposite sides of said motor and adapted for limited rotary movement with said motor in a plane at right angles to said axis;
time delay stop means adjustably mounted upon said adjustment bracket retainingly engaging one end of said motor bracket;
an extension arm on said bracket at right angles thereto;
a torsion spring on said adapter;
second means anchoring one end of said spring upon said adjustment bracket;
the other end of said spring biasing said bracket arm and motor into a normal first position with said bracket engaging said stop means, said output shaft and paddle freely rotating;
and upon stalling of said drive shaft, transferring its torque to said motor for rotating said motor and bracket and bracket arm to a second switch operating position against the action of said torsion spring;
and a switch means within sai chamber mounted on said housing base having a switch arm operatively engaged by said bracket arm when in said second position, adapted for controlling selectively the start and stop operations of conveyors, elevators, or feeders, and to provide audible or visual warning signals;
said motor bracket automatically returning to its first position when said paddle becomes disengaged from said bulk material and its motor is unrestricted.

4,211,967
MOTOR SPEED ADJUSTING APPARATUS
Ryo Akiyama, Sakai, and Yoshiaki Igarashi, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Apr. 21, 1978, Ser. No. 898,852
Claims priority, application Japan, Apr. 27, 1977, 52/49562; May 4, 1977, 52/51413
Int. Cl.[2] H02P *7/28*
U.S. Cl. 318—490 **9 Claims**



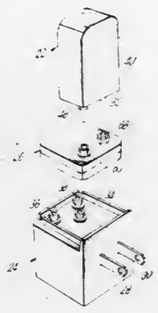
1. A motor speed adjusting apparatus comprising:
a motor speed setting means for generating a motor speed setting signal;
a programmable divider connected to said motor speed setting means, having an input and an output, for generating a division signal having a frequency which is the frequency of the signal applied to said input divided by an integral divisor, said divisor corresonding to said motor speed setting signal;
a reference signal generating means for generating a reference signal having a constant frequency;
a phase comparator connected to said programmable divider and said reference signal generating means for generating a d.c. signal corresponding to the phase difference between said division signal and said reference signal;
a voltage controlled oscillator connected to said phase comparator for generating an output signal having a frequency corresponding to said d.c. signal of said phase comparator, said output signal being applied to said input of said programmable divider and said output signal for application to a frequency controlled motor for control of the speed of the frequency controlled motor by the frequency thereof; and
a display means connected to said motor speed setting means for displaying an indication of said motor speed setting signal, whereby said divisor of said programmable divider is stepwise changeable by said motor speed setting signal from a standard number N (N being an integer) which corresponds to a nominal motor speed and said display means displays the rate of deviation of said divisor from said standard number N.

4,211,968

BATTERY CHARGER ADAPTER

Raymond K. Sugalski, Gainesville, Fla., assignor to General Electric Company, Worthington, Ohio

Filed Feb. 16, 1978, Ser. No. 878,453
Int. Cl.[2] H01M *10/46*
U.S. Cl. 320—2 **3 Claims**



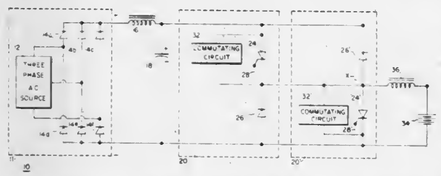
1. A charging adapter comprising a molded, insulating, unitary housing having first and second portions interconnected by an integral hinge at abutting edges thereof, whereby said portions may be folded over into abutting juxtaposition; said first and second portions having terminal contacts thereon on opposed surfaces thereof in the folded position, the interior juxtaposed surfaces having an ultrasonic energy concentrator thereof and cavities therein, electrical means connecting associated terminal contacts within said cavities, whereby when said adapter is subjected to ultrasonic energy a unitary adapter is formed.

4,211,969

HIGH EFFICIENCY CIRCUIT FOR RAPIDLY CHARGING BATTERIES

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,698
Int. Cl.[2] H02J *7/10*
U.S. Cl. 320—14 **8 Claims**



1. An improved battery charger circuit for rapidly and efficiently charging a battery by providing periodic, substantially lossless battery discharge at a high rate for short intervals during the charging process, comprising:

(a) a DC current source;

(b) energy storage means coupled to said DC current source for alternately storing battery discharge energy during battery discharge intervals and for supplying battery charging current from stored battery discharge energy during selected charging time intervals;

(c) inductive means adapted for coupling to a battery to be charged for maintaining decreasing current conduction therethrough when connection to said DC source and energy storage means is interrupted;

(d) a first chopper circuit coupling said inductive means to said current DC source and said energy storage means, said first chopper circuit responsive to external gate signals for conducting battery charge current therethrough from said DC current source and said energy storage means when said first chopper circuit is gated by an external gate signal for circulating said battery charge current during intervals other than when said first chopper circuit is gated by an external gate signal; and

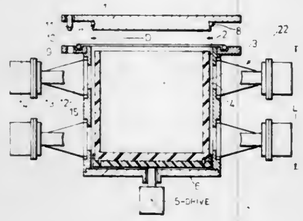
(e) a second chopper circuit coupling said DC current source and said energy storage means to said inductive means, said second chopper circuit responsive to external gate signals for alternately providing a low loss battery discharge path for high current battery discharge pulses when said second chopper circuit is gated by an external gate signal and for diverting current from said battery discharge path to said energy storage means during intervals other than when said second chopper circuit is gated.

4,211,970

APPARATUS FOR DETERMINING THE WATER CONTENT OF ISOTROPIC MATERIALS

Hans G. Fitzky, Odenthal-Hahnenberg; Franz Schmitt, Cologne; Norbert Bollongino, Leichlingen, and Helmut Rehrmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 30, 1978, Ser. No. 910,557
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724959
Int. Cl.[2] G01R *27/04*
U.S. Cl. 324—58.5 C **14 Claims**



1. An apparatus for measuring the water content of electrically non-conductive powders, granulates, pastes and other isotropic materials, comprising a frequency-modulated microwave oscillator for supplying a frequency modulated microwave a closed cylindrical multimode measuring resonator receptive of the frequency modulated microwave, and dimensioned according to $0.5<D/L<2$ and $D>3\lambda$ where D is the diameter and L is the length of the resonator and λ is the microwave length to thereby be excitable in a plurality of modes a cylindrical sample container rotatably mountable about its cylindrical axis within the resonator and filling the volume thereof such that any annular gap therebetween is insufficient to produce interfering resonances therein and means for detecting the microwave transmitted through the resonator.

4,211,971

RATIO METER FOR CAPACITIVE-TYPE DISPLACEMENT CONVERTER

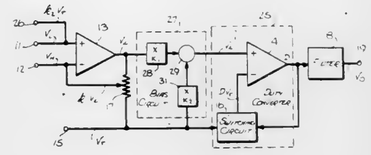
Tamotsu Kobayashi, and Sadaki Igarashi, both of Yokohama, Japan, assignors to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,180
Claims priority, application Japan, Jun. 30, 1977, 52/87463[U]
Int. Cl.[2] G01R *7/04;* **G06G** *7/16*
U.S. Cl. 324—140 D **3 Claims**

1. A ratio meter to determine the ratio of a first input signal representing the difference between two variables and a second input signal representing the sum of these variables, said meter comprising:

A a span adjustment circuit responsive to the difference between the two variables to produce said first input signal;

B a bias circuit having an adder to one input of which is applied the product of the first input signal and a first constant and to another input of which is applied the product of the second input signal and a second constant to produce a biased output which is the sum of these products;



C a duty converter constituted by a comparator having a non-inverting input and an inverting input, and a switching circuit controlled by the duty pulse output of said comparator, the biased output of the bias circuit being applied to said non-inverting input, the second input signal being applied to said inverting input through said switching circuit in accordance with the duty pulse output of said comparator; and

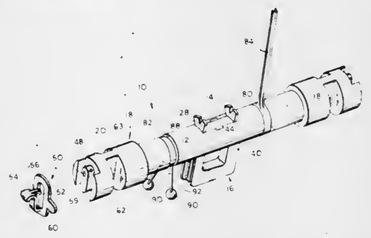
D a filter coupled to the output of said comparator to smooth the duty pulses to yield the desired output.

4,211,972

SELF CONTAINED FILAR SUSPENDED METER ROTOR

Willem J. L. Boreas, Sayreville, N.J., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Jul. 31, 1978, Ser. No. 929,884
Int. Cl.[2] G01R *5/02, 1/02*
U.S. Cl. 324—154 R **15 Claims**



1. In an electric meter including a stator mount, a means for generating a magnetic field, and a coil mounted for rotational movement in said magnetic field, an improvement comprising a self-contained rotor and mount assembly removably engageable with said stator mount, said assembly comprising:

a rotor shaft having two ends and including means mounting said coil thereon;

stator engaging means comprising end pieces disposed at each end of said shaft for removably engaging said stator mount;

filar suspension means for suspending said rotor shaft between said end pieces; and

spring tension means on at least one of said end pieces for maintaining tension in said filar suspension means

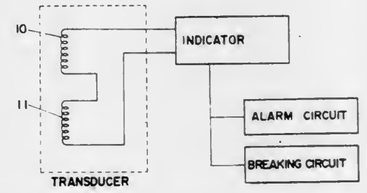
whereby said self-contained rotor and mount assembly as a unit can be engaged and disengaged by said end pieces.

4,211,973

APPARATUS FOR DETECTING FAULTS TO BE OCCURRED OR INITIALLY EXISTING IN A RUNNING ELECTRIC ROTARY MACHINE

Tetsuya Sato; Osamu Kato, and Hisashi Saito, all of Hyogo, Japan, assignors to Kabushiki Kaisha Teikoku Denki Seisakusho, Osaka, Japan

Continuation of Ser. No. 687,050, May 17, 1976, abandoned, which is a continuation of Ser. No. 404,615, Oct. 9, 1973, abandoned. This application Jan. 18, 1978, Ser. No. 870,361
Claims priority, application Japan, Oct. 11, 1972, 47-101731; Feb. 9, 1973, 48-17882
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—158 MG **1 Claim**



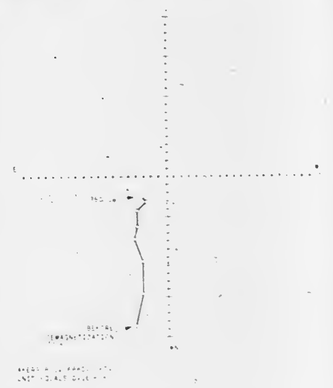
1. Apparatus for detecting faults occurring or initially existing in an electric rotary machine of an axial air gap type while the machine is running, comprising: a stator core; a rotor having slots; and a detector including a pair of detector coils disposed symmetrically in said stator core relative to the axis of rotation of said rotor and electrically so connected in series with each other that a fundamental wave voltage induced in said detector coils is cancelled and higher harmonic voltages, having a frequency which is determined by the number of said slots, are superimposed on each other resulting in a detection voltage which is the addition of said higher harmonic voltages, said rotor including an odd number of slots to enable said detector to detect said detection voltage of the added higher harmonic wave voltages induced in said coils.

4,211,974

METHOD FOR ORIENTING A BOREHOLE CORE

William E. Henry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 13, 1978, Ser. No. 942,012
Int. Cl.[2] G01V *3/08*
U.S. Cl. 324—377 **5 Claims**



1. A method for longitudinally orienting a borehole core with respect to the longitudinal axis of the drill string which drilled said borehole core in such a manner that the original

longitudinal attitude of said borehole core within the earth may be determined comprising the steps of:

partially demagnetizing at least a portion of said borehole core in steps to thereby at least partially remove in steps the artificial remanent magnetism imparted to said borehole core by said drill string, said artificial remanent magnetism being oriented substantially parallel to the longitudinal axis of said drill string;

measuring the direction and intensity of the total magnetism of said borehole core at desired intervals during the partial demagnetizing procedure;

establishing an artificial remanent magnetism vector which extends from the final measurement of the direction and intensity of the total magnetism of said borehole core taken during said partial demagnetizing procedure towards the initial measurement of the direction and intensity of the total magnetism of said borehole core taken during said partial demagnetizing procedure; and

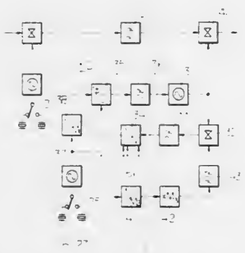
orienting said borehole core in such a manner that said artificial remanent magnetism vector points at least substantially downwardly towards the bottom of said borehole core for a borehole in the Northern hemisphere and points at least substantially upwardly towards the top of said borehole core for a borehole in the Southern hemisphere.

4,211,975

LOCAL SIGNAL GENERATION ARRANGEMENT

Masahiro Kuroda, Tokyo, Japan, assignor to Anritsu Electric Company, Limited, Japan

Filed Apr. 4, 1978, Ser. No. 893,447
Int. Cl.² H04B 1/40
U.S. Cl. 455—75 **10 Claims**



1. A single sideband radio transmitter receiver having a transmitting section for selectively producing a transmission signal consisting of an upper sideband output signal and a lower sideband output signal, comprising:

a first oscillator;

a first pair of crystal resonators;

first switch means coupled to said first oscillator and first pair of crystal resonators for selectively controlling the frequency of oscillation of said first oscillator by a first one and a second one of said first pair of crystal resonators, to thereby selectively produce a first output signal and a second output signal from said first oscillator;

balanced modulator circuit means coupled to receive a modulation signal and responsive to said first output signal from said first oscillator for producing an output signal composed of a signal whose frequency is the sum of said modulation signal frequency and said first output signal frequency and a signal whose frequency is the difference between said modulation signal frequency and said first output signal frequency, and responsive to said second output signal from said first oscillator for producing an output signal composed of a signal whose frequency is the difference between said second output signal frequency and said modulation signal frequency and a signal whose frequency is the sum of said modulation signal frequency and said second output signal frequency;

a single sideband bandpass filter having an upper cut-off frequency which is close to a resonant frequency of said first one of said first pair of crystal resonators and a lower cut-off frequency which is close to a resonant frequency of said second one of said first pair of crystal resonators, and coupled to receive the output signals from said balanced modulator, for selecting an upper sideband intermediate frequency signal, comprising said signal whose frequency is the sum of said modulation signal frequency and said first output signal frequency, and a lower sideband intermediate frequency signal, comprising said signal whose frequency is the differnce between said second ouput signal frequency and said modulation signal frequency;

a standard reference frequency oscillator;

a second pair of crystal resonators;

second switch means for selectively connecting said standard reference frequency oscillator to each of said second pair of crystal resonators, and linked to said first switch means, for developing a first reference frequency signal from said standard reference frequency oscillator when said first output signal is being produced by said first oscillator and a second reference frequency signal when said second output signal is being produced by said first oscillator;

a first frequency divider for dividing the frequency of the output signal from said standard reference frequency oscillator;

frequency multiplier means coupled to the output of said standard reference frequency oscillator, for generating a signal whose frequency is an integral multiple of the frequency of the output signal from said standard reference frequency oscillator;

a voltage-controlled oscillator, for producing a local oscillator signal, and having a frequency control input;

a first frequency mixer having a first input coupled to receive said local oscillator signal from said voltage-controlled oscillator and a second input coupled to receiver the output from said frequency multiplying means;

a filter coupled to receiver the output from said first frequency mixer, for selecting a signal of predetermined frequency from said first frequency mixer output;

a programmable frequency divider having an input coupled to receiver said selected signal from said filter, and input terminals for receiving a first control signal comprising a digital signal in parallel form, said first control signal determining the division ratio of said programmable frequency divider;

a phase comparator having a first input coupled to receive the output signal from said first frequency divider and a second input coupled to receive the output signal from said programmable frequency divider;

a low pass filter coupled to receive the output from said phase comparator, for producing a second control signal indicative of a phase difference between said first frequency divider output and said programmable frequency divider output, said second control signal being applied to said frequency control input of the voltage controlled oscillator; and

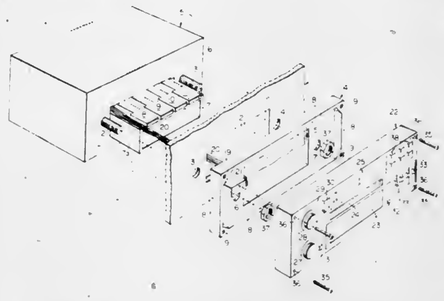
a second mixer coupled to receive said local oscillator signal from the voltage controlled oscillator and to the output of said single sideband bandpass filter, being responsive to said local oscillator signal and said upper sideband intermediate frequency signal for producing said upper sideband output signal; and being responsive to said local oscillator signal and said lower sideband intermediate frequency signal for producing said lower output signal.

4,211,976

COMPOUND ACOUSTIC APPARATUS FOR AUTOMOTIVE VEHICLES

Nobutaro Inoue, Yokohama, Japan, assignor to Shintom Kabushiki Kaisha, Japan

Filed Jun. 13, 1978, Ser. No. 915,217
Claims priority, application Japan, Mar. 31, 1978, 53-36679
Int. Cl.² H04B 1/06
U.S. Cl. 455—344 **7 Claims**



1. A compound acoustic apparatus including a radio receiver and a magnetic tape player and adapted to be mounted on an interior panel of an automative vehicle which is formed with a rectangular first opening and a pair of circular holes located at opposite ends of the opening; the apparatus comprising a main unit including a housing having a front side in which a second opening is formed for receiving a tape cartridge which cooperates with the player, said second opening being smaller in size than said first opening, an operating unit formed with a third opening of a comparable size as said second opening and carrying a plurality of control elements which control the main unit, the operating unit carrying a plurality of manual operating members on its front side which operate the control elements, first fastening means extending through said holes for securing the main unit on the rear side of the interior panel and second fastening means for securing the operating unit on the front side of the interior panel in a manner such that said third opening formed in the operating unit communicates with said second opening formed in the main unit through said first opening formed in the interior panel, whereby a tape cartridge is insertable through said third and first openings into said second opening of said main unit, and connecting means for providing an electrical interconnection between the main unit and the operating unit.

4,211,977

MIXER CIRCUIT ARRANGEMENT

Keiro Shinkawa; Hiroji Shoyama, and Chuichi Sodeyama, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

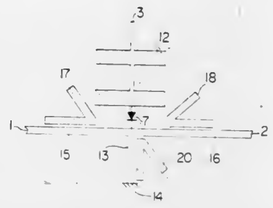
Filed Feb. 15, 1977, Ser. No. 768,730
Claims priority, application Japan, Feb. 16, 1976, 51-14872; Feb. 16, 1976, 51-14873; Feb. 16, 1976, 51-14874; Feb. 16, 1976, 51-14875; Feb. 16, 1976, 51-14876
Int. Cl.² H04B 1/26
U.S. Cl. 455—326 **3 Claims**

1. A mixer circuit arrangement of a high frequency plane circuit employing a microwave strip line as a basic component wherein a diode is connected in parallel with said line and a high frequency signal and a local oscillation signal being applied at opposite ends of said line toward said diode, comprising:

a first filter including a double-open-ended line of a length equal to one half of the wavelength of said local oscillation signal with a portion thereof having a length equal to one quarter of said wavelength from one end of said line being arranged adjacent to said transmission line, said first filter being coupled to the high frequency signal input line at such a point that the impedance thereof as viewed from the junction point of said diode assumes an open impedance at the resonant frequency of said first filter;

a second filter including a double-open-ended line of a length equal to one half of the wavelength of said high frequency signal and constructed in the same manner as said first filter, said second filter being coupled to the local oscillation signal input line at such a point that the impedance thereof as viewed from said junction point of said diode assumes an open impedance to the resonant frequency of said second filter;

a line conected to said junction point of said diode on the opposite side to said diode and exhibiting a substantially shorted impedance to the frequency of an intermediate frequency signal which is a frequency component equal to



the frequency difference between said high frequency signal and said local oscillation signal; and

a third filter including a double-open-ended line of a length equal to one half of the wavelength of an image signal having a frequency equal to the difference between twice the frequency of said local oscillation signal and the frequency of said high frequency signal and having the same construction as said first filter, said third filter being coupled to said line connected to said junction point, at such point that the impedance thereof as viewed from said junction point of said diode assumes a shorted impedance to the frequency of said image signal; and

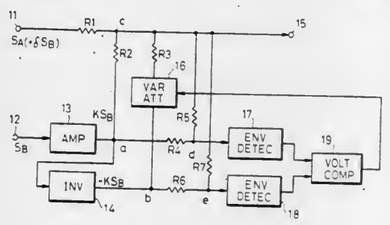
a line connected to the other end of said diode to take out said intermediate signal produced at said diode.

4,211,978

CROSS-TALK COMPONENT CANCELLATION CIRCUIT IN AN ANGLE-MODULATED WAVE SIGNAL TRANSMISSION SYSTEM

Nobuaki Takahashi, Yamato, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 25, 1978, Ser. No. 899,891
Claims priority, application Japan, Apr. 25, 1977, 52/47589; Apr. 25, 1977, 52/47590; Apr. 25, 1977, 52/47591; Apr. 25, 1977, 52/47592; Apr. 25, 1977, 52/47593; Apr. 25, 1977, 52/47594
Int. Cl.² H04B 1/12
U.S. Cl. 455—295 **10 Claims**



1. A cross-talk component cancellation circuit in an angle-modulated wave signal system for receiving first and second angle-modulated wave signals on at least two channels, wherein a cross-talk component of the second angle-modulated wave signal is admixed with the first angle-

modulated wave signal, said cross-talk component cancellation circuit comprising:

means for phase inverting the second angle-modulated wave signal;

first means for mixing respective portions of the second angle-modulated wave signal and the phase-inverted second angle-modulated wave signal with the first angle-modulated wave signal to produce a first means output signal;

means responsive to a control signal for varying at least one respective portion of the second angle-modulated wave signal and the phase-inverted second angle-modulated wave signal for mixing by the first means;

second means for mixing the first means output signal with the second angle-modulated wave signal and the phase-inverted second angle-modulated wave signal in respective specific mixing quantities thereby to produce third and fourth angle-modulated wave signals;

means responsive to the third and fourth angle-modulated wave signals to produce said control signal for variably controlling the amount of said at least one respective portion and to supply said control signal to said varying means; and

means coupled to said first means for obtaining the first angle-modulated wave signal the cross-talk component of which has been canceled by the first means.

4,211,979

CIRCUIT ARRANGEMENT FOR ELIMINATING WAVEFORM DISTORTION OF AN ANGLE-MODULATED SIGNAL TRANSMITTED OVER MULTIPATHS

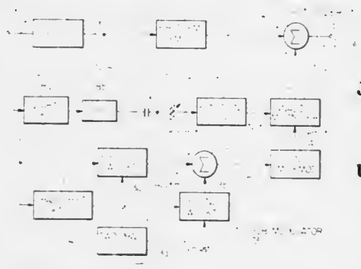
Teruo Muraoka; Masami Yamazaki, and Yukinobu Ishigaki, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 28, 1978, Ser. No. 919,744

Claims priority, application Japan, Jun. 29, 1977, 52-77558

Int. Cl.² H04B *1/12*

U.S. Cl. 455—306 **16 Claims**



13. Apparatus for enabling elimination of multipath distortion of an angle modulated input signal having a relatively constant average envelope amplitude comprising means responsive to the input signal for angle demodulating the input signal and deriving a demodulated signal, means responsive to the input signal for deriving a first signal having an amplitude E(t) commensurate only with AC components of the input signal envelope, means responsive to the first signal for deriving a second signal having an amplitude proportional to the time derivative of time varying components within an AC component of the first signal, means responsive to the first signal for deriving a third signal having an amplitude proportional to:

$$\frac{E(t)}{1 + 2E(t)},$$

means for non-linearly combining said second and third signals to derive a signal representing multipath distortion on the demodulated signal amplitude, and means for linearly combining the demodulated and multipath distortion representing signals to substantially eliminate the multipath distortion from the demodulated signal.

4,211,980

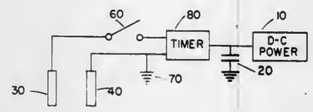
METHOD OF CREATING AN ELECTRIC FIELD FOR SHARK REPELLENT

William R. Stowell, 7572 Trailwind Dr., Cincinnati, Ohio

Continuation-in-part of Ser. No. 810,377, Jun. 27, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,386

Int. Cl.² H04B *1/02*; H05C *1/04*

U.S. Cl. 455—40 **6 Claims**



1. The method for repelling sharks and for affecting other selected electro-sensitive sea creatures through its nervous system utilizing a d.c. voltage source comprising:

applying a pulsed d.c. potential to establish electron and ion flow between a cathode and anode electrodes immersed in salt water,

maintaining said d.c. potential on said electrodes 0.5 to 10 milli-seconds, which is less than the period of time to build up an ion shield about said cathode, said period of maintaining said d.c. potential is minimal to affect a shark's nervous system,

spacing said pulsed d.c. potential to a repetition rate related to the natural frequency of the shark's nervous system (6–12 cycles per second), and

discontinuing the application of said d.c. potential prior to said build up of said ion shield.

4,211,981

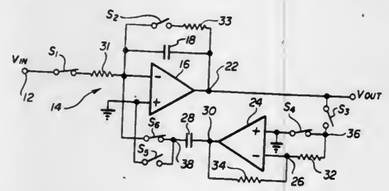
INTEGRATOR WITH DIELECTRIC ABSORPTION CORRECTION

Jesse P. Lerma, La Habra, Calif., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 4, 1978, Ser. No. 902,599

Int. Cl.² H03K *5/00*; G06G *7/18*

U.S. Cl. 328—127 **9 Claims**



1. In an electronic integrating circuit, including an amplifier with input and output terminals, and an integrating capacitor, connected between said terminals, having dielectric absorption, the dielectric absorption causing an error voltage build-up on said integrating capacitor following an integration interval, wherein the improvement comprises:

a second amplifier having respective input and output terminals;

a second capacitor having one terminal connected to the second amplifier output terminal; and

switch means for selectively coupling, in sequence, (1) immediately following an integration interval, the first amplifier output terminal to the second amplifier input terminal for sampling said error voltage and charging said second capacitor to a sampled voltage representing said error voltage, and (2) during the next integration interval, the other terminal of said second capacitor to the first amplifier input terminal for transferring said sampled voltage to said integrating capacitor to substantially counteract said error voltage during the next integration interval.

4,211,982

CONTROL CIRCUITS

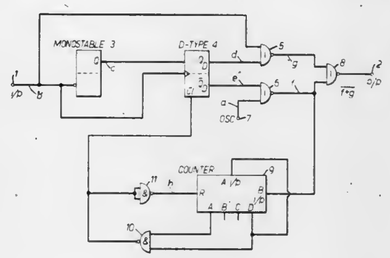
Robin Smith, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Mar. 9, 1978, Ser. No. 885,007

Claims priority, application United Kingdom, Mar. 9, 1977, 9828/77

Int. Cl.² H03K *1/16, 5/20, 9/06*

U.S. Cl. 328—138 **8 Claims**



1. In a radar display, a control circuit suitable for controlling the position of movable markers on a p.p.i. radar display including means for receiving control pulses and for passing them to an output terminal when the rate at which control pulses are received is below a predetermined value, and means for generating a plurality of output pulses for each received pulse when said rate is above the predetermined value.

4,211,983

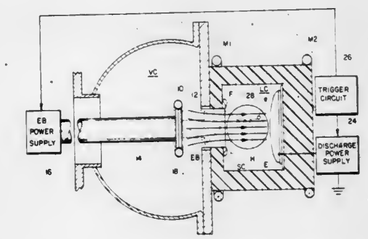
HIGH ENERGY ELECTRON BEAM DRIVEN LASER

Jack D. Daugherty, Winchester; Jonah H. Jacob, Cambridge, and Joseph A. Mangano, Belmont, all of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed May 1, 1978, Ser. No. 901,600

Int. Cl.² H01S *3/097*

U.S. Cl. 331—94.5 PE **17 Claims**



1. In the method of producing stimulated emission of radiation from a lasable gas disposed in a working region in a cavity having an optical axis and imperforate walls for confining said gas and comprising part of a gas laser, the steps comprising:

(a) providing a gaseous lasable medium in said cavity;

(b) generating exterior of said cavity a broad area electron beam having a current density sufficient to generate a self-induced magnetic field effective to cause pinching of said electron beam, said electron beam being at least in part effective to provide a population inversion sufficient to support said stimulated emission of radiation;

(c) introducing said broad area electron beam into said cavity through a wall thereof transverse to said optical axis; and

(d) establishing a guiding magnetic field having disposed substantially within it said broad area electron beam, said guiding magnetic field further having a vector substantially parallel to and coincident with the direction of said electron beam and an intensity greater than that of said self-induced magnetic field.

4,211,984

OSCILLATING CIRCUIT ARRANGEMENTS FOR HIGH FREQUENCY INDUSTRIAL GENERATORS

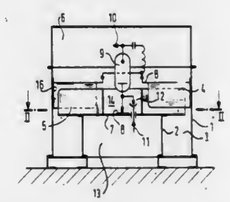
Kurt Lamberts; Jürgen Leppin, both of Clausthal-Zellerfeld; Berndt Greten, and Harry Neubauer, both of Springe, all of Fed. Rep. of Germany, assignors to Bison-Werke, Bahre & Greten GmbH & Co. KG, Springe, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 905,081

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722355

Int. Cl.² H03B *5/18*

U.S. Cl. 331—97 **11 Claims**



1. An oscillating circuit arrangement for high frequency industrial generators suitable for warming an electrically poorly conducting substance and comprising a resonant circuit in the form of a coaxial conduction system including a capacitor having interdigitated plates and an associated electron tube and in which the coaxial conducting system is of square cross section and the plates of the capacitor are arranged at right angles to respective surfaces of internal and external conductors of the coaxial conduction system.

4,211,985

CRYSTAL OSCILLATOR USING A CLASS B COMPLEMENTARY MIS AMPLIFIER

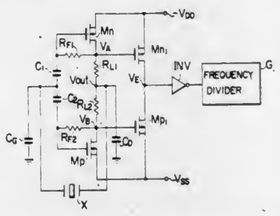
Osamu Yamashiro, Ohmiya, Japan, assignor to Hitachi, Ltd., Japan

Division of Ser. No. 719,238, Aug. 31, 1976, Pat. No. 4,100,502. This application Apr. 26, 1978, Ser. No. 900,321

Claims priority, application Japan, Sep. 3, 1975, 50-105919

Int. Cl.² H03B *5/36*

U.S. Cl. 331—116 FE **17 Claims**



1. An oscillator circuit including an amplifier means using a complementary MIS inverter circuit and a positive feed-back means connected between the input and the output of said amplifier means for feeding back the output signal of said

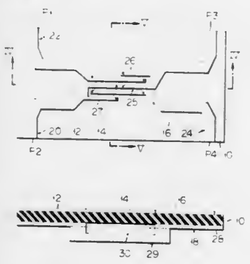
amplifier means to the input thereof and including an inductive element and capacitance elements provided at the input and the output of said amplifier means, the inverter circuit of said amplifier means including a p-channel and n-channel FETs, a first resistance means connected between the drains of said FETs, second resistance means connected between the drain and gate of said p-channel FET, and third resistance means connected between the drain and gate of said n-channel FET, whereby the bias voltage between the gate and the source of each of said p-channel and n-channel FETs is set to a predetermined voltage.

4,211,986

STRIP LINE COUPLER HAVING SPACED GROUND PLATE FOR INCREASED COUPLING CHARACTERISTIC

Yusuke Tajima, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 17, 1978, Ser. No. 925,531
Claims priority, application Japan, Jul. 25, 1977, 52-89022
Int. Cl.[2] H01P *5/18*
U.S. Cl. 333—116 **7 Claims**



1. A strip line coupling circuit comprising:
a dielectric plate having first and second planar surfaces opposite to each other;
coupling means formed of a plurality of strip line conductors arranged on said first planar surface of said dielectric plate and including strong and weak coupling sections connected with one another; and
a ground conductor formed on said second planar surface of said dielectric plate, that portion of said ground conductor which faces said strong coupling section being separated from said second planar surface of said dielectric plate by a predetermined distance to lower the dielectric constant and thereby increase the coupling capacity of said strong coupling section over said weak coupling section, and the remaining portion of said ground conductor being attached to the second planar surface of said dielectric plate.

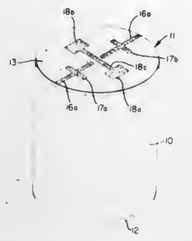
4,211,987

CAVITY EXCITATION UTILIZING MICROSTRIP, STRIP, OR SLOT LINE

Jing-Jong Pan, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Nov. 30, 1977, Ser. No. 856,037
Int. Cl.[2] H01P *7/06, 5/00*
U.S. Cl. 333—230 **15 Claims**

1. An arrangement for excitation of a resonator comprising a resonant cavity, an insulating substrate forming at least a portion of a wall of said cavity, a conductive layer formed on the surface of said substrate inside said cavity, a slot being formed in said conductive layer, and coupling means mounted on the outer surface of said substrate for coupling energy through said slot into said cavity and for extracting energy from said cavity through said slot, and wherein said coupling means comprises a pair of coextensive conductive microstrips disposed on said substrate with the ends thereof positioned above the area of the



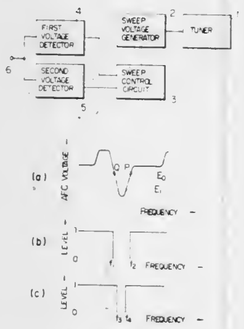
slot in said conductive layer and being spaced by a predetermined amount.

4,211,988

SEARCH TUNING SYSTEM FOR TELEVISION RECEIVER

Shigeo Matsuura; Eisaku Akutsu, and Hiroshi Miyamoto, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 27, 1978, Ser. No. 946,193
Claims priority, application Japan, Sep. 30, 1977, 52-117452
Int. Cl.[2] H03J *3/04*
U.S. Cl. 334—16 **3 Claims**



1. A search tuning system for a television receiver comprising:
a tuner having frequency increased monotonously in response to application of a tuning voltage of a magnitude increased monotonously in one direction and adapted to produce a first AFC voltage at a first frequency and a fourth frequency higher than said first frequency upon reception of a television signal, said first AFC voltage being different from an AFC voltage in the quiescent state, said tuner being further adapted to produce a second AFC voltage at a second frequency higher than said first frequency as well as at a third frequency which is higher than said second frequency and lower than said fourth frequency:
a sweep voltage generator circuit for supplying said tuning voltage to said tuner;
a sweep control circuit for supplying a control signal to said sweep voltage generator circuit thereby to control increasing, decreasing and holding of said tuning voltage;
a first voltage detector circuit for detecting when the AFC voltage of said tuner has attained said first voltage thereby to produce a first detection signal to be supplied to said sweep control circuit;
wherein said sweep voltage generator circuit is controlled by said sweep control circuit unless said first detector circuit produces said first detection signal, whereby said tuning voltage applied to said tuner is caused to vary in said one direction thereby to sweep said tuning frequency, while upon reception of a television signal during said frequency sweeping, the sweeping of said tuning voltage is inverted in response to generation of said first detection signal from said first detector circuit, wherein said sweep control circuit responds to disappearance of said first detection signal in the course of said inverted sweeping thereby to hold the instantaneous tuning voltage and stop the sweeping of said tuning frequency;
said search tuning system further including a second voltage detector circuit for producing a second detection signal when AFC voltage of said tuner has attained said second AFC voltage and supplying said second detection signal to said sweep control circuit, wherein, upon detection of said second detection signal through said second detector circuit in the course of said frequency sweeping in said one direction, said second detection signal is applied to said sweep control circuit which then controls said sweep voltage generator circuit thereby to invert the frequency sweeping direction and hold the corresponding tuning voltage invariably until application of said second detection signal, while upon production of said second detection signal from said second voltage detector circuit said second detection signal is supplied to said sweep control circuit to be stored therein for preparation of stopping said inverted frequency sweeping, which is then realized by holding invariably said tuning voltage from said sweep voltage generator circuit in response to application of said first detection signal produced from said first detection circuit when the AFC voltage has attained said first AFC voltage at said first frequency.

4,211,989

CIRCUIT BREAKER BELL ALARM AND LOCKOUT ACCESSORY APPARATUS

Vincent P. Acampora, Bristol, Conn., assignor to General Electric Company, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,079
Int. Cl.[2] H01H *73/12, 75/00, 77/00*
U.S. Cl. 335—17 **10 Claims**



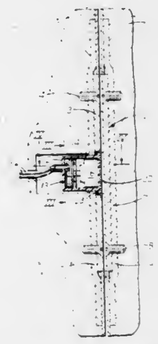
1. Circuit breaker accessory apparatus comprising, in combination:
A. a frame;
B. an accessory latch pivotally mounted to said frame;
C. a spring biasing said accessory latch for pivotal movement in a first direction;
D. a latch lever mounted to said frame and biased into latching engagement with said accessory latch to constrain pivotal movement thereof in said first direction;
E. an actuating arm operatively coupled adjacent one end with the breaker movable contacts and mounted at its other end to said accessory latch for pivotal movement from a reset position to a lockout position upon automatic tripping of the circuit breaker to open its contacts;
F. an auxiliary switch;
G. an operating lever mounted by said frame for movement between a de-actuating position and an actuating position in actuating engagement with said switch, said operating lever
(1) normally biased to its actuating position,
(2) held in its de-actuating position by said actuating arm while in its reset position, and
(3) released for movement to its actuating position by the movement of said actuating arm to its lockout position; and
H. cancelling means acting on said latch lever to release said accessory latch for pivotal movement in said first direction under the urgence of said spring, whereby said actuating arm is swung to a defeat position, thereby engageable returning said operating lever to its de-actuating position.

4,211,990

ELECTRIC SWITCH CONCEALING HINGE

Joseph W. Gwozdz, Clark Summit, Pa., assignor to McKinney Manufacturing Company, Scranton, Pa.

Filed Jul. 10, 1978, Ser. No. 923,022
Int. Cl.[2] H01H *36/00*
U.S. Cl. 335—205 **5 Claims**

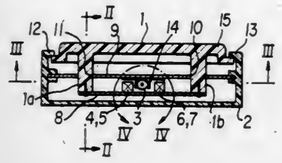


1. In combination with a door frame having a jamb and containing a normally closed door member, a hinge with a jamb leaf and a door leaf member, means securing the jamb leaf to said jamb, means securing the door leaf member to said door member, one of said members having a surface facing said jamb leaf in close proximity thereto when said door member is closed, the jamb having a hole extending into it from behind the jamb leaf of the hinge and concealed by said leaf, the back of said jamb leaf being provided with a recess facing the jamb hole and having a non-ferrous front wall, at least the area of said one member surface opposite said front wall being ferrous metal, and an electric switch housing secured in said jamb hole and projecting into said jamb leaf recess, the housing containing an electric switch and a permanent magnet for activating it when the door member is closed and attracts the magnet, said switch housing being concealed by and unattached to said hinge so that the hinge can be removed from said jamb without disturbing the housing.

4,211,991
MAGNET-CONTROLLED SWITCH

Claude Lombard, Le Chesnay, and Guy Viala, Paris, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed May 22, 1978, Ser. No. 907,965
Claims priority, application France, May 25, 1977, 77 15894
Int. Cl.[2] H01H 9/00
U.S. Cl. 335—207 10 Claims

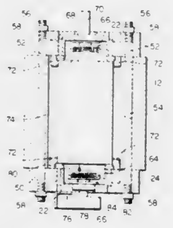


1. A magnetic controlled switch with momentary contact, said switch comprising:
- a case;
- at least one flexible strip interruptor in said case;
- a first ferromagnetic plate fixed to said case;
- a manipulation element movably positioned in said case;
- a second ferromagnetic plate in said case and fixed to said manipulation element;
- at least one pair of magnets, each of said magnets being fixed to one of said plates and contacting the other of said plates to hold said plates in parallel spaced relation, each said pair of magnets having mutually opposite poles adjacent each said plate thereby creating a magnetic field perpendicular to said plates; and wherein said at least one flexible strip interruptor is fixed to one of said plates between said one of said plates and the other of said plates, each said interruptor being positioned between at least one of said pairs of magnets so that said interruptor is subjected to said magnetic field when said magnets are separated from said other of said plates;
- whereby said plates protect said interruptor from extraneous magnetic fields.

4,211,992
POSITIONING MEANS FOR LIMITED ROTATION MOTOR

David M. Gaskill, Jr., Providence, R.I., assignor to Atlan-Tol Industries, Inc., West Warwick, R.I.

Filed Sep. 25, 1978, Ser. No. 946,210
Int. Cl.[2] H01F 7/08
U.S. Cl. 335—222 6 Claims

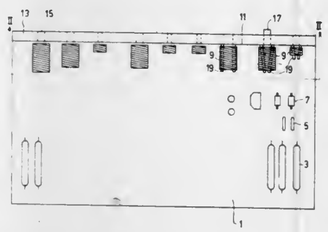


1. In a limited rotation motor having a fixed stator including front and rear generally planar faces which define a central opening longitudinally extending therebetween, a fixed permanent magnet mounted within said stator opening and disposed in closely opposed spaced radial opposition thereto and forming a magnetic field therebetween, and a moving coil positioned for back and forth limited arcuate movement within said magnetic field; the improvement comprising, means for simultaneously positioning said magnet and coil with respect to each other and said stator, said positioning means including a pair of opposed bridges transversely extending across said front and rear stator faces respectively, each of said bridges including at least one pair of transversely spaced longitudinally directed first pins extending inwardly from the inner surface of said bridge proximal to its respective stator face into said stator opening and contacting opposite side surfaces of said magnet in side-to-side parallel contact to laterally space said magnet within said stator opening in a first direction, a pair of transversely spaced longitudinally directed second pins positioned transversely between said first set of pins and extending inwardly from said bridge inner surfaces, the terminal ends of said second pins positioned in contact with the open face of an undercut formed on the longitudinally opposed front and rear faces to laterally space said magnet within said stator opening in a second direction coplanar and normal to said first direction, and means for maintaining said bridges in fixed position relative to said stator, said coil rotatably journalled in said bridges at opposite ends thereof.

4,211,993
DEVICE FOR PROCESSING HIGH-FREQUENCY ELECTRICAL SIGNALS

Johannes H. Hendriks, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,361
Claims priority, application Netherlands, Nov. 16, 1977, 7712604
Int. Cl.[2] H01F 21/06
U.S. Cl. 336—131 1 Claim

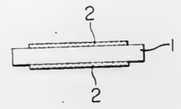


1. A device for processing high-frequency electrical signals, comprising a board accommodating electronic components including a plurality of solenoid coils, said solenoid coils being self-supporting and arranged in a row parallel to an edge of the board having the axes thereof extending perpendicularly to said edge, adjusting cores with which said solenoid coils may be adjusted, a plate (13) of insulating material, extending perpendicularly to the board (1) and being arranged parallel to the row of solenoid coils (9), said plate (13) comprising apertures (15) which are substantially coaxial with the solenoid coils and in which the adjusting cores (17) are provided, said plate (13) being provided, at the area of at least one of the apertures (15), with a coupling piece (19) which is slidable into the associated solenoid coil (9) and which comprises a passage (21) which is coaxial with the aperture (15) whereby when one of said adjusting cores is inserted into the passage of said coupling piece such that the associated solenoid coil may be adjusted, the coupling piece thereupon prevents mechanical vibration of the solenoid coil.

4,211,994
CERAMIC VARISTOR

Hiroshi Oda, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 4, 1978, Ser. No. 965,867
Claims priority, application Japan, Dec. 9, 1977, 52/148302
Int. Cl.[2] H01C 7/10
U.S. Cl. 338—21 8 Claims

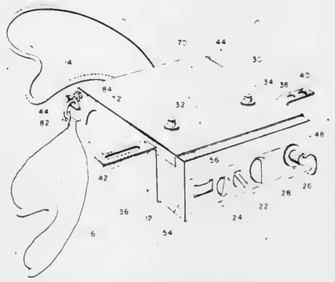


1. A ceramic varistor comprising a polycrystalline sintered ceramic body having non-linear voltage current characteristics, a ceramic body having a high electrical conductivity bonded to said polycrystalline sintered ceramic body having a non-linear voltage current characteristics through a metal, and electrodes formed on outer surfaces of the bodies.

4,211,995
ALARM AND LOCKING DEVICE TO PREVENT THEFT OF AN ARTICLE

Jack Smith, 209 W. Alexander, Apt. A, Euless, Tex. 76039

Filed Sep. 20, 1976, Ser. No. 724,649
Int. Cl.[2] G08B 21/00; B60R 11/02
U.S. Cl. 340—63 3 Claims



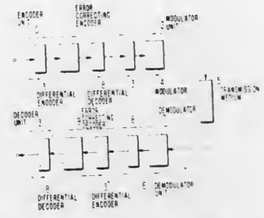
1. A method for preventing the theft of a portable article to be protected from beneath an automobile dashboard comprising, in combination:
- placing the portable article to be protected in a container;
- mounting a lid on the container;
- positioning the lid under the dashboard of the automobile;
- looping an electrically conducting wire from the container around an element of the automobile;
- so that an alarm signal is generated whenever any of the following occur:
  - (a) the lid is brought forth from under the dashboard;
  - (b) the container is removed from the lid; and
  - (c) there is a break in the wire loop.

4,211,996
ERROR CORRECTION SYSTEM FOR DIFFERENTIAL PHASE-SHIFT-KEYING

Katsuhiro Nakamura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1978, Ser. No. 926,062
Claims priority, application Japan, Jul. 19, 1977, 52-87013; Jul. 19, 1977, 52-87014; Jul. 19, 1977, 52-87015
Int. Cl.[2] G06F 11/12
U.S. Cl. 371—37 3 Claims

1. An error correcting system for differential phase-shift-keying comprising an encoder unit including a differential encoder for differentially encoding an input data sequence, an error correcting encoder for adding a check digit sequence to the differentially encoded data sequence, and a differential decoder for differentially decoding the data sequence added with the check digit sequence; a decoder unit including a differential encoder for differentially encoding a received data sequence, an error correcting decoder for correcting error

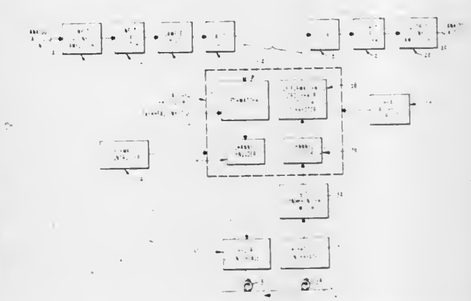


digits contained in the differentially encoded received data sequence, and a differential decoder for differentially decoding the output data sequence from the error correcting decoder; and a transmission medium disposed between said encoder and decoder units and including a differentially encoded phase-shift-keying modulator unit and a differentially encoded phase-shift-keying demodulator unit.

4,211,997
METHOD AND APPARATUS EMPLOYING AN IMPROVED FORMAT FOR RECORDING AND REPRODUCING DIGITAL AUDIO

Paul J. Rudnick, Oakland, and Alastair M. Heaslett, Palo Alto, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Nov. 3, 1978, Ser. No. 957,270
Int. Cl.[2] G06F 11/12; G11B 27/00
U.S. Cl. 371—38 23 Claims



1. A method for recording a signal as digital data in a recording medium, comprising the steps of;
- generating successive series of digital words representing the digital data;
- selectively separating alternate words of the series of digital words into respective separate sub-blocks of data;
- generating error correction information for a given pair of separate sub-blocks thereof;
- interspersing error detection and sync information within given locations in each data and error correction sub-blocks; and
- recording a selected succession of sub-blocks of data and error correction information within at least two separate tracks in the recording medium to define data blocks with selected inter-block gaps therebetween.

4,211,998

METHOD OF AND REMOTE CONTROL APPARATUS FOR REMOTELY CONTROLLING A MEDICAL APPLIANCE

Klaus M. Junginger, Rastatt, and Hermann Kieferle, Karlsruhe, both of Fed. Rep. of Germany, assignors to Stierlen-Maquet Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 936,060

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738406

Int. Cl.[2] **H04B** *7/00;* **H04Q** *9/12*

U.S. Cl. 340—171 R **18 Claims**



6. A remote control arrangement for controlling a medical appliance, comprising a transmitter, a receiver associated with at least one appliance, said transmitter comprising a generator for generating frequency signals of different frequencies as a function of a command signal, said transmitter having means for generating a command signal as a sequence of frequency signal impulses and for the generation alternately therewith of group frequency impulses of group frequencies different from all the frequency signals corresponding to command signals which can be generated, said receiver having at its input an amplifier selective for the frequencies of the frequency signal impulses corresponding to the command signals and of the group frequency impulses and a decoding circuit following said amplifier which, when supplied with frequency signal impulses emits command signal impulses to an output corresponding to the number of the frequency signals which can be generated, said amplifier further operating when fed by the group frequency impulses to emit indicator impulses indicating the reception of said group frequency impulses to a further output and which when fed simultaneously with two signals of different frequency and approximately equal amplitude generates no output signals, and said receiver having means to emit the command signal corresponding to the respective command signal impulses as a function of the presence of the indicator impulses, said amplifier of said receiver having at the group frequency a gain factor lower at least by 3 dB than at the frequencies of the frequency signal impulses corresponding to command signals.

4,211,999

CONVERTER FOR CONVERTING A HIGH FREQUENCY VIDEO SIGNAL TO A DIGITAL SIGNAL

Ronald L. Clark, Indianapolis, and John L. Kreeger, Cumberland, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1977, Ser. No. 854,455

Int. Cl.[2] **H03K** *13/175*

U.S. Cl. 340—347 AD **7 Claims**

1. A high speed peak-detecting analog-to-digital converter comprising,

an analog voltage signal,

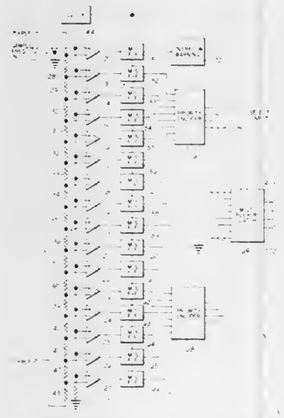
a plurality of voltage comparators each having an output terminal and having an input connected to said analog voltage signal,

first means for providing a different threshold voltage to each said comparator, each said comparator providing an output signal at said output terminal whenever the voltage value of said analog voltage signal exceeds said threshold voltage being applied to a particular comparator,

clock pulse generating means,

second means connected with said output terminals and triggered by said clock pulse generating means for continuously sampling said analog voltage signal and providing an output signal for each comparator whose threshold voltage is lower than the voltage value of the sampled analog voltage signal,

first and second priority encoders connected with said second means for encoding each threshold voltage which is lower in value than the voltage value of the sampled



analog voltage signal and providing a digital output denoting the highest threshold voltage which was exceeded by the sampled analog voltage, and

a multiplexer connected with said first and second priority encoders for accepting the digital output of said first priority encoder when said second priority encoder does not provide a digital output and for accepting only the digital output of said second priority encoder when said second priority encoder provides an output and providing a digital output which is representative of the highest threshold voltage which was exceeded by the sampled analog voltage.

4,212,000

POSITION-TO-DIGITAL ENCODER

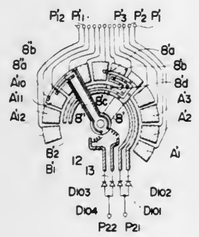
Seiji Yamada, Saki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 21, 1978, Ser. No. 935,390

Claims priority, application Japan, Aug. 20, 1977, 52-100017; Oct. 2, 1977, 52-106016

Int. Cl.[2] **G08C** *9/08*

U.S. Cl. 340—347 P **11 Claims**



1. A digital code signal generating device comprising:

at least one set of a plurality of conducting elements each arranged in a row with each of said conducting elements having the same pitch and the same length with respect to the direction of the row, and said conducting elements being spaced to have the same gap between adjacent conducting elements;

at least one pair of brush contacts slidable over said at least one set of conducting elements along the direction of said row, and being spaced from one another in the direction of the row such that said at least one pair of contacts are either both on a single conducting element or respectively on two adjacent conducting elements;

supply means for providing an electrical signal to said at least one pair of brush contacts; and

a decoder interconnected with each one of said conducting elements for generating two sets of different binary coded outputs in accordance with whether said at least one pair of brush contacts are contacting one or two of said conducting elements.

4,212,001

ELECTRIC HORN

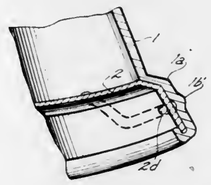
Toshiji Taira, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 25, 1977, Ser. No. 818,668

Claims priority, application Japan, Aug. 31, 1976, 51-117534[U]; Sep. 2, 1976, 51-118192[U]; Dec. 16, 1976, 51-169085[U]

Int. Cl.[2] **G10K** *9/00*

U.S. Cl. 340—388 **1 Claim**



1. An electric horn comprising:

a cup-shaped housing having a peripheral edge shaped to form a bent flange portion and a bulge having an inside wall formed in said bent flange portion and extending from the interior of said housing to a point on said flange portion spaced from the interior of said housing to provide an air passage therein,

a diaphragm member disposed in said housing and including a substantially flat central portion having a surface facing outwardly of said housing and a bent peripheral portion extending from said flat central portion at an angle greater than 90° with respect to said surface, said bent flange portion engaging said bent peripheral portion of said diaphragm member on the exterior thereof to hold said diaphragm member in said housing, said bent peripheral portion having a vent formed therein opening into the inside wall of said bulge in said bent flange portion so that the inside of said housing is communicated with the atmosphere through the inside of said bulge and said vent in said bent peripheral portion of said diaphragm, and

means disposed in said housing for driving said diaphragm.

4,212,002

METHOD AND APPARATUS FOR SELECTIVE ELECTRONIC SURVEILLANCE

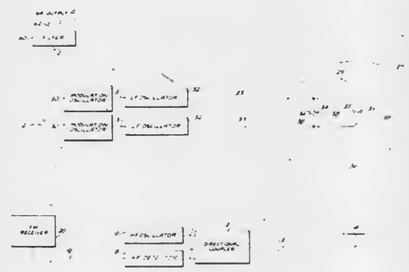
Robert D. Williamson, 7350 NW. First Ct., Pembroke Pines, Fla. 33024

Continuation-in-part of Ser. No. 689,336, May 24, 1976, Pat. No. 4,087,802. This application Mar. 3, 1978, Ser. No. 883,058

The portion of the term of this patent subsequent to May 9, 1995, has been disclaimed.

Int. Cl.[2] **G08B** *13/22*

U.S. Cl. 340—572 **21 Claims**



12. An apparatus for setting up within a surveillance area at least one precisely defined control zone and detecting within that control zone and that control zone's margin the presence of a transponder having signal mixing capability comprising:

an HF signal generator;

means coupled to the HF signal generator for propagating through the surveillance area an electronic wave corresponding to the HF signals generated;

a source of first LF signals for each control zone, such signals having a frequency difference than that of any other LF signals, but close enough thereto to all be within the pass band of an FM receiver;

a first modulation oscillator coupled to the source of first LF signals, thereby creating first FM signals generated for that control zone;

a first means coupled to the source of the first FM signals for each control zone for establishing through that control zone an electronic field corresponding to the first FM signals generated for that control zone;

a source of second LF signals for each control zone; such signals having a frequency different from that of any other LF signals, but close enough thereto to all be within the pass band of the FM receiver;

a second modulation oscillator having a different characteristic than the first modulation oscillator and coupled to the source of second LF signals to frequency modulate the source of second LF signals, thereby creating a source of second FM signals;

a second means coupled to the source of second FM signals for each control zone for establishing a control zone margin for each control zone with an electronic field corresponding to the second FM signals for that control zone, thereby precisely defining that control zone;

signal detecting means constructed to detect FM signals only when received as a composite with the HF signals;

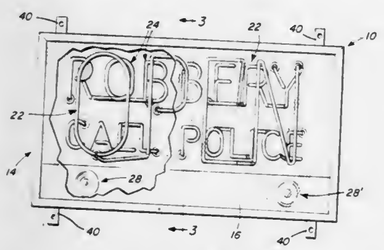
means for coupling the signal detecting means with the surveillance area for receiving the signals therefrom; and

a means coupled to the signal detecting means delivering an electronic output for any control zone in response to detection of first FM signals for that control zone, when those first FM signals predominate over that control zone's second FM signals.

4,212,003
ROBBERY WARNING DEVICE CONTAINING SELECTIVELY ACTUATABLE INFORMATION BEARING AND WARNING DISPLAYS

Terry L. Mishoe, Thomasville, and Walton E. Peatross, High Point, both of N.C., assignors to Edward N. Post, High Point, N.C.

Continuation-in-part of Ser. No. 592,635, Jul. 2, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 898,898
Int. Cl.² G08B 13/00; G09F 9/48
U.S. Cl. 340—574 4 Claims



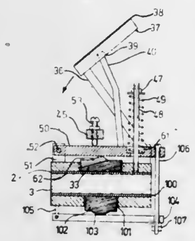
1. A robbery warning device, comprising, in combination:
(a) a frame, said frame being substantially rectangular and including four substantially planar peripheral edge walls defining a through opening;
(b) a translucent panel mounted on the frame over the through opening forming a front wall thereof, and having a pair of spaced, substantially parallel faces;
(c) lamp means forming a sign and disposed within the through opening adjacent a one of the faces of the panel directed inwardly of the frame for being selectively energized and making visible through the translucent panel the sign formed by the lamp means, the lamp means including a first neon sign and a second neon sign disposed in superimposed relationship within the frame, said first neon sign being structured to provide a mundane message or advertisement, said second neon sign being structured to produce an emergency message, said first neon sign being positioned between said second neon sign and said translucent panel;
(d) strobe means mounted in the frame for actuation when the lamp means is actuated, illuminating the panel and attracting attention to the sign formed by the lamp means and made visible by the lamp means when viewed from beyond the other of the faces of the panel, which other of the faces is directed outwardly of the frame; and
(e) circuit means connected to said lamp means and said strobe means for controlling selective actuation of said first neon sign, said second neon sign, and said strobe means, said circuit means including a first switch means, said first switch means being normally closed for energizing the first neon sign, and a second switch means, said second switch means being normally open and selectively alternatively energizable for providing current to said second neon sign and said strobe means in unison and deenergizing said first neon sign.

4,212,004
PRESSURE DROP DETECTORS

Erle W. Bensemann, Christchurch, New Zealand, assignor to Benefis Systems Limited, Christchurch, New Zealand

Filed Apr. 25, 1978, Ser. No. 900,047
Claims priority, application New Zealand, Jul. 7, 1977, 184590
Int. Cl.² G08B 17/04; H01H 37/40
U.S. Cl. 340—591 4 Claims

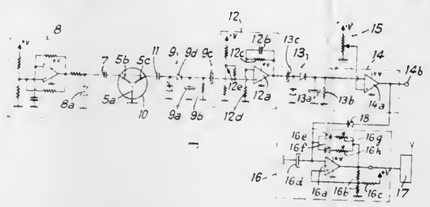
1. A pressure drop detector for a pressurized fluid system comprising: a block of material having in a first surface thereof a pressurized fluid circuit in the form of grooves or channels forming fluid flow paths in said first surface; apertures provided in a second surface of said block for connecting said fluid circuit with tubes or pipes of the pressurized fluid system; a first flat diaphragm positioned over said first surface but movable relative thereto; a second flat diaphragm positioned over said second surface but movable relative thereto; each diaphragm controlling the operation of at least one piston respectively movable therewith; said first diaphragm (a) detecting from said fluid circuit the pressure in said fluid system at an appropriate portion of said fluid circuit and causing said piston movable therewith to operate a low system pressure indicating means when the system pressure has dropped to a predetermined level and (b) controlling fluid flow along said fluid flow paths in said fluid circuit at at least one valve seat portion provided on said first surface; said second surface being connected by at least one fluid path to said first surface whereby said second diaphragm detects the pressure in a pressurized fluid supply connected to said pressurized fluid circuit; another of said pistons is moved by said second diaphragm to provide a bias for said indicating means so that the said predetermined level of the lowered system pressure at which a low pressure indication is given is at least partly determined by the pressure in the pressurized fluid supply.



4,212,005
MOVEMENT DETECTOR

Jacques Hubert, Saint-Avold, and Jean-Marie Ory, Heillecourt, both of France, assignors to Societe Chimique des Charbonnages, Paris, France

Filed Jun. 28, 1978, Ser. No. 920,070
Claims priority, application France, Jun. 28, 1977, 77 19869
Int. Cl.² H04B 7/00, 9/00
U.S. Cl. 340—603 15 Claims

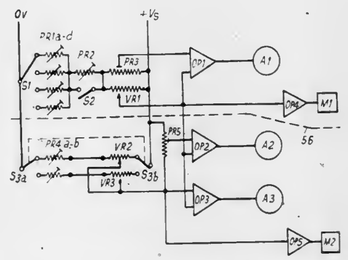


1. A movement detector comprising a sensor formed by a closed container partially filled with liquid, at least two electrodes electrically insulated from each other and in contact with said liquid, measuring means connected with said electrodes and providing a measuring signal whose amplitude is a function of the impedance between said electrodes, a detection circuit responsive to said measuring signal for measuring the amplitude of the variations of said measuring signal, and a threshold circuit responsive to said detection circuit for supplying an informative signal whenever said amplitude of variation becomes smaller than a predetermined threshold.

4,212,006
CRANE LOAD ALARM WITH COMPENSATION FOR DIRECTION OF ROPE MOVEMENT

William A. Cakebread, and Graham R. Pryke, both of St. Leonards-on-Sea, England, assignors to B & A Engineering Company Ltd., Hastings, England

Filed Jan. 26, 1979, Ser. No. 7,354
Claims priority, application United Kingdom, Jan. 26, 1978, 3259/78
Int. Cl.² G08B 21/00
U.S. Cl. 340—685 20 Claims

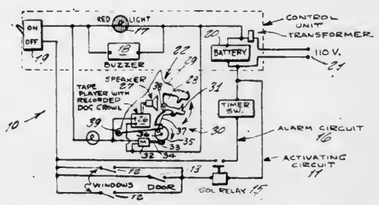


1. A load weighing device for cranes, said device comprising a dynamometer interposed in the crane rope which is operable to produce an output signal indicative of the tension in the rope caused by a load on the crane hook, a rope direction sensing element for sensing the direction of rope motion through the dynamometer and means for modifying the dynamometer output signal in accordance with the direction of rope motion as sensed by said direction sensing element.

4,212,007
COMBINED BURGLAR FRIGHTENING DEVICE AND ALARM

Daniel Reyes, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Sep. 30, 1976, Ser. No. 728,434
Int. Cl.² G08B 13/08
U.S. Cl. 340—691 4 Claims

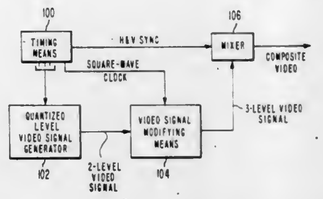


1. A burglar frightening device and alarm, comprising an electric circuit having a switch normally maintained in open position by contact with a closure to a building access opening, said switch being biased to a closed position whereby upon opening of said closure, said switch moves to the closed position to activate said circuit, including an alarm and animal simulating mechanism electrically connected to said circuit, wherein said mechanism includes means for simulating movements and sounds emitted by an animal about to attack, whereby opening movement of the closure results in actuation of both said alarm and mechanism.

4,212,008
CIRCUIT FOR DISPLAYING CHARACTERS ON LIMITED BANDWIDTH, RASTER SCANNED DISPLAY

Robert S. Hopkins, Jr., Marlton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 24, 1978, Ser. No. 909,039
Int. Cl.² G06F 3/14
U.S. Cl. 340—723 10 Claims

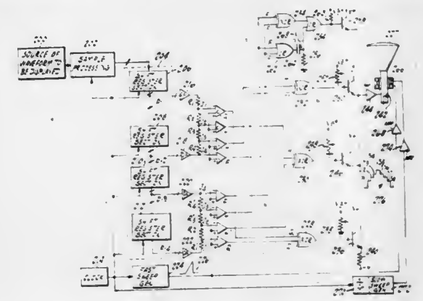


1. In apparatus including timing means and video-signal generating means for deriving a quantized-level video signal for use in displaying character patterns on a television display device, wherein said quantized-level video signal includes a background level and a character-pattern delineating level which is different from said background level, any transition in level of said video signal only occurring at an end of an integral number of one or more entire periods of an elemental timing signal; the combination therewith comprising:
video-signal modifying means responsive to the occurrence of any given transition in at least one certain direction between a background level and a character-pattern delineating level of said video signal for changing the value of said character-pattern delineating level with respect to said background level to increase the difference therebetween for that given entire elemental timing period of said character-pattern delineating level of said video signal which is contiguous with said given transition.

4,212,009
SMOOTHING A RASTER DISPLAY

George L. Adleman, Brockton, and Robert L. Stettiner, Lexington, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 16, 1977, Ser. No. 852,176
Int. Cl.² G06F 3/14
U.S. Cl. 340—728 12 Claims



1. Apparatus for developing control signals that may be used with a display means to change the width of a pattern of light contrast along parallel paths in such manner that the display means may display a waveform intersecting said parallel paths in the form of a smooth line, said means for developing control signals comprising
sampling means responsive to a waveform to be displayed for successively producing sample signals, each sample signal representing the amplitude of the intersection of the

waveform to be displayed with a different one of a plurality of adjacent paths,

first means responsive to a first pair of said sample signals for developing a first set of control signals that can be used for increasing the width of the pattern of contrast in light produced along a given direction of a parallel path within an amplitude range defined by the amplitudes represented by said first pair of sample signals, and

second means responsive to a second pair of said sample signals for developing a second set of control signals that can be used for decreasing the width of the pattern of contrast in light produced along said given direction of said path within an amplitude range defined by the amplitudes represented by said second pair of sample signals.

4,212,010

METHOD FOR THE OPERATION OF A DISPLAY DEVICE HAVING A BISTABLE LIQUID CRYSTAL LAYER

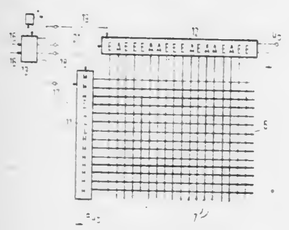
Karl H. Walter, Grafing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,199

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1976, 2644449

Int. Cl.² G06F *3/14*

U.S. Cl. 340—784 **4 Claims**



1. In a method for operating a display screen having a liquid crystal layer disposed between rows and columns of a conductor matrix, said liquid crystal being switched from a first optical state to a second optical state by applying a voltage higher than an upper threshold voltage U_{12}, being switched from a second to the first optical state by applying a voltage lower than a lower threshold voltage U_{21} and being maintained in one of said optical states by applying a holding voltage U_h with $U_{21} < U_h < U_{12}$, said method comprising writing-in information into the display by addressing the rows in a serial fashion and operation of the column with the relevant row data in parallel with respect to each row with the information being subsequently held in the device and being erased prior to the next write-in step with the improvements comprising during the addressing of each row erasing a predetermined number of the next following rows while maintaining the states in the remaining rows, that all the signals which are fed to the conductor matrix, namely the switching, holding, erasing signals on the row conductors and the "on" and "off" information signals for the column conductors consist of a sequence of pulses or pulse groups with each of the sequences having the same period of duration T, all pulses of the sequences consisting of elementary pulses having a magnitude U_0 and a duration T/2m where m is a natural number and the interval of time between consecutive pulses being shorter than the shortest transition time of the layer between the two optical states, the row addressing time t being at least equal to the transition time of the layer from the second to the first optical state, so that effective voltages at the matrix point operate on the layer during the addressing time, said effective voltages, namely the two write-in voltages $U_{s/on}$, $U_{s/off}$, the holding voltage U_h and the erasing voltage U_l being produced solely by the combination of suitable signal pulses or signal pulse groups of the elementary pulses from the pulses on the row and column conductors.

4,212,011

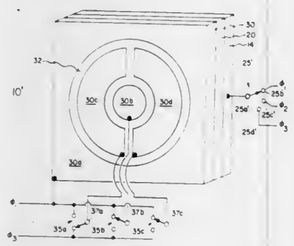
MULTIMODE LIQUID CRYSTAL DISPLAY

Wesley K. Waldron, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1978, Ser. No. 937,953

Int. Cl.² G06F *3/14*; G09F *9/32*

U.S. Cl. 340—784 **9 Claims**



1. A liquid crystal display, comprising:

at least one liquid crystal cell, each cell including a continous control electrode;

another electrode spaced from said control electrode and having an insulative groove formed therein to define N independent segment portions, where N is an integer greater than zero, each spatially and electrically separated from each other and from a remaining background portion;

a layer of liquid crystal material filling the volume between said control electrode and said another electrode;

sources of first and second driving voltages, each voltage having substantially identical frequencies, amplitudes and waveshapes, but having a phase, relative to an arbitrary reference, different from the phase of the other driving voltage;

the first source being permanently connected to the background portion of said another electrode;

first means for selectively connecting each of said N segment portions of said another electrode individually to one or the other of the voltages from said first and second voltage sources; and

second means for selecting connecting each one of said first and second voltage sources individually to said control electrode;

the connection of driving voltages of substantially identical phase, both to said control electrode and to at least one of said background portion and one of said N segment portions of said another electrode, causing the liquid crystal material therebetween to be in a first condition of light transmission;

the area defined by said groove always being in said first light-transmissive condition;

the connection of driving voltages having different phases, between said control electrode and at least one of said background portion and one of said N segment portions of said another electrode, causing the liquid crystal material therebetween to be in a remaining condition of light transmission;

the voltage applied by said first selective connecting means to said control electrode selectively operating said cell with a selectable one of dark and bright background in the area defined by of said background electrode portion, and the voltage applied by said second selective connecting means to each of said segment electrode portions selectively operating said cell with a selectable one of dark and bright segments in the area defined by the associated segment electrode portion, to cause the cell to display a selected one of a total of 2^{N+1} different indicia.

4,212,012

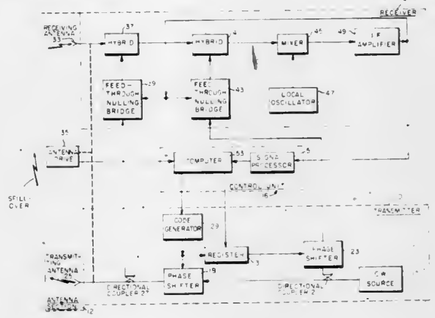
CONTINUOUS WAVE RADAR

David V. Manoogian, Lynnfield, and Roderic J. Procaccino, Westwood, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 18, 1978, Ser. No. 970,600

Int. Cl.² G01S *9/37*

U.S. Cl. 343—7 A **1 Claim**



1. The method of operating a continuous wave radar which transmits a modulated continuous wave signal in a directional beam from a transmitting antenna trainable in azimuth and receives clutter signals from clutter at different ranges as the azimuth is changed, such method comprising the steps of:

(a) determining, at each position in azimuth of the transmitting antenna, the range of any clutter in the far-field and storing a timing signal representative of the propagation delay of the clutter causing the greatest far field signal;

(b) storing a reference signal representative of the modulation of the transmitted signal; and

(c) reproducing, in response to the timing signal for each position in azimuth, the reference signal and nulling the then received clutter signals.

4,212,013

DUPLEX-TRANSMITTER RECEIVER ARRANGEMENT

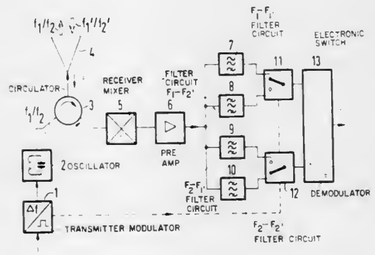
Gunter Biethan, Neuried, and Peter Kloeber, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,363

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744212

Int. Cl.² H04B *1/40*

U.S. Cl. 370—30 **6 Claims**



6. A transmitter-receiver apparatus having only one oscillator for the transmitter of a digitally modulated radio system for communication transmission between a plurality of transmitter-receiver stations mounted at prescribed distances for bidirectional communication and telemetry transmission, comprising, a circulator, an antenna connected to said circulator, a first oscillator tunable to frequencies f_1/f_2 connected to said circulator for radiating signals at frequencies f_1 and f_2 from said antenna, a first receiver mixer connected to said circulator and receiving signals at least at frequencies f_1' and f_2' from said antenna and signals at frequencies f_1 and f_2 from said first oscillator, means for modulating said first oscillator, a second receiver mixer receiving the output of said first mixer, an auxiliary oscillator supplying an input to said second receiver mixer at a frequency of f_3, and a pair of filter circuits connected to the output of said second receiver mixer and having center frequencies of $f_2 - f_1'$ and $f_2 - f_2' - f_3$ and a demodulator connected to the output of said pair of filter circuits.

4,212,014

ELECTRONICALLY CONTROLLED DIELECTRIC PANEL LENS

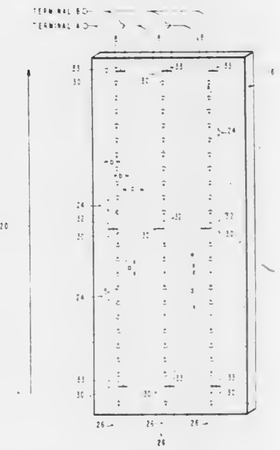
Claude Chekroun, Bures sur Yvette, France, assignor to Societe d'Etude du Radant, Orsay, France

Filed Jun. 22, 1978, Ser. No. 918,053

Claims priority, application France, Jun. 24, 1977, 77 19365

Int. Cl.² H01Q *19/06*

U.S. Cl. 343—754 **23 Claims**



1. In a lens apparatus for phase shifting a wave transmitted by a microwave radiating source having at least one dielectric panel with said at least one dielectric panel including first conductive leads and a plurality of switch means having conductive and non-conductive states mounted on said first conductive leads with each switch means spaced apart on said first conductive leads one from another by a distance which enables shifting the phase of said transmitted wave by selectively controlling the conductive state of said switch means, the improvement comprising:

a. second conductive leads in said panel adjacent to and parallel with said first conductive leads;

b. said switch means of each first conductive lead being divided at junctions into groups, the switch means of each group being connected in the same polar direction thereby defining a polarity for each group and successive groups of each first conductive lead being of alternate polarity; and

c. means for coupling said groups of each first conductive lead in parallel between two second conductive leads with the polarity of each parallel connected group being in the same direction, whereby selective biasing of each two second conducting leads assures each respective first conductive lead being selectively rendered continuous and discontinuous by said switch means.

4,212,015

PORTABLE MAST FOR RADIO LINK SYSTEMS

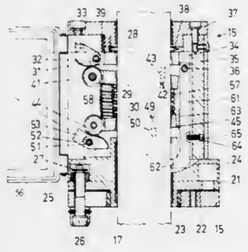
Robert Graf, Untersiggenthal, and René Meier, Neuenhof, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Aug. 1, 1978, Ser. No. 930,007

Claims priority, application Switzerland, Aug. 4, 1977, 9566/77

Int. Cl.² H01Q *1/10*

U.S. Cl. 343—883 **2 Claims**



1. A portable mast, particularly for radio link systems, having a stand and a rotary head of the stand, a mast tube lifting and lowering device installed in the head of the stand, telescopic mast tube elements forming a mast tube which can be locked, and staying elements for the fixing of the mast at the site, wherein said lowering and lifting device comprises:

three ring-shaped friction pawls surrounding the mast tube and adapted for forced-locking, self-arresting connection with said mast tube, disposed within the head of the stand in the longitudinal direction of the mast tube elements and adapted to raise and lower said mast tube when said pawls are tilted, with an upper mast carrying pawl disposed above a center mast lowering pawl which in turn is disposed above a lower mast lifting pawl;

a manually operable lowering cam connected to said upper carrying pawl and in effective connection with said center lowering pawl at a bearing portion of said lowering pawl to tilt said lowering pawl, said upper carrying pawl supporting said mast tube and having a swivel connection to a pin at its side opposite said lowering cam;

a manually operable lifting cam in effective connection with said lower lifting pawl at a bearing portion of said lifting pawl and having a swivel connection in the head of the stand;

a plurality of spring elements provided between the lower lifting pawl and the center lowering pawl for holding said lower lifting pawl and said center lowering pawl in contact with said lowering and lifting cams; and

catch lever means for fixing the lifting pawl as soon as a lower face of a mast tube element not being in contact with the adjacent face of a next following mast tube element, has reached a certain position within the head of the stand.

4,212,016

VEHICLE MULTICONDITION RECORDING SYSTEM

Herman Ruhl, 30 Queen Elizabeth Blvd., Toronto, Ontario, Canada (M8Z 2T6)

Filed Sep. 29, 1977, Ser. No. 837,503

Int. Cl.² G01D *9/28, 15/16*

U.S. Cl. 346—62 **15 Claims**

1. Vehicle recording system for recording a multiplicity of operating conditions in a chart characterized by the combination of recording means for inscribing on the chart at essentially right angles to its direction of movement, servocontrolled positioning means for positioning and moving said recording means to recording positions in response to control signals which are the result of two separate input signals combined with one another to provide said control signals, one of said input signals identifying a particular operating condition, the other of said input signals identifying the value of that particular operating condition for simultaneous appropriate positioning of the recording means on the chart and recording



of the value of each identified operating condition, control means to selectively direct different control signals for the multiplicity of operating conditions to the servocontrolled positioning means.

4,212,017

DEFLECTION ELECTRODE ASSEMBLY FOR MULTI-NOZZLE INK JET PRINTERS

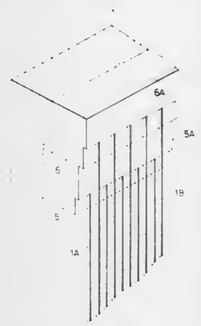
Masayoshi Tamai, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,758

Claims priority, application Japan, Dec. 8, 1977, 52-146590

Int. Cl.² G01D *15/18*

U.S. Cl. 346—75 **4 Claims**



1. In a multi-nozzle ink jet printer adapted to eject ink droplets from an array of nozzles along a path to a recording medium moving in a direction perpendicular to a first plane containing said array and said path, said droplets being charged and deflected in a direction substantially parallel to the array of nozzles whereby said ink droplets strike against said moving recording medium in a predetermined position, the improvement comprising at least two deflection electrode assemblies spaced apart along the path of said droplets; each assembly having a plurality of parallel conductive round wires disposed in a second plane perpendicular to said first plane in a spaced relationship from said nozzle array, said conductive wires being alternately charged to form two groups of conductive wires between which a deflection voltage is applied.

4,212,018

LASER BEAM RECORDING SYSTEM

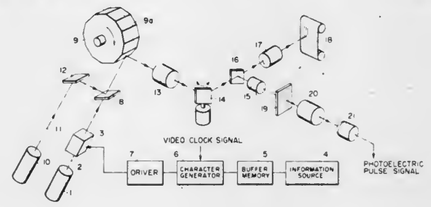
Masahiro Ohnishi; Yuji Ohara, and Hiroshi Oono, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 15, 1979, Ser. No. 3,347

Claims priority, application Japan, Jan. 17, 1978, 53/3480

Int. Cl.² G01D *15/10, 9/42*

U.S. Cl. 346—76 L **8 Claims**



1. In a laser beam recording system in which a recording light beam and a read-out light beam are deflected periodically by a rotating polygonal mirror and the read-out light beam scans a linear encoder behind which a photodetector is located whereby a photoelectric pulse signal is generated by the photodetector,

a video clock signal generating device for generating a video clock signal in synchronization with the photoelectric pulse signal, said video clock signal generating device comprising;

an oscillator for generating a clock signal,

a divider for dividing the clock signal into a reference pulse signal having a frequency of 1/n of that of the clock signal, where said n is an integral number, and

a phase comparator for detecting the displacement of the phase of said photoelectric pulse signal from that of said reference pulse signal and controlling said oscillator to make the phases of the photoelectric pulse signal and the reference pulse signal registered with each other,

whereby a video clock signal is generated which is synchronized with said photoelectric pulse signal and has a frequency of n-times as large as that of the photoelectric pulse signal, said video clock signal providing a video signal which is used to modulate the recording light beam.

4,212,019

AVALANCHE PHOTODIODE

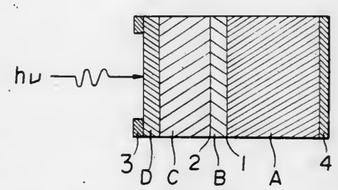
Manabu Wataze; Kazuhisa Takahashi; Saburo Takamiya, and Shigeru Mitsui, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,639

Claims priority, application Japan, Jul. 19, 1977, 52-86843

Int. Cl.² H01L *29/90, 29/161*

U.S. Cl. 357—13 **8 Claims**



1. An avalanche photodiode comprising:

a first semiconductor layer of a selected conductivity type and being formed from a first semiconductor material; said first semiconductor layer being capable of converting incident radiation to electrons;

a second semiconductor layer located adjacent the side of said first semiconductor layer that is exposed to incident radiation, having the same conductivity type and being of the same semiconductor material as said first semiconductor layer; said second semiconductor layer having a higher impurity density than said first semiconductor layer;

a first electrode in operative contact with said second semiconductor material;

a third semiconductor layer, functioning as a carrier multiplying region, located on the other side of said first semiconductor layer and having the same conductivity type as said first semiconductor layer; said third semiconductor layer being formed from a second semiconductor material;

a fourth semiconductor layer of an opposite conductivity type located adjacent said third semiconductor; said fourth semiconductor layer being formed from said semiconductor material and having a higher impurity density than said third semiconductor layer; and a second electrode in operative contact with said fourth semiconductor layer.

4,212,020

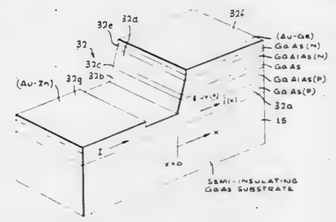
SOLID STATE ELECTRO-OPTICAL DEVICES ON A SEMI-INSULATING SUBSTRATE

Amnon Yariv, San-Marino; Shlomo Margalit, and Chien-Ping Lee, both of Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jul. 21, 1978, Ser. No. 926,649

Int. Cl.² H01L *33/00*

U.S. Cl. 357—17 **11 Claims**



1. An arrangement comprising:

a GaAs semi-insulating layer, representing a substrate with a top surface,

a solid state laser structure on top of said substrate, said laser structure comprising first, second, third, fourth and fifth layers of GaAs N type, a ternary compound of GaAs of the N type, GaAs, a ternary compound of GaAs P type and GaAs P type, respectively, above said substrate, with said first layer extending beyond the other layers which form a mesa;

a first contact on top of said fifth layer,

a second contact on the top surface of said first layer, spaced apart from the other layers which form said mesa, and

electronic means wherein the first GaAs N type layer forms part thereof,

said electronic means including an additional contact, with said second contact being adjacent said mesa and the additional contact being spaced therefrom in a direction farther away from said mesa, said electronic means being substantially a Gunn oscillator.

4,212,021

LIGHT EMITTING DEVICES

Yuichi Ono, Tokyo; Mitsuhiro Mori, Kokubunji; Makoto Morioka; Kazuhiro Ito, both of Tokyo; Masahiko Kawata, Yokohama, and Kazuhiro Kurata, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 817,681, Jul. 21, 1977, abandoned. This application May 22, 1979, Ser. No. 41,318

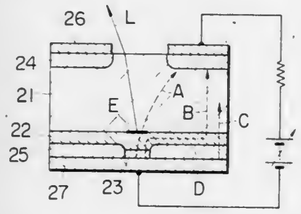
Claims priority, application Japan, Jul. 21, 1976, 86037/76

Int. Cl.² H01L *33/00*

U.S. Cl. 357—17 **10 Claims**

1. A light emitting device having a III-V compound semi-

conductor substrate which has a predetermined conductivity type, a III-V compound first semiconductor layer which is deposited on an upper surface of said III-V compound semiconductor substrate and which has the opposite conductivity type to that of said substrate, wherein a p-n junction is formed between said semiconductor substrate and said first semiconductor layer, a current control semiconductor layer which has the opposite conductivity type to that of said first semiconductor layer and which covers an upper surface of said first semiconductor layer and which has a hole therethrough, a second semiconductor layer positioned in said hole and contacting said first semiconductor layer, whereby current can flow through said current control semiconductor layer, said second semiconductor layer having the same conductivity type as said first semiconductor layer, a first electrode which is provided



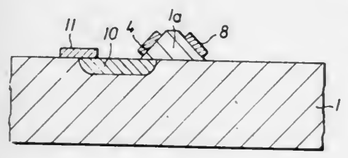
directly on said current control semiconductor layer and said second semiconductor layer and which is in current flow communication with said first semiconductor layer through said second semiconductor layer, and a second electrode which is provided on a bottom surface of said semiconductor substrate and which has a light extracting window at its center part for emitting light from said device, said current control semiconductor layer being made of a layer of higher carrier concentration than the carrier concentration in the first semiconductor layer, whereby light is adapted to be emitted from a radiation region adjacent said p-n junction, normal to said p-n junction, which radiation region is confined by said current control semiconductor layer, and adapted to pass through the semiconductor substrate to said light extracting window, and wherein the bandgap of said semiconductor substrate is wider than that of said radiation region.

4,212,022

FIELD EFFECT TRANSISTOR WITH GATE AND DRAIN ELECTRODES ON THE SIDE SURFACE OF A MESA

Heinz Beneking, Aachen, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 464,622, Apr. 26, 1974, abandoned. This application Jun. 6, 1975, Ser. No. 584,340
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1974, 2444489; Apr. 30, 1973, 2321895
Int. Cl.² H01L *29/80, 29/64, 29/06*
U.S. Cl. 357—22 **3 Claims**



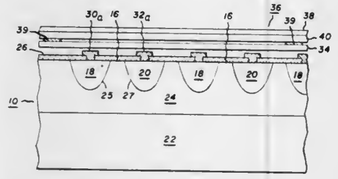
1. In a semiconductor device including a semiconductor body of a first conductivity type, an ohmic electrode and a blocking electrode for said semiconductor body with one of said electrodes being disposed on the side surface of said semiconductor body and the other of said electrodes being disposed adjacent to said one electrode and on a major surface of said semiconductor body the improvement wherein: said device is a field effect transistor having a source electrode, a drain electrode and a control electrode contacting said semiconductor body with said control electrode being disposed between said source and drain electrodes; said semiconductor body is a thin semiconductor layer of uniform conductivity type and forms the controllable channel region of said transistor; said source and control electrodes constitute said ohmic and said blocking electrodes respectively and said drain electrode is the same type electrode as said source electrode; said control electrode and said drain electrode are disposed on the side surface of the semiconductor body; and said source electrode is disposed on the major surface of the semiconductor body in the immediate vicinity of said control electrode.

4,212,023

BILATERAL PHOTOTRANSISTOR

Hing C. Chu, Liverpool; William H. Sahm, III, Syracuse, both of N.Y., and Robert I. Chen, Beaverton, Oreg., assignors to General Electric Company, Auburn, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,098
Int. Cl.² H01L *31/12, 27/14*
U.S. Cl. 357—19 **19 Claims**



1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type having first and second opposed major surfaces;
a first semiconductor layer of the same conductivity as said substrate but characterized by a lower impurity concentration, said first layer epitaxially formed on first major surface;
first and second symmetrical, interdigitated semiconductor regions extending from a top surface of said first semiconductor layer into the bulk of said layer towards but not meeting the boundary between said first layer and said substrate, said first and second regions being of a second conductivity type opposite said first conductivity type; and
a radiation sensitive base region disposed between first and second symmetrical interdigitated regions.

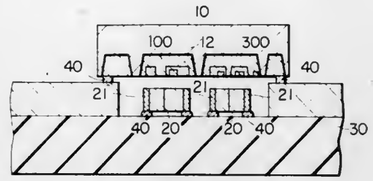
4,212,024

SOLID-STATE SWITCHING CIRCUIT EMPLOYING PHOTON COUPLING SUITABLE FOR CONSTRUCTION IN FORM OF INTEGRATED CIRCUIT

Yoshitaka Sugawara, and Tatsuya Kamei, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed May 3, 1978, Ser. No. 902,498
Claims priority, application Japan, May 11, 1977, 52/53147
Int. Cl.² H01L *29/74*
U.S. Cl. 357—38 **4 Claims**

1. A solid-state switching circuit employing photon coupling, the switching operation of which is controlled by a control signal, comprising:
at least one light-emitting diode for radiating photons in response to the control signal supplied thereto;
a light-activated silicon controlled rectifier, the switching operation of which is controlled by the photons radiated from said light-emitting diode;
a transistor, the collector electrode and the emitter electrode of which are connected to the gate electrode and the cathode electrode of said light-activated silicon controlled rectifier, respectively;
a diode connected between the n-base layer of said light-activated silicon controlled rectifier and the base electrode of said transistor; and



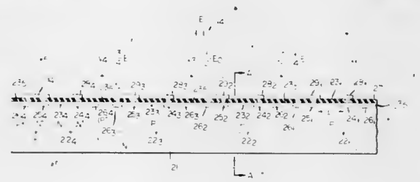
a photodiode connected between the base electrode and the emitter electrode of said transistor, and being activated by the photons radiated from said light-emitting diode, thereby said transistor being turned off in response to the appearance of the control signal.

4,212,025

VOLTAGE DIVIDING INTEGRATED CIRCUIT DEVICE

Masataka Hirasawa, Ayase; Akira Hashimoto, and Haruji Yamazaki, both of Yokohama, allof, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Jan. 31, 1978, Ser. No. 873,881
Claims priority, application Japan, Jan. 31, 1977, 52-9397
Int. Cl.² H01L *27/04*
U.S. Cl. 357—51 **3 Claims**



1. An integrated circuit voltage divider comprising:
a semiconductor substrate of a first conductivity type;
a plurality of first regions having a second conductivity type and separately formed in said substrate, each forming a PN junction with said substrate;
a plurality of second regions having said second conductivity type, each of said second regions formed in said substrate along said PN junctions formed by said substrate and a corresponding one of said first regions, and each of said second regions having an impurity concentration higher than the impurity concentration of said first regions;
a plurality of identical resistive regions having said first conductivity type, each of said resistive regions formed in a corresponding one of said first regions, and each of said resistive regions having first and second sides and first and second ends, said first and second sides of each resistive region being in contact with a corresponding one of said second regions; and
connection means for electrically connecting said resistive regions in series with one another, first ends connected to second ends, across a source of supply voltage to be divided, and for providing a precision voltage drop of said source voltage at said connected first and second ends of said resistive regions, said connection means including means for electrically connecting each first end of each of said resistive regions with said corresponding one of said second regions to prevent PN junctions formed by said resistive regions and said first regions from being forward-biased.

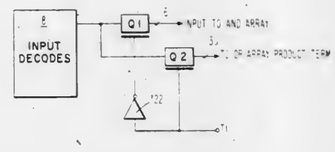
4,212,026

MERGED ARRAY PLA DEVICE, CIRCUIT, FABRICATION METHOD AND TESTING TECHNIQUE

P. S. Balasubramanian, Manassas; Claude R. Bertin, Oakton, and Stephen B. Greenspan, Reston, all of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 809,877, Jun. 24, 1977. This application Sep. 25, 1978, Ser. No. 945,745
Int. Cl.² H01L *27/02*
U.S. Cl. 357—41 **17 Claims**





2. A semiconductor structure for a programmed logic array having an AND array and an OR array of FET devices, comprising:
a semiconductor substrate of a first conductivity type;
a spaced parallel array of diffusion lines of a second conductivity type in said substrate;
a first insulating layer overlying said substrate having a first plurality of openings selectively defining FET gates for said OR array, second plurality of openings selectively defining FET drains for said AND array, and a third plurality of openings selectively defining FET gates in said AND array;
a first, spaced parallel array of conductor lines overlying said first insulator layer and oriented perpendicularly to said diffusion lines, having a conductor passing through one of said first openings to form the gate of a first FET device in said OR array and passing through one of said third openings proximate to said one of said first openings, to form a drain contact for a second contiguous FET device in said AND array;
a second insulating layer overlying said first array of conductor lines having a plurality of openings over said second openings in said first insulating layer;
a second spaced, parallel array of conductor lines overlying said second insulator layer and oriented parallel with said first spaced parallel array of conductor lines, having a conductor passing through said opening in said second insulating layer to form the gate of said second FET device, forming an input to said AND array;
whereby a PLA is formed having a merged AND and OR array.

4,212,027

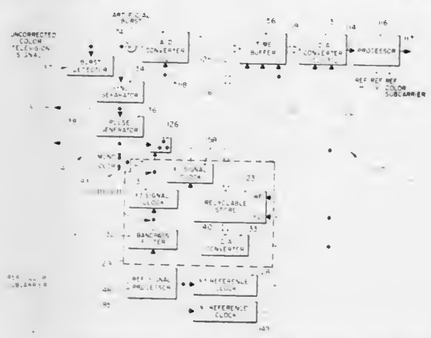
TIME BASE COMPENSATOR

Maurice G. Lemoine, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 464,269, Apr. 25, 1974, abandoned. This application Mar. 12, 1975, Ser. No. 557,708

Int. Cl.[2] H04N *9/02*

U.S. Cl. 358—8 **89 Claims**



1. A compensator for synchronizing relative to a reference clock signal an information signal having a timing component, comprising; an analog to digital converter receiving and digitally encoding said information signal in response to clock signals, reference clock signal source means, digital memory means including input and output means, switching means having first and second states, said switching means in its first state connecting said reference clock signal source means to said analog to digital converter for clocking said analog to digital converter to encode the information signal at a rate coherent with said reference clock signal, means connecting said digital memory means to an output of said analog to digital converter while said switching means is in its first state for storing and regenerating said timing component of said information signal, said switching means in its second state connecting the output of said digital memory means to said analog to digital converter for clocking said analog to digital converter to encode the information signal at a rate coherent with said timing component of said information signal, said switching means responsive to said information signal to assume temporarily its first state, and a digital to analog converter coupled to receive the output of said analog to digital converter for decoding the digitized information signal, said reference clock signal source means coupled to said digital to analog converter for clocking said digital to analog converter at a rate coherent with said reference signal.

4,212,028

PROCESSING PAL COLOR TELEVISION SIGNALS

John O. Drewery, Coulsdon, England, assignor to The Marconi Company Limited, Chelmsford and Standard Telephones and Cables Limited, London, both of, England

Filed Aug. 30, 1978, Ser. No. 938,028

Claims priority, application United Kingdom, Sep. 1, 1977, 36590/77

Int. Cl.[2] H04N *9/39*

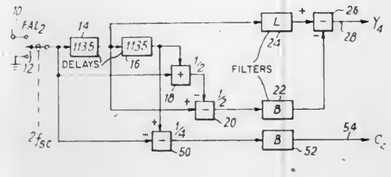
U.S. Cl. 358—11 **8 Claims**

1. A method of processing digital PAL colour television signals, comprising the steps of:

transcoding between (i) an encoded PAL signal sampled at twice the colour subcarrier frequency and (ii) a luminance signal sampled at twice the colour subcarrier frequency and/or a composite chrominance signal sampled at the colour subcarrier frequency and comprising the sum and difference of the quadrature colour signals on alternative lines;

said transcoding step comprising:

forming the output samples (a) over the chrominance bandwidth by linearly combining samples selected from three or more adjacent lines of the television signal, and (b) below the chrominance bandwidth by linearly combining



samples selected from the samples on at least one of the adjacent lines; and

filtering the output samples by means of a digital filter, to provide the desired output signal.

4,212,029

ELASTIC SURFACE WAVE FILTER FOR COLOR TELEVISION RECEIVER

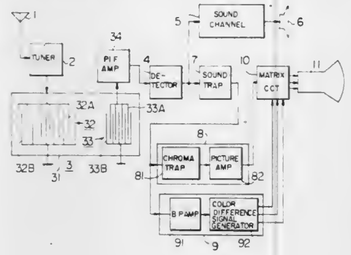
Takeshi Murakami, and Katashi Hazama, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 16, 1977, Ser. No. 825,039

Claims priority, application Japan, Aug. 20, 1976, 51-98757

Int. Cl.[2] H04N *9/535*

U.S. Cl. 358—21 R **10 Claims**



10. In a color television receiver, comprising:

a signal source for generating a color television signal which comprises a color composite video signal including a chromaticity signal component, a luminosity component and a sound signal component;

a video detector for detecting said color composite video signal from said color television signal;

an elastic surface wave filter which provides said color television signal with a given amplitude characteristic and comprises a piezo-electric substrate permitting an elastic surface wave to be propagated, an input converter provided on said piezo-electric substrate for converting said color television signal to an elastic surface wave, and an output converter provided on said piezo-electric substrate for converting said elastic surface wave from said input converter again to a color composite video electric signal which includes said chromaticity signal component, said luminosity component, and said sound signal component and which is fed to said video detector;

a band pass amplifier for extracting said chromaticity signal component from said color composite video signal from said video detector and for amplifying the same; and

sound signal attenuating means provided in a signal transmission line from said signal source to said band pass amplifier for attenuating said sound signal component, and for causing a group delay distortion to said chromaticity signal component passing therethrough, said elastic surface wave filter being provided with an nonuniform group delay characteristic which is symmetrical with a group delay characteristic given to said chromaticity signal component by said signal transmission line including said sound signal attenuating means and except for said elastic surface wave filter, whereby said signal transmission line including said elastic surface wave filter provides said chromaticity signal component with a uniform group delay characteristic.

4,212,030

BEAM INDEX COLOR CATHODE RAY TUBE

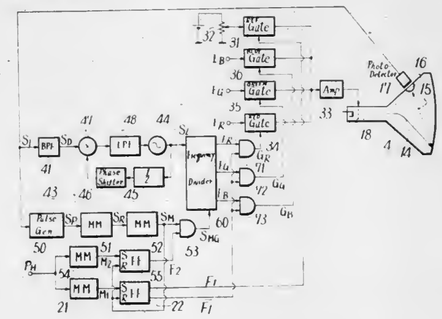
Akira Tooyama; Akio Ohkoshi, both of Tokyo; Takashi Tooyama, Kokubunji; Takahiro Yukawa, Tokyo, and Takashi Hosono, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 969,861

Claims priority, application Japan, Dec. 20, 1977, 52-153297

Int. Cl.[2] H04N *9/24*

U.S. Cl. 358—67 **21 Claims**



1. A cathode ray tube system comprising a cathode ray tube having means for forming an electron beam, means to vary the intensity of said electron beam, and a screen, said screen having an image area and a run-in area contiguous with an edge of said image area, said image area having a repetitive pattern of a plurality of groups of color phosphor elements arranged side-by-side with each element of each group producing light of a different color when excited, a first set of index stripes spaced apart in said image area in the direction in which said phosphor stripes are arranged side-by-side, a second set of index stripes in said run-in area, said first and second sets of index stripes having a pitch which is related to the pitch of said groups of color phosphor elements, means for applying to said intensity varying means a signal having variations indicative of desired variations of the response of said color phosphor elements, means for generating an index signal in response to the scanning by said electron beam of said second set of index stripes, at least one cycle of said index signal having a longer period than others thereof, means responsive to the longer period of said at least one cycle to synchronize the time-phase position of said means for varying the intensity of the beam at the beginning of the scanning of said image area of the screen by said beam.

4,212,031

METHOD OF ALIGNING A BODY

Alfons Schmitt, Talheim; Diether Utz, Öhringen, and Klaus Schäfer, Heilbronn, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

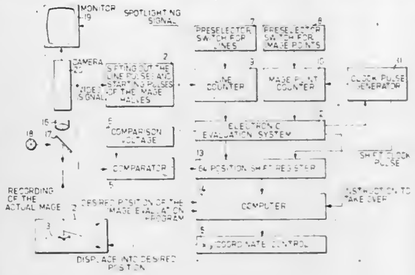
Filed Sep. 29, 1977, Ser. No. 837,890

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643809

Int. Cl.[2] G05D *3/00*

U.S. Cl. 358—101 **15 Claims**

1. A method of aligning a body in a desired position, comprising producing an image of the actual location of at least one alignment position of the body and breaking this actual location image down into image points the spacing of which is smaller than the required adjustment accuracy; digitalizing and storing the information content of these image points in a data processing system containing the desired location of the one



alignment position also stored in digitalized form; comparing the actual and desired locations of the one alignment position and calculating deviations therebetween; and displacing the body by the amount of the deviations with the aid of movement devices controlled by the data processing system.

4,212,032

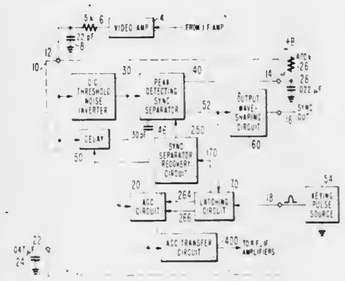
SYNCHRONIZATION AND GAIN CONTROL CIRCUIT

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,822

Int. Cl.[2] H04N *5/52*

U.S. Cl. 358—177 **8 Claims**



1. In a television receiver, apparatus comprising:

a source of video signals which may be contaminated with impulse noise, said video signals containing synchronizing signal components;

means coupled to said source of video signals for inverting the impulse noise in said video signals which exceeds a predetermined threshold level;

means coupled to said source of video signals for delaying said video signals;

means coupled to the output of said noise inverting means and the output of said delaying means for combining said delayed video signals with said inverted impulse noise to produce noise cancelled video signals;

peak detecting means direct current coupled to the output of said combining means for generating a reference voltage related to the synchronizing signal components of said noise cancelled video signals;

a comparator responsive to said noise cancelled video signals and said reference voltage for generating synchronizing signal pulses when the synchronizing signal compo-

nents of said video signals exceed said reference voltage level;

a source of recurrent pulses normally in a substantially constant phase relationship with said synchronizing signal pulses;

means direct current coupled to the output of said synchronizing signal generating means and responsive to said recurrent pulses for producing keying signals upon the coincidence of a synchronizing signal pulse and a recurrent pulse; and

automatic gain control means coupled to said source of video signals and responsive to said keying signals for producing an AGC control signal.

4,212,033

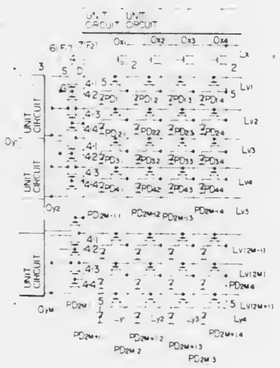
Patent Not Issued For This Number

4,212,034

SOLID-STATE IMAGE PICKUP DEVICE

Norio Kokie, Tokyo; Masaharu Kubo, and Shusaku Nagahara, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 8, 1978, Ser. No. 931,967
Claims priority, application Japan, Aug. 10, 1977, 52-95039
Int. Cl.[2] H04N *3/14*
U.S. Cl. 358—213 **5 Claims**



1. In an image pickup device having

a plurality of photoelectric conversion elements arranged in a two-dimensional pattern,

horizontal and vertical switching means for selectively energizing said photoelectric conversion elements, and

horizontal and vertical scanning means for controlling the respective horizontal and vertical switching means,

the improvement wherein said vertical scanning means comprises

means for selecting pairs of row lines and being composed of a unit circuit including four switches coupled to respective trios of said row lines and

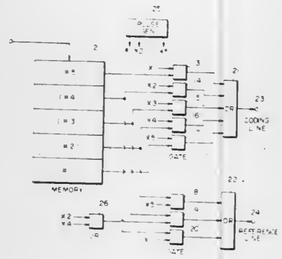
means for applying a first field change-over signal to two of said four switches and for applying a second change-over signal to the other two switches of said four switches.

4,212,035

FACSIMILE SIGNAL CODING SYSTEM

Yukio Nakagome, Yokohama; Hiroichi Teramura, Tokyo; Yasuhiro Yamazaki, Hiratsuka, and Yasushi Wakahara, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Jun. 7, 1978, Ser. No. 913,038
Claims priority, application Japan, Jun. 16, 1977, 52-70438
Int. Cl.[2] H04N *7/12*
U.S. Cl. 358—260 **3 Claims**



1. A facsimile signal coding system comprising:

input terminal means for receiving a facsimile signal to be coded;

group means connected to said input terminal means for dividing said input facsimile signal into a plurality of scanning groups each including a number of scanning lines;

coding means connected to said group means for coding each of said scanning line groups, so that a substantially central one of the scanning lines of each group is encoded by a coding method without referring to information of a scanning line adjacent to the central scanning line, so that information of the remaining lines above the central scanning line is sequentially encoded upwardly from the central scanning line using information of the just precedently encoded line as reference information for each scanning line to be coded, and so that information of the remaining lines below the central scanning line is sequentially encoded downwardly from the central scanning line using information of the just precedently encoded line as reference information for each scanning line to be coded; and

output terminal means connected to said coding means for obtaining the coded output of said facsimile signal.

4,212,036

METHOD FOR CODING ADDRESSES OF INFORMATION CHANGE PICTURE ELEMENTS IN FACSIMILE SIGNAL

Yukio Nakagome, Yokohama; Hiroichi Teramura, Tokyo; Yasuhiro Yamazaki, Hiratsuka, and Yasushi Wakahara, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Nov. 10, 1976, Ser. No. 740,716
Claims priority, application Japan, Nov. 10, 1975, 50-134978
Int. Cl.[2] H04N *1/40, 7/12*
U.S. Cl. 358—261 **2 Claims**

1. A method for coding addresses of information change picture elements each having information different from that of the immediately preceding picture element in a facsimile signal obtained by successively scanning an original picture, comprising steps of:

classifying said information change picture elements into deviation change points each having a high correlation to a final reference change point selected from coded information picture elements, and new change points each having substantially no correlation to the reference change point, said deviation change point being defined as a change point to be coded starting a run of one information type in an instant scanning line and having in an immediately preceding scanning line a run of the same information type overlying the run started by the deviation change point but which does not overlie a preceding run of the same information type in the instant scanning line;

receiving each of said deviation change points and coding the address of its final reference change point and the direction and length of each deviation of said deviation change points from the corresponding final reference change point; and

sixthly, checking further in the left direction from the final reference change point to a picture element just above a change point immediately preceding the instant change point to count the number of change points of the same change direction as the instant change point so as to obtain the address of the final reference change point;

seventhly, searching a change point on the reference scanning line in the scanning direction from a picture element just above the instant change point to a picture element just above a change point immediately succeeding the instant change point;

eightly, determining that the instant change point is not the deviation change point when no change point is found at the seventh step of searching;

ninethly, determining that the instant change point is the deviation change point when a change point is found at the seventh step of searching and then employing the found change point as the final reference change point; and

tenthly, skipping to the sixth step.

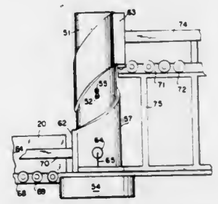
4,212,037

METHOD FOR SCANNING A CARD WITH VIDEO SIGNAL

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 665,281, Mar. 9, 1976, Pat. No. 4,084,198, which is a continuation-in-part of Ser. No. 458,879, Apr. 8, 1974, Pat. No. 3,943,563, which is a continuation-in-part of Ser. No. 286,056, Sep. 5, 1972, Pat. No. 3,803,350, which is a continuation-in-part of Ser. No. 83,239, Oct. 22, 1970, abandoned, which is a continuation of Ser. No. 807,877, Jun. 20, 1977, abandoned. This application Mar. 10, 1978, Ser. No. 885,264
The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.
Int. Cl.[2] H04N *5/78;* G11B *25/04*
U.S. Cl. 360—33 **8 Claims**





1. A method of transducing information with respect to a record card comprising:

feeding a magnetic record card containing image information recordings extending along parallel tracks of said card in a flat condition into a card reading device,

automatically arcuately deforming said record card as it is fed through said card reading device,

rotating a magnetic transducing means in a first direction against the surface of the arcuately deformed record card while effecting relative movement between said record card and said rotating transducing means in a second direction in a manner to cause said transducing means to scan consecutive record tracks of said record card which tracks extend transverse to the longitudinal axis of the card, and

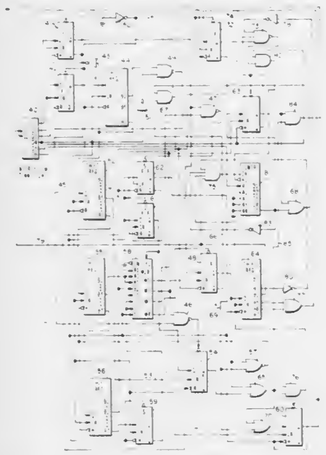
operating said magnetic transducing means as it scans selected tracks of said record card in a manner to cause said transducing means to generate signals on its output, which signals are representative of the recordings provide on the selected tracks so scanned to the exclusion of information recorded on the other tracks of the card and passing the signals generated in scanning said selected tracks to a signal processing means, and applying said signals to modulate an image generating means to generate an image representative of selected information recorded on said card.

4,212,038

DOUBLE DENSITY READ RECOVERY

Donald J. Rathbun, Andover, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 3, 1978, Ser. No. 866,441
Int. Cl.[2] H03K *13/24;* G11B *5/09*
U.S. Cl. 360—41 **3 Claims**



1. A logic read recovery system compatible with integrated circuit implementation and requiring no tuning adjustments for converting an MFM encoded information stream characterized by plural information bit cells received from a mass storage medium to an NRZ information stream for transfer through a data format unit to a mass storage controller, which comprises:

(a) bit cell access means in electrical communication with said storage medium for providing a plural information bit cell window for sensing said MFM information stream;

(b) multiplexer means receiving selected samples of said MFM information stream from said bit cell access means for supplying timing strobes to control the operation of said read recovery system;

(c) information identification means responsive to said multiplexer means and said bit cell access means for indicating the presence of clock bits, data bits and logic zero data in said MFM information stream;

(d) synchronization strobe generator means in electrical communication with said information identification means and said data format unit for removing an information bit cell from said bit access means upon the identification of a clock bit or a data bit in said information bit cell;

(e) address mark detection means in electrical communication with said multiplexer means, said bit cell access means and said strobe generator means for detecting an address mark indicating the presence of a data field in said MFM information stream and for inhibiting both the identification of clock bits and the transfer of NRZ information to said storage controller until after said address mark is detected; and

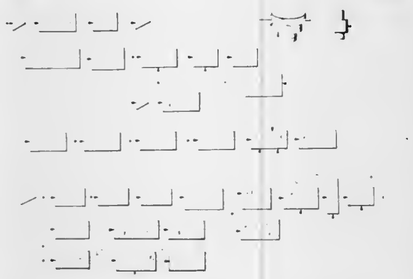
(f) NRZ conversion means in electrical communication with said information identification means and said address mark detection means and responsive to said strobe generator means for issuing a logic one level when a data bit is identified, and a logic zero level when either a clock bit or logic zero data is identified in said MFM information stream to form said NRZ information stream.

4,212,039

VTR TAPE DRIVE SYSTEM

Minoru Koda, Hirakata, Japan, assignor to Matsushita Electrical Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 733,936, Oct. 19, 1976, abandoned.
This application Jun. 12, 1978, Ser. No. 915,304
Claims priority, application Japan, Oct. 20, 1975, 50-126643
Int. Cl.[2] G11B *15/18*
U.S. Cl. 360—73 **3 Claims**



1. A tape driving system for a magnetic recording and reproducing apparatus in which a video signal is recorded intermittently by a rotary magnetic head and an audio signal is recorded continuously on a magnetic tape, respectively, said system comprising:

a brushless DC motor for moving the magnetic tape at various tape moving speeds and having a rotor, a stator core having main windings wound thereon and opposed to said rotor and a position detector for detecting the rotational position of said rotor and producing a rotor position signal;

a pulse generating means for generating a pulse signal;

an integrating circuit connected to said pulse generating means for producing a modified pulse signal from said pulse signal by slowing the rise time and the fall time of said pulse signal;

a driving source selecting means having a first input connected to said position detector, a second input connected to said integrating circuit and an output, for selectively connecting said rotor position signal or said modified pulse signal to said output thereof; and

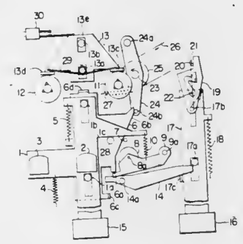
a current supply means connected to said output of said driving source selecting means and said brushless DC motor, for supplying current to said main windings of said brushless DC motor according to said signal supplied thereto by said output of said driving source selection means, whereby said brushless DC motor is driven as a conventional brushless DC motor in a high speed range of tape moving speeds when said rotor position signal is applied thereto and said brushless DC motor is driven as a pulse motor in a low speed range of tape moving speeds when said modified pulse signal is applied thereto, the highest speed in said low speed range being lower than the lowest speed in said high speed range.

4,212,040

TAPE RECORDER WITH SINGLE CONTROL ACTIVATING MEMBER

Masashi Yoshida, Nakaminato, and Yasuo Iino, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 10, 1978, Ser. No. 923,196
Claims priority, application Japan, Jul. 11, 1977, 52-82001; Sep. 30, 1977, 52-130545[U]
Int. Cl.[2] G11B *15/22, 5/54, 21/22*
U.S. Cl. 360—96.3 **2 Claims**



1. In a tape recorder of the type having a head base plate carrying at least one magnetic head mounted upon said head base plate and movable between a playback position and a stop position, said head base plate being urged toward the stop position by a first elastic member, a capstan for feeding the tape at fixed speed, a pinch roller arm rotatably supporting a pinch roller opposed to said capstan, a pair of reel mounts for taking up and supplying the tape respectively, a take-up arm rotatably supporting a take-up roller, and a brake plate for applying the braking force to said pair of reel mounts; the improvement comprising: a control board which is biased toward said playback position by a second elastic member connected between said control board and said head base plate, and which has a stopping member for defining a relative position of said control board with respect to said head base plate against said second elastic member, said control board and said head base plate being movable in a state maintaining said relative position when said control board moves toward said play back position, the control board itself being movable independently of said head base plate toward said stop position in opposition to the biasing of said second elastic member by an external operation after said control board has been located at said playback position, and said control board being a single member including a first control section coacting with said pinch roller arm to move said pinch roller arm toward and away from said capstan, a second control section coacting with said take-up arm to move said take-up arm toward and away from said take-up reel mount, and a third control section coacting with said brake plate to move said brake plate toward and away from said reel mounts.

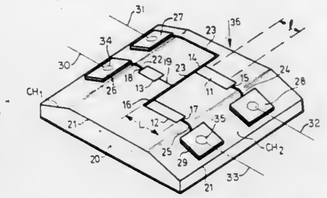
4,212,041

APPARATUS AND METHOD FOR REMOVING THE EFFECT OF INTERFERENCE MAGNETIC FIELDS IN A MAGNETIC TRANSDUCER DEVICE FOR DETECTING INFORMATION MAGNETICALLY CODED ON A CARRIER

Jean-Pierre Lazzari, Montfort-L'Amaury, and Michel Helle, Marcq, both of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France

Filed Apr. 24, 1978, Ser. No. 899,383
Claims priority, application France, Apr. 29, 1977, 77 13026
Int. Cl.[2] G11B *5/12, 5/20, 5/30*
U.S. Cl. 360—113 **25 Claims**

1. A magnetic transducer for detecting information magnetically coded on a carrier adapted to be passed in front of the transducer comprising a substrate, at least one magnetoresistive detecting element on said substrate having a surface parallel to the plane in which the carrier moves for detecting the information coded on the carrier; a magnetoresistive compensating element, said compensating element being positioned with respect to said detecting element such that said compensating element is not subject to the magnetic leakage field of said coded information as it passes in front of said transducer,



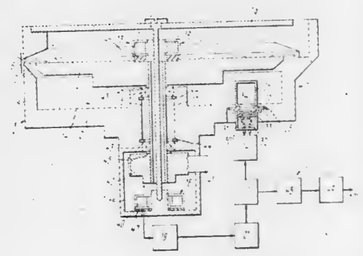
but is subject to the same interference magnetic fields as the detecting element and the voltages developed across the detecting and compensating elements in response to the effect on them of the interference magnetic fields is the same.

4,212,042

DEVICE FOR RECOVERING VIDEO INFORMATION FROM MAGNETIC TAPE

Alexandr G. Koshelev, Leninsky prospekt, 189, kv. 87; Svyatoslav D. Kretov, Leninsky prospekt, 153, kv. 59, and Konstantin A. Lavrentiev, ulitsa Kutsygina, 6, kv. 97, all of Voronezh, U.S.S.R.

Filed Dec. 19, 1978, Ser. No. 971,032
Claims priority, application U.S.S.R., Dec. 28, 1977, 2555851
Int. Cl.[2] G11B *5/52, 15/12*
U.S. Cl. 360—108 **7 Claims**



1. A device for recovering video information from magnetic tape comprising:

an assembly including magnetic heads and having a current-carrying casing formed with a bottom, walls and a cover, said magnetic heads being arranged within said casing in a manner allowing rotation and coupling thereof to said magnetic tape through a slot in one of said walls;

a hollow shaft secured to said current-carrying casing and mounting said magnetic heads;

a slip ring enclosed within said casing and having a rotor and stator each of which includes a closed core and a winding wound on said core, said winding of said rotor being electrically coupled to said magnetic heads;

a current-carrying element arranged within said shaft and connected to said bottom and said cover so that the current-carrying element, said cover, said walls and said bottom form a closed three-dimensional turn coupling said windings of said rotor and said stator;

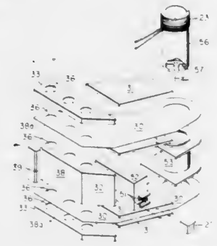
a step-up transformer electrically coupled to said winding of said stator;

a first reproduction signal correcting circuit electrically coupled to said step-up transformer;

a reproduction amplifier having an input and an output, said input being connected to the first reproduction signal correcting circuit;

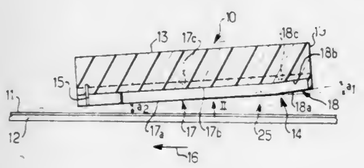
a second reproduction signal correcting circuit connected to said output of said reproduction amplifier;
a short-circuited turn consisting of a first and a second portion, the first portion of said turn being arranged within said current-carrying casing and the second portion thereof arranged beyond said current-carrying casing, said short-circuited turn being inductively coupled to the second reproduction signal correcting circuit and having a lower inductance as compared to the closed three-dimensional coupling turn;
a subsequent reproduction signal shaping channel having an input connected to the output of said reproduction amplifier.

4,212,043
MAGNETIC TRANSDUCING
Billy R. Baker, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Nov. 1, 1978, Ser. No. 956,777
Int. Cl.² G11B *5/48, 21/18, 21/24*
U.S. Cl. 360—104 **7 Claims**



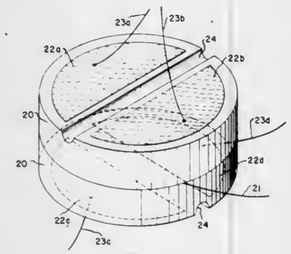
1. A mount for holding and varying the position of a magnetic transducing means, comprising:
a base defining a first pair of spaced-apart hinge positions;
a pair of leaf members having rigid body portions and terminating in a pair of first and a pair of second flexibly springily bending hinge portions, the first pair of hinge portions being fixed to said base at said hinge positions thereon; and
a link member defining a second pair of spaced-apart hinge positions, the second pair of hinge portions being fixed to said link member at said second hinge positions;
said transducing means being mounted on said mount remote from said base.

4,212,044
PLATFORM FOR MAGNETIC TRANSDUCERS HAVING DUST DIVERTER MEANS
Michel Plotto, Plaisir, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France
Filed Nov. 8, 1978, Ser. No. 958,840
Claims priority, application France, Nov. 18, 1977, 77 34801
Int. Cl.² G11B *5/60, 5/10, 17/32*
U.S. Cl. 360—103 **12 Claims**



1. In a transducer platform for reading and writing from and onto a data carrier adapted to be driven past the platform from front to rear along its lengthwise dimension, said platform having major face adapted to be disposed adjacent the data carrier, said major face including a plurality of skids including at least two symmetrically disposed outer skids defining the flight surface of the platform and at least one intermediate skid having a magnetic transducer including an air gap to enable data to be read from and written onto the data carrier by said transducer, said skids having a major dimension parallel to the lengthwise dimension of said platform and having a front edge and a rear edge, the rear edge corresponding to the rear of the platform with reference to the direction of movement of the data carrier the improvement comprising a diverter means having a leading pointed edge formed in the front of said at least one intermediate skid for forcing unwanted contaminant material to the side of the said intermediate skid and thus to minimize build-up of said material around the skid and adjacent the data carrier, said diverter means comprising a surface disposed at an angle with respect to the major dimension of said at least one skid, said magnetic transducer being disposed adjacent the trailing edge of said at least one intermediate skid.

4,212,045
MULTI-TERMINAL VARISTOR CONFIGURATION
Francois D. Martzloff, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 22, 1978, Ser. No. 972,448
Int. Cl.² H02H *1/04*
U.S. Cl. 361—127 **10 Claims**

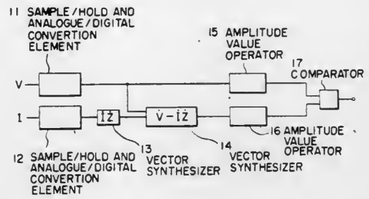


1. A metal oxide varistor especially for polyphase circuit protection comprising a pair of metal oxide varistor bodies having substantially the same dimensions, each of said bodies having a pair of parallel opposed faces, a first one of said faces on each said varistor body possessing an electrode contact covering substantially all of said first face, and a second one of said faces on each said varistor body possessing two spaced-apart, noncontacting electrode contacts, each covering substantially half of said second face, said pair of varistor bodies being attached so that said first faces are coincident and said electrodes on said first faces are in electrical contact.

4,212,046
DISTANCE RELAYING SYSTEMS
Fumio Andow, Hachioji; Tetsuo Matsushima, Takaido-Higashi, and Eiichi Okamoto, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha and Tokyo Denryoki Kabushiki Kaisha, both of, Japan
Filed May 9, 1978, Ser. No. 904,264
Claims priority, application Japan, May 16, 1977, 52-55418
Int. Cl.² H02H *3/38*
U.S. Cl. 361—80 **4 Claims**

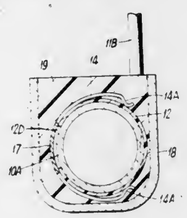
1. A digital distance relaying system, comprising first means for determining an alternating current quantity $\dot{V}-\dot{I}\dot{Z}$, where $\dot{V}$ and $\dot{I}$ represent voltage and current of an alternating current system and $\dot{Z}$ a vector, second means for determining the amplitude value of the voltage $\dot{V}$, third means for determining

the amplitude value of said alternating current quantity $V-IZ$, and fourth means for comparing the outputs of said second and



third means for determining the operating point of the relay system.

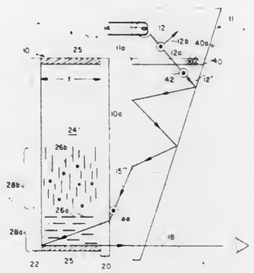
4,212,047
FAIL-SAFE/SURGE ARRESTER SYSTEMS
John Napiorkowski, Hempstead, N.Y., assignor to TII Corporation, Lindenhurst, N.Y.
Filed Aug. 31, 1976, Ser. No. 719,077
Int. Cl.² H02H *3/22*
U.S. Cl. 361—124 **22 Claims**



1. A fail-safe surge arrester system comprising:
(1) a gas filled housing including at least two electrodes defining an ionizable gap;
(2) short circuiting means biased toward a short circuit connection with said electrodes;
(3) fusible means in thermal contact with said gap and directly interposed between at least one of said electrodes and said short circuiting means, said fusible means comprising a plastic material having mechanical properties which change substantially under predetermined thermal conditions to prevent said short circuit connection at the fusible means except in the presence of a sustained overload causing said fusible means to fuse and yield to permit the establishment of said short circuit connection.

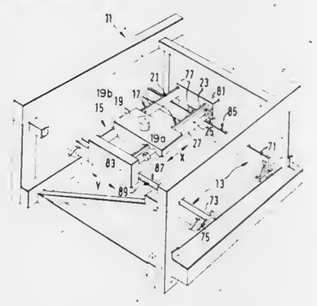
4,212,048
ILLUMINATOR FOR REFLECTIVE DICHROIC LIQUID CRYSTAL DISPLAYS
Donald E. Castleberry, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jun. 16, 1978, Ser. No. 916,137
Int. Cl.² F21V *9/14;* **G02F** *1/13;* **F21V** *7/00*
U.S. Cl. 362—19 **3 Claims**

1. An illuminator for a reflective dichroic liquid crystal display cell having a planar front surface of predetermined length, said illuminator comprising:
a wedge of light transmissive material having a rear surface disposed adjacent and substantially parallel to, and of length greater than and overlying the length of, the planar front surface of said display cell;
means disposed within the thicker end of said wedge illuminator member for emitting light rays with random polarization and ramdom emission direction;
said randomly-emitted light rays emerging from said wedge illuminator member rear surface at random distances along the length thereof and obliquely entering the front surface of said display cell; and
means positioned within a portion of said thicker member end so as to avoid interference with light reflected from the said display cell front surface for polarizing the light



rays emitted from said wedge illuminator to have a polization vector parallel to the plane of said display front surface, to enhance the contrast ratio between light reflected from areas of said display cell respectivey substantially reflecting and substantially absorbing said rays.

4,212,049
GUIDEO CARRIAGE ASSEMBLY FOR PHOTODRAFTING EQUIPMENT
Geoffrey D. Maskens, Sturminster Marshall, England, assignor to Quest Automation Limited, Dorset, England
Filed Sep. 26, 1977, Ser. No. 836,826
Claims priority, application United Kingdom, Sep. 28, 1976, 40195/76
Int. Cl.² A61G *13/00*
U.S. Cl. 362—33 **8 Claims**



1. Photodrafting equipment comprising a guided carriage assembly having a carriage, photo-projection means on said carriage, and guide means for supporting the carriage for linear movement of the carriage and photo-projection means relative to said guide means, the guide means comprising first, second and third individual support members fixed to a base structure and presenting respective straight edges extending in one direction, and the carriage comprising bearing means for bearing on the said straight edges to support the carriage and to track therealong on movement the carriage in the said direction, the carriage being arranged for the bearing means to bear on the first straight edge at first and second spaced points with the lines of the reaction forces exerted thereat lying in a first plane parallel with the said direction, to bear on the second straight edge at third and fourth spaced points with the lines of the reaction forces exerted thereat lying in a second plane parallel with the said direction, the second plane being inclined to the first plane, and to bear on the third straight edge at a fifth point

with the line of the reaction force exerted thereat lying in a plane parallel with the said direction, the third plane being spaced from the line of intersection of the first and second planes.

4,212,050

SWINGABLE SEARCHLIGHT FOR VEHICLES, ESPECIALLY PASSENGER VEHICLES

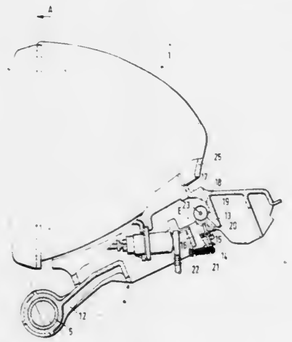
Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 10, 1978, Ser. No. 876,946

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1977, 2708374

Int. Cl.² B60Q *1/06*

U.S. Cl. 362—65 **14 Claims**



1. A retractable searchlight for vehicles which is movable from a working position to a retracted position comprising:

(a) at least one searchlight;

(b) a drive shaft and an operating device cooperating therewith for causing rotation of said shaft; and

(c) a supporting device for supporting said searchlight upon said shaft, said supporting device comprising at least two members a first of which is secured to the shaft for movement therewith and the second of which is connected to said searchlight and is mounted so as to be displaceable relative to said shaft, disengagement means between said first and second members for enabling said second member connected to said searchlight to be displaced with said first member between said working and retracted positions during normal operation and for disengaging said first member from said second member when said searchlight encounters a resistance, whereby continued movement of said searchlight is interrupted.

4,212,051

ANTI-ROTATIONAL LAMP ASSEMBLY

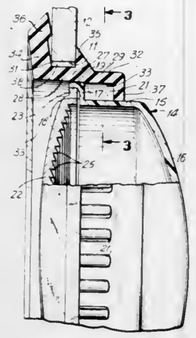
George J. Kulik, Valley Stream, N.Y., assignor to Abex Corporation, New York, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,930

Int. Cl.² F21V *21/14*

U.S. Cl. 362—287 **10 Claims**

1. An anti-rotational vehicle lamp assembly for mounting in an opening in a wall comprising a substantially cylindrical elastomeric grommet having a front end and a back end and an opening therethrough, said grommet formed with a substantially cylindrical side wall adapted to be secured within a substantially circular opening in said wall, and a lamp housing formed from substantially cylindrical side wall and a lens forming the front surface of said housing, said housing formed with a plurality of radial ribs about the circumference of said housing side wall for compressively engaging the inner surface of said grommet side wall, the outside diameter of said housing



along said ribs being greater than the inside diameter of said grommet side wall.

4,212,052

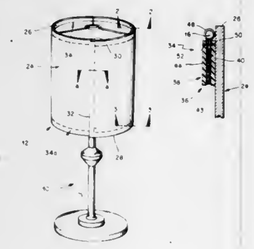
ASSEMBLABLE AND DISASSEMBLABLE LAMP SHADE

Carol K. Chambard, 301 N. Walker Ave., Wayzata, Minn. 55391

Filed Jul. 26, 1978, Ser. No. 928,319

Int. Cl.² F21V *1/06*

U.S. Cl. 362—352 **9 Claims**



1. An assemblable and disassemblable lamp shade comprising a sheet of flexible material having at least one edge, a first pile-type fastener tape having its back side secured to one side of said sheet adjacent said one edge thereof, a second pile-type fastener tape releasably engageable with said first pile-type fastener tape, and foldable means connected to and extending between adjacent edges of said pile-type fastener tapes, whereby said foldable means can be looped inwardly about a conventional lamp shade ring and said second pile-type fastener tape releasably engaged at said one side with said first pile-type fastener tape.

4,212,053

D.C. TO D.C. CONVERTER UTILIZING RESONANT INDUCTOR TO NEUTRALIZE CAPACITIVE LOSSES

James Sichenzia, Massapequa Park, N.Y., assignor to Venus Scientific Inc., Farmingdale, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,284

Int. Cl.² H02M *1/14*

U.S. Cl. 363—39 **9 Claims**

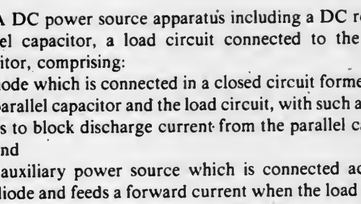
1. A d-c to d-c converter comprising:

a d-c power source;

a step-up transformer having a primary winding, a secondary winding, and a core;

means for applying said d-c power source to said primary winding in such a manner that the polarity of a flux induced in said core by said d-c source reverses at a predetermined frequency equal to twice the operating frequency of the transformer;

a-c to d-c convertor means coupling said secondary winding to a load, said a-c to d-c convertor means being for converting an a-c signal appearing across said secondary winding into a d-c signal; and



said means for applying said d-c power source to said primary winding including an inductor which forms, at said operating frequency of said transformer, a resonant circuit solely with the equivalent Thevenin capacitive reactance appearing across said primary winding.

4,212,054

DC POWER SOURCE

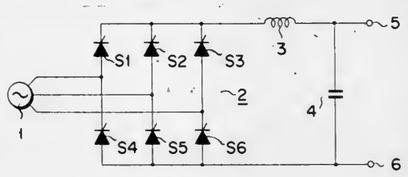
Nagataka Seki, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1978, Ser. No. 973,561

Claims priority, application Japan, Dec. 27, 1977, 52-156469; Mar. 30, 1978, 53-37072

Int. Cl.² H02M *1/18*

U.S. Cl. 363—53 **9 Claims**



1. A DC power source apparatus including a DC reactor, a parallel capacitor, a load circuit connected to the parallel capacitor, comprising:

a diode which is connected in a closed circuit formed by the parallel capacitor and the load circuit, with such a polarity as to block discharge current from the parallel capacitor; and

an auxiliary power source which is connected across the diode and feeds a forward current when the load circuit is in a normal condition and makes the DC output of the DC power source flow into the load circuit, and which further includes a voltage detector connected to the closed circuit formed by the parallel capacitor, the load circuit and the diode, thereby detecting an abnormal condition of the load circuit and shutting off the load current flowing in said diode on the basis of the detected output.

4,212,055

CONTROL FOR AN INVERTER STATION

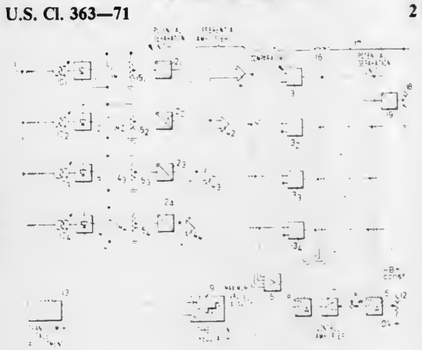
Johann Podlewski, Berlin, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,113

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736540

Int. Cl.² H02M *7/00*

U.S. Cl. 363—71 **2 Claims**



1. A method for matching the control arrangement for the direct voltage of an inverter station to the control path, in which the inverter station includes a plurality of thyristor bridges which are connected in series at their direct voltage side and connected to a three-phase mains via a plurality of variable ratio transformers each individually associated with a respective thyristor bridge, a plurality of extinction angle circuits each associated with a respective thyristor bridge, and a total control circuit for controlling the voltage of all thyristor bridges together, the control circuit providing an output corresponding to the direct voltage of the inverter station and responding to a setting value representative of the transformer stage adjustment which operates in synchronism for all thyristor bridges, said method comprising: comparing a measured value which corresponds to the direct bridge voltage of each thyristor bridge with the instantaneous maximum value of the measured values for all thyristor bridges; and, whenever a measured value differs from the maximum value by more than a predetermined amount, instantaneously switching off the respective thyristor bridge and correspondingly matching the control value for the transformer stage adjustment and the circuit gain of the total control circuit.

4,212,056

INVERTER APPARATUS

Hiroyuki Kitamura, Yokohama; Yorio Hosokawa, and Katsumi Fukasawa, both of Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 18, 1978, Ser. No. 943,458

Claims priority, application Japan, Sep. 20, 1977, 52-112795

Int. Cl.² H02P *13/20, 5/40*

U.S. Cl. 363—96 **12 Claims**

1. In an inverter apparatus of the type comprising a plurality of first controlled semiconductor elements connected between a direct current source and an alternating current load, a control circuit for sequentially turning ON and OFF said first controlled semiconductor elements according to a predetermined sequence to convert direct current into alternating current, and a reverse bias circuit including a pair of second controlled semiconductor elements respectively connected in series with said direct current source and ON.OFF controlled by said control circuit for applying a reverse bias to said first controlled semiconductor elements to effect simultaneous commutation thereof, and a pair of diodes connected across

said direct current source, and a third controlled semiconductor element connected between said first and second semiconductor elements and turned ON at the time of commutation of said first controlled semiconductor elements by said control circuit, and a reactor connected in parallel with said third controlled semiconductor element, said control circuit comprising:

means for forming a frequency signal having a frequency related to an operating frequency of said inverter apparatus,

means responsive to said frequency signal for generating a plurality of control signals having a predetermined phase difference and conduction intervals related to the ON-OFF operation of said first controlled semiconductor elements,

a commutation synchronizing signal generator responsive to said frequency signal,



a delay circuit connected between said first controlled semiconductor elements and said control signal generating means for delaying said control signals in response to the output of said commutation synchronizing signal generator thereby turning ON and OFF said first controlled semiconductor elements in accordance with a predetermined sequence,

a pulse width modulation signal generator controlled by a predetermined instruction signal to produce a pulse width modulated signal,

means responsive to an inverted output of said commutation synchronizing signal generator and said pulse width modulated signal for controlling one of said second controlled semiconductor elements,

means responsive to the inverted output of said commutation synchronizing signal generator for controlling the other of said second controlled semiconductor elements, and

means responsive to said frequency signal for controlling said third controlled semiconductor element.

4,212,057

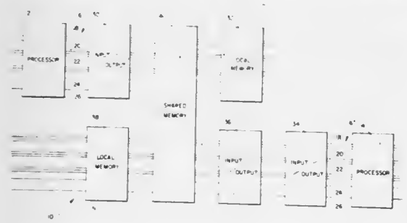
SHARED MEMORY MULTI-MICROPROCESSOR COMPUTER SYSTEM

Charles L. Devlin, Ballston Lake, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 22, 1976, Ser. No. 679,408

Int. Cl.[2] **G06F** *15/16, 13/00, 9/18*

U.S. Cl. 364—200 **9 Claims**



1. A microcomputer system of the type including at least two processors each configured to operate substantially independent of the remaining processors and each having an address bus, an input data bus and an output data bus, said system comprising:

a shared memory having an address bus, an input data bus and an output data bus for receiving on said input data bus and to, and, transmitting on said output data bus from, storage digital control, program and data information from and to any one of said processors; and

a single control means connected to said memory and to each of said substantially independent processors for selectively connecting the respective address, input data and output data buses of said memory to the respective address, input data and output data buses of a selected one of said processors in response to a request for memory access received by said control means from said processors, said control means including at least first, second and third sets of buffers respectively for connecting the address, input data and output data buses of said memory to the corresponding address, input data and output data buses of a selected processor sending a request for memory access; means for recognizing predetermined patterns of address bits appearing at said single control means on said address buses of said at least two processors for generating one of a plurality of logic signals each associated with a corresponding processor addressing said memory; and means receiving the logic signals from said address bits recognizing means for enabling said first, second and third sets of buffers to connect the buses of said memory to the associated busses of the requesting processor if a single memory access request is received by said control means and for enabling said first, second and third sets of buffers to connect the buses of said memory to the associated buses of the last processor previously having access to said memory, at any time prior to the present request for access and without consideration of the length of time any other processor has been waiting for access to said memory, if a request for memory access is received by said address bits recognizing means substantially simultaneously from each of at least two of said processors, after an access to said memory by one of said processors is completed.

4,212,058

COMPUTER STORE MECHANISM

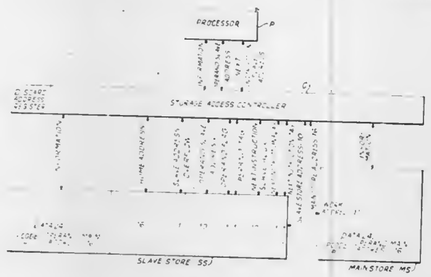
Jaya A. Gunawardena, Peradeniya, Sri Lanka, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 726,162, Sep. 24, 1976, abandoned. This application Sep. 20, 1977, Ser. No. 834,872

Claims priority, application United Kingdom, Sep. 27, 1975, 39647/75

Int. Cl.[2] **G11C** *9/00;* **G06F** *13/00*

U.S. Cl. 364—200 **13 Claims**



8. A method of accessing information in a computer system having two levels of memory, one level comprising a main store and the other level comprising a slave store of faster operating speed than said main store and having a lesser number of addresses than said main store, each word in said slave store including a main field of the same size as a word of main store and a subsidiary field capable of containing at least one slave store address, there being provided (i) a storage access controller coupled to said main store and said slave store and including a discard address register for storing the address in said slave store into which the next transfer from said main store is to be inserted by said storage access controller, and (ii) validation means coupled to said slave store and said discard address register, the method comprising:

(a) transferring each of a plurality of words from a respective address in said main store to said main field of a respective address in said slave store determined by the discard address register under the control of said storage access controller, at least one of said words being an instruction and at least another of said words being data, previous words held in said slave store being discarded if necessary on a first-in-first-out basis;

(b) entering the slave store address of data required by said instruction into the subsidiary field of the slave store address of said instruction under the control of said storage access controller; and

(c) prior to execution of said instruction, comparing, in said validation means, the content of the subsidiary field of the slave store address of said instruction with the content of said discard address register to determine whether said data required by said instruction has been overwritten by another word from said main store since the slave store address of said data was written into the subsidiary field of the slave store address of said instruction.

4,212,059

INFORMATION PROCESSING SYSTEM

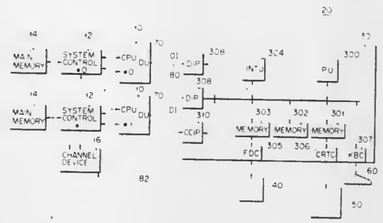
Fumitaka Sato, Oume; Masahiko Iwane, Tokyo, and Masaki Murayama, Fussa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Mar. 14, 1978, Ser. No. 886,598

Claims priority, application Japan, Mar. 14, 1977, 52-27788; Mar. 15, 1977, 52-28428; Mar. 15, 1977, 52-28429

Int. Cl.[2] **G06F** *11/00*

U.S. Cl. 364—200 **21 Claims**



1. An information processing system comprising:

external processor means capable of issuing diagnostic commands;

a central processing unit including a control store storing microprograms including a plurality of microinstructions, an interface connected to said external processor means, a microinstruction register for storing microinstructions received from said control store or from said external processor means through said interface, a circuit for processing microinstructions stored in said microinstruction register, and a diagnostic unit for processing a diagnostic command received from said external processor means through said interface; and

said diagnostic unit comprising means for writing a microinstruction received from said external processor means directly into said microinstruction register in response to said diagnostic command, means for causing said circuit to execute the microinstruction stored in said microinstruction register, and means for reading out the execution results generated by said circuit.

4,212,060

METHOD AND APPARATUS FOR CONTROLLING THE SEQUENCE OF INSTRUCTIONS IN STORED-PROGRAM COMPUTERS

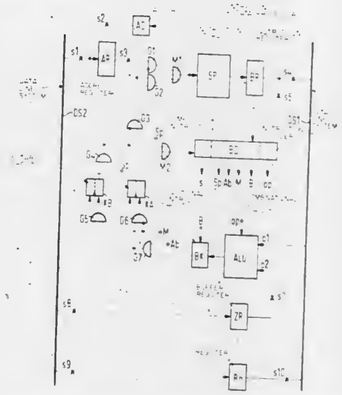
Gerhard Prey, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 681,057, Apr. 28, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 941,155

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1975, 2519395

Int. Cl.[2] **G06F** *9/00*

U.S. Cl. 364—200 **3 Claims**



1. In a program controlled data processing system, a control unit for controlling the instruction sequence in said data processing system, said control unit having an instruction storage unit for storing instructions, said control unit comprising:

instruction decoding means coupled to said instruction storage unit for decoding the instructions received from the instruction storage unit to generate control signals;

execution means coupled to said instruction decoding means for executing the instructions in accordance with the control signals;

checking means for determining the presence or absence of a prespecified condition in response to the decoding of an interrogation instruction by said instruction decoding means;

first and second bistable circuits;

first setting means responsive to the decoding of a control mark in the interrogation instruction by said instruction decoding means and the presence or absence of the prespecified condition for setting said first bistable circuit;

second setting means responsive to the decoding of the control mark in the interrogation instruction by said instruction decoding means and the presence or absence of the prespecified condition for setting said second bistable circuit;

first blocking means connected to said instruction decoding means and responsive to the setting of said first bistable circuit for preventing the execution of the next instruction in the instruction sequence by suppressing the control signals generated by said instruction decoding means; and

second blocking means connected to said instruction decoding means and responsive to the setting of said second bistable circuit together with the occurrence of a jump instruction signal Sp being read out of said instruction storage unit for preventing execution of the next following jump instruction in the instruction sequence by suppressing the control signals generated by said instruction decoding means for the next following jump instruction, said second blocking means including gate means connected to said instruction storage unit for preventing the instruction storage unit from receiving the branch address associated with the next jump instruction in response to the setting of

said second bistable circuit and the occurrence of a jump instruction signal Sp.

4,212,061

RADIATION SIGNAL PROCESSING SYSTEM

Glenn F. Knoll, Ann Arbor; Donald R. Strange, Howell, and Matthew C. Bennett, Jr., Ann Arbor, all of Mich., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 21, 1977, Ser. No. 862,889
Int. Cl.[2] G06F *7/38;* **G01T** *1/20*
U.S. Cl. 364—414 **18 Claims**



1. An improved signal processing system for radiation imaging apparatus, comprising:

a radiation transducer producing transducer signals proportional to apparent orthogonal spatial coordinates of detected radiation events;

means for storing true spatial coordinates corresponding to a plurality of predetermined apparent spatial coordinates relative to selected detected radiation events said means for storing responsive to said transducer signal and producing an output signal representative of said true spatial coordinates; and

means for interpolating the true spatial coordinates of the detected radiation events located intermediate the stored true spatial coordinates, said means for interpolating communicating with said means for storing

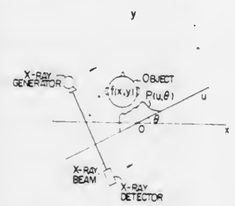
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4,212,062

TOMOGRAPHIC IMAGING SYSTEM

Hideki Kohno, Tokyo; Hidemi Shiono, Akikawa; Chitose Nakaya, Hachioji; Kensuke Sekihara, Sakamachi; Teruichi Tomura, Kunitachi; Shinji Yamamoto; Takayuki Hayakawa, both of Hachioji; Isao Horiba, and Shigenobu Yanaka, both of Kashiwa, all of Japan, assignors to Hitachi Medical Corporation, Japan

Filed Jun. 27, 1978, Ser. No. 919,627
Claims priority, application Japan, Oct. 21, 1977, 52-126490
Int. Cl.[2] G01N *23/04;* **G06F** *15/34*
U.S. Cl. 364—414 **3 Claims**



1. A tomographic imaging system comprising:

irradiating means for irradiating a cross-section of an object under consideration with radiation rays from plural directions;

detector means for detecting the radiation rays transmitted through the cross-section of said object to produce an output signal;

first memory means for storing the output signal of said detector means; and

an image reconstructing section for performing a convolution integral operation on the contents of said first memory means by means of a first weighting function to reconstruct a three-dimensional image of the cross-section of said object, said image reconstructing section including (i) second memory means for storing a second weighting function, said second weighting function being provided with a predetermined positive and negative (N−1)th order when the output signal of said detector means produced by the irradiation of the cross-section of said object from one of said plural directions is sampled by N points, the value of the (N−1)th order of said second weighting function being an integration of said first weighting function from the (N−1)th order to positive infinity and the value of −(N−1)th order of said second weighting function being an integration of said first weighting function from the −(N−1)th order to negative infinity, (ii) control means for successively reading out the contents of said first and second memory means, and (iii) operational means for performing multiplying and summing operations on the read-out contents of said first and second memory means, said operational means producing the product of the values of the (N−1)th and −(N−1)th orders of said second weighting function and a component of the output signal of said detector means relating to the radiation rays free from the absorption thereof by said object.

4,212,063

APPARATUS FOR MEASURING THE ACTION OF FORCES BETWEEN WHEELED VEHICLES AND SUBSTRUCTURE

Ragnar M. Härdmark, Linköping, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Sep. 6, 1978, Ser. No. 940,038
Int. Cl.[2] G01N *19/02*
U.S. Cl. 364—426 **9 Claims**



1. An apparatus incorporated in a wheeled motor vehicle for measuring and indicating coefficient of friction values for driving and braking vehicles on a substructure, said measuring apparatus comprising:

at least one control panel, arranged in the vehicle, with a plurality of control means for selection and control of a measuring sequence;

at least one measuring wheel pivotally mounted in the vehicle so as to be raisable and lowerable to engage and disengage said substructure, said wheel engaging the substructure at least during said measuring sequence, and said wheel rotating when engaged with said substructure with an amount of slip relative the speed of the wheeled vehicle;

at least one force measuring transducer mounted to said vehicle including means for sensing the forces and/or torque acting on the measuring wheel and generating signals corresponding thereto;

at least one vehicle speed measuring transducer mounted to the vehicle including means for sensing the speed of the vehicle and generating a pulsed signal corresponding thereto;

at least one electronic unit including a memory for storing a plurality of preset measuring distances, said unit being mounted to the vehicle, and further including means for receiving and processing signals generated by said force measuring transducers and said speed measuring transducers, and in response thereto transmitting output signals to a plurality of instruments displaying the measuring results; and

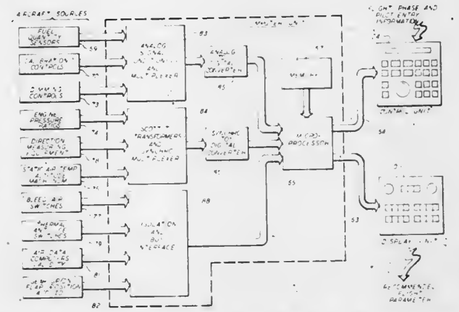
a plurality of controls mounted to said vehicle including means for selecting measuring distances of different length, each control triggering, when actuated, the switching in circuit of a first signal value preselected to represent the measuring distance in question in said memory, said electronic unit including means for comparing said first signal with a second signal value generated by summing up signal pulses generated by said vehicle speed transducer and representing the distance travelled by the vehicle during said measuring sequence, and wherein said electronic unit also includes means for triggering discontinuation of said measuring sequence when said first and second signal values are equal.

4,212,064

PERFORMANCE ADVISORY SYSTEM

Arthur M. Forsythe, Shelburne; James H. Anapol, and Zygmund Reich, both of Burlington, all of Vt., assignors to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Apr. 5, 1977, Ser. No. 784,819
Int. Cl.[2] G06F *15/00*
U.S. Cl. 364—424 **22 Claims**



1. A performance advisory system for use in optimizing aircraft performance comprising:

(a) a display unit for displaying to the pilot recommended flight parameters;

(b) a control unit including means for selecting a mode of aircraft operation for which recommended flight parameters are required;

(c) means for converting and multiplexing inputs from aircraft sources indicating actual operating parameters, which inputs comprise a plurality of inputs in analog form, another plurality in analog synchro form and further plurality in digital form comprising:

(i) an analog multiplexer having a plurality of data inputs and a single data output and an address input, said analog parameters being coupled to the data inputs of said analog multiplexer;

(ii) an analog to digital converter having its input coupled to the data output of said analog multiplexer;

(iii) a random access memory having a data input, a data output and an address input the data input of said random access memory coupled to the output of said digital to analog converter and the data output of said memory coupled to said computing means; and

(iv) a cyclic address generator for cyclically addressing each of the inputs to said analog multiplexer having an output coupled to both said analog multiplexer address input and said random access memory address input, whereby the data present at the data inputs to said analog multiplexer will be successively loaded into locations of said random access memory; and

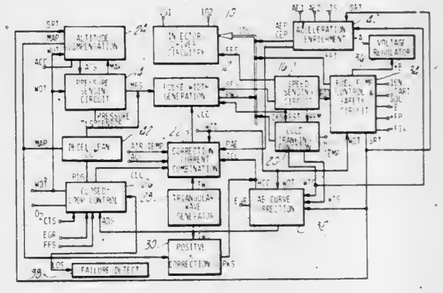
(d) computing means including at least a central processing unit and a fixed program memory having as inputs the outputs from said control unit indicating the mode of operation and said digital information, for solving the flight equations for the aircraft on which said system is installed, said computing means providing recommended flight parameters as outputs which are coupled to said display unit.

4,212,065

ALTITUDE COMPENSATION FEATURE FOR ELECTRONIC FUEL MANAGEMENT SYSTEMS

Roman O. Marchak, Northville; William A. Peterson, Jr., Rochester, both of Mich., and Ralph W. Carp, Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 917,992
Int. Cl.[2] F02M *7/00;* **G06F** *15/46*
U.S. Cl. 364—431 **10 Claims**



1. An electronic control unit for the management of the air/fuel ratio of an internal combustion engine, said electronic control unit comprising:

base calibration means for regulating the air/fuel ratio of the engine in response to sensed engine operating parameters indicative o the mass air flow and mass fuel flow inducted into the engine, said base calibration means regulating the air/fuel ratio by sensing one of said mass air flow and said mass fuel flow and calculating the other from a schedule of desired air/fuel ratios, said schedule including a manifold absolute pressure schedule with a power enrichment breakpoint beyond which the air/fuel ratio is decreased more rapidly for increases in manifold absolute pressure than below said breakpoint; and

altitude compensation means for correcting said air/fuel ratio for changes in air density occuring at different altitudes including,

power enrichment means for lowering the power enrichment breakpoint of the manifold absolute pressure schedule to lower manifold absolute pressure values for increases in altitude; and

altitude offset means for enrichment of the manifold absolute pressure schedule at all values for increases in altitude.

4,212,066

HYBRID ELECTRONIC CONTROL UNIT FOR FUEL MANAGEMENT SYSTEMS

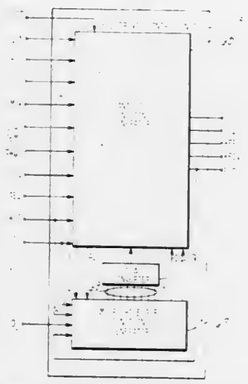
Ralph W. Carp; Harold E. Weissler, II, and Paul R. Kudlaty, all of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 918,306
Int. Cl.[2] F02M *7/00;* **G06F** *15/46*
U.S. Cl. 364—431 **14 Claims**

1. A hybrid electronic control unit for the management of the air/fuel ratio of an internal combustion engine, said electronic control unit comprising:

an analog function generator for receiving a plurality of inputs representative of various operating parameters and conditions of the engine and for outputting analog control

signals for controlling the air/fuel ratio of the engine, said analog function generator including a pulse which width generation means for generating a repetitive pulse width signal, wherein said signal is developed at a frequency dependent upon the speed of the engine and with duration indicative of air/fuel ratio, wherein said pulse width generation means regulates the duration of each pulse from the time elapsed by a variable ramp signal traversing from an initial level to a terminating level, and wherein said initial and terminating levels are a function of at least one operating parameter of the engine;



a digital function generator for receiving a plurality of inputs representative of various operating parameters and conditions of the engine and for outputting digital control signals to said analog function generator; and

a D/A converter for converting at least one of said digital control signals to an analog control signal,

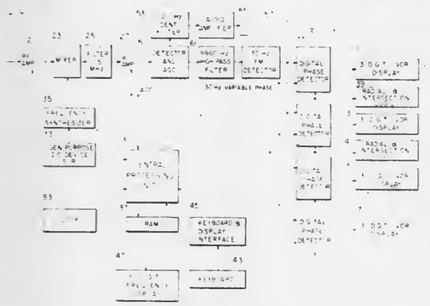
said digital function generator communicating with said analog function generator via said converted control signal and uncoverted digital control signals, wherein said converted control signal varies said ramp signal to modulate the duration of the pulse width signal.

4,212,067

NAVIGATING DEVICE

Claude L. Henderson, Indianapolis, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed Jul. 20, 1978, Ser. No. 926,544
Int. Cl.² G01S *11/00*
U.S. Cl. 364—460 **31 Claims**



1. A radio navigation device comprising:

a plurality of display units for continuously providing simultaneous visible bearing indications relative to a plurality of geographically separated radio navigation facilities;

a single radio frequency receiver selectively operable at each of a plurality of different receiving frequencies corresponding to different radio navigation facilities; and

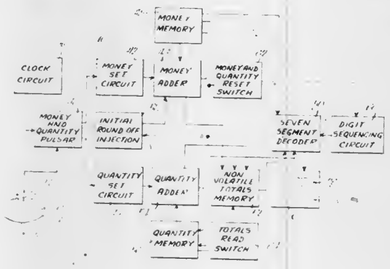
means for repetitively sequencing the receiver between different receiving frequencies at a rate sufficient to maintain a substantially continuously updated display for each bearing indication.

4,212,068

SYSTEM FOR CALCULATING AND DISPLAYING SALES INFORMATION

Clifton A. Hoyt, P.O. Box 1280 Star Rte., Solon Springs, Wis. 54873

Filed Jun. 3, 1977, Ser. No. 803,346
Int. Cl.² G06F *15/56*; B67D *5/08*
U.S. Cl. 364—465 **11 Claims**



1. A system for calculating and displaying the quantity and cost of dispensed quantities of a flowing liquid comprising:

detecting means for detecting the passing of a predetermined quantity of liquid;

means responsive to the detecting means for providing a first signal each time the predetermined quantity of liquid is detected;

means responsive to the first signal for generating a second signal representative of a desired incremental value of the quantity of the liquid each time the first signal is received;

means responsive to the first signal for generating a third signal representative of a desired cost of the liquid per incremental value of the quantity of the liquid;

means for storing the second and third signals;

means for adding the stored second and third signals with subsequently received second and third signals to provide updated second and third signals;

display means including a visual display section having a plurality of digits for displaying cost, and a visual display section having a plurality of digits for displaying quantity;

means for converting the updated second and third signals into a display of quantity and cost in said display means;

means for resetting the system after dispensing a desired quantity of liquid;

nonvolatile core memory means responsive to the resetting means for accumulating and storing the updated second and third signals each time the system is reset to provide a totals signal for the quantity and cost of all quantities of liquid dispensed; and

means for causing said totals signal to be displayed by said display means.

4,212,069

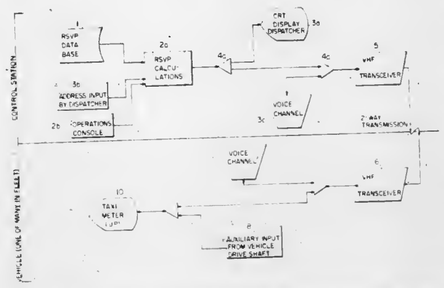
PARATRANSIT FARE COMPUTATION AND DISPATCHING METHOD

Dwight M. Baumann, 4516 Henry St., Pittsburgh, Pa. 15213

Continuation-in-part of Ser. No. 719,118, Aug. 31, 1976, abandoned. This application Jun. 6, 1978, Ser. No. 913,248
Int. Cl.² G06F *15/56*; G08G *1/12*
U.S. Cl. 364—467 **8 Claims**

1. A method of paratransit fare computation and dispatching, that comprises, storing at a station information in a computer relating to routes and distances between street addresses and historical data as to time for normal transit therebetween

under different times of day and traffic conditions; peripherally interfacing with the station through communication links with moving vehicles; communicating pick-up and deposit addresses along such links to the station from each vehicle for each hire thereof; calculating fares and estimating times of



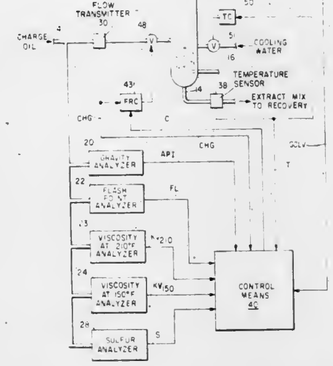
transit using said stored information; transmitting along said links, said calculated fares and estimated times of transit selectively addressed to the corresponding vehicle; and receiving and automatically displaying said transmitted fares and times at the respective vehicles.

4,212,070

CONTROL SYSTEM FOR A FURFURAL REFINING UNIT RECEIVING HEAVY SWEET CHARGE OIL

Avilino Sequeira, Jr.; John D. Begnaud, and Frank L. Barger, all of Port Arthur, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 851,912, Nov. 16, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,908
Int. Cl.² G06G *7/58*; C10G *21/00*
U.S. Cl. 364—500 **8 Claims**



1. A control system for a furfural refining unit receiving heavy sweet charge oil and furfural solvent, one of which is maintained at a fixed rate while the flow rate of the other is controlled by the control system, wherein the system treats the received heavy sweet charge oil with the received furfural to yield extract mix and raffinate, comprising gravity analyzer means for sampling the heavy sweet charge oil and providing a signal API corresponding to the API gravity of the heavy sweet charge oil, flash point analyzer means for sampling the heavy sweet charge oil and providing a signal FL corresponding to the flash point temperature of the heavy sweet charge oil, viscosity analyzer means for sampling the heavy sweet charge oil and providing signals KV_{150} and KV_{210} corresponding to the kinematic viscosities, corrected to 150° F. and 210° F., respectively, sulfur analyzer means for sampling the heavy sweet charge oil and providing a signal S corresponding to the sulfur content of the heavy sweet charge oil, flow rate sensing means for sensing the flow rates of the heavy sweet charge oil and of the furfural and providing signals CHG and SOLV, corresponding to the charge oil flow rate and the furfural flow rate, respectively, temperature sensing means sensing the temperature of the extract mix and providing a corresponding signal T, and control means connected to all of the analyzer means, and to all the sensing means for controlling the other flow rate of the heavy sweet charge oil and the furfural flow rates in accordance with signals API, FL, KV_{150}, KV_{210}, S, T, CHG and SOLV; wherein said control means includes VI signal means connected to the viscosity analyzer means for providing a signal VI corresponding to the viscosity index of the heavy sweet charge oil in accordance with the kinematic viscosity signals KV_{150} and KV_{210}; SUS_{210} signal means connected to the viscosity analyzer means for providing a signal SUS_{210} corresponding to the heavy sweet charge oil viscosity in Saybolt Universal Seconds corrected to 210° F.; W signal means connected to the viscosity analyzer means, to the gravity analyzer means and to the sulfur analyzer means for providing a signal W corresponding to the wax content of the heavy sweet charge oil in accordance with signals KV_{210}, API and S; A signal means connected to the gravity analyzer means, to the viscosity analyzer means, to the sulfur analyzer means, to the flash point temperature analyzer means and to the VI signal means for providing a signal A corresponding to an interim factor A in accordance with signals KV_{210}, S, API, VI and FL; ΔVI signal means connected to the viscosity analyzer means, to the gravity analyzer means, to the flash point temperature analyzer means, to the VI signal means, the W signal means and the SUS_{210} signal means and receiving a DC voltage VI_{RP} for providing a signal ΔVI corresponding to the change in viscosity index in accordance with signals KV_{210}, API, VI, FL, W and SUS_{210} and voltage VI_{RP}, J signal means receiving direct current voltages C_{80} through C_{83} and being connected to ΔVI signal means, to the A signal means, to the temperature sensing means for providing a J signal corresponding to a furfural dosage for heavy sweet charge oil in accordance with the ΔVI signal, signals A and T, voltages C_{80} through C_{83} and the following equation:

$$J=(\Delta VI-C_{80}-C_{81}\sqrt{T})/[-C_{82}T+C_{83}(A)(T)],$$

where C_{80} through C_{83} are constants; control signal means connected to the J signal means and to the flow rate sensing means for providing a control signal in accordance with the J signal and one of the sensed flow rate signals, and apparatus means connected to the control signal means for controlling the one flow rate of the heavy sweet charge oil and furfural flow rates in accordance with the control signal.

4,212,071

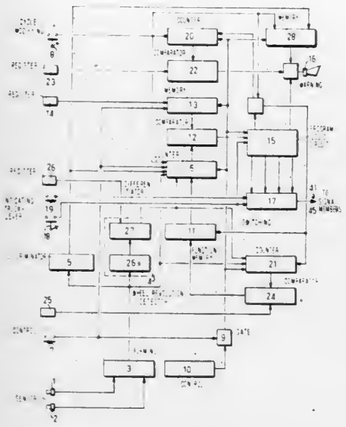
METHOD AND DEVICE FOR DRIVING A COMPACTION MACHINE

Pierre Dortu, Paris, France, assignor to Travaux et Produits Routiers Societe a Responsabilite Limitee, Paris, France

Filed Aug. 2, 1978, Ser. No. 930,211
Claims priority, application France, Aug. 2, 1977, 77 23699
Int. Cl.² G06F *15/50*
U.S. Cl. 364—505 **12 Claims**

1. Method for driving a compaction machine over an area of ground, said method comprising: causing the machine to perform a certain number of passages to and fro in said area, preparing a program beforehand comprising the appropriate number of to and fro passages, as well as the length of each of them, recording said program, detecting the movements of the machine in one direction and in the other, comparing the movements of the machine with those provided by the program and transmitting signals, such as optical or sound signals, to inform the driver of the operation to follow, and when a length equal to the length provided in the program has been

traversed in one direction or in the other in the course of a round-trip, recording the length traversed by the machine beyond the length provided by the program until it is stopped



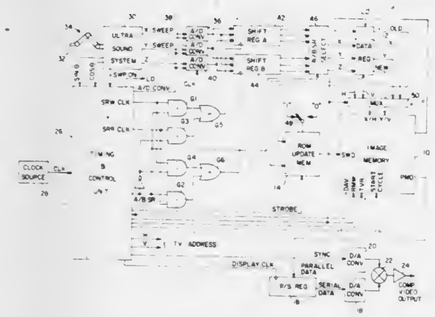
to change direction of operation, and therefrom increasing the path to be traversed in the opposite direction by a length equal to the thus recorded length.

4,212,072

DIGITAL SCAN CONVERTER WITH PROGRAMMABLE TRANSFER FUNCTION

Kenneth A. Huelsman, Carlsbad, and Allen A. Harano, Oceanside, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 7, 1978, Ser. No. 884,327
Int. Cl.² G06F *15/20*; H04N *5/14*
U.S. Cl. 364—515 **6 Claims**



1. A method for processing video data in digital form, and storing it in an image memory for subsequent display, where the video data is developed by repeated scans and presented in the form of scan signals defining scan coordinates of picture elements, and a pixel value for each picture element, the steps of

reading out of said image memory pixel values at locations corresponding to said scan coordinates,

providing an updated value for each new pixel value to be stored in said image memory from a set in an update memory as a function of (1) at least one old pixel value read out of said image memory at a location to be updated as defined by said scan coordinates, and (2) a new pixel value for the corresponding scan coordinates, said set having an appropriate updated value for every combination of an old pixel value and a new pixel value stored in an update memory location defined by a composite word including the combination of the old and new pixel values and at least one additional bit of greater significance,

selecting said at least one additional bit as a "1" or a "0" to provide for addressing one of said at least two parts of said update memory as a function of said old and new pixel values, each part having a different set of updated pixel values representing a selected transfer function,

receiving said old pixel value from said image memory and a new pixel value, forming said composite word with said at least one additional bit for addressing said update memory, and reading out an updated pixel value, and

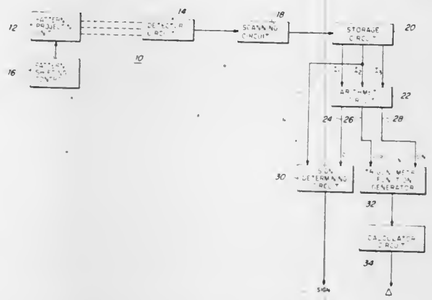
storing said updated pixel value in said image memory at a location addressed by said scan coordinates corresponding to said new pixel value and previously used to address said image memory to read out said old pixel value.

4,212,073

METHOD AND SYSTEM FOR SURFACE CONTOURING

N. Balasubramanian, 22908 Cricket Hill Rd., Cupertino, Calif. 95014

Filed Dec. 13, 1978, Ser. No. 969,241
Int. Cl.² G01B *11/24*
U.S. Cl. 364—562 **14 Claims**



1. A surface contouring system comprising:

means for projecting a sinusoidal pattern on a surface to be tested;

means for shifting the pattern in three steps at one quarter period intervals of the sinusoidal pattern;

mask means containing the same sinusoidal pattern;

at least one detector for sensing, through said mask means, the intensity of the radiation from the test surface;

means for scanning each said detector at each step to obtain from each detector a signal representative of the level of intensity at each detector;

means for storing each intensity level derived from each detector at each of said steps;

means responsive to said storing means for determining the d.c. spatial frequency amplitude from the sum of the intensity levels derived from the first and third steps; for determining the cosinusoidal spatial frequency amplitude from the difference between the intensity levels derived from the first and third steps and for determining the sinusoidal spatial frequency amplitude and intensity level derived from the second step;

means for combining said sinusoidal and cosinusoidal spatial frequency amplitudes to generate an amplitude representative of a trigonometric function of the phase angle of the radiation from the test surface; and

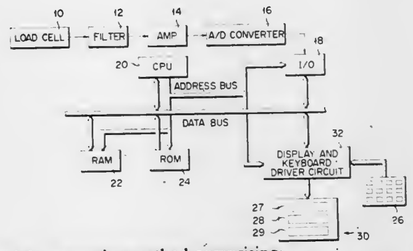
means, responsive to said amplitude representative of a trigonometric function of the phase angle, for generating an output representative of the height of the test surface at each position monitored by a said detector.

4,212,074

WEIGHT MEASURING METHOD AND APPARATUS THEREOF

Shiro Kuno, and Yoshiharu Nishimura, both of Mishima, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1978, Ser. No. 927,938
Claims priority, application Japan, Jul. 29, 1977, 52-91966
Int. Cl.² G06F *9/16, 15/20*; G01G *7/00*
U.S. Cl. 364—567 **21 Claims**



1. A weight measuring method comprising:

a first step of sensing the weight to be measured and successively generating a digital data signal corresponding to the weight to be measured;

a second step of reading out the generated digital data signal at different timings and successively writing the same into a first memory;

a third step of comparing N (integer larger than 3) digital data corresponding to N digital data signals successively stored in said first memory;

a fourth step of, when it is detected (where M is an integer greater than 1 but less than N) that more than (M-1) number/of digital data in said N digital data have the same value, writing the digital data having the same value into a second memory;

a fifth step of writing into said second memory the latest one of the digital data stored in said first memory when it is detected that the number of digital data having the same value fails to reach M; and

a sixth step of reading out the digital data stored in said second memory as weight indication data.

4,212,075

ELECTRICAL COMPONENT TESTING SYSTEM FOR COMPONENT INSERTION MACHINE

Gerald W. Cleversey, Topsfield; Robert J. Duncan, Magnolia; George H. Medidge, Jr., North Andover, and Jean A. Fleming, South Hamilton, all of Mass., assignors to USM Corporation, Farmington, Conn.

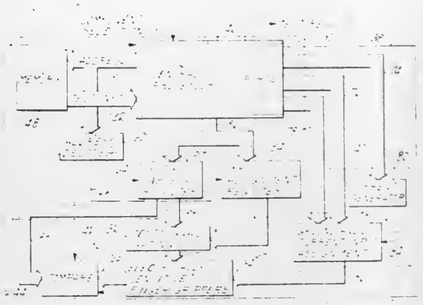
Filed Oct. 10, 1978, Ser. No. 950,056
Int. Cl.² G06F *11/00*
U.S. Cl. 364—580 **33 Claims**

1. A system for testing components that are to be automatically inserted by a component insertion machine, said system comprising:

means, within the automatic control portion of said component insertion machine, for automatically identifying each component that is to be inserted by said component insertion machine;

means, responsive to the identification of a component that is to be inserted, for automatically selecting at least one test for each such identified component;

means, responsive to the automatic selection of a test, for applying at least one signal to an identified input on the component; and



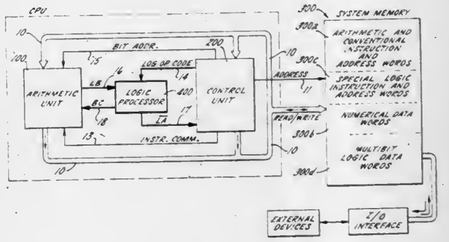
means for comparing the response of the component under test with an expected result.

4,212,076

DIGITAL COMPUTER STRUCTURE PROVIDING ARITHMETIC AND BOOLEAN LOGIC OPERATIONS, THE LATTER CONTROLLING THE FORMER

John P. Conners, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Sep. 24, 1976, Ser. No. 726,277
Int. Cl.² G06F *9/06*
U.S. Cl. 364—706 **35 Claims**



1. In a digital computer, the combination comprising

(a) a basic arithmetic system including

(a1) a read/write system memory adapted to hold mutli-bit words at a plurality of address locations,

(i) some of said words representing coded instructions and addresses,

(ii) some of said words representing data, and

(iii) some of said instruction-address words being of special code format to represent a logic instruction, a bit address, and a memory address,

(a2) an arithmetic unit having multi-bit inputs and outputs,

(a3) a bus between said system memory and said arithmetic unit, and

(a4) a control unit including means for producing successive operational sequences which include

(i) fetching an instruction/address word from memory,

(ii) feeding from memory to the arithmetic unit the operand represented by the address portion of the fetched word, and

(iii) executing the function represented by the instruction portion of the fetched word,

(b) a one-bit logic processor responsive to various logic operation codes to perform different functional operations upon a bistate input signal (LB) fed thereto,

(c) said control unit (a4) further including means responsive to a special instruction word fetched from memory for

(i) transmitting from the operand fed to said arithmetic

unit, as an input signal to said logic processor, the particular bit which corresponds to the bit address portion of the fetched word, and

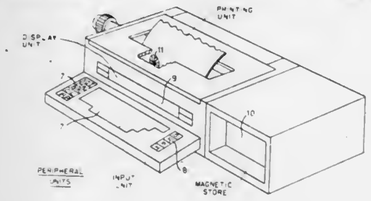
(ii) actuating said logic processor (b) to execute the function represented by the logic instruction portion of the fetched word.

4,212,077

TEXT PROCESSING SYSTEM FOR DISPLAYING AND EDITING A LINE OF TEXT

Vittore Vittorelli, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Irea, Italy

Filed Sep. 8, 1977, Ser. No. 831,530
Claims priority, application Italy, Sep. 22, 1976, 69270 A/76
Int. Cl.² G06F *3/02, 3/10, 3/14*
U.S. Cl. 364—900 **18 Claims**



1. A text processing system comprising:

manual input means responsive to an operator for entering text information, including alphanumeric characters such as space and hyphen characters, and format information, including printing line length, right hand margin and right hand margin zone length for a line of text, in the system;

storage means including recording means for recording and reading information on a recording medium;

printing means for printing lines of text according to the text and format information entered by said manual input means;

a display unit having the capacity of displaying at least a portion of a line of text; and

a control unit including:

mode selecting means for selectively defining a record mode and a print mode of operation for the system;

storage control means operative in the record mode of operation for controlling said storage means to record the information entered by said manual input means on said recording medium of said recording means, on a line by line basis;

temporary storage means operative in the print mode of operation upon entry of the format information for temporarily storing a line of text;

read out means connected to said storage means and said temporary storage means for reading out text information from said recording medium and transferring the text information to said temporary storage means;

searching means, operative in the print mode of operation when the length of the line of text temporarily stored in said temporary storage means is greater than the printing line length entered by said manual input means, for searching for a space or hyphen character stored in the right hand margin zone of the line of text stored in said temporary storage means;

insertion means operative in the event said searching means does not find a space or hyphen character in the right hand margin zone of the line of text for automatically inserting a hyphen character in a predetermined position in the right hand margin zone of the line of text stored in said temporary storage means;

display control means for controlling said display unit to display at least the alphanumeric characters stored in said temporary storage means in the right hand margin zone of the line of text;

first manually operable means responsive to the operator and connected to said temporary storage means for altering the position in said temporary storage means of the inserted hyphen character within the right hand margin zone of the line of text;

actuating means responsive to each operation of said first manually operable means for actuating said display control means to control said display unit to thereby display the right hand margin zone of the line of text stored in said temporary storage means;

second manually operable means for enabling the operator to confirm the acceptance of the displayed position of the hyphen character; and

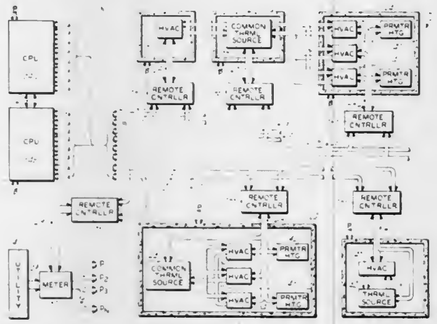
print control means for controlling said printing means to print at least a portion of the line of text stored in said temporary storage means up to and including the hyphen character in the event either said searching means finds a space or hyphen in the right hand margin zone of the line of text or the operator confirms the position of the hyphen character with said second manually operable means.

4,212,078

COMPUTER CONTROLLED FACILITY MANAGEMENT SYSTEM (FMS)

John E. Games, Granby; Richard E. Rosien, Windsor, and William W. Bitterli, Simsbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,557
Int. Cl.² G06F *3/04, 15/46;* **H04Q** *9/00*
U.S. Cl. 364—900 **4 Claims**



1. Apparatus for controlling the operation of an environmental conditioning system (ECS) of the type which regulates environmental conditions of a space in dependence on the actual value of output parameters provided by one or more controlled devices therein in response to corresponding parameter control signals presented to each, comprising:

plurality of sensor means disposed in the ECS, one or more associated with each controlled device for providing sensed actual value output parameter signals from the associated controlled device;

plurality of control interface means, one associated with each controlled device, each adapted for providing in response to closed loop signals presented thereto the corresponding parameter control signal to the associated controlled device;

remote processor unit (RPU) means, having RPU input means and RPU output means and having RPU memory means for storing signals, said remote processor unit means being responsive at said RPU input means to said sensed actual value parameter signals presented thereto from said plurality of sensor means and to controlled device reference parameter signals for each controlled device presented thereto from a central processor unit means, said RPU input means having means for successively sampling, and registering in said RPU memory means, successively sampled values of said sensed actual

value parameter signals and said controlled device reference parameter signals presented thereto, said RPU output means being connected to each of said control interface means, said remote processor unit means comparing said sensed actual value parameter signals registered therein for each controlled device with the controlled device reference parameter signal registered therein for the same controlled device for providing through said RPU output means to the associated one of said control interface means said closed loop signal at a magnitude in dependence on a difference value therebetween; and

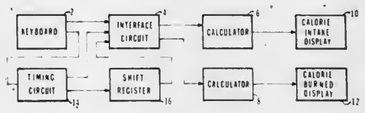
central processor unit (CPU) means, having CPU input means connected for response to said RPU output means and CPU output means connected for response to said RPU input means, and having CPU memory means for storing signals including a plurality of ECS reference signals for the ECS, said CPU input means having means for sampling, and registering in said CPU memory means, signals presented thereto including said sensed data signals registered in said RPU memory means which are presented to said CPU input means in response to command signals provided by said central processor means to said remote processor means, said central processor means comparing said sensed actual value parameter signals for each controlled device with one or more of said plurality of ECS reference signals for providing said controlled device reference parameter signals to said remote processor means at a magnitude equal to a difference value therebetween.

4,212,079

ELECTRONIC CALORIE COUNTER

Richard B. Segar, Largo, Md., and Lewis C. Marascalco, Pittsburgh, Pa., assignors to GPD, Inc., Mitchellville, Md.

Filed May 18, 1978, Ser. No. 907,338
Int. Cl.² G06M *3/08*
U.S. Cl. 364—900 **10 Claims**



1. A calorie monitoring device comprising:

(a) first input means for receiving an input indicative of calorie intake said first input means including a keyboard;

(b) interface means;

(c) first calculator means coupled to said first input means by said interface means, said first calculator means comprising:

(i) first display means for displaying the calorie intake;

(ii) first storage means for storing the value of calorie intake;

(iii) first adder means for adding the input of said input means to the value in said first storage means, wherein the sum replaces the value in said storage means and is displayed on said display means;

(d) second input means for receiving an input indicative of calories burned per unit of time said second input means including said keyboard;

(e) timing circuit means coupled between said second input means and said interface means;

(f) second calculator means coupled to said second input means and said timing circuit means by said interface means, said second calculator means comprising:

(i) second display means for displaying the value of calories burned;

(ii) second storage means for storing the input to said second input means and the total value of calories burned; and

(iii) adder means for adding the value of the input of said second input means to the total value of the calories burned at predetermined intervals as determined by said timing circuit means, wherein the sum replaces the total value of the calories burned in said storage means and is displayed on said display means; and

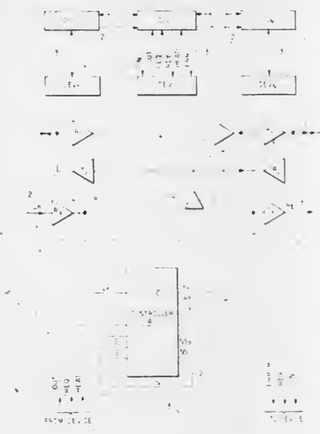
(g) a mode switch means coupled between said keyboard and said interface means for operably coupling said keyboard to one of said first or second calculator means through said interface means and for disabling the other of said first or second calculator means through said interface means.

4,212,080

DATA TRANSMISSION CONTROL SYSTEM

Walter C. Milliken, 8 Evans Dr., Dover, N.H. 03820

Filed Jun. 5, 1978, Ser. No. 912,871
Int. Cl.² G06F *3/04;* **H04Q** *9/00*
U.S. Cl. 364—900 **10 Claims**



1. A data communication system comprising:

a plurality of control units each one of which includes means for transmitting and receiving data;

a communication bus, having a head end and a tail end, interconnecting said control units in series and including a bidirectional data signal path and a single unidirectional control signal path;

a plurality of devices each one of which is adapted for either or both transmitting or receiving data;

an interface signal bus corresponding to each one of said devices operatively connecting each corresponding device to a corresponding one of said control units;

wherein at least one of said control units includes means for activating a control signal and unidirectionally propagating said control signal toward the tail end of said communications bus via said control signal path; and wherein

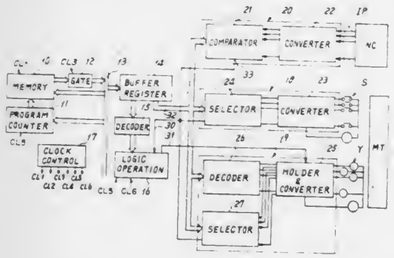
each of said control units includes selectable means for unidirectionally propagating said control signal toward the tail end of said communications bus via said control signal path, and means responsive to the active state of said control signal and independent of any other signal on said communications bus for enabling its corresponding device to transmit data.

4,212,081

PROGRAMMABLE SEQUENCE CONTROLLER WITH AUXILIARY FUNCTION DECODING CIRCUIT

Isao Suzuki, Okazaki; Toshihiko Yomogida, Kariya, and Sadamu Kato, Takahama, all of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha, Aichi, Japan

Filed Jul. 10, 1978, Ser. No. 923,205
Claims priority, application Japan, Jul. 29, 1977, 52-91584
Int. Cl.[2] G05B *19/28;* G06F *3/00*
U.S. Cl. 364—900 6 Claims



1. A programmable sequence controller comprising: memory means for storing a sequence program including a train of instructions identified respectively by memory addresses thereof, each of said instructions having command information and address information therein;

an input circuit operatively connected to a plurality of addressed external input devices for converting states of said external input devices into logical values;

an output circuit operatively connected to a plurality of addressed external output devices to be energized or deenergized;

a logic operation circuit operatively connected to said memory means and to said input and output circuits for examining a logical value of one of said external input devices specified by the address information of one of said instructions based upon command information of said one instruction;

means for reading out the sequence program from said memory means and feeding command information to said logic operation circuit and address information to said input and output circuits, said output circuit being operable to energize or deenergize one of said addressed external output devices in response to an output of said logic operation circuit;

means for timing the operations of said memory means, logic operation circuit and reading out means;

said memory means further storing an auxiliary function decoding program comprising command information and address information;

a comparator circuit capable of a simultaneous comparison of a plurality of bits and operatively connected to an external numerical control device to receive auxiliary function data therefrom and connected to receive address information of said decoding program for comparing the auxiliary function data with the address information of said decoding program;

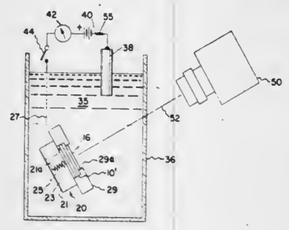
said logic operation circuit being further operatively connected to said comparator circuit to examine the comparison result of said comparator circuit based upon command information of said decoding program, whereby the auxiliary function data is decoded.

4,212,082

METHOD FOR FABRICATION OF IMPROVED STORAGE TARGET AND TARGET PRODUCED THEREBY

William D. Barber, Ballston Lake, and George E. Possin, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 21, 1978, Ser. No. 898,620
Int. Cl.[2] G11C *13/02;* C25D *11/32*
U.S. Cl. 365—118 15 Claims



1. A method for fabricating a charge-storage target, comprising the steps of:

(a) providing a target of silicon semiconductor material of a first polarity-type;

(b) fabricating a semiconductor layer of silicon of an opposite polarity-type, upon a surface of the semiconductor substrate;

(c) providing an electrolyte initially in contact with a portion of the surface of said semiconductor layer, opposite said substrate, upon which an anodic oxide layer is to be grown and thence in contact with the surface of said anodic oxide during growth;

(d) selecting the electrolyte to be one of diethylene glycol, HNO_3, and a mixture of potassium nitrate and N-methylacetamide;

(e) providing a cathode at least partially immersed in the electrolyte;

(f) providing an anode contact to the semiconductor substrate;

(g) utilizing a final anodizing potential of at least 200 volts to cause a flow of current from the anode connection through the electrolyte to the cathode to anodize the surface of the semiconductor layer, opposite the junction between the semiconductor layer and substrate and form a layer of anodic silicon oxide thereon; and

(h) fabricating a layer of conductive material upon the surface of the anodic silicon oxide.

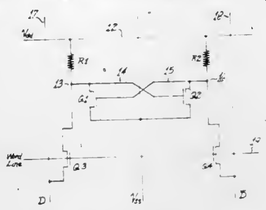
4,212,083

MOS INTEGRATED WITH IMPLANTED RESISTOR ELEMENTS

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 691,252, May 28, 1976. This application Aug. 18, 1978, Ser. No. 934,931
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—154 6 Claims

3. An integrated semiconductor device including a buried resistor comprising: an active circuit element formed in a face of a semiconductor body and including regions of doped semiconductor material in said face; a layer of thick, thermally grown field oxide surrounding said regions on said face, said layer extending into the face having a thickness not substantially less than the depth of said regions; and a resistor element comprising lightly-doped semiconductor material of conductivity-type opposite that of material immediately thereunder, said layer of field oxide overlying said resistor element; one



end of the resistor element being connected to one of said regions.

4,212,084

BEAM-FORMER FOR FFT-BASED SIGNAL PROCESSOR

Lynn A. Poole, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 20, 1978, Ser. No. 962,538
Int. Cl.[2] G01S *3/80*
U.S. Cl. 367—118 24 Claims

10. A beam-forming signal processor for use with a Fast Fourier Transform circuit in a sonar system comprising:

an array of pressure sensors forming a series of rows and columns;

a plurality of compression means;

a plurality of coupling means including a coupler for each row and for each column in said array of pressure sensors for coupling the analytical sum of the outputs from the sensors in that row of column to a different one of said plurality of compression means, said couplers at least partially weighting said signals with respect to each other to form a desired beam shape;

means for sampling and digitizing different ones of said compressed signals at predetermined times in relation to each other to thereby impart an appropriate time shift to the compressed signals in relation to each other so that the direction of maximum sensitivity of the beam to be formed by processing these signals is tilted, said sampling and digitizing means including an analog-to-digital converter for each one of said compression means;

means for decompressing said time shifted signals;

means for accumulating the decompressed signals originating from a plurality of said couplings means; and

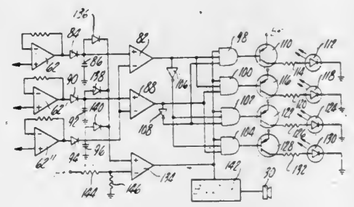
means for applying the signal from said accumulating means representing one sample of a tilted sensitivity pattern to said Fast Fourier Transform circuit.

4,212,085

FREQUENCY ACTIVATED DIRECTION INDICATOR

Mary C. Vaillancour, 99 Cherry Hill Dr., Davison, Mich. 48423, and Bruce L. Miller, Davison, Mich., assignors to Mary C. Vaillancour, Flint, Mich.

Filed Dec. 8, 1976, Ser. No. 748,642
Int. Cl.[2] G01S *3/80*
U.S. Cl. 367—124 8 Claims



6. In combination with an automotive vehicle having a front, a rear, a right side and left side, said vehicle having a longitudinal axis passing through said front and rear and a transverse axis, normal to said longitudinal axis passing through said right and left sides, an emergency vehicle direction indicator, comprising at least

first sound amplifier means disposed to preferentially receive incident sound waves originating to the right of said vehicle along said transverse axis, said first sound amplifier generating a first output signal having a value proportional to the incident sound waves having frequencies above a predetermined frequency;

second sound amplifier means disposed to preferentially receive incident sound waves originating to the left of said vehicle along said transverse axis, said second sound amplifier means generating second output signal having a value proportional to the incident sound waves having frequencies above said same predetermined frequency;

third sound amplifier means disposed to preferentially receive incident sound waves originating from a direction along said longitudinal axis, said third sound amplifier means generating a third output signal having a value proportional to the incident sound waves having frequencies above said same predetermined frequency; and

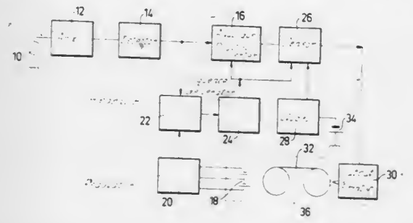
first comparator means receiving said first and third output signals for generating a first compared signal indicative of the value of said first output signal being greater than said third output signal and a second compared signal indicative of the value of said third output signal having a value greater than said first output signal;

second comparator means receiving said second and third output signals for generating a third compared signal when the value of said second output signal is greater than the value of said third output signal and a fourth compared signal when the value of said third output signal is greater than the value of said second output signal;

logic means having four outputs, each of said outputs indicative a predetermined direction, said logic means generating a signal on one of said outputs in response to said first, second, third and fourth compared signals;

visual indicator means connected to each of the four outputs of said logic means for generating a visual signal indicative of the direction from which said sound waves are originating in response to the signal generated by said logic means.

4,212,086
MEASURING AND RECORDING DEVICE FOR MONITORING VIBRATIONS CAUSED BY BLASTING
Lars Stenling, Märsta, Sweden, assignor to Nitro Consult AB, Sweden
Filed Jan. 30, 1978, Ser. No. 873,261
Claims priority, application Sweden, Feb. 3, 1977, 7701217
Int. Cl.[2] G01V 1/16; G01D 9/28
U.S. Cl. 367—178 8 Claims



1. In a measuring and recording device having at least one transducer in an input circuit and set to detect vibrations, whereby mechanical movement detected by said transducer is converted into electric signals, which, after further processing in the input circuit, are transmitted to an analog/digital converter so designed that it and a time signaling circuit may be read by a sensor to permit the recording on a recording medium of the information embodied in the processed signals received from said input circuit, a further circuit comprising

a regulated voltage source and a voltage comparator unit connected in series between said input circuit and said analog/digital converter so that the voltage source supplies energy continuously to the input circuit, and to the voltage comparator unit only, and

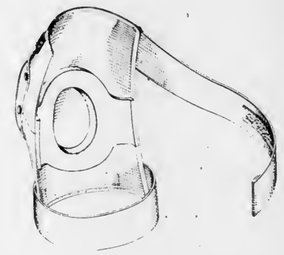
a sequence generator having an input connected to the output of said comparator unit, and an output connected to said converter and to said sensor,

said comparator unit being connected to said output circuit and being operative, upon receiving from said input circuit a processed signal of a magnitude exceeding a pre-set threshold value, to trigger the regulated voltage source so that the latter intermittently powers said sequence generator, which functions to activate and control both said analog/digital converter and said sensor.

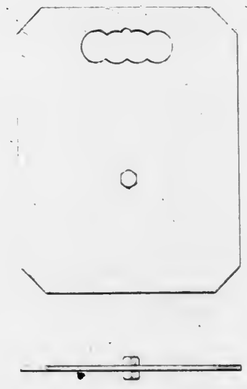
DESIGNS

JULY 8, 1980

255,728
PROTECTOR
John D. Baron, 2040 Ocean Front, Del Mar, Calif. 92014
Filed May 12, 1978, Ser. No. 905,187
Term of patent 14 years
Int. Cl. D2—02
U.S. Cl. D2—27



255,730
SAW BLADE CARRIER
Frederick L. McLean, 670 Van Buren Ave., St. Paul, Minn. 55104
Filed Feb. 24, 1978, Ser. No. 881,077
Term of patent 14 years
Int. Cl. D3—02
U.S. Cl. D3—30



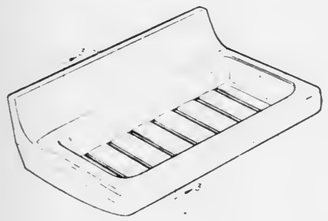
255,729
BOLA TIE
Glenda Harriman, 520 N. 72nd Pl., Scottsdale, Ariz. 85257
Filed Oct. 5, 1977, Ser. No. 839,643
Term of patent 14 years
Int. Cl. D2—05
U.S. Cl. D2—352



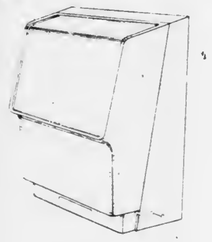
255,731
LOUNGE SEAT OR SIMILAR ARTICLE
Robert J. Marks, 9350 SW. 106th St., Miami, Fla. 33157
Filed Aug. 12, 1977, Ser. No. 823,966
Term of patent 14 years
Int. Cl. D6—01
U.S. Cl. D6—63



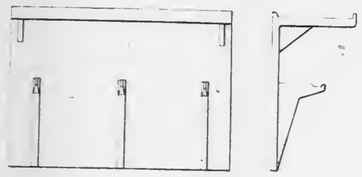
255,732
SOAP DISH
Harry Thomasson, Paarp, Sweden, assignor to Osmos Plast AB, Helsingborg, Sweden
Filed Nov. 3, 1978, Ser. No. 959,111
Claims priority, application Sweden, Aug. 15, 1978, 781872
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—90



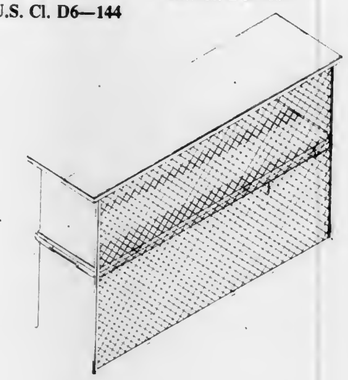
255,733
TOWEL DISPENSING CABINET
E. Burton Benjamin, Highland Park, Ill., assignor to Mosinee Paper Corporation, Mosinee, Wis.
Filed Aug. 2, 1978, Ser. No. 930,336
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—96



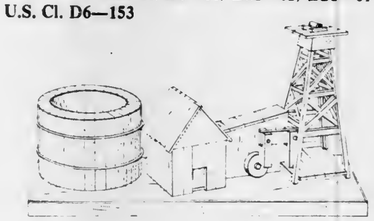
255,734
COMBINATION SHELF AND HOOK UNIT
Arno J. Liebman, 1819 Shore Dr., South, Apt. No. 218, South Pasadena, Fla. 33707
Filed Jul. 26, 1978, Ser. No. 928,440
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—136



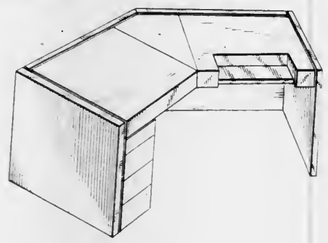
255,735
BAR
Allen W. Gale, Rocky River, Ohio, assignor to Cardinal American Corporation, Cleveland, Ohio
Filed Nov. 14, 1977, Ser. No. 851,525
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—144



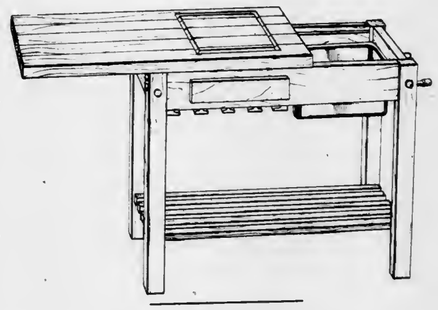
255,736
PLANTER
Winnie C. Whitmire, P.O. Box 3843, Odessa, Tex. 79760
Filed Oct. 25, 1978, Ser. No. 954,598
Term of patent 14 years
Int. Cl. D6—*06*; D11—*02*; D21—*01*
U.S. Cl. D6—153



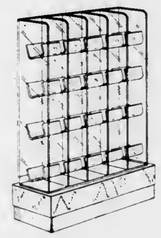
255,737
STATION
Frank Gayeski, 45 Pine St., Hackensack, N.J. 07601
Filed Apr. 19, 1978, Ser. No. 897,922
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



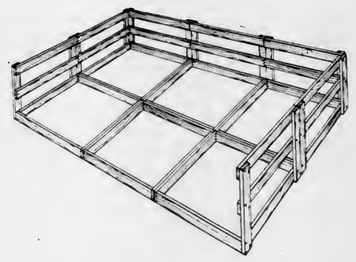
255,738
SERVING TABLE
Philip L. Tome, Malta, Ohio, assignor to Taylor Woodcraft, Malta, Ohio
Filed Mar. 30, 1978, Ser. No. 891,941
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



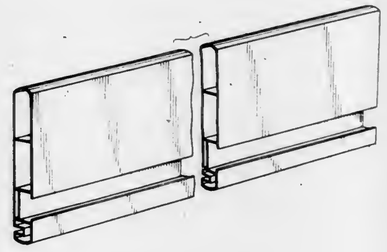
255,739
PANTY HOSE DISPLAY UNIT
Russell K. Winter, Crownsville; Nedim Savas, Bethesda; Joseph H. Snively, Catonsville, and Thomas D. Harvey, Chevy Chase, all of Md., assignors to Russell William, Ltd., Columbia, Md.
Filed Apr. 23, 1979, Ser. No. 32,173
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—189



255,740
FURNITURE FRAME OR SIMILAR ARTICLE
Robert J. Marks, 9350 SW. 106th St., Miami, Fla. 33157
Filed Aug. 12, 1977, Ser. No. 823,965
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



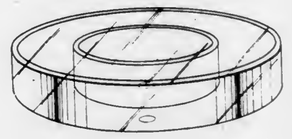
255,741
DRAWER WALL PANEL
Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L. B. (Plastics) Limited, Belper, England
Filed Jan. 27, 1978, Ser. No. 872,955
Claims priority, application United Kingdom, Jul. 23, 1977, 980868
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



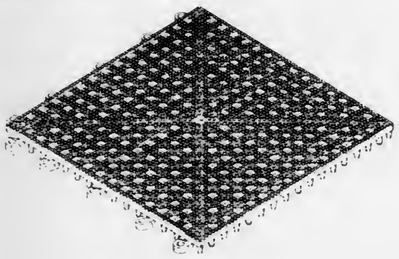
255,742
BED CANOPY FRAME SIDE RAIL
Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035
Continuation-in-part of Ser. No. 675,499, Apr. 9, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,638
Term of patent 14 years
Int. Cl. D6—*06, 01*
U.S. Cl. D6—198

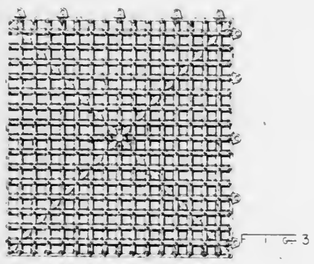


255,743
CUSHION
Patrick J. Randall, 2320 Jackson, Joplin, Mo. 64801
Filed Aug. 12, 1977, Ser. No. 823,940
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—201



255,744
MAT SECTION
Chester E. Dekko, Baby Mountain, Kendallville, Ind. 46755
Filed Jan. 9, 1978, Ser. No. 867,954
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209





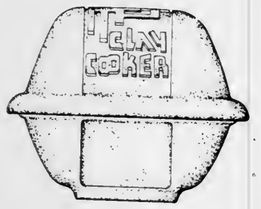
255,745
MIRROR
Erling H. Pedersen, Lyngby, Denmark, assignor to Stig Ravn A/S, Farum, Denmark
Filed Aug. 7, 1978, Ser. No. 931,817
Claims priority, application Denmark, Feb. 9, 1978, 118/78
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—236



255,746
MIRROR FRAME OR THE LIKE
John Van Koert, New York County, N.Y.
Filed Sep. 23, 1977, Ser. No. 836,194
Term of patent 14 years
Int. Cl. D6—*7*
U.S. Cl. D6—241



255,747
COOKING VESSEL
Joseph A. Rinaldi, Oradell, N.J., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed Jul. 17, 1978, Ser. No. 925,420
Term of patent 14 years
Int. Cl. D07—*01*, *02*
U.S. Cl. D7—16





255,748
DECAL FOR CULINARY WARE OR THE LIKE
Patricia A. Luzier, Toledo, Ohio, assignor to Corning Glass Works, Corning, N.Y.
Division of Ser. No. 797,471, May 16, 1977. This application Mar. 22, 1979, Ser. No. 22,812
Term of patent 14 years
Int. Cl. D07—*01*; D19—*08*
U.S. Cl. D7—39



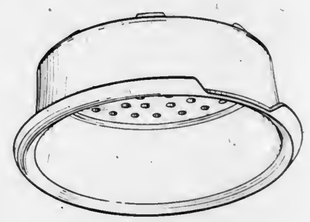
255,749
DECAL FOR CULINARY WARE OR THE LIKE
Patricia A. Luzier, Toledo, Ohio, assignor to Corning Glass Works, Corning, N.Y.
Division of Ser. No. 797,471, May 16, 1977. This application Mar. 22, 1979, Ser. No. 22,814
Term of patent 14 years
Int. Cl. D07—*01*; D19—*08*
U.S. Cl. D7—39

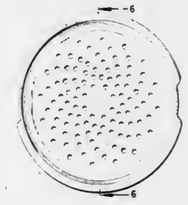


255,750
DECAL FOR CULINARY WARE OR THE LIKE
Estelle G. Rothstein, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Division of Ser. No. 817,854, Jul. 21, 1977. This application Apr. 4, 1979, Ser. No. 26,939
Term of patent 14 years
Int. Cl. D07—*01*; D19—*08*
U.S. Cl. D7—39

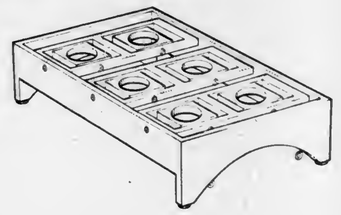


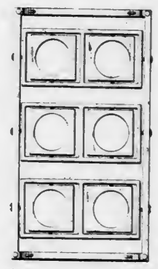
255,751
COLANDER
Robert H. C. M. Daenen, Hekelgem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Feb. 9, 1978, Ser. No. 876,460
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—47



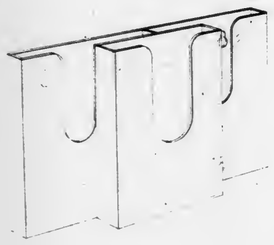


255,752
BEVERAGE TRAY
Yngve Källström, Jönköping, Sweden, assignor to Lennart Almquist, Mullsjo and Goran Kjellerstedt, Huskvarna, both of, Sweden
Filed Aug. 17, 1977, Ser. No. 825,546
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—71

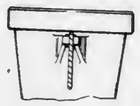




255,753
FOOD PROCESSOR TOOL HOLDER
Paul R. Hoffman, Toronto, and Hans K. Wallenwein, Thornhill, both of Canada, assignors to Plasti-Fab. Co. Ltd.
Filed Feb. 15, 1978, Ser. No. 878,178
Term of patent 14 years
Int. Cl. D7—*06;* D6—*04*
U.S. Cl. D7—74

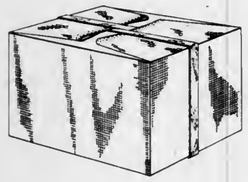


255,754
RECEPTACLE FOR STORING A YOGURT CONTAINER
Carol A. Faunce, 30117 Wicklow Rd., Farmington Hills, Mich. 48018
Filed Sep. 28, 1977, Ser. No. 837,159
Term of patent 14 years
Int. Cl. D07—*01, 07*
U.S. Cl. D7—77

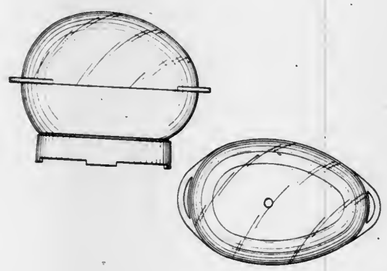




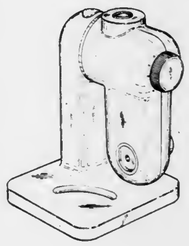
255,755
INSULATED CARRIER FOR BEVERAGE CANS OR THE LIKE
David L. Galloway, Christian County; Morris L. Dock; James K. Grundy, both of Green County, and Robert D. Woodworth, Stone County, all of Mo., assignors to Leisure Foam Products, Inc., Ozark, Mo.
Filed Jan. 13, 1978, Ser. No. 869,156
Term of patent 14 years
Int. Cl. D7—*02;* D9—*05*
U.S. Cl. D7—77



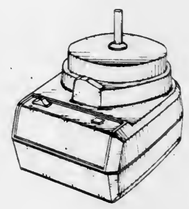
255,756
EGG COOKER
Raymond W. Dybala, Chicago, Ill., assignor to Sunbeam Corporation
Filed Jul. 10, 1978, Ser. No. 922,955
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94

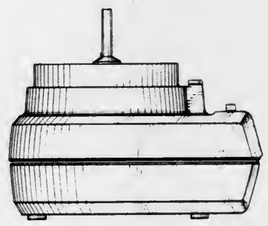


255,757
KITCHEN APPLIANCE MOTOR
Rolf Feil, Wasserburg, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 27, 1976, Ser. No. 754,448
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1976, 51.4522
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—153

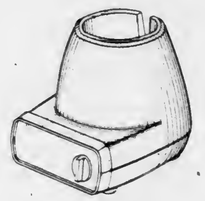


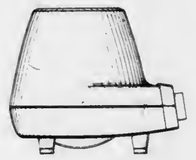
255,758
FOOD PROCESSOR BASE
Norman A. Steinkamp, La Grange Park, and Bernard B. Bluestein, Des Plaines, both of Ill., assignors to Sunbeam Corporation
Filed Jul. 3, 1978, Ser. No. 921,932
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—153



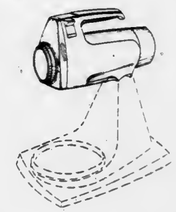


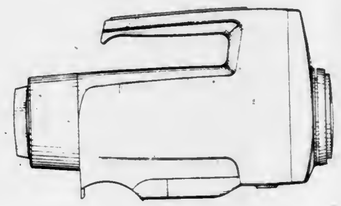
255,759
POWER UNIT FOR A BLENDER OR THE LIKE
Robert O. Ernest, Oak Park, Ill., assignor to Sunbeam Corporation
Filed Dec. 8, 1978, Ser. No. 967,672
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—154





255,760
MIXER
Robert O. Ernest, Oak Park; Richard K. Thomas, Elk Grove Village, and Gordon T. Guth, Evanston, all of Ill., assignors to Sunbeam Corporation
Filed Jul. 14, 1978, Ser. No. 924,592
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—158

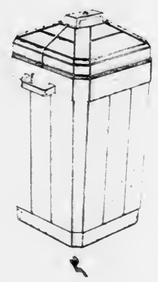




255,761
HAMPER COVER
Paul Bogner, 8952 Faust Cir., Huntington Beach, Calif. 92646
Filed Mar. 30, 1978, Ser. No. 891,935
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—163



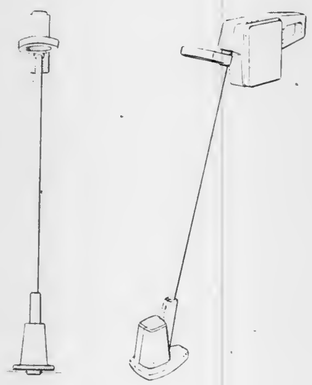
255,762
PLANK TRASH CAN
Norman Lee, East Aurora, N.Y., and Clayton J. Ammondson, Reidsville, N.C., assignors to Zarn, Inc., Reidsville, N.C.
Filed May 8, 1978, Ser. No. 903,998
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—194



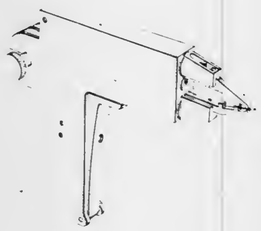
255,763
CLIPPERS
William C. Ferguson, Denville, N.J., assignor to Cooper Industries Inc., Houston, Tex.
Filed Dec. 16, 1977, Ser. No. 861,293
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5



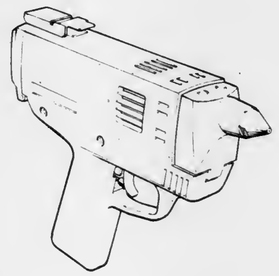
255,764
ROTARY LAWN EDGER, TRIMMER OR SIMILAR ARTICLE
Marco H. Lombard, Houston, Tex., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Mar. 3, 1978, Ser. No. 883,063
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—08



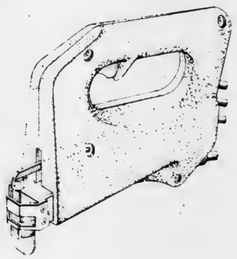
255,765
MANUAL WELDING IMPLEMENT
Basil D. Crooks, and R. Brian P. Bennett, both of Toronto, Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Jun. 17, 1977, Ser. No. 807,486
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



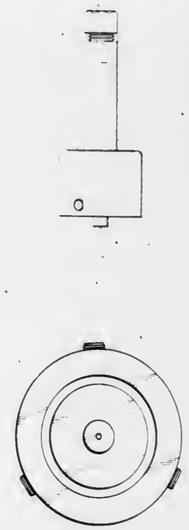
255,766
ADHESIVE-APPLYING TOOL
Howard N. Wieland, Jr., Hanover, Mass., assignor to The Dexter Corporation, Windsor Locks, Conn.
Filed Jan. 25, 1978, Ser. No. 872,234
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



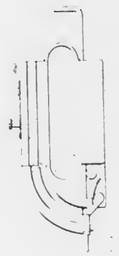
255,767
WELDING GUN
Donald H. Ettinger, Royal Oak, Mich., assignor to USM Corporation, Farmington, Conn.
Filed Feb. 1, 1978, Ser. No. 874,270
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—30



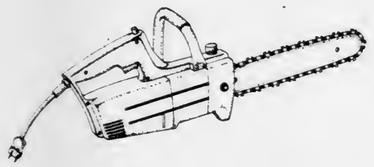
255,768
HUB PULLING DEVICE
Jim L. Immel, and Carl E. Stitt, both of P.O. Box 32884, Oklahoma City, Okla. 73123
Filed May 30, 1978, Ser. No. 910,445
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—51



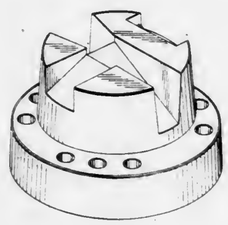
255,769
INSERTION TOOL FOR INSERTING TWO-LEADED ELECTRICAL CAPACITORS, AND THE LIKE, INTO PRINTED CIRCUIT BOARDS
Denver Braden, San Diego, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 20, 1978, Ser. No. 910,547
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—51



255,770
CHAIN SAW
Kazumasa Asamoto, Hiroshima, Japan, assignor to Shindaiwa Kogyo Co., Ltd., Hiroshima, Japan
Filed Feb. 21, 1978, Ser. No. 879,871
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—65

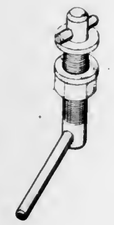


255,771
GLUE GUN HOLDER
Maria I. Cruz, 252811 Pericia, Mission Viejo, Calif. 92691
Filed Nov. 30, 1977, Ser. No. 855,958
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—71



255,772
QUARTER-TURN FASTENER
Norman S. Johnson, New Milford, and Robert J. Trotter, Clinton, both of N.J., assignors to United Products Inc.
Filed Oct. 4, 1977, Ser. No. 839,266
Term of patent 14 years
Int. Cl. D08—*08*
U.S. Cl. D8—331





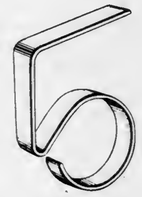




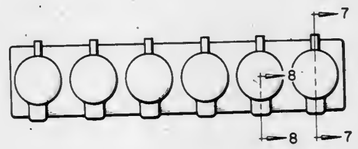
255,773
CLIP FOR HOLDING A GAS PUMP NOZZLE TRIGGER IN THE OPEN POSITION
Walter O. A. Raske, 9051 Katy Freeway, Houston, Tex. 77024
Filed Jul. 26, 1978, Ser. No. 928,198
Term of patent 14 years
Int. Cl. D8—*08, 05;* D15—*02;* D7—*06*
U.S. Cl. D8—349



255,774
HOOK
Norman F. Soucy, 91 Garfield Ave., Lynn, Mass. 01905
Filed Mar. 22, 1978, Ser. No. 889,622
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—371



255,775
PACKAGING CONTAINER
Anton H. Clemens, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Sep. 6, 1977, Ser. No. 830,907
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—18



255,776
BOTTLE
William J. Britt, Greenville, S.C., assignor to Morton-Norwich Products, Inc., Greenville, S.C.
Filed Mar. 23, 1978, Ser. No. 889,581
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60



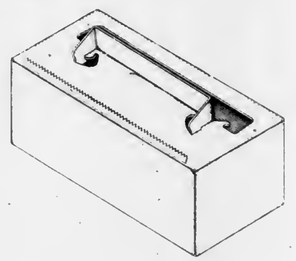
255,777
MEDICINE CONTAINER
Fred H. Lowe, 4324 Thunder Rd., Dallas, Tex. 75234
Filed Mar. 20, 1978, Ser. No. 888,097
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



255,778
CANDY PACKAGE
Lawrence D. Albert, New York, N.Y., assignor to Altray Company, Inc.
Filed Dec. 22, 1977, Ser. No. 863,214
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193



255,779
DISPENSING BOX FOR SHEET MATERIAL
Richard T. Clatterbuck, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company
Filed Aug. 22, 1977, Ser. No. 826,500
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



255,780
TRAY BLANK
Valdis Kuplis, Bourbonnais, Ill., assignor to Olinkraft, Inc., Denver, Colo.
Filed Oct. 27, 1977, Ser. No. 846,237
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



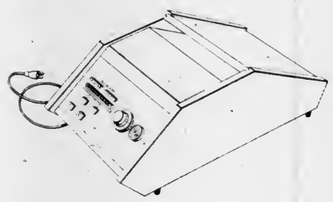
255,781
FLIP TOP DISPENSER BOX BLANK
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Nov. 10, 1977, Ser. No. 850,223
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



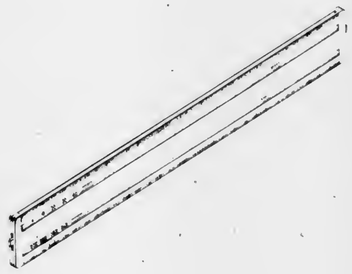
255,782
TIE STRAP
Lawrence J. Forest, Palo Alto, Calif., assignor to GTE Products Corporation, Stamford, Conn.
Filed May 31, 1977, Ser. No. 802,233
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—252



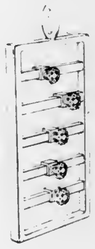
255,783
LETTER BOMB DETECTOR
Ronald B. Hays, 15956 Shady Grove Rd., Gaithersburg, Md. 20760
Filed Dec. 21, 1977, Ser. No. 862,985
Term of patent 14 years
Int. Cl. D10—*04, 05*
U.S. Cl. D10—46



255,784
MULTIPLE SCALE RULE
Douglas D. Seely, Jr., 54743 Merrifield Dr., Mishawaka, Ind. 46514
Filed Apr. 13, 1978, Ser. No. 896,194
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71



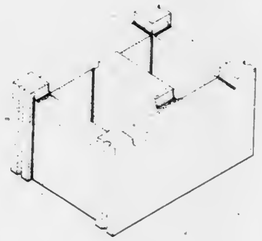
255,785
PENDANT
Paul I. Bishton, Sutton Coldfield, England, assignor to Strada Jewellery Limited, Birmingham, England
Filed Mar. 20, 1978, Ser. No. 888,679
Claims priority, application United Kingdom, Feb. 2, 1978, 983196/78
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D11—43



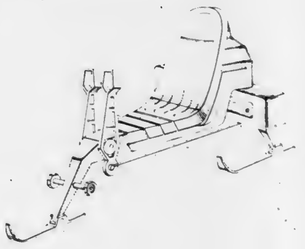
255,786
DESIGN FOR A PICTURE PLAQUE
Thomas A. Lewis, 946 W. 129th Pl., Chicago, Ill. 60649
Filed Aug. 2, 1978, Ser. No. 930,153
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—136



255,787
PLANT PROPAGATING BLOCK
Coatus L. Morehead, Jr., Athens, Ga., assignor to Flowers, Inc., Athens, Ga.
Filed Jan. 12, 1978, Ser. No. 869,025
Term of patent 14 years
Int. Cl. D11—*02*; D25—*01*
U.S. Cl. D11—155

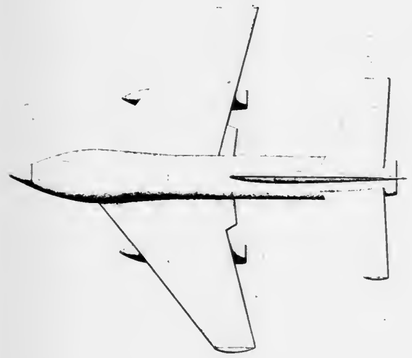


255,788
SKI SLED
Thomas A. Gustafson, 6266 Halverson Dr., Rockford, Ill. 61109
Filed Nov. 1, 1977, Ser. No. 847,679
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—9

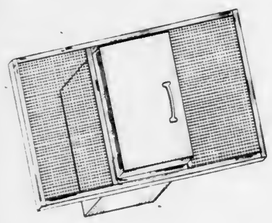


255,789
JET CARGO AIRCRAFT
Michael C. Bowers, 2520 Kecoughton Rd., Hampton, Va. 23661
Filed May 17, 1977, Ser. No. 797,821
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71

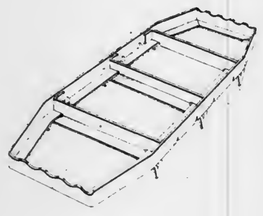




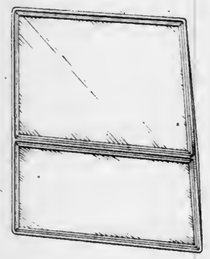
255,790
COMBINED CHAIN CONTAINER AND STEP PLATE FOR TRACTORS
Michael E. McManigal, Rte. 2, Box 19 C, Council Bluffs, Iowa 51501
Filed Apr. 3, 1978, Ser. No. 893,106
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—96



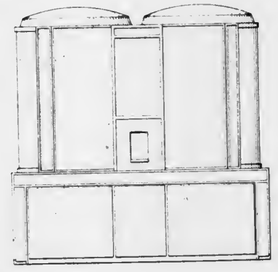
255,791
TRACTION GRILLE FOR VEHICLE
Guy LaPointe, 1857 Cambray, St-Bruno, Quebec, Canada (J3G 3J4)
Filed May 1, 1978, Ser. No. 901,992
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—154

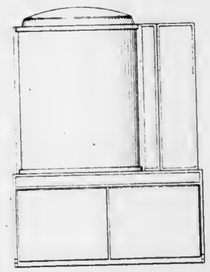


255,792
AUTOMOTIVE REARVIEW MIRROR
John L. Harrison, 3906 Hays, Wellington, Colo. 80549
Filed Oct. 25, 1977, Ser. No. 845,254
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



255,793
AUTOMATIC TAPE CARTRIDGE SELECTING AND PLAYING MECHANISM
John P. Jenkins, Towanda, Ill., assignor to International Tapetronics Corporation, Bloomington, Ill.
Filed Apr. 11, 1978, Ser. No. 895,303
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6

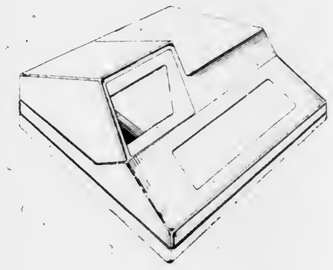




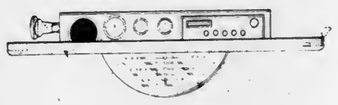
255,794
LOUDSPEAKER
Dieter Rams, Kronberg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jan. 3, 1978, Ser. No. 866,601
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 73 MR 8632
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—34

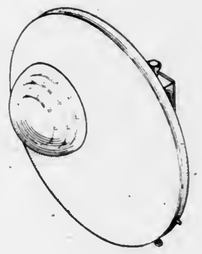


255,795
COMPUTER TERMINAL HOUSING
John F. Marshall, Provo, and James R. Huffman, Orem, both of Utah, assignors to Lektronics Systems, Inc., Provo, Utah
Filed Nov. 13, 1978, Ser. No. 960,500
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45

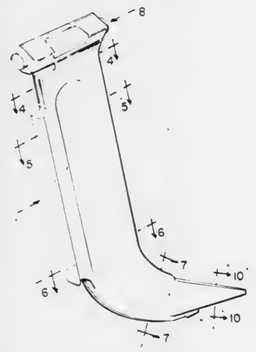


255,796
WALL MOUNTED MUSIC-RESPONSIVE COLOR ORGAN
Remo Saraceni, Philadelphia, Pa., assignor to Novitas, Inc., Los Angeles, Calif.
Filed Sep. 29, 1977, Ser. No. 837,759
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—99

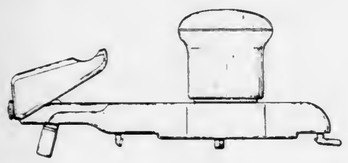




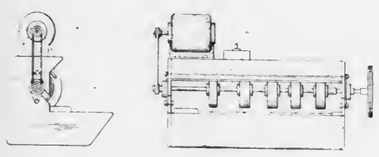
255,797
PLOW SHANK
John W. Ryan, Yowie Bay, Australia, assignor to Agrowplow Pty Limited, Yowie Bay, Australia
Filed Apr. 5, 1978, Ser. No. 893,718
Claims priority, application Australia, Nov. 21, 1977, 73371/77
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—11



255,798
TAPPING DEVICE
Helmut Wiedmann, Hundsbergstrasse 29, 7100 Heilbronn, Fed. Rep. of Germany
Filed Oct. 16, 1978, Ser. No. 951,404
Claims priority, application Fed. Rep. of Germany, May 22, 1978, 863
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D15—112



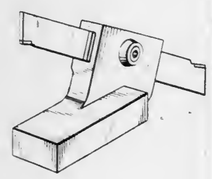
255,799
LAPIDARY MACHINE
Earl Christensen, 1286 Hermitage Ave., Clearwater, Fla. 33516
Filed Nov. 11, 1977, Ser. No. 850,821
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—125



255,800
CUTTING INSERT
Joseph E. Kendra, Latrobe, Pa., assignor to Kennametal Inc.
Filed Jul. 26, 1977, Ser. No. 819,078
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139



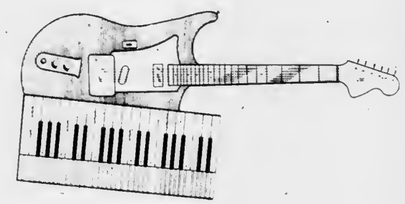
255,801
COMBINED LATHE TOOL AND HOLDER THEREFOR
Howard A. Treloar, 21 Barretts Rd., Lynton, South Australia, 5062, Australia
Filed Aug. 9, 1978, Ser. No. 933,118
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139



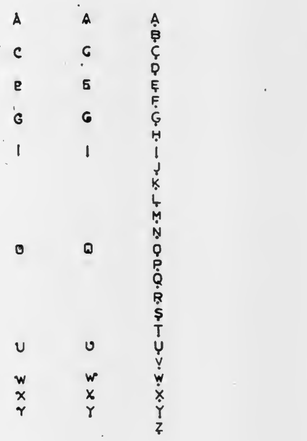
255,802
PAIR OF SPECTACLES
Richard W. Canavan, III, P.O. Box 6, South Woodstock, Conn. 06267
Filed Jun. 19, 1978, Ser. No. 916,697
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—65



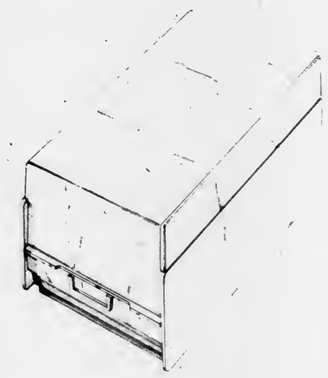
255,803
COMBINED GUITAR AND SYNTHESIZER KEYBOARD
Jerome C. Leal, 5954 E. El Monte, Fresno, Calif. 93727
Filed Jan. 28, 1977, Ser. No. 763,344
Term of patent 3½ years
Int. Cl. D17—*01, 03*
U.S. Cl. D17—2



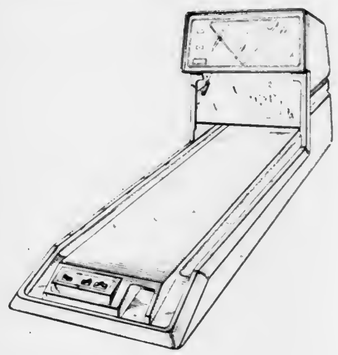
255,804
PRONUNCIATION-CODED TYPE FONT
Chester L. James, Sr., 123 W. Twelfth St., Beaumont, Calif. 92223
Filed Jul. 3, 1978, Ser. No. 921,359
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24



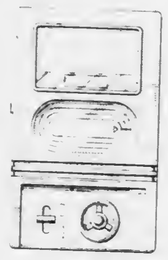
255,805
HINGED TOP CARD FILE
James F. Hampshire; Greg P. Terek, and Richard C. Sankovich, all of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Dec. 12, 1977, Ser. No. 859,954
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



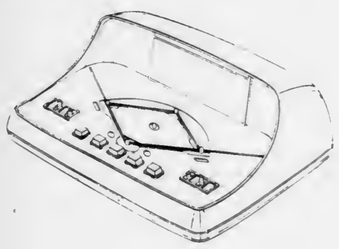
255,806
BOWLING GAME CASING
John A. Vernon, Montgomery, Mass., and Lawrence L. Reiner, Woodbury, N.Y., assignors to Louis Marx & Co., Inc., Stamford, Conn.
Filed Feb. 13, 1978, Ser. No. 877,581
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—7



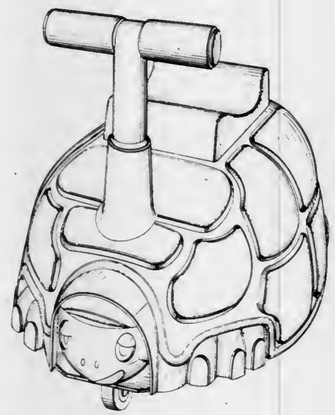
255,807
ELECTRONIC RACING GAME, OR SIMILAR ARTICLE
Lee F. Radtke, Lake Zurich, Ill., assignor to Interstate Industries, Inc., Mundelein, Ill.
Filed Oct. 23, 1978, Ser. No. 953,794
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—27



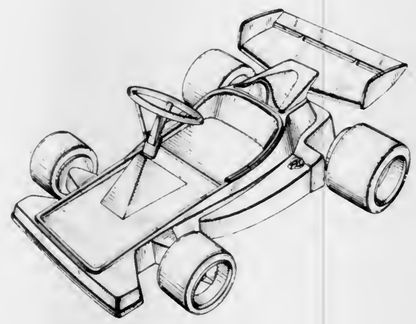
255,808
BASEBALL GAME CASING
Johnson C. Tai, Kowloon, Hong Kong, assignor to Micro Electronics Limited, Kowloon, Hong Kong
Filed Jun. 20, 1978, Ser. No. 917,407
Claims priority, application United Kingdom, Feb. 1, 1978, 983165/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—28



255,809
RIDING TOY
Edward B. Bretschger, Cos Cob, Conn., assignor to Louis Marx & Co., Inc., Stamford, Conn.
Filed Feb. 10, 1978, Ser. No. 876,791
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—74



255,810
RIDING TOY
Edward B. Bretschger, Cos Cob, Conn., assignor to Louis Marx & Co., Inc., Stamford, Conn.
Filed Feb. 10, 1978, Ser. No. 876,792
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—137



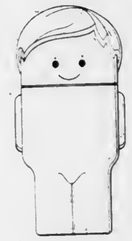
255,811
TOY RACCOON
Patricia I. Holstine, 16 N. Main, Conrad, Mont. 59425
Filed Aug. 14, 1978, Ser. No. 933,729
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148



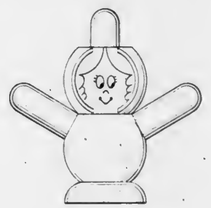
255,812
STUFFED TOY HORSE WITH HAT
Zula B. Cox, Rt. 1, Box 5A, Folsom, La. 70437
Filed Aug. 11, 1978, Ser. No. 933,252
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—165



255,813
TOY FIGURE
John A. Pape, Clifton, and Norman Walker, London, both of England, assignors to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Jan. 24, 1978, Ser. No. 872,348
Claims priority, application United Kingdom, Dec. 2, 1977, 982467/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166



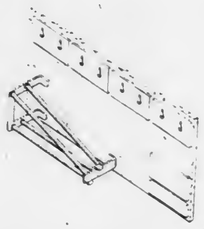
255,814
TOY FIGURE
Howard Wexler, 300 E. 40th St., New York, N.Y. 10016
Filed Mar. 23, 1978, Ser. No. 889,612
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—168



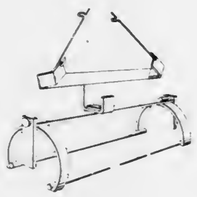
255,815
EXERCISER
Edith O. Hallerman, 41-06 Case St., Elmhurst, N.Y. 11373
Filed Sep. 20, 1978, Ser. No. 944,811
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—198



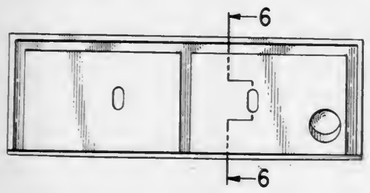
255,816
COMBINED TENNIS RACKET HOLDER AND TENNIS COURT CONTROL PANEL
Bert M. Trubody, Taylorsville; William W. White, Los Gatos, and David R. Vonasek, Milpitas, all of Calif., assignors to Patterson-Williams Manufacturing Co., Santa Clara, Calif.
Filed Feb. 17, 1978, Ser. No. 879,011
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—199



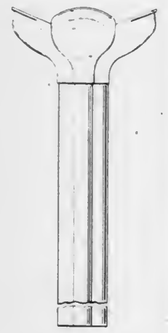
255,817
TENNIS BALL RETRIEVER
Donald O. Wright, 26333 Belle Porte Ave., Harbor City, Calif. 90710
Filed Apr. 4, 1978, Ser. No. 893,501
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—206



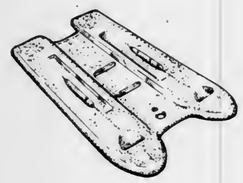
255,818
GOLF CLUB HEAD
William L. Barber, 5892 Lourdes Dr., Huntington Beach, Calif. 92649
Filed Feb. 10, 1978, Ser. No. 876,586
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219



255,819
GOLF CLUB HOLDER
Herman E. Stock, P.O. Box 1718, Pompano Beach, Fla. 33061
Filed Feb. 6, 1978, Ser. No. 875,134
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—221



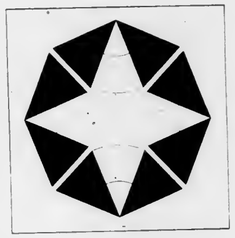
255,820
DUAL SKI STRUCTURE FOR WATER SKIING AND SNOW SLEDDING
Thomas W. Borden, 3444 Laclede Ave., Los Angeles, Calif. 90039; Richard A. Hulst, 3971 Abella, La Crescenta, Calif. 91214, and Gary M. Yaeger, 3900 Karen Lynn Dr., Glendale, Calif. 91200
Filed Nov. 1, 1977, Ser. No. 847,526
Term of patent 14 years
Int. Cl. D21—*02*; D12—*14*
U.S. Cl. D21—229



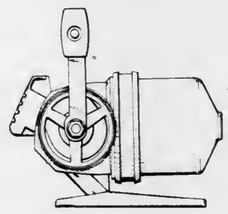
255,821
GOLF PUTTING TARGET
Jan Göransson, Ekliden 20, Örkelljunga, Sweden (286 00)
Filed Dec. 2, 1977, Ser. No. 857,200
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—234



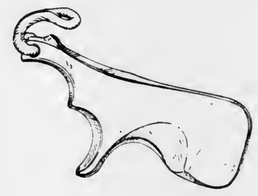
255,822
GUN TARGET
Charles R. Dulude, 33 Burnside Ave., East Hartford, Conn. 06108
Filed Apr. 7, 1978, Ser. No. 894,640
Term of patent 14 years
Int. Cl. D22—*04*
U.S. Cl. D22—15



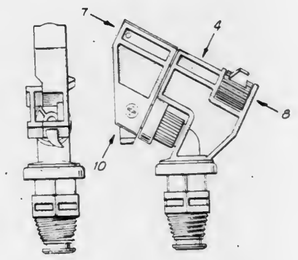
255,823
FISHING REEL
Chuuji Deguchi, Musashino, and Shosuke Nakauchi, Saitama, both of Japan, assignors to Olympic Fishing Tackle Co., Ltd., Saitama, Japan
Filed Jan. 5, 1978, Ser. No. 867,295
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



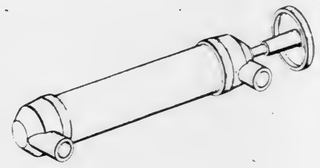
255,824
ARCHERY BOW STRING RELEASE GRIP
Paul D. MacWilliams, 4039 Brunswick Ave., Los Angeles, Calif. 90039, and Mark A. Santos, 3701 Cazador St., Los Angeles, Calif. 90041
Filed Jun. 26, 1978, Ser. No. 919,398
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—99



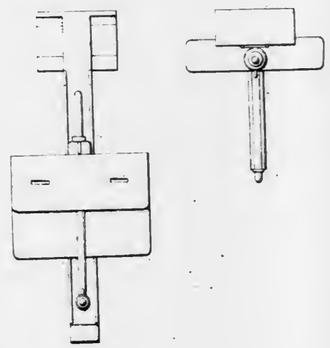
255,825
LAWN SPRINKLER
Charles T. Hardy, Wilton Manors, Fla., assignor to Safe-T-Lawn, Inc., Hialeah, Fla.
Filed Oct. 25, 1977, Ser. No. 844,451
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7



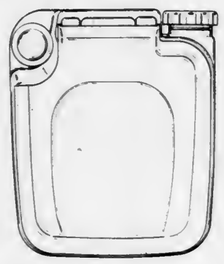
255,826
HAND PUMP
Ethan A. Stout, and Jerry W. Reinsch, both of Houston, Tex., assignors to Spartan Labs, Inc., Houston, Tex.
Filed Feb. 22, 1977, Ser. No. 770,450
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—15



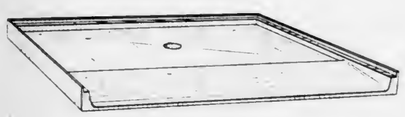
255,827
FLUSH TANK VALVE CLOSER
Walter Makhobey, 3109 E. Caley Ave., Littleton, Colo. 80121
Filed Feb. 27, 1978, Ser. No. 881,887
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



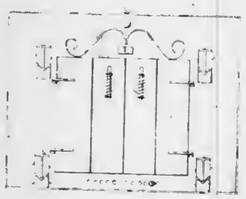
255,828
TOILET
Frederick A. Butler, Redford Semele, England, and William Croonenberg, Roosendaal, Netherlands, assignors to Thetford Corporation, Ann Arbor, Mich.
Filed Oct. 4, 1978, Ser. No. 948,340
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



255,829
SHOWER FLOOR
Arthur W. Swenson, Prairie Village, Kans., assignor to Stern-Williams Co., Inc., Shawnee Mission, Kans.
Filed Feb. 21, 1978, Ser. No. 879,697
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



255,830
FIREPLACE HEATER
Homer P. Hansen, 1925 W. 24th St., Eugene, Oreg. 97405
Filed Aug. 8, 1978, Ser. No. 932,036
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—95



255,831
HEATING STOVE
Roray J. Sandau, Rte. 1, Box 729, Salem, Oreg. 97304, and Gordon H. McKee, 7120 Perrydale Rd., Amity, Oreg. 97101
Filed Jul. 7, 1978, Ser. No. 923,045
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

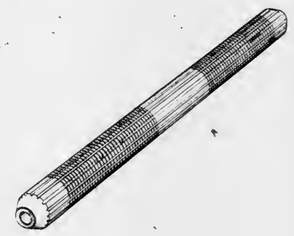
255,832
ROOM VAPORIZER
Ernst Reichl, München, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 7, 1978, Ser. No. 922,787
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—148



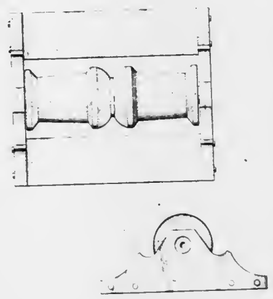
255,833
INFANT OXYGEN HOOD
Norman C. Crandall, Costa Mesa, Calif., assignor to Shiley Incorporated
Filed May 26, 1978, Ser. No. 910,000
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1.1



255,834
DENTAL INSTRUMENT HANDLE
Sigurd Lindén, Teatergatan 4, Linköping, Sweden
Filed Nov. 2, 1977, Ser. No. 847,953
Claims priority, application Sweden, May 13, 1977, 771112; May 13, 1977, 771113
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—16



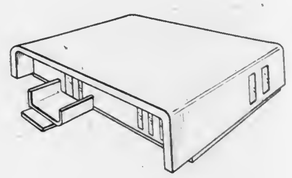
255,835
FOOT MASSAGER OR SIMILAR ARTICLE
Lon C. Bentsen, Rte. 1, Box 559, Toledo, Oreg. 97391
Filed Jan. 24, 1978, Ser. No. 872,016
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



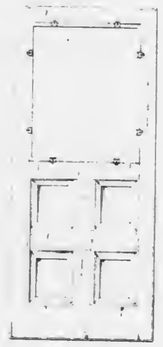
255,836
DENTAL CAPSULE
Edward A. Weissenburger, Mercerville, N.J., assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Mar. 30, 1979, Ser. No. 25,428
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—56



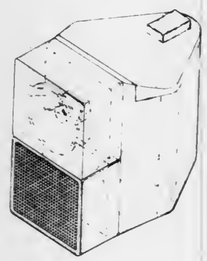
255,837
BUILDING STRUCTURE
John H. Leasure, 12 Littlejohn Rd., Cape Elizabeth, Me. 04107, and David D. Leasure, 505 Sunset Rd., Falmouth, Me. 04105
Filed Jul. 11, 1978, Ser. No. 923,627
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—18



255,838
PLASTIC STORM DOOR
Peter R. Emanuel, Marine City, Mich., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jan. 16, 1978, Ser. No. 869,936
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48



255,839
BATTERY-OPERATED LIGHT
Knut O. Sassmannshausen, D-6580 Idar-Oberstein, Rothenbach, Fed. Rep. of Germany
Filed Jul. 27, 1977, Ser. No. 819,381
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 1436
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—37



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JULY, 1980

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Abrahamson, John H. Milking. 4,211,184, Cl. 119-14.020.

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Adams, Thomas H.; Beck, James P.; and Menson, Robert C., to Baxter Travenol Laboratories, Inc. Method and apparatus for making novel particulate compositions. 4,211,015, Cl. 34-5.000.

Adleman, George L.; and Stettiner, Robert L., to Hewlett-Packard Company. Smoothing a raster display. 4,212,009, Cl. 340-728.000.

Aero-Metric General, Inc.: *See—*
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Akell, Robert B.; Muller, Werner C.; and Pick, Rudolph, to Syngas Company. Naphtha stripping. 4,211,638, Cl. 208-180.000.

Akers, Larry D.; Scholl, Charles H.; Smith, Joseph S.; and Williams, Edward A., to Nordson Corporation. Hot melt adhesive dispensing system of the hand held gun. 4,211,262, Cl. 141-2.000.

Akhmetov, Raul S.: *See—*
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Akiyama, Ryo; and Igarashi, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Motor speed adjusting apparatus. 4,211,967, Cl. 318-490.000.

Aktiebolaget Electrolux: *See—*
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Akutagawa, Kazuhiko: *See—*
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Andow, Fumio; Matsushima, Tetsuo; and Okamoto, Eiichi, to Tokyo Shibaura Denki Kabushiki Kaisha; and Tokyo Denryoki Kabushiki Kaisha. Distance relaying systems. 4,212,046, Cl. 361-80.000.

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Barnett, Charles J.; Emmick, Thomas L.; and Hoying, Richard C., to Eli Lilly and Company. Preparation of substituted 2-aminopyrazines. 4,211,870, Cl. 544-336.000.

Barta, Franz, to BSB Aktiengesellschaft fur Mechanische Beschriftung und Dekoration. Self-adhering, transferable layer of varnish (lacquer) or color. 4,211,809, Cl. 428-201.000.

Barta, Franz, to BSB Aktiengesellschaft fur Mechanische Beschriftung und Dekoration. Self-adhering, transferable layer of varnish (lacquer) or color. 4,211,810, Cl. 428-201.000.

Barten, Piet G. J.; and Bijma, Jan, to U.S. Philips Corporation. Method of manufacturing a static convergence unit, and a color display tube comprising a convergence unit manufactured according to the method. 4,211,960, Cl. 315-368.000.

BASF Aktiengesellschaft: *See*—
Halbritter, Klaus, 4,211,875, Cl. 548-342.000.

Bass, Robert F. Dynamic power source. 4,211,078, Cl. 60-413.000.

Bastgen, Wendel, to Alb. Klein & Co. GmbH KG. Process for the batch filtering of suspensions. 4,211,162, Cl. 100-36.000.

Baugh, Daniel W., Jr.: *See*—
Watt, George W.; and Baugh, Daniel W., Jr., 4,211,757, Cl. 423-251.000.

Baumann, Dwight M. Paratransit fare computation and dispatching method. 4,212,069, Cl. 364-467.000.

Baumgartner, Peter; and Kuhne, Robert, to Sulzer Brothers Ltd. Camshaft for an internal combustion engine. 4,211,192, Cl. 123-90.600.

Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U. Device for diagnosing microprogram computers. 4,211,916, Cl. 371-15.000.

Baxter Travenol Laboratories, Inc.: *See*—
Adams, Thomas H.; Beck, James P.; and Menson, Robert C., 4,211,015, Cl. 34-5.000.
Lillegard, Thomas R.; Rollins, Richard A.; and Stauber, Ronald C., 4,211,380, Cl. 248-229.000.

Bayer Aktiengesellschaft: *See*—
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Dieterich, Dieter, 4,211,850, Cl. 521-164.000.
Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,211,970, Cl. 324-58.50C.
Hartmann, Alfons; Kuhle, Engelbert; and Hammann, Ingeborg, 4,211,790, Cl. 424-285.000.
Hermann, Karl H.; and Dorsch, Hans-Lothar, 4,211,716, Cl. 260-391.000.
Hund, Franz; Linde, Gunter; and Kresse, Peter, 4,211,565, Cl. 106-14.050.
Keggenhoff, Berthold; Bandtel, Eberhard; and Rosenkranz, Hans J., 4,211,751, Cl. 422-134.000.
Klein, Johann, 4,211,289, Cl. 172-686.000.
Kuhlthau, Hans-Peter; Psaar, Hubertus; and Raue, Roderich, 4,211,436, Cl. 282-27.500.
Muschelknautz, Edgar; Herold, Heiko; Brunner, Kunz; and Horstmann, Walter, 4,211,604, Cl. 159-4.00D.
Scheer, Martin; Anke, Heidrun; Konig, Wilfried; and Zahner, Hans, 4,211,787, Cl. 424-279.000.
Spahrkas, Heinrich; Muller, Josef; Komarek, Ernst; and Luck, Wolfhard, 4,211,529, Cl. 8-94.260.
Wenzel, Wolfgang; and Dieterich, Dieter, 4,211,683, Cl. 260-29.40R.
Winkelmann, Hans D.; Wolf, Karlheinz; Oertel, Harald; and Weimann, Norbert, 4,211,699, Cl. 260-239.30R.

BBC Brown Boveri & Cie.: *See*—
Burnier, Pierre H., 4,211,087, Cl. 62-55.500.

BBC Brown Boveri & Company Limited: *See*—
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Henle, Burkhard; Vukasovic, Ivica; and Fiorentzis, Michael, 4,211,934, Cl. 307-98.000.
Kalbfuss, Richard, 4,211,069, Cl. 60-39.020.
Kramer, Wilhelm, 4,211,542, Cl. 55-179.000.
Portmann, Alexandre, 4,211,070, Cl. 60-39.080.
Speil, Peter, 4,211,516, Cl. 416-191.000.
Starcevic, Mihailo, 4,211,383, Cl. 248-603.000.

Beatrice Foods Company: *See*—
Leonard, Rex D.; and Hulstyn, Jan, 4,211,086, Cl. 62-50.000.

Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, to Bayer Aktiengesellschaft. Process for the preparation of tetrachloropyrimidine. 4,211,869, Cl. 544-334.000.

Beck, Hans: *See*—
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Beck, James P.: *See*—
Adams, Thomas H.; Beck, James P.; and Menson, Robert C., 4,211,015, Cl. 34-5.000.

Beecham Group Limited: *See*—
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Behlert, Austin F. Center pin lock for single-action revolver. 4,211,026, Cl. 42-59.000.

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Alles, Harold G.; and Kubik, Peter S., 4,211,012, Cl. 33-18.00R.
Cross, Peter S.; and Schmidt, Ronald V., 4,211,467, Cl. 350-96.140.
Madden, James J., 4,211,459, Cl. 339-75.0MP.
Mogab, Cyril J., 4,211,601, Cl. 156-643.000.
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Bellis, Robert E., to Coin Controls Limited. Coin chute. 4,211,317, Cl. 194-1.00D.

Bemis, Alan G.: *See*—
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Bender Machine Works, Inc.: *See*—
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Bendix Corporation, The: *See*—
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Marchak, Roman O.; Peterson, William A., Jr.; and Carp, Ralph W., 4,212,065, Cl. 364-431.000.
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Benefis Systems Limited: *See*—
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Beneking, Heinz, to Licentia Patent-Verwaltungs-G.m.b.H. Field effect transistor with gate and drain electrodes on the side surface of a mesa. 4,212,022, Cl. 357-22.000.

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Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,211,938, Cl. 307-233.00R.

Bennett, Matthew C., Jr.: *See*—
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Bennett, Moreland P.; Cacalloro, Philip A.; and McCloy, Albert J., to General Electric Company. Header structure for a panel-type radiator and method of making said structure. 4,211,278, Cl. 165-130.000.

Bensemann, Erle W., to Benefis Systems Limited. Pressure drop detectors. 4,212,004, Cl. 340-591.000.

Benson, Nigel C.; Hughes, John M. F.; Kingslake, Denis; and Symonds, David G., to Imperial Chemical Industries Limited. Apparatus for feeding a moving web to a stenter apparatus. 4,210,987, Cl. 26-89.000.

Benton, Robert L., to General Motors Corporation. Plural lead ball nut screw actuator. 4,211,125, Cl. 74-424.80R.

Bentz, Gerard; Galey, Jean; and Devalois, Serge, to L'Air Liquide, Societe Anonyme pour l'Etude et L'Expoitation des Procedes Georges Claude. Method of centrifugally casting metal under an inert atmosphere. 4,211,269, Cl. 164-67.000.

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Fichtl, Karl; Berger, Rudolf; Durnfelder, Otto; and Pilz, Erich, 4,211,164, Cl. 100-145.000.

Berges, David A., to SmithKline Corporation. Phosphonoalkyl and esterified phosphonoalkyl substituted tetrazole thiols. 4,211,703, Cl. 548-112.000.

Bergstrom, Arthur E. Compensated blast joint for oil well production tubing. 4,211,440, Cl. 285-45.000.

Bergwerksverband GmbH: *See*—
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.

Berlin, Gary L., to Herrmidifier Company, Inc. Humidifier nozzle mounting. 4,211,735, Cl. 261-116.000.

Bernhardsson, Klas T. Y.: *See*—
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Bernhardt, Rainer, to Bockemuehl, Johannes. Tank for developing color films. 4,211,481, Cl. 354-312.000.

Berry, Milton E.; and Pariani, Ronald L., to Southwire Company. Method of controlling combustion in a metal melting furnace. 4,211,555, Cl. 75-72.000.

Bertelsen, Bruce I.: *See*—
Babinski, John P.; Bertelsen, Bruce I.; Raacke, Karl H.; and Sirgo, Valdeko H., 4,211,505, Cl. 406-19.000.

Bertin, Claude R.: *See*—
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Bertolacini, Ralph J.; and Yu, Albert P., to Standard Oil Company (Indiana). Two-catalyst hydrocracking process. 4,211,634, Cl. 208-59.000.

Bess, James W., Sr.: *See*—
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Bethlehem Steel Corporation: *See*—
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Betz, Norman L.: *See*—
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Bickford, Elwood D.; and Shurgan, Joel, to Duro-Test Corporation. Phantom fluorescent lamp with safety switch. 4,211,958, Cl. 315-312.000.

Bierbach, Herbert; Kohlen, Rudolf; and Hafke, Carl, to Metallgesellschaft Aktiengesellschaft. Producing pure gas of high calorific value from gasification of solid fuel. 4,211,539, Cl. 48-197.00R.

Bieser, Dennis W. D. Method and apparatus for internally seasoning meat prior to cooking. 4,211,160, Cl. 99-494.000.

Biethan, Gunter; and Kloeber, Peter, to Siemens Aktiengesellschaft. Duplex-transmitter receiver arrangement. 4,212,013, Cl. 370-30.000.

Biggs, Candice B.; Pyke, Thomas R.; and Wovcha, Merle G., to Upjohn Company, The. Process for microbial transformation of steroids. 4,211,841, Cl. 435-136.000.

Bijma, Jan: *See*—
Barten, Piet G. J.; and Bijma, Jan, 4,211,960, Cl. 315-368.000.

Bilynsky, John D.: *See—*
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Biophysics Research & Consulting Corporation: *See—*
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Biotronik Mess- und Therapiegerate GmbH & Co.: *See—*
Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, 4,211,235, Cl. 128-419.0PG.
Nagel, Joachim, 4,211,237, Cl. 128-698.000.
Birk, Edward W., to Crepaco, Inc. Case filling apparatus. 4,211,056, Cl. 53-543.000.
Bishop, Thomas D., to Deritend Engineering Company, The. Feeders for cardboard and like blanks. 4,211,398, Cl. 271-9.000.
Bison-Werke, Bahre & Greten GmbH & Co. KG: *See—*
Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,211,984, Cl. 331-97.000.
Bitterli, William W.: *See—*
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Bjorklund, Knut B., to AB Bonnierforetagen. Cancer associated polypeptide antigen compositions. 4,211,766, Cl. 424-88.000.
Blair, George C.: *See—*
Stahl, Edward L.; Sanders, Ellsworth E.; and Blair, George C., 4,211,327, Cl. 206-505.000.
Blake, Colin C.; and Payne, Ivan C., to Ciba-Geigy AG. Electrolytic recovery of silver from photographic bleach-fix baths. 4,211,630, Cl. 204-275.000.
Blake, Ralph K.; Morgan, James G.; and Woodward, David W., to Du Pont de Nemours, E. I., and Company. Photographic silver halide element with opaque backing layer. 4,211,837, Cl. 430-502.000.
Blanton, James R., to Dresser Industries, Inc. Variable orifice sleeve valve hydraulic jar tool. 4,211,293, Cl. 175-297.000.
Blaszczak, Larry C.: *See—*
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Blount, David H. Process for the production of polyisocyanate-polyester-silicate plastic. 4,211,848, Cl. 521-154.000.
Blowsky, Frank C.; and Glickman, Kenneth B. Telescoping physical exercising device. 4,211,404, Cl. 272-141.000.
Blowsky, Frank C.; Glickman, Kenneth B.; and Iscoe, Alan D. Physical exercising device. 4,211,405, Cl. 272-141.000.
Bloyd, Jon A., to Aero-Metric General, Inc. Light indicating system having light emitting diodes and power reduction circuit. 4,211,956, Cl. 315-208.000.
BMI, Inc.: *See—*
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Bock, Erich; Braun, Erwin; and Wulfhorst, Burkhard, to Schubert & Salzer. Method and device for cleaning spinning rotors in open-end spinning mechanism. 4,211,063, Cl. 57-302.000.
Bockemuehl, Johannes: *See—*
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Bocsanczy, Janos; and Stalherm, Dieter, to Carl Still, Firma. Coke oven coal charging device. 4,211,611, Cl. 202-262.000.
Boeing Company, The: *See—*
Hofmann, George F., 4,211,917, Cl. 371-20.000.
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Mormann, Werner; Bofinger, Gerhard; and Wolfie, Wilfried, 4,211,232, Cl. 128-305.500.
Bokach, Galina S.: *See—*
Semkina, Novella V.; Bokach, Galina S.; and Zinkovsky, Ivan V., 4,211,624, Cl. 204-195.00S.
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., to International Mobile Machines Incorporated. Tone detector. 4,211,938, Cl. 307-233.00R.
Bollongino, Norbert: *See—*
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Bolter, German; Helmle, Herbert; and Beck, Hans, to Hans Beck. Cut-and-weld device for superimposed foils advanced in the form of strips. 4,211,599, Cl. 156-494.000.
Bom, Cornelis J. G.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,211,283, Cl. 172-59.000.
Bonfils, Robert J. Picture frame retainer. 4,211,382, Cl. 248-467.000.
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., to Fiber Industries, Inc. Selfbonded nonwoven fabrics. 4,211,816, Cl. 428-296.000.
Boone, Sheila T.: *See—*
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Bordini, Fosco; and Mauri, Luigi, to Moplefan S.p.A. Laminated olefinic polymer sheets for packaging. 4,211,811, Cl. 428-220.000.
Boreas, Willem J. L., to Sangamo Weston, Inc. Self contained filar suspended meter rotor. 4,211,972, Cl. 324-154.00R.
Borg-Warner Corporation: *See—*
Vandevier, Joseph E.; and Hocutt, Larry E., 4,211,625, Cl. 204-197.000.
Borman, Willem F. H., to General Electric Company. Copolyesters of polybutylene terephthalate. 4,211,689, Cl. 260-40.00R.
Borowski, Kurt: *See—*
Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, 4,211,478, Cl. 354-60.00L.
Bosenberg, Wolfram A.: *See—*
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Boss, Raymond E., to United States of America, Navy. Hot gas motor. 4,211,148, Cl. 91-499.000.
Boucher, Raymond M. G., to Biophysics Research & Consulting Corporation. Process for ultrasonic pasteurization. 4,211,744, Cl. 422-20.000.
Bourset, Claude; and Lenne, William, to Essilor International (Cie Generale d'Optique). Molding assembly for casting soft contact lenses. 4,211,384, Cl. 249-160.000.
Bower, Terry F.: *See—*
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., 4,211,270, Cl. 164-83.000.
Boyd, Kenneth J., to Weber-Knapp Company. Hinge. 4,210,979, Cl. 16-147.000.
Boyd, Leroy. Refuse container sprayer. 4,211,745, Cl. 422-28.000.
Boyd, Stuart G.: *See—*
Steward, Raymond G.; Boyd, Stuart G.; and Civardi, Frank P., 4,211,590, Cl. 156-79.000.
Braconnier, Daniel; Joly, Jean; and Renault, Michele, to Rhone-Poulenc-Textile. Openwork textile structure and process for manufacture thereof. 4,211,812, Cl. 428-224.000.
Bradley, Richard L. Rifle gun barrel. 4,211,146, Cl. 89-16.000.
Bradt, Rexford H., to Jeffers, Albert L., a part interest. Process for forming and twisting fibers. 4,211,736, Cl. 264-8.000.
Braid, Milton, to Mobil Oil Corporation. Alkali metal containing transition metal complexes of thiobis (alkylphenols) as stabilizers for various organic media. 4,211,663, Cl. 252-42.700.
Braun, David B.; and Drap, Stephen, to Union Carbide Corporation. Poly(ethylene oxide) compositions. 4,211,681, Cl. 260-29.20R.
Braun, Erwin: *See—*
Bock, Erich; Braun, Erwin; and Wulfhorst, Burkhard, 4,211,063, Cl. 57-302.000.
Braun, Raymond J. Solar refrigeration system. 4,211,212, Cl. 126-439.000.
Braverman, Milton. Extender and header card for medicinal dispensing device. 4,211,329, Cl. 206-534.000.
Bredon Hydraulics Limited: *See—*
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Brenner, Margaret A.: *See—*
Brenner, Robert, 4,211,306, Cl. 182-76.000.
Brenner, Robert, to Brenner, Robert; and Brenner, Margaret A. Emergency building escape ladder. 4,211,306, Cl. 182-76.000.
Bresson, Clarence R.; and Thornberry, William E., to Phillips Petroleum Company. Gauge. 4,211,013, Cl. 33-147.00R.
Bridges, Barry A.: *See—*
Crescenzi, Donald; and Bridges, Barry A., 4,211,322, Cl. 206-44.00R.
Bridgestone Tire Company Limited: *See—*
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,211,901, Cl. 200-83.00B.
Watabe, Yoji; Fujii, Yoshihiko; Anzai, Shiro; and Furukawa, Junji, 4,211,676, Cl. 260-2.300.
Briggs, Martin H. Structural spanning member. 4,211,047, Cl. 52-522.000.
Brisken, Axel F.; and Smith, Lowell S., to General Electric Company. Wear plate for piezoelectric ultrasonic transducer arrays. 4,211,949, Cl. 310-322.000.
Brisken, Axel F.: *See—*
Smith, Lowell S.; and Brisken, Axel F., 4,211,948, Cl. 310-322.000.
Bristol, Robert D. Internal combustion engine with free floating auxiliary piston. 4,211,082, Cl. 60-605.000.
Brizzolara, Donald F., to Du Pont de Nemours, E. I., and Company. Polyisocyanate compositions. 4,211,804, Cl. 427-377.000.
Brock, James D.; and Mize, Erbie G., to Astec, Industries, Inc. Drum mix asphalt plant with fiber filter dust collector. 4,211,490, Cl. 366-11.000.
Brooks, James C., Jr. Compensating trolling fin. 4,211,180, Cl. 114-144.00R.
Brothers, Jack, to United States of America, Army. Sub projectile or flechette launch system. 4,211,169, Cl. 102-67.000.
Brown, Douglas B.; and Bender, Robert. Apparatus for discharge of pressure cooked particulate or fibrous material. 4,211,163, Cl. 100-145.000.
Brown, Earle S., Jr.: *See—*
Walker, Wellington E.; Bryant, David R.; and Brown, Earle S., Jr., 4,211,719, Cl. 260-449.00L.
Brown, Glen. Practice putting green. 4,211,417, Cl. 273-176.00H.
Brown, Marvin R.: *See—*
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Brown, William R., to FMC Corporation. Vibrator with eccentric weights. 4,211,121, Cl. 74-87.000.
Bruderhaus Maschinen GmbH: *See—*
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Bruel & Kjaer A/S: *See—*
Jensen, Joergen, 4,211,951, Cl. 310-329.000.
Brumfield, Robert C. Surface treatment for blood dialysis cartridges. 4,211,602, Cl. 156-644.000.
Brummel, Allan J.; Hodur, Neil R.; and Synkoski, Richard, to Brummel, Allan J. Contact lenses with angular orientation and stabilization. 4,211,476, Cl. 351-160.00R.
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Bryant Grinder Corporation: *See—*
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Mitchell, William A.; and Clark, John S., 4,211,454, Cl. 308-26.000.
BSB Aktiengesellschaft fur Mechanische Beschriftung und Dekoration: *See—*
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Barta, Franz, 4,211,810, Cl. 428-201.000.
Bublitz, Robert F., to Reynolds Metals Company. Container closure structure. 4,211,338, Cl. 220-359.000.
Buck, George S., Jr.; and Weyker, R. G., to Fiberlok, Inc. Bonded laminated structure and method for producing such. 4,211,817, Cl. 428-310.000.
Buckle, Derek R.; and Smith, Harry, to Beecham Group Limited. Indanediones. 4,211,791, Cl. 424-304.000.
Buckner, John G.; Lineberry, Cletus E.; and Harris, Jimmy W. Method and apparatus for handling and stacking brick. 4,211,130, Cl. 83-23.000.
Budd Company, The: *See—*
Eggert, Walter S., Jr., 4,211,173, Cl. 105-402.000.
McMullen, John C., 4,211,311, Cl. 188-209.000.
Buhrer, Carl F., to GTE Laboratories Incorporated. Ceramic compositions and articles prepared therefrom. 4,211,758, Cl. 423-263.000.
Bundy, Gordon L., to Upjohn Company, The. 9-Deoxy-9α,6-nitrilo or 6,9α-imino-17,18-didehydro-PGF compounds. 4,211,706, Cl. 260-326.270.
Bunker Ramo Corporation: *See—*
Holt, Harley R., 4,210,997, Cl. 29-566.300.
White, William G.; and Johnson, Verle D., 4,211,001, Cl. 29-747.000.
Burgess, John D.; and Jacuzzi, Virgil J., to Jacuzzi Bros., Incorporated. Whirlpool bath. 4,211,216, Cl. 128-66.000.
Burke, Roger W.; and Boone, Sheila T. Multiple-curved fashion design tool. 4,211,010, Cl. 33-11.000.
Burnier, Pierre H., to BBC Brown Boveri & Cie. Device for maintaining a vacuum in a compartment of a rotating member. 4,211,087, Cl. 62-55.500.
Burris, Michael V. Asphalt-sulfur emulsion composition. 4,211,575, Cl. 106-274.000.
Burroughs Corporation: *See—*
Costello, Matthew J.; and Gallagher, Norman K., 4,211,493, Cl. 400-121.000.
Butler, James L. Plastic tube. 4,211,259, Cl. 138-109.000.
Butts, Lawrence D.; and Kambic, Raymond V., to Folger Adam Co., Division of Telkee, Inc., a part interest. Electric strike. 4,211,443, Cl. 292-341.160.
C.I. Kasei Company Limited: *See—*
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C. van der Lely N.V.: *See—*
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Cacalloro, Philip A.: *See—*
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Cairns, Hugh; and Payne, Anthony R., to Fisons Limited. Compounds. 4,211,788, Cl. 424-283.000.
Cakebread, William A.; and Pryke, Graham R., to B & A Engineering Company Ltd. Crane load alarm with compensation for direction of rope movement. 4,212,006, Cl. 340-685.000.
California Institute of Technology: *See—*
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California Medical Developments, Inc.: *See—*
Olsen, C. Eric, 4,211,323, Cl. 206-210.000.
Camardella, Giuseppe, to Tekma Kinomat S.p.A. Automatic welding of resistance wires on resistors terminals. 4,211,913, Cl. 219-56.220.
Cambrian Engineering Group Limited, The: *See—*
McGowan, Raymond J., 4,211,610, Cl. 202-177.000.
Campagnie Industrielle des Piles Electriques "Cipel": *See—*
Chevet, Robert, 4,211,830, Cl. 429-27.000.
Campbell, June H. Insulated lunch bag. 4,211,091, Cl. 62-372.000.
Canadian International Paper Company: *See—*
Saxton, William R.; and Lawford, William H., 4,211,605, Cl. 162-64.000.
Cannella, Vincent D.: *See—*
Izu, Masatsugu; and Cannella, Vincent D., 4,211,838, Cl. 430-502.000.
Cantaloupe, Francis A.; Colegrove, Robert W.; Megles, John E., Jr.; and Rittler, Hermann L., to Corning Glass Works. Brown glass-ceramic articles. 4,211,820, Cl. 428-410.000.
Cante, Charles J.; Downhour, Russell; Randall, Lee P.; and Morgan, Jeffrey D., to General Foods Corporation. Dry dog food of improved palatability. 4,211,797, Cl. 426-2.000.
Carey, Wayne C. Method of making a cooking vessel release material. 4,211,802, Cl. 426-609.000.
Carl Still, Firma: *See—*
Bocsanczy, Janos; and Stalherm, Dieter, 4,211,611, Cl. 202-262.000.
Carp, Ralph W.; Weissler, Harold E., II; and Kudlaty, Paul R., to Bendix Corporation, The. Hybrid electronic control unit for fuel management systems. 4,212,066, Cl. 364-431.000.
Carp, Ralph W.: *See—*
Marchak, Roman O.; Peterson, William A., Jr.; and Carp, Ralph W., 4,212,065, Cl. 364-431.000.
Carr, Norman L.; Schleppy, Ronald, Jr.; and Shah, Yatish T., to Gulf Research and Development Company. Coal liquefaction process employing multiple recycle streams. 4,211,631, Cl. 208-8.0LE.
Carrier Corporation: *See—*
Geary, Carl H., Jr., 4,211,932, Cl. 290-52.000.
Carroll, Kevin T. Game and exercising device, method of exercising, and method of playing a game. 4,211,402, Cl. 272-93.000.
Cassidy, Joseph C., to Energy Kinematics, Inc. Hybrid hydrostatic-pneumatic power generation system. 4,211,077, Cl. 60-398.000.
Castleberry, Donald E., to General Electric Company. Illuminator for reflective dichroic liquid crystal displays. 4,212,048, Cl. 362-19.000.
Catalucci, Enrico, to Lonza, Ltd. Process for the production of p-(N-methyl)-aminobenzoyl-L-glutamic acid. 4,211,883, Cl. 562-433.000.
Cater, Allen W., to CRS Co. Preparation of protein enriched yeast products devoid of carbohydrates. 4,211,798, Cl. 426-41.000.
Caterpillar Tractor Co.: *See—*
Grawey, Charles E., 4,211,592, Cl. 156-123.00R.
Kranc, Stanley J., 4,211,520, Cl. 417-494.000.
Lockhart, David A., 4,211,205, Cl. 123-193.0CH.
Cel-U-Dex, Inc.: *See—*
Chamberlin, Coleman R., 4,211,805, Cl. 428-40.000.
Centre Technique de l'Industrie Horiogere "Ceterhor" Laboratoire d'Electrochimie-Faculte des Sciences et des Techniques: *See—*
Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, 4,211,475, Cl. 350-357.000.
CGR Medical Corporation: *See—*
Hellstrom, Melbourne J.; Perlin, Allen I.; and Kutlik, Edward, 4,211,927, Cl. 250-445.00T.
Chaffin, Richard, to Clevepak Corporation. Automatic multicell carton. 4,211,359, Cl. 229-28.00R.
Chambard, Carol K. Assemblable and disassemblable lamp shade. 4,212,052, Cl. 362-352.000.
Chamberlin, Coleman R., to Cel-U-Dex, Inc. Self-adhesive labeling article. 4,211,805, Cl. 428-40.000.
Chambers, Albert, to Fisons Limited. Compositions comprising a compound having sodium cromoglycate activity and aminosalicylic acid. 4,211,777, Cl. 424-232.000.
Chambers, Doyle M.: *See—*
Steelman, Carrol D.; and Chambers, Doyle M., 4,211,778, Cl. 424-244.000.
Champion International Corporation: *See—*
Lillibridge, Harold R., 4,210,977, Cl. 15-306.00R.
Scott, Raymond G.; and Wysocki, Lawrence S., 4,211,360, Cl. 229-43.000.
Chandler, Curtis S., to AMP Incorporated. Metal strain relief clamp. 4,211,463, Cl. 339-103.00M.
Chaney, Robert F.; and Connell, Gene N., to Quad C Corporation. Covered mixing machine, or the like, and method of loading the same. 4,211,491, Cl. 366-30.000.
Chang, Shih-chih. Gas-liquid mixing process and apparatus. 4,211,733, Cl. 261-36.00R.
Chapman, Kenneth G., to Pfizer Inc. Process for the preparation of dustless quinoxaline-1,4-dioxide animal feed supplement premixes. 4,211,781, Cl. 424-250.000.
Chapman, Walter H.; Hiland, David E.; Knies, Erwin B.; and Oberlin, Robert E., to Du Pont de Nemours, E. I., and Company. Apparatus for connecting tow carts to a conveyor. 4,211,172, Cl. 104-172.0BT.
Chassin, Andre' : *See—*
Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, 4,211,795, Cl. 426-2.000.
Chattopadhyay, Ashok: *See—*
Rose, Selwyn H.; and Chattopadhyay, Ashok, 4,211,677, Cl. 260-13.000.
Chave & Earley, Inc.: *See—*
Perry, Gerald N., 4,211,661, Cl. 210-491.000.
Chekroun, Claude, to Societe d'Etude du Radant. Electronically controlled dielectric panel lens. 4,212,014, Cl. 343-754.000.
Chemische Werke Huls Aktiengesellschaft: *See—*
List, Ferdinand; Klos, Julius; and Alfs, Helmut, 4,211,506, Cl. 406-55.000.
Chen, Nai Y., to Mobil Oil Corporation. Catalytic conversion of hydrocarbons. 4,211,635, Cl. 208-93.000.
Chen, Robert I.: *See—*
Chu, Hing C.; Sahm, William H., III; and Chen, Robert I., 4,212,023, Cl. 357-19.000.
Chen, Thomas Y. C. Methods and apparatus for feeding liquid into apparatus having high pressure resistance. 4,211,188, Cl. 122-451.00R.
Cheng, Sheng-Hsiung. Automotive anti-choking device. 4,211,734, Cl. 261-39.00B.
Cherednik, Igor M.: *See—*
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.
Chesnokov, Vadim D.: *See—*
Valgin, Vasily D.; Vasilenko, Alexandr M.; Morozov, Anatoly Y.; and Chesnokov, Vadim D., 4,211,856, Cl. 528-141.000.
Chevet, Robert, to Saft Leclanche; and Campagnie Industrielle des Piles Electriques "Cipel". Air-depolarized primary cell. 4,211,830, Cl. 429-27.000.
Chikashige, Kiyoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. End plug fitting for an endoscope. 4,211,214, Cl. 128-4.000.
Chikul, Olga S.: *See—*
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.;

Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Chikul, Vitaly I.: *See—*
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Childers-Fowler Research and Development Company: *See—*
Fowler, Herbert, 4,211,620, Cl. 204-129.000.

Chisso Corporation: *See—*
Inukai, Takashi; Inoue, Hiromichi; and Sato, Hideo, 4,211,666, Cl. 252-299.000.
Kunimune, Kohichi; Inadomi, Seigo; and Yoshida, Satomi, 4,211,819, Cl. 428-374.000.
Ohtake, Nobumasa; Yoshizawa, Ryo; and Koga, Isao, 4,211,704, Cl. 260-319.100.

Choay S.A.: *See—*
Moreau, Robert C.; and Fournier, Jean-Paul, 4,211,776, Cl. 424-228.000.

Choi, Sam K.; and Lee, Kee D. Antistatic agents, synthesis and use thereof. 4,211,859, Cl. 528-275.000.

Chojnacki, Dennis A.: *See—*
Mayers, Richard R.; Huebner, Steven R.; and Chojnacki, Dennis A., 4,211,088, Cl. 62-64.000.

Chu, Hing C.; Sahm, William H., III; and Chen, Robert I., to General Electric Company. Bilateral phototransistor. 4,212,023, Cl. 357-19.000.

Chugoku Marine Paints Ltd.: *See—*
Matsuda, Sumio; and Kudara, Hajime, 4,211,566, Cl. 106-16.000.

Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., to Gosudarstvenny Nauchno-Issledovatelsky Energetichesky Institut Imeni G.M. Krzhizhanovskogo. Method for heat processing of pulverized brown coal. 4,211,632, Cl. 208-8.00R.

Chukhanov, Zinovy Z.: *See—*
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

Chun, Delo K. K.: *See—*
D'Oporto, Tito R.; and Chun, Delo K. K., 4,211,127, Cl. 81-63.000.

Ciba-Geigy AG: *See—*
Blake, Colin C.; and Payne, Ivan C., 4,211,630, Cl. 204-275.000.

Ciba-Geigy Corporation: *See—*
Altermatt, Hans; and Wick, Arnold, 4,211,688, Cl. 260-40.00P.
Deiner, Hans, 4,211,815, Cl. 428-290.000.
Hurter, Rudolf, 4,211,698, Cl. 260-176.000.
Luttringer, Jean P., 4,211,527, Cl. 8-526.000.
Nachbur, Hermann; and Rohringer, Peter, 4,211,814, Cl. 428-265.000.
Roth, Martin; Kvita, Vratislav; and Greber, Gerd, 4,211,705, Cl. 260-326.00C.

Cihal, Jan: *See—*
Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, 4,211,895, Cl. 179-18.00J.

Cikalon Vliesstoffwerk GmbH: *See—*
Lochner, Herbert, 4,211,593, Cl. 156-148.000.

Cincinnati Milacron Inc.: *See—*
Wisbey, Jerry D.; and Stone, Kirby L., 4,211,255, Cl. 137-625.480.

Civardi, Frank P.; and Loew, Frederic C., to Milliken Research Corporation. Treated fabric structure. 4,211,806, Cl. 428-91.000.

Civardi, Frank P.: *See—*
Steward, Raymond G.; Boyd, Stuart G.; and Civardi, Frank P., 4,211,590, Cl. 156-79.000.

Clark Equipment Company: *See—*
Sturtz, Charles R., Jr., 4,211,256, Cl. 137-625.640.

Clark, John S.: *See—*
Mitchell, William A.; and Clark, John S., 4,211,454, Cl. 308-26.000.

Clark, Ronald L.; and Kreeger, John L., to United States of America, Navy. Converter for converting a high frequency video signal to a digital signal. 4,211,999, Cl. 340-347.0AD.

Clason, Frank L., to Towmotor Corporation. Interlock mechanism. 4,211,314, Cl. 192-4.00A.

Claytor, Gary L.: *See—*
Westbrook, Clifton W.; Parcell, Lloyd J.; Claytor, Gary L.; and Klock, Byron V., 4,211,646, Cl. 210-15.000.

Clevepak Corporation: *See—*
Chaffin, Richard, 4,211,359, Cl. 229-28.00R.

Cleversey, Gerald W.; Duncan, Robert J.; Medidge, George H., Jr.; and Fleming, Jean A., to USM Corporation. Electrical component testing system for component insertion machine. 4,212,075, Cl. 364-580.000.

Cloutier, Jean-Marie. Multipurpose tibial template. 4,211,228, Cl. 128-303.00R.

Coatu, Ovidiu. Portable barbecue grill. 4,211,159, Cl. 99-421.00V.

Cochrane, John J. Liquid treating system. 4,211,656, Cl. 210-149.000.

Coday, Jerry F. Precast concrete building module form. 4,211,043, Cl. 52-79.100.

Coffaro, Matthew; and Pelton, Ronald L. Weight lifting leg exercise device. 4,211,403, Cl. 272-134.000.

Coiffeurs i Coppola, di Aldo e Antonio Coppola, s.n.c.: *See—*
Coppola, Aldo; and Coppola, Antonio, 4,211,245, Cl. 132-40.000.

Coin Controls Limited: *See—*
Bellis, Robert E., 4,211,317, Cl. 194-1.00D.

Cole, Michael, to Metals Research Limited. Crystal growth. 4,211,600, Cl. 156-608.000.

Cole-Parmer Instrument Company: *See—*
Hogan, Lawrence R., 4,211,519, Cl. 417-360.000.

Colegrove, Robert W.: *See—*
Cantaloupe, Francis A.; Colegrove, Robert W.; Megles, John E., Jr.; and Rittler, Hermann L., 4,211,820, Cl. 428-410.000.

Colgate-Palmolive Company: *See—*
Douglass, Miriam L., 4,211,871, Cl. 546-6.000.
Schaar, Charles H., 4,211,226, Cl. 128-287.000.
Weyn, Hendrik F., 4,211,341, Cl. 222-94.000.

Collado, Hugo. Sugarcane cultivator. 4,211,284, Cl. 172-151.000.

Colletti, John B.; and Howell, Forrest W., to TRW Inc. Power steering motor seal. 4,211,152, Cl. 92-168.000.

Collins, Walter W., to Jenkins Metal Corporation. Adaptable knife sheath. 4,211,003, Cl. 30-162.000.

Colt Industries Operating Corp.: *See—*
Zechlin, Richard, 4,211,195, Cl. 123-335.000.

Colver, Kenneth W.: *See—*
Cox, Michael D.; Hunt, Norman; and Colver, Kenneth W., 4,211,193, Cl. 123-352.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Dixon, David R.; Lydiate, Jack; and Lubbock, Frederick J., 4,211,664, Cl. 252-62.540.

Compagnie Generale d'Electricite: *See—*
Desplanches, Gerard; and Leboucq, Jacques, 4,211,570, Cl. 106-65.000.
Le Goff, Denis, 4,211,474, Cl. 350-356.000.

Compagnie Generale des Etablissements Michelin: *See—*
Coulombeau, Alain, 4,211,829, Cl. 429-27.000.

Compagnie Internationale pour l'Informatique: *See—*
Lazzari, Jean-Pierre; and Helle, Michel, 4,212,041, Cl. 360-113.000.
Plotto, Michel, 4,212,044, Cl. 360-103.000.
Ugon, Michel, 4,211,919, Cl. 235-487.000.

Compair Construction & Mining Limited: *See—*
Pidgeon, Howard H. J., 4,211,522, Cl. 418-99.000.

Computer Peripherals, Inc.: *See—*
Hardt, Thomas T., 4,211,166, Cl. 101-111.000.

Condec Corporation: *See—*
Phipps, Arthur L., 4,211,739, Cl. 264-51.000.

Conklin, Harold A., Jr., to Baldwin Piano & Organ Company. Sound reflector for grand pianos. 4,211,142, Cl. 89-189.000.

Connell, Gene N.: *See—*
Chaney, Robert F.; and Connell, Gene N., 4,211,491, Cl. 366-30.000.

Conners, John P., to Giddings & Lewis, Inc. Digital computer structure providing arithmetic and boolean logic operations, the latter controlling the former. 4,212,076, Cl. 364-706.000.

Conoco, Inc.: *See—*
Peterson, Marvin L.; and Maxson, Orwin G., 4,211,503, Cl. 405-216.000.

Consortium fur Elektrochemische Industrie, GmbH: *See—*
Marquardt, Klaus; and Kreuzer, Franz-Heinrich, 4,211,729, Cl. 525-106.000.

Consumer Promotions, Inc.: *See—*
Salmon, Peter C.; and Kidd, Christopher, 4,211,331, Cl. 211-13.000.

Container Corporation of America: *See—*
Helms, Charles R., 4,211,336, Cl. 220-270.000.
Skaggs, Boyd T., 4,211,355, Cl. 229-15.000.

Container Equipment Corporation: *See—*
Walters, Robert W.; and Nylander, James, 4,211,153, Cl. 93-53.0SD.

Coombes, Alan: *See—*
Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, 4,211,235, Cl. 128-419.0PG.

Cooper, Frank W., Jr., to Westinghouse Electric Corp. Hydraulic expansion swaging of tubes in tubesheet. 4,210,991, Cl. 29-421.00R.

Copal Company Limited: *See—*
Shimizu, Munetaka; and Takeda, Yoshimasa, 4,211,498, Cl. 400-621.000.

Coppola, Aldo; and Coppola, Antonio, to Coiffeurs i Coppola, di Aldo e Antonio Coppola, s.n.c. Hair-waving device. 4,211,245, Cl. 132-40.000.

Coppola, Antonio: *See—*
Coppola, Aldo; and Coppola, Antonio, 4,211,245, Cl. 132-40.000.

Cordis Dow Corp.: *See—*
Lipps, Bennie J.; Murphy, William P., Jr.; and Mather, Frank W., III, 4,211,597, Cl. 156-245.000.

Corning Glass Works: *See—*
Cantaloupe, Francis A.; Colegrove, Robert W.; Megles, John E., Jr.; and Rittler, Hermann L., 4,211,820, Cl. 428-410.000.
Hares, George B.; and Morse, David L., 4,211,569, Cl. 106-53.000.

Corpus, Nikolaus: *See—*
Stoll, Kurt; Hinder, Herbert; and Corpus, Nikolaus, 4,211,155, Cl. 98-115.0LH.

Corse, Louis G., to Machines Chambon. Inking device for printing with greasy ink. 4,211,167, Cl. 101-148.000.

Costello, Alan T.: *See—*
Baird, David B.; Costello, Alan T.; Fishwick, Brian R.; McClelland, Robert D.; and Smith, Peter, 4,211,696, Cl. 260-152.000.

Costello, Matthew J.; and Gallagher, Norman K., to Burroughs Corporation. Impact printing apparatus. 4,211,493, Cl. 400-121.000.

Cote, Robert J. Musical instrument. 4,211,143, Cl. 84-402.000.

Cotter, Byron R., to Hooker Chemicals & Plastics Corp. Process for the preparation of aromatic nitriles. 4,211,721, Cl. 260-465.00G.

Coulombeau, Alain, to Compagnie Generale des Etablissements Michelin. Process for assembling a porous membrane on a support and assembly produced in this manner. 4,211,829, Cl. 429-27.000.

Cowher, Melvyn E.; and Sedgwick, Thomas O., to International Business Machines Corporation. CVD Growth of magnetic oxide films having growth induced anisotropy. 4,211,803, Cl. 427-128.000.

Cox, Michael D.; Hunt, Norman; and Colver, Kenneth W., to Associated Engineering Limited. Speed regulating systems. 4,211,193, Cl. 123-352.000.

Crane, Walton B., to Industrial Designs and Services. Lug box having cored-out plastic end walls. 4,211,358, Cl. 229-23.00C.

Crepaco, Inc.: *See—*
Birk, Edward W., 4,211,056, Cl. 53-543.000.

Crepin, Roger, to Thomson-Brandt. Steering arrangement for projectiles of the missile kind, and projectiles fitted with this arrangement. 4,211,378, Cl. 244-3.220.

Crescenzi, Donald; and Bridges, Barry A., to Leigh Products, Inc. Self-joined interlocking container. 4,211,322, Cl. 206-44.00R.

Cretin, Michel. Safety pyramid toy spindle. 4,211,029, Cl. 46-17.000.

Cross, Peter S.; and Schmidt, Ronald V., to Bell Telephone Laboratories, Incorporated. Optically-controlled two-channel integrated optical switch. 4,211,467, Cl. 350-96.140.

Cross, Robert M. Log splitter. 4,211,264, Cl. 144-193.00D.

CRS Co.: *See—*
Cater, Allen W., 4,211,798, Cl. 426-41.000.

Crummer, Robert R.: *See—*
Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,211,692, Cl. 260-45.70P.

Cryomedics, Inc.: *See—*
Rzasa, Ronald P., 4,211,231, Cl. 128-303.100.

CSELT—Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Tamburelli, Giovanni, 4,211,929, Cl. 250-55.000.

Cunard, Joel C., to Hedstrom Co. Swing having electrically rewound spring motor drive. 4,211,401, Cl. 272-86.000.

Cunningham, Hugh, to PPG Industries, Inc. Permionic membrane electrolytic cell. 4,211,627, Cl. 204-252.000.

Cure, Omer P. I., to Electro-Nite Co. Molten metal sampling device. 4,211,117, Cl. 73-425.40R.

Cuvelier, Georges, to Dollfus-Mieg & Cie. Solutions of sublimable dyes for the preparation of special inks for felt tip markers or pens. 4,211,528, Cl. 8-471.000.

Cvacho, Daniel S. Sealing process for underground walls. 4,211,050, Cl. 52-742.000.

Cyborex Laboratories, Inc.: *See—*
Hedges, Walter P.; and Sullivan, C. Gardner, II, 4,211,933, Cl. 307-35.000.

Czarnota, John J. Vehicle tire traction strip. 4,211,366, Cl. 238-14.000.

Daimler-Benz Aktiengesellschaft: *See—*
Hafner, Gunther, 4,211,202, Cl. 123-457.000.
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, 4,211,831, Cl. 429-78.000.

Dalitz, Shirley R. Planter basket. 4,211,036, Cl. 47-66.000.

Danilov, Leonid I.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Danilov, Leonid I.; and Pinsky, Gennady I., 4,211,101, Cl. 72-247.000.

Dankert, Gerhard: *See—*
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,211,869, Cl. 544-334.000.

Darbo, Rolf E., to Portable Cookery, Inc. Portable cooking grill. 4,211,206, Cl. 126-9.00R.

Das, Anup K.: *See—*
Emblem, Harold G.; Das, Anup K.; and Jones, Kenneth, 4,211,717, Cl. 556-470.000.

Das, Manik L., to Sigma Chemical Company. Colorimetric cholesterol assay. 4,211,531, Cl. 23-230.00B.

Data Machines International, Inc.: *See—*
Naylor, James E., 4,211,496, Cl. 400-124.000.

Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., to Avco Everett Research Laboratory, Inc. High energy electron beam driven laser. 4,211,983, Cl. 331-94.5PE.

Davies, Barrie L.: *See—*
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., 4,211,816, Cl. 428-296.000.

Davis, Douglas H., to PPG Industries, Inc. Storable glass batch composition. 4,211,568, Cl. 106-52.000.

Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, to Plessey Canada Ltd. Electronic telephone system with time division multiplexed signalling. 4,211,895, Cl. 179-18.00J.

Dayco Corporation: *See—*
Meadows, Roger D., 4,211,457, Cl. 339-15.000.

Dean, John J.; and Wetzig, Lloyd M. Fuel pellets and process for producing fuel pellets from botanical materials. 4,211,740, Cl. 264-68.000.

Deavenport, Joe E.; and Roorda, John W., to Westek Corporation. Touch-control adapter for electric lamps. 4,211,959, Cl. 315-362.000.

Decaux, Jean-Claude. Sanitary unit. 4,210,973, Cl. 4-420.000.

Decoene, Frans J. G. C., to Sperry Corporation. Row crop attachment. 4,211,059, Cl. 56-94.000.

Deere & Company: *See—*
Saele, Arvid H.; and Johannsen, Donald O., 4,211,079, Cl. 60-433.000.

Dehn, Rudolph A., to General Electric Company. Microwave directional coupler and detector module. 4,211,911, Cl. 219-10.55F.

Dehring, James C.: *See—*
Sleeter, Michael R.; and Dehring, James C., 4,211,107, Cl. 73-49.600.

Deiner, Hans, to Ciba-Geigy Corporation. Waterproofing of textiles. 4,211,815, Cl. 428-290.000.

Del Mar Avionics: *See—*
Shu, Stephen K.; and Squires, W. David, 4,211,238, Cl. 128-700.000.

de Recourt Martyn, Elizabeth: *See—*
Matthews, Carl; and de Recourt Martyn, Elizabeth, 4,211,302, Cl. 181-248.000.
Matthews, Carl; and de Recourt Martyn, Elizabeth, 4,211,303, Cl. 181-248.000.
Matthews, Carl; and de Recourt Martyn, Elizabeth, 4,211,304, Cl. 181-248.000.
Matthews, Carl; and de Recourt Martyn, Elizabeth, 4,211,305, Cl. 181-248.000.

Deritend Engineering Company, The: *See—*
Bishop, Thomas D., 4,211,398, Cl. 271-9.000.

Desai, Kishor A., to American Color & Chemical Corporation. Azoanilino-toluene sulfonamidoalkyleneamine cationic dyes for paper. 4,211,697, Cl. 260-158.000.

De Santis, Richard. Adjustable holder for molding dentures. 4,211,392, Cl. 269-75.000.

DeSoto, Inc.: *See—*
Rose, Selwyn H.; and Chattopadhyay, Ashok, 4,211,677, Cl. 260-13.000.

Desplanches, Gerard; and Leboucq, Jacques, to Compagnie Generale d'Electricite. Method of manufacturing beta alkaline alumina parts. 4,211,570, Cl. 106-65.000.

Deutsch Company Electronic Components Division, The: *See—*
Holzman, Melvyn A., 4,211,469, Cl. 350-96.160.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Harmonic formant filter for an electronic musical instrument. 4,211,138, Cl. 84-1.010.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Lindner, Friedrich, 4,211,208, Cl. 126-400.000.
Twardy, Harald; and Lo, Roger, 4,211,072, Cl. 60-203.000.

Devalois, Serge: *See—*
Bentz, Gerard; Galey, Jean; and Devalois, Serge, 4,211,269, Cl. 164-67.000.

Deverell, Harry E., to Allegheny Ludlum Steel Corporation. Controlled weld area grinding to prevent the initiation of intergranular corrosion. 4,211,042, Cl. 51-281.00R.

Devlin, Charles L.; and Eichelberger, Charles W., to General Electric Company. Shared memory multi-microprocessor computer system. 4,212,057, Cl. 364-200.000.

DeVoid, Robert R.; and Hodson, William A. Apparatus and procedure for testing prerequisite skills for reading by use of a dynamic line pattern. 4,211,018, Cl. 35-35.00R.

Deweck, Jean: *See—*
Van Hecke, Michel C. F.; and Deweck, Jean, 4,211,754, Cl. 423-62.000.

Diamond Shamrock Corporation: *See—*
McCutchen, Hugh L.; and Bess, James W., Sr., 4,211,629, Cl. 204-252.000.

Di Drusco, Giovanni; and Zaffagnini, Deoscaride, to Montedison S.p.A. Process for producing synthetic fibers for use in paper-making. 4,211,737, Cl. 264-12.000.

Diegel, Herbert F. Foil applicator for folding and applying adhesive backed foil to the edge of a work piece. 4,211,598, Cl. 156-468.000.

Diesel Kiki Co., Ltd.: *See—*
Kobayashi, Masayoshi, 4,211,203, Cl. 123-406.000.

Dieterich, Dieter, to Bayer Aktiengesellschaft. Polyhydroxy compounds containing urethane aryl sulfonic acid hydroxyalkyl ester groups. 4,211,850, Cl. 521-164.000.

Dieterich, Dieter: *See—*
Wenzel, Wolfgang; and Dieterich, Dieter, 4,211,683, Cl. 260-29.40R.

Dietrich, Otto E. Wear and alignment sleeve for power tool. 4,211,509, Cl. 408-35.000.

Digby, Dennis: *See—*
Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, 4,211,235, Cl. 128-419.0PG.

Diggs, Richard E. Apparatus for desalinating water. 4,211,609, Cl. 202-176.000.

Dill, Herbert C.; and Scales, Stanley R., to Hughes Tool Company. Earth boring tool with improved inserts. 4,211,508, Cl. 407-120.000.

Dittrich, Werner; Josten, Walter; Nestler, Heinz; and Schnippering, Friedhelm, to Dynamit Nobel Aktiengesellschaft. Process for the manufacture of refractory ceramic products. 4,211,567, Cl. 106-38.350.

Diver's Exchange, Inc.: *See—*
O'Neill, Wilbur J., 4,211,220, Cl. 128-201.270.

DiVincenzo, Joseph. Car floor tray. 4,211,447, Cl. 296-1.00F.

Dixon, David R.; Lydiate, Jack; and Lubbock, Frederick J., to ICI Australia Limited; and Commonwealth Scientific and Industrial Research Organization. Process for making composite magnetic material. 4,211,664, Cl. 252-62.540.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Trenkler, Werner, 4,212,050, Cl. 362-65.000.

Dodds, Curtis E.: *See—*
Schmitz, Lawrence S.; Dodds, Curtis E.; and Whipple, John, 4,211,065, Cl. 368-47.000.

Dolch, Gernot, to Mecano-Simmonds GmbH. Blind rivet. 4,211,145, Cl. 85-72.000.

Dollfus-Mieg & Cie: *See—*
Cuvelier, Georges, 4,211,528, Cl. 8-471.000.

Donaldson Company, Inc.: *See—*
Tokar, Joseph C.; and Janezich, Frank A., 4,211,543, Cl. 55-485.000.

D'Oporto, Tito R.; and Chun, Delo K. K., to Ingersoll-Rand Company. Ratchet wrench reversing mechanism. 4,211,127, Cl. 81-63.000.

Doreau, Michel: *See—*
Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, 4,211,475, Cl. 350-357.000.

Doring, Fritz: *See—*
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,211,869, Cl. 544-334.000.

Dorsch, Hans-Lothar: *See—*
Hermann, Karl H.; and Dorsch, Hans-Lothar, 4,211,716, Cl. 260-391.000.

Dortu, Pierre, to Travaux et Produits Routiers Societe a Responsabilite Limitee. Method and device for driving a compaction machine. 4,212,071, Cl. 364-505.000.

Dougherty, Robert S.; Hirsch, Walter; and March, Rene, to Massey-Ferguson Industries Limited. Combine harvester automatic table height control. 4,211,057, Cl. 56-10.200.

Douglass, Miriam L., to Colgate-Palmolive Company. Heavy metal derivatives of mercaptopyridine-1-oxide. 4,211,871, Cl. 546-6.000.

Dow Chemical Company, The: *See—*
Ioset, Robert M., 4,211,775, Cl. 424-225.000.
Kurfman, Virgil B.; and Gransden, Raymond E., Jr., 4,211,822, Cl. 428-412.000.
Markley, Lowell D.; and Norton, Elizabeth J., 4,211,549, Cl. 71-88.000.
Marshall, David L.; and Herndon, William C., 4,211,763, Cl. 424-1.000.
Martin, Charles W.; and Ward, Eldon L., 4,211,784, Cl. 424-267.000.
Pews, R. Garth; and Ash, Mezzie L., 4,211,873, Cl. 546-346.000.
Raley, Charles F., Jr., 4,211,853, Cl. 525-317.000.

Downhour, Russell: *See—*
Cante, Charles J.; Downhour, Russell; Randall, Lee P.; and Morgan, Jeffrey D., 4,211,797, Cl. 426-2.000.

Dragerwerk Aktiengesellschaft: *See—*
Schwanbom, Erik; Hartwig, Hans-Joachim; and Warnow, Detlef, 4,211,221, Cl. 128-204.260.

Drap, Stephen: *See—*
Braun, David B.; and Drap, Stephen, 4,211,681, Cl. 260-29.20R.

Dravo Corporation: *See—*
Saxon, Arthur F., 4,211,752, Cl. 422-268.000.

Dresser Industries, Inc.: *See—*
Blanton, James R., 4,211,293, Cl. 175-297.000.

Drewery, John O., to Marconi Company Limited, The; and Standard Telephones and Cables Limited. Processing pal color television signals. 4,212,028, Cl. 358-11.000.

Drucker, Gerhard: *See—*
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, 4,211,831, Cl. 429-78.000.

Du, Elbert. Pressure sensitive transfer media. 4,211,826, Cl. 428-497.000.

Du Pont of Canada Limited: *See—*
Oughton, Richard W., 4,211,695, Cl. 260-123.500.
Oughton, Richard W., 4,211,801, Cl. 426-430.000.

Dubreuil, Monique, heir: *See—*
Dubreuil, Robert, deceased; Ast, Orvo; and Pavilanis, Vytautas, 4,211,843, Cl. 435-2.000.

Dubreuil, Robert, deceased (by Dubreuil, Monique, heir); Ast, Orvo; and Pavilanis, Vytautas, to L'Institut Armand-Frappier. Strain of measles virus and process of producing the same. 4,211,843, Cl. 435-2.000.

Dunbar, Glenn G. Weight vehicle apparatus. 4,211,297, Cl. 180-24.020.

Duncan, Robert J.: *See—*
Cleversey, Gerald W.; Duncan, Robert J.; Medidge, George H., Jr.; and Fleming, Jean A., 4,212,075, Cl. 364-580.000.

Dunn, Wendell E., Jr. Process for beneficiating titaniferous ores. 4,211,755, Cl. 423-74.000.

Du Pont de Nemours, E. I., and Company: *See—*
Blake, Ralph K.; Morgan, James G.; and Woodward, David W., 4,211,837, Cl. 430-502.000.
Brizzolara, Donald F., 4,211,804, Cl. 427-377.000.
Chapman, Walter H.; Hiland, David E.; Knies, Erwin B.; and Oberlin, Robert E., 4,211,172, Cl. 104-172.0BT.
Erdman, John P., 4,211,868, Cl. 544-221.000.
FitzGerald, Emerson B.; and Meyer, Walter C., 4,211,691, Cl. 260-42.210.
Nichols, Lee H., III; and Smith, Edmund H., Jr., 4,211,132, Cl. 83-71.000.
Pechhold, Engelbert; and Robinson, Ivan M., 4,211,862, Cl. 528-405.000.
Plambeck, Louis, Jr., 4,211,561, Cl. 430-306.000.
Robinson, Ivan M., 4,211,854, Cl. 525-410.000.
Scribner, Richard M., 4,211,876, Cl. 548-367.000.
Smiley, Robert A., 4,211,722, Cl. 260-465.300.

Duranleau, Roger G.: *See—*
Lewellen, Philip C.; Gates, Walter C., Jr.; and Duranleau, Roger G., 4,211,673, Cl. 252-462.000.

Durnfelder, Otto: *See—*
Fichtl, Karl; Berger, Rudolf; Durnfelder, Otto; and Pilz, Erich, 4,211,164, Cl. 100-145.000.

Duro-Test Corporation: *See—*
Bickford, Elwood D.; and Shurgan, Joel, 4,211,958, Cl. 315-312.000.

Dworschak, Karl: *See—*
Friedl, Reiner; Dworschak, Karl; and Hornfeck, Werner, 4,211,365, Cl. 237-12.30C.

Dyal, Elton E., to Modular Controls Corporation. Normally closed pressure compensated flow control valve. 4,211,254, Cl. 137-596.120.

Dynamit Nobel Aktiengesellschaft: *See—*
aus der Funten, Helmut; and Vogt, Wilhelm, 4,211,711, Cl. 260-343.30R.
Dittrich, Werner; Josten, Walter; Nestler, Heinz; and Schnippering, Friedhelm, 4,211,567, Cl. 106-38.350.
Steffen, Klaus-Dieter, 4,211,710, Cl. 260-343.30R.
Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, 4,211,730, Cl. 260-45.75B.

E M I Limited: *See—*
Fairbairn, Ian A., 4,211,925, Cl. 250-445.00T.

E. R. Squibb & Sons, Inc.: *See—*
Rovnyak, George C., 4,211,786, Cl. 424-273.00P.

Eadie, Brian K. M.; and Parker, William H. C., to Eadie Bros. & Co. Limited. Card-clothing wire. 4,211,583, Cl. 148-6.350.

Eadie Bros. & Co. Limited: *See—*
Eadie, Brian K. M.; and Parker, William H. C., 4,211,583, Cl. 148-6.350.

Eakes, Marion L. Apparatus for improving the collection of gases into a suction orifice. 4,211,154, Cl. 98-115.0LH.

Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., to Exxon Research & Engineering Co. Process for the production of an intermediate Btu gas. 4,211,538, Cl. 48-197.00R.

Eakman, James M.; Marshall, Harry A.; and Kalina, Theodore, to Exxon Research & Engineering Co. Process for the production of a chemical synthesis gas from coal. 4,211,669, Cl. 252-373.000.

Eastman Kodak Company: *See—*
Wu, Tai-Wing, 4,211,844, Cl. 435-25.000.

Eckert, Joachim; and Spirk, Franz, to Siemens Aktiengesellschaft. Asynchronous electric machine. 4,211,946, Cl. 310-212.000.

Edwards, Ernest; and Jukes, Michael K., to International Telephone and Telegraph Corporation. Connector tool. 4,211,395, Cl. 269-254.00R.

Efimov, Viktor M.: *See—*
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Egger, Gerhard: *See—*
Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, 4,211,478, Cl. 354-60.00L.

Eggers, Philip E.: *See—*
Kortier, William E.; Mueller, John J.; and Eggers, Philip E., 4,211,889, Cl. 136-237.000.

Eggert, Walter S., Jr., to Budd Company, The. End construction for a railway car. 4,211,173, Cl. 105-402.000.

Eguchi, Chikahiko: *See—*
Nakamori, Shigeru; Yokozeki, Kenzo; Mitsugi, Koji; Eguchi, Chikahiko; and Iwagami, Hisao, 4,211,840, Cl. 435-107.000.

Eichelberger, Charles W.; and Andrejko, Edward S., to General Electric Company. Electronic speed error signal processing circuit. 4,211,931, Cl. 290-40.00A.

Eichelberger, Charles W.: *See—*
Devlin, Charles L.; and Eichelberger, Charles W., 4,212,057, Cl. 364-200.000.

Eigner, Erich, to Waagner-Biro Aktiengesellschaft. Tumbling mills. 4,211,369, Cl. 241-182.000.

Einem, Robert E.; Richards, Joseph A.; and Gassowski, Jerzy R., to International Telephone and Telegraph Corporation. Head for a mosaic printer. 4,211,495, Cl. 400-124.000.

Einstein, Harry, to Exxon Research & Engineering Co. Bipolar battery. 4,211,833, Cl. 429-149.000.

Ekman Engineering AG: *See—*
Ekman, Kjell R., 4,211,253, Cl. 137-594.000.

Ekman, Kjell R., to Ekman Engineering AG. Coupling device. 4,211,253, Cl. 137-594.000.

Eldar, Meir. Method and chart for organizing and producing colors. 4,211,016, Cl. 35-28.300.

Electric Power Research Institute, Inc.: *See—*
Pilat, Michael J.; Powell, Edward B., Jr.; and Thielke, John F., 4,211,116, Cl. 73-421.50A.

Electro-Nite Co.: *See—*
Cure, Omer P. I., 4,211,117, Cl. 73-425.40R.

Eli Lilly and Company: *See—*
Barnett, Charles J.; Emmick, Thomas L.; and Hoying, Richard C., 4,211,870, Cl. 544-336.000.
Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., 4,211,702, Cl. 260-239.100.

Ellis, Jeffrey R.: *See—*
Wagner, Herman B.; and Ellis, Jeffrey R., 4,211,572, Cl. 106-90.000.

Emblem, Harold G.; Das, Anup K.; and Jones, Kenneth, to Zirconal Processes Limited. Manufacture of alkyl silicates. 4,211,717, Cl. 556-470.000.

Emerson Electric Co.: *See—*
Woods, Donald M., 4,211,004, Cl. 30-276.000.
Woods, Donald M., 4,211,005, Cl. 30-276.000.

Emeury, Jean-Marie L.; and Girardon, Hubert H., to Societe Nationale des Poudres et Explosifs. Continuous process for the manufacture of dinitroglycolurile. 4,211,874, Cl. 548-304.000.

Emmick, Thomas L.: *See—*
Barnett, Charles J.; Emmick, Thomas L.; and Hoying, Richard C., 4,211,870, Cl. 544-336.000.

Energy Conversion Devices, Inc.: *See—*
Izu, Masatsugu; and Cannella, Vincent D., 4,211,838, Cl. 430-502.000.

Energy Kinematics, Inc.: *See—*
Cassidy, Joseph C., 4,211,077, Cl. 60-398.000.

Energy Modification, Inc.: *See—*
Gleim, William K. T., 4,211,633, Cl. 208-45.000.

Energy Sciences Inc.: *See—*
Nablo, Sam V., 4,211,622, Cl. 204-159.120.

Engebreth, Roald N. Device for protecting wine against excessive exposure to air. 4,211,115, Cl. 73-421.00B.

Entwistle, Ian D.; and Johnstone, Robert A. W., to Shell Oil Company. Reduction of carboxylic acid halides to aldehydes. 4,211,727, Cl. 568-437.000.

Eocom Corporation: *See—*
McGowan, Norman L., 4,211,399, Cl. 271-232.000.

Epper, Wolfgang: *See—*
Koppe, Eberhard; Schonteich, Peter; and Epper, Wolfgang, 4,211,653, Cl. 210-77.000.

Eppstein, Lee B.; Kroeger, James K.; and Lindblom, Kenneth A., to Photovolt Corporation. Endpoint drift correction for automatic titrations. 4,211,614, Cl. 204-1.00T.

Erben, Ludwig, to Trutzschler GmbH & Co. KG. Electronic pressure switch. 4,211,935, Cl. 307-118.000.

Erco Leuchten GmbH: *See—*
Seelbach, Heinz; and Eversberg, Gerhard, 4,211,460, Cl. 339-75.00M.

Erdman, John P., to Du Pont de Nemours, E. I., and Company. Process for making a fluoroelastomer gelling agent preparation of 1,3,5-tris-(3,3-difluoro-2-propenyl)-s-triazine-2,4,6-(1H,3H,5H)-trione. 4,211,868, Cl. 544-221.000.

Erwin Kampf GmbH & Co. Maschinenfabrik, Firma: *See—*
Wehde, Friedrich, 4,211,135, Cl. 83-499.000.

Essilor International (Cie Generale d'Optique): *See—*
Bourset, Claude; and Lenne, William, 4,211,384, Cl. 249-160.000.

Ethridge, Frank W. Removable step or shelf for ladder. 4,211,307, Cl. 182-121.000.

Etlin, Vladimir N. Means for biological treatment of water. 4,211,657, Cl. 210-195.400.

Eubank, Joseph P., Jr. Picture frame. 4,211,023, Cl. 40-155.000.

Euker, Charles A., Jr.: *See—*
Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., 4,211,538, Cl. 48-197.00R.

Euverard, Maynard R.: *See—*
Pulver, W. Clark; Euverard, Maynard R.; Heide, Henry A.; and Zbikowski, Ronald P., 4,211,319, Cl. 198-432.000.

Evans, Robert F. Borehole angle control by gage corner removal effects. 4,211,292, Cl. 175-61.000.

Everest & Jennings, Inc.: *See—*
Motloch, Wallace M., 4,211,426, Cl. 280-87.02W.

Eversberg, Gerhard: *See—*
Seelbach, Heinz; and Eversberg, Gerhard, 4,211,460, Cl. 339-75.00M.

Ex-Cell-O Corporation: *See—*
Lisiecki, Robert E., 4,211,357, Cl. 229-17.00G.

Excor, Inc.: *See—*
Thorsell, Roland H.; and Pyle, Stoddard H., 4,211,134, Cl. 83-471.300.

Exxon Nuclear Company, Inc.: *See—*
Watt, George W.; and Baugh, Daniel W., Jr., 4,211,757, Cl. 423-251.000.

Exxon Production Research Company: *See—*
Mifsud, Joseph F., 4,211,301, Cl. 181-120.000.

Exxon Research & Engineering Co.: *See—*
Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., 4,211,538, Cl. 48-197.00R.
Eakman, James M.; Marshall, Harry A.; and Kalina, Theodore, 4,211,669, Cl. 252-373.000.
Einstein, Harry, 4,211,833, Cl. 429-149.000.
Feldman, Nicholas, 4,211,534, Cl. 44-62.000.
Gardner, Irwin J., 4,211,855, Cl. 525-344.000.
Muenker, Adolf H.; and Young, Archie R., II, 4,211,210, Cl. 126-438.000.

Fairbairn, Ian A., to E M I Limited. CT Scanner with anode scan monitor. 4,211,925, Cl. 250-445.00T.

Fancy, Richard E., to General Motors Corporation. Passive lap and shoulder belt system. 4,211,430, Cl. 280-802.000.

Fang, Frank F.; and Shih, Kwang K., to International Business Machines Corporation. Method of fabricating multicolor light emitting diode array utilizing stepped graded epitaxial layers. 4,211,586, Cl. 148-175.000.

Farris, William C. Energy conservation system for hot water heaters and storage tanks. 4,211,187, Cl. 122-20.00B.

Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, to Laboratoires Sarget. Benzopyran glycoside acetals and ketals. 4,211,772, Cl. 424-180.000.

Fedorov, Nikolai A.: *See—*
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

Feldman, Nicholas, to Exxon Research & Engineering Co. Combination of ethylene polymer, polymer having alkyl side chains, and nitrogen containing compound to improve cold flow properties of distillate fuel oils. 4,211,534, Cl. 44-62.000.

Fenart, Jean-Claude, to Societe Anonyme Francaise du Ferodo. Cover assembly for a diaphragm spring clutch having diaphragm spring centering means independent and distinct from assembly means therefor. 4,211,315, Cl. 192-70.270.

Fengler, Werner H. Vehicle propulsion system by individual stepping motors from continuously-running engine-driven alternator and/or pulsating battery current. 4,211,930, Cl. 290-15.000.

Feniou, Claude: *See—*
Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, 4,211,772, Cl. 424-180.000.

Fenn, Cyril P.; and Thelwell, William H., to Fibreglass Limited. Cutting of corrugated material. 4,211,131, Cl. 83-56.000.

Fernandez, Alberto C., to Kinnard, Harry W. O. Pollution control system. 4,211,541, Cl. 55-68.000.

Ferrieu, Gilbert M. M., to Telecommunications Radioelectrique et Telephoniques T.R.T. Subscriber's circuit with a symmetrical amplifier. 4,211,896, Cl. 179-18.0FA.

Ferruti, Paolo; and Paoletti, Rodolfo. Novel prostaglandin precursors in polymeric form. 4,211,865, Cl. 536-48.000.

Fiber Industries, Inc.: *See—*
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., 4,211,816, Cl. 428-296.000.

Fiberlok, Inc.: *See—*
Buck, George S., Jr.; and Weyker, R. G., 4,211,817, Cl. 428-310.000.

Fibreglass Limited: *See—*
Fenn, Cyril P.; and Thelwell, William H., 4,211,131, Cl. 83-56.000.

Fichtl, Karl; Berger, Rudolf; Durnfelder, Otto; and Pilz, Erich, to Industrie-Werke Karlsruhe-Augsburg Aktiengesellschaft. Rotary drum-type collecting vessel with a raking and pressing screw. 4,211,164, Cl. 100-145.000.

Fields, Joseph E.: *See—*
Johnson, John H.; and Fields, Joseph E., 4,211,765, Cl. 424-78.000.

Finch, Jack N.; and Poska, Forrest L., to Phillips Petroleum Company. Methanation process. 4,211,718, Cl. 260-449.00M.

Finta, Csaba: *See—*
Szabo, Imre Z.; Nagy, Kornel; and Finta, Csaba, 4,211,105, Cl. 73-11.000.

Fiorentzis, Michael: *See—*
Henle, Burkhard; Vukasovic, Ivica; and Fiorentzis, Michael, 4,211,934, Cl. 307-98.000.

Fischer, Artur. Arrangement for and a method of anchoring a mounting element in a hole of a support structure. 4,211,049, Cl. 52-704.000.

Fischer, Philipp-Josef; and Reier, Richard, to Siemens Aktiengesellschaft. Device for guiding the printer needles in a mosaic needle printer. 4,211,494, Cl. 400-124.000.

Fisher, Jack W.: *See—*
Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., 4,211,702, Cl. 260-239.100.

Fisher, Joseph. Endotracheal tube introducer. 4,211,234, Cl. 128-200.260.

Fisher, Leslie G.; and Palmer, Bertram J., to GKN Transmissions Limited. Shaft and universal joint assembly. 4,211,589, Cl. 156-73.500.

Fishwick, Brian R.: *See—*
Baird, David B.; Costello, Alan T.; Fishwick, Brian R.; McClelland, Robert D.; and Smith, Peter, 4,211,696, Cl. 260-152.000.

Fisons Limited: *See—*
Cairns, Hugh; and Payne, Anthony R., 4,211,788, Cl. 424-283.000.
Chambers, Albert, 4,211,777, Cl. 424-232.000.

FitzGerald, Emerson B.; and Meyer, Walter C., to Du Pont de Nemours, E. I., and Company. Thermoplastic powder coating systems. 4,211,691, Cl. 260-42.210.

Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, to Bayer Aktiengesellschaft. Apparatus for determining the water content of isotropic materials. 4,211,970, Cl. 324-58.50C.

Flameless Furnaces Limited: *See—*
Pearce, Arnold P., 4,211,186, Cl. 122-4.00D.

Flanigen, Edith M.: *See—*
Grose, Robert W.; and Flanigen, Edith M., 4,211,760, Cl. 423-328.000.

Fleming, Jean A.: *See—*
Cleversey, Gerald W.; Duncan, Robert J.; Medidge, George H., Jr.; and Fleming, Jean A., 4,212,075, Cl. 364-580.000.

Fluid Device Corporation: *See—*
Richards, George B., 4,211,249, Cl. 137-393.000.

Fluor Corporation: *See—*
Netzer, David, 4,211,540, Cl. 48-202.000.

FMC Corporation: *See—*
Brown, William R., 4,211,121, Cl. 74-87.000.

Foam-Ply, Inc.: *See—*
Johanson, Ronald C.; and McDonald, Bill W., 4,211,385, Cl. 249-192.000.

Folger Adam Co., Division of Telkee, Inc.: *See—*
Butts, Lawrence D.; and Kambic, Raymond V., 4,211,443, Cl. 292-341.160.

Fordertechnik Streicher GmbH: *See—*
Streicher, Max, 4,211,521, Cl. 418-48.000.

Forsythe, Arthur M.; Anapol, James H.; and Reich, Zygmund, to Simmonds Precision Products, Inc. Performance advisory system. 4,212,064, Cl. 364-424.000.

Fort, Geza: *See—*
Seitz, Lamont J.; and Fort, Geza, 4,211,108, Cl. 73-141.0AB.

Fournier, Jean-Paul: *See—*
Moreau, Robert C.; and Fournier, Jean-Paul, 4,211,776, Cl. 424-228.000.

Fowler, Herbert, to Childers-Fowler Research and Development Company. Method of and apparatus for producing hydrogen and oxygen by photoelectrically-induced electrolysis. 4,211,620, Cl. 204-129.000.

Fox, Jack J.: *See—*
Lopez, Carlos; Watanabe, Kyoichi A.; Reichman, Uri; and Fox, Jack J., 4,211,773, Cl. 424-180.000.

Framberg, Norman S., to Abex Corporation. Air cylinder. 4,211,150, Cl. 92-119.000.

Francois, Andre' C.: *See—*
Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, 4,211,795, Cl. 426-2.000.

Franz, John E.; and Kaufman, Robert J., to Monsanto Company. Esters of N-phosphinothioylmethylglycine and herbicidal method. 4,211,548, Cl. 71-87.000.

Franz, John E.; and Kaufman, Robert J., to Monsanto Company. N-Carbobenzoxy-N-phosphinothioylmethylglycine. 4,211,732, Cl. 260-938.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH: *See—*
Theurer, Josef, 4,211,170, Cl. 104-2.000.

Freitag, Gunter; Krahl, Alfred; Ullmann, Gerhard; and Wenzel, Gunter, to Sigri Elektrographit Gesellschaft mit Beschrankter Haftung. Joining together shaped bodies of polytetrafluoroethylene. 4,211,594, Cl. 156-158.000.

Frey, Lawrence A.; Harrison, Robert E.; and McGriff, James E., to Timber Conversion, Inc. Resilient article stack binder. 4,211,389, Cl. 24-269.000.

Friedl, Reiner; Dworschak, Karl; and Hornfeck, Werner, to Webasto Werk W. Baier GmbH & Co. Motor vehicle auxiliary heater. 4,211,365, Cl. 237-12.30C.

Friedman, Alexander A.; and Tait, Scott J. Anaerobic method of treating high-strength waste-water. 4,211,647, Cl. 210-17.000.

Fries, John R.: *See—*
Toomey, Gerald P.; Grove, John L.; and Fries, John R., 4,211,211, Cl. 126-439.000.

Frisbee, Claude M., to J. I. Case Company. Adjustable blade stabilizer and controls. 4,211,282, Cl. 172-7.000.

Frykhult, Rune H.; and Rundqvist, Lars-Goran, to AB Celleco. Hydrocyclone separator. 4,211,643, Cl. 209-211.000.

Fuji Photo Film Co., Ltd.: *See—*
Ohnishi, Masahiro; Ohara, Yuji; and Oono, Hiroshi, 4,212,018, Cl. 346-76.00L.
Suzuki, Nobuo; Sashihara, Kenji; and Masuda, Takao, 4,211,839, Cl. 430-619.000.
Yoneyama, Masakazu; Mukunoki, Yasuo; Mikami, Takeshi; and Sasaki, Jun, 4,211,836, Cl. 430-449.000.

Fuji Xerox Co., Ltd.: *See—*
Tamai, Masayoshi, 4,212,017, Cl. 346-75.000.

Fujii, Yoshihiko: *See—*
Watabe, Yoji; Fujii, Yoshihiko; Anzai, Shiro; and Furukawa, Junji, 4,211,676, Cl. 260-2.300.

Fujikawa, Noboru: *See—*
Taguchi, Tadashi; Fujikawa, Noboru; Kohno, Mitsuo; Yoshitake, Katsumi; and Satake, Kunio, 4,211,560, Cl. 430-313.000.

Fujita, Masanori: *See—*
Oda, Hajime; Samejima, Toshihide; Matsumura, Toshio; Moritani, Nakanobu; and Fujita, Masanori, 4,211,067, Cl. 368-185.000.

Fukasawa, Katsumi: *See—*
Kitamura, Hiroyuki; Hosokawa, Yorio; and Fukasawa, Katsumi, 4,212,056, Cl. 363-96.000.

Fukuyama, Toshifumi; and Hattan, Hideaki, to Omron Tateisi Electronics Co. Fluid tight ultrasonically welded photoelectric device. 4,211,923, Cl. 250-239.000.

Furman, Anatoly V. Operational amplifier with switching error elimination. 4,211,939, Cl. 307-229.000.

Furman, Leonard: *See—*
Thomas, Charles W., Jr., 4,211,198, Cl. 123-592.000.

Furukawa, Haruki; Usami, Susumu; and Nakaho, Junichi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Webbing guide. 4,211,432, Cl. 280-808.000.

Furukawa, Junji: *See—*
Watabe, Yoji; Fujii, Yoshihiko; Anzai, Shiro; and Furukawa, Junji, 4,211,676, Cl. 260-2.300.

Furuya, Katusuke: *See—*
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, 4,211,052, Cl. 53-77.000.

G. W. Dahl Company, Inc.: *See—*
Getchell, Williams G.; and Lambert, Norman A., 4,211,387, Cl. 251-335.00B.

Gaertner, Van R., to Monsanto Company. N-Phosphonomethyliminodiacetonitrile and certain derivatives thereof. 4,211,547, Cl. 71-86.000.

Galey, Jean: *See—*
Bentz, Gerard; Galey, Jean; and Devalois, Serge, 4,211,269, Cl. 164-67.000.

Gallagher, Norman K.: *See—*
Costello, Matthew J.; and Gallagher, Norman K., 4,211,493, Cl. 400-121.000.

Gallagher, Stephen F. Inspiratory force adaptor. 4,211,240, Cl. 128-725.000.

Gallo, Mario, to Wirth, Gallo & Co. Method and a scale for manual or automatic weighing of objects of same nominal weight. 4,211,295, Cl. 177-185.000.

Gambino, Nate J. Wild goose and duck call. 4,211,031, Cl. 46-177.000.

Game Time, Inc.: *See—*
Ray, Sunnie, 4,211,400, Cl. 272-56.50R.

Games, John E.; Rosien, Richard E.; and Bitterli, William W., to United Technologies Corporation. Computer controlled facility management system (FMS). 4,212,078, Cl. 364-900.000.

Gardner, Denise: *See—*
Morrison, Howard J.; Gardner, Denise; and Schoenfield, Palmer J., 4,211,030, Cl. 46-67.000.

Gardner, Irwin J., to Exxon Research & Engineering Co. Catalytic dehydrohalogenation process for allylically halogenated unsaturated hydrocarbon polymers. 4,211,855, Cl. 525-344.000.

Garrison, Harold K., to Hesston Corporation. Folding tool beams with level equalizer therebetween. 4,211,287, Cl. 172-311.000.

Garwood, William E.; and Lee, Wooyoung, to Mobil Oil Corporation. Process for the treatment of olefinic gasoline. 4,211,640, Cl. 208-255.000.

Gaskill, David M., Jr., to Atlan-Tol Industries, Inc. Positioning means for limited rotation motor. 4,211,992, Cl. 335-222.000.

Gassowski, Jerzy R.: *See—*
Einem, Robert E.; Richards, Joseph A.; and Gassowski, Jerzy R., 4,211,495, Cl. 400-124.000.

Gates, Walter C., Jr.: *See—*
Lewellen, Philip C.; Gates, Walter C., Jr.; and Duranleau, Roger G., 4,211,673, Cl. 252-462.000.

Gaunt, Conrad L., to General Motors Corporation. Toughening of PVC-separator-enveloped battery plates. 4,210,998, Cl. 29-623.400.

Gavrovskaya, Ljudmila K.: *See—*
Grechishkin, Leonid L.; Gavrovskaya, Ljudmila K.; and Goldfarb, Vadim L., 4,211,764, Cl. 424-9.000.

Gay, Larry T. Method and apparatus for collecting and domestic use of solar heat. 4,211,209, Cl. 126-422.000.

Geary, Carl H., Jr., to Carrier Corporation. Power recovery system. 4,211,932, Cl. 290-52.000.

Gehmlich, Dietrich K.: *See—*
Raemer, Daniel B.; Gehmlich, Dietrich K.; Westenskow, Dwayne R.; and Johnson, Curtis C., deceased, 4,211,239, Cl. 128-716.000.

Gelbard, Robert B.; and Griffin, James R., to General Electric Company. Household refrigerator with air circulation and cooling arrangement. 4,211,090, Cl. 62-283.000.

Gen-Tech, Inc.: *See—*
Tawse, Ian S., 4,211,945, Cl. 310-112.000.

General Aviation Electronics, Inc.: *See—*
Henderson, Claude L., 4,212,067, Cl. 364-460.000.

General Electric Company: *See—*
Acampora, Vincent P., 4,211,989, Cl. 335-17.000.
Alley, Robert P.; Haller, Theodore R.; and Tompkins, Russell E., 4,211,957, Cl. 315-276.000.
Barber, William D.; and Possin, George E., 4,212,082, Cl. 365-118.000.
Bennett, Moreland P.; Cacalloro, Philip A.; and McCloy, Albert J., 4,211,278, Cl. 165-130.000.
Borman, Willem F. H., 4,211,689, Cl. 260-40.00R.
Brisken, Axel F.; and Smith, Lowell S., 4,211,949, Cl. 310-322.000.
Castleberry, Donald E., 4,212,048, Cl. 362-19.000.
Chu, Hing C.; Sahm, William H., III; and Chen, Robert I., 4,212,023, Cl. 357-19.000.
Dehn, Rudolph A., 4,211,911, Cl. 219-10.55F.
Devlin, Charles L.; and Eichelberger, Charles W., 4,212,057, Cl. 364-200.000.
Eichelberger, Charles W.; and Andrejko, Edward S., 4,211,931, Cl. 290-40.00A.
Gelbard, Robert B.; and Griffin, James R., 4,211,090, Cl. 62-283.000.
Haller, Theodore R., 4,211,944, Cl. 310-72.000.
Mark, Victor; and Wilson, Phillip S., 4,211,679, Cl. 260-29.10R.
Martzloff, Francois D., 4,212,045, Cl. 361-127.000.
Miller, Donald E.; and Painter, John P., 4,211,915, Cl. 371-15.000.
Smith, Lowell S.; and Brisken, Axel F., 4,211,948, Cl. 310-322.000.
Steigerwald, Robert L., 4,211,969, Cl. 320-14.000.
Sugalski, Raymond K., 4,211,968, Cl. 320-2.000.
Waldron, Wesley K., 4,212,011, Cl. 340-784.000.

General Foods Corporation: *See—*
Cante, Charles J.; Downhour, Russell; Randall, Lee P.; and Morgan, Jeffrey D., 4,211,797, Cl. 426-2.000.
Scharschmidt, Rudolph K.; and Murphy, Lynn, 4,211,800, Cl. 426-93.000.

General Motors Corporation: *See—*
Benton, Robert L., 4,211,125, Cl. 74-424.80R.
Fancy, Richard E., 4,211,430, Cl. 280-802.000.
Gaunt, Conrad L., 4,210,998, Cl. 29-623.400.
Ludecke, Otto A.; and Rosebrock, Theodore L., 4,211,075, Cl. 60-285.000.

Genis, Gerhard. Lightweight aggregate. 4,211,738, Cl. 264-44.000.

Genshaw, Marvin A.; and White, William I., to Miles Laboratories, Inc. Glucose indicator and method. 4,211,845, Cl. 435-14.000.

Getchell, Williams G.; and Lambert, Norman A., to G. W. Dahl Company, Inc. Valve construction. 4,211,387, Cl. 251-335.00B.

Geurian, Grady O. Cutter assembly for saw chain. 4,211,136, Cl. 83-830.000.

Gibson, Earl W. Chain saw guide bar and sawdust plate. 4,211,007, Cl. 30-383.000.

Giddings & Lewis, Inc.: *See—*
Conners, John P., 4,212,076, Cl. 364-706.000.

Gillespie, Dorie. Brush and deodorant holder. 4,211,750, Cl. 422-123.000.

Girardon, Hubert H.: *See—*
Emeury, Jean-Marie L.; and Girardon, Hubert H., 4,211,874, Cl. 548-304.000.

GKN Transmissions Limited: *See—*
Fisher, Leslie G.; and Palmer, Bertram J., 4,211,589, Cl. 156-73.500.

Glassmeyer, John J., to Pullman Incorporated. Impact resistant bumper for vehicles. 4,211,444, Cl. 293-150.000.

Glauner, Jens; Kauhl, Gunther; Pflug, Hannes; Steinke, Leo; and Weyl, Helmut, to Robert Bosch GmbH. Glow plug arrangement. 4,211,204, Cl. 123-145.00A.

Gleim, William K. T., to Energy Modification, Inc. Separation of asphaltic materials from heptane soluble components in liquified solid hydrocarbonaceous extracts. 4,211,633, Cl. 208-45.000.

Glickman, Kenneth B.: *See—*
Blowsky, Frank C.; and Glickman, Kenneth B., 4,211,404, Cl. 272-141.000.
Blowsky, Frank C.; Glickman, Kenneth B.; and Iscoe, Alan D., 4,211,405, Cl. 272-141.000.

Glitz, Ekkehard, to Licentia Patent-Verwaltungs-G.m.b.H. Method for setting code text generators in ciphering devices. 4,211,891, Cl. 375-2.000.

Glomski, Norman J., to Heil Company, The. Method and apparatus for certifying the output torque curve of a hydraulic hoist for use in dump body applications. 4,211,110, Cl. 73-168.000.

Glownia, Stanislaw: *See—*
Slowinski, Stanislaw; Vasina, Stanislaw; Pasich, Jerzy; Kosek, Jerzy; and Glownia, Stanislaw, 4,211,274, Cl. 164-401.000.

Goldfarb, Vadim L.: *See—*
Grechishkin, Leonid L.; Gavrovskaya, Ljudmila K.; and Goldfarb, Vadim L., 4,211,764, Cl. 424-9.000.

Goldman, Abraham, to RCA Corporation. Aqueous photoresist of casein and N-methylol acrylamide. 4,211,563, Cl. 430-286.000.

Gordon Barlow Design: *See—*
Barlow, Gordon A.; and Janiszewski, Anthony T., 4,211,412, Cl. 273-424.000.

Goshima, Norio: *See—*
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,211,901, Cl. 200-83.00B.

Gosudarstvenny Nauchno-Issledovatelsky Energeticheskiy Institut Imeni G.M. Krzhizhanovskogo: *See—*
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

Goto, Kenji: *See—*
Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.

Goto, Motoo: *See—*
Nagano, Takeshi; Goto, Motoo; and Tsuji, Yoshiyuki, 4,211,556, Cl. 75-74.000.

Goverde, Bastiaan C.; Janssen, Peter S. L.; and Kostner, Gerhard M., to Akzo N.V. Test-kit and method for the estimation of LP-X. 4,211,530, Cl. 23-230.00B.

GPD, Inc.: *See—*
Segar, Richard B.; and Marascalco, Lewis C., 4,212,079, Cl. 364-900.000.

Graefe, Gernot. Method and apparatus for preparing high grade fertilizer. 4,211,545, Cl. 71-9.000.

Graf, Robert; and Meier, Rene, to BBC Brown Boveri & Company Limited. Portable mast for radio link systems. 4,212,015, Cl. 343-883.000.

Graham, Thomas G., to Singer Company, The. Automatic slow speed for skip stitch mode. 4,211,177, Cl. 112-221.000.

Grampp, Ekkehard; Schmitt, Reinhold; and Uhlig, Helmut, to Rohm GmbH. Methods for making flocculation-resistant citrus juice. 4,211,799, Cl. 426-50.000.

Granda, Edward J.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.

Grande, Magnar J. Energy convertion engine. 4,211,076, Cl. 60-398.000.

Gransden, Raymond E., Jr.: *See—*
Kurfman, Virgil B.; and Gransden, Raymond E., Jr., 4,211,822, Cl. 428-412.000.

Gravisse, Philippe E.; and Van Schoote, Jacques F., to B.R.I.C. (Burea de Recherche pour l'Innovation et la Convervence; and N.V. Anciens Etablissements Alsberge et Van Oost. Photoluminescent textile materials. 4,211,813, Cl. 428-263.000.

Grawey, Charles E., to Caterpillar Tractor Co. Method of building a closed tube-tire. 4,211,592, Cl. 156-123.00R.

Great Plains Manufacturing Incorporated: *See—*
Applequist, Roy E., 4,211,288, Cl. 172-328.000.

Greber, Gerd: *See—*
Roth, Martin; Kvita, Vratislav; and Greber, Gerd, 4,211,705, Cl. 260-326.00C.

Grechishkin, Leonid L.; Gavrovskaya, Ljudmila K.; and Goldfarb, Vadim L., to Nauchno-Issledovatelsky Institut Experimentalnoi Meditsiny. Gastric secretion stimulation with 2-amino-5-(2-aminoethyl)-1,3,4-thiadiozole. 4,211,764, Cl. 424-9.000.

Green, Evert S. Method and apparatus for irrigating container-grown plants. 4,211,037, Cl. 47-80.000.

Green, Robert L. Eyelet clamp for shoes. 4,210,983, Cl. 24-73.0ES.

Greenaway, David L.: *See—*
Nyfeler, Alex; Greenaway, David L.; and Lienhard, Heinz, 4,211,918, Cl. 235-454.000.

Greenspan, Stephen B.: *See—*
Balasubramanian, P. S.; Bertin, Claude R.; and Greenspan, Stephen B., 4,212,026, Cl. 357-41.000.

Greenwald, Richard B., to Polaroid Corp. Photographic processes and compositions employing thioether containing silver halide solvents. 4,211,559, Cl. 430-211.000.

Greenwald, Richard B., to Polaroid Corporation. Photographic compositions with silver halide solvents containing thioether groups. 4,211,562, Cl. 430-456.000.

Greten, Berndt: *See—*
Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,211,984, Cl. 331-97.000.

Griffin, James R.: *See—*
Gelbard, Robert B.; and Griffin, James R., 4,211,090, Cl. 62-283.000.

Grimaldo, Samuel, to American Machine & Hydraulics, Inc. Double taper clamp. 4,211,103, Cl. 72-316.000.

Grose, Robert W.; and Flanigen, Edith M., to Union Carbide Corporation. Crystalline zeolite Upsilon and process for preparing same. 4,211,760, Cl. 423-328.000.

Gross, Benjamin; and Lee, Wooyoung, to Mobil Oil Corporation. FCC Catalyst section control. 4,211,636, Cl. 208-164.000.

Gross, Benjamin; and Lee, Wooyoung, to Mobil Oil Corporation. FCC Catalyst section control. 4,211,637, Cl. 208-164.000.

Gross, Valery N. System for measuring radioactivity of labelled biopolymers. 4,211,747, Cl. 422-81.000.

Grosz-Roll, Friedrich; Schutz, Gerhard; and Streiff, Felix, to Sulzer Brothers Ltd. Heat exchanger having internal fittings. 4,211,277, Cl. 165-109.00T.

Grove, John L.: *See—*
Toomey, Gerald P.; Grove, John L.; and Fries, John R., 4,211,211, Cl. 126-439.000.

Grunleitner, Hans; Kogler, Georg; Kohnlein, Hans; and Tschirner, Peter, to Siemens Aktiengesellschaft. Brushless d-c motor. 4,211,962, Cl. 318-254.000.

Gruppo Lepetit S.p.A.: *See—*
Tarzia, Giorgio; and Panzone, Gianbattista, 4,211,708, Cl. 260-326.460.
Tarzia, Giorgio; and Panzone, Gianbattista, 4,211,709, Cl. 260-326.470.

GTE Laboratories Incorporated: *See—*
Buhrer, Carl F., 4,211,758, Cl. 423-263.000.

GTE Products Corporation: *See—*
Puhak, Peter G.; Bilynsky, John D.; and Sorensen, Fred L., 4,211,465, Cl. 339-144.00T.

Guangorena, Jesus, to Barient Company. Removable main shaft retainer for deck winch. 4,211,388, Cl. 254-344.000.

Gubergrits, Mark Y.: *See—*
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Gueret, Jean-Louis H., to L'Oreal. Brush for brushing the hair or massaging the cutaneous covering. 4,211,217, Cl. 128-67.000.

Guerin, Jean G., to Produits Chimiques Ugine Kuhlmann. Method of preparing carbon tetrachloride. 4,211,728, Cl. 260-658.00R.

Gugliotta, Paul F.; and Hoffmann, David. Tube space frame system. 4,211,044, Cl. 52-200.000.

Guidas: *See—*
Guillot, Jack, 4,211,073, Cl. 60-746.000.

Guillot, Jack, to Guidas. Combustion chamber principally for a gas turbine. 4,211,073, Cl. 60-746.000.

Gulf Research and Development Company: *See—*
Carr, Norman L.; Schleppy, Ronald, Jr.; and Shah, Yatish T., 4,211,631, Cl. 208-8.0LE.
Hartle, Robert J., 4,211,535, Cl. 44-68.000.
Pellegrini, John P., Jr., 4,211,665, Cl. 252-63.000.

Gunawardena, Jaya A., to National Research Development Corporation. Computer store mechanism. 4,212,058, Cl. 364-200.000.

Gusev, Valery F.: *See—*
Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U., 4,211,916, Cl. 371-15.000.

Guthrie, James L.: *See—*
Kehr, Clifton L.; Wood, Louis L.; and Guthrie, James L., 4,211,847, Cl. 521-121.000.

Gwozdz, Joseph W., to McKinney Manufacturing Company. Electric switch concealing hinge. 4,211,990, Cl. 335-205.000.

H. B. Fuller Company: *See—*
Johnson, Richard C.; Kafer, Otto R.; and Todd, Mike J., 4,210,978, Cl. 15-320.000.

Haag, Werner O.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Resin-metal compound complex. 4,211,880, Cl. 560-243.000.

Habedank, Klaus-Dieter; and Troebel, Werner, to Siemens Aktiengesellschaft. Rotary actuating device for low-voltage circuit breakers with toggle lever. 4,211,906, Cl. 200-330.000.

Haberle, Friedrich: *See—*
Kress, Dieter; and Haberle, Friedrich, 4,211,507, Cl. 407-37.000.

Habu, Takeshi: *See—*
Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,211,835, Cl. 430-403.000.

Hadni, Armand, to Agence Nationale de Valorisation de la Recherche (ANVAR). Monocrystalline like layers, processes of manufacturing

such layers, and articles comprising such layers. 4,211,821, Cl. 428-411.000.

Haep, Heinz, to Rheinmetall GmbH. Fin-stabilized practice missile. 4,211,168, Cl. 102-41.000.

Hafke, Carl: *See*—
Bierbach, Herbert; Kohlen, Rudolf; and Hafke, Carl, 4,211,539, Cl. 48-197.00R.

Hafner, Gunther, to Daimler-Benz Aktiengesellschaft. Pump nozzle for air-compressing injection internal combustion engine. 4,211,202, Cl. 123-457.000.

Halaby, Sami A.; and Caco, Edward S., to Warner-Lambert Company. Guarded razor blade. 4,211,006, Cl. 30-346.550.

Halbritter, Klaus, to BASF Aktiengesellschaft. Preparation of 4-methyl-5-chloromethyl-imidazole. 4,211,875, Cl. 548-342.000.

Hallberg, Rolf O.; Lindstrom, Carl H. M.; and Westerberg, Hakan. Process and a measuring cell for the coulometric determination of the content of a component dissolved in water. 4,211,615, Cl. 204-1.00T.

Haller, Theodore R., to General Electric Company. Amorphous metal electric motor with integral capacitor. 4,211,944, Cl. 310-72.000.

Haller, Theodore R.: *See*—
Alley, Robert P.; Haller, Theodore R.; and Tompkins, Russell E., 4,211,957, Cl. 315-276.000.

Halvorsen, James V., to Bryant Grinder Corporation. Replaceable collet in double diaphragm chuck. 4,211,425, Cl. 279-46.00R.

Hamai, Kyugo, to Nissan Motor Company, Limited. Internal combustion engine with dual induction system and more particularly to combustion chamber design thereof. 4,211,189, Cl. 123-308.000.

Hamaoka, Shigeo: *See*—
Kiuchi, Mitsuyuki; and Hamaoka, Shigeo, 4,211,912, Cl. 219-10.770.

Hamilton, Wallace, to McDowell-Wellman Company. Poke hole closure apparatus. 4,211,536, Cl. 48-87.000.

Hammann, Ingeborg: *See*—
Hartmann, Alfons; Kuhle, Engelbert; and Hammann, Ingeborg, 4,211,790, Cl. 424-285.000.

Hancock Laboratories, Inc.: *See*—
Wright, John T. M., 4,211,325, Cl. 206-438.000.

Hannigan, Noreen A.; and Travis, Terence, to International Business Machines Corporation. Copy production machines having job separation and collation capabilities. 4,211,483, Cl. 355-14.00R.

Hans Beck: *See*—
Bolter, German; Helmle, Herbert; and Beck, Hans, 4,211,599, Cl. 156-494.000.

Hansen, Gary G.; Pengue, Leonard M.; and Watkin, Theodore, to Pitney Bowes, Inc. Unit document feeding mechanism. 4,211,397, Cl. 271-4.000.

Hansen, John D. Lock strike. 4,211,442, Cl. 292-340.000.

Harano, Allen A.: *See*—
Huelsman, Kenneth A.; and Harano, Allen A., 4,212,072, Cl. 364-515.000.

Hardmark, Ragnar M., to Saab-Scania Aktiebolag. Apparatus for measuring the action of forces between wheeled vehicles and substructure. 4,212,063, Cl. 364-426.000.

Hardt, Thomas T., to Computer Peripherals, Inc. Print band one edge guide. 4,211,166, Cl. 101-111.000.

Hares, George B.; and Morse, David L., to Corning Glass Works. High index ophthalmic glasses. 4,211,569, Cl. 106-53.000.

Harford, Jack R., to RCA Corporation. Synchronization and gain control circuit. 4,212,032, Cl. 358-177.000.

Harris Corporation: *See*—
Pan, Jing-Jong, 4,211,987, Cl. 333-230.000.
Roos, Edward V., 4,211,950, Cl. 310-327.000.
Yautz, Michael J., Jr.; and Winslow, Richard N., 4,211,320, Cl. 198-450.000.

Harris, Jimmy W.: *See*—
Buckner, John G.; Lineberry, Cletus E.; and Harris, Jimmy W., 4,211,130, Cl. 83-23.000.

Harrison, Peter G., to Hawker Siddeley Dynamics Engineering, Ltd. Temperature measurement. 4,211,113, Cl. 73-359.00R.

Harrison, Robert E.: *See*—
Frey, Lawrence A.; Harrison, Robert E.; and McGriff, James E., 4,211,389, Cl. 24-269.000.

Hartle, Robert J., to Gulf Research and Development Company. Gasoline fuel compositions containing antiknock additive. 4,211,535, Cl. 44-68.000.

Hartmann, Alfons; Kuhle, Engelbert; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating arthropods with an oxime ester of N-carboxylated-carbamate. 4,211,790, Cl. 424-285.000.

Hartmann, Armin; and Hums, Dieter, to Intong AB. Method of producing gas concrete. 4,211,571, Cl. 106-87.000.

Hartwig, Hans-Joachim: *See*—
Schwanbom, Erik; Hartwig, Hans-Joachim; and Warnow, Detlef, 4,211,221, Cl. 128-204.260.

Hasegawa, Mitsuhiro: *See*—
Atoji, Nobuhisa; Matsumoto, Takashi; Kusumoto, Shoichi; Sato, Kazue; and Hasegawa, Mitsuhiro, 4,211,898, Cl. 179-156.00R.

Hashimoto, Akira: *See*—
Hirasawa, Masataka; Hashimoto, Akira; and Yamazaki, Haruji, 4,212,025, Cl. 357-51.000.

Hashimoto, Junichi, to Pentel Kabushiki Kaisha. Tip-pushed type mechanical pencil. 4,211,500, Cl. 401-65.000.

Hashimoto, Nobuyuki: *See*—
Sakakibara, Naoji; and Hashimoto, Nobuyuki, 4,211,257, Cl. 137-625.650.

Hata, Kazuhiko: *See*—
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.

Hatano, Hajime: *See*—
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.

Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., to Eli Lilly and Company. Process for preparation of penicillin and cephalosporin imino halides. 4,211,702, Cl. 260-239.100.

Hattan, Hideaki: *See*—
Fukuyama, Toshifumi; and Hattan, Hideaki, 4,211,923, Cl. 250-239.000.

Hattori, Kyo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Secondary air supply system for the exhaust system of an internal combustion engine. 4,211,074, Cl. 60-276.000.

Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition system for internal combustion engines. 4,211,194, Cl. 123-417.000.

Hattori, Tadashi: *See*—
Iwata, Toshiharu; and Hattori, Tadashi, 4,211,952, Cl. 313-143.000.

Hawes, Stanley P., to Airscrew Howden Limited. Mixed flow fan. 4,211,514, Cl. 415-191.000.

Hawker Siddeley Dynamics Engineering, Ltd.: *See*—
Harrison, Peter G., 4,211,113, Cl. 73-359.00R.

Hayakawa, Takayuki: *See*—
Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, 4,212,062, Cl. 364-414.000.
Nakaya, Chitose; Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yamamoto, Shinji; Tomura, Teruichi; and Hayakawa, Takayuki, 4,211,926, Cl. 250-445.00T.

Hayford, Donald E.: *See*—
Myers, Hugh K; and Hayford, Donald E., 4,211,437, Cl. 282-27.500.

Hazama, Katashi: *See*—
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Heard, Robert A. H. Mounting device. 4,211,381, Cl. 248-231.000.

Heaslett, Alastair M.: *See*—
Rudnick, Paul J.; and Heaslett, Alastair M., 4,211,997, Cl. 371-38.000.

Hedges, Walter P.; and Sullivan, C. Gardner, II, to Cyborex Laboratories, Inc. Electrical load restoration method. 4,211,933, Cl. 307-35.000.

Hedstrom Co.: *See*—
Cunard, Joel C., 4,211,401, Cl. 272-86.000.

Heide, Henry A.: *See*—
Pulver, W. Clark; Euverard, Maynard R.; Heide, Henry A.; and Ziolkowski, Ronald P., 4,211,319, Cl. 198-432.000.

Heil Company, The: *See*—
Glomski, Norman J., 4,211,110, Cl. 73-168.000.

Heimburg, Richard W.; and Stewart, Donald M. Method of constructing a burner. 4,210,995, Cl. 29-157.00R.

Hein, Carl C.; Silver, Harold K.; Spitz, Joseph J.; and Seidler, Donald W., to American Can Company. Blister package. 4,211,326, Cl. 206-484.000.

Heine, Helmut A.; Rosenbusch, Helmut W.; and Schmidt, Otto H., to Heine Optotechnik GmbH & Co. KG. Endoscope housing cover hinge construction utilizing a spring, ball and bore arrangement in combination with a hinge pin. 4,211,215, Cl. 128-4.000.

Heine Optotechnik GmbH & Co. KG: *See*—
Heine, Helmut A.; Rosenbusch, Helmut W.; and Schmidt, Otto H., 4,211,215, Cl. 128-4.000.

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Lazzari, Jean-Pierre; and Helle, Michel, 4,212,041, Cl. 360-113.000.

Hellstrom, Melbourne J.; Perlin, Allen I.; and Kutlik, Edward, to CGR Medical Corporation. Computerized tomography system. 4,211,927, Cl. 250-445.00T.

Helmle, Herbert: *See*—
Bolter, German; Helmle, Herbert; and Beck, Hans, 4,211,599, Cl. 156-494.000.

Helms, Charles R., to Container Corporation of America. Container closure. 4,211,336, Cl. 220-270.000.

Henderson, Claude L., to General Aviation Electronics, Inc. Navigating device. 4,212,067, Cl. 364-460.000.

Hendriks, Johannes H., to U.S. Philips Corporation. Device for processing high-frequency electrical signals. 4,211,993, Cl. 336-131.000.

Henle, Burkhard; Vukasovic, Ivica; and Fiorentzis, Michael, to BBC Brown Boveri & Company Limited. Current-measuring input for an electronic relay. 4,211,934, Cl. 307-98.000.

Henrich, Donald A.; and Rose, Edgar, to Outboard Marine Corporation. Marine propeller fish line and weed cutter. 4,211,515, Cl. 416-146.00R.

Henry, Charles L.; and White, James E., to Akzona Incorporated. Copolyester yarns and fibers dyeable without carrier at atmospheric pressure. 4,211,678, Cl. 260-22.00D.

Henry, William E., to Phillips Petroleum Company. Method for orienting a borehole core. 4,211,974, Cl. 324-377.000.

Hepinstall, James T., Jr.: *See*—
Mehra, Ravinder C.; and Hepinstall, James T., Jr., 4,211,346, Cl. 222-205.000.

Herbst, Heiner: *See*—
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Hercules Incorporated: *See*—
Vandenberg, Edwin J., 4,211,670, Cl. 252-429.00B.

Hermann, Karl H.; and Dorsch, Hans-Lothar, to Bayer Aktiengesellschaft. Process for isolating triarylmethane dyestuffs. 4,211,716, Cl. 260-391.000.

Herndon, William C.: *See*—
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Herold, Heiko: *See*—
Muschelknautz, Edgar; Herold, Heiko; Brunner, Kunz; and Horstmann, Walter, 4,211,604, Cl. 159-4.00D.

Herrmidifier Company, Inc.: *See*—
Berlin, Gary L., 4,211,735, Cl. 261-116.000.

Hess, Peter; and Rampel, Hans, to Metallwerk Max Brose GmbH & Co. Drive arrangement for an automotive window operating mechanism. 4,211,122, Cl. 74-89.200.

Hesston Corporation: *See*—
Garrison, Harold K., 4,211,287, Cl. 172-311.000.
Rhodes, Keith H., 4,211,060, Cl. 56-294.000.

Hewlett-Packard Company: *See*—
Adleman, George L.; and Stettiner, Robert L., 4,212,009, Cl. 340-728.000.

Hiland, David E.: *See*—
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Hill, Martha A.: *See*—
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Hinder, Herbert: *See*—
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Hirasawa, Kunio: *See*—
Tsukushi, Masanori; Kashimura, Katsuichi; Koyanagi, Osamu; Yoshioka, Yoshio; and Hirasawa, Kunio, 4,211,903, Cl. 200-148.00D.

Hirasawa, Masataka; Hashimoto, Akira; and Yamazaki, Haruji, to Tokyo Shibaura Electric Co., Ltd. Voltage dividing integrated circuit device. 4,212,025, Cl. 357-51.000.

Hirose, Kazuhito: *See*—
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Hirsch, Walter: *See*—
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Hitachi, Ltd.: *See*—
Asano, Hideki; Kokaku, Hiroyoshi; Suzuki, Katsuhito; and Saida, Kenichi, 4,211,690, Cl. 260-42.460.
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Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, 4,211,276, Cl. 165-1.000.
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Murakami, Takeshi; and Hazama, Katashi, 4,212,029, Cl. 358-21.00R.
Nishikawa, Akio; Katagiri, Junichi; Kinjo, Noriyuki; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,211,686, Cl. 260-40.00R.
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Ono, Yuichi; Mori, Mitsuhiro; Morioka, Makoto; Ito, Kazuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,212,021, Cl. 357-17.000.
Shinkawa, Keiro; Shoyama, Hiroji; and Sodeyama, Chuichi, 4,211,977, Cl. 455-326.000.
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Ueyama, Takehiko; Nishizawa, Masahiro; Odaka, Yoshiyuki; and Matsuda, Hiromi, 4,211,477, Cl. 354-1.000.
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Hocutt, Larry E.: *See*—
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Hodson, William A.: *See*—
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Brummel, Allan J.; Hodur, Neil R.; and Synkoski, Richard, 4,211,476, Cl. 351-160.00R.

Hoechst Aktiengesellschaft: *See*—
Usbeck, Gerhard, 4,211,619, Cl. 204-33.000.

Hofer, Kurt; Moesch, Rudolf; and Tscheulin, Guenther, to Sandoz Ltd. Fluorene phosphonites and thiophosphonites as antioxidants for organic materials. 4,211,731, Cl. 260-932.000.

Hoff, Glen R., to Standard Oil Company (Indiana). Olefin polymerization catalyst. 4,211,671, Cl. 252-431.00N.

Hoffman, Charles A.; Weeton, John W.; and Orth, Norman W., to United States of America, National Aeronautics and Space Administration. Method for alleviating thermal stress damage in laminates. 4,211,354, Cl. 228-118.000.

Hoffman-La Roche Inc.: *See*—
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,211,724, Cl. 260-562.00B.

Hoffman, Paul H.; and Lessig, John A. Shrimp processing method. 4,210,982, Cl. 17-48.000.

Hoffmann, David: *See*—
Gugliotta, Paul F.; and Hoffmann, David, 4,211,044, Cl. 52-200.000.

Hofmann, George F., to Boeing Company, The. Circuit board testing apparatus and method. 4,211,917, Cl. 371-20.000.

Hogan, Lawrence R., to Cole-Parmer Instrument Company. Fluid pump and quick release mounting arrangement therefor. 4,211,519, Cl. 417-360.000.

Hokama, Yosh, to International Beauty Distributor. Manicure nail smoothing and buffing. 4,211,246, Cl. 132-76.400.

Hokushin Electric Works, Ltd.: *See*—
Kobayashi, Tamotsu; and Igarashi, Sadaki, 4,211,971, Cl. 324-140.00D.

Holekamp, Malcolm L. Vertically adjustable mast assembly for a dredge. 4,211,020, Cl. 37-65.000.

Holl, Helmar: *See*—
Papajewski, Reinhold; Holl, Helmar; and Schmedtkord, Ulrich, 4,211,373, Cl. 242-20.000.

Holland, George W.; Jernow, Jane L.; and Rosen, Perry; to Hoffman-La Roche Inc. 16-Substituted prostaglandins. 4,211,724, Cl. 260-562.00B.

Holmes, Curtis F.: *See*—
Mueller, Max A.; and Holmes, Curtis F., 4,211,832, Cl. 429-105.000.

Holt, Harley R., to Bunker Ramo Corporation. Conductor terminating apparatus. 4,210,997, Cl. 29-566.300.

Holzman, Melvyn A., to Deutsch Company Electronic Components Division, The. Optical coupling device. 4,211,469, Cl. 350-96.160.

Home of Champions: *See*—
Tomar, Julius, 4,211,407, Cl. 273-60.00B.

Honeywell Inc.: *See*—
Mueller, Dale A.; and Serber, Stephen L., 4,211,089, Cl. 62-209.000.
Schilling, Roger A., 4,211,526, Cl. 431-69.000.

Honeywell Information Systems Inc.: *See*—
Rathbun, Donald J., 4,212,038, Cl. 360-41.000.

Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., to Outokumpu Oy. Method of refining of melts by means of a pulverous solid material and/or a gas. 4,211,553, Cl. 75-53.000.

Honny Chemicals Company, Ltd.: *See*—
Yoshida, Shinichi, 4,211,824, Cl. 428-462.000.

Hood, Stanley R. Indicating thermometer. 4,211,114, Cl. 73-363.900.

Hooker Chemicals & Plastics Corp.: *See*—
Cotter, Byron R., 4,211,721, Cl. 260-465.00G.
Salee, Gideon, 4,211,687, Cl. 260-40.00R.

Hoover Universal, Inc.: *See*—
Hunerberg, Edward C., 4,211,523, Cl. 425-4.00C.
Young, David A.; and Kimball, Bruce S., 4,211,427, Cl. 280-406.00A.

Hopkins, David A., to Valeron Corporation, The. Adjustable boring head. 4,211,510, Cl. 408-186.000.

Hopkins, Robert S., Jr., to RCA Corporation. Circuit for displaying characters on limited bandwidth, raster scanned display. 4,212,008, Cl. 340-723.000.

Hori, Sankichi: *See*—
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Horiba, Isao: *See*—
Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, 4,212,062, Cl. 364-414.000.

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Hornfeck, Werner: *See*—
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Horng, Cheng T.; and Schwenker, Robert O., to International Business Machines Corporation. Process for making large area isolation trenches utilizing a two-step selective etching technique. 4,211,582, Cl. 148-1.500.

Horsfield, Sydney G.; Kuhlmann, George E.; and Bemis, Alan G., to Standard Oil Company (Indiana). Preparation of phthalic acid by single step continuous air oxidation of liquid ortho-xylene. 4,211,881, Cl. 562-416.000.

Horstmann, Walter: *See—*
Muschelknautz, Edgar; Herold, Heiko; Brunner, Kunz; and Horstmann, Walter, 4,211,604, Cl. 159-4.00D.

Hosie, Alistair M. Boat loading device. 4,211,513, Cl. 414-559.000.

Hosokawa, Yorio: *See—*
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Hosono, Takashi: *See—*
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Hotimsky, Eric P. L. Device for the balanced fixing and mounting of blades in machines provided to cut, crush and hash. 4,211,371, Cl. 241-282.100.

Hottovy, John D.: *See—*
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Hoult, David P. Fish raising. 4,211,183, Cl. 119-3.000.

Howard, Durrell U. Adjustable suspension assembly. 4,211,429, Cl. 280-716.000.

Howell, Forrest W.: *See—*
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Hoying, Richard C.: *See—*
Barnett, Charles J.; Emmick, Thomas L.; and Hoying, Richard C., 4,211,870, Cl. 544-336.000.

Hoyt, Clifton A. System for calculating and displaying sales information. 4,212,068, Cl. 364-465.000.

Hrusch, Louis C., to Pneumo Corporation. Split lock ring for locking actuator and method for manufacturing the same. 4,211,149, Cl. 92-27.000.

Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, to AGFA-Gevaert, A.G. Circuit for indicating the condition of the battery in a photographic camera. 4,211,478, Cl. 354-60.00L.

Hubert, Jacques; and Ory, Jean-Marie, to Societe Chimique des Charbonnages. Movement detector. 4,212,005, Cl. 340-603.000.

Hubert, Odile: *See—*
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Huebner, Steven R.: *See—*
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Huelsman, Kenneth A.; and Harano, Allen A., to Hughes Aircraft Company. Digital scan converter with programmable transfer function. 4,212,072, Cl. 364-515.000.

Huggins, Keith G.; and Roitt, Ivan M. Specific binding assay techniques. 4,211,762, Cl. 424-1.000.

Hughes Aircraft Company: *See—*
Huelsman, Kenneth A.; and Harano, Allen A., 4,212,072, Cl. 364-515.000.
Schmitz, Lawrence S.; Dodds, Curtis E.; and Whipple, John, 4,211,065, Cl. 368-47.000.

Hughes, Alfred J.: *See—*
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Hughes, David E.: *See—*
Yocum, William C.; and Hughes, David E., 4,211,386, Cl. 251-122.000.

Hughes, John M. F.: *See—*
Benson, Nigel C.; Hughes, John M. F.; Kingslake, Denis; and Symonds, David G., 4,210,987, Cl. 26-89.000.

Hughes, Peter I.; Lynch, Robert J.; and Ahrens, James J. Bulk dry food product storage, display and dispensing apparatus. 4,211,343, Cl. 222-130.000.

Hughes Tool Company: *See—*
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Hulstyn, Jan: *See—*
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Hums, Dieter: *See—*
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Hund, Franz; Linde, Gunter; and Kresse, Peter, to Bayer Aktiengesellschaft. Iron oxide-based anti-corrosion pigments. 4,211,565, Cl. 106-14.050.

Hunerberg, Edward C., to Hoover Universal, Inc. Gas-flow control apparatus for equipment for producing foamed plastic. 4,211,523, Cl. 425-4.00C.

Hung, William M.: *See—*
Schmidt, Paul J.; and Hung, William M., 4,211,872, Cl. 546-116.000.

Hunt, Norman: *See—*
Cox, Michael D.; Hunt, Norman; and Colver, Kenneth W., 4,211,193, Cl. 123-352.000.

Hunt, Ronald E.; and Souliere, Ernest G., to International Business Machines Corporation. Paper feeding control apparatus. 4,211,499, Cl. 400-637.600.

Hunyar, Csaba K., to MCA Disco-Vision, Inc. Process for producing a stamper for videodisc purposes. 4,211,617, Cl. 204-5.000.

Hurter, Rudolf, to Ciba-Geigy Corporation. Disazo dyes containing an acetoacetanilide middle component. 4,211,698, Cl. 260-176.000.

Hurvitz, Arnold. Method and means for processing metal sheets. 4,211,102, Cl. 72-304.000.

Hussey Manufacturing Company, Inc.: *See—*
Sutter, David L., 4,211,450, Cl. 297-232.000.

Hyslop, Karl J.: *See—*
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I. H. W. Engineering Limited: *See—*
Shephard, Philip C., 4,211,451, Cl. 297-362.000.

I.W.S. Nominee Company Limited: *See—*
Mehta, Parvez; and Warnes, Anthony M., 4,211,261, Cl. 139-425.00R.

Ichikawa, Akira; Nakata, Kazuo; and Hirose, Kazuhito, to Hitachi, Ltd. Multifrequency signal receiving system. 4,211,897, Cl. 179-84.0VF.

ICI Australia Limited: *See—*
Dixon, David R.; Lydiate, Jack; and Lubbock, Frederick J., 4,211,664, Cl. 252-62.540.

Ideal Toy Corporation: *See—*
Nielsen, Edwin A., 4,211,409, Cl. 273-86.00B.

Igarashi, Sadaki: *See—*
Kobayashi, Tamotsu; and Igarashi, Sadaki, 4,211,971, Cl. 324-140.00D.

Igarashi, Yoshiaki: *See—*
Akiyama, Ryo; and Igarashi, Yoshiaki, 4,211,967, Cl. 318-490.000.

Ihara Chemical Industry Co., Ltd.: *See—*
Koike, Wataro; Kimoto, Takahiro; and Matsui, Sadayoshi, 4,211,723, Cl. 260-544.00K.

Iino, Yasuo: *See—*
Yoshida, Masashi; and Iino, Yasuo, 4,212,040, Cl. 360-96.300.

Ikeda, Masayuki; and Naka, Takahiro, to Kabushiki Kaisha Suwa Seikosha. Time signal timepiece. 4,211,064, Cl. 368-272.000.

Ikeda, Tamotsu: *See—*
Nishikawa, Akio; Katagiri, Junichi; Kinjo, Noriyuki; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,211,686, Cl. 260-40.00R.

Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirobumi, to Kabushiki Kaisha Seikosha. Thickness-shear mode quartz oscillator with an added non-circular mass. 4,211,947, Cl. 310-312.000.

Ikeyama, Kazunori: *See—*
Sakai, Koichi; and Ikeyama, Kazunori, 4,211,157, Cl. 99-306.000.

Imperial Chemical Industries Limited: *See—*
Baird, David B.; Costello, Alan T.; Fishwick, Brian R.; McClelland, Robert D.; and Smith, Peter, 4,211,696, Cl. 260-152.000.
Benson, Nigel C.; Hughes, John M. F.; Kingslake, Denis; and Symonds, David G., 4,210,987, Cl. 26-89.000.
Shearing, Herbert J., 4,211,680, Cl. 260-29.2TN.
Smith, Leslie H., 4,211,878, Cl. 549-78.000.

Inadomi, Seigo: *See—*
Kunimune, Kohichi; Inadomi, Seigo; and Yoshida, Satomi, 4,211,819, Cl. 428-374.000.

Indech, Robert. Groove guided piston linkage for an internal combustion engine. 4,211,190, Cl. 123-48.00B.

Industrial Designs and Services: *See—*
Crane, Walton B., 4,211,358, Cl. 229-23.00C.

Industrial Electronic Hardware Corp.: *See—*
Wescott, Ronald O., 4,211,461, Cl. 339-91.00R.

Industrie-Werke Karlsruhe-Augsburg Aktiengesellschaft: *See—*
Fichtl, Karl; Berger, Rudolf; Durnfelder, Otto; and Pilz, Erich, 4,211,164, Cl. 100-145.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Vittorelli, Vittore, 4,212,077, Cl. 364-900.000.

Ingersoll-Rand Company: *See—*
D'Oporto, Tito R.; and Chun, Delo K. K., 4,211,127, Cl. 81-63.000.

Inmont Corporation: *See—*
Steward, Raymond G.; Boyd, Stuart G.; and Civardi, Frank P., 4,211,590, Cl. 156-79.000.

Inomata, Koichiro; and Yamada, Masakazu, to Tokyo Shibaura Electric Co., Ltd. Samarium-cobalt-copper-iron-titanium permanent magnets. 4,211,585, Cl. 148-31.570.

Inoue, Hiromichi: *See—*
Inukai, Takashi; Inoue, Hiromichi; and Sato, Hideo, 4,211,666, Cl. 252-299.000.

Inoue, Nobutaro, to Shintom Kabushiki Kaisha. Compound acoustic apparatus for automotive vehicles. 4,211,976, Cl. 455-344.000.

Institut National de la Recherche Agronomique and Aussedat-Rey: *See—*
Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, 4,211,795, Cl. 426-2.000.

Interlake, Inc.: *See—*
Kunka, Bernard P.; and Simonelic, George B., 4,211,350, Cl. 227-8.000.

International Beauty Distributor: *See—*
Hokama, Yosh, 4,211,246, Cl. 132-76.400.

International Business Machines Corporation: *See—*
Babinski, John P.; Bertelsen, Bruce I.; Raacke, Karl H.; and Sirgo, Valdeko H., 4,211,505, Cl. 406-19.000.
Balasubramanian, P. S.; Bertin, Claude R.; and Greenspan, Stephen B., 4,212,026, Cl. 357-41.000.
Cowher, Melvyn E.; and Sedgwick, Thomas O., 4,211,803, Cl. 427-128.000.
Fang, Frank F.; and Shih, Kwang K., 4,211,586, Cl. 148-175.000.
Hannigan, Noreen A.; and Travis, Terence, 4,211,483, Cl. 355-14.00R.
Horng, Cheng T.; and Schwenker, Robert O., 4,211,582, Cl. 148-1.500.

Hunt, Ronald E.; and Souliere, Ernest G., 4,211,499, Cl. 400-637.600.
Lapadula, Constantino; and Lin, Burn J., 4,211,834, Cl. 430-326.000.
Panissidi, Hugo A.; Shelton, Glenmore L., Jr.; and Will, Peter M., 4,211,147, Cl. 91-184.000.
Sambucetti, Carlos J., 4,211,616, Cl. 204-2.000.

International Flavors & Fragrances Inc.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.

International Mobile Machines Incorporated: *See—*
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,211,938, Cl. 307-233.00R.

International Telephone and Telegraph Corporation: *See—*
Edwards, Ernest; and Jukes, Michael K., 4,211,395, Cl. 269-254.00R.
Einem, Robert E.; Richards, Joseph A.; and Gassowski, Jerzy R., 4,211,495, Cl. 400-124.000.
Seitz, Lamont J.; and Fort, Geza, 4,211,108, Cl. 73-141.0AB.
Steensma, Peter D., 4,211,468, Cl. 350-96.100.
Vincent, Arthur L., 4,211,748, Cl. 422-90.000.

Intong AB: *See—*
Hartmann, Armin; and Hums, Dieter, 4,211,571, Cl. 106-87.000.

Inui, Hiroo: *See—*
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.

Inukai, Takashi; Inoue, Hiromichi; and Sato, Hideo, to Chisso Corporation. Liquid crystal compounds. 4,211,666, Cl. 252-299.000.

Ioset, Robert M., to Dow Chemical Company, The. Ronnel composition and use to promote nutritional response. 4,211,775, Cl. 424-225.000.

IRI-E Kosan Corporation: *See—*
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,211,552, Cl. 75-24.000.

Isaacks, Kenneth M., to Otis Engineering Corporation. Plunger lift system. 4,211,279, Cl. 166-64.000.

Iscoe, Alan D.: *See—*
Blowsky, Frank C.; Glickman, Kenneth B.; and Iscoe, Alan D., 4,211,405, Cl. 272-141.000.

Iseki Agricultural Machinery Mfg. Co. Ltd.: *See—*
Kanetou, Yuuji; and Uetani, Hirofumi, 4,211,921, Cl. 250-202.000.

Ishida, Takahiro: *See—*
Yamada, Koichi; Yoshihara, Masao; Ishida, Takahiro; and Sato, Kazuo, 4,211,667, Cl. 252-313.00R.

Ishigaki, Yukinobu: *See—*
Muraoka, Teruo; Yamazaki, Masami; and Ishigaki, Yukinobu, 4,211,979, Cl. 455-306.000.

Ishii, Kyoko, administrator: *See—*
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and Ishii, Kyoko, administrator, 4,211,118, Cl. 73-592.000.

Ishii, Ryoichi, deceased: *See—*
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and Ishii, Kyoko, administrator, 4,211,118, Cl. 73-592.000.

Ishikawa, Hidehiko: *See—*
Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, 4,211,558, Cl. 430-359.000.

Ishikawa, Yuichi: *See—*
Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, 4,211,276, Cl. 165-1.000.

Ito, Kazuhiro: *See—*
Ono, Yuichi; Mori, Mitsuhiro; Morioka, Makoto; Ito, Kazuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,212,021, Cl. 357-17.000.

Ito, Tetsuo: *See—*
Suminoe, Taro; Ito, Tetsuo; and Masuhara, Eiichi, 4,211,682, Cl. 260-29.300.

Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, to Hitachi, Ltd. Method of making fin elements for heat exchangers. 4,211,276, Cl. 165-1.000.

Itoh, Tsutomu, to Onoda Cement Co., Ltd. Laminated paper container with sealed seams. 4,211,339, Cl. 220-450.000.

ITT Industries, Incorporated: *See—*
Lupertz, Hans-Henning, 4,211,310, Cl. 188-73.300.

Iwagami, Hisao: *See—*
Nakamori, Shigeru; Yokozeki, Kenzo; Mitsugi, Koji; Eguchi, Chikahiko; and Iwagami, Hisao, 4,211,840, Cl. 435-107.000.

Iwai, Fumio; Kokiso, Masakazu; Koiso, Junichi; and Ogino, Tamio, to Konishiroku Photo Industry Co., Ltd. Drum cleaning blade for image transfer type electrophotographic copying machine. 4,211,484, Cl. 355-15.000.

Iwane, Masahiko: *See—*
Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,212,059, Cl. 364-200.000.

Iwasaki, Motoaki: *See—*
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,211,901, Cl. 200-83.00B.

Iwata, Kazuo: *See—*
Matsuda, Akira; Tojo, Tetsuo; and Iwata, Kazuo, 4,211,852, Cl. 525-240.000.

Iwata, Toshiharu; and Hattori, Tadashi, to Nippon Soken, Inc. Spark plug. 4,211,952, Cl. 313-143.000.

Izawa, Kiyoshi: *See—*
Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, 4,211,558, Cl. 430-359.000.

Izu, Masatsugu; and Cannella, Vincent D., to Energy Conversion Devices, Inc. Method of high sensitivity imaging and imaging film therefor. 4,211,838, Cl. 430-502.000.

J. I. Case Company: *See—*
Frisbee, Claude M., 4,211,282, Cl. 172-7.000.
Sickler, Emory J., 4,211,364, Cl. 237-12.30A.

J. M. Huber Corporation: *See—*
Scott, Oscar T., IV, 4,211,578, Cl. 106-307.000.

Jackson, Herman R. Method for removing impurities and residual moisture from petroleum fuels. 4,211,639, Cl. 208-188.000.

Jackson, Larry D. Electric hair curling device having a rotatable curling barrel. 4,211,914, Cl. 219-225.000.

Jacob, Jonah H.: *See—*
Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., 4,211,983, Cl. 331-94.5PE.

Jacobson, Ilamae W. Self measuring garment assembly. 4,211,011, Cl. 33-15.000.

Jacuzzi Bros., Incorporated: *See—*
Burgess, John D.; and Jacuzzi, Virgil J., 4,211,216, Cl. 128-66.000.

Jacuzzi, Virgil J.: *See—*
Burgess, John D.; and Jacuzzi, Virgil J., 4,211,216, Cl. 128-66.000.

Jagenberg Werke Atkiengesellschaft: *See—*
Weiss, Peter; and Thievessen, Karl, 4,211,375, Cl. 242-81.000.

Jager. Circulating air classifier or separator. 4,211,641, Cl. 209-144.000.

Jamgochian, Ralph; Oley, Leonard; Stachnik, Joseph; and Tutella, Alfred L., to ARA Services, Inc. Combination hot and cold drink machine. 4,211,342, Cl. 222-129.400.

Janezich, Frank A.: *See—*
Tokar, Joseph C.; and Janezich, Frank A., 4,211,543, Cl. 55-485.000.

Janiszewski, Anthony T.: *See—*
Barlow, Gordon A.; and Janiszewski, Anthony T., 4,211,412, Cl. 273-424.000.

Janssen, Peter S. L.: *See—*
Goverde, Bastiaan C.; Janssen, Peter S. L.; and Kostner, Gerhard M., 4,211,530, Cl. 23-230.00B.

Japan Synthetic Rubber Co., Ltd.: *See—*
Suminoe, Taro; Ito, Tetsuo; and Masuhara, Eiichi, 4,211,682, Cl. 260-29.300.

Japan Tobacco & Salt Public Corporation, The: *See—*
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.

Jeffers, Albert L.: *See—*
Bradt, Rexford H., 4,211,736, Cl. 264-8.000.

Jenkins Metal Corporation: *See—*
Collins, Walter W., 4,211,003, Cl. 30-162.000.

Jennrich, George J., to Allis-Chalmers Corporation. Rolls for compacting mill. 4,211,524, Cl. 425-296.000.

Jensen, Joergen, to Bruel & Kjaer A/S. Shear type prestressed piezoelectric force transducer. 4,211,951, Cl. 310-329.000.

Jensen, Richard W.; and Peterson, Richard H. Pedal control circuits for electronic piano. 4,211,141, Cl. 84-1.270.

Jensen, William C., to Western Farm Services Inc. Process for preparation of ammonium polyphosphate. 4,211,546, Cl. 71-34.000.

Jernow, Jane L.: *See—*
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,211,724, Cl. 260-562.00B.

Jet Aeration Company (Jet Inc.): *See—*
Jordan, Edward J., 4,211,655, Cl. 210-108.000.

JLG Industries, Inc.: *See—*
Toomey, Gerald P.; Grove, John L.; and Fries, John R., 4,211,211, Cl. 126-439.000.

Johannsen, Donald O.: *See—*
Saele, Arvid H.; and Johannsen, Donald O., 4,211,079, Cl. 60-433.000.

Johanson, Ronald C.; and McDonald, Bill W., to Foam-Ply, Inc. Concrete form structure. 4,211,385, Cl. 249-192.000.

Johansson, Carl E., to SKF Industrial Trading and Development Co. B.V. Rock drill bit lubrication system. 4,211,453, Cl. 308-8.200.

Johnson, Curtis C., deceased: *See—*
Raemer, Daniel B.; Gehmlich, Dietrich K.; Westenskow, Dwayne R.; and Johnson, Curtis C., deceased, 4,211,239, Cl. 128-716.000.

Johnson, George C., to Mobil Oil Corporation. Synthesis of zeolite S. 4,211,756, Cl. 423-118.000.

Johnson, John H.; and Fields, Joseph E., to Monsanto Company. Method for controlling obesity. 4,211,765, Cl. 424-78.000.

Johnson, Lonnie G. Smoke detecting timer controlled thermostat. 4,211,362, Cl. 236-47.000.

Johnson, Richard C.; Kafer, Otto R.; and Todd, Mike J., to H. B. Fuller Company. Automatic carpet cleaning machine. 4,210,978, Cl. 15-320.000.

Johnson, Verle D.: *See—*
White, William G.; and Johnson, Verle D., 4,211,001, Cl. 29-747.000.

Johnstone, Robert A. W.: *See—*
Entwistle, Ian D.; and Johnstone, Robert A. W., 4,211,727, Cl. 568-437.000.

Joly, Jean: *See—*
Braconnier, Daniel; Joly, Jean; and Renault, Michele, 4,211,812, Cl. 428-224.000.

Jones, Kenneth: *See—*
Emblem, Harold G.; Das, Anup K.; and Jones, Kenneth, 4,211,717, Cl. 556-470.000.

Jordan, Edward J., to Jet Aeration Company (Jet Inc.). Upflow filter construction. 4,211,655, Cl. 210-108.000.

Josten, Walter: *See—*
Dittrich, Werner; Josten, Walter; Nestler, Heinz; and Schnippering, Friedhelm, 4,211,567, Cl. 106-38.350.

Jourdan, Louis J.; and Saillour, Jean M. Machine tools and machine for removing stem from vegetable, such as cabbage or cauliflower. 4,211,161, Cl. 99-638.000.

Joyner, James M.: *See—*
Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,211,692, Cl. 260-45.70P.

Judd Ringer Corporation: *See—*
Ringer, Charles J., 4,211,033, Cl. 47-45.000.

Jukes, Michael K.: *See—*
Edwards, Ernest; and Jukes, Michael K., 4,211,395, Cl. 269-254.00R.

Julien, Hermann: *See—*
Neubeck, Kurt; and Julien, Hermann, 4,211,000, Cl. 29-714.000.

Junginger, Klaus M.; and Kieferle, Hermann, to Stierlen-Maquet Aktiengesellschaft. Method of and remote control apparatus for remotely controlling a medical appliance. 4,211,998, Cl. 340-171.00R.

Kabachek, Vladimir G.: *See—*
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Kusumoto, Yasuo; and Miyazaki, Joichi, 4,211,066, Cl. 368-113.000.

Kabushiki Kaisha Kenseido: *See—*
Ohno, Yoshio, 4,211,618, Cl. 204-11.000.

Kabushiki Kaisha Mikado: *See—*
Naka, Kozaburo, 4,211,048, Cl. 52-700.000.

Kabushiki Kaisha Seikosha: *See—*
Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirobumi, 4,211,947, Cl. 310-312.000.
Oda, Hajime; Samejima, Toshihide; Matsumura, Toshio; Moritani, Nakanobu; and Fujita, Masanori, 4,211,067, Cl. 368-185.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Ikeda, Masayuki; and Naka, Takahiro, 4,211,064, Cl. 368-272.000.

Kabushiki Kaisha Teikoku Denki Seisakusho: *See—*
Sato, Tetsuya; Kato, Osamu; and Saito, Hisashi, 4,211,973, Cl. 324-158.0MG.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Furukawa, Haruki; Usami, Susumu; and Nakaho, Junichi, 4,211,432, Cl. 280-808.000.
Yasumatsu, Jun, 4,211,377, Cl. 242-107.200.

Kafer, Otto R.: *See—*
Johnson, Richard C.; Kafer, Otto R.; and Todd, Mike J., 4,210,978, Cl. 15-320.000.

Kajima Kensetsu Kabushiki Kaisha: *See—*
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.

Kalbfuss, Richard, to BBC Brown Boveri & Company Limited. Combustion chamber for a gas turbine. 4,211,069, Cl. 60-39.020.

Kalina, Theodore: *See—*
Eakman, James M.; Marshall, Harry A.; and Kalina, Theodore, 4,211,669, Cl. 252-373.000.

Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K. Dual current supply system for aluminum-producing electrolyzers. 4,211,626, Cl. 204-243.00M.

Kambic, Raymond V.: *See—*
Butts, Lawrence D.; and Kambic, Raymond V., 4,211,443, Cl. 292-341.160.

Kamei, Tatsuya: *See—*
Sugawara, Yoshitaka; and Kamei, Tatsuya, 4,212,024, Cl. 357-38.000.

Kamio, Kunimasa: *See—*
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.

Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, to Sumitomo Chemical Company, Limited. Epoxy resins and process for producing the same. 4,211,715, Cl. 260-348.640.

Kanetou, Yuuji; and Uetani, Hirofumi, to Iseki Agricultural Machinery Mfg. Co. Ltd. Sensor for use in controlling operation of mobile farming machine. 4,211,921, Cl. 250-202.000.

Kang, Kenneth S.; and Veeder, George T., III, to Merck & Co., Inc. Bacterial polysaccharide S-21 and complex thereof. 4,211,774, Cl. 424-181.000.

Kantner, Hans-Joachim. Liquid container for urine collection. 4,211,749, Cl. 422-102.000.

Karasev, Vadim A.: *See—*
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

Karayianis, Nick: *See—*
Morrison, Clyde A.; Karayianis, Nick; and Wortman, Donald E., 4,211,487, Cl. 356-336.000.

Karl Lautenschlager KG Mobelbeschiageabrik: *See—*
Lautenschlager, Karl, Jr.; Lautenschlager, Horst; and Lautenschlager, Reinhard, 4,210,980, Cl. 16-171.000.

Karlsson, Rune. Floor mat for stalls or cribs. 4,211,185, Cl. 119-28.000.

Karrenbauer, Herbert, to Licentia Patent-Verwaltungs-G.m.b.H. Gas-blast circuit breaker. 4,211,904, Cl. 200-148.00A.

Kartridg Pak Co., The: *See—*
Tucker, Phillip C., 4,211,051, Cl. 53-138.00A.

Kashimura, Katsuichi: *See—*
Tsukushi, Masanori; Kashimura, Katsuichi; Koyanagi, Osamu; Yoshioka, Yoshio; and Hirasawa, Kunio, 4,211,903, Cl. 200-148.00D.

Kasjura, Nina N.: *See—*
Konovenko, Grigory M.; Slipchenko, Svetlana L.; Markus, Vladimir M.; and Kasjura, Nina N., 4,211,685, Cl. 260-30.4EP.

Kastec Corporation: *See—*
Kaster, Robert L.; and Mehl, Donald N., 4,211,241, Cl. 128-774.000.

Kaster, Robert L.; and Mehl, Donald N., to Kastec Corporation. Heart valve sizing gauge. 4,211,241, Cl. 128-774.000.

Katagiri, Junichi: *See—*
Nishikawa, Akio; Katagiri, Junichi; Kinjo, Noriyuki; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,211,686, Cl. 260-40.00R.

Kato, Kotaro: *See—*
Amemiya, Yoshihito; and Kato, Kotaro, 4,210,996, Cl. 29-610.00R.

Kato, Osamu: *See—*
Sato, Tetsuya; Kato, Osamu; and Saito, Hisashi, 4,211,973, Cl. 324-158.0MG.

Kato, Sadamu: *See—*
Suzuki, Isao; Yomogida, Toshihiko; and Kato, Sadamu, 4,212,081, Cl. 364-900.000.

Kato, Shogo: *See—*
Kitai, Kiyoshi; Kobayashi, Masaru; Yonemoto, Tomoo; and Kato, Shogo, 4,211,480, Cl. 354-234.000.

Kato, Tomoyasu: *See—*
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.

Kato, Yasuyuki; and Moritani, Masahiko, to Sumitomo Chemical Company, Limited. Process for the continuous casting of liquid polymerizable compositions. 4,211,742, Cl. 264-216.000.

Kaufman, Robert J.: *See—*
Franz, John E.; and Kaufman, Robert J., 4,211,548, Cl. 71-87.000.
Franz, John E.; and Kaufman, Robert J., 4,211,732, Cl. 260-938.000.

Kauhl, Gunther: *See—*
Glauner, Jens; Kauhl, Gunther; Pflug, Hannes; Steinke, Leo; and Weyl, Helmut, 4,211,204, Cl. 123-145.00A.

Kawagai, Kenji: *See—*
Aoki, Kazuhide; and Kawagai, Kenji, 4,211,942, Cl. 307-355.000.

Kawai, Masaki: *See—*
Toyama, Jin-Ichi; and Kawai, Masaki, 4,211,965, Cl. 318-341.000.

Kawai, Mitsuji. Compressive pressure augmentation device. 4,211,197, Cl. 123-585.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph, 4,211,138, Cl. 84-1.010.

Kawaki, Takeo: *See—*
Sugio, Akitoshi; and Kawaki, Takeo, 4,211,857, Cl. 528-215.000.

Kawamura, Yoshihisa; and Saito, Masaaki, to Nissan Motor Company, Limited. Fuel supplying device for internal combustion engine. 4,211,191, Cl. 123-52.00M.

Kawata, Masahiko: *See—*
Ono, Yuichi; Mori, Mitsuhiro; Morioka, Makoto; Ito, Kazuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,212,021, Cl. 357-17.000.

Kearney & Trecker Corporation: *See—*
Zankl, Frank, 4,211,512, Cl. 409-221.000.

Keggenhoff, Berthold; Bandtel, Eberhard; and Rosenkranz, Hans J., to Bayer Aktiengesellschaft. Use of an apparatus for continuous photopolymerization. 4,211,751, Cl. 422-134.000.

Kehr, Clifton L.; Wood, Louis L.; and Guthrie, James L., to W. R. Grace & Co. Polyurethane foams and foam forming compositions containing amine scavengers. 4,211,847, Cl. 521-121.000.

Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, to Biotronik Mess- und Therapiegerate GmbH & Co. Programmer for implanted pacer. 4,211,235, Cl. 128-419.0PG.

Kellner, Jackson M., to Smith International, Inc. Drill fluid powered hydraulic system. 4,211,291, Cl. 175-17.000.

Kendall Company, The: *See—*
Anderson, Gary C.; Howey, Jon A.; and Patel, Harish A., 4,211,227, Cl. 128-296.000.
Samour, Carlos M., 4,211,595, Cl. 156-187.000.

Kendrick, Richard L. Spinal restraint device. 4,211,218, Cl. 128-87.00R.

Kennecott Copper Corporation: *See—*
Pemsler, J. Paul; and Litchfield, John K., 4,211,753, Cl. 423-54.000.
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., 4,211,270, Cl. 164-83.000.

Kennedy, Harry L.; Kesaree, Prakash M.; and Reeves, Robert H., Jr., to Velasco Scale Company. Dual fill rate liquid filler apparatus having a single control valve. 4,211,263, Cl. 141-83.000.

Kent, William C., to Western Electric Company, Incorporated. Zero insertion force connector. 4,211,458, Cl. 339-74.00R.

Kesaree, Prakash M.: *See—*
Kennedy, Harry L.; Kesaree, Prakash M.; and Reeves, Robert H., Jr., 4,211,263, Cl. 141-83.000.

Keystone Camera Corporation: *See—*
Zawodny, Arthur, 4,211,479, Cl. 354-213.000.

Kidd, Christopher: *See—*
Salmon, Peter C.; and Kidd, Christopher, 4,211,331, Cl. 211-13.000.

Kidyashev, Jury K.: *See—*
Vasilinina, Olga V.; Kidyashev, Jury K.; Potapov, Valery N.; Ryabikov, Stanislav V.; Stepanov, Anatoly M.; and Strebkov, Dmitry S., 4,211,581, Cl. 136-89.0CA.

Kieferle, Hermann: *See—*
Junginger, Klaus M.; and Kieferle, Hermann, 4,211,998, Cl. 340-171.00R.

Kiess, Ulrich: *See—*
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, 4,211,831, Cl. 429-78.000.

Kigo, Hiroyuki: *See—*
Koyama, Masaoki; and Kigo, Hiroyuki, 4,211,684, Cl. 260-29.6TA.

Kikkoman Shoyu Co., Ltd.: *See—*
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.

Kil, Ilya G.: *See—*
Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K., 4,211,626, Cl. 204-243.00M.

Kim, Georgy V.: *See—*
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Kimball, Bruce S.: *See—*
Young, David A.; and Kimball, Bruce S., 4,211,427, Cl. 280-406.00A.

Kimoto, Takahiro: *See—*
Koike, Wataro; Kimoto, Takahiro; and Matsui, Sadayoshi, 4,211,723, Cl. 260-544.00K.

Kimura, Hideyuki: *See—*
Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, 4,211,276, Cl. 165-1.000.

Kimura, Kunio: *See—*
Sonetaka, Kazunori; Nishino, Atsushi; and Kimura, Kunio, 4,211,672, Cl. 252-455.00R.

King, James P., to Pennwalt Corporation. Synergistic lubricating compositions. 4,211,662, Cl. 252-21.000.

Kingslake, Denis: *See—*
Benson, Nigel C.; Hughes, John M. F.; Kingslake, Denis; and Symonds, David G., 4,210,987, Cl. 26-89.000.

Kinjo, Noriyuki: *See—*
Nishikawa, Akio; Katagiri, Junichi; Kinjo, Noriyuki; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,211,686, Cl. 260-40.00R.

Kinnard, Harry W. O.: *See—*
Fernandez, Alberto C., 4,211,541, Cl. 55-68.000.

Kirk, Norbert A. Hand-held peeler. 4,211,002, Cl. 30-123.300.

Kitagawa, Tsuneo: *See—*
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,211,482, Cl. 355-8.000.

Kitai, Kiyoshi; Kobayashi, Masaru; Yonemoto, Tomoo; and Kato, Shogo, to Seiko Koki Kabushiki Kaisha. Electromagnetic shutter controlling device for camera. 4,211,480, Cl. 354-234.000.

Kitamura, Hiroyuki; Hosokawa, Yorio; and Fukasawa, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Inverter apparatus. 4,212,056, Cl. 363-96.000.

Kiuchi, Mitsuyuki; and Hamaoka, Shigeo, to Matsushita Electric Industrial Co., Ltd. Induction heating apparatus. 4,211,912, Cl. 219-10.770.

Kiwala, Jacob: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.

Klein, Edmund. Method of controlling the secretion of sebum in humans. 4,211,767, Cl. 424-92.000.

Klein, Johann, to Bayer Aktiengesellschaft. Sleeve with armband. 4,211,289, Cl. 172-686.000.

Kleinewefers Gesellschaft mit beschrankter Haftung: *See—*
Meisen, Klaus, 4,211,094, Cl. 68-5.00D.

Kleinknecht, Hans P., to RCA Corporation. Optical testing of a semiconductor. 4,211,488, Cl. 356-369.000.

Kleinknecht, Hans P.; and Bosenberg, Wolfram A., to RCA Corporation. Photomask alignment system. 4,211,489, Cl. 356-400.000.

Kleisa, Kurt: *See—*
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.

Klinkenberg, Herbert: *See—*
Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, 4,211,730, Cl. 260-45.75B.

Klock, Byron V.: *See—*
Westbrook, Clifton W.; Parcell, Lloyd J.; Claytor, Gary L.; and Klock, Byron V., 4,211,646, Cl. 210-15.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Abelitis, Andris, 4,211,573, Cl. 106-100.000.
Koppe, Eberhard; Schonteich, Peter; and Epper, Wolfgang, 4,211,653, Cl. 210-77.000.

Kloeber, Peter: *See—*
Biethan, Gunter; and Kloeber, Peter, 4,212,013, Cl. 370-30.000.

Klos, Julius: *See—*
List, Ferdinand; Klos, Julius; and Alfs, Helmut, 4,211,506, Cl. 406-55.000.

Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., to Milliken Research Corporation. Nitrogen containing compositions. 4,211,725, Cl. 260-583.00P.

Knies, Erwin B.: *See—*
Chapman, Walter H.; Hiland, David E.; Knies, Erwin B.; and Oberlin, Robert E., 4,211,172, Cl. 104-172.0BT.

Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., to Medtronic, Inc. Radiation signal processing system. 4,212,061, Cl. 364-414.000.

Kobayashi, Masaru: *See—*
Kitai, Kiyoshi; Kobayashi, Masaru; Yonemoto, Tomoo; and Kato, Shogo, 4,211,480, Cl. 354-234.000.

Kobayashi, Masayoshi, to Diesel Kiki Co., Ltd. Fuel injection pump. 4,211,203, Cl. 123-406.000.

Kobayashi, Mikio: *See—*
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.

Kobayashi, Tamotsu; and Igarashi, Sadaki, to Hokushin Electric Works, Ltd. Ratio meter for capacitive-type displacement converter. 4,211,971, Cl. 324-140.00D.

Kobayashi, Tsuguo: *See—*
Nishikawa, Akio; Katagiri, Junichi; Kinjo, Noriyuki; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,211,686, Cl. 260-40.00R.

Koda, Minoru, to Matsushita Electrical Industrial Co., Ltd. VTR Tape drive system. 4,212,039, Cl. 360-73.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Michalik, Horst B.; and Weschenfelder, Otto T., 4,211,396, Cl. 270-13.000.

Koenig, Burton G. Fishing apparatus. 4,210,984, Cl. 24-201.0HE.

Koga, Isao: *See—*
Ohtake, Nobumasa; Yoshizawa, Ryo; and Koga, Isao, 4,211,704, Cl. 260-319.100.

Kogler, Georg: *See—*
Grunleitner, Hans; Kogler, Georg; Kohnlein, Hans; and Tschirner, Peter, 4,211,962, Cl. 318-254.000.

Kohlen, Rudolf: *See—*
Bierbach, Herbert; Kohlen, Rudolf; and Hafke, Carl, 4,211,539, Cl. 48-197.00R.

Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, to Daimler-Benz Aktiengesellschaft. Battery vent and filler opening structure. 4,211,831, Cl. 429-78.000.

Kohnlein, Hans: *See—*
Grunleitner, Hans; Kogler, Georg; Kohnlein, Hans; and Tschirner, Peter, 4,211,962, Cl. 318-254.000.

Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, to Hitachi Medical Corporation. Tomographic imaging system. 4,212,062, Cl. 364-414.000.

Kohno, Hideki: *See—*
Nakaya, Chitose; Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yamamoto, Shinji; Tomura, Teruichi; and Hayakawa, Takayuki, 4,211,926, Cl. 250-445.00T.

Kohno, Mitsuo: *See—*
Taguchi, Tadashi; Fujikawa, Noboru; Kohno, Mitsuo; Yoshitake, Katsumi; and Satake, Kunio, 4,211,560, Cl. 430-313.000.

Kohyama, Susumu, to Tokyo Shibaura Electric Co., Ltd. Multi-channel charge coupled transfer device. 4,211,937, Cl. 307-221.00D.

Koike, Wataro; Kimoto, Takahiro; and Matsui, Sadayoshi, to Ihara Chemical Industry Co., Ltd. Process for producing chlorosulfonylbenzoylchloride. 4,211,723, Cl. 260-544.00K.

Koiso, Junichi: *See—*
Iwai, Fumio; Kokiso, Masakazu; Koiso, Junichi; and Ogino, Tamio, 4,211,484, Cl. 355-15.000.

Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, to Kajima Kensetsu Kabushiki Kaisha. Building structure. 4,211,045, Cl. 52-251.000.

Kokaku, Hiroyoshi: *See—*
Asano, Hideki; Kokaku, Hiroyoshi; Suzuki, Katsuhito; and Saida, Kenichi, 4,211,690, Cl. 260-42.460.

Kokie, Norio; Kubo, Masaharu; and Nagahara, Shusaku, to Hitachi, Ltd. Solid-state image pickup device. 4,212,034, Cl. 358-213.000.

Kokiso, Masakazu: *See—*
Iwai, Fumio; Kokiso, Masakazu; Koiso, Junichi; and Ogino, Tamio, 4,211,484, Cl. 355-15.000.

Kokubu, Yoshikazu: *See—*
Obata, Kanichiro; Kokubu, Yoshikazu; and Okazaki, Isao, 4,211,628, Cl. 204-252.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,035, Cl. 358-260.000.
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,036, Cl. 358-261.000.
Wakabayashi, Hiroharu, 4,211,920, Cl. 455-601.000.

Kollmeier, Hans-Joachim; and Rossmy, Gerd, to Th. Goldschmidt AG. Process of producing cross-linked urethane-group comprising foams of open-cell structure. 4,211,849, Cl. 521-164.000.

Koltgen, Hermann. Devices for inspecting bores. 4,211,014, Cl. 33-178.00R.

Komarek, Ernst: *See—*
Spahrkas, Heinrich; Muller, Josef; Komarek, Ernst; and Luck, Wolfhard, 4,211,529, Cl. 8-94.260.

Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, to Mitsubishi Gas Chemical Company, Inc. Process for producing terephthalic acid. 4,211,882, Cl. 562-416.000.

Komizo, Toshiyuki: *See—*
Awano, Takeshi; and Komizo, Toshiyuki, 4,211,431, Cl. 280-804.000.

Kongo Co., Ltd.: *See—*
Taniwaki, Genshi, 4,211,039, Cl. 49-361.000.

Konig, Helmut; and Schnider, Karl, to Maschinenfabrik Dipl. Ing. Helmut Konig. Dough portioning machine. 4,211,492, Cl. 366-76.000.

Konig, Wilfried: *See—*
Scheer, Martin; Anke, Heidrun; Konig, Wilfried; and Zahner, Hans, 4,211,787, Cl. 424-279.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Iwai, Fumio; Kokiso, Masakazu; Koiso, Junichi; and Ogino, Tamio, 4,211,484, Cl. 355-15.000.
Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,211,835, Cl. 430-403.000.
Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, 4,211,558, Cl. 430-359.000.

Konkler, Anthony W.: *See—*
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Konno, Tetsuro: *See—*
Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirobumi, 4,211,947, Cl. 310-312.000.

Konovenko, Grigory M.; Slipchenko, Svetlana L.; Markus, Vladimir M.; and Kasjura, Nina N. Adhesive composition. 4,211,685, Cl. 260-30.4EP.

Koppe, Eberhard; Schonteich, Peter; and Epper, Wolfgang, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method for vacuum filtration. 4,211,653, Cl. 210-77.000.

Koppl, Franz: *See—*
Steudten, Friedrich; and Koppl, Franz, 4,211,040, Cl. 51-42.000.

Koreicho, Wladimir, to Societe Anonyme de Telecommunications. Devide for suppressing very close interference echo signals in optical pulse compression radars. 4,211,485, Cl. 356-5.000.

Kortenbusch, Werner, to Ruhrkohle AG. Method and arrangement for hydraulic conveying of solids. 4,211,518, Cl. 417-54.000.

Kortier, William E.; Mueller, John J.; and Eggers, Philip E., to United States of America, Energy. Thermoelectric module. 4,211,889, Cl. 136-237.000.

Kos, Jacob J.: *See—*
Nauta, Jan P.; and Kos, Jacob J., 4,211,743, Cl. 264-284.000.

Kosek, Jerzy: *See—*
Slowinski, Stanislaw; Vasina, Stanislaw; Pasich, Jerzy; Kosek, Jerzy; and Glownia, Stanislaw, 4,211,274, Cl. 164-401.000.

Koshelev, Alexandr G.; Kretov, Svyatoslav D.; and Lavrentiev, Konstantin A. Device for recovering video information from magnetic tape. 4,212,042, Cl. 360-108.000.

Kosonocky, Walter F.; and Sauer, Donald J., to RCA Corporation. CCD Gate electrode structures and systems employing the same. 4,211,936, Cl. 307-221.00D.

Kostner, Gerhard M.: *See—*
Goverde, Bastiaan C.; Janssen, Peter S. L.; and Kostner, Gerhard M., 4,211,530, Cl. 23-230.00B.

Kotobuki Sangyo Kabushiki Kaisha: *See—*
Shimada, Hiroaki, 4,211,095, Cl. 72-250.000.

Kotthaus, Erich, to Werkzeugmaschinenfabrik Oerlikon-Buhrle. Method of manufacturing pairs of spur gears. 4,211,511, Cl. 409-26.000.

Koyama, Masaoki; and Kigo, Hiroyuki, to Asahi-Dow Limited. Vinylidene chloride polymer latex. 4,211,684, Cl. 260-29.6TA.

Koyanagi, Osamu: *See—*
Tsukushi, Masanori; Kashimura, Katsuichi; Koyanagi, Osamu; Yoshioka, Yoshio; and Hirasawa, Kunio, 4,211,903, Cl. 200-148.00D.

Kozhuro, Lev M.: *See—*
Sakulevich, Faddei J.; Kravchenko, Lev N.; Kozhuro, Lev M.; and Shimansky, Vladimir A., 4,211,041, Cl. 51-131.300.

Krahl, Alfred: *See—*
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Kramer, Wilhelm, to BBC Brown Boveri & Company Limited. Method and apparatus for producing dry, compressed air for electrical switch gear. 4,211,542, Cl. 55-179.000.

Kranc, Stanley J., to Caterpillar Tractor Co. Timing control for sleeve metering fuel system. 4,211,520, Cl. 417-494.000.

Kraska, Allen R., to Pfizer Inc. N,N-Disubstituted aminomethylphenylethanolamines. 4,211,794, Cl. 424-330.000.

Krauss-Maffei Aktiengesellschaft: *See—*
Taubenmann, Peter, 4,211,345, Cl. 222-134.000.

Kravchenko, Lev N.: *See—*
Sakulevich, Faddei J.; Kravchenko, Lev N.; Kozhuro, Lev M.; and Shimansky, Vladimir A., 4,211,041, Cl. 51-131.300.

Kreeger, John L.: *See—*
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Krengel, Genrikh I.: *See—*
Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U., 4,211,916, Cl. 371-15.000.

Kress, Dieter; and Haberle, Friedrich, to MAPAL Fabrick fur Prazisionswerkzeuge Dr. Kress KG. Rotary cutting tool with radially adjustable, reversible tool bits. 4,211,507, Cl. 407-37.000.

Kresse, Peter: *See—*
Hund, Franz; Linde, Gunter; and Kresse, Peter, 4,211,565, Cl. 106-14.050.

Kretov, Svyatoslav D.: *See—*
Koshelev, Alexandr G.; Kretov, Svyatoslav D.; and Lavrentiev, Konstantin A., 4,212,042, Cl. 360-108.000.

Kreuzer, Franz-Heinrich: *See—*
Marquardt, Klaus; and Kreuzer, Franz-Heinrich, 4,211,729, Cl. 525-106.000.

Krieger, Raymond L., to B. K. Sweeney Manufacturing Company. Gear puller. 4,210,990, Cl. 29-263.000.

Krinsky, Martin S. Orthopedic cushion and method for fitting thereof. 4,211,236, Cl. 128-594.000.

Krisch, Burkhard: *See—*
Muller, Karl-Heinz; Krisch, Burkhard; Rindfleisch, Volker; and Neuendorff, Hans F. R., 4,211,924, Cl. 250-311.000.

Kroeger, James K.: *See—*
Eppstein, Lee B.; Kroeger, James K.; and Lindblom, Kenneth A., 4,211,614, Cl. 204-1.00T.

Krogerus, Helge J.: *See—*
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.

Krylov, Nikolai I.; Toder, Ilya A.; Danilov, Leonid I.; and Pinsky, Gennady I. Mill stand roll assembly. 4,211,101, Cl. 72-247.000.

Kubach, John S.; and Stanley, Richard D. Filter venting devices for ostomy appliances. 4,211,224, Cl. 128-283.000.

Kubik, Peter S.: *See—*
Alles, Harold G.; and Kubik, Peter S., 4,211,012, Cl. 33-18.00R.

Kubo, Masaharu: *See—*
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Kubota, Ltd.: *See—*
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Kudara, Hajime: *See—*
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Kudlaty, Paul R.: *See—*
Carp, Ralph W.; Weissler, Harold E., II; and Kudlaty, Paul R., 4,212,066, Cl. 364-431.000.

Kuhle, Engelbert: *See—*
Hartmann, Alfons; Kuhle, Engelbert; and Hammann, Ingeborg, 4,211,790, Cl. 424-285.000.

Kuhlmann, George E.: *See—*
Horsfield, Sydney G.; Kuhlmann, George E.; and Bemis, Alan G., 4,211,881, Cl. 562-416.000.

Kuhlthau, Hans-Peter; Psaar, Hubertus; and Raue, Roderich, to Bayer Aktiengesellschaft. Pressure-sensitive recording material. 4,211,436, Cl. 282-27.500.

Kuhne, Robert: *See—*
Baumgartner, Peter; and Kuhne, Robert, 4,211,192, Cl. 123-90.600.

Kulakov, Nikolai K.: *See—*
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.

Kulik, George J., to Abex Corporation. Anti-rotational lamp assembly. 4,212,051, Cl. 362-287.000.

Kunimune, Kohichi; Inadomi, Seigo; and Yoshida, Satomi, to Chisso Corporation. Heat-melt adhesive propylene polymer fibers. 4,211,819, Cl. 428-374.000.

Kunka, Bernard P.; and Simonelic, George B., to Interlake, Inc. Wire stitching machine. 4,211,350, Cl. 227-8.000.

Kuno, Shiro; and Nishimura, Yoshiharu, to Tokyo Electric Co., Ltd. Weight measuring method and apparatus thereof. 4,212,074, Cl. 364-567.000.

Kuramshin, Ravil S.: *See—*
Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U., 4,211,916, Cl. 371-15.000.

Kurata, Kazuhiro: *See—*
Ono, Yuichi; Mori, Mitsuhiro; Morioka, Makoto; Ito, Kazuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,212,021, Cl. 357-17.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Obata, Kanichiro; Kokubu, Yoshikazu; and Okazaki, Isao, 4,211,628, Cl. 204-252.000.

Kurfman, Virgil B.; and Gransden, Raymond E., Jr., to Dow Chemical Company, The. Highly reflective multilayer metal/polymer composites. 4,211,822, Cl. 428-412.000.

Kurihara, Kazuhiko: *See—*
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Kuroda, Hiroyuki: *See—*
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Kuroda, Masahiro, to Anritsu Electric Company, Limited. Local signal generation arrangement. 4,211,975, Cl. 455-75.000.

Kusakari, Naohiko: *See—*
Wada, Osamu; and Kusakari, Naohiko, 4,211,858, Cl. 528-272.000.

Kusumoto, Shoichi: *See—*
Atoji, Nobuhisa; Matsumoto, Takashi; Kusumoto, Shoichi; Sato, Kazue; and Hasegawa, Mitsuhiro, 4,211,898, Cl. 179-156.00R.

Kusumoto, Yasuo; and Miyazaki, Joichi, to Kabushiki Kaisha Daini Seikosha. Stop watch. 4,211,066, Cl. 368-113.000.

Kusunoki, Shigeru; and Tanaka, Junzo, to Matsushita Electric Industrial Co., Ltd. High frequency heating apparatus with improved door arrangement. 4,211,910, Cl. 219-10.55D.

Kutlik, Edward: *See—*
Hellstrom, Melbourne J.; Perlin, Allen I.; and Kutlik, Edward, 4,211,927, Cl. 250-445.00T.

Kuur, Vyacheslav P.: *See—*
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Kvita, Vratislav: *See—*
Roth, Martin; Kvita, Vratislav; and Greber, Gerd, 4,211,705, Cl. 260-326.00C.

Kwasnoski, Daniel; and Symons, Carl R., to Bethlehem Steel Corporation. Coke pushing emission control system. 4,211,608, Cl. 201-41.000.

Kyoya, Kazuhiro: *See—*
Tsuchiya, Yoichiro; and Kyoya, Kazuhiro, 4,211,356, Cl. 229-16.00R.

Laboratoires Sarget: *See—*
Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, 4,211,772, Cl. 424-180.000.

Lafferty, Robert M., to Agroferm AG. Processes for the manufacture of D(-)-3-hydroxybutyric acid and D(-)-3-hydroxybutyric acid producing mutants. 4,211,846, Cl. 435-141.000.

Lafon, Guy. Dispensing machine, in particular for coins. 4,211,248, Cl. 133-1.00R.

Laing, Karsten: *See—*
Ludin, Ludwig; Laing, Nicholaus; Laing, Oliver; and Laing, Karsten, 4,211,092, Cl. 62-499.000.

Laing, Nicholaus: *See—*
Ludin, Ludwig; Laing, Nicholaus; Laing, Oliver; and Laing, Karsten, 4,211,092, Cl. 62-499.000.

Laing, Oliver: *See—*
Ludin, Ludwig; Laing, Nicholaus; Laing, Oliver; and Laing, Karsten, 4,211,092, Cl. 62-499.000.

L'Air Liquide, Societe Anomyme pour l'Etude et l'Explotion des Procedes: *See—*
L'Hermite, Mathurin; and Pierrard, Francois, 4,211,584, Cl. 148-16.700.

L'Air Liquide, Societe Anonyme pour l'Etude et L'Expoitation des Procedes Georges Claude: *See—*
Bentz, Gerard; Galey, Jean; and Devalois, Serge, 4,211,269, Cl. 164-67.000.

Lambert, Norman A.: *See—*
Getchell, Williams G.; and Lambert, Norman A., 4,211,387, Cl. 251-335.00B.

Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, to Bison-Werke, Bahre & Greten GmbH & Co. KG. Oscillating circuit arrangements for high frequency industrial generators. 4,211,984, Cl. 331-97.000.

Lang, Stanley A., Jr.: *See—*
Lin, Yang-I; and Lang, Stanley A., Jr., 4,211,726, Cl. 568-424.000.

Lange, Gerhard, to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG). Chain welding machine. 4,211,068, Cl. 59-31.000.

Langhoff, Josef: *See—*
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.

Langseder, Neal E., to American Can Company. Fracture resistant retained lever tab and method of manufacture. 4,211,335, Cl. 220-269.000.

Lanter, Kent J.; Betz, Norman L.; and Williams, Danny L., to Ralston Purina Company. Feed intake limiting composition for cattle. 4,211,796, Cl. 426-2.000.

Lapadula, Constantino; and Lin, Burn J., to International Business Machines Corporation. Method of using a o-quinone diazide sensitized phenol-formaldehyde resist as a deep ultraviolet light exposure mask. 4,211,834, Cl. 430-326.000.

Larin, Valentin F.: *See—*
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Larsen, Robert T., to Outboard Marine Corporation. Lawn mower including a carburetor enclosure. 4,211,058, Cl. 56-17.500.

Larsen, Russell E. Game board and apparatus. 4,211,419, Cl. 273-248.000.

Laurel Bank Machine Co., Ltd.: *See—*
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katsuke, 4,211,052, Cl. 53-77.000.

Lautenschlager, Horst: *See—*
Lautenschlager, Karl, Jr.; Lautenschlager, Horst; and Lautenschlager, Reinhard, 4,210,980, Cl. 16-171.000.

Lautenschlager, Karl, Jr.; Lautenschlager, Horst; and Lautenschlager, Reinhard, to Karl Lautenschlager KG Mobelbeschiageabrik. Cabinet hinge, especially for period furniture. 4,210,980, Cl. 16-171.000.

Lautenschlager, Reinhard: *See—*
Lautenschlager, Karl, Jr.; Lautenschlager, Horst; and Lautenschlager, Reinhard, 4,210,980, Cl. 16-171.000.

Lava Crucible Refractories, Co.: *See—*
Miller, Eldon D., 4,211,554, Cl. 75-53.000.

Lavrentiev, Konstantin A.: *See—*
Koshelev, Alexandr G.; Kretov, Svyatoslav D.; and Lavrentiev, Konstantin A., 4,212,042, Cl. 360-108.000.

Lawford, William H.: *See—*
Saxton, William R.; and Lawford, William H., 4,211,605, Cl. 162-64.000.

Lawson, John E., to Armco, Inc. Articulated plural well deep water production system. 4,211,281, Cl. 166-345.000.

Lazzari, Jean-Pierre; and Helle, Michel, to Compagnie Internationale pour l'Informatique. Apparatus and method for removing the effect of interference magnetic fields in a magnetic transducer device for detecting information magnetically coded on a carrier. 4,212,041, Cl. 360-113.000.

Leboucq, Jacques: *See—*
Desplanches, Gerard; and Leboucq, Jacques, 4,211,570, Cl. 106-65.000.

Lee, Chien-Ping: *See—*
Yariv, Amnon; Margalit, Shlomo; and Lee, Chien-Ping, 4,212,020, Cl. 357-17.000.

Lee, Hop. Electric outlet box containing twin electric sockets. 4,211,464, Cl. 339-122.00R.

Lee, Kee D.: *See—*
Choi, Sam K.; and Lee, Kee D., 4,211,859, Cl. 528-275.000.

Lee, Thomas B. K., to American Hoechst Corporation. Method of preparation of isopropyl 4,10-dihydro-10-oxothieno[3,2-c][1]benzoxepin-8-acetate. 4,211,877, Cl. 549-44.000.

Lee, Wooyoung: *See—*
Garwood, William E.; and Lee, Wooyoung, 4,211,640, Cl. 208-255.000.
Gross, Benjamin; and Lee, Wooyoung, 4,211,636, Cl. 208-164.000.
Gross, Benjamin; and Lee, Wooyoung, 4,211,637, Cl. 208-164.000.

Le Goff, Denis, to Compagnie Generale d'Electricite. Ultra-rapid electro-optical shutter. 4,211,474, Cl. 350-356.000.

Legros, Francis R.; and Tourman, Alain L. Device for aerating and chemically activating shower water. 4,211,368, Cl. 239-315.000.

Lehmann, Joachim: *See—*
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.

Leigh Products, Inc.: *See—*
Crescenzi, Donald; and Bridges, Barry A., 4,211,322, Cl. 206-44.00R.

Lemelson, Jerome H. Method for scanning a card with video signal. 4,212,037, Cl. 360-33.000.

Lemoine, Maurice G., to Ampex Corporation. Time base compensator. 4,212,027; Cl. 358-8.000.

Lenne, William: *See—*
Bourset, Claude; and Lenne, William, 4,211,384, Cl. 249-160.000.

Lenselink, Willem, to Polak's Frutal Works B.V. Cyclic acetals and ketals and their use in perfume compositions. 4,211,674, Cl. 252-522.00R.

Leonard, Henri, to Micro-Mega S.A. Dental handpiece. 4,211,009, Cl. 32-27.000.

Leonard, Rex D.; and Hulstyn, Jan, to Beatrice Foods Company. Cryogenic breathing system. 4,211,086, Cl. 62-50.000.

Leppin, Jurgen: *See—*
Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,211,984, Cl. 331-97.000.

Lerma, Jesse P., to Abbott Laboratories. Integrator with dielectric absorption correction. 4,211,981, Cl. 328-127.000.

Lerman, Martin D. Oral device. 4,211,008, Cl. 433-229.000.

Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, to Institut National de la Recherche Agronomique and Aussedat-Rey. Animal feeds. 4,211,795, Cl. 426-2.000.

Lessig, John A.: *See—*
Hoffman, Paul H.; and Lessig, John A., 4,210,982, Cl. 17-48.000.

Lever Brothers Company: *See—*
Machin, David, 4,211,675, Cl. 252-557.000.
Petranyi, Pal I., 4,211,328, Cl. 206-525.000.

Lewellen, Philip C.; Gates, Walter C., Jr.; and Duranleau, Roger G., to Texaco Inc. Catalytic metal-rare earth metal hydride for reduction of carbon monoxide in hydrogen. 4,211,673, Cl. 252-462.000.

LGZ Landis & Gyr Zug AG: *See—*
Nyfeler, Alex; Greenaway, David L.; and Lienhard, Heinz, 4,211,918, Cl. 235-454.000.

L'Hermite, Mathurin; and Pierrard, Francois, to L'Air Liquide, Societe Anomyme pour l'Etude et l'Explotion des Procedes. Methods of heat-treating steel. 4,211,584, Cl. 148-16.700.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Beneking, Heinz, 4,212,022, Cl. 357-22.000.
Glitz, Ekkehard, 4,211,891, Cl. 375-2.000.
Karrenbauer, Herbert, 4,211,904, Cl. 200-148.00A.
Podlewski, Johann, 4,212,055, Cl. 363-71.000.
Schmitt, Alfons; Utz, Diether; and Schafer, Klaus, 4,212,031, Cl. 358-101.000.

Lienhard, Heinz: *See—*
Nyfeler, Alex; Greenaway, David L.; and Lienhard, Heinz, 4,211,918, Cl. 235-454.000.

Lifeline Products, Inc.: *See—*
Marshall, James J., 4,211,842, Cl. 435-210.000.

Lilja, Launo L.: *See—*
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.

Lillegard, Thomas R.; Rollins, Richard A.; and Stauber, Ronald C., to Baxter Travenol Laboratories, Inc. Universal hospital bracket. 4,211,380, Cl. 248-229.000.

Lillibridge, Harold R., to Champion International Corporation. Air cleaning apparatus. 4,210,977, Cl. 15-306.00R.

Lin, Burn J.: *See*—
Lapadula, Constantino; and Lin, Burn J., 4,211,834, Cl. 430-326.000.

Lin, Edward D. Urethral catheter. 4,211,233, Cl. 128-349.00B.

Lin, Yang-I; and Lang, Stanley A., Jr., to American Cyanamid Company. Synthesis of substituted 9,10-anthracene-dicarboxaldehydes and 9,10-dihydro-9,10-anthracenedicarboxaldehydes. 4,211,726, Cl. 568-424.000.

Lindblom, Kenneth A.: *See*—
Eppstein, Lee B.; Kroeger, James K.; and Lindblom, Kenneth A., 4,211,614, Cl. 204-1.00T.

Linde Aktiengesellschaft: *See*—
Springmann, Helmut, 4,211,544, Cl. 62-30.000.

Linde, Gunter: *See*—
Hund, Franz; Linde, Gunter; and Kresse, Peter, 4,211,565, Cl. 106-14.050.

Lindgens, Theodor: *See*—
Wittkopp, Helmut; vom Dorp, Heinz; and Lindgens, Theodor, 4,211,129, Cl. 82-1.00C.

Lindner, Friedrich, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Container for a heat storage medium. 4,211,208, Cl. 126-400.000.

Lindo, Calvin E. Golf club combined with foldable extensions for surveying greens. 4,211,415, Cl. 273-162.00B.

Lindstrom, Carl H. M.: *See*—
Hallberg, Rolf O.; Lindstrom, Carl H. M.; and Westerberg, Hakan, 4,211,615, Cl. 204-1.00T.

Lineberry, Cletus E.: *See*—
Buckner, John G.; Lineberry, Cletus E.; and Harris, Jimmy W., 4,211,130, Cl. 83-23.000.

L'Institut Armand-Frappier: *See*—
Dubreuil, Robert, deceased; Ast, Orvo; and Pavilanis, Vytautas, 4,211,843, Cl. 435-2.000.

Lipps, Bennie J.; Murphy, William P., Jr.; and Mather, Frank W., III, to Cordis Dow Corp. Method for making artificial kidney. 4,211,597, Cl. 156-245.000.

Lipschutz, Paul, to Neiman S.A. Security lock with pistons and cylindrical key. 4,211,096, Cl. 70-364.00R.

Lisiecki, Robert E., to Ex-Cell-O Corporation. Container and blank for constructing same. 4,211,357, Cl. 229-17.00G.

List, Ferdinand; Klos, Julius; and Alfs, Helmut, to Chemische Werke Huls Aktiengesellschaft. Method and apparatus for the metered conveying of pulverulent solids. 4,211,506, Cl. 406-55.000.

Litchfield, John K.: *See*—
Pemsler, J. Paul; and Litchfield, John K., 4,211,753, Cl. 423-54.000.

Lo, Roger: *See*—
Twardy, Harald; and Lo, Roger, 4,211,072, Cl. 60-203.000.

Lochner, Herbert, to Cikalon Vliesstoffwerk GmbH. Method of making a needled and ornamentally patterned fleece material. 4,211,593, Cl. 156-148.000.

Lockhart, David A., to Caterpillar Tractor Co. Laminated spacer plate for engines and method for making the same. 4,211,205, Cl. 123-193.0CH.

Lodhi, Shahid A.; and Sims, Bernard, to American Cyanamid Company. Triethyl citrate solutions of PGE-type compounds. 4,211,793, Cl. 424-305.000.

Loew, Frederic C.: *See*—
Civardi, Frank P.; and Loew, Frederic C., 4,211,806, Cl. 428-91.000.

Lombard, Claude; and Viala, Guy, to Regie Nationale des Usines Renault. Magnet-controlled switch. 4,211,991, Cl. 335-207.000.

Long, Marshall; Alley, Lewis F.; and White, James E., to Marlen Research Corporation. Machine for feeding, cutting, spacing and accumulating articles. 4,211,055, Cl. 53-517.000.

Lonza, Ltd.: *See*—
Catalucci, Enrico, 4,211,883, Cl. 562-433.000.

Lopez, Carlos; Watanabe, Kyoichi A.; Reichman, Uri; and Fox, Jack J., to Sloan Kettering Institute for Cancer Research. 5-Substituted 1-(2'-Deoxy-2'-substituted-β-D-arabinofuranosyl)pyrimidine nucleosides. 4,211,773, Cl. 424-180.000.

LoPiano, Rocco W. Pulsed oxygen chamber. 4,211,223, Cl. 128-207.260.

L'Oreal: *See*—
Gueret, Jean-Louis H., 4,211,217, Cl. 128-67.000.

Lorenz, David R.: *See*—
McDonald, Patrick D.; Vivilecchia, Richard V.; and Lorenz, David R., 4,211,658, Cl. 210-198.00C.

Lotscher, Bernhard. Scale. 4,211,296, Cl. 177-211.000.

Louisiana State University Board of Supervisors: *See*—
Steelman, Carrol D.; and Chambers, Doyle M., 4,211,778, Cl. 424-244.000.

Lubbock, Frederick J.: *See*—
Dixon, David R.; Lydiate, Jack; and Lubbock, Frederick J., 4,211,664, Cl. 252-62.540.

Luck, Wolfhard: *See*—
Spahrkas, Heinrich; Muller, Josef; Komarek, Ernst; and Luck, Wolfhard, 4,211,529, Cl. 8-94.260.

Ludecke, Otto A.; and Rosebrock, Theodore L., to General Motors Corporation. Diesel engine exhaust particulate filter with intake throttling incineration control. 4,211,075, Cl. 60-285.000.

Ludin, Ludwig; Laing, Nicholaus; Laing, Oliver; and Laing, Karsten. Space heating installation. 4,211,092, Cl. 62-499.000.

Luenser, Kurt K., to Verson Allsteel Press Company. Solid state control system for mechanical press. 4,211,098, Cl. 72-21.000.

Lupertz, Hans-Henning, to ITT Industries, Incorporated. Spot-type disc brake. 4,211,310, Cl. 188-73.300.

Lustig, Stanley; and Vasudevan, Ganapathy, to Union Carbide Corporation. Method of fabricating tubular casing for processed foods. 4,211,596, Cl. 156-244.120.

Luttringer, Jean P., to Ciba-Geigy Corporation. Process for dyeing polyester materials. 4,211,527, Cl. 8-526.000.

Lydiate, Jack: *See*—
Dixon, David R.; Lydiate, Jack; and Lubbock, Frederick J., 4,211,664, Cl. 252-62.540.

Lynch, Robert J.: *See*—
Hughes, Peter I.; Lynch, Robert J.; and Ahrens, James J., 4,211,343, Cl. 222-130.000.

Machin, David, to Lever Brothers Company. Detergent bars with improved slip properties. 4,211,675, Cl. 252-557.000.

Machines Chambon: *See*—
Corse, Louis G., 4,211,167, Cl. 101-148.000.

Mack Corporation: *See*—
Mack, James F., 4,211,123, Cl. 74-99.00A.

Mack, James F., to Mack Corporation. Motion conversion mechanism. 4,211,123, Cl. 74-99.00A.

Madden, James J., to Bell Telephone Laboratories, Incorporated. Circuit board interconnection apparatus. 4,211,459, Cl. 339-75.0MP.

Magnussen, Haakon T., Jr.; and Moeller, Roy P., to Altex Scientific, Inc. Spectrophotometer. 4,211,486, Cl. 356-328.000.

Magyar Vagon-es Gepgyar: *See*—
Szabo, Imre Z.; Nagy, Kornel; and Finta, Csaba, 4,211,105, Cl. 73-11.000.

Makinen, Juho K.: *See*—
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.

Makrutzki, Dieter: *See*—
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.

Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, to Cehtre Technique de l'Industrie Horiogere "Ceterhor" Laboratoire d'Electrochimie-Faculte des Sciences et des Techniques. Electro-optic display device using a vitreous solid ion-conductive material. 4,211,475, Cl. 350-357.000.

Manchester, Donald F.: *See*—
Zajic, James E.; Hill, Martha A.; Manchester, Donald F.; and Muzika, Karel, 4,211,645, Cl. 210-7.000.

Mangano, Joseph A.: *See*—
Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., 4,211,983, Cl. 331-94.5PE.

Mannesmann Aktiengesellschaft: *See*—
Schrewe, Hans; and Pleschiutschnige, Fritz-Peter, 4,211,272, Cl. 164-89.000.

Manoogian, David V.; and Procaccino, Roderic J., to Raytheon Company. Continuous wave radar. 4,212,012, Cl. 343-7.00A.

MAPAL Fabrick fur Prazisicnswerkzeuge Dr. Kress KG: *See*—
Kress, Dieter; and Haberle, Friedrich, 4,211,507, Cl. 407-37.000.

Marascalco, Lewis C.: *See*—
Segar, Richard B.; and Marascalco, Lewis C., 4,212,079, Cl. 364-900.000.

March, Rene: *See*—
Dougherty, Robert S.; Hirsch, Walter; and March, Rene, 4,211,057, Cl. 56-10.200.

Marchak, Roman O.; Peterson, William A., Jr.; and Carp, Ralph W., to Bendix Corporation, The. Altitude compensation feature for electronic fuel management systems. 4,212,065, Cl. 364-431.000.

Marconi Company Limited, The: *See*—
Drewery, John O., 4,212,028, Cl. 358-11.000.
Smith, Robin, 4,211,982, Cl. 328-138.000.

Margalit, Shlomo: *See*—
Yariv, Amnon; Margalit, Shlomo; and Lee, Chien-Ping, 4,212,020, Cl. 357-17.000.

Marguste, Mart A.: *See*—
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Marie, Georges R. P. Mode converters for converting a non-confining wave into a confining wave in the far infrared range. 4,211,471, Cl. 350-147.000.

Mark, Victor; and Wilson, Phillip S., to General Electric Company. Organoboron plasticized polycarbonate composition. 4,211,679, Cl. 260-29.10R.

Markley, Lowell D.; and Norton, Elizabeth J., to Dow Chemical Company, The. Substituted oxirane compounds. 4,211,549, Cl. 71-88.000.

Markus, Vladimir M.: *See*—
Konovenko, Grigory M.; Slipchenko, Svetlana L.; Markus, Vladimir M.; and Kasjura, Nina N., 4,211,685, Cl. 260-30.4EP.

Marlen Research Corporation: *See*—
Long, Marshall; Alley, Lewis F.; and White, James E., 4,211,055, Cl. 53-517.000.

Marquardt, Klaus; and Kreuzer, Franz-Heinrich, to Consortium fur Elektrochemische Industrie, GmbH. Compositions containing diorganopolysiloxanes. 4,211,729, Cl. 525-106.000.

Marsch, James E.: *See*—
Quick, David C.; and Marsch, James E., 4,211,313, Cl. 192-4.00A.

Marshall, David L.; and Herndon, William C., to Dow Chemical Company, The. Anion exchange resin in the determination of thyroid function. 4,211,763, Cl. 424-1.000.

Marshall, Harry A.: *See*—
Eakman, James M.; Marshall, Harry A.; and Kalina, Theodore, 4,211,669, Cl. 252-373.000.

Marshall, James J., to Lifeline Products, Inc. Starch-degrading benzymes derived from *Clacosporium resinae*. 4,211,842, Cl. 435-210.000.

Marstrand, Even. Complex compound for the treatment of diseases disclosing abnormal blood pictures. 4,211,712, Cl. 260-343.700.

Martikainen, Jaakko; and Pousar, Kurt, to Oy Wartsila AB. Cylinder lock assembly. 4,211,097, Cl. 70-373.000.

Martin, Charles W.; and Ward, Eldon L., to Dow Chemical Company, The. Bis(dithiocarbamate) salts. 4,211,784, Cl. 424-267.000.

Martin, Lloyd E. Portable cable spooler for wells. 4,211,376, Cl. 242-86.50R.

Martin, William J.; and Yang, Kwang-Tzu, to Whirlpool Corporation. Wet oxidation of coal for generation of heat energy. 4,211,174, Cl. 110-263.000.

Martzloff, Francois D., to General Electric Company. Multi-terminal varistor configuration. 4,212,045, Cl. 361-127.000.

Marumoto, Katsuji; and Omae, Tsutomu, to Hitachi, Ltd. Control circuit for use in control of current supply for electric motor with improved duty controlling oscillator circuit, particularly for electrical vehicle. 4,211,961, Cl. 318-139.000.

Marvin Glass & Associates: *See*—
Morrison, Howard J.; Gardner, Denise; and Schoenfield, Palmer J., 4,211,030, Cl. 46-67.000.

Maschinenfabrik Dipl. Ing. Helmut Konig: *See*—
Konig, Helmut; and Schnider, Karl, 4,211,492, Cl. 366-76.000.

Mashita, Kentaro: *See*—
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.

Maskens, Geoffrey D., to Quest Automation Limited. Guideo carriage assembly for photodrafting equipment. 4,212,049, Cl. 362-33.000.

Maslov, Vladimir I.: *See*—
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Mason, Leonard; and Anderson, Clifford. Drilling string shock-absorbing tool. 4,211,290, Cl. 175-321.000.

Massey-Ferguson Industries Limited: *See*—
Dougherty, Robert S.; Hirsch, Walter; and March, Rene, 4,211,057, Cl. 56-10.200.

Massey, Frederick, to Tioxide Group Limited. Flexible container with discharge tube. 4,211,266, Cl. 150-1.000.

Massies, Jean; and Nuyen, Tronc L., to Thomson-CSF. Process for producing a metal to compound semiconductor contact having a potential barrier of predetermined height. 4,211,587, Cl. 148-187.000.

Massin, Michel: *See*—
Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, 4,211,475, Cl. 350-357.000.

Masuda, Takao: *See*—
Suzuki, Nobuo; Sashihara, Kenji; and Masuda, Takao, 4,211,839, Cl. 430-619.000.

Masuhara, Eiichi: *See*—
Suminoe, Taro; Ito, Tetsuo; and Masuhara, Eiichi, 4,211,682, Cl. 260-29.300.

Masuzawa, Sigeaki: *See*—
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,211,892, Cl. 179-1.0SM.

Material Control, Inc.: *See*—
Sweet, Donald B., 4,211,966, Cl. 318-482.000.

Mather, Frank W., III: *See*—
Lipps, Bennie J.; Murphy, William P., Jr.; and Mather, Frank W., III, 4,211,597, Cl. 156-245.000.

Matsuda, Akira; Tojo, Tetsuo; and Iwata, Kazuo, to Mitsui Petrochemical Industries Ltd. Thermoplastic olefin resin composition and laminated film or sheet thereof. 4,211,852, Cl. 525-240.000.

Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, to Bridgestone Tire Company Limited; and Mitaka Instrument Company Limited. Pressure sensing switch with conductive deflectable diaphragm. 4,211,901, Cl. 200-83.00B.

Matsuda, Hiromi: *See*—
Ueyama, Takehiko; Nishizawa, Masahiro; Odaka, Yoshiyuki; and Matsuda, Hiromi, 4,211,477, Cl. 354-1.000.

Matsuda, Sumio; and Kudara, Hajime, to Chugoku Marine Paints Ltd. Antifouling method. 4,211,566, Cl. 106-16.000.

Matsui, Sadayoshi: *See*—
Koike, Wataro; Kimoto, Takahiro; and Matsui, Sadayoshi, 4,211,723, Cl. 260-544.00K.

Matsui, Takashi: *See*—
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,211,550, Cl. 71-89.000.

Matsumoto, Takashi: *See*—
Atoji, Nobuhisa; Matsumoto, Takashi; Kusumoto, Shoichi; Sato, Kazue; and Hasegawa, Mitsuhiro, 4,211,898, Cl. 179-156.00R.

Matsumura, Hiromu: *See*—
Narisada, Masayuki; Tsuji, Teruji; Matsumura, Hiromu; and Nagata, Wataru, 4,211,779, Cl. 424-246.000.

Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, to Nippon Shinyaku Co., Ltd.; and Takara Shuzo Co., Ltd. Acyl derivatives of 2-[3-(2-chloroethyl)-3-nitrosoureido]-2-deoxy-D-glucopyranose. 4,211,866, Cl. 536-53.000.

Matsumura, Toshio: *See*—
Oda, Hajime; Samejima, Toshihide; Matsumura, Toshio; Moritani, Nakanobu; and Fujita, Masanori, 4,211,067, Cl. 368-185.000.

Matsuo, Syunji: *See*—
Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,211,835, Cl. 430-403.000.

Matsuo, Tatsuo: *See*—
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,211,552, Cl. 75-24.000.

Matsushima, Shunsuke: *See*—
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.

Matsushima, Tetsuo: *See*—
Andow, Fumio; Matsushima, Tetsuo; and Okamoto, Eiichi, 4,212,046, Cl. 361-80.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Akiyama, Ryo; and Igarashi, Yoshiaki, 4,211,967, Cl. 318-490.000.
Atoji, Nobuhisa; Matsumoto, Takashi; Kusumoto, Shoichi; Sato, Kazue; and Hasegawa, Mitsuhiro, 4,211,898, Cl. 179-156.00R.
Kiuchi, Mitsuyuki; and Hamaoka, Shigeo, 4,211,912, Cl. 219-10.770.
Kusunoki, Shigeru; and Tanaka, Junzo, 4,211,910, Cl. 219-10.55D.
Minami, Shunji, 4,211,940, Cl. 307-251.000.
Oda, Hiroshi, 4,211,994, Cl. 338-21.000.
Sonetaka, Kazunori; Nishino, Atsushi; and Kimura, Kunio, 4,211,672, Cl. 252-455.00R.
Yabu, Toshiomi; Wada, Tatsuo; Yamada, Kouichi; and Yoshino, Tadashi, 4,211,964, Cl. 318-314.000.

Matsushita Electrical Industrial Co., Ltd.: *See*—
Koda, Minoru, 4,212,039, Cl. 360-73.000.

Matsuura, Shigeo; Akutsu, Eisaku; and Miyamoto, Hiroshi, to Hitachi, Ltd. Search tuning system for television receiver. 4,211,988, Cl. 334-16.000.

Matthews, Carl; and de Recourt Martyn, Elizabeth. Sound absorbing device. 4,211,302, Cl. 181-248.000.

Matthews, Carl; and de Recourt Martyn, Elizabeth. Sound absorbing device. 4,211,303, Cl. 181-248.000.

Matthews, Carl; and de Recourt Martyn, Elizabeth. Sound absorbing device. 4,211,304, Cl. 181-248.000.

Matthews, Carl; and de Recourt Martyn, Elizabeth. Sound absorbing device. 4,211,305, Cl. 181-248.000.

Mauri, Luigi: *See*—
Bordini, Fosco; and Mauri, Luigi, 4,211,811, Cl. 428-220.000.

Maxson, Orwin G.: *See*—
Peterson, Marvin L.; and Maxson, Orwin G., 4,211,503, Cl. 405-216.000.

May, Randall L. Adjustable pitch drum. 4,211,144, Cl. 84-411.00A.

Mayers, Richard R.; Huebner, Steven R.; and Chojnacki, Dennis A., to Midland-Ross Corporation. Internal cooling of heat exchanger tubes. 4,211,088, Cl. 62-64.000.

MCA Disco-Vision, Inc.: *See*—
Hunyar, Csaba K., 4,211,617, Cl. 204-5.000.

McCafferty, Donald F., to Orthopedic Contour Systems, Inc. Accommodative foot bed. 4,211,019, Cl. 36-43.000.

McCarter, Ed R.: *See*—
Thatcher, Arthur K.; and McCarter, Ed R., 4,211,199, Cl. 123-445.000.

McClelland, Robert D.: *See*—
Baird, David B.; Costello, Alan T.; Fishwick, Brian R.; McClelland, Robert D.; and Smith, Peter, 4,211,696, Cl. 260-152.000.

McCloy, Albert J.: *See*—
Bennett, Moreland P.; Cacalloro, Philip A.; and McCloy, Albert J., 4,211,278, Cl. 165-130.000.

McCorsley, Clarence C., III; and Varga, Julianna K., to Akzona Incorporated. Process for making a solid impregnated precursor of a solution of cellulose. 4,211,574, Cl. 106-163.00R.

McCutchen, Hugh L.; and Bess, James W., Sr., to Diamond Shamrock Corporation. Anode and base assembly for electrolytic cells. 4,211,629, Cl. 204-252.000.

McDaniel, Charles E.; and McDaniel, Yvonne. Apparatus for electromagnetically generating fields for repelling or attracting permanent magnetic fields for the purpose of entertainment. 4,211,411, Cl. 273-345.000.

McDaniel, Max P.; Hottovy, John D.; and Welch, Melvin B., to Phillips Petroleum Company. Polymer slurry catalyst residue deactivation. 4,211,863, Cl. 528-483.000.

McDaniel, Yvonne: *See*—
McDaniel, Charles E.; and McDaniel, Yvonne, 4,211,411, Cl. 273-345.000.

McDonald, Bill W.: *See*—
Johanson, Ronald C.; and McDonald, Bill W., 4,211,385, Cl. 249-192.000.

McDonald, Patrick D.; Vivilecchia, Richard V.; and Lorenz, David R., to Waters Associates, Inc. Triaxially compressed packed beds. 4,211,658, Cl. 210-198.00C.

McDowell-Wellman Company: *See*—
Hamilton, Wallace, 4,211,536, Cl. 48-87.000.

McGonigal, Charles; and Voytko, James E., to Western Electric Company, Inc. Apparatus for making slotted beam contact elements. 4,211,099, Cl. 72-47.000.

McGowan, Norman L., to Eocom Corporation. Multiple size plate registration apparatus and method. 4,211,399, Cl. 271-232.000.

McGowan, Raymond J., to Cambrian Engineering Group Limited, The. Apparatus for heat and mass transfer. 4,211,610, Cl. 202-177.000.
McGriff, James E.: *See—*
Frey, Lawrence A.; Harrison, Robert E.; and McGriff, James E., 4,211,389, Cl. 24-269.000.
McKinney Manufacturing Company: *See—*
Gwozdz, Joseph W., 4,211,990, Cl. 335-205.000.
McMullen, John C., to Budd Company, The. Railway car truck and brake support structure. 4,211,311, Cl. 188-209.000.
McNeil Laboratories, Incorporated: *See—*
Rasmussen, Chris R., 4,211,867, Cl. 544-60.000.
McQuay-Perflex, Inc.: *See—*
Osheroff, Gene W., 4,211,363, Cl. 236-49.000.
Meadows, Roger D., to Dayco Corporation. Vacuum cleaning apparatus. 4,211,457, Cl. 339-15.000.
Meatheringham, Michael R. Football training aid. 4,211,017, Cl. 35-29.00R.
Mecano-Simmonds GmbH: *See—*
Dolch, Gernot, 4,211,145, Cl. 85-72.000.
Meckler, Milton. Geothermal mineral extraction system. 4,211,613, Cl. 203-11.000.
Medidge, George H., Jr.: *See—*
Cleversey, Gerald W.; Duncan, Robert J.; Medidge, George H., Jr.; and Fleming, Jean A., 4,212,075, Cl. 364-580.000.
Medtronic, Inc.: *See—*
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,212,061, Cl. 364-414.000.
Mees, Rudolf A., to WTI Wetenschappelijk Technische Instrumentatie B.V. Flame ionization detector. 4,211,746, Cl. 422-54.000.
Megles, John E., Jr.: *See—*
Cantaloupe, Francis A.; Colegrove, Robert W.; Megles, John E., Jr.; and Rittler, Hermann L., 4,211,820, Cl. 428-410.000.
Mehl, Donald N.: *See—*
Kaster, Robert L.; and Mehl, Donald N., 4,211,241, Cl. 128-774.000.
Mehra, Ravinder C.; and Hepinstall, James T., Jr., to Sybron Corporation. Variable volume dispensing bottle with push-pull closure. 4,211,346, Cl. 222-205.000.
Mehta, Parvez; and Warnes, Anthony M., to I.W.S. Nominee Company Limited. Fabrics for protective garments having strands of reflective materials. 4,211,261, Cl. 139-425.00R.
Meier, Rene: *See—*
Graf, Robert; and Meier, Rene, 4,212,015, Cl. 343-883.000.
Meisen, Klaus, to Kleinewefers Gesellschaft mit beschrankter Haftung. Steaming plant for the treatment of continuous webs of textile material containing thermoplastic synthetic fibers. 4,211,094, Cl. 68-5.00D.
Menson, Robert C.: *See—*
Adams, Thomas H.; Beck, James P.; and Menson, Robert C., 4,211,015, Cl. 34-5.000.
Merck & Co., Inc.: *See—*
Kang, Kenneth S.; and Veeder, George T., III, 4,211,774, Cl. 424-181.000.
Ratcliffe, Ronald W., 4,211,707, Cl. 260-326.310.
Villarejos, Miguel, 4,211,333, Cl. 215-249.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,211,768, Cl. 424-95.000.
Mesa Engineering, Inc.: *See—*
Smith, Randall C., 4,211,893, Cl. 179-1.00A.
Metallgesellschaft Aktiengesellschaft: *See—*
Bierbach, Herbert; Kohlen, Rudolf; and Hafke, Carl, 4,211,539, Cl. 48-197.00R.
Metallurgie Hoboken-Overpelt: *See—*
Van Hecke, Michel C. F.; and Deweck, Jean, 4,211,754, Cl. 423-62.000.
Metallwerk Max Brose GmbH & Co.: *See—*
Hess, Peter; and Rampel, Hans, 4,211,122, Cl. 74-89.200.
Metals Research Limited: *See—*
Cole, Michael, 4,211,600, Cl. 156-608.000.
Metz, George F. Biorhythm cycle display apparatus. 4,211,025, Cl. 40-495.000.
Meyer, Jacques: *See—*
Thiele, Kurt; Ahmed, Quazi; Scharen, Walter; and Meyer, Jacques, 4,211,551, Cl. 71-116.000.
Meyer, Victor, Jr.: *See—*
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,211,938, Cl. 307-233.00R.
Meyer, Walter C.: *See—*
FitzGerald, Emerson B.; and Meyer, Walter C., 4,211,691, Cl. 260-42.210.
Michalik, Horst B.; and Weschenfelder, Otto T., to Koenig & Bauer Aktiengesellschaft. Web-fed rotary printing press. 4,211,396, Cl. 270-13.000.
Michel, Jean-Claude; and Potin, Philippe, to Ato Chimie. Process for the preparation of lactames through oxime isomerization. 4,211,700, Cl. 260-239.30A.
Micro-Mega S.A.: *See—*
Leonard, Henri, 4,211,009, Cl. 32-27.000.
Midland-Ross Corporation: *See—*
Mayers, Richard R.; Huebner, Steven R.; and Chojnacki, Dennis A., 4,211,088, Cl. 62-64.000.
Wilson, Clive J., 4,211,370, Cl. 241-183.000.
Midolo, Lawrence L. Vapor cycle cooling system. 4,211,093, Cl. 62-505.000.
Mifsud, Joseph F., to Exxon Production Research Company. Marine seismic transducer. 4,211,301, Cl. 181-120.000.
Mikami, Takeshi: *See—*
Yoneyama, Masakazu; Mukunoki, Yasuo; Mikami, Takeshi; and Sasaki, Jun, 4,211,836, Cl. 430-449.000.
Mikhailov, Viktor P.: *See—*
Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U., 4,211,916, Cl. 371-15.000.
Mildern, William D. Valve. 4,211,347, Cl. 222-402.180.
Miles Laboratories, Inc.: *See—*
Genshaw, Marvin A.; and White, William I., 4,211,845, Cl. 435-14.000.
Miller, Adrian D., to Western Geophysical Co. of America. Air gun with reciprocating shuttle. 4,211,300, Cl. 181-120.000.
Miller, Bruce L.: *See—*
Vaillancour, Mary C.; and Miller, Bruce L., 4,212,085, Cl. 367-124.000.
Miller, Donald E.; and Painter, John P., to General Electric Company. Keyboard verification system. 4,211,915, Cl. 371-15.000.
Miller, Eldon D., to Lava Crucible Refractories, Co. Method of introducing addition agents into a vessel of molten metal. 4,211,554, Cl. 75-53.000.
Miller, Robert C.: *See—*
Vaerewyck, Eugene G.; Miller, Robert C.; and Anderson, Arthur E., 4,211,922, Cl. 250-203.00R.
Milliken Research Corporation: *See—*
Civardi, Frank P.; and Loew, Frederic C., 4,211,806, Cl. 428-91.000.
Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., 4,211,725, Cl. 260-583.00P.
Milliken, Walter C. Data transmission control system. 4,212,080, Cl. 364-900.000.
Minami, Shunji, to Matsushita Electric Industrial Co., Ltd. Electronic power control device. 4,211,940, Cl. 307-251.000.
Minasov, Alexandr N.: *See—*
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.
Minnesota Mining and Manufacturing Company: *See—*
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Minolta Camera Kabushiki Kaisha: *See—*
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,211,482, Cl. 355-8.000.
Nakamura, Akiyoshi, 4,211,472, Cl. 350-216.000.
Yamada, Seiji, 4,212,000, Cl. 340-347.00P.
Minoura, Mikio: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.
Mishoe, Terry L.; and Peatross, Walton E., to Post, Edward N. Robbery warning device containing selectively actuatable information bearing and warning displays. 4,212,003, Cl. 340-574.000.
Mitaka Instrument Company Limited: *See—*
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,211,901, Cl. 200-83.00B.
Mitchell, William A.; and Clark, John S., to Bryant Grinder Corporation. Antifriction bearing support. 4,211,454, Cl. 308-26.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Niwa, Yoshiei, 4,211,908, Cl. 219-69.00P.
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,212,019, Cl. 357-13.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, 4,211,882, Cl. 562-416.000.
Sugio, Akitoshi; and Kawaki, Takeo, 4,211,857, Cl. 528-215.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
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Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
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Mitsugi, Koji: *See—*
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Mitsui Petrochemical Industries Ltd.: *See—*
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Mitsui, Shigeru: *See—*
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Miyakawa, Keizo: *See—*
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Miyamoto, Hiroshi: *See—*
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Miyazaki, Joichi: *See—*
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Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, to Laurel Bank Machine Co., Ltd. Packaging paper confirming device in a coin packaging machine. 4,211,052, Cl. 53-77.000.

Mize, Erbie G.: *See—*
Brock, James D.; and Mize, Erbie G., 4,211,490, Cl. 366-11.000.
Mizukoshi, Kaoru: *See—*
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.
Mobil Oil Corporation: *See—*
Braid, Milton, 4,211,663, Cl. 252-42.700.
Chen, Nai Y., 4,211,635, Cl. 208-93.000.
Garwood, William E.; and Lee, Wooyoung, 4,211,640, Cl. 208-255.000.
Gross, Benjamin; and Lee, Wooyoung, 4,211,636, Cl. 208-164.000.
Gross, Benjamin; and Lee, Wooyoung, 4,211,637, Cl. 208-164.000.
Haag, Werner O.; and Whitehurst, Darrell D., 4,211,880, Cl. 560-243.000.
Johnson, George C., 4,211,756, Cl. 423-118.000.
Tabak, Samuel A.; and Morrison, Roger A., 4,211,886, Cl. 585-321.000.
Yan, Tsoung-Yuan, 4,211,576, Cl. 106-278.000.
Modular Controls Corporation: *See—*
Dyal, Elton E., 4,211,254, Cl. 137-596.120.
Moeller, Roy P.: *See—*
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Mogab, Cyril J., to Bell Telephone Laboratories, Incorporated. Device fabrication by plasma etching. 4,211,601, Cl. 156-643.000.
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Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.
Moldestad, Jon P. Safety device for hose connections. 4,211,439, Cl. 285-27.000.
Molivadas, Stephen. Heating and cooling systems. 4,211,207, Cl. 126-433.000.
Mollard, Paul, to Produits Chimiques Ugine Kuhlmann. High-density sodium perborate and method of preparation. 4,211,759, Cl. 423-281.000.
Monacelli, Umberto. Magazine member for holding fastening staples and the like. 4,211,351, Cl. 227-120.000.
Monarch Marking Systems, Inc.: *See—*
Amprim, Lawrence; and Williams, Frederick P., 4,211,021, Cl. 40-2.00R.
Moncada, Salvador: *See—*
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Monsanto Company: *See—*
Franz, John E.; and Kaufman, Robert J., 4,211,548, Cl. 71-87.000.
Franz, John E.; and Kaufman, Robert J., 4,211,732, Cl. 260-938.000.
Gaertner, Van R., 4,211,547, Cl. 71-86.000.
Johnson, John H.; and Fields, Joseph E., 4,211,765, Cl. 424-78.000.
Montedison S.p.A.: *See—*
Di Drusco, Giovanni; and Zaffagnini, Deoscaride, 4,211,737, Cl. 264-12.000.
Montgomery, Edward B. Data input system. 4,211,497, Cl. 400-486.000.
Moodt, John C. Wheedle wheel game apparatus. 4,211,414, Cl. 273-141.00A.
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., to International Flavors & Fragrances Inc. Composition of matter comprising more than 50% trans, trans-Δ-damascone for augmenting or enhancing the aroma and taste of a smoking tobacco. 4,211,242, Cl. 131-17.00R.
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Moreau, Robert C.; and Fournier, Jean-Paul, to Choay S.A. N-Substituted 2-methoxybenzenesulphonamides, process for preparing them and medicaments containing them. 4,211,776, Cl. 424-228.000.
Morgan, James G.: *See—*
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Morgan, Myron B.; and Sharloe, Steven F. Panelboard and mounting fixture combination. 4,211,379, Cl. 248-222.200.
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Morianz, Josef V., to Swiss Aluminium Ltd. Device for continuous horizontal casting. 4,211,275, Cl. 164-440.000.
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Moritani, Masahiko: *See—*
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Mormann, Werner; Bofinger, Gerhard; and Wolfie, Wilfried, to Aesculap-Werker Aktiengesellschaft, vormals Jetter & Scheerer. Mucous membrane cutter for mucogingival membrane surgery. 4,211,232, Cl. 128-305.500.
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Morrison, Clyde A.; Karayianis, Nick; and Wortman, Donald E., to United States of America, Army. Method and apparatus for determining aerosol size distributions. 4,211,487, Cl. 356-336.000.
Morrison, Howard J.; Gardner, Denise; and Schoenfield, Palmer J., to Marvin Glass & Associates. Space toy. 4,211,030, Cl. 46-67.000.
Morrison, Roger A.: *See—*
Tabak, Samuel A.; and Morrison, Roger A., 4,211,886, Cl. 585-321.000.
Morse, David L.: *See—*
Hares, George B.; and Morse, David L., 4,211,569, Cl. 106-53.000.
Mosher, Ralph S., to Robotics, Inc. Compact low force economical general purpose walking beam conveyor. 4,211,321, Cl. 198-774.000.
Mosser, Jacqueline: *See—*
Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, 4,211,772, Cl. 424-180.000.
Motloch, Wallace M., to Everest & Jennings, Inc. Weight relieving ambulator. 4,211,426, Cl. 280-87.02W.
Motosugi, Katsuhiko: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.
Mueller, Achim; Peetz, Hans-Dieter; Scheeren, Peter; Sistig, Helmut; and Schallenberg, Andreas, to Saint Gobain Industries. Apparatus for applying adhesive to opposed surfaces of shaped members. 4,211,181, Cl. 118-411.000.
Mueller, Dale A.; and Serber, Stephen L., to Honeywell Inc. Heat pump wrong operational mode detector and control system. 4,211,089, Cl. 62-209.000.
Mueller, John J.: *See—*
Kortier, William E.; Mueller, John J.; and Eggers, Philip E., 4,211,889, Cl. 136-237.000.
Mueller, Max A.; and Holmes, Curtis F., to Wilson Greatbatch Ltd. Lithium-halogen cell including monomer charge transfer complex. 4,211,832, Cl. 429-105.000.
Muenker, Adolf H.; and Young, Archie R., II, to Exxon Research & Engineering Co. High temperature solar absorber coating and method of applying same. 4,211,210, Cl. 126-438.000.
Mukunoki, Yasuo: *See—*
Yoneyama, Masakazu; Mukunoki, Yasuo; Mikami, Takeshi; and Sasaki, Jun, 4,211,836, Cl. 430-449.000.
Muller, Josef: *See—*
Spahrkas, Heinrich; Muller, Josef; Komarek, Ernst; and Luck, Wolfhard, 4,211,529, Cl. 8-94.260.
Muller, Karl-Heinz; Krisch, Burkhard; Rindfleisch, Volker; and Neuendorff, Hans F. R., to Siemens Aktiengesellschaft. Transmission-type scanning charged-particle beam microscope. 4,211,924, Cl. 250-311.000.
Muller, Peter: *See—*
Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,211,768, Cl. 424-95.000.
Muller, Rolf, to Papst-Motoren KG. Brushless, permanent magnet d-c pulse current controlled, essentially uniform torque dynamo electric machine, particularly motor. 4,211,963, Cl. 318-254.000.
Muller, Werner C.: *See—*
Akell, Robert B.; Muller, Werner C.; and Pick, Rudolph, 4,211,638, Cl. 208-180.000.
Multakh, Leonid, to Acker Drill Company, Inc. Impregnated diamond drill bit. 4,211,294, Cl. 175-330.000.
Munro, John J., III: *See—*
Parsons, George W., Jr.; and Munro, John J., III, 4,211,928, Cl. 250-497.000.
Murakami, Kazuo, to Nippon Gakki Seizo Kabushiki Kaisha. Pickup mechanism. 4,211,139, Cl. 84-1.140.
Murakami, Takeshi; and Hazama, Katashi, to Hitachi, Ltd. Elastic surface wave filter for color television receiver. 4,212,029, Cl. 358-21.00R.
Muraoka, Teruo; Yamazaki, Masami; and Ishigaki, Yukinobu, to Victor Company of Japan, Limited. Circuit arrangement for eliminating waveform distortion of an angle-modulated signal transmitted over multipaths. 4,211,979, Cl. 455-306.000.
Murata, Tomoji: *See—*
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,211,482, Cl. 355-8.000.
Murayama, Masaki: *See—*
Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,212,059, Cl. 364-200.000.
Murphy, Lynn: *See—*
Scharschmidt, Rudolph K.; and Murphy, Lynn, 4,211,800, Cl. 426-93.000.
Murphy, William P., Jr.: *See—*
Lipps, Bennie J.; Murphy, William P., Jr.; and Mather, Frank W., III, 4,211,597, Cl. 156-245.000.
Murray, George G. Method of making a molded plastic bowling pin. 4,210,992, Cl. 29-525.000.

Muschelknautz, Edgar; Herold, Heiko; Brunner, Kunz; and Horstmann, Walter, to Bayer Aktiengesellschaft. Apparatus for the mechanical separation of solids from drying gas in spray driers. 4,211,604, Cl. 159-4.00D.

Musoh, Masanori: *See—*
Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, 4,211,276, Cl. 165-1.000.

Muth, William J. Slicer outlet extender. 4,211,133, Cl. 83-162.000.

Muzika, Karel: *See—*
Zajic, James E.; Hill, Martha A.; Manchester, Donald F.; and Muzika, Karel, 4,211,645, Cl. 210-7.000.

Myers, Elmer P.: *See—*
Pezzini, Mario; and Myers, Elmer P., 4,211,252, Cl. 137-580.000.

Myers, Hugh K; and Hayford, Donald E., to Appleton Papers Inc. Stilt capsules for pressure-sensitive record material. 4,211,437, Cl. 282-27.500.

Nablo, Sam V., to Energy Sciences Inc. Process for imparting durable flame retardancy to fabric, fibers and other materials and improved product produced thereby. 4,211,622, Cl. 204-159.120.

Nachbur, Hermann; and Rohringer, Peter, to Ciba-Geigy Corporation. Method for the fireproofing of synthetic fiber material. 4,211,814, Cl. 428-265.000.

Nagahara, Shusaku: *See—*
Kokie, Norio; Kubo, Masaharu; and Nagahara, Shusaku, 4,212,034, Cl. 358-213.000.

Nagano, Takeshi; Goto, Motoo; and Tsuji, Yoshiyuki, to Mitsubishi Kinzoku Kabushiki Kaisha. Reverberatory smelting of non-ferrous metal sulfide ores. 4,211,556, Cl. 75-74.000.

Nagata, Kenzo: *See—*
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,211,482, Cl. 355-8.000.

Nagata, Wataru: *See—*
Narisada, Masayuki; Tsuji, Teruji; Matsumura, Hiromu; and Nagata, Wataru, 4,211,779, Cl. 424-246.000.

Nagatani, Toshio: *See—*
Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,211,835, Cl. 430-403.000.

Nagel, Joachim, to Biotronik Mess- und Therapiegerate GmbH & Co. Method and apparatus for identifying recurring signal patterns. 4,211,237, Cl. 128-698.000.

Nagy, Kornel: *See—*
Szabo, Imre Z.; Nagy, Kornel; and Finta, Csaba, 4,211,105, Cl. 73-11.000.

Nahas, Nicholas C.: *See—*
Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., 4,211,538, Cl. 48-197.00R.

Nahir, David: *See—*
Sarig, Yoav; Nahir, David; and Alper, Yekutiel, 4,211,062, Cl. 56-328.00R.

Naka, Kozaburo, to Kabushiki Kaisha Mikado. Concrete anchor. 4,211,048, Cl. 52-700.000.

Naka, Takahiro: *See—*
Ikeda, Masayuki; and Naka, Takahiro, 4,211,064, Cl. 368-272.000.

Nakagawa, Taizo; Watanabe, Yutaka; and Ohmori, Kaoru, to Nippon Kayaku Kabushiki Kaisha. Fungicidal composition for use in agriculture and horticulture and its use. 4,211,785, Cl. 424-272.000.

Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, to Kokusai Denshin Denwa Kabushiki Kaisha. Facsimile signal coding system. 4,212,035, Cl. 358-260.000.

Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, to Kokusai Denshin Denwa Kabushiki Kaisha. Method for coding addresses of information change picture elements in facsimile signal. 4,212,036, Cl. 358-261.000.

Nakaho, Junichi: *See—*
Furukawa, Haruki; Usami, Susumu; and Nakaho, Junichi, 4,211,432, Cl. 280-808.000.

Nakai, Kiyoshi: *See—*
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.

Nakamori, Shigeru; Yokozeki, Kenzo; Mitsugi, Koji; Eguchi, Chikahiko; and Iwagami, Hisao, to Ajinomoto Company, Incorporated. Method for producing D-α-amino acid. 4,211,840, Cl. 435-107.000.

Nakamura, Akiyoshi, to Minolta Camera Kabushiki Kaisha. Wide angle objective lens system. 4,211,472, Cl. 350-216.000.

Nakamura, Katsuhiro, to Nippon Electric Co., Ltd. Error correction system for differential phase-shift-keying. 4,211,996, Cl. 371-37.000.

Nakamura, Teruya: *See—*
Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, 4,211,866, Cl. 536-53.000.

Nakano, Mariko: *See—*
Tobari, Shizen; and Nakano, Mariko, 4,211,532, Cl. 23-231.000.

Nakao, Shinji: *See—*
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.

Nakata, Kazuo: *See—*
Ichikawa, Akira; Nakata, Kazuo; and Hirose, Kazuhito, 4,211,897, Cl. 179-84.0VF.

Nakaya, Chitose; Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yamamoto, Shinji; Tomura, Teruichi; and Hayakawa, Takayuki, to Hitachi Medical Corporation. Tomographic imaging system. 4,211,926, Cl. 250-445.00T.

Nakaya, Chitose: *See—*
Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, 4,212,062, Cl. 364-414.000.

Napiorkowski, John, to TII Corporation. Fail-safe/surge arrester systems. 4,212,047, Cl. 361-124.000.

Narisada, Masayuki; Tsuji, Teruji; Matsumura, Hiromu; and Nagata, Wataru, to Shionogi & Co., Ltd. 7α-Methoxy substituted cephalosporins. 4,211,779, Cl. 424-246.000.

Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, to Bergwerksverband GmbH; and Ruhrkohle AG. Method of hot-briquetting mixtures of coal and coke. 4,211,533, Cl. 44-10.00C.

Natarajan, Krishnaswamy: *See—*
Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, 4,211,895, Cl. 179-18.00J.

National Patent Development Corporation: *See—*
Raines, Kenneth C., 4,211,588, Cl. 156-73.100.

National Research Development Corporation: *See—*
Gunawardena, Jaya A., 4,212,058, Cl. 364-200.000.
Porter, George, 4,211,621, Cl. 204-157.10R.

Nauchno-Issledovatelsky Institut Experimentalnoi Meditsiny: *See—*
Grechishkin, Leonid L.; Gavrovskaya, Ljudmila K.; and Goldfarb, Vadim L., 4,211,764, Cl. 424-9.000.

Naumann, Fritz: *See—*
Rocchio, Rodolfo; Naumann, Fritz; and Strotkotter, Heinrich, 4,211,200, Cl. 123-445.000.

Nauta, Jan P.; and Kos, Jacob J., to Nauta Roll Corporation. Apparatus and method for embossing web material. 4,211,743, Cl. 264-284.000.

Nauta Roll Corporation: *See—*
Nauta, Jan P.; and Kos, Jacob J., 4,211,743, Cl. 264-284.000.

Naylor, James E., to Small Business Administration; and Data Machines International, Inc. Printing solenoid. 4,211,496, Cl. 400-124.000.

Nei, Koichi: *See—*
Sado, Ryoichi; and Nei, Koichi, 4,211,890, Cl. 174-68.500.

Neiman S.A.: *See—*
Lipschutz, Paul, 4,211,096, Cl. 70-364.00R.

Nestler, Heinz: *See—*
Dittrich, Werner; Josten, Walter; Nestler, Heinz; and Schnippering, Friedhelm, 4,211,567, Cl. 106-38.350.

Netzer, David, to Fluor Corporation. Process for the manufacture of fuel gas. 4,211,540, Cl. 48-202.000.

Neubauer, Harry: *See—*
Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,211,984, Cl. 331-97.000.

Neubeck, Kurt; and Julien, Hermann, to Alexander Wiegand GmbH. Device for producing a spring manometer measuring system. 4,211,000, Cl. 29-714.000.

Neuendorff, Hans F. R.: *See—*
Muller, Karl-Heinz; Krisch, Burkhard; Rindfleisch, Volker; and Neuendorff, Hans F. R., 4,211,924, Cl. 250-311.000.

Ng, Wahling H.; and Zaycer, Andrew, to United States of America, Army. Instrumentation coupling. 4,211,124, Cl. 73-345.000.

Niccols, Peter J. Machines for applying bags or sacks to the discharge spouts of bag-filling machines. 4,211,053, Cl. 53-386.000.

Nichols, Lee H., III; and Smith, Edmund H., Jr., to Du Pont de Nemours, E. I., and Company. Apparatus for on-line defect zoning. 4,211,132, Cl. 83-71.000.

Nickell, Joe H. Magic drinking straw. 4,211,024, Cl. 40-406.000.

Nielsen, Edwin A., to Ideal Toy Corporation. Toy vehicle game and drone vehicle. 4,211,409, Cl. 273-86.00B.

Nikiforov, Vladimir P.: *See—*
Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K., 4,211,626, Cl. 204-243.00M.

Nikolaev, Anatoly M.: *See—*
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

Nikolaus, Heinrich J.: *See—*
Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,211,768, Cl. 424-95.000.

Nippon Electric Co., Ltd.: *See—*
Nakamura, Katsuhiro, 4,211,996, Cl. 371-37.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Murakami, Kazuo, 4,211,139, Cl. 84-1.140.

Nippon Kayaku Kabushiki Kaisha: *See—*
Nakagawa, Taizo; Watanabe, Yutaka; and Ohmori, Kaoru, 4,211,785, Cl. 424-272.000.

Nippon Shinyaku Co., Ltd.: *See—*
Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, 4,211,866, Cl. 536-53.000.

Nippon Soken, Inc.: *See—*
Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.
Iwata, Toshiharu; and Hattori, Tadashi, 4,211,952, Cl. 313-143.000.

Nippon Steel Corporation: *See—*
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,211,552, Cl. 75-24.000.

Nippon Telegraph and Telephone Public Corporation: *See—*
Amemiya, Yoshihito; and Kato, Kotaro, 4,210,996, Cl. 29-610.00R.

Watanabe, Kunio; and Yamamoto, Heiichi, 4,211,894, Cl. 179-2.0EB.

Nippondenso Co., Ltd.: *See—*
Taira, Toshiji, 4,212,001, Cl. 340-388.000.

Nishida, Minoru: *See—*
Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.

Nishikawa, Akio; Katagiri, Junichi; Kinjo, Noriyuki; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, to Hitachi, Ltd. Unsaturated polyester resin composition for use in pressure molding. 4,211,686, Cl. 260-40.00R.

Nishimura, Yoshiharu: *See—*
Kuno, Shiro; and Nishimura, Yoshiharu, 4,212,074, Cl. 364-567.000.

Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material and method of processing the same. 4,211,835, Cl. 430-403.000.

Nishino, Atsushi: *See—*
Sonetaka, Kazunori; Nishino, Atsushi; and Kimura, Kunio, 4,211,672, Cl. 252-455.00R.

Nishizaki, Shinzo: *See—*
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,211,892, Cl. 179-1.0SM.

Nishizawa, Masahiro: *See—*
Ueyama, Takehiko; Nishizawa, Masahiro; Odaka, Yoshiyuki; and Matsuda, Hiromi, 4,211,477, Cl. 354-1.000.

Nishizawa, Yoshihiko: *See—*
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.

Nissan Motor Company, Limited: *See—*
Hamai, Kyugo, 4,211,189, Cl. 123-308.000.
Kawamura, Yoshihisa; and Saito, Masaaki, 4,211,191, Cl. 123-52.00M.

Nissen, Roland N.; and Soldan, Lyle H. Solar panel. 4,211,213, Cl. 126-452.000.

Nitro Consult AB: *See—*
Stenling, Lars, 4,212,086, Cl. 367-178.000.

Niwa, Yoshiei, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for high frequency discharge shaping of a workpiece by means of a rectangular bipolar pulsating voltage. 4,211,908, Cl. 219-69.00P.

Nogami, Takahiro; Shimizu, Hidetoshi; Horie, Mitsuyuki; and Yaji, Yuji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Emergency brake system for vehicles. 4,211,312, Cl. 188-273.000.

Nordson Corporation: *See—*
Akers, Larry D.; Scholl, Charles H.; Smith, Joseph S.; and Williams, Edward A., 4,211,262, Cl. 141-2.000.

Norris, Orlin R. Gaskets for liquid level gages. 4,211,112, Cl. 73-328.000.

Norton, Elizabeth J.: *See—*
Markley, Lowell D.; and Norton, Elizabeth J., 4,211,549, Cl. 71-88.000.

Nosikov, Vasily I.: *See—*
Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K., 4,211,626, Cl. 204-243.00M.

Nuyen, Tronc L.: *See—*
Massies, Jean; and Nuyen, Tronc L., 4,211,587, Cl. 148-187.000.

N.V. Anciens Etablissements Alsberge et Van Oost: *See—*
Gravisse, Philippe E.; and Van Schoote, Jacques F., 4,211,813, Cl. 428-263.000.

Nyfeldt, Knud H.; and Bernhardsson, Klas T. Y. Device for collecting materials as for example oil floating on a water surface. 4,211,659, Cl. 210-242.00S.

Nyfeler, Alex; Greenaway, David L.; and Lienhard, Heinz, to LGZ Landis & Gyr Zug AG. Method and device for identifying documents. 4,211,918, Cl. 235-454.000.

Nylander, James: *See—*
Walters, Robert W.; and Nylander, James, 4,211,153, Cl. 93-53.0SD.

Obata, Kanichiro; Kokubu, Yoshikazu; and Okazaki, Isao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Electrolytic bath assembly. 4,211,628, Cl. 204-252.000.

Obayashi, Akira: *See—*
Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, 4,211,866, Cl. 536-53.000.

Oberlin, Robert E.: *See—*
Chapman, Walter H.; Hiland, David E.; Knies, Erwin B.; and Oberlin, Robert E., 4,211,172, Cl. 104-172.0BT.

Oda, Hajime; Samejima, Toshihide; Matsumura, Toshio; Moritani, Nakanobu; and Fujita, Masanori, to Kabushiki Kaisha Seikosha. Time adjusting device for electronic timepiece. 4,211,067, Cl. 368-185.000.

Oda, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Ceramic varistor. 4,211,994, Cl. 338-21.000.

Odaka, Yoshiyuki: *See—*
Ueyama, Takehiko; Nishizawa, Masahiro; Odaka, Yoshiyuki; and Matsuda, Hiromi, 4,211,477, Cl. 354-1.000.

Oertel, Harald: *See—*
Winkelmann, Hans D.; Wolf, Karlheinz; Oertel, Harald; and Weimann, Norbert, 4,211,699, Cl. 260-239.30R.

Ogawa, Masami: *See—*
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,211,550, Cl. 71-89.000.

Ogino, Tamio: *See—*
Iwai, Fumio; Kokiso, Masakazu; Koiso, Junichi; and Ogino, Tamio, 4,211,484, Cl. 355-15.000.

Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, to Konishiroku Photo Industry Co., Ltd. Color printing method. 4,211,558, Cl. 430-359.000.

Ohara, Yuji: *See—*
Ohnishi, Masahiro; Ohara, Yuji; and Oono, Hiroshi, 4,212,018, Cl. 346-76.00L.

Ohkoshi, Akio: *See—*
Tooyama, Akira; Ohkoshi, Akio; Tooyama, Takashi; Yukawa, Takahiro; and Hosono, Takashi, 4,212,030, Cl. 358-67.000.

Ohlbach, Ralph C. Assembly protecting and inventorying printed circuit boards. 4,211,324, Cl. 206-328.000.

Ohmori, Kaoru: *See—*
Nakagawa, Taizo; Watanabe, Yutaka; and Ohmori, Kaoru, 4,211,785, Cl. 424-272.000.

Ohnishi, Masahiro; Ohara, Yuji; and Oono, Hiroshi, to Fuji Photo Film Co., Ltd. Laser beam recording system. 4,212,018, Cl. 346-76.00L.

Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, to Kikkoman Shoyu Co., Ltd.; and Japan Tobacco & Salt Public Corporation, The. Process for producing expanded tobacco stems. 4,211,243, Cl. 131-140.00P.

Ohno, Yoshio, to Kabushiki Kaisha Kenseido; and Toppan Printing Co. Ltd. Method for making screens. 4,211,618, Cl. 204-11.000.

Ohta, Tazuo: *See—*
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, 4,211,882, Cl. 562-416.000.

Ohtake, Nobumasa; Yoshizawa, Ryo; and Koga, Isao, to Chisso Corporation. Method for producing 2,3,3-trimethylindolenine. 4,211,704, Cl. 260-319.100.

Oka, Hitoshi, to Hitachi, Ltd. Chemical copper plating solution. 4,211,564, Cl. 106-1.230.

Okada, Hiroaki; Yamazaki, Iwao; and Yashiki, Takatsuka, to Takeda Chemical Industries, Ltd. Preparations for vaginal administration. 4,211,769, Cl. 424-177.000.

Okamoto, Eiichi: *See—*
Andow, Fumio; Matsushima, Tetsuo; and Okamoto, Eiichi, 4,212,046, Cl. 361-80.000.

Okazaki, Isao: *See—*
Obata, Kanichiro; Kokubu, Yoshikazu; and Okazaki, Isao, 4,211,628, Cl. 204-252.000.

Okuyama, Haruyoshi: *See—*
Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, 4,211,558, Cl. 430-359.000.

Oley, Leonard: *See—*
Jamgochian, Ralph; Oley, Leonard; Stachnik, Joseph; and Tutella, Alfred L., 4,211,342, Cl. 222-129.400.

Olivant, Terence B. Vise. 4,211,393, Cl. 269-111.000.

Olsen, C. Eric, to California Medical Developments, Inc. Disposable diagnostic swab having a stored culture medium. 4,211,323, Cl. 206-210.000.

Omae, Tsutomu: *See—*
Marumoto, Katsuji; and Omae, Tsutomu, 4,211,961, Cl. 318-139.000.

Omron Tateisi Electronics Co.: *See—*
Fukuyama, Toshifumi; and Hattan, Hideaki, 4,211,923, Cl. 250-239.000.

O'Neill, Wilbur J., to Diver's Exchange, Inc. Diving helmet assembly. 4,211,220, Cl. 128-201.270.

Ongaro Dynamics, Ltd.: *See—*
Ongaro, Theodore, 4,211,109, Cl. 73-146.000.

Ongaro, Theodore, to Ongaro Dynamics, Ltd. Multiple plane road wheel for use with tire measuring and correcting apparatus. 4,211,109, Cl. 73-146.000.

Ono, Yuichi; Mori, Mitsuhiro; Morioka, Makoto; Ito, Kazuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, to Hitachi, Ltd. Light emitting devices. 4,212,021, Cl. 357-17.000.

Onoda Cement Co., Ltd.: *See—*.
Itoh, Tsutomu, 4,211,339, Cl. 220-450.000.

Oono, Hiroshi: *See—*
Ohnishi, Masahiro; Ohara, Yuji; and Oono, Hiroshi, 4,212,018, Cl. 346-76.00L.

Oppenheimer, Jess. Unattached swing teaching apparatus. 4,211,418, Cl. 273-186.00R.

Orion Research Incorporated: *See—*
Ross, James W., Jr.; Amass, Charles E.; Baer, Charles S.; and Thomae, Martin H., 4,211,623, Cl. 204-195.00M.

Orth, Norman W.: *See—*
Hoffman, Charles A.; Weeton, John W.; and Orth, Norman W., 4,211,354, Cl. 228-118.000.

Orthopedic Contour Systems, Inc.: *See—*
McCafferty, Donald F., 4,211,019, Cl. 36-43.000.

Ory, Jean-Marie: *See—*
Hubert, Jacques; and Ory, Jean-Marie, 4,212,005, Cl. 340-603.000.

Osheroff, Gene W., to McQuay-Perflex, Inc. Fluidically-controlled air-conditioning system. 4,211,363, Cl. 236-49.000.

Ostoich, Eli, to Sunlite Plastics, Inc. Extrusion process for laminated medical-surgical tubing. 4,211,741, Cl. 264-173.000.

Otis Engineering Corporation: *See—*
Isaacks, Kenneth M., 4,211,279, Cl. 166-64.000.

Otto Junker GmbH: *See—*
Apelt, Heinz; and Packes, Helmut, 4,210,976, Cl. 15-246.500.

Oughton, Richard W., to Du Pont of Canada Limited. Process for the treatment of comminuted oats. 4,211,695, Cl. 260-123.500.

Oughton, Richard W., to Du Pont of Canada Limited. Process for the treatment of comminuted oats. 4,211,801, Cl. 426-430.000.

Outboard Marine Corporation: *See—*
Henrich, Donald A.; and Rose, Edgar, 4,211,515, Cl. 416-146.00R.
Larsen, Robert T., 4,211,058, Cl. 56-17.500.

Outokumpu Oy: *See—*
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.

Owens-Corning Fiberglas Corporation: *See—*
Sleeter, Michael R.; and Dehring, James C., 4,211,107, Cl. 73-49.600.
Williamson, Michael, 4,211,887, Cl. 13-6.000.

Oy Wartsila AB: *See—*
Martikainen, Jaakko; and Pousar, Kurt, 4,211,097, Cl. 70-373.000.

Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, to Sankyo Company Limited. Use of isourea derivatives and triazine derivatives in combination with gibberellins as plant growth regulators. 4,211,550, Cl. 71-89.000.

Ozaki, Masakuni: *See—*
Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, 4,211,866, Cl. 536-53.000.

Packes, Helmut: *See—*
Apelt, Heinz; and Packes, Helmut, 4,210,976, Cl. 15-246.500.

Painter, John P.: *See—*
Miller, Donald E.; and Painter, John P., 4,211,915, Cl. 371-15.000.

Pajtas, Michael S. Agricultural method and implement. 4,211,285, Cl. 172-156.000.

Palmer, Bertram J.: *See—*
Fisher, Leslie G.; and Palmer, Bertram J., 4,211,589, Cl. 156-73.500.

Pan, Jing-Jong, to Harris Corporation. Cavity excitation utilizing microstrip, strip, or slot line. 4,211,987, Cl. 333-230.000.

Panissidi, Hugo A.; Shelton, Glenmore L., Jr.; and Will, Peter M., to International Business Machines Corporation. Servo-control valve for a linear hydraulic motor. 4,211,147, Cl. 91-184.000.

Panzone, Gianbattista: *See—*
Tarzia, Giorgio; and Panzone, Gianbattista, 4,211,708, Cl. 260-326.460.
Tarzia, Giorgio; and Panzone, Gianbattista, 4,211,709, Cl. 260-326.470.

Paoletti, Rodolfo: *See—*
Ferruti, Paolo; and Paoletti, Rodolfo, 4,211,865, Cl. 536-48.000.

Papajewski, Reinhold; Holl, Helmar; and Schmedtkord, Ulrich, to Singer Company, The. Thread guiding system for sewing machine bobbin winders. 4,211,373, Cl. 242-20.000.

Papst-Motoren KG: *See—*
Muller, Rolf, 4,211,963, Cl. 318-254.000.

Parcell, Lloyd J.: *See—*
Westbrook, Clifton W.; Parcell, Lloyd J.; Claytor, Gary L.; and Klock, Byron V., 4,211,646, Cl. 210-15.000.

Pariani, Ronald L.: *See—*
Berry, Milton E.; and Pariani, Ronald L., 4,211,555, Cl. 75-72.000.

Parker, William H. C.: *See—*
Eadie, Brian K. M.; and Parker, William H. C., 4,211,583, Cl. 148-6.350.

Parsons, George W., Jr.; and Munro, John J., III, to Technical Operations, Incorporated. Linear storage projector. 4,211,928, Cl. 250-497.000.

Pasich, Jerzy: *See—*
Slowinski, Stanislaw; Vasina, Stanislaw; Pasich, Jerzy; Kosek, Jerzy; and Glownia, Stanislaw, 4,211,274, Cl. 164-401.000.

Patel, Harish A.: *See—*
Anderson, Gary C.; Howey, Jon A.; and Patel, Harish A., 4,211,227, Cl. 128-296.000.

Pavilanis, Vytautas: *See—*
Dubreuil, Robert, deceased; Ast, Orvo; and Pavilanis, Vytautas, 4,211,843, Cl. 435-2.000.

Payne, Anthony R.: *See—*
Cairns, Hugh; and Payne, Anthony R., 4,211,788, Cl. 424-283.000.

Payne, Ivan C.: *See—*
Blake, Colin C.; and Payne, Ivan C., 4,211,630, Cl. 204-275.000.

Pearce, Arnold P., to Flameless Furnaces Limited. Fluidized bed combusters. 4,211,186, Cl. 122-4.00D.

Peatross, Walton E.: *See—*
Mishoe, Terry L.; and Peatross, Walton E., 4,212,003, Cl. 340-574.000.

Pechhold, Engelbert; and Robinson, Ivan M., to Du Pont de Nemours, E. I., and Company. Block polymers of hydroquinone di-(β-hydroxyalkyl) ethers or isomers thereof and tetrahydrofuran/alkylene oxide copolymers. 4,211,862, Cl. 528-405.000.

Peck, Robert L., to Atlantic Richfield Company. Thermoelectric energy system. 4,211,828, Cl. 429-11.000.

Pedersen, Alec, to Pedersen Industries Ltd. Twin ski. 4,211,433, Cl. 280-601.000.

Pedersen Industries Ltd.: *See—*
Pedersen, Alec, 4,211,433, Cl. 280-601.000.

Pedroso, Raul I.: *See—*
Pedroso, Rosa M.; and Pedroso, Raul I., 4,211,501, Cl. 401-261.000.

Pedroso, Rosa M.; and Pedroso, Raul I. Spreading tool. 4,211,501, Cl. 401-261.000.

Peetz, Hans-Dieter: *See—*
Mueller, Achim; Peetz, Hans-Dieter; Scheeren, Peter; Sistig, Helmut; and Schallenberg, Andreas, 4,211,181, Cl. 118-411.000.

Pellegrini, John P., Jr., to Gulf Research and Development Company. Electrical apparatus insulated with a high fire point synthetic alkylaromatic fluid. 4,211,665, Cl. 252-63.000.

Pelton, Ronald L.: *See—*
Coffaro, Matthew; and Pelton, Ronald L., 4,211,403, Cl. 272-134.000.

Pemsler, J. Paul; and Litchfield, John K., to Kennecott Copper Corporation. Recovery of molybdenun values from dilute solutions. 4,211,753, Cl. 423-54.000.

Penco, Sergio: *See—*
Vicario, Gian P.; Penco, Sergio; and Arcamone, Federico, 4,211,864, Cl. 536-17.00A.

Pengue, Leonard M.: *See—*
Hansen, Gary G.; Pengue, Leonard M.; and Watkin, Theodore, 4,211,397, Cl. 271-4.000.

Pennwalt Corporation: *See—*
King, James P., 4,211,662, Cl. 252-21.000.
Wiechers, Adriaan, 4,211,644, Cl. 209-166.000.

Pentel Kabushiki Kaisha: *See—*
Hashimoto, Junichi, 4,211,500, Cl. 401-65.000.

Perlin, Allen I.: *See—*
Hellstrom, Melbourne J.; Perlin, Allen I.; and Kutlik, Edward, 4,211,927, Cl. 250-445.00T.

Perry, Gerald N., to Chave & Earley, Inc. Filter medium. 4,211,661, Cl. 210-491.000.

Petersen, Egon N.: *See—*
Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, 4,211,730, Cl. 260-45.75B.

Peterson, Marvin L.; and Maxson, Orwin G., to Conoco, Inc. Bimetallic corrosion resistant structural joint and method of making same. 4,211,503, Cl. 405-216.000.

Peterson, Richard H.: *See—*
Jensen, Richard W.; and Peterson, Richard H., 4,211,141, Cl. 84-1.270.

Peterson, Wesley R., to Singer Company, The. Sewing machine mount. 4,211,178, Cl. 112-258.000.

Peterson, William A., Jr.: *See—*
Marchak, Roman O.; Peterson, William A., Jr.; and Carp, Ralph W., 4,212,065, Cl. 364-431.000.

Petranyi, Pal I., to Lever Brothers Company. Package for solid or pasty goods. 4,211,328, Cl. 206-525.000.

Petroff, Peter D. Infiltration-inflow sewer line analyzer. 4,211,111, Cl. 73-195.000.

Petrovich, Vojislav. Beneficiation of coal and metallic and non-metallic ores by froth flotation process using polyhydroxy alkyl xanthate depressants. 4,211,642, Cl. 209-167.000.

Petukhov, Evgeny F.: *See—*
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Pews, R. Garth; and Ash, Mezzie L., to Dow Chemical Company, The. Preparation of chloromethylpyridines. 4,211,873, Cl. 546-346.000.

Pezzini, Mario; and Myers, Elmer P., to Yaun-Williams Bucket Co., The. Hydraulic coupler. 4,211,252, Cl. 137-580.000.

Pfister, Hans B.: *See—*
Baltensperger, Rudolf; and Pfister, Hans B., 4,211,171, Cl. 104-123.000.

Pfizer Inc.: *See—*
Chapman, Kenneth G., 4,211,781, Cl. 424-250.000.
Kraska, Allen R., 4,211,794, Cl. 424-330.000.

Pflug, Hannes: *See—*
Glauner, Jens; Kauhl, Gunther; Pflug, Hannes; Steinke, Leo; and Weyl, Helmut, 4,211,204, Cl. 123-145.00A.

Phillips Petroleum Company: *See—*
Banks, Robert L., 4,211,885, Cl. 585-316.000.
Bresson, Clarence R.; and Thornberry, William E., 4,211,013, Cl. 33-147.00R.
Finch, Jack N.; and Poska, Forrest L., 4,211,718, Cl. 260-449.00M.
Henry, William E., 4,211,974, Cl. 324-377.000.
McDaniel, Max P.; Hottovy, John D.; and Welch, Melvin B., 4,211,863, Cl. 528-483.000.

Phipps, Arthur L., to Condec Corporation. Foam extrusion apparatus and method. 4,211,739, Cl. 264-51.000.

Photovolt Corporation: *See—*
Eppstein, Lee B.; Kroeger, James K.; and Lindblom, Kenneth A., 4,211,614, Cl. 204-1.00T.

Pick, Rudolph: *See—*
Akell, Robert B.; Muller, Werner C.; and Pick, Rudolph, 4,211,638, Cl. 208-180.000.

Pidgeon, Howard H. J., to Compair Construction & Mining Limited. Oil-injected rotary compressors. 4,211,522, Cl. 418-99.000.

Pierce, Donald C. Apparatus for cutting stiff sheet material. 4,211,137, Cl. 83-864.000.

Pierrard, Francois: *See—*
L'Hermite, Mathurin; and Pierrard, Francois, 4,211,584, Cl. 148-16.700.

Piesner, Barry J. Hydroponic growing systems. 4,211,034, Cl. 47-62.000.

Pilat, Michael J.; Powell, Edward B., Jr.; and Thielke, John F., to Electric Power Research Institute, Inc. Assembly for and method of sampling particle-laden fluids and a cascade impactor used therewith. 4,211,116, Cl. 73-421.50A.

Pilz, Erich: *See—*
Fichtl, Karl; Berger, Rudolf; Durnfelder, Otto; and Pilz, Erich, 4,211,164, Cl. 100-145.000.

Pinckney Molded Plastics, Inc.: *See—*
Stahl, Edward L.; Sanders, Ellsworth E.; and Blair, George C., 4,211,327, Cl. 206-505.000.

Pinsky, Gennady I.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Danilov, Leonid I.; and Pinsky, Gennady I., 4,211,101, Cl. 72-247.000.

Pitman, Raymond F., to R O Corporation. Color coded boom and chart system. 4,211,332, Cl. 212-157.000.

Pitney Bowes, Inc.: *See—*
Hansen, Gary G.; Pengue, Leonard M.; and Watkin, Theodore, 4,211,397, Cl. 271-4.000.

Plambeck, Louis, Jr., to Du Pont de Nemours, E. I., and Company. Method of producing cross-linked polymeric images. 4,211,561, Cl. 430-306.000.

Pleschiutschnigg, Fritz-Peter: *See—*
Schrewe, Hans; and Pleschiutschnigg, Fritz-Peter, 4,211,272, Cl. 164-89.000.

Plessey Canada Ltd.: *See—*
Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, 4,211,895, Cl. 179-18.00J.

Plessey Handel und Investments AG: *See—*
Stewart, William J., 4,211,470, Cl. 350-96.210.

Plotto, Michel, to Compagnie Internationale pour l'Informatique. Platform for magnetic transducers having dust diverter means. 4,212,044, Cl. 360-103.000.

Plumer, Mark J. Vehicle wheel lug nut apparatus. 4,211,128, Cl. 81-71.000.

Pneumo Corporation: *See—*
Hrusch, Louis C., 4,211,149, Cl. 92-27.000.

Podlewski, Johann, to Licentia Patent-Verwaltungs-G.m.b.H. Control for an inverter station. 4,212,055, Cl. 363-71.000.

Poirier d'Ange d'Orsay, Emmanuel J. H., to Societe pour l'Equipement de Vehicules. Carburetor. 4,211,196, Cl. 123-439.000.

Polak's Frutal Works B.V.: *See—*
Lenselink, Willem, 4,211,674, Cl. 252-522.00R.

Polaroid Corp.: *See—*
Greenwald, Richard B., 4,211,559, Cl. 430-211.000.
Greenwald, Richard B., 4,211,562, Cl. 430-456.000.

Polymer Processing Research Institute Ltd.: *See—*
Yazawa, Masahide; and Kurihara, Kazuhiko, 4,211,807, Cl. 428-109.000.

Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S. Method for thermal processing bitumen-containing materials and device for realization of same. 4,211,606, Cl. 201-12.000.

Poole, Brian; and Young, Philip J., to Air Products and Chemicals, Inc. Apparatus for shielding molten metal during teeming. 4,211,390, Cl. 266-207.000.

Poole, Lynn A., to United States of America, Navy. Beam-former for FFT-based signal processor. 4,212,084, Cl. 367-118.000.

Popov, Alexandr D.; Solomin, Vladimir A.; and Zvezdunov, Dmitry A. Linear induction motor. 4,211,943, Cl. 310-13.000.

Popper Engineering Ltd.: *See—*
Popper, Jakhin B., 4,211,441, Cl. 292-259.00R.

Popper, Jakhin B., to Popper Engineering Ltd. Spring clasp. 4,211,441, Cl. 292-259.00R.

Popplewell, James M.: *See—*
Pryor, Michael J.; Popplewell, James M.; and Anthony, William H., 4,211,827, Cl. 428-654.000.

Portable Cookery, Inc.: *See—*
Darbo, Rolf E., 4,211,206, Cl. 126-9.00R.

Portals Plus, Inc.: *See—*
Resech, Raymond W., 4,211,423, Cl. 277-212.0FB.

Porter, George, to National Research Development Corporation. Method and apparatus for producing hydrogen using solar energy. 4,211,621, Cl. 204-157.10R.

Portmann, Alexandre, to BBC Brown Boveri & Company Limited. Start-up motor assembly for rotational machines. 4,211,070, Cl. 60-39.080.

Poska, Forrest L.: *See—*
Finch, Jack N.; and Poska, Forrest L., 4,211,718, Cl. 260-449.00M.

Possin, George E.: *See—*
Barber, William D.; and Possin, George E., 4,212,082, Cl. 365-118.000.

Post, Edward N.: *See—*
Mishoe, Terry L.; and Peatross, Walton E., 4,212,003, Cl. 340-574.000.

Potapov, Valery N.: *See—*
Vasilinina, Olga V.; Kidyashev, Jury K.; Potapov, Valery N.; Ryabikov, Stanislav V.; Stepanov, Anatoly M.; and Strebkov, Dmitry S., 4,211,581, Cl. 136-89.0CA.

Potin, Philippe: *See—*
Michel, Jean-Claude; and Potin, Philippe, 4,211,700, Cl. 260-239.30A.

Poubeau, Pierre, to Societe Nationale Industrielle Aerospatiale. Inertia wheel. 4,211,452, Cl. 308-10.000.

Pousar, Kurt: *See—*
Martikainen, Jaakko; and Pousar, Kurt, 4,211,097, Cl. 70-373.000.

Powell, Edward B., Jr.: *See—*
Pilat, Michael J.; Powell, Edward B., Jr.; and Thielke, John F., 4,211,116, Cl. 73-421.50A.

PPG Industries, Inc.: *See—*
Ackley, Richard H., 4,211,818, Cl. 428-367.000.
Cunningham, Hugh, 4,211,627, Cl. 204-252.000.
Davis, Douglas H., 4,211,568, Cl. 106-52.000.

Prat, Gisele: *See—*
Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, 4,211,772, Cl. 424-180.000.

Prey, Gerhard, to Siemens Aktiengesellschaft. Method and apparatus for controlling the sequence of instructions in stored-program computers. 4,212,060, Cl. 364-200.000.

Price, Herbert B., to Spencer Wright Industries, Inc. Knife block for tufting machines. 4,211,176, Cl. 112-79.00R.

Prischmann, Karl H., to Thyssen Industrie AG. Multilayer vessel or tube construction. 4,211,260, Cl. 138-143.000.

Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I. Dry coke quenching process. 4,211,607, Cl. 201-39.000.

Procaccino, Roderic J.: *See—*
Manoogian, David V.; and Procaccino, Roderic J., 4,212,012, Cl. 343-7.00A.

Procter & Gamble Company, The: *See—*
Youngquist, Rudolph W., 4,211,694, Cl. 260-123.500.

Produits Chimiques Ugine Kuhlmann: *See—*
Guerin, Jean G., 4,211,728, Cl. 260-658.00R.
Mollard, Paul, 4,211,759, Cl. 423-281.000.

Pryke, Graham R.: *See—*
Cakebread, William A.; and Pryke, Graham R., 4,212,006, Cl. 340-685.000.

Pryor, Michael J.; Popplewell, James M.; and Anthony, William H., to Swiss Aluminium Ltd. Al-Si-Sn Alloy clad composite. 4,211,827, Cl. 428-654.000.

Przedsiegiorstwo Projektowania I Wyposazania Odlewni "Prodlew": *See—*
Slowinski, Stanislaw; Vasina, Stanislaw; Pasich, Jerzy; Kosek, Jerzy; and Glownia, Stanislaw, 4,211,274, Cl. 164-401.000.

Psaar, Hubertus: *See—*
Kuhlthau, Hans-Peter; Psaar, Hubertus; and Raue, Roderich, 4,211,436, Cl. 282-27.500.

Ptacnik, Edmund; and Trainer, Carl, to Siemens Aktiengesellschaft. Circuit arrangement for an indirectly controlled exchange, in particular a telephone exchange. 4,211,899, Cl. 179-175.20C.

Puhak, Peter G.; Bilynsky, John D.; and Sorensen, Fred L., to GTE Products Corporation. Means for controlling dielectric flow in an electron tube base. 4,211,465, Cl. 339-144.00T.

Pullman Berry Company: *See—*
Rymarchyk, Nicholas M.; and Smith, Charles T., 4,211,316, Cl. 193-2.00R.

Pullman Incorporated: *See—*
Glassmeyer, John J., 4,211,444, Cl. 293-150.000.

Pulver, W. Clark; Euverard, Maynard R.; Heide, Henry A.; and Ziolkowski, Ronald P., to Velten & Pulver, Inc. Oven unloader. 4,211,319, Cl. 198-432.000.

Purdue Research Foundation: *See—*
Richey, Clarence B., 4,211,061, Cl. 56-327.00R.

Pyke, Thomas R.: *See—*
Biggs, Candice B.; Pyke, Thomas R.; and Wovcha, Merle G., 4,211,841, Cl. 435-136.000.

Pyle, Stoddard H.: *See—*
Thorsell, Roland H.; and Pyle, Stoddard H., 4,211,134, Cl. 83-471.300.

Quad C Corporation: *See—*
Chaney, Robert F.; and Connell, Gene N., 4,211,491, Cl. 366-30.000.

Quentin, Gerhard. Method of purifying industrial sugar solutions. 4,211,579, Cl. 127-46.00A.

Quest Automation Limited: *See—*
Maskens, Geoffrey D., 4,212,049, Cl. 362-33.000.

Quick, David C.; and Marsch, James E., to Allis-Chalmers Corporation. Transmission brake with lubricating and cooling means. 4,211,313, Cl. 192-4.00A.

Quigley, Thomas J., to Stackpole Components Company. Slide switch with shorting contact. 4,211,900, Cl. 200-5.00R.

Quigley, Thomas J., to Stackpole Components Company. Slide switch assembly for mounting in a panel. 4,211,905, Cl. 200-295.000.

Quiroz, Luis E. Chess-like board game. 4,211,420, Cl. 273-260.000.

R O Corporation: *See—*
Pitman, Raymond F., 4,211,332, Cl. 212-157.000.

Raacke, Karl H.: *See—*
Babinski, John P.; Bertelsen, Bruce I.; Raacke, Karl H.; and Sirgo, Valdeko H., 4,211,505, Cl. 406-19.000.

Raemer, Daniel B.; Gehmlich, Dietrich K.; Westenskow, Dwayne R.; and Johnson, Curtis C., deceased (by Whitehead, Charles W., Wilma W. Johnson, personal representatives), to University of Utah. Neonatal oxygen consumption monitor. 4,211,239, Cl. 128-716.000.

Raines, Kenneth C., to National Patent Development Corporation. Method of manufacturing a vented piercing device for intravenous administration sets. 4,211,588, Cl. 156-73.100.

Raley, Charles F., Jr., to Dow Chemical Company, The. Flame retardant halohydrocarbon polymer composition. 4,211,853, Cl. 525-317.000.

Ralston Purina Company: *See—*
Lanter, Kent J.; Betz, Norman L.; and Williams, Danny L., 4,211,796, Cl. 426-2.000.

Rampel, Hans: *See—*
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Randall, Lee P.: *See—*
Cante, Charles J.; Downhour, Russell; Randall, Lee P.; and Morgan, Jeffrey D., 4,211,797, Cl. 426-2.000.

Randlett, M. Ronald: *See—*
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., 4,211,270, Cl. 164-83.000.

Rangabe, Alexander R., to Zerostat Components Limited. Damping apparatus for damping the resonance of disc record tone arms. 4,211,422, Cl. 274-23.00R.

Rao, G. R. Mohan, to Texas Instruments Incorporated. MOS Integrated with implanted resistor elements. 4,212,083, Cl. 365-154.000.

Rasmussen, Chris R., to McNeil Laboratories, Incorporated. Nitrogen heterocyclic carboximidamide compounds. 4,211,867, Cl. 544-60.000.

Ratcliffe, Ronald W., to Merck & Co., Inc. Process for hydrolytically cleaving O-sulfo thienamycins. 4,211,707, Cl. 260-326.310.

Rathbun, Donald J., to Honeywell Information Systems Inc. Double density read recovery. 4,212,038, Cl. 360-41.000.

Raue, Roderich: *See—*
Kuhlthau, Hans-Peter; Psaar, Hubertus; and Raue, Roderich, 4,211,436, Cl. 282-27.500.

Ravnikar, Borut. Wheel. 4,211,268, Cl. 152-5.000.

Ray, Stephen W. Solid state lamp. 4,211,955, Cl. 315-53.000.

Ray, Sunnie, to Game Time, Inc. Modularized slide. 4,211,400, Cl. 272-56.50R.

Raytheon Company: *See—*
Manoogian, David V.; and Procaccino, Roderic J., 4,212,012, Cl. 343-7.00A.

RCA Corporation: *See—*
Goldman, Abraham, 4,211,563, Cl. 430-286.000.
Harford, Jack R., 4,212,032, Cl. 358-177.000.
Hopkins, Robert S., Jr., 4,212,008, Cl. 340-723.000.
Kleinknecht, Hans P., 4,211,488, Cl. 356-369.000.
Kleinknecht, Hans P.; and Bosenberg, Wolfram A., 4,211,489, Cl. 356-400.000.
Kosonocky, Walter F.; and Sauer, Donald J., 4,211,936, Cl. 307-221.00D.
Rosnowski, Wojciech, 4,211,182, Cl. 118-725.000.
Schade, Otto H., Jr., 4,211,941, Cl. 307-303.000.
Torrington, Leslie A., 4,211,421, Cl. 274-9.00B.
Turnbull, John C.; and Yoder, Benjamin F., 4,210,988, Cl. 29-25.150.

Redington Inc.: *See—*
Sramek, Elmer D., 4,211,054, Cl. 53-502.000.

Reed, Douglas A., to Tektronix, Inc. Multilayer circuit board construction and method. 4,211,603, Cl. 156-659.100.

Reese, Jonathan. Combination container and control form for shipping, identifying and reordering merchandise. 4,211,434, Cl. 282-11.50A.

Reese, Jonathan. Combination container and control form for shipping, identifying and reordering merchandise. 4,211,435, Cl. 282-25.000.

Reeves, Robert H., Jr.: *See—*
Kennedy, Harry L.; Kesaree, Prakash M.; and Reeves, Robert H., Jr., 4,211,263, Cl. 141-83.000.

Regie Nationale des Usines Renault: *See—*
Aunis, Jean-Marie, 4,211,353, Cl. 227-156.000.
Lombard, Claude; and Viala, Guy, 4,211,991, Cl. 335-207.000.

Rehrmann, Helmut: *See—*
Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,211,970, Cl. 324-58.50C.

Reich, Zygmund: *See—*
Forsythe, Arthur M.; Anapol, James H.; and Reich, Zygmund, 4,212,064, Cl. 364-424.000.

Reichman, Uri: *See—*
Lopez, Carlos; Watanabe, Kyoichi A.; Reichman, Uri; and Fox, Jack J., 4,211,773, Cl. 424-180.000.

Reier, Richard: *See—*
Fischer, Philipp-Josef; and Reier, Richard, 4,211,494, Cl. 400-124.000.

Relander, John H.: *See—*
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.

Renault, Michele: *See—*
Braconnier, Daniel; Joly, Jean; and Renault, Michele, 4,211,812, Cl. 428-224.000.

Resech, Raymond W., to Portals Plus, Inc. Roof seal device. 4,211,423, Cl. 277-212.0FB.

Reuterskiold, Tom C. Device for absorbing tension loads in an elongate flexible member. 4,211,308, Cl. 188-1.00C.

Reyes, Daniel; and Spector, George. Combined burglar frightening device and alarm. 4,212,007, Cl. 340-691.000.

Reynolds, Charles E., to AMP Incorporated. Crimped electrical connections for conductors on thin substrates. 4,211,466, Cl. 339-176.0MF.

Reynolds Metals Company: *See—*
Bublitz, Robert F., 4,211,338, Cl. 220-359.000.

Rheinmetall GmbH: *See—*
Haep, Heinz, 4,211,168, Cl. 102-41.000.

Rhodes, Keith H., to Hesston Corporation. Mowing rotor. 4,211,060, Cl. 56-294.000.

Rhone-Poulenc-Textile: *See—*
Braconnier, Daniel; Joly, Jean; and Renault, Michele, 4,211,812, Cl. 428-224.000.

Rice, DeLong, Jr. Holding device. 4,211,158, Cl. 99-403.000.

Richard Wolf Medical Instruments Corp.: *See—*
Wurster, Helmut, 4,211,229, Cl. 128-303.100.

Richards, George B., to Fluid Device Corporation. Liquid level control system. 4,211,249, Cl. 137-393.000.

Richards, Joseph A.: *See—*
Einem, Robert E.; Richards, Joseph A.; and Gassowski, Jerzy R., 4,211,495, Cl. 400-124.000.

Richardson, Larry D.; and Sobolewski, Annette M. Convertible and collapsible bench/table combination. 4,211,449, Cl. 297-126.000.

Richey, Clarence B., to Purdue Research Foundation. Flexible crop pick-up device. 4,211,061, Cl. 56-327.00R.

Rickert, Raymond E.; and Swalls, Billy J., to Templeton Coal Co., Inc. Automatic purging system. 4,211,251, Cl. 137-565.000.

Rindfleisch, Volker: *See—*
Muller, Karl-Heinz; Krisch, Burkhard; Rindfleisch, Volker; and Neuendorff, Hans F. R., 4,211,924, Cl. 250-311.000.

Ringer, Charles J., to Judd Ringer Corporation. Plant support and compost enclosure. 4,211,033, Cl. 47-45.000.

Rittler, Hermann L.: *See—*
Cantaloupe, Francis A.; Colegrove, Robert W.; Megles, John E., Jr.; and Rittler, Hermann L., 4,211,820, Cl. 428-410.000.

Rivier, Jean E. F.; Brown, Marvin R.; and Vale, Wylie W., Jr., to Salk Institute for Biological Studies, The. Peptides with para-substituted phenylalanine. 4,211,693, Cl. 260-112.50S.

Roberling, Fritz. Rodent poison dispenser with protective closure plate of attractive odor or taste. 4,211,028, Cl. 43-131.000.

Robert Bosch GmbH: *See—*
Glauner, Jens; Kauhl, Gunther; Pflug, Hannes; Steinke, Leo; and Weyl, Helmut, 4,211,204, Cl. 123-145.00A.

Robert, Guy: *See—*
Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, 4,211,475, Cl. 350-357.000.

Roberts & Porter, Inc.: *See—*
Trankle, Richard A., 4,211,808, Cl. 428-131.000.

Robinett, Ross. Toy hoop device. 4,211,032, Cl. 46-220.000.

Robins, Roland K.: *See—*
Witkowski, Joseph T.; and Robins, Roland K., 4,211,771, Cl. 424-180.000.

Robinson, Ivan M., to Du Pont de Nemours, E. I., and Company. Block polymers of poly(tetramethylene oxide) and tetrahydrofuran/alkylene oxide copolymers. 4,211,854, Cl. 525-410.000.

Robinson, Ivan M.: *See—*
Pechhold, Engelbert; and Robinson, Ivan M., 4,211,862, Cl. 528-405.000.

Robotics, Inc.: *See—*
Mosher, Ralph S., 4,211,321, Cl. 198-774.000.

Rocchio, Rodolfo; Naumann, Fritz; and Strotkotter, Heinrich, to Audi Nsu Auto Union Aktiengesellschaft. Vacuum force amplifier for internal combustion engine. 4,211,200, Cl. 123-445.000.

Rodeaud, Jacques: *See—*
Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, 4,211,795, Cl. 426-2.000.

Roesler, Layton S.; and Roesler, Patricia I. Table tennis net holder. 4,211,406, Cl. 273-30.000.

Roesler, Patricia I.: *See—*
Roesler, Layton S.; and Roesler, Patricia I., 4,211,406, Cl. 273-30.000.

Rohm GmbH: *See—*
Grampp, Ekkehard; Schmitt, Reinhold; and Uhlig, Helmut, 4,211,799, Cl. 426-50.000.
Vetter, Heinz, 4,211,525, Cl. 425-326.100.

Rohringer, Peter: *See—*
Nachbur, Hermann; and Rohringer, Peter, 4,211,814, Cl. 428-265.000.

Roitt, Ivan M.: *See—*
Huggins, Keith G.; and Roitt, Ivan M., 4,211,762, Cl. 424-1.000.

Rollins, Richard A.: *See—*
Lillegard, Thomas R.; Rollins, Richard A.; and Stauber, Ronald C., 4,211,380, Cl. 248-229.000.

Roman, Steven A.; and Soloway, Samuel B., to Shell Oil Company. Oxyimino-substituted (1R,cis)-cyclopropanecarboxylate pesticides. 4,211,789, Cl. 424-285.000.

Roman, Steven A.; and Soloway, Samuel B., to Shell Oil Company. Oxyimino-substituted (1R,trans)-cyclopropanecarboxylate pesticides. 4,211,792, Cl. 424-304.000.

Roorda, John W.: *See—*
Deavenport, Joe E.; and Roorda, John W., 4,211,959, Cl. 315-362.000.

Roos, Edward V., to Harris Corporation. Arrangement for coupling RF energy into piezoelectric transducers. 4,211,950, Cl. 310-327.000.

Rose, Edgar: *See—*
Henrich, Donald A.; and Rose, Edgar, 4,211,515, Cl. 416-146.00R.

Rose, Selwyn H.; and Chattopadhyay, Ashok, to DeSoto, Inc. Polyphosphazene copolymers with phenoxy and with phenylphenoxy and/or naphthoxy groups, and aqueous dispersions. 4,211,677, Cl. 260-13.000.

Rosebrock, Theodore L.: *See—*
Ludecke, Otto A.; and Rosebrock, Theodore L., 4,211,075, Cl. 60-285.000.

Rosen, Perry: *See—*
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,211,724, Cl. 260-562.00B.

Rosenbusch, Helmut W.: *See—*
Heine, Helmut A.; Rosenbusch, Helmut W.; and Schmidt, Otto H., 4,211,215, Cl. 128-4.000.

Rosenkranz, Hans J.: *See—*
Keggenhoff, Berthold; Bandtel, Eberhard; and Rosenkranz, Hans J., 4,211,751, Cl. 422-134.000.

Rosien, Richard E.: *See—*
Games, John E.; Rosien, Richard E.; and Bitterli, William W., 4,212,078, Cl. 364-900.000.

Rosnowski, Wojciech, to RCA Corporation. Diffusion apparatus. 4,211,182, Cl. 118-725.000.

Ross, James W., Jr.; Amass, Charles E.; Baer, Charles S.; and Thomae, Martin H., to Orion Research Incorporated. Halide electrode. 4,211,623, Cl. 204-195.00M.

Rossmy, Gerd: *See—*
Kollmeier, Hans-Joachim; and Rossmy, Gerd, 4,211,849, Cl. 521-164.000.

Roth, Martin; Kvita, Vratislav; and Greber, Gerd, to Ciba-Geigy Corporation. Imidyl-benzenedicarboxylic acid derivatives. 4,211,705, Cl. 260-326.00C.

Rovnyak, George C., to E. R. Squibb & Sons, Inc. Mercaptoacyldihydropyrazole carboxylic acid derivatives. 4,211,786, Cl. 424-273.00P.

Rudnick, Paul J.; and Heaslett, Alastair M., to Ampex Corporation. Method and apparatus employing an improved format for recording and reproducing digital audio. 4,211,997, Cl. 371-38.000.

Ruggiero, Anthony M. Invalid walker with improved brake means. 4,211,309, Cl. 188-83.000.

Ruhl, Herman. Vehicle multicondition recording system. 4,212,016, Cl. 346-62.000.

Ruhrkohle AG: *See—*
Kortenbusch, Werner, 4,211,518, Cl. 417-54.000.
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.

Rundqvist, Lars-Goran: *See—*
Frykhult, Rune H.; and Rundqvist, Lars-Goran, 4,211,643, Cl. 209-211.000.

Ryabikov, Stanislav V.: *See—*
Vasilinina, Olga V.; Kidyashev, Jury K.; Potapov, Valery N.; Ryabikov, Stanislav V.; Stepanov, Anatoly M.; and Strebkov, Dmitry S., 4,211,581, Cl. 136-89.0CA.

Rybalko, Sergei A. Electron beam device with variable beam energy. 4,211,953, Cl. 313-450.000.

Ryco Graphic Manufacturing, Inc.: *See—*
Switall, Thomas G., 4,211,258, Cl. 137-862.000.

Rymarchyk, Nicholas M.; and Smith, Charles T., to Pullman Berry Company. Chute for charging steel making vessels. 4,211,316, Cl. 193-2.00R.

Rzasa, Ronald P., to Cryomedics, Inc. Cryosurgical instrument. 4,211,231, Cl. 128-303.100.

Saab-Scania Aktiebolag: *See—*
Hardmark, Ragnar M., 4,212,063, Cl. 364-426.000.

Sado, Ryoichi; and Nei, Koichi, to Shin-Etsu Polymer Co., Ltd. Electronic circuit boards. 4,211,890, Cl. 174-68.500.

Saeki, Toshio: *See—*
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.

Saele, Arvid H.; and Johannsen, Donald O., to Deere & Company. Positive neutral control for hydrostatic transmission. 4,211,079, Cl. 60-433.000.

Saft Leclanche: *See—*
Chevet, Robert, 4,211,830, Cl. 429-27.000.

Sahm, William H., III: *See—*
Chu, Hing C.; Sahm, William H., III; and Chen, Robert I., 4,212,023, Cl. 357-19.000.

Saida, Kenichi: *See—*
Asano, Hideki; Kokaku, Hiroyoshi; Suzuki, Katsuhito; and Saida, Kenichi, 4,211,690, Cl. 260-42.460.

Saillour, Jean M.: *See—*
Jourdan, Louis J.; and Saillour, Jean M., 4,211,161, Cl. 99-638.000.

Saint Gobain Industries: *See—*
Mueller, Achim; Peetz, Hans-Dieter; Scheeren, Peter; Sistig, Helmut; and Schallenberg, Andreas, 4,211,181, Cl. 118-411.000.

Saito, Hisashi: *See—*
Sato, Tetsuya; Kato, Osamu; and Saito, Hisashi, 4,211,973, Cl. 324-158.0MG.

Saito, Masaaki: *See—*
Kawamura, Yoshihisa; and Saito, Masaaki, 4,211,191, Cl. 123-52.00M.

Sakai, Koichi; and Ikeyama, Kazunori, to U.S. Philips Corporation. Coffee maker. 4,211,157, Cl. 99-306.000.

Sakakibara, Naoji; and Hashimoto, Nobuyuki, to Aisin Seiki Kabushiki Kaisha. Solenoid valve. 4,211,257, Cl. 137-625.650.

Sakulevich, Faddei J.; Kravchenko, Lev N.; Kozhuro, Lev M.; and Shimansky, Vladimir A. Rotor-type machine for abrasive machining of parts with ferromagnetic abrasive powders in magnetic field. 4,211,041, Cl. 51-131.300.

Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and by Ishii, Kyoko, administrator, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic fault detector. 4,211,118, Cl. 73-592.000.

Salee, Gideon, to Hooker Chemicals & Plastics Corp. Polymer blends with improved flame retardance. 4,211,687, Cl. 260-40.00R.

Salk Institute for Biological Studies, The: *See—*
Rivier, Jean E. F.; Brown, Marvin R.; and Vale, Wylie W., Jr., 4,211,693, Cl. 260-112.50S.

Salmon, Peter C.; and Kidd, Christopher, to Consumer Promotions, Inc. Merchandising display. 4,211,331, Cl. 211-13.000.

Salvino, Lawrence P. Portable device for supporting a roll of aluminum sheeting for dispensing. 4,211,374, Cl. 242-55.000.

Sambucetti, Carlos J., to International Business Machines Corporation. Electrochromic printing system. 4,211,616, Cl. 204-2.000.

Samejima, Toshihide: *See—*
Oda, Hajime; Samejima, Toshihide; Matsumura, Toshio; Moritani, Nakanobu; and Fujita, Masanori, 4,211,067, Cl. 368-185.000.

Samour, Carlos M., to Kendall Company, The. Method of coating pipe, 4,211,595, Cl. 156-187.000.

Sampson, Harold J. Log clamping apparatus. 4,211,394, Cl. 269-239.000.

Sanders, Ellsworth E.: *See—*
Stahl, Edward L.; Sanders, Ellsworth E.; and Blair, George C., 4,211,327, Cl. 206-505.000.

Sandoz Ltd.: *See—*
Hofer, Kurt; Moesch, Rudolf; and Tscheulin, Guenther, 4,211,731, Cl. 260-932.000.

Sangamo Weston, Inc.: *See—*
Boreas, Willem J. L., 4,211,972, Cl. 324-154.00R.

Sankyo Company Limited: *See—*
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,211,550, Cl. 71-89.000.

Sanyo Electric Co., Ltd.: *See—*
Yoshida, Nagatoshi; and Taga, Yoshihito, 4,211,909, Cl. 219-10.55R.

Sarig, Yoav; Nahir, David; and Alper, Yekutiel. Machine for harvesting agricultural produce. 4,211,062, Cl. 56-328.00R.

Sasaki, Jun: *See—*
Yoneyama, Masakazu; Mukunoki, Yasuo; Mikami, Takeshi; and Sasaki, Jun, 4,211,836, Cl. 430-449.000.

Sasayama, Hiroharu, to C.I. Kasei Company Limited. Process for the preparation of self-swelling leakage-preventing materials. 4,211,851, Cl. 525-108.000.

Sashihara, Kenji: *See—*
Suzuki, Nobuo; Sashihara, Kenji; and Masuda, Takao, 4,211,839, Cl. 430-619.000.

Satake, Kunio: *See—*
Taguchi, Tadashi; Fujikawa, Noboru; Kohno, Mitsuo; Yoshitake, Katsumi; and Satake, Kunio, 4,211,560, Cl. 430-313.000.

Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, to Tokyo Shibaura Electric Co., Ltd. Information processing system. 4,212,059, Cl. 364-200.000.

Sato, Hideo: *See—*
Inukai, Takashi; Inoue, Hiromichi; and Sato, Hideo, 4,211,666, Cl. 252-299.000.

Sato, Kazue: *See—*
Atoji, Nobuhisa; Matsumoto, Takashi; Kusumoto, Shoichi; Sato, Kazue; and Hasegawa, Mitsuhiro, 4,211,898, Cl. 179-156.00R.

Sato, Kazuo: *See—*
Yamada, Koichi; Yoshihara, Masao; Ishida, Takahiro; and Sato, Kazuo, 4,211,667, Cl. 252-313.00R.

Sato, Tetsuya; Kato, Osamu; and Saito, Hisashi, to Kabushiki Kaisha Teikoku Denki Seisakusho. Apparatus for detecting faults to be occurred or initially existing in a running electric rotary machine. 4,211,973, Cl. 324-158.0MG.

Sauer, Donald J.: *See—*
Kosonocky, Walter F.; and Sauer, Donald J., 4,211,936, Cl. 307-221.00D.

Saunders, Louie G. Columnar structure. 4,211,179, Cl. 114-90.000.

Sawada, Daisaku: *See—*
Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.

Saxon, Arthur F., to Dravo Corporation. Hinged load dumping door for multi-cell extractors. 4,211,752, Cl. 422-268.000.

Saxton, William R.; and Lawford, William H., to Canadian International Paper Company. High yield chemimechanical pulping processes. 4,211,605, Cl. 162-64.000.

Scales, Stanley R.: *See—*
Dill, Herbert C.; and Scales, Stanley R., 4,211,508, Cl. 407-120.000.

Schaar, Charles H., to Colgate-Palmolive Company. Disposable diaper with flap covered tape fastener. 4,211,226, Cl. 128-287.000.

Schade, Otto H., Jr., to RCA Corporation. Integrated circuitry including low-leakage capacitance. 4,211,941, Cl. 307-303.000.

Schafer, Klaus: *See—*
Schmitt, Alfons; Utz, Diether; and Schafer, Klaus, 4,212,031, Cl. 358-101.000.

Schallenberg, Andreas: *See—*
Mueller, Achim; Peetz, Hans-Dieter; Scheeren, Peter; Sistig, Helmut; and Schallenberg, Andreas, 4,211,181, Cl. 118-411.000.

Scharen, Walter: *See—*
Thiele, Kurt; Ahmed, Quazi; Scharen, Walter; and Meyer, Jacques, 4,211,551, Cl. 71-116.000.

Scharschmidt, Rudolph K.; and Murphy, Lynn, to General Foods Corporation. Flake cereal process and product. 4,211,800, Cl. 426-93.000.

Scheer, Martin; Anke, Heidrun; Konig, Wilfried; and Zahner, Hans, to Bayer Aktiengesellschaft. Antibacterial agents effective in growth promotion and increased feed utilization. 4,211,787, Cl. 424-279.000.

Scheeren, Peter: *See—*
Mueller, Achim; Peetz, Hans-Dieter; Scheeren, Peter; Sistig, Helmut; and Schallenberg, Andreas, 4,211,181, Cl. 118-411.000.

Scheurecker, Werner, to Voest-Alpine Aktiengesellschaft. Arrangement at a continuous casting plant. 4,211,273, Cl. 164-150.000.

Schick Laboratories, Inc.: *See—*
Sears, Hartley M., 4,211,456, Cl. 339-12.00R.

Schill, Gottlob, to Bruderhaus Maschinen GmbH. Apparatus for the compressive handling of a strip of material. 4,211,165, Cl. 100-162.00R.

Schilling, Roger A., to Honeywell Inc. Control system for redundant valves. 4,211,526, Cl. 431-69.000.

Schleppy, Ronald, Jr.: *See—*
Carr, Norman L.; Schleppy, Ronald, Jr.; and Shah, Yatish T., 4,211,631, Cl. 208-8.0LE.

Schmalz, Johann, to U.S. Philips Corporation. Method of manufacturing a capacitor roll, and a capacitor comprising a roll thus manufactured. 4,210,989, Cl. 29-25.420.

Schmedtkord, Ulrich: *See—*
Papajewski, Reinhold; Holl, Helmar; and Schmedtkord, Ulrich, 4,211,373, Cl. 242-20.000.

Schmid, Rolyn A., to Bender Machine Works, Inc. Detergent supply control for automatic dishwasher. 4,211,517, Cl. 417-12.000.

Schmidt, Otto H.: *See—*
Heine, Helmut A.; Rosenbusch, Helmut W.; and Schmidt, Otto H., 4,211,215, Cl. 128-4.000.

Schmidt, Paul J.; and Hung, William M. Substituted furopyridinones and furopyrazinones. 4,211,872, Cl. 546-116.000.

Schmidt, Ronald V.: *See—*
Cross, Peter S.; and Schmidt, Ronald V., 4,211,467, Cl. 350-96.140.

Schmidt, Werner: *See—*
Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, 4,211,730, Cl. 260-45.75B.

Schmitt, Alfons; Utz, Diether; and Schafer, Klaus, to Licentia Patent-Verwaltungs-G.m.b.H. Method of aligning a body. 4,212,031, Cl. 358-101.000.

Schmitt, Franz: *See—*
Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,211,970, Cl. 324-58.50C.

Schmitt, Frederick L.: *See—*
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Schmitt, Reinhold: *See—*
Grampp, Ekkehard; Schmitt, Reinhold; and Uhlig, Helmut, 4,211,799, Cl. 426-50.000.

Schmitz, Lawrence S.; Dodds, Curtis E.; and Whipple, John, to Hughes Aircraft Company. Automatic system for setting digital watches. 4,211,065, Cl. 368-47.000.

Schnider, Karl: *See—*
Konig, Helmut; and Schnider, Karl, 4,211,492, Cl. 366-76.000.

Schnippering, Friedhelm: *See—*
Dittrich, Werner; Josten, Walter; Nestler, Heinz; and Schnippering, Friedhelm, 4,211,567, Cl. 106-38.350.

Schoenfield, Palmer J.: *See—*
Morrison, Howard J.; Gardner, Denise; and Schoenfield, Palmer J., 4,211,030, Cl. 46-67.000.

Scholl, Charles H.: *See—*
Akers, Larry D.; Scholl, Charles H.; Smith, Joseph S.; and Williams, Edward A., 4,211,262, Cl. 141-2.000.

Scholle, William R. Dispenser spigot. 4,211,348, Cl. 222-498.000.

Schonteich, Peter: *See—*
Koppe, Eberhard; Schonteich, Peter; and Epper, Wolfgang, 4,211,653, Cl. 210-77.000.

Schreiber, William L.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.

Schrewe, Hans; and Pleschiutschnigg, Fritz-Peter, to Mannesmann Aktiengesellschaft. Cooling of ingots or castings. 4,211,272, Cl. 164-89.000.

Schubert & Salzer: *See—*
Bock, Erich; Braun, Erwin; and Wulfhorst, Burkhard, 4,211,063, Cl. 57-302.000.

Schulte, Juergen. Parking apparatus for laterally shifting a vehicle. 4,211,299, Cl. 180-200.000.

Schutz, Gerhard: *See—*
Grosz-Roll, Friedrich; Schutz, Gerhard; and Streiff, Felix, 4,211,277, Cl. 165-109.00T.

Schwanbom, Erik; Hartwig, Hans-Joachim; and Warnow, Detlef, to Dragerwerk Aktiengesellschaft. Respirator. 4,211,221, Cl. 128-204.260.

Schwartz, Charles A. Method of manufacturing a cooled lifting magnet with damped eddy currents. 4,210,994, Cl. 29-606.000.

Schwenker, Robert O.: *See—*
Horng, Cheng T.; and Schwenker, Robert O., 4,211,582, Cl. 148-1.500.

Scott, George W., to Textron, Inc. Slide fastener stringer with folded and bonded continuous molded coupling element and method and apparatus for manufacturing. 4,210,985, Cl. 24-205.16R.

Scott, Oscar T., IV, to J. M. Huber Corporation. Method of producing a carbon black silica pigment. 4,211,578, Cl. 106-307.000.

Scott, Raymond G.; and Wysocki, Lawrence S., to Champion International Corporation. Openable container cover (III). 4,211,360, Cl. 229-43.000.

Scribner, Richard M., to Du Pont de Nemours, E. I., and Company. 3-Pyrazolidinone carboxamides. 4,211,876, Cl. 548-367.000.

Sears, Hartley M., to Schick Laboratories, Inc. Magnetic electrical connectors. 4,211,456, Cl. 339-12.00R.

Sedgwick, Thomas O.: *See—*
Cowher, Melvyn E.; and Sedgwick, Thomas O., 4,211,803, Cl. 427-128.000.

Seelbach, Heinz; and Eversberg, Gerhard, to Erco Leuchten GmbH. Adapter for connecting a load to a bus bar. 4,211,460, Cl. 339-75.00M.

Segar, Richard B.; and Marascalco, Lewis C., to GPD, Inc. Electronic calorie counter. 4,212,079, Cl. 364-900.000.

Seidler, Donald W.: *See—*
Hein, Carl C.; Silver, Harold K.; Spitz, Joseph J.; and Seidler, Donald W., 4,211,326, Cl. 206-484.000.

Seiko Koki Kabushiki Kaisha: *See—*
Kitai, Kiyoshi; Kobayashi, Masaru; Yonemoto, Tomoo; and Kato, Shogo, 4,211,480, Cl. 354-234.000.

Seitz, Lamont J.; and Fort, Geza, to International Telephone and Telegraph Corporation. Electrical connector test equipment. 4,211,108, Cl. 73-141.0AB.

Seki, Nagataka, to Tokyo Shibaura Denki Kabushiki Kaisha. DC Power source. 4,212,054, Cl. 363-53.000.

Sekihara, Kensuke: *See—*
Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, 4,212,062, Cl. 364-414.000.
Nakaya, Chitose; Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yamamoto, Shinji; Tomura, Teruichi; and Hayakawa, Takayuki, 4,211,926, Cl. 250-445.00T.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Yazawa, Masahide; and Kurihara, Kazuhiko, 4,211,807, Cl. 428-109.000.

Sekiya, Setsuro: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.

Semkina, Novella V.; Bokach, Galina S.; and Zinkovsky, Ivan V. Material for producing pyrometric refractory components, pyrometric refractory component, and process for producing same. 4,211,624, Cl. 204-195.00S.

Sempliner, Arthur T.: *See—*
Teague, Walter D., Jr.; and Sempliner, Arthur T., 4,210,975, Cl. 15-22.00R.

Sentoku, Hideshi: *See—*
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, 4,211,052, Cl. 53-77.000.

Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., to Texaco Inc. Control system for a furfural refining unit receiving heavy sweet charge oil. 4,212,070, Cl. 364-500.000.

Serber, Stephen L.: *See—*
Mueller, Dale A.; and Serber, Stephen L., 4,211,089, Cl. 62-209.000.

Shah, Yatish T.: *See—*
Carr, Norman L.; Schleppy, Ronald, Jr.; and Shah, Yatish T., 4,211,631, Cl. 208-8.0LE.

Shahan, James E., to Transco, Inc. Acoustical panel mounting element. 4,211,046, Cl. 52-506.000.

Shanks, Ian A., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal display devices. 4,211,473, Cl. 350-337.000.

Shapatina, Elizaveta A.: *See—*
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

Sharloe, Steven F.: *See—*
Morgan, Myron B.; and Sharloe, Steven F., 4,211,379, Cl. 248-222.200.

Sharp Kabushiki Kaisha: *See—*
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,211,892, Cl. 179-1.0SM.

Shearing, Herbert J., to Imperial Chemical Industries Limited. Quick-set compositions of hydraulic cement, silica, water, polyisocyanate and polyol. 4,211,680, Cl. 260-29.2TN.

Shell International Research Maatschappij B.V.: *See—*
Austermuhle-Bertola, Helena, 4,211,720, Cl. 260-464.000.

Shell Oil Company: *See—*
Entwistle, Ian D.; and Johnstone, Robert A. W., 4,211,727, Cl. 568-437.000.
Roman, Steven A.; and Soloway, Samuel B., 4,211,789, Cl. 424-285.000.
Roman, Steven A.; and Soloway, Samuel B., 4,211,792, Cl. 424-304.000.
Swanson, Benjamin F., 4,211,106, Cl. 73-38.000.
Szakasits, Julius J.; and Wadham, Thomas C., 4,211,340, Cl. 222-3.000.
Tieman, Charles H., 4,211,780, Cl. 424-246.000.

Shelton, Glenmore L., Jr.: *See—*
Panissidi, Hugo A.; Shelton, Glenmore L., Jr.; and Will, Peter M., 4,211,147, Cl. 91-184.000.

Shephard, Philip C., to I. H. W. Engineering Limited. Seat reclining mechanism. 4,211,451, Cl. 297-362.000.

Shepherd, Robert G., to American Cyanamid Company. Hypolipidemic and antiatherosclerotic novel 4-(aralkyl- and heteroarylalkylamino)phenyl compounds. 4,211,783, Cl. 424-263.000.

Shibata, Shinya: *See—*
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,211,892, Cl. 179-1.0SM.

Shibata, Tatsuo: *See—*
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,211,552, Cl. 75-24.000.

Shibazaki, Kenji: *See—*
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,211,482, Cl. 355-8.000.

Shigematu, Takashi: *See—*
Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.

Shih, Kwang K.: *See—*
Fang, Frank F.; and Shih, Kwang K., 4,211,586, Cl. 148-175.000.

Shimada, Hiroaki, to Kotobuki Sangyo Kabushiki Kaisha. Stock restraining effect adjusting mechanism of a stock guide for use with a rolling mill. 4,211,095, Cl. 72-250.000.

Shimalla, Charles J.: *See—*
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., 4,211,816, Cl. 428-296.000.

Shimansky, Vladimir A.: *See—*
Sakulevich, Faddei J.; Kravchenko, Lev N.; Kozhuro, Lev M.; and Shimansky, Vladimir A., 4,211,041, Cl. 51-131.300.

Shimizu, Hidetoshi: *See—*
Nogami, Takahiro; Shimizu, Hidetoshi; Horie, Mitsuyuki; and Yaji, Yuji, 4,211,312, Cl. 188-273.000.

Shimizu, Munetaka; and Takeda, Yoshimasa, to Copal Company Limited. Paper cutting and perforated line forming device of printer. 4,211,498, Cl. 400-621.000.

Shin-Etsu Polymer Co., Ltd.: *See—*
Sado, Ryoichi; and Nei, Koichi, 4,211,890, Cl. 174-68.500.

Shinkawa, Keiro; Shoyama, Hiroji; and Sodeyama, Chuichi, to Hitachi, Ltd. Mixer circuit arrangement. 4,211,977, Cl. 455-326.000.

Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., to Kennecott Copper Corporation. Method for continuous casting of metallic strands at exceptionally high speeds. 4,211,270, Cl. 164-83.000.

Shintom Kabushiki Kaisha: *See—*
Inoue, Nobutaro, 4,211,976, Cl. 455-344.000.

Shiono, Hidemi: *See—*
Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, 4,212,062; Cl. 364-414.000.
Nakaya, Chitose; Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yamamoto, Shinji; Tomura, Teruichi; and Hayakawa, Takayuki, 4,211,926, Cl. 250-445.00T.

Shionogi & Co., Ltd.: *See—*
Narisada, Masayuki; Tsuji, Teruji; Matsumura, Hiromu; and Nagata, Wataru, 4,211,779, Cl. 424-246.000.

Shipman, Gene H., to Minnesota Mining and Manufacturing Company. Multilayer composite films and method of manufacture thereof. 4,211,825, Cl. 428-483.000.

Short, Edward H., III: *See—*
Witten, John E.; Wood, Loren E.; and Short, Edward H., III, 4,211,334, Cl. 220-89.00A.

Shoyama, Hiroji: *See—*
Shinkawa, Keiro; Shoyama, Hiroji; and Sodeyama, Chuichi, 4,211,977, Cl. 455-326.000.

Shu, Stephen K.; and Squires, W. David, to Del Mar Avionics. Apparatus and method for recording and playing back electrocardial signals. 4,211,238, Cl. 128-700.000.

Shultz, William E., Sr. Seal puller. 4,211,446, Cl. 294-26.000.

Shurgan, Joel: *See—*
Bickford, Elwood D.; and Shurgan, Joel, 4,211,958, Cl. 315-312.000.

Sibalis, Dan. Tampon with a collapsible and invertible shroud. 4,211,225, Cl. 128-285.000.

Sichenzia, James, to Venus Scientific Inc. D.C. to D.C. Converter utilizing resonant inductor to neutralize capacitive losses. 4,212,053, Cl. 363-39.000.

Sickler, Emory J., to J. I. Case Company. Heating system for a revolving cab. 4,211,364, Cl. 237-12.30A.

Sidorova, Galina D.: *See—*
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Sidwell, Jeffrey: *See—*
Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, 4,211,895, Cl. 179-18.00J.

Siegfried AG: *See—*
Thiele, Kurt; Ahmed, Quazi; Scharen, Walter; and Meyer, Jacques, 4,211,551, Cl. 71-116.000.

Siemens Aktiengesellschaft: *See—*
Biethan, Gunter; and Kloeber, Peter, 4,212,013, Cl. 370-30.000.
Eckert, Joachim; and Spirk, Franz, 4,211,946, Cl. 310-212.000.
Fischer, Philipp-Josef; and Reier, Richard, 4,211,494, Cl. 400-124.000.
Grunleitner, Hans; Kogler, Georg; Kohnlein, Hans; and Tschirner, Peter, 4,211,962, Cl. 318-254.000.
Habedank, Klaus-Dieter; and Troebel, Werner, 4,211,906, Cl. 200-330.000.
Muller, Karl-Heinz; Krisch, Burkhard; Rindfleisch, Volker; and Neuendorff, Hans F. R., 4,211,924, Cl. 250-311.000.
Prey, Gerhard, 4,212,060, Cl. 364-200.000.
Ptacnik, Edmund; and Trainer, Carl, 4,211,899, Cl. 179-175.20C.
Stein, Karl-Ulrich; Herbst, Heiner; and Widmann, Dietrich, 4,211,888, Cl. 136-225.000.
Troebel, Werner, 4,211,907, Cl. 200-318.000.
Walter, Karl H., 4,212,010, Cl. 340-784.000.

Sigma Chemical Company: *See—*
Das, Manik L., 4,211,531, Cl. 23-230.00B.

Sigri Elektrographit Gesellschaft mit Beschrankter Haftung: *See—*
Freitag, Gunter; Krahl, Alfred; Ullmann, Gerhard; and Wenzel, Gunter, 4,211,594, Cl. 156-158.000.

Sih, John C., to Upjohn Company, The. Esters of prostacyclin-type compounds. 4,211,879, Cl. 560-53.000.

Silka, Adolf N.: *See—*
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.

Silver, Harold K.: *See—*
Hein, Carl C.; Silver, Harold K.; Spitz, Joseph J.; and Seidler, Donald W., 4,211,326, Cl. 206-484.000.

Simmonds Precision Products, Inc.: *See—*
Forsythe, Arthur M.; Anapol, James H.; and Reich, Zygmund, 4,212,064, Cl. 364-424.000.

Simonelic, George B.: *See—*
Kunka, Bernard P.; and Simonelic, George B., 4,211,350, Cl. 227-8.000.

Sims, Bernard: *See—*
Lodhi, Shahid A.; and Sims, Bernard, 4,211,793, Cl. 424-305.000.

Singer Company, The: *See—*
Graham, Thomas G., 4,211,177, Cl. 112-221.000.
Papajewski, Reinhold; Holl, Helmar; and Schmedtkord, Ulrich, 4,211,373, Cl. 242-20.000.
Peterson, Wesley R., 4,211,178, Cl. 112-258.000.

Sirgo, Valdeko H.: *See—*
Babinski, John P.; Bertelsen, Bruce I.; Raacke, Karl H.; and Sirgo, Valdeko H., 4,211,505, Cl. 406-19.000.

Sistig, Helmut: *See—*
Mueller, Achim; Peetz, Hans-Dieter; Scheeren, Peter; Sistig, Helmut; and Schallenberg, Andreas, 4,211,181, Cl. 118-411.000.

Sivachenko, Eugene W. High strength corrugated metal plate and method of fabricating same. 4,211,504, Cl. 405-284.000.

Skaggs, Boyd T., to Container Corporation of America. Partition. 4,211,355, Cl. 229-15.000.

SKF Industrial Trading and Development Co. B.V.: *See—*
Johansson, Carl E., 4,211,453, Cl. 308-8.200.

Skovgaard, Leif O. Thermal insulating and cushioned bag, especially a carrying bag. 4,211,267, Cl. 150-2.100.

Sleeter, Michael R.; and Dehring, James C., to Owens-Corning Fiberglas Corporation. Pipe testing machine with clamping pressure keyed to hydrostatic test pressure. 4,211,107, Cl. 73-49.600.

Slipchenko, Svetlana L.: *See—*
Konovenko, Grigory M.; Slipchenko, Svetlana L.; Markus, Vladimir M.; and Kasjura, Nina N., 4,211,685, Cl. 260-30.4EP.

Sloan Kettering Institute for Cancer Research: *See—*
Lopez, Carlos; Watanabe, Kyoichi A.; Reichman, Uri; and Fox, Jack J., 4,211,773, Cl. 424-180.000.

Slowinski, Stanislaw; Vasina, Stanislaw; Pasich, Jerzy; Kosek, Jerzy; and Glownia, Stanislaw, to Przedsiegiorstwo Projektowania I Wyposazania Odlewni "Prodlew". Equipment for cooling and separation of castings and moulding sand. 4,211,274, Cl. 164-401.000.

Small Business Administration: *See—*
Naylor, James E., 4,211,496, Cl. 400-124.000.

Small, William. Hydroponic gardening apparatus. 4,211,035, Cl. 47-62.000.

Smiley, Robert A., to Du Pont de Nemours, E. I., and Company. Formaldehyde stabilization of acrylonitrile against color. 4,211,722, Cl. 260-465.300.

Smirnov, Alexandr S.: *See—*
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Smith, Arnold R., to Bell Telephone Laboratories, Incorporated. Method for wiring electrical bays. 4,210,999, Cl. 29-857.000.

Smith, Charles T.: *See—*
Rymarchyk, Nicholas M.; and Smith, Charles T., 4,211,316, Cl. 193-2.00R.

Smith, Edmund H., Jr.: *See—*
Nichols, Lee H., III; and Smith, Edmund H., Jr., 4,211,132, Cl. 83-71.000.

Smith, Harry: *See—*
Buckle, Derek R.; and Smith, Harry, 4,211,791, Cl. 424-304.000.

Smith, Herman W., to Upjohn Company, The. Aromatic analogs of 4,5,13,14-tetradehydro-PGI_1 compounds. 4,211,713, Cl. 260-346.730.

Smith, Herman W., to Upjohn Company, The. 2,2-Difluoro-trans-4,5,13,14-tetrahydro-PGI_1 compounds. 4,211,714, Cl. 260-346.730.

Smith, Herman W., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-3,7-inter-m-phenylene-13,14-didehydro-PGF compounds. 4,211,884, Cl. 568-807.000.

Smith International, Inc.: *See—*
Kellner, Jackson M., 4,211,291, Cl. 175-17.000.

Smith, Jack. Alarm and locking device to prevent theft of an article. 4,211,995, Cl. 340-63.000.

Smith, Joseph S.: *See—*
Akers, Larry D.; Scholl, Charles H.; Smith, Joseph S.; and Williams, Edward A., 4,211,262, Cl. 141-2.000.

Smith, Leslie H., to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,211,878, Cl. 549-78.000.
Smith, Lowell S.; and Brisken, Axel F., to General Electric Company. Front surface matched piezoelectric ultrasonic transducer array with wide field of view. 4,211,948, Cl. 310-322.000.
Smith, Lowell S.: *See—*
Brisken, Axel F.; and Smith, Lowell S., 4,211,949, Cl. 310-322.000.
Smith, Peter: *See—*
Baird, David B.; Costello, Alan T.; Fishwick, Brian R.; McClelland, Robert D.; and Smith, Peter, 4,211,696, Cl. 260-152.000.
Smith, Randall C., to Mesa Engineering, Inc. Dual mode music instrument amplifier. 4,211,893, Cl. 179-1.00A.
Smith, Robin, to Marconi Company Limited, The. Control circuits. 4,211,982, Cl. 328-138.000.
Smith, William. Simulated football game. 4,211,410, Cl. 273-94.000.
SmithKline Corporation: *See—*
Berges, David A., 4,211,703, Cl. 548-112.000.
Smorodinov, Alexandr N.: *See—*
Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K., 4,211,626, Cl. 204-243.00M.
Snyder, David E., to U.S. Industries, Inc. Pressure relief valve. 4,211,250, Cl. 137-514.000.
Sobolewski, Annette M.: *See—*
Richardson, Larry D.; and Sobolewski, Annette M., 4,211,449, Cl. 297-126.000.
Societa Farmaceutici Italia (Farmitalia Carlo Erba S.p.A.): *See—*
Vicario, Gian P.; Penco, Sergio; and Arcamone, Federico, 4,211,864, Cl. 536-17.00A.
Societe Anonyme de Telecommunications: *See—*
Koreicho, Wladimir, 4,211,485, Cl. 356-5.000.
Societe Anonyme Francaise du Ferodo: *See—*
Fenart, Jean-Claude, 4,211,315, Cl. 192-70.270.
Societe Chimique des Charbonnages: *See—*
Hubert, Jacques; and Ory, Jean-Marie, 4,212,005, Cl. 340-603.000.
Societe d'Etude du Radant: *See—*
Chekroun, Claude, 4,212,014, Cl. 343-754.000.
Societe Nationale des Poudres et Explosifs: *See—*
Emeury, Jean-Marie L.; and Girardon, Hubert H., 4,211,874, Cl. 548-304.000.
Societe Nationale Industrielle Aerospatiale: *See—*
Poubeau, Pierre, 4,211,452, Cl. 308-10.000.
Societe pour l'Equipement de Vehicules: *See—*
Poirier d'Ange d'Orsay, Emmanuel J. H., 4,211,196, Cl. 123-439.000.
Sodeyama, Chuichi: *See—*
Shinkawa, Keiro; Shoyama, Hiroji; and Sodeyama, Chuichi, 4,211,977, Cl. 455-326.000.
Soldan, Lyle H.: *See—*
Nissen, Roland N.; and Soldan, Lyle H., 4,211,213, Cl. 126-452.000.
Solodkov, Vyacheslav I.: *See—*
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.
Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; and Zvezdunov, Dmitry A., 4,211,943, Cl. 310-13.000.
Soloway, Samuel B.: *See—*
Roman, Steven A.; and Soloway, Samuel B., 4,211,789, Cl. 424-285.000.
Roman, Steven A.; and Soloway, Samuel B., 4,211,792, Cl. 424-304.000.
Sonetaka, Kazunori; Nishino, Atsushi; and Kimura, Kunio, to Matsushita Electric Industrial Co., Ltd. Supported catalyst for purifying gas and method of manufacturing the same. 4,211,672, Cl. 252-455.00R.
Sony Corporation: *See—*
Tooyama, Akira; Ohkoshi, Akio; Tooyama, Takashi; Yukawa, Takahiro; and Hosono, Takashi, 4,212,030, Cl. 358-67.000.
Sorensen, Fred L.: *See—*
Puhak, Peter G.; Bilynsky, John D.; and Sorensen, Fred L., 4,211,465, Cl. 339-144.00T.
Sorokin, German P.: *See—*
Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U., 4,211,916, Cl. 371-15.000.
Souliere, Ernest G.: *See—*
Hunt, Ronald E.; and Souliere, Ernest G., 4,211,499, Cl. 400-637.600.
Southwire Company: *See—*
Berry, Milton E.; and Pariani, Ronald L., 4,211,555, Cl. 75-72.000.
Ward, George C., 4,211,271, Cl. 164-87.000.
Spahrkas, Heinrich; Muller, Josef; Komarek, Ernst; and Luck, Wolfhard, to Bayer Aktiengesellschaft. Chrome-tanning. 4,211,529, Cl. 8-94.260.
Spector, George: *See—*
Reyes, Daniel; and Spector, George, 4,212,007, Cl. 340-691.000.
Speil, Peter, to BBC Brown Boveri & Company Limited. Blade structure for fluid flow rotary machine. 4,211,516, Cl. 416-191.000.
Spencer Wright Industries, Inc.: *See—*
Price, Herbert B., 4,211,176, Cl. 112-79.00R.
Sperry Corporation: *See—*
Decoene, Frans J. G. C., 4,211,059, Cl. 56-94.000.
Spirk, Franz: *See—*
Eckert, Joachim; and Spirk, Franz, 4,211,946, Cl. 310-212.000.
Spitz, Joseph J.: *See—*
Hein, Carl C.; Silver, Harold K.; Spitz, Joseph J.; and Seidler, Donald W., 4,211,326, Cl. 206-484.000.
Springmann, Helmut, to Linde Aktiengesellschaft. Compression of nitrogen overhead from high pressure column in tractionation of air. 4,211,544, Cl. 62-30.000.
SPS Technologies, Inc.: *See—*
Tambini, Angelo L., 4,211,120, Cl. 73-761.000.
Squires, W. David: *See—*
Shu, Stephen K.; and Squires, W. David, 4,211,238, Cl. 128-700.000.
Sramek, Elmer D., to Redington Inc. Cartoner for elongated articles and components thereof. 4,211,054, Cl. 53-502.000.
Stachnik, Joseph: *See—*
Jamgochian, Ralph; Oley, Leonard; Stachnik, Joseph; and Tutella, Alfred L., 4,211,342, Cl. 222-129.400.
Stackpole Components Company: *See—*
Quigley, Thomas J., 4,211,900, Cl. 200-5.00R.
Quigley, Thomas J., 4,211,905, Cl. 200-295.000.
Stahl, Edward L.; Sanders, Ellsworth E.; and Blair, George C., to Pinckney Molded Plastics, Inc. Stack and nest container. 4,211,327, Cl. 206-505.000.
Stalherm, Dieter: *See—*
Bocsanczy, Janos; and Stalherm, Dieter, 4,211,611, Cl. 202-262.000.
Standard Oil Company (Indiana): *See—*
Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,211,692, Cl. 260-45.70P.
Bertolacini, Ralph J.; and Yu, Albert P., 4,211,634, Cl. 208-59.000.
Hoff, Glen R., 4,211,671, Cl. 252-431.00N.
Horsfield, Sydney G.; Kuhlmann, George E.; and Bemis, Alan G., 4,211,881, Cl. 562-416.000.
Standard Telephones and Cables Limited: *See—*
Drewery, John O., 4,212,028, Cl. 358-11.000.
Stanley, Richard D.: *See—*
Kubach, John S.; and Stanley, Richard D., 4,211,224, Cl. 128-283.000.
Starcevic, Mihailo, to BBC Brown Boveri & Company Limited. Arrangement for supporting vertical-axis machine housing. 4,211,383, Cl. 248-603.000.
Stauber, Ronald C.: *See—*
Lillegard, Thomas R.; Rollins, Richard A.; and Stauber, Ronald C., 4,211,380, Cl. 248-229.000.
Steelman, Carrol D.; and Chambers, Doyle M., to Louisiana State University Board of Supervisors. Use of carbothiolates as insecticides. 4,211,778, Cl. 424-244.000.
Steensma, Peter D., to International Telephone and Telegraph Corporation. Method and apparatus to provide a secure optical communication system. 4,211,468, Cl. 350-96.100.
Steffen, Klaus-Dieter, to Dynamit Nobel Aktiengesellschaft. Process of preparing 3-bromophthalide. 4,211,710, Cl. 260-343.30R.
Steigerwald, Robert L., to General Electric Company. High efficiency circuit for rapidly charging batteries. 4,211,969, Cl. 320-14.000.
Stein, Karl-Ulrich; Herbst, Heiner; and Widmann, Dietrich, to Siemens Aktiengesellschaft. Arrangement with several thermal elements in series connection. 4,211,888, Cl. 136-225.000.
Stein, Philip C. Centrifugally compensated seal for sealing between concentric shafts. 4,211,424, Cl. 277-25.000.
Steinke, Leo: *See—*
Glauner, Jens; Kauhl, Gunther; Pflug, Hannes; Steinke, Leo; and Weyl, Helmut, 4,211,204, Cl. 123-145.00A.
Stenling, Lars, to Nitro Consult AB. Measuring and recording device for monitoring vibrations caused by blasting. 4,212,086, Cl. 367-178.000.
Stenzenberger, Horst, to Technochemie GmbH Verfahrenstechnik. Thermosetting imide resins from dihydrazide of dicarboxylic acid. 4,211,860, Cl. 528-312.000.
Stenzenberger, Horst, to Technochemie GmbH Verfahrenstechnik. Thermosetting imide resins from amino acid hydrazide. 4,211,861, Cl. 528-322.000.
Stepanov, Anatoly M.: *See—*
Vasilinina, Olga V.; Kidyashev, Jury K.; Potapov, Valery N.; Ryabikov, Stanislav V.; Stepanov, Anatoly M.; and Strebkov, Dmitry S., 4,211,581, Cl. 136-89.0CA.
Stett.ner, Robert L.: *See—*
Adleman, George L.; and Stettiner, Robert L., 4,212,009, Cl. 340-728.000.
Steudten, Friedrich; and Koppl, Franz, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for machining silicon rods and tubes by abrasion. 4,211,040, Cl. 51-42.000.
Steward, Raymond G.; Boyd, Stuart G.; and Civardi, Frank P., to Inmont Corporation. Method of making perforated contoured trim panel. 4,211,590, Cl. 156-79.000.
Stewart, Donald M.: *See—*
Heimburg, Richard W.; and Stewart, Donald M., 4,210,995, Cl. 29-157.00R.
Stewart Stamping Corporation, a division of Insilco Corp.: *See—*
Wolfthal, Maurice, 4,211,462, Cl. 339-103.00M.
Stewart, William J., to Plessey Handel und Investments AG. Optical fibre connector. 4,211,470, Cl. 350-96.210.
Stierlen-Maquet Aktiengesellschaft: *See—*
Junginger, Klaus M.; and Kieferle, Hermann, 4,211,998, Cl. 340-171.00R.
Stiles, Kenneth M., to Air Logistics Corporation. Production of optical fiber cables. 4,211,591, Cl. 156-83.000.
Stog, Wilhelm, to WSW Stahl- und Wasserbau GmbH. Device for collecting emissions rising from a quenching car of a battery of coke ovens. 4,211,612, Cl. 202-263.000.

Stoll, Kurt; Hinder, Herbert; and Corpus, Nikolaus, to Heinrich Prinkmann Anlagenvernachtung. Laboratory hood. 4,211,155, Cl. 98-115.0LH.
Stoltzman, Gary L. Portable golf ball washer. 4,210,974, Cl. 15-21.00A.
Stone, Kirby L.: *See—*
Wisbey, Jerry D.; and Stone, Kirby L., 4,211,255, Cl. 137-625.480.
Stoody, William R. Sack retention and pressurizing for aerosol type dispensers. 4,211,344, Cl. 222-131.000.
Story, Albert G., to Union Carbide Corporation. Ectating ring shirring method and apparatus. 4,210,981, Cl. 17-45.000.
Stotz, Manfred: *See—*
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, 4,211,831, Cl. 429-78.000.
Stowell, William R. Method of creating an electric field for shark repellent. 4,211,980, Cl. 455-40.000.
Strange, Donald R.: *See—*
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,212,061, Cl. 364-414.000.
Strasser, Peter. Clamping frame for making rectangular frames, particularly picture frames. 4,211,391, Cl. 269-41.000.
Strebkov, Dmitry S.: *See—*
Vasilinina, Olga V.; Kidyashev, Jury K.; Potapov, Valery N.; Ryabikov, Stanislav V.; Stepanov, Anatoly M.; and Strebkov, Dmitry S., 4,211,581, Cl. 136-89.0CA.
Streicher, Max, to Fordertechnik Streicher GmbH. Eccentric disc pump. 4,211,521, Cl. 418-48.000.
Streiff, Felix: *See—*
Grosz-Roll, Friedrich; Schutz, Gerhard; and Streiff, Felix, 4,211,277, Cl. 165-109.00T.
Strock, Alvin E. Oral health and hygiene kit. 4,211,330, Cl. 206-581.000.
Strotkotter, Heinrich: *See—*
Rocchio, Rodolfo; Naumann, Fritz; and Strotkotter, Heinrich, 4,211,200, Cl. 123-445.000.
Sturtz, Charles R., Jr., to Clark Equipment Company. Circulating flow hydraulic pilot system. 4,211,256, Cl. 137-625.640.
Su, Tien-Kuei: *See—*
Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., 4,211,725, Cl. 260-583.00P.
Subbteo Sports Games Limited: *See—*
Tickle, Roy P., 4,211,408, Cl. 273-85.00R.
Sugalski, Raymond K., to General Electric Company. Battery charger adapter. 4,211,968, Cl. 320-2.000.
Sugawara, Yoshitaka; and Kamei, Tatsuya, to Hitachi, Ltd. Solid-state switching circuit employing photon coupling suitable for construction in form of integrated circuit. 4,212,024, Cl. 357-38.000.
Sugio, Akitoshi; and Kawaki, Takeo, to Mitsubishi Gas Chemical Company, Inc. Method for producing polyphenylene oxides. 4,211,857, Cl. 528-215.000.
Sugita, Mitsuyuki: *See—*
Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirobumi, 4,211,947, Cl. 310-312.000.
Sullivan, C. Gardner, II: *See—*
Hedges, Walter P.; and Sullivan, C. Gardner, II, 4,211,933, Cl. 307-35.000.
Sulzer Brothers Ltd.: *See—*
Baumgartner, Peter; and Kuhne, Robert, 4,211,192, Cl. 123-90.600.
Grosz-Roll, Friedrich; Schutz, Gerhard; and Streiff, Felix, 4,211,277, Cl. 165-109.00T.
Suminoe, Taro; Ito, Tetsuo; and Masuhara, Eiichi, to Japan Synthetic Rubber Co., Ltd. Dental hydraulic investment. 4,211,682, Cl. 260-29.300.
Sumitomo Aluminium Smelting Company, Limited: *See—*
Yamada, Koichi; Yoshihara, Masao; Ishida, Takahiro; and Sato, Kazuo, 4,211,667, Cl. 252-313.00R.
Sumitomo Chemical Company, Limited: *See—*
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.
Kato, Yasuyuki; and Moritani, Masahiko, 4,211,742, Cl. 264-216.000.
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Asian Industry Co., Ltd. Fuel supply apparatus for internal combustion engines. 4,211,201, Cl. 12-463.000.
Sunami, Hideo, to Hitachi, Ltd. Method for fabricating a field effect transistor. 4,210,993, Cl. 29-571.000.
Sunlite Plastics, Inc.: *See—*
Ostoich, Eli, 4,211,741, Cl. 264-173.000.
Superior Valve Company: *See—*
Yocum, William C.; and Hughes, David E., 4,211,386, Cl. 251-122.000.
Sutter, David L., to Hussey Manufacturing Company, Inc. Release mechanism for rows of collapsible seats. 4,211,450, Cl. 297-232.000.
Sutz, Richard K. Wind machine system for pushing and lifting loads and having improved counterbalancing. 4,211,126, Cl. 74-590.000.
Suzuki, Isao; Yomogida, Toshihiko; and Kato, Sadamu, to Toyoda-Koki Kabushiki-Kaisha. Programmable sequence controller with auxiliary function decoding circuit. 4,212,081, Cl. 364-900.000.
Suzuki, Kanekichi: *See—*
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and Ishii, Kyoko, administrator, 4,211,118, Cl. 73-592.000.
Suzuki, Katsuhito: *See—*
Asano, Hideki; Kokaku, Hiroyoshi; Suzuki, Katsuhito; and Saida, Kenichi, 4,211,690, Cl. 260-42.460.
Suzuki, Masaharu; Taniguchi, Takashi; and Yamagishi, Hideki, to Toray Industries, Inc. Tintable coatings and articles having such coatings. 4,211,823, Cl. 428-412.000.
Suzuki, Nobuo; Sashihara, Kenji; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Method of producing light-sensitive composition for use in thermally developable light-sensitive elements and elements so produced. 4,211,839, Cl. 430-619.000.
Swalls, Billy J.: *See—*
Rickert, Raymond E.; and Swalls, Billy J., 4,211,251, Cl. 137-565.000.
Swanson, Arthur P. Golf club. 4,211,416, Cl. 273-164.000.
Swanson, Benjamin F., to Shell Oil Company. Estimates of permeability from capillary pressure measurements. 4,211,106, Cl. 73-38.000.
Sway, Boris. Method of and apparatus for treating water. 4,211,649, Cl. 210-37.00R.
Sweet, Donald B., to Material Control, Inc. Level control sensor switch mechanism. 4,211,966, Cl. 318-482.000.
Swenson, Donald A., to United States of America, Energy. Alternating phase focused linacs. 4,211,954, Cl. 315-5.410.
Swiss Aluminium Ltd.: *See—*
Morianz, Josef V., 4,211,275, Cl. 164-440.000.
Pryor, Michael J.; Popplewell, James M.; and Anthony, William H., 4,211,827, Cl. 428-654.000.
Switall, Thomas G., to Ryco Graphic Manufacturing, Inc. Spray dampening system for offset printing with page control assembly. 4,211,258, Cl. 137-862.000.
Sybron Corporation: *See—*
Mehra, Ravinder C.; and Hepinstall, James T., Jr., 4,211,346, Cl. 222-205.000.
Woltosz, Stanley N., 4,211,230, Cl. 128-303.170.
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M. Method for processing lead storage-battery scrap. 4,211,557, Cl. 75-77.000.
Sykes, Willard D. Wire spring forming machine. 4,211,100, Cl. 72-131.000.
Symonds, David G.: *See—*
Benson, Nigel C.; Hughes, John M. F.; Kingslake, Denis; and Symonds, David G., 4,210,987, Cl. 26-89.000.
Symons, Carl R.: *See—*
Kwasnoski, Daniel; and Symons, Carl R., 4,211,608, Cl. 201-41.000.
Syngas Company: *See—*
Akell, Robert B.; Muller, Werner C.; and Pick, Rudolph, 4,211,638, Cl. 208-180.000.
Synkoski, Richard: *See—*
Brummel, Allan J.; Hodur, Neil R.; and Synkoski, Richard, 4,211,476, Cl. 351-160.00R.
Szabo, Imre Z.; Nagy, Kornel; and Finta, Csaba, to Magyar Vagon-es Gepgyar. Method for measuring the damping coefficient of torsional-vibration dampers. 4,211,105, Cl. 73-11.000.
Szakasits, Julius J.; and Wadham, Thomas C., to Shell Oil Company. Catalyst regeneration. 4,211,340, Cl. 222-3.000.
Szpindel, Motek: *See—*
Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, 4,211,895, Cl. 179-18.00J.
Tabak, Samuel A.; and Morrison, Roger A., to Mobil Oil Corporation. Manufacture of benzene, toluene and xylene. 4,211,886, Cl. 585-321.000.
Taga, Yoshihito: *See—*
Yoshida, Nagatoshi; and Taga, Yoshihito, 4,211,909, Cl. 219-10.55R.
Taguchi, Tadashi; Fujikawa, Noboru; Kohno, Mitsuo; Yoshitake, Katsumi; and Satake, Kunio, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing image using laminated oriented cover film. 4,211,560, Cl. 430-313.000.
Taira, Toshiji, to Nippondenso Co., Ltd. Electric horn. 4,212,001, Cl. 340-388.000.
Tait, Scott J.: *See—*
Friedman, Alexander A.; and Tait, Scott J., 4,211,647, Cl. 210-17.000.
Tajima, Yusuke, to Tokyo Shibaura Denki Kabushiki Kaisha. Strip line coupler having spaced ground plate for increased coupling characteristic. 4,211,986, Cl. 333-116.000.
Takahashi, Kazuhisa: *See—*
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,212,019, Cl. 357-13.000.
Takahashi, Kazuo: *See—*
Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,211,835, Cl. 430-403.000.
Takahashi, Nobuaki, to Victor Company of Japan, Limited. Cross-talk component cancellation circuit in an angle-modulated wave signal transmission system. 4,211,978, Cl. 455-295.000.
Takamiya, Saburo: *See—*
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,212,019, Cl. 357-13.000.
Takara Shuzo Co., Ltd.: *See—*
Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, 4,211,866, Cl. 536-53.000.
Takashima, Tadao: *See—*
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,211,552, Cl. 75-24.000.
Takasuna, Tsuneyoshi: *See—*
Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, 4,211,276, Cl. 165-1.000.

Takeda Chemical Industries, Ltd.: *See—*
Okada, Hiroaki; Yamazaki, Iwao; and Yashiki, Takatsuka, 4,211,769, Cl. 424-177.000.

Takeda, Yoshimasa: *See—*
Shimizu, Munetaka; and Takeda, Yoshimasa, 4,211,498, Cl. 400-621.000.

Takeda, Yuji: *See—*
Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.

Takeuchi, Yuzo: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.

Tamai, Masayoshi, to Fuji Xerox Co., Ltd. Deflection electrode assembly for multi-nozzle ink jet printers. 4,212,017, Cl. 346-75.000.

Tamanaga, Shinichi: *See—*
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.

Tambini, Angelo L., to SPS Technologies, Inc. Tightening apparatus. 4,211,120, Cl. 73-761.000.

Tamburelli, Giovanni, to CSELT—Centro Studi e Laboratori Telecomunicazioni S.p.A. Fiber-optical system for transmitting multilevel signals. 4,211,929, Cl. 250-55.000.

Tanaka, Junzo: *See—*
Kusunoki, Shigeru; and Tanaka, Junzo, 4,211,910, Cl. 219-10.55D.

Tanaka, Tomio; and Yamano, Rinzo, to Kubota, Ltd. Offset tractor. 4,211,298, Cl. 180-75.000.

Tanaka, Toru: *See—*
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, 4,211,882, Cl. 562-416.000.

Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, to IRI-E Kosan Corporation; and Nippon Steel Corporation. Method for processing molten slag. 4,211,552, Cl. 75-24.000.

Taniguchi, Takashi: *See—*
Suzuki, Masaharu; Taniguchi, Takashi; and Yamagishi, Hideki, 4,211,823, Cl. 428-412.000.

Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, to Sharp Kabushiki Kaisha. Synthetic-speech calculators. 4,211,892, Cl. 179-1.0SM.

Taniwaki, Genshi, to Kongo Co., Ltd. Door assembly. 4,211,039, Cl. 49-361.000.

Tapper, Robert. Iontophoretic burn-protection method. 4,211,222, Cl. 128-207.210.

Tarzia, Giorgio; and Panzone, Gianbattista, to Gruppo Lepetit S.p.A. Aminopyrrole derivatives. 4,211,708, Cl. 260-326.460.

Tarzia, Giorgio; and Panzone, Gianbattista, to Gruppo Lepetit S.p.A. Aminopyrrole derivatives. 4,211,709, Cl. 260-326.470.

Tate, Clarence R., to Thalatta, Inc. Process of microencapsulation and products thereof. 4,211,668, Cl. 252-316.000.

Taubenmann, Peter, to Krauss-Maffei Aktiengesellschaft. Apparatus for the feeding (metering) of liquid synthetic-resin components. 4,211,345, Cl. 222-134.000.

Tausig, Wayne R., to United States of America, Navy. Breakaway pin release. 4,211,502, Cl. 403-324.000.

Tawse, Ian S., to Gen-Tech, Inc. Multi-voltage and multi-frequency alternator/generator of modular construction. 4,211,945, Cl. 310-112.000.

Teague, Walter D., Jr.; and Sempliner, Arthur T. Fluid line and connection for fluid-driven appliance. 4,210,975, Cl. 15-22.00R.

Technical Operations, Incorporated: *See—*
Parsons, George W., Jr.; and Munro, John J., III, 4,211,928, Cl. 250-497.000.

Technochemie GmbH Verfahrenstechnik: *See—*
Stenzenberger, Horst, 4,211,860, Cl. 528-312.000.
Stenzenberger, Horst, 4,211,861, Cl. 528-322.000.

Tedrow, Joe E. Tool box accessory cabinet. 4,211,455, Cl. 312-198.000.

Teitel, Robert J. Hydrogen supply method. 4,211,537, Cl. 48-191.000.

Tekma Kinomat S.p.A.: *See—*
Camardella, Giuseppe, 4,211,913, Cl. 219-56.220.

Tektronix, Inc.: *See—*
Reed, Douglas A., 4,211,603, Cl. 156-659.100.

Telecommunications Radioelectrique et Telephoniques T.R.T.: *See—*
Ferrieu, Gilbert M. M., 4,211,896, Cl. 179-18.0FA.

Temkin, Naum E.: *See—*
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.

Templeton Coal Co., Inc.: *See—*
Rickert, Raymond E.; and Swalls, Billy J., 4,211,251, Cl. 137-565.000.

Teramura, Hiroichi: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,035, Cl. 358-260.000.
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,036, Cl. 358-261.000.

Texaco Inc.: *See—*
Lewellen, Philip C.; Gates, Walter C., Jr.; and Duranleau, Roger G., 4,211,673, Cl. 252-462.000.
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,212,070, Cl. 364-500.000.
Westbrook, Clifton W.; Parcell, Lloyd J.; Claytor, Gary L.; and Klock, Byron V., 4,211,646, Cl. 210-15.000.

Texas Instruments Incorporated: *See—*
Rao, G. R. Mohan, 4,212,083, Cl. 365-154.000.

Textron, Inc.: *See—*
Scott, George W., 4,210,985, Cl. 24-205.16R.

Th. Goldschmidt AG: *See—*
Kollmeier, Hans-Joachim; and Rossmy, Gerd, 4,211,849, Cl. 521-164.000.

Thackery, Russell H. Log splitting apparatus. 4,211,265, Cl. 144-194.000.

Thalatta, Inc.: *See—*
Tate, Clarence R., 4,211,668, Cl. 252-316.000.

Thatcher, Arthur K.; and McCarter, Ed R., to Thatcher, Arthur K. Computer controlled sonic fuel system. 4,211,199, Cl. 123-445.000.

Thelwell, William H.: *See—*
Fenn, Cyril P.; and Thelwell, William H., 4,211,131, Cl. 83-56.000.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH. Mobile apparatus for the continuous replacement of an old track by a new track. 4,211,170, Cl. 104-2.000.

Thibault, Annie: *See—*
Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, 4,211,772, Cl. 424-180.000.

Thiele, Kurt; Ahmed, Quazi; Scharen, Walter; and Meyer, Jacques, to Siegfried AG. Herbicide. 4,211,551, Cl. 71-116.000.

Thielke, John F.: *See—*
Pilat, Michael J.; Powell, Edward B., Jr.; and Thielke, John F., 4,211,116, Cl. 73-421.50A.

Thievessen, Karl: *See—*
Weiss, Peter; and Thievessen, Karl, 4,211,375, Cl. 242-81.000.

Thomae, Martin H.: *See—*
Ross, James W., Jr.; Amass, Charles E.; Baer, Charles S.; and Thomae, Martin H., 4,211,623, Cl. 204-195.00M.

Thomas, Charles W., Jr., to Furman, Leonard, a part interest. Air/fuel mixing arrangement for an internal combustion engine. 4,211,198, Cl. 123-592.000.

Thomas, Robert C. Water reclamation process. 4,211,650, Cl. 210-44.000.

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Thomas, Robert C. Water reclamation process. 4,211,652, Cl. 210-44.000.

Thompson, Teresa J.: *See—*
Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., 4,211,725, Cl. 260-583.00P.

Thomson-Brandt: *See—*
Crepin, Roger, 4,211,378, Cl. 244-3.220.

Thomson-CSF: *See—*
Massies, Jean; and Nuyen, Tronc L., 4,211,587, Cl. 148-187.000.

Thornberry, William E.: *See—*
Bresson, Clarence R.; and Thornberry, William E., 4,211,013, Cl. 33-147.00R.

Thorsell, Roland H.; and Pyle, Stoddard H., to Excor, Inc. Self-aligning fence for radial arm saw. 4,211,134, Cl. 83-471.300.

Thyssen Industrie AG: *See—*
Prischmann, Karl H., 4,211,260, Cl. 138-143.000.

Tickle, Roy P., to Subbteo Sports Games Limited. Figure unit for sports games. 4,211,408, Cl. 273-85.00R.

Tieman, Charles H., to Shell Oil Company. 2,2-(Thiobis(nitromethylidyne))bis(tetrahydro-2H-1,3-thiazine) and use. 4,211,780, Cl. 424-246.000.

TII Corporation: *See—*
Napiorkowski, John, 4,212,047, Cl. 361-124.000.

Tile Council of America, Inc.: *See—*
Wagner, Herman B.; and Ellis, Jeffrey R., 4,211,572, Cl. 106-90.000.

Timber Conversion, Inc.: *See—*
Frey, Lawrence A.; Harrison, Robert E.; and McGriff, James E., 4,211,389, Cl. 24-269.000.

Timko, Joseph M., to Upjohn Company, The. Spironolactone process. 4,211,701, Cl. 260-239.570.

Tioxide Group Limited: *See—*
Massey, Frederick, 4,211,266, Cl. 150-1.000.

Tobari, Shizen; and Nakano, Mariko, to Toyo Roshi Kaisha Ltd. Test composition, method and a test stick for detection of chloride ion in cow's milk. 4,211,532, Cl. 23-231.000.

Tobitsuka, Junzo: *See—*
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,211,550, Cl. 71-89.000.

Todavchich, Zoltan-Ivan I.: *See—*
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.

Todd, Mike J.: *See—*
Johnson, Richard C.; Kafer, Otto R.; and Todd, Mike J., 4,210,978, Cl. 15-320.000.

Toder, Ilya A.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Danilov, Leonid I.; and Pinsky, Gennady I., 4,211,101, Cl. 72-247.000.

Tojo, Tetsuo: *See—*
Matsuda, Akira; Tojo, Tetsuo; and Iwata, Kazuo, 4,211,852, Cl. 525-240.000.

Tokar, Joseph C.; and Janezich, Frank A., to Donaldson Company, Inc. Air cleaner with replaceable filter element. 4,211,543, Cl. 55-485.000.

Tokyo Denryoki Kabushiki Kaisha: *See—*
Andow, Fumio; Matsushima, Tetsuo; and Okamoto, Eiichi, 4,212,046, Cl. 361-80.000.

Tokyo Electric Co., Ltd.: *See—*
Kuno, Shiro; and Nishimura, Yoshiharu, 4,212,074, Cl. 364-567.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Andow, Fumio; Matsushima, Tetsuo; and Okamoto, Eiichi, 4,212,046, Cl. 361-80.000.
Aoki, Kazuhide; and Kawagai, Kenji, 4,211,942, Cl. 307-355.000.
Kitamura, Hiroyuki; Hosokawa, Yorio; and Fukasawa, Katsumi, 4,212,056, Cl. 363-96.000.
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and Ishii, Kyoko, administrator, 4,211,118, Cl. 73-592.000.
Seki, Nagataka, 4,212,054, Cl. 363-53.000.
Tajima, Yusuke, 4,211,986, Cl. 333-116.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Hirasawa, Masataka; Hashimoto, Akira; and Yamazaki, Haruji, 4,212,025, Cl. 357-51.000.
Inomata, Koichiro; and Yamada, Masakazu, 4,211,585, Cl. 148-31.570.
Kohyama, Susumu, 4,211,937, Cl. 307-221.00D.
Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,212,059, Cl. 364-200.000.
Tsuchida, Hiroaki, 4,211,902, Cl. 200-148.00R.

Tomar, Julius, to Home of Champions. Game ball. 4,211,407, Cl. 273-60.00B.

Tompkins, Russell E.: *See—*
Alley, Robert P.; Haller, Theodore R.; and Tompkins, Russell E., 4,211,957, Cl. 315-276.000.

Tomura, Teruichi: *See—*
Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, 4,212,062, Cl. 364-414.000.
Nakaya, Chitose; Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yamamoto, Shinji; Tomura, Teruichi; and Hayakawa, Takayuki, 4,211,926, Cl. 250-445.00T.

Toomey, Gerald P.; Grove, John L.; and Fries, John R., to JLG Industries, Inc. Solar energy collector and transfer apparatus. 4,211,211, Cl. 126-439.000.

Tooyama, Akira; Ohkoshi, Akio; Tooyama, Takashi; Yukawa, Takahiro; and Hosono, Takashi, to Sony Corporation. Beam index color cathode ray tube. 4,212,030, Cl. 358-67.000.

Tooyama, Takashi: *See—*
Tooyama, Akira; Ohkoshi, Akio; Tooyama, Takashi; Yukawa, Takahiro; and Hosono, Takashi, 4,212,030, Cl. 358-67.000.

Toppan Printing Co. Ltd.: *See—*
Ohno, Yoshio, 4,211,618, Cl. 204-11.000.

Toray Industries, Inc.: *See—*
Suzuki, Masaharu; Taniguchi, Takashi; and Yamagishi, Hideki, 4,211,823, Cl. 428-412.000.
Wada, Osamu; and Kusakari, Naohiko, 4,211,858, Cl. 528-272.000.

Torrington, Leslie A., to RCA Corporation. Video disc player having adjustable end-of-play switch. 4,211,421, Cl. 274-9.00B.

Tottori Sanyo Electric Co., Ltd.: *See—*
Yoshida, Nagatoshi; and Taga, Yoshihito, 4,211,909, Cl. 219-10.55R.

Tourman, Alain L.: *See—*
Legros, Francis R.; and Tourman, Alain L., 4,211,368, Cl. 239-315.000.

Towmotor Corporation: *See—*
Clason, Frank L., 4,211,314, Cl. 192-4.00A.

Toyama, Jin-Ichi; and Kawai, Masaki, to Hitachi, Ltd. Device for controlling rotational speed of electric motor. 4,211,965, Cl. 318-341.000.

Toyama, Kozo: *See—*
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.

Toyo Roshi Kaisha Ltd.: *See—*
Tobari, Shizen; and Nakano, Mariko, 4,211,532, Cl. 23-231.000.

Toyoda-Koki Kabushiki-Kaisha: *See—*
Suzuki, Isao; Yomogida, Toshihiko; and Kato, Sadamu, 4,212,081, Cl. 364-900.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Furukawa, Haruki; Usami, Susumu; and Nakaho, Junichi, 4,211,432, Cl. 280-808.000.
Hattori, Kyo, 4,211,074, Cl. 60-276.000.
Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.
Nogami, Takahiro; Shimizu, Hidetoshi; Horie, Mitsuyuki; and Yaji, Yuji, 4,211,312, Cl. 188-273.000.
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.
Yasumatsu, Jun, 4,211,377, Cl. 242-107.200.

Trainer, Carl: *See—*
Ptacnik, Edmund; and Trainer, Carl, 4,211,899, Cl. 179-175.20C.

Trankle, Richard A., to Roberts & Porter, Inc. Backing sheet. 4,211,808, Cl. 428-131.000.

Transco, Inc.: *See—*
Shahan, James E., 4,211,046, Cl. 52-506.000.

Travaux et Produits Routiers Societe a Responsabilite Limitee: *See—*
Dortu, Pierre, 4,212,071, Cl. 364-505.000.

Travis, Terence: *See—*
Hannigan, Noreen A.; and Travis, Terence, 4,211,483, Cl. 355-14.00R.

Trenkle, Robert W.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.

Trenkler, Werner, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Swingable searchlight for vehicles, especially passenger vehicles. 4,212,050, Cl. 362-65.000.

Trinkaus, Winfried: *See—*
Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,211,768, Cl. 424-95.000.

Trio Kabushiki Kaisha: *See—*
Tsuchiya, Yoichiro; and Kyoya, Kazuhiro, 4,211,356, Cl. 229-16.00R.

Troebel, Werner, to Siemens Aktiengesellschaft. Setting mechanism with detent steps for tripping devices of electrical switch gear. 4,211,907, Cl. 200-318.000.

Troebel, Werner: *See—*
Habedank, Klaus-Dieter; and Troebel, Werner, 4,211,906, Cl. 200-330.000.

Trutzschler GmbH & Co. KG: *See—*
Erben, Ludwig, 4,211,935, Cl. 307-118.000.

TRW Inc.: *See—*
Colletti, John B.; and Howell, Forrest W., 4,211,152, Cl. 92-168.000.

Tscheulin, Guenther: *See—*
Hofer, Kurt; Moesch, Rudolf; and Tscheulin, Guenther, 4,211,731, Cl. 260-932.000.

Tschirner, Peter: *See—*
Grunleitner, Hans; Kogler, Georg; Kohnlein, Hans; and Tschirner, Peter, 4,211,962, Cl. 318-254.000.

Tsuchida, Hiroaki, to Tokyo Shibaura Electric Co., Ltd. Apparatus for phase switching in pumping-up power station. 4,211,902, Cl. 200-148.00R.

Tsuchiya, Yoichiro; and Kyoya, Kazuhiro, to Trio Kabushiki Kaisha. Buffered package. 4,211,356, Cl. 229-16.00R.

Tsuji, Teruji: *See—*
Narisada, Masayuki; Tsuji, Teruji; Matsumura, Hiromu; and Nagata, Wataru, 4,211,779, Cl. 424-246.000.

Tsuji, Yoshiyuki: *See—*
Nagano, Takeshi; Goto, Motoo; and Tsuji, Yoshiyuki, 4,211,556, Cl. 75-74.000.

Tsukada, Naoshi: *See—*
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.

Tsukushi, Masanori; Kashimura, Katsuichi; Koyanagi, Osamu; Yoshioka, Yoshio; and Hirasawa, Kunio, to Hitachi, Ltd. Electromagnetic puffer type gas circuit breaker. 4,211,903, Cl. 200-148.00D.

Tsuprov, Sergei A.: *See—*
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

Tsybukov, Igor K.: *See—*
Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K., 4,211,626, Cl. 204-243.00M.

Tucker, Phillip C., to Kartridg Pak Co., The. Cut-off device for chub machines. 4,211,051, Cl. 53-138.00A.

Tung, Shao E. Process for removal of sulfur dioxide from gaseous mixtures. 4,211,761, Cl. 423-539.000.

Tuovinen, Frans H.: *See—*
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.

Turetsky, Isadore. Filter-purifier cartridge. 4,211,660, Cl. 210-315.000.

Turnbull, John C.; and Yoder, Benjamin F., to RCA Corporation. Method for making an indirectly-heated cathode assembly. 4,210,988, Cl. 29-25.150.

Tutella, Alfred L.: *See—*
Jamgochian, Ralph; Oley, Leonard; Stachnik, Joseph; and Tutella, Alfred L., 4,211,342, Cl. 222-129.400.

Twardy, Harald; and Lo, Roger, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Device for the thermal decomposition of liquid fuels. 4,211,072, Cl. 60-203.000.

Tyagunov, Boris I.: *See—*
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Tyree, Lewis, Jr. Systems for supplying tanks with cryogen. 4,211,085, Cl. 62-48.000.

Uchida, Kuniharu: *See—*
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and Ishii, Kyoko, administrator, 4,211,118, Cl. 73-592.000.

Uchida, Yasuo: *See—*
Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, 4,211,558, Cl. 430-359.000.

Ueno, Takahiro. Method for driving a vehicle driven by an internal combustion engine. 4,211,083, Cl. 60-626.000.

Uetani, Hirofumi: *See—*
Kanetou, Yuuji; and Uetani, Hirofumi, 4,211,921, Cl. 250-202.000.

Ueyama, Takehiko; Nishizawa, Masahiro; Odaka, Yoshiyuki; and Matsuda, Hiromi, to Hitachi, Ltd. Light exposing prism system for use in forming phosphor plane of color picture tube. 4,211,477, Cl. 354-1.000.

Ugon, Michel, to Compagnie Internationale pour l'Informatique. Portable data carrier including a microprocessor. 4,211,919, Cl. 235-487.000.

Uhlig, Helmut: *See—*
Grampp, Ekkehard; Schmitt, Reinhold; and Uhlig, Helmut, 4,211,799, Cl. 426-50.000.

Ulanen, Yalmar S.: *See—*
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Ullmann, Gerhard: *See—*
Freitag, Gunter; Krahl, Alfred; Ullmann, Gerhard; and Wenzel, Gunter, 4,211,594, Cl. 156-158.000.

Union Carbide Corporation: *See—*
Braun, David B.; and Drap, Stephen, 4,211,681, Cl. 260-29.20R.
Grose, Robert W.; and Flanigen, Edith M., 4,211,760, Cl. 423-328.000.
Lustig, Stanley; and Vasudevan, Ganapathy, 4,211,596, Cl. 156-244.120.
Story, Albert G., 4,210,981, Cl. 17-45.000.
Walker, Wellington E.; Bryant, David R.; and Brown, Earle S., Jr., 4,211,719, Cl. 260-449.00L.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Shanks, Ian A., 4,211,473, Cl. 350-337.000.

U.S. Industries, Inc.: *See—*
Snyder, David E., 4,211,250, Cl. 137-514.000.

United States of America
Army: *See—*
Brothers, Jack, 4,211,169, Cl. 102-67.000.
Morrison, Clyde A.; Karayianis, Nick; and Wortman, Donald E., 4,211,487, Cl. 356-336.000.
Ng, Wahling H.; and Zaycer, Andrew, 4,211,124, Cl. 73-345.000.
Energy: *See—*
Kortier, William E.; Mueller, John J.; and Eggers, Philip E., 4,211,889, Cl. 136-237.000.
Swenson, Donald A., 4,211,954, Cl. 315-5.410.
National Aeronautics and Space Administration: *See—*
Hoffman, Charles A.; Weeton, John W.; and Orth, Norman W., 4,211,354, Cl. 228-118.000.
Navy: *See—*
Boss, Raymond E., 4,211,148, Cl. 91-499.000.
Clark, Ronald L.; and Kreeger, John L., 4,211,999, Cl. 340-347.0AD.
Poole, Lynn A., 4,212,084, Cl. 367-118.000.
Tausig, Wayne R., 4,211,502, Cl. 403-324.000.

U.S. Philips Corporation: *See—*
Barten, Piet G. J.; and Bijma, Jan, 4,211,960, Cl. 315-368.000.
Hendriks, Johannes H., 4,211,993, Cl. 336-131.000.
Sakai, Koichi; and Ikeyama, Kazunori, 4,211,157, Cl. 99-306.000.
Schmalz, Johann, 4,210,989, Cl. 29-25.420.

United Technologies Corporation: *See—*
Games, John E.; Rosien, Richard E.; and Bitterli, William W., 4,212,078, Cl. 364-900.000.
Wallischeck, Karl H., 4,211,151, Cl. 92-146.000.

University of Utah: *See—*
Raemer, Daniel B.; Gehmlich, Dietrich K.; Westenskow, Dwayne R.; and Johnson, Curtis C., deceased, 4,211,239, Cl. 128-716.000.

Uozumi, Junzo: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.

Upjohn Company, The: *See—*
Biggs, Candice B.; Pyke, Thomas R.; and Wovcha, Merle G., 4,211,841, Cl. 435-136.000.
Bundy, Gordon L., 4,211,706, Cl. 260-326.270.
Sih, John C., 4,211,879, Cl. 560-53.000.
Smith, Herman W., 4,211,713, Cl. 260-346.730.
Smith, Herman W., 4,211,714, Cl. 260-346.730.
Smith, Herman W., 4,211,884, Cl. 568-807.000.
Timko, Joseph M., 4,211,701, Cl. 260-239.570.
Voorhees, John J., 4,211,770, Cl. 424-180.000.

Usami, Susumu: *See—*
Furukawa, Haruki; Usami, Susumu; and Nakaho, Junichi, 4,211,432, Cl. 280-808.000.

Usbeck, Gerhard, to Hoechst Aktiengesellschaft. Process for anodically oxidizing aluminum and use of the material so prepared as a printing plate support. 4,211,619, Cl. 204-33.000.

USM Corporation: *See—*
Cleversey, Gerald W.; Duncan, Robert J.; Medidge, George H., Jr.; and Fleming, Jean A., 4,212,075, Cl. 364-580.000.

Utz, Diether: *See—*
Schmitt, Alfons; Utz, Diether; and Schafer, Klaus, 4,212,031, Cl. 358-101.000.

Vaerewyck, Eugene G.; Miller, Robert C.; and Anderson, Arthur E., to Westinghouse Electric Corp. Heliostat guidance. 4,211,922, Cl. 250-203.00R.

Vaillancour, Mary C.; and Miller, Bruce L., to Vaillancour, Mary C. Frequency activated direction indicator. 4,212,085, Cl. 367-124.000.

Vale, Wylie W., Jr.: *See—*
Rivier, Jean E. F.; Brown, Marvin R.; and Vale, Wylie W., Jr., 4,211,693, Cl. 260-112.50S.

Valeron Corporation, The: *See—*
Hopkins, David A., 4,211,510, Cl. 408-186.000.

Valgin, Vasily D.; Vasilenko, Alexandr M.; Morozov, Anatoly Y.; and Chesnokov, Vadim D. Process for producing acid agent from sulfonated phenol and formaldehyde. 4,211,856, Cl. 528-141.000.

Vandenberg, Edwin J., to Hercules Incorporated. Titanium trichloride catalyst component for propylene polymerization. 4,211,670, Cl. 252-429.00B.

van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Soil cultivating implements. 4,211,283, Cl. 172-59.000.

van der Lely, Cornelis. Agricultural implements. 4,211,175, Cl. 111-6.000.

van der Wal, Auke, to Vereenigde Metaalverpakking en Hecktdraad Industrie B.V. MVM-ENDRA. Method and a device for applying an enlacing tape around an object. 4,211,349, Cl. 226-171.000.

Vandevier, Joseph E.; and Hocutt, Larry E., to Borg-Warner Corporation. Impressed current cathodic protection system for submersible downhole pumping assembly. 4,211,625, Cl. 204-197.000.

Vane, John R.; and Moncada, Salvador. Pharmaceutical combination. 4,211,782, Cl. 424-263.000.

Van Hecke, Michel C. F.; and Deweck, Jean, to Metallurgie Hoboken-Overpelt. Process for the production of a tantalum and niobium bearing concentrate from a tantalum and niobium bearing ferro-alloy. 4,211,754, Cl. 423-62.000.

Van Schoote, Jacques F.: *See—*
Gravisse, Philippe E.; and Van Schoote, Jacques F., 4,211,813, Cl. 428-263.000.

Vapor Energy, Inc.: *See—*
Wyatt, William G., 4,211,071, Cl. 60-39.550.

Varga, Julianna K.: *See—*
McCorsley, Clarence C., III; and Varga, Julianna K., 4,211,574, Cl. 106-163.00R.

Vasilenko, Alexandr M.: *See—*
Valgin, Vasily D.; Vasilenko, Alexandr M.; Morozov, Anatoly Y.; and Chesnokov, Vadim D., 4,211,856, Cl. 528-141.000.

Vasilinina, Olga V.; Kidyashev, Jury K.; Potapov, Valery N.; Ryabikov, Stanislav V.; Stepanov, Anatoly M.; and Strebkov, Dmitry S. Solar Photoelectric conversion apparatus with cooling means. 4,211,581, Cl. 136-89.0CA.

Vasina, Stanislaw: *See—*
Slowinski, Stanislaw; Vasina, Stanislaw; Pasich, Jerzy; Kosek, Jerzy; and Glownia, Stanislaw, 4,211,274, Cl. 164-401.000.

Vasudevan, Ganapathy: *See—*
Lustig, Stanley; and Vasudevan, Ganapathy, 4,211,596, Cl. 156-244.120.

Veeder, George T., III: *See—*
Kang, Kenneth S.; and Veeder, George T., III, 4,211,774, Cl. 424-181.000.

Velasco Scale Company: *See—*
Kennedy, Harry L.; Kesaree, Prakash M.; and Reeves, Robert H., Jr., 4,211,263, Cl. 141-83.000.

Velten & Pulver, Inc.: *See—*
Pulver, W. Clark; Euverard, Maynard R.; Heide, Henry A.; and Ziolkowski, Ronald P., 4,211,319, Cl. 198-432.000.

Venus Scientific Inc.: *See—*
Sichenzia, James, 4,212,053, Cl. 363-39.000.

Vereenigde Metaalverpakking en Hecktdraad Industrie B.V. MVM-ENDRA: *See—*
van der Wal, Auke, 4,211,349, Cl. 226-171.000.

Verjux, Jean, to Arenco-Decoufle, Societe Anonyme. Plate with tilted reversal heads for a device for orientating cigarettes. 4,211,318, Cl. 198-377.000.

Verson Allsteel Press Company: *See—*
Luenser, Kurt K., 4,211,098, Cl. 72-21.000.

Vetter, Heinz, to Rohm GmbH. Apparatus for making stretched, hollow shaped strands having corrugated intermediate supports. 4,211,525, Cl. 425-326.100.

Viala, Guy: *See—*
Lombard, Claude; and Viala, Guy, 4,211,991, Cl. 335-207.000.

Vicario, Gian P.; Penco, Sergio; and Arcamone, Federico, to Societa Farmaceutici Italia (Farmitalia Carlo Erba S.p.A.). Daunorubicin and doxorubicin labelled with ^{14}C at the 14-position and processes for their preparation. 4,211,864, Cl. 536-17.00A.

Victor Company of Japan, Limited: *See—*
Muraoka, Teruo; Yamazaki, Masami; and Ishigaki, Yukinobu, 4,211,979, Cl. 455-306.000.
Takahashi, Nobuaki, 4,211,978, Cl. 455-295.000.

Vikharev, Ivan G.: *See—*
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Villarejos, Miguel, to Merck & Co., Inc. Tamperproof container. 4,211,333, Cl. 215-249.000.

Vinals, Joacquin: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.

Vincent, Arthur L., to International Telephone and Telegraph Corporation. Stack gas analyzer and thermal oxidation device therefor. 4,211,748, Cl. 422-90.000.

Viscardi, Francis N. Elongated flexible fishing lure with helical shape. 4,211,027, Cl. 43-42.240.

Vittorelli, Vittore, to Ing. C. Olivetti & C., S.p.A. Text processing system for displaying and editing a line of text. 4,212,077, Cl. 364-900.000.

Vivilecchia, Richard V.: *See—*
McDonald, Patrick D.; Vivilecchia, Richard V.; and Lorenz, David R., 4,211,658, Cl. 210-198.00C.

Vock, Manfred H.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.

Voest-Alpine Aktiengesellschaft: *See—*
Scheurecker, Werner, 4,211,273, Cl. 164-150.000.

Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, to Merck Patent Gesellschaft mit beschrankter Haftung. Dietetic foodstuff and its production. 4,211,768, Cl. 424-95.000.

Vogt, Wilhelm: *See—*
aus der Funten, Helmut; and Vogt, Wilhelm, 4,211,711, Cl. 260-343.30R.

Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, to Dynamit Nobel Aktiengesellschaft. Acrylate-based polymers and copolymers and their use as flameproofing agents. 4,211,730, Cl. 260-45.75B.

vom Dorp, Heinz: *See—*
Wittkopp, Helmut; vom Dorp, Heinz; and Lindgens, Theodor, 4,211,129, Cl. 82-1.00C.

Voorhees, John J., to Upjohn Company, The. Treatment of psoriasis intralesionally with N^6-2'-O-dibutyryl cyclic AMP. 4,211,770, Cl. 424-180.000.

Vowles, Jaren P. Method and apparatus for cleaning an endless strip of film, tape, or the like. 4,211,580, Cl. 134-9.000.

Voytko, James E.: *See—*
McGonigal, Charles; and Voytko, James E., 4,211,099, Cl. 72-47.000.

Vukasovic, Ivica: *See—*
Henle, Burkhard; Vukasovic, Ivica; and Fiorentzis, Michael, 4,211,934, Cl. 307-98.000.

W. Hegenscheidt Gesellschaft mbH: *See—*
Wittkopp, Helmut; vom Dorp, Heinz; and Lindgens, Theodor, 4,211,129, Cl. 82-1.00C.

W. R. Grace & Co.: *See—*
Kehr, Clifton L.; Wood, Louis L.; and Guthrie, James L., 4,211,847, Cl. 521-121.000.

Waagner-Biro Aktiengesellschaft: *See—*
Eigner, Erich, 4,211,369, Cl. 241-182.000.

Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Steudten, Friedrich; and Koppl, Franz, 4,211,040, Cl. 51-42.000.

Wada, Osamu; and Kusakari, Naohiko, to Toray Industries, Inc. Method for preparing polyester. 4,211,858, Cl. 528-272.000.

Wada, Tatsuo: *See—*
Yabu, Toshiomi; Wada, Tatsuo; Yamada, Kouichi; and Yoshino, Tadashi, 4,211,964, Cl. 318-314.000.

Wadham, Thomas C.: *See—*
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Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG): *See—*
Lange, Gerhard, 4,211,068, Cl. 59-31.000.

Wagner, Herman B.; and Ellis, Jeffrey R., to Tile Council of America, Inc. Dry-set mortars and method for improving the water retentivity thereof. 4,211,572, Cl. 106-90.000.

Wakabayashi, Hiroharu, to Kokusai Denshin Denwa Kabushiki Kaisha. Fault location system for optical repeating paths. 4,211,920, Cl. 455-601.000.

Wakahara, Yasushi: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,035, Cl. 358-260.000.
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,036, Cl. 358-261.000.

Waldron, Wesley K., to General Electric Company. Multimode liquid crystal display. 4,212,011, Cl. 340-784.000.

Walker, Wellington E.; Bryant, David R.; and Brown, Earle S., Jr., to Union Carbide Corporation. Catalytic process for polyhydric alcohols and derivatives. 4,211,719, Cl. 260-449.00L.

Wallace, Volney. Conversion of energy by means of tethered whirlwinds. 4,211,084, Cl. 60-641.000.

Wallin, Bruce K., to Welch Foods Inc. Process of purifying plant anthocyanin colors. 4,211,577, Cl. 106-288.00Q.

Wallischeck, Karl H., to United Technologies Corporation. Jam proof piston. 4,211,151, Cl. 92-146.000.

Walter, Karl H., to Siemens Aktiengesellschaft. Method for the operation of a display device having a bistable liquid crystal layer. 4,212,010, Cl. 340-784.000.

Walters, Robert W.; and Nylander, James, to Container Equipment Corporation. Carton erecting apparatus. 4,211,153, Cl. 93-53.0SD.

Ward, Eldon L.: *See—*
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Ward, George C., to Southwire Company. Continuous casting mold geometry improvement. 4,211,271, Cl. 164-87.000.

Warner-Lambert Company: *See—*
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Warnes, Anthony M.: *See—*
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Warnow, Detlef: *See—*
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Wasniewski, Alain: *See—*
Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, 4,211,475, Cl. 350-357.000.

Watabe, Yoji; Fujii, Yoshihiko; Anzai, Shiro; and Furukawa, Junji, to Bridgestone Tire Company Limited. Process for reclaiming scrap vulcanized rubber. 4,211,676, Cl. 260-2.300.

Watanabe, Hisao: *See—*
Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, 4,211,866, Cl. 536-53.000.

Watanabe, Kunio; and Yamamoto, Heiichi, to Nippon Telegraph and Telephone Public Corporation. Transmitter multiplexing system for a land mobile communication system. 4,211,894, Cl. 179-2.0EB.

Watanabe, Kyoichi A.: *See—*
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Watanabe, Yutaka: *See—*
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Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Avalanche photodiode. 4,212,019, Cl. 357-13.000.

Waters Associates, Inc.: *See—*
McDonald, Patrick D.; Vivilecchia, Richard V.; and Lorenz, David R., 4,211,658, Cl. 210-198.00C.

Watkin, Theodore: *See—*
Hansen, Gary G.; Pengue, Leonard M.; and Watkin, Theodore, 4,211,397, Cl. 271-4.000.

Watt, George W.; and Baugh, Daniel W., Jr., to Exxon Nuclear Company, Inc. Actinide sulfite tetrahydrate and actinide oxysulfite tetrahydrate. 4,211,757, Cl. 423-251.000.

Weavers, Mark W.; and Konkler, Anthony W., to Minnesota Mining and Manufacturing Company. Multiple-point hinge for double-wall plastic box. 4,211,337, Cl. 220-341.000.

Webasto Werk W. Baier GmbH & Co.: *See—*
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Weber-Knapp Company: *See—*
Boyd, Kenneth J., 4,210,979, Cl. 16-147.000.

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Weber, Raymond C.; and Weber, Leslie A. Apparatus for aerobic treatment of contaminated liquid. 4,211,654, Cl. 210-104.000.

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Wehde, Friedrich, to Erwin Kampf GmbH & Co. Maschinenfabrik, Firma. Cutting width modifying means for a longitudinal web cutting machine. 4,211,135, Cl. 83-499.000.

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Weiss, Peter; and Thievessen, Karl, to Jagenberg Werke Atkiengesellschaft. Chuck for webs of material wound onto spools. 4,211,375, Cl. 242-81.000.

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Welch Foods Inc.: *See—*
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Welch, Melvin B.: *See—*
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Wenzel, Gunter: *See—*
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Wenzel, Wolfgang; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Process for the preparation of aqueous dispersions of polyurethanes. 4,211,683, Cl. 260-29.40R.

Werkzeugmaschinenfabrik Oerlikon-Buhrle: *See—*
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Weschenfelder, Otto T.: *See—*
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Wescott, Ronald O., to Industrial Electronic Hardware Corp. Axially mating cable connector. 4,211,461, Cl. 339-91.00R.

Westbrook, Clifton W.; Parcell, Lloyd J.; Claytor, Gary L.; and Klock, Byron V., to Texaco Inc. Waste water process. 4,211,646, Cl. 210-15.000.

Westek Corporation: *See—*
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Westenskow, Dwayne R.: *See—*
Raemer, Daniel B.; Gehmlich, Dietrich K.; Westenskow, Dwayne R.; and Johnson, Curtis C., deceased, 4,211,239, Cl. 128-716.000.

Westerberg, Hakan: *See—*
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Western Electric Company, Incorporated: *See—*
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McGonigal, Charles; and Voytko, James E., 4,211,099, Cl. 72-47.000.

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Jensen, William C., 4,211,546, Cl. 71-34.000.

Western Geophysical Co. of America: *See—*
Miller, Adrian D., 4,211,300, Cl. 181-120.000.

Westinghouse Electric Corp.: *See—*
Cooper, Frank W., Jr., 4,210,991, Cl. 29-421.00R.
Vaerewyck, Eugene G.; Miller, Robert C.; and Anderson, Arthur E., 4,211,922, Cl. 250-203.00R.

Weston, Robert M. Adjustable rack assembly. 4,211,448, Cl. 296-3.000.

Wetzig, Lloyd M.: *See—*
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Weyker, R. G.: *See—*
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Weyl, Helmut: *See—*
Glauner, Jens; Kauhl, Gunther; Pflug, Hannes; Steinke, Leo; and Weyl, Helmut, 4,211,204, Cl. 123-145.00A.

Weyn, Hendrik F., to Colgate-Palmolive Company. Dispensing container of stabilized extrudable dentifrice containing normally chemically reactive components. 4,211,341, Cl. 222-94.000.

Whipple, John: *See—*
Schmitz, Lawrence S.; Dodds, Curtis E.; and Whipple, John, 4,211,065, Cl. 368-47.000.

Whirlpool Corporation: *See—*
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White, Gordon D., to Bredon Hydraulics Limited. Hydraulic power packs. 4,211,080, Cl. 60-458.000.

White, James E.: *See—*
Henry, Charles L.; and White, James E., 4,211,678, Cl. 260-22.00D.
Long, Marshall; Alley, Lewis F.; and White, James E., 4,211,055, Cl. 53-517.000.

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White, William I.: *See—*
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Whitehead, Charles W., Wilma W. Johnson, personal representatives: *See—*
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Whitehurst, Darrell D.: *See—*
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Wick, Arnold: *See—*
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Widmann, Dietrich: *See—*
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Wiechers, Adriaan, to Pennwalt Corporation. Froth flotation process and collector composition. 4,211,644, Cl. 209-166.000.

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Williams, Curtis. Tilt release catch. 4,210,986, Cl. 24-230.0TC.

Williams, Danny L.: *See—*
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Williams, Edward A.: *See—*
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Williams, Frederick P.: *See—*
Amprim, Lawrence; and Williams, Frederick P., 4,211,021, Cl. 40-2.00R.

Williams, Shane. Smoking device. 4,211,244, Cl. 131-194.000.

Williamson, Michael, to Owens-Corning Fiberglas Corporation. Electrical furnace, zones balanced with a symmetrically tapped transformer. 4,211,887, Cl. 13-6.000.

Williamson, Robert D. Method and apparatus for selective electronic surveillance. 4,212,002, Cl. 340-572.000.

Wilson, Clive J., to Midland-Ross Corporation. Lining for grinding mills. 4,211,370, Cl. 241-183.000.

Wilson Greatbatch Ltd.: *See—*
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Winkelmann, Hans D.; Wolf, Karlheinz; Oertel, Harald; and Weimann, Norbert, to Bayer Aktiengesellschaft. Isocyanate adduct diols. 4,211,699, Cl. 260-239.30R.

Winslow, Richard N.: *See—*
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Wirth, Gallo & Co.: *See—*
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Wisbey, Jerry D.; and Stone, Kirby L., to Cincinnati Milacron Inc. Slide valve. 4,211,255, Cl. 137-625.480.

Witkowski, Joseph T.; and Robins, Roland K. Treatment of human viral diseases with 1-B-D-ribofuranosyl-1,2,4-triazole-3-carboxamide. 4,211,771, Cl. 424-180.000.

Witten, John E.; Wood, Loren E.; and Short, Edward H., III, to B S & B Safety Systems, Inc. Safety pressure relief apparatus. 4,211,334, Cl. 220-89.00A.

Wittkopp, Helmut; vom Dorp, Heinz; and Lindgens, Theodor, to W. Hegenscheidt Gesellschaft mbH. Method for producing a bore. 4,211,129, Cl. 82-1.00C.

Wolber, William G., to Bendix Corporation, The. Self-standardizing pressure sensor for use in an electronic fuel control system. 4,211,119, Cl. 73-721.000.

Wolf, Karlheinz: *See—*
Winkelmann, Hans D.; Wolf, Karlheinz; Oertel, Harald; and Weimann, Norbert, 4,211,699, Cl. 260-239.30R.

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Wolfthal, Maurice, to Stewart Stamping Corporation, a division of Insilco Corp. Electrical connector for termination cords with improved locking means. 4,211,462, Cl. 339-103.00M.

Woltosz, Stanley N., to Sybron Corporation. Electrosurgical coagulation. 4,211,230, Cl. 128-303.170.

Wood, Loren E.: *See—*
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Wood, Louis L.: *See—*
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Woods, Donald M., to Emerson Electric Co. String-type weed cutter with mechanical line feed. 4,211,004, Cl. 30-276.000.

Woods, Donald M., to Emerson Electric Co. Apparatus for cutting vegetation. 4,211,005, Cl. 30-276.000.

Woods, Ivan D. Soap bar holder. 4,211,445, Cl. 294-25.000.

Woodward, David W.: *See—*
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Wortman, Donald E.: *See—*
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Wovcha, Merle G.: *See—*
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Wright, Glenn L., to Youngstown Steel Door Company, The. Roller drop door. 4,211,038, Cl. 49-234.000.

Wright, John T. M., to Hancock Laboratories, Inc. Heart valve holder. 4,211,325, Cl. 206-438.000.

WSW Stahl- und Wasserbau GmbH: *See—*
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WTI Wetenschappelijk Technische Instrumentatie B.V.: *See—*
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Wu, Tai-Wing, to Eastman Kodak Company. Bilirubin-specific fungal enzyme preparation. 4,211,844, Cl. 435-25.000.

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Wurster, Helmut, to Richard Wolf Medical Instruments Corp. Laser endoscope. 4,211,229, Cl. 128-303.100.

Wyatt, William G., to Vapor Energy, Inc. Vapor generators. 4,211,071, Cl. 60-39.550.

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Yabu, Toshiomi; Wada, Tatsuo; Yamada, Kouichi; and Yoshino, Tadashi, to Matsushita Electric Industrial Co., Ltd. Speed control circuit. 4,211,964, Cl. 318-314.000.

Yaji, Yuji: *See—*
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Yamada, Hiroshi: *See—*
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Yamada, Koichi; Yoshihara, Masao; Ishida, Takahiro; and Sato, Kazuo, to Sumitomo Aluminium Smelting Company, Limited. Process for producing alumina sols. 4,211,667, Cl. 252-313.00R.

Yamada, Koichiro, to Hitachi, Ltd. Exhaust bypassing system for a turbocharger. 4,211,081, Cl. 60-602.000.

Yamada, Kouichi: *See—*
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Yamada, Masakazu: *See—*
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Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Position-to-digital encoder. 4,212,000, Cl. 340-347.00P.

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Yamamoto, Shinji: *See—*
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Yamashiro, Osamu, to Hitachi, Ltd. Crystal oscillator using a class B complementary MIS amplifier. 4,211,985, Cl. 331-116.0FE.

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Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,036, Cl. 358-261.000.

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Yan, Tsoung-Yuan, to Mobil Oil Corporation. Pitch and asphalt compositions. 4,211,576, Cl. 106-278.000.

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Yariv, Amnon; Margalit, Shlomo; and Lee, Chien-Ping, to California Institute of Technology. Solid state electro-optical devices on a semi-insulating substrate. 4,212,020, Cl. 357-17.000.

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Yasumatsu, Jun, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Locking device for a seatbelt system. 4,211,377, Cl. 242-107.200.

Yaun-Williams Bucket Co., The: *See—*
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Yautz, Michael J., Jr.; and Winslow, Richard N., to Harris Corporation. Apparatus for combining sheet material assemblages. 4,211,320, Cl. 198-450.000.

Yazawa, Masahide; and Kurihara, Kazuhiko, to Polymer Processing Research Institute Ltd.; and Sekisui Kagaku Kogyo Kabushiki Kaisha. Reinforced non-woven fabrics and method of making same. 4,211,807, Cl. 428-109.000.

Yazev, Mikhail V.: *See—*
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Yeates, Robert D. Downhole surge tools, method and apparatus. 4,211,280, Cl. 166-311.000.

Yocum, William C.; and Hughes, David E., to Superior Valve Company. Slow opening cylinder valve. 4,211,386, Cl. 251-122.000.

Yoder, Benjamin F.: *See—*
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Yokono, Hitoshi: *See—*
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Yomogida, Toshihiko: *See—*
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Yonemoto, Tomoo: *See—*
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Yoneyama, Masakazu; Mukunoki, Yasuo; Mikami, Takeshi; and Sasaki, Jun, to Fuji Photo Film Co., Ltd. Method for dispersing oil-soluble photographic additives. 4,211,836, Cl. 430-449.000.

Yoshida, Masashi; and Iino, Yasuo, to Hitachi, Ltd. Tape recorder with single control activating member. 4,212,040, Cl. 360-96.300.

Yoshida, Nagatoshi; and Taga, Yoshihito, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. Combination microwave and gas oven. 4,211,909, Cl. 219-10.55R.

Yoshida, Satomi: *See—*
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Yoshida, Shinichi, to Honny Chemicals Company, Ltd. Bonding rubber to metal. 4,211,824, Cl. 428-462.000.

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Yoshino, Tadashi: *See—*
Yabu, Toshiomi; Wada, Tatsuo; Yamada, Kouichi; and Yoshino, Tadashi, 4,211,964, Cl. 318-314.000.

Yoshioka, Yoshio: *See—*
Tsukushi, Masanori; Kashimura, Katsuichi; Koyanagi, Osamu; Yoshioka, Yoshio; and Hirasawa, Kunio, 4,211,903, Cl. 200-148.00D.

Yoshitake, Katsumi: *See—*
Taguchi, Tadashi; Fujikawa, Noboru; Kohno, Mitsuo; Yoshitake, Katsumi; and Satake, Kunio, 4,211,560, Cl. 430-313.000.

Yoshizawa, Ryo: *See—*
Ohtake, Nobumasa; Yoshizawa, Ryo; and Koga, Isao, 4,211,704, Cl. 260-319.100.

Young, Archie R., II: *See—*
Muenker, Adolf H.; and Young, Archie R., II, 4,211,210, Cl. 126-438.000.

Young, David A.; and Kimball, Bruce S., to Hoover Universal, Inc. Trailer hitch. 4,211,427, Cl. 280-406.00A.

Young, Philip J.: *See—*
Poole, Brian; and Young, Philip J., 4,211,390, Cl. 266-207.000.

Youngquist, Rudolph W., to Procter & Gamble Company, The. Deflavoring vegetable seed materials. 4,211,694, Cl. 260-123.500.

Youngstown Steel Door Company, The: *See—*
Wright, Glenn L., 4,211,038, Cl. 49-234.000.

Yu, Albert P.: *See—*
Bertolacini, Ralph J.; and Yu, Albert P., 4,211,634, Cl. 208-59.000.

Yukawa, Takahiro: *See—*
Tooyama, Akira; Ohkoshi, Akio; Tooyama, Takashi; Yukawa, Takahiro; and Hosono, Takashi, 4,212,030, Cl. 358-67.000.

Zaffagnini, Deoscaride: *See—*
Di Drusco, Giovanni; and Zaffagnini, Deoscaride, 4,211,737, Cl. 264-12.000.

Zahner, Hans: *See—*
Scheer, Martin; Anke, Heidrun; Konig, Wilfried; and Zahner, Hans, 4,211,787, Cl. 424-279.000.

Zajic, James E.; Hill, Martha A.; Manchester, Donald F.; and Muzika, Karel, to Abitibi Paper Company Ltd. Foam flotation activated sludge process. 4,211,645, Cl. 210-7.000.

Zankl, Frank, to Kearney & Trecker Corporation. Rotary table with ballscrew drive. 4,211,512, Cl. 409-221.000.

Zapomel, Janos. Fork accessory for winding spaghetti. 4,211,372, Cl. 242-1.000.

Zawodny, Arthur, to Keystone Camera Corporation. Film advance mechanism. 4,211,479, Cl. 354-213.000.

Zaycer, Andrew: *See—*
Ng, Wahling H.; and Zaycer, Andrew, 4,211,124, Cl. 73-345.000.

Zechlin, Richard, to Colt Industries Operating Corp. Overspeed ignition system. 4,211,195, Cl. 123-335.000.

Zelter, Zelmen: *See—*
Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, 4,211,795, Cl. 426-2.000.

Zerostat Components Limited: *See—*
Rangabe, Alexander R., 4,211,422, Cl. 274-23.00R.

Zilka, Thomas J. Nailing machine. 4,211,352, Cl. 227-130.000.

Zimmermann, Jurgen. Apparatus for making a coffee beverage. 4,211,156, Cl. 99-287.000.

Zinkovsky, Ivan V.: *See—*
Semkina, Novella V.; Bokach, Galina S.; and Zinkovsky, Ivan V., 4,211,624, Cl. 204-195.00S.

Ziolkowski, Ronald P.: *See—*
Pulver, W. Clark; Euverard, Maynard R.; Heide, Henry A.; and Ziolkowski, Ronald P., 4,211,319, Cl. 198-432.000.

Zirconal Processes Limited: *See—*
Emblem, Harold G.; Das, Anup K.; and Jones, Kenneth, 4,211,717, Cl. 556-470.000.

Zubilin, Ivan G.: *See—*
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.

Zvezdunov, Dmitry A.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; and Zvezdunov, Dmitry A., 4,211,943, Cl. 310-13.000.

Zybalova, Galina P.: *See—*
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JULY, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allied Chemical Corporation: *See—*
Damon, William H., Re. 30,327, Cl. 280-740.000.

Aluminum Company of America: *See—*
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., Re. 30,330, Cl. 204-67.000.

Bernstein, David H.: *See—*
Sorensen, Karsten; Bernstein, David H.; and Druke, Michael B., Re. 30,331, Cl. 364-200.000.

Cochran, C. Norman: *See—*
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., Re. 30,330, Cl. 204-67.000.

Compressor Controls Corp.: *See—*
Rutshtein, Alexander; and Staroselsky, Naum, Re. 30,329, Cl. 415-1.000.

Damon, William H., to Allied Chemical Corporation. Inflator seal. Re. 30,327, Cl. 280-740.000.

Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., to Aluminum Company of America. Aluminum purification. Re. 30,330, Cl. 204-67.000.

Data General Corporation: *See—*
Sorensen, Karsten; Bernstein, David H.; and Druke, Michael B., Re. 30,331, Cl. 364-200.000.

Druke, Michael B.: *See—*
Sorensen, Karsten; Bernstein, David H.; and Druke, Michael B., Re. 30,331, Cl. 364-200.000.

Hill, Walter W.: *See—*
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., Re. 30,330, Cl. 204-67.000.

Hoague-Sprague Leasing Company, Inc.: *See—*
Waldbauer, Wilhelm, deceased, Re. 30,325, Cl. 93-51.00M.

Huss, Heinrich. Apparatus for developing a travelling photographic emulsion carrier. Re. 30,328, Cl. 354-322.000.

Mazgaj, Robert M.: *See—*
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., Re. 30,330, Cl. 204-67.000.

Milito, Richard A.: *See—*
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., Re. 30,330, Cl. 204-67.000.

Rutshtein, Alexander; and Staroselsky, Naum, to Compressor Controls Corp. Method and apparatus for antisurge protection of a dynamic compressor. Re. 30,329, Cl. 415-1.000.

Sem-Torq, Inc.: *See—*
Seme, Joseph P., Re. 30,324, Cl. 40-595.000.

Seme, Joseph P., to Sem-Torq, Inc. Letter and number kits and the process of preparing same. Re. 30,324, Cl. 40-595.000.

Sorensen, Karsten; Bernstein, David H.; and Druke, Michael B., to Data General Corporation. Data processing system having a unique CPU and memory timing relationship and data path configuration. Re. 30,331, Cl. 364-200.000.

Staroselsky, Naum: *See—*
Rutshtein, Alexander; and Staroselsky, Naum, Re. 30,329, Cl. 415-1.000.

TRW Inc.: *See—*
van Buren, Harold S., Jr., Re. 30,326, Cl. 220-326.000.

van Buren, Harold S., Jr., to TRW Inc. Panel hole closure. Re. 30,326, Cl. 220-326.000.

Waldbauer, Wilhelm, deceased, to Hoague-Sprague Leasing Company, Inc. Method and apparatus for producing glued folded boxes. Re. 30,325, Cl. 93-51.00M.

LIST OF PLANT PATENTEES

Chattem, Inc.: *See—*
Jolly, Nelson F., 4,564, Cl. 10.000.

Farrell, William R. Variety of tropical apricot shrub. 4,565, 7-8-80, Cl. 33.000.

Fischer, Arnold W., to Pan-American Plant Company. African violet named Julia. 4,569, 7-8-80, Cl. 69.000.

Hope, Claude, to Pan-American Plant Company. Kalanchoe named Princess. 4,567, 7-8-80, Cl. 68.000.

Hope, Claude, to Pan-American Plant Company. Kalanchoe named Conquistador. 4,568, 7-8-80, Cl. 68.000.

Jolly, Nelson F., to Chattem, Inc. Rose plant. 4,564, 7-8-80, Cl. 10.000.

Pan-American Plant Company: *See—*
Fischer, Arnold W., 4,569, Cl. 69.000.
Hope, Claude, 4,567, Cl. 68.000.
Hope, Claude, 4,568, Cl. 68.000.

Surabian, Aaron, to Surabian Bros. Nectarine tree. 4,566, 7-8-80, Cl. 41.000.

Surabian Bros.: *See—*
Surabian, Aaron, 4,566, Cl. 41.000.

LIST OF DESIGN PATENTEES

Agrowplow Pty Limited: *See—*
Ryan, John W., 255,797, Cl. D15-11.000.

Albert, Lawrence D., to Altray Company, Inc. Candy package. 255,778, 7-8-80, Cl. D9-193.000.

Almquist, Lennart: *See—*
Kallstrom, Yngve, 255,752, Cl. D7-71.000.

Altray Company, Inc.: *See—*
Albert, Lawrence D., 255,778, Cl. D9-193.000.

Ammondson, Clayton J.: *See—*
Lee, Norman; and Ammondson, Clayton J., 255,762, Cl. D7-194.000.

Asamoto, Kazumasa, to Shindaiwa Kogyo Co., Ltd. Chain saw. 255,770, 7-8-80, Cl. D8-65.000.

Barber, William L. Golf club head. 255,818, 7-8-80, Cl. D21-219.000.

Baron, John D. Protector. 255,728, 7-8-80, Cl. D2-27.000.

Benjamin, E. Burton, to Mosinee Paper Corporation. Towel dispensing cabinet. 255,733, 7-8-80, Cl. D6-96.000.

Bennett, R. Brian P.: *See—*
Crooks, Basil D.; and Bennett, R. Brian P., 255,765, Cl. D8-30.000.

Bentsen, Lon C. Foot massager or similar article. 255,835, 7-8-80, Cl. D24-36.000.

Bishton, Paul I., to Strada Jewellery Limited. Pendant. 255,785, 7-8-80, Cl. D11-43.000.

Bluestein, Bernard B.: *See—*
Steinkamp, Norman A.; and Bluestein, Bernard B., 255,758, Cl. D7-153.000.

Bogner, Paul. Hamper cover. 255,761, 7-8-80, Cl. D7-163.000.

Borden, Thomas W.; Hulst, Richard A.; and Yaeger, Gary M. Dual ski structure for water skiing and snow sledding. 255,820, 7-8-80, Cl. D21-229.000.

Bosch-Siemens Hausgerate GmbH: *See—*
Feil, Rolf, 255,757, Cl. D7-153.000.
Reichl, Ernst, 255,832, Cl. D23-148.000.

Bowers, Michael C. Jet cargo aircraft. 255,789, 7-8-80, Cl. D12-71.000.

Braden, Denver, to Illinois Tool Works Inc. Insertion tool for inserting two-leaded electrical capacitors, and the like, into printed circuit boards. 255,769, 7-8-80, Cl. D8-51.000.

Braun Aktiengesellschaft: *See—*
Rams, Dieter, 255,794, Cl. D14-34.000.

Bretschger, Edward B., to Louis Marx & Co., Inc. Riding toy. 255,809, 7-8-80, Cl. D21-74.000.

Bretschger, Edward B., to Louis Marx & Co., Inc. Riding toy. 255,810, 7-8-80, Cl. D21-137.000.

Britt, William J., to Morton-Norwich Products, Inc. Bottle. 255,776, 7-8-80, Cl. D9-60.000.

Butler, Frederick A.; and Croonenberg, William, to Thetford Corporation. Toilet. 255,828, 7-8-80, Cl. D23-48.000.

Canavan, Richard W., III. Pair of spectacles. 255,802, 7-8-80, Cl. D16-65.000.

Cardinal American Corporation: *See—*
Gale, Allen W., 255,735, Cl. D6-144.000.

Champion International Corporation: *See—*
Roccaforte, Harry I., 255,781, Cl. D9-245.000.

Christensen, Earl. Lapidary machine. 255,799, 7-8-80, Cl. D15-125.000.

Clatterbuck, Richard T., to Goodyear Tire & Rubber Company, The. Dispensing box for sheet material. 255,779, 7-8-80, Cl. D9-224.000.

Clemens, Anton H., to Miles Laboratories, Inc. Packaging container. 255,775, 7-8-80, Cl. D9-18.000.

Cooper Industries Inc.: *See—*
Ferguson, William C., 255,763, Cl. D8-5.000.

Corning Glass Works: *See—*
Luzier, Patricia A., 255,748, Cl. D7-39.000.
Luzier, Patricia A., 255,749, Cl. D7-39.000.
Rothstein, Estelle G., 255,750, Cl. D7-39.000.

Cox, Zula B. Stuffed toy horse with hat. 255,812, 7-8-80, Cl. D21-165.000.

Crandall, Norman C., to Shiley Incorporated. Infant oxygen hood. 255,833, 7-8-80, Cl. D24-1.100.

Crooks, Basil D.; and Bennett, R. Brian P., to Northern Telecom Limited. Manual welding implement. 255,765, 7-8-80, Cl. D8-30.000.

Croonenberg, William: *See—*
Butler, Frederick A.; and Croonenberg, William, 255,828, Cl. D23-48.000.

Cruz, Maria I. Glue gun holder. 255,771, 7-8-80, Cl. D8-71.000.

Daenen, Robert H. C. M., to Dart Industries Inc. Colander. 255,751, 7-8-80, Cl. D7-47.000.

Dart Industries Inc.: *See—*
Daenen, Robert H. C. M., 255,751, Cl. D7-47.000.

Deguchi, Chuuji; and Nakauchi, Shosuke, to Olympic Fishing Tackle Co., Ltd. Fishing reel. 255,823, 7-8-80, Cl. D22-25.000.

Dekko, Chester E. Mat section. 255,744, 7-8-80, Cl. D6-209.000.

Dexter Corporation, The: *See—*
Wieland, Howard N., Jr., 255,766, Cl. D8-30.000.

Dock, Morris L.: *See—*
Galloway, David L.; Dock, Morris L.; Grundy, James K.; and Woodworth, Robert D., 255,755, Cl. D7-77.000.

Dulude, Charles R. Gun target. 255,822, 7-8-80, Cl. D22-15.000.

Dybala, Raymond W., to Sunbeam Corporation. Egg cooker. 255,756, 7-8-80, Cl. D7-94.000.

Emanuel, Peter R., to International Telephone and Telegraph Corporation. Plastic storm door. 255,838, 7-8-80, Cl. D25-48.000.

Emerson Electric Co.: *See—*
Lombard, Marco H., 255,764, Cl. D8-08.000.

Ernest, Robert O., to Sunbeam Corporation. Power unit for a blender or the like. 255,759, 7-8-80, Cl. D7-154.000.

Ernest, Robert O.; Thomas, Richard K.; and Guth, Gordon T., to Sunbeam Corporation. Mixer. 255,760, 7-8-80, Cl. D7-158.000.

Ettinger, Donald H., to USM Corporation. Welding gun. 255,767, 7-8-80, Cl. D8-30.000.

Faunce, Carol A. Receptacle for storing a yogurt container. 255,754, 7-8-80, Cl. D7-77.000.

Feil, Rolf, to Bosch-Siemens Hausgerate GmbH. Kitchen appliance motor. 255,757, 7-8-80, Cl. D7-153.000.

Ferguson, William C., to Cooper Industries Inc. Clippers. 255,763, 7-8-80, Cl. D8-5.000.

Flowers, Inc.: *See—*
Morehead, Coatus L., Jr., 255,787, Cl. D11-155.000.

Forest, Lawrence J., to GTE Products Corporation. Tie strap. 255,782, 7-8-80, Cl. D9-252.000.

Gale, Allen W., to Cardinal American Corporation. Bar. 255,735, 7-8-80, Cl. D6-144.000.

Galloway, David L.; Dock, Morris L.; Grundy, James K.; and Woodworth, Robert D., to Leisure Foam Products, Inc. Insulated carrier for beverage cans or the like. 255,755, 7-8-80, Cl. D7-77.000.

Gayeski, Frank. Station. 255,737, 7-8-80, Cl. D6-161.000.

Goodyear Tire & Rubber Company, The: *See—*
Clatterbuck, Richard T., 255,779, Cl. D9-224.000.

Goransson, Jan. Golf putting target. 255,821, 7-8-80, Cl. D21-234.000.

Grundy, James K.: *See—*
Galloway, David L.; Dock, Morris L.; Grundy, James K.; and Woodworth, Robert D., 255,755, Cl. D7-77.000.

GTE Products Corporation: *See—*
Forest, Lawrence J., 255,782, Cl. D9-252.000.

Gustafson, Thomas A. Ski sled. 255,788, 7-8-80, Cl. D12-9.000.

Guth, Gordon T.: *See—*
Ernest, Robert O.; Thomas, Richard K.; and Guth, Gordon T., 255,760, Cl. D7-158.000.

Gutner, Kenneth H. Bed canopy frame side rail. 255,742, 7-8-80, Cl. D6-198.000.

Hallerman, Edith O. Exerciser. 255,815, 7-8-80, Cl. D21-198.000.

Hampshire, James F.; Terek, Greg P.; and Sankovich, Richard C., to Rubbermaid Commercial Products Inc. Hinged top card file. 255,805, 7-8-80, Cl. D19-76.000.

Hansen, Homer P. Fireplace heater. 255,830, 7-8-80, Cl. D23-95.000.

Hardy, Charles T., to Safe-T-Lawn, Inc. Lawn sprinkler. 255,825, 7-8-80, Cl. D23-7.000.

Hardy, Terence: *See—*
Litchfield, Leon G.; and Hardy, Terence, 255,741, Cl. D6-191.000.

Harriman, Glenda. Bola tie. 255,729, 7-8-80, Cl. D2-352.000.

Harrison, John L. Automotive rearview mirror. 255,792, 7-8-80, Cl. D12-187.000.

Harvey, Thomas D.: *See—*
Winter, Russell K.; Savas, Nedim; Snively, Joseph H.; and Harvey, Thomas D., 255,739, Cl. D6-189.000.

Hays, Ronald B. Letter bomb detector. 255,783, 7-8-80, Cl. D10-46.000.

Hilary Page "Sensible" Toys Limited: *See—*
Pape, John A.; and Walker, Norman, 255,813, Cl. D21-166.000.

Hoffman, Paul R.; and Wallenwein, Hans K., to Plasti-Fab. Co. Ltd. Food processor tool holder. 255,753, 7-8-80, Cl. D7-74.000.

Holstine, Patricia I. Toy raccoon. 255,811, 7-8-80, Cl. D21-148.000.

Huffman, James R.: *See—*
Marshall, John F.; and Huffman, James R., 255,795, Cl. D14-45.000.

Hulst, Richard A.: *See—*
Borden, Thomas W.; Hulst, Richard A.; and Yaeger, Gary M., 255,820, Cl. D21-229.000.

Illinois Tool Works Inc.: *See—*
Braden, Denver, 255,769, Cl. D8-51.000.

Immel, Jim L.; and Stitt, Carl E. Hub pulling device. 255,768, 7-8-80, Cl. D8-51.000.

International Tapetronics Corporation: *See—*
Jenkins, John P., 255,793, Cl. D14-6.000.

International Telephone and Telegraph Corporation: *See—*
Emanuel, Peter R., 255,838, Cl. D25-48.000.

Interstate Industries, Inc.: *See—*
Radtke, Lee F., 255,807, Cl. D21-27.000.

James, Chester L., Sr. Pronunciation-coded type font. 255,804, 7-8-80, Cl. D18-24.000.

Jenkins, John P., to International Tapetronics Corporation. Automatic tape cartridge selecting and playing mechanism. 255,793, 7-8-80, Cl. D14-6.000.

Johnson & Johnson Dental Products Company: *See—*
Weissenburger, Edward A., 255,836, Cl. D24-56.000.

Johnson, Norman S.; and Trotter, Robert J., to United Products Inc. Quarter-turn fastener. 255,772, 7-8-80, Cl. D8-331.000.

Johnson, Tai C., to Micro Electronics Limited. Baseball game casing. 255,808, 7-8-80, Cl. D21-28.000.

Kallstrom, Yngve, to Almquist, Lennart; and Kjellerstedt, Goran. Beverage tray. 255,752, 7-8-80, Cl. D7-71.000.

Kendra, Joseph E., to Kennametal Inc. Cutting insert. 255,800, 7-8-80, Cl. D15-139.000.

Kennametal Inc.: *See—*
Kendra, Joseph E., 255,800, Cl. D15-139.000.

Kjellerstedt, Goran: *See—*
Kallstrom, Yngve, 255,752, Cl. D7-71.000.

Kuplis, Valdis, to Olinkraft, Inc. Tray blank. 255,780, 7-8-80, Cl. D9-245.000.

L. B. (Plastics) Limited: *See—*
Litchfield, Leon G.; and Hardy, Terence, 255,741, Cl. D6-191.000.

LaPointe, Guy. Traction grille for vehicle. 255,791, 7-8-80, Cl. D12-154.000.

Leal, Jerome C. Combined guitar and synthesizer keyboard. 255,803, 7-8-80, Cl. D17-2.000.

Leasure, David D.: *See—*
Leasure, John H.; and Leasure, David D., 255,837, Cl. D25-18.000.

Leasure, John H.; and Leasure, David D. Building structure. 255,837, 7-8-80, Cl. D25-18.000.

Lee, Norman; and Ammondson, Clayton J., to Zarn, Inc. Plank trash can. 255,762, 7-8-80, Cl. D7-194.000.

Leisure Foam Products, Inc.: *See—*
Galloway, David L.; Dock, Morris L.; Grundy, James K.; and Woodworth, Robert D., 255,755, Cl. D7-77.000.

Lektronics Systems, Inc.: *See—*
Marshall, John F.; and Huffman, James R., 255,795, Cl. D14-45.000.

Lewis, Thomas A. Design for a picture plaque. 255,786, 7-8-80, Cl. D11-136.000.

Liebman, Arno J. Combination shelf and hook unit. 255,734, 7-8-80, Cl. D6-136.000.

Linden, Sigurd. Dental instrument handle. 255,834, 7-8-80, Cl. D24-16.000.

Litchfield, Leon G.; and Hardy, Terence, to L. B. (Plastics) Limited. Drawer wall panel. 255,741, 7-8-80, Cl. D6-191.000.

Lombard, Marco H., to Emerson Electric Co. Rotary lawn edger, trimmer or similar article. 255,764, 7-8-80, Cl. D8-08.000.

Louis Marx & Co., Inc.: *See—*
Bretschger, Edward B., 255,809, Cl. D21-74.000.
Bretschger, Edward B., 255,810, Cl. D21-137.000.
Vernon, John A.; and Reiner, Lawrence L., 255,806, Cl. D21-7.000.

Lowe, Fred H. Medicine container. 255,777, 7-8-80, Cl. D9-185.000.

Luzier, Patricia A., to Corning Glass Works. Decal for culinary ware or the like. 255,748, 7-8-80, Cl. D7-39.000.

Luzier, Patricia A., to Corning Glass Works. Decal for culinary ware or the like. 255,749, 7-8-80, Cl. D7-39.000.

MacWilliams, Paul D.; and Santos, Mark A. Archery bow string release grip. 255,824, 7-8-80, Cl. D22-99.000.

Makhobey, Walter. Flush tank valve closer. 255,827, 7-8-80, Cl. D23-40.000.

Marks, Robert J. Lounge seat or similar article. 255,731, 7-8-80, Cl. D6-63.000.

Marks, Robert J. Furniture frame or similar article. 255,740, 7-8-80, Cl. D6-191.000.

Marshall, John F.; and Huffman, James R., to Lektronics Systems, Inc. Computer terminal housing. 255,795, 7-8-80, Cl. D14-45.000.
McKee, Gordon H.: *See—*
Sandau, Roray J.; and McKee, Gordon H., 255,831, Cl. D23-97.000.
McLean, Frederick L. Saw blade carrier. 255,730, 7-8-80, Cl. D3-30.000.
McManigal, Michael E. Combined chain container and step plate for tractors. 255,790, 7-8-80, Cl. D12-96.000.
Micro Electronics Limited: *See—*
Johnson, Tai C., 255,808, Cl. D21-28.000.
Miles Laboratories, Inc.: *See—*
Clemens, Anton H., 255,775, Cl. D9-18.000.
Morehead, Coatus L., Jr., to Flowers, Inc. Plant propagating block. 255,787, 7-8-80, Cl. D11-155.000.
Morton-Norwich Products, Inc.: *See—*
Britt, William J., 255,776, Cl. D9-60.000.
Mosinee Paper Corporation: *See—*
Benjamin, E. Burton, 255,733, Cl. D6-96.000.
Nakauchi, Shosuke: *See—*
Deguchi, Chuuji; and Nakauchi, Shosuke, 255,823, Cl. D22-25.000.
Northern Telecom Limited: *See—*
Crooks, Basil D.; and Bennett, R. Brian P., 255,765, Cl. D8-30.000.
Novitas, Inc.: *See—*
Saraceni, Remo, 255,796, Cl. D14-99.000.
Olinkraft, Inc.: *See—*
Kuplis, Valdis, 255,780, Cl. D9-245.000.
Olympic Fishing Tackle Co., Ltd.: *See—*
Deguchi, Chuuji; and Nakauchi, Shosuke, 255,823, Cl. D22-25.000.
Osmos Plast AB: *See—*
Thomasson, Harry, 255,732, Cl. D6-90.000.
Pape, John A.; and Walker, Norman, to Hilary Page "Sensible" Toys Limited. Toy figure. 255,813, 7-8-80, Cl. D21-166.000.
Patterson-Williams Manufacturing Co.: *See—*
Trubody, Bert M.; White, William W.; and Vonasek, David R., 255,816, Cl. D21-199.000.
Pedersen, Erling H., to Stig Ravn A/S. Mirror. 255,745, 7-8-80, Cl. D6-236.000.
Plasti-Fab. Co. Ltd.: *See—*
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Radtke, Lee F., to Interstate Industries, Inc. Electronic racing game, or similar article. 255,807, 7-8-80, Cl. D21-27.000.
Rams, Dieter, to Braun Aktiengesellschaft. Loudspeaker. 255,794, 7-8-80, Cl. D14-34.000.
Randall, Patrick J. Cushion. 255,743, 7-8-80, Cl. D6-201.000.
Raske, Walter O. A. Clip for holding a gas pump nozzle trigger in the open position. 255,773, 7-8-80, Cl. D8-349.000.
Reichl, Ernst, to Bosch-Siemens Hausgerate GmbH. Room vaporizer. 255,832, 7-8-80, Cl. D23-148.000.
Reiner, Lawrence L.: *See—*
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Rinaldi, Joseph A., to Rival Manufacturing Company. Cooking vessel. 255,747, 7-8-80, Cl. D7-16.000.
Rival Manufacturing Company: *See—*
Rinaldi, Joseph A., 255,747, Cl. D7-16.000.
Roccaforte, Harry I., to Champion International Corporation. Flip top dispenser box blank. 255,781, 7-8-80, Cl. D9-245.000.
Rothstein, Estelle G., to Corning Glass Works. Decal for culinary ware or the like. 255,750, 7-8-80, Cl. D7-39.000.
Rubbermaid Commercial Products Inc.: *See—*
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Russell William, Ltd.: *See—*
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Ryan, John W., to Agrowplow Pty Limited. Plow shank. 255,797, 7-8-80, Cl. D15-11.000.
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Saraceni, Remo, to Novitas, Inc. Wall mounted music-responsive color organ. 255,796, 7-8-80, Cl. D14-99.000.
Sassmannshausen, Knut O. Battery-operated light. 255,839, 7-8-80, Cl. D26-37.000.
Savas, Nedim: *See—*
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Soucy, Norman F. Hook. 255,774, 7-8-80, Cl. D8-371.000.
Spartan Labs, Inc.: *See—*
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Steinkamp, Norman A.; and Bluestein, Bernard B., to Sunbeam Corporation. Food processor base. 255,758, 7-8-80, Cl. D7-153.000.
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Stock, Herman E. Golf club holder. 255,819, 7-8-80, Cl. D21-221.000.
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Strada Jewellery Limited: *See—*
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Sunbeam Corporation: *See—*
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Thomasson, Harry, to Osmos Plast AB. Soap dish. 255,732, 7-8-80, Cl. D6-90.000.
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Treloar, Howard A. Combined lathe tool and holder therefor. 255,801, 7-8-80, Cl. D15-139.000.
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Van Koert, John. Mirror frame or the like. 255,746, 7-8-80, Cl. D6-241.000.
Vernon, John A.; and Reiner, Lawrence L., to Louis Marx & Co., Inc. Bowling game casing. 255,806, 7-8-80, Cl. D21-7.000.
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Hoffman, Paul R.; and Wallenwein, Hans K., 255,753, Cl. D7-74.000.
Weissenburger, Edward A., to Johnson & Johnson Dental Products Company. Dental capsule. 255,836, 7-8-80, Cl. D24-56.000.
Wexler, Howard. Toy figure. 255,814, 7-8-80, Cl. D21-168.000.
White, William W.: *See—*
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Whitmire, Winnie C. Planter. 255,736, 7-8-80, Cl. D6-153.000.
Wiedmann, Helmut. Tapping device. 255,798, 7-8-80, Cl. D15-112.000.
Wieland, Howard N., Jr., to Dexter Corporation, The. Adhesive-applying tool. 255,766, 7-8-80, Cl. D8-30.000.
Winter, Russell K.; Savas, Nedim; Snively, Joseph H.; and Harvey, Thomas D., to Russell William, Ltd. Panty hose display unit. 255,739, 7-8-80, Cl. D6-189.000.
Woodworth, Robert D.: *See—*
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Zarn, Inc.: *See—*
Lee, Norman; and Ammondson, Clayton J., 255,762, Cl. D7-194.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 8, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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49	4,211,363

CLASS 237

12.3 A	4,211,364
12.3 C	4,211,365

CLASS 238

14	4,211,366

CLASS 239

226	4,211,367
315	4,211,368

CLASS 241

182	4,211,369
183	4,211,370
282.1	4,211,371

CLASS 242

1	4,211,372
20	4,211,373
55	4,211,374
81	4,211,375
86.5 R	4,211,376
107.2	4,211,377

CLASS 244

3.22	4,211,378

CLASS 248

222.2	4,211,379
229	4,211,380
231	4,211,381
467	4,211,382
603	4,211,383

CLASS 249

160	4,211,384
192	4,211,385

CLASS 250

55	4,211,929
202	4,211,921
203 R	4,211,922
239	4,211,923
311	4,211,924
445 T	4,211,925
	4,211,926
	4,211,927
497	4,211,928

CLASS 251

122	4,211,386
335 B	4,211,387

CLASS 252

21	4,211,662
42.7	4,211,663
62.54	4,211,664
63	4,211,665
299	4,211,666
313 R	4,211,667
316	4,211,668
373	4,211,669
429 B	4,211,670
431 N	4,211,671
455 R	4,211,672
462	4,211,673
522 R	4,211,674
557	4,211,675

CLASS 254

344	4,211,388

CLASS 260

2.3	4,211,676
13	4,211,677
22 D	4,211,678
29.1 R	4,211,679
29.2 R	4,211,681
29.2 TN	4,211,680
29.3	4,211,682
29.4 R	4,211,683
29.6 TA	4,211,684
30.4 EP	4,211,685
40 P	4,211,688
40 R	4,211,686
	4,211,687
	4,211,689
42.21	4,211,691
42.46	4,211,690
45.7 P	4,211,692
45.75 B	4,211,730
112.5 S	4,211,693
123.5	4,211,694
	4,211,695
152	4,211,696
158	4,211,697
176	4,211,698
239.1	4,211,702
239.3 A	4,211,700
239.3 R	4,211,699
239.57	4,211,701
319.1	4,211,704
326 C	4,211,705
326.27	4,211,706
326.31	4,211,707
326.46	4,211,708
326.47	4,211,709
343.3 R	4,211,710
	4,211,711
343.7	4,211,712
346.73	4,211,713
	4,211,714
348.64	4,211,715
391	4,211,716
449 L	4,211,719
449 M	4,211,718
464	4,211,720
465 G	4,211,721
465.3	4,211,722
544 K	4,211,723
562 B	4,211,724
583 P	4,211,725
658 R	4,211,728
932	4,211,731
938	4,211,732

CLASS 261

36 R	4,211,733
39 B	4,211,734
116	4,211,735

CLASS 264

8	4,211,736
12	4,211,737
44	4,211,738
51	4,211,739
68	4,211,740
173	4,211,741
216	4,211,742
284	4,211,743

CLASS 266

207	4,211,390

CLASS 269

41	4,211,391
75	4,211,392
111	4,211,393
239	4,211,394
254 R	4,211,395

CLASS 270

13	4,211,396

CLASS 271

4	4,211,397
9	4,211,398
232	4,211,399

CLASS 272

56.5 R	4,211,400
86	4,211,401
93	4,211,402
134	4,211,403
141	4,211,404
	4,211,405

CLASS 273

30	4,211,406
60 B	4,211,407
85 R	4,211,408
86 B	4,211,409
94	4,211,410
141 A	4,211,414
162 B	4,211,415
164	4,211,416
176 H	4,211,417
186 R	4,211,418
248	4,211,419
260	4,211,420
345	4,211,411
411	4,211,413
424	4,211,412

CLASS 274

9 B	4,211,421
23 R	4,211,422

CLASS 277

25	4,211,424
212 FB	4,211,423

CLASS 279

46 R	4,211,425

CLASS 280

87.02 W	4,211,426
406 A	4,211,427
511	4,211,428
601	4,211,433
716	4,211,429
740	Re.30,327
802	4,211,430
804	4,211,431
808	4,211,432

CLASS 282

11.5 A	4,211,434
25	4,211,435
27.5	4,211,436
	4,211,437

CLASS 285

7	4,211,438
27	4,211,439
45	4,211,440

CLASS 290

15	4,211,930
40 A	4,211,931
52	4,211,932

CLASS 292

259 R	4,211,441
340	4,211,442
341.16	4,211,443

CLASS 293

150	4,211,444

CLASS 294

25	4,211,445
26	4,211,446

CLASS 296

1 F	4,211,447
3	4,211,448

CLASS 297

126	4,211,449
232	4,211,450
362	4,211,451

CLASS 307

35	4,211,933
98	4,211,934
118	4,211,935
221 D	4,211,936
	4,211,937
229	4,211,939
233 R	4,211,938
251	4,211,940
303	4,211,941
355	4,211,942

CLASS 308

8.2	4,211,453
10	4,211,452
26	4,211,454

CLASS 310

13	4,211,943
72	4,211,944
112	4,211,945
212	4,211,946
312	4,211,947
322	4,211,948
	4,211,949
327	4,211,950
329	4,211,951

CLASS 312

198	4,211,455

CLASS 313

143	4,211,952
450	4,211,953

CLASS 315

5.41	4,211,954
53	4,211,955
208	4,211,956
276	4,211,957
312	4,211,958
362	4,211,959
368	4,211,960

CLASS 318

139	4,211,961
254	4,211,962
	4,211,963
314	4,211,964
341	4,211,965
482	4,211,966
490	4,211,967

CLASS 320

2	4,211,968
14	4,211,969

CLASS 324

58.5 C	4,211,970
140 D	4,211,971
154 R	4,211,972
158 MG	4,211,973
377	4,211,974

CLASS 328

127	4,211,981
138	4,211,982

CLASS 331

94.5 PE	4,211,983
97	4,211,984
116 FE	4,211,985

CLASS 333

116	4,211,986
230	4,211,987

CLASS 334

16	4,211,988

CLASS 335

17	4,211,989
205	4,211,990
207	4,211,991
222	4,211,992

CLASS 336

131	4,211,993

CLASS 338

21	4,211,994

CLASS 339

12 R	4,211,456
15	4,211,457
74 R	4,211,458
75 M	4,211,460
75 MP	4,211,459
91 R	4,211,461
103 M	4,211,462
	4,211,463
122 R	4,211,464
144 T	4,211,465
176 MF	4,211,466

CLASS 340

63	4,211,995
171 R	4,211,998
347 AD	4,211,999
347 P	4,212,000
388	4,212,001
572	4,212,002
574	4,212,003
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603	4,212,005
685	4,212,006
691	4,212,007
723	4,212,008
728	4,212,009
784	4,212,010
	4,212,011

CLASS 343

7 A	4,212,012
754	4,212,014
883	4,212,015

CLASS 346

62	4,212,016
75	4,212,017
76 L	4,212,018

CLASS 350

96.10	4,211,468
96.14	4,211,467
96.16	4,211,469
96.21	4,211,470
147	4,211,471
216	4,211,472
337	4,211,473
356	4,211,474
357	4,211,475

CLASS 351

160 R	4,211,476

CLASS 354

1	4,211,477
60 L	4,211,478
213	4,211,479
234	4,211,480
312	4,211,481
322	Re.30,328

CLASS 355

8	4,211,482
14 R	4,211,483
15	4,211,484

CLASS 356

5	4,211,485
328	4,211,486
336	4,211,487
369	4,211,488
400	4,211,489

CLASS 357

13	4,212,019
17	4,212,020
	4,212,021

19	4,212,023
22	4,212,022
38	4,212,024
41	4,212,026
51	4,212,025

CLASS 358

8	4,212,027
11	4,212,028
21 R	4,212,029
67	4,212,030
101	4,212,031
177	4,212,032
213	4,212,034
260	4,212,035
261	4,212,036

CLASS 360

33	4,212,037
41	4,212,038
73	4,212,039
96.3	4,212,040
103	4,212,044
104	4,212,043
108	4,212,042
113	4,212,041

CLASS 361

80	4,212,046
124	4,212,047
127	4,212,045

CLASS 362

19	4,212,048
33	4,212,049
65	4,212,050
287	4,212,051
352	4,212,052

CLASS 363

39	4,212,053
53	4,212,054
71	4,212,055
96	4,212,056

CLASS 364

200	Re.30,331
	4,212,057
	4,212,058
	4,212,059
	4,212,060
414	4,212,061
	4,212,062
424	4,212,064
426	4,212,063
431	4,212,065
	4,212,066
460	4,212,067
465	4,212,068
467	4,212,069
500	4,212,070
505	4,212,071
515	4,212,072
562	4,212,073
567	4,212,074
580	4,212,075
706	4,212,076
900	4,212,077
	4,212,078
	4,212,079
	4,212,080
	4,212,081

CLASS 365

118	4,212,082
154	4,212,083

CLASS 366

11	4,211,490
30	4,211,491
76	4,211,492

CLASS 367

118	4,212,084
124	4,212,085
178	4,212,086

CLASS 368

47	4,211,065
113	4,211,066
185	4,211,067
272	4,211,064

CLASS 370

30	4,212,013

CLASS 371

15	4,211,915
	4,211,916
20	4,211,917
37	4,211,996
38	4,211,997

CLASS 375

2	4,211,891

CLASS 400

121	4,211,493
124	4,211,494
	4,211,495
	4,211,496
486	4,211,497
621	4,211,498
631.6	4,211,499

CLASS 401

65	4,211,500
261	4,211,501

CLASS 403

324	4,211,502

CLASS 405

216	4,211,503
284	4,211,504

CLASS 406

19	4,211,505
55	4,211,506

CLASS 407

37	4,211,507
120	4,211,508

CLASS 408

35	4,211,509
186	4,211,510

CLASS 409

26	4,211,511
221	4,211,512

CLASS 414

559	4,211,513

CLASS 415

1	Re.30,329
191	4,211,514

CLASS 416

146 R	4,211,515
191	4,211,516

CLASS 417

12	4,211,517
54	4,211,518
360	4,211,519
494	4,211,520

CLASS 418

48	4,211,521
99	4,211,522

CLASS 422

20	4,211,744
28	4,211,745
54	4,211,746
81	4,211,747
90	4,211,748
102	4,211,749
123	4,211,750
134	4,211,751
268	4,211,752

CLASS 423

54	4,211,753
62	4,211,754
74	4,211,755
118	4,211,756
251	4,211,757
263	4,211,758
281	4,211,759
328	4,211,760
539	4,211,761

CLASS 424

1	4,211,762
	4,211,763
9	4,211,764
78	4,211,765
88	4,211,766
92	4,211,767
95	4,211,768
177	4,211,769
180	4,211,770
	4,211,771
	4,211,772
	4,211,773
181	4,211,774
225	4,211,775
228	4,211,776
232	4,211,777
244	4,211,778
246	4,211,779
	4,211,780
250	4,211,781
263	4,211,782
	4,211,783
267	4,211,784
272	4,211,785
273 P	4,211,786
279	4,211,787
283	4,211,788
285	4,211,789
	4,211,790
304	4,211,791
	4,211,792
305	4,211,793
330	4,211,794

CLASS 425

4 C	4,211,523
296	4,211,524
326.1	4,211,525

CLASS 426

2	4,211,795
	4,211,796
	4,211,797
41	4,211,798
50	4,211,799
93	4,211,800
430	4,211,801
609	4,211,802

CLASS 427

128	4,211,803
377	4,211,804

CLASS 428

40	4,211,805
91	4,211,806
109	4,211,807
131	4,211,808
201	4,211,809
	4,211,810
220	4,211,811
224	4,211,812
263	4,211,813
265	4,211,814
290	4,211,815
296	4,211,816
310	4,211,817
367	4,211,818
374	4,211,819
410	4,211,820
411	4,211,821
412	4,211,822
	4,211,823
462	4,211,824
483	4,211,825
497	4,211,826
654	4,211,827

CLASS 429

11	4,211,828
27	4,211,829
	4,211,830
78	4,211,831
105	4,211,832
149	4,211,833

CLASS 430

211	4,211,559
286	4,211,563
306	4,211,561
313	4,211,560
326	4,211,834
359	4,211,558
403	4,211,835
449	4,211,836
456	4,211,562
502	4,211,837
	4,211,838
619	4,211,839

CLASS 431

69	4,211,526

CLASS 433

229	4,211,008

CLASS 435

2	4,211,843
14	4,211,845
25	4,211,844
107	4,211,840
136	4,211,841
141	4,211,846
210	4,211,842

CLASS 455

40	4,211,980
75	4,211,975
295	4,211,978
306	4,211,979
326	4,211,977
344	4,211,976
601	4,211,920

CLASS 521

121	4,211,847
154	4,211,848
164	4,211,849
	4,211,850

CLASS 525

106	4,211,729
108	4,211,851
240	4,211,852
317	4,211,853
344	4,211,855
410	4,211,854

CLASS 528

141	4,211,856
215	4,211,857
272	4,211,858
275	4,211,859
312	4,211,860
322	4,211,861
405	4,211,862
483	4,211,863

CLASS 536

17 A	4,211,864
48	4,211,865
53	4,211,866

CLASS 544

60	4,211,867
221	4,211,868
334	4,211,869
336	4,211,870

CLASS 546

6	4,211,871
116	4,211,872
346	4,211,873

CLASS 548

112	4,211,703
304	4,211,874
342	4,211,875
367	4,211,876

CLASS 549

44	4,211,877
78	4,211,878

CLASS 556

470	4,211,717

CLASS 560

53	4,211,879
243	4,211,880

CLASS 562

416	4,211,881
	4,211,882
433	4,211,883

CLASS 568

424	4,211,726
437	4,211,727
807	4,211,884

CLASS 585

316	4,211,885
321	4,211,886

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D2—	27	255,728
	352	255,729
D3—	30	255,730
D6—	63	255,731
	90	255,732
	96	255,733
	136	255,734
	144	255,735
	153	255,736
	161	255,737
	179	255,738
	189	255,739
	191	255,740
		255,741
	198	255,742
	201	255,743
	209	255,744
	236	255,745
	241	255,746
D7—	16	255,747
	39	255,748
		255,749
		255,750
	47	255,751
	71	255,752
	74	255,753
	77	255,754
		255,755
	94	255,756
	153	255,757
		255,758
	154	255,759
	158	255,760
	163	255,761
	194	255,762
D8—	5	255,763
	08	255,764
	30	255,765
		255,766
		255,767
	51	255,768
		255,769
	65	255,770
	71	255,771
	331	255,772
	349	255,773
	371	255,774
D9—	18	255,775
	60	255,776
	185	255,777
	193	255,778
	224	255,779
	245	255,780
		255,781
	252	255,782
D10—	46	255,783
	71	255,784
D11—	43	255,785
	136	255,786
	155	255,787
D12—	9	255,788
	71	255,789
	96	255,790
	154	255,791
	187	255,792
D14—	6	255,793
	34	255,794
	45	255,795
	99	255,796
D15—	11	255,797
	112	255,798
	125	255,799
	139	255,800
		255,801
D16—	65	255,802
D17—	2	255,803
D18—	24	255,804
D19—	76	255,805
D21—	7	255,806
	27	255,807
	28	255,808
	74	255,809
	137	255,810
	148	255,811
	165	255,812
	166	255,813
	168	255,814
	198	255,815
	199	255,816
	206	255,817
	219	255,818
	221	255,819
	229	255,820
	234	255,821
D22—	15	255,822
	25	255,823
	99	255,824
D23—	7	255,825
	15	255,826
	40	255,827
	48	255,828
	69	255,829
	95	255,830
	97	255,831
	148	255,832
D24—	1.1	255,833
	16	255,834
	36	255,835
	56	255,836
D25—	18	255,837
	48	255,838
D26—	37	255,839

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DESIGN PATENTS

6 : 255,769
255,771
255,833
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06 : 255,728
255,761
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PLANT PATENTS

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Sidney A. Diamond, *Commissioner*

Vol. 996 Number 3

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 15, 1980



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PATENT AND TRADEMARK OFFICE NOTICES

Update of Information Concerning the Patent Cooperation Treaty (PCT)

The following topics of interest to applicants and prospective applicants under the Patent Cooperation Treaty appear in this Notice:

Topic 1: Adherence to the Patent Cooperation Treaty (PCT) by Hungary and the Democratic People's Republic of Korea.
Topic 2: List of PCT Contracting States as of June 1, 1980.
Topic 3: Table of Fees for the processing of PCT International Applications.
Topic 4: Note concerning the Patent Treaty between Switzerland and Liechtenstein.
Topic 5: Modification of Section 203 of the Administrative Instruction under the PCT.

TOPIC 1: RATIFICATION OF THE PATENT COOPERATION TREATY BY HUNGARY AND THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

Hungary deposited its instrument of ratification with the International Bureau on March 27, 1980. According to the provisions of Patent Cooperation Treaty (PCT) Article 63, the PCT came into effect for Hungary on June 27, 1980. Hungary may be designated in International Applications filed on and after June 27, 1980.

On April 8, 1980, the Democratic People's Republic of Korea (North Korea) deposited its instrument of accession to the PCT. This deposit will result in the Democratic People's Republic of Korea becoming a Contracting State of the PCT on July 8, 1980. Consequently, nationals and residents of the Democratic People's Republic of Korea will become entitled to file international applications under the PCT as from July 8, 1980, and, from the same date, it will be possible to file international applications designating the Democratic People's Republic of Korea.

TOPIC 3: PCT FEE AMOUNTS (AS OF AUGUST 1, 1979)

Transmittal Fee	35.00
Search Fee	300.00
Basic Fee	
First 30 sheets	190.00
Basic Fee Supplement	
Each sheet over 30	3.50
Designation Fee	
Each State or group of States for which the same regional patent is sought	45.00

TOPIC 4: NOTE CONCERNING THE PATENT TREATY BETWEEN SWITZERLAND AND LIECHTENSTEIN

On April 1, 1980, a Patent Treaty between Switzerland and Liechtenstein will enter into force and, on the same day, the European Patent Convention will enter into force for Liechtenstein. Certain modifications to the Administrative Instructions under the PCT relating to the designation of Switzerland and Liechtenstein in international applications will also enter into force on April 1, 1980.

Under the Treaty between Switzerland and Liechtenstein, the two will constitute a single territory for patent purposes and the Swiss Intellectual Property Office will have assigned to it the performance of the administrative tasks related hereto. The Swiss Intellectual Property Office will also act as the receiving Office for international applications under the PCT filed by the nationals and residents of Liechtenstein. The designation of either Switzerland or Liechtenstein in an international application will automatically have the effect of the desgnation of both.

Until April 1, 1980, international applications which designate Switzerland (whether for the purposes of a national patent or for a European patent) will have effect for Liechtenstein once a patent is granted by virtue of the present law in Liechtenstein which extends to Liechtenstein the effect of patents having effect for Switzerland. This makes it unnecessary to designate Liechtenstein in international applications filed prior to April 1, 1980; indeed, no provision will exist for effect to be given to such a designation prior to that date.

From April 1, 1980, the designation of Switzerland and Liechtenstein (or either of them without the other) in an international application (whether for the purposes of a patent granted by the Swiss Intellectual Property Office or for the purposes of a European patent) will have the effect of a designation for the purposes of a single patent granted with reference to and having effect for both Switzerland and Liechtenstein.

The following principles will apply with respect to the designation of Switzerland and Liechtenstein (or both) in international applications:

European Patents. If the designation is for the purposes of a European patent, the indication that a regional patent is sought (or alternatively that a European patent is sought) must be given in connection with the designation.

Patents granted by Swiss Intellectual Property Office. If a patent to be granted by the Swiss Intellectual Property Office is sought, the designation must not contain any further indications besides the name of Switzerland or Liechtenstein (or both), in particular the words "regional patent" must not be used.

Double Designations. The designation of Switzerland and Liechtenstein for the purposes of a European patent and also for the purposes of a patent granted by the Swiss Intellectual Property Office (i.e., a double designation) is also possible where either of them (or both) is (are) indicated once with the indication that a regional patent is sought and once without such indication.

No additional designation fee will be payable under the PCT by reason of the fact that Liechtenstein is included in the designation of Switzerland and *vice versa* since the effect of the Treaty between Switzerland and Liechtenstein is, for the purposes of the PCT, to create a unitary regional patent for the two States.

TOPIC 5: ADMINISTRATIVE INSTRUCTIONS UNDER THE PATENT COOPERATION TREATY (PCT)

Modification

The Director General of the World Intellectual Property Organization has modified Section 203 of the Administrative Instructions under the PCT pursuant to Rule 89.2 of the PCT Regulations. The text of Section 203 as so modified is set out below. The new text takes effect on April 1, 1980.

Section 203

Regional Patents

(1) Where the applicant wishes to obtain a regional patent in respect of any designated State, he shall, subject to paragraphs (2) and (3), make the indication in the request referred to in Rule 4.1(b)(IV) by inserting the words "regional patent," or their equivalent in the language of the international application, immediately after the indication of the said State or, where an indication has been made under Section 202, after that indication, provided that:

(i) Where Article 4(1)(ii), third clause applies, and not all the States party to the regional treaty have been designated, the international application shall be treated as if all those States had been designated and as if the designations of all such States contained the said words, whether the said designations contained an indication of the wish to obtain a regional patent or, according to Article 4(1)(ii), fourth clause, are to be treated as containing such indication:

(ii) Where the national law of any designated State contains a provision as referred to in Article 45(2), the International Bureau shall, according to Article 4(1)(ii), fourth clause, treat the designation as if it contained the said words even where the applicant failed to indicate them.

(2) The applicant may, instead of the words "regional patent" referred to in paragraph (1), use other words to the same effect; such words may include a reference to a patent to be granted by the European Patent Office under the Convention on the Grant of European Patents done at Munich on October 5, 1973 ("European patent"), where the regional patent which the applicant wishes to obtain is a European patent.

(3) An indication, in respect of the designation of Liechtenstein or Switzerland, or both, of the wish to obtain a regional patent shall be taken as indicating a wish to obtain a European patent in respect of those States, whereas the absence of any indication of the wish to obtain a regional patent in respect of such a designation shall be taken as indicating a wish to obtain a patent granted by the Swiss Intellectual Property Office in respect of those States.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dated: June 17, 1980.

TOPIC 2: LIST OF PCT CONTRACTING STATES AS OF JUNE 1, 1980

State	Ratification or Accession	Date of Ratification or Accession	Date From Which State May Be Designated
(1) Central African Republic*	Accession	15 September 1971	01 June 1978
(2) Senegal*	Ratification	08 March 1972	01 June 1978
(3) Madagascar	Ratification	27 March 1972	01 June 1978
(4) Malawi	Accession	16 May 1972	01 June 1978
(5) Cameroon*	Accession	15 March 1973	01 June 1978
(6) Chad*	Accession	12 February 1974	01 June 1978
(7) Togo*	Ratification	28 January 1975	01 June 1978
(8) Gabon*	Accession	06 March 1975	01 June 1978
(9) United States of America	Ratification	26 November 1975	01 June 1978
(10) Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11) Congo*	Accession	08 August 1977	01 June 1978
(12) Switzerland**	Ratification	14 September 1977	01 June 1978
(13) United Kingdom**	Ratification	24 October 1977	01 June 1978
(14) France**	Ratification	25 November 1977	01 June 1978
(15) Soviet Union	Ratification	29 December 1977	01 June 1978
(16) Brazil	Ratification	09 January 1978	01 June 1978
(17) Luxembourg**	Ratification	31 January 1978	01 June 1978
(18) Sweden**	Ratification	17 February 1978	01 June 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark	Ratification	01 September 1978	01 December 1978
(21) Austria**	Ratification	23 January 1979	23 April 1979
(22) Monaco	Ratification	22 March 1979	22 June 1979
(23) Netherlands**	Ratification	10 April 1979	10 July 1979
(24) Romania	Accession	24 April 1979	24 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein**	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea	Accession	08 April 1980	08 July 1980

*Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI Member States. A designation of any State is an indication that all OAPI States have been designated. Note: only one designation fee is due regardless of the number of OAPI Member States designated.

**Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member States are available through PCT, except for France, for which only European patents are available if PCT is used. If regional protection is desired for one or more States, the indication "regional patent" must follow the designation of the State or States. Note: only one designation fee is due regardless of the number of EPC Member States designated.

Statement on Prior Art

In March, 1980, the Quality Review Branch conducted a survey to determine the value of the "explanations of relevance" submitted by applicants in prior art statements as required in 37 CFR 1.97–1.99. Of the 128 cases (part of the 4% sample selected in the normal quality review process) surveyed, 64 contained prior art citations and 58 of these were accompanied by "explanations of relevance" for each cited reference. Of the 58 explanations of relevance, 45 (77%) were considered by examiners to be helpful in assessing each prior art citation in terms of finding relevant disclosures which might not otherwise have been found or in saving time in locating such disclosures.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dated: June 17, 1980.

Board of Appeals Decisions Rendered in the Month of May 1980

Affirmed	167
Affirmed in part	24
Reversed	61
Total	252

Rulemaking Agenda

On June 5, 1980, the Department of Commerce published in the FEDERAL REGISTER, 45 FR 37972, its semiannual agenda of rulemaking actions planned or under consideration by its various units, including the Patent and Trademark Office. The agenda consists of three schedules, A, B, C, and brief descriptions of each rule change under consideration.

Schedule A lists the rules or rule changes under consideration, of which 10 are patent or trademark rules or rule changes. Schedule B lists existing rules selected for review over the next 12 months, none of which, however, are patent or trademark rules. Schedule C lists rules or rule changes which appeared in the last agenda but are being dropped from Schedules A and B. Nine are patent or trademark rules or rule changes.

For those members of the public who are interested in the Patent and Trademark Office's agenda of rulemaking activities, the portions of Schedules A and C which list patent and trademark rules or rule changes, and the brief descriptions of the 10 patent and trademark rules or rule changes under consideration are reproduced below.

Schedule A - DOC SEMIANNUAL AGENDA OF PENDING REGULATIONS
MAY 15, 1980

Department Unit	Title of Regulation Under Consideration	Contact Person	Is Regulation Significant? Yes	No	Unknown	Is Regulatory Analysis Required? Yes	No	Unknown	Anticipated Date of Regulatory Action*
PTI/PTO	Ex Parte Prosecution of Trademark Applications; Inter Partes Proceedings before the Trademark Trial and Appeal Board; Petitions to the Commissioner and Post-Registration Requirements (37 CFR 2.20, 2.27, 2.63, 2.65, 2.81, 2.88, 2.94-2.135, 2.142, 2.146, 2.165, 2.173, 2.184, and 2.186)	David J. Kera, Member, Trademark Trial and Appeal Board (703) 557-3551	X				X		N-A 1980, F-M 1981
PTI/PTO	Secrecy of Certain Inventions and Licenses to File Applications in Foreign Countries (37 CFR Part 5)	S. W. Engle Act'g. Dir., Special Laws Admin. Group (703) 557-2877	X				X		N-J 1980, F-J 1981
PTI/PTO	Requests for Identifiable Records (37 CFR 1.15)	John W. Dewhirst Assoc. Solicitor (703) 557-3542	X				X		N-J 1980, F-J 1981
PTI/PTO	Compulsory Counterclaims in Trademark Opposition and Cancellation Proceedings (37 CFR 2.106 and 2.114)	David J. Kera, Member, Trademark Trial and Appeal Board (703) 557-3551	X				X		F-J 1980
PTI/PTO	Patent Application Oath or Declaration Requirements (37 CFR 1.65, 3.18 and 3.18a)	Louis O. Maassel, Editor, Manual of Patent Examining Procedure (703) 557-3070	X				X		N-J 1980 (Reproposed), F-J 1981

* A = Advanced Notice of Proposed Rulemaking; N = Notice of Proposed Rulemaking; I = Interim Rule; F = Final Rule.

Department Unit	Title of Regulation Under Consideration	Contact Person	Is Regulation Significant? Yes	No	Unknown	Is Regulatory Analysis Required? Yes	No	Unknown	Anticipated Date of Regulatory Action*
PTI/PTO	Professional Conduct of and Advertising by Persons Registered to Practice Before the PTO (37 CFR 1.344, 1.345, 2.13 and 2.14)	Harry I. Moatz Commissioner of Patents and Trademarks (703) 557-2238	X				X		N-J 1980, F-D 1980
PTI/PTO	Prosecution of Patent Applications after Final Rejection	Louis O. Maassel Editor, Manual of Patent Examining Procedure (703) 557-3070	X				X		N-A 1980, F-F 1981
PTI/PTO	Deposit of Computer Program Listings (37 CFR 1.21, 1.77 and 1.96)	Louis O. Maassel Editor, Manual of Patent Examining Procedure (703) 557-3070	X				X		F-A 1980
PTI/PTO	Amending Patents and Patent Applications to Correct Inventorship (37 CFR 1.45 and 1.324)	Louis O. Maassel Editor, Manual of Patent Examining Procedure (703) 557-3070	X				X		N-J 1980, F-F 1981
PTI/PTO	Interferences; Motions and Printed Briefs (37 CFR 1.225, 1.231, 1.253, 1.254, and 1.258)	Ian A. Calvert Chairman, Board of Patent Interferences (703) 557-3625	X				X		N-A 1980, F-J 1981

* A = Advanced Notice of Proposed Rulemaking; N = Notice of Proposed Rulemaking; I = Interim Rule; F = Final Rule.

Schedule C -- Regulations Deleted From Prior DOC Semiannual Agenda

Department Unit	Title of Regulation	Prior Agenda Listing	Reason for Deletion from Agenda
PTI/PTO	* Interferences, Motions Before the Primary Examiner (37 CFR 1.231)	UC	Combined with related regulations under a new title: Interferences; Motions and Printed Briefs (see Schedule A).
PTI/PTO	* Examination of Reissue Applications (37 CFR 1.176)	UC	Changes determined to be unnecessary. Alternatives available under existing regulations have proven to be adequate.
PTI/PTO	* Recording Interests in Patents, Trademarks, Patent Applications and Trademark Applications (37 CFR 1.331-334, 2.185-187)	UC	Changes determined to be unnecessary. Guidelines will be published in the Manual of Patent Examining Procedure and Trademark Manual of Examining Procedure to assist the public in determining the kinds of interests that may and may not be recorded.
PTI/PTO	* Advisory Opinions by the PTO on the Validity of Patents	UC	Postponed pending congressional action on H.R. 6933 and S. 1679 which include provisions for the re-examination of issued patents.
PTI/PTO	* Inter Partes Proceedings and Procedures before the Trademark Trial and Appeal Board (37 CFR 2.91-136 and 2.27(d))	UR	Review completed. Revisions are under consideration (see Schedule A).
PTI/PTO	* Appeals to the Trademark Trial and Appeal Board (37 CFR 2.141-142 and 2.64)	UR	Review completed. Revisions are under consideration (see Schedule A).
PTI/PTO	* Secrecy of Certain Inventions and Licenses to File Applications in Foreign Countries (37 CFR Part 5)	UR	Review completed. Revisions are under consideration (see Schedule A).
PTI/PTO	* Petitions to the Commissioner in Trademark Cases (37 CFR 2.146-2.148, 2.64, 2.65 and 2.184)	UR	Review completed. Revisions are under consideration (see Schedule A).
PTI/PTO	* Request for Identifiable Records (37 CFR 1.15)	UR	Review completed. Revision is under consideration (see Schedule A).

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Ex parte prosecution of trademark applications, inter partes proceedings before the Trademark Trial and Appeal Board, petitions to the Commissioner and post-registration requirements (37 CFR 2.20, 2.27, 2.63, 2.65, 2.81, 2.88, 2.94-2.135, 2.142, 2.146, 2.165, 2.173, 2.184 and 2.186).

(a) *Description and Need:* PTO is considering a revision of its regulations relating to the ex parte prosecution of trademark applications, inter partes proceedings before the Trademark Trial and Appeal Board, Petitions to the Commissioner and post-registration requirements, currently published in Title 37, *Code of Federal Regulations*, Part 2, which have been found on review to need clarification, updating and expansion.

(b) *Legal Authority:* Pub. L. 489, 79th Cong., 2d Sess., Ch. 540, Sec. 41, as amended (15 U.S.C. 1123, as amended).

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (September 1980).

(ii) In final form (May 1981).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish its proposed revision in the FEDERAL REGISTER and the OFFICIAL GAZETTE and invite the public to submit comments. A public hearing will be held.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:* (i) Regulatory analysis required?

(yes , no X , unknown).

(ii) *Other Documents Available:* None

(h) *Agency Contact:* David J. Kera, Member, Trademark Trial and Appeal Board, Commissioner of Patents and Trademarks, Washington, D.C. 20231. Tel: (703) 557-3551.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Secrecy of certain inventions and licenses to file applications in foreign countries (37 CFR Part 5).

(a) *Description and Need:* PTO has reviewed these regulations and found that they should be revised to clarify procedures and provide up-to-date information relating to these procedures.

(b) *Legal Authority:* 35 U.S.C. 6 and 181-188, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes , no , unknown).

(ii) Is the regulation major?

(yes , no , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (August 1980).

(ii) In final form (January 1981).

(e) *Tentative Plan for Obtaining Public Comments.* PTO will publish its proposed revision in the FEDERAL REGISTER and the OFFICIAL GAZETTE and invite the public to submit comments. No public hearing will be held.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:*

(1) Regulatory analysis required?

(yes , no , unknown).

(2) *Other Documents Available:* None.

(h) *Agency Contact:* S. W. Engle, Acting Director, Special Laws Administration Group, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-2877.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Requests for identifiable records (37 CFR 1.15).

(a) *Description and Need:* PTO has reviewed and found that it needs to update its regulation, currently published in Title 37, *Code of Federal Regulations*, Part 1, relating to requests by members of the public for records not disclosed as part of the regular informational activity of the PTO and not otherwise dealt with in Part 1.

(b) *Legal Authority:* 35 U.S.C. 6, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes , no , unknown).

(ii) Is the regulation major?

(yes , no , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (August 1980).

(ii) In final form (January 1981).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish its proposed revision in the FEDERAL REGISTER and the OFFICIAL GAZETTE and invite the public to submit comments. No public hearing will be held.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:*

(1) Regulatory analysis required?

(yes , no , unknown).

(2) *Other Documents Available:* None.

(h) *Agency Contact:* John W. Dewhirst, Associate Solicitor, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-3551.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Compulsory counterclaims in trademark opposition and cancellation proceedings (37 CFR 2.106 and 2.114).

(a) *Description and Need:* PTO is considering a revision of its regulations relating to counterclaims in trademark cases, currently published in Title 37, *Code of Federal Regulations*, Part 2. Defendants who could counterclaim to cancel a registration pleaded by the plaintiff in trademark opposition and cancellation cases are not required by current regulations to do so. The revision under consideration would require the defendant to do so. The primary benefit of the revision will be to avoid piecemeal litigation and settle all issues between the parties at one time with a minimum expenditure of time and effort by the parties and the PTO.

(b) *Legal Authority:* Pub. L. 489, 79th Cong., 2d Sess., Ch. 540, Sec. 41, as amended (15 U.S.C. 1123, as amended).

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable:* Anticipated Dates Proposal Will Appear in the FEDERAL REGISTER:

(i) In proposed form (April 16, 1979).

(ii) In final form (July 1980).

(e) *Tentative Plan for Obtaining Public Comments:* PTO published the proposed revision in the FEDERAL REGISTER (44 FR 22478, April 16, 1979) and the OFFICIAL GAZETTE for comment.

(f) *Major Issues:* The major issue involved in the proposed action is whether a defendant would, in certain circumstances be precluded from filing a concurrent use application if (s)he is required to counterclaim for cancellation of a registration pleaded by the plaintiff.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(yes , no X , unknown).

(2) *Other Documents Available:* A file of the comments the PTO has received and a summary and analysis of the comments will be available for examination by interested parties.

(h) *Agency Contact:* David J. Kera, Member, Trademark Trial and Appeal Board, Commissioner of Patents and Trademarks, Washington, D.C. 20231. Tel. (703) 557-3551.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Patent application oath or declaration requirements. (37 CFR 1.65, 3.18 and 3.18a).

(a) *Description and Need:* PTO proposes to revise its regulations relating to the information patent applicants are required to provide in their oaths or declarations in patent applications, currently published in Title 37, *Code of Federal Regulations*, Part 1. PTO proposes to revise these regulations to require that an oath or declaration speaks as of the filing date of the application if the application is a continuation-in-part. This requirement will provide information that court decisions indicate should be considered by the PTO in examining patent applications.

(b) *Legal Authority:* 35 U.S.C. 6, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (published 43 FR 55417, November 28, 1978; revised proposal August 1980).

(ii) In final form (February 1981).

(e) *Tentative Plan for Obtaining Public Comments:* PTO published a proposed revision in the FEDERAL REGISTER for comment and held a public hearing on February 7, 1979. In view of objections to one part of the proposed revision, that part is being deleted. A revised proposal will be published for comment since the original proposal was inadvertently not published in the OFFICIAL GAZETTE. No further hearing will be held.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(yes , no X , unknown).

(2) *Other Documents Available:* A file of the written comments received by the PTO, a transcript of the hearing and a summary and analysis of comments will be available for examination by interested parties.

(h) *Agency Contact:* Louis O. Maassel, Editor of the Manual of Patent Examining Procedure, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-3070.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Professional conduct of and advertising by persons registered to practice before the PTO. (37 CFR 1.344, 1.345, 2.13 and 2.14).

(a) *Description and Need:* PTO is considering a revision of its regulations prescribing the standards of conduct and advertising of persons registered to practice before the PTO, currently published in Title 37, *Code of Federal Regulations*, Parts 1 and 2. PTO proposes to revise these regulations to make reference to the current version of the American Bar Association's "Code of Professional Responsibility," an older version being referred to in the current regulations, and to make the standards for advertising consistent with recent decisions of the Supreme Court.

(b) *Legal Authority:* 35 U.S.C. 6 and 31, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (July 1980).

(ii) In final form (December 1980).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish the proposed revision of these regulations in the FEDERAL REGISTER and the OFFICIAL GAZETTE for comment. A public hearing will also be held.

(f) *Major Issues:* The major issue is whether the American Bar Association's "Code of Professional Responsibility" should continue to be the PTO's standard of conduct.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(yes , no X , unknown).

(2) *Other Documents Available:* None.

(h) *Agency Contact:* Harry I. Moatz, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-2238.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Prosecution of patent applications after final rejection.

(a) *Description and Need:* PTO is considering a revision of its regulations currently published in Title 37, *Code of Federal Regulations*, Part 1, to allow the prosecution of patent applications to continue after a final rejection if an additional fee is paid. The revision will benefit patent applicants by making it unnecessary for them to file a complete new application in order to continue prosecution after a final rejection in the original application. The PTO will benefit from a saving in file space and a reduction in handling and recordkeeping costs.

(b) *Legal Authority:* 35 U.S.C. 6, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (August 1980).

(ii) In final form (February 1981).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish its proposed revision in the FEDERAL REGISTER and the OFFICIAL GAZETTE for comment. A public hearing may be held.

(f) *Major Issues:* The major issue is whether such revision is within the Commissioner's rulemaking authority or will require legislative authorization.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(yes , no X , unknown).

(2) *Other Documents Available:* None.

(h) *Agency Contact:* Louis O. Maassel, Editor of the Manual of Patent Examining Procedure, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-3070.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Deposit of computer program listings. (37 CFR 1.21, 1.77 and 1.96).

(a) *Description and Need:* PTO proposes to revise its regulations relating to patent application disclosures, currently published in Title 37, *Code of Federal Regulations*, Part 1, to allow lengthy computer program listings to be deposited in the PTO and incorporated by reference in the patent application.

Under current regulations, lengthy computer program listings must be reproduced in the specification or the drawings as integral parts of a patent application. The proposed revision will benefit patent applicants by relieving them of the burden and expense of reproducing lengthy computer program listings.

The PTO and patent applicants will both benefit from a reduction in the cost of printing patents which do not include a lengthy computer program listing.

(b) *Legal Authority:* 35 U.S.C. 6, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (June 15, 1977).

(ii) In final form (August 1980).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish the proposed revision in the FEDERAL REGISTER (42 FR 30522, June 15, 1977) for comment and held a public hearing.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(yes , no X , unknown).

(2) *Other Documents Available:* A file of the written comments received by the PTO, a summary and analysis of the comments and a transcript of the hearing will be available for examination by interested parties.

(h) *Agency Contact:* Louis O. Maassel, Editor of the Manual of Patent and Examining Procedure, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-3070. J. Kent Hughes, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-0410.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Amending patents and patent applications to correct inventorship. (37 CFR 1.45 and 1.324).

(a) *Description and Need:* PTO is considering a revision of its regulations, currently published in Title 37, *Code of Federal Regulations*, Part 1, to permit the substitution of one sole inventor for another sole inventor in patent applications under appropriate circumstances. The revision is needed in order to remove restrictions against this type of substitution under the circumstances existing in *Stoddard v. Dann*, 564 F. 2d 556, 195 USPQ 97 (D.C. Cir. 1977).

(b) *Legal Authority:* 35 U.S.C. 6, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (June 1980).

(ii) In final form (February 1981).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish its proposed revision of the regulations in the FEDERAL REGISTER and the OFFICIAL GAZETTE and invite the public to submit comments. A public hearing will be held.

(f) *Major Issues:* The major issue is whether the PTO should authorize substitution of one sole inventor for another under the circumstances in *Stoddard v. Dann*.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(yes , no X , unknown).

(2) *Other Documents Available:* None.

(h) *Agency Contact:* Louis O. Maassel, Editor of the Manual of Patent Examining Procedure, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-3070.

DOC Operating Unit:

Patent and Trademark Office (PTO)

Title of Regulation

Interferences; motions and printed briefs (37 CFR 1.225, 1.231, 1.253, 1.254 and 1.258).

(a) *Description and Need:* PTO is considering a revision of its regulations, currently published in Title 37, *Code of Federal Regulations*, Part 1, relating to motions and printed briefs which rival inventors may file in interference proceedings conducted to determine who was the first inventor.

Recent experience has demonstrated a need to make it clear that after an interference has been redeclared, a motion is not permitted if it could have been filed earlier during the motion period and been considered by the primary examiner. A recent decision of the United States Court of Customs and Patent Appeals indicates a need to state specifically that an issue of benefit raised by motion is not preserved for later consideration at final hearing unless the motion was transmitted to and decided by, the primary examiner. The same Court has also made certain amendments in its rule governing the acceptance of printed briefs which should be reflected in the PTO's comparable regulation governing the acceptance of printed briefs.

(b) *Legal Authority:* 35 U.S.C. 6, as amended.

(c) *Importance:*

(i) Is the regulation significant?

(yes X , no , unknown).

(ii) Is the regulation major?

(yes , no X , unknown).

(d) *Timetable: Anticipated Dates Proposal Will Appear in the* FEDERAL REGISTER:

(i) In proposed form (August 1980).

(ii) In final form (January 1981).

(e) *Tentative Plan for Obtaining Public Comments:* PTO will publish its proposed revision of the regulations in the FEDERAL REGISTER and the OFFICIAL GAZETTE and invite the public to submit comments. No public hearing will be held.

(f) *Major Issues:* There are no major issues.

(g) *Documents Available to Interested Parties:*

(1) Regulatory Analysis Required?

(Yes , no X , unknown).

(2) *Other Documents Available:* None.

(h) *Agency Contact:* Ian A. Calvert, Chairman, Board of Patent Interferences, Commissioner of Patents and Trademarks, Washington, D.C. 20231, Tel. (703) 557-3625.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dated: June 18, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,297,422, Re. S.N. 148,860, Filed May 12, 1980, Cl. 65/38, METHOD OF MAKING MOLDS FOR MULTI-FOCAL OPHTHALMIC LENSES, Stanley A. Emerson, et al., Owner of Record: *Itek Corporation, Lexington, Mass.*, Attorney or Agent: Homer O. Blair, et al., Ex. Gp.: 173

3,706,696, Re. S.N. 142,365, Filed Apr. 21, 1980, Cl. 260/29.7, GROUTING COMPOSITION, Frank E. Bernett, et al., Owner of Record: *Tile Council of America, Inc., New York, N.Y.*, Attorney or Agent: George B. Finnegan, Jr., et al., Ex. Gp.: 144

3,826,616, Re. S.N. 141,220, Filed Apr. 17, 1980, Cl. 23/230 B, METHOD OF DIAGNOSING PREGNANCY IN MILK-PRODUCING ANIMALS BY PROGESTAGEN ASSAY, John A. Laing, Owner of Record: *National Research Development, London, England*, Attorney or Agent: Douglas B. Henderson, et al., Ex. Gp.: 177

3,887,342, Re. S.N. 143,883, Filed Apr. 25, 1980, Cl. 55/203, LIQUID-GAS SEPARATOR UNIT, Philip R. Bunnelle, Owner of Record: *Kobe, Inc., Huntington Park., Calif.*, Attorney or Agent: Richard D. Seibel, Ex. Gp.: 176

3,888,771, Re. S.N. 141,654, Filed Apr. 18, 1980, Cl. 210/500 M, HOLLOW FIBERS OF CUPRAMMONIUM CELLULOSE AND A PROCESS OF THE MANUFACTURE OF SAME, Masami Tsuge, et al., Owner of Record: *Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan*, Attorney or Agent: Douglas B. Henderson, et al., Ex. Gp.: 176

3,906,031, Re. S.N. 062,411, Filed Jul. 31, 1979, Cl. 560/32, NOVEL 9-FLUORENYLMETHOXYCARBONYL COMPOUNDS, Louis A. Carpino, et al., Owner of Record: *Research Corporation, New York, N.Y.*, Attorney or Agent: Henry T. Burke, et al., Ex. Gp.: 126

3,945,390, Re. S.N. 140,641, Filed Apr. 15, 1980, Cl. 137/1, SEALING SYSTEM FOR SHUTOFF ELEMENTS, Richard Huber, Owner of Record: *Klinger AG, Zug, Switzerland*, Attorney or Agent: Karl W. Flocks, Ex. Gp.: 341

4,057,597, Re. S.N. 149,624, Filed May 13, 1980, Cl. 525/860, BLOCK-TYPE ARYL COPOLYESTERS AND FILAMENTS BASED ON THESE COPOLYESTERS, Bernard Fayolle, Owner of Record: *Rhone-Poulenc-Textile*,

Paris, France. Attorney or Agent: Davidson C. Miller, et al., Ex. Gp.: 143

4,082,614, Re. S.N. 133,318, Filed Mar. 24, 1980, Cl. 435/292, MEANS FOR CONVEYING PATHOLOGICAL SPECIMENS SAFELY TO PLACES OF IDENTIFICATION, Donald H. DeVaughn, Owner of Record: *Bio-Syn, Inc., San Francisco, Calif.*, Attorney or Agent: Paul D. Flehr, et al., Ex. Gp.: 176

4,085,187, Re. S.N. 140,656, Filed Apr. 15, 1980, Cl. 264/280, PROCESS FOR COMPRESSION ROLLING OF POLYMERIC FILMS, Richard H. Jenks, et al., Owner of Record: *Revere Copper & Brass, Inc., New York, N.Y.*, Attorney or Agent: Charles E. Miller, Ex. Gp.: 147

4,085,897, Re. S.N. 142,957, Filed Apr. 23, 1980, Cl. 241/18, CRUSHER-DRYER AND METHOD OF CRUSHING, William F. Hahn, et al., Owner of Record: *Pennsylvania Crusher Corporation, Broomall, Pa.*, Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 322

4,086,287, Re. S.N. 143,396, Filed Apr. 24, 1980, Cl. 585/466, SELECTIVE ETHYLATION OF MONO ALKYL BENZENES, Warren W. Kaeding, et al., Owner of Record: *Mobil Oil Corporation, New York, N.Y.*, Attorney or Agent: Charles A. Huggett, et al., Ex. Gp.: 116

4,089,014, Re. S.N. 146,275, Filed May 5, 1980, Cl. 354/38, EXPOSURE CONTROL SYSTEM, Hiroshi Ueda, et al., Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan*, Attorney or Agent: Robert J. Lasker, Ex. Gp.: 211

4,092,892, Re. S.N. 132,805, Filed Mar. 24, 1980, Cl. 83/413, HOLE FORMING MACHINE, Ronald Moone, Owner of Record: *BMG Pierce-All Limited, Berkshire, England*, Attorney or Agent: Lawrence E. Laubscher, Ex. Gp.: 323

4,095,922, Re. S.N. 147,870, Filed May 8, 1980, Cl. 417/313, ELECTRO-MECHANICAL DEVICE, James B. Farr, Owner of Record: *Tecumseh Products Company, Tecumseh, Mich.*, Attorney or Agent: George A. Gust, et al., Ex. Gp.: 343

4,098,567, Re. S.N. 145,932, Filed May 2, 1980, Cl. 432/72, RECIRCULATING PROCESSING OVEN HEATER, Gordon F. Hubbert, Owner of Record: *Gladd Industries, Inc., Detroit, Mich.*, Attorney or Agent: James A. Kushman, Ex. Gp.: 344

4,105,268, Re. S.N. 149,445, Filed May 13, 1980, Cl. 312/184, DOCUMENT HANGING SYSTEM, Abram G. Elias, et al., Owner of Record: *The Huey Company, Franklin Park, Ill.*, Attorney or Agent: Granger Cook, Jr., et al., Ex. Gp.: 355

4,110,963, Re. S.N. 147,016, Filed May 6, 1980, Cl. 57/86, BREAK-OUT APPARATUS FOR FAULT PREVENTION IN THE PRODUCTION OF MULTI-STRAND YARNS, Dieter E. A. Plate, et al., Owner of Record: *Commonwealth Scientific and Industial Research Organization, Campbell, Australia*, Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 244

4,118,720, Re. S.N. 143,892, Filed Apr. 25, 1980, Cl. 354/81, VIEWFINDER EYEPIECE LEVELING DEVICE, Robert E. Gottschalk, Owner of Record: *Panavision, Incorporated, Tarzana, Calif.*, Attorney or Agent: John B. Young, Ex. Gp.: 211

4,137,606, Re. S.N. 132,732, Filed Mar. 24, 1980, Cl. 24/16 PB, WEBBED HARNESSING DEVICE, William Ellis Wood, Owner of Record: *Dennison Manufacturing Company, Framingham, Mass.*, Attorney or Agent: George E. Kersey, Ex. Gp.: 355

4,141,296, Re. S.N. 140,744, Filed Apr. 16, 1980, Cl. 102/24 R, CARRIER FOR EXPLOSIVE PRIMER AND METHOD OF USING SAME, Brooke J. Calder, Jr., et al., Owner of Record: *Austin Power Company, Beachwood, Ohio*, Attorney or Agent: James H. Tilberry, Ex. Gp.: 221

4,144,708, Re. S.N. 146,387, Filed May 5, 1980, Cl. 368/232, OMNIDIRECTIONAL CLOCK, David Graham Jones, Owner of Record: *Inventor*, Attorney or Agent: John M. Prutzman, et al., Ex. Gp.: 217

4,149,551, Re. S.N. 147,023, Filed May 6, 1980, Cl. 132/7, METHOD OF CONDITIONING HAIR USING A FLEXIBLE SUBSTRATE, Lawrence Benjamin, et al., Owner of Record: *The Procter and Gamble Company, Cincinnati, Ohio*, Attorney or Agent: Richard C. Whitte, et al., Ex. Gp.: 333

4,150,764, Re. S.N. 142,950, Filed Apr. 23, 1980, Cl. 220/263, FOOT OPERATED CONTAINER AND CLOSURE DEVICE, Howard A. Anderson, Owner of Record: *Cities Service Company, Tulsa, Okla.*, Attorney or Agent: John W. Carpenter, et al., Ex. Gp.: 241

4,179,717, Re. S.N. 145,911, Filed May 2, 1980, Cl. 360/84, METHOD AND APPARATUS FOR VIDEO SIGNAL RECORDING, Alexander R. Maxey, Owner of Record: *Arvin Industries, Inc., Columbus, Ind.*, Attorney or Agent: Joseph G. Nauman, Ex. Gp.: 235

4,186,835, Re. S.N. 149,531, Filed May 13, 1980, Cl. 206/443, BOX FOR AMPOULES HAVING A PACKAGING INSERT THAT PROVIDES A CLOSURE ARRANGEMENT AND REINFORCEMENT, Otto Hofer, Owner of Record: *Interondo AG, Buchs, Switzerland*, Attorney or Agent: Edward J. Brenner, Ex. Gp.: 241

4,195,849, Re. S.N. 148,844, Filed May 12, 1980, Cl. 277/12, PISTON FLUID SEAL MOUNTING, Morris E. Taft, Owner of Record: *Caterpillar Tractor Co., Peoria, Ill.*, Attorney or Agent: Bradford Wiles, Ex. Gp.: 241

PATENT NOTICES

Certificates of Correction for the Week of July 15, 1980

Re. 30,249	4,170,718	4,187,798	4,195,670
D. 253,127	4,171,789	4,188,230	4,195,693
3,473,891	4,172,057	4,189,042	4,195,753
3,766,703	4,172,064	4,189,193	4,195,816
3,858,873	4,173,081	4,189,627	4,195,887
3,870,137	4,174,693	4,190,411	4,196,151
3,894,352	4,175,289	4,190,574	4,196,153
3,903,342	4,175,662	4,190,595	4,196,202
3,954,491	4,175,880	4,190,635	4,196,298
4,042,320	4,176,122	4,190,657	4,196,391
4,063,130	4,177,548	4,190,662	4,196,678
4,067,059	4,177,757	4,190,789	4,196,918
4,082,410	4,178,400	4,191,090	4,196,951
4,082,411	4,179,100	4,191,195	4,197,042
4,102,286	4,179,305	4,191,402	4,197,050
4,110,113	4,180,551	4,191,437	4,197,114
4,110,189	4,180,765	4,191,550	4,197,179
4,115,533	4,181,528	4,191,574	4,197,351
4,122,171	4,182,106	4,191,582	4,197,502
4,127,418	4,182,550	4,191,583	4,197,738
4,136,090	4,182,713	4,191,677	4,197,831
4,138,594	4,182,952	4,192,062	4,197,987
4,140,567	4,183,908	4,192,857	4,197,994
4,143,059	4,184,139	4,192,915	4,198,366
4,143,080	4,184,157	4,193,492	4,198,562
4,143,625	4,184,251	4,193,503	4,198,585
4,144,230	4,184,397	4,193,541	4,198,713
4,145,236	4,184,568	4,193,618	4,198,823
4,145,461	4,184,663	4,193,751	4,198,834
4,145,692	4,184,788	4,193,768	4,199,015
4,154,929	4,184,904	4,193,842	4,199,100
4,157,316	4,185,546	4,194,008	4,199,329
4,157,446	4,185,751	4,194,119	4,199,544
4,158,140	4,186,123	4,194,316	4,199,640
4,159,193	4,186,352	4,194,459	4,199,733
4,160,257	4,186,496	4,194,918	4,200,568
4,163,526	4,186,624	4,195,002	4,201,051
4,169,146	4,186,922	4,195,189	4,201,759
4,169,585	4,187,261	4,195,201	4,201,800
4,169,730	4,187,376	4,195,408	4,201,845
4,170,568	4,187,785	4,195,409	4,202,648
			4,202,865

Patents Available for Licensing or Sale

3,858,643. PERSONNEL SHELTER. Mr. David S. Reed, Protect-O-Dome, 6390 Pea Ridge Road, Huntington, W. Va.

4,139,102. CLOTHES HANGER RETENTION BAR. Mary J. Winton, P.O. Box 889, Placerville, Calif. 95667.

4,170,194. APPARATUS FOR APPLYING PLASTIC POWDER TO AN ARTICLE. V. Etlin, 7403 Lisle Ave., Falls Church, Va. 22043.

4,177,583. ORTHOPEDIC SHOE WITH FOREFOOT PROTECTIVE GUARD. A. W. Chapman, 5711 Woodland Drive, Western Springs, Ill. 60558.

4,184,580. COIN OPERATED BATTERY CHARGER AND CHARGING SYSTEM CHECK. Austin J. Ellis, Jr., 528 K St., Rio Linda, Calif. 95673.

4,194,711. FLEXIBLE SEWER LINE SUPPORT. Leroy Winton, P.O. Box 889, Placerville, Calif. 95667.

4,194,866. SLIVER CAN TRANSPORTING DOLLY. Correspondence to: Rieter Machine Works Ltd., 8406 Winterthur, Switzerland.

4,197,807. COLLAPSIBLE TRAFFIC CONE MARKER. Bruce E. Campbell, 2070 N. Bechelli #6, Redding, Calif. 96002.

4,203,459. CONTROLLING MECHANISM FOR SPRINKLER SYSTEM. Correspondence to: Bovard & Co., Optingenstresse 16, CH-3000, Berne 25, Switzerland.

The following two patents are offered by Bingham Associates of the Southwest, Inc., 3508 West Boyce, Fort Worth, Tex. 76133.

3,347,521. UNDERGROUND CONDUIT INSTATION TOOL.

4,132,288. SECURITY DEVICE FOR HIGH MOUNTED EQUIPMENT.

The following patent is available for licensing or sale. Correspondence to: Karl Hou, 29 Maple East St., Teaneck, N.J. 07666.

4,144,041. ADJUSTABLE THROAT VENTURI SCRUBBER.

The following patent is available for licensing or sale. Address communications to: Theodore D. Gosman, 9 Walnut Court, Huntington, N.Y. 11743.

4,173,715. ACOUSTICAL DEVICE.

The following patents are offered by: Otis Engineering Corporation, P.O. Box 34380, Dallas, Tex. 75234. Telephone (214) 323-3882.

3,454,029. VALVES.

3,533,430. SHUTTLE VALVE.

3,654,962. VALVES.

Xerxes T. Stoddard and Ruel C. Terry, co-inventors, offer to sell or grant licenses under the patents listed below. Inquiries respecting purchasing or licensing should be directed to: Ruel C. Terry, agent for the co-inventors, 3090 S. High St., Denver, Colo. 80210.

3,881,551. METHOD OF EXTRACTING IMMOBILE HYDROCARBONS.

4,019,578. RECOVERY OF PETROLEUM FROM TAR AND HEAVY OIL SANDS.

4,022,280. THERMAL RECOVERY OF HYDROCARBONS BY WASHING AN UNDERGROUND SAND.

4,051,889. HEATING FRASCH SULPHUR MINE WATER USING WASTE HEAT.

4,058,164. HEATING MINE WATER FOR RECOVERY OF IMMOBILE HYDROCARBONS.

Xerxes T. Stoddard, Vesper A. Vaseen and Ruel C. Terry, co-inventors, offer to sell or grant licenses under the patents listed below. Inquiries respecting purchasing or licensing from the above named co-inventors should be addressed to: Ruel C. Terry, agent for the co-inventors, 3090 S. High St., Denver, Colo. 80210.

4,177,246. WET OXIDATION OF MATERIALS.

4,177,249. WET OXIDATION OF SULPHUR AND THE CAPTURE OF GENERATED HEAT.

4,178,357. STRIPPING SULPHUR COMPOUNDS FROM STACK AND OTHER DISCHARGE GASES AND THE COMMERCIAL PRODUCTS DERIVED THEREFROM.

4,186,171. APPARATUS FOR THE WET OXIDATION OF SULPHUR AND THE CAPTURE OF GENERATED HEAT.

4,191,012. WET OXIDATION ENGINE.

The General Electric Company is prepared to grant nonexclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: Patent Counsel, Gas Turbine Division, General Electric Company, 1 River Road, Bldg. #500, room 218, Schenectady, N.Y. 12345.

4,185,369. METHOD OF MANUFACTURE OF COOLED TURBINE BUCKET.

Applications for license may be addressed to: Patent Counsel Division, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa. 19142.

3,769,538. VACUUM ARC DEVICES WITH FERROUS ELECTRODES.

4,048,456. PUFFER-TYPE GAS-BLAST CIRCUIT BREAKER.

Application for license may be addressed to: the Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,390,832. HEAVY MOTOR MOUNTING FOR DIRECT BLOWER ASSEMBLY.

3,621,730. WASHING MACHINE WITH DUAL SPEED CYCLE CONTROL MEANS.

3,673,823. SMALL OR LARGE LOAD AUTOMATIC WASHER.

3,838,733. CONTROL SYSTEM FOR MULTIPLE ZONE HEATING AND COOLING.

3,910,061. SAFETY CONDENSATE OVERFLOW SYSTEM.

3,942,311. ADDITIVE DISPENSING SYSTEM

3,942,705. PROTECTION FOR ALUMINUM TUBING DURING ULTRASONIC SOLDERING.

3,949,576. LIQUID FLOW DIVERSION ARRANGEMENT.

3,952,556. LIQUID FLOW DIVERSION ARRANGEMENT.

4,071,045. CHECK VALVE CONSTRUCTION.

4,180,807. CHARGE TRANSFER CIRCUIT WITH VOLTAGE THRESHOLD COMPENSATING MEANS.

4,192,149. POST CONDENSER LOOP CASE HEATER CONTROLLED BY AMBIENT HUMIDITY.

4,193,488. COIN-OPERATED WASHING MACHINE CYCLE TIME REDUCER.

4,196,952. CABINET CORNER CAP ASSEMBLY.

4,199,205. REFRIGERATOR CABINET CONSTRUCTION.

Applications for licenses may be addressed to the General Electric Company, Component Motor Division, 1635 Broadway, Fort Wayne, Ind. 46804, Attention, Patent Counsel.

4,041,360. CONTROL CIRCUIT FOR AN ELECTRIC MOTOR.

4,051,595. METHODS FOR SETTING INSULATORS AND PRESSING END TURNS.

4,054,349. APPARATUS FOR ESTABLISHING MULTIPOINT ELECTRICAL CONTACT WITH AN INSULATED CONDUCTOR.

4,188,145. ASSEMBLY AND METHOD OF ASSEMBLING.

Application for license may be addressed to: the General Electric Company, Patent Counsel Division, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

4,193,049. ULTRASONIC TOUCH CONTROL PANEL.

D. 254,048. DESIGN FOR AN ELECTRIC PEELING WAND OR SIMILAR ARTICLE.

Applications for license may be addressed to: Patent Counsel, Gas Turbine Division, General Electric Company, 1 River Road, Bldg. 53-300, Room 218, Schenectady, N.Y. 12345.

4,177,011. BAR FOR SEALING THE GAP BETWEEN ADJACENT SHROUD PLATES IN LIQUID COOLED GAS TURBINE.

4,185,455. FUEL PULSATION SUPPRESSION FOR GAS TURBINE COMBUSTION SYSTEM.

Applications for license may be addressed to the General Electric Company, Aircraft Engine Group, 1000 Western Ave., Lynn, Mass. 01910, Attention: Patent Counsel.

3,762,835. FOREIGN OBJECT DAMAGE PROTECTION FOR COMPRESSOR BLADES AND OTHER STRUCTURES AND RELATED METHODS.

3,767,479. MULTICOMPONENT EUTECTICS FOR HIGH TEMPERATURE APPLICATIONS.

3,781,782. DIRECTIVE ACOUSTIC ARRAY FOR NOISE SOURCE LOCALIZATION.

3,844,845. DIRECTIONAL COMPOSITES BY SOLID STATE UP-TRANSFORMATION.

3,847,679. DIRECTIONAL EUTECTOID COMPOSITES BY SOLID-STATE UP-TRANSFORMATION.

3,850,261. WIDE BAND WIDTH SINGLE LAYER SOUND SUPPRESSING PANEL.

3,850,702. METHOD OF MAKING SUPERALLOY BODIES.

3,942,581. METHOD AND APPARATUS FOR CASTING DIRECTIONALLY SOLIDIFIED ARTICLES

3,979,534. PROTECTIVE COATINGS FOR DISPERSION STRENGTHENED NICKEL CHROMIUM ALLOYS.

4,013,141. MEANS FOR LUBRICATING A MECHANISM DISPOSED WITHIN A ROTATING SHAFT.

4,032,912. INTENSITY MODULATED DISPLAY SYSTEM.

4,060,329. METHOD AND APPARATUS FOR MEASURING DEFLECTION OF ROTATING AIRFOILS.

4,091,892. PHASED TREATMENT NOISE SUPPRESSOR FOR ACOUSTIC DUCT APPLICATIONS.

4,123,196. SUPERSONIC COMPRESSOR WITH OFF-DESIGN PERFORMANCE IMPROVEMENT.

4,149,824. BLADE CONTAINMENT DEVICE.

4,169,692. VARIABLE AREA TURBINE NOZZLE AND MEANS FOR SEALING SAME.

4,189,939. COMPACT MULTIMISSION AIRCRAFT PROPULSION SIMULATOR.

Application for license under these patents may be addressed to: Patent Counsel, Ordnance Systems Department, General Electric Company, 100 Plastics Ave., Pittsfield, Mass. 02101.

4,036,344. MULTIPLE-PLATE CLUTCH.

4,079,687. TORPEDO TARGET ACQUISITION.

Application for license may be addressed to the Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,507,193. HERMETIC MOTOR COMPRESSOR CRANKCASE VENTING SYSTEM.

3,532,448. ROTARY COMPRESSOR.

3,568,712. SUCTION VALVE FOR ROTARY COMPRESSOR.

3,602,007. REFRIGERATOR INCLUDING THROUGH-THE-DOOR ICE SERVICE.

3,605,509. LOST MOTION MECHANISM FOR COIN-OPERATED TIMER RUN TIME ACCUMULATOR.

3,619,641. AUXILIARY STARTER DEVICE FOR AIR CONDITIONER COMPRESSOR.

3,765,100. CAPACITIVE SENSING DRYER CONTROL.

3,883,204. ICE BUCKET RETRIEVING APPARATUS OF A REFRIGERATOR.

3,907,050. HEAT EXCHANGE HOUSING.

4,184,661. DISCONNECTABLE COUPLING FOR A SPLIT SYSTEM AIR CONDITIONER.

4,186,563. COOLING EFFICIENCY METER CIRCUIT FOR AN AIR CONDITIONER.

4,186,945. TRANSITION SLEEVE FOR A CABINET OR THE LIKE.

4,187,691. HEAT DUMP BYPASS VALVE ARRANGEMENT.

4,190,305. STRUCTURAL SUPPORT FOR A REFRIGERATOR.

4,191,025. FLUID SUPPLY SYSTEM FOR A DOMESTIC APPLIANCE.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA Patents should be addressed to RCA Corporation, Sr. Vice President, Licensing, 30 Rockefeller Plaza, New York, N.Y. 10020.

4,187,443. COLOR PICTURE TUBE HAVING IMPROVED CORRUGATED APERTURED MASK AND METHOD OF MAKING SAME.

4,188,123. OPTICALLY MEASURING THE CARRIER CONCENTRATION IN A SEMICONDUCTOR.

4,188,583. SAMPLING METHOD AND APPARATUS.

4,188,588. CIRCUITRY WITH UNBALANCED LONG-TAILED-PAIR CONNECTIONS OF FET'S

4,188,593. RC OSCILLATOR.

4,189,682. MICROWAVE FET POWER CIRCUIT.

4,189,688. MICROWAVE FET POWER OSCILLATOR.

4,189,714. ANALOG-TO-DIGITAL CIRCUIT WITH ADJUSTABLE SENSITIVITY.

4,189,735. RECORD PLAYBACK APPARATUS AND INFORMATION RECORD THEREFOR.

4,189,746. METHOD AND APPARATUS FOR DETERMINING FOCUS CONDITIONS.

4,189,782. MEMORY ORGANIZATION.

4,189,814. APPARATUS AND METHOD FOR AUTOMATICALLY ALIGNING A MULTIBEAM ELECTRON GUN ASSEMBLY WITH A CATHODE-RAY TUBE BULB.

4,189,940. ENGINE FAULT DIAGNOSIS.

4,190,053. APPARATUS AND METHOD FOR HYPERTHERMIA TREATMENT.

4,190,735. SEMICONDUCTOR DEVICE PACKAGE.

4,190,791. SWITCHING REGULATOR FOR TELEVISION DEFLECTION CIRCUIT WITH IMPROVED ULTOR VOLTAGE REGULATION.

4,190,843. RECORDING METHODS FOR A MULTILAYER OPTICAL RECORD.

4,190,863. REMOTE CONTROL SYSTEM FOR A TELEVISION CAMERA.

4,190,864. REMOTE IRIS CONTROL FOR TELEVISION CAMERAS.

4,190,865. VIDEO IMAGE TUBE HIGHLIGHT SUPPRESSION CIRCUIT.

4,190,936. APPARATUS AND METHOD FOR DETERMINING DEVIATION OF MASK-TO-FACEPLATE SPACING IN A CATHODE RAY USE.

4,190,987. DOUBLE DOME HEAT AND SMOKE VENT STRUCTURE.

4,191,295. PROCESSING RACK.

4,191,380. VIDEO DISC PLAYER HAVING UNITARY RECORD HANDLING PLATFORM CONSTRUCTION.

4,191,381. APPARATUS FOR FACILITATING CARRIAGE RETURN IN VIDEO DISC PLAYER.

4,191,895. LOW NOISE CCD INPUT CIRCUIT.

4,191,896. LOW NOISE CCD INPUT CIRCUIT.

4,191,936. IMAGE PICKUP ASSEMBLY.

4,191,941. SWITCH MATRIX FOR DATA TRANSFERS.

4,191,966. CATV BLOCK CONVERTER.

4,191,971. SYSTEM FOR CONNECTING A PLURALITY OF VIDEO SENDING TELEVISION APPARATUS.

4,191,975. DIGITAL PHASE SYNCHRONIZING SYSTEM.

4,193,018. DEFLECTION CIRCUIT.

4,193,691. SPECTROMETER.

4,194,184. BIDIRECTIONAL DIGITAL POSITION ENCODER.

4,194,285. METHOD OF MAKING A FIELD EFFECT TRANSISTOR.

4,194,463. APPARATUS FOR APPLYING SEALING MATERIAL TO A CATHODE-RAY TUBE.

4,194,912. WATER BASED PHOTORESIST.

4,195,248. COLOR PICTURE TUBE HAVING IMPROVED CORRUGATED MASK.

4,195,269. TWO-WAY SINGLE FIBER OPTICAL COMMUNICATION SYSTEM.

4,195,308. OHMIC CONTACT FOR P TYPE INDIUM PHOSPHIDE.

4,195,309. VIDEO PROCESSING SYSTEM INCLUDING COMB FILTERS.

4,195,312. RECORDER AND ANTIREFLECTIVE RECORD BLANK HAVING AN OPTICALLY PASSIVE TRANSPARENT LAYER.

4,195,313. ANTIREFLECTIVE INFORMATION RECORD HAVING AN OPTICALLY PASSIVE TRANSPARENT LAYER.

4,198,614. DEFLECTION YOKE ASSEMBLY INCLUDING A BEAM POSITIONING MAGNET ARRANGEMENT.

4,198,640. REFLECTARRAY ANTENNA.

4,198,641. ROTATING FIELD POLARIZATION ANTENNA SYSTEM.

4,198,652. D.C. GAIN CONTROLLED AMPLIFIER.

4,198,658. RECORDING/PLAYBACK APPARATUS FACILITATING TRACK SKIP DETECTION.

4,199,384. METHOD OF MAKING A PLANAR SEMICONDUCTOR ON INSULATING SUBSTRATE DEVICE UTILIZING THE DEPOSITION OF A DUAL DIELECTRIC LAYER BETWEEN DEVICE ISLANDS.

4,199,386. METHOD OF DIFFUSING ALUMINUM INTO MONOCRYSTALLINE SILICON.

4,199,691. CCD MULTIPLE CHANNEL NETWORK.

4,199,702. ELECTRON MULTIPLIER INPUT ELECTRON OPTICS.

4,199,705. MODULATOR STRUCTURE FOR A FLAT PANEL DISPLAY DEVICE.

4,199,733. EXTENDED-DRAIN MOS MIRRORS.

4,199,773. INSULATED GATE FIELD EFFECT SILICON-ON-SAPPHIRE TRANSISTOR AND METHOD OF MAKING SAME.

4,199,776. INTEGRATED INJECTION LOGIC WITH FLOATING REINJECTORS.

4,199,787. INTERCARRIER SOUND SYSTEM.

4,199,860. METHOD OF INTEGRATING SEMICONDUCTOR COMPONENTS.

4,200,274. FIXTURE FOR HOLDING A FACEPLATE AND A FUNNEL OF A CRT DURING SEALING.

4,200,396. OPTICALLY TESTING THE LATERAL DIMENSIONS OF A PATTERN.

4,200,473. AMORPHOUS SILICON SCHOTTKY BARRIER SOLAR CELLS INCORPORATING A THIN INSULATING LAYER AND THIN DOPED LAYER.

4,200,811. FREQUENCY DIVIDER CIRCUIT.

4,200,878. METHOD OF FABRICATING A NARROW BASE-WIDTH BIPOLAR DEVICE AND THE PRODUCT THEREOF.

4,200,881. ENCODING AND TRANSCODING APPARATUS FOR VIDEO DISC SYSTEMS.

4,200,892. SOLID STATE IMAGE SENSOR.

Re. 30,249. ELECTRON DISCHARGE DEVICE INCLUDING AN ELECTRON EMISSIVE ELECTRODE HAVING AN UNDULATING CROSS-SECTIONAL CONTOUR.

4,196,232. METHOD OF CHEMICALLY VAPOR-DEPOSITING A LOW-STRESS GLASS LAYER.

4,196,257. BI-ALKALI TELLURIDE PHOTOCATHODE.

4,196,370. CRT GENERATING THREE INLINE BEAMS AND HAVING SHUNTS FOR WEAKENING CENTER BEAM HORIZONTAL MAGNETIC DEFLECTION AND STRENGTHENING VERTICAL DEFLECTION.

4,196,372. PICK-UP TUBE HAVING BIAS LIGHTING AND CONTROLS THEREFOR.

4,196,438. ARTICLE AND DEVICE HAVING AN AMORPHOUS SILICON CONTAINING A HALOGEN AND METHOD OF FABRICATION.

4,196,443. BURIED CONTACT CONFIGURATION FOR CMOS/SOS INTEGRATED CIRCUITS.

4,196,457. MAGNETIC TAPE ROTARY HEADWHEEL ASSEMBLY WITH VENTING MEANS.

4,196,507. METHOD OF FABRICATING MNOS TRANSISTORS HAVING IMPLANTED CHANNELS.

4,196,906. VIDEO DISC PLAYER.

4,197,011. DEFECT DETECTION AND PLOTTING SYSTEM.

4,197,557. BRIGHTNESS CONTROL CIRCUIT EMPLOYING A CLOSED CONTROL LOOP.

4,197,558. OVERLOAD PROTECTION CIRCUIT FOR VIDEO AMPLIFIERS.

4,197,630. METHOD OF FABRICATING MNOS TRANSISTORS HAVING IMPLANTED CHANNELS.

4,197,749. ULTRASONIC WAVE ENERGY ELECTRONIC B-SCAN IMAGING APPARATUS.

4,197,751. PULSE-ECHO ULTRASONIC WAVE-ENERGY IMAGING SYSTEM INCORPORATING HIGH-ANGULAR VELOCITY OSCILLATED TRANSDUCER.

4,197,860. HYPERTHERMIA APPLICATOR.

4,197,921. ANTI-REFLECTIVE ACOUSTIC WAVEFRONT REFRACTION ELEMENT.

4,198,060. WIPING APPARATUS AND METHOD FOR A HIGH-DENSITY INFORMATION RECORD.

4,198,145. APPARATUS FOR DEVELOPING PHOTOGRAPHIC IMAGES ON AN EMULSION COATED FILM.

4,198,246. PULSED LASER IRRADIATION FOR REDUCING RESISTIVITY OF A DOPED POLYCRYSTALLINE SILICON FILM.

4,198,252. MNOS MEMORY DEVICE.

4,198,581. TEMPERATURE COMPENSATING COMPARATOR.

4,198,611. REDUNDANCY SYSTEM WITH EIGHT DEVICES FOR FIVE CHANNELS.

The Electric Power Research Institute offers to grant non-exclusive licenses on reasonable terms and conditions under these patents listed below. Inquiries respecting licenses should be addressed to John P. Taylor, Manager of Patent Administration and Licensing, Electric Power Research Institute, P.O. Box 10412, Palo Alto, Calif. 94303.

4,102,220. MULTI-RING INERTIAL ENERGY STORAGE WHEEL HAVING TAPERED RING MOUNTING MEMBERS.

4,112,785. RING ASSEMBLY FOR INERTIAL ENERGY STORAGE ROTOR.

4,161,715. METHOD AND APPARATUS FOR MEASURING THE INTERIOR DIMENSIONS OF A HOLLOW BODY.

4,150,582. ROTOR RING FOR INERTIAL ENERGY STORAGE ROTOR.

4,131,937. NATURALLY COMMUTATED VOLTAGE-FED CONVERTER FOR LINKING A DC SOURCE TO AN AC SOURCE.

4,131,721. ELECTROLYTIC CELL HAVING A NOVEL ELECTRODE INCLUDING PLATINUM ON A CARBON SUPPORT ACTIVATED WITH A PHOSPHORUS-OXYGEN-CONTAINING COMPOUND.

4,102,175. RESPONSE TIME VERIFICATION OF IN SITU HYDRAULIC PRESSURE SENSORS IN A NUCLEAR REACTOR.

4,154,361. QUICK OPENING PRESSURE RELEASE DEVICE AND METHOD.

4,151,747. MONITORING ARRANGEMENT UTILIZING FIBER OPTICS.

4,147,982. TURBINE GENERATOR GROUND CURRENT ARCING DETECTION APPARATUS AND METHOD.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

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DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent application 6-062,592. Mechanical Heat Transfer Device. Filed July 31, 1979.

Patent application 6-082,353. Streamline Afterbody for an Ejection Seat. Filed Oct. 5, 1979.

Patent application 6-082,354. Hot Spike Mixer. Filed Oct. 5, 1979.

Patent application 6-088,503. Broad Spectrum Vibration Damper Assembly Fixed Stator Vanes of Axial Flow Compressor. Filed Oct. 26, 1979.

Patent application 6-091,220. Cooling System for Ramjet Engine. Filed Nov. 5, 1979.

Patent application 6-091,993. Broadband Mode Suppressor for Microwave Integrated Circuits. Filed Nov. 7, 1979.

Patent application 6-092,818. Aircraft Ejection Seat Safetying Device. Filed Nov. 9, 1979.

Patent application 6-096,720. Containment and Release Device for Fluids. Filed Nov. 21, 1979.

Patent application 6-097,462. Last Round Detection Device. Filed Nov. 26, 1979.

Patent application 6-100,321. Soft Landing Gear. Filed Dec. 5, 1979.

Patent application 964,870. Copper (II) Chloride-Tetra chloroaluminate Battery. Filed Nov. 29, 1978.

Patent 4,183,720. Composite Fan Blade Platform Double Wedge Centrifugal Seal. Filed Jan. 3, 1978. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,184,896. Surface Barrier Tailoring of Semiconductor Devices Utilizing Scanning Electron Microscope Produced Ionizing Radiation. Filed June 6, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,292. Potential Troughs for Charge Transfer Devices. Filed Aug. 3, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,458. Turbofan Augmentor Flameholder. Filed May 11, 1978. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,185,461. Turbojet Engine With Combustor Bypass. Filed Jan. 10, 1978. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,185,558. Re-Entry Vehicle Boundary Layer Transition Suppressor. Filed Apr. 23, 1968. Patented Jan. 29, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administrative Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6-098,460. Soda Crackers. Filed Nov. 29, 1979.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 4,095,106. Radiation Attenuatiton Gauge With Magnetically Coupled Source. Filed Mar. 16, 1977. Patented June 13, 1978. Not available NTIS.

Patent 4,150,290. Focal-Surface Detector for Heavy Ions. Filed May 13, 1977. Patented Apr. 17, 1979. Not available NTIS.

Patent 4,157,473. Simplified Fast Neutron Dosimeter. Filed Dec. 8, 1975. Patented June 5, 1979. Not available NTIS.

Patent 4,157,559. Coaxial Nuclear Radiation Detector With Deep Junction and Radial Field Gradient. Filed Jan. 31, 1977. Patented June 5, 1979. Not available NTIS.

Patent 4,161,950. Electrosurgical Knife. Filed Aug. 1, 1975. Patented July 24, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent 4,174,937. Powder Agglomerator and Its Method of Use. Filed Sept. 15, 1978. Patented Nov. 20, 1979. Not available NTIS.

Patent 4,180,177. Pressure Vent for Explosion-Proof Electrical Enclosures. Filed Apr. 4, 1979. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,352. Extensible Brattice and Cantilevered Roof Mounted Support System Therefor. Filed Nov. 7, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,181,607. Removal of Asbestos Fibers From Water. Filed Sept. 15, 1978. Patented Jan. 1, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-024,135. Neutral-Beam-Sustained Astron Reactor. Filed Mar. 26, 1979.

Patent application 6-061,350. A Laser/Ultrasonic Welding Technique. Filed July 23, 1979.

Patent application 6-061,534. Quick Releasing High Strength Connector. Filed July 24, 1979.

Patent application 6-063,605. Universal Cargo Restraint System. Filed Aug. 3, 1979.

Patent application 6-064,688. A Terrain Correlation Updating System. Filed Aug. 3, 1979.

Patent application 6-074,844. Heat Exchanger for Contaminated Water. Filed Sept. 7, 1979.

Patent application 6-084,274. A Flexure Mounted Gimbal Support Assembly. Filed Oct. 10, 1979.

Patent application 6-086,188. Underwater Audio Intercommunication System. Filed Oct. 17, 1979.

Patent application 6-086,977. Fire Fighting Simulator. Filed Oct. 22, 1979.

Patent application 950,944. Process for Generation Gas for Telescoping Cartridge Operation. Filed Oct. 13, 1979.

Patent 3,753,086. Method and Apparatus for Locating and Measuring Wave Guide Discontinuities. Filed Dec. 9, 1970. Patented Aug. 14, 1973. Not available NTIS.

Patent 4,130,887. Digital Plotting System for Displaying Character Information. Filed Nov. 14, 1977. Patented Dec. 19, 1978. Not available NTIS.

Patent 4,149,164. Digital Plotting System for Graphic Information. Filed Dec. 27, 1977. Patented Apr. 10, 1979. Not available NTIS.

Patent 4,149,165. Digital Plotting System for Displaying Curved Line Information. Filed Dec. 27, 1977. Patented Apr. 10, 1979. Not available NTIS.

Patent 4,162,533. Time Compression Correlator. Filed Jan. 30, 1978. Patented July 24, 1979. Not available NTIS.

Patent 4,163,286. Digital Plotting System for Displaying Straight Line Information. Filed Nov. 14, 1977. Patented July 31, 1979. Not available NTIS.

Patent 4,169,568. Hermetically Sealed Parachute Container. Filed Nov. 14, 1977. Patented Oct. 2, 1979. Not available NTIS.

Patent 4,170,013. Stripline Patch Antenna. Filed July 28, 1978. Patented Oct. 2, 1979. Not available NTIS.

Patent 4,171,525. VLF Loop Array Antenna. Filed Apr. 5, 1978. Patented Oct. 16, 1979. Not available NTIS.

Patent 4,171,526. Event Mark Decoder for Use With Time Code Generator. Filed Oct. 2, 1978. Patented Oct. 16, 1979. Not available NTIS.

Patent 4,173,000. Simulated VLF/LF Noise Generator. Filed Aug. 21, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,175,471. Cutting Apparatus and Vertical Drive Mechanism Therefor. Filed Dec. 19, 1977. Patented Nov. 27, 1979. Not available NTIS.

Patent 4,176,354. Phased-Array Maintenance-Monitoring System. Filed Aug. 25, 1978. Patented Nov. 27, 1979. Not available NTIS.

Patent 4,176,899. Quick Disconnect Electrical Connector Having Disassembly Features for Refurbishment. Filed Oct. 23, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,438. Surface Acoustic Wave Modulator Using Single Crystal Films of Lithium Ferrite. Filed July 18, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,468. Inflatable Cavity-Backed Annular Slot Transmitting Antenna. Filed Sept. 5, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,179,533. Multi-Refractory Films for Gallium Arsenide Devices. Filed Apr. 25, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,179,583. Electro-Mechanical Low Backlash Cable Connector. Filed Mar. 6, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,179,604. Electron Collector for Forming Low-Loss Electron Images. Filed Sept. 29, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,185,538. Simplified Air System for Underwater Rocket Launching. Filed Aug. 30, 1960. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,186,440. Continuous Memory System. Filed May 24, 1966. Patented Jan. 29, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP-2, Washington, D.C. 20546

Patent 3,352,774. Apparatus for Electrolytically Tapered or Contoured Cavities. Filed Jan. 17, 1966. Patented Nov. 14, 1967. Not available NTIS.

Patent 3,635,537. Multiple Anode Arc Lamp System. Filed Dec. 29, 1969. Patented Jan. 18, 1972. Not available NTIS.

Patent 4,168,939. Acoustically Swept Rotor. Filed Sept. 8, 1977. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,171,615. Supercharged Topping Rocket Propellant Feed System. Filed Apr. 21, 1966. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,173,001. Laser Apparatus. Filed Sept. 29, 1977. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,173,324. Coupling Device for Moving Vehicles. Filed May 19, 1978. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,173,397. Solar Concentrator. Filed Nov. 30, 1977. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,175,249. Self-Reconfiguring Solar Cell System. Filed June 19, 1978. Patented Nov. 20, 1979. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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	Sunnyvale Patent Library*	(408) 736-0795
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Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 14, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-2-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	7-5-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	10-15-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-27-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-31-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	10-10-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-18-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-12-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers, Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-17-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-11-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements, Clutches.	2-1-79

Expiration of patents: The patents within the range of numbers indicated below expire during June 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,991,768 to 3,995,571, inclusive
Plant Patents..... Numbers 2,262 to 2,268, inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,332

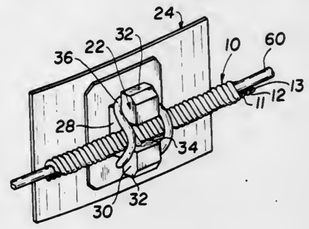
MULTI-STRANDED COILED ORTHODONTIC ARCH WIRE

Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214

Original No. 4,086,702, dated May 2, 1978, Ser. No. 708,304, Jul. 26, 1976. Application for reissue Dec. 8, 1978, Ser. No. 967,723

Int. Cl.[2] **A61C** *7/00*

U.S. Cl. 433—20 **60 Claims**



1. An orthodontic arch wire adapted to be connected to an orthodontic bracket mounted on a malocclude tooth, the arch wire comprising a plurality of adjacent strands coiled in the form of a tightly wound elongated coiled wire normally having an array of interleaved turns of and generally parallel, and having a lumen extending therethrough, said strands when formed into said turns having a predetermined radial thickness (t), said turns having a common internal dimension (d-FIG. 2; s1-FIG. 9) of said lumen no greater than two times said predetermined radial thickness (t) of said strands and having a common outer dimension no greater than approximately 0.025 inches, said strands being made from a material sufficiently elastic to at least permit bending of the arch wire over a short length thereof by selectively and at least partially separating adjacent turns, and to provide sufficient stiffness over a long length to provide adequate anchoring characteristics for orthodontic devices attached thereto.

Re. 30,333

EBULLIENT COOLED TURBOCHARGER BEARING HOUSING

Phillip B. Gordon, Jr., Washington, and Keats E. Hunt, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Original No. 4,107,927, dated Aug. 22, 1978, Ser. No. 745,743, Nov. 29, 1976. Application for reissue Jan. 29, 1979, Ser. No. 7,094

Int. Cl.[2] **F02B** *37/00*

U.S. Cl. 60—605 **4 Claims**

1. In a turbocharged, internal combustion engine system, the combination of:

a liquid cooled, internal combustion engine;

a heat exchanger for cooling the liquid from the engine;

a turbocharger including a rotary turbine and a rotary compressor, housings containing the turbine and the compressor, a shaft interconnecting the turbine and the compressor and bearings journalling the shaft within the housing adjacent the turbine;

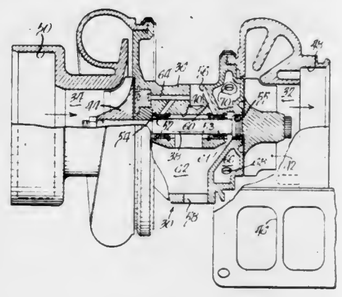
means for directing exhaust gases from said engine to said turbine to drive the same;

means for directing air from said compressor to the engine;

a liquid passage in said housing operatively interposed between said turbine and said bearings and having a lower inlet and an upper outlet;

means for directing liquid coolant from said engine to said inlet; and

means for directing coolant from said outlet to said heat exchanger whereby thermosiphoning of said coolant through said passage will occur when said engine is not operative and ebullient cooling of said housing immediately adjacent said bearings will occur *due* to the presence



of liquid in said passage to thereby prevent excessive heat buildup in said housing even when said engine is not operative and thereby prevent thermal damage to said bearings.

Re. 30,334

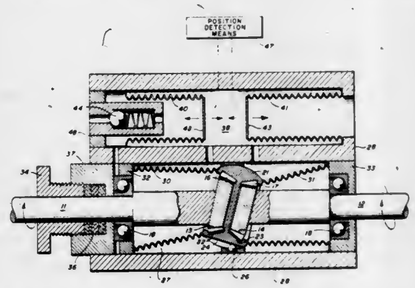
PRESSURE COMPENSATED HERMETICALLY SEALED TRANSMISSION SYSTEM

Carl R. Coles, Michigan City, Ind., assignor to Zero-Seal, Inc., Arlington Heights, Ill.

Original No. 3,933,052, dated Jan. 20, 1976, Ser. No. 516,206, Oct. 21, 1974. Application for reissue Mar. 7, 1977, Ser. No. 774,590

Int. Cl.[2] **F16J** *15/50*

U.S. Cl. 74—18.1 **26 Claims**



1. A power transmission device comprising

a. a hermetically sealed chamber having *an interior surface*, a first opening in a first wall of said chamber, and a second opening in an opposing rear wall of said chamber, said openings having a common axis;

b. rigid transmission means, capable of being wobbled, nonrotatably engaging the interior [wall] *surface* of said chamber, said transmission means being arranged to wobble about a substantially fixed point lying substantially along said common axis;

c. a first flexible imperforate membrane engaging said transmission means and sealing said first opening;

d. a second flexible imperforate membrane engaging said transmission means and sealing said second opening;

e. a rotatable driving member external to said chamber and extending through said first opening of said chamber;
f. a driven member external to said chamber and extending through said second opening of said chamber;
g. means coupling said driving member to said transmission means for converting the rotary motion of said driving member into a wobbling motion of said transmission means; and
h. means coupling said transmission means to said driven means for converting the motion of said transmission means into a rotating motion of said driven means.

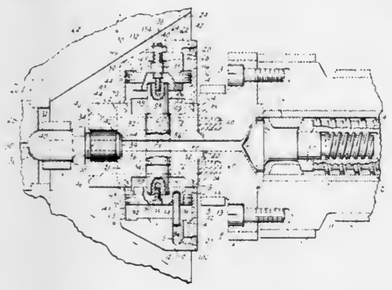
Re. 30,335
NOZZLE SHUT-OFF DEVICE

Oskar R. Johansson, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Original No. 3,500,501, dated Mar. 17, 1970, Ser. No. 701,699, Jan. 30, 1968. Application for reissue Feb. 13, 1978, Ser. No. 877,565

Int. Cl.[2] **B29F** *1/03*

U.S. Cl. 425—548 **7 Claims**



11. In an injection molding apparatus comprising a temperature controllable cylinder having a nozzle attached to one end thereof, means for forcing molten material from said cylinder through a passageway formed in said nozzle, a platen with a mold having a sprue formed therein, which sprue is in communication with said passageway formed in said nozzle, and a nozzle shut-off valve interposed between said nozzle and said cylinder, the improvement comprising:

(a) a valve body having a first passageway in axial alignment with both said cylinder and the passageway formed in said nozzle and a second passageway intersecting said first passageway;

(b) a valve spool reciprocable in the second passageway of said valve body and having a third passageway parallel to and capable of axial alignment with the first passageway of said valve body;

(c) a piston attached in an axial direction to each end of said valve spool;

(d) a cylinder peripherally encompassing each of said pistons and having one closed end and one open end with said open end being adjacent to said valve body and said cylinders each being attached to said valve body;

(e) a piston-stroke adjusting means incorporated in at least one of said cylinders;

(f) a source of fluid under pressure; and

(g) means to connect said source of fluid under pressure alternately to said cylinders, to pressurize one and vent the other of said cylinders, thereby causing said pistons and valve spool to reciprocate in unison, thus in one position blocking the first passageway in said valve body and in the other position axially aligning the third passageway in said valve spool with the first passageway in said valve body, thereupon allowing molten material to enter said nozzle from said temperature controllable cylinder.

12. In an injection molding apparatus comprising a temperature controllable cylinder having a nozzle attached to one end thereof, means for forcing molten material from said cylinder through a passageway formed in said nozzle, a platen with a mold having a sprue formed therein, which sprue is in communication with said passageway formed in said nozzle, and a nozzle shut-off valve interposed between said nozzle and said cylinder, the improvement comprising:

(a) a valve body having a first passageway in axial alignment with both said cylinder and the passageway formed in said nozzle and a second passageway intersecting said first passageway;

(b) a valve spool reciprocable in the second passageway of said valve body and having a third passageway parallel to and capable of axial alignment with the first passageway of said valve body;

(c) a piston attached in an axial direction to each end of said valve spool;

(d) a cylinder peripherally encompassing each of said pistons and having one closed end and one open end with said open end being adjacent to said valve body and said cylinders each being attached to said valve body;

(e) said platen having a recess therein located and sized to substantially contain said nozzle shut-off valve;

(f) said nozzle shut-off valve being disposed substantially within said recess;

(g) a source of fluid under pressure; and

(h) means to connect said source of fluid under pressure alternately to said cylinders, to pressurize one and vent the other of said cylinders, thereby causing said pistons and valve spool to reciprocate in unison, thus in one position blocking the first passageway in said valve body and in the other position axially aligning the third passageway in said valve spool with the first passageway in said valve body, thereupon allowing molten material to enter said nozzle from said temperature controllable cylinder.

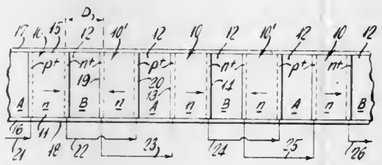
Re. 30,336
SOLAR-CELL ARRAY

Roy Kaplow, Newton; Robert I. Frank, Lexington, and Joel L. Goodrich, Quincy, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Original No. 4,129,458, dated Dec. 12, 1978, Ser. No. 877,356, Feb. 13, 1978. Application for reissue Apr. 27, 1979, Ser. No. 33,991

Int. Cl.[2] **H01L** *31/06*

U.S. Cl. 136—89 PC **16 Claims**



15. A semiconductor solar-cell array comprising a plurality of spaced, elongate, parallel units formed from a common substrate and comprised of a first conductivity type, the body material of each of said units having the same spaced relation to the body material of other of said units as in the original substrate from which they are formed, each unit having upstanding sidewalls and having therebetween an upper surface adapted for exposure to receive incident radiation, adjacent pairs of sidewalls at first spaces between adjacent units each including a region of a second conductivity type, adjacent pairs of sidewalls at second spaces between adjacent units being devoid of second conductivity-type regions, first-space pairs of sidewalls being in alternating interlace with second-space pairs of sidewalls in a given direction of traverse of the units of said array, and means interconnecting said units for combining the individual electrical outputs of said units, said means comprising separate conductive connections establishing ohmic contact with the respective sidewall regions of said units.

Re. 30,337
TEXTILE TREATMENT COMPOSITION

Basil L. Loudas, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Original No. 4,043,923, dated Aug. 23, 1977, Ser. No. 446,003, Feb. 26, 1974. Application for reissue Nov. 27, 1978, Ser. No. 964,063

Int. Cl.[2] **C08K** *5/02, 5/05;* **D06M** *13/00*

U.S. Cl. 252—8.75 **14 Claims**

1. A composition comprising a liquid vehicle containing from about 1% to about 25% by weight of a detergent-compatible organic fluorochemical compound containing about 10 to 60 weight percent carbon-bonded fluorine and having the formula $(R_fQ)_e(XCO)_mA(COOM)_p$ where R_f is fluorinated aliphatic radical of at least three carbon atoms, "Q" is a divalent linking group, "M" is a cation selected from NH_4^+, Na^+, K^+, Li^+, H^+ or is a protonated alkyl amine having from 1-6 carbon atoms in the alkyl group "A" is a polyvalent organic radical having a valency of m+p and is the residue of a polybasic organic acid or an organic anhydride, "X" is NR (wherein R is hydrogen or an alkyl group of from 1 to 14 carbon atoms), *or* N [or O] and e, p and m are integers of 1 or 2.

Re. 30,338
ORGANOTIN STABILIZER COMPOSITION CONTAINING MORE THAN 20 PERCENT TIN AND RESIN COMPOSITIONS CONTAINING THE SAME

Otto S. Kauder, New York, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

Original No. 3,632,538, dated Jan. 4, 1972, Ser. No. 635,658, May 3, 1967. Application for reissue Aug. 28, 1978, Ser. No. 937,677

Int. Cl.[2] **C08K** *5/58*

U.S. Cl. 260—23 XA **16 Claims**

1. A stabilizer composition for improving the resistance to deterioration of polyvinyl chloride resins when heated at 350° F., consisting essentially of an organotin alpha- or beta-mercapto carboxylic acid ester having the formula

$$[R_2'-Sn+S-Z-(COOR'')_m-]_{4-m}$$
$$R_2'Sn-[S-Z_1-(COOR'')_m]_2$$

wherein R' is an alkyl radical linked to tin through carbon and having from one to about eight carbon atoms, Z is a bivalent alkylene radical having from one to about two carbon atoms, and carrying the —S— and —COOR'' groups, and R'' is an organic group derived from a monohydric or polyhydric alcohol having from one to about two hydroxyl groups and from one to about fifteen carbon atoms, *and* m is an integer from 1 to 2, [and n is an integer from 1 to 2,] the S—Z—(COOR'')$_m$ group being derived from an alpha- or beta-mercaptocarboxylic acid ester; and an organotin sulfide having the formula R_2SnS, in which R is alkyl linked to tin through carbon and has from one to about eight carbon atoms, the organotin compounds together comprising an amount of tin within the range from about 20 to about 35% by weight, and an amount of sulfur within the range from about 10 to about 35% by weight.

Re. 30,339
CONVERSION OF ACID S, PRODUCED BY THE ORGANISM *POLYANGIUM CELLULOSUM* VAR. *FULVUM* INTO ACID F

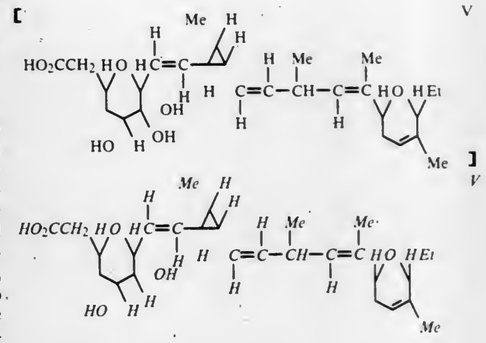
David T. Connor, Ann Arbor, Mich., and Maximilian von Strandtmann, New Castle, Del., assignors to Warner-Lambert Company, Morris Plains, N.J.

Original No. 4,076,940, dated Feb. 28, 1978, Ser. No. 794,180, May 5, 1977. Application for reissue Jul. 14, 1978, Ser. No. 924,469

Int. Cl.[2] **C09B** *23/00*

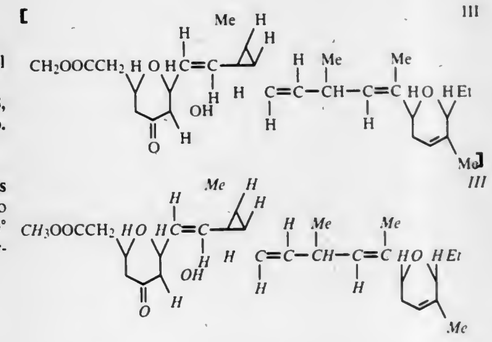
U.S. Cl. 542—430 **3 Claims**

1. A process for preparing the substance acid F (V) having the following formula:

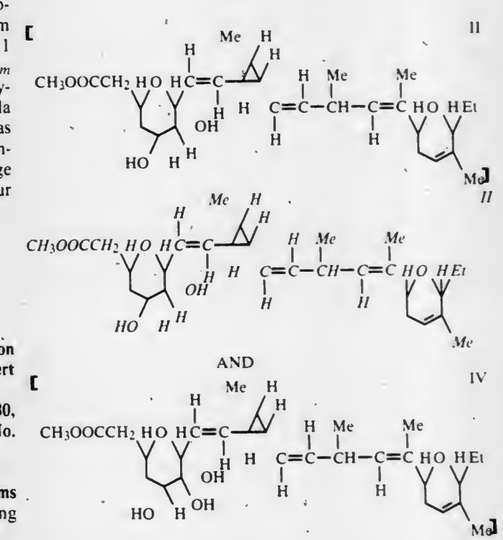


which comprises the following steps:

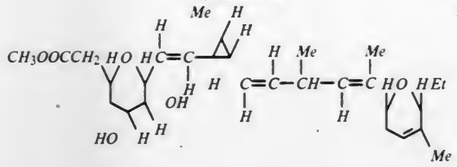
A. Reducing an alcoholic solution of keto ester S (III) wherein the keto ester S has the following formula:



with an alkali metal borohydride to obtain a mixture of acid S methyl ester II and acid F methyl ester IV having the following formulas:



-continued



IV

B. Separating acid S methyl ester II and acid F methyl ester IV by preparative thin layer chromatography;

C. Hydrolyzing acid F methyl ester IV to obtain the desired acid F (V).

PLANT PATENTS

GRANTED JULY 15, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,570

NECTARINE TREE

Jonathan P. Chakerian, and Dennis G. Surabian, both of Reedley, Calif., assignors to Surabian Brothers, Reedley, Calif.

Filed Feb. 23, 1979, Ser. No. 14,740
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized by its bearing of semi-freestone, yellow fleshed fruit which is of large size for its relatively early ripening season; and by its general resemblance to the Armking Nectarine Tree (U.S. Plant Pat. No. 2,943), which it most nearly resembles, but from which it is distinguished by its fruit ripening from five to seven days earlier, having firmer flesh, and being more rounded.

4,571

PEACH TREE

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Jan. 22, 1979, Ser. No. 5,578
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, as illustrated and described, characterized by its regular and productive bearing of large size, yellow flesh, firm, freestone fruit, with excellent eating and shipping quality and is further characterized — by having attractive red skin color, uniform ripening and maturing two weeks before O'Henry Peach (U.S. Plant. Pat. No. 2,964).

4,572

PEACH CULTIVAR

Catherine H. Bailey, Englishtown, and L. Fredric Hough, Bloomsbury, both of N.J., assignors to Stark Brothers Nurseries & Orchards Company, Louisiana, Mo.

Filed Mar. 28, 1979, Ser. No. 24,713
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of yellow freestone peach tree, substantially as illustrated and described, characterized by a strong, vigorous growth habit, the exceptional winter hardiness of the fruit buds, improved tolerance to bacterial leaf spot, and the ability to yield large round firm globose bright red colored slow softening fruit having a rich and delicious flower which commonly ripens very late with that of the Autumnglo variety and approximately 3 to 5 days after that of the Rio Oso Gem variety.

4,573

STRAWBERRY PLANT

Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed Apr. 4, 1979, Ser. No. 27,194
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—48 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

4,574

STRAWBERRY PLANT

Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed Apr. 4, 1979, Ser. No. 27,195
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—48 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

4,575

RHUBARB PLANT - K-1 VARIETY

Larry A. Krieger, Bridgman, Mich., assignor to Stark Brothers Nurseries & Orchards Company, Louisiana, Mo.

Filed Apr. 11, 1979, Ser. No. 29,150
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—89 **1 Claim**

1. A new and distinct variety of rhubarb plant which is a mutation of the Valentine variety, substantially as illustrated and described, characterized by stalks of extremely large diameter, stalks which are red on both the inside and on the outside, tender stalks which cook-up well in the absence of strings and which require a substantially lesser quantity of sugar during processing, prominent leaf ribs, and the absence of seed stalks.

PATENTS

GRANTED JUL. 15, 1980

ERRATA

For CLASS	See PATENT NO.
433-030	4,212,105
368-062	4,212,153
368-248	4,212,154
368-250	4,212,155
368-085	4,212,156
368-087	4,212,157
368-080	4,212,158
368-082	4,212,159
024-073 R	4,212,251
274-037	4,212,490
430-494	4,212,672
430-496	4,212,673
427-389.8	4,212,697
568-313	4,212,825
568-347	4,212,827
568-314	4,212,828
568-433	4,212,829
568-486	4,212,830
568-017	4,212,831
425-230	4,212,851
528-495	4,212,951
375-097	4,213,006
375-010	4,213,007
370-100	4,213,011
370-012	4,213,094
375-014	4,213,095
455-260	4,213,096

PATENTS

GRANTED JULY 15, 1980

GENERAL AND MECHANICAL

4,212,087

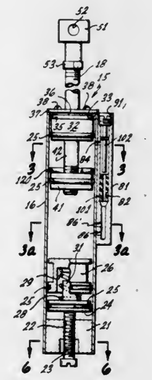
PROSTHETIC LEG WITH A HYDRAULIC CONTROL

LaVaugh L. Mortensen, 10533 San Anselma Ave., South Gate, Calif. 90280

Filed Nov. 16, 1978, Ser. No. 961,114

Int. Cl.[2] **A61F** *1/00, 1/08*

U.S. Cl. 3—1.2 **9 Claims**



1. A leg prosthetic comprising:
an upper thigh member;
a lower shank member;
a knee joint pivotably connecting said members; and
first means pivotably connected between said members for control of said knee joint and comprising:
a cylinder having a head end and a crank end, and pin-connected at said head end to one of said members;
a piston slidably disposed within said cylinder with sealing means therebetween;
a connecting rod connected at one end to said piston and extending out of said crank end, and having the other end thereof pin-connected to the other one of said members;
second means for slidably sealing said crank end around said rod;
a first one-way by-pass valve and a second one-way by-pass valve disposed exterior of said cylinder and each having an inlet port and an outlet port;
said cylinder having a first pair of radial ports and a second pair of radial ports, spaced axially from said first pair;
said inlet port of said first valve and said outlet port of said second valve, each communicating with a respective one of said first pair of radial ports;
said outlet port of said first valve and said inlet port of said second valve each communicating with a respective one of said second pair of radial ports; and
hydraulic fluid disposed within said cylinder.

4,212,088

APPARATUS FOR CLEANING SWIMMING POOLS

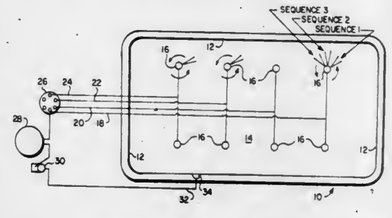
John M. Goettl, Phoenix, Ariz., and George J. Ghiz, 4736 E. Palo Verde, Phoenix, Ariz. 85018, assignors to George J. Ghiz, Phoenix, Ariz.

Division of Ser. No. 832,464, Sep. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 616,677, Sep. 25, 1975, abandoned. This application May 18, 1978, Ser. No. 907,113

Int. Cl.[2] **E04H** *3/20;* **B08B** *3/02;* **B05B** *15/10*

U.S. Cl. 4—490 **6 Claims**

1. A system for cleaning the inner surfaces of a swimming pool, said pool having
means for introducing water under pressure into said pool,
means for withdrawing water containing suspended deleterious matter from said pool and conducting said water to a filter where said suspended deleterious matter is separated from said water, and
means for returning said filtered water from said filter to said pool,
said system comprising a water delivery assembly located upon the inner surface of said swimming pool, said assembly comprising:
(a) a housing in fluid communication with a source of water under pressure, said housing having an outer open end communicating with the interior of said swimming pool;
(b) a rotatable water delivery head formed as a single moving part having an upper end and at least one water aperture therein to project a pressurized stream of water in adjacent parallel and scrubbing relation to the inner surface of said pool, said delivery head being mounted in said housing and adapted for reciprocal motion therewithin to an extended operative position and a retracted inoperative position, said delivery head also adapted for limited random rotation only when positioned between said extended operative position and said retracted inoperative position;



(c) said water delivery head responsive to the application of pressurized water to said housing for extending non-rotational to said extended operative position; said head also responsive to the removal of pressure from the water in said housing for retraction to said retracted inoperative position;
(d) means responsive to the application of pressurized water to said housing for rotating said delivery head a randon angular distance during movement between its retracted inoperative position and extended operative position; and
(e) means for stopping rotation of said delivery head when it is in its extended operative position to permit the projection therefrom of a pressurized stream of water, in a random direction, of sufficient velocity to clean the inner surface of said pool, said means for stopping said rotation comprising a radially extending collar on said delivery head, and an annular ledge in said housing, friction means on said collar and ledge coming into contact with each other when said head is in said extended position to stop rotation of said rotatable water delivery head.

4,212,089

PROCESS FOR AROMATIZING AND/OR DEODORIZING THE ENVIRONMENT SURROUNDING THE FLUSH TANK OF A TOILET

Jerome Lindauer, Hillsdale, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 958,492, Nov. 7, 1978, Pat. No. 4,168,550. This application Apr. 24, 1979, Ser. No. 32,747

Int. Cl.[3] **E03D** *9/02*

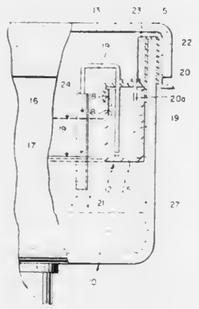
U.S. Cl. 4—228 **14 Claims**

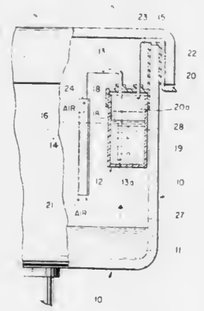
1. A process comprising the steps of dispensing a measured

amount of odorant or deodorant vapor into the atmosphere surrounding a flush tank toilet and simultaneously dispensing a measured amount of one or more solutions selected from the group consisting of a cleanser solution, a sanitizer solution, an aromatizer solution and a deodorizer solution into the liquid stored in the flush tank by using apparatus wherein said flush tank is of the type which retains a flushing liquid which lowers and rises between a first upper level and a second lower level during flushing, said apparatus including:

(i) container means for retaining the additive liquids in solution;

(ii) first conduit means having outlet opening means and inlet opening means, said first conduit means communicating between said container means and an inlet opening means positionable in said flush tank intermediate said first and second levels of the flushing liquid to admit air into the first conduit means when the flushing liquid lowers below





the inlet opening means, said inlet opening means being positionable sufficiently below said first level for the flushing liquid to force air through the first conduit means into the container means as the flushing liquid level rises above the inlet opening means towards said first level; said first conduit means also communicating between said additive liquid in the container means and said outlet opening means positionable in said tank for passage of additive liquid into the flushing liquid whereby the level of said outlet opening means is substantially below the bottom level of said solution in said dispensing apparatus, said apparatus having in combination:

a. said first conduit means which communicates between said container means and said inlet opening means consisting essentially of a first tube having a first inside diameter and a second tube having a second inside diameter, said first tube being positioned from a point in proximity to the bottom of said container means and passing through the top of said container means above the level of said additive liquid solution and then in a downward direction to a point which is at substantially a level identical to the level of the bottom of said container means which retains said additive liquid solution, the end of said first tube having said first inside diameter being said outlet opening means for said conduit means for passage of additive liquid into the flushing liquid, said outlet of said first tube being fixedly connected in a sealed manner to said second tube having said second inside diameter, said second tube having said second inside diameter passing from said outlet means of said first tube to said inlet opening means positionable in said tank intermediate said first and second levels of the flushing liquid to admit air into the first conduit means when the flushing liquid lowers below the inlet opening means, and

b. a second conduit means communicating from a level above the highest level of the additive liquid solution retained in said container means into the air surrounding said flush tank;

c. the ratio of said second inside diameter to said first inside diameter being in the range of from about 2:1 up to about 5:1,

whereby during the flushing, during the first cycle thereof, when the flushing liquid lowers from the first upper level to the second lower level, additive liquid is siphoned from said container means into said flushing liquid and during the second phase of the flushing cycle, when the flushing liquid rises from said second lower level to said first upper level, air forced into said second tube of said first conduit means and into said container means in the form of air bubbles which travel to the upper level of said additive liquid solution held within said container means and whereby aromatizing or deodorizing substance contained in said additive liquid solution is diffused into said travelling air bubbles so that when the air bubbles reach the upper surface of said additive liquid solution held in said container means the gaseous phase is a mixture of air and aromatizing or deodorizing substance and the mixture of air and aromatizing or deodorizing substance then travels through said second conduit means into the atmosphere surrounding said flush tank.

4,212,090

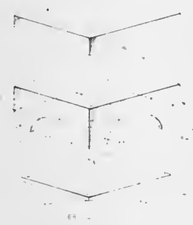
OTTOMAN CONVERTIBLE

Louis Ehrlich, 22 Chestnut Pl., Brookline, Mass. 02146

Continuation-in-part of Ser. No. 944,075, Sep. 20, 1978. This application Feb. 23, 1979, Ser. No. 14,369

Int. Cl.² A47C *13/00*

U.S. Cl. 5—14 **7 Claims**



1. An ottoman convertible to a bed comprising:

a base having a horizontal platform substantially equal in width and depth dimensions to the plan dimensions of the ottoman, said base also having legs for supporting the platform above the floor,

a lower cushion having a rigid frame and with legs secured to the frame, the total height of the lower cushion from the bottom of its legs to the top surface of the cushion exceeding the height of the base from the bottom of its legs to the top surface of the platform,

said platform provided with openings placed within the platform and removed from the platform edge through

which openings the legs of the lower cushion extend when the lower cushion is placed on the platform,

and an upper cushion having plan dimensions substantially equal to the plan dimensions of the lower cushion and designed to lie either directly on the platform or on top of the lower cushion when the lower cushion is on the platform,

the plan dimensions of the base being slightly smaller than the plan dimensions of the lower and upper cushions so that when either the lower cushion or upper cushion is placed on the base, it overlays the base to hide it,

the combined height of the base with its legs and the upper cushion being equal to the height of the lower cushion from its upper surface to the bottom of its legs whereby when the upper cushion is placed directly on the platform and the lower cushion is placed immediately adjacent and in alignment with the base and upper cushion, the three elements define a reclining surface having substantially twice the plan area of ottoman when the base, lower cushion and upper cushion are stacked on top of one another.

4,212,091

WIPER APPARATUS FOR A VIEWING SURFACE

Marcus C. Jones, 7009 Stonycreek Dr., Oklahoma City, Okla. 73132

Filed Feb. 5, 1979, Ser. No. 9,122

Int. Cl.² B60S *1/12, 1/44*

U.S. Cl. 15—250 B **21 Claims**



1. In combination with a viewing device having a viewing surface, the viewing device projecting laterally from a vehicle, an improved wiping apparatus comprising:

a mounting frame supporting the viewing device, the mounting frame and viewing device defining an enclosed interior cavity;

a wiper frame slidingly supported on the mounting frame above the viewing surface;

a wiper blade supported by the wiper frame and disposed to wipingly engage the viewing surface as the wiper frame is moved;

a first fluid cylinder for motivating bidirectional linear movement of the wiper frame, the first fluid cylinder being supported by the mounting frame and disposed within the interior cavity in a position parallel to the line of travel of the wiper blade, the first fluid cylinder having a first end and a second end;

a first piston disposed in the interior of the first fluid cylinder;

a first piston rod extending through, and closely received in, an aperture in the mounting frame, the first piston rod having one end connected to the first piston and the other end connected to the wiper frame;

first fluid communication means for establishing fluid communication to the first end of the first cylinder and comprising a first conduit;

second fluid communication means for establishing fluid communication to the second end of the first cylinder and comprising a second conduit; and

control means interposed in the first and second conduits for actuating fluid flow in a selectable one of the first and second conduits when the first and second conduits are connected to a source of pressurized fluid.

4,212,092

CASTOR-WHEEL FOR ARMCHAIRS AND THE LIKE

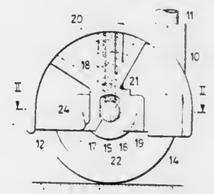
Franco Ferrari, Lecco, Italy, assignor to Agostino Ferrari & C. S.n.C, Lecco, Italy

Filed Sep. 14, 1978, Ser. No. 942,372

Claims priority, application Italy, Nov. 3, 1977, 29322 A/77

Int. Cl.² B60B *33/00*

U.S. Cl. 16—35 R **6 Claims**



1. A castor wheel assembly, for chairs, said castor wheel assembly being characterized in that it comprises a body having a horizontally extending slot, said slot having a vertical extent, a pivot axle mounted within said slot for limited vertical movement, a pair of wheel-halves rotatably mounted on opposite end portions of said pivot axle, said body having at opposite ends of said slot seats each having tapered confronting walls, each of said wheel-halves having a hub positioned generally within one of said seats, a spring normally urging said pivot axle so as to bring said hubs of the wheel-halves into wedging frictional contact with said tapered seat walls, said spring being of a strength to support its proportional share of the weight of an associated chair and being compressible under the load of a person in the chair to release said hub from said seats, said body having means mounting said body for rotation about a vertical axis which is offset from the axis of said pivot axle.

4,212,093

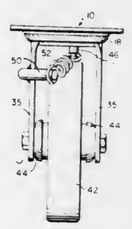
SELF-ALIGNING MECHANISM FOR SWIVEL CASTER

Paul W. Lombard, Woburn, Mass., assignor to Market Forge, Division of Beatrice Foods Co., Everett, Mass.

Filed Feb. 5, 1979, Ser. No. 9,403

Int. Cl.² B60B *33/00*

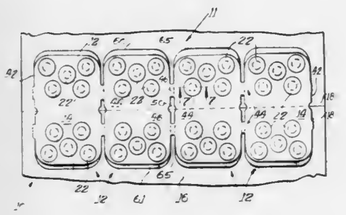
U.S. Cl. 16—35 D **11 Claims**



1. A self-aligning mechanism for a swivel caster comprising a support, a carriage mounted on the support for rotation about a predetermined axis, a wheel mounted to the carriage about an axis at right angles to said predetermined axis, yieldable means connected at one end to the carriage, and means rotatably connecting the other end of said yieldable means to the car-

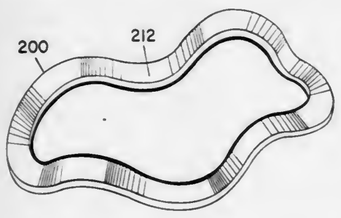
riage support at a point central of the rotation of that end of the yieldable means which is connected to the carriage and radially displaced from the axis of rotation of the carriage.

4,212,094
BELT FASTENERS
Winston C. Pray, Lombard, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.
Filed Oct. 5, 1978, Ser. No. 948,970
Int. Cl.[2] F16G *3/02*
U.S. Cl. 24—31 B **5 Claims**



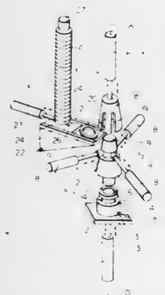
1. A plurality of metallic belt fasteners joined together in a strip for joining belt ends together, comprising: a first belt fastener having at least one plate body for laying against one side of the belt, a plurality of openings in said plate body for receiving fastener means to penetrate the belt and to secure the plate body at a definite fixed location on the belt end, a second adjacent belt fastener having a plate body for laying against the same side of the belt, a plurality of openings in said second plate body for receiving fastener means to secure the second plate body to the belt at a fixed location closely adjacent the first plate body, a metallic bridge means joining said first and second plate bodies and being integrally attached to each of them, said bridge means joining said fastener plates and holding said plates in a predetermined relationship to each other with said openings in said adjacent plates being located at fixed and predetermined locations to each other and to an end of the belt, frangible means connecting said bridge means to said first and second fastener plates for breaking away said bridge means, said bridge means spacing said fastener plates from each other until being broken away and leaving a substantial space between adjacent edges of said fastener plates, said frangible means being adapted to allow chiseling of said bridge means after securing said fastener plates or said bridge means breaking away along one side at said first plate body with the flexing of the belt and then along the other side at said second plate body under flexing of the belt.

4,212,095
BEARING COMPONENTS AND METHODS OF MAKING SAME
Henry A. Warchol, 2 Sackville Ave., Westfield, Mass. 01085
Filed Feb. 13, 1978, Ser. No. 876,899
Int. Cl.[2] B21K *1/05*
U.S. Cl. 29—148.4 C **5 Claims**



1. A method of transforming a flat narrow strip of stock into one half of a bearing retainer cage of cyclodial undulated configuration comprising the steps of: forming a closed ring from a narrow strip of stock with the confronting edges fused together, transforming the ring into a frustroconical configuration, transforming the frustroconical configuration into a flat planar configuration, and transforming the flat planar configuration into equispaced ball retaining undulations of cyclodial configuration.

4,212,096
AUTOMATIC RESILIENT RING FITTING DEVICE
Tatsuoki Saito, and Eiji Nagashima, both of Kofu, Japan, assignors to Tokico Ltd., Kanagawa, Japan
Filed Aug. 21, 1978, Ser. No. 935,315
Claims priority, application Japan, Aug. 20, 1977, 52/100031
Int. Cl.[2] B23P *19/02*
U.S. Cl. 29—235 **7 Claims**



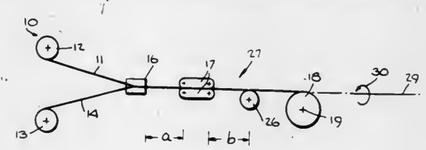
1. An automatic fitting device for fitting an elastic annular ring on a circumferential groove on an article, said device comprising:
- a support for supporting said article thereon;
- a guide having a conically shaped surface with the large diameter end of said guide extending downward and shaped for abutting at one end surface of said article which is supported on said support, said guide adapted for having said annular ring mounted thereon;
- moving means for moving said elastic annular ring down along said conical surface and causing the diameter of said ring to enlarge, said moving means further pushing said ring onto said article and causing said ring to be fitted in said circumferential groove of said article; and
- clamping means for releasably clamping the outer surface of said guide and supporting said guide when said guide is not abutting at said article.

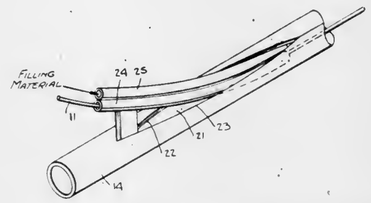
4,212,097
METHOD AND APPARATUS FOR MANUFACTURING OPTICAL CABLE ELEMENTS
Antonio Portinari, Sesto San Giovanni, and Sergio Longoni, Milan, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy
Filed Apr. 20, 1978, Ser. No. 898,081
Claims priority, application Italy, May 4, 1977, 23147 A/77
Int. Cl.[2] B23P *11/02;* **B21B** *15/00;* **B21D** *39/03;* **B23P** *23/04*
U.S. Cl. 29—450 **18 Claims**

1. A method for producing a unitary element particularly adapted for use in telecommunication cables, said element comprising a tube of an elastic material having a longitudinally extending slit therein which extends from the outer periphery of the tube to the interior thereof, said tube loosely enclosing one or more optical fibers, said method comprising:
- uniformly advancing a tube of said material which has been previously extruded and stabilized toward a traction zone, said tube having an inner diameter larger than the diameter of a circle circumscribing said one or more fibers;

- applying a traction force to said tube in said zone to place the portion of the tube upstream of said zone under tension;
- upstream of said zone, cutting said tube longitudinally, as the tube is advanced, through one thickness of the tube wall to provide a pair of cut edges extending longitudinally of the tube;
- separating said edges upstream of said zone to provide a gap therebetween;
- uniformly advancing said fiber or fibers while inserting them within said tube through said gap;
- permitting said edges to come together, after the fiber or fibers have been inserted, by reason of the elasticity of the tube material; and
- collecting the tube with the fiber or fibers loosely enclosed therein, at a point downstream of said traction zone while causing said tube to follow a linear path from said traction zone to said point.

6. Apparatus for producing a unitary element particularly adapted for use in telecommunication cables, said element



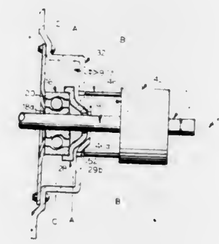


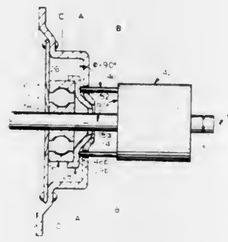
comprising a tube of an elastic material having a longitudinally extending slit therein which extends from the outer periphery of the tube to the interior thereof, said tube loosely enclosing one or more optical fibers, said apparatus comprising:
- cutting means for cutting said tube longitudinally and from the exterior to the interior thereof to form a pair of cut edges;
- first feeding means for feeding said tube to said cutting means;
- traction means following said cutting means for pulling said tube away from said cutting means;
- spreading means intermediate said traction means and said cutting means for spreading said edges apart to form a gap therebetween;
- second feeding means for feeding said one or more fibers toward and into the interior of said tube through said gap; and
- collecting means following said traction means for collecting said tube with said fiber or fibers therein after they leave said traction means.

4,212,098
METHOD AND APPARATUS FOR ALIGNING A BEARING
William T. Sand, Curtice, Ohio, assignor to Eltra Corporation, Toledo, Ohio
Filed Dec. 5, 1977, Ser. No. 857,538
Int. Cl.[2] B23P *3/00, 19/04*
U.S. Cl. 29—460 **8 Claims**

1. A mounting apparatus for a bearing containing an outer race and an inner race, the inner race adapted to receive and support a shaft, in combination with apparatus for aligning said bearing, comprising:
- a first plate;
- a second plate;
- a cup adapted to swivel on a portion of the first plate, said cup receiving the outer race of the bearing to support the bearing on the first plate;
- first means disposed on the second plate for pressing the outer race into the cup and simultaneously pressing the cup into said first plate portion, whereby the first plate is adapted to swivel with respect to the bearing and the shaft axis; and
- second means for shifting the outer race with respect to the inner race by shifting said cup in said first plate until the outer race is parallel to the inner race.

5. A method for mounting and aligning a bearing mounted on a plate, the plate being removably fastened to a frame, the bearing consisting of an inner race adapted to receive and support the shaft and an outer race concentric therewith, comprising the steps:





placing the bearing in a cup;
placing the cup on the plate;
resiliently pressing the bearing in the cup and the cup simultaneously on the plate;
passing the shaft through the inner race, the cup, and the plate;
fastening the plate on the frame; and aligning the outer race by shifting the cup on the plate.

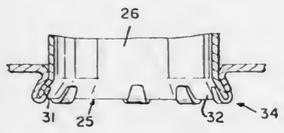
8. An alignment tool to be used with bearings having inner and outer races wherein the inner race supports a shaft, and the outer race is received in a cup, comprising:
- a collar having a bore closely receiving a shaft that is slid down the shaft which includes a plurality of at least three circumferentially spaced parallel legs protruding axially therefrom, the ends of which define a plane perpendicular to the shaft axis, and all of said ends contact the cup when the inner race and the outer race are parallel with respect to the center line of the shaft.

4,212,099

METHOD OF MAKING TUBE-TO-PLATE CONNECTION

Ronald S. Williams, and Robert S. Hill, both of Columbus, Ind., assignors to Arvin Industries, Columbus, Ind.

Division of Ser. No. 908,392, May 22, 1978. This application Dec. 18, 1978, Ser. No. 970,551
Int. Cl.² B23P *11/02*
U.S. Cl. 29—507 **4 Claims**



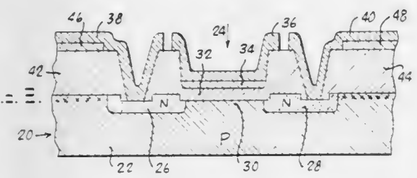
1. The method of joining a tube to a plate comprising the steps of forming an aperture in the plate where the tube is to be joined, forming a flange around the perimeter of the aperture, forming a plurality of upstanding fingers on the flange remote from the plate, forming each finger to include a generally radially inwardly extending portion and a radially inner, axially extending distal end portion, inserting the tube into the aperture such that its side wall lies in a space provided between the proximal and distal end portions of the fingers, and deforming the distal ends of the fingers and adjacent regions of the tube side wall radially outwardly to form indentations in the tube side wall within which the finger distal end portions are positioned to prevent rotation of the tube in the plate to capture the tube against rotation and longitudinal movement with respect to the plate.

4,212,100

STABLE N-CHANNEL MOS STRUCTURE

John Paivinen, Bloomfield Hills, Mich.; Walter D. Eisenhower, Jr., Audobon, Pa., and Ernest R. Helfrich, Richardson, Tex., assignors to MOS Technology, Inc., Norristown, Pa.

Filed Sep. 23, 1977, Ser. No. 835,985
Int. Cl.² B01J *17/00*
U.S. Cl. 29—571 **2 Claims**



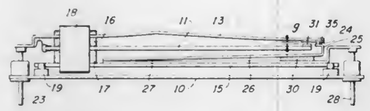
1. A method of making an MOS integrated circuit having improved temperature stability comprising the steps of:
providing a P-type silicon substrate and forming a first uniform thin oxide layer along a laterally extending top major surface of the substrate;
ion-implanting a P-type dopant through the first oxide layer to form immediately thereunder a uniform layer of P^+-type semiconductor material extending laterally along said major surface of the substrate;
forming a second uniform thick oxide layer over the major surface of the substrate and removing selected laterally spaced-apart portions of the first and second oxide layers to leave a pattern of pairs of active areas of the substrate spaced laterally by unremoved fields of the first and second oxide layers and underlying fields of P^+-type material, the active areas of each pair being laterally spaced apart by a strip of unremoved first and second oxide and an underlying strip of P^+-type layer;
forming a source region at one of the active areas of each pair of active areas and a drain region at the other active area of the pair and forming a third thick oxide layer extending laterally over the major surface of the substrate;
removing at least a portion of the strip of first, second and third oxide layers over said strip of P^+-type layer and removing at least a portion of said strip of P^+-type layer to leave a pattern of unimplanted gate regions of the substrate, each gate region being laterally flanked by a source region and a drain region, and removing the third oxide layer over a portion of each source and drain region;
forming a fourth, thin oxide layer over each source region, drain region and gate region;
forming a layer of polysilicon extending laterally over the major surface of the substrate;
removing selected portions of the polysilicon layer to leave over each gate region a polysilicon layer portion extending laterally at least to the lateral extent of said gate region and removing the fourth, thin oxide layer over at least a portion of each of at least some of said source and drain regions; and
forming a metal layer laterally disposed over the major surface of the substrate and removing selected portions of said metal layer to leave over each gate region a metal layer portion disposed over the polysilicon layer portion and extending laterally at least to the lateral extent of the gate region and to leave electrical interconnects to selected ones of said regions.

4,212,101

METHOD FOR ADJUSTING PIEZOELECTRIC RELAY OPERATING GAPS

Ivan E. Brohard, Westerville, and James R. Freeburg, Reynoldsburg, both of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1978, Ser. No. 973,537
Int. Cl.² H01H *11/00*
U.S. Cl. 29—622 **3 Claims**



1. In the fabrication of a piezoelectric relay comprising
a substrate,
a bracket supporting a fixed contact mounted on said substrate by a solder layer,
a flexible spring mounted on said substrate having a moveable contact affixed at an end thereof normally bearing on said fixed contact by the force of said spring, and
an actuator beam mounted on said substrate adapted to engage said spring for raising said moveable contact from said fixed contact responsive to the application of an operate voltage thereto; a method for adjusting the operating gap between said spring and said actuator beam comprising the steps of
adjusting the thickness of said solder layer so that an initial gap is presented between said actuator beam and said spring,
applying an adjust voltage to said beam of a magnitude sufficient to cause a free deflection toward said spring exerting a nominal force substantially equal to said spring force,
applying heat to said solder layer to its melting point to permit said spring to urge said bracket towards said substrate and to permit said spring to contact said beam,
removing said heat when the combined reactive forces of said fixed contact and said beam equal said spring force, and
removing said adjust voltage to leave a final gap between said spring and said beam.

4,212,102

IC SOCKET INSERTION TOOL

John H. Drinkard, Jr., Exton, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 22, 1978, Ser. No. 963,116
Int. Cl.² H05K *3/30*
U.S. Cl. 29—741 **13 Claims**



1. An apparatus for use in mounting leaded electronic parts on a printed circuit board, said printed circuit board drilled with a plurality of holes to receive the mounting leads of said leaded electronic parts, said holes forming a plurality of patterns, each of said patterns corresponding to the pattern of the mounting leads of one of said leaded electronic parts, said printed circuit board further drilled with a plurality of alignment holes, said apparatus comprising:
template means having a plurality of recesses, said template means for receiving said leaded electronic parts, each of said recesses located at a position corresponding to the location of one of said plurality of patterns on said printed circuit board; and
means for positioning one of said leaded electronic parts in each of said recesses, whereby one of said leaded electronic parts is seated in each of said recesses, said positioning means including
a horizontal support,
means for dispensing said leaded electronic parts, said dispensing means including a plurality of dispensing tubes and means for holding said plurality of dispensing tubes in a position to dispense one of said leaded electronic parts into each of a subset of said plurality of said recesses,
means connected to said horizontal support and said dispensing means, including means for supporting said dispensing means above and at an acute angle with said horizontal support, said support means further including means for vibrating said dispensing means, and
alignment means connected to said horizontal support for aligning said template means in position to receive said leaded electronic parts, said alignment means including two angle iron shaped guide bars, said template means being slidable between the opposed inner surfaces of said guide bars.

4,212,103

RAZOR

April Schuman-Hoole, Box 791, Tenafly, N.J. 07670

Filed Oct. 27, 1978, Ser. No. 955,408
Int. Cl.² B26B *21/22*
U.S. Cl. 30—32 **4 Claims**

1. A handle construction mounting a razor head having at least one razor blade mounted within the razor head with a cutting edge projected from one side of the razor head for shaving, said handle construction including a handle adapted to be manually gripped to support the razor head during shaving, said handle including a head carrying section mounting the razor head thereon and a gripping section integral with that end of said head carrying section opposite the razor head and angled with respect to said head carrying section, said head carrying section including a pair of spaced apart legs extending from the juncture between said head carrying and gripping sections to opposite ends of the razor head to define an opening therebetween immediately ahead of the razor head, said head carrying section further including a transparent member extending between said mounting legs of said head carrying section of said handle along that end of said opening opposite the cutting edge of the razor blade to close said opening so that material removed during shaving can accumulate within said opening under said transparent member, yet the user can view the skin area being shaved immediately ahead of the razor head through said transparent member.

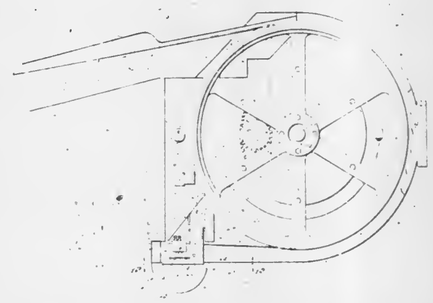


4,212,104

BLADE GUIDE ROLLER ASSEMBLY FOR A BAND SAW

Mark W. Wikoff, Cincinnati, Ohio, assignor to The Walter J. Best Company and The Wolf Machine Company, both of Cincinnati, Ohio

Division of Ser. No. 881,734, Feb. 27, 1978, Pat. No. 4,160,320, which is a continuation-in-part of Ser. No. 785,037, Apr. 6, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 969,855
Int. Cl.² B27B *13/08, 13/02*
U.S. Cl. 30—380 **8 Claims**



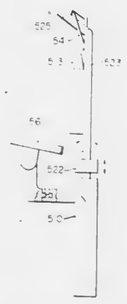
1. An alignment roller assembly for an endless saw blade of a band saw, one idler roller assembly being located in the saw's idler wheel housing, and another idler roller assembly being located in the saw's driven wheel housing, said alignment roller assembly comprising
an edge roller positioned to bear against the non-toothed edge of said endless saw blade,
two side face rollers, said side face rollers being disposed to bear against opposite sides of said endless saw blade, the rotational axes of said side face rollers being on a line angulated relative to the plane of said edge roller, and
a swing arm on which is mounted one of said side face rollers, said swing arm permitting said one side face roller to be adjusted relative to the other side face roller.

4,212,105

INSPECTION DEVICE FOR CAVITIES

Hiroshi Hukuba, No. 914-1, Nazukari, Nagareyama-shi, Chiba-ken, Japan

Filed Nov. 4, 1977, Ser. No. 848,616
Claims priority, application Japan, Nov. 10, 1976, 51-135644; Jun. 6, 1977, 52-66511; Jul. 12, 1977, 52-83168; Sep. 21, 1977, 52-113829
Int. Cl.² A61C *3/00*
U.S. Cl. 433—30 **36 Claims**



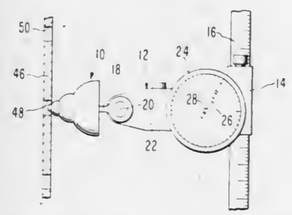
1. An inspection device, comprising: an elongated body adapted to be grasped by the human hand; an inspection mirror; support structure mounting said inspection mirror on said body, said support structure including a rotatable first support which is rotatable about a first axis of rotation relative to said body and which supports said inspection mirror for arcuate movement as a unit about said first axis of rotation, said first axis of rotation extending lengthwise of said elongated body, said support structure also including a second support which supports said inspection mirror for tilting movement relative to said body about a second axis transverse to said first axis of rotation for changing the inclination of said inspection mirror relative to said body; and actuating means engaged with said inspection mirror for tilting said inspection mirror in response to relative movement between said support structure and said actuating means.

4,212,106

MULTI-DIAMETER, HEMISPHERE, CENTER-OF-HOLE LOCATING PROBE

Harry M. Smith, 1093 Norfolk Dr., San Jose, Calif. 95129

Filed Oct. 18, 1978, Ser. No. 952,519
Int. Cl.² G01B *3/22, 5/12*
U.S. Cl. 33—172 D **7 Claims**



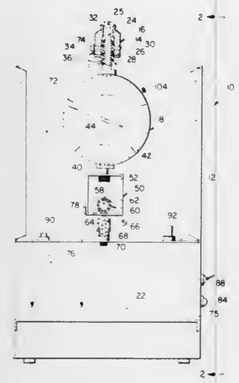
1. A contact member for use with a device for measuring the space between a number of holes in a workpiece comprising: an elongated body having a control axis and a number of sections provided with respective, generally spherical outer surface portions of different diameters, each section being generally hemispherical in cross-section; and means on the body at one end thereof and centrally located relative to said central axis for connecting the body to a measuring device.

4,212,107

LENS MEASURING METHOD AND APPARATUS

Orazio Mezzasalma, Edificio Parque Florida 45N Avenida Avila, La Florida, Caracas-105, Venezuela

Filed Jun. 9, 1978, Ser. No. 914,090
Int. Cl.² G01B *5/08, 5/20*
U.S. Cl. 33—174 A **15 Claims**



1. A lens measuring apparatus for obtaining a desired measurement of an electrically conductive lens having first and second opposed surfaces, said lens measuring apparatus comprising:

a first electrical conducting contact for contacting a first portion of the first surface of said lens, said first electrical contact comprising a support collar having a metallic support contact surface for supporting said lens thereon with said first surface of said lens in electrical contact with said support contact surface;

a second electrical conducting contact mounted for movement with respect to said first electrical conducting contact for selectively contacting a second portion of said first surface of said lens, the relative positioning of said first and second electrical conducting contacts being indicative of the desired measurement of the lens, said second electrical conducting contact comprising a rod mounted for movement along a line substantially normal to said support contact surface and having a metallic tip for contacting said first surface of said lens whereby the position of said tip relative to said support contact surface of said support collar is indicative of said desired measurement;

potential means for applying a potential across said first and second contacts to cause current to be conducted between said first and second contacts through said lens when both of said first and second electrical conducting contacts contact said first surface of said lens;

moving means for moving said second electrical conducting contact relative to said first electrical conducting contact to change the relative positioning of said first and second contacts; and

sensing means for sensing said current conducted between said first and second contacts through said lens.

4,212,108

LAYOUT TOOL FOR FRAMING STUDS

Hubert H. Jackson, 2512 21st St., Santa Monica, Calif. 90405

Filed Jan. 8, 1979, Ser. No. 1,675
Int. Cl.³ G01B *3/00*
U.S. Cl. 33—174 G **5 Claims**

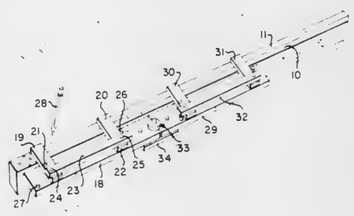
1. A layout tool for framing studs including, in combination:

(a) a straight elongated bar having a flat narrow top surface;

(b) first and second flat narrow bar segments pivoted to the top surface of said elongated bar adjacent to opposite ends

of said flat narrow top surface for swinging movement in their own planes towards each other to closed positions in which the segments overlie and are parallel to said elongated bar, and to open positions away from each other in which the segments extend at right angles to said elongated bar, the distance between said segments when in open positions corresponding to the desired distance between framing studs to be erected;

(c) an additional straight elongated bar having third and fourth bar segments pivoted to its top surface for swinging movement in an identical manner to said first and second bar segments, the distance between one end of said additional straight elongated bar and the third bar segment being such that when said one end is in abutting alignment



with the end of said first mentioned straight elongated bar following said second segment, the distance between said second segment and third segments when in open positions corresponds to said desired distance; and

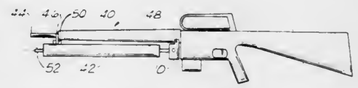
(d) connecting means for securing the straight elongated bars in end-to-end alignment whereby, said tool can be positioned along base and overhead boards for the framing studs with the open bar segments overlying the boards and four stud positions marked on the boards with one application of said tool by utilizing said segments as a pencil guide, and whereby said segments can be folded to their closed positions and said straight elongated bar disconnected from said additional straight elongated bar for easy packing and transportation of said tool.

4,212,109

WINDAGE AND ELEVATION MECHANISM FOR LASER AIMED WEAPONS

Wesley L. Snyder, 1103 Forest Home Dr., Houston, Tex. 77077

Filed Oct. 30, 1978, Ser. No. 955,890
Int. Cl.² F41G *1/34*
U.S. Cl. 33—241 **17 Claims**



17. A windage and elevation mechanism for a weapon having an elongate barrel with a laser aiming device attached thereto, comprising:

a support member;

a rod substantially rigidly attached to said laser aiming device and movably attached to said support member in axial alignment with said barrel of said weapon;

means for supporting said rod within said support member; and

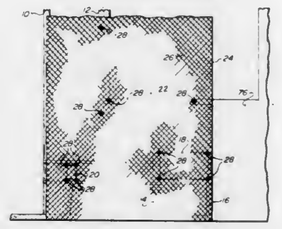
adjusting means mounted to said support member and operatively associated with said means for supporting said rod, for calibrating said laser aiming device in a vertical and horizontal direction.

4,212,110

APPARATUS FOR MARKING BUILDING PANELS

Duncan E. Hill, Jr., Paramus, N.J., assignor to Design Maintenance Corporation, Palisades Park, N.J.

Filed Jul. 3, 1978, Ser. No. 921,215
Int. Cl.² G01B *3/14*
U.S. Cl. 33—174 G **7 Claims**



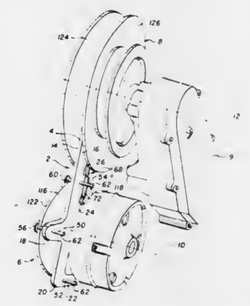
1. An apparatus for indicating on the surface of a panel the location of a portion of the panel to be cut, which apparatus comprises a planar body conforming to the shape of the panel and adapted to be superimposed on and register with the panel, the body also being adapted to be superimposed on a work area, the body having means defining a matrix of openings therethrough, separate means for marking the surface of the panel, the means for marking being adapted for insertion through, registration in and retention by one of the means defining an opening through the body; whereby when the planar body is superimposed on the work area, marking means are registered in the means defining openings through the body conforming to a position in the work area requiring a "cut" in a panel, and the planar body with registered marking means is then superimposed on and registered with a panel, the registered marking means operate to indicate on the surface of the panel the portion thereof to be cut.

4,212,111

SNOWMOBILE CLUTCH ADJUSTING TOOL

Stanley T. Saari, Box 3616, R.R. #2, Clearwater, British Columbia, Canada (V0E 1N0)

Filed Dec. 4, 1978, Ser. No. 965,931
Claims priority, application Canada, Mar. 22, 1978, 299572
Int. Cl.² G01B *5/25*
U.S. Cl. 33—181 R **11 Claims**



1. A tool for aligning sheaves and the like rotatable about spaced-apart parallel axes of rotation, the tool comprising:

an elongate member for extending between two sheaves generally perpendicular to the axes of rotation;

first contacting means generally near a first end of the elongate member for contacting a first said sheave; and

second contacting means generally near a second end of the elongate member for contacting a second said sheave

comprising three gauge members spaced apart as the vertices of a triangle and extending from one side of the elongate member, each gauge member comprising indicating means for indicating a distance between the elongate member and the second sheave, so that, when the first contacting means contacts the first sheave, and the second contacting means contacts the second sheave and each indicating means indicates said distance, the sheaves are aligned.

4,212,112
METHOD FOR DRYING SOLID CARBONACEOUS MATERIALS
Christopher J. LaDelfa, Tulsa, Okla., and Marvin Greene, Somerset, N.J., assignors to Cities Service Company, Tulsa, Okla.
Filed Aug. 29, 1978, Ser. No. 937,890
Int. Cl.³ F26B *3/00*
U.S. Cl. 34—9 **7 Claims**

1. A process for reducing the moisture content of solid, moist carbonaceous materials, using a closed contactor, comprising

(a) grinding the solid material to a size range of 20–400 mesh,

(b) mixing the solid, moist carbonaceous material with a moisture-removing liquid selected from the group consisting of benzene, toluene, and xylenes, these materials being capable of forming an azeotrope with the moisture, with the ratio of solid material to moisture-removing liquid in the mixture varying from about 2/1 to about 1/20,

(c) heating the mixture, and

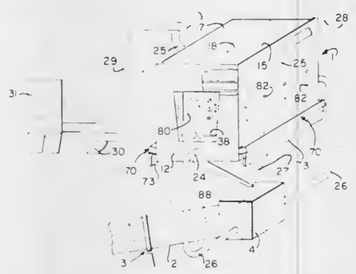
(d) separating the azeotrope from the mixture, thus reducing the moisture content of the solid portion of the mixture.

4,212,113
APPARATUS FOR DRYING AN AIR-BORNE WEB
Karl-Hugo S. Andersson, Vaxjo, Sweden, assignor to AB Svenska Flaktabriken, Stockholm, Sweden
Filed Aug. 17, 1978, Ser. No. 934,401
Claims priority, application Sweden, Aug. 18, 1977, 7709332
Int. Cl.³ F26B *13/20*
U.S. Cl. 34—156 **1 Claim**



1. Apparatus for drying web material with air comprising a first series of transversely-oriented and uniformly longitudinally spaced-apart supporting blow boxes disposed in a plane underlying the undersurface of the web in its plane of travel through the apparatus to blow drying air against the undersurface of the web to support the web in closely-spaced relation to the plane of said blow boxes, a second series of blow boxes disposed on the upper side of the web in a plane closely adjacent the plane of travel of the web through the apparatus, said upper blow boxes being disposed above the upper surface of the web in pairs, said upper blow boxes being of uniform width in their plane, a fan chamber for each of the upper blow boxes, said fan chambers being disposed at spaced locations along the length of at least one side of the dryer apparatus, said pairs of upper blow boxes extending diagonally from each fan chamber at a divergent angle respectively forwardly and rearwardly of the direction of web travel in said plane, said divergent upper blow boxes defining angularly shaped open spaces therebetween, the wide side of said open spaces spanning at least three of said lower blow boxes and the narrow side of said open spaces spanning less than one of said lower blow boxes, said open spaces serving as suction compartments for the exhausting of spent drying air from the upper surface of the web, said open spaces further providing free access to the web path between said blow boxes to facilitate cleaning of the web path in the event of web rupture.

4,212,114
APPARATUS FOR PREHEATING SOLID PARTICULATE MATERIAL
William C. Wentzel, Allentown, Pa., assignor to Fuller Company, Bethlehem, Pa.
Filed Feb. 22, 1978, Ser. No. 879,839
Int. Cl.³ F26B *17/12*
U.S. Cl. 34—167 **8 Claims**



1. Apparatus for preheating solid particulate material which is to be heat processed in a furnace comprising:

a vessel having sidewalls, end walls and a floor and having at least one inlet for solid particulate material to be preheated, an outlet for preheated solid particulate material adapted to be flow connected to a furnace, an inlet for hot exhaust gases from the furnace for preheating the solid particulate material and an outlet for spent preheating gases;

means defining a gas-solids contact zone within said vessel intermediate the inlet and the outlet for solid particulate material and intermediate the inlet and the outlet for gas whereby the solid particulate material which moves from its inlet to its outlet and the gas which moves from its inlet to its outlet pass through the gas-solids contact zone;

a plurality of conduits for conducting solid particulate material from the inlet for solid particulate material to the gas-solids contact zone;

a plurality of valve means, each operatively associated with one of said conduit means for controlling the flow of solid particulate material through its associated conduit for controlling the depth of material in said gas-solids contact zone;

means for moving solid particulate material from said gas-solids contact zone to said outlet for preheated solid particulate material;

a U-shaped wall means having legs and a generally horizontal member connecting said legs mounted in said vessel and spaced from said sidewalls and said floor; and

said gas-solids contact zone is defined by said sidewalls, end walls, floor and said U-shaped wall means.

4,212,115
SEED CORN DRYER APPARATUS
Howard Adler, Sharpsville, Ind., assignor to Adler's Seeds, Inc., Sharpsville, Ind.
Filed Nov. 3, 1978, Ser. No. 957,570
Int. Cl.³ F26B *25/06*
U.S. Cl. 34—215 **12 Claims**



12. A dryer apparatus comprising: a foundation, an exterior shell on said foundation, said exterior shell including a pair of opposite upstanding side walls, a pair of interior walls upstanding from said foundation, said interior walls being spaced-apart from and generally parallel to said side walls, a plenum being located between said paired interior walls, said plenum including upper and lower plenums, a storage area being contained between said side and interior walls, and means for circulating air between the lower and upper plenums only through said storage area, said plenum further includes a grain distribution area positioned above said upper plenum, a closeable passageway being contained in each of said interior walls of said distribution area, said closeable passageways providing selective communication between said distribution area and storage area, and means, located in said distribution area, for receiving and distributing grain so as to maintain a uniform depth of grain in the storage area.

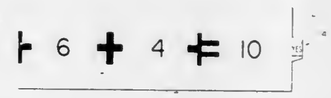
4,212,116
TRAINING APPARATUS FOR VISUALLY IMPAIRED PERSON
James D. Hajduch, 1703 Carolina Ave., Whiting, Ind. 46394
Filed Feb. 5, 1979, Ser. No. 9,740
Int. Cl.³ G09B *21/00*
U.S. Cl. 35—29 R **10 Claims**

1. An apparatus to aid in instructing a visually impaired person comprising: a first and second exciter means, situated as set forth hereinafter, each of said exciter means capable of producing a light beam; a first and second receiver means, situated a distance away from said exciter means so that each of said first and second receiver means is capable of receiving said light beam produced by said first and second exciter means, respectively, said first and second exciter means being spaced apart a sufficient distance to allow said person to stand or walk on the floor therebetween, without interrupting the light beam from either of said exciter means to said corresponding receiver means; and a first and second sound means associated with said first and second receiver means respectively, each of said sound means acting to produce a distinctive sound in



response to the interruption of said light beam to said corresponding receiver means.

4,212,117
SYSTEM OF INTERACTIVE BLOCKS
Blair F. Baldwin, and Deborah Stoddard, both of New York, N.Y., assignors to Baldwin, Stoddard & Company, New York, N.Y.
Filed Feb. 12, 1979, Ser. No. 11,072
Int. Cl.³ G09B *19/02*
U.S. Cl. 35—31 C **13 Claims**



1. A system of interactive blocks for teaching arithmetic, comprising:

a plurality of addend blocks each having:

first and second spaced parallel exterior surfaces and a hole extending through said block between said surfaces;

an elongated rod mounted within said hole for linear movement in a direction transverse to said surfaces;

means for limiting the movement of said rod so that when one end of said rod is adjacent said first surface the other end thereof extends outwardly from said second surface a predetermined distance linearly proportional to a first numerical value, and so that said one end of said rod is movable only between said surfaces;

a plurality of answer blocks each having:

a pair of spaced exterior surfaces and an elongated recess communicating with a selected one of said surfaces;

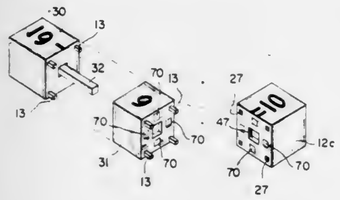
a displaceable flag member disposed in said recess and mounted for movement in response to entry of one of said rods a given distance into said recess linearly proportional to a given numerical value;

visible means for indicating the position of said flag member;

means for preventing said one rod from extending into said recess a distance greater that said given distance; and

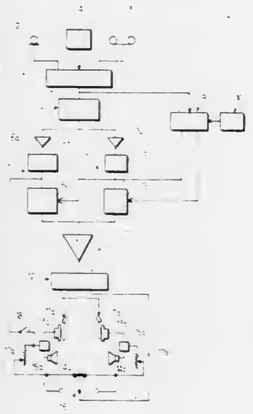
indexing means on said first, second and selected surfaces of said addend and answer blocks respectively for maintaining adjacent ones of said surfaces with the holes and recesses thereof in mutual alignment.

4,212,118
SYSTEM OF INTERACTIVE BLOCKS
Blair F. Baldwin, and Deborah Stoddard, both of New York, N.Y., assignors to Baldwin, Stoddard & Company, New York, N.Y.
Continuation-in-part of Ser. No. 11,072, Feb. 12, 1979. This application Jun. 20, 1979, Ser. No. 50,457
Int. Cl.³ G09B *19/02*
U.S. Cl. 35—31 C **20 Claims**



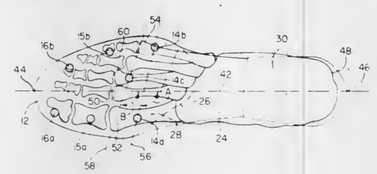
7. A system of interactive blocks for teaching arithmetic, comprising
- a plurality of minuend blocks each having an elongated rod extending from a given surface therof a first predetermined distance linearly proportional to a first numerical value;
- a plurality of subtrahend blocks each having parallel first and second spaced exterior surfaces and a hole extending through said subtrahend block between said surfaces, the width of said subtrahend block between said surfaces being linearly proportional to a second numerical value;
- a plurality of answer blocks each having:
  - a pair of spaced exterior surfaces and an elongated recess communicating with a selected one of said pair of surfaces; and
- means for indicating when said rod extends into said recess a distance within a predetermined range of distance values corresponding to a given numerical value.

4,212,119
AUDIO-VOCAL INTEGRATOR APPARATUS
Ange A. A. Tomatis, 68 Bd de Courcelles, 75017 Paris, France, assignor to Ange Alfred Auguste Tomatis, Paris, France
Filed Sep. 7, 1978, Ser. No. 940,208
Claims priority, application France, Jul. 19, 1978, 78 21407
Int. Cl.³ G09B *19/04;* **H04R** *3/00*
U.S. Cl. 35—35 C **5 Claims**



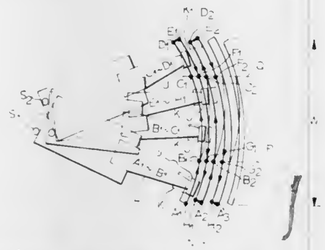
5. An audiovocal integrator apparatus, comprising
means for producing an acoustical signal; means for alerting the human ear by osseous conduction to the imminence of an acoustical signal; and means for transmitting the acoustical signal to the ear only after the ear has been alerted previously by osseous conduction.

4,212,120
TRACK SHOES HAVING STRAIGHT LAST AND IMPROVED SPIKE PLACEMENT
William J. Bowerman; Geoffrey L. Hollister; Stanley L. James, and Dennis E. Vixie, all of Eugene, Oreg., assignors to BRS, Inc., Beaverton, Oreg.
Filed Jun. 10, 1976, Ser. No. 694,720
Int. Cl.² A43B *5/00*
U.S. Cl. 36—129 **6 Claims**



1. A track shoe comprising:
a shoe upper;
a spike plate attached to said shoe upper and having a plurality of spike fasteners secured thereto which are adapted to hold track spike elements;
said fasteners including a rear pair of first and second rear spike fasteners located at positions that will be beneath the overlying metatarsal bones of the wearer's foot and behind the heads of said metatarsal bones, said rear spike fasteners being centered on a straight line which slants backward from the inside to the outside of said shoe; and
said fasteners including a third rear spike fastener located at a position that will be behind the head of the overlying metatarsal bone of the wearer's foot between said rear pair of spike fasteners and ahead of said line joining the centers of said rear pair of fasteners.

4,212,121
METHOD AND APPARATUS FOR DREDGING HAVING BOW-STERN MOVEMENT OF THE SUCTION MEANS
Masao Kato, Tokyo, and Kosuke Kishida, Ichikawa, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 31, 1978, Ser. No. 929,813
Int. Cl.² E02F *3/92*
U.S. Cl. 37—58 **3 Claims**



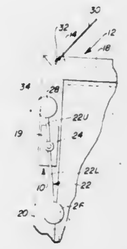
1. A method for dredging, comprising:
driving one spud of a pair of spuds provided on the respective sides of the stern of a dredger into the bottom of a body of water, said spud being on one side of the stern;
carrying out a cycle of steps comprised of:
swinging a ladder projecting from the bow of the dredger and the hull about the spud driven into the bottom while dredging through a suction port member that is mounted at the free end of said ladder so as to be movable sternward and forward in the bow-stern direction of said hull as said ladder is swinging in the direction from one side through a first portion of the side to side path of movement of the suction port member with said suction port member disposed at the forwardmost position of its stroke:
then at the end of the first portion of said path, driving the spud on the other side into the bottom and retracting the spud on said one side;
further dredging while swinging said ladder and hull in the directon from said one side toward said other side about the spud on said other side through a second portion of said path while simultaneously gradually retracting said suction port member from the forwardmost position of the stroke thereof to the most sternward position;
at the end of the second portion of said path, driving the spud on said one side into the bottom and retracting the spud on said other side;
further dredging while swinging said ladder and hull in the direction from said one side towards said other side about the spud on said one side through the remainder of said path;
at the end of said swinging movement, moving said suction port member in the forward direction to the middle of the stroke;
thereafter dredging while swinging said ladder and said hull along the entire path towards said one side; and
at the end of said last-mentioned swinging movement, advancing said suction port member to the forwardmost position of its stroke; and thereafter repeating said cycle of steps.

4,212,122
FRAMING MEANS FOR FRAMING A PICTURE OR OTHER OBJECT
Paul Reim, Rathausgasse 5, D-7100 Heilbronn, Fed. Rep. of Germany
Filed Feb. 17, 1978, Ser. No. 878,742
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2708144
Int. Cl.² G09F *1/12*
U.S. Cl. 40—152.1 **7 Claims**



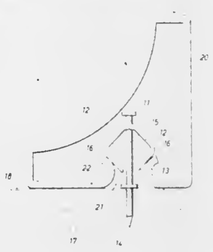
1. Framing means for pictures and like objects, including a frame having a substantially Lshaped cross-section to define an enclosure having an inwardly projecting front flange, a picture holding set including a transparent front plate for supporting a picture, an elastically compressible insert, and a rear plate, comprising a plurality of arresting and holding projections integrally formed on the rear edge of said frame and extending inwardly at such a distance from each other and from said front flange as to receive and hold in a fixed position said picture holding set while said elastically compressible insert is in compressed state , said projections having a substantially V-shaped configuration with inwardly projecting apexes, and the inner side of the apex portion of each projection being provided with a recess adapted for receiving a matching part of a detachable prop and the edge side between said recess and the outer side of said apex portion having indentations for accommodating suspension elements.

4,212,123
POSITIONING DEVICE
Martin I. Robin, 7616 Niles Center Rd., Skokie, Ill. 60077
Filed Nov. 22, 1978, Ser. No. 962,966
Int. Cl.² G09F *01/12*
U.S. Cl. 40—152.1 **8 Claims**



1. In combination, an object such as a picture frame, mirror or the like for suspending substantially in the vertical plane having a normally visible front surface and an opposed, normally hidden rear surface; indicator means for indicating whether said object is desirably suspended relative to the horizontal plane mounted on said object rear surface; a suspension point mounted on said object rear surface on which said indicator means is supportably mounted; said suspension point comprising a pivot enabline said indicator means to freely hang in a predetermined manner in the vertical plane regardless of the disposition of said object relative to the horizontal plane while said object is suspended substantially in the vertical plane; said indicator means being located relative to the periphery of said object so as to be hidden from view when viewing the front surface of said object when said object is suspended in substantially the vertical plane with said object at a predetermined angular disposition relative to the horizontal plane; said indicator means being visible when viewing the front surface of said object while suspended in substantially the vertical plane when said object is not in said predetermined angular disposition relative to the horizontal plane.

4,212,124
FRAME FOR WALL-MOUNTABLE DISPLAYS
Paul Gammill, P.O. Box 60327, Houston, Tex..77205
Filed Jan. 4, 1979, Ser. No. 1,017
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—155 **17 Claims**



1. A frame section for covering at least a portion of the border of a wall-mounted display, comprising
- a plurality of nails for attaching the border of the display to the wall, each of said nails including
  - a first head on the driven end of said nail,
  - a second head axially displaced from said first head for holding the display border against the wall,
- resilient means located between said first and second heads and extending radially beyond said first head, and

an elongate frame strip having an opening in the back thereof for passing over said first head and snapping over said resilient means by resilient action.

said resilient means contracting in size when said strip passes thereover and returning to its original size thereafter to hold said strip against the border of the display.

4,212,125

HOOK SETTING FISHING ROD ATTACHMENT

Chin K. Kim, Chicago, Ill., assignor to Bong Kon Kim, Melrose Park, Ill., a part interest

Filed Jul. 31, 1978, Ser. No. 929,887
Int. Cl.² A01K *91/06*
U.S. Cl. 43—15 **10 Claims**



1. In hook setting apparatus adapted to be connected fixedly to a fishing rod having a fishing line connected at one of its ends and at its other end to a fishhook, a hook setting attachment comprising:

a fixed elongated member adapted to be attached to the fishing rod;

a movable member mounted on said fixed member to move between an initial position and a set position;

line attaching means disposed on said movable member and adapted to be attached releasably to the fishing line;

means for mounting movably said line attaching means on said movable member for permitting a predetermined free movement between said line attaching means and said movable member;

main spring means for urging resiliently said movable member to its initial position;

latching means at least partially disposed at the set position of said movable member for moving reciprocatively in a path of travel into and out of a latching position to fix releasably said movable member in its set position against the force of said spring means;

returning means at least partially disposed at said set position for helping move said latching means out of its latching position against the force of said main spring means;

retaining means responsive to said line attaching means for holding releasably said latching means in its latching position against the action of said returning means during relative movement between said line attaching means and said movable member without releasing said latching means and subsequently for permitting said returning means to help move said latching means out of its latching position to free said movable member relative to said fixed member in response to a sufficiently strong force applied to said retaining means via the fishing line to move said retaining means through said predetermined distance relative to said movable member for causing said retaining means to move for freeing said latching means so that said movable member returns abruptly under the force of said main spring means to said initial position, thereby jerking on the fishing line to set the fishhook in place to catch a fish; and

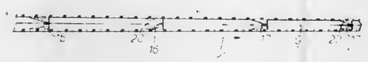
means for mounting swingably said retaining means to move transversely into and out of said path of travel to enable said retaining means to hold said latching means in its latching position and subsequently permitting said latching means to move reciprocatively out of its latching position.

4,212,126

FISHING ROD

David L. Barnett, Wyndholme, Back La., Bredon near Tewkesbury, Gloucestershire, England

Filed Sep. 19, 1978, Ser. No. 943,824
Int. Cl.² A01K *87/04*
U.S. Cl. 43—24 **15 Claims**



1. A fishing rod having a hollow shaft with a handle end and a tip end, defining an interior passageway which tapers from the handle end towards the tip end, a line entry opening to the interior of the shaft adjacent the handle end of the rod and a line exit opening from the interior of the rod adjacent the tip end of the shaft, and a series of spaced line supporting guides positioned within the shaft so than an internal passageway through each line guide is aligned with the rod axis, the internal passageway of each guide tapering inwardly, in the direction towards the tip of the rod, from the outer edge of one end of the guide towards the other end of the guide, the guides each having a length approximately 1½ times its maximum diameter, being of progressively smaller diameter towards the tip end of the rod, and being positioned along a major proportion of the length of the rod at such spacings that, when the rod is subjected to a test load, being the maximum expected working load when the rod is used for fishing, so as to take up a curved form, an imaginary straight line drawn between the points of minimum internal radius of the passageways defined by the wall sections of an adjacent pair of line guides will not contact the curved inner wall of the hollow shaft.

4,212,127

POWER PLANE FOR TRANSPORTING FISHING LINE

Dennis Daniels, Quilecene, Wash.

Filed Feb. 12, 1979, Ser. No. 11,237
Int. Cl.² A01K *97/00*
U.S. Cl. 43—43.12 **8 Claims**



1. Fishing line transporting apparatus for automatically moving a releasable light fish line down a heavily weighted weight line moving through the water and returning to the surface of the water when the light line is released, comprising:

a carrier,

means slidably coupling the carrier for movement along the heavily weighted line,

means on the carrier for releasably holding a light fish line and lure,

a hydrodynamic responsive plane on said carrier for transporting the carrier up and down the weight line depending on its angular attitude as the weight line is moved laterally through the water,

means for releasably holding the hydrodynamic responsive plane in a down mode condition with the surface angled to provide a downward force vector on the carrier, and

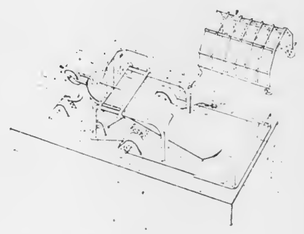
means for changing the angular attitude of the hydrodynamic responsive plane to an up mode condition with the surface angled to provide an upward force vector on the carrier when the fish line is released from the fish line holding means thereby returning the carrier to the water surface to be reused.

4,212,128

ANIMAL TRAP

Reginald W. Vance, R.R. 1, Maki Rd., Sault Ste. Marie, Ontario, Canada (P6A 5K6)

Filed Dec. 1, 1978, Ser. No. 965,609
Int. Cl.² A01M *23/30*
U.S. Cl. 43—81 **6 Claims**



1. An animal trap comprising:

a base;

a platform pivotally mounted in said base;

a trigger member movably mounted on said base and coupled to said platform;

a generally U-shaped striker wire pivotally secured to said base and pivotally movable between a set position and an opposed striking position;

spring means baising said striker wire towards its striking position;

the trigger member being movable, in response to movements of said platform, between a first, set position in which it engages the striker wire to hold said striker wire in the set position, and a second, releasing position in which it releases the striker wire;

a bait receptacle mounted above said platform and presenting one open side in a direction away from the trigger member and towards the striking position of the striker wire, so as to allow access to bait in said bait receptacle from one lateral direction only, said bait receptacle being positionally adjustable twards and away from the trigger member relative to the platform;

a cover for said bait receptacle, said cover having an open side coinciding with the open side of the bait receptacle and being movable between a covering position in which it is above the bait receptacle, and an open position permitting top access thereto for bait loading purposes;

and means for releasably holding said cover in its covering position.

4,212,129

INSECT TRAP

Billy R. Shumate, Hayes, N.C., assignor to Richard Dean Roberts, Wilbar and Robert L. Brewer, Winston-Salem, both of, N.C., part interest to each

Filed Apr. 23, 1979, Ser. No. 32,496
Int. Cl.² A01M *1/04*
U.S. Cl. 43—113 **7 Claims**

1. An insect trap, comprising:

(a) a cylindrical body member having at least one open end;

(b) a funnel member removably fitted in each such open end;

(c) a unitary lamp assembly including at least a switch, lamp mount and lamp, said assembly being mounted in the sidewall of said body member with said lamp being located internally and said switch being located externally thereof;

(d) an AC prong assembly secured to and having prongs extending outwardly and externally of said body member and adapted to mate with an AC wall outlet for supporting said body member therefrom and providing a source of power for energizing said lamp; and

(e) circuit means operatively associated with said lamp and prong assemblies enabling said lamp to be energized through power supplied through said prong assembly.



4,212,130

PLAYHOUSE WITH ELEMENTS BASED ON TWO MODULAR UNITS

June F. Walker, 3010 Anacapa Pl., Fullerton, Calif. 92635

Filed Apr. 7, 1978, Ser. No. 894,499
Int. Cl.² A63H *33/10*
U.S. Cl. 46—12 **11 Claims**



1. A modular playhouse comprising a plurality of sections, means for supporting said playhouse, said supporting means having a vertical portion determining its height and generally horizontal portion with sides determining its length and width, and means for connecting said sections ones to the others, the shapes and sizes of said sections regulated by two related modular units, a first of said modular units being essentially a right triangle so proportioned that the hypotenuse thereof is essentially twice as long as the base thereof, a second of said modular units being essentially a rectangle, the length and width of said second modular unit essentially corresponding in measurement to said hypotenuse and said base of said first modular unit respectively, said sections comprising at least one substantially triangular panel having its linear dimensions regulated by the linear dimensions of said first modular unit, and at least one substantially rectangular panel having its linear dimensions regulated by the linear dimensions of said second modular unit, and said supporting means having the linear dimension of its height regulated by the linear dimension of the height of said first modular unit and having the linear dimension of at least one of its sides regulated by the linear dimension of said hypotenuse of said first modular unit.

4,212,131

HIGH UTILITY DISK TOY

Alexander D. Ross, Jr., 332 Sugartown Rd., B-32, Devon, Pa. 19333

Filed Dec. 6, 1976, Ser. No. 748,274
Int. Cl.[3] A63H *27/00*
U.S. Cl. 46—74 D 30 Claims



1. A high utility disk toy adapted to be thrown through the air, spun on a finger or spun like a top, that can be stacked (having seventy-five percent or more of its height fitting into or over another) that can be thrown as one, with in flight separation and having a full flight formation factor, comprising:

a. a concave/convex central dome having a smooth sloping surface extending down to;
b. an intermediate crown that radiuses into;
c. a rounded peripheral concave/convex disk hull that extends outwardly and then down on a larger radius to;
d. a flat bottom horizontal rim wing flight stabilizer that extends outwardly at right angles from the base of the disk hull to its outer rounded perimeter.

4,212,132

DOLL WITH EMBRACING ARM MOVEMENT

Dov Lewanoni, Brooklyn, N.Y., assignor to Goldberger Doll Mfg. Co., Inc., Brooklyn, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,320
Int. Cl.[2] A63H *5/00*
U.S. Cl. 46—118 9 Claims



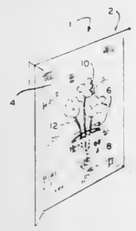
1. A doll with embracing arms and concomitant clapping hands movement which comprises a torso, two legs dependent from said torso, a head, said head being mounted on the upper end of said torso, and two arms, each of said arms being pivotally mounted on one side of the upper end of said torso so that each of said arms is partially rotatable about a substantially vertical axis, a rectangular parallelepiped receptacle, said receptacle being longitudinally disposed within said torso and having an open front side, each of the pivotal mountings of said arms being attached to said receptacle and being disposed external to one side edge of said receptacle proximately at the top of said receptacle, a movable panel, said movable panel having dependent leg panels which slidably engage the interior of the side walls of said receptacle, with a protuberance on the surface of each leg panel extending into a rectilinear slot in a side wall of said receptacle, each of said slots being substantially perpendicular to the rear side of said receptacle so that when said movable panel is depressed, each of said protuberances slides in a slot and said movable panel moves from a spaced away position parallel to the rear side of said receptacle to a displaced position closer to and parallel to the rear side of said receptacle, a pair of lever arms, each of said lever arms extending into said receptacle from the pivotal mounting of one of said arms, so that displacement of a lever arm when said movable panel is depressed pivots the arm of the doll about said pivotal mounting, a flexible resilient connection member, said connection member being under tension and extending rectilinearly between said pair of lever arms, and contact means at each upper corner of said movable panel, each contact means contacting and displacing one of said lever arms when said movable panel is depressed and displaced into said receptacle, so that said arms move towards each other in an embracing movement and the hands on the terminal ends of said arms appear to clap.

4,212,133

PICTURE FRAME VASE

Lindsey D. Lufkin, 991 Waimanu St., Honolulu, Hi. 96814

Filed Mar. 14, 1975, Ser. No. 558,372
Int. Cl.[2] A01G *5/00*; A47G *1/24*; G09F *19/00*
U.S. Cl. 47—41 R 4 Claims



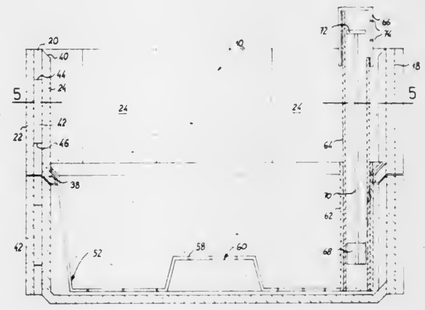
1. A picture vase comprising a relatively large vertically oriented decorative plate having a front face and a rear surface and having a generally rectangular opening with a larger horizontal dimension and a small vertical dimension positioned in a central portion of the vertically oriented plate and slightly below a center of the plate and having a frame surrounding the plate and extending outward from the plate, the frame extending forward from the front surface of the plate and rearward from the rear surface of the plate, means connected to the frame for hanging the frame with the decorative plate disposed vertically on a wall and having a relatively small water pocket container with an open top and a closed bottom and sides mounted on a rear surface of the plate, the water pocket container having an upward opening adjacent the opening in the central portion of the vertically oriented plate, wherein the container is a flat laterally extended container mounted flush on said plate beneath the opening, the container having an upward opening commensurate with the opening in the plate, the container being relatively wide in a direction along the plate and narrow in a direction transverse to the plate, and the container tapering laterally inward and downward, and the frame extends rearward from the plate for a distance greater than a thickness of the container, whereby the frame rests against a wall and whereby flowers positioned on the front of the plate and having stems extending downward and rearward through the opening in the container are held and watered by the water pocket container wherein the narrow rearward dimension of the container holds the stems so that the flowers remain upright.

4,212,134

MODULAR PLANTING BOX SYSTEM INCLUDING LIQUID LEVEL AND INSERT

Hans J. B. Brokamp, Schmiedgasse 21, D-8950 Kaufbeuren, Fed. Rep. of Germany

Continuation of Ser. No. 813,429, Jul. 6, 1977, abandoned. This application Oct. 5, 1978, Ser. No. 948,997.
Int. Cl.[2] A01G *9/02*
U.S. Cl. 47—82 1 Claim



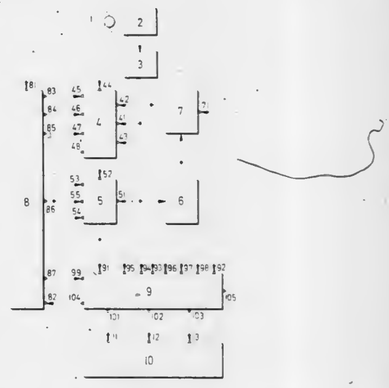
1. An improved planting box assembly being formed of a plurality of individual planting boxes each being stacked upon one another, said boxes are formed by a frame having a polygonal cross-section with vertical walls, vertical ribs and vertical channels at said walls; said ribs and channels are formed of a complementary cross-section; said channels being formed of a pair of individual planting boxes stacked one upon another to define vertical slide guides for ribs of another planting box, enabling lateral connection of respective planting boxes of identical shape; supporting means arranged in each of the said channels defining structure to support said ribs, said improvement comprising: disposing a planting box vertically in an offset position with respect to a first planting box, by half of the height of the other planting boxes; each individual planting box having a lower edge portion formed at each vertical wall, a lower one of a given pair of planting boxes having a bottom wall connected with the lower edge portion; a pot-like insert having an outer edge portion at its upper end, disposed on the lower edge portion of an upper one of said pair of planting boxes, said insert having an overall height which is at least equal to the interior height of the respective planting boxes; a bottom portion of the pot-like insert being disposed to be spaced from a bottom of the lower one of said pair of planting boxes; a plurality of small openings and recess means of a reverse cup-like shape formed in said insert adapted to retain a solid nutrient preparation therein; and a vertical tube formed at the inner side of one side wall of said pot-like insert and an extension tube extending over the whole height of a plurality of planting boxes stacked one upon another, for insertion into the vertical tube to thereby receive a displaceably arranged float body connected by a vertical rod and an indicator element disposed at an upper end of the vertical rod, the indicator element being surrounded by a sleeve-like head of transparent material fitted over an upper end of the extension tube.

4,212,135

METHOD OF ADAPTIVE CONTROL OF A RECESSING CYCLE ON A GRINDING MACHINE AND APPARATUS THEREFOR

Miroslav Mirsch; František Rosberg, and Miroslav Růžička, all of Prague, Czechoslovakia, assignors to Tos Hostivar, narodni podnik, Prague, Czechoslovakia

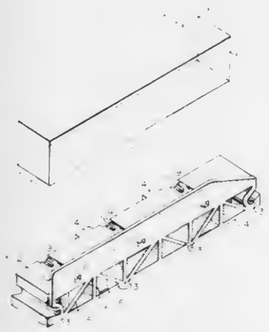
Filed Feb. 23, 1979, Ser. No. 14,557
Claims priority, application Czechoslovakia, Feb. 23, 1978, 1137-78
Int. Cl.[2] B24B *49/16*, *1/00*
U.S. Cl. 51—165.71 8 Claims



5. An apparatus for adaptive control of a recessing cycle, comprising a pick-up head touching a machined workpiece, a dimensional encoder unit, a comparator unit and a cycle control unit, means connecting an output of the pick-up head to an input of the dimensional encoder unit, an analysis unit, a synthesis unit, a removal speed determining unit, a function unit, means connecting an output of the dimensional encoder unit to a first collecting input of the analysis unit, to the first pick-up input of the synthesis unit, to a first sorting input of the comparator unit and to an input of the removal speed determining unit, means connecting the output of the removal speed determining unit to a second sorting input of the comparator unit and to an input of the function unit, an output of the function unit being connected to a third sorting input of the comparator unit and to a second collecting input of the analysis unit, an output of the analysis unit being connected to a second pick-up input of the synthesis unit, an output of the synthesis unit being connected both to a first reference input of the comparator unit and to a third collecting input of the analysis unit, a cycle control unit, a first keying input of the analysis unit being connected to a first control output of the cycle control unit, a second keying input of the analysis unit being connected to a second control output of the cycle control unit, a third keying input of the analysis unit being connected to the third control output of the control block, a fourth keying input of the analysis unit being connected together with a fifth keying input of the synthesis unit to a fourth control output of the cycle control unit, a fifth control output of the cycle control unit being connected to a locking input of the comparator unit, a first auxiliary output of the comparator unit being connected as a feedback path to an auxiliary control input of the cycle control unit, a second auxiliary output of the comparator unit being connected to a sampling input of the function unit, a first output of the comparator unit being connected to an input of a roughing control of action units of a grinding machine, a second output of the comparator unit being connected to an input of a cycle end control of the action units of the grinding machine and a third output of the comparator unit being connected to an input of a finish grinding control of the action units of the grinding machine, the synthesis unit being provided with a first auxiliary input and with a second auxiliary

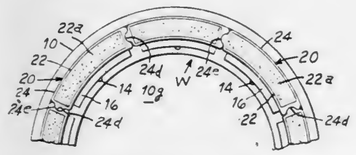
input, the analysis unit being provided with an order input, the cycle control unit being provided with a control input and the comparator unit being provided with a second reference input, a third reference input, a fourth reference input and a fifth reference input.

4,212,136
ABRADING ELEMENTS
Glenn A. Stertzbach, Getzville, N.Y., assignor to Vonscot Industries, Clarence, N.Y.
Filed Dec. 15, 1977, Ser. No. 860,910
Int. Cl.[3] B24D *5/00, 17/00*
U.S. Cl. 51—204 **22 Claims**



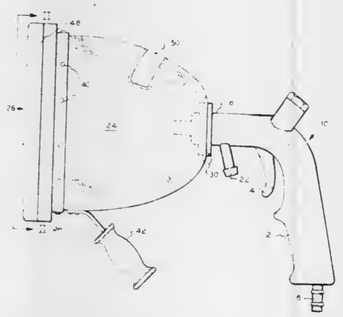
1. An abrading element comprising a preformed abrasive article having an abrading face and an opposite attachment face, in a molded plastic unitary support structure, said unitary support structure having a flat support face to which the attachment face of the abrasive article attaches and said support face having voids therein such that from about 70 to about 90 percent of the surface area of the attachment face of said abrasive article is in contact with said support face and from about 10 to about 30 percent of said surface area is opposite said voids, and said support face being resiliently supported by a triangular truss support bridge intimately molded therewith.

4,212,137
SEGMENTAL GRINDING WHEEL AND COMPOSITE ABRADING SEGMENTS THEREFOR
Charles V. Rue, Petersham, Mass., assignor to Norton Company, Worcester, Mass.
Filed Jul. 20, 1978, Ser. No. 926,539
Int. Cl.[2] B24D *5/08, 7/06*
U.S. Cl. 51—206.4 **10 Claims**



1. A composite abrading segment of precise size and interfitting arcuate shape for an annular segmental grinding wheel wherein a plurality of segments are assembled in interfitting engagement with each other and clamping to suitable chuck means adapted for mounting on drive means for rotation therewith about an axis comprising:
a preformed bonded abrasive segment of simple arcuate shape having
a working face; and
a shell of precise size and more complex interfitting arcuate shape encasing at least a portion of each side except the working face of the abrasive segment and having
at least one projection on an end of the shell adapted for interfitting engagement with a depression on an adjoining segment of the grinding wheel, and
at least one depression on an opposite end of the shell adapted for receiving a projection on another adjoining segment of the grinding wheel.

4,212,138
PORTABLE CONFINED SURFACE SAND BLAST APPARATUS
Gary Hutchison, 1355 Day Rd, Hudson, Mich. 49247
Filed Sep. 5, 1978, Ser. No. 939,245
Int. Cl.[2] B24C *3/06*
U.S. Cl. 51—427 **10 Claims**



1. A portable sandblast apparatus for mounting upon a hand held sandblast nozzle comprising, in combination, a flexible shroud having an open end and a sandblast nozzle receiving orifice spaced from said open end, nozzle mounting means defined at said orifice for firmly and sealingly receiving a sandblast nozzle, air previous sand particle filter means defined in said shroud, and an annular flexible surface seal attached to said shroud open end for establishing a seal with the surface to be cleaned, the flexibility of said shroud permitting a nozzle within said mounting means to be freely moved for directional purposes while said seal is maintained in a sealed relationship with the surface to be cleaned.

4,212,139
HEAVY DUTY DRAWBAR
Stephen G. Shoup, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Jul. 11, 1977, Ser. No. 814,380
Int. Cl.[2] E04C *3/32*
U.S. Cl. 52—721 **1 Claim**

1. A fabricated beam structure comprising,
a primary plate having spaced substantially parallel opposite end wall portions generally symmetrically positioned with respect to a plane parallel thereto and midway therebetween and having apertures therethrough for entry of external fastener means and the like and being connected by a diagonally disposed intermediate wall portion, and a pair of substantially flat plates disposed on opposite sides of said primary plate and secured thereto in edgeward substantially congruent overlying relation to form a box-like structure but providing a pair of oppositely outwardly

opening pockets respectively adjacent to said end wall portion for ready access to said external fastener means



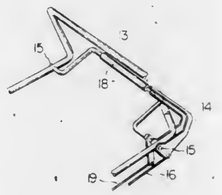
and the like which may be extendable through said apertures in said end wall portions.

4,212,140
APPARATUS FOR RESTORING DISTORTED ARTICLES TO THEIR TRUE CROSS-SECTIONAL SHAPE
Bertram G. Poynton, Bromham, and Phillip S. Waite, Kempston, both of England, assignors to Ti Fords Limited, Kempston, England
Filed Apr. 23, 1979, Ser. No. 32,271
Int. Cl.[3] B65B *7/28, 63/02;* **B21D** *1/06*
U.S. Cl. 53—289 **10 Claims**



1. Apparatus for successively advancing distortable articles of nominally circular cross-section and for restoring distorted articles, at least temporarily, to their circular cross-sectional shape, comprising:
(a) two star wheels mounted side-by-side with their axes of rotation substantially parallel,
(b) means defining cooperating part-circular recesses in the peripheries of said star wheels,
(c) said part-circular recesses in each said star wheel having centres of curvature disposed on the pitch circle of the siad star wheel,
(d) said recess defining means on at least one of said star wheels being radially displaceable and being resiliently urged into radially outermost positions in which said centres of curvature of the associated recesses are disposed on said pitch circle of the star wheel, and
(e) means rotating said star wheels in opposite directions at substantially equal peripheral speeds, such that said recesses in said two star wheels are successively disposed in mutually opposed relation, whereby each article advanced between said star wheels is resiliently clamped between opposing ones of said recesses which serve to restore said article to its circular cross-sectional shape.

4,212,141
LAWN MOWER
Takeshi Miyazawa, Wako; Takeo Ogano, Kawagoe; Naotoshi Ono, Sayama, all of Japan, and Kazunobu Sato, Torrance, Calif., assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 26, 1979, Ser. No. 6,569
Claims priority, application Japan, Feb. 2, 1978, 53-12144[U]
Int. Cl.[2] A01D *35/26*
U.S. Cl. 56—11.8 **11 Claims**

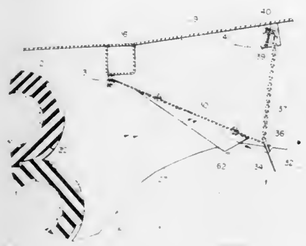


1. A lawn mower, comprising in combination:
(a) a machine body;
(b) a prime mover having an output shaft extending therefrom, and mounted on one part of said machine body;
(c) a lawn cutting blade operatively joined to said output shaft;
(d) means for rotating and stopping said lawn cutting blade;
(e) means for driving and stopping said machine body in a self-driving mode;
(f) pulley means to interlock said means (d) and (e);
(g) a steering handle extending from said machine body;
(h) first lever means provided at one part of said steering handle for on-and-off operation of said rotating and stopping means for said cutting blade; and
(i) second lever means also provided at one part of said steering handle and in contiguity to said first lever means for on-and-off operations of said driving and stopping means for said machine body,
said first lever means being operable independently of said second lever means, and said second lever means, when gripped, being engaged with said first lever means to cause said first lever means to rotate in its operative direction, and maintain the same at its operational position.

4,212,142
CROP DEFLECTOR CONTROL
Robert C. Miner, Clarendon Hills, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed May 10, 1979, Ser. No. 37,989
Int. Cl.[3] A01D *57/26*
U.S. Cl. 56—14.4 **2 Claims**

1. A hay harvesting machine including a transverse frame, a crop cutting apparatus disposed across the front of the frame, a pair of counterrotating hay conditioning rolls disposed rearwardly of said cutting apparatus on said frame for receiving crops therefrom and propelling said crops in a rearwardly directed airborne stream, windrowing apparatus disposed on said frame rearwardly of said conditioning rolls and including a pair of rearwardly converging side deflectors for laterally consolidating said crops for deposit on the ground in a windrow, a trapezoidal crop deflecting baffle having a forward edge hinged to said frame above the crop stream and having a first position permitting substantial consolidation by said windrowing apparatus and a second position intercepting the crop stream and deflecting it downwardly for deposit in a swath, baffle position control means comprising a transversely extend-

ing rod rotatably mounted on said windrowing apparatus and having one end extending laterally externally thereof, a flexible tension member attached to the periphery of said rod and extending downwardly to a distal end attached to the rearward



portion of said baffle sheet, a ratchet fixedly attached to said transverse rod, a spring loaded pawl attached to said windrowing apparatus in a position to releasably engage said ratchet to prevent rotation of said rod in a direction lowering said deflector, and means for rotating said transverse rod.

4,212,143

DEFLECTOR MEANS FOR MOWER-CONDITIONER

Gerard P. L. Chaumont, Dijon, France, assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 6, 1979, Ser. No. 9,977

Claims priority, application United Kingdom, Feb. 14, 1978, 5752/78

Int. Cl.² A01D *49/00*

U.S. Cl. 56—14.4 **20 Claims**



1. A mower-conditioner comprising:

mower means for cutting standing crop,

rotary crop conditioner and spreader means located rearwardly of the mower means for operating on the cut crop,

fixed deflector means positioned rearwardly of the crop conditioner and spreader means and

further deflector means movable between first and second positions relative to the fixed deflector means, the fixed and movable deflector means being operable in one position of the movable deflector means to form a windrow of the crop discharged from the crop conditioner and spreader means and in the other position of the movable deflector means to allow the crop conditioner and spreader means to widely spread the cut crop.

4,212,144

MACHINE FOR CUTTING AND CONDITIONING FORAGE

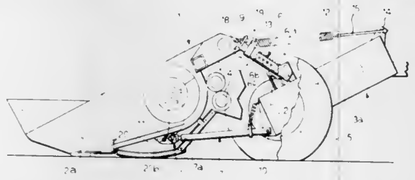
Giuseppe Raineri, Bassano del Grappa, Italy, assignor to Pietro Laverda S.P.A., Breganze, Italy

Filed Feb. 27, 1979, Ser. No. 15,691

Claims priority, application Italy, Mar. 7, 1978, 67480 A/78

Int. Cl.² A01D *35/12*

U.S. Cl. 56—15.8 **7 Claims**



1. In a machine for cutting and conditioning forage, of the type including:

a frame,

a cutter platform,

a cutter bar mounted on said cutter platform,

a pair of counter rotating transverse rolls on said cutter platform for conditioning the forage cut by said cutter bar,

two pairs of side arms connecting said cutter platform to said frame of said machine, each said pair of side arms comprising an upper side arm and a lower side arm, and

means pivoting each said side arm at one end thereof to said cutter platform and at the other end thereof to said frame of said machine,

the improvement wherein:

said upper side arms extend forwardly and upwardly from said pivot connecting them to said frame of said machine,

said lower side arms each consist of a hydraulic actuator extension and retraction of which controls the raising and lowering of said cutter platform respectively,

respective resilient biasing means are located above each said upper side arm, said resilient biasing means interconnecting the frame of said machine and said two upper side arms, and

abutment elements located on the frame of said machine in positions such that said upper side arms are spaced therefrom when said hydraulic actuators are in a fully retracted position and said upper side arms turn downwardly about the pivots connecting them to the frame of said machine until they engage against said abutment elements when said double acting hydraulic actuators are caused to extend from said fully retracted position, whereby said cutter platform is displaced forwardly from its lowered position prior to being raised from the ground upon extension of said hydraulic actuators.

4,212,145

TOBACCO HARVESTER WITH IN-LINE HARVESTING SYSTEM

Carlisle A. Middleton, 38 Dungarrie Rd., Baltimore, Md. 21228

Filed Aug. 16, 1978, Ser. No. 934,096

Int. Cl.² A01D *45/16*

U.S. Cl. 56—27.5 **25 Claims**

1. In a tobacco harvester having a frame with means for tobacco harvester, guide means for plants, means for severing stalks of plants, conveyor means for plants, including indexing means, a spear having alternating means for gripping and holding the spear generally horizontal for impaling stalks of plants and associated therewith stick holding means for receiving stalks impaled, the improvement comprising in combination: the frame having a passage for tobacco plants entirely therethrough along the lower part thereof in a fore-and-aft direction, the severing means being adjacently forward of the

spear in position for severing stalks of plants instantly prior to said impaling on the spear, the guide means being resilient and located for resiliently biasing stalks after severance into centered alignment for said impaling on the spear, and all said



guide means, severing means, conveying means, spear and stick holding means having alignment on the frame for substantially level, straightline harvesting of tobacco plants along said passage.

4,212,146

UNIVERSAL CUTTING AND FEED ASSEMBLY FOR MULTIROW STALK-CROP HARVESTER

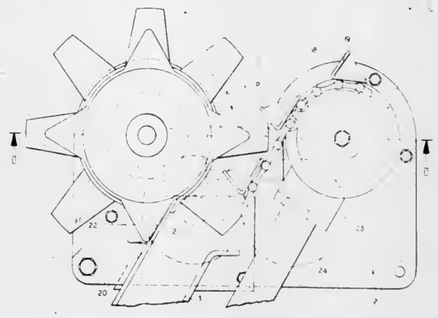
Theodor Eistert, Neustadt, German Democratic Rep., assignor to VEB Kombinat Fortschritt, Neustadt,Sachsen, German Democratic Rep.

Filed Sep. 6, 1978, Ser. No. 940,100

Claims priority, application German Democratic Rep., Sep. 9, 1977, 200955

Int. Cl.² A01D *45/00, 55/00*

U.S. Cl. 56—98 **10 Claims**



1. In a multirow stalk-crop harvester displaceable along the ground and having a plurality of forwardly open throats are adapted to receive a row of the crop during harvesting thereof and having at the front end of each throat at one side thereof a cutting rotor and to the other side thereof a sprocket for a conveyor chain extending back along the respective throat, the improvement comprising:

a plurality of separate and identical mounting plates each secured to said harvester at the front end of a respective throat, each plate being substantially symmetrical about a respective upright plane bisecting the respective front end and extending generally in the normal direction of displacement of said harvester, each plate defining a pair of axes substantially parallel to and symmetrically flanking the respective plane;

a pair of similar mounts on each of said plates symmetrically flanking the respective plane and centered on the respective axes, the respective cutting rotor being carried on one of the mounts of each pair of mounts for rotation about the respective axis and the respective sprocket being carried on the other mount of the respective pair of mounts for rotation about the respective axis, each of said mounts being securable to the respective plate centered on either of the respective axes; and

means including a set of gears on each of said plates symmetrical to the respective plane and interconnecting the respective rotor and sprocket for driving each rotor from the respective sprocket.

4,212,147

FODDER MOWER-CONDITIONER

Anton Werner, Saverne, France, assignor to Kuhn S.A., Saverne, France

Filed Nov. 1, 1977, Ser. No. 847,543

Claims priority, application France, Jul. 22, 1977, 7723684

Int. Cl.² A01D *67/06, 75/22*

U.S. Cl. 56—228 **3 Claims**



1. A mower conditioner adapted to be connected to a tractor provided with a lift linkage, said mower conditioner comprising

cutter means adapted to be rotatably driven about at least two approximately vertical axes

at least one conditioning rotor adapted to be rotatably driven about an approximately horizontal axis

a first element of a first hitch device that entirely carries the mower conditioner in its transport position, said first element being disposed behind the cutter means and the conditioning rotor of the mower conditioner in its normal operating position

a second hitch device that advances the mower conditioner in said normal operating position, said second hitch device having means to connect it with the lift linkage of the tractor

a second element of the first hitch device releasably connectable with said first element, said second element being disposed behind the second hitch device of the mower conditioner in said normal operating position, wherein when the two elements of the first hitch device are connected the mower conditioner is entirely carried.

4,212,148

AGRICULTURAL MACHINE

J. O. Brownlee, 14 S. Evers St., Plant City, Fla. 33566

Continuation-in-part of Ser. No. 660,354, Feb. 23, 1976, abandoned. This application Oct. 27, 1977, Ser. No. 845,946

Int. Cl.² A01D *46/00*

U.S. Cl. 56—328 R **22 Claims**

1. An agricultural machine for cultivating and harvesting fruit bearing trees, said agricultural machine comprising: enclosure means shaped and dimensioned for disposition in substantially surrounding relationship to the fruit bearing tree; spray means attached to said enclosure means and disposed in fluid delivering relationship to the fruit bearing tree, whereby fluids may be applied to the fruit bearing tree; air blowing means comprising a plurality of fan means attached to said enclosure means and disposed in fluid communicating relationship to the fruit bearing tree; collection means attached to said enclosure means and disposed in receiving relationship to fruit

removed from the fruit bearing tree; wheel support means attached to said enclosure means, whereby said agricultural machine may be transported along a predetermined path; and drive means operatively connected to said wheel support means in driving relation thereto; said enclosure means comprising first and second side portions disposed in spaced apart relationship to each other, and said first and second side portions each comprising inner and outer wall members, a plurality of side vane means disposed in substantially spaced apart relationship on said inner and outer wall members, said side vane means disposed within said inner wall members being



adjustable with respect to a normal horizontal position whereby fluid from said spray means and said fan means may be oscillated, said enclosure means further comprising bottom liner means disposed in substantially interconnecting relation between the bottom of said first side portion and the bottom of said second side portion; said collection means comprising a pair of first ramp means, each one of said pair being attached at one end thereof to a corresponding one of said first and said second side portions and the other end of each one of said pair being attached to said bottom liner means, whereby disengaged fruit falling on said bottom liner means is directed to one of said pair of first ramp means.

4,212,149

CROP BALING MACHINES

Bernard Krone, Spelle, and Wilhelm Ahler, Stadtlohn, both of Fed. Rep. of Germany, assignors to Maschinenfabriken Bernard Krone GmbH, Spelle, Fed. Rep. of Germany

Filed Jun. 27, 1978, Ser. No. 919,639

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2730040; Oct. 4, 1977, 2744548

Int. Cl.² A01D *87/00*

U.S. Cl. 56—341 **24 Claims**



1. A crop baling machine of the kind for producing wound bales and comprising a cylindrical bale winding compartment having a part cylindrical boundary wall which terminates at a front edge and a rear edge, said front edge and said rear edge defining a gap means, said gap means being disposed at the bottom of said compartment for the introduction into said compartment of crop to be wound into a bale in said compartment, and an endless conveyor means for imparting winding movement to crop introduced into said winding compartment through said gap means, said conveyor means having radially inner and outer runs extending between said front and rear edges of said gap means and having said radially inner run guided to run in circular fashion around the inside of said part cylindrical boundary wall in a direction away from said rear edge of said gap means and towards said front edge of said gap means to thereby effect winding movement of said crop.

4,212,150

RAKE ATTACHMENT FOR GARDEN TOOL

Frank M. Dmochowski, 41210 Ave. 10½, Madera, Calif. 93637

Continuation-in-part of Ser. No. 696,178, Jun. 15, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 973,143

Int. Cl.² A01D *7/00*

U.S. Cl. 56—400.06 **7 Claims**



1. In a hand tool having a first tool blade mounted on one end of an elongated handle an attachment for mounting a second tool blade on said handle comprising:

clamp means disposed to engage and removably clamp onto a portion of said handle adjacent the mounting of said first tool blade thereon, said clamp means having a clamp plate;

a second tool blade having a blade base plate at a proximal end and ground engaging surfaces at a distal end; and

pivotal connection means interconnecting said second tool blade and said clamp means, said pivotal connection means including hinge means interconnected between said clamp plate and said blade base plate and disposed to permit pivotal movement of said second tool blade between a work position wherein said second tool blade is positioned adjacent said first tool blade and a stowed position wherein said ground engaging surfaces of said blade are positioned adjacent a portion of said handle and directed oppositely from said first tool blade, and securing means disposed to releasably secure said second tool blade in either said work position or said stowed position;

said hinge means of said pivotal connection means includes a pair of spaced parallel base hinge ears projecting from said blade base and having a pair of aligned hinge pin holes therein, and a pair of spaced parallel plate hinge ears projecting from said clamp plate and having a pair of aligned hinged pin holes; and

said securing means of said pivotal connection means includes a coil spring mounted coaxially on said hinge pin and contained between said hinge ears, said coil spring having legs extending from opposite ends thereof, one engaged with said clamping means plate and the other engaged with said second tool blade base with said spring stressed to resiliently urge said base into overlapping parallel relationship with said clamp plate and thereby dispose said second tool blade in its stowed position.

4,212,151

MANUFACTURE OF COMPACTED STRAND

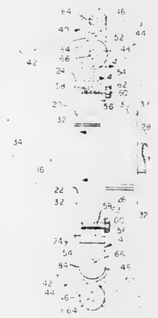
Siegfried A. Schauffelle, Marion, Ind.; Angelo P. Barone, and Lloyd W. Beamish, both of Sycamore, Ill., assignors to The Anaconda Company, Greenwich, Conn.

Filed Oct. 5, 1978, Ser. No. 948,865

Int. Cl.² D02J *1/00*

U.S. Cl. 57—9 **7 Claims**





1. Apparatus for the manufacture of cable formed by at least one dense, uniform lay of conductors received about and compacted on a core comprising

(a) strander means,

(b) a plurality of bobbins at least equal in number to the number of conductors in said lay supporting a substantially endless length of round conductor, each said bobbin being supported by said strander means whereby said conductor carried thereby is adapted to be played out during said manufacture,

(c) forming apparatus likewise supported by said strander means, said forming apparatus including a plurality of former means, continuously receiving a single conductor, said former means including

(1) a first roller having a cylindrical surface,

(2) a second roller having a surface including a plurality of grooves of a non-round cross-section therealong for accommodating round conductors of different gage and for forming said conductor to a non-round configuration, and

(3) mounting means for supporting said rollers for rotation about parallel axes, each said roller being disposed in position whereby said conductor is deformed substantially to the cross-section of said groove through rolling action of said first roller,

(d) a die for compacting substantially simultaneously each of said conductors of said lay on said core, and

(e) means for supporting said core for movement continuously to said die to receive said conductors of said lay, through said die and for moving said cable away from said die.

4,212,152

YARN BLENDING WITH AIR ATTACHMENT ON CONING MACHINE

Alfred R. Roman, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 14, 1978, Ser. No. 900,340

Int. Cl.² D02G *1/16, 3/24, 3/34*

U.S. Cl. 57—207 **12 Claims**



1. A process for combining at least two unlike yarn ends wherein at least one is a continuous filament textured yarn to produce a novelty yarn exhibiting essentially no uniform appearance characteristics along the length thereof as a result of the combining of the two unlike yarn ends, including the steps of:

removing each of the two yarn ends from respective supply packages under predetermined tensions;

merging the two yarn ends and feeding the merged ends through an intermingling jet;

flowing a fluid within the jet in a direction countercurrent to the direction of flow of the merged ends so as to effect random intermingling along the length of the merged ends and to create random areas therealong wherein the two yarn ends exhibit a structure varying between parallel, plied, a core and effect like relationship and interlaced with respect to one another;

passing the randomly intermingled merged ends through a yarn feed system located downstream from the air jet; and

collecting the merged ends on a take-up package.

9. A randomized novelty yarn comprised of at least two unlike yarn ends, one of the yarns being a false-twist textured continuous filament yarn, a spun yarn, or a continuous knit-de-knit yarn, the other yarn being one of the two remaining unchosen yarns, said novelty yarn being randomly intermingled along its length so that said novelty yarn does not exhibit substantially any uniform appearance characteristic along the length thereof as a result of the combining of the two unlike yarns and includes random areas where the combined yarns vary between being plied, intermingled so that individual yarn characteristics are masked, parallel and configured as core and effect yarns.

4,212,153

TIME COLOR INDICATOR

Agis F. Kydonieus, New York, N.Y.; Inja K. Smith, West Orange, N.J.; Reid A. Conroy, York, Pa., and Ernest A. Pedicano, Greenwich, Conn., assignors to Herculite Protective Fabrics Corporation, New York, N.Y.

Filed Feb. 7, 1978, Ser. No. 875,723

Int. Cl.² G04F *13/00*

U.S. Cl. 368—62 **18 Claims**

1. A solid, non-porous time indicator comprising a laminate which comprises

(i) a solid, non-porous polymeric substrate having a first and a second surface; and

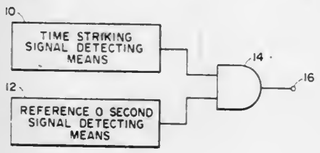
(ii) a layer of a solid, non-porous polymeric composition adhered to the first surface of said substrate and containing an agent capable of migrating throughout said substrate to cause a visually perceptible change in the substrate at the second surface thereof.



4,212,154
TIME STRIKING DEVICE FOR ELECTRONIC TIMEPIECE

Katsuhiko Takebe, Machida; Masao Fukuda, Kurihashi; Minoru Shiratori, and Minosaku Aso, both of Showa, all of Japan, assignors to Rhythm Watch Co. Ltd., Tokyo, Japan

Filed Apr. 17, 1979, Ser. No. 30,733
Claims priority, application Japan, Apr. 27, 1978, 53-50406
Int. Cl.[2] G04B *21/02;* **G04C** *21/06*
U.S. Cl. 368—248 **6 Claims**



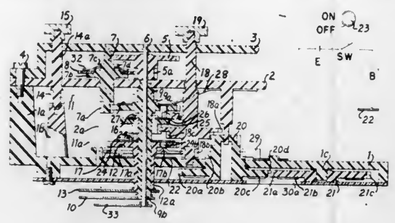
1. A time striking device of an electronic timepiece having a time indicating gear train driven by timepiece driving pulses, comprising a time striking signal detecting means coordinately arranged and installed in the time indicating gear train and supplying the time striking signal prior to striking time at every striking time, a reference zero second detecting means counting the timepiece driving pulses and supplying a reference zero second signal, a coincidence circuit supplying a primary time striking direction signal by the coincidence of the outputs from said two detecting means, a frequency dividing circuit for counting said timepiece driving pulses and for sending out a secondary time striking direction signal at a desired time interval, a selecting circuit selectively supplying said primary time striking direction signal from said coincidence circuit and said secondary time striking direction signal from said frequency dividing circuit to a time striking section.

4,212,155
TIME DETECTING SWITCH FOR CLOCK

Masuo Ogihara; Kozo Chimura, and Nobuo Shinozaki, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1978, Ser. No. 908,556
Claims priority, application Japan, May 23, 1977, 52-66689[U]
Int. Cl.[2] G04B *23/10;* **G04C** *21/16*
U.S. Cl. 368—250 **7 Claims**

1. In combination, a time detecting switch for connection in series with the electrically actuated time signalling circuit of a time signalling clock having a time wheel and a detecting wheel both rotatably mounted coaxially, and a phase detecting type slide switch disposed between the time wheel and the detecting wheel, comprising: one of said wheels comprising an electrically conductive hub having a flange with a radial contacting surface at one end of the hub, an insulating disk and a sectoral switch plate around said hub, the disk being sandwiched between said plate and said flange and the plate being mechanically and electrically connected to the other end portion of said hub facing the other wheel; the other of said wheels having a sliding contact for contacting said sectoral plate; and wherein the radial contacting surface of said flange is configured to maintain uninterrupted continuous sliding contact with the time signalling circuit of the clock.



4,212,156
STEP MOTOR CONTROL MECHANISM FOR ELECTRONIC TIMEPIECE

Yoshikazu Kawamura; Minoru Hosokawa; Sakiho Okazaki, and Hiroshi Ishii, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

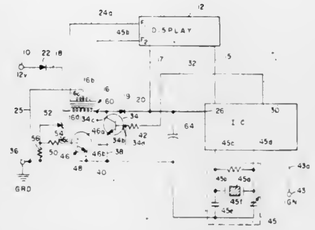
Filed Oct. 6, 1977, Ser. No. 839,867
Claims priority, application Japan, Oct. 6, 1976, 51-120146
Int. Cl.[2] G04C *3/00*
U.S. Cl. 368—85 **5 Claims**

1. An electronic timepiece having a step motor and comprising a quartz crystal vibrator producing a high frequency time standard signal, divider circuit means for producing low frequency time signals in response to said high frequency time standard signal; a gear train driven by said step motor and adapted to place the step motor in one of a first normally loaded condition and a second loaded condition; load detection means for producing load detection signals in response to detecting said second loaded condition of said step motor, driving and control means intermediate said divider circuit means and said step motor for receiving the low frequency signal from the dividing circuit means, said driving and control means being adapted to apply a first drive signal having a first pulse width to said step motor in response to said low frequency signal, said driving and control means in response to said load signal being applied thereto, being adapted to apply to said step motor a second drive signal having a pulse width of longer duration than said first pulse width, said step motor including a drive coil for receiving said first drive signal produced by said driving and control means, said load detecting means being adapted to detect the occurrence of signal peaks induced in said drive coil after said drive signal is applied thereto, and in response to detecting a shift of the signal peak induced in the drive coil when the step motor is placed in a second loaded condition produce said second load detection signal.

4,212,157
SOLID STATE CLOCK

LaVerne L. Frey, Delavan, Wis., assignor to Borg Instruments Inc., Delavan, Wis.

Filed Aug. 21, 1978, Ser. No. 935,215
Int. Cl.[2] G04C *3/00*
U.S. Cl. 368—87 **34 Claims**



1. In a solid state clock of the like required to provide an accurate and reliable time indication when operated from a power supply having undesired voltage fluctuations, the combination comprising:

display means for providing a visual display of time or other information in accordance with predetermined signal inputs;

circuit means coupled between said power supply and said display means for supplying said predetermined signal input to said display and for developing a first switching signal having a predetermined frequency;

voltage multiplying means coupled between said power supply and said circuit means for multiplying the variable voltage output of said power supply and for supplying said multiplied voltage to an input of said circuit means;

first electrical switching means responsive to said first switching signal and coupled to said circuit means and said multiplying means for establishing a nominal, effective, duty cycle for said voltage multiplying means; and

second electrical switching means comprising a break-down device having a first, high impedance state for all signal outputs from said multiplying means below a predetermined level and a second, low impedance state for all signal outputs from said multiplying means above said predetermined level, said second electrical switching means being coupled to said first switching means for regulating the effective duty cycle of said first switching means and the effective duty cycle of said multiplying means in accordance with whether said break-down device is in said first or said second state.

4,212,158
ELECTRONIC TIMEPIECE

Munetaka Tamaru, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1978, Ser. No. 947,151
Int. Cl.[2] G04C *3/00;* **G04B** *27/00*
U.S. Cl. 368—80 **7 Claims**

1. An electronic timepiece comprising: display means having a plurality of hands for displaying time;

first means for producing a first pulse train of a first predetermined frequency;

second means for producing a second pulse train of a second predetermined frequency less than said first predetermined frequency;

switch means for selecting one of said first or second pulse trains and providing the selected pulse train at its output;

an electro-mechanical transducer for

converting said selected pulse train into rotary motion;

transmission means for transmitting the rotary motion of said electro-mechanical transducer to said hands of said display means, said transmission means having first and second drive ratios; and

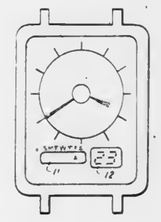


means for changing said drive ratio of said transmission means in response to the change in said selected pulse train by said switch means.

4,212,159
ELECTRONIC TIMEPIECE

Robert T. Noble, Dallas; Perry A. Penz, and Burton W. Marks, both of Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 13, 1978, Ser. No. 877,041
Int. Cl.[2] G04B *19/30, 19/06*
U.S. Cl. 368—82 **8 Claims**



1. An electro-optic display having a first layer of display elements disposed in configuration radiating from near the central point of the display and defining radial bars, a second layer of elements disposed in cooperative relationship with said first layer, said second layer of elements being disposed in a plurality of annular concentric groups operatively associated with said radial bars, a first plurality of individually separate electrical paths interconnecting said elements of said first layer into predetermined serially connected groups, each group containing at least two of said radial bars, and a second plurality of electrical conductors separately connected to the elements of said second layer and providing means for individually applying electrical potentials thereto, said first plurality of individually separate electrical paths including a common electrical hub at the central point of said display to effect electrical connections between a predetermined plurality of said radial bars.

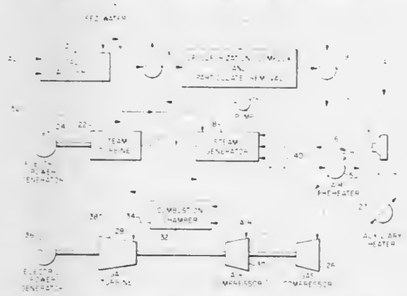
4,212,160
COMBINED CYCLE POWER PLANT USING LOW BTU GAS

Henry J. Blaskowski, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 22, 1977, Ser. No. 863,390
Int. Cl.[2] F02B *43/08;* **F02C** *7/02*
U.S. Cl. 60—39.12 **1 Claim**

1. An electric power generating plant comprising a coal

gasification complex for producing a gaseous fuel, a gas cleanup complex downstream of the coal gasification complex, a first heat exchanger between the coal gasification complex and the gas cleanup complex for removing heat from the gaseous fuel, and a second heat exchanger located downstream of the gas cleanup complex for restoring the removed heat back to the gaseous fuel, a first steam generator fired by said gaseous fuel, a steam turbine receiving steam from said first steam generator, a first electric power generator connected to and driven by said steam turbine, a gas turbine fired by said gaseous fuel, said gas turbine comprising an air compressor, a gas

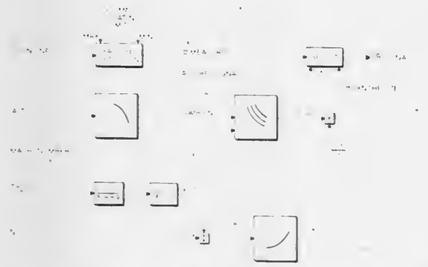


compressor, a combustion chamber, and a turbine section, with both the air and gas compressors being driven by the gas turbine, a second electric power generator connected to and driven by said gas turbine, means for introducing the hot, oxygen-rich exhaust gases from the gas turbine to the first steam generator, a second steam generator associated with the coal gasification complex, means for transporting steam from the coal gasification complex to the steam turbine, an air preheater where air is heated by the combustion exhaust gases of the first steam generator and means for transporting heated air from the air preheater to both the first steam generator and the coal gasification complex.

4,212,161
SIMULATED PARAMETER CONTROL FOR GAS TURBINE ENGINE

David M. Newirth, Vernon, and Eugene W. Koenig, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 1, 1978, Ser. No. 901,899
Int. Cl.³ F02C *9/28, 9/44*
U.S. Cl. 60—39.28 R **2 Claims**

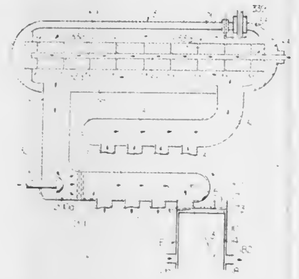


1. For a gas turbine engine having compressor and burner powering aircraft, means for providing a synthesized parameter of burner pressure to be substituted for a measured parameter of burner pressure in the event of failure of said measured parameter signal as determined by comparing the value of the measured signal with predetermined maximum and minimum normal operating limits of said signal comprising, a first function generator responding to Mach No. and altitude for producing a first signal indicative of the compressor inlet pressure, a second function generator responsive to compressor inlet temperature and compressor rotor speed for producing a second signal and means for combining said first signal and said second signal for producing an output signal whose value is approximate the failed measured parameter signal of burner pressure.

4,212,162
CONSTANT COMBUSTION ENGINE

Akira Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Feb. 21, 1978, Ser. No. 879,497
Claims priority, application Japan, Feb. 21, 1977, 52-18462
Int. Cl.² F02G *3/02*
U.S. Cl. 60—39.63 **10 Claims**



1. A constant combustion engine comprising:
means for supplying a predetermined quantity of air;
a prime mover connected to said air supply means, which alternately repeats compression of said predetermined quantity of supplied air and expansion of a mixture as a working gas;
means for supplying a predetermined quantity of fuel;
a combustion device in which said compressed air and said predetermined quantity of fuel are supplied from said prime mover and said fuel supply means, respectively, to be mixed, ignited and burned therein, thereby producing the combustion products;
means for supplying a predetermined quantity of water provided at the downstream of said combustion device; and
a vaporization device in which said combustion products are charged from said combustion device and said predetermined quantity of water is supplied from said water supply means to be sprayed into said combustion products, thereby producing the mixture of said combustion products and water vapor as said working gas;
said mixture of the combustion products and water vapor being supplied to said prime mover from said vaporization device and expanded therein to drive the prime mover.

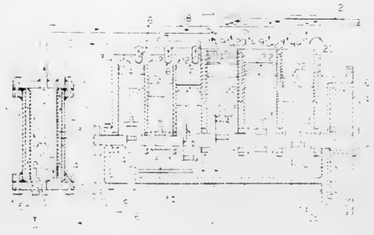
4,212,163
HEAT ENGINE

Stanley J. Mikina, 4782 Coquina Key Dr., St. Petersburg, Fla. 33705

Filed Jun. 16, 1978, Ser. No. 915,907
Int. Cl.² F02G *3/02*
U.S. Cl. 60—39.63 **12 Claims**

1. A hot gas engine based on the classical Joule cycle and comprising the combination of an air compressor, an external combustor for continuously burning a fluid fuel with the compressed air, a plurality of engine cylinders for expansion of the products of combustion, and a pair of series inlet poppet valves and actuating cams having separate cam shafts per engine

cylinder so phased as to provide a short interval period of gas admission to each engine cylinder at different times for making

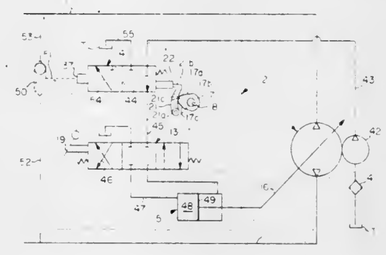


the expansion ratio substantially equal to the compression ratio for maximum thermal efficiency.

4,212,164
VARIABLE DELIVERY PUMP CONTROL SYSTEM

John E. G. Young, Watertown, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Dec. 6, 1978, Ser. No. 966,835
Int. Cl.³ F04B *49/00*
U.S. Cl. 60—452 **3 Claims**

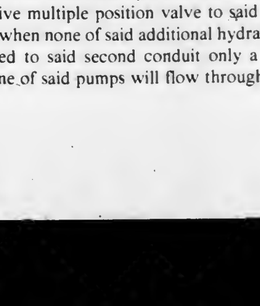


1. A variable delivery hydraulic pump control system comprising a variable delivery pump adapted to be connected through a closed loop to a reversible motor, and a pump control mechanism in a housing adapted to be secured to the pump, the mechanism comprising direction control valve means for governing directional flow of fluid through the pump, a pressure compensating valve means for governing pressure output of the pump, and pump control cylinder means connected to a stroke control cam of the pump for governing the rate of flow of fluid through the closed loop, the pump control cylinder means being governed jointly by the direction control valve means and the pressure compensating valve means, wherein improved maximum pressure regulating means in the pump control mechanism housing comprises:
(a) a cam plate coaxially connected to a directional control rotatable valve spool of the directional control valve means, the cam plate having an outer periphery that is continously radially variable from a maximum radial point to a minimum radial point for either direction of rotation of the cam from the maximum radial point, and
(b) a cam follower lever operable about a pivot at one end to actuate a reciprocating sleeve in the pressure compensating valve means with its other end,
(c) the cam follower lever having a cam follower detent at an intermediate point between its ends adapted to bear upon the periphery of the cam plate and maintain the reciprocating sleeve in a maximum operated position in one direction of its reciprocating operation when the control valve means is in a center position,
(d) whereby, upon actuation of the direction control valve means from a normal position for designation of operation of a motor in either direction, maximum flow is permitted in the closed loop except as limited by the positioning of the reciprocating sleeve of the pressure compensating valve means.

4,212,165
HYDRAULIC CONTROL ARRANGEMENT

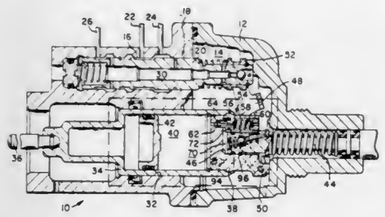
Wilhelm Zirps, Hemmingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 14,879
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808196
Int. Cl.² F15B *13/06, 13/09*
U.S. Cl. 60—486 **8 Claims**



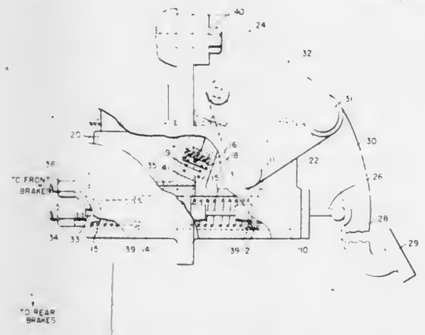
1. A hydraulic control arrangement for distribution of pressure fluid to at least two systems, that is a first system including a first source of pressure fluid constituted by a pump having an inlet communicating with a fluid-filled tank and an outlet, a first hydraulic consumer, a first conduit connecting said outlet of the first pump to said first consumer, and a fluid-flow regulating valve in said first conduit and a second system including a second source of pressure fluid constituted by a second pump having an inlet communicating with said tank and an outlet, a plurality of additional hydraulic consumers, a second conduit connecting said outlet of the second pump to said plurality of additional consumers, a plurality of multiple position valves in said second conduit, one for each of said additional hydraulic consumers and each movable between a neutral position and at least one working position and each providing in said neutral position free flow of fluid through said second conduit; a cross-conduit connecting said first conduit upstream of said fluid-flow regulating valve with said second conduit; a branch conduit connected at one end to said second conduit upstream of the connection of the latter to said cross-conduit; a bypass valve in said branch conduit movable between a first position permitting flow of fluid through said branch conduit and a second position preventing such flow; spring means acting at one end of said bypass valve and biasing the latter to said first position and a control pressure acting on the other end of said bypass valve for biasing the latter to said second position, said control pressure corresponding to the respective higher consumer pressure of an additional hydraulic consumer connected by the respective multiple position valve to said second conduit, whereby when none of said additional hydraulic consumers is connected to said second conduit only a partial fluid stream from one of said pumps will flow through said second system.

4,212,166
HYDRAULIC BRAKE BOOSTER AND RELIEF VALVE THEREFOR
Louis S. Tang, Mishawaka, Ind., assignor to The Bendix Corporation, Southfield, Mich.
Filed May 11, 1978, Ser. No. 904,946
Int. Cl.² B60T *11/32*
U.S. Cl. 60—582 **4 Claims**



1. In a hydraulic brake booster having a housing substantially defining a pressure chamber, a control valve within the housing communicating pressurized fluid to the pressure chamber, a piston movable in response to pressurized fluid within the pressure chamber and substantially defining a storage chamber located inside the piston and an input member cooperating with the piston to move the latter when the pressurized fluid communicated to the pressure chamber is below a predetermined value, the improvement wherein said piston carries a relief valve and said input member cooperates with said piston to define an actuating cavity, the actuating cavity communicating with the relief valve and said input member being movable relative to said piston to pressurize the actuating cavity which causes the relief valve to open the storage chamber to the pressure chamber.

4,212,167
HYDRAULIC BRAKE SYSTEM
Lloyd L. Pruett, 1210 Whitney Dr., Columbia, Tenn. 38401
Continuation-in-part of Ser. No. 588,670, Jun. 20, 1975, abandoned. This application Mar. 28, 1979, Ser. No. 24,712
Int. Cl.³ B60T *7/02*
U.S. Cl. 60—594 **4 Claims**

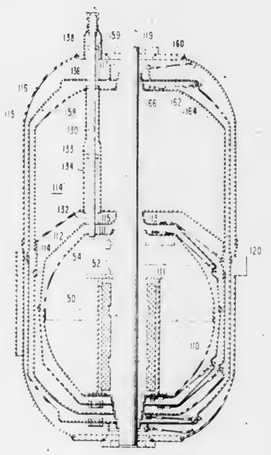


1. Hydraulic brake apparatus comprising a brake pedal connected to a master cylinder containing a piston actuatable by applying force to said pedal to generate hydraulic pressure ahead of said master cylinder piston for pressurizing a slave through conduit means, an auxiliary cylinder containing a second piston, an hydraulic fluid line leading from said master cylinder to said auxiliary cylinder for causing movement of said second piston in response to hydraulic pressure generated by said master cylinder piston and a brake lever pivotally mounted on a fixed pivot and having a rest position from which it is movable in two directions, said brake lever being connected to a piston rod of said second piston on one side of the fixed pivot and being in abutment connection with a piston rod of the master cylinder piston on the other side of the fixed pivot, the pressure generated by the master piston upon pivoting of the brake lever in one direction being transmitted to the second piston to cause pivoting of the brake lever in the same one direction, whereby an initial force applied to said pedal is amplified in a recycling and in an incrementally increasing manner.

4,212,168
POWER PRODUCING DRY-TYPE COOLING SYSTEM
Craig T. Bouchard, Westmont; Elmer W. Rothrock, Hinsdale, and James B. Maher, Oak Brook, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Sep. 15, 1978, Ser. No. 942,766
Int. Cl.² F01K *9/00, 23/04*
U.S. Cl. 60—661 **17 Claims**

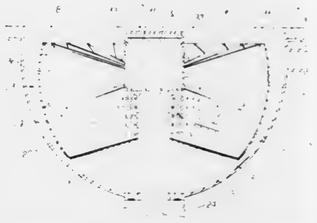
1. Apparatus for removal of heat from exhaust or spent steam from a steam driven electric generating power plant in which the steam must be condensed in a hot-well before the water can be reconverted to steam, comprising:
a closed loop containing a refrigerant fluid,
a condenser having a refrigerant inlet and outlet in the closed loop and positioned to effect spent steam condensation in the hot-well by indirect heat exchange with refrigerant fluid flowing through the condenser,
a heat exchanger having a refrigerant inlet and outlet in the closed loop and adapted to be located in a cooling tower to effect indirect heat exchange between refrigerant fluid flowing through the heat exchanger and atmospheric temperature air flowing through the cooling tower to cool the refrigerant fluid,
a compressor and an expander positioned parallel to one another in the loop between the outlet of the condenser and the inlet of the heat exchanger,
a liquid pump and an expansion valve positioned parallel to one another in the loop between the outlet of the heat exchanger and the inlet of the condenser,
control means to activate the compressor and open the expansion valve, and inactivate the expander and the liquid pump, when the temperature of the atmospheric air flowing through the cooling tower is too high to effect efficient heat exchange and condensation of the refrigerant in the cooling tower heat exchanger without compressing the refrigerant, and
control means to activate the expander and the liquid pump, inactivate the compressor and close the expansion valve, when the temperature of the atmospheric air flowing through the cooling tower is low enough to condense refrigerant vapor in the cooling tower heat exchanger at a pressure lower than the pressure of the refrigerant vapor exiting the condenser, to thereby extract energy by means of the expander for use in producing power or work.

4,212,169
CRYOSTAT FOR SUPERCONDUCTING NMR SPECTROMETER
George D. Kneip, Jr., Menlo Park, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Feb. 21, 1978, Ser. No. 879,292
Int. Cl.² F17C *7/02*
U.S. Cl. 62—45 **4 Claims**



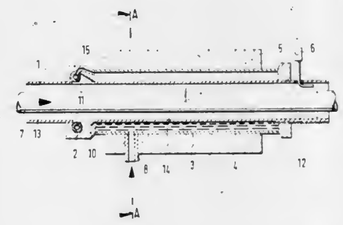
1. In a cryostat for a superconducting NMR spectrometer,
a substantially spherical central reservoir adapted to contain a first liquified gas,
a superconductive solenoid housed within said central reservoir, and
means for venting said central reservoir to the exterior of said cryostat,
first radiation shield means surrounding said substantially spherical reservoir and partially surrounding said venting means,
shell means surrounding said first radiation shield and partially surrounding said venting means and a second reservoir for containing a second liquified gas, said second reservoir disposed in thermal contact with said shell in the region above said central reservoir, whereby said shell and said reservoir form an isothermal body at the temperature of said second liquified gas,
said first radiation shield further comprising a thermally conductive means contacting said venting tube at a point intermediate along the length of said tube, whereby said radiation shield is cooled to a selected temperature by the vapor of said first liquified gas escaping through said vent tube, said selected temperature intermediate the temperature of said liquified gas and the temperature of the external surrounds of said first radiation shield,
an outer radiation shield surrounding said isothermal body and partially surrounding said venting means, said outer radiation shield further comprising a thermally conductive means contacting said venting means tube whereby said outer radiation shield is maintained at a temperature intermediate said second liquified gas and ambient temperature by the vapor of said first liquified gas escaping through said vent tube, and
a hermetically sealed containment vessel surrounding said outer radiation shield and partially surrounding said venting means.

4,212,170
CRYOPUMP
Otto Winkler, Fürstentum, Liechtenstein, assignor to Oerlikon Buhrle USA Incorporated, Hudson, N.H.
Filed Apr. 16, 1979, Ser. No. 30,098
Int. Cl.² B01D *5/00*
U.S. Cl. 62—55.5 **15 Claims**



1. A high vacuum cryopump apparatus comprising:
a vacuum chamber means;
a multiple stage cryogenerator means comprising a low temperature heat sink means and a lower temperature heat sink means both located within said chamber means;
cryopump surface means located within said chamber means in heat conducting contact with said lower temperature heat sink means;
a radiation shield enclosure means located within said chamber means and enclosing both said cryopump surface means and said lower temperature heat sink means, said shield enclosure means being supported by said low temperature sink means and defining an inlet opening permitting gas conductance between said chamber and said cryopump surface means;
baffle means located in said inlet opening and being shaped and arranged so as to obstruct all direct rectilinear paths between said chamber means and said cryopump surface means; and
heat conductive bridge means directly connecting said baffle means to said low temperature heat sink means so as to provide a good thermally conductive path therebetween.

4,212,171
DEVICE IN THE FORM OF A DOUBLE-WALLED PIPE FOR COOLING CONTINUOUS PROFILES
Erhard Soecknick, Düsseldorf, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany
Filed Oct. 2, 1978, Ser. No. 947,343
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 7731245[U]
Int. Cl.² F25D *13/06*
U.S. Cl. 62—63 **7 Claims**



1. In a device in the form of a double-walled pipe for the cooling of continuous profiles, in which a space formed between the core pipe and the jacket pipe is equipped with con-

nections for the inlet of a low-boiling, liquefied gas and the outlet of the vaporized gas, the improvement being said core pipe having a cross section which is fitted to the cross section of the continuous profile which is to be cooled, mounting means detachably mounting said core pipe into said jacket pipe whereby said core pipe may be replaced by a different core pipe in accordance with the cross section of the profile being cooled, and at least one injection orifice in said core pipe near the profile intake opening for the feeding of the vaporized gas into the space formed between said core pipe and the continuous profile.

4,212,172

FIBERGLASS AIRCONDITIONER AIR PRE-COOLER

Anthony C. Manno, 8644 E. Bonnie Rose Ave., Scottsdale, Ariz. 85253, assignor to Anthony C. Manno, Scottsdale, Ariz.

Filed Jun. 20, 1978, Ser. No. 910,885
Int. Cl.³ F28D *5/00*
U.S. Cl. 62—305 **4 Claims**



1. An apparatus for cooling the condensor coils of an air condltioning system comprising an evaporator, compressor and condensor, said apparatus having four sides, a front and a rear, fiberglass vane means located on the front, said vane means being so arranged as to provide moisture pick up by turbulent air thus cooling such air, a laminated fiber filter assembly filled with nylon material for separating the moisture from the air and protecting the condensor coils, said filter assembly located on the rear of the apparatus against the condensor coils, a plastic spray nozzle mounted above the vanes for directing cooling water on to the interior of the vanes, a fiber glass water ramp located at the bottom of the vanes and the filter assembly, a reservoir mounted below the ramp for collecting the water flowing from the filter assembly, drain means in said reservoir for controlling the water level, said apparatus increasing the efficiency of the air conditioning system by reducing the running time of the compressor and the condensor and evaporator fan motors, a solenoid used to control the flow of water.

4,212,173

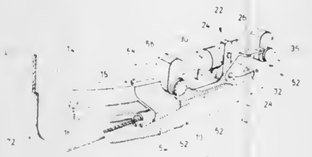
Patent Not Issued For This Number

4,212,174

LAY-IN YARN FEED

Michael W. Shepherd, 29 Park Rd., Cross Hills, Near Keighley, Yorkshire, England

Filed Aug. 12, 1977, Ser. No. 824,176
Claims priority, application United Kingdom, Aug. 25, 1976, 35280/76
Int. Cl.³ D04B *9/16*
U.S. Cl. 66—9 R **6 Claims**



1. A circular knitting machine of the type having cylinder needles, dial needles and at least one yarn feeder and wherein the cylinder needles are lifted and the dial needles are projected as part of stitch forming operation, provided with a relatively stationary guide member comprising an axially extended mainly tubular eye portion having an inlet end located outside the angle between the verges of said cylinder needles and said dial needles and an outlet end located inside the angle between the verges of said cylinder needles and said dial needles, and a finger portion extending in the angle between the verges of said cylinder needles and said dial needles so that the cylinder needles may pass along the outer side of said guide member and the dial needles may pass above said guide member, said eye portion merging into said finger portion and said finger extending over at least the region where said cylinder needles begin to lift at the leading end of said yarn feeder.

4,212,175

CABLE LOCK FOR PORTABLE PROPERTY

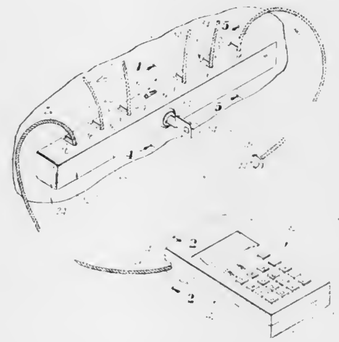
Gilbert Zakow, Bayside, N.Y., assignor to Componentry Research & Development Enterprises, Inc., Bayside, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,692
Int. Cl.³ E05B *73/00*
U.S. Cl. 70—58 **28 Claims**

1. A cable lock for portable property comprising a rectangular parallelepiped locking box, said locking box having an inner box member and an outer box member, each of said box members having three longitudinal walls and two opposed end walls;

the three longitudinal walls of each of said box members consisting of two opposed side longitudinal walls and a middle longitudinal wall, the two opposed side longitudinal walls of each of said box members being spaced apart in registration and straddling the middle longitudinal wall of the respective box member, each longitudinal edge of the middle longitudinal wall being joined to a longitudinal edge of one of the two opposed side longitudinal walls of each box member, the inner box member being slidably engageable with and mateable with the outer box member, so that when said box members are mated and said locking box is integrally assembled, and when the opposed side longitudinal walls of said inner box member are within said outer box member, the middle longitudinal wall of the inner box member is then opposed to the middle longitudinal wall of the outer box member, and each of the opposed side longitudinal walls of the inner box member is contiguous with one of the opposed side longitudinal walls of the outer box member, and said inner box member is mated to and mounted in mirror image relationship within said outer box member;

the spacing between opposed side longitudinal walls of the inner box member being less than the spacing between opposed side longitudinal walls of the outer box member,



the spacing between opposed end walls of the inner box member being less than the spacing between opposed end walls of the outer box member, so that the inner box member is receivable within the outer box member, the width of the opposed side longitudinal walls of both the inner box member and the outer box member being substantially equal, the middle longitudinal wall of one of the box members being mountable to a fixed mounting surface;

means to detachably secure the outer box member to the inner box member;

a plurality of openings in said one side longitudinal wall of the inner box member, so that a continuous rectilinear passage is provided into said inner box member;

one side longitudinal wall of said outer box member being provided with a plurality of parallel slots juxtaposed with said openings, each of said slots extending from a free edge of said outer box member perpendicularly inwards from said free edge and towards the middle longitudinal wall of said outer box member and terminating short of said middle longitudinal wall;

a plurality of flexible cable means, an end of each of said cable means being receivable through one of the slots in said one side longitudinal wall of the outer box member and also through the juxtaposed one of the openings in said one side longitudinal wall of the inner box member; and

means to secure at least one end of each of said cable means when extended through the juxtaposed slot and opening, at least one discrete item of portable property being mountable to each of said cable means.

4,212,176

AUTOMOBILE TRUNK LOCK SECURITY DEVICE

Charles C. Hegedus, 121 Macleod Ct., Conyers, Ga. 30207

Filed May 30, 1978, Ser. No. 910,674
Int. Cl.³ E05B *17/00*
U.S. Cl. 70—417 **3 Claims**



1. A security device for an automobile trunk having a trunk lid of double wall construction with a lid opening fromed in an outer wall and with a trunk latch housing mounted on an inner wall, and a cylinder lock mounted within the outer wall opening having a lock stem extending inwardly from the lid into a keyway of the trunk latch housing, and with the security device comprising a block defining a central aperture mounted snuggly about the cylinder lock overlaying the inside surface of the trunk lid about the lid outer wall opening whereby prying of the lock outwardly from the trunk lid to expose and gain access to the trunk latch housing keyway through the trunk lid opening is inhibited by the block; and a resilient mounting plate mounted on the trunk lid inner wall and to said block spring biasing said mounting block towards the latch housing whereby prying of the lock inwardly into the trunk to enable the cylinder lock to fall and expose the trunk latch housing keyway is inhibited by the mounting plate by maintaining the lock and block over the keyway.

4,212,177

APPARATUS FOR CONTINUOUS EXTRUSION

Francis J. Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 664,611, Mar. 8, 1976, Pat. No. 4,094,178. This application Mar. 27, 1978, Ser. No. 890,875
Int. Cl.³ B21B *45/02;* **B21C** *31/00*
U.S. Cl. 72—41 **25 Claims**

1. Apparatus for continuously deforming an elongated workpiece of indefinite length to produce an elongated product of indefinite length, said apparatus comprising:

first means, mounted for rotation and having a radially extending first surface, including an annular groove therealong, for engaging with said first surface a first peripheral portion of the elongated workpiece, said first means further including an annular recess, located inwardly from said annular groove in a direction away from said first

surface of the first means, and a liner shrink-fitted into said annular recess in the first means, said liner including said annular groove, said liner further having a portion thereof extending generally outwardly from said annular recess along said second arcuate area of the annular groove so that the liner will be forced inwardly into the annular recess along said first arcuate area of the annular groove including said first and second locations during the rotation of said first and second means and will apply compressive stresses of increasing magnitude to the elongated workpiece as the elongated workpiece advances from said first location to said second location while within the annular groove;

second means, mounted for movement upon rotation of said first means and having a second surface facing said first surface of said first means, for engaging with said second surface a second peripheral portion of the elongated workpiece such that the elongated workpiece will be gripped between said first surface of the first means and said second surface of the second means and will advance from a first location to a second location upon the rotation of the first means and the simultaneous movement of the second means;

a deforming agency so located adjacent to said second location as to receive and deform the elongated workpiece upon the advance of the elongated workpiece to said second location;

third means for rotating said first means; and

fourth means, rendered effective simultaneously with operation of said third means, for so moving said second means with said first means as to advance the elongated workpiece toward and into said deforming agency.



4,212,178

ROLLING MILL

Erich Bretschneider, Meerbusch, Fed. Rep. of Germany, assignor to Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 862,857, Dec. 21, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,632

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657823; Dec. 21, 1976, 2657839

Int. Cl.[2] **B21B** *17/06, 1/00, 39/00*

U.S. Cl. 72—97 **4 Claims**

1. Seamless tube rolling mill, comprising:

(a) a reheat furnace for billets,

(b) a piercing mill for forming a longitudinal bore through the billet,

(c) a first longitudinal conveyor extending in spaced, parallel relationship to the axis of the piercing mill at the exit side thereof,

(d) a cross conveyor extending from the said longitudinal conveyor to a second longitudinal conveyor,

(e) a planetary rolling mill located at the discharge end of the second longitudinal conveyor and include a guide sleeve for carrying the billet, a concentric mandrel adapted to extend through the bore in the billet and carried for longitudinal movement relative to the planetary rolling mill, means locking the mandrel in place when its downstream end reaches the work area of the mill, and a tube-like feed device slidably carried in the space between the mandrel and the guide sleeve for pushing the billet along the mandrel and through the said work area, and

(f) a stretch-reducing rolling mill mounted adjacent to and in line with the exit of the planetary rolling mill to receive the billet as it emerges therefrom.



4,212,179

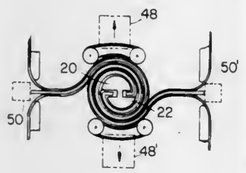
DRIVEN MANDREL AND METHOD

Tristan D. Juergens, Conifer, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Oct. 12, 1978, Ser. No. 950,656

Int. Cl.[3] **B21C** *47/02*

U.S. Cl. 72—148 **15 Claims**



1. A mandrel useful in winding together a plurality of flexible strip members, comprising:

a first curvilinear perimetric driving portion;

a second curvilinear perimetric driving portion juxtaposed from the first driving portion;

an isthmus interconnecting the first and second driving portions and thereby defining with the first and second driving portions juxtaposed slots for receiving ends of the flexible strip members to be wound; and

said first and second driving portions being offset generally laterally with respect to one another, in a direction parallel to the centerline passing through the openings of the slots, and in an amount from about 70 to about 85 percent of the combined thickness of the flexible strip members to be wound.

4,212,180

DEVICE FOR CONTROLLING THE ROTATION OF THE WORKING ROLLERS IN A TUBE ROLLING MILL

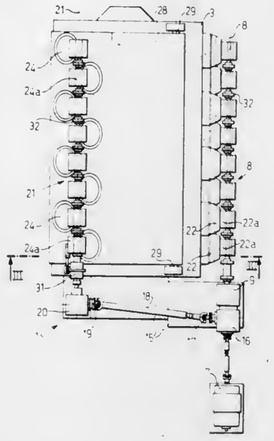
Filippo Cattaneo, and Rosolino Corolla, both of Milan, Italy, assignors to Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Oct. 18, 1978, Ser. No. 952,604

Claims priority, application Italy, Nov. 8, 1977, 29430 A/77

Int. Cl.[2] **B21B** *35/02*

U.S. Cl. 72—249 **4 Claims**



1. A device for controlling the rotation of working rolls in a tube rolling mill of the kind comprising a number of housings, each containing three working rollers normally in axial alignment on a single bearing structure, the rolls in each housing being keyed to corresponding shafts controlled from outside the housing and actuated by a single rotor, the device being characterised in that it comprises:

three high-speed shafts (**8, 14, 21**) borne outside a plurality of housings (**2**) in the rolling mill (**1**) and extending parallel to the common axis of the housings (**2**),

a reduction gear (**22, 23, 24**) for each working roll (**4, 5, 6**) of each single housing (**2**), borne outside the housing and axially engageable or disengageable from the corresponding shaft (**4***a*, **5***a*, **6***a*) of the aforementioned roll (**4, 5, 6**),

a bevel gear (**22***a*, **23***a*, **24***a*) between each reduction gear (**22, 23, 24**) and one of the high-speed shafts (**8, 14, 21**), and

a kinematic transmission (**9, 11, 13–16, 15, 20**) between the single motor (**7**) and each high-speed shaft (**8, 14, 21**).

4,212,181

MECHANISM FOR AUTOMATICALLY CENTERING SUB-GUIDE ROLLERS AND FOR ADJUSTING CLAMPING CONDITION OF SUB-GUIDE ROLLERS, FOR USE IN MATERIAL GUIDING APPARATUS OF ROLLING MILL

Hiroaki Shimada, Sappora, Japan, assignor to Kotobuki Sangyo Kabushiki Kaisha, Sapporo, Japan

Filed Jan. 8, 1979, Ser. No. 1,888

Int. Cl.[2] **B21B** *39/16*

U.S. Cl. 72—250 **2 Claims**

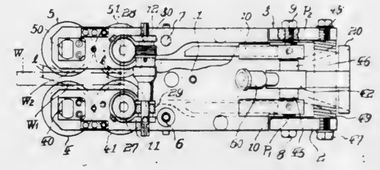
1. An automatic centering and clamping adjusting mechanism for adjusting the clearance between a pair of sub-guide rollers by swinging each of said rollers at each side of the axis of feed of the material to be rolled, for use in a material guiding apparatus of a rolling mill, characterized by comprising the following features A, B, C, D and E:

(A) first and second roller holders **2,3** adapted to be swung around respective pivot points **6,7**, said roller holders **2,3** carrying at their front portions guide rollers **4,5** and having support shafts **25** rotatably attached thereto;

(B) sub-guide rollers **41,51** rotatably carried by respective eccentric shaft pins **26** which are unitary with respective support shafts **25**;

(C) a left hand screw gear **27** fixed to one end of said support shaft **25** on said first roller holder **2**, and a right hand screw gear **28** fixed to one end of said support shaft **25** on said second roller holder **3**;

(D) a left hand screw pinion **29** and a right hand screw pinion **30** which can be rotated coaxially by manual operation and engaging respectively one of said left hand screw gear **27** and said right hand screw gear **28**, and



(E) manually rotatable shafts **13,14** carrying said left hand screw pinion **29** and right hand screw pinion **30** of feature (D) above are axially aligned with each other, and wherein a dog clutch adapted to allow only sliding movement is attached to one of said shafts, while a dog pin **19** for engagement with said dog clutch is attached to the other shaft, whereby said left hand screw pinion **29** and said right hand screw pinion **30** can be rotated simultaneously when said dog pin and dog clutch are engaged.

4,212,182

INDIRECT METAL EXTRUSION AND TUBE PRESS AND A SEALING PLATE AND A PRESSURE PLATE THEREFOR

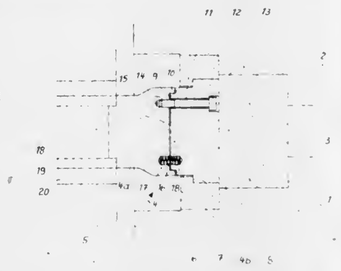
Weinfried Steyvers, Dusselford-Oberkassel, and Franz-Josef Zilges, Monchengladbach, both of Fed. Rep. of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,770

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1977, 2739904

Int. Cl.[2] **B21C** *26/00, 29/00*

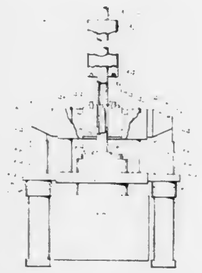
U.S. Cl. 72—253 A **6 Claims**



1. An indirect metal extrusion press having a sealing plate for sealing one end of a bore in a billet container, a moving cross-head, and a pressure plate attached to the moving cross-head, the moving cross-head pressing the pressure plate against the sealing plate and the sealing plate against the billet container, the pressure and sealing plates forming a pressure transmission path which includes a pair of mutually adjacent surfaces lying in parallel planes at right angles to the extrusion axis, said surfaces engaging with each other to prevent relative movement between them parallel to said planes but to permit relative movement along the axis of extrusion, compressible spacing members being provided between the surfaces to force

them apart when pressure is not being transmitted along the path, to leave an air gap between the surfaces.

4,212,183
UPSETTING OF TUBE ENDS
Thomas L. Mabery, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 11, 1978, Ser. No. 968,523
Int. Cl.³ B21K *21/12*
U.S. Cl. 72—318 **4 Claims**



1. An apparatus for upsetting the end of a tube to achieve a desired inner diameter and a desired outer diameter at the upset tube end, comprising:

a. a gripper clamp positioned for clamping the tube on a portion of the tube away from the tube end in order to hold the tube stationary during the upsetting operation;

b. a mandrel having a diameter equal to the desired inner diameter and being positionable inside the tube end during the upsetting operation so as to prevent reduction of the inner diameter of the upset tube end to less than the desired inner diameter;

c. a one-piece upset die having a tube cavity shaped so as to prevent the outer diameter of the upset tube end from increasing to more than the desired outer diameter;

d. means for forcing the upset die onto the tube end so as to cause the tube cavity to receive the tube end;

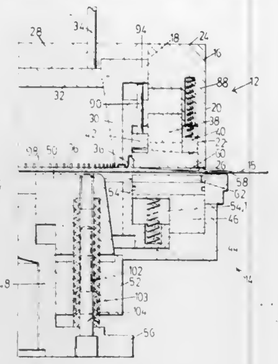
e. means for positioning the mandrel inside the tube end before the upsetting force is applied and for withdrawing the mandrel from inside the upset tube end;

f. means for applying a longitudinal compression force to the tube end while the mandrel is positioned inside the tube end an the tube end is disposed within the tube cavity of the upset die; and

g. means for retracting the upset die from the upset tube end in a direction away from the gripper clamp while the tube remains clamped in the gripper clamp.

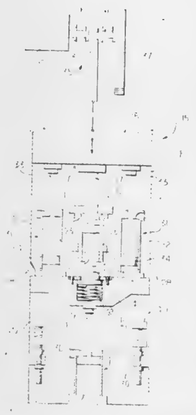
4,212,184
MANUFACTURE OF FOIL CONTAINERS
Hans Falch, 205 Clarendon Heights, Bruce Street, Hillbrow, Johannesburg, South Africa
Filed Feb. 3, 1978, Ser. No. 875,027
Claims priority, application South Africa, Feb. 10, 1977, 77/0778
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—340 **18 Claims**

1. A method of manufacturing containers from flat foil which comprises a sequence of steps including providing a flat foil blank, indenting the blank with alternate upwardly and downwardly directed indentations which extend in radial directions, initially drawing a shape which has a base and a first portion of the walls in the center of the blank and which initially leaves a remaining flat area of the blank around said base and said first portion of the walls during the drawing, lightly guiding the remaining flat area of the indented blank, which is being drawn into the walls so as to fold the flat area into regular double fold pleats, and flattening the double fold pleats



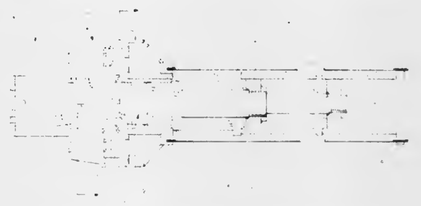
before they move from the flat area of the blank into an area in which they form the final portion of the walls.

4,212,185
HYDRAULIC PRESS SYSTEM
Donald E. Miller, Mt. Prospect, Ill., assignor to The Continental Group, Inc., New York, N.Y.
Filed Mar. 16, 1979, Ser. No. 21,283
Int. Cl.³ B21J *9/10*
U.S. Cl. 72—354 **11 Claims**



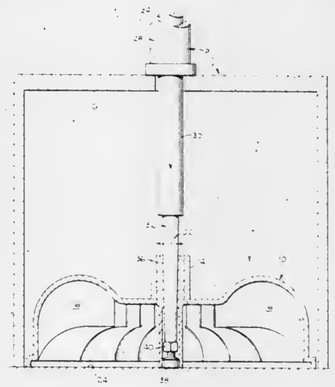
1. A press structure for attachment to a mechanical press of the type including a frame and a reciprocating ram, said press structure comprising a die sleeve having means for fixedly mounting said die sleeve relative to said press frame, a load beam, a die pad carried by said load beam for movement within said die sleeve, means mounting said load beam for movement relative to said die sleeve, a punch carried by said ram for movement through said die sleeve and for cooperating with said pad to form a closed end tubular member, and at least one load cylinder connecting said ram and said load beam for movement generally in unison and controlled relative movement, said load cylinder being a hydraulic cylinder, a low pressure hydraulic fluid source and a high pressure hydraulic fluid source, means for connecting said low pressure hydraulic fluid source to said load cylinder for filling said load cylinder during movement of said ram and punch from a top dead center position to a workpiece engaging position, and means for connecting said high pressure hydraulic fluid source to said load cylinder substantially at the time said punch engages a workpiece to apply a forging pressure connection between said ram and said load beam.

4,212,186
PIPE EXPANDER
Joseph F. Blattler, Suite 302, 10405 Saskatchewan Dr., Edmonton, Alberta, Canada
Filed Oct. 25, 1978, Ser. No. 954,659
Int. Cl.³ B21D *41/02*
U.S. Cl. 72—393 **6 Claims**



1. In a tube expander of the kind having a series of die members suitable for engaging the inside of a tube to expand this, said die members being guided for radial movement by a thrust plate and being caused to move by a mandrel movable axially within the thrust plate and having a circumferentially spaced series of slideways which slope outwardly from an inner end portion of the mandrel to an outer end thereof, each slideway co-operating with a similarly sloping inner surface of one of said die members, said mandrel being movable axially by a piston connected via a piston rod to the inner end thereof and movable in a hydraulic cylinder; the improvement wherein said slideways are at least partly recessed within said mandrel, and those portions of said mandrel, piston rod, and connecting parts therebetween which are subjected to the full tension applied by the piston rod during tube expansion all have a minimum transverse area which is larger than the area circumscribed by the innermost ends of said slideways, whereby the force which can be exerted by the mandrel is not limited by said circumscribed area.

4,212,187
METHOD AND APPARATUS FOR RESIZING TORQUE CONVERTER IMPELLER DRIVE SHAFTS
Oscar P. Scholz, 70 Laconia Ct., San Jose, Calif. 95139
Filed Nov. 24, 1978, Ser. No. 963,341
Int. Cl.² B21D *39/08*
U.S. Cl. 72—393 **3 Claims**



1. A method of resizing the hollow drive shaft hub of a torque converter impeller comprising the steps of:

(a) uniformly heating said hub to a malleable state;

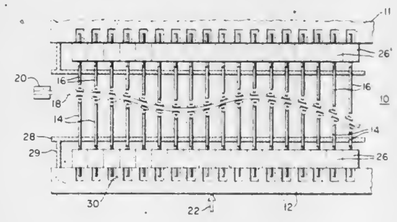
(b) rotating said impeller during said step of uniformly heating said hub to a malleable state;

(c) positioning an expanding tool within said heated and malleable hollow hub;

(d) actuating said expanding tool to radially expand said hub, while malleable, to a diameter larger than its original diameter, the rotation of said impeller during the uniform heating of said hub to a malleable state enables the actuation of said expanding tool to provide a uniform expansion of said hub; and

(e) finishing the exterior of said hub to fit a complementary bearing therefor.

4,212,188
APPARATUS FOR FORMING SHEET METAL
George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.
Filed Jan. 18, 1979, Ser. No. 4,422
Int. Cl.³ B21D *11/20*
U.S. Cl. 72—413 **5 Claims**

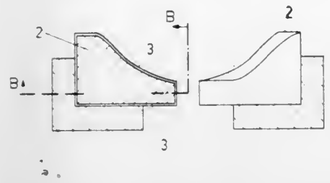


1. Apparatus for forming sheet metal comprising two opposed support members, a first set of movable rams disposed in a matrix array on one of said support members, a second set of movable rams disposed on the other of said support members in positions corresponding to the rams of the first set, each ram of one set being substantially in alignment with a ram of the other set, all of said rams having work-engaging heads thereon, means for individually positioning the rams of one set so that their heads define a surface of predetermined configuration, means for positioning the rams of the other set so that their heads conform to said surface, the heads being adapted to engage a workpiece placed between the two sets of rams, an individual motor for each of said rams for effecting movement of the ram, control means for actuating said motors to position the rams to establish said predetermined configuration, and means for applying a force to at least one set of rams to form the workpiece to the shape of said surface.

4,212,189
TOOL FOR ISOTHERMAL FORGING
Walter Fuchs, Nussbaumen; Gernot H. Gessinger, Birmenstorf; Roland Künzli, Mellingen, and Erwin Schönfeld, Baden, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Aug. 8, 1978, Ser. No. 932,018
Claims priority, application Switzerland, Jan. 9, 1977, 10643/77
Int. Cl.³ B21J *13/02*
U.S. Cl. 72—478 **33 Claims**

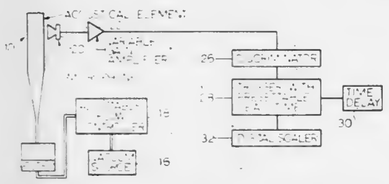
1. Tool for isothermal forging, consisting of two die halves, at least one of which is divided at least once, characterised in

that the divided die half is assembled from individual components, of which at least those individual components which



face the workpiece to be forged are provided with a thin, electrically insulating layer on at least their contact surfaces.

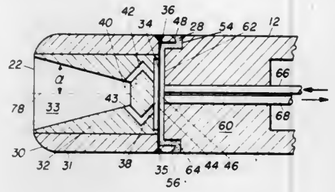
4,212,190
ACOUSTICAL PARTICLE DETECTOR AND METHOD
Stephen R. Coover, and Parker C. Reist, both of Chapel Hill, N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.
Filed Dec. 18, 1978, Ser. No. 970,636
Int. Cl.² G01N *15/00*
U.S. Cl. 73—28 **17 Claims**



1. An acoustical method for detecting particles in an aerosol which are above a given size, said method comprising:
(a) providing an acoustical element adapted for allowing audio pulses to be generated by aerosol particles when the aerosol is passed therethrough at high velocities and wherein said acoustical element consists essentially of a conically-shaped entry section which tapers into a capillary tube which in turn exits into an expansion chamber;
(b) establishing a pressure differential across said acoustical element to cause the flow of a representative sample of said aerosol therethrough;
(c) maintaining the flow of said aerosol sample through said acoustical element by means enabling the Reynolds number to be adjusted and with said means adjusted in accordance with a preselected Reynolds number, with said Reynolds number being selected according to the particle size range of interest and the ability of said particles within said size range to generate an acoustic pulse under the flow conditions represented by said Reynolds number; and
(d) detecting the acoustic pulses generated by said particles.

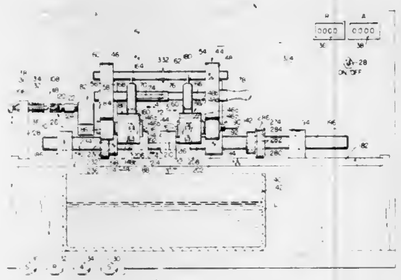
4,212,191
DIFFERENTIAL PRESSURE GAUGE
Noel H. Ethridge, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Mar. 15, 1979, Ser. No. 20,890
Int. Cl.² G01L *7/08*
U.S. Cl. 73—861.47 **14 Claims**

1. An apparatus for measuring differential pressure that an explosion produced blast wave produces on a target comprising:
a tubular housing having a stagnation inlet end and a threaded mounting end;
removable stagnation inlet overpressure means operatively disposed in said stagnation inlet end of said housing and adapted for responsively sampling incident fluid flow of said blast wave;
compensating side-on inlet overpressure means for sampling side-on inlet pressure produced by said blast wave;



diaphram means, transversely positioned in said housing, for moving in response to said differential pressure between said stagnation inlet overpressure means and said compensating side-on inlet overpressure means; and
friction-free sensing means operatively positioned in said housing for detecting motion in said diaphram means and for generating an output signal in response to said motion.

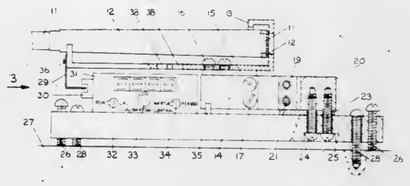
4,212,192
BALLOON TESTING DEVICE
Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Jun. 28, 1978, Ser. No. 920,105
Int. Cl.³ G01M *3/08, 3/38*
U.S. Cl. 73—45.5 **44 Claims**



1. A device for testing an elongated hollow elastic sleeve having a pair of opposed ends, comprising:
means for releasably retaining and closing the opposed ends of the sleeve;
means for inflating a central portion of the sleeve intermediate its ends;
means for illuminating walls of the inflated sleeve from within the sleeve;
means for rotating the retaining means and inflated sleeve for inspection thereof;
means for retaining a testing liquid; and
means for selectively submerging the inflated sleeve into the testing liquid.

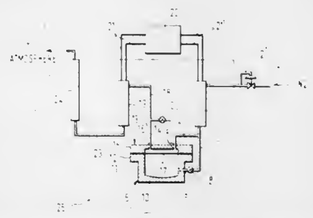
4,212,193
APPARATUS AND METHOD FOR DETERMINING THE MOMENT OF INERTIA OF GOLF CLUBS AND LIKE OBJECTS
John W. Turley, 14 Pine St., Oxford, Conn. 06483
Filed Dec. 6, 1978, Ser. No. 966,802
Int. Cl.³ G01M *1/10*
U.S. Cl. 73—65 **2 Claims**

1. An apparatus for measuring the moment of inertia of an object about any axis not passing through the center of gravity of said object, wherein a holder is provided to hold said object with such axis lying vertical, and a single resilient member located at said axis is provided to support said holder and said object in cantilever fashion, said resilient member also allowing only oscillatory rotational movement of said holder and said object in a horizontal plane about said axis, and said resilient member also providing a restoring force proportional to



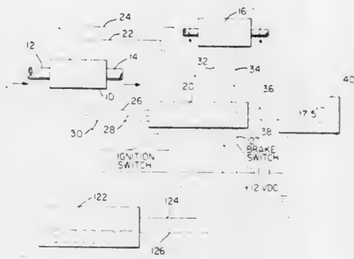
the rotational displacement of said holder and said object away from their neutral position, for which the restoring force is zero, whereby said holder and said object can be displaced and then released, enabling said oscillatory rotational movement to occur, and a single measurement of period of oscillation can be made, from which the moment of inertia about said axis of said object can be calculated without any other measurement of said object being required.

4,212,194
MEASUREMENT OF EQUILIBRIUM RELATIVE HUMIDITY
Donald C. Allen, and Alan T. Smith, both of Sittingbourne, United Kingdom, assignors to EPS (Research & Development) Limited, Sittingbourne, England
Filed Jun. 12, 1979, Ser. No. 47,736
Claims priority, application United Kingdom, Aug. 11, 1978, 33083/78
Int. Cl.² G01N *27/46, 33/02*
U.S. Cl. 73—73 **9 Claims**



1. A method for determining the equilibrium relative humidity over a substance, the method comprising the steps of placing a sample of the substance in a first compartment of a diffusion chamber, said first compartment being partitioned from a second compartment of said chamber by means of water vapour permeable non-hygroscopic material and said second compartment being provided with inlet and outlet ports, sweeping a dried gas at a constant rate through said second compartment via said inlet and outlet ports, and determining the moisture concentration in the gas when conditions of steady state diffusion have been reached, and calculating from said moisture concentration, the equilibrium relative humidity over the sample.

4,212,195
SYSTEM TO MEASURE FUEL CONSUMPTION OF A VEHICLE
Michael R. Young, 5808 Ramblewood, Brighton, Mich. 48116
Filed Aug. 30, 1978, Ser. No. 927,178
Int. Cl.² G01F *9/02*
U.S. Cl. 73—114 **20 Claims**



1. A system for visually indicating on a display within a vehicle employing a liquid fuel consuming engine and road engaging propelling members the approximate distance traveled per quantity of fuel used by the vehicle, said system comprising:
A. display means for visually indicating a given numerical value in response to an electrical input having a given characteristic;
B. first transducer means for converting a given distance traveled by said vehicle into a first electrical output pulse having a given characteristic;
C. second transducer means for converting a given amount of fuel used by said engine into a second electrical output pulse having a given characteristic; and
D. computer means connected to receive the electrical outputs of said first and said second transducer means and to transmit an electrical input to said display means, said computer means being operable to:
1. count the total number of first pulses for a given number of second pulses, then calculate a distance traveled per quantity of fuel used value, then place said value a given number of times N in a register, then divide the total value in the register by n to determine a quotient, said n being equal to or greater than N, then forward said quotient to said display means via an electrical input to visually indicate said quotient; then
2. count another total number of first pulses for said given number of second pulses, then calculate another distance traveled per quantity of fuel used value, then add said other value to the register and subtract the displayed value from the register, then divide said new value of the register by n to determine a new quotient, then forward said new quotient to said display means via another electrical input to visually indicate said new quotient; and then
3. continue repeating the actions of paragraph D2.

4,212,196
SINGLE BEAM TORQUE READOUT AND MULTIPLIER APPARATUS
Raymond L. Krieger, Denver; Ralph W. Weaver, Aurora, and Edward T. Able, Denver, all of Colo., assignors to B. K. Sweeney Manufacturing Company, Denver, Colo.
Filed Oct. 31, 1978, Ser. No. 956,401
Int. Cl.² G01L *5/24*
U.S. Cl. 73—136 R **12 Claims**

1. A torque applying and readout apparatus adapted for applying rotational torque and for measuring the torque applied by a drive motor selectively attached to said apparatus, said apparatus operatively measuring the reaction torque between a rotating drive shaft and a housing of the drive motor,

said apparatus further correlating the reaction torque to the torque applied by said apparatus and supplying an indication of the torque applied, said torque applying and readout apparatus comprising:

a housing;

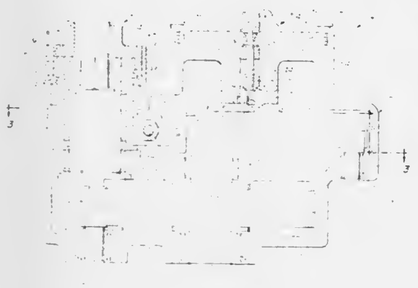
an input shaft and an output shaft rotatably received by said housing;

means operatively interconnecting said input shaft and said output shaft for rotation;

means adapted for connecting the output shaft to an object to be rotated and to which rotational torque is applied;

pivot means pivotably attached to said housing;

deflection means operatively connected between said pivot means and said housing for biasing said pivot means against pivoting away from an initial position, said deflection means applying biasing force to said pivot means in predetermined magnitude related to the amount of pivoting of said pivot means away from the initial position, said deflection means comprising an elongated beam member



having deflection characteristics and rigidly connected at one end to said pivot means and connected at the other end to said housing by means comprising a swivel post shaft pivotably attached to said housing and defining a slot extending therein, the slot receiving the other end of said beam member therein;

attaching means adapted for operatively connecting said pivot means to the housing of said drive motor, said attaching means operatively pivoting said pivoting means in predetermined relation to the magnitude of reaction torque between the housing and the drive shaft of said drive motor;

a torque meter assembly attached to said housing, said meter assembly including a meter input member for operating said assembly to indicate torque; and

means operatively connecting said pivot means and the meter input member for operatively transferring movement from said pivot means to activate the meter input member of said meter assembly.

4,212,197

STRAIN GAGE LOAD CONVERTER

Masayasu Kawai, Mitaka, and Katsumi Ishikawa, Kokubunji, both of Japan, assignors to Kyowa Electronic Instruments Co., Ltd., Tokyo, Japan

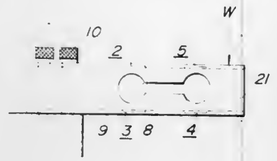
Filed Jan. 8, 1979, Ser. No. 1,403

Claims priority, application Japan, Jan. 24, 1978, 53-6536

Int. Cl.[2] G01L *1/22*

U.S. Cl. 73—141 A **3 Claims**

1. A strain gage load converter of a parallelogram shaped beam type characterized in that gage mounting surfaces of the beam are made concave shaped along a main axis of the beam so that measurement error of the load converter due to shift of



a load point in a direction normal to said axis can be made substantially negligible.

4,212,198

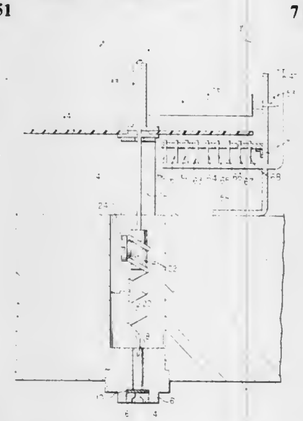
BOREHOLE PRESSURE SENSING SYSTEM

David L. Divine, Midland, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,630

Int. Cl.[2] E21B *47/06*

U.S. Cl. 73—151 **7 Claims**



1. A bottom hole pressure sensing system comprising a tool adapted to pass through a borehole traversing an earth formation, said tool includes an outer shell having an end which enters the borehole first, said end having an opening, pressure sensitive means located in said opening, bourdon-tube means arranged with the pressure sensitive means so that as the borehole pressure changes the bourdon-tube will change its rotational position along a longitudinal axis, encoding means, including a mask having opaque and translucent areas is affixed to the bourdon-tube so that as the bourdon tube changes the mask is rotated accordingly; splitting means spacially related to the mask for receiving a light beam and splitting it to provide a plurality of light beams impinging upon the mask; a transmission subsystem of light conductors having one conductor conducting light from the surface to the splitting means and a plurality of conductors spacially arranged with the splitting means and the mask so that the mask is between said splitting means and said plurality of light conductors which conduct any of the plurality of light beams passing through said mask; surface apparatus including a source of light arranged with the one conductor of the transmission system so as to provide light to the one conductor, and means connected to the plurality of light conductors in the transmission subsystem for providing a display corresponding to the pressure in the borehole in accordance with the light conducted by the plurality of light conductors.

4,212,199

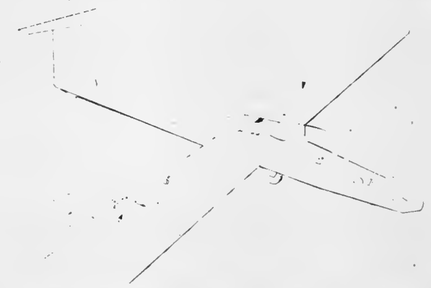
SYSTEM FOR USE IN CONDUCTING WAKE INVESTIGATION FOR A WING IN FLIGHT

Paul F. Bikle, and Lawrence C. Montoya, both of Lancaster, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 28, 1979, Ser. No. 15,983

Int. Cl.[3] G01C *21/00*

U.S. Cl. 73—861.66 **7 Claims**



1. In an improved system for use in conducting wake investigation for a wing in flight, the improvement comprising:

A. a first pressure head including a reference total pressure port adapted to be mounted on a wing and supported thereby in spaced relation with a wake as the wake is generated by the wing;

B. a second pressure head including a reference static pressure port adapted to be mounted on the wing and supported thereby in spaced relation with the wake;

C. a probe head adapted to be supported for displacement through the wake including a total pressure port and a static pressure port; and

D. pressure sensing means including a differential transducer and pressure switching means commonly connected to said heads and to said transducer for selectively connecting pairs of the ports the transducer in an opposed relationship, said switching means having included.

first connecting means for connecting the reference total pressure port of the first pressure head in communication with one side of the transducer and means for simultaneously connecting the total pressure port of the head to the other side of the transducer, and

second connecting means for connecting the reference static pressure port of the second pressure head in communication with said one side of the transducer, and means for simultaneously connecting the static pressure port of said probe head in communication with said other side of the transducer.

4,212,200

INSTANTANEOUS FLOW METER FOR AUTOMOBILE VEHICLES

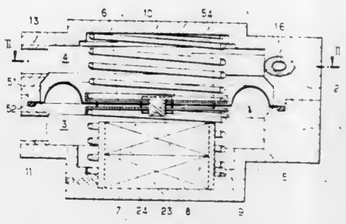
Alain Rousseau, Paris, and Francois Ramel, Levallois, both of France, assignors to Transformateurs BC and EFFA, France

Filed Aug. 14, 1978, Ser. No. 933,210

Int. Cl.[2] G01F *1/38*

U.S. Cl. 73—861.47 **6 Claims**

1. A flow meter connectable to the piping in which circulates the fluid whose flow is to be measured, said flow meter comprising: flow restrictor means for introducing a calibrated pressure drop; a hermetic enclosure connected to said piping; a flexible membrane imperviously separating said enclosure into a first and a second chamber; means for positioning said membrane allowing it to move resiliently in a direction perpendicular to its surface; and a transducer component converting said movement into a flow-indicating electrical signal, said flow restrictor means being housed in the second chamber, and communication piping between the two chambers, fitted in one wall of the enclosure, making the flow restrictor means communicate with the first chamber, a fluid intake hole being



formed in one wall of the first chamber, and an exit hole being formed in one wall of the second chamber.

4,212,201

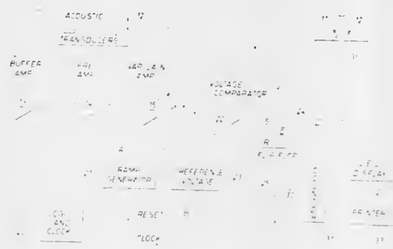
ULTRASONIC SENSOR

John M. Hirsch, and Robert G. Stapleton, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 23, 1978, Ser. No. 936,153

Int. Cl.[2] G01N *29/02*

U.S. Cl. 73—290 V **6 Claims**



1. An ultrasonic apparatus for identifying the fluid in a vessel comprising:

a pair of transducers mounted to transmit ultrasonic energy through said fluid and receive the ultrasonic energy after it has passed through the fluid;

amplifier means, said transducers being coupled in series in the feedback circuit of said amplifier means, said amplifier means including adjustable elements for adjusting the impedence of the amplifier means to cause it to resonate; and,

a measuring circit, said measuring circuit including means for producing a repeatable ramp voltage and measuring the time required to cause an amplifier circuit to resonate using said preset ramp voltage to adjust the impedence of the amplifier.

4,212,202

DISTRIBUTED COMPENSATION FOR CAPACITANCE-TYPE FLUID MEASURING APPARATUS

Charles C. Schmidt, Bettendorf, Iowa, assignor to The Bendix Corporation, Southfield, Mich.

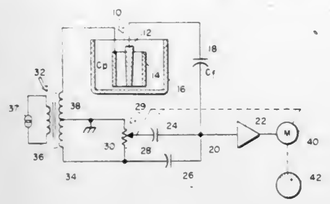
Continuation-in-part of Ser. No. 944,114, Sep. 20, 1978, abandoned. This application Aug. 9, 1979, Ser. No. 64,946

Int. Cl.[2] G01F *23/26*

U.S. Cl. 73—304 C **10 Claims**

1. Capacitance fluid measuring means for measuring the mass of a dielectric fluid in a container wherein the mass of fluid in the container is related to the dielectric k, of said fluid

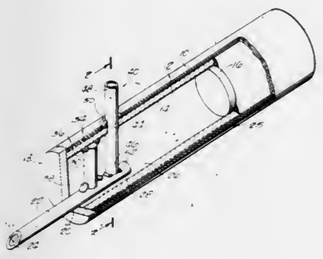
and to the level of the fluid in the container through a mathematical expression of the form of said container, f(V), and wherein



$$f(V) = \frac{aV}{a + b\,(k_o - 1)\,(1 - V)}$$

where a and b are constants relating to the fluid, k_o is the relative nominal dielectric constant of the fluid and V is the normalized volume of fluid in the container at a given fluid level, said fluid measuring means including a capacitor probe having electrodes contoured in accordance with f(V).

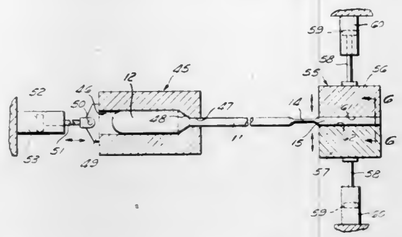
4,212,203
MOLTEN METAL STREAM SAMPLER WITH FILL GAUGE
Richard A. Falk, 519 Westminster Dr., Waukesha, Wis. 53186
Filed Apr. 19, 1979, Ser. No. 31,569
Int. Cl.[2] G01N *1/12*
U.S. Cl. 73—425.4 R **3 Claims**



1. A molten metal stream sampler including a refractory cylindrical wall defining a mold cavity, a fill tube extending into said cavity, and means for securing said fill tube along the inside surface of said cylindrical wall, said means including a strut extending at right angles with the longitudinal fill tube axis and wedged between said fill tube and the opposite refractory wall in spanning relation across said mold cavity, and refractory cement at the ends of said strut and said fill tube securing the strut and said fill tube on said refractory cylindrical wall.

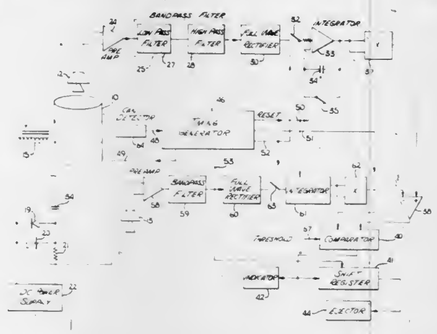
4,212,204
PIPETTE AND METHOD OF MAKING SAME
Elmer F. St. Amand, 12744 Kahlenberg La., N. Hollywood, Calif. 91607
Filed Apr. 26, 1979, Ser. No. 33,699
Int. Cl.[2] B01L *3/02*; B29C *25/00*
U.S. Cl. 73—425.6 **20 Claims**

1. A pipette for the dispensing of liquids comprising:
a hollow bulb and hollow stem connected thereto and constructed of a stretchable plastic material;
said stem comprising a stretched section having an inside diameter in the approximate range of 0.013 to 0.131 inch and a wall thickness in the approximate range of 0.0045 to



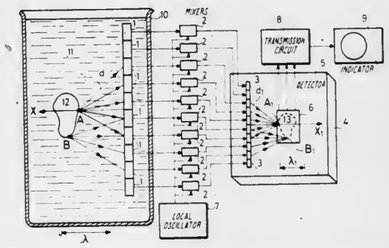
0.015 inch, the thickness also being small enough to provide an inside passage in said stretched section.

4,212,205
CONTAINER DEFECT DETECTION APPARATUS
Perry C. West, Saratoga, and Robert R. Buss, Palo Alto, both of Calif., assignors to Reticon Corporation, Sunnyvale, Calif.
Filed Feb. 12, 1979, Ser. No. 11,497
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—579 **13 Claims**



1. An apparatus for detecting defects in an open container comprising:
striking means for imparting energy to said container to cause it to vibrate at its natural frequencies;
first sensing means disposed adjacent to said container for sensing said vibrations of said container;
a first filter for selecting predetermined frequencies associated with a defective one of said containers, coupled to said sensing means;
comparator means for examining said predetermined frequencies associated with a defective one of said containers, coupled to said filter;
second sensing means spaced-apart from said container to sense background noise;
a second filter for selecting said predetermined frequencies associated with a defective one of said containers, coupled to said second sensing means; and,
cancellation means for cancelling the effects of one signal on a second signal, said cancellation means coupled between said filters and said comparator means so as to minimize the effects of said background noise from the signal applied to said comparator means
whereby defects in an empty or substantially empty container are detected.

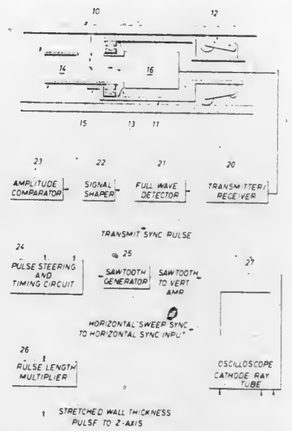
4,212,206
ULTRASONIC SYSTEM FOR THE VISUAL DISPLAY OF A THIN SECTION OF A BODY
Pierre Hartemann, and Roger Torguet, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Oct. 10, 1978, Ser. No. 950,144
Claims priority, application France, Oct. 7, 1977, 77 30245
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—606 **17 Claims**



1. System for visually displaying the image of a thin section of a body by ultrasonics, said system comprising: an ultrasonic generator, a scanning probe and means for visual display of said image; said system further comprising a frequency-converter ultrasonic lens made up of a first array of N bulk wave electromechanical transducers forming said scanning probe, a group of N frequency conversion circuits connected to a common local oscillator and a second array of N surface-wave electromechanical transducers arranged on a substrate; said first and second arrays of transducers having their corresponding transducers interconnected two-by-two by said frequency conversion electrical circuits so as to constitute a transmission link having N channels in which N electrical signals circulate; the frequency of said bulk waves being equal to the difference between the frequency of said surface waves and that of the signal produced by said local oscillator; the surface of the substrate carrying said second array of N transducers being equipped with at least one third array of surface-wave electromechanical transducers which, imaged by said frequency converter ultrasonic lens, carries out discrete scanning of the section through focussing the ultrasonic energy exchanged between said ultrasonic generator and said visual display means.

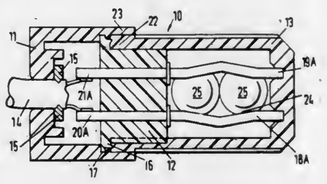
4,212,207
ULTRASONIC TUBE INSPECTION
Joseph J. Conradi, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Dec. 14, 1978, Ser. No. 969,743
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—623 **17 Claims**

1. An improved ultrasonic apparatus of the pulse echo type for inspecting tubular members where the apparatus includes means for directing a pulse of ultrasonic energy through the wall of the tubular member, said improvement comprising:
means for producing a plurality of pulses spaced circumferentially around the tubular member;
first circuit means disposed to detect the reflection of said ultrasonic energy from the inner and outer walls of the tubular member,
a cathode ray tube, the horizontal sweep of said tube being triggered by the production of said pulses of ultrasonic energy and the beam intensity being turned on by the detection of the reflection from the inner wall and turned off by the detection of the reflection from the outer wall; and
means for triggering a separate horizontal sweep of the cathode ray tube for each pulse of ultrasonic energy, each separate sweep being vertically spaced from the preceding



sweep such that a rectilinear picture of the circumferential cross section of the tube wall is produced.

4,212,208
VIBRATION DETECTOR INCORPORATING TWO OR MORE SEISMIC ELEMENTS
John L. Weale, Camberley, and Stephen P. Wiles, Basingstoke, both of England, assignors to Inertia Switch Limited, Hampshire, England
Filed Jul. 24, 1978, Ser. No. 927,568
Claims priority, application United Kingdom, Jul. 22, 1977, 30975/77
Int. Cl.[2] G01V *1/16*
U.S. Cl. 73—652 **10 Claims**



1. A vibration responsive detector comprising at least one pair of parallel, electrically conductive rods, at least two seismic elements, having electrically conductive outer surfaces, mounted on the rods of said one pair so as to provide parallel electrical connections between these two rods, characterised in that positioning means (**24**, **33**) are provided for urging each seismic element (**25**) into contact with an adjacent seismic element (**25**) so as to ensure electrical connection between adjacent elements (**25**) irrespective of relative movement of adjacent elements (**25**) transversely of the rods (**18**, **19**).

4,212,209

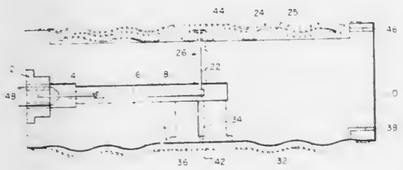
DIFFERENTIAL PRESSURE TO ELECTRIC CURRENT TRANSDUCER EMPLOYING A STRAIN SENSITIVE RESISTIVE PATTERN ON A SUBSTRATE HAVING A HIGH MODULUS OF ELASTICITY

William F. Newbold, Philadelphia, and Gurnam Singh, Willow Grove, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 838,538, Oct. 3, 1977, abandoned. This application Sep. 7, 1978, Ser. No. 940,333

Int. Cl.[3] **G01L** *9/06*

U.S. Cl. 73—721 **5 Claims**



1. A differential pressure to current transducer comprising in combination:
- a transducer housing;
- a strain sensitive element including a resistive pattern on a slab which has high modulus of elasticity;
- a header secured in said housing;
- a rigid beam extender embedded in and secured to one end of said slab, said beam extender at least eight times as long as said slab;
- the other end of said slab embedded in and secured to said header with said beam extender and slab in combination forming an extended cantilever beam;
- a pair of diaphragms secured to said housing, at least one of said diaphragms being a capsule;
- a fluid passage in said housing coupling a pressure exerted on one diaphragm to the other diaphragm; and
- means coupling an interior wall of said capsule to said rigid beam extender, whereby movement of the wall causes movement of said beam extender and a change in the resistive values of said resistive pattern.

4,212,210

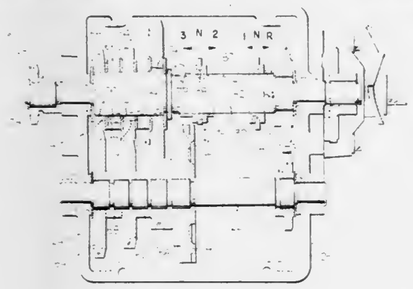
MULTI-SPEED TRANSMISSION WITH H-PATTERN SHIFT

Roland L. von Kaler, Tecumseh, and Norman E. Jolliff, Tipton, both of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Feb. 3, 1978, Ser. No. 875,117

Int. Cl.[2] **F16H** *3/08*; **G05G** *9/14*, *5/10*

U.S. Cl. 74—375 **10 Claims**



1. In a multi-speed transmission including a housing, an output shaft journalled in said housing, an intermediate shaft journalled in said housing in spaced, parallel relationship with said output shaft, an input shaft journalled in said housing and drivingly connected to said intermediate shaft, a reverse gear rotatably mounted on said output shaft, a gear on said intermediate shaft drivingly connected to said reverse gear, a group of at least first, second and third forward gears rotatably mounted on said output shaft, said reverse gear and each gear of said group having a plurality of radially spaced, axially extending notches formed therein, said group being axially spaced from said reverse gear, at least three gears mounted on said intermediate shaft for rotation therewith and respectively drivingly connected to the gears of said group, at least one axially extending slot in said output shaft extending under at least the first gear of said group, a collar mounted on said output shaft intermediate said reverse gear and said gear group, said collar being axially movable on said output shaft in either direction from a neutral position to first and second positions, respectively, a driving member axially movable with said collar, said driving member extending toward said reverse gear and drivingly engaging a said notch therein in said first position of said collar thereby drivingly to connect said reverse gear to said output shaft, a key in said slot connected to said collar and axially movable therewith, said key extending toward said gear group and drivingly engaging a said notch in said first gear in said second position of said collar thereby drivingly to connect said first gear to said output shaft, and a manual gear-shift lever mounted on said housing and operatively connected to said collar for selectively moving the same to said positions thereof, the improvement comprising: a second collar mounted on said output shaft intermediate said first-named collar and gear group, said second collar being axially movable on said output shaft in either direction from a neutral position to first and second positions, respectively, said second collar surrounding said first-named key; a second axially extending slot in said output shaft extending under the gears of said group, a second key in said second slot and axially movable therewith, said second and third gears being axially spaced, said second key having a driving portion thereon which extends into the space between said second and third gears in said neutral position of said second collar, said driving portion drivingly engaging a said notch in said second gear in said first position of said second collar and drivingly engaging a said notch in said third gear in said second position of said second collar thereby drivingly to connect said second and third gears, respectively, to said output shaft; said shift lever being operatively connected to said second collar for selectively moving the same to said positions thereof.

4,212,211

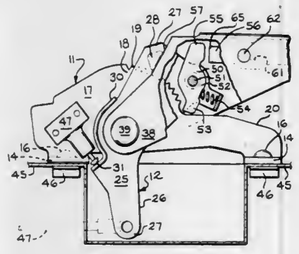
PARKING BRAKE LEVER ASSEMBLY

William Rickert, LaSalle, Mich., assignor to Donovan Wire & Iron Company, Toledo, Ohio

Filed Jul. 17, 1978, Ser. No. 925,453

Int. Cl.[2] **G05G** *5/18*

U.S. Cl. 74—538 **4 Claims**



1. A hand-actuated parking brake lever assembly for mechanical linkage to and operation of a remote brake, said assembly comprising:
- a ratchet plate having a sector of teeth and means for securing said plate from movement;
- a lever mechanism including a brake-operating lever and a releasable brake lock, said brake-operating lever being pivotally mounted to said ratchet plate and having both a stop member and a means for mechanical linkage to such remote brake whereby such remote brake is applied when said lever is pivoted in an operating direction, and said releasable brake lock comprising a pawl pivotally mounted to said lever mechanism and adjacent said sector of teeth and means supported by said lever mechanism for biasing said pawl into engagement with said sector of teeth when said lever is pivoted in an operating direction whereby said pawl maintains the braking force until disengaged;
- a handle pivotally mounted to said ratchet plate and including a drive member adapted to abut and drive said stop member when said handle is pivoted in an operating direction thereby simultaneously pivoting said lever and selectively engaging said pawl with said sector of teeth, said handle being returnable to a non-operating position without disengaging said pawl from said sector of teeth; and
- means for disengaging said pawl from said sector of teeth thereby releasing said brake lock.

4,212,212

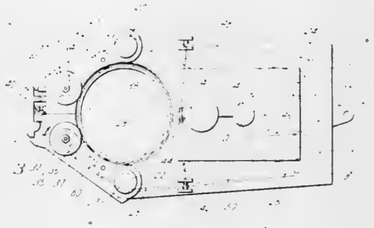
ROTARY DRIVE APPARATUS

Arthur R. Chandler, and Victor Moody, both of Lowestoft, England, assignors to Weatherford/Lamb, Inc., Houston, Tex.

Filed Oct. 6, 1978, Ser. No. 949,320

Int. Cl.[2] **B25B** *17/00*

U.S. Cl. 81—57.17 **2 Claims**



1. In a rotary drive apparatus for applying rotational torque to a cylindrical member of the type having a body structure including a recess to receive the cylindrical member, a plurality of wheels mounted to said body structure, an endless loop trained round said wheels and disposed so that it contacts the outer surface of the cylindrical member when the cylindrical member is positioned in the recess, a drive means mounted to the body structure for driving the endless loop, two jaws for closing off the recess during operation, at least one of said jaws rotatably mounted to the body structure, one of said wheels rotatably mounted on the front of each jaw, each of said front mounted wheels having freely rotating flanges disposed so that they contact and support the outer surface of the cylindrical member during operation and the outer periphery of said flanges rotates at the same speed as the outer periphery of said member, the improvement which comprises two reaction rollers engaging said cylindrical member when the member is positioned in the recess, each jaw having one reaction roller mounted thereon, said reaction rollers disposed so that both of the wheels with freely rotating flanges are positioned between the reaction rollers and so that the reaction rollers contact the cylindrical member thereby reducing the effects of toppling of the cylindrical member should toppling occur.

4,212,213

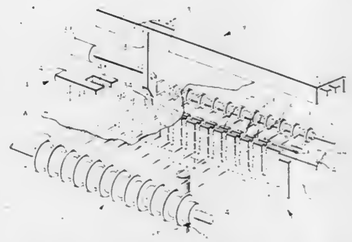
WEB SEVERING DEVICE AND PROCESS FOR SEVERING A WEB

Robert O. Wolfelsperger, Fairfield, and William R. Pasco, Brick Town, both of N.J., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 10, 1978, Ser. No. 950,241

Int. Cl.[2] **B26D** *7/02*

U.S. Cl. 83—56 **5 Claims**



1. A web severing device comprising web transporting means,
- web lifting means located to move a web to be severed apart and away from the web transporting means,
- web cutting means to sever the web without damage to the web transporting means, and
- web clamping means mounted to interfere with and contact an end of the lifting edge in the lifting mode, said web transporting means having a planar web transport surface, and said web lifting means having a lifting edge which, in a normal mode, is located below the web transport surface and, in a lifting mode, is located above the web transport surface.

4,212,214

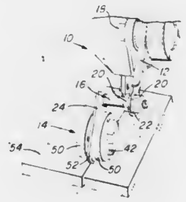
ANTI-KICKBACK DEVICE

Jacob R. Bippus, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 6, 1978, Ser. No. 958,256

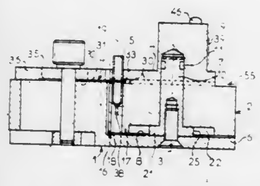
Int. Cl.[3] **B27G** *19/02*, *19/08*

U.S. Cl. 83—102.1 **5 Claims**



1. An anti-kickback device for use with stationary saws having a work table and a saw associated with said work table, said anti-kickback device comprising, a holder, mounting means on said holder, a rotatable wheel assembly on said mounting means allowing rotation in one direction only and having a member adapted to contact the surface of a workpiece, said mounting means including a pivotal connection between said mounting means and said holder, and a slot in said holder for permitting limited rotation of said mounting means about said pivotal connection, whereby gripping force on said workpiece is increased when said wheel assembly has a force applied opposite to said one direction.

4,212,215
APPARATUS FOR CUTTING A TUBE OF SEMI-RIGID MATERIAL
Bruno Buys, La Madeleine, France, assignor to Astec, France
Filed Jul. 3, 1978, Ser. No. 921,179
Claims priority, application France, Jul. 6, 1977, 77 21393
Int. Cl.[2] B26D *3/16*
U.S. Cl. 83—109 **13 Claims**



1. Apparatus for cutting a tube of semirigid material at a pre-determined point to make possible separate removal of first and second contents of the tube on opposite sides of the cutting point, and comprising:

a flat blade provided with a cutting edge and a flat portion, the dimensions of the latter being at least equal to the cross-sectional dimensions of a tube to be cut at the desired cutting point;

jaws which together define a longitudinal channel with a transverse profile complementary to that of the tube to be cut so that they can receive the latter inside them, the said jaws also defining in an area adjacent to the channel, a slot running transversely in relation to the general direction of the channel and intersecting the latter transversely across and through the whole of its transverse periphery at a level corresponding with the level at which it is desired to cut a tube when fixed in the channel;

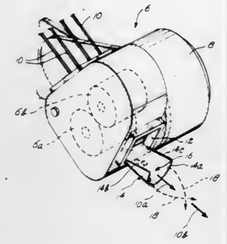
means for clenching the jaws around a tube so as to grip it over the greater part of its periphery, at least in zones situated in the immediate proximity of the slot and on both sides of the latter; means for relatively moving the blade and the jaws whereby the blade enters the slot and its cutting edge passes transversely through the channel to cut a tube therein until the flat part of the blade completely covers the cross-section of the channel at the point of the slot, and seals off the two parts of the tube after cutting each other and;

means for axially adjusting the position of said tube within said channel to bring the position of an interface between said first and second contents of said tube into coincidence with the position of said blade, said adjusting means comprising a stop provided in said channel between said slot and a first end thereof to abut the tubes, and means for adjusting the position of said stop in said channel.

4,212,216
DEFLECTOR FOR ATTACHMENT TO FIBER CHOPPER NOZZLE
Frank E. Ives, 26601 Dover Ct., Kent, Wash. 98031
Filed Jan. 22, 1979, Ser. No. 5,305
Int. Cl.[2] B65B *39/00;* **B26D** *7/06*
U.S. Cl. 83—165 **5 Claims**

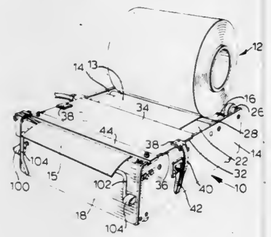
1. In a fiber chopper including a body having a nozzle opening, and including means associated with said body for chopping a fiber strand into fiber segments and causing said fiber segments to be ejected from said nozzle along a primary flow path, said nozzle opening having a lower edge portion, an upper edge portion, and sides, an immprovement associated with said nozzle comprising:

means defining a forwardly extending, upwardly opening trough having its longitudinal dimension oriented generally parallel to said primary flow path for receiving fiber segments ejected from said nozzle and causing said fiber segments ejected from the corner portions of said nozzle



to be skewed upwardly and inwardly relative to said primary flow path.

4,212,217
WEB DISPENSER
John B. Heppner, Toronto, Canada, assignor to C. A. Pemberton & Co., Toronto, Canada
Filed Sep. 18, 1978, Ser. No. 943,522
Claims priority, application Canada, Nov. 14, 1977, 290705
Int. Cl.[2] B26D *5/20*
U.S. Cl. 83—277 **6 Claims**



1. A dispenser for dispensing a flexible web from a roll of web material, comprising;

(a) a housing having an inner chamber, an upper wall of said chamber forming a platform disposed above said inner chamber, said platform having a front end and a back end,

(b) unwinding support means on said housing at said back end of said platform for supporting a roll of web material in a position to permit unwinding thereof in the direction of its longitudinal extent along said platform,

(c) cutter means on said housing at said front end of said platform, said cutter means being adapted to cut the web transversely of its longitudinal extent to any required length,

(d) a guide plate releasably mounted above said platform in a spaced relationship therewith to provide a narrow guideway therebetween for receiving the web and limiting the extent to which it can be raised above said platform,

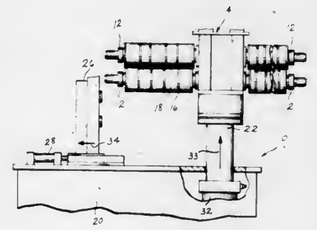
(e) passage means extending longitudinally of said platform and opening between said guideway and said inner chamber,

(f) quick release means releasably retaining said guide plate with respect to said housing whereby said guide plate can be removed to facilitate feeding of said web along said guideway,

(g) web feeder means mounted in said inner chamber and enclosed by said housing, said feeder means including finger means adapted to move into said guideway by way of said passage means to engage a web which is restrained by said guide plate as aforesaid and out of said guideway to release said web,

(h) feeder drive means located in said inner chamber for driving said web feeder means into and out of said guideway and longitudinally of said platform to feed a web of material along said platform to project outwardly from said cutter means.

4,212,218
SLITTER HAVING LIFTABLE PIVOTED MULTIPLE SPACED PAIRS OF ARBORS
Harold R. Braner, River Grove, and Douglas S. Matsunaga, Vernon Hills, both of Ill., assignors to Braner Enterprises, Inc., Schiller Park, Ill.
Filed Aug. 28, 1978, Ser. No. 937,450
Int. Cl.[2] B23D *19/06;* **B26D** *1/24*
U.S. Cl. 83—479 **7 Claims**



1. A slitter for cutting sheet material extending along a pass line into strips comprising

a frame,

a first housing,

multiple spaced pairs of arbors carried by said first housing and extending outwardly thereof,

means for shifting said first housing between upper and lower positions whereby said spaced arbors are raised out of and lowered into the plane of said material pass line as a unit relative to said frame,

means pivotally connecting said first housing to said frame for rotative movement about a generally vertical axis when said first housing is in its upper position whereby a selected one of said pairs of arbors may be vertically aligned with said material pass line for movement into the pass line when said first housing is shifted into its lower position, and

a second housing for supporting said selected one pair of arbors when positioned in said material pass line.

4,212,219
HARMONICA STAND
Dana L. Hubbard, 11 Leafwood Circle, San Rafael, Calif. 94901
Filed Jul. 6, 1979, Ser. No. 55,288
Int. Cl.[2] G10D *7/12*
U.S. Cl. 84—1.06 **5 Claims**

1. The harmonica holder comprising:

means comprising a rigid upright pole adapted to be supported on a horizontal surface;

a harmonica support seat mounted on the end of said pole;

a spring-biased pressure bar adapted to clamp a harmonica in place on said support seat;

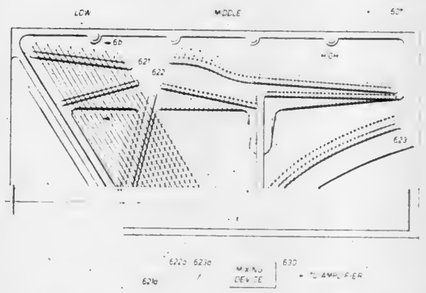
a first microphone holder;

means for releaseably securing said first microphone holder in a selected position along said pole; and



a wind shield interposed between said harmonica support and said first microphone holder.

4,212,220
MAGNETIC SENSOR FOR A MUSICAL INSTRUMENT AND METHOD OF CONSTRUCTING SAME
Charles T. Helpinstill, II, 6124 Jessamine, Houston, Tex. 77036
Continuation of Ser. No. 621,365, Oct. 10, 1975, abandoned.
This application Oct. 21, 1977, Ser. No. 844,333
Int. Cl.[2] G10H *3/00;* **H01F** *27/02*
U.S. Cl. 84—1.14 **15 Claims**



1. A magnetic sensor for a musical instrument having vibrating magnetic elements to produce musical notes, which magnetic sensor is suitable for attachment to the frame of the instrument and which magnetic sensor produces an electronic signal in response to the vibration of any of the vibrating magnetic elements, comprising;

a flexible, electrostatically shielded, coil-magnet comprising:

a flexible bar magnet of predetermined length, width and thickness, the bar magnet having two major surfaces defined by the length and width of the bar magnet and having side surfaces, wherein the poles of the magnet are the major surfaces and wherein a uniform magnetic flux density exists across the thickness of the bar between the poles of the bar magnet;

a coil comprising a predetermined number of windings of a conductor which are wound around the side surfaces of the bar magnet; and

electrostatic shielding material which is adhesively bound to the major surfaces of said bar magnet and which

encompasses and encloses said bar magnet and windings;

a two-wire cable connected to the ends of the coil of said coil-magnet; and

flexible, non-conductive material encompassing said coil-magnet and the connection of the two-wire cable to the coil of the coil-magnet.

4,212,221

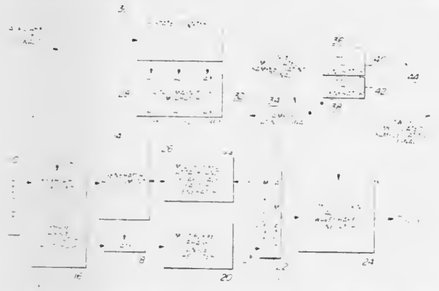
METHOD AND APPARATUS FOR NOTE ATTACK AND DECAY IN AN ELECTRONIC MUSICAL INSTRUMENT

Robert P. Woron, Allentown, Pa., assignor to Allen Organ Company, Macungie, Pa.

Continuation-in-part of Ser. No. 787,695, Apr. 14, 1977, abandoned. This application Mar. 30, 1978, Ser. No. 891,874

Int. Cl.² G10H *1/02, 5/00*

U.S. Cl. 84—1.26 **5 Claims**



1. In an electronic musical instrument having plural multiplexed waveshape generator channels, a keyboard, a demultiplexing audio waveshape generator for generating an audio signal derived from said plural multiplexed waveshape generator channels, generator assignment logic operatively associated with said keyboard for generating a sample gating signal which indicates that one or more of said multiplexed channels have been captured by said keyboard, and a multiplexed attack and decay scale factor generator for generating scale factors for each multiplexed channel to produce a desired attack and decay envelope for each of said audio waveshape generator channels, the combination comprising:

a counter,

a clock for repetitively advancing said counter through plural counts,

a digital comparator for comparing each of said counts to said attack and decay scale factors,

gating logic connected to said comparator for modulating said sample gating signal by transmitting said sample gating signal to a waveshape generator if a scale factor is greater than or equal to said count and by blocking said sample gating signal otherwise.

4,212,222

VIOLIN SHOULDER REST

Ted Henkle, 5415 Reynolds Street, Savannah, Ga. 31405

Filed Dec. 21, 1978, Ser. No. 971,964

Int. Cl.² G10G *5/00;* G10D *3/18*

U.S. Cl. 84—278 **5 Claims**

1. A shoulder rest for an instrument having a chin rest and a supporting clamp engaging a back portion of the instrument generally opposite the chin rest, comprising:

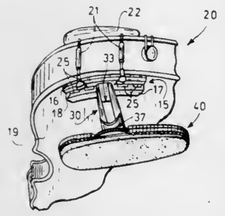
an elongated mounting base securable between said supporting clamp and said back portion of the instrument;

an arm having a longitudinal slot formed therein;

means for detachably securing said arm to said base at different locations along the length of said base;

a shoulder rest element having a top surface and a bottom surface and a bore extending through said surfaces thereof; and

means for coupling said shoulder rest element to said arm which permits sliding, rotational and tilting movement of said rest element relative to said arm and which permits the rest element to be fixed in a desired and stationary position relative to said arm, said means for coupling including a threaded bolt, one end of which extends through said bore of said shoulder rest element and the other end of which extends through said slot and is slidably coupled to said arm for sliding movement along said slot thereof, and a nut threadably secured on said one end of said bolt opposite said lower surface of said shoulder rest element, said nut being movable between a non-locking position in which it permits sliding movement of said bolt and, in turn, said shoulder rest element, along the length of the slot and rotational movement of said shoulder rest element about said bolt and, in turn, said arm, and a locking position, in which it secures the shoulder rest element in a fixed position relative to said arm, said nut having a control disc in engagement therewith which facilitates tightening and loosening of the nut so as to permit the sliding, rotational and tilting movement adjustments of the position of said shoulder rest element relative to said arm to be controlled exclusively by said control disc.



4,212,223

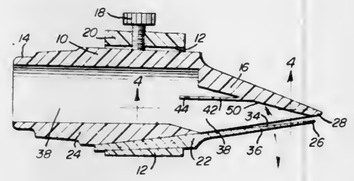
MOUTHPIECE FOR WOODWIND MUSICAL INSTRUMENTS

Clinton A. Runyon, P.O. Box 1018, Opelousas, La. 70570

Filed Oct. 27, 1978, Ser. No. 955,172

Int. Cl.² G10D *9/02*

U.S. Cl. 84—383 R **4 Claims**



1. In a mouthpiece for clarinet or saxophone wherein the mouthpiece comprises a hollow mouthpiece frame and a primary reed, the frame including an inclined wall opposed to the primary reed defining an interior elongated tone chamber having a longitudinal extent and an end for attachment to a length of tubular instrument body and having a chink opening between said primary reed and said mouthpiece for blowing of air therethrough to produce a musical tone, the improvement comprising a secondary reed mounted within said tone chamber for vibrating sympathetically to modify the tone so produced, the secondary reed being disposed substantially parallel to said longitudinal extent and being integral with said mouthpiece frame, said primary and secondary reeds having generally flat surfaces in substantially parallel relation to each other, said secondary reed having a mounting portion and a sympathetically vibrating portion, the mounting portion being secured to the inside surface of the inclined wall and the vibrating portion being directed substantially parallel to said longitudinal extent, said secondary reed being bendable along said vibrating portion near said mounting portion to permit bending closer to said primary reed about a transverse line generally parallel to the inner surface of the primary reed to produce a louder and brighter tone and bendable along said vibrating portion about the same transverse line near said mounting portion to permit bending away from said primary reed to produce a darker sound, whereby the vibratable primary reed creates an oscillatory motion of air within said tone chamber, which oscillatory motion of air sets the secondary reed into sympathetic vibration and causes the tone produced by the instrument to be modified.

4,212,224

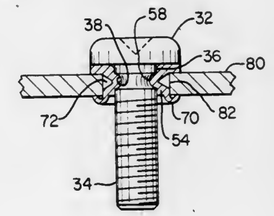
JACKING SCREW TYPE FASTENER

Robert C. Bragg, Jr., Amesbury, and John T. Hawley, North Chelmsford, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Sep. 25, 1978, Ser. No. 945,169

Int. Cl.² F16B *35/00, 39/00*

U.S. Cl. 85—1 K **1 Claim**



1. The combination of a threaded fastener having a head portion and a shank portion and a collar adapted to be secured to said fastener around said shank portion adjacent said head portion, however, permitting relative rotary motion of said fastener with respect to said collar while preventing relative axial motion therebetween, wherein the improvement comprises:

said shank portion having a shoulder portion disposed adjacent said head portion said shoulder portion extending lengthwise of said shank for a predetermined extent;

said threaded fastener shank portion being provided with an annular groove adjacent said shoulder portion, said groove having a width substantially equal or exceeding its depth and having a cross-section with a generally arcuate perimeter;

said collar having an enlarged bearing portion adapted to cooperate with the head portion of said fastener and a cylindrical sleeve portion extending longitudinally of said bearing portion said sleeve portion having a diameter of sufficient dimension so as to rotatably receive the shank portion of said fastener therein;

said collar sleeve portion being further provided with an annular groove adjacent said bearing portion, said groove having a width substantially equal to or greater than its depth and having a cross-section with a generally arcuate perimeter, however, said width of said groove being less than the thickness of the mounting device into which said combined fastener is installed, the material of said sleeve proximate said groove being compressible into said groove in said shank portion;

said collar sleeve portion being further provided at its end opposite said bearing portion with a flange extending generally longitudinally of said sleeve and adapted to be swagged against said mounting device to secure said fastener therein.

4,212,225

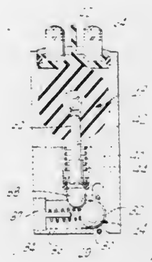
MUNITION ARMING DEVICE

Curtis V. Correll, Sr., 1900 Bonita Dr., Glendale, Calif. 91208, and William F. West, 12077 Kalua Dr., Sunland, Calif. 91040

Filed Sep. 15, 1978, Ser. No. 942,871

Int. Cl.² F41F *5/02;* B64D *1/04*

U.S. Cl. 89—1.5 D **25 Claims**



23. An arming device for selectively allowing a munition to be discharged in a safe condition or an armed condition comprising:

a locking member;

solenoid means for preventing movement of said locking member upon energization thereof to permit a munition to be discharged in an armed condition;

a wire engaging member;

an intermediate member disposed between said wire engaging member and said locking member; and

a housing in which said wire engaging member is confined for substantially horizontal movement and said intermediate member is confined for substantially vertical movement;

said wire engaging member and said intermediate member having mutually engaging curved surfaces.

4,212,226

DEVICE AND METHOD OF ILLUMINATING A TARGET BY THE EYE-MOTION OF AN OPERATOR

Erwin S. Teltscher, 69, Diana's Trail, Roslyn, N.Y. 11576

Filed Jun. 21, 1978, Ser. No. 917,733

Int. Cl.² F41G *3/02*

U.S. Cl. 89—41 L **9 Claims**



4. In a method of illuminating a target by the eye motion of an operator with the aid of a lens, said lens comprising means for focusing light rays impinging on the lens from a light source, and reflected from the lens, substantially onto a predetermined region by an eye movement of a wearer of the lens, the lens having an inner transparent region adapted to substantially fit over the pupil of the eye, and an outer region surrounding said inner region, said outer region having an outer surface defining a plurality of recesses, a corresponding portion of the surface of the outer region of said lens defining each of said recesses having a light-reflecting property, and being

shaped so as to focus the lens-reflected light onto said predetermined region,

the steps comprising:

fitting at least one eye of the operator with said lens, arranging the light source in the vicinity of the operator, and

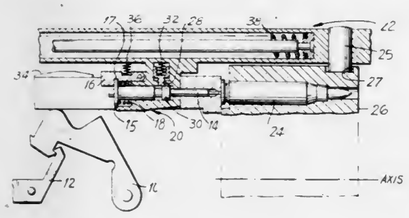
moving the eye-fitted lens so as to focus the light rays reflected from the lens onto said predetermined region, whereby a portion of the light rays reflected from the lens are, in turn, reflected from the predetermined region.

4,212,227

DUAL-MODE FIRING MECHANISM

Paul E. Stewart, Deerfield, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 2, 1979, Ser. No. 621
Int. Cl.³ F41D *11/10*
U.S. Cl. 89—129 B **7 Claims**



1. A mechanism for firing cartridges in a burst from a battery position of a rifle comprising:

operating rod means slidably mounted in said rifle for assuming three positions—a first full forward (cocked and firing) position, a second (short stroke rearward) position, and a third (long stroke or reload) position;

means for normally urging said operating rod means to said first full forward position;

a firing pin carrier mounted on said rod;

a firing pin slidably mounted in said carrier between a normal position and a firing position;

firing pin spring means normally urging said firing pin towards said normal position;

first firing pin latching means for securing said firing pin when in a normal position;

second firing pin latching means for securing said firing pin when in said firing position;

hammer means, operable when both said firing pin and said operating rod means are in said first full forward position and said normal position respectively, and when operated for releasing said first latching means and driving said firing pin from said normal position to said second firing position;

means for momentarily moving said operating rod means to said second position after a cartridge is fired and a next cartridge of the burst is moved to said battery position;

means for momentarily moving said operating rod means to said third position after firing a last cartridge in the burst; and

ramp means for releasing said second latching means when said rod means is moved to said third position.

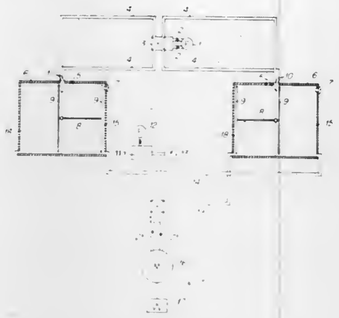
4,212,228

POWER PLANT

Floyd L. Heaton, Mountain City, Tenn., assignor to Fluid Engineering Co., Johnson City, Tenn.

Filed Nov. 8, 1978, Ser. No. 958,793
Int. Cl.³ F01B *7/00*
U.S. Cl. 91—170 **9 Claims**

1. A power plant comprising two double-ended cylinders each containing double-ended pistons therewithin; a common high-pressure pneumatic force applied to one piston chamber of each cylinder; means to cyclicly reciprocate the pistons; and



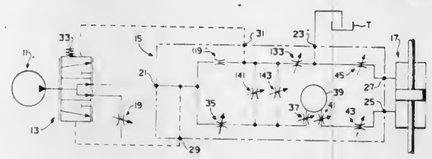
hydraulic means to transmit the force generated in a second piston chamber of each cylinder to a hydraulic motor.

4,212,229

CONTROLLER FOR FLUID PRESSURE OPERATED DEVICES

Oliver W. Johnson, Chaska, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 875,714, Feb. 6, 1978, Pat. No. 4,167,893. This application Oct. 25, 1978, Ser. No. 954,519
Int. Cl.² F15B *13/04*
U.S. Cl. 91—446 **15 Claims**



1. A controller operable to control the flow of fluid from a source of pressurized fluid to a fluid pressure operated device, the source of fluid including pressure responsive means for varying the delivery of fluid to said controller, said controller comprising:

(a) housing means including an inlet port for connection to the source of fluid, a return port for connection to a reservoir, first and second control fluid ports for connection to the fluid pressure operated device, and a load signal port for connection to the pressure responsive means;

(b) valve means disposed in said housing means including a primary rotatable valve member and a cooperating relatively rotatable follow-up valve member, said valve members defining a neutral position and a central reference plane disposed perpendicular to the axes of rotation of said valve members;

(c) means for imparting follow-up movement to said follow-up valve member in response to the flow of fluid to or from the fluid pressure operated device;

(d) means coupling said follow-up valve member to said primary valve member for limited movement relative to said neutral position and for common rotary movement therewith;

(e) said primary and follow-up valve members cooperating with said housing means to define a first plurality of fluid passages connecting said inlet port and said first control fluid port when said valve members are relatively displaced in one direction from said neutral position and a second plurality of fluid passages connecting said inlet port and said second control fluid port when said valve members are relatively displaced in the other direction from said neutral position, said first and second pluralities of fluid passages being arranged to provide substantially the same restriction to fluid flow between said inlet port and said control fluid ports in either direction of relative displacement from said neutral position;

(f) said first and second pluralities of fluid passages including first and second main flow control orifices, respectively, each of said orifices having a substantially zero flow area when said valve members are in said neutral position and an increasing flow area as said valve members are displaced from said neutral position;

(g) said valve means and said housing means cooperating to define a load signal chamber in continuous fluid communication with said load signal port;

(h) means operable to communicate fluid pressure from upstream of said first and second main flow control orifices to said load signal chamber; and

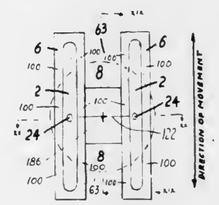
(i) said valve means including means to variably restrict the flow of fluid from said load signal chamber to said first plurality of fluid passages, downstream of said first main flow control orifice, when said valve members are relatively displaced in said one direction, and to said second plurality of fluid passages, downstream of said second main flow control orifice, when said valve members are relatively displaced in said other direction.

4,212,230

SLIDE FACES OF PISTON SHOES IN RADIAL PISTON MACHINES

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 537,352, Jan. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 477,085, Jun. 6, 1974, Pat. No. 3,951,047. This application Aug. 5, 1977, Ser. No. 822,161
Int. Cl.² F01B *13/06*
U.S. Cl. 92—58 **8 Claims**



1. A radial piston machine comprising;

a central axis defining body able to revolve around said central axis and having a plurality of pistons reciprocable in radially open cylinders; a piston stroke actuating body radially of said central body and having an annular guide face turned toward said central body; each one piston radially reciprocal in each of said cylinders and having an outer end turned toward said guide face;

said outer ends forming bearing beds for the pivotable reception of a pivot portion of a respective piston shoe; each one piston shoe associated with each one of said pistons having a pivot portion carried and borne on the said bearing bed of the respective piston;

said piston shoes having guide portions extending peripherally relatively to said actuating body in the direction of rotation of said central body and having contact faces riding on said guide face;

each of said piston shoes being formed with a pair of fluid pressure receiving and containing depressions and sealing lands around said depressions whereby said sealing lands and depressions form together hydrostatic bearings;

said central body and said actuating body having medial axis; said axes being distanced from each other and forming an eccentricity between said bodies; said actuating body having axial ends and said piston shoes having axial ends parallel to said ends of said actuating body; said contact faces moving relatively to said guide face in a direction of movement parallel to said ends due to the said eccentricity between said bodies when at least said central axis defining body revolves; said depressions of said hydrostatic bearings closed by said guide face and by said sealing lands;

at least one recess provided in said machine and extended to said contact faces of said piston shoes for the separation of one of said hydrostatic bearings of a respective piston shoe from the other of said hydrostatic bearings of the respective piston shoe;

said recess extending parallel to said ends of said actuating body and of said piston shoes;

said depressions of each pair of said depressions laterally distanced from each other, parallel to each other, located in said guide portions and distanced from the axis of the respective piston;

said depressions extending in said direction of movement of said contact faces and being narrower in the direction parallel to said axes; said sealing lands including parallel portions with parallel ends in said direction of movement;

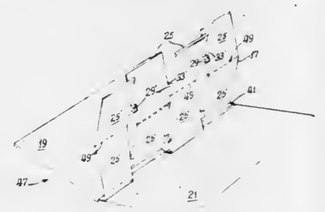
and portions of said hydrostatic bearings being located radially of said pistons and of said pivot portions.

4,212,231

METHOD OF MAKING A PROMOTIONAL NOVELTY DEVICE

Ib Penick, Prospect Heights, and John K. Volkert, Northfield, both of Ill., assignors to Compak Systems Inc., Northfield, Ill.

Division of Ser. No. 746,340, Dec. 1, 1976, Pat. No. 4,146,988, which is a continuation-in-part of Ser. No. 638,558, Dec. 8, 1975, Pat. No. 3,995,388. This application Aug. 16, 1978, Ser. No. 934,202
Int. Cl.³ G09F *1/00*
U.S. Cl. 93—1 F **10 Claims**



1. A method of making an item of the character described, which method comprises

providing a pair of base panels of sheet material,

providing a planar coupon-carrying panel which includes a plurality of side-by-side coupons which are disposed side-by-side in said panel being defined by slit means therebetween, and which panel also includes tab means corresponding in number to and individually associated with each of said coupons and further includes means interconnecting laterally adjacent pairs of said side-by-side coupons at locations spaced apart from said tab means, and

adhesively joining said coupon-carrying panel and said base panels generally along a straight line to form an adhesive joinder so that said base panels are hinged to each other and form a hinged connection with said coupon-carrying panel being disposed therebetween and with each tab means joined in surface contact to an opposite base panel from that to which the adjacent tab means is joined,

whereby opening of said hinged base panels causes said plurality of coupons to stand up from the respective planes

of said base panels with adjacent coupons disposed in planes lying at a substantial angle to each other.

6. A method of making an item of the character described, which method comprises

providing a pair of sheet material base panels which are hinged together along a straight line,

die-cutting an elongated piece of sheet material to form a plurality of coupons by cutting said piece with a plurality of transverse cuts that begin at one longitudinal edge and terminate short of the opposite longitudinal edge of said piece to leave interconnections between adjacent coupons, adjacent transverse cuts beginning at different longitudinal edges,

defining a pair of tabs at the opposite ends of said interconnected coupons by two lines of weakness, and

joining said pair of tabs in surface contact with different base panels, with said die-cut panel disposed between said pair of base panels and with said tab means located spaced from said straight line of said base panels,

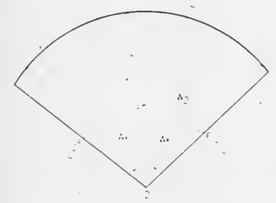
whereby opening of said hinged base panels causes said plurality of coupons to extend out of the respective planes of said base panels in a zig-zag configuration.

4,212,232

METHOD OF PRODUCING A FOLDABLE CONTAINER

Gee Y. Lee, 62, Kochok-Dong, Youngdeungpo-ku, Seoul, Rep. of Korea

Filed Nov. 28, 1978, Ser. No. 964,206
Int. Cl.² B31B *5/26*
U.S. Cl. 93—49 M **2 Claims**



1. A method of producing a container capable of being folded flatly and having a planar bottom, comprising the steps of:

forming a sheet of foldable material into a fan shape,

folding said fan-shaped sheet along its center line,

folding the apex of the folded fan-shaped sheet against the body of the sheet along a line from the edge of the folded fan shaped-sheet to the center line thereof, located a preselected distance from the apex of said fan-shaped sheet,

unfolding said sheet,

marking an arc on said sheet having its center at the apex and having a radius equal to said preselected distance,

forming said sheet of foldable material into a truncated cone having the apex portion of said cone protruding into the interior of said truncated cone, and

folding said truncated cone substantially flat.

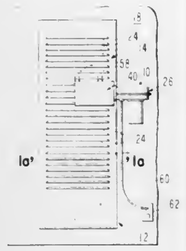
4,212,233

BLOWER UNIT FOR WALL HEATER HAVING SLOTTED FRONT PANEL

Robert H. Shaffer, 492 Sierra Vista Ave., Mountain View, Calif. 94043

Filed Jan. 6, 1978, Ser. No. 867,638
Int. Cl.² G03C *1/28*
U.S. Cl. 98—108 **11 Claims**

1. A blower unit for use with a wall heater having a slotted upright panel covering one boundary of a wall heater space comprising: a blower having an air inlet, an air outlet, and means for generating a flow of air between the inlet and outlet; and means carried by the blower near the outlet thereof and insertable into a slot of the panel for mounting the blower on said panel externally thereof in a position with the outlet adjacent to and facing the panel and communicating with at least one of the slots to thereby permit air flowing out of the outlet



to enter said one of the slots of the panel and be directed into the wall heater space to cause air to be forced out of the space through the remaining slots.

4,212,234

BAKING MOLD ASSEMBLY

Charles N. DeCourcy, 3022 Teton Cir., Huntsville, Ala. 35810

Filed Apr. 11, 1978, Ser. No. 895,432
Int. Cl.³ A23P *1/00;* **B22C** *9/24*
U.S. Cl. 99—426 **3 Claims**

1. The method of making a configured baking product comprising:

commencing with a generally flat plate having a plurality of spaced receptacles in its surface wherein each receptacle is adapted to hold a pair of spaced concentric tubes, and there is an opening in said plate interior of each said receptacle;

placing in each receptacle a pair of metal tubes concentrically spaced ½ inch to ⅝ inch apart; and

placing a batter in the region between said tubes and applying heat to said batter, including the supplying of heat upward through said openings.

4,212,235

BARBECUE FOOD HOLDER

Vernon W. Snyder, Box 32, Sabetha, Kans. 66534

Filed Feb. 9, 1979, Ser. No. 10,687
Int. Cl.² A47J *37/00*
U.S. Cl. 99—441 **4 Claims**

1. A barbecue holder comprising:

a. a pair of generally planar grids each including an open loop of wire, each having a forward and rearward edge, and adapted to be disposed in superposed relation in parallel, spaced apart planes when in a closed position,

b. a link extending between and pivotally interconnecting the forward edges of said grids, whereby said grids may be pivotally spread apart to an open position to receive food items therebetween,

c. a pair of handles extending rearwardly respectively from the rearward edges of said grids, normally substantially in the planes of said grids, whereby said grids may be manually opened for the insertion of food items, or closed to grip and compress said food items therebetween, said handle of the upper of said grids comprising a normally straight spring handle wire extending rearwardly from said upper grid, and

d. latch means operable to secure said handles releasably together with said grids in their closed position, said latch means comprising a resilient latch wire lying alongside said handle wire, means joining said latch wire to said



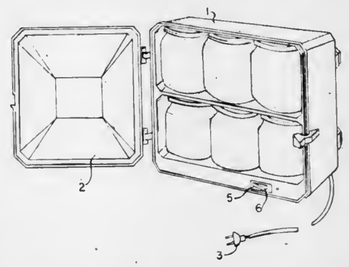
handle wire whereby the former may be moved longitudinally relative to the latter and an upwardly opening hook carried at the forward end of said latch wire and engageable slidably and detachably beneath the handle of said lower grid and spaced apart from said latch wire at such a distance that when so engaged with said lower handle closely adjacent said grids, it holds said grids in parallel planes, whereby when closing movement of said grids is arrested by food items therebetween, said latch wire may be moved rearwardly to position said hook well to the rear of said grids, said upper handle wire resiliently flexed to bring said hook into engagement with said lower handle, and said latch wire and hook moved forwardly, so that said hook wedges said handles closer together adjacent said grids to complete the closing movement of said grids.

4,212,236

DUAL POSITION YOGURT MAKING DEVICE

D. Fernando M. Guillen, Madrid, Spain, assignor to Industrias Rumbo, S.A., Madrid, Spain

Filed Jan. 3, 1977, Ser. No. 756,257
Claims priority, application Spain, Sep. 21, 1976, 223,410
Int. Cl.² A01J *11/04, 13/00, 15/14*
U.S. Cl. 99—467 **3 Claims**



1. A dual position yogurt making device, comprising

an elongated casing body defining a longer axis,

a lid hinged to said body,

a longitudinal partition extending along the longer axis of the body, adapted for storage of vessels therein in varying ways and depending on the arrangement of the device, with the vessels containing the milk to be coagulated,

said casing body has a base at a portion thereof remote from said lid,

a plurality of supports being secured to said base, said plurality of supports include two upper supports when said body is turned so that said longitudinal partition is horizontal, said two upper supports being formed with a hole extending completely therethrough in a perpendicular direction to said longitudinal partition and adapted to be inserted with heads of tenterhooks, the latter being nailed into a wall, for hanging the device, said supports adapted to support said device on a horizontal surface in a position with said lid at the top.

4,212,237

AUTOMATIC ASPARAGUS PEELING MACHINE

Tauan-Yuan Hsu, No. 1-2 North Ta-Wan, Yung Kang Hsiang, Tainan Hsien, Taiwan, Taiwan

Filed Aug. 30, 1978, Ser. No. 938,218
Int. Cl.² A23N *7/04*
U.S. Cl. 99—589 **8 Claims**



1. An automatic asparagus peeling machine comprising:

vibrating type feeding means;

parallel guide means adapted to transport single stalks of asparagus transversely in parallel alignment from said feeding means;

conveying means which receive individual stalks of asparagus sequentially from said parallel guide means and which transport the stalks linearly in a transverse direction away from said parallel guide means; and

an automatic peeling assembly, including:

multiple guide entry means;

several pairs of vertical cylindrical rollers, aligned in parallel so as to form two files, each such roller being driven by a shaft which is adapted to swing in a pendulum fashion, said shaft being housed in a protective tube, each said pair of rollers being joined by resilient means connected to said protective tube so as to weakly bias the rollers of a pair against spreading apart beyond an initially fixed gap, and each of said rollers in said pairs being independently driven so as to rotate in opposite directions, thereby providing a linear transporting force to stalks of asparagus which enter therebetween, the combination of said resilient bias and said pendulum action being selected to avoid crushing the stalks, all said pairs of rollers being commonly driven;

knife tool means mounted upon multiple pairs of opposed swinging arms, which arms align knives with the said files of said rollers when in peeling position and which said arms are biased to swing outwardly so as to separate the knife tools by a distance which is large compared to the diameter of asparagus stalks when said arms are in an open position; and

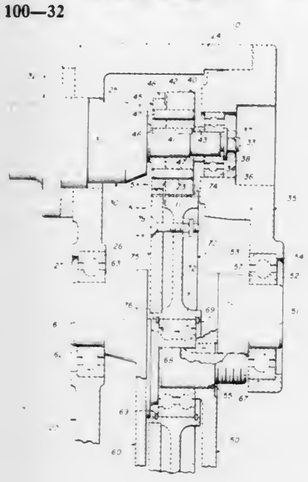
an enclosure, surrounding the peeling assembly and to which the said cylindrical roller pairs, said knife tool means, and said guide entry means are assembled, and where said conveying means delivers the asparagus stalks to the first of said guide means, said first guide means directing the stalks to the first of said pairs of rollers, other guide means being placed before subsequent pairs of rollers.

4,212,238

ROTARY DOG ASSEMBLY

James R. Simmons, Homewood, and Frank C. Weller, Chicago, both of Ill., assignors to Interlake, Inc., Oak Brook, Ill.

Filed Mar. 5, 1979, Ser. No. 17,284
Int. Cl.[2] B65B *13/22*
U.S. Cl. 100—32 **7 Claims**



1. Apparatus for tensioning a length of strap held at one end thereof without marring the surface thereof, said apparatus comprising a drive wheel mounted for rotation about a fixed first axis and having a substantially smooth circumferential drive surface adapted to contact the associated strap in frictional engagement therewith, a feed wheel mounted for rotation about a movable second axis parallel to said first axis and having a substantially smooth circumferential feed surface adapted to contact the associated strap in frictional engagement therewith, said second axis being shiftable about a third axis parallel to said second axis to accommodate movement of said feed wheel toward and away from said drive wheel, said feed wheel being normally disposed in a rest configuration wherein a plane defined by said first and second axes is disposed at an angle less than 26 degrees with respect to a plane defined by said second and third axes and with said feed surface disposed for cooperation with said drive surface frictionally to grip the associated strap therebetween, and drive means coupled to said drive wheel for rotation thereof to cooperate with said feed wheel frictionally to move the associated strap in a tensioning direction, tensioning of the associated strap exerting a resultant force on said feed wheel tending to effect movement thereof about said third axis from said rest configuration in a direction to increase the frictional gripping force exerted on the associated strap by said feed surface and said drive surface, whereby the frictional gripping force exerted on the associated strap is increased as the tension thereof is increased for minimizing slippage of the associated strap without marring the surface thereof.

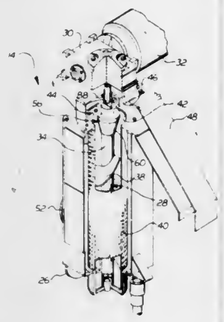
4,212,239

METHOD AND APPARATUS FOR REMOVING MOISTURE FROM WET PULP

Louis F. Fraula, Troy, and Gary V. Hoying, Sidney, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Feb. 15, 1979, Ser. No. 12,464
Int. Cl.[2] A47J *19/02;* **B30B** *3/00*
U.S. Cl. 100—37 **24 Claims**

6. In a press for extracting fluid from a slurry of solids and including an elongated tubular screen having a lower slurry inlet and an upper solids outlet, a plurality of openings defined in said screen for passage of extracted fluid to the exterior of said screen, a screw disposed within said screen and having an elongated central shaft and helical flighting mounted around said shaft with an upper end portion of said shaft extending beyond an upper end of said flighting, power means for rotating said shaft of said screw and said flighting therewith relative to said screen to cause lifting of solids in said slurry from said lower inlet toward said upper outlet and a compression cone having a central bore which receives said upper end portion of said screw shaft for disposing said cone adjacent said upper end of said flighting and adjacent said upper outlet of said screen so as to restrict passage therethrough of solids being lifted by said screw and thereby engage and cause compressive force to be



exerted on the solids within said screen which results in extraction of fluid therefrom through said screen openings before discharge of the solids through said upper outlet, the improvement which comprises:

interfitting elements defined respectively on said cone and said shaft so as to mount said compression cone on said upper end portion of said screw shaft for rotational movement with said shaft and for translatory movement relative to said shaft toward and away from said upper end of said screw flighting and said upper screen outlet during rotation of said cone with said shaft.

4,212,240

TRASH COMPACTOR

Harlan E. Lee, and Lester W. Toelke, both of Houston, Tex., assignors to International Tool & Supply Company, Inc., Houston, Tex.

Filed Aug. 7, 1978, Ser. No. 931,519
Int. Cl.[2] B30B *1/32*
U.S. Cl. 100—53 **23 Claims**

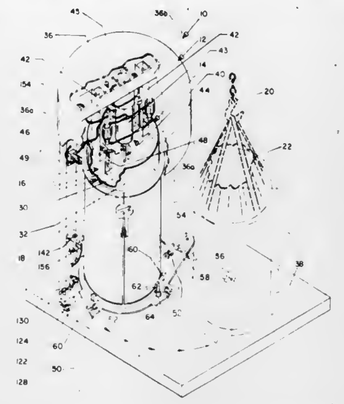
1. A heavy dhuty trash compactor comprising:

a compacting unit, including a ram movably supported in association with a ram-receiving container, for compacting trash disposed within the container; and

an electricity-free drive unit disposed in association with the compacting unit for forcefully advancing the ram into the container, the drive unit including a hydraulic system having at least one hydraulic pump for propelling the ram by hydraulic force and a pneumatic system for controllably applying gas under pressure for driving the hydraulic pump, thereby providing electricity-free drive to the compacting unit; and

a safety latch movable between latched and operating positions and disposed in association with the ram for maintaining the ram remote from the container when the latch

is in the latched position, said latch normally being resiliently urged into said latched position and being advanced



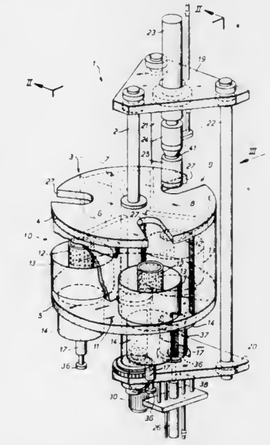
into said operating position when said ram is forcefully advanced by the drive unit into the container.

4,212,241

PROCESS OF EXTRACTING JUICE FROM A SAMPLE OF LIQUID-CONTAINING MATTER SUCH AS SUGARCANE AND AN EXTRACTOR PRESS

Gérard Pinette, Givry, France, assignor to Pinette-Emidecau S.A., Chalon sur Saone, France

Filed Nov. 22, 1978, Ser. No. 963,101
Claims priority, application France, Nov. 28, 1977, 77 35692
Int. Cl.[2] B30B *9/06, 15/02*
U.S. Cl. 100—116 **38 Claims**



1. In an extractor press having a plurality of work stations, means for selectively bringing the work stations individually and sequentially into position relative to a single operating station, each work station having its own sample compression means and juice evacuating means, and the single operating station having means operative cooperatively with each sample compression means for precompressing the sample and means for ejecting a depleted sample cake; the method comprising the steps of:

(a) loading a first work station in position at the single operating station with a sample of liquid-containing matter;

(b) precompressing the sample in the first work station at the single operating station utilizing the precompressing means of the single operation station;

(c) displacing the first work station away from the single operating station and bringing a second work station into position at the single operating station;

(d) repeating steps (a) and (b) with the second work station at the single operating station;

(e) beginning the compression of, and evacuation of juice from, the sample at the first work station subsequent to the precompression thereof and continuing compression and evacuation during step (d);

(f) eventually returning the first work station to the single operating station during the compression of, and evacuation of juice from, the sample at the second work station; and

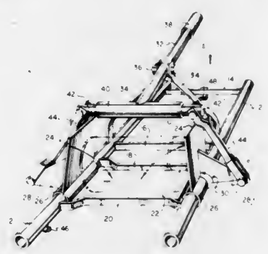
(g) ejecting the thus depleted cake from the first work station and reloading the first work station, and then precompressing a new sample therein again at the single operating station.

4,212,242

CAN CRUSHING DEVICE

Kenneth L. Willis, 407 Sierra Dr., Euless, Tex. 76039

Filed Apr. 30, 1979, Ser. No. 34,638
Int. Cl.[2] B30B *7/00*
U.S. Cl. 100—233 **9 Claims**



1. Apparatus for crushing cans comprising:

a planar supporting structure,

a fixed crushing plate carried on said supporting structure,

a pair of moving crushing plates rotatably carried on said supporting structure in alignment with said fixed crushing plate, whereby in a closed position first surfaces of said moving crushing plates overlie and substantially cover said fixed crushing plate,

a pair of arms each having a first end connected to a second surface of said moving crushing plates,

a lever pivotally carried by said supporting structure having a first end positioned above said fixed crushing plate and coupled to second ends of said arms, and a second end forming a grip for manual operation of said apparatus,

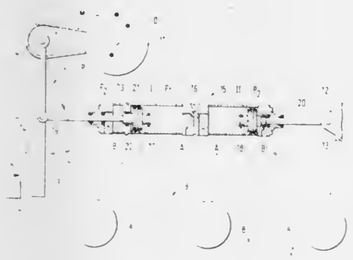
whereby upon lifting said grip said moving crushing plates move to an open position in which a can may be placed on said fixed crushing plate and upon forcing said grip downward said moving crushing plates move to a closed position crushing said can.

4,212,243

INSTALLATION FOR THE STAMPING OF ADVANCING ROLLING STOCK IN ROLLING MILLS AND CONTINUOUS CASTING PLANTS

Helmut Haegermann, am Altenhof 21, 4030 Ratingen 6/Hosel, Fed. Rep. of Germany

Filed May 8, 1978, Ser. No. 903,960
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720676
Int. Cl.[2] B44B *5/00*; B41F *17/00*
U.S. Cl. 101—4 2 Claims



1. A device for stamping with a die workpieces which advance along a path, the device utilizing a source of compressed air including sources of both normal and reduced pressures the device comprising:

(a) a pendulum arm for carrying the die adjacent one end thereof;

(b) a cylinder arrangement including a cylinder, a piston having one side and another side, and a piston rod coupled with said piston and extending from said other side thereof, said pendulum arm being swingable by said piston rod between an operating position in which the die will be in the path of an advancing workpiece and a non-operating position in which the die will be out of the path of the advancing workpiece, said piston rod being in a run out position when said pendulum is in said operating position, said piston being in a run out position when said pendulum is in said non-operating position;

(c) an intermediate piece defining chambers on either side of said intermediate piece, one chamber being disposed generally to said one side of said piston when said pendulum is in the operating position and being disposed to one side of said intermediate piece; the other chamber being disposed to the other side of said intermediate piece;

(d) means for effecting communication between said one chamber and the source of reduced pressure;

(e) means for establishing communication between said other chamber and the source of normal pressure;

(f) a projection on said other side of said piston;

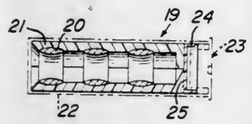
(g) a passage through said intermediate piece, said passage and said projection being arranged and configured for mutual sealing cooperation to block said passage when said piston rod is in said run out position and to selectively establish communication between said other chamber and a part of said one chamber on said other side of said piston when said projection and said passage are out of sealing cooperation, whereby a counterforce resulting from the reduced pressure acting on said piston exceeds a pendulum withdrawing force resulting from the normal pressure acting on said shoulder member when said projection and said passage are in sealing cooperation with each other and the pendulum withdrawing force exceeds the counterforce when the projection and passage are out of sealing cooperation.

4,212,244

SMALL ARMS AMMUNITION

Abraham Flatau, 2004 Stockton Rd., Joppa, Md. 21085

Continuation of Ser. No. 844,863, Oct. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 567,962, Apr. 14, 1975, abandoned. This application Dec. 9, 1977, Ser. No. 858,934
Int. Cl.[2] F42B *5/00*
U.S. Cl. 102—38 MM 4 Claims



1. A composite small caliber cartridge including:

a cartridge case for containing a propellant gas source, force transmitting means frictionally held within said cartridge case, and

a plurality of projectiles firmly engaged within said force transmitting means,

each of said projectiles consisting of an annular shaped hollow ring symmetrical about a center rotation axis and having a circular leading edge and a circular trailing edge, said leading and trailing edges being spaced apart a distance less than the diameter of said ring,

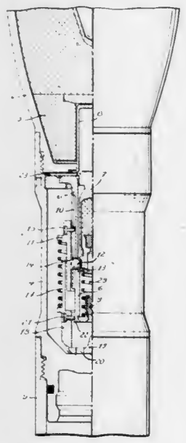
said plurality of projectiles in said force transmitting means having said center rotation axes in coincidence whereby rotation of said force transmitting means causes rotation of said projectiles about said coinciding axes.

4,212,245

BOTTOM FUSE

Maurice Rusbach, Vaud, Switzerland, assignor to Sarmac S.A., Geneva, Switzerland

Filed Nov. 7, 1978, Ser. No. 959,191
Claims priority, application Switzerland, Dec. 2, 1977, 14765/77
Int. Cl.[2] F42C *15/24*
U.S. Cl. 102—249 7 Claims



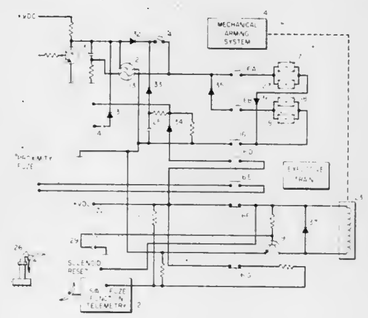
1. Bottom fuse for an explosive projectile, comprising a hollow body, a primer and a percussion point at the rear of the hollow body, a detonator mounted for forward sliding movement in the hollow body from an inactive stocking position completely inside the body to an active working position partly outside the front of said body, means for releasably locking the detonator in said stocking position, a sleeve slidably mounted outside said body, means resiliently urging the sleeve forwardly toward a foward position in which said sleeve unlocks said locking means, means to delay said forward movement of said sleeve under the influence of said urging means, and means resiliently urging said percussion point and primer away from each other.

4,212,246

FUZE ELECTRONIC CIRCUITRY

Jefferson O. Eaton, Ridgecrest, and Wilbur B. Lunt, Idlewild, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1978, Ser. No. 910,543
Int. Cl.[2] F42C *15/40*
U.S. Cl. 102—270 7 Claims



1. An electric circuit for a proximity fuze with a safe and arm device having safe and armed conditions located within a guided missile, comprising:

electro-mechanical means for enabling said safe and arm device to arm in response to an electric input signal;

function monitoring means effectively connected to said electro-mechanical means for indicating safe and arm device function sequence progress;

grounding means, effectively connected to said electro-mechanical means, for preventing reception of said electric input signal by said electro-mechanical means;

instantaneous detonation means, effectively connected to said proximity fuze, for detonating an explosive train in response to a close target encounter signal from said proximity fuze;

proximity fuze disablement means effectively connected to said proximity fuze for preventing transmission of said close target encounter signal;

proximity fuze selection means effectively connected to said proximity fuze for selectively enabling said proximity fuze by disconnecting said proximity fuze disablement means;

delay detonation means effectively connected to said instantaneous detonation means for delaying detonation of said explosive train for a predetermined time period in response to a direct target impact by said guided missile; and

circuit interruption means attached to said safe and arm device and effectively connected to said proximity fuze, said instantaneous detonation means, said delay detonation means, and said electromechanical means for controlling transmission of electric signals in response to the condition of said safe and arm device;

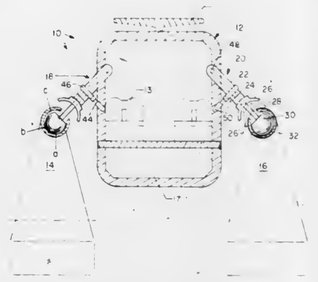
whereby selection of said proximity fuze and a close target encounter results in an instantaneous detonation of said explosive train, and a direct target impact always results in a delayed detonation of said explosive train so that a preselected time period is provided for target penetration by said guided missile.

4,212,247

TRANSIT SYSTEM

Kenneth P. Lusk, 1000 B Richmond Rd., China Lake, Calif. 93555

Filed Jul. 21, 1978, Ser. No. 926,831
Int. Cl.[2] B61D *13/04*
U.S. Cl. 104—124 13 Claims



1. A transportation system including:

track means comprising at least two tubular track members extending along the length of a right of way to be traversed;

each track member including a longitudinal slot in one side thereof and which slot extends the entire length thereof;

means supporting said track means along said right of way;

at least one vehicle;

at least one running gear on each side of each said vehicle and extending from said vehicle at an acute, downwardly sloping angle from the vehicle to said track members;

each said running gear having an outboard end adapted to engage within one of said tubular track means through said slot therein including a running gear member having a generally circular area in orthogonal cross section slightly less than the cross sectional area of the inside of said tube and effective with the inner surfaces of said tube to provide support and guidance for said vehicle.

4,212,248

APPARATUS AND METHOD FOR REDUCING INTERLINE TWISTING

Richard W. Maybury, Gorleston, England, assignor to Brown & Root, Inc., Houston, Tex.

Filed Mar. 2, 1978, Ser. No. 882,794
Int. Cl.[3] B61B *13/10*
U.S. Cl. 104—138 G 12 Claims

1. An apparatus for reducing interline twisting of any pair of a plurality of lines connected between a device for traversing the interior of an elongated tubular member and a tubular member exit opening, as the device traverses an interior section of the tubular member, said device tending to rotate about its longitudinal axis as it traverses said tubular member interior section,

said apparatus comprising

a barrier guide member having

a barrier body portion,

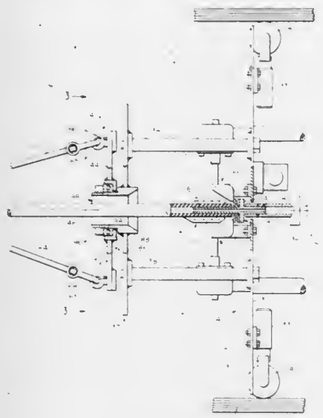
means for mounting said barrier body portion on said device for rotational movement about a barrier member rotation axis, said rotation axis being substantially parallel to said device longitudinal axis, and said body portion having means for maintaining the orientation of said body portion substantially fixed with respect to the direction of gravitational pull of the earth,

at least one line receiving member, each line receiving member being connected to at least one of a first group of said lines, and

first means for connecting each said line receiving member to said body portion at at least one connection

point, to provide a relatively fixed spatial orientation for said line receiving member,

second means for connecting each line of a second group of said lines directly to said device without attachment to the barrier guide member, and



said second connecting means interacting with said barrier guide member for preventing each line of said second group from encircling any connection point on the barrier guide member whereby interline twisting is reduced.

4,212,249

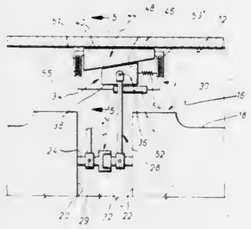
DYNAMIC-COMPENSATING MAGNETIC SUPPORT APPARATUS

Alexander I. Kalina, 5565 Gasmer #674, Houston, Tex. 77035

Filed Jul. 17, 1978, Ser. No. 925,513

Int. Cl.² B61B *13/10*

U.S. Cl. 104—281 **8 Claims**



1. Magnetic supporting apparatus comprising:

a magnet means for producing an upward load-supporting force, the magnet means including an upper inclined surface;

an arm attached at one end to said magnet means and attachable at another end to a load, said arm being operable to transmit the upward load-supporting force to such a load; and

adjusting means for adjusting a magnitude of the upward load-supporting force in relation to a magnitude of a downward force of such a load, said adjusting means being substantially continuously operable and comprising a friction foot having a magnetic member-engaging surface and being positionable between said magnet means and a surface of a magnetic member to transmit a magnetic field of said magnet means and to frictionally engage such a magnetic member, the friction foot having a lower inclined surface adjacent to and cooperable with the upper inclined surface of the magnet means to transmit a magnetic field through said friction foot at predetermined positions on said magnet means, and magnetic field reducing means for reducing a portion of the magnetic field of said magnet means.

4,212,250

MINE LOCOMOTIVE

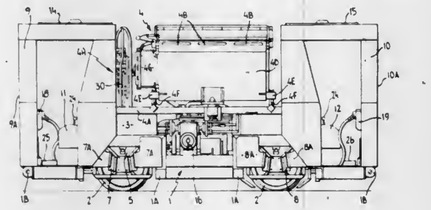
William F. Burgess, Maltby, England, assignor to Thomas Hill (Rotherham) Limited, Rotherham, England

Filed Apr. 14, 1978, Ser. No. 896,298

Claims priority, application United Kingdom, Apr. 16, 1977, 15874/77

Int. Cl.² B60K *27/00, 33/00;* **B61C** *3/00*

U.S. Cl. 105—50 **8 Claims**



1. A vehicle for carriage of personnel comprising:

a vehicle body including a driving cab at each end thereof;

traction means operatively carried by said vehicle body for driving the vehicle;

driving control means in each driving cab, said driving control means in each cab being respectively linked to said traction means, each driving control means being operative to permit movement of the vehicle only in the direction the cab faces, and both driving control means including braking means for the vehicle;

and selector means operatively connected to each of said driving control means, said selector means having at least two positions, a first position for activating said driving control means in one of said cabs and a second position for activating said driving control means in the other of said cabs.

4,212,251

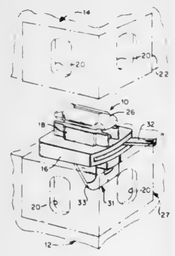
KEY ACTUATED STACKER LOCKING DEVICE

John M. DiMartino, Sayville, N.Y., assignor to Line Fast Corporation, Holbrook, N.Y.

Filed Nov. 30, 1977, Ser. No. 855,918

Int. Cl.² B65D *21/02, 25/20;* **B65J** *1/22*

U.S. Cl. 24—73 R **4 Claims**



1. A selectively operable stacker key locking device adapted to secure a first corner fitting of a first shipping container to a second corner fitting of a second container in an adjacent stacked relation, each of the corner fittings having a web portion defining an elongated opening therein comprising:

a. a planar base member adapted to keep the first and second corner fittings in a spaced apart relationship when inserted therebetween;

b. a neck member affixed to said planar base member and extending upwardly therefrom, said neck member being dimensioned and configured to enter the opening of a web portion of the first corner fitting and neck member defining an inner open portion which extends therethrough having a first set of screw threads on the wall of the neck defining the inner open portion thereof;

c. an elongated shank member extending upwardly from said planar base member and through the open portion of the neck member, said shank member being rotatable within the neck member and having a second set of screw threads on the outer portion thereof, said second set of threads being mateable and capable of co-acting with said first set of threads in said neck member;

d. a crosshead member affixed to the upper end of the shank member, said crosshead member having at least one elongated flange dimensioned and configured to enter the opening defined by a web portion of the first corner fitting when aligned therewith in a first position and rotatable to a second locking position such that at least one dimension of the crosshead exceeds a corresponding dimension of the web opening to lock the crosshead member within the web;

e. an elongated handle substantially rigidly connected to the shank member, said handle extending outwardly through the base member such that rotation of the handle from a first position to a second position results in a corresponding rotation of the crosshead from said first position to said corresponding second locking position;

f. the bias of said first set of screw threads and said second set of screw threads being set in a direction such that when said shank portion is rotated in the inner open portion of the neck to rotate the crosshead member to a second locking position the crosshead member is directionally gathered closer to the base member and that when said shank portion is rotated in the open portion of the neck to rotate the crosshead member to said first position the crosshead member is directionally urged apart from the base member;

g. means on the lower portion of the base member for attaching the planar base member to a second corner fitting on a second container; and

h. means for greasing said threads through said neck portion.

4,212,252

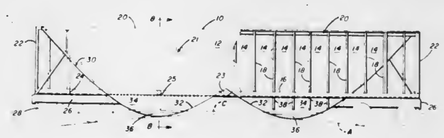
GONDOLA-TYPE RAILWAY CAR

James D. Hart, Grove City, and Joseph C. Lightner, Greenville, both of Pa., assignors to Greenville Steel Car Co., Greenville, Pa.

Filed Feb. 2, 1978, Ser. No. 874,616

Int. Cl.² B61D *7/00, 17/00*

U.S. Cl. 105—406 R **5 Claims**



1. A gondola-type railway car comprising:

(a) an upper body, said upper body including a pair of side sills which extend the length of said car, one on each side thereof; a plurality of side panels attached to and extending generally upwardly from each side sill; a pair of downwardly sloping end plates, each extending transversely across said upper body between said side panels and located at an end of said car;

(b) a pair of truck assemblies, each attached at an end of said car to the upper body and positioned below said side sills;

(c) a transverse center cross ridge member extending transversely across said upper body and located midway between said end plates; and

(d) a doorless bottom member extending below said side sills and including at least two bottom sheets, each having a parabolic shape taken in a vertical plane parallel to the length of said car and attached at an edge to said end plate at a position near the end of the car and at an opposing edge to said transverse center cross ridge member; two pairs of wall members, each said wall member attached to and extending downwardly between one of said side sills and an edge of said bottom sheet.

4,212,253

SUPPORT DEVICE FOR A BLAST DOWNPIPE OF A BLAST-FURNACE

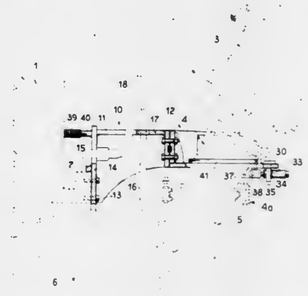
Henry Voituriez, Dunkerque, and René Aymard, Grande Synthe, both of France, assignors to Union Siderurgique du Nord et de l'Est de la France, Paris, France

Filed Sep. 29, 1978, Ser. No. 946,736

Claims priority, application France, Sep. 30, 1977, 77 29508

Int. Cl.² F23L *1/00*

U.S. Cl. 110—182.5 **10 Claims**



1. A device for supporting a lower end element of a blast downpipe of a blast furnace, which end element is superjacent to an elbow element which carries the nozzle of a tuyere, for maintaining said end element in a fixed position when removing the elbow element from said end element for maintenance, the device comprising a support unit for fixing to a rigid casing of the blast furnace and defining at least one supporting and guiding slideway means, a member fixed on said end element and slidably supported on said slideway means, and means for maintaining the position of said member on said slideway means when removing said elbow element from said end element.

4,212,254

TILLER PLANTER WITH MODIFIED SEED BED FINISHING IMPLEMENT

Vincent J. Zumbahlen, Newton, Ill.

Continuation-in-part of Ser. No. 647,655, Jan. 8, 1976, Pat. No. 4,048,929. This application Sep. 19, 1977, Ser. No. 834,191

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.² A01C *5/00, 5/08*

U.S. Cl. 111—52 **15 Claims**

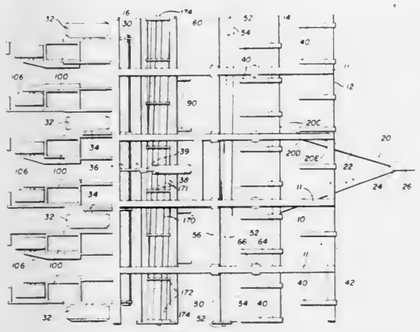
1. A machine for tilling and planting the surface of a field comprising:

a frame adapted for movement across a field, said frame adapted to be drawn by a prime mover tractor, the longitudinal attitude of said frame being adjustable from said tractor, whereby the operator of said tractor can independently adjust both the elevation of the front of said frame and the elevation of the rear of said frame;

a plow unit mounted below the forward portion of said

frame, said plow unit comprising a plurality of chisel plows adapted to plow the soil as said frame is moved through the field;

a reel unit flexibly mounted below said frame, to the rear of said plow unit, said reel unit extending substantially the width of said plow unit, adapted to rotate as said frame is pulled through the field and thereby pulverize the soil, said reel unit being biased downwardly but being limited as to downward movement and as to depth of soil penetration;



a seed bed finishing implement flexibly mounted below said frame to the rear of said reel unit, said seed bed finishing implement extending substantially the width of said plow unit, and adapted to finish the soil to prepare a seed bed as said frame is pulled through the field; and

a seed planting unit rigidly mounted on the rear of said main frame whereby the seed planting unit is raised from the ground when the rear of the main frame is elevated, said seed planting unit adapted to plant a plurality of rows of seeds as said frame is pulled through the field.

4,212,255

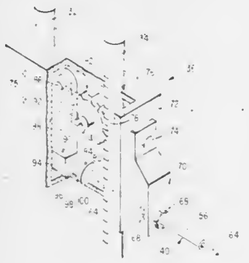
SEWING MACHINE TREADLE WITH A VARIABLE LENGTH CONTROL LINKAGE

Paulus W. Wolf, Karlsruhe, Fed. Rep. of Germany, assignor to The Singer Company, Stamford, Conn.

Filed Apr. 24, 1979, Ser. No. 32,806

Int. Cl.² D05B *75/06*

U.S. Cl. 112—217.1 **5 Claims**



1. An adjustable height sewing machine stand comprising base means, telescoping column pedestal means extending upwardly of said base means for supporting a sewing machine at an adjustable height above said base means, column pedestal locking means for selectively locking said pedestal means to support such machine at a desired height above said base means and unlocking said pedestal means for raising and lowering such machine, treadle means associated with said base means for movement in response to foot pressure by a machine operator, variable length control linkage means connected with said treadle means and connectable with such machine to enable operator foot control thereof, said linkage means including a pair of generally parallel link rods, link rod locking means for selectively locking said link rods together to enable movement of said treadle means to be transmitted through the locked said link rods and unlocking said link rods to enable adjustment of the combined length thereof, and remote actuating means for said link rod locking means enabling adjustment thereof into a locking or unlocking mode during adjustment of said pedestal means.

4,212,256

DETACHABLE SOLE PLATE

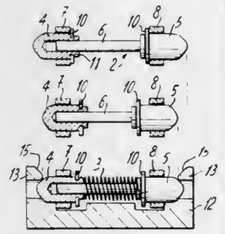
Antonio Jimenez, Meyrin, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Nov. 20, 1978, Ser. No. 963,469

Claims priority, application Switzerland, Nov. 25, 1977, 14468/77

Int. Cl.² D05B *29/00, 29/12*

U.S. Cl. 112—240 **4 Claims**



1. A sewing machine presser foot including a sole plate and a support therefor, said support including a pair of spaced arms, each of said arms provided with a bore, a pin assembly compressible in a longitudinal direction and fixed in said bores of the arms of said support, said sole plate being attachable to and detachable from said pin assembly and including a flange on its upper face extending along each of its longitudinal edges, each said flange having an opening therein, said openings being aligned with each other, the ends of said pin assembly being of substantially hemispherical shape and of a greater diameter than the diameter of said openings, a ramp on each flange above each of said openings, said ramps being inclined toward each other whereby they guide said pin assembly into said openings when the ends of said pin assembly are engaged by said ramps and moved toward said openings.

4,212,257

SEWING MACHINE FULL AND LOW BOBBIN INDICATOR

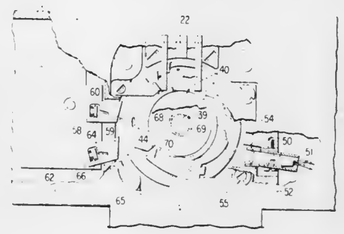
William L. Herron, Elizabeth, and Edward W. Rummel, Short Hills, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 5, 1979, Ser. No. 55,137

Int. Cl.² D05B *45/00*

U.S. Cl. 112—278 **4 Claims**

1. A lockstitch sewing machine comprising a frame, said frame supporting sewing instrumentalities including a needle carrying needle bar supported by said frame for endwise reciprocation, a feed system for urging work material in a path under said needle, a looptaker supported in said frame for cooperation with said needle in the formation of stitches, a bobbin case supported by said looptaker, said bobbin case supporting therein a bobbin having a pair of flanges separated by a thread carrying hub, said bobbin case and said bobbin extending from said looptaker a sufficient distance to have a flange and a portion of said hub of said bobbin extending therefrom, a light source situated adjacent said looptaker and extending light rays above said looptaker and through apertures in said extending portion of said bobbin case provided therefore, a first and a second light sensor on the opposite side of said looptaker from said light source, said first light sensor being aligned in a path extending between said light source and said first sensor adjacent said hub of said bobbin, the second



light sensor being arranged in a path extending between said light source and said second sensor substantially tangent to the periphery of an imaginary cylinder having the bobbin flanges as extremes thereof, and means for providing an indication of a completed light path between said light source and said first light sensor and an indication of an interrupted light path between said light source and said second light sensor.

4,212,258

UNDERWATER APPARATUS FOR ACOUSTICALLY INSPECTING A SUBMERGED OBJECT

H. Dale Collins, Richland, Wash., assignor to International Submarine Services, S.A., London, England

Filed May 12, 1978, Ser. No. 905,203

Int. Cl.² B63G *8/00*

U.S. Cl. 114—312 **7 Claims**



1. Underwater apparatus for acoustically inspecting a volume of a submerged object, comprising:

an underwater vehicle capable of transporting humans and equipment to a submerged object having an accessible surface;

a portable acoustical probe capable of being carried and easily applied to the surface of the submerged object by a diver for acoustically inspecting the interior of the object;

a data transmission and control cable of a desired length operatively interconnecting the portable acoustical probe with the underwater vehicle to enable the probe to be operated spaced from the underwater vehicle;

said portable acoustical probe having a generally two dimensional array of acoustical transducers for receiving transmit electrical pulse signals and in response thereto directing pulsed acoustical wave energy into the volume during a transmit mode and for receiving reflected pulsed acoustical wave energy from the volume and in response thereto generating received electrical pulse signals during a receive mode;

electronic scan control means operatively connected to the transducers (a) generating the transmit electrical pulse signals, (b) for selecting various combinations of the transducers with each combination of transducers associated with a portion of the volume having a selected focal point, (c) for adjusting the phases of the transmit electrical signals in relation to the relative distances between the selected transducers and the selected focal point during the transmit mode, (d) for mixing the phase adjusted transmit electrical pulse signals with the received pulse signals to focus the combination of the transducers on the corresponding selected focal point during the receive mode, and (e) for sequencing the combination of transducers during both the transmit and receive modes to sequentially scan portions of the interior to obtain high contrast acoustical information from such scanned portions;

visual display means in the underwater vehicle operatively connected to the electronic control means and responsive to the electrical signals for displaying a real-time visual image of the interior of the object.

4,212,259

MARINE VESSEL NOISE ATTENUATING STRUCTURE

Victor A. Webb; Arthur D. Wells, both of Coventry; Geoffrey C. Clarke, Rugby, and Charles P. R. Peecock, Harrow, all of England, assignors to Rolls-Royce Limited, London, England

Filed Dec. 15, 1978, Ser. No. 969,978

Claims priority, application United Kingdom, Dec. 22, 1977, 53882/77

Int. Cl.² E04F *17/04*

U.S. Cl. 115—73 **10 Claims**



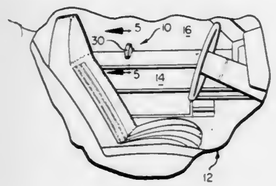
1. A marine vessel having a gas turbine engine power plant, said gas turbine engine power plant having an associated gas flow duct supported by structure of the marine vessel and located within a well in the vessel structure, said gas flow duct having a plurality of perforate portions interspaced with plain portions, a plurality of circumferentially arranged axially spaced non-porous channel members attached to said gas flow duct and axially spaced from each other along the gas flow duct adjacent each of said respective perforate portions, said channel members and said perforate portions of the gas flow duct together defining a plurality of trapezoidal section annular noise attenuating cells with said plain portions being positioned between adjacent cells, and at least one layer of heat insulating material surrounding the exterior of said non-porous channel members, and covering means surrounding said insulating material and containing the same, said covering means being secured to said gas flow duct.

4,212,260

AUTOMOBILE HEADLIGHT REMINDER DEVICE

Robert Splan, 900 E. Wilmette, Palatine, Ill. 60067

Filed Jun. 28, 1979, Ser. No. 53,067
Int. Cl.[2] B60Q *9/00*; G09B *7/18*
U.S. Cl. 116—28 R **7 Claims**



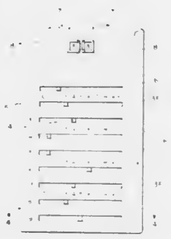
1. Apparatus for reminding a driver to turn off automobile headlights before locking an automobile door, comprising: a sheath member defining an enclosure for concealing an interior automobile door lock actuating post and removably mountable thereover, and a bracket member coupled to said sheath member and movable relative thereto for engaging an automobile window slot adjacent said door lock actuating post for maintaining said sheath member in a position for concealing said door lock actuating post, whereby said apparatus must be removed by the driver from the door lock actuating post in order to actuate the post to its locking position, thereby reminding the driver to turn off the automobile headlights before locking the door.

4,212,261

GOLF SCORE KEEPING DEVICE

John Gaetano, 1143 Crane St., Suite D, Menlo Park, Calif. 94025

Filed Jan. 25, 1979, Ser. No. 6,270
Int. Cl.[2] A63B *71/06*
U.S. Cl. 116—224 **4 Claims**



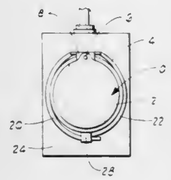
1. A device for keeping a golf score comprising:
a pair of rectangular oppositely faced panels joined at their periphery to define a space there between;
nine parallel horizontal slots positioned at regular intervals through the first of said panels and bearing graduations 1 through 9 opposite one end of each slot respectively;
nine parallel horizontal slots positioned at regular intervals through the second of said panels, said slots being staggered in relation to said slots in said first panel and bearing graduations of 10 through 18 opposite one end of each slot respectively;
numbers 1 to 10 positioned at equally spaced intervals along each of said slots; slide means positioned in said space between said panels disposed for horizontal movement along said slots and having an indicator means projecting through said slots;
said indicator means forming a part of said slide means;
a plurality of series of positive stops positioned along each side of said slots in said space between said panels disposed to arrest the movement of said slide means when said indicaor is opposite each of said numbers in turn;
said indicator means being disposed for motion in a direction perpendicular to said slots and said stops;
an enlarged section adjacent said indicator means and forming a part of said slide means and being wider than said slots;
said enlarged section forming a ledge upon said slide means and disposed for sliding engagement with said positive stops so that these can be only vertical movement of said enlarged section when said enlarged section is between adjacent pairs of said positive stops in any one series;
spring arms adjoining said enlarged section of said slide means and forming a part thereof;
legs positioned on the end of said spring arms disposed for sliding upon the interior surface of the oppositely spaced panel;
whereby depressing said indicator means causes said enlarged section to clear said positive stops and permits movement of said slide means in a horizontal direction, and releasing said indicator means causes said enlarged section and said indicator to move in a vertical direction between said positive stops thereby positioning said slide and said indicator means in a position opposite any desired one of said members along said slots and providing positive engagement of said indicator in said position.

4,212,262

UTILITY METER READER ALERT DEVICE

Bruce L. Gorrell, 157 N. Evergreen, Wichita, Kans. 67212

Filed Jan. 29, 1979, Ser. No. 7,349
Int. Cl.[2] G01D *11/26*; G09F *9/00*
U.S. Cl. 116—307 **4 Claims**



1. A utility meter reader alert device for alerting a customer of a utility company that his utility meter, having an outwardly extending face, has been read by the utility company, the device comprising:
a cover disposed in front of the glass face of the meter and dimensioned for covering the individual dials in the meter, the dials indicating the usage of the utility by the customer; and
attachment means for securing the cover to the outwardly extending glass face of the meter, the cover pivotally attached to the attachment means and parallel to the front of the face of the meter so that the cover may be rotated thereon to expose the individual dials in front of the meter when the meter has been read by the utility company.

4,212,263

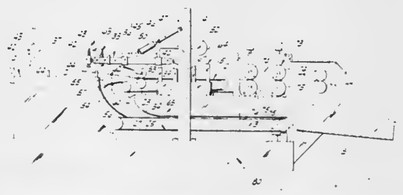
PRINTING PLATE PROCESSING MACHINE

Charles R. Hillhouse, Aurora, Mo., assignor to Tasope' Limited, Aurora, Mo.

Filed Nov. 15, 1978, Ser. No. 960,740
Int. Cl.[2] B05C *11/00*
U.S. Cl. 118—37 **10 Claims**

1. In a printing plate processing machine:
(a) a loading station for receiving a loading stack of alternately disposed printing plates and plate-separating paper sheets,
(b) a first conveyor means for receiving the printing plates,

(c) a second conveyor means for receiving the plate-separating paper sheets,
(d) feed means selectively transporting the plates and paper sheets alternately from the loading stack toward the first and second conveyor means,
(e) plate and paper sheet diverting means between the first and second conveyor means for alternately delivering the plates to the first conveyor means and the paper sheets to the second conveyor means,



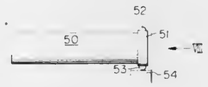
(f) plate-processing means for processing the plates after disposition on the first conveyor means, and
(g) a collecting station for receiving the same plates and same paper sheets from the first and second conveyor means respectively and for disposing the plates and paper sheets alternately in a single collecting stack after processing of the plates.

4,212,264

APPARATUS FOR SUPPLYING ELECTROPHOTOGRAPHIC DEVELOPER

Wilhelm Knechtel, Biebertal, and Taisuke Tokiwa, Fernwald, both of Fed. Rep. of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1978, Ser. No. 902,905
Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723805
Int. Cl.[2] G03G *15/08*
U.S. Cl. 118—653 **19 Claims**





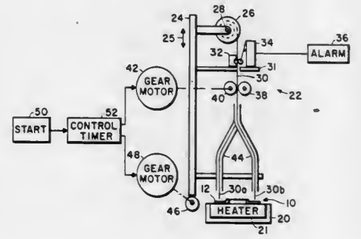
1. Electrophotographic developing apparatus comprising:
means for applying developer onto a surface to be developed;
means provided in a vicinity of said applying means for conveying developer to said applying means; and
means for supplying developer to said developer conveying means, said supplying means including a housing, a developer cartridge having an opening at one end and rotatably supported in said housing about its substantially horizontally oriented longitudinal axis, means for rotating said cartridge, and means for vibrating said cartridge in a direction different from the rotational direction of said cartridge, said vibrating means comprising a cam and a follower, both of which are provided at an end of said cartridge.

4,212,265

TINNING APPARATUS FOR MULTIPLE SOLDER SURFACES

Howard D. Buxton, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 31, 1978, Ser. No. 929,384
Int. Cl.[2] H01R *43/02*
U.S. Cl. 118—700 **3 Claims**



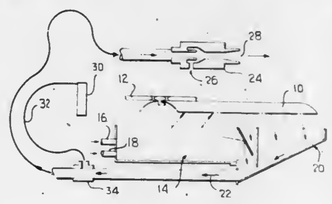
1. Apparatus for solder tinning a plurality of bonding surfaces simultaneously, the apparatus comprising in combination:
solder feeding means for depositing a predetermined quantity of solder simultaneously on each of the plurality of bonding surfaces;
preheater means for raising the temperature of the plurality of bonding surfaces to the melting temperature of said solder; and
timer means for controlling said solder feeding means to deposit said predetermined quantity of solder on each of the plurality of bonding surfaces.

4,212,266

CATCHER AND RETURN DEVICE FOR OVERSPRAYED POWDER

Robert D. Payne, Countryside; Fred E. Buczkowski, Cicero, and Wesley J. Szpitalak, Palos Park, all of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,158
Int. Cl.[3] B05B *5/08*; B05C *7/02, 19/00*
U.S. Cl. 118—712 **10 Claims**



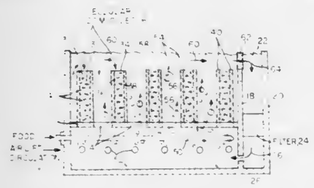
1. For use in an apparatus for applying a powder stripe to the interior of a tubular member, a catcher for separately receiving deflected and stray powder particles, said catcher comprising an upstanding mounting plate, a powder passage through an upper portion of said mounting plate for receiving stray powder particles, a catcher housing extending horizontally from said mounting plate in horizontal alignment with said powder passage, said catcher housing being closed with the exception of a horizontally extending open top and having a sloping bottom wall sloping downwardly towards said mounting plate, said catcher housing open top forming means for receiving deflected particles and a return passage through said mounting plate opening into said catcher housing adjacent said bottom wall.

4,212,267
INSECT STUDY STATION
Irvin G. Patterson, 2730 Hwy. 90 West, Seguin, Tex. 78155
Filed Dec. 8, 1978, Ser. No. 967,582
Int. Cl.[2] A01K *67/00*
U.S. Cl. 119—1 **5 Claims**



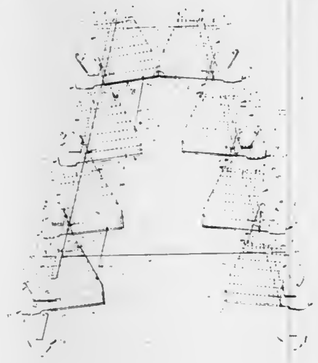
1. An insect study station comprising:
a. a base having a configuration adapted to telescopically engage and detachably retain an elongated cylinder,
b. a cylinder having a base end and a top end, the base end of said cylinder telescopically engaging said base,
c. a cap means enclosing the top end of said cylinder, said cap means further comprising:
(1) an undercap having constructed in its outer diameter,
(2) a cap sleeve penetrating and telescopically engaging said top end of said cylinder,
(3) said cap sleeve terminating in a cap stop,
(4) the interior of said undercap comprising a cap recess adapted to receive and retain a cotton ball,
(5) a multiplicity of apertures dispersed adjacent the periphery of said undercap,
(6) an overcap telescopically engaging and encasing said undercap,
(7) a multiplicity of apertures dispersed adjacent the periphery of said overcap, and
(8) the dispersal and spacing of said apertures in said overcap and said undercap being such as to provide for an open configuration when the apertures are aligned and a closed configuration when the apertures are staggered,
d. an indentation constructed in said base comprising a food cup opening into said cylinder.

4,212,268
AQUACULTURE HABITAT
Paul W. Chapman, Derry, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Jun. 26, 1978, Ser. No. 918,885
Int. Cl.[3] A01K *61/00*
U.S. Cl. 119—2 **8 Claims**



6. A method of providing food, air, and water to animal rearing compartments comprising the steps of:
providing in a tank of water compartments having openings and mesh means covering said openings;
positioning food distribution means beneath said compartments in said tank; and
providing air lift circulation means beneath said food distribution means, such that bubbles formed by said air lift circulation means carry food from the food distribution means into the vicinity of said mesh means.

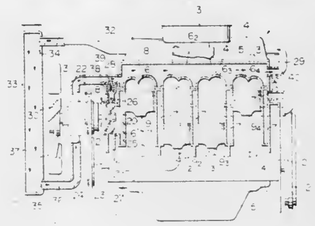
4,212,269
POULTRY CAGES
Charles A. White, Holland, and W. Ronald Williams, Saginaw, both of Mich., assignors to U.S. Industries, Inc., New York, N.Y.
Filed Jan. 24, 1978, Ser. No. 871,821
Int. Cl.[2] A01K *31/06*
U.S. Cl. 119—17 **14 Claims**



14. A poultry cage assembly comprising:
a plurality of vertically spaced rows of wire mesh cages each having a floor, a rear, a top, a front and partitions dividing the rows into separate cages;
a pair of spaced A-frames having upwardly inwardly extending legs;
means for mounting said rows of cages on said legs of and extending between said A-frames such that the junction of the floor and rear of the uppermost rows of cages contact one another;
means for securing said uppermost rows of cages to one another at said junction to provide support for the assembly between said legs; and
a plurality of hangers coupled between vertically spaced rows of cages of each side of said A-frame to provide vertical support for the rear portion of said cages.

4,212,270
COOLING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Kiyoshi Nakanishi, and Takeshi Okumura, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Sep. 22, 1977, Ser. No. 835,722
Claims priority, application Japan, May 24, 1977, 52-60063
Int. Cl.[2] F01P *7/16*
U.S. Cl. 123—41.09 **2 Claims**

1. A cooling system for an internal combustion engine which has a cylinder block and a cylinder head, comprising a first circuit means which circulates cooling water through said cylinder block, and a second circuit means which circulates cooling water through said cylinder head, wherein:
the first circuit means comprises a first water pump and a passage portion formed in said cylinder block,
and the second circuit means comprises a second water pump, a radiator, and a passage portion formed in said cylinder head,
further comprising: a first connecting passage means which connects a portion of said second circuit means located downstream of said radiator to a portion of said first circuit means located upstream of said first water pump, a second connecting passage means which connects a portion of said first circuit means located at the exit of said passage portion formed in said cylinder block to a portion of said second circuit means located at the exit of said cylinder head,
and a thermostat valve incorporated in said first connecting passage means which responds to the water temperature in said first circuit.

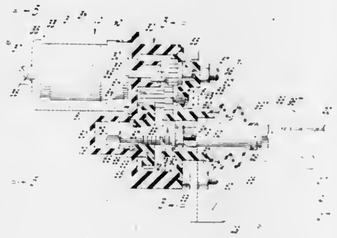


4,212,271
RADIAL TORQUE INTERNAL COMBUSTION ENGINE
Dale L. Rigterink, 237 Van Raalte Ave., Holland, Mich. 49423
Filed Jun. 1, 1978, Ser. No. 911,347
Int. Cl.[2] F02B *53/00*
U.S. Cl. 123—43 B **6 Claims**



1. In a rotary internal combustion engine including a housing having a plurality of combustion chambers formed therein; means including a supporting framework mounting said housing for rotation about an axis defined by a shaft member, said shaft member supporting said combustion chambers for rotation therewith, said chambers being formed in said housing circumferentially with respect to said axis; a plurality of pistons cooperably operable in said combustion chambers to cause said housing to rotate; means for supporting said pistons for movement in said chambers with respect to said housing, said supporting means including a sleeve member journaled on said shaft member, said pistons having a connecting rod attached thereto and to said sleeve, said pistons and said housing being alternately movable toward and away from each other with rotation of said housing between at least compression and power strokes; means forming fuel inlet and exhaust passageways communicating with said combustion chambers; biasing means associated with said pistons for urging said pistons in the same direction of movement as said housing for moving said pistons into said chambers in a compression stroke; ignition means for igniting a fuel mixture in said combustion chambers at a predetermined position of said pistons during said compression stroke to thereby initiate a power stroke; means for holding said pistons with respect to said frame during said power stroke to prevent retrograde movement of said pistons thereby to urge said housing to rotate about said axis, said holding means including a brake, said brake including a first portion fixed relative to said supporting framework and a second portion fixed relative to said sleeve member, said sleeve being operatively connected to said holding means, and means for engaging said first portion and said second portion to hold said pistons from movement during said power stroke, said first portion of said brake member comprising a pair of brake shoes positioned on each side of said second portion, said second portion comprising a disc fixed relative to said sleeve for movement therewith, said disc having surfaces thereon adapted for frictional engagement with said brake shoes; and means for sensing the position of said pistons with respect to said chambers for releasing said holding means allowing said pistons to rotate with said housing.

4,212,272
IDLE SPEED CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE
Rufus L. Hawk, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 9, 1978, Ser. No. 959,327
Int. Cl.[2] F02D *11/10*
U.S. Cl. 123—339 **3 Claims**



1. An idle speed control device for an internal combustion engine having a throttle valve control member that is spring biased in a valve closing direction, said device comprising housing means adapted to be mounted on the engine, a shaft supported by said housing means having a throttle stop at one end adapted to be engaged by and stop the throttle valve control member in various throttle valve idle positions as determined by the axial position of said shaft, said shaft and said housing means having cooperating shaft mounting means by which said shaft is free to move axially but cannot rotate, a reversible motor mounted on said housing means, speed reducing gear means mounted in said housing means including an annular gear that is driven at reduced speed by said motor and is free to move axially to a limited extent, said housing means including gear travel stop means for limiting axial movement of said annular gear, said shaft extending through and having extension and retraction stop means facing opposite sides of said annular gear, said annular gear having an internal thread, said shaft having a screw thread between its two said stop means engageable with the thread in said annular gear whereby said shaft is caused to retract to effect throttle valve closing movement on rotation of said annular gear in one direction by said motor and said shaft is caused to extend to effect throttle valve opening movement on rotation of said annular gear in the opposite direction by said motor, a pivot plate pivotally supported in said housing means, spring means for pivoting said pivot plate to engage and hold said annular

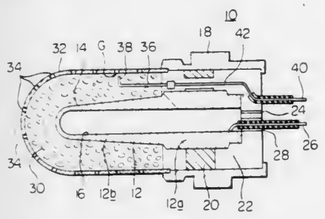
gear against one of said gear travel stop means when the throttle control member is removed from said throttle stop and yielding to permit said annular gear to move to engage and be held against the other of said gear travel stop means when the spring biased throttle control member engages said throttle stop, and switch means mounted in said housing means for controlling whether said motor can operate, said switch means including a switch blade connected to said pivot plate so as to close said switch means to permit motor operation when the pivot plate is forced to pivot and hold said annular gear against said other gear travel stop means by the spring biased throttle control member engaging said throttle stop and to open said switch means to prevent motor operation when the pivot plate is forced to pivot and hold said annular gear against said one gear travel stop means when the throttle control member is removed from said throttle stop.

4,212,273

AIR FUEL SUPPLY SYSTEM AND OXYGEN SENSOR THEREFOR

Hiroyuki Maruoka, No. 3-4-5, Kami-ohokanishi, Konan-ku, Yokohama City, Japan

Filed Oct. 7, 1977, Ser. No. 840,244
Claims priority, application Japan, Oct. 8, 1976, 51-121406
Int. Cl.[2] G01N *27/58;* F02M *7/00*
U.S. Cl. 123—438 **13 Claims**



1. A gas sensor comprising:
a casing;
a solid electrolyte disposed in said casing and having first and second surfaces which are respectively covered with first and second metallic electrodes, said first metallic electrode being adapted to be exposed to a gas subject to measurement and said second metallic electrode being adapted to be exposed to a reference gas;
supporting means supporting said electrolyte in said casing;
a layer of oxidizing catalyst disposed on said first metallic electrode to cover at least a portion of same; and
an electric heat generator separate and distinct from said catalyst and disposed in said layer of the catalyst for generating heat when electrically energized.

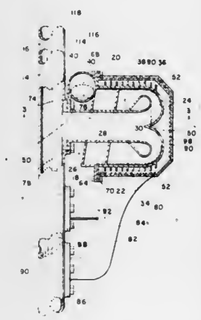
11. An air-fuel mixture supply system for an internal combustion engine having an intake conduit system in which a throttle valve is operatively arranged, comprising:
an air-fuel mixture supply means for controlling the amount of fuel fed into the engine in response to command signals applied thereto;
a control unit for applying said command signals to said air-fuel mixture supply means in response to information signals applied thereto;
an oxygen sensor disposed in said intake conduit system to project into an intake passage downstream of said throttle valve, said sensor producing said information signals by detecting the oxygen content in said intake passage and comprising a casing electrically and mechanically connected to said intake conduit system, an electrolyte disposed in said casing and having first and second surfaces which are respectively covered with first and second metallic electrodes, said first metallic electrode being adapted to be exposed to the interior of said intake passage and second metallic electrode being adapted to be exposed to a reference gas, an electrically conductive supporting member disposed in said casing to support said electrolyte while providing an electrical connection between said first metallic electrode and said casing, a layer of oxidizing catalyst disposed in said first metallic electrode to mantle said electrolyte while being exposed to the interior of said intake passage, and an electric heat generator separate and distinct from said catalyst and disposed in said layer of catalyst for generating heat when electrically energized; and
an electrical power source for energizing said heating means within a predetermined period of time after starting of said engine.

4,212,274

POLLUTION EMISSION CONTROL AND FUEL SAVING DEVICE FOR INTERNAL COMBUSTION ENGINES

Thomas E. Quick, 1616 Park Pl., Wichita, Kans. 67203

Continuation-in-part of Ser. No. 722,601, Sep. 13, 1976, abandoned, and a continuation of Ser. No. 454,475, Mar. 25, 1974, abandoned. This application Jan. 21, 1977, Ser. No. 761,340
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—548 **13 Claims**



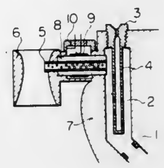
1. A method of treating the output stream of the carburetor of an internal combustion engine prior to introducing the same into the intake manifold of the engine so as to obtain a stream approaching equilibrium that is essentially liquid free and of substantially saturation composition, said method comprising the step of imparting angular momentum to the carburetor output stream and centrifuging vaporizable liquid droplets entrained therein against a surrounding shell solely by directing such stream into a spiral passageway defined in part by the surrounding shell and a partition wall disposed between and providing fluid separation between adjacent convolutions of the passageway, whereby the stream travels a spiral path having an axial component in one direction within the confines of the surrounding shell, the step of thereafter directing the stream exiting from the spiral passageway to the intake manifold along an exiting path that is radially within, separated from and having an axial component in a direction opposite to that of the spiral path, and the step of heating the exterior of the surrounding shell an amount approximately sufficient to vaporize all the liquid droplets centrifuged thereagainst, whereby angular momentum is initially imparted to the stream solely by reaction of the stream against the heated surrounding shell to the end that entrained liquid droplets impinge substantially solely upon a heated surface with impingement upon and coalescence of liquid droplets upon a relatively cool surface being thereby substantially avoided.

4,212,275

CARBURETOR

Mitsumasa Inoue, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 1, 1977, Ser. No. 847,611
Claims priority, application Japan, Nov. 5, 1976, 51-132459
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—549 **5 Claims**



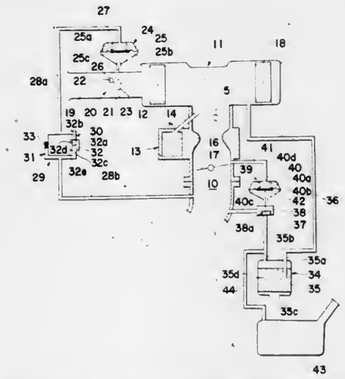
1. In an internal combustion engine having an induction system: an air-fuel mixture forming means and an, induction passage leading to said internal combustion engine; and means disposed within said air-fuel mixture forming means and said induction passage for adsorbing a portion of the fuel fed to said internal combustion engine in an unvaporized state and reintroducing said portion into said induction passage in a vaporized state, said means taking the form of
a porous ceramic body made of an electrically conductive material having a positive temperature coefficient and an apertured metal member disposed in said induction passage in contact with said porous ceramic body, which apertured metal member serves as one of two electrical contacts of said porous ceramic body and which apertured metal member further serves to receive said vaporized fuel through said apertures to mix the same with the air-fuel mixture passing through the induction passage.

4,212,276

AUTOMOBILE EVAPORATIVE EMISSION CONTROL DEVICE

Yoshihisa Kaneda, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jan. 19, 1979, Ser. No. 5,014
Claims priority, application Japan, Jan. 30, 1978, 53-10563[U]
Int. Cl.[2] F02M *33/02, 37/00*
U.S. Cl. 123—516 **8 Claims**



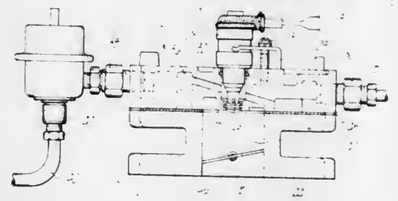
1. In combination with an internal combustion engine having an intake manifold leading to at least one combustion chamber and including a carburetor having a throttle valve disposed in the intake manifold for combining fuel from a fuel tank with primary air to form a combustible mixture to be supplied into the combustion chamber, an evaporative emission control device which comprises:
an air cleaner housing, the interior of which is fluid connected to one end of the intake manifold remote from the combustion chamber, said air cleaner housing having a primary air intake duct communicating the interior of the air cleaner housing to the atmosphere;
a gating valve means disposed in said primary air intake duct and operable to selectively close and open the primary air intake duct;
a first diaphragm valve assembly having a compartment divided into first and second working chambers by a diaphragm member, said second working chamber being in communication with the atmosphere and said diaphragm member being operatively connected to said gating valve means and displaceable between a first position, in which the gating valve means is held in position to close the primary air intake duct, and a second position in which the gating valve means is held in position to open the primary air intake duct;
a first fluid passage means extending between the first working chamber and the intake manifold and through which air contained in the first working chamber is drawn into the intake manifold, when a negative pressure is developed in the intake manifold, to create a negative pressure in the first working chamber to displace the diaphragm member towards the second position;
means disposed on said first fluid passage means and operable, when the negative pressure in the intake manifold decreases, for delaying a corresponding decrease of the negative pressure in the first working chamber for a predetermined time to maintain the gating valve means in the opened position; and
a purifying unit for collecting fuel vapors resulting from evaporation of fuel in an engine fuel system during an inoperative condition of the engine with no negative pressure developed in the intake manifold.

4,212,277

ECONOMY THROTTLE BODY FOR HOT FUEL HANDLING

Angelo R. Melotti, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 6, 1978, Ser. No. 883,553
Int. Cl.[2] F02M *39/00;* F02B *3/00;* B05B *1/30*
U.S. Cl. 123—434 **11 Claims**



1. A throttle body for attachment to a manifold of an internal combustion engine, said throttle body comprising:
an upper throttle body member having integral fuel passages for the delivery of pressurized fuel to at least one air induction bore disposed therethrough and means for mounting a fuel injector in the air flow path of that bore, said fuel injector operable to meter said pressurized fuel from said fuel passages;
a lower throttle body member, adapted to mount between said upper throttle body and the manifold of the internal combustion engine, having said bore further disposed therethrough and including a throttle means located in said bore to control the amount of air flow thereghrough; and

a thermal barrier separating said upper member from said lower member to prevent substantial thermal energy from reaching the fuel passages of the upper member from the manifold and thereby causing hot fuel handling problems.

4,212,278

SAFETY DEVICE FOR DIESEL ENGINES

Norbert Eisinger, Mannheim; Paul Wesch, Ilvesheim, and Matthias Dzsida, Mannheim, all of Fed. Rep. of Germany, assignors to Motoren-Werke Mannheim AG, Mannheim, Fed. Rep. of Germany

Filed Jul. 26, 1978, Ser. No. 928,075

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734215

Int. Cl.³ F02B *77/08*

U.S. Cl. 123—319 **10 Claims**



1. A safety device for a diesel engine and responding to an abnormal change of ratio of useful torque delivered by said diesel engine to fuel quantity per power stroke, said fuel quantity per power stroke being defined by position of an injection pump control rod, said safety device comprising: transducer means converting control rod displacement into a control signal which is at least substantially proportional to said fuel quantity per power stroke; correcting means; and crank drive means for converting control rod displacement into a rotation of said correcting means.

4,212,279

ELECTRONIC-MECHANICAL GOVERNOR FOR DIESEL ENGINES

Yoshio Ohtani, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,498

Claims priority, application Japan, Jul. 15, 1977, 52-84043

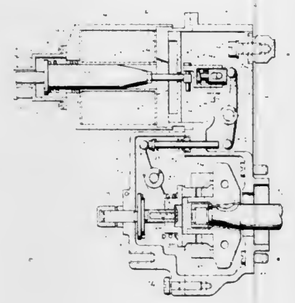
Int. Cl.³ F02M *59/20*

U.S. Cl. 123—352 **8 Claims**

1. A governor system for a diesel engine, the engine having an accelerator and a fuel-injection pump which has a fuel control rack, the governor system comprising:

a centrifugal governing means for an upper speed range of the engine, said centrifugal governing means having flyweights displaceable as a function of engine r.p.m. and a shifter movable in response to a displacement of the flyweights;

an electronic governing means for a lower speed range of the engine, comprising an electromagnetic actuator including an electromagnetic coil, a plunger displaceable in response to the magnetic force of said coil and having a tapered end, a magnetic pole member having an aperture of a conical section corresponding to said tapered end of said plunger for passing said plunger therethrough, and means for permanently urging said plunger in a direction opposite to said magnetic pole member against the magnetic force of said coil; and an electronic control circuit means for driving said electromagnetic actuator, comprising means for generating signals individually representing an amount of operation of said accelerator provided in the engine, an engine speed and a position of said plunger, and an amplifier coupled to said signal generating means for supplying a control signal based upon said generated signals to said electromagnetic coil to actuate the same; a



first coupling means permanently coupling said plunger with said fuel control rack of said fuel-injection pump; and a second coupling means adapted to connect said shifter of said centrifugal governing means with said control rack to transmit a displacement of said flyweights thereto when the engine speed has exceeded a predetermined speed in said upper speed range of the engine, and to keep said shifter disengaged from said control rack below said predetermined speed.

4,212,280

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

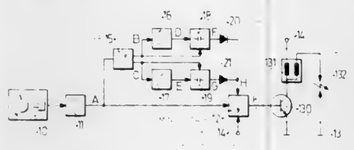
Jürgen Fresow, Schwieberdingen, and Bert Wurst, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 29, 1977, Ser. No. 865,577

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1977, 2700676

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—611 **8 Claims**



1. Ignition system for an internal combustion engine having an ignition coil (**131**);

a controlled switch (**130**) serially connected with the primary of the ignition coil (**131**) and controlling the commencement and interruption of current flow therethrough;

a control signal source (**10, 11**) coupled for rotation with the engine and providing ignition control pulses to determine the opening instant of said controlled switch (**130**) and hence determining the ignition instant of said system;

a timing circuit (**12**) connected to and controlling the time instant of connection of the controlled switch (**130**) for said current flow therethrough and through the ignition coil;

connection timing control means (**16, 18, 20; 17, 19, 21**) responsive to the recurrence rate of ignition pulses providing a control signal representative of said recurrence rate, and hence speed of the engine, connected to and controlling the timing circuit (**12**) to thereby control the time instant of connection of the controlled switch (**130**) subsequent to a prior opening thereof as a function of engine speed including

an integrator means (**16, 17**) integrating during the time of subsequent recurrent ignition pulses, and providing said control signal as a function of the integration time to said timing circuit, the timing circuit commanding closing after a prior opening at time instants which variably follow said prior opening as the recurrence rate of said ignition pulses changes, to maintain the closed or ON-time of said controlled switch (**130**) essentially constant as the speed of the engine varies;

and further including a memory means connected to the integrator means and storing a signal representative of the integrated value integrated by said integrator means over the time between successive pulses, the memory being connected to said timing circuit to control timing intervai thereof.

4,212,281

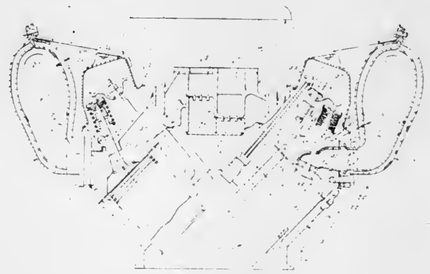
LOW WEIGHT RECIPROCATING ENGINE

Robert P. Ernest, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 753,347, Dec. 22, 1976, Pat. No. 4,136,648. This application Aug. 14, 1978, Ser. No. 933,340

Int. Cl.³ F02B *75/22*

U.S. Cl. 123—193 H **4 Claims**



1. A head for an internal combustion engine, comprising:

(a) a one piece integral casting comprised of a nonallotropic metal having a thermal conductivity of at least 0.25 cal./cm²/cm/sec./° C. and less than 5% alloying ingredients, said casting having a flat deck bottom and walls defining a plurality of aligned cylinder roofs extending upwardly from said deck, said casting further having walls defining a plurality of intake and exhaust passages extending through certain of said roof walls, and said casting further having walls defining valve guide cylinders associated with each exhaust intake passage,

(b) means defining limited channels for cooling fluid to flow in one path in series along the sides of each of said roof walls and in another path in series past each of said valve guide cylinders, said channels opening upon said deck substantially along their entire length, and

(c) each cylinder wall having an integral non-allotropic metal alloy rich zone extending along at least the exposed surface of said valve guide cylinder, said alloy rich zone being comprised of an alloy mixture having ingredients selected from the group consisting of silicon, copper, nickel, carbon, tungsten, molybdenum, zirconium, vanadium, magnesium, zinc, chromium, cobalt, manganese and titanium, the remainder being said non-allotropic metal.

4,212,282

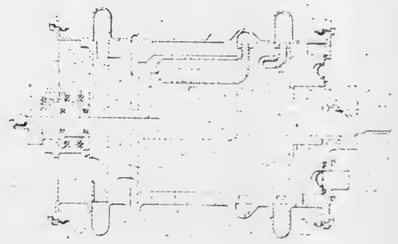
POSITIVE DISPLACEMENT, CONTINUOUS COMBUSTION ROTARY ENGINE

Agaton P. Apanovitch, 1060 Poquonock Ave., Windsor, Conn. 06095

Filed Sep. 19, 1978, Ser. No. 943,701

Int. Cl.³ F01C *1/00;* **F02B** *53/00*

U.S. Cl. 123—204 **21 Claims**



1. A rotary device constituting a pump or motor and including:

a casing having an annular groove on its inner surface forming a gas path;

end caps on the casing having inlet and outlet openings, one in each cap;

a rotor within the casing and journalled in the caps and having a projecting piston thereon to fit within the annular groove and to move therein as the rotor turns; said rotor being shorter than the casing to define inlet and outlet chambers at opposite ends of the rotor;

said rotor having inlet and outlet passages therein, each passage extending from one end wall of the rotor and terminating in the periphery of the rotor to communicate with said groove, said inlet and outlet passages being adjacent to and on opposite sides of the piston; and connecting with said inlet and outlet chambers;

at least two valves axially movable in the casing and positioned to extend across and close said annular groove, each of said valves having an opening therein comparable in dimension to the piston for the piston to pass therethrough; and each valve having axially spaced inwardly extending projections located in said chambers; and

cam means on each end of the rotor adjacent the projections and acting on the projections to move the valves axially to align the opening therein with the annular groove as the piston approaches the valves and to close the groove after the piston passes the valves; said cam means being located in said chambers.

4,212,283

ROTARY ENGINE

Ong S. Hoo, 3-17-21, Koishikawa Bunkyo-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 542,681, Jan. 20, 1975, abandoned. This application May 2, 1977, Ser. No. 792,551

Claims priority, application Japan, Jan. 25, 1974, 49-11271

Int. Cl.³ F02B *53/12*

U.S. Cl. 123—210 **3 Claims**

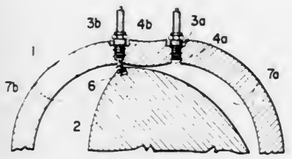
1. A rotary internal combustion engine, comprising:

a wall structure defining a combustion chamber, having means for supplying an air-fuel mixture to the chamber and for withdrawing products of combustion from the chamber, the chamber having a trochoidal inner surface;

a substantially triangular rotor having a power output shaft eccentrically secured thereto, the shaft being mounted centrally in and extending from the chamber, the rotor having three apex edges in contact with said inner surface so that on combustion of the air-fuel mixture in the chamber, the rotor performs a planetary motion in a direction

along said inner surface, with the apex edges sliding along the surface; and

an ignition system, comprising, a plug channel extending through the wall, located at a position before a pressure turning point having a restricted opening in the trochoidal inner surface, and an ignition spark plug structure having



a spark-producing electrode disposed in said channel and spaced from said inner surface, said opening being narrower in said direction than in a direction parallel to the shaft,

whereby combustion of the air-fuel mixture in the chamber is facilitated.

4,212,284

PNEUMATICALLY-OPERATED BALL PROJECTING DEVICE

Richard Speer, Oak Hall, Ware Neck, Va. 23178

Continuation-in-part of Ser. No. 764,197, Jan. 31, 1977, Pat. No. 4,094,294. This application Apr. 6, 1978, Ser. No. 894,162

Int. Cl.² F41F *1/04*

U.S. Cl. 124—56 **29 Claims**

1. In a pneumatic device for projecting a ball, the device comprising a ball-directing tube defining a generally tubular inner space; gas pressure supply means operatively connected to a first end of the tube to provide gas under pressure thereto; means for feeding a ball into the tube for movement along the tubular inner space in a direction from the first end of the tube toward the second end of the tube; and detent means in the tube for transiently restraining the movement of a ball therethrough, the improvement comprising providing a pneumatically operated detent means, the detent means comprises:

an inflatable member within said tube, the member having a first inflated configuration extending into the tubular inner space, defining a substantially pressure-tight detent volume, so as to constrict the tubular inner space and thus restrain the movement of a ball therealong, and a second, deflated configuration, permitting the movement of a ball along the tubular inner space;

a pressure chamber, the gas pressure in such pressure chamber being increased when a ball is in place in the tubular inner space and is restrained by the detent member in the inflated configuration, while gas under pressure is being provided to the first end of the tube;

pressure valve means between the detent volume, and the pressure chamber;

pressure bias means operatively connected to the pressure valve means to bias the pressure valve means towards an open position;

a first pressure-responsive member operatively connected to the pressure valve means and acting against the bias means, tending to move the pressure valve means towards a closed position;

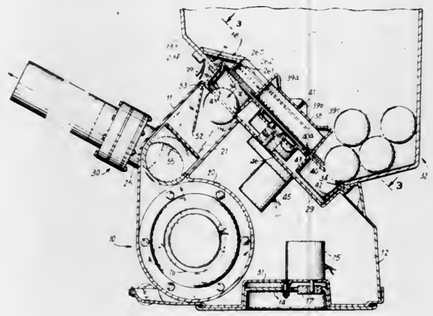
exhaust valve means between the detent volume and atmosphere;

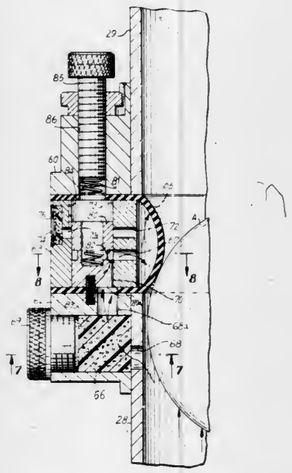
exhaust bias means operatively connected to the exhaust valve means to bias the exhaust valve means towards a closed position;

a second pressure-responsive member operatively connected to the exhaust valve means and acting against the exhaust bias means, tending to move the exhaust valve means towards an open position; and

pressure-connecting means between the pressure-responsive members and the pressure chamber;

whereby at a predetermined pressure in the pressure chamber, the pressure valve means is moved into the closed position, and the exhaust valve means is moved into the open position, so as to substantially immediately permit the deflation of the inflatable member when a ball is pressed thereagainst and permit passage of the ball along the tubular inner space.





4,212,285

DART GUN AND DART THEREFOR

Bernard J. Cagan, Los Angeles, and Kenneth L. McQuary, Hermosa Beach, both of Calif., assignors to Placo Products Company, Torrance, Calif.

Filed Jan. 31, 1978, Ser. No. 874,032

Int. Cl.² F41B *11/00*

U.S. Cl. 124—67 **4 Claims**

1. In an air operated dart gun, the combination of:

(a) an air cylinder;

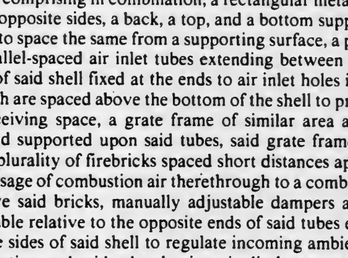
(b) a dart barrel connected to said cylinder;

(c) a piston in said cylinder;

(d) means for propelling said piston in said cylinder toward said dart barrel to displace air under pressure from said dart barrel;

(e) a one-piece dart comprising a shaft having a forward end provided with an integral, circular suction cup larger than said shaft and having a rearward end insertable into said dart barrel and provided with an integral propelling element larger than said shaft and complementary to said dart barrel;

(f) barrier means for positively preventing physical contact between said piston and said propelling element of said dart, and for making physical contact between said piston and a foreign object in said dart barrel virtually impossible; and



(g) serpentine shaped air passage means connecting said cylinder to said dart barrel and having a laterally offset portion bypassing said barrier means and making insertion of a foreign object around said barrier means into contact with said piston virtually impossible.

4,212,286

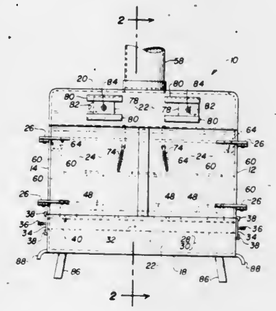
SHEET METAL FIREPLACE TYPE STOVE

Robert K. Shane, 587 W. Market St., York, Pa. 17404, and Glenn E. White, R.D. 4 Pine St., Dillsburg, Pa. 17019

Filed Dec. 1, 1978, Ser. No. 965,619

Int. Cl.² F24C *1/14*

U.S. Cl. 126—77 **6 Claims**



1. A sheet metal stove for burning logs and other types of wood fuel comprising in combination, a rectangular metal shell including opposite sides, a back, a top, and a bottom supported upon legs to space the same from a supporting surface, a plurality of parallel-spaced air inlet tubes extending between opposite sides of said shell fixed at the ends to air inlet holes in said sides which are spaced above the bottom of the shell to provide an ash-receiving space, a grate frame of similar area as said bottom and supported upon said tubes, said grate frame supporting a plurality of firebricks spaced short distances apart to permit passage of combustion air therethrough to a combustion zone above said bricks, manually adjustable dampers adjustably movable relative to the opposite ends of said tubes exteriorly of the sides of said shell to regulate incoming ambient air for combustion and said tubes having air discharge openings intermediately of the ends thereof to provide air by convection for combustion to rise through said spaces between the edges of said firebricks upon said frame to fuel when supported thereon, a metal deflector plate extending between the sides of said shell and extending upwardly and outwardly from the rear wall of said shell toward the front thereof, the lower edge of said deflector being spaced a limited distance above the inner edge of said grate and the upper edge being spaced from the top of said shell and from the front suitable distances to provide discharge of combustion products to a flue opening in said top of said shell, front door means hinged to the front of said shell and covering a front opening when closed, additional manually-operable damper means in said front above said front door means regulatable relative to said damper means for the ends of said tubes to control the combustion of fuel and effect economy thereof by extending the burning thereof, additional firebricks positioned vertically across said back and ends of said shell, and means attached to said back and ends of said shell to support said additional firebricks.

4,212,287

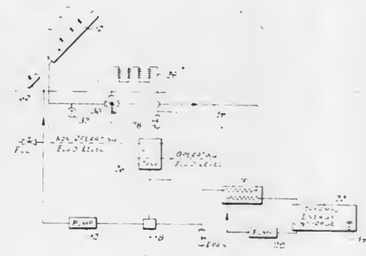
INSOLATION INTEGRATOR

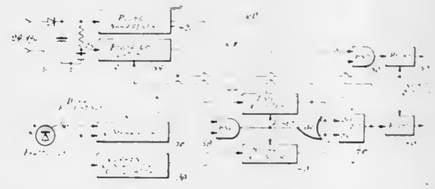
John J. Dougherty, Norristown, and George T. Rudge, Lansdale, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Aug. 24, 1978, Ser. No. 936,626

Int. Cl.² F24J *3/02*; **H01L** *31/00*; **H01J** *39/12*

U.S. Cl. 126—419 **4 Claims**





1. In a solar collector system wherein a fluid is circulated through a solar energy collector by a fluid impeller, a control arrangement comprising:

insolation detector means for producing an insolation signal, the magnitude of which is proportional to the rate of the insolation;

first pulse producing means for producing first pulses at a frequency proportional to the magnitude of said insolation signal;

first counter means connected to receive said first pulses and to produce an output when its capacity is reached;

second pulse producing means for producing second pulses at a fixed rate;

second counter means connected to receive said second pulses and to produce an output when its capacity is reached;

said first and second counter means being connected to be reset upon receiving the output pulse from either said first or second counter means; and

actuating means responsive to an output from said first counter means to turn on said fluid impeller and responsive to an output from said second counter means to turn off said fluid impeller.

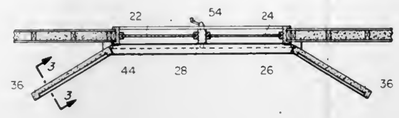
4,212,288
WINDOW-MOUNTED SOLAR HEATING AND HUMIDIFYING DEVICE
Vincent B. Lipinski, P.O. Box 41, Chaska, Minn. 55318
Filed Jun. 7, 1978, Ser. No. 913,509
Int. Cl.² F24J *3/02*
U.S. Cl. 126—428 **7 Claims**

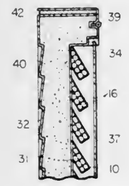


1. A solar heating and humidifying device for heating a building through a window, the device comprising:
- a transparent housing having an open back and bottom for attachment to a building wall having a window therein such that said back covers a portion of the wall including the window and said open bottom covers and encloses a portion of the ground adjacent the building,
- means adjacent said bottom for regulating and restricting the intake of air into said housing, said means comprising, an automotive type cylindrical air filter having an outer circumference, a portion of said circumference being exposed to the outside air, and said inlet regulating means comprises an arcuate door located adjacent said circumference and circumferentially slidable thereover between a first position uncovering said portion and allowing air flow through said filter and a second position covering said portion thereby preventing flow through said filter,
- a heat-storing framework substantially conforming in shape to said housing and located within said housing,
- a heat and moisture absorbing material located on said framework in heat-transferring relation thereto,
- means adjacent the upper end of said housing for regulating the outlet flow of heated and moisturized air out of said housing and through the window.

4,212,289
SOLAR SHUTTER OR BLIND SYSTEM FOR WINDOWS
Raymond T. Hebert, P.O. Box 134, Saratoga, Calif. 95070
Filed Aug. 24, 1978, Ser. No. 936,374
Int. Cl.² F24J *3/02*
U.S. Cl. 126—428 **5 Claims**

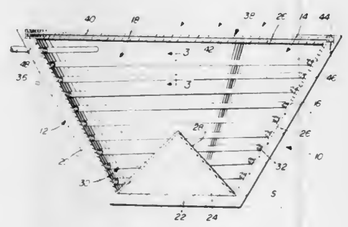
1. A solar shutter system adapted to be exteriorly mounted adjacent a building window comprising a plurality of vanes each said vane having a plurality of elongate channels formed therein, a phase change material disposed and sealed within each of said channels, said phase change material selected to have a solid to liquid transition slightly above desired building temperature and a high heat of fusion associated with said transition, means for mounting said vanes in a spaced parallel array with the elongate dimension thereof horizontal to form a generally planar shutter array approximately the same size as the associated window, means for mounting said shutter for pivotal movement toward and away from the associated window from a position immediately adjacent thereto so that the sides of the vanes exposed when the shutter is fully opened are reversed upon closure to face inwardly toward said window space when the same is closed over the window, and insulation means disposed on the rear side of said planar array so that whenever the shutter is closed heat loss through the window





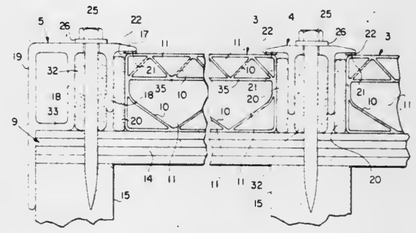
and from the vanes to the outside is minimized while heat is being delivered to the building.

4,212,290
SOLAR COLLECTOR
Warren L. Warnken, R.R. #2, Box 316 13225 Cheyenne Ct., Pine, Colo. 80470
Filed Mar. 6, 1978, Ser. No. 884,626
Int. Cl.² F24J *3/02*
U.S. Cl. 126—438 **8 Claims**



1. A solar collector, comprising, in combination:
(a) a body member provided with an upwardly opening recess, said recess having a frust-conical inner surface;
(b) heat exchanger means arranged on the surface for receiving radiation and heating a fluid medium contained in the heat exchanger means;
(c) reflector means arranged in the recess for distributing impinging solar radiation to the heat exchanger means;
said reflector means comprising a conical surface formed in a bottom portion of the recess and arranged converging to a point upwardly toward the opening of the recess, said conical surface being reflective to reflect impinging radiation evenly onto the inner surface of said recess and said heat exchanger means.

4,212,291
BATTEN FOR MOUNTING A UNITARY SOLAR COLLECTOR PANEL
Robert A. Erb, Valley Forge, Pa., assignor to The Franklin Institute, Philadelphia, Pa.
Continuation-in-part of Ser. No. 645,648, Dec. 31, 1975, Pat. No. 4,114,597. This application Aug. 3, 1978, Ser. No. 930,796
Int. Cl.² F24J *3/02;* **E04C** *1/34*
U.S. Cl. 126—445 **27 Claims**



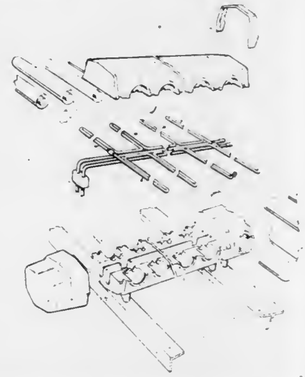
5. A batten which retains juxtaposed unitary, coextruded, synthetic thermoplastic solar collector panels to a structure for assembly of a solar thermal energy collector system thereon, which batten comprises
- a substantially horizontal retention member adapted to extend over and engage a top portion of the juxtaposed collector panels which are adjacent to the batten;
- a pair of leg members in contact with the retention member, which, in cooperation with the retention member, are adapted to engage the sides of adjacent collector panels and to mount the collector panels onto the structure while allowing for thermal expansion of the collector panels in a lengthwise and crosswise direction and to minimize bowing of the collector panels out of their normally planar configuration; and
- a compressible pad positioned between at least one of the leg members and the outer edge of the nearest adjacent collector panel.

4,212,292
SOLAR COLLECTOR
Charles P. Reinert, Garvin, Minn., assignor to Solarein, Inc., Buffalo, Minn.
Continuation-in-part of Ser. No. 806,905, Jun. 15, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 958,352
Int. Cl.² F24J *3/02*
U.S. Cl. 126—449 **12 Claims**



1. A solar collector for collecting solar energy in combination with a building having a wall structure including a wall element comprising:
- a light transmissive member mounted on said wall and adapted to receive solar heat energy therethrough;
- said light transmissive member defining a central plane and being disposed in spaced relation with respect to said wall element and cooperating with the latter to define a chamber therebetween,
- a heat absorber comprising a fibrous, porous mat substantially filling the volumetric space defining said chamber, said mat having a thickness dimension generally perpendicular to the light transmissive member and a longitudinal dimension generally parallel to the central plane, and said mat absorbing solar heat transmitted through said light transmissive member, said fibrous mat being substantially uniform in density and having an overall density within the range of 0.12 td_f and 0.8 td_f, where t is the fiber thickness and d_f is the density of the material comprising the fiber,
- an inlet and an outlet for said chamber spaced apart in direction along the longitudinal dimension of the mat through which air is directed to be circulated through the porous fibrous mat fibers whereby the air will be heated by surface contact with the fibers as the air is circulated therethrough.

4,212,293
MODULAR TUBULAR SOLAR ENERGY COLLECTOR APPARATUS
Duane C. Nugent, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 737,364, Nov. 1, 1976, Pat. No. 4,120,285. This application Apr. 7, 1978, Ser. No. 894,315
Int. Cl.² F24J *3/02*
U.S. Cl. 126—450 **7 Claims**



1. A manifold apparatus for plural tubular solar energy collectors comprising a complementary pair of longitudinally split, mating and complementary elongated manifold members each comprised of a low density cellular insulating material and having a cavity means defined therein, the split pair of said members when juxtaposed in assembled position providing (1) plural apertures extending laterally into the manifold for receiving said tubular solar collectors in an external laterally dependent relationship therewith, (2) a cavity means housing metal fluid conduit elements for circulating a heat exchange fluid through said tubular collectors, said conduit elements extending transversely and longitudinally along the manifold, said cavity means aligned with and extending into an aperture of the manifold, and (3) a skin layer of a fiberglas reinforced polymeric thermosetting material over the exterior surface of said split, complementary manifold members, said skin layer including plural aperture forming flanges and a grommet gasket in each said flange for annularly, sealingly engaging said tubular solar collectors, and marginal overlapping, mating portions along an overlapping perimeter seam line, thereby covering the insulation at the mating seam line of said complementary split pair of said members.

4,212,294

ORTHOPEDIC FRACTURE FIXATION DEVICE

Frank P. Murphy, 5727 Stratford Lane, Lakeland, Fla.

Filed Mar. 15, 1979, Ser. No. 20,806
Int. Cl.³ A61B *17/18;* **A61F** *5/04*
U.S. Cl. 128—92 BC **5 Claims**



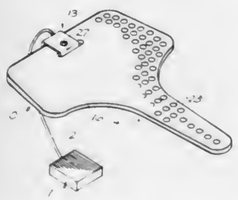
1. An orthopedic fixation device primarily designed to accomplish a three point fixation of a bone fragment relative to a main part of a fractured bone and comprising in combination: a first fixation member being substantially rigid and including an internally threaded aperture formed therein intermediate its opposite ends, and having a head at a proximal end thereof, said first fixation member further including an externally threaded surface portion formed on an exterior surface of said first fixation member between said internally threaded aperture and the distal end of said first fixation member, said externally threaded surface portion being adapted to be disposed to securely engage a predetermined portion of the main part of the fractured bone, whereby said first fixation member is adapted to be mounted on the interior of the main part of the fractured bone; a second fixation member comprising an elongated, substantially flexible pin having an externally threaded surface portion extending along a predetermined portion of the length thereof, said pin having a transverse dimension along said externally threaded surface portion sufficient to accomplish threaded attachment within said aperture of said first fixation member when disposed in aligned engaging relation therewith, said second fixation member adapted to be disposed on the interior of both the bone fragment and the main part of the fractured bone and to extend along the longitudinal dimension of the main part of the fractured bone on the interior thereof and into anchoring engagement with said first fixation member, whereby inspection and fixation of the bone fragment and the main part of the fractured bone is accomplished.

4,212,295

MOISTURE RESPONSIVE PAD FOR TREATMENT OF ENURESIS

Joe W. Snyder, Newberg, Oreg., assignor to Nite Train-R Enterprises, Inc., Newberg, Oreg.

Filed May 12, 1978, Ser. No. 905,192
Int. Cl.² A61B *19/00;* **H01H** *29/00*
U.S. Cl. 128—138 A **3 Claims**



1. A moisture responsive pad for signaling involuntary emission of droplets of urine when worn by a user and used in combination with an electrically activated signaling apparatus, comprising:

a central insulating layer formed as a sheet of flexible, nonabsorbent closed cell elastomeric foam material having a constant thickness between oppositely facing parallel surfaces, the central layer being compressible and electrically nonconductive;

first and second electrode layers each comprising a continuous sheet of flexible nonabsorbent liquid impervious material having an electrically conductive surface;

said first electrode layer being bonded to a first surface of said central layer;

said first electrode layer and said central insulating layer having a plurality of discrete open apertures formed therethrough in corresponding registration with one another;

said apertures having diameters less than the thickness of the central insulating layer;

said second electrode layer being bonded to the remaining surface of said central insulating layer such that the conductive surface contacts the central insulating layer;

the peripheral configurations of the first and second electrode layers corresponding in both size and shape to the peripheral configuration of the central insulating layer, whereby the respective electrically conductive surfaces of said first and second electrode layers are spaced apart;

said pad having a contoured peripheral configuration including a wide upper section and a protruding narrow lower section centered thereon, enabling the pad to be fitted within the crotch of an undergarment by a user;

said second electrode layer being a continuous noninterrupted sheet of material sealing off the apertures of said center insulating layer along said remaining surface thereof; and

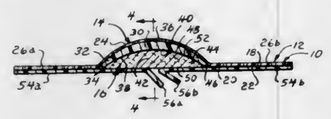
wherein the walls of the open apertures of the central closed cell elastomeric foam insulating layer have uniformly roughened surfaces extending between the electrode layers which assist in spreading the droplets of urine across the thickness of the insulating layer to provide an electrically conductive path between the first and second electrode layers.

4,212,296

BANDAGE WITH PROTECTIVE MEMBER

Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Apr. 20, 1978, Ser. No. 898,003
Int. Cl.² A61L *15/00*
U.S. Cl. 128—156 **6 Claims**



1. A bandage comprising:

a tape strip having a back surface, a front surface, adhesive on said front surface, a central portion, and a pair of opposed end portions extending from said central portion for securing the bandage to a patient;

a protective member of foam material having a central region of enlarged thickness and an edge area tapering from said central region to an outer edge extending peripherally around the protective member, said protective member having a generally convex back surface secured to the front surface of said strip central portion with said protective member edge generally aligned with the front surface of said strip end portions, and said protective member having a generally concave front surface defining a cavity facing away from said strip central portion; and

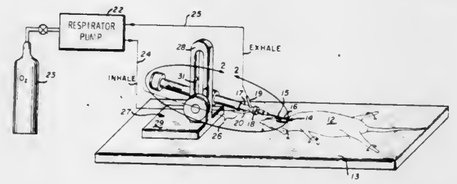
an absorbent pad having a central region of enlarged thickness and an edge area tapering from the pad central region toward an outer edge extending peripherally around the pad, said pad having a generally convex back surface secured to the front surface of the protective member with said pad received in and substantially filling said cavity, said outer edge of the pad being located adjacent the outer edge of the protective member, and said pad having a generally planar front surface generally aligned with the front surface of said strip end portions.

4,212,297

MICRO-FLUID EXCHANGE COUPLING APPARATUS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; John E. Johnson, Jr., Baltimore, Md., and Paul F. Swartz, San Carlos, Calif.

Filed Oct. 16, 1978, Ser. No. 951,422
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—207.14 **1 Claim**



1. In a micro-fluid exchange apparatus for exchanging fluid within an organ of a small animal such as a rat or mouse via the intermediary of a hollow needle for penetrating a fluid conduit of the small animal for connecting the hollow needle in fluid exchanging relation with the fluid conduit such as a trachea or blood vessel of the small animal;

plenum means comprising a chamber having inlet and outlet port means for connection in fluid communication with the hollow needle for passage of fluid therethrough into and out of the fluid conduit of the small animal via the intermediary of the hollow needle;

pedestal means for pivotably holding the hollow needle at any one of a selected number of angles of inclination relative to a reference base support to which the small animal is to be held during the procedure;

translating means for translating the hollow needle into the fluid conduit of the small animal or along the longitudinal axis of the elongated hollow needle;

said translating means including an elongated hollow sleeve adapted to be secured to said pedestal means, a drive rod axially translatable within said sleeve means, key means for keying said drive rod means to said sleeve means to allow axial translation therewithin without substantial rotation therebetween;

means for coupling the hollow needle and said plenum means to said drive rod for axial translation therewith;

said sleeve means including a threaded portion;

rotatable drive means having a threaded portion for mating with said threaded portion of said sleeve means for axial translation within said sleeve means for effecting relative rotation between said sleeve means and said rotatable drive means;

means for coupling said rotatable drive means to said drive rod; and

readout means coupled to said drive rod for axial translation therewith for reading out the axial position of said drive rod relative to said sleeve means.

4,212,298

THERMODILUTION INJECTOR

Walter A. Gezari, Killingworth, Conn., assignor to Hart Associates, Inc., East Hartford, Conn.

Continuation-in-part of Ser. No. 735,340, Oct. 26, 1976, abandoned. This application Oct. 20, 1977, Ser. No. 843,333
Int. Cl.² A61M *5/00*
U.S. Cl. 128—215 **23 Claims**

1. An injector for delivering injectate to a patient including:

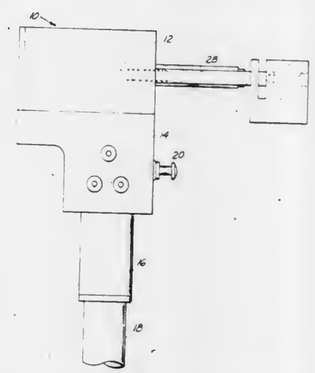
a body;

support means on said body for receiving a syringe;

actuator means in said body responsive to pressurized fluid to actuate said syringe, said actuator means having a movable output member;

connecting means for connecting said actuator means output member to a syringe in said support means;

a source of pressurized fluid for said actuator means, said source of pressurized fluid being internally contained in said body;



regulating means in said body for maintaining at a substantially constant level the pressure of pressurized fluid delivered from said pressurized fluid source in said body to said actuator means whereby said actuator means output member will move at a substantially constant rate; and

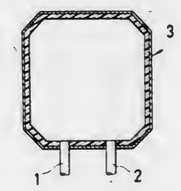
control means in said body for controlling delivery of the pressurized fluid to said actuator means.

4,212,299

CONTAINER BAG

Shyoji Yokokoji, Sayama, and Kazuhisa Hoshino, Ichikawa, both of Japan, assignors to Toppan Printing Co., Ltd., Japan

Filed Jun. 2, 1978, Ser. No. 912,082
Claims priority, application Japan, Jun. 7, 1977, 52-67041; Jan. 26, 1978, 53-7658; Feb. 6, 1978, 53-12101
Int. Cl.² A61J *1/00;* **A61M** *5/00*
U.S. Cl. 128—272 **5 Claims**

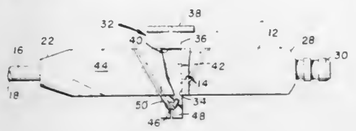


1. A container bag for preserving blood or its component materials at temperatures in the range of liquid nitrogen temperatures, which container bag comprises an inner layer of ethylene-tetrafluoroethylene copolymer, and an outer layer of a member selected from the group consisting of perfluoroalkoxy resin, polytetrafluoroethylene, and tetrafluoroethylene-hexafluoropropylene copolymer, said outer layer materials having melting points or thermal sticking points which are higher than those of said inner layer.

4,212,300
RUBBER BAND POWERED PISTON VALVE ASPIRATOR

Roy A. Meals, 10376 Keswick Ave., Los Angeles, Calif. 90064

Filed Feb. 6, 1978, Ser. No. 875,401
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—276 **2 Claims**



1. A surgical aspirator, comprising:

a body means with a passageway therethrough;

a control valve means installed in said body means to control suction flow therethrough, said control valve means consisting of a valve piston with a passageway therethrough arranged perpendicularly to cylindrical sides thereof for communication with said passageway in said body means when said valve piston is in an on position, said valve piston having a slot in the bottom end thereof for anchoring a power means, a piston cylinder in said body means, in which said valve piston is disposed, and so situated in said body means so that passageway through said valve piston may be aligned with said passageway in said body means, and a thumb button attached to top of said valve piston for depressing the valve piston;

a probe means connected to one end of said body means, the interior passageway of said probe means communicating with the interior passageway through said body means, said probe means having a tip on the end thereof, said tip having at least one entry port therein, said entry port communicating with the interior passageway of said probe means;

a male connection means connected to one end of said body means opposite to end to which said probe means is connected, the interior of said male connection means communicating with the interior passageway of said body means, with a vacuum or suction system connected to said male connection; and

a power means for operation of said control valve means, said power means being a rubber band, said rubber band power means being attached to said body means, said body means having a system of grooves on the exterior thereof in a configuration to mount said power means, said rubber band power means being attached to a first edge of said body means, then passing down a first side of said body means, passing through a slot in bottom of said valve piston, then passing up a second side of said body means, and being attached to a second edge of said body means.

4,212,301
DIGITAL TAMPON

Russell L. Johnson, Weyauwega, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 14, 1978, Ser. No. 933,165
Int. Cl.[2] A61F *13/20*
U.S. Cl. 128—285 **15 Claims**

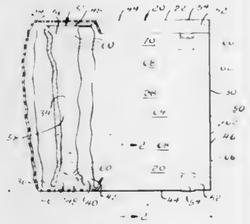
1. A tampon of unitary construction comprised of a compressible absorbent material a lower portion of said material being compressed to provide a rigid insertion means for finger contact and support of soft outer shell during insertion, the remaining upper portion of said material being relatively uncompressed and being draped downwardly from the top of said insertion means to surround said insertion means and extend past the lower terminus of said insertion means to provide a downwardly-facing finger-receiving pocket, and a withdrawal string secured to and extending from said insertion means.



4,212,302
ABSORBENT ARTICLE WITH SPACED HYDROCOLLOID MATERIAL

Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 712,439, Aug. 9, 1976, abandoned. This application Dec. 22, 1977, Ser. No. 863,484
Int. Cl.[3] A61F *13/16*
U.S. Cl. 128—287 **3 Claims**

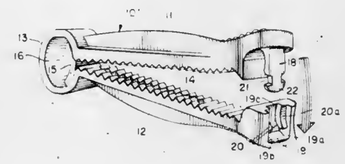


1. A disposable diaper comprising, an absorbent pad assembly having a pair of side edges, a pair of end edges connecting the side edges, a fluid pervious top sheet, a backing sheet of fluid impervious material, and an absorbent pad comprising a mass of fibers located intermediate said top and backing sheets and having a pair of opposed side edges located adjacent the side edges of the pad assembly, said pad assembly having a pair of longitudinal first fold lines defining a longitudinally extending central panel, and a pair of second longitudinal fold lines defining a pair of longitudinally extending first panels located intermediate the first and second fold lines and overlying the central panel, said second fold lines defining a pair of longitudinally extending outermost panels overlying the first panels and located intermediate the second fold lines and the side edges of the pad assembly, with the outermost panels including side margins of the pad, said pad assembly having a hydrocolloid material dispersed in fibers of the pad and positioned in longitudinal central regions of said opposed pad side margins, a pair of opposed pad end margins located adjacent said pair of opposed end edges of the pad assembly, said opposed pad end margins having a hydrocolloid material dispersed in fibers of the pad, with said central panel defining a fluid receiving region and being substantially free of hydrocolloid material, and said diaper having a pair of tape fasteners located adjacent said opposed side edges of the pad assembly and adjacent one of said end edges.

4,212,303
UMBILICAL CORD CLAMP

John L. Nolan, Glenview, Ill., assignor to Hollister Incorporated, Chicago, Ill.

Filed Jul. 17, 1978, Ser. No. 925,511
Int. Cl.[2] A61B *17/08*
U.S. Cl. 128—346 **14 Claims**



1. An umbilical cord clamp of generally V-shaped configuration comprising a pair of flexible arms having rear end portions joined together by an integral hinge at the apex of the V and having free forward end portions normally disposed in spaced-apart relation and being movable towards each other for clamping an umbilical cord between said arms, and locking means for securing said arms together when said clamp is closed, wherein the improvement comprises

said locking means includes a flexible tongue at the forward end of one of said arms, said tongue projecting towards the other of said arms in the general direction of closing movement of said one arm, said other arm having a recess at its forward end for receiving said tongue and having a pair of transversely-spaced projections extending into said recess from opposite sides thereof, said tongue having a tip portion and said projections defining a pair of forwardly sloping ramp surfaces engagable with said tip portion for flexing the tongue forwardly as said arms are urged together, said tongue having a pair of lateral notches adjacent said tip portion for receiving said pair of projections when said tip portion has cleared said ramp surfaces and said clamp is fully closed.

4,212,304
URETHERAL CATHETER STENT

Roy P. Finney, Tampa, Fla., assignor to Medical Engineering Corp., Racine, Wis.

Filed Apr. 7, 1978, Ser. No. 894,278
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—349 R **14 Claims**

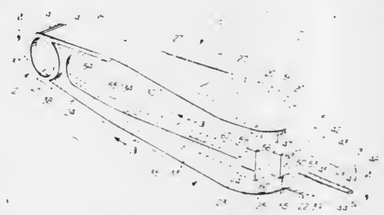


1. An ureteral catheter stent comprises an elongated relatively flexible tubular member having at least one drainage opening extending through a wall thereof, the end portions of said tubular member are in the form of hooks, at least one of which has a closed end and the tubular member includes indicating means which indicate when the end portion is forcibly straightened the direction the closed end hook will extend when the portion is allowed to resume its normal shape.

4,212,305
DISPOSABLE FORCEPS

Charles A. Lahay, Fayette, Ala., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Mar. 2, 1978, Ser. No. 882,676
Int. Cl.[3] A61B *17/30*
U.S. Cl. 128—354 **2 Claims**



1. In a forceps of the tweezer type fabricated of a plastic material and having integrally connected elements to provide a unitary structure, improvements therein comprising:

(a) a pair of opposed arms, each said arm including:

i. a substantially straight intermediate portion,

ii. a substantially straight rearward portion extending in one direction from said intermediate portion and having a terminal end, and

iii. a substantially straight forward portion extending in the other direction from said intermediate portion and having a terminal end,

said intermediate portions being substantially parallel and

said rearward portions being in converging relationship from said intermediate portions;

(b) a rigid structure connecting said rearward portions at the terminal ends thereof;

(c) a jaw carried by each said forward portion and having a face terminating in the nose;

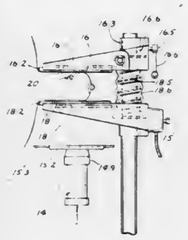
(d) a generally central rib extending inwardly from each arm and connected at one end to said jaw and connected at the other end to said rigid structure,

(e) a generally cylindrical wall of a width substantially equal to the width of the terminal ends of said rearward portions, which portions extend substantially tangentially therefrom, said cylindrical wall further having an intermediate transverse partition which is substantially a continuation of said ribs, and

(f) a purchase area carried by each said intermediate portion nearer said forward portion than said rearward portion,

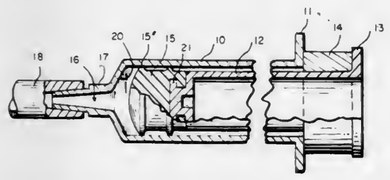
whereby, upon compressive force being applied to said purchase areas, arcuate bending moment occurs in said arms between said purchase areas and said rigid structure and said arms move, one toward the other, until the noses of said jaws abut, and whereupon continued application of said compressive force causes said arms to flex inwardly, substantially in the area of said intermediate section, until the faces of said jaws abut.

4,212,306
BREAST EXAMINATION DEVICE AND METHOD
Khalid Mahmud, 6601 Southcrest Dr., Minneapolis, Minn. 55435
Filed May 18, 1978, Ser. No. 907,001
Int. Cl.[2] A61B *6/08;* **G01N** *33/16*
U.S. Cl. 128—665 **16 Claims**



1. Apparatus for the examination of the female breast for tumors or the like, comprising a pair of spaced plates transparent to visible light;
means for supporting the plates relative to each other and permitting the plates to be moved toward and away from one another to enable the breast to be captured and gently compressed and flattened between the plates; and
a source of visible light positionable exteriorly of the plates for producing a narrow beam of light directable through the plates and flattened breast, said source being movable with respect to the plates generally normal to the direction of said beam to enable sequential illumination of substantially the entire breast captured between the plates.

4,212,307
BLOOD SAMPLING SYRINGE
Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Inc., Keene, N.H.
Continuation of Ser. No. 715,678, Aug. 19, 1976, abandoned, which is a continuation of Ser. No. 542,578, Jan. 20, 1975, abandoned. This application Jan. 12, 1978, Ser. No. 868,897
Int. Cl.[2] A61B *5/00*
U.S. Cl. 128—763 **23 Claims**



23. A syringe, which comprises;
a cylindrical barrel having a first open end for receiving a plunger and a second open end adapted to mount a needle on the opening thereof; and
a plunger slidably mounted in said barrel, said plunger being withdrawable from said barrel through said first open end and said plunger comprising:
a. means for receiving a force to move said plunger in or out of said barrel,
b. an elastomeric plunger tip adapted to form a sliding seal with the inner walls of said barrel,
c. a shank joining said means to said plunger tip,
d. means for preventing the plunger tip from moving inwardly beyond a predetermined position to prevent the plunger tip from contacting said barrel second end, thereby avoiding compression of said plunger tip against said second open end by the inward movement of said plunger and thereby avoiding air from being sucked into said syringe barrel upon release of compression, and to provide a chamber defined by said second open end of said barrel and the lower end of said plunger tip when said plunger tip is in said predetermined position,
e. an inert fluid disposed in said barrel between the second open end thereof and said plunger tip, in a volume in excess of that required to fill said chamber and the bore of said needle.

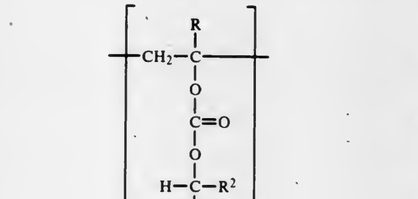
4,212,308
PARALLEL-FLOW ONE-WAY BLOOD SAMPLING DEVICE
Edward P. Percarpio, North Haledon, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.
Filed Dec. 27, 1977, Ser. No. 864,388
Int. Cl.[2] A61B *5/14*
U.S. Cl. 128—766 **3 Claims**



1. A device for sampling a body fluid such as blood, comprising:
a housing having a forward end and a distal end;
a first cannula secured to the forward end of said housing for penetration of a fluid-containing vessel of a patient's body;
a second cannula secured to the distal end of said housing;
a first conduit within said housing, said conduit being in fluid communication with said first and second cannulas;
a first one-way valve mounted within said first conduit;
a second conduit within said housing, said second conduit being in fluid communication with said first and second cannulas; and
a second one-way valve mounted within said second conduit, said first and second valves capable of independently and simultaneously permitting downstream flow therethrough towards said second cannula, said valves being aligned with each other along the longitudinal axis of said housing, one of said valves being mounted nearer the distal end of the housing than the other.

4,212,309
BLOOD GAS SAMPLER
Harvey R. Moorehead, Salt Lake City, Utah, assignor to Ballard Medical Products, Inc., Midvale, Utah
Filed Sep. 28, 1978, Ser. No. 946,887
Int. Cl.[3] A61B *5/14*
U.S. Cl. 128—766 **5 Claims**

1. A method of obtaining a reliable blood specimen for analysis of gas characteristics using a syringe comprising the steps:
assembling the syringe by placing a plunger partially within a barrel having a stepped bore so that a seal at the leading end of the plunger and unattached to the syringe barrel is not appreciably deformed by a larger trailing end barrel bore portion;
storing the syringe in the mentioned assembled state for an interval of time;
advancing the plunger further into the barrel causing the seal to engage and be sealingly deformed against but unattached to a smaller leading end barrel bore portion;



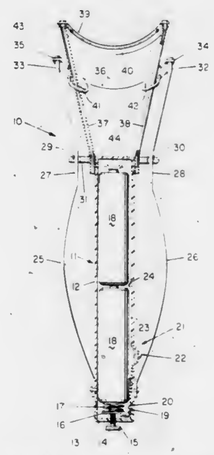
retracting the plunger solely by arterial blood pressure following penetration of an artery thereby aspirating a blood specimen into the barrel without seal leakage;
restricting seal displacement during aspiration to a length less than the length of the smaller leading barrel bore portion by engagement of external stop structure;
discharging the sample, by exertion of manual force for testing of the gas characteristics thereof.

4,212,310
UNITARY PACK OF SMOKING TOBACCO PRODUCTS CONTAINING POLYMERIC ALCOHOL FLAVORANT-RELEASE COMPOSITIONS
Thomas V. Van Auken, Richmond; Harvey J. Grubbs, Mechanicsville, and William R. Johnson, Jr., Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Dec. 12, 1977, Ser. No. 859,712
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.
Int. Cl.[2] A24B *3/14, 3/12*
U.S. Cl. 131—17 R **6 Claims**

1. A unitary pack of smoking tobacco products which comprises at least one smoking tobacco product which contains an alcohol flavorant-release composition as hereinafter defined in a unitary pack with at least one smoking tobacco product which does not contain such alcohol flavorant-release composition, said alcohol flavorant-release composition being a polymeric composition having a molecular weight in the range between about 500 and 2,000,000 and consisting essentially of recurring monomer units corresponding to the formula:

wherein R is a member selected from the group consisting of aliphatic, alicyclic and aromatic hydrocarbon radicals containing between 1 and about 10 carbon atoms, R^1 and R^2 are members independently selected from the group consisting of hydrogen and aliphatic, alicyclic, heterocyclic and aromatic hydrocarbon radicals, or R^1 and R^2 taken together with the connecting elements form an alicyclic structure, and wherein the total number of carbon atoms in R^1 and R^2 collectively does not exceed about 20; and n is an integer between 2 and about 10,000.

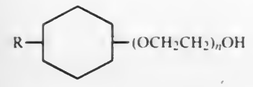
4,212,311
BATTERY OPERATED EYELASH CURLER
Leon del Valle, 10924 Aletta Ave., Culver City, Calif. 90213
Filed Aug. 23, 1978, Ser. No. 936,260
Int. Cl.[2] A45D *2/00*
U.S. Cl. 132—31 A **3 Claims**



1. A manually-operable eyelash curler, comprising:
(a) a pair of curved arms housed within a stationary frame, which when mechanically depressed along the outermost curved portion, drives a movable, non-electrically heated eyelash compressing element into intimate contact with a stationary electrically heated eyelash compressing element;
(b) a centrally-disposed battery pack to provide the electrical energy to heat the electrically heated eyelash compressing element;
(c) a first electrical switch which arms the electrical circuit; and
(d) a second electrical switch operably associated with one or the curved arms to energize the electrically heated eyelash compressing element when the curved arm is manually operated.

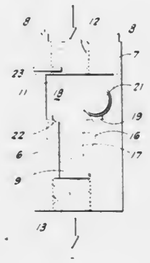
4,212,312
FRAGMENTED POLYMERS AS FRICTION REDUCERS IN PIPELINE TRANSPORTATION OF PRODUCTS
Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Continuation-in-part of Ser. No. 793,993, May 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 571,889, Apr. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 327,379, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 170,637, Aug. 10, 1971, abandoned. This application Aug. 28, 1978, Ser. No. 937,363
Int. Cl.[2] F17D *1/16*
U.S. Cl. 137—13 **11 Claims**

1. A process for reducing the flowing friction of a liquid hydrocarbon in a pipeline with a polymer of at least 1,000 molecular weight and soluble in the hydrocarbon, comprising preparing a particulated, substantially undegraded polymer for introduction into the hydrocarbon by mixing the polymer with a water-immiscible, low-boiling solvent, water, and from about 0.05% to about 10% by weight, based on the weight of the solvent, of a surfactant having the formula



wherein R is an alkyl radical having from 4 to 20 carbon atoms and n is an integer of from 2 to 8, whereby the polymer is dissolved in the solvent, and forming polymer particles by flashing off the solvent, separating the particles from the water, and injecting the particles into the hydrocarbon.

4,212,313
SHOCK SHUTOFF VALVE
Harry K. Winters, San Rafael, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed Aug. 14, 1978, Ser. No. 933,278
Int. Cl.² F16K *17/36*
U.S. Cl. 137—39 **2 Claims**



1. A shock shutoff valve comprising a valve body, means within said body defining a flow bore symmetrical about a normally vertical axis, a rotary plug, means on said plug adapted in one position of said plug to continue said flow bore, means in said plug defining a valve seat around said flow bore, a pedestal in said body alongside of and above said valve seat, a magnetically responsive ball adapted to rest on top of said pedestal and to roll from said pedestal downwardly toward and into said valve seat in position to block said flow bore, and magnetic means for axially urging said ball and said valve seat into close abutment in said position even when said axis is inclined to the vertical and gravity tends to urge said ball out of said seat.

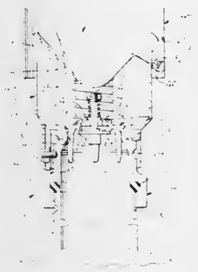
4,212,314
WASTE WATER OUTLET SANITARY PLANT COMPRISING A SIPHON
Kurt S. B. Ericson, 17 Goudenregenlaan, B-2610 Wilrijk, Belgium
Filed Aug. 31, 1978, Ser. No. 938,332
Claims priority, application Belgium, Aug. 31, 1977, 858266
Int. Cl.² E03C *1/295*
U.S. Cl. 137—216.2 **4 Claims**

1. A hydraulic device for the drainage of waste water from a spilling unit into a sewer comprising a container adapted for receiving a water seal therein, an inlet pipe extending from the spilling unit into said container having a lower end adapted to extend into the water seal contained in said container, an outlet pipe extending from said container and adapted to be connected to a sewer, automatic air valve means connected to said container for permitting the inlet of air into said container and blocking the outflow of air from said container, said automatic air valve means comprising an upper part of said container defining a frusto-conical neck diminishing in diameter upwardly of said container, a cover extending over said container and defining with said frusto-conical neck of said container a peripheral air inlet, and an annular valve resting over said peripheral air inlet, said annular valve adapted to be lifted by air entering said chamber when a negative pressure occurs in said outlet pipe so as to permit the introduction of sufficient quantity of fresh air and for resting over said peripheral air inlet to block the passage of air out of said container when air pressure in said outlet pipe is balanced with respect to pressure



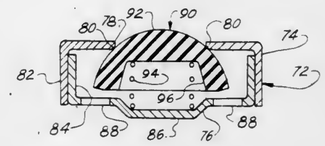
exterior to said container and when there is an overpressure in said outlet pipe whereby waste water can flow through an entire cross-sectional area of said outlet pipe into the sewer, whereas the air flow takes place after the waste water stops streaming from the spilling unit.

4,212,315
SHROUD FOR PRESSURE VACUUM VENT
Richard L. Fahl, Cincinnati, and Eugene B. Pemberton, Fairfield, both of Ohio, assignors to Dover Corporation, New York, N.Y.
Filed May 30, 1978, Ser. No. 910,223
Int. Cl.² F16K *17/18*
U.S. Cl. 137—377 **15 Claims**



1. In combination, a body mounted on the upper end of a riser pipe of an underground storage tank, said body having first means to vent vapor from the tank when pressure in the tank exceeds a predetermined pressure and second means to allow ambient pressure to enter the tank when the tank has a vacuum therein exceeding a predetermined vacuum, a housing supported on said body and having an open upper end, a cap supported on said housing and cooperating therewith to substantially enclose said first and second means, said cap being spaced from the open end of said housing to form a passage means therebetween of an area not to retard vapor flow, and a shroud extending above the top of said cap and beneath the top of said housing to prevent driven moisture from entering said passage means while allowing upward vapor from said first means and said passage means.

4,212,316
CONTROL VALVE
Walter E. Basch, St. Louis, Mo., and Roger G. Wallis, Belleville, Ill., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Mar. 13, 1978, Ser. No. 885,886
Int. Cl.² F16K *15/02*
U.S. Cl. 137—543.17 **2 Claims**



1. A control valve for use in an automotive fuel pump comprising:

a housing installed in the fuel pump, said housing including a cap whose top surface has a central circular opening therein forming a fuel inlet, the peripheral surface of which is outwardly curved and a seat over which the cap fits, the seat having at least one opening therein forming a fuel outlet;

a valve member positioned in the housing and movable relative to said circular opening, the valve member having an outer spherically curved contact surface for tangentially contacting said outwardly curved peripheral surface of the opening to form a seal at the curved peripheral surface of the opening and prevent flow of fuel therethrough, said valve member being of rubber and the contact surface thereof having a Rubber Manufacturing Association (RMA) class **2** finish and a surface hardness of approximately 70 durometer; and

a coil compression spring seating against said seat and bearing against said valve member to continuously urge said valve member into sealing contact with said curved peripheral surface of said opening, the spring exerting a force on said valve member such that the valve member remains seated against a positive head of fuel in the range of 24 inches to 48 inches of fuel applied in the normal direction of fuel flow through the control valve, whereby a minimal amount of fuel leakage occurs through the control valve when said fuel pump is not pumping.

4,212,317
VACUUM INTERLOCK
E. Vincent Patrick, Lorton; Howard K. Dickson, Alexandria, and Howard L. Dunmire, Stafford, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 2, 1978, Ser. No. 930,265
Int. Cl.² H01J *31/26*; F16K *41/04*
U.S. Cl. 137—565 **2 Claims**

1. A vacuum interlock device for transporting samples into a main vacuum chamber having upper and lower opposed ports surrounded by external parallel portal flanges and a first pump means being in communication with said chamber for evacuation thereof, said device comprising;

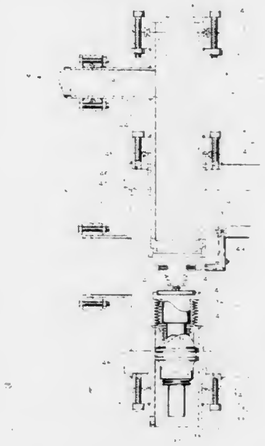
a tubular vestibule defining a center longitudinal axis and having first and second open ends said vestibule and said vacuum chamber defining two distinct chambers upon sealing contact of said gate member with said knife edge of said second end, said pump means allowing only evacuation of said vestibule when said distinct chambers are defined said second end being surrounded by a separate continuous knife edged ridge;

a first auxiliary flange with a knife edged ridge surrounding said vestibule and permanently sealed thereto including a first gasket means to vacuum couple said vestibule to said upper portal flange with said second open end in said main chamber;

a substantially cylindrical gate member having a continuous end surface portion defined by a metal softer than that in said knife edged ridges contacting said second open end of said vestibule only over the full length of its knife edge;

a lower hollow tubing member surrounded by and sealed to a lower auxiliary flange, said tubing member and said gate member being substantially coaxial with said longitudinal axis;

said lower auxiliary flange including a second gasket means



to vacuum couple said tubing member to said lower portal flange;

a driver means coupled between said gate member and reciprocatively mounted within said tubing member to reciprocate said gate member along said longitudinal axis normal to said continuous surface portion; and

a vacuum type bellows having one end sealed to said gate member and its remaining end coupled to said tubing member, said bellows surrounding and excluding said driver means from the inside of said main vacuum chamber said first end including a removable cover means sealing said first end,

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4,212,318
RETAINER ASSEMBLY FOR FUEL TANK MOUNTED SENDING UNIT
Helmut Warmbold, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 22, 1979, Ser. No. 68,837
Int. Cl.² E03B *11/00*; F17D *1/00*
U.S. Cl. 137—590 **7 Claims**



1. In an automotive fuel tank having an aperture formed

through a wall thereof for permitting insertion of a component having portions communicating with the interior and the exterior of the tank, a retainer assembly for securing said component to said wall of said tank in sealing relationship about said aperture, said retaining means comprising:

A. a stepped retainer bore formed in said tank wall about said aperture and having:
   1. an inner annular shoulder portion adjacent said aperture;
   2. an outer toothed ratchet portion formed adjacent the exterior surface of said tank wall; and
   3. an intermediate threaded portion;

B. means defining an annular flange on said component registering with said inner annular shoulder portion;

C. elastomeric sealing means disposed between said annular shoulder portion and said annular flange; and

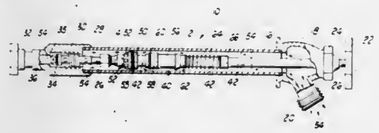
D. a plug member received in said stepped retainer bore for compressively engaging said component annular flange to effect sealing engagement and having:
   1. an inner threaded portion engaging said bore threaded portion, and
   2. an outer pawl portion operative in one condition to engage said bore ratchet portion to normally permit rotation of said plug member in a direction effecting tightening threaded engagement with said fuel tank wall.

4,212,319

ANTI-BACKFLOW DEVICE FOR SILLCOCKS

James B. Krablin, 1904 W. 30th St. South, Wichita, Kans. 67217

Filed Mar. 15, 1978, Ser. No. 886,735
Int. Cl.² F16K *15/18*
U.S. Cl. 137—614.2 **1 Claim**



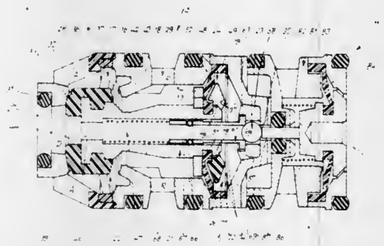
1. An anti-backflow device for preventing fluids from flowing back into a water supply system comprising:
   (a) a connecting rod;
   (b) a stationary tube having a first end portion and a second end portion and disposed around said connecting rod;
   (c) a sillcock tube surrounding the connecting rod and defining a flow passage between an inlet port and an outlet port;
   (d) attaching means at said second end portion to maintain the stationary tube stationary relative to the sillcock tube while said connecting rod is allowed to rotate within the stationary tube relative to both the stationary tube and the sillcock tube;
   (e) a valve having an annular valve housing which includes a first annular seal means sealingly attaching said valve housing to the interior of the sillcock tube and the exterior of the stationary tube, said valve housing including a plurality of circumferentially spaced ports in proximity to said first seal means, and a second annular sealing means mounted on a valve head defined by a sliding tube and biased by a spring into engagement with the valve housing closing the ports, said spring additionally engaging a stop means on said first end portion of said stationary tube said stationary tube;
   (f) a rotary valve attached to said connecting rod to open and close said inlet port of said sillcock tube fluid passage, when said rotary valve is rotated to the open position fluid flows past the rotary valve through the plurality of said inlet ports and biases the valve head open to allow the fluid to communicate with said outlet port of the sillcock tube.

4,212,320

MULTIWAY VALVE

Kurt Stoll, Esslingen, Fed. Rep. of Germany, and Jan R. deFries, Zürich, Switzerland, assignors to Festo-Maschinenfabrik Gottlieb Stoll, Esslingen, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,498
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743829
Int. Cl.² F15B *13/042*; F16K *11/04*
U.S. Cl. 137—625.6 **10 Claims**



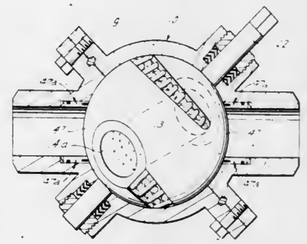
1. A multiway valve, comprising:
housing means forming a main valve chamber and a control valve chamber therein;
an axially movable main valve body reciprocally mounted for movement between first and second positions in said main valve chamber and extending into said control valve chamber;
first means defining a working port communicating with said main valve chamber;
second means defining a main vent bore communicating with said main valve chamber, said main valve body and said housing means each having third means thereon cooperatively related to control the communication between said working port and said main vent bore in response to movements of said main valve body to said first and second positions;
flexible and axially movable diaphragm means connected to and extending between said housing means and said main valve body and blocking the communication between said main valve chamber and said control valve chamber, one side of said diaphragm means being in communication with said main vent bore when said main valve body is in each of said first and second positions;
passageway means defining an inlet port to said housing means for supplying pressurized fluid to said control valve chamber to urge said main valve body to said first position;
valve means in said passageway means for controlling the supply of pressurized fluid to said control valve chamber, a blocking of said supply of said pressurized fluid to said control valve chamber effecting an axial shifting of said main valve body to said second position and an axial flexing movement of said diaphragm means to accommodate the shifting movement of said main valve body;
annular spring means in said control valve chamber secured to said housing means and having plural radially inwardly extending resilient arms; and
an annular member axially movably disposed in said control valve chamber between said diaphragm means and said resilient arms, said resilient arms engaging said annular member and urging same toward said diaphragm means.

4,212,321

LOW NOISE ROTARY CONTROL VALVE

Eldon E. Hulsey, 4111 Woodhead, #45, Houston, Tex. 77098, assignor to J. R. Butler; Eldon S. Hulsey; Joe Hulsey and Pipe Line Tech., Inc., all of Houston, Tex.

Continuation-in-part of Ser. No. 820,190, Jul. 29, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 27,967
Int. Cl.² F16K *47/04*
U.S. Cl. 137—625.32 **15 Claims**



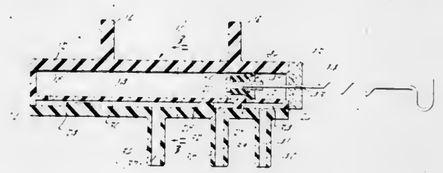
9. In a rotary control valve comprising:
(a) a casing defining a receptacle having a main axis and having flow ports communicating with said receptacle at spaced points to define a flowway therethrough;
(b) a flow-control member rotatably disposed within said receptacle, said member comprising:
   (1) a body shaped to fit said receptacle;
   (2) said body defining an axial bore opening through the outer wall of said body, whereby the opposite open ends of the bore will be in register with said flow ports at the fully-open position of said control member;
   (3) a pair of elongated orifice slots through the wall of said body extending circumferentially of the body in opposite directions generally from the opposite open ends of the wall of said bore, each of said slots being defined by walls converging toward their trailing ends;
   (4) said body having nonslotted closure portions between the trailing ends of said orifice slots and the adjacent ends of said bore, said closure portions being adapted to close off said flow ports in the flowway-closing position of said control member, the improvements wherein:
   (5) said body having a silencing chamber surrounding the wall of said bore, and silencing means in said silencing chamber.

4,212,322

LINEAR VACUUM PROGRAMMER

Paul M. Douglas, St. Charles, and Andrew A. Kenny, Roselle, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 754,654, Dec. 27, 1976, abandoned. This application Jan. 18, 1979, Ser. No. 4,439
Int. Cl.² F16K *11/06*
U.S. Cl. 137—625.48 **6 Claims**



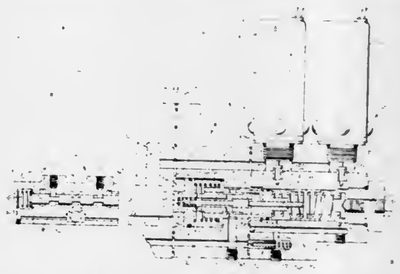
1. A linear programmer for controlling various parts of a system by fluid pressure, comprising:
(a) body means including means defining a first body portion having a longitudinal bore therein, said first body portion having at least two valving apertures extending through said first body portion and fluidly communicating with said bore, said apertures being spaced longitudinally with respect to said bore a first distance;
(b) said body means including means defining a second body portion attached to said first body portion along a parting line, said first and second body portions having adjacent surfaces, said surfaces defining a plurality of longitudinally extending manifold chambers disposed intermediate said first and second body portions and exteriorly of said bore, each of said valving apertures providing fluid communication between said bore and one of said manifold chambers;
(c) said second body portion defining at least two fluid ports, said fluid ports being spaced longitudinally relative to said bore a second distance substantially greater than said first distance, each of said fluid ports being in fluid communication with one of said manifold chambers such that said valving apertures are located intermediate said fluid ports; and
(d) plunger means movable within said bore and in sealing contact therewith, said plunger means operative to valve said apertures from one side of said plunger means to the other side thereof by moving an amount less than said second distance and greater than said first distance.

4,212,323

POWER ASSIST PROPORTIONAL REMOTE CONTROLLER

Azam S. Qureshi, Racine, Wis., assignor to Tomco, Inc., Racine, Wis.

Filed Aug. 18, 1977, Ser. No. 825,561
Int. Cl.² F15B *13/042*
U.S. Cl. 137—625.61 **7 Claims**



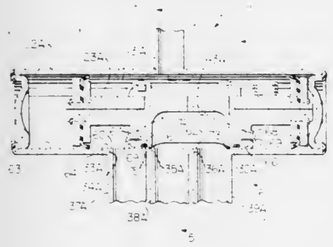
1. A power assist remotely controlled servo controller for remote operation of a directional control valve, said directional control valve including a valve spool for directing inlet pressure fluid from an inlet passage to a pressure passage,
a fluid pressure chamber in said directional control valve at one end of said valve spool, said pressure chamber being connected to the inlet pressure fluid passage, said servo control comprising:
force amplifying means mounted on said directional control valve, said amplifying means including a power piston operatively positioned to engage the other end of said valve spool, said amplifying means including first passage means connecting the inlet pressure fluid passage to said power piston and valve means in said power piston for controlling the flow of inlet pressure fluid to said amplifying means,
and means for remotely controlling said valve means, said remote controlling means including a housing, a pressure balanced pilot piston positioned in said housing and operatively engaging said valve means,
second passage means connecting the inlet pressure fluid passage to each side of said pressure balanced pilot piston,
and selectively actuatable means for remotely releasing fluid pressure on either side of said pressure balanced piston whereby the movement of said pressure balanced piston is

translated into movement of said valve means, said power piston following the movement of said valve means to control the position of the valve spool in the directional control valve.

4,212,324
REVERSING VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME

Werner R. Bauer, Radnor, Pa., assignor to Robershaw Controls Company, Richmond, Va.

Division of Ser. No. 825,957, Aug. 19, 1977, Pat. No. 4,144,905.
This application Nov. 15, 1978, Ser. No. 960,969
Int. Cl.[2] F16K *11/07, 31/124*
U.S. Cl. 137—625.66 **9 Claims**



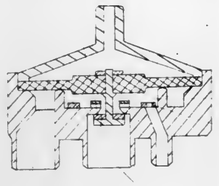
1. In a method of making a reversing valve construction having a housing means provided with a chamber carrying a movable piston-like valve member therein that controls port means of a valve seat means of said housing means through the relative position of a cavity of said valve member relative to said port means, said port means comprising first, second and third ports disposed in spaced apart and straight line relation and said cavity bridging said first and second ports while exposing said chamber to said third port when said valve member is in one position thereof and bridging said second and third ports while exposing said chamber to said first port when said valve member is in another position thereof, said valve seat means having an arcuate cross-sectional surface and said valve member also having an arcuate cross-sectional surface adjacent said arcuate surface of said valve seat means, the improvement comprising the steps of disposing a flexible annular sealing member between said valve member and said valve seat means and surrounding said cavity to seal said cavity to said valve seat means while permitting sliding movement therebetween, and operatively associating biasing means with said valve member and said flexible sealing member to urge and flex said sealing member into sealing engagement with said valve seat means so as to tend to sealingly conform said flexible sealing member to the contour of said valve seat means whereby said flexible sealing member is intermediate said arcuate surfaces of said valve member and said valve seat means.

4,212,325
PULSATOR VALVES

Evan M. Phillips, 26 Acacid Crescent, Hamilton, New Zealand

Filed Apr. 13, 1978, Ser. No. 896,094
Claims priority, application New Zealand, Mar. 25, 1977, 183700
Int. Cl.[2] A01J *5/12*
U.S. Cl. 137—627.5 **4 Claims**

1. A milking machine pulsator valve having a pressure limiting restriction applied to the air passage at output connection to the teat cups wherein a valve member is provided comprising a substantially flat annular member arranged to seat on an annularly surfaced valve seat within said pulsator valve and wherein said pressure limiting restriction comprises an orifice of predetermined size within said valve member arranged to seat downwardly on a valve seat about said output connection

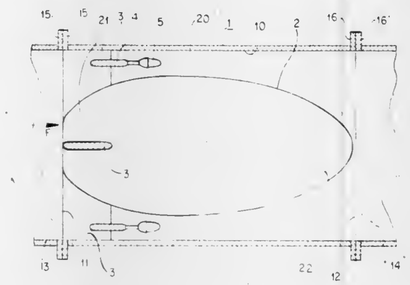


during outward air flow from said pulsator valve, so that said orifice is aligned with said output conenction.

4,212,326
FLOW RATE LIMITER FOR A HYDRAULIC CIRCUIT

Jacques Genevey, Echirolles, France, assignor to Alsthom-Atlantique, Paris, France

Continuation of Ser. No. 865,555, Dec. 29, 1977, abandoned.
This application Apr. 24, 1979, Ser. No. 32,803
Claims priority, application France, Jan. 18, 1977, 77 01300
Int. Cl.[2] F15D *1/00*
U.S. Cl. 138—40 **6 Claims**

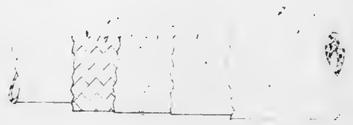


1. A flow rate limiter for a hydraulic circuit comprising:
means forming a passage having an inside wall in the form of a circular cylinder having an upstream end and a downstream end;
means disposed within said passage for producing supercavitation of the hydraulic flow through said passage, the improvement comprising:
a streamlined body disposed caoxially on the axis of the wall and including a nose at its upstream end, a diverging surface portion extending downstream therefrom and merging into a converging surface portion and terminating in a tail at its downstream end; and
wherein said supercavitation producing means comprises a plurality of circumferentially spaced supercavitation producing obstacles between the wall and the body, with said obstacles causing supercavitation in said annular space under the influence of a predetermined flow through said passage throughout said annular space defined by said streamlined body and said inside wall; and
means for fixing the body and said obstacles within said passage.

4,212,327
POLYMERIC HOSE

Doyle V. Haren, Clyde, and William M. Edwards, Waynesville, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Nov. 1, 1978, Ser. No. 956,762
Int. Cl.[3] F16L *11/04*
U.S. Cl. 138—125 **4 Claims**

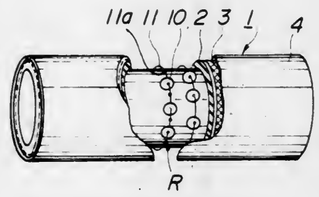


1. In a polymeric hose comprising an inner base tube, a reinforcing braid made of aramid yarn disposed concentrically around said base tube, said aramid yarn having great affinity for water, a polymeric cover tube, an adhesive layer disposed between said braid and said cover tube, said polymeric cover tube being disposed concentrically around said reinforcing braid and adhesive layer, the improvement comprising, a moisture-impervious tubular film disposed between said braid and said adhesive layer, said tubular film being bonded against said braid and in the interstices between individual yarns of said braid, said film isolating said aramid yarn and resulting in a tubular zone surrounding said braid and said tubular zone being surrounded by said adhesive layer and cover tube, said tubular zone being free of water moisture created bubbles.

4,212,328
WEAR RESISTANT RUBBER HOSE

Megumi Yamamoto, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 16, 1977, Ser. No. 851,916
Claims priority, application Japan, Feb. 18, 1977, 52-17973[U]; Oct. 17, 1977, 52-138052[U]
Int. Cl.[2] F16L *11/08*
U.S. Cl. 138—138 **2 Claims**

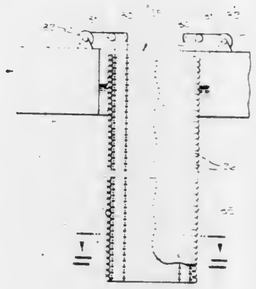


1. In a wear resistant rubber hose comprising an inner layer of surface rubber, an intermediate reinforcing layer surrounding said inner layer of surface rubber and an outer cover rubber layer surrounding said reinforcing layer, the improvements comprising: a cord having a plurality of spaced spherical bodies threaded thereon in the manner of a string of beads, said cord being helically wound around the central longitudinal axis of the hose, having a rigidity considerably higher than that of said inner layer of surface rubber, and being completely embedded inside the inner layer of surface rubber.

4,212,329
PIPE CONSTRUCTION AND METHOD OF MAKING SAME

Edward E. Horton, Portuguese Bend, Calif., assignor to Deep Oil Technology, Inc., Irvine, Calif.

Filed Aug. 14, 1978, Ser. No. 933,440
Int. Cl.[2] F16L *9/22*
U.S. Cl. 138—155 **13 Claims**



1. A pipe construction comprising:
a plurality of annular elements of selected cross section stacked one upon the other in coaxial relation to form an open ended passageway;
sealing means between each of said elements;
means for suspending said stack of elements including a plurality of tension members, each fixed to the bottommost of said elements,
each of said tension members having a guiding connection to each of said elements;
said elements in stacked relation being under compression, said tension members being under tension;
each annular element including a plurality of arcuate sections.

4,212,330
REED BAULK UNIT

Cornelis van Donk, Mortel, and Hubert P. van Mullekom, Deurne, both of Netherlands, assignors to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Sep. 5, 1978, Ser. No. 939,709
Int. Cl.[2] D03D *47/30*
U.S. Cl. 139—435 **7 Claims**



1. A reed baulk unit for a pneumtic weaving machine comprising a series of reed blades held in a groove in a head portion

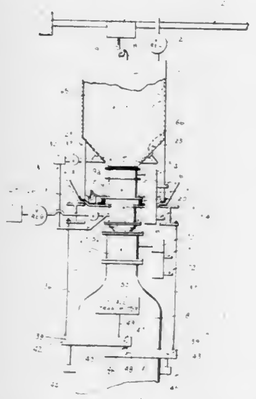
of said unit and at least one blowing nozzle housing located close to said reed blades, said blowing nozzle housing being fed from a pressurized air container through valve means which are mounted on the reed baulk and adapted to be actuated by a control shaft supported by the reed baulk, said reed baulk having an arm portion by means of which it is fixed to rocking trunnions which are rotatably mounted in the weaving machine, said reed baulk unit being characterized in that the reed baulk is formed of an extruded hollow profile, a longitudinal hollow space of which serves as said pressurized air container communicating, through an opening in the wall of the reed baulk profile, with blowing nozzle housing located on the outer side of the reed baulk profile, and control valves for said blowing nozzle housing accommodated by the blowing nozzle housing, while said control shaft is supported in a substantially semi-cylindrical recess in a portion of the reed baulk profile projecting outwardly adjacent the blowing nozzle housing.

4,212,331

PRESSURIZED APPARATUS FOR DISCHARGING POWDERED REAGENT FROM A SHIPPING CONTAINER

Victor Benatar, 1191 Hopkins Ter., Atlanta, Ga. 30324

Filed Dec. 1, 1978, Ser. No. 965,400
Int. Cl.³ B65B *1/16*
U.S. Cl. 141—67 **13 Claims**



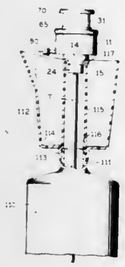
1. Apparatus for discharging powdered reagent from a shipping container having a material handling passage through its wall, said apparatus comprising support structure, a transition chamber mounted on said support structure and having an inlet at its upper part and an outlet at its lower part and arranged so as to support the shipping container with its material handling passage in communication with said inlet, weighing means supported by said support structure, a dispenser vessel suspended from and supported by said weighing means and having an entry opening adjacent said outlet of said transition chamber, and yieldable coupling means interconnecting said outlet and said entry opening for maintaining a fluid-tight connection therebetween irrespective of the weight of said dispenser vessel or of its disposition relative to said support structure, wherein said shipping container includes a support base having a circular lower part and wherein said transition chamber includes a base plate having a central inlet and upwardly extending and outwardly inclined guide means spaced radially outward of said inlet for engaging said circular lower part of said shipping container so as to position said shipping container in substantially coaxial relation with said transition chamber, and wherein a resilient sealing ring is interposed between said base plate on said transition chamber and a flange of said shipping container to form a fluid tight joint therebetween.

4,212,332

MANUALLY OPERATED PUMP FOR DISPENSING PRODUCT FROM A CONTAINER

Louis F. Kutik, Ft. Lauderdale, and Howard E. Cecil, Miami, both of Fla., assignors to Security Plastics, Inc., Miami Lakes, Fla.

Filed Feb. 21, 1978, Ser. No. 879,366
Int. Cl.³ B67D *5/06, 5/42*
U.S. Cl. 141—98 **18 Claims**



1. In a pump for dispensing product from a container through a dip tube extending up through the container, said pump having:

a housing attachable to the container at the top and to the upper end of the dip tube, said housing presenting an upwardly facing valve seat communicating with the upper end of the dip tube;

a floating valve in the housing above said valve seat having an imperforate valve element at its lower end sealingly engageable with said valve seat to completely block the upward flow of product at said valve seat, said floating valve being reciprocable toward and away from said valve seat;

an actuator reciprocable in the housing above said floating valve to withdraw product from the container and pump the withdrawn product from the housing;

and means providing a frictional coupling between said actuator and said floating valve to impart the actuator movement to the floating valve and to permit overtravel of the actuator with respect to the floating valve when the latter is restrained against movement with the actuator;

said floating valve having a recess therein above its lower end which is open at its upper end;

said housing and said reciprocable actuator together providing a variable volume pumping chamber above the floating valve;

said actuator extending down into said recess in the floating valve with a first clearance between them;

the improvement wherein said floating valve has openings in its lower end laterally outward from said imperforate valve element and said valve seat which lead up into said recess for passing product from the dip tube up into said recess when the actuator is moved up to unseat said valve element on the floating valve from the valve seat;

said actuator, in its downstroke overtravel after seating said valve element on the valve seat, being operative to move down within said recess and thereby force product out of said recess up into said pumping chamber through said clearance between the actuator and the floating valve at said recess;

said housing reciprocably receiving said floating valve with a second clearance between them extending from the lower end of the floating valve up into said pumping chamber;

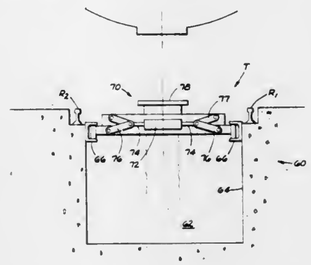
and said actuator, in its downstroke overtravel after seating said valve element on the valve seat, forcing product out of said recess down through said openings in the lower end of the floating valve and up through said second clearance between the floating valve and the housing into said pumping chamber.

4,212,333

QUICK FILL/EMPTY TANK CAR SYSTEM

Robert W. Randolph, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,107
Int. Cl.² B65B *3/04*
U.S. Cl. 141—98 **14 Claims**



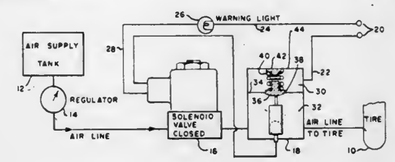
11. A railway tank car loading and unloading facility comprising: a vertically movable actuating assembly including a lading valve actuator, a vent valve actuator, and an electrical actuator; a lading conduit attached to said lading valve actuator extending to a lading container; lading conduit valve means located in said lading conduit; a pump in fluid communication with said lading conduit adapted to pump lading from said container, through said conduit, and into said car; a vent conduit attached to said vent valve actuator and extending from said actuating assembly to said container; vent conduit valve means located in said vent conduit; a lading sensor located in the upper portion of said tank; an electrical connection extending from said sensor to an electrical sensor connection on said tank bottom; said electrical sensor connection having means for engaging said electrical actuator; an electrical control console having a first electrical connection extending from said panel to said actuating assembly; a second electrical connection extending from said console to said electrical connection on said actuating assembly; a third electrical connection extending from said console to said lading conduit valve means; a fourth electrical connection extending from said console to said vent valve means; a fifth electrical connection extending from said console to said pump, whereby said actuating assembly, said lading valve means, said vent valve means, and said pump can be controlled from said electrical console, and whereby the loading and unloading of a railway tank car can be controlled from said console.

4,212,334

TIRE INFLATING UNIT

Walter H. Dudar, 1227 Levee St., Dallas, Tex. 75207

Filed Nov. 16, 1978, Ser. No. 961,135
Int. Cl.² B65B *3/26*
U.S. Cl. 141—197 **5 Claims**



1. A device for inflating a vehicle tire comprising a valve adapted for movement from a normally closed position to an open position and having a valve inlet for connection to a source of compressed air and a valve outlet; control means adapted to block movement of said valve to the open condition unless the pressure in the tire exceeds a preset level, said control means including a control inlet for connection to the tire to be inflated, movable contact means responsive to pressure admitted by said control inlet and movable from a normal position to a preset limit position, adjustable biasing means adapted for biasing said movable contact means toward its normal position, and circuit means opened and closed by said movable contact means, said circuit means adapted for controlling movement of said valve to its open position when said circuit means is closed, and for moving said valve to its closed condition when said circuit means is open; and, air conduit means connecting said valve outlet to the tire to be inflated, whereby when the control inlet is connected to a vehicle tire to be inflated, if the pressure in the tire is above said preset level said contact means will move against said adjustable bias means to its preset limit position to close said circuit means thereby moving said valve to the open position permitting the passage of air from said source through said air conduit means into the tire

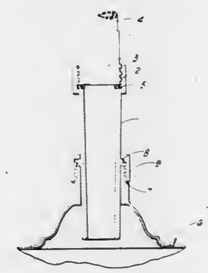
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4,212,335

WATERBED FILLING UNIT

Anthony J. Bova, P.O. Box 4175, Stockton, Calif. 95204

Filed Feb. 27, 1978, Ser. No. 881,792
Int. Cl.² B65B *3/04;* **F16L** *35/00*
U.S. Cl. 141—382 **1 Claim**



1. A waterbed filling unit—for interposition between, and connection with, the exteriorly male-threaded filler neck of a waterbed and the male-threaded fitting on the outer end of a garden hose—comprising a water-delivery tube for telescopic insertion into said male-threaded filler neck, a female-threaded fitting on the then outer end of the tube for coupling with said male-threaded fitting of the garden hose, a nut-type fitting rotatably surrounding the tube intermediate its ends for coupling with said male-threaded neck, an external annular stop flange on the tube intermediate its ends and encompassed by the nut-type fitting, the stop flange—when such nut-type fitting is threaded tight on the filler neck—being clamped against the upper end of the latter, the water-delivery tube being elongated between the stop flange and the inner end of such tube and projecting inwardly beyond the nut-type fitting, and said elongated portion of the tube being long-tapered and telescopically internally engaging in jam relation in the filler neck; the nut-type fitting, as threaded tight on the filler neck and with the stop flange as then clamped against the upper end of the filler neck, maintaining such jam relation of the elongated portion of the tube in the filler neck.

4,212,336

SCREWDRIVER

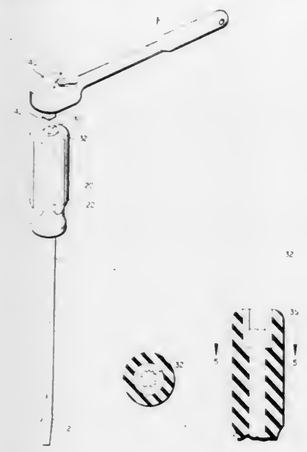
William C. Smith, P.O. Box 383, Barrington, Ill. 60010

Filed Jul. 24, 1978, Ser. No. 927,465
Int. Cl.² B25G *1/00*
U.S. Cl. 145—61 L **4 Claims**

1. An improved screwdriver comprising a steel shank and a

lightweight plastic handle surrounding the upper end of said shank,

said shank including a standard tapered screwdriver tip at the lower end, said tip adapted to engage slots or kerfs of standard screws, and an upper end of square or hexagonal cross-section,



a cylindrically shaped opening or a well positioned in the upper end of said handle, coaxial with the axis of said shank, said opening or well being large enough to receive the socket of a standard socket wrench, the upper portion of said shank extending into said opening or well, whereby said well is adapted to receive a standard socket wrench in engagement with the upper end of said shank.

4,212,337

CLOSURE FASTENING DEVICE

Ewald A. Kamp, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,432

Int. Cl.² B65D *33/24*

U.S. Cl. 150—3 **17 Claims**



1. A closure fastening device consisting essentially of:

a first U-shaped channel element including:

a first base portion,

a pair of spaced apart first webs extending,

from said first base portion, and

first hook portions extending from each of said first webs and facing away from each other; and

a second u-shaped channel element including a second base portion, a pair of spaced apart second webs extending from said second base portion, and

second hook portions nonlinearly extending from each of said second webs and facing towards each other;

said bases being of sufficient width to allow at least one of them to flex during the occlusion and opening of said fastening device;

said channel elements being adapted to interlock by pressing said first channel element into said second channel element so that said first and said second hook portions engage at predetermined pairs of contact surfaces, one of said pairs of said contact surfaces defining a negative angle of engagement; and

said channel elements establishing an open compartment defined by the interior surfaces of said first and second base portions and first and second web portions when said channel elements are occluded,

each of said channel elements having substantially the same cross section along its occludable length.

4,212,338

VEHICLE WHEEL WITH ANNULAR EMERGENCY SUPPORT

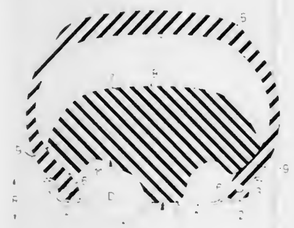
Reinhard Tiemann, Hemmingen, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 22, 1978, Ser. No. 908,269

Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722885

Int. Cl.² B60C *17/04*

U.S. Cl. 152—158 **5 Claims**



1. In combination: a vehicle wheel which has a rim with rim flanges and a drop center; a pneumatic tire having two bead sections and being mounted on said wheel; and an annular emergency support arranged within the hollow space of said tire, said annular support being provided with projection means located on and extending radially inwardly from the inner periphery of said annular support between said bead sections for supporting said annular support on said rim of said wheel between said bead sections adjacent to said drop center, said projection means being introduceable into said drop center for facilitating mounting and removal of said annular support, said annular support having provided on its inner periphery, on at least one side of said projection means, recess means for simplifying mounting and removal of said annular support from said wheel, the inner diameter of said recess means being greater than the inner diameter of said projection means, the difference between said diameters being at least about twice as great as the radial distance from the base of said drop center to the radially outer extremity of said wheel flanges.

4,212,339

TIRE/WHEEL ASSEMBLY WITH LOW MOLECULAR WEIGHT COOLANT-LUBRICANT

Robert L. Dobson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

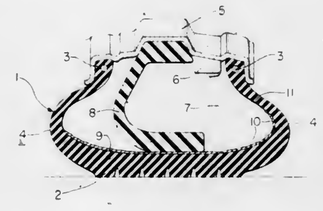
Filed Jan. 2, 1979, Ser. No. 216

Int. Cl.² B60C *17/04, 19/06*

U.S. Cl. 152—158 **10 Claims**

1. A tire/wheel assembly comprised of:

(A) a pneumatic tire axially mounted on a centered, rigid wheel rim, said assembly having attached therein a receptacle containing a coolant composition comprised of about 40 to about 70 weight percent water and correspondingly about 60 to about 30 weight percent polyethylene glycol having a number average molecular weight in the range of about 300 to about 600, said coolant composition itself characterized by having a viscosity in the range of about 4 to about 30 centipoises at about 25° C., measured with a



Brookfield LVF viscometer with spindle No. 1 at 12 rpm, and

(B) means for releasing said coolant composition onto the inner surface of said pneumatic tire as a coating thereon to conduct heat from the inner surface of said tire in its at least partially deflated state and thereby retard a rapid heat build-up to a destructive temperature range in the tire carcass.

4,212,340

RADIAL TIRE WITH BEAD REINFORCING ELEMENTS

Sjirk van der Burg, 27, Avenue du Bois, B-4920 Embourg, Belgium; Karl A. Grosch, Uelenbender Weg 22, D-1506 Roetgen (Rott), Fed. Rep. of Germany, and Marcel J. Bertrand, 147 Rue de Garillarmont, B-4030 Grivegnée-Liège, Belgium

Division of Ser. No. 620,971, Oct. 9, 1975, Pat. No. 4,074,743. This application Dec. 5, 1977, Ser. No. 858,911

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1974, 2455709

Int. Cl.² B60C *9/00*

U.S. Cl. 152—355 **12 Claims**



1. In a motor vehicle pneumatic tire having an inner wall portion and an outer wall portion with a bead ring disposed therebetween and a radial carcass having parallel cord elements and a turnup portion folded about the bead ring from the inner wall portion toward the outer wall portion for termination in a turnup edge, a bead reinforcement folded about the bead ring and the carcass ply turnup portion from the inner wall portion to the outer wall portion and having a first terminal edge at the inner wall portion and a second terminal edge at the outer wall portion extending beyond the turnup edge of the carcass ply turnup portion, said bead reinforcement further including a main ply portion of predetermined thickness having a first cord material, said main ply portion extending from the first terminal edge to a transition zone at said outside wall portion between the bead ring and the turnup edge of said carcass ply with cord ends of said first cord material being at said transition zone, and a terminal ply portion of lesser thickness than said main ply portion and having a second cord material of lesser stiffness than said first cord material, said terminal ply portion extending from said transition zone, wherein said main ply portion and said terminal ply portion are in contact with one another, to said second terminal edge, at least a section of said terminal ply portion and said main ply portion being substantially coplanar along the radial carcass at said transition zone and the main ply portion and the terminal ply portion have cord elements of the same pitch inclined in the same direction running at a bias to the cord elements of the radial carcass ply.

4,212,341

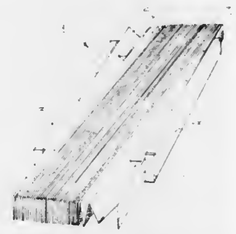
SUN SCREEN BLINDS AND THE LIKE

Eric V. Fisher, Earlwood, Australia, assignor to Impact Products Pty. Ltd., Australia

Filed May 3, 1978, Ser. No. 902,549

Int. Cl.² E05B *3/94*

U.S. Cl. 160—84 R **4 Claims**



1. Apparatus for extending or retracting such as a sun screen blind, divider, partition or the like, said apparatus comprising; a single length of elastized extensible cord means; two housing members wherein at least one housing member has stored therein a looped portion of said single length of elasticized extensible cord means; the end portions of said looped portion of said single length of cord means extending from two mutually spaced locations on said at least one housing member so that said cord means is withdrawable from and retractable into said at least one housing member through said spaced locations, the ends of said single length of extensible cord means being connected to said other housing member; an expansible and collapsible screen member located on the portions of said cord means between said two housing members and wherein said looped elasticized cord means comprise the sole means for supplying a force for retracting said screen member upon said cord means being extended from its unstretched position so that the tension at all points on said single length of elasticized extensible cord means is maintained substantially the same upon extension or retraction of said apparatus.

4,212,342

METHOD AND APPARATUS FOR REGULATING THE BATH LEVEL OF A CONTINUOUS CASTING MOLD

Sten Linder, Tystberga, and Johan Spijkerman, Nyköping, both of Sweden, assignors to Concast AG, Zurich, Switzerland

Filed Sep. 8, 1978, Ser. No. 940,622

Claims priority, application Switzerland, Sep. 19, 1977, 11398/77

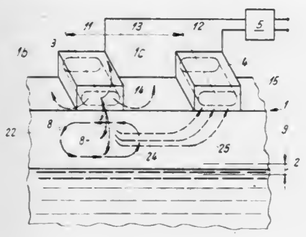
Int. Cl.² B22D *11/16*

U.S. Cl. 164—4 **15 Claims**

1. A method of regulating the bath level of a continuous casting mold by means of electromagnetic alternating fields, comprising the steps of:

using a continuous casting mold having a hollow mold compartment and a pour-side where there is infed molten

metal to be cast for forming therein a cast strand moving in a predetermined direction of travel;
forming an electromagnetic primary alternating field at the pour-side of the mold and which is directed into the hollow mold compartment by means of a transmitter coil having a central axis extending transversely with respect to the direction of travel of the cast strand;
inducing by means of the electromagnetic primary alternating field a current which flows in the mold wall;



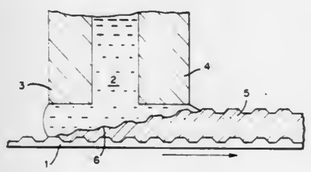
generating a secondary electromagnetic alternating field by means of said current;
measuring the secondary electromagnetic alternating field emanating above the bath level out of the mold wall by means of a receiver coil whose central axis is located in spaced relation from the central axis of the transmitter coil; and
utilizing the secondary electromagnetic alternating field as an input signal for regulating the bath level.

4,212,343

CONTINUOUS CASTING METHOD AND APPARATUS FOR STRUCTURALLY DEFINED METALLIC STRIPS

Mandayam C. Narasimhan, Seekonk, Mass., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J..

Filed Mar. 16, 1979, Ser. No. 20,907
Int. Cl.² B22D *11/06*
U.S. Cl. 164—64 **13 Claims**



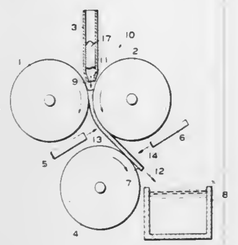
1. Apparatus for making contoured continuous metal strip from the melt comprising, in combination:
(a) a movable chill body providing a contoured chill surface for deposition thereon of molten metal for solidification thereon into a contoured metal strip, both surfaces of which replicate the contours of the chill surface, said chill body including means adapted to provide longitudinal movement of said chill surface at velocity of from about 100 to about 2000 meters per minute, the contours of said chill surface being provided by protruberances and/or indentations on said surface of heights and/or depths not exceeding about 2 millimeters, with the provisos that (1) said protrusions and/or indentations having heights and-/or depths of more than about 0.1 mm being defined by walls which are arranged indirection transverse to the direction of movement of the chill surface and are not steeper than about 65°, measured with respect to the chill surface, and far walls which are arranged in the direction of movement of the chill surface or in intermediate direction, and are not steeper than about 85°, measured with respect to the chill surface, and (2) said protrusions and/or indentations less than about 0.1 mm being defined by walls which are not steeper than about 88°, regardless of the direction in which they are arranged with respect to the direction of movement of the chill surface
(b) a reservoir for holding molten metal in communication with;
(c) a slotted nozzle for depositing molten metal onto said chill surface, located in close proximity to said chill surface, having its slot arranged generally perpendicular to the direction of movement of the chill surface, said slot being defined by a pair of generally parallel lips, a first lip and a second lip numbered in direction of movement of the chill surface, wherein said slot has a width of from about 0.2 to about 1 millimeter, measured in direction of movement of the chill surface, wherein said first lip has a width at least equal to the width of said slot, and said second lip has a width of from about 1.5 to about 3 times the width of said slot, wherein the gap between the lips and the chill surface is from about 0.1 to about 1 times the width of said slot; and
(d) means for effecting expulsion of the molten metal contained in said reservoir through said nozzle for deposition onto the moving chill surface.

4,212,344

METHOD OF MANUFACTURING AN AMORPHOUS ALLOY

Satoru Uedaira, and Shigeyasu Ito, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1978, Ser. No. 936,102
Claims priority, application Japan, Sep. 12, 1977, 52/109747
Int. Cl.² B22D *11/06, 11/16*
U.S. Cl. 164—87 **11 Claims**



1. A method of manufacturing an amorphous alloy comprising the steps of:
preparing a molten mixture of the raw materials going into said alloy,
rolling and quenching said molten mixture between a pair of oppositely rotating rolls to form a film of amorphous alloy, said rolling and quenching being carried out under the following conditions:

$$Y \geqq C_0\left(\frac{A}{2850}\right)^2\left(\frac{R}{15}\right)\left(\frac{X}{T_{cry}-T}\right)^4$$

where:
Y is the roll pressure per unit width of film, in metric tons per centimeter,
C_o is a constant determined by Young's modulus and the thermal conductivity of the material of said rolls,
A is the rotational speed of said rolls in r.p.m.,
R is the diameter of the rolls in centimeters,
X is the thickness of said film in microns,
T_{cry} is the crystallization temperature of said amorphous alloy in °C.,
T is the temperature of said rolls in °C., and

$$\frac{1}{R} = \frac{1}{2}\left(\frac{1}{R_1} + \frac{1}{R_2}\right)$$

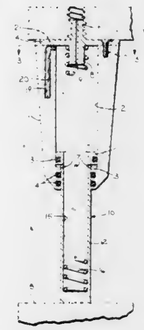
where the rolls have diameters of R_1 and R_2 cm respectively.

4,212,345

DEVICE FOR FORMING HOLES IN A FOUNDRY SAND MOLD

Steven J. Pemper, 12110 W. Greenfield Ave., West Allis, Wis. 53214

Filed Mar. 2, 1979, Ser. No. 16,919
Int. Cl.² B22C *13/00, 23/00*
U.S. Cl. 164—149 **13 Claims**



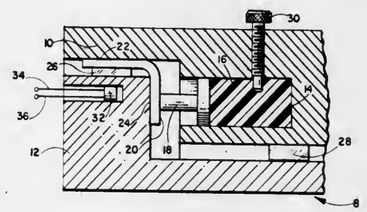
10. A device for forming holes in a foundry sand mold comprising a body having a central bore, a pin mounted for sliding movement within the bore, the outer end of the pin projecting beyond the outer end of the body, a seal located between the wall of the bore and the pin to seal the sliding joint therebetween, said body including a recess communicating with the bore, a wick disposed within the recess with the outer end of the wick terminating at the wall of the bore, and a quantity of lubricant disposed within the recess, said lubricant flowing by capillary action through the wick to the wall of the bore and then along the bore wall to the seal.

4,212,346

VARIABLE HEAT TRANSFER DEVICE

Edward S. Boyd, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Sugundo, Calif.

Filed Sep. 19, 1977, Ser. No. 834,619
Int. Cl.² G05D *23/00*
U.S. Cl. 165—32 **21 Claims**



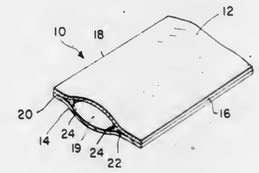
1. A thermal switch comprising:
a first heat station of heat conducting material;
a second heat station of heat conducting material;
a strip of heat conducting material extending between said first heat station and said second heat station, said strip having a thermal conduction interface with said first heat station at a first region of said strip, a thermal conduction interface with said second heat station at a second region of said strip wherein said second region is longitudinally displaced along said strip from said first region, and an intermediate region extending longitudinally along said strip between said first and second regions, wherein, in said intermediate region, said strip comprises a plurality of thin ribbons consisting of metal foil formed in a flaccid stack; and
thermal actuator means for varying contact pressure at said thermal interface of said strip with a selected one of said first and second heat stations in response to temperature changes of said first heat station.

4,212,347

UNFURLABLE HEAT PIPE

George Y. Eastman, Lancaster, Pa., assignor to Thermacore, Inc., Leola, Pa.

Filed Dec. 20, 1978, Ser. No. 971,404
Int. Cl.² F28D *15/00*
U.S. Cl. 165—46 **4 Claims**



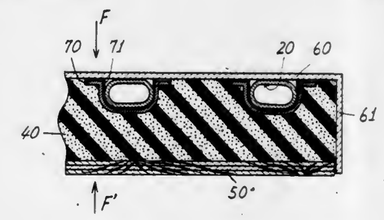
1. A gravity independent heat pipe which can be rolled up comprising:
two flexible heat conductive sheets bonded together at the edges of their facing surfaces to form an enclosed volume between them, said bonds forming crevices on the perimeter of the enclosed volume which serve as capillary channels; and
heat exchange fluid, selected to vaporize and condense in the range of temperatures anticipated for operation of the heat pipe, contained within the enclosed volume.

4,212,348

HEAT-RADIATING FLOOR BOARD

Toshiyuki Kobayashi, 401,24-5, Showa-cho, Suita-shi, Osaka, Japan

Filed Apr. 11, 1978, Ser. No. 895,484
Claims priority, application Japan, Apr. 4, 1977, 52-48712; Nov. 2, 1977, 52-131869
Int. Cl.² F24H *9/08*
U.S. Cl. 165—49 **5 Claims**



1. A heat-radiating floor board which has a stratified structure, the board comprising a metallic surface plate having a lower surface; a metallic tube of noncircular cross section and having a substantial flat surface, fixed meanderinly with its said flat surface in contact with said lower surface of said plate with heat-reflecting aluminum adhesive tape, said tape being in

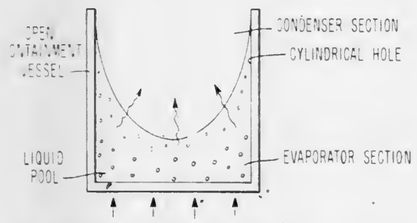
contact with a portion of said tube and with portions of said plate adjacent to said tube; an intermediate layer of hard plastic foam strongly adhering to said metallic tube, said tape and said lower surface; and a wooden base board strongly adhering to said intermediate layer.

4,212,349

MICRO BELLOWS THERMO CAPSULE

Frank E. Andros, Binghamton, and Robert J. E. Shay, Bath, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1979, Ser. No. 48
Int. Cl.[2] F28D *15/00*
U.S. Cl. 165—105 **9 Claims**



1. A heat transfer device comprising;
a closed container having an evaporator section and a condenser section; and
a liquid coolant in said evaporator section having surface tension characteristics whereby the application of heat to said evaporator section results in the formation of a vapor bubble and a flow of vapor across said bubble which condenses in said condenser section where heat is rejected and liquid is replenished to said evaporator section by flow through a continuous liquid film.

4,212,350

MODULAR ELEMENT RADIATOR-CONVECTOR

Mario Andreoli, Via dello Sterlino, 16, Bologna, Italy

Filed Apr. 6, 1976, Ser. No. 674,268
Claims priority, application Italy, Apr. 11, 1975, 4763/75[U]; May 6, 1975, 3402 A/75
Int. Cl.[2] F24H *3/00;* **F28F** *1/12*
U.S. Cl. 165—129 **2 Claims**



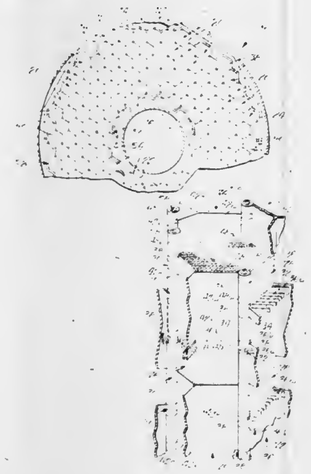
1. A radiator-convector comprising a plurality of assembled modular elements each of which comprises an upper sleeve member, a lower sleeve member parallel to said upper sleeve member, a plate cast integral with said sleeve members and perpendicular to a plane passing through said sleeve members, said plate having a front edge and rear edge, a conduit formed in said plate and connecting said upper sleeve member with said lower sleeve member, fins extending from the opposite sides of said plate and comprising substantially parallel fins obliquely arranged with respect to said plane and front fins provided at the front edge of said plate and forming a front wall, said front fins and the plate of adjacent elements when assembled defining air ducting vertical channels each having a lower inlet opening and an upper outlet opening and said parallel fins defining air ducting oblique channels, wherein according to the improvement said oblique channels have their lower ends open at the rear edges of said plates and their upper ends communicating with said vertical channels and wherein at the inlet openings of said vertical channels ribs are arranged which converge towards said channels.

4,212,351

ARTICULATED MODULE FLOW GUIDE SYSTEM

Thomas H. Van Hagan, Encinitas, and David E. Tanner, Poway, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 23, 1978, Ser. No. 889,291
Int. Cl.[2] F28F *1/42*
U.S. Cl. 165—160 **13 Claims**



1. In a heat exchanger flow guide system for supporting and promoting uniform shell-side flow distribution between modular polygonal shaped tube bundles, said system comprising, in combination, a plurality of flow guides each of which includes at least three axisymmetrically-located radial panels defining connecting means at their radial outer edges adapted to facilitate connection with similar flow guides so that a plurality of the flow guides serve to form a staggered polygonal lattice work peripherally about said plurality of polygonal tube bundles defining flow guide channels having mutually shared partitions.

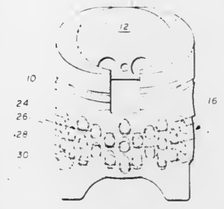
4,212,352

GRIPPING MEMBER FOR WELL TOOLS

Thomas E. Upton, Garland, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 8, 1979, Ser. No. 1,499
Int. Cl.[2] E21B *23/00*
U.S. Cl. 166—206 **7 Claims**

1. A unitary tubular gripping member having a two segment intersecting-axis bore passage therethrough and exterior gripping means thereon, said gripping means further comprising a plurality of insert teeth elements located such that crests of said tooth elements define a plurality of crest lines curved around said tubular gripping member and wherein said individually curved crests with a radius of curvature substantially smaller than the radius of curvature of said crest lines and arranged with a portion of each curved crests thereof lying substantially



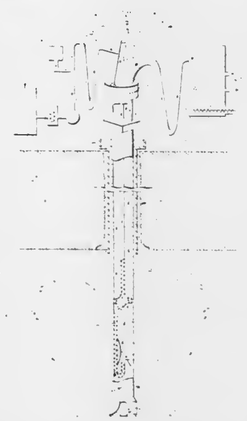
in a crest line having a curved profile around the tubular gripping member, said insert teeth elements are located in a staggered relation wherein crests of adjacent tooth elements define points substantially along adjacent crest lines, and said insert teeth elements are mounted in individual recesses in said tubular gripping member and located in a spaced relation to each other.

4,212,353

HYDRAULIC MINING TECHNIQUE FOR RECOVERING BITUMEN FROM TAR SAND DEPOSIT

Wilbur L. Hall, Bellaire, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,933
Int. Cl.[2] E21B *43/24, 43/37;* **E21C** *37/06*
U.S. Cl. 166—303 **15 Claims**



1. A hydraulic mining method for recovering viscous petroleum including bitumen from subterranean, viscous petroleum-containing unconsolidated mineral formations including tar sand deposits, said formations being penetrated by at least one well, comprising:
(a) introducing a hot, aqueous hydraulic mining fluid comprising a mixture of hot water or steam and a diamine having the following formula:

$$R_1R_2NR_3NH_2$$

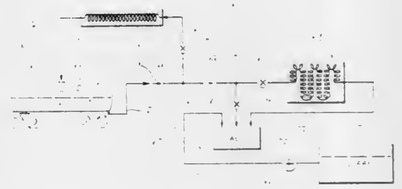
wherein R_1 and R_2 and each hydrogen or a C_1 to C_6 alkyl, linear or branched, N in nitrogen, H is hydrogen, and R_3 is a C_2 to C_{18} alkylene, linear or branched, the number of carbon atoms in R_1, R_2 and R_3 being from 3 to 20, into the formation via the well in the form of a high velocity jet which rotates within the formation, said jet contacting the formation with sufficient energy to dislodge viscous petroleum one unconsolidated minerals; and
(b) recovering a fluid pulp comprising viscous petroleum, unconsolidated minerals and hydraulic mining fluid from the formation.

4,212,354

METHOD FOR INJECTING CARBON DIOXIDE INTO A WELL

Jerry H. Guinn, Pampa, Tex., assignor to Service Fracturing Company and Airry, Inc., Pampa, Tex.

Filed Mar. 19, 1979, Ser. No. 21,441
Int. Cl.[2] E21B *43/24, 43/26*
U.S. Cl. 166—303 **8 Claims**



1. In a method of injecting carbon dioxide into a well having the steps of transporting carbon dioxide to the well site inside a tank, maintaining the temperature and pressure during transporting so as to maintain the carbon dioxide predominately in a liquid state, withdrawing the carbon dioxide and boosting the pressure with a booster pump, then pumping the carbon dioxide down the well with a high pressure pump, an improved method for reducing the vaporization of the carbon dioxide between the tank and the booster pump, comprising:
diverting a portion of the liquid carbon dioxide after the booster pump and before the high pressure pump into a vaporizer;
vaporizing the carbon dioxide in the vaporizer;
transmitting the vaporized carbon dioxide from the vaporizer back into the tank; and
controlling the amount of carbon doixide diverted to the vaporizer so as to maintain the tank at a pressure sufficient to avoid vaporization between the tank and booster pump.

4,212,355

TUBING MANIPULATED TEST VALVE AND LATCH ASSEMBLY

Daniel R. Reardon, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.

Filed Sep. 11, 1978, Ser. No. 940,924
Int. Cl.[2] E21B *43/12*
U.S. Cl. 166—336 **26 Claims**

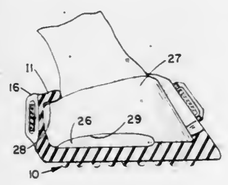
1. In a test valve assmebly adapted to be lowered on a tubular string between upper and lower tubular sections into position within a blowout preventer stack at the upper end of a bore of a well, the improvement comprising: a housing having first and second fluid flow passages therethrough; a valve member between said flow passages and shiftable in said housing to open position to communicate said flow passages during selective incremental testing of said well and manipulatable in said housing to closed position to isolate said flow passages prior to and subsequent to selective incremental testing of said well; means responsive to mechanical manipulation of said tubular string for shifting said valve member between closed

and open positions; and clutch means whereby said upper tubular section may be selectively rotationally engaged with



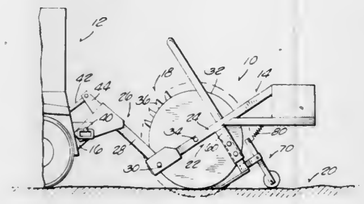
said lower tubular section during testing of said well and when said valve member is in open position.

4,212,356
NAIL-LESS HORSESHOE
Jno R. Battle, 337 Mt. Holyoke Ave., Pacific Palisades, Calif. 90272
Filed Dec. 26, 1978, Ser. No. 972,917
Int. Cl.[2] A01L *3/00, 3/06*
U.S. Cl. 168—18 **5 Claims**



1. A nail-less horseshoe comprising, in combination:
(a) a flexible material defining an enclosure having an upper rim, said enclosure being of general hollow ungulate shape for engaging about and under a horse's hoof and including a generally horizontal forwardly directed rear lip across the rear upper perimeter portion of said rim and a front V-shaped opening extending from the upper front of said rim of the enclosure and terminating in a vertex portion at the lower front of the enclosure to permit the enclosure to be expanded and placed over the hoof, said enclosure including integrally formed exterior enlargements having generally vertical slots, said enlargements being positioned at circumferentially spaced exterior locations about the enclosure;
(b) a flexible belt of textile material passing about the exterior of the enclosure below said rim through said slots with opposite end portions of the belt extending forwardly adjacent to said V-shaped opening; and
(c) buckle means coupled to said opposite end portions of said belt for cinching the end portions together in overlapping relationship whereby said enclosure may be readily disposed over a horse's hoof and thereafter said end portions of the opposite ends of said belt cinched to circumferentially contract the enclosure about the hoof, said rear lip engaging over the rear heel portion of the horse's hoof, the opposite sides of said V-shaped opening coming together as said enclosure is contracted to thereby cause said enclosure to snugly engage the horse's hoof.

4,212,357
TURF AERATING DEVICE
Boyd D. Clements, Elmwood; Charles E. Hines, and James J. Kubat, both of Lincoln, all of Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Feb. 1, 1978, Ser. No. 874,160
Int. Cl.[2] A01B *45/02*
U.S. Cl. 172—22 **9 Claims**

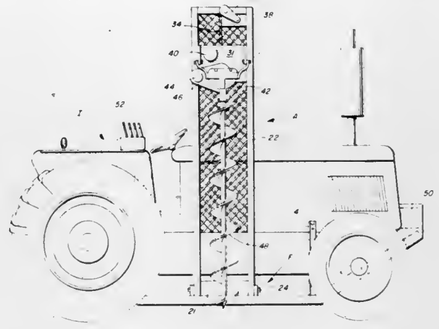


8. A turf aerating device comprising a frame, a cylindrical drum supported from said frame for rotation about a horizontally extending axis and for rolling travel over the surface of the turf to be aerated, a plurality of radially extending, core-forming elements carried on the outer periphery of said drum and adapted to penetrate the turf, said core-forming elements being arranged in a plurality of laterally spaced, generally parallel rows, a generally horizontally extending cross member mounted on said frame rearwardly of the drum axis, bracket means pivotally supported from said cross member, a ground-engageable roller supported from said bracket means rearwardly of the drum axis, and spring means connected between said bracket means and said frame for biasing said roller into engagement with the turf, and a plurality of guard members mounted on said cross member, each of said guard members extending toward the periphery of said drum to a location laterally adjacent one of said rows and having a surface which is located to travel closely adjacent the turf surface and thereby restrain the turf from being pulled upwardly by said core-forming elements.

4,212,358
POSTHOLE DIGGING APPARATUS
Kenneth R. Wisbrock, c/o Valley Construction & Fencing, 68 S. LaSalle, Aurora, Ill. 60505
Filed Jul. 25, 1977, Ser. No. 818,289
Int. Cl.[2] E21C *11/02*
U.S. Cl. 173—27 **5 Claims**

1. A posthole digging attachment for a tractor unit, comprising an undercarriage frame having side members adapted to be attached lengthwise beneath the chassis of a tractor; brackets extending outwardly from said side members at locations adapted for attachment to said chassis of a tractor at corresponding locations along its length; means for detachably connecting said brackets to a said chassis; a slide assembly incorporated in said framework and comprising a structure movable inwardly and outwardly in a lateral direction relative to the length of said frame; a vertical guide assembly pivotally connected to the outwardly extended portion of said structure and adjustable about a horizontal axis parallel to said length of the frame; a rotary drilling tool slidably mounted on said vertical guide assembly for vertical movement of the tool; and drive means for pivotally adjusting said vertical guide assembly, vertically moving said drilling tool, and moving said vertical guide assembly inwardly and outwardly said slide assembly,

vertical guide assembly and drive means being disposed outside an unobstructed space provided within said side members



and brackets to cradle and accommodate said chassis of the tractor.

4,212,359
DOWNHOLE WEIGHT CONTROL DEVICE FOR IMPACT ROCK DRILLING TOOL
Gerald L. Adcock, 511 Airway Dr., Lewiston, Id. 83501
Filed Dec. 27, 1977, Ser. No. 864,780
Int. Cl.[2] E21B *17/04*
U.S. Cl. 175—26 **7 Claims**



1. A downhole weight device for attaching to a downhole, pneumatically-operated impact rock drilling tool having a drill bit to automatically maintain the drill bit in low value pressure contact with the bottom of the hole irrespective of the depth of the hole and the working pressure to enable the tool to operate at optimum penetration efficiency while minimizing breakage and excessive wear of the drill bit, in which the impact drilling tool has:
an elongated tool housing extending between an upper end and a lower end with an enclosed internal tool cylinder chamber therebetween;
said lower end of the tool housing having a chuck for receiving and securing the drill bit thereto with the drill bit permitted limited free movement with respect to the tool housing between a closed working position and an extended nonworking position;
a hammer piston freely mounted in the cylinder chamber for moving downward toward and impacting against the drill bit;
said hammer piston having an upper face surface of a known area;
wherein the downhole weight device comprises:
an elongated cylindrical casing member having a cylindrical cavity therein;
a weight control piston member mounted for reciprocal movement within the cylindrical cavity;
first connecting means for operatively connecting one of the members to an uphole drill string;
a second connecting means for operatively connecting the other member to the upper end of the tool housing;
device air supply means for applying air at the working air pressure (1) to the tool cylinder chamber and against the upper face surface of the hammer piston to drive the hammer piston downward toward and against the drill bit and against the elongated tool housing creating an upward force related to the known area of the upper piston face tending to lift the tool housing with respect to the tool bit with the tool bit tending to move from the closed position toward the extended nonworking position, and (2) to the device cylindrical cavity and against a face surface of the weight control piston member for generating a downward force through the second connecting means applied to the tool housing to oppose the upward force tending to lift the tool housing;
wherein said face surface of the weight control piston member has a surface area related to the known area of the upper face surface of the hammer piston so that the downward force is sufficient to prevent the tool housing from lifting with respect to the drill bit and to maintain the drill bit in the closed working position with the drill bit in low value operating contact pressure with the bottom of the hole;
wherein the weight control piston member is reciprocally mounted in the elongated cylindrical cavity for movement to a contracted position when the drill string is fed downward at a substantially greater rate than the penetration rate of the drilling bit and to an extended position when the penetration rate of the drilling bit is substantially greater than the feed rate of the drill string; and
automatic air pressure decreasing means responsive to the contraction of the tool for automatically decreasing the air pressure against the hammer piston and the weight control piston when the weight control piston member approaches the contracted position to cause an increase in back pressure up the drill string and to reduce the applied downward force on the tool housing to minimize the contact pressure of the drill bit with the bottom of the hole when the drill string is fed downward at a substantially greater rate than the penetration rate of the drilling bit.

4,212,360
LOAD MEASURING ARRANGEMENTS FOR FORK LIFT TRUCKS OR THE LIKE
Keith Chesher, Billericay, England, assignor to Pye (Electronics Products) Limited, Cambridge, England
Filed Oct. 12, 1978, Ser. No. 950,659
Claims priority, application United Kingdom, Oct. 20, 1977, 43721/77
Int. Cl.[2] G01G *19/08, 19/14, 3/14*
U.S. Cl. 177—139 **3 Claims**

1. An arrangement for measuring the weight of a load being carried by a fork lift truck or other load-handling device having a fork or other load engaging member mounted on a carriage supported and arranged for movement parallel to the axis of a substantially vertical mast of the device, which comprises at least one flexible carriage support member, one end of said support member being secured to a first anchor member fixed in relation to the mast and the other end of said support member being secured to a second anchor member fixed to the carriage, at least one anchor member having an opening there-

through; a securing member associated with said one anchor member and having a central portion passing through the opening in said one anchor member, a first end portion adapted to be connected to one end of the flexible support member on one side of the anchor member, and a second end portion having a cross-section greater than that of the opening and



positioned on the other side of the anchor member; a load cell transducer located between said second end portion and said other side of the anchor member and responsive to measure the compressive forces exerted between the securing member and the anchor member; and means responsive to the resulting load cell transducer measurement to provide an indication of the weight of the load being carried.

4,212,361

ELECTRICAL SCALE WITH IMPROVED IMMUNITY TO ENVIRONMENTAL DISTURBANCES

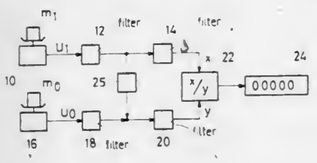
Rudolf Stocker, Azmoos, Switzerland, assignor to Mettler Instruments AG, Greifensee, Switzerland

Filed Feb. 22, 1979, Ser. No. 14,241

Claims priority, application Switzerland, Feb. 24, 1978, 2026/78

Int. Cl.[2] **G01G** *19/00, 3/14*

U.S. Cl. 177—200 **14 Claims**



1. In an electrical scale subject to environmental disturbances, said electrical scale having load receiving means for receiving a load to be weighed, load-responsive means connected to said load receiving means for furnishing a first load signal varying as a function of the weight of said load, reference mass receiving means for receiving a reference load, reference signal furnishing means connected to said reference mass receiving means for furnishing a reference signal responding to the weight of said reference load, and combining means having a load input connected to said load-responsive means and a reference input connected to said reference signal furnishing means for furnishing a final output signal indicative of said weight of said load relative to said reference mass, said final output signal having undesired variations due to said environmental disturbances:

the improvement comprising means for decreasing said undesired variations of said final output signal, said means comprising coupling means having a transfer characteristic varying as a predetermined function of frequency intercoupled between said load-responsive means and said reference input of said combining means for furnishing a compensating signal varying as a function of said load signal and said transfer characteristic of said coupling means to said reference input of said combining means, whereby differences in variation of said load signal and said reference signal resulting from acceleration effects of said environmental disturbances are substantially decreased.

4,212,362

DEVICE FOR CAUSING TRANSLATION OF A TRACKED MACHINE

Guy Blanpain, Verneuil. en. Halatte, and Pierre Grandfils, Précy -sur- Oise, both of France, assignors to Charbonnages de France, Paris, France

Filed Sep. 25, 1978, Ser. No. 946,055

Claims priority, application France, Oct. 7, 1977, 77 30301

Int. Cl.[2] **B62D** *11/04*

U.S. Cl. 180—6.48 **4 Claims**



1. A device for causing translation of a machine comprising a sledge for carrying the machine and an articulated track surrounding said sledge, said track comprising a plurality of shoes articulated to one another, each shoe comprising two L-angle half-shoes each having a longer branch and a shorter branch and connecting means fastening the two half-shoes together and holding the two shorter branches spaced apart from one another and substantially parallel to the direction of movement of the track, and further comprising a jack carried by the sledge, and a pushing member provided at the end of the piston rod of the jack and arranged to cooperate with a plurality of abutments provided inside the track, wherein each abutment is carried by the shorter branches of each shoe and the space between the shorter branches forms a passage in the track.

4,212,363

TWIST-TYPE CONTROL HANDLE FOR LAWN MOWERS

Eugene Letner, Richmond Hill, and Donald L. Gobin, Savannah, both of Ga., assignors to Roper Corporation, Kankakee, Ill.

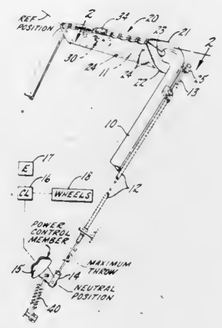
Filed Sep. 1, 1978, Ser. No. 938,969

Int. Cl.[2] **B62D** *51/04*

U.S. Cl. 180—19 H **7 Claims**

1. In a walking type power lawn mower or the like the combination comprising a power control member having a neutral position and movable therefrom to a position of maximum throw, a handle for manual guidance including a transversely arranged cross bar at a convenient gripping height, a tubular grip snugly telescoped over the cross bar and rockable thereon forwardly from a reference position, means including a cable coupled to the tubular grip at one end and to the power control member at the other end to increase the setting of the latter in accordance with the degree of movement of the grip from reference position, the grip being of oval cross section dimensioned to fit the grasp of the operator's hand, the long dimension of the oval being angled rearwardly and downwardly in reference position so as to be substantially parallel to the palms of the operator when they are placed in a natural grasping position on the grip whereby the operator can sense by the orientation of his hands the neutral position of the power control member as well as the subsequent degree of

departure from neutral position, latching means for normally latching the tubular grip in its reference position, and a latch-releasing trigger on the tubular grip positioned to be manually



engageable by at least one hand of the operator incident to grasping the grip for releasing the latch and thereby releasing the grip for forward rocking movement.

4,212,364

DRIVE AXLE SUPPORT FRAME FOR A WALK-BEHIND, SELF-PROPELLED LAWN MOWER

Dale R. Dobberpuhl, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Dec. 14, 1978, Ser. No. 969,459

Int. Cl.[2] **B62D** *51/04;* **A01D** *35/26*

U.S. Cl. 180—19 R **4 Claims**



1. In a self-propelled rotary lawn mower including a main frame defining a blade housing and being supported by front and rear sets of wheels, an engine supported on a central portion of the frame and drive means coupled between the engine and one of the sets of wheels, the improvement residing in a support structure for the one set of wheels, comprising: said frame including an extension elevated above the ground; an axle support frame vertically pivotally connected to the extension for swinging about a transverse axis; adjustment means connected between the main and axle support frames for releasably fixing the axle support frame in selected vertical positions relative to the main frame; said drive means including an axle rotatably supported by the axle support frame, said one set of wheels including a pair of wheels respectively fixed to the opposite ends of the axle; a cross-shaft located on said axis and rotatably supported by the axle support frame; coupling means connected between the cross-shaft and axle for selectively establishing a drive transmitting relationship therebetween; and said axle support frame being in the form of a guard structure having opposite ends joined by a fore-and-aft curved central portion, the opposite ends and central portion of the axle support frame cooperating with the extension of the main frame to form an open-bottomed housing for at least central portions of the axle and cross-shaft and for the coupling means.

4,212,365

ARTICULATING MINE CAR COUPLING

Paul F. Curry, P.O. Box 775, Glade Spring, Va. 24340

Filed Sep. 18, 1978, Ser. No. 942,899

Int. Cl.[2] **B62D** *11/00, 13/02*

U.S. Cl. 180—139 **4 Claims**



1. An articulating coupling for connecting two wheeled vehicles, comprising:

vertical pivot means to connect the two vehicles for relative turning movement in a horizontal plane;

means for selectively turning the vehicles about said vertical pivot means;

horizontal pivot means to connect the two vehicles for tilting movement relative to each other, said horizontal pivot means comprising a pair of normally abutting, vertical hinge plates, means for connecting one of said hinge plates rigidly to one of the vehicles, means for connecting the other of said hinge plates to said vertical pivot means, a hinge pin pivotally connecting the lower ends of said plates to each other, and a pair of vertical wall plates connected to opposite sides of said other hinge plate and extending said other hinge plate past said one hinge plate toward said one vehicle;

said means for selectively turning the vehicles comprising a pair of extensible power units on opposite sides of said vertical pivot means and operative between said other vehicle and said wall plates to forcibly pivot said wall plates relative to said other vehicle about said vertical pivot means; and

tilting means including at least one further extensible power unit operative between said one vehicle and said wall plates to pivot said hinge plates out of normal abutting relationship and raise the respective portions of the vehicles connected by the coupling.

4,212,366

POWER STEERING CONTROL DEVICE

Tadao Ohtuka, Namekawa; Takeshi Ohe, Higashimatsuyama, and Kunihiro Hamano, Tokigawa, all of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,075

Int. Cl.[2] **B62D** *5/08*

U.S. Cl. 180—141 **19 Claims**

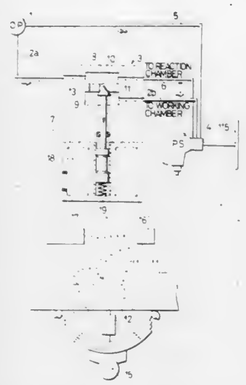
1. A power steering control system for controlling operation of a fluid pressure-operated power steering unit of a steerable vehicle having a steering wheel, said power steering unit including fluid pressure-operated reaction means for applying a reaction force to resist turning of said steering wheel, which comprises:

a pump for supplying pressurized fluid for operating said reaction means;

a vehicle load sensing mechanism which produces an output responsive to the weight of the load on the vehicle;

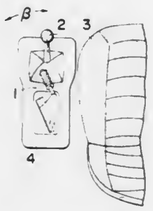
fluid pressure control valve means connected for controlling the pressure of the pressurized fluid applied by said pump to said reaction means and thereby controlling the amount of reaction force applied to said steering wheel, and actuating means connected for operating said control valve

means in response to the output of said vehicle load sensing mechanism so that the reaction force applied to the



steering wheel is small when the weight of the load on the vehicle is large.

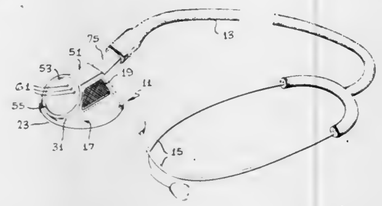
4,212,367
MANUAL LEVER FOR A VEHICLE
Hiroshi Kawaguchi, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Mar. 13, 1978, Ser. No. 886,112
Claims priority, application Japan, Apr. 13, 1977, 52-42353
Int. Cl.[2] B60T *7/10*
U.S. Cl. 180—271 **4 Claims**



1. A manual lever mounted along one side of a driver's seat in a vehicle, so as to be pivoted in a plane of pivotal movement by the hand of a driver seated in said seat, wherein the plane of pivotal movement of said lever is oblique to the longitudinal axis of said vehicle so that said lever approaches said seat when said lever is pivoted backward.

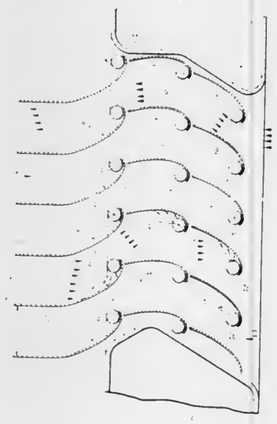
4,212,368
ANGULARLY RELATED DUAL STETHOSCOPE HEAD
Derek R. Allen, 27 Point Loma, Corona del Mar, Calif. 92625
Filed Mar. 13, 1978, Ser. No. 885,883
Int. Cl.[2] A61B *7/02;* **H04R** *25/00*
U.S. Cl. 181—131 **6 Claims**

1. A stethoscope head comprising:
a low frequency sound receiving bell having,
a bell axis and a concave cross-sectional configuration forming a bowl-like member;
a high frequency sound receiving diaphragm having,
a diaphragm axis;
a body joining and supporting said bell and said diaphragm such that said bell axis intersects said diaphragm axis at an acute angle, said body including,
a valve seat;
a first airway joining said diaphragm with said valve seat;
a second airway joining said bell with said valve seat and being offset from said bell axis, said airway being formed of a series of openings of substantially smaller diameter than the diameter of said first airway;
a valve spool operatively mounted in said valve seat having a central axis outside of said bell axis and said diaphragm axis;



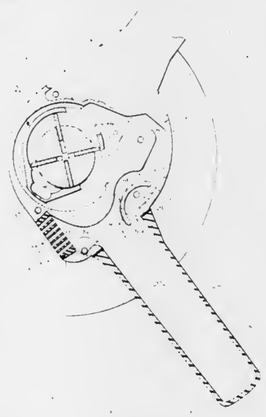
a flattened sound tube passing through said valve spool and extending from said body member to act as a lever whereby said spool can be rotated within said valve seat to selectively communicate said sound tube with said first and second airways, said sound tube having an operative axis outside of the respective bell axis and said diaphragm axis.

4,212,369
SOUND-ABSORBING COVERING, ESPECIALLY RADIATOR COVERING FOR MOTOR VEHICLES
Karl Zeilinger, Berglen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Filed Feb. 22, 1979, Ser. No. 13,817
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808166
Int. Cl.[2] F04F *17/04*
U.S. Cl. 181—224 **27 Claims**



1. A sound-absorbing covering operable to be traversed by a gaseous medium in a direction opposite to the direction of travel of the sound, characterized by at least one air channel means, in which at least one section of a channel wall is formed by an arcuate wall portion substantially parabolically shaped in cross section, the arcuate wall portion facing with its apex the in-flow side of the gaseous medium and terminating in an arcuate apex portion protruding into the interior space of the channel means, the arcuate apex portion shielding a trough-shaped recess substantially open in the direction of the discharge side of the gaseous medium, and a sound-absorbing insert means arranged in said recess at least approximately within the area of the focal line thereof.

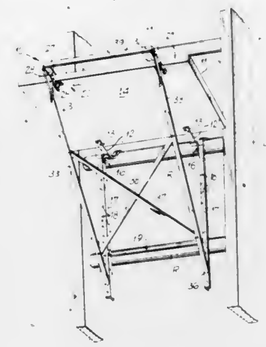
4,212,370
SOUND ABSORBER FOR AN INTERMITTENTLY DISCHARGED GASEOUS WORKING MEDIUM
Ernst Dreher, Reutlingen; Richard Wolf, Stuttgart, and Max Bürklin, Waldenbuch, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Oct. 25, 1978, Ser. No. 955,477
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752261
Int. Cl.[2] F01N *1/08*
U.S. Cl. 181—230 **12 Claims**



1. A sound absorber for intermittently discharged gaseous working medium, comprising a discharge channel for said medium, said channel having at least one portion in which the direction of flow of said medium is changed and said one portion defining a succession of passages periodically increasing and decreasing in cross-section; the variations of the flow direction of said medium in respective passages being substantially smaller than 90°, and the ratio between the maximum and minimum cross-sections of said passages being at most 4:1; and an outlet nozzle plate terminating said discharge channel and defining a plurality of discharge nozzles having central axes converging in the direction of flow of said medium into the outer atmosphere and at least a part of said central axes intersecting at different points lying in a single plane.

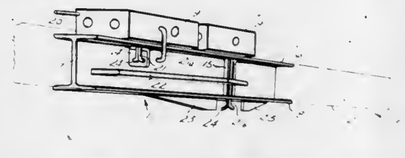
4,212,371
LADDER ATTACHMENT
Alexander R. Gaviorno, Jr., 57 Devonshire Dr., Cheshire, Mass. 01225
Filed Apr. 25, 1979, Ser. No. 33,139
Int. Cl.[2] E06C *7/14*
U.S. Cl. 182—121 **7 Claims**

1. A foldable platform attachment for a ladder comprising a rigid, generally rectangular carrier platform having front, rear and side edges, said platform including adjacent each of its side edges a foldable linkage arrangement adapted to assume a triangular configuration, each said linkage arrangement including a hook member fixed to said platform adjacent its front edge and adapted to be engaged over a ladder rung, a hanger arm pivotally depending from said hook member for movement about a first pivot axis parallel to the plane of said platform, said hanger arm being adapted to engage against adjacent ladder rungs and including a plurality of longitudinally spaced lock apertures, a lock bar having a free end and having a second end connected to said platform adjacent said rear edge for pivotal movement about a second axis parallel to said first axis between first and second limiting abutting positions against said platform, said bar extending beyond said rear edge of said platform in one said limiting position and beneath said platform in said other limiting position, and a stretcher leg having one end pivotally connected to said free end of said lock bar for movement about a third pivot axis parallel to said other pivot axes, said stretcher leg including at its other end a



connector portion complemental to and adapted to engage a selected lock aperture of said hanger arm.

4,212,372
LUBRICATION PROCESS AND APPARATUS
William C. Murphy, and Lyle G. Myers, both of Fremont, Mich., assignors to Molychem, Inc., Bailey, Mich.
Filed Jun. 22, 1978, Ser. No. 917,790
Int. Cl.[2] F16N *7/00*
U.S. Cl. 184—15 B **6 Claims**

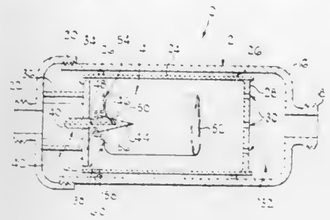


4. A process for central source lubrication, comprising the steps of:
guiding and guarding the path of structure in continuous movement;
directing capillary tubes to precision delivery of lubricant against the path of structure;
metering the delivery of lubricant through said capillaries by use of an attenuated capacitor discharge to the solenoid of valves connected to said capillaries in accord with precise positioning of said structure in continuous movement.

4,212,373
DOSING A FLOWING FLUID
Edgar P. Scragg, 60 Mulder St., Florida Park Extension 3, Florida, Transvaal, South Africa
Filed Sep. 6, 1978, Ser. No. 939,927
Claims priority, application South Africa, Sep. 21, 1977, 77/5656
Int. Cl.[3] F16N *7/34*
U.S. Cl. 184—56 A **15 Claims**

15. A method of dosing a flowing fluid which comprises the steps of:
(a) impaling an additive cartridge on a spike the cartridge comprising a bag secured to an element which element includes a sleeve, and impaling being effected by passing the spike through said sleeve so that the spike penetrates the cartridge;
(b) providing on said sleeve and said spike co-operating surfaces which inter-engage to restrain the cartridge against accidental detachment from the spike;
(c) placing the spike and cartridge within a casing having an inlet for fluid to be dosed and an outlet for dosed fluid;

(d) causing flowing fluid to impinge on the bag so as to flatten the bag and thereby force additive from the bag



through an outlet path provided therefor through said spike.

4,212,374
VEHICLE HOIST
Leslie Bubik, Toronto, Canada, assignor to Vulcan Equipment Company Limited, Toronto, Canada
Filed Mar. 23, 1978, Ser. No. 889,587
Claims priority, application Canada, Feb. 17, 1978, 297202
Int. Cl.[2] B66F *7/10*
U.S. Cl. 187—8.43 **20 Claims**

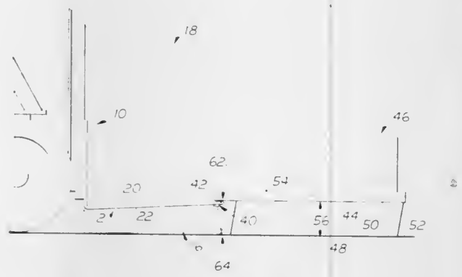


1. A vehicle hoist which comprises a pair of ground-engaging feet extending in a spaced-apart parallel relationship, said feet each having a front end and a substantially vertical column extending upwardly therefrom adjacent said front end, a ramp section for receiving a vehicle to be raised and movably supported between said columns for vertical motion in a substantially horizontal attitude, said ramp section comprising a pair of spaced-apart ramp members extending forwardly and rearwardly beyond said columns and second vehicle lifting means, said second vehicle lifting means comprising a vehicle-engaging member having an upper surface normally flush with an upper deck of a respective ramp member and means for moving said vehicle-engaging member substantially vertically, a transverse cross member extending between said ramp members in alignment with said columns, said cross member extending beyond said ramp members and having guide means engageable with said columns, and spacer means for maintaining a substantially constant relationship between said ramp section and said columns, and means for moving said ramp section relative to said columns.

4,212,375
ALIGNING APPARATUS FOR MATERIAL HANDLING SYSTEM
Laurel L. Peterson, East Peoria, and Alan J. Hickman, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Jun. 15, 1978, Ser. No. 915,694
Int. Cl.[2] B66B *9/20*
U.S. Cl. 187—9 R **12 Claims**

1. In a material lifting system (**10**) having a lifting element (**12**) and first means (**14**) for controllably moving the lifting element (**12**) between first and second positions (**16,18**), said lifting element (**12**) having first and second surfaces (**20,22**) and being positionable between material (**46**) to be loaded on said first surface (**20**) and structure (**52**) adjacent said material (**46**) to be loaded on said first surface (**46**), the improvement comprising:

second means (**40**) for delivering a first signal in response to said first surface (**20**) of the lifting element (**12**) being at an elevation (**42**) greater than a first preselected elevation (**44**) relative to said material (**46**) to be loaded on said first surface (**20**) and a second signal in response to said second surface (**22**) of the lifting element (**12**) being at an elevation (**48**) less than a second preselected elevation (**50**) relative to said structure (**52**) adjacent said material (**46**) to be loaded on said first surface (**20**), said second means (**40**) including first and second switch portions (**58,60**) connected to said lifting element (**12**), said first switch portion (**58**) extending above said first surface (**20**) and being



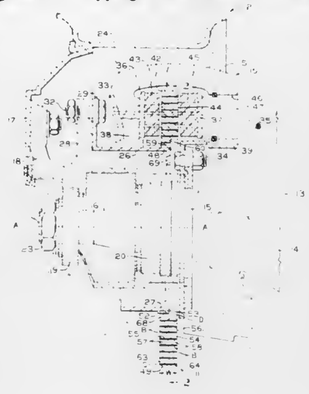
contactable with said material (**46**) to be loaded in response to said first surface (**20**) being positioned between said material (**46**) and adjacent structure (**52**) and at said elevation (**42**) greater than said first preselected elevation (**44**), said second switch portion (**60**) extending below said second surface (**22**) and being contactable with said adjacent structure (**52**) in response to said second surface (**22**) being positioned between said material (**46**) and adjacent structure (**52**) and at said elevation (**48**) less than said second preselected elevation (**50**); and

third means (**57**) for receiving said first and second signals and automatically positioning one of said surfaces (**20,22**) of the lifting element (**12**) at the respective related one of said preselected elevations (**44,50**) in response to receiving the related respective one of said signals.

4,212,376
CALIPER BRAKE ROTOR
John J. Enright, Troy, and William T. Holzworth, Springfield, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Oct. 11, 1978, Ser. No. 950,491
Int. Cl.[2] F16D *65/12*
U.S. Cl. 188—218 XL **12 Claims**

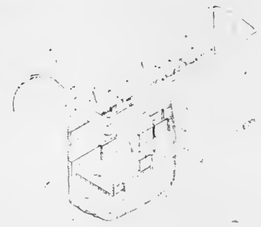
1. A rotor for a caliper brake comprising a disc with a central opening and an outer periphery, said disc including at least one coiled metal strip, said strip having a rectangular cross section with edge surfaces and overlapping surfaces, each of said edge surfaces having a sufficient thickness so that when aligned with edge surfaces of adjacent coils friction faces are provided for engagement by friction lining carriers of said caliper brake, said disc including radially inner coils adjacent said opening, radially outer coils adjacent said outer periphery, intermediate coils between said outer and inner coils, means holding said coils in overlapping position such that their edges are maintained in alignment wherein said overlapping surfaces of said inner coils are adhered over at least a 360-degree circumferentially continuous area, said overlapping surfaces of said outer coils are adhered over at least a 360-degree circumferentially continuous area and said intermediate coils are held

in overlapping position at circumferentially spaced-apart positions along said overlapping surfaces and mounting means at



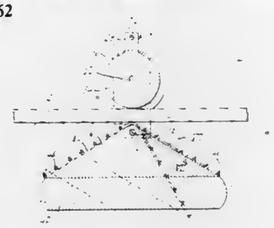
said central opening in torque-transmitting engagement with said inner coils for mounting said rotor on a wheel.

4,212,377
CONVERTIBLE BAG
Robert Weinreb, 510 Broadway, New York, N.Y. 10012
Filed Oct. 15, 1979, Ser. No. 84,754
Int. Cl.[3] B65D *30/22*
U.S. Cl. 190—52 **3 Claims**



1. A fabric bag, comprising a parallelopipedal fabric pouch having an open top, opposed front and back faces, opposed side ends and a bottom; a cover secured to said pouch for closing the open top; an elongated divider panel extending from one side end to the other and swingably secured along one longitudinal end thereof to the inside of one of said faces and having a longitudinally extending free end; a pair of cooperating elongated hook and eye tape fasteners, one tape fastener being secured to said divider panel at said free end and the other fastener being secured to the inside of the other of said faces; said divider panel having a first position in which it is parallel to said bottom, thus dividing the pouch into an upper compartment located between said open top and said divider panel and a lower compartment located between said divider panel and said bottom, said divider panel being held in said first position when said cooperating tape fasteners are in contacting fastening relationship; said divider panel being swingable, after disengagement of said cooperating tape fasteners, to a second position in which it lies against the inside of said one face to merge said compartments into a single space; and a closable slot means in one of said faces for providing access to said lower compartment.

4,212,378
DEVICE FOR DE-ICING POWER CABLES
Henry J. Hrovat, 1121 W. 9th St., Newton, Kans. 67114
Filed Jun. 26, 1978, Ser. No. 919,077
Int. Cl.[2] B60L *5/02*
U.S. Cl. 191—62 **9 Claims**



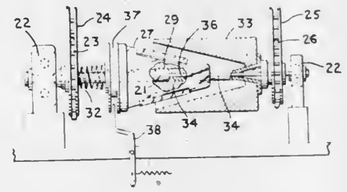
1. A device for de-icing a span of a power cable supported between a pair of gound-supported pales, said device comprising:

a. a dolly having a rotatable wheel engaging said cable for rolling movement therealong, said dolly comprising a body portion in which said wheel is mounted for rotation on an axis transverse to and above said cable,

b. a weight of substantial mass, said weight being mounted on said body portion for free pivotal movement on an axis parallel to said wheel axis and extending transversely beneath said cable, and

c. scraper members carried by said weight and normally not engaging said cable, but being operable responsively to pivotal movement of said weight on said body portion to move into scraping engagement with said cable.

4,212,379
CONICAL CLUTCH
Hugo A. Zoino, 273 Parker St., Newark, N.J. 07104
Filed Mar. 17, 1978, Ser. No. 887,602
Int. Cl.[2] F16D *13/24*
U.S. Cl. 192—66 **14 Claims**



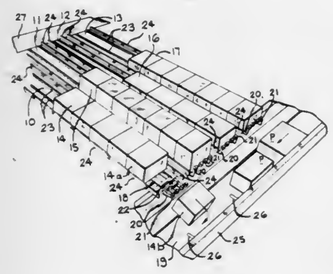
1. A cone clutch comprising an inner cone and an outer cone, a shaft for supporting the cones, the inner cone being mounted for axial movement along the shaft, the inner cone being mounted for rotation with the shaft, and actuating means for moving the inner cone in one direction into engagement with the outer cone and for moving the inner cone in the opposite direction out of engagement with the outer cone, the inner cone being provided with at least one ridged surface comprising ridges disposed at predetermined angles, and said one ridged surface being interrupted by at least one radially movable plate having an arcuate outer periphery which includes ridges disposed at predetermined angles different from the first mentioned angles.

4,212,380
TORSION DAMPING ASSEMBLY FOR FRICTION CLUTCHES
René Billet, Lamorlaye, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Mar. 30, 1978, Ser. No. 891,769
Claims priority, application France, Apr. 4, 1977, 77 10034
Int. Cl.[2] F16D *3/14, 3/66*
U.S. Cl. 192—106.2 4 Claims



1. A torsion damping assembly comprising two coaxial members including a hub and a radial web disposed annularly around said hub, said coaxial members being mounted for relative angular displacement over a predetermined sector limited by meshing means including at least one radially oriented meshing member intermeshing with circumferential play with at least one complementary radially oriented meshing member facing the first mentioned meshing member, and a friction washer also having along its inner periphery a radially oriented meshing member similar to the meshing member on said web and also intermeshing with the corresponding meshing member on said hub.

4,212,381
ANTI-RUNOUT DEVICE AND CONVEYOR APPARATUS
Martin E. Cook, 10025 Stoll Rd., Haslett, Mich. 48840
Filed Feb. 15, 1979, Ser. No. 12,379
Int. Cl.[2] B65F *11/00*
U.S. Cl. 193—40 14 Claims



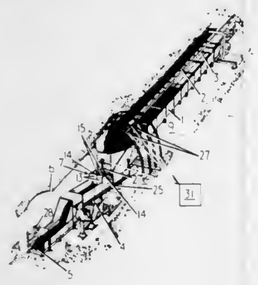
1. In a conveyor apparatus including means defining an inclined lane and a discharge end along which packages are to be conveyed by gravity for singular discharge at the end, means defining a support for the lane, a release mechanism at the discharge end of said lane, the release mechanism being moveable from a package blocking position to a package release position for a first in line package, a brake means positioned upstream from the release mechanism for retarding movement of a second in line package in the lane when the release mechanism is in its release position, the improvement in the brake means which comprises:

(a) a brake shoe wherein one side of the shoe is mounted on a lifter means and wherein an opposite side of the shoe is a brake surface;

(b) guide means mounted on the support means adapted for supported movement of the lifter means such that the shoe is linearly moveable substantially above the lane for contact by the brake surface of the shoe with an underside of a second in line package which can be moving out of contact with and above the lane towards the release mechanism to lift the package; and

(c) means for moving the lifter means such that the brake surface of the shoe engages the underside of and lifts the second in line package in response to the release mechanism being in the release position.

4,212,382
BUNKERING SYSTEM
Morgan J. Williams, Melbourne, England, assignor to Coal Industry (Patents) Limited, London, England
Filed Jun. 19, 1978, Ser. No. 916,750
Claims priority, application United Kingdom, Jun. 21, 1977, 25774/77
Int. Cl.[2] B65G *43/08*
U.S. Cl. 198—502 4 Claims

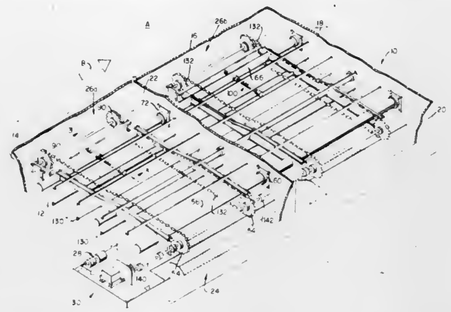


1. A device, to be used in a bunkering system including a drivable conveyor adapted to remove material from a bunker, comprising a pivotally mounted metering door mounted in a pivotal mounting and biased to remain closed, at least one fluid operable ram for moving the pivotal mounting up and down relative to the conveyor thereby to vary the clearance between the bottom of the door and the conveyor, and an indicating means which gives an indication of the clearance.

4,212,383
DRAG CONVEYOR AND HOPPER ASSEMBLY
David A. Wagner, Middlesex, N.J., assignor to Research-Cottrell, Inc., Somerville, N.J.
Filed Nov. 20, 1978, Ser. No. 962,026
Int. Cl.[2] B65G *19/00, 21/10, 41/00*
U.S. Cl. 198—616 6 Claims

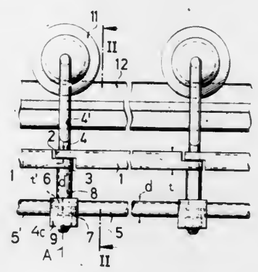
1. A drag conveyor and hopper assembly characterized by a hopper having a generally quadrangular base and vertical side walls, a conveyed material receiving trough along one side of the base, and a drag conveyor, said drag conveyor having a main frame comprising at least a pair of spaced apart longitudinal frame members telescopically extendable at one end, means for extending and retracting said telescopically extendable end, at least a pair of longitudinally spaced transverse members rigidly connected to said frame members and extending transversely therebeyond, hopper wall engaging support members telescopically mounted at the outboard ends of the at least one pair of transverse members, an idler shaft and a drive shaft each

carrying a pair of transversely spaced chain sprockets mounted at opposite ends of the frame members, a pair of drag chains



mounted between said sprockets and a plurality of drag bars connected between said pair of chains.

4,212,384
CIRCULATING CONVEYOR
Erwin Grube, Bielefeld, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany
Filed Sep. 7, 1978, Ser. No. 940,197
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740594
Int. Cl.[2] B65G *17/32*
U.S. Cl. 198—684 7 Claims



1. An endless conveyor for a suspended load, comprising:

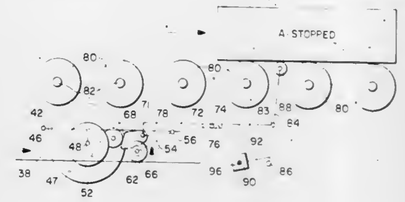
an endless track;

a load carrier displaceable along said track and formed with a plurality of wheels riding on said track, said load carrier comprising a drive chain formed by a multiplicity of rigid bars adapted to sustain tensile and compressive stress in the longitudinal dimension, successive bars being articulated together about vertical axes;

drive means including a friction roller engageable with a flank of said drive chain; and

a load-support chain for goods to be transported by said conveyor below said drive chain, said support chain being constituted of a plurality of rigid bars articulated together about vertical axes at their ends and each of the same length as a corresponding bar of said drive chain, said load carrier comprising for each wheel supporting same upon said track, a respective stirrup-shaped member having a shank forming an axle for the respective wheel engaging said track, another shank below said track, a bight interconnecting said shanks and a downwardly extending stem from the shank below said track, each of said downwardly extending shanks forming an articulation for adjoining bars of both chains whereby adjoining bars of both chains have coincident articulation axes defined by said stems.

4,212,385
ARTICLE ACCUMULATION CONVEYOR
John M. Leach, Box 341, Port Jefferson, N.Y. 11777
Filed Sep. 29, 1978, Ser. No. 946,860
Int. Cl.[2] B65G *13/06*
U.S. Cl. 198—781 10 Claims



3. An article accumulation conveyor comprising a frame, rotatable article support units carried by said frame and positioned so as to form an article travel path, a driven elongated member mounted for movement lengthwise along but vertically spaced from and below said article support units, a frame carried support under said driven member maintaining it always at a substantially fixed elevation, means for transmitting movement from said driven member to said article support units to rotate the same so as to move the articles comprising at least one movement transmission assembly pivoted for vertical movement on and rotatably mounted relative to said frame for movement into two extreme vertical positions relative to said driven member and comprising a rotatable member, a first part of which contacts said driven member and is rotated thereby (in the extreme lowered position) and a second part of which is attached for rotation with said first part and contacts (at least one) in between two of said article support units when in the extreme raised position to rotate the same and move said article without breaking the driving contact between said first member and said driven member, said first part which contacts said driven member and the driven member itself having coacting interlocking areas which enable significant vertical separation movement between them without breaking driving contact therebetween, means powered solely by said driven elongated member and which exerts a definite and well defined vertical thrust of unlimited duration, except for space limitations, upwardly for moving said movement transmitting means vertically from the lower extreme position to the upper extreme position to force said second part in between two of said rotatable article supports to rotate them, and means operated by articles when in certain positions on said rotatable article supports for controlling the vertical movement functions of said last named means but without exerting any of the force to create the vertical movements so that a very light article can accurately control the vertical movements.

5. An article accumulation conveyor comprising a frame, rotatable article support and moving units carried by said frame and positioned so as to form an article travel path, a driven elongated member movable lengthwise along said rotatable article support unit path, activatable means for transmitting movement from said driven member to (articles on said path) said rotatable article support units, sensor means operated by articles at selected points on said path and connected with said movement transmission means so as to activate and deactivate said movement transmission means when articles are in given positions on said path whereby the conveyor is enabled to perform an article accumulation function and means normally inoperative but operable at will by an operator to lock said sensor means in either the movement transmission means activated or deactivated position whereby the conveyor is also enabled to selectively perform the function of a constantly powered roller conveyor or unpowered roller conveyor.

4,212,386
CIGARETTE CASE
Leo Maisonneuve, 4480 N. 40th St., St. Petersburg, Fla. 33714
Continuation of Ser. No. 832,086, Sep. 12, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 953,548
Int. Cl.[2] A45C *11/00*
U.S. Cl. 206—37 **3 Claims**



1. A novelty device configured to hold a single cigarette or the like, said novelty device comprising an elongated upper and an elongated lower member detachably coupled together by a clasp means attached to said upper member and a guide means comprising an alignment means comprising at least one ridge including a forward and rear portion formed on said upper member and extending substantially the length thereof and a corresponding ledge including a forward and rear portion formed on said lower member and extending substantially the length thereof disposed to operatively engage each other in sliding relation to maintain lateral alignment of said upper member relative to said lower member during assembly and disassembly of said novelty device and a stop means to position said upper member relative to said lower member longitudinally when assembled, said clasp means comprises a substantially flexible member fixedly attached to said upper member having a substantially U-shaped element to extend over one end of said upper member and said lower member, said stop means comprises a key-like element formed along said forward portion of said ridge and a corresponding lower stop means comprises a detent formed on said forward portion of said ledge to maintain said longitudinal alignment of said upper member relative to said lower member, said guide means further including an opening means formed on said rear portion of said ridge and said ledge to facilitate the opening of said upper member relative to said lower member, said opening means comprising an upper opening element including a first key formed on said rear portion of said ridge and a lower opening element including a second key formed on said rear portion of said ledge, said upper and lower opening elements disposed to operatively engage each other in camming relationship to lift said elongated upper member relative to said elongated lower member during the opening of said upper member relative to said lower member.

4,212,387
CABLE REPAIR KIT
Edward J. Kotski, Hackettstown; Larry N. Siebens, Great Meadows, and Donald D. Perry, Milford, all of N.J., assignors to Amerace Corporation, New York, N.Y.
Filed Dec. 18, 1978, Ser. No. 970,254
Int. Cl.[2] H02G *15/08;* **B65D** *81/32, 85/00*
U.S. Cl. 206—223 **6 Claims**

1. A cable repair kit having component parts therein capable of being utilized in the field to repair electrical cables or conduits, said kit comprising:

(a) an abrasive material for roughening the damaged portion of said cable;

(b) a cleaning compound for removing contaminants from said damaged portion of said cable;

(c) a filler compound for augmenting broken surface regions of said damaged cable portion;

(d) a bonding agent adapted to be applied to said damaged cable portion including said filler augmented cable surface region;

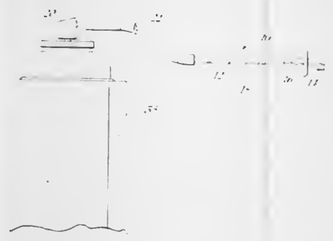
(e) a flexible patch of electrically insulative material adapted to be wrapped circumferentially about said damaged cable



portion and bonded thereto via said aforementioned bonding agent; and

(f) a tape material for taping edge portions of said patch to the outer surface of said cable to each other.

4,212,388
PORTABLE RUST INHIBITOR APPLICATOR FOR A VEHICLE
Fred P. Vacha, 226 Lombardy Ave., Fort Lauderdale, Fla. 33308
Filed Oct. 20, 1978, Ser. No. 953,085
Int. Cl.[2] B65D *69/00, 71/00*
U.S. Cl. 206—230 **5 Claims**



1. A rust inhibitor applicator kit for applying the rust inhibitor to relatively inexcessible surfaces of a vehicle body or the like, comprising:

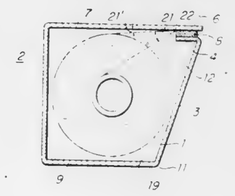
a pressurized container with a rust inhibitor, said container having an outlet for dispensing said rust inhibitor;

a conduit having a longitudinal axis and a first end and a second end, said first end being open and said second end including a nozzle aperture disposed adjacent said second end, said nozzle aperture being positioned at a predetermined angle relative to the longitudinal axis of said conduit;

a flexible tube attachable at one end to the first end of said conduit and connectable at said tube opposite end to the outlet of said pressurized container having rust inhibitor disposed therein; and

means for punching a relatively small hole in a vehicle body surface, said hole being sized to receive said second end of said conduit to allow insertion of the conduit nozzle aperture disposed adjacent the end of said conduit through said body surface.

4,212,389
CARTRIDGE HAVING A SKEWED SIDE WALL FOR CONTAINING PHOTOSENSITIVE MATERIAL
Daniel H. Robbins, Rochester, N.Y., assignor to Itek Corporation, Lexington, Mass.
Continuation of Ser. No. 730,758, Oct. 6, 1976, abandoned. This application Sep. 8, 1978, Ser. No. 940,542
Int. Cl.[3] B65D *81/18, 85/67*
U.S. Cl. 206—316 **8 Claims**



1. In combination:

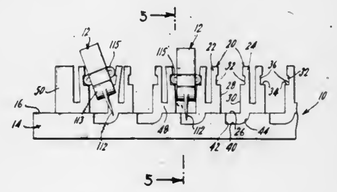
a. a cylindrical roll of photosensitive material having a predetermined length and diameter before the commencement of consumption thereof;

b. a cartridge containing said roll having first, second, and third walls being substantially perpendicular to each other;

b-1. a fourth skewed wall portion extending along the length of said roll and configured to form an obtuse angle of greater than 90° at the intersection of said first and fourth wall portions at a first cartridge portion thereof, and configured to form an angle of less than 90° at the intersection of said third and fourth wall portion at a second cartridge portion thereof, the distance between central portions of said first and third wall portions and the distance between central portions of said second and fourth wall portions both being slightly greater than said predetermined diameter of said roll of photosensitive material; and

c. exit orifice means positioned at said second cartridge portion, the width of said first wall portion being substantially less than said predetermined diameter of said roll and the width of said third wall portion being substantially greater than said predetermined diameter of said roll.

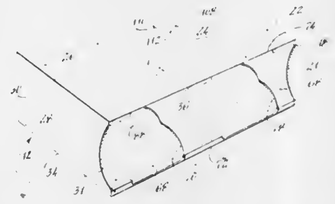
4,212,390
WOUND CLIP RACK
Jan Raczkowski, Glendale, and Irving A. Speelman, East Williston, both of N.Y., assignors to Propper Manufacturing Co., Inc., Long Island City, N.Y.
Filed Oct. 20, 1977, Ser. No. 843,715
Int. Cl.[2] B65D *85/00*
U.S. Cl. 206—339 **7 Claims**



1. A rack adapted to support and dispense wound clips of the type having prongs comprising: a base having a substantially flat upper surface; a plurality of clusters of flexible support fingers projecting upwardly from and positioned above said upper surface of said base, each of said clusters adapted to support one wound clip and including at least one pair of flexible support fingers having facing support surfaces defining a space therebetween, each of said facing support surfaces having indentations positioned above said upper surface of said base and above at least a portion of said space, said indentations constructed and arranged to releasably grasp and hold a wound clip above said upper surface of said base; and groove means constructed in said base and positioned below said upper surface of said base, said groove means being positioned proximate each of said clusters and constructed and arranged to receive the prongs of the wound clips, at least a portion of said groove means being aligned between the pair of flexible support fingers of the corresponding clusters.

5. In combination, a plurality of wound clips of the type having prongs and a rack adapted to support and dispense said wound clips, said rack including: a base, a plurality of clusters of flexible support fingers projecting upwardly from said base, each of said clusters adapted to support one wound clip and including at least one pair of flexible support fingers having facing support surfaces, each of said facing support surfaces having indentations releasably grasping and holding a wound clip; and groove means in said base associated with each of said clusters receiving the prongs of the wound clips, at least a portion of said groove means being situated between the pair of flexible support fingers of a corresponding cluster.

4,212,391
GLASSWARE CARRIER
Joseph F. Schillinger, Morrison, Ill., assignor to Champion International Corporation, Stamford, Conn.
Continuation of Ser. No. 898,295, Apr. 20, 1978, Pat. No. 4,155,450. This application Jan. 15, 1979, Ser. No. 3,482
The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.
Int. Cl.[2] B65D *5/04, 85/62*
U.S. Cl. 206—434 **13 Claims**



1. In a receptacle for displaying and carrying glassware comprising a substantially rectangular parallelopiped sleeve having a top wall, a bottom wall, a pair of side walls, and an open front and rear surface, said sleeve being collapsible to a substantially flat configuration about hinge lines connecting said walls at their lateral edges, a substantially upright divider wall secured to the interior of each of said top and bottom walls and extending between said pair of side walls, and a support panel secured between said bottom wall and the divider wall on each side of said divider wall and said top wall and the divider wall on each side of said divider wall, each of said support panels being disposed at an acute angle with respect to the top and bottom walls to which it is secured and having at least one opening for receiving an item of glassware disposed between the openings adjacent said top and bottom walls on the same side of each of said divider walls, the improvement comprising:

(a) a divider wall locking means for each said divider wall comprising:

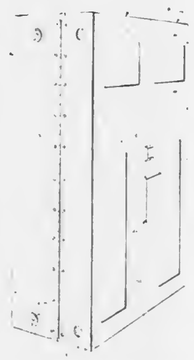
i. a movable panel hingedly connected between said divider wall and said adjacent top or bottom walls and capable of being moved from a first horizontal position locking said divider wall upright relative to an adjacent top or bottom wall and a second horizontal position thereby unlocking and collapsing said divider wall thereto, said movable panel including a first and second panel portion pivotably connected along a common fold line to form a hinge, said first panel portion being pivotably connected to said divider wall and said second panel portion being connected to said adjacent top or bottom wall, whereby said first and second panel can be placed in face to face relation to define said first horizontal position and substantial side by side relation to define said second horizontal position.

4,212,392

MEDICAL EMERGENCY TREATMENT KIT

Robert T. McKenzie, Manlius, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,942
Int. Cl.[3] B65D *69/00*
U.S. Cl. 206—571 8 Claims



1. In a portable kit for use in medical emergencies, the combination of

a main upright housing portion defining a first storage space which opens forwardly;

secondary housing means which defines at least a second storage space;

mounting means mounting at least a portion of said secondary housing means on said main housing portion for movement between a closed position, in which said second storage space opens toward said first storage space, and an open position, in which said second storage space is disposed beside said first storage space and opens forwardly;

first article-retaining means disposed in a predetermined location and orientation in said first storage space and comprising

first support means defining a plurality of forwardly opening recesses each dimensioned to receive and support a medicine injector vial, and

plate means disposed in upright position in front of said first support means and including a plurality of apertures each aligned with a different one of said recesses;

second article-retaining means disposed in a predetermined location and orientation in said second storage space and comprising

second support means defining a plurality of recesses which extend across said second storage space and open away from said main housing portion when said portion of said secondary housing means is in said open position, each of said recesses of said second support means being dimensioned to accommodate a syringe unit with a portion of the syringe unit exposed to view when said portion of said secondary housing means is in said open position,

each of said recesses of said second support means being aligned horizontally with at least one of the forwardly opening recesses of said first support means, said at least one forwardly opening recess being dimensioned to accommodate and support a medicine injector vial of the size to be employed with the syringe unit accommodated by the recess of said second support means with which it is horizontally aligned,

whereby the user of the kit, having chosen a medicine injector vial from said first article retaining means, can quickly select the related syringe unit from said second article retaining means without need for inspection of the syringe unit to assure that the proper syringe unit has been selected.

4,212,393

MAGIC PICTURES

Leon G. Lenkoff, 3203 Alden Dell, Louisville, Ky. 40207

Filed Dec. 29, 1978, Ser. No. 974,520
Int. Cl.[2] B44D *5/06*
U.S. Cl. 206—575 11 Claims



1. A coloring package combination comprising:

invisible coloring pictures which are each outlined in a water-insoluble ink defining various areas therein, said areas having printed therein a mixture of a water-insoluble ink of a uniform color and a variety of water-soluble coloring materials of different colors located at certain predetermined portions of the picture, said water-soluble coloring materials being thoroughly mixed with the water-insoluble ink to such an extent that the water-soluble colors are hidden from sight within the water-insoluble uniformly colored ink;

a single felt tip marking pen comprising a tubular hollow holder enclosed at one end and comprising a felt tip located at the other end, said tubular holder containing therein a liquid selected from the group consisting of water and a solution of water with a water evaporation inhibitor within the hollow portion and in contact with the felt tip, said felt tip pen being used to activate the water-soluble colors by rubbing the felt tip of the pen across the various areas in the picture thereby depositing the water located within the tubular saturated pen holder through the felt tip to the picture surface so as to release the colors from the water-soluble ink said water being metered out of the pen in such small amounts as to enable one to color accurately without splashing water onto the picture and forming pools of smeared water colors thereupon; and,

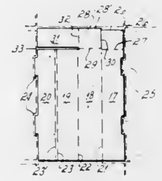
a wrapper to house the pictures and felt tip marker into a single package.

4,212,394

EDGE AND CORNER CUSHION FOR PALLETIZED PACKAGES AND THE LIKE

Donald E. Alley, 5440 Hillside Ter., Milford, Ohio 45150

Filed May 21, 1979, Ser. No. 41,241
Int. Cl.[2] B65D *5/60, 5/50, 25/12*
U.S. Cl. 206—586 12 Claims



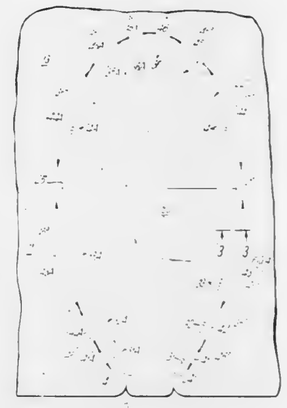
1. An edge and corner cushion comprising a generally rectangular blank fabricated from corrugated paperboard or other type of stock material, said blank including a plurality of score lines defining panels which are folded along said score lines for forming said cushion, said blank including first, second, third, fourth, fifth and sixth score lines; a first panel being bordered by said first score line, a first edge of said blank, a second edge of said blank and said fourth score line; a second panel adjoining said first panel along said first score line, said second panel being bordered by said first score line, said first edge of said blank, said second score line and said fifth score line; a third panel adjoining said second panel along said second score line, said third panel being bordered by said second score line, said first edge of said blank, said third score line and a first cutout; a fourth panel adjoining said third panel along said third score line, said fourth panel being bordered by said third score line, said first edge of said blank, a third edge of said blank and said first cutout; a fifth panel adjoining said first panel along said fourth score line, said fifth panel bordered by said fourth score line, said second edge of said blank, a fourth edge of said blank and a first cut; a sixth panel adjoining said second panel along said fifth score line, said sixth panel being bordered by said fifth score line, said first cut, said fourth edge of said blank and said sixth score line; and a seventh panel adjoining said sixth panel along said sixth score line, said seventh panel being bordered by said sixth score line, said fourth edge of said blank, said third edge of said blank and said first cutout; said first panel being foldable along said first score line so that said first and fifth panels respectively overlap said second and sixth panels; said fifth and sixth panels being foldable along said respective fourth and fifth score lines so that said overlapping fifth and sixth panels are substantially perpendicular to said overlapping first and second panels; said seventh panel being foldable along said sixth score line so that said seventh panel is substantially perpendicular to said overlapping first and second panels and said overlapping fifth and sixth panels, the border of said seventh panel defined by said first cutout lying substantially parallel to said second score line; said third panel being foldable along said second score line so that said third panel overlaps said seventh panel; and said fourth panel being foldable along said third score line so that said fourth panel overlaps said overlapping third and seventh panels; the border of said first panel defined by said second edge of said blank and the border of said fourth panel defined by said third edge of said blank having cooperating locking means for retaining said blank erected into said cushion once said panels are folded, said erected cushion for protecting an edge and at least one contiguous corner of a package against damage from binding straps or impact and for providing a brace between vertically stacked packages.

4,212,395

MULTI-ANGLED PERFORATED OPENING DEVICE

Ralph J. Korte, Darien, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 22, 1979, Ser. No. 969,224
Int. Cl.[2] B65D *17/20, 17/24*
U.S. Cl. 206—611 4 Claims



1. A carton of sheet fibrous material including a removable access panel having a curvilinear peripheral outline defined by a plurality of spaced linear perforations, said outline comprising a plurality of pairs of associated arcuate segments, the perforations in each arcuate segment of an associated pair of segments being the mirror image of the perforations in the other segment of said associated pair of segments, all of the respective perforations of one of the arcuate segments being disposed at the same predetermined angle relative to the longitudinal axis of said access panel, each of said pairs of arcuate segments defining a discrete panel section, at least one of said panel sections having a greater resistance to tearing than the other panel sections, the perforations of the panel section of higher resistance to tearing being disposed at a predetermined angle relative to the longitudinal axis of the access panel which is greater than the angle to which the perforations of the other discrete panel sections are disposed relative to the longitudinal axis of the access panel, said access panel being generally oval in configuration and including at one end thereof a pull tab; a first pair of spaced apart opposed cuts adjacent said pull tab; a first minor support section disposed adjacent said first pair of cuts, each of the arcuate segments defining said first minor support section having seven perforations; a first minor tear section disposed adjacent said first minor support section, each of the arcuate segments defining said first minor tear section having twelve perforations; a first major support section adjacent said first minor tear section, each of the arcuate segments defining said first major support section including thirty-one perforations; a second pair of spaced apart cut portions disposed adjacent said first major support section; a first major tear section disposed adjacent said second pair of cuts, each of the arcuate segments defining said first major tear section having twenty-seven perforations; a second minor support section disposed adjacent said first major tear section, each of the arcuate segments defining said second minor support section having twelve perforations; and a second minor tear section disposed adjacent said second minor support section, each of the arcuate segments defining said second minor tear section having seven perforations, such that the access panel, while being readily removable from the carton, includes at least one support section defined by said panel section of higher resistance to tearing, thus protecting the carton from accidental collapse.

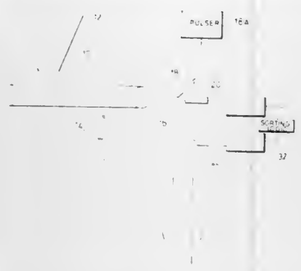
4,212,396
ENVELOPE ASSEMBLY
Robert H. Allen, North Tonawanda, and Victor J. Robertson, Niagara Falls, both of N.Y., assignors to Moore Business Forms, Inc., New York, N.Y.
Division of Ser. No. 809,922, Jun. 24, 1977, Pat. No. 4,166,539. This application Oct. 31, 1978, Ser. No. 956,180
Int. Cl.³ B65D *27/34*
U.S. Cl. 206—629 **4 Claims**



1. A stuffed, sealed envelope assembly, comprising, superimposed front and back plies, adhesive means securing said plies together along marginal edges thereof to form an envelope pocket within the assembly, insert material located within said pocket and being unattached to said plies so as to be freely disposed within said pocket, means including chip elements in abutting engagement with at least one edge of said insert material for maintaining said insert in a desired registration position within said pocket, means lying adjacent one of said marginal edges for opening said pocket and exposing said insert material for extraction therefrom, said opening and exposing means comprising at least one cut line extending through only one of said plies and defining a pocket access opening, said cut line lying near one end of said one insert edge, and said cut line partially delimiting a portion of said one ply which may be separated along said one insert edge from the remainder of said one ply upon insertion of an opener through said access opening, said chip elements underlying said portion of said one ply and being secured thereto, whereby said pocket may be opened and said insert material exposed for extraction therefrom as said portion is separated along said one insert edge from said remainder of said one ply upon exertion by the opener of a force causing the separation after the opener is inserted through said access opening, said chip elements being moved away from said insert upon the separation of said portion.

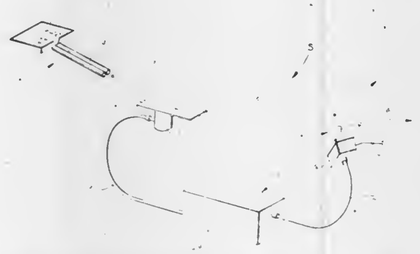
4,212,397
SEPARATION OF MATERIALS
Manfred Bockelmann, 65 Maid Marion Ave., Robindale, Transvaal, South Africa
Filed Nov. 29, 1976, Ser. No. 745,896
Claims priority, application South Africa, Dec. 8, 1975, 75/7668
Int. Cl.³ B07C *5/346*; G01J *1/58*
U.S. Cl. 209—589 **7 Claims**

1. Apparatus for separating from a batch of particulate material a selected material having the intrinsic property of fluorescing with a predetermined decay time when irradiated with radiation from a suitable source of radiation, said apparatus comprising means for providing a beam of radiation suitable to cause the selected material to fluoresce with the predetermined decay time; means for pulsing the beam with a repetition interval greater than the predetermined decay time; means for causing a stream of the particulate material to move through the pulsed beam; means for detecting the fluorescing material in the stream and for obtaining a measure of the decay time of the fluorescing; and means responsive to said last-named means



for deflecting from the stream only fluorescing material having the predetermined decay time.

4,212,398
PARTICLE SEPARATING DEVICE
Ralph M. Parker, Redding, and James H. Mock, Ceres, both of Calif., assignors to Pet Incorporated, St. Louis, Mo.
Filed Aug. 16, 1978, Ser. No. 934,092
Int. Cl.³ B07C *5/00*
U.S. Cl. 209—590 **18 Claims**

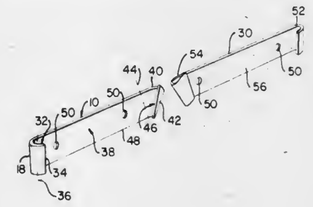


1. An apparatus for separating comingled solid particles, said apparatus comprising: a sounding plate against which the particles are directed one at a time, whereby the individual particles impart mechanical vibrations to the sounding plate with the vibrations produced by like particles being similar in frequency and decay; means for converting the vibrations produced in the sounding plate by each particle into an electrical input signal that oscillates at the frequency of the vibrations and undergoes changes in amplitude that correspond to changes in the amplitude of the vibrations; logic means for analyzing the input signal as to the oscillations which exceed a prescribed threshold amplitude and for producing an output signal which distinguishes those input signals that have a prescribed number of oscillations exceeding the threshold amplitude from those input signals which do not, so that the particles after striking the sounding plate may be separated on the basis of output signals derived from the logic means.

4,212,399
SHOE MOUNTING APPARATUS
William H. Penney, 15 Putnam St., Revere, Mass. 02151
Filed Dec. 11, 1978, Ser. No. 968,549
Int. Cl.³ A47F *7/08*
U.S. Cl. 211—35 **9 Claims**

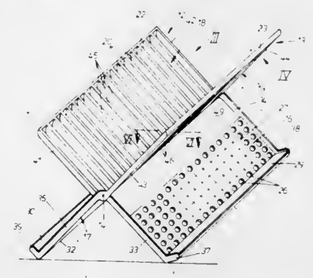
1. A shoe mounting apparatus comprising a pair of straps, each of said pair of straps having a first hook-like end and a second hook-like end thereon, said first hook-like end having a surface being a portion of a surface of revolution, said surface of revolution defined by an axis of revolution, said axis of revolution extending transverse to the longitudinal axis above

said strap and outwardly from a first lateral surface thereof, said second hook-like end having a surface area being a portion of the surface area of a truncated conical surface, said truncated conical surface having a longitudinal axis transverse to said longitudinal axis of said strap and extending outwardly from said lateral surface thereof, said each of said pair of straps defining a first edge and a second edge extending at said second hook-like end, said first edge defining a larger partial open



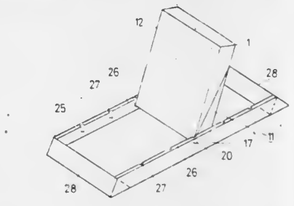
mouth portion than the partial open mouth portion defined by said second edge, said each of said pair of straps defining a third edge and a fourth edge extending at said first hook-like end, said third and said fourth edge defining a pair of partial open mouth portions each having the same size, wherein said larger open mouth portion is larger than each of said pair of partial open mouth portions, means to secure said pair of straps to a vertical standard.

4,212,400
STAND FOR HOLDING UTENSILS TO BE DRIED
Renate Buchsteiner, Gingen, Fed. Rep. of Germany, assignor to Johannes Buchsteiner GmbH & Co KG, Gingen, Fed. Rep. of Germany
Filed May 2, 1978, Ser. No. 902,266
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 7737937[U]
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—41 **40 Claims**



1. A stand, particularly for holding utensils to be dried, comprising two plate-like members pivotally connected to one another in a scissors-like manner and pivotable about an axis between an open position so as to assume a rack shape and a closed position, each of said members having an upper portion located above said axis and adapted in said open position to support utensils to be dried, and a lower portion located below said axis and adapted to support the stand in at least said open position, said lower portion of each of said members having a lower end region, a supporting section extending from said lower end region toward said axis and adapted to support utensils to be dried, and a holding section extending from said supporting section in said lower end region at an angle relative to said supporting section so as to prevent utensils supported by said supporting section from sliding off the latter, each of said holding sections being a strip laterally projecting from a respective one of said supporting section so as to form a V-shaped receiving recess therebetween, each of said strips including a substantially right angle with a respective one of said supporting sections and having a lower surface adapted to stably support the stand in an upright manner in said closed position.

4,212,401
DEVICE FOR STORING OBJECTS, IN PARTICULAR CARD-LIKE OBJECTS
Eduard H. Schweizer, 5101 Boarshead Rd., Minnetonka, Minn. 55343
Filed Feb. 16, 1978, Ser. No. 878,447
Claims priority, application Switzerland, Feb. 24, 1977, 2301/77; Sep. 21, 1977, 11543/77
Int. Cl.³ A47G *29/00*
U.S. Cl. 211—81 **4 Claims**



1. A device for storing and showing objects, particularly card-like objects, comprising:

a stand including a generally rectangular flat base and upstanding parallel longitudinal sides provided on their opposed inner surfaces with a plurality of pairs of opposed groove means defining bearing means; and

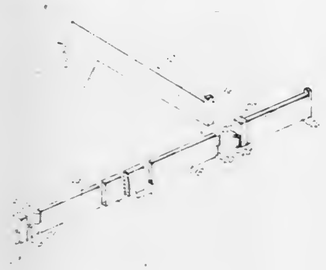
a plurality of generally rectangular, generally flat openable and closeable containers for the objects adapted to be stacked generally upright in said stand, each of said containers having a base portion and wherein a plurality of the objects can be arranged vertically supported on said base portion, each of said containers having a front section and a rear section which includes said base portion and having means pivotally connecting said sections for pivotal movement about the front edge of said base portion between a closed position and an open position, whereby in said open position a stack of objects supported upright in said rear section can readily be turned forward one-by-one to be stacked on the inside of said front section, each of said containers also including a pair of projections on its opposite sides adjacent said base portion adapted to be received in a pair of said bearing means to permit tilting movement of said container in said stand between forwardly and rearwardly inclined positions, whereby when a pair of adjacent containers is tilted apart the rearward of said containers can be opened as aforesaid, the lower ends of said groove means and said base portion of each container being arranged and proportioned so that the rear edge of said base portion engages said stand base when a container is in its rearwardly inclined position to serve as a stop means to maintain the container in such position, and wherein said stand is provided with an upstanding front side engageable by the foremost of the containers when the latter is in its forwardly inclined position to serve as a stop for maintaining said container in such position.

4,212,402

GARMENT DISPLAY RACK

Edmund R. Kelly, Downey, and Thomas V. Orona, Sr., El Monte, both of Calif., assignors to Rax-Unlimited, South Gate, Calif.

Filed Jul. 10, 1978, Ser. No. 922,989
Int. Cl.[2] A47F *5/08*
U.S. Cl. 211—105.3 **5 Claims**



1. A garment display rack comprising:
a telescoping suspension bar;
a first member adapted to support one end of said telescoping suspension bar;
a second member adapted to support the other end of said telescoping suspension bar;
means for attaching one end of said telescoping suspension bar to said first support member so as to permit said suspension bar to be translated or rotated in a horizontal plane; and
means for attaching the other end of said telescoping suspension bar to said second support member so as to permit said suspension bar to be translated or rotated in a horizontal plane and,
wherein said means for attaching the end of the suspension bar to said first member to permit translation and rotation, comprises:
a pivotal joint attached to one end of said telescoping suspension bar;
a slidable sleeve adapted to translate with respect to said first member;
a bearing support for engaging said pivotal joint; and
means for attaching said bearing support to said slidable sleeve.

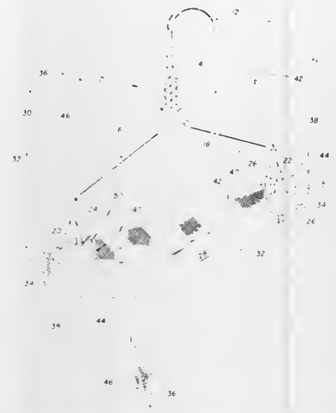
4,212,403

DRAPERY HANGER

Michael R. Zeigler, 1125 Maple Ave.; Robert P. Zeigler, 6675 Quail Ridge La., and Bert A. Zeigler, 1333 Maple Ave., all of Fort Wayne, Ind. 40802

Filed Feb. 27, 1978, Ser. No. 881,377
Int. Cl.[2] A47F *7/16*
U.S. Cl. 211—119 **7 Claims**

1. A drapery hanger comprising a hanger member having a pair of arms extending in opposite directions, a pair of collars each being adjustable to a plurality of different circumferential lengths, means connecting said collars to said arms, said collars being supported by said arms, said collars each comprising an elongated and flexible element having opposite ends, and means for fastening said opposite ends together at various positions, said hanger member being between said collars, said collars opening in opposite directions from said hanger, said hanger member being sufficiently strong to bear the weight of



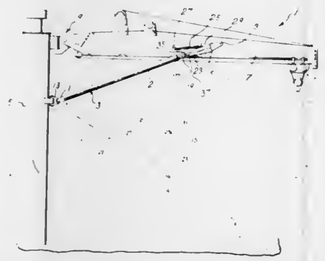
at least one pair of drapes, each of said collars being sufficiently strong to bear the weight of at least one drape.

4,212,404

DEVICE FOR LIFTING CRANE BOOM

George T. R. Campbell, Nassau, The Bahamas, and Yukitoshi Morioke, Chiba, Japan, assignors to Algoship International Limited, Nassau, The Bahamas

Filed Dec. 27, 1977, Ser. No. 864,481
Claims priority, application Japan, Dec. 25, 1976, 51-157131
Int. Cl.[2] B66C *23/54*
U.S. Cl. 212—238 **12 Claims**



1. A lifting system for a crane of the type having a mast, and a boom hinged to the mast; the lifting system having a brace, extending between the mast and the boom; the brace pivotally connected to both the mast and the boom; a hinge in the brace dividing it into a short section, connected to the boom, and a long section, connected to the mast; and boom moving means pivotally connected to the boom and the short brace section at a first point spaced from the hinge.

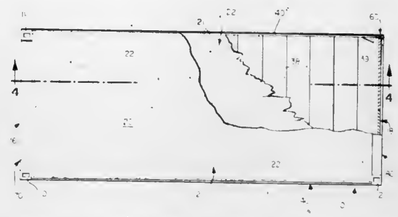
4,212,405

ALUMINUM PANEL CONTAINER OR TRAILER BODY

George A. Schmidt, 370 Winchester Ave., Langhorne, Pa. 19047, assignor to Srick Corporation, Fairless Hills, Pa. Continuation-in-part of Ser. No. 868,772, Oct. 23, 1969, abandoned. This application Mar. 7, 1972, Ser. No. 232,448

Int. Cl.[3] B65D *88/12, 6/34*
U.S. Cl. 220—1.5 **33 Claims**

1. A frameless cargo-carrying container or trailer unit comprising: a body comprising a floor, a front end, a rear end, and a pair of opposing sides, at least each of said sides consisting essentially of an aluminum alloy plate having a minimum tensile yield point of about 25,000 p.s.i., each of said plates having a substantially uniform thickness of at least about 5/32 of an inch, and means interconnecting said floor and each of said sides whereby at least about 67 percent of the load caused by



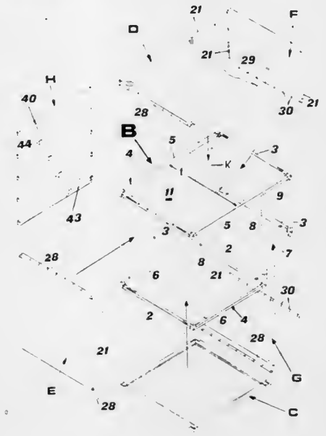
the presence of cargo in the container or trailer body and created by dynamic forces during operation of said container or trailer body is borne by said sides.

4,212,406

CONTAINER, IN PARTICULAR FOR TRANSPORTING FREIGHT BY AIR

Gerhard Mittelmann, Oehningen, Fed. Rep. of Germany, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jul. 30, 1979, Ser. No. 62,163
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834175
Int. Cl.[3] B65D *88/52*
U.S. Cl. 220—1.5 **12 Claims**



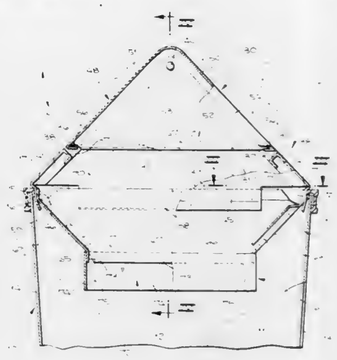
1. A container for use in transporting freight comprising
a first and second plurality of profiled rods;
a first and second plurality of tripodal corner members each having first, second and third legs;
securing means associated with said first and second profiled rods and said first and second legs of said first and second corner members for securing said first profiled rods to said first corner members and said second profiled rods to said second corner members so as to form first and second side wall frames;
a plurality of transverse profiled spar members extending between said first and second side wall frames;
securing means associated with said profiled spar members and said third leg of said corner members for securing said spar members to said first and second side wall frame members so as to form a structural frame; and
a plurality of covering means mounted on said structural frame such that said covering means is in tension and said structural frame is in compression.

4,212,407

FIRE EXTINGUISHING WASTE RECEPTACLE

Bart J. Lydon, 910 Freeport Blvd., Sparks, Nev. 89431

Filed Jan. 30, 1978, Ser. No. 873,388
Int. Cl.[2] B65D *25/00*
U.S. Cl. 220—88 R **4 Claims**



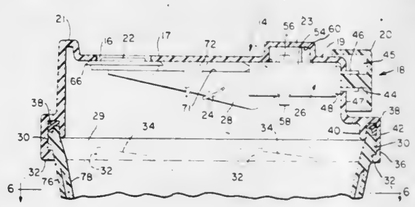
1. A cover for a waste receptacle having upright sidewalls, each sidewall having an upper sidewall edge about the opening of the receptacle, the cover comprising an upper portion comprising a pair of upright supports extending generally upward from opposing upper sidewall edges, side means for supporting the upright supports generally parallel to each other and spaced apart, an axle between the upright supports, a swinging top swinging on the axle extending between the upright supports to cover the opening,
the cover further including a lower portion comprising a baffle comprising angled baffle walls depending from the upright supports and from the side means toward each other and leaving a baffle opening extending into the receptacle, the swinging top including two angled sides intersecting each other, the angled sides normally extending to the side means and to the upright supports to cover the opening, the swinging top further including a generally horizontal base along the bottom of the swinging top to seal the volume of the swinging top from the receptacle.

4,212,408

BEVERAGE DRINKING CONTAINER

Joseph F. Valenzona, Harbor City, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Filed Nov. 3, 1978, Ser. No. 957,528
Int. Cl.[2] A47G *19/22*
U.S. Cl. 220—254 **3 Claims**



1. A sealable drinking container comprising:
a cup having a circular upper lip,
a cap having a confining upright side wall and a transverse confining top wall having an undersurface and releasably engageable with the upper lip of said cup in transverse

arrangement thereacross in a liquid tight seal, and having a drinking opening near the perimeter of said top wall,

a plug moveably positionable in said drinking opening of said cap,

trigger actuating means including a transverse push bar having an arcuately curved outer surface located externally to said cap beyond said confining upright wall, and adjacent the undersurface of said top wall and concentric relative to a portion of said circular upper lip, a unitary laterally moveable plunger having a post extending through a portion of said confining side wall of said cap into engagement with said push bar, a U-shaped bifurcated shackle having separated, parallel legs extending inwardly from said post within said confining side wall of said cap, an elongated lever having opposite ends and of uniform thickness and with a flat surface facing said top wall and connected to said plug at one end and rotatably mounted between said legs of said shackle at the other end for rotational movement in a plane parallel to said legs of said shackle, and with a lever shoulder defined therein on a side opposite said flat surface, guide means including a cam surface on said cap against which said flat surface of said lever bears, and

unitary spring biasing means including a unitary wire spring having a pair of legs which terminate in feet releasably secured relative to said cap and which diverge outward from engagement with said lever shoulder and bear thereagainst to bias said lever linearly to force said push bar radially outwardly from said cap and which bias said lever in rotation to rotate said plug toward engagement with said drinking opening, whereby depression of said push bar toward said confining upright wall of said cap carries said shackle toward said drinking opening so that said end of said lever attached to said shackle moves toward said drinking opening forcing the flat surface thereof facing said top wall against said cam surface which rotates said lever and said plug inwardly from said cup out of engagement with said drinking opening when said trigger is actuated.

4,212,409

CONTAINER CLOSURE MEMBERS

Jan-Bertil Jeppsson, Lomma, Sweden, assignor to AB Akerlund & Rausing, Sweden

Filed Apr. 9, 1979, Ser. No. 28,476
Claims priority, application Sweden, Apr. 10, 1978, 7803975; May 30, 1978, 7806216
Int. Cl.² B65D *41/32*
U.S. Cl. 220—276 **14 Claims**



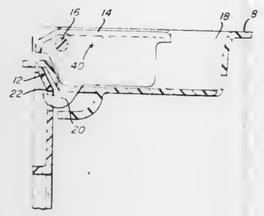
1. A closure member for closing a container opening, said opening being bounded by an upstanding edge of said container, said closure member being formed of plastic material and comprising a central closure panel, a circumferential rim connected to said closure panel for abutting the internal surface of said upstanding edge, a circumferential edge flange connected to said rim and having a circumferential weakened area formed therein about which the edge flange can be folded to abut the outer surface of said upstanding edge, and said edge flange having cut-out portions formed therein to permit the folded edge flange to conform to said outer surface.

4,212,410

GRAVITY DUMP SHIPPING CRATE FOR POULTRY

Herbert W. Galer, Newnan Boro, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 11, 1979, Ser. No. 47,414
Int. Cl.² B65D *45/16*
U.S. Cl. 220—324 **4 Claims**



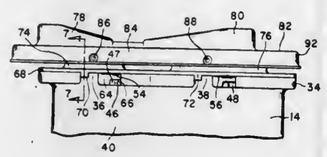
1. A readily dumped shipping crate comprising a container, a hinged cover therefor, and a latching assembly on said hinged cover, said latching assembly being pivotally mounted on the edge of the cover opposite the hinges thereof so that, in the closed position it lies in said cover and making latching engagement with a portion of said container, and in the unlatched position it is suspended from its pivot in a position in which it is rotated out of latching engagement with said portion of said container and extends outwardly from said cover.

4,212,411

MASTER CYLINDER RESERVOIR COVER

John E. Steer, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 12, 1978, Ser. No. 914,307
Int. Cl.² B65D *43/08, 43/12, 53/00*
U.S. Cl. 220—347 **7 Claims**



1. A container comprising:

a housing defining a chamber for retaining fluid therein, said housing having a flange surrounding an opening to said chamber, said flange having an upwardly facing, planar, horizontal surface and a radial, outwardly facing, planar, vertical surface said flange having a series of vertically extending grooves on the peripheral surface thereof and extending through the horizontal and vertical surfaces, said vertical surface having a cover locking section adjacent one side of each of said grooves, each cover locking section comprising a portion of said vertical surface slanted at an acute angle with respect to said horizontal surface adjacent said grooves, and a second portion depressed relative to the slanted surface, the depressed surface and said slanted surface cooperating to define horizontal and vertical abutments therebetween;

a diaphragm member surrounding the opening of said housing; and

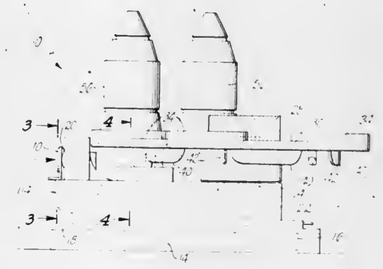
cover means having a peripheral lip thereon, said peripheral lip having a series of detents projecting radially inwardly therefrom, said detents traveling over one of said horizontal and vertical abutments as said cover means is attached to said housing, said abutments being engageable with said detents to resist removal of said cover means from said housing, and to hold said diaphragm against said housing and seal said chamber from the surrounding environment.

4,212,412

TURNTABLE ARTICLE HOLDER WITH EJECTOR

Masaki Ikeda, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Feb. 6, 1978, Ser. No. 875,675
Claims priority, application Japan, Feb. 22, 1977, 52-20680[U]
Int. Cl.² F41J *5/02*
U.S. Cl. 221—81 **10 Claims**



1. An apparatus having a base, a turntable located on said base, said turntable including a plurality of article holding locations located around its periphery, motive means for rotating said turntable about its axis, ejection means for removing articles held at said article holding locations from said turntable, and indexing means for controlling movement of said turntable so that successive of said article holding locations are adjacent to said ejection means in which the improvement comprises:

said ejection means comprising an ejection lever pivotally mounted on said base so as to be capable of being rotated between a cocked position in which said ejection lever is spaced from said turntable and an uncocked position in which said lever extends upwardly from said base generally toward said turntable, said ejection lever being capable of engaging an article held at an article holding location on said turntable which is adjacent to said lever when said lever moves from said cocked position to said uncocked position,

biasing means biasing said lever toward said uncocked position,

a cocking surface corresponding to each of said article holding locations located on said turntable, said cocking surfaces being located so as to be capable of sequentially engaging said ejection lever when said turntable is rotated and when said ejection lever is in said uncocked position so as to rotate said ejection lever from said uncocked position to said cocked position,

latch means for holding said ejection lever in said cocked position,

latch release means for moving said latch means so as to permit said biasing means to move said ejection lever from said cocked position to said uncocked position;

said indexing means comprising an escapement lever and a plurality of stop projections,

each of said stop projections corresponding to one of said article holding locations located on said turntable,

said escapement lever pivotally mounted on said base, said escapement lever being capable of being rotated between a blocking position and a non-blocking position, said escapement lever being located so as to engage one of said stop means in order to limit rotation of said turntable in said blocking position, said escapement lever being located so as not to interfere with the rotation of said turntable in said non-blocking position,

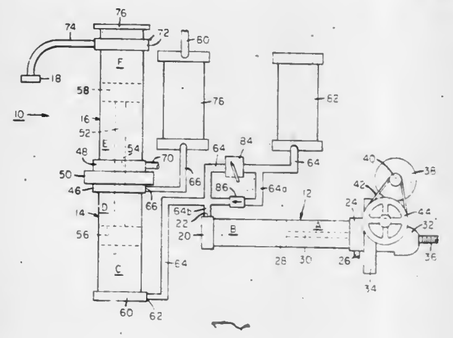
said escapement lever being located so as to be engaged by said ejection lever as said ejection lever is moved from said uncocked to said cocked position so as to be rotated to said blocking position.

4,212,413

METHOD AND APPARATUS FOR DISPENSING FRIT HAVING A HYDRAULICALLY ACTUATED PISTON

Donald L. Barber, Jr., Corning, N.Y., and Bernard G. Caron, Lewisberry, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,343
Int. Cl.² G01F *11/04*
U.S. Cl. 222—1 **7 Claims**



1. A method of dispensing frit material at a constant rate for sealing glass articles which comprises, supplying frit material to be dispensed into one end of a first cylinder, slideably mounting a piston within said cylinder with a piston rod attached thereto extending through the opposite end of said cylinder for sliding movement with respect to said opposite end, applying a motivating force to said piston rod externally of said cylinder for longitudinal movement within said cylinder toward and away from said one end, moving said piston rod and said piston within said cylinder toward said one end at a predetermined constant rate in response to said external motivation, dispensing frit material from said one end at a constant rate, continuously venting said cylinder to the atmosphere between said piston and said opposite end, and motivating said piston rod by selectively applying hydraulic fluid to one surface or to an opposite surface of a second piston attached to that portion of said piston rod extending through said opposite end of said cylinder.

4,212,414

LIQUID DISPENSING HEAD WITH RINSING FLUID INLET AND INSTALLATION

Jozef Beyens, Ruisbroek Aan De Rupel, Belgium, assignor to Konstruktie J. Lambrechts p.v.b.a., Ruisbroek Aan De Rupel, Belgium

Filed Oct. 30, 1978, Ser. No. 956,358
Int. Cl.² B67D *1/08*; B65D *83/00*; F37L *37/18*
U.S. Cl. 222—148 **11 Claims**



1. An installation for dispensing liquid from a container, comprising a dispensing head adapted to be fitted to the container having a valve plunger with which the dispensing head

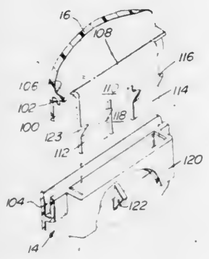
co-operates to enable liquid in the container to be dispensed through the dispensing head under pressure of a gas supplied to the container through the dispensing head, a source of pressurising gas connected to gas inlet means of the dispensing head and a dispensing tap connected to outlet means of the dispensing head through a length of delivery pipe, wherein the dispensing head has rinsing fluid inlet means connected to a source of a rinsing fluid and a valve member movable between a first position in which the rinsing fluid inlet means is closed, the gas inlet means is in communication with the interior of the container to which the dispensing head is fitted and the outlet means is in communication with the interior of the container through the valve plunger so that liquid is dispensed from the container through the dispensing tap, and a second position in which the outlet means is disconnected from the interior of the container and placed in communication with the rinsing fluid inlet means so that rinsing fluid flows through the outlet means, the delivery pipe and the dispensing tap, and wherein the installation includes control means operable from a position close to the dispensing tap for controlling the position of the valve member independently of the supply of gas to the gas inlet means.

4,212,415

HOUSING AND MODULE THEREFOR

Raymond J. Neely, Montgomeryville, Pa., assignor to Refreshment Machinery Incorporated, Warminster, Pa.

Filed Jan. 9, 1978, Ser. No. 868,162
Int. Cl.² G01F *11/00;* **B65D** *11/18*
U.S. Cl. 222—231 **9 Claims**



1. A housing module comprising a rectangular plastic body having an integral loop projecting outwardly from opposite walls at the upper end thereof, at least one integral tab projecting from the lower end of each of said walls, each tab having a locking surface spaced from the lower end of its associated wall by a distance slightly less than the vertical height of the loop on the upper end of its associated wall, each tab being constructed so that it may extend downwardly through a loop on another housing module and be latched thereto by contact between its locking surface and a surface of the loop on the other housing module, the upper edge of said body being provided with a groove, the lower edge of said body having a tongue adapted to enter the groove on said another housing module to form a labyrinth seal.

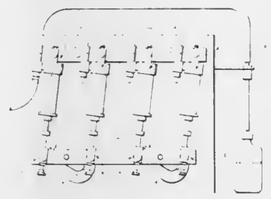
4,212,416

FINE TUNE ADJUSTING MECHANISM FOR TANDEM-OPERATED FILLING UNITS OF A FILLING MACHINE

Richard N. Bennett, Arbutus, Md., assignor to National Instrument Company, Inc., Baltimore, Md.

Filed Jun. 5, 1978, Ser. No. 912,417
Int. Cl.² B65B *3/04*
U.S. Cl. 222—267 **5 Claims**

1. A fine adjusting mechanism for finely adjusting the volume dispensed by an individual filling unit of a filling machine having several such filling units operated in common from a common drive means, in which each filling unit includes a cylinder and a piston carried by a piston rod and operable to reciprocate within the cylinder to provide a suction and discharge stroke, and in which said common drive means comprises a common drive bar for connection with the piston rods of said individual filling units, eccentric drive means, and connecting means drivingly connecting said eccentric drive means with said common drive bar to convert the rotary movement of the eccentric drive means into reciprocating movement of the pistons by way of said common drive bar and the piston rods including common volume-adjusting means in said connecting means for adjusting simultaneously the volume of all filling units connected with said common drive bar,



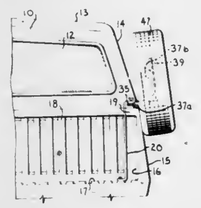
characterized in that each piston rod is operatively connected with the common drive bar by way of its own adjustable lost motion connecting means which is operable to provide a lost motion between two relatively movable members transmitting the driving movement from the common drive bar to the piston rod of a respective filling unit, and fine adjusting means for selectively adjusting the lost motion possible between said two relatively movable members to thereby provide an individual fine volume adjustment for each filling unit in addition to the simultaneous volume adjustment for all the filling units connected with said common drive bar by said common volume-adjusting means.

4,212,417

SPARE TIRE CARRIER FOR PICK-UP TRUCKS

Leroy A. Scott, R.R. #6, Paola, Kans.

Filed Dec. 22, 1978, Ser. No. 972,220
Int. Cl.² B62D *43/02, 43/06*
U.S. Cl. 224—42.21 **6 Claims**



1. A device for mounting a vehicle wheel and tire assembly on the side wall of a pick-up truck bed,

the pick-up truck bed having a normally horizontal floor, normally vertical side walls at the side edges of the floor and a normally horizontal rim at the top edge of the side walls comprising, in combination:

a normally vertical beam member having a lower end portion adapted to overlie and be connected to the truck bed floor and of sufficient height to extend above the top of the side wall top edge rim,

a substantially rectangular tube section having upper, lower and side walls connected at one edge thereof to one side face of the upper end of said beam member and projecting laterally therefrom in such manner as to overlie the side wall top edge rim with the lower wall thereof,

means for connecting the beam member lower end portion to the truck bed floor,

means for connecting the lower wall of the tube section to the side wall top edge rim,

a pair of L-shaped arms pivotably mounted on one end thereof on a shaft rotatably received in opposed openings in the side walls of the tube section,

a flat circular plate fixed by one face thereof to the edges of the L-shaped arms not connected to the said shaft, and

means on the other face of the plate for securing the center portion of a car wheel to said plate,

said circular plate, when a car wheel with a tire is mounted thereon, movable from a first, normally vertical, down position within said truck bed to a second, normally vertical, up position outside and above said truck bed by pivoting said arms on said shaft,

the openings in the side walls of the tube section being paired, elongate slots and means for alternately confining the shaft next to each end of said slot.

4,212,418

SHOULDER HOLSTER WITH IMPROVED SHOULDER STRAP ARRANGEMENT

John E. Bianchi, 1601 Wilt Rd., Fallbrook, Calif. 92028

Filed Nov. 21, 1977, Ser. No. 853,589
Int. Cl.² F41B *13/04*
U.S. Cl. 224—206 **4 Claims**



1. An underarm holster and harness comprising:

a holster body having a pair of holster support portions joined to said holster body and extending upward at generally an acute angle whereby one of said pair of holster support portions can extend partially from the underarm region toward the wearer's chest and the other of said pair of holster support portions can extend from the underarm region toward the wearer's back;

a harness comprising an over the shoulder strap including opposite end regions engaging a respective holster support portion of said holster body to define an engagement region between said harness and said holster support portions;

said engagement region defining a plurality of longitudinally spaced transverse slots and an end region interwoven in a serpentine path through said slots;

said end region having smooth edges and sufficient width to maintain continuous frictional engagement with the ends of said slots in addition to the surface friction between the harness and holster support portion defining said engagement region thereby adding sufficient additional frictional resistance to holster movement to support said holster and a weapon therein despite physical exertion of the wearer; and

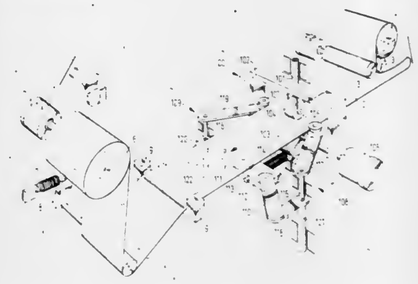
said shoulder strap and holster support portions being continuously adjustable at the engagement portion by manually applied longitudinal force applied thereto.

4,212,419

STRIP GUIDING DEVICE

Ernst Huber, Wettingen, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Oct. 10, 1978, Ser. No. 949,535
Claims priority, application Switzerland, Oct. 14, 1977, 12583/77
Int. Cl.² B65H *25/06, 25/26*
U.S. Cl. 226—23 **3 Claims**



1. A strip guiding device comprising a pair of rollers each mounted on opposite sides of the strip and in contact therewith; means mounting said rollers to pivot around an axis substantially perpendicular to the plane of the strip; means driving at least one roller; two mechanical sensing elements abutting opposite lateral edges of the strip and a differential linkage coupling the sensing elements to said mounting means so that if the strip shifts laterally the sensing elements move the mounting means to pivot the pair of rollers around said axis to impart a component of motion in the opposite direction to the shift by said at least one roller to the strip, thus moving it back, said differential linkage including means for permitting said sensing elements to move symmetrically toward or away from each other to compensate for varying strip widths without pivoting said pair of rollers about said axis.

4,212,420

RIBBON STORAGE DEVICE

Edward F. Helinski, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,755
Int. Cl.² B65H *17/50*
U.S. Cl. 226—118 **10 Claims**



1. A ribbon storage device comprising:

a receptacle having a compartment for storing a stack of uniformly folded ribbon,

said receptacle having an exit for withdrawing ribbon in a single strand from said stack,

support means within said receptacle for engaging said ribbon stack at the end thereof closest to said exit,

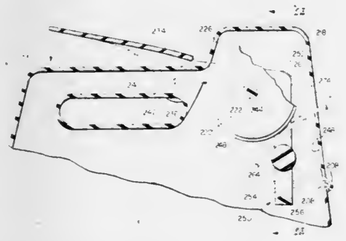
said support means having the characteristic of automatically compensating for variations in the space occupied in the storage compartment by said ribbon stack due to expansion or contraction thereof.

4,212,421

RETRIEVAL AND STORAGE DEVICE FOR FLEXIBLE ELEMENTS

Robert F. Scott, P.O. Box 1442, Terre Haute, Ind. 47808

Filed Dec. 29, 1977, Ser. No. 865,741
Int. Cl.² B65H *17/26*
U.S. Cl. 226—127 **2 Claims**



1. An apparatus for retrieving and storing a flexible element having first and second ends, the apparatus comprising means for retrieving the flexible element and means for providing storage of the retrieved flexible element, the retrieving means including at least one wheel, means for holding the flexible element frictionally against the periphery of the wheel, means for supporting the wheel for rotation about its axis, and means for turning the wheel in a direction to cause retrieval of the flexible element between the wheel periphery and the holding means, the support means including means for shifting the holding means from a use orientation to a slip-providing orientation in which the frictional engagement between the periphery of the wheel and the flexible element is released to provide for withdrawal of the flexible element from the storage means between the wheel periphery and the holding means, the shifting means including a trigger member and a yoke member actuable by the trigger member, the holding means being supported from the yoke member, the yoke member having a slip-providing position in which the holding means is out of frictional engagement with the elongated member, and a flexible element retrieval position in which the holding means is held in frictional engagement with the flexible element.

4,212,422

WEB POSITION CONTROLLER FOR WEB TRANSPORT SYSTEMS

Charles G. Rauchfuss, Jr., Franklinville; Ralph Herman, Cherry Hill, and Harvey R. Barton, Jr., Turnersville, all of N.J., assignors to RCA Corporation, New York, N.Y.

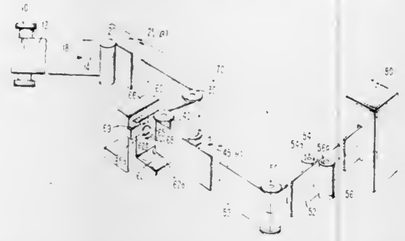
Filed Sep. 18, 1978, Ser. No. 943,148
Int. Cl.² B65H *23/04;* **G03B** *1/48*
U.S. Cl. 226—196 **5 Claims**

1. A web position controller for maintaining the longitudinal center line of a moving web on a predetermined reference axis, comprising:

a support structure arranged in a fixed position relative to said reference axis;

a carriage pivotally mounted to said support structure to freely rotate about a pivot axis with the pivot axis generally aligned with said reference axis;

a first roller and a second roller rotatably attached to said carriage for conveying the moving web first over said first roller and then over said second roller, said second roller being mounted to the carriage relatively near the pivot axis and said first roller being mounted to the carriage at a point relatively remote from the pivot axis; and



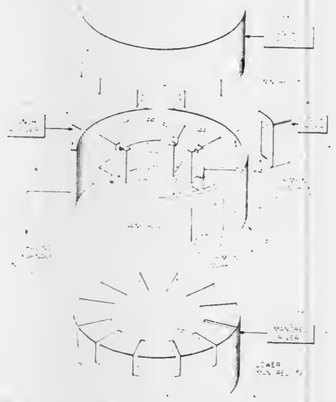
said first roller being responsive to transverse displacements of the web to directly and automatically cause said carriage coupled thereto to pivot in a direction to align the longitudinal center line of the moving web conveyed across said rollers with said reference axis.

4,212,423

MAGNETRON ANODE MANUFACTURE

James R. Mims, Bedford, N.H., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 22, 1978, Ser. No. 944,824
Int. Cl.² B23K *1/04;* **H01J** *25/587*
U.S. Cl. 228—136 **4 Claims**



1. A method of manufacture of a cylindrical structure having radially projecting vanes comprising:

cutting a section of a tube to provide said cylindrical structure;

inserting said cylindrical structure between a mandrel and a set of punches, said mandrel having an external surface which mates with an internal surface of said cylindrical structure, said mandrel having a set of dies in the form of slots in said external surface spaced circumferentially around said mandrel, said punches being aligned with said dies;

punching a wall of said cylindrical surface form slots by driving said punches toward said dies;

removing said mandrel and said set of punches from said cylindrical structure;

placing said vanes in said slots;

positioning upper and lower portions of a mandrel within said cylindrical structure, said upper and said lower mandrel portions being slotted to envelope said vanes;

crimping the regions in said wall of said cylindrical structure around said slots in said wall to secure said vanes in said slots, said crimping being accomplished by advancing a set of punches along respective planes of said vanes against said upper and said lower mandrel portions; and

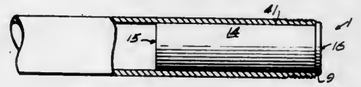
brazing said vanes to said wall.

4,212,424

THERMOSENSITIVE SAFETY VALVE

Jeffrey L. Fortune, 5820 Balao Way, South, St. Petersburg Beach, Fla. 33706

Division of Ser. No. 838,869, Oct. 3, 1977, Pat. No. 4,143,812. This application Nov. 20, 1978, Ser. No. 962,228
Int. Cl.² G05D *23/08*
U.S. Cl. 236—93 R **7 Claims**



1. A method of restricting a supply of fluid in a fluid delivery system for the safety of the user of the same when the fluid temperature rises to a predetermined value, said method comprising the step of:

a flowing a stream of fluid through a fluid delivery system,

positioning a thermoresponsive reed means of a valve in a non-interrupting fluid position behind a ledge within the fluid delivery system when the temperature of the fluid is below the predetermined value, so that when the temperature of the fluid is below the predetermined value, there is no interaction of the reed means with the fluid flow,

flexing the thermoresponsive reed means into a flexed intermediate position of having an interacting relationship with the main stream of fluid flow upon the temperature of the fluid exceeding the predetermined value,

yieldably engaging the thermoresponsive reed means with the interaction with the main stream of fluid flow to allow the main stream of the fluid flow to move the reed means against a passage of the valve to partially seal the same to the fluid flow,

decreasing the pressure of the fluid flow to reinstate the thermoresponsive reed means to at least the flexed intermediate position.

4,212,425

ELECTRICALLY HEATED WINDSHIELD WASHER SPRAY NOZZLE ASSEMBLY

Horst Schlick, Schwalbach, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG., Schwalbach, Fed. Rep. of Germany

Continuation of Ser. No. 595,326, Nov. 6, 1975, Pat. No. 4,068,269. This application Feb. 27, 1978, Ser. No. 881,635
The portion of the term of this patent subsequent to May 9, 1995, has been disclaimed.
Int. Cl.² B60S *1/52;* **H05B** *1/00;* **B67D** *5/62;* **B05B** *1/24*
U.S. Cl. 239—133 **2 Claims**

1. A apparatus for spraying such as the windshield of an automotive vehicle comprising:

a hollow angled pipe of thermally conductive material, having a fluid inlet and a terminal portion;

a spray nozzle assembly of thermally conductive material and mounted on said terminal portion;

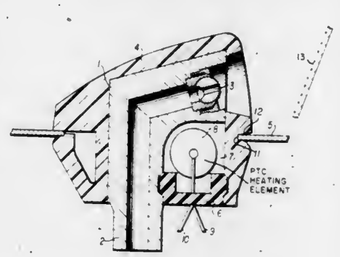
housing means of thermally insulating material enclosing said pipe and adapted for a detachable mounting upon the vehicle, adjacent the windshield thereof in a position such that fluid spray from said nozzle assembly is directed onto the exterior surface of the windshield; and forming a chamber with a downwardlyfacing opening beneath the nozzle assembly;

a PTC heating element mounted in said chamber contiguous to and in heat exchange relation with said nozzle assembly and pipe;

said PTC element having a pill-shaped structure, whose electric connections from a power supply pass through a plastic closure element to the outside;

said closure element being removably fixed in said housing and closing said downwardly-facing opening,

said housing being formed of heat-insulating thermo-plastic material and being circumferentially grooved for releasable engagement with the rim of an opening in the body surface of the vehicle,



said PTC heating element having a temperature resistance curve such that at low ambient temperatures a low resistance and at high ambient temperatures a high resistance occurs;

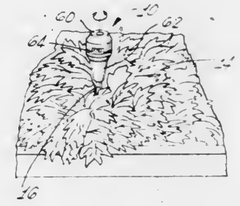
the Curie point of said curve being at or just below the freezing point temperature of water and rising sharply at or about 0° C. with its steepest portion below about 50° C.

4,212,426

PROTECTIVE HOUSING FOR IRRIGATION SPRINKLERS

Mansam Choi, Duarte, Calif., assignor to Anthony Manufacturing Corp., Azusa, Calif.

Filed Dec. 1, 1978, Ser. No. 965,341
Int. Cl.² B05B *3/14, 15/10*
U.S. Cl. 239—230 **9 Claims**



1. In an irrigation apparatus including an impact drive rotary sprinkler mounted for rotation about the axis of a riser, said sprinkler including a nozzle for ejecting a stream of water from the sprinkler and an impact arm having a reaction member which periodically enters said stream to impart rotary motion to said sprinkler; the improvement comprising:

a housing entirely surrounding said sprinkler and having at least one opening through said housing adjacent to and aligned with said nozzle and said reaction member to permit said stream ejected from said nozzle and from said reaction member to exit said housing, said housing including a downwardly facing generally concave cover overlying said sprinkler, said cover including a top and a downwardly extending annular wall containing said opening, said housing further including a generally frusto-conical lower wall surrounding a lower portion of said sprinkler and arranged with the apex end of said frusto-conical wall

facing downwardly and closely surrounding said riser adjacent the bottom of said sprinkler, and the larger diameter end of said frusto-conical wall is sized to cooperate with said downwardly extending annular wall of said generally concave cover, and is positioned adjacent to and immediately below said annular wall; and

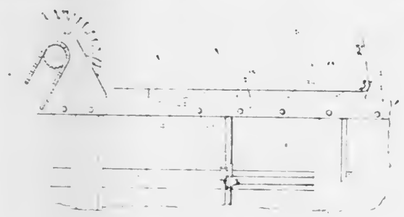
means on said housing for engaging said sprinkler, said means extending downwardly from said top and engaging an upper portion of said sprinkler thereby causing said cover to rotate with said sprinkler and maintaining said opening in alignment with said nozzle and said reaction member during operation of said sprinkler.

4,212,427

GATE ATTACHMENT FOR MANURE SPREADER

Rodger B. Grant, Port Colborne, Canada, assignor to Deere & Company, Moline, Ill.

Filed Oct. 26, 1978, Ser. No. 955,020
Int. Cl.² A01C *3/06*
U.S. Cl. 239—676 **4 Claims**



4. A gate attachment for blocking material from the open rear end of a manure spreader that includes a box with transversely spaced upright sides having upper edges comprising: a pair of fore-and-aft spaced brackets extending upwardly from the upper edges of each of the respective sides; a pair of upright fore-and-aft extending arms mounted by pivotal connections at their forward ends on the respective front brackets of the pair of fore-and-aft spaced brackets to swing vertically between raised and lowered positions, each arm being U-shaped in cross section and closed at their upper edges and with the respective lower edges of the arms opening downwardly and in substantial engagement with said upper edges of the respective sides when the arms in their lower positions, and each of said arms having opposite transversely spaced sides positioned respectively on opposite sides of the fore-and-aft spaced brackets; and a pair of hydraulic cylinders mounted on the rear of the respective fore-and-aft spaced brackets at a level above the lower edges of the arms when the latter are in their lower positions and extending therefrom between the sides of said arms and connected thereto in radially offset relation with respect to the pivotal connection between the fron brackets and the respective arms; and a vertical wall extending between and mounted on the rear portions of said arms so as to depend therefrom so as to block passage of material through said open rear end when said arms are in their lower positions.

4,212,428

HYDRAULIC POWER AND CONTROL SYSTEM FOR GRANULAR FERTILIZER SPREADERS

John H. Walker, Beatrice, Nebr., assignor to Dempster Industries, Inc., Beatrice, Nebr.

Filed Apr. 5, 1978, Ser. No. 893,801
Int. Cl.² E01C *19/20*
U.S. Cl. 239—677 **4 Claims**

1. In apparatus for spreading material such as fertilizer:

a mobile vehicle adapted to be towed during material spreading operation thereof,

said vehicle having a material carrying hopper and ground engaging wheel means adapted to be turned in response to movement of said vehicle and at a rate substantially proportional to the speed of said movement of said vehicle;

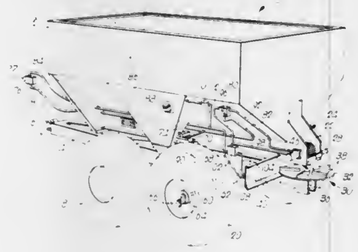
conveyor means carried by said vehicle, operably associated with said hopper and having a rotatable operating part to be driven for operating said conveyor means to remove material from said hopper at a rate substantially proportional to the speed of rotation of said operating part;

rotatable spreader means carried by said vehicle, operably associated with said conveyor means for receiving material being removed from said hopper by said conveyor means, and operable when rotatively driven for spreading said material received from said conveyor means over a zone of the ground adjacent the vehicle and of extent dependent upon the rate at which said spreader means is rotated;

a first, hydraulic motor having an inlet port and an outlet port and operably coupled with said operating part of said conveyor means for driving the latter at a speed substantially proportional to the rate of flow of hydraulic fluid applied to said inlet port of said first motor;

a second, hydraulic motor having an inlet port and an outlet port and operably coupled with said spreader means for driving the latter at a speed substantially proportional to the rate of flow of hydraulic fluid applied to said inlet port of said second motor;

hydraulic rate control valve means having an inlet port, a controlled flow outlet port and a bypass flow outlet port, said control valve means delivering at said controlled flow outlet port thereof a flow of hydraulic fluid substantially



proportional to the flow of hydraulic fluid applied to said inlet port thereof and delivering at said bypass flow outlet port thereof the remainder of said hydraulic fluid applied to said inlet port thereof;

hydraulic flow driver means having an inlet port, a controlled flow outlet port and a bypass flow outlet port,

said divider means delivering at said controlled flow outlet port thereof a substantially constant flow of hydraulic fluid and delivering at said bypass flow outlet port thereof the remainder of said hydraulic fluid applied to said inlet port thereof;

a hydraulic pump adapted to be rotatively driven,

said pump having an inlet port and an outlet port and being operable to deliver at said outlet port thereof a flow of hydraulic fluid substantially proportional to the rate at which said pump is driven;

means for operably coupling said pump with said wheel means for driving said pump at a rate substantially proportional to the speed of said movement of said vehicle in response to turning of said wheel means; and

hydraulic fluid circuit means including a portion coupling the outlet port of said pump with the inlet port of said control valve means, a portion coupling the controlled flow outlet port of said control valve means with the inlet port of said first motor, portions coupling the outlet port of said first motor and the bypass flow outlet port of said control valve means with the inlet port of said divider means, a portion coupling the controlled flow outlet port of said divider means with the inlet port of said second motor, and return portions coupling said outlet port of said second motor and said bypass flow outlet port of said divider means with said inlet port of said pump,

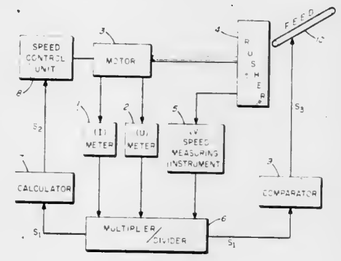
whereby said conveyor means is driven at a rate substantially proportional to the speed of movement of said vehicle, while said spreader means is driven at a substantially constant rate, for spreading said material substantially uniformly upon said zone of the ground regardless of variations in the speed at which said vehicle is being moved.

4,212,429

METHOD AND AN APPARATUS FOR CONTROLLING A CRUSHER

Jean-Philippe Cuvelier, Castres, and Henri Gistau, Paris, both of France, assignors to Societe Miniere et Metallurgique de Penarroya, Paris, France

Filed Mar. 15, 1978, Ser. No. 886,831
Claims priority, application France, Mar. 16, 1977, 77 07810
Int. Cl.² B02C *17/18, 25/00*
U.S. Cl. 241—26 **8 Claims**



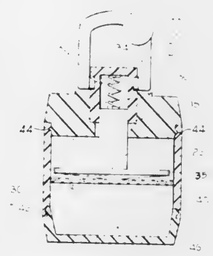
1. A method for controlling an autogenous or a semi-autogenous crusher, in which the charge within the crusher is continuously determined, and the speed of rotation of said crusher is controlled in accordance with a function which links said speed of rotation to said charge and in which said charge is determined from a resistance to rotation experienced by a motor which drives said crusher, and in which said resistance is determined by the ratio between the power absorbed by said motor and the speed of rotation of said crusher.

4,212,430

HAND-HELD PULVERIZER

John D. Dale, and David G. Knotter, both of Phoenix, Ariz., assignors to Deering Precision Instruments Co., Phoenix, Ariz.

Filed Sep. 11, 1978, Ser. No. 940,956
Int. Cl.² B02C *7/00*
U.S. Cl. 241—89.4 **13 Claims**



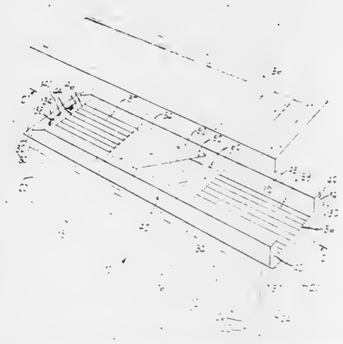
1. A hand-held pulverizer comprising: a hollow cylindrical casing, having openings at opposite ends having; a mesh screen disposed within said cylindrical casing; cover means removably secured to one end of said cylindrical casing; said cover means having a pair of aperture means forming openings on opposite sides of said cover means and a cavity communicating therebetween; rotatable means mounted in said cavity and extending above and below said cover means; handle means disposed on said rotatable means above said cover means to rotate said rotatable means; a pulverizing disc disposed on the end of said rotatable means below said cover means and opposite said handle means having a plurality of spiral-shaped blades disposed on the underside of said pulverizing disc in frictional contact with said mesh screen, whereby material placed on said screen will be driven towards the center of said screen as it is pulverized by said pulverizing disc when said rotatable means is rotated; and a collecting plate removably attached to said cylindrical casing opposite said cover means to receive the pulverized material falling through said mesh screen.

4,212,431

FOOD PROCESSING UNIT

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Sep. 25, 1978, Ser. No. 945,302
Int. Cl.² B02C *19/12*; B26D *4/42*
U.S. Cl. 241—100 **10 Claims**



1. A food processing unit adapted to receive a plurality of food processing devices and comprising a food receiving chamber and a working platform, said food receiving chamber comprising:

1. a rectangular horizontal base having a first pair of opposed, vertical, upwardly extending major side walls rising from the base;
2. a second pair of opposed, vertical, upwardly extending minor side walls rising from the base;
3. a pair of outwardly extending horizontal base surfaces each connected to an upper edge of one member of the opposed side wall pairs and each having an upwardly extending wall at its outer edge forming third and fourth pairs of opposed, vertical, upwardly extending side walls;
4. said working platform comprising an elongated base formed with a fifth pair of opposed vertical side walls said walls being formed with elongated grooves to support said food processing devices extending upwardly therefrom and with upper and lower stages extending crosswise between said side walls, said stages and said side walls defining an opening for releasably supporting a food processing device.

4,212,432

COMMINUTING MACHINE AND HOUSING WITH A ROTOR JOURNALLED IN THE HOUSING AND A TOOL CONNECTED TO THE HOUSING

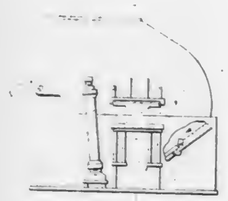
Günther Bohne, Düsseldorf; Bernhard Brans, Oberhausen; Haribert Hannebauer; Manfred Helfenbein, both of Düsseldorf, and Jürgen Theobald, Korschenbroich, all of Fed. Rep. of Germany, assignors to Lindemann Maschinenfabrik GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 29, 1976, Ser. No. 727,941

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1975, 2543769

Int. Cl.² B02C *13/04*

U.S. Cl. 241—285 B **4 Claims**



1. In a comminuting machine comprising a two-part housing, a rotor journalled for rotation within said housing, journal means including a bearing casing for rotatably journalling said rotor about an axis in said housing, and a hinge pivotally connecting said two parts together whereby said two parts are separable for maintenance, tools secured to said rotor for rotation therewith, means stationarily mounted in at least one part of said two-part housing for interacting with said tools in effecting the comminuting action, the improvement wherein said bearing casing of said journal means of said rotor is selectively supported in either of said two parts forming said housing whereby said rotor with said bearing casing and said tools connected thereto is located in either of said parts of said two-part housing when said parts are separated for maintenance so that access is available to said rotor and said means stationarily mounted in at least one part of said two-part housing.

4,212,433

COP SUPPLYING APPARATUS FOR AUTOMATIC WINDING MACHINE

Isamu Matsui, Kyotoshi, and Buro Suganuma, Nagaokakyoshi, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

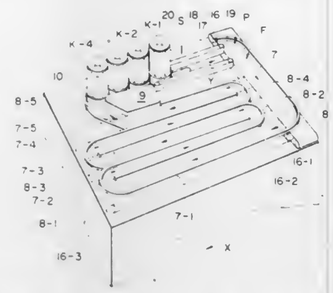
Filed Jul. 27, 1978, Ser. No. 928,599

Claims priority, application Japan, Jul. 29, 1977, 52-92081

Int. Cl.² B65H *54/20, 67/06*

U.S. Cl. 242—35.5 A **13 Claims**

1. An apparatus for transferring and supplying cops to an automatic winding machine having a plurality of winding units each with a magazine including magazine cans comprising an automatic cop feeding apparatus, and a cop supplying truck which is so provided as to move in the lengthwise direction of the automatic winding machine, while storing cop containers containing cops, between the magazines provided on each of the winding units of the automatic winding machine, wherein said cop supplying truck comprises a first conveyer device for storing and conveying a plurality of cop containers which are put on the truck and contain a cop extending vertically therein, a take-out device for taking only the first cop container among an array of the conveyed cop containers when said truck passes by a magazine, a second conveyer device for conveying only one unit of the thus taken out cop container, and a device



for feeding the cop contained in the taken out cop container from the cop supplying truck into a magazine can of the magazine.

4,212,434

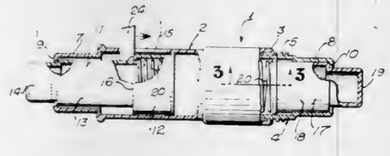
THEFT DETERRENT TOILET ROLL SPINDLES

Randall B. Walker, S. San Francisco, Calif., assignor to The Bobrick Corporation, North Hollywood, Calif.

Filed Dec. 18, 1978, Ser. No. 970,340

Int. Cl.² B65H *19/00*

U.S. Cl. 242—55.2 **1 Claim**



1. A theft minimizing toilet roll spindle for dispensing toilet tissue rolled about a distructable core and utilizing a holder having a pair of opposed journal sockets, the spindle comprising:

a. a thin walled sleeve slidable received in the core contiguous to the internal surface thereof, the sleeve having an axially extending slot confronting the core;

b. a pair of thin walled tubular stems received in opposite ends of the sleeve having end portions of reduced diameter dimensioned to be slidably received in the journal sockets;

c. at least one of the tubular stems having an external shoulder exposed to the slot for engagement by a hand tool upon removal of the core;

d. both of the stems having internal shoulders;

e. and a spring interposed between the shoulders to urge the reduced ends of the stems into the journal sockets.

4,212,435

SEATBELT RETRACTOR

Takashi Kawaharazaki, Toyoake, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Feb. 5, 1979, Ser. No. 9,675

Claims priority, application Japan, Feb. 9, 1978, 53-15171[U]

Int. Cl.² A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107 **4 Claims**

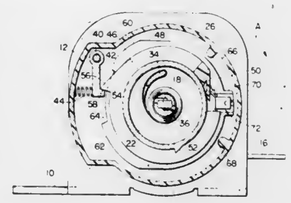
1. A seatbelt retractor comprising:

spring means in which a first spring and second spring weaker in biasing force than the first spring are connected in series and further connected to a seatbelt take-up shaft so as to render the force for winding up the seatbelt;

ratchet means comprising a pawl for engagement with a latch gear provided at a connecting portion between the first and second springs so as to prevent the biasing force of the first spring from acting on the take-up shaft;

a friction plate cooperating with said pawl wherein the turning force of said take-up shaft is imparted thereto by a frictionally contacting means so as to engage said pawl with the latch gear; and

camplate means connected to the take-up shaft through a one-way clutch comprising a gear wheel which rotates



together with said take-up shaft having only one latch formed thereon and an arm projecting from said camplate means which cooperates with said latch on said gear wheel, by which the wind-up force of the take-up shaft is imparted when relative rotation between the camplate means and the take-up shaft is one turn, for disengaging said latch gear from the pawl by the turning force of the take-up shaft.

4,212,436

TAPE TRANSPORT APPARATUS HAVING A CENTRAL CAPSTAN

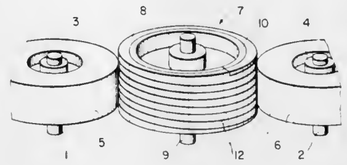
Klaus Schoettle, Heidelberg; Werner Hoffmann, Ludwigshafen, and Eduard Käemmer, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 14, 1978, Ser. No. 969,552

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 2755932

Int. Cl.² G03B *1/04*

U.S. Cl. 242—192 **10 Claims**



1. In a tape transport apparatus comprising a capstan, take-up and supply reels and biasing means, said reels being capable of being urged toward the capstan by the biasing means for transporting the tape from the supply reel to the take-up reel, said capstan having a resilient peripheral portion with concentric regions of different resilience which are substantially inelastic in their circumferential direction, and having a driving surface for frictionally driving at least one of the take-up and supply reels,

the improvement that at least one annular insert is provided within said resilient peripheral portion for producing a concentric region of lower resilience than the resilience of the remainder of the peripheral portion while the frictional driving surface of the peripheral portion is maintained effective, said at least one annular insert being elastically deformable in the radial direction so as to merely reduce the radial flexibility of the peripheral portion, and lacking elastic deformability in the circumferential direction so as to enhance the non-flexibility of the peripheral portion in the circumferential direction.

4,212,437

TAPE CASSETTE

Haruo Shiba, and Masatoshi Okamura, both of Tokyo, Japan, assignors to TDK Electronics Company Limited, Tokyo, Japan

Filed Aug. 14, 1978, Ser. No. 933,581

Claims priority, application Japan, Dec. 12, 1977, 52-166794[U]

Int. Cl.² G03B *1/04*

U.S. Cl. 242—199 **6 Claims**



1. A tape cassette cover locking mechanism for a tape cassette having a first and second half-case comprising:

a cover lockably mounted on said first half-case;

a lock plate mounted on said second half-case for engaging said cover;

a rib member mounted on said second half-case; and,

a plate spring fixedly mounted on said rib, one end of which engages said lock plate.

4,212,438

FAST REWIND MECHANISM FOR BIDIRECTIONAL TAPE TRANSPORTS FOR CASSETTES

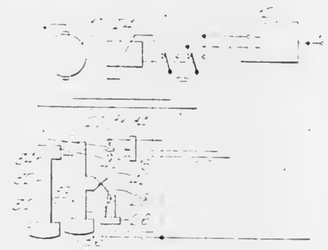
Etienne A. M. Schatteman, Wemmel, Belgium, assignor to Star S.A., Brussels, Belgium

Filed May 16, 1978, Ser. No. 906,311

Claims priority, application France, May 18, 1977, 77 15380

Int. Cl.² G11B *15/30*

U.S. Cl. 242—201 **9 Claims**



1. In a recording and playback apparatus for tapes stored in cassettes, having a bidirectional drive for transporting the tape from reel to reel of a cassette in either direction at normal speed, including drive means for both the reels engageable with the take-up reel in the direction of tape movement at normal tape playback or recording speed, and means including an electrically powered device operable in response to an electrical pulse for reversing said bidirectional drive and coincidentally engaging said drive means with the supply roll; the improvement comprising:

manually actuable fast forward and fast rewind control elements;

means for increasing the speed of said drive means in response to the actuation of either said control elements; and

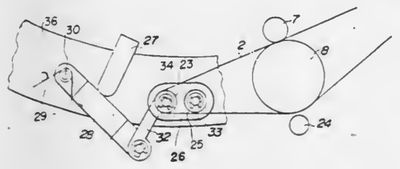
circuit means including a switch operated responsive to the actuation only of said fast rewind control element for producing an electrical pulse and conducting said pulse to operate said electrically powered device to reverse said bidirectional drive and coincidentally engage said drive means with the supply reel, to transport the tape from reel to reel in the reverse direction at fast speed regardless of the original direction of tape movement at normal speed when the fast rewind control is actuated.

4,212,439

MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS

Fumio Sekiguchi, Sagamihara, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,194
Claims priority, application Japan, Nov. 1, 1977, 52-131034
Int. Cl.[2] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—206 **13 Claims**



1. An apparatus for recording and/or reproducing information signals on magnetic tape comprising magnetic tape supply and take-up reel means, a magnetic head assembly disposed along a magnetic tape path between said supply and take-up reel means, a capstan and pinch roller for driving the magnetic tape therebetween at a constant speed, said pinch roller having a first position against the capstan and a second position away from the capstan, tape amount increasing means for providing a predetermined increase in the length of tape extending from said capstan toward said supply reel means, said tape amount increasing means comprising a braking member for pinching said tape between said braking member and said pinch roller when said pinch roller is in said second position, thereby preventing the movement of said tape therebetween, and a loop-forming member for forming a tape loop in the tape extending beyond said pinch roller, said loop-forming member having activating means therefor for defining a large loop when said pinch roller is in said first position thereof and a small loop when said pinch roller is in said second position.

4,212,440

CAMOUFLAGED AND DECEPTIVE DISTORTED VEHICLE AND METHOD OF ASSEMBLING SUCH VEHICLES

Carlisle K. Ferris, 50 Moraine Rd., Morris Plains, N.J. 07950

Filed May 1, 1978, Ser. No. 901,799
Int. Cl.[2] B64D *7/00*
U.S. Cl. 244—1 R **70 Claims**

1. A camouflaged and deceptive distorted vehicle comprising:

(a) a top and bottom surface,

(b) said surfaces having two pairs of coordinate sections including a first fore and aft coordinate sections pair extending from adjacent the front edge of said vehicle to adjacent the rear edge of said vehicle and a second left and right coordinate sections, pair, extending from adjacent the one side edge of said vehicle to adjacent the opposite side edge of said vehicle,

(c) at least one of said two pairs of coordinate sections of said top surface being colored, and



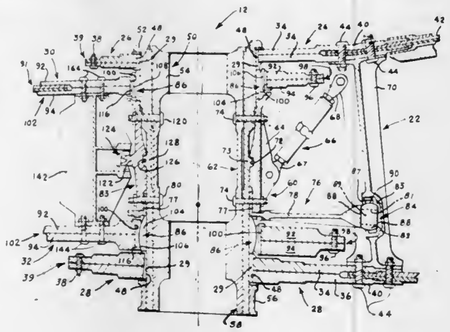
(d) said color on said at least one of said two pairs of coordinate sections at said top surface graduating from dark to light beginning dark adjacent one edge on one section and ending light on the other adjacent edge of said one section.

4,212,441

WING PIVOT ASSEMBLY FOR VARIABLE SWEEP WING AIRCRAFT

Leonard A. Ascani, Jr.; Burton C. Rickey, both of Palos Verdes Estates; Merle E. Riggs, Woodland Hills, and Andrew R. Shoemaker, La Habra, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 11, 1978, Ser. No. 905,063
Int. Cl.[2] B64C *3/40*
U.S. Cl. 244—46 **7 Claims**



1. In a sweep wing aircraft having a fuselage, a pair of movable wings and means for moving said wings to a plurality of positions, the improvement therein residing in a pair of pivot assemblies, each of said pair of pivot assemblies comprising a pivot pin, means operably connected between said fuselage and said pivot pin for mounting said pivot pin adjacent said fuselage, means operably connected between said pivot pin and said fuselage for preventing said pivot pin from rotating, means operably connected between one of said pair of wings and said pivot pin for movably securing said one wing to said pivot pin, means operably connected between said pivot pin and said one wing for movably supporting said one wing with respect to said pivot pin and for transferring vertical shear loads from said one wing to said pivot pin, said means for movably supporting said one wing with respect to said pivot pin being an outboard shear fitting in the form of an approximately 100° arc of a cylinder secured to said pivot pin juxtaposed said means for preventing rotation of said pivot pin and having the inner radius of said rotation prevention means matched to the outer radius of said pivot pin, a tongue protruding from said outboard shear fitting and a shear bearing operably connected to said one wing and movably engaging said tongue on said outboard shear fitting, and means operably connected between said pivot pin and said fuselage for transferring said vertical shear loads from said pivot pin into said fuselage whereby each of said pair of pivot assemblies movably secures one of said pair of wings, respectively, to said fuselage of said aircraft.

4,212,442

THRUST REVERSER

Etienne Fage, Jouy en Josas, France, assignor to Societe ASTECH, Meudon La Foret, France

Filed Feb. 24, 1978, Ser. No. 881,045
Claims priority, application France, Mar. 4, 1977, 77 06359
Int. Cl.[2] B64D *33/04*
U.S. Cl. 244—110 B **9 Claims**



1. A thrust reverser for a jet engine of an aircraft, comprising:

two symmetrical doors pivotally mounted about an axis which is transverse and substantially diametrical to the jet of said engine, and which is disposed downstream of the jet exhaust pipe thereof, each of said doors being pivoted for movement between a folded or stowed position in which said doors are clear of said jet, and an unfolded or opened out position in which said doors are disposed transversely and in the path of said jet;

at least one longitudinal power driven control jack for the simultaneous control of said doors, said jack comprising two aligned pistons, rigidly connected by a common intermediate piston rod, each piston being housed in a corresponding cylinder,

first connecting means interconnecting said cylinders to form a rigid self-supporting cylinder assembly having an upstream cylinder and a downstream cylinder;

second connecting means independent of said first connecting means, said second means connecting said upstream cylinder to said jet engine;

at least two connecting rods each having one end pivotally connected to said piston rod and the other end pivotally connected to a door, and

a hinge for each door mounted directly on said downstream cylinder.

4,212,443

STRAPPED DOWN ATTITUDE AND HEADING REFERENCE SYSTEM FOR AIRCRAFT EMPLOYING SKEWED AXIS TWO-DEGREE-OF-FREEDOM RATE GYROS

Damon H. Duncan, and Martin S. Klemes, both of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed May 18, 1978, Ser. No. 907,228
Int. Cl.[2] G05D *1/10*
U.S. Cl. 244—177 **6 Claims**



1. In a unitary strapped down attitude and heading reference system for an aircraft having first, second and third primary rotation axes and including a system enclosure, said system comprising,

(a) an inertial reference assembly module including

(i) a base support member having at least first and second mutually orthogonal reference surfaces and adapted to be fixed within said enclosure with said surfaces disposed in first and second orthogonal planes normal respectively to first and second primary aircraft axes,

(ii) first and second two-degree-of-freedom rate gyroscopes, each gyroscope having a housing including a rotor and a motor for spinning said rotor about a spin axis and pick-off and torquer means cooperative with said rotor and defining two mutually orthogonal input axes normal to said spin axis and means responsive to said pick-off means for supplying two output signals proportional respectively to aircraft rotation rates about said two input axes,

(iii) means for aligning and securing said first and second gyroscope housing relative to said first and second base support reference surfaces respectively such that their spin axes are respectively normal thereto and parallel to said first and second aircraft axes and their input axes are respectively skewed at an angle on the order of forty-five degrees relative to the third primary aircraft axis, said gyroscope input axes thereby lying parallel to the slant height of a cone having a half angle on the order of forty-five degrees, the axis of said cone being parallel to said third aircraft axis, the difference between the output signals of the first of said gyroscopes corresponding to components of aircraft rotation rates about one of said first and second axes and the difference between the output signals of said second of said gyroscopes corresponding to components of aircraft rotation rates about the other of said first and second axes, and the output signal components of both gyroscopes corresponding to aircraft rotation rates about said third axis, said last-mentioned signal components being normally equal,

(b) computer means responsive to said output signals of said inertial reference assembly module including

(i) means responsive to the signal outputs of said first gyroscope for providing a signal corresponding to the difference therebetween and scaling means for modifying the amplitude thereof in accordance with said skew angle whereby to provide a resultant signal proportional to aircraft rotation rate about said first aircraft axis,

(ii) means responsive to the signal outputs of said second

gyroscope for providing a signal corresponding to the difference therebetween and scaling means responsive to said difference signal for modifying the amplitude thereof in accordance with said skew angle whereby to provide a resultant signal proportional to aircraft rotation rate about said second aircraft axis, and

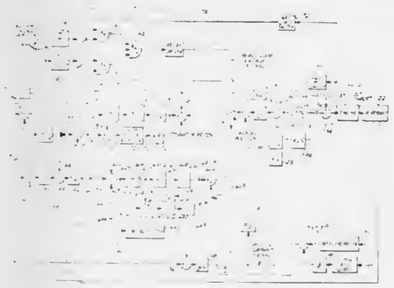
(iii) means responsive to the signal outputs of said first and second gyroscopes respectively for providing first and second signals corresponding respectively to the sum thereof and scaling means responsive to each of said sum signals for modifying the amplitudes thereof in accordance with said skew angle whereby to provide two resultant signals proportional to aircraft rotation rates about said third aircraft axis, and means for averaging the values of said two resultant signals.

4,212,444

GUST BIAS SIGNAL-GENERATING CIRCUIT FOR AIRCRAFT THROTTLE CONTROL SYSTEM

Leonard P. Stephan, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 22, 1977, Ser. No. 853,952
Int. Cl.² G05D *1/08*
U.S. Cl. 244—182 **3 Claims**



1. In combination:

a shear detector circuit responsive to signals representative of airspeed and longitudinal acceleration for providing an output signal; and

gust bias signal-generating means responsive to said output signal for providing a gust bias signal representative of increased level of turbulence, means for limiting the fly fast command provided by said gust bias signal to about 10 knots, said gust bias signal-generating means including switching means responsive to landing flap extension for doubling the amplitude of said gust bias signal in the event of turbulence during landing.

4,212,445

ADJUSTABLE MOUNTING, AND SECURING AND FASTENING ASSEMBLY WITH CHANNEL BAR

Magnus F. Hagen, 434 Panorama Dr., Laguna Beach, Calif. 92651

Continuation-in-part of Ser. No. 808,999, Jun. 22, 1977. This application Jun. 15, 1978, Ser. No. 915,818
Int. Cl.² F16M *13/00*
U.S. Cl. 248—245 **11 Claims**

1. A mounting and securing assembly wherein an object having a keyhole-shaped opening or openings can be adjustably and removably mounted on and secured to a wall or partition, said assembly comprising:

a channel-like member disposed in or attached to said wall or partition and having a rear wall formed with a plurality of aligned juxtapositioned apertures extending longitudinally thereof; a pair of opposite side walls; a front wall having a longitudinal slot formed therein, and positioned opposite said apertures, and a pair of flange members formed as part of said front wall and defined by said longitudinal slot, said channel like member having a substantially "C"-shaped cross-sectional configuration;

a fastener member formed to be removably mounted in said channel-like member and including a central main body having a maximum diameter equal to, or less than, the width of said longitudinal slot; a front locking bar member; a rear locking bar member wherein said main body is disposed therebetween, said rear locking bar member being received and locked in said channel member when said fastener member is rotated through 90°; and a rearwardly extending stud member positioned on the rear



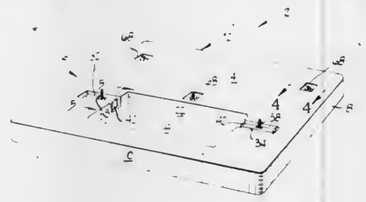
locking bar to be received in one of said apertures in said channel-like member; and wherein said front locking bar is formed to extend through a wall of said object having said keyhole-shaped opening formed therein, said object being supported on said central main body and held in engagement with said front wall of said channel like member, wherein a space is defined between said front locking bar and said rear locking bar, the combined thickness of said flanges and said wall of said object to be mounted being equal to the width of said space, and wherein said rear locking bar includes a locking means.

4,212,446

UNIVERSAL MOUNTING PAD FOR ELECTRICAL TRANSFORMERS

Edward J. Domanick, and Lewis B. Haskins, both of Littleton, Colo., assignors to Johns-Manville, Denver, Colo.

Filed Feb. 14, 1975, Ser. No. 550,094
Int. Cl.² F16M *5/00*
U.S. Cl. 248—678 **5 Claims**



1. A universal mounting pad for anchoring any of several different sizes of electrical transformers, which comprises

a generally flat deck having a top surface, two ends and two transverse sides;

ground engaging support means extending downwardly from said deck;

an opening extending through said deck adjacent one of said ends and disposed between said transverse sides;

two oppositely disposed recesses in said deck extending outwardly from said hole, each recess disposed parallel to said ends;

each of said recesses having a flat bottom surface recessed below said top surface of said deck by a predetermined depth;

a channel mounting member secured within each of said recesses, said member having a depth substantially equal to the depth of said recess and a longitudinal axis substantially aligned with the longitudinal axis of said recess, with the open portion of said channel mounting member being on the uppermost surface of said member and adapted to retain therein connecting means which attach the transformer to said pad;

a plurality of additional recesses in said deck, each recess having a bottom surface depressed below the level of said top surface of said deck; and

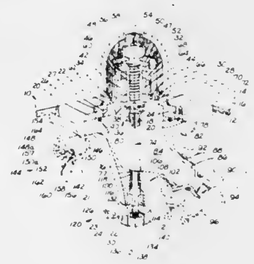
anchoring means cooperating with said additional recesses to anchor said pad to the underlying ground to substantially prevent the movement of said pad in lateral and vertical planes, said anchoring means comprises a shaft having at one end thereof earth engaging means and near the other end thereof a radial collar which engages the bottom of the additional recess and screw threads for engagement with a nut.

4,212,447

OPERATING HANDLE FOR BOTTOM OPERATED RAILWAY TANK CAR VALVE

Gunter R. Behle, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,966
Int. Cl.² F16K *1/48, 31/60, 35/10*
U.S. Cl. 251—98 **9 Claims**



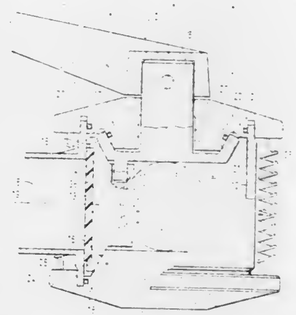
1. In a railway tank car bottom outlet lading valve assembly, an operating handle assembly for a lading valve comprising: an operating shaft extending vertically within a lading outlet chamber having a non-round shaft tool connection portion near the bottom thereof; an operating handle pivotably mounted on the outlet chamber adjacent said shaft non-round connection portion; said operating handle including a handle non-round connection slot which engages said shaft non-round connection portion; a handle-storing bracket for the distal end of the operating handle mounted above said shaft non-round portion adjacent the tank car bottom; said bracket being U-shaped and including a removable pin extending between opposite arms of the bracket for maintaining the distal end of said handle in a stored position within said bracket, and whereby said handle may be pivoted to a generally horizontal position to rotate the shaft through engagement of the handle non-round connection slot with the shaft non-round portion for at least 180° without disengagement, and thus move the lading valve between open and closed positions, and whereby, after use, the distal end of the handle may be returned to the stored position in the handle-storing bracket.

4,212,448

SHUT-OFF VALVE

Günther Wulf, Wangen, Fed. Rep. of Germany, assignor to Hermann Waldner KG, Wangen, Fed. Rep. of Germany

Continuation of Ser. No. 764,231, Jan. 31, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,381
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1976, 2618115
Int. Cl.² F16K *25/00*
U.S. Cl. 251—184 **3 Claims**



1. A shut-off valve comprising:

a housing having a substantially vertically extending cylindrical bore therein;

at least two pipe connections radially opening into the housing;

a rotatable actuator comprising an actuating spindle substantially coaxial with the bore and an actuating part extending radially outwardly from the spindle and comprising an upper downwardly and radially outwardly facing wedge surface;

means in the bore defining a first lower upwardly and radially outwardly facing wedge surface;

a closure member supported within the bore, said closure member defining opposite upper and lower wedge surfaces coaxial with the longitudinal axis of the housing, said lower wedge surface of the closure member being in facing abutment with the first lower wedge surface and said upper wedge surface of the closure member being in facing abutment with the wedge surface of the actuator;

a upper cover on the upper end of the housing through which the actuating spindle extends;

a tubular bearing bush in direct contact with and between the actuating spindle and the cover;

means in contact with the upper end of the bush for biasing it against the actuating part and it against the closure member;

a cap, fixedly secured to and extending over the upper end of said cover, through which the actuating spindle extends; and

said biasing means comprises a biasing member in direct contact with and between the cap and the upper end of the bush.

4,212,449

SWING-ARM DEVICE FOR A VEHICLE LIFT

Tozaburo Tsujimura, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

Filed Oct. 3, 1978, Ser. No. 948,204
Claims priority, application Japan, Dec. 22, 1977, 52-173403[U]
Int. Cl.² B60S *13/00*
U.S. Cl. 254—89 H **1 Claim**

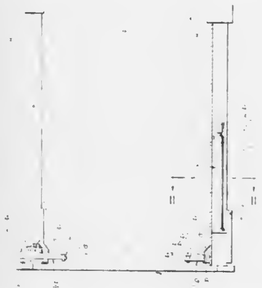
1. In a vehicle lift in which a carriage is raised and lowered

up and down a support pillar, a swing arm device for supporting a vehicle comprising:

(a) a first arm having first and second ends disposed substantially horizontally, its first end being pivotally coupled about a vertical axis to said carriage;

(b) a second arm having a first and second end disposed substantially horizontally, the first end thereof being pivotally coupled to the second end of the first arm, the pivotal coupling between said first and second arms being remote from the carriage and about a vertical axis, the second end of said second arm being adapted to support a vehicle;

(c) a first locking member including a first strut which extends substantially perpendicular to the axis of the pivotal coupling intermediate the carriage and said first arm and



first locking means for adjustably fixing the distance between two points located on said carriage and said first arm, respectively, substantially away from the axis of said pivotal coupling, said first locking means being coupled to said first strut whereby the pivoting of said first locking arm is locked; and

(d) a second locking member including a second strut which extends substantially perpendicular to the axis of the pivotal coupling intermediate the first and second arms and second locking means for adjustably fixing the distance between two points located on said first arm and said second arm, respectively, substantially away from the axis of said pivotal coupling, said second locking means being coupled to said second strut whereby the pivoting of said second arm is locked.

4,212,450

JACKING APPARATUS

R. Bruce Lambert, Chatsworth, Calif., assignor to Santa Fe International Corporation, Orange, Calif.

Filed Aug. 25, 1978, Ser. No. 937,030

Int. Cl.³ B66F *1/04*

U.S. Cl. 254—108 **7 Claims**



1. A jacking apparatus for moving a load over a rail having a plurality of longitudinally-spaced slots therealong, said apparatus comprising:

a load frame adapted to move over said rail for moving a load therewith,

a carriage inside said frame adapted to move over said rail,

a pawl member mounted on said carriage for rotation about a transverse pivot axis between two angular positions,

a reciprocating, double-acting, hydraulic cylinder coupled between said carriage and said frame for producing relative movements therebetween,

said pawl member having a claw foot adapted to mesh with the consecutive slots on said rail,

said claw foot having a pair of outwardly extending side claws which are symmetrically disposed relative to a plane containing said pivot axis and the longitudinal axis of said pawl member, and

said claw foot engaging said rail during one stroke of said cylinder, and becoming disengaged from said rail during the reverse stroke of said cylinder, depending on the angular position of said pawl member.

4,212,451

INSTALLATION FOR THE PRODUCTION OF CONTINUOUSLY CAST BILLETS

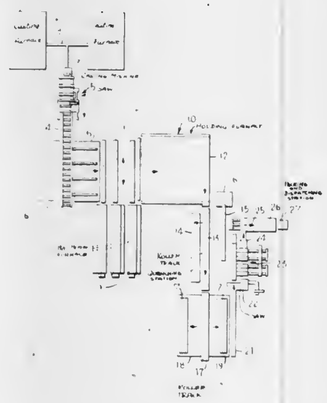
Hansjöng Klotzbücher, Muri; Erwin Kolb, Illnau, and Bernhard Hilge, Adliswil, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 691,729, Jun. 1, 1976. This application Apr. 5, 1978, Ser. No. 893,802

Claims priority, application Switzerland, Jun. 6, 1975, 7342/75

Int. Cl.³ B22D *11/12*; C22D *1/04, 1/06*

U.S. Cl. 266—50 **10 Claims**



1. An installation, for use in producing continuously cast billets, of alloys of aluminum or magnesium, comprising, in combination,

a horizontal continuous casting machine operable for casting the billets,

a horizontal conveyor connected up to said casting machine for receiving the cast billets from said machine while warm,

a movable cutting device operable to move synchronously with said conveyor for cutting the billets as they are transported while warm by said conveyor,

a heat treating unit disposed adjacent said conveyor and being operable to receive said cut warm billets from the conveyor and to heat treat them thereafter,

a reserve magazine provided between said heat treating unit and the end of the conveyor track remote from the casting machine,

a cooling unit adjacent and downstream of said heat treating unit for receiving the heat treated billets for controlled cooling thereof,

a cutting device adjacent and downstream of said cooling unit for cutting the heat treated billets to the desired final length, and

providing at the end of the production line an automatic stacking and packing device.

2. An installation, for use in producing continuously cast billets, of alloys of aluminum or magnesium, comprising, in combination,

a horizontal continuous casting machine operable for casting the billets,

a horizontal conveyor connected up to said casting machine for receiving the cast billets from said machine while warm,

a movable cutting device operable to move synchronously with said conveyor for cutting the billets as they are transported while warm by said conveyor,

a heat treating unit disposed adjacent said conveyor and being operable to receive said cut warm billets from the conveyor and to heat treat them thereafter,

a reserve magazine provided between said heat treating unit and the end of the conveyor track remote from the casting machine, and

a stacking and packing unit downstream of said heat treating unit operable to receive said billets off the end of the production line and stack and pack them.

4,212,452

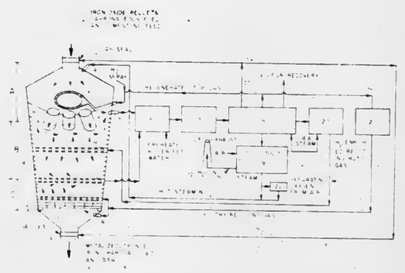
APPARATUS FOR THE DIRECT REDUCTION OF IRON ORE

Jack Hsieh, Rte. 4, Box 9770, Richland, Wash. 99352

Division of Ser. No. 879,250, Feb. 21, 1978, Pat. No. 4,160,663. This application Apr. 30, 1979, Ser. No. 34,807

Int. Cl.³ F27B *1/20*

U.S. Cl. 266—156 **2 Claims**



1. Apparatus for the direct reduction of iron ore comprising

(a) a fixed shaft furnace,

(b) a partition extending across the upper portion of said shaft furnace,

(c) at least one conduit extending downwardly from said partition,

(d) means for feeding ore into said shaft furnace above said partition,

(e) a discharge grate extending across the lower portion of said shaft furnace,

(f) means for introducing heated oxygen, substantially free of inert gases, and steam above said partition and for introducing reducing gas between said partition and said discharge grate.

(g) means for withdrawing top gas immediately below said partition,

(h) means for cooling, purifying and dehumidifying said top gas and introducing a portion of said cooled and purified top gas into said shaft furnace adjacent said discharge grate,

4,212,453

PLANT FOR REFINING PIG IRON

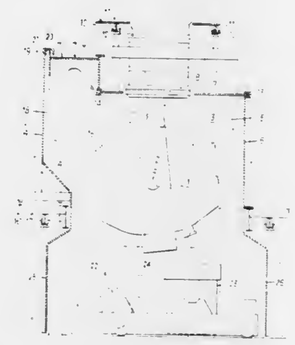
Friedrich Laimer, Perg, and Herbert Herrmann, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Feb. 2, 1978, Ser. No. 874,400

Claims priority, application Austria, Feb. 21, 1977, 1133/77

Int. Cl.² C21C *5/40*

U.S. Cl. 266—158 **4 Claims**



2. A plant for refining pig iron by means of oxygen or gases enriched with oxygen, of the type including: a converter; a chamber accommodating the converter, said chamber having an upper part and a lower part formed from stationary chamber walls and a ceiling; a principal hood connected to said ceiling; a charge opening and a secondary hood covering it provided in said upper part of said chamber; and closing means for closing said charge opening, characterized in that

said ceiling has a stationary part and a displaceable part, said displaceable part surrounding and being united with said principal hood so as to form a displaceable unit above said converter,

said secondary hood covering said charge opening is united with said stationary part of said ceiling, and

said closing means includes a sliding door and rail means for guiding said sliding door, said sliding door being designed as a plane, perpendicularly arranged plate and a slag protection means extending downwards at an inclined angle toward the chamber interior being provided on said sliding door at the lower end of the inner side thereof.

4,212,454

OPERATION TABLE

Norman J. Lee, London, England, assignor to Matburn (Holdings) Limited, London, England

Filed Apr. 24, 1978, Ser. No. 899,107

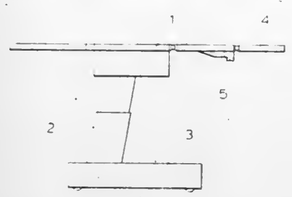
Claims priority, application United Kingdom, Apr. 28, 1977, 17770/77

Int. Cl.² A61G *13/00*

U.S. Cl. 269—328 **4 Claims**

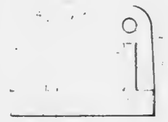
1. A surgical operation table comprising a platform with a main section and an end extension section which may be removably fitted adjacent an end of the main section, wherein the said extension section has a pair of support arms removably engageable in complementary sockets secured to the main section, at least one of the sockets being provided with a spring locking plate which is engageable with a depending locking abutment portion carried by a support arm inserted in the socket to prevent the arm being withdrawn from the socket.

said spring locking plate engaging the underside of said depending locking abutment portion, and means being provided



for disengaging the locking plate from the arm when it is desired to remove the extension section from the main section.

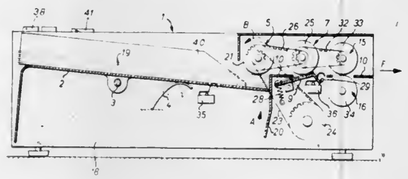
4,212,455
POWER SAW BLADE CHANGE ASSIST
James N. Eckley, 1752 N. Atherton St., State College, Pa. 16801
Filed Nov. 29, 1978, Ser. No. 964,683
Int. Cl.[2] B25B *1/08, 1/10, 1/20*
U.S. Cl. 269—236 **8 Claims**



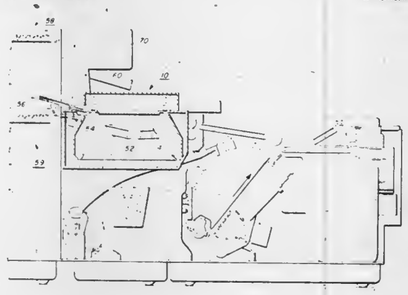
1. A device for use in changing a power saw blade, said device comprising:
a horizontal base portion for providing a stable base;
a vertical holder on top of said horizontal base portion, said vertical holder having a vertical groove therethrough extending downward through said horizontal base portion; said groove having a curved rear portion and being large enough for receiving the saw blade therein, said groove further having a non-constant width, said curved rear portion of said groove having a first width large enough for accomodating the set of the teeth of the saw blade, and said groove having a front portion having a second width less than said first width; and
a fastening means through said vertical holder and moveable into said front portion of said groove for holding the saw blade in said groove.

4,212,456
APPARATUS FOR AUTOMATICALLY FEEDING INDIVIDUAL SHEETS FROM A STACK THROUGH AN OFFICE MACHINE
Kurt Ruenzi, 8126 Zumikon, Switzerland
Continuation-in-part of Ser. No. 779,755, Mar. 21, 1977, Pat. No. 4,113,244, which is a continuation-in-part of Ser. No. 674,918, Apr. 8, 1976, Pat. No. 4,032,135. This application Sep. 7, 1978, Ser. No. 940,213
Claims priority, application Switzerland, Apr. 15, 1975, 4758/75
Int. Cl.[2] B65H *5/22*
U.S. Cl. 271—4 **3 Claims**

1. A sheet feeding and receiving apparatus for directing sheets of paper to and receiving said sheets of paper from platen means in a typewriting machine, comprising driven free wheeling separating roller means, a pivotally mounted supply stack support, means resiliently urging the leading edge of a top sheet on said supply stack support against said driven free wheeling separating roller means, a stop engaging the lower sheets on said stack support, a set of positively driven first transport roller means positioned downstream of said separating roller means in the transport direction of sheets on said stack, separating means (**627**) for separating the uppermost sheet from said stack to inhibit the passage of more than one sheet at a time through the apparatus, said apparatus further comprising first sheet guide means for deflecting the sheet supplied by the sheet separating roller means at a deflection angle in a downward direction, receiving stack support means arranged partially above said pivotally mounted supply stack support, second sheet guide means arranged above and downstream of said platen means for directing sheets upwardly from below said platen means to said receiving stack support means for storing sheets received from said platen, and driven second transport roller means positioned above said platen means to feed sheets from said platen means to said receiving stack support means, said apparatus further comprising photocell means operatively arranged between said free wheeling separating roller means and said platen means for detecting a spacing between successive sheets, and drive means operatively interconnecting said free wheeling separating roller means, and said first and second transport roller means for driving said roller means from a common source.



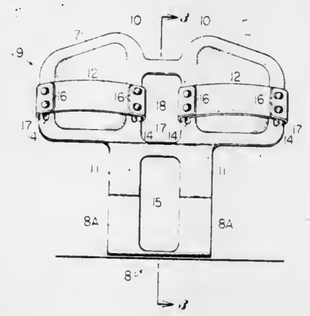
4,212,457
PRE/POST-COLLATION COPYING SYSTEM
Joachim Guenther, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 27, 1978, Ser. No. 890,097
Int. Cl.[2] B65H *31/24, 29/60*
U.S. Cl. 271—288 **8 Claims**



1. In a method of copying wherein a set of plural documents are circulated and copied a number of times corresponding to a selected plural number of copies, the improvement comprising:
switching between a selected one of the following different modes of operation;
a conventional post-collation mode of operation in which a number of identical copies corresponding to said selected number of copies are made from each document copied from the circulated document set, and these copies are forwarded to different individual bins of a sorting apparatus for collation in said sorting apparatus; and
a pre-collation mode of operation using the same sorting apparatus in which the documents are plurally circulated by a number of times corresponding to the selected plural number of copies and copied once per circulation, in which mode of operation all the copies made from one said document circulation are placed in one said bin, but different said bins are used for different said document copying circulations so that each pre-collated copy set is individually placed in a different said bin of said sorting apparatus.

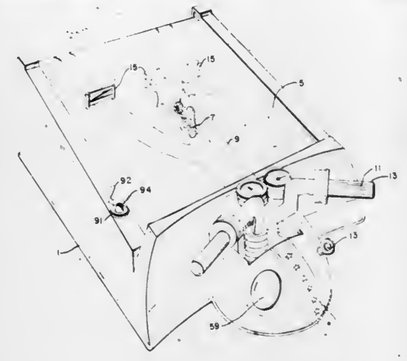
4. In a method of copying in which a pre-collation mode of copying is provided wherein a set of documents may be multiply recirculated for single copying onto copy sheets by a number of circulations corresponding to the number of desired copies to produce copy sheets in pre-collated order, and alternatively a post-collation mode of copying is provided wherein the documents may be multiply copied during a circulation onto multiple uncollated copy sheets and forwarded to a sorting apparatus having a number of individual sorting bins for sorting said uncollated copies into said bins; and in which the number of copies to be made by said copier may be selected by actuating a copy counter control, the improvement comprising:
automatically switching between said pre-collation mode of copying and said post-collation mode of copying in response to said selection in said copy counter control of sa plural number of copies which exceeds a pre-set plural number corresponding to desired crossover copy count, so that when the selected number of copies is below said preset number the mode of document copying will be pre-collation, and when the selected number of copies is above said pre-set number the mode of copying will be post-collation.

4,212,458
FOOT HOLDING DEVICE FOR USE IN PERFORMING SIT-UP EXERCISES
George Bizilia, 226 Newbury St. #22, Boston, Mass. 02116
Filed May 8, 1978, Ser. No. 903,873
Int. Cl.[3] A63B *23/02*
U.S. Cl. 272—93 **5 Claims**



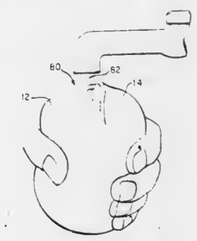
1. A device for use in performing sit-up exercies, said device including a head means for receiving feet of a user, a pair of laterally spaced supports carried by said head means, one support for supporting each foot of a user, each support including a support surface engageable by the ball area of the foot during an exercise program and a restraining strap holding each foot to the support surface, a base section in the form of a U and shaped and dimensioned to receive within it the bottom margin of a door, a connecting section positioned between said head means and said one side wall of said U-shaped base section, said connecting section inclined outwardly and upwardly thus placing said supports in position to receive the feet of a person who is seated or lying on the floor while the sit-up exercises are being performed, and said head section being inclined relative to said connecting section towards a plane inclusive of said one side wall.

4,212,459
RACING GAME
Tobin Wolf, 285 Aycrigg Ave., Passaic, N.J. 07055
Filed Feb. 13, 1978, Ser. No. 877,485
Int. Cl.[2] A63F *9/14*
U.S. Cl. 273—1 E **23 Claims**



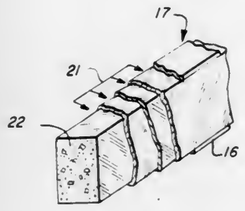
7. A racing game comprising, in combination,
(a) a flexible endless belt,
(b) roller means positioned within and driving said belt and substantially coextensive therewith,
(c) a housing supporting said roller means,
(d) control means for variably controlling rotational space of said roller means,
(e) a vehicle, and
(f) means secured to said housing and said vehicle for directing said vehicle relative to said belt in two degrees of freedom, wherein said roller means includes a pair of spaced rollers, said rollers each including aligned grooves therein and further including an obstacle retaining means secured to the underside of said belt and aligned with said grooves, whereby said obstacle retaining means passes in said grooves when passing over said rollers.

4,212,460
HOLLOW WATER-FILLED GAME TOY
Donald J. Kraft, 512 Dartmouth Rd., Burbank, Calif. 91510
Filed Jul. 27, 1978, Ser. No. 928,382
Int. Cl.[2] A63B *37/12, 43/04*
U.S. Cl. 273—58 B **7 Claims**



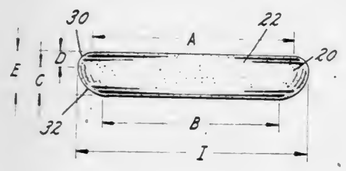
1. A hollow game toy comprising:
two resilient manually deformable complementary parts each having matching rim structures which are engaged to form a substantially hermetically sealed hollow body, said rim structure including at least one evacuation vent for purging fluid from the body interior during deformation of the body.

4,212,461
COMPOSITE HIGH STRENGTH TO WEIGHT STRUCTURE HAVING SHELL AND WEIGHT CONTROLLED CORE
Andrew M. Cecka, Thousand Oaks, and Paul G. Pawling, Oxnard, both of Calif., assignors to Fansteel Inc., N. Chicago, Ill.
Division of Ser. No. 703,137, Jul. 7, 1976, Pat. No. 4,124,670. This application Jul. 10, 1978, Ser. No. 922,984
Int. Cl.[2] A63B *49/10*
U.S. Cl. 273—73 F **16 Claims**



1. In a tennis racket frame having a handle and an ellipsoid head attached to one end of said handle and a grip element at the opposite end of said handle, an improved construction wherein said frame comprises a structural member of high strength to weight ratio comprising a core of an expanded porous resinous material integrally bonded to a shell comprising at least one layer of resin-coated unidirectionally oriented graphite fibers, said shell completely encasing said core at any cross section transverse to the length of said member and said core containing from about 25 to about 75 volume percent of chopped cork as a low density filler material and from zero to about 60 weight percent of a high density weight control material.

4,212,462
HYDROPLANING DISC
Danny W. Glovak, 2651 Holmes, Hamtramck, Mich. 48212, and Allan W. Buyze, 2701 South Fairview N-16, Santa Ana, Calif. 92704
Continuation-in-part of Ser. No. 739,837, Nov. 8, 1976, Pat. No. 4,151,997. This application Jun. 5, 1978, Ser. No. 912,285
Int. Cl.[2] A63B *65/10, 67/06*
U.S. Cl. 273—424 **9 Claims**

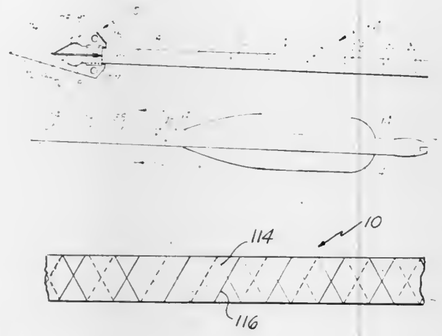


1. An aerodynamic and hydromechanical hydroplaning disc comprising:

(a) a disc-like solid and unitary body of heavier-than-water material having a substantially flat top surface parallel to a substantially flat bottom surface enclosing the bulk of the center portion of the disc, the top surface being significantly larger than the bottom surface, and

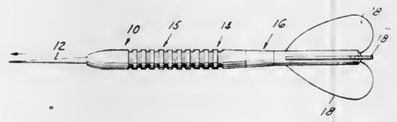
(b) a peripheral surface joining the top and bottom surfaces such that said peripheral surface is formed with a predetermined convex contour relative to the central axis perpendicular to the flat surfaces, said contour having a relatively larger radius of curvature for the bottom of the peripheral surface and a relatively smaller radius of curvature for the top of the peripheral surface, said curvatures blending tangentially at the periphery and at the respective top and bottom surfaces.

4,212,463
HUMANE BLEEDER ARROW
Robert J. Repinski, North Clarendon, and Enoch B. Pratt, Wells, both of Vt.
Filed Feb. 17, 1978, Ser. No. 878,717
Int. Cl.[2] F41B *5/02*
U.S. Cl. 273—418 **19 Claims**



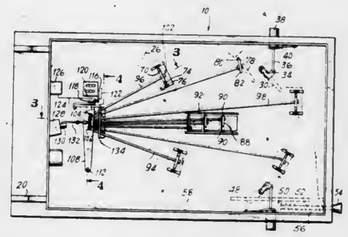
19. Apparatus, which comprises a hunting arrow including an elongated, hollow shaft having an inner surface, an outer surface and groove means formed thereon for facilitating the shearing of said shaft at the position thereof, said groove means comprising at least one groove spirally formed on said shaft, said groove extending about the circumference of said shaft a plurality of times and having a pitch approximately on the order of magnitude or less than the diameter of said shaft, wherein said inner surface is smooth and of a substantially constant diameter along the entire length of said shaft and wherein said arrow includes an open front end at the forward portion of said shaft of a diameter equal to said constant diameter, and further comprising arrowhead means attached to said open front end of said arrow so as not to obstruct fluid flow thereinto, said arrowhead means comprising a sleeve affixed to said outer surface of said shaft, a substantially planar broadhead removably mountable on said sleeve, and a substantially planar blade insert oriented at right angles on said sleeve and broadhead.

4,212,464
DART BODY
Milan S. Pelouch, Libertyville, Ill., assignor to Fansteel Inc., North Chicago, Ill.
Filed Feb. 15, 1978, Ser. No. 878,018
Int. Cl.[2] A63B *65/02*
U.S. Cl. 273—416 **7 Claims**



1. In a dart for hand throwing, a dart body to improve finger grip and release having a generally symmetrical gripping surface about a fore and aft axis, said surface having a plurality of each of grooves formed therein spaced along the axis of the body and having fore and aft spaced walls merging into the gripping surface, the forward wall having a relatively sharp merging angle with said surface and the aft wall having a relatively large and obtuse angle merging with said surface.

4,212,465
PINBALL GAME WITH PLURAL RE-PROJECTORS ACTUABLE BY SINGLE SOLENOID ACTED UPON BY SINGLE SWITCH
Avi Arad, New York, N.Y., assignor to Louis Marx & Co., Inc., Stamford, Conn.
Continuation of Ser. No. 779,300, Mar. 21, 1977, abandoned. This application Mar. 9, 1978, Ser. No. 885,132
Int. Cl.[2] A63D *3/02, 13/00*
U.S. Cl. 273—121 A **13 Claims**



12. A pinball game comprising:

a playing surface sloping downwardly from the rear to the front thereof;

at least one ball;

primary rear projector means for propelling a ball from near the front of the playing surface towards the rear thereof so as to permit the ball to roll down over the playing surface;

a plurality of rear re-projectors including a movable element and means supporting said element for movement between a front position and a rear position on said playing surface for impeding the ball as the ball rolls down over the playing surface and for propelling said ball towards the rear of said playing surface when one of said re-projector means is contacted by said ball;

a solenoid;

a normally open energizing circuit for the solenoid;

a common normally open switch which is closed for completing the circuit in response to a ball contacting one of said rear re-projector means;

a common member adapted for displacement in a front-to-rear direction connected to and displaceable by said solenoid; and

motion transmission means for individually connecting each said rear re-projector means to said common member and for transferring forward motion of the associated rear re-projector when contacted by a ball rolling downwardly over the playing surface of the game, said motion transmission means being operatively connected with said switch through said common member whereby the motion of the motion transmission means from any of said rear re-projectors operates to operate said switch and actuate said solenoid;

said solenoid displacing said common member when the circuit is completed in response to a ball contacting one of said rear re-projectors thereby moving at least said rear re-projector means contacted by said ball towards the rear of said playing surface to said ball rearwardly.

4,212,466
GAME APPARATUS
John R. Wildman, North Riverside, and Burton C. Meyer, Downers Grove, both of Ill. Assignors to Maruin Glass & Associates, Chicago, Ill.
Filed Apr. 3, 1978, Ser. No. 892,646
Int. Cl.[3] A63F *7/24, 7/30*
U.S. Cl. 273—121 R **17 Claims**

1. A game apparatus comprising:

an enclosure for holding one or more balls including a sloping bottom wall and a peripheral side wall for containing said balls as they roll on said bottom wall toward a lower end portion thereof;

manually controlled means for launching said balls from said lower end portion toward an upper end portion;

target means in said enclosure adapted to be engaged by a ball rolling on said bottom wall, said target means including a releasable drive means;



a release member activated by contact with said ball for actuating said drive means; and

a paddle mounted on a shaft for rotation therewith, said drive means including a biasing member on said shaft to rotate the same in response to activation thereof, to forcefully propel said ball in a given direction.

4,212,467
GOLF CLUB
Yukio Shiratori, 15432 Harvard Blvd., Gardena, Calif. 90247
Filed Jun. 15, 1978, Ser. No. 915,618
Int. Cl.[2] A63B *69/36, 53/10*
U.S. Cl. 273—163 A **11 Claims**



1. In a golf club, the improvement comprising, in combination:

a club head;

an elongated longitudinally extending substantially cylindrical shaft means having a first end coupled to said club head, and a second end;

a grip means coupled to said second end of said shaft means;

said shaft means having a predetermined longitudinal axis extending between said grip means and said club head;

said shaft means comprising:

a solid transparent portion intermediate said club head and said grip means, and said solid transparent portion having a peripheral surface; and

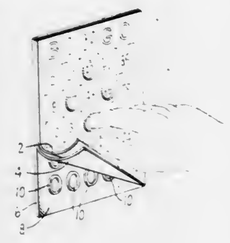
opaque indicia means on said transparent portion of said shaft means lying in a plane containing said predetermined longitudinal axis and said indicia means extending a predetermined longitudinal distance between said grip means and said club head.

4,212,468

PRESSURE SENSITIVE GAME APPARATUS

Philip H. Knott, One San Antonio Pl., San Francisco, Calif. 94133

Filed Jun. 30, 1978, Ser. No. 920,845
Int. Cl.² A63F 3/00
U.S. Cl. 273—240 **14 Claims**



1. Game apparatus in which symbols are provided in a predetermined pattern and in which selected ones of those symbols are to be marked, comprising

a sheet of flexible, translucent material having an overlying said symbol pattern,

a substantially rigid and generally planar backing member attached to and behind said translucent sheet, said backing member having a fixed pattern of geometrical shapes extending below the surface of said backing member such that said translucent sheet may be depressed by a user partially into said pattern shapes, and said backing member having at least portions of the surface thereof which faces said translucent sheet coated with a pigmented material and a pressure sensitive, releasable adhesive material at least around portions of the periphery of each said geometrical shape, such that pressure applied upon the translucent sheet corresponding to a selected symbol of the symbol pattern will urge that portion of the translucent sheet partially into the corresponding backing member shape and into contact with the adhesive around the periphery of such shape to mark the selected symbol, and then the translucent sheet may be pulled free of such adhesion and marking for reuse in another game.

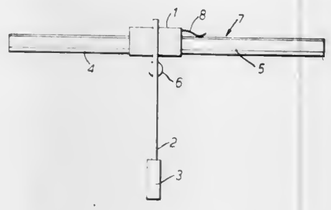
4,212,469

DISC RECORD PLAYERS

Brian P. Taylor, Swindon; David J. Davis, Wroughton, and Roy N. Wasdell, Wolverhampton, all of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed May 30, 1978, Ser. No. 910,859
Claims priority, application United Kingdom, Jun. 3, 1977, 23708/77
Int. Cl.² G11B 3/38
U.S. Cl. 274—23 A **6 Claims**

1. A disc record player comprising a pickup arm, electrical position responsive means for providing an electrical signal that is dependent upon the position of the pickup arm, electrical reference means for affording one or more reference signals corresponding to one or more required positions of the pickup arm, comparator means for comparing the electrical signal from the electrical position responsive means with a selected reference signal from the electrical reference means and for generating a command signal which is effective to cause the pickup arm to move to a position corresponding to the said required position, a motor driven carriage means for carrying said pickup arm which is movable for maintaining the pickup arm in a fixed relationship to a record on the record player, a first servo-controlled means for energising the motor driven carriage means when the pickup arm is in contact with a record being played, and second servo-controlled means responsive to the electrical signal that is dependent upon the position of the pickup arm and to said reference signal for moving the pickup arm to the position corresponding to said required position when the pickup arm is not in contact with a record



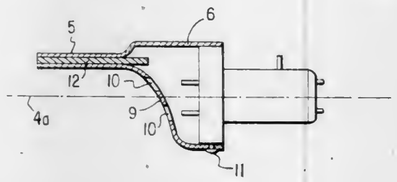
being played, the first servo-controlled means comprising feedback control means for controllling the velocity and/or acceleration of the pickup arm, said feedback control means being interconnected between said electrical position responsive means and said motor driven carriage means for effecting velocity and/or acceleration feedback control of the pickup arm, said feedback control means including first and second differentiator means for providing velocity and acceleration feedback control of the pickup arm, the first differentiator means affording a velocity control signal and the second differentiator means affording an acceleration control signal.

4,212,470

HEAD SHELL FOR PICK-UP ARMS AND METHOD OF MAKING SAME

Mitsuyoshi Morinaga, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1978, Ser. No. 941,767
Int. Cl.² G11B 3/10
U.S. Cl. 274—37 **5 Claims**



1. A head shell for pick-up arms comprising

a flat part for mounting a phonograph cartridge formed by machine-pressing one end of a tubular member so that an opening remains at the other end and

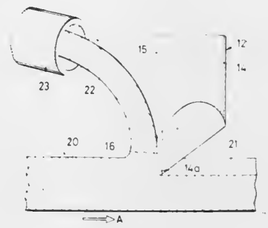
an electrical connector mounted at the opening adapted for connection to a pick-up arm.

4,212,471

DEVICE FOR CUTTING A SOUND GROOVE ON A DISC RECORDING MEDIUM

Yoshiro Nishiwaki, and Tetsuro Izumi, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Mar. 28, 1979, Ser. No. 25,449
Claims priority, application Japan, Mar. 31, 1978, 53-36550
Int. Cl.² G11B 3/44
U.S. Cl. 274—38 **8 Claims**



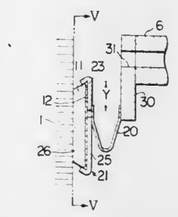
1. A device for cutting sound grooves in a disc recording medium, said device having a cutting stylus for recording sound by cutting on the disc recording medium, said cutting stylus comprising a cutting stylus structure of diamond having a cutting part for cutting the disc recording medium while producing a cut chip therefrom, at least a surface of the cutting stylus structure contacting the chip having been rendered electroconductive to a specific depth by an ion-implantation process.

4,212,472

SEAL ASSEMBLY FOR ROTARY HEAT-EXCHANGER

Toru Mizuno, Kariya, and Masao Kitano, Numazu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed May 30, 1978, Ser. No. 911,195
Int. Cl.² F16J 15/54
U.S. Cl. 277—12 **12 Claims**



1. A seal assembly for a rotary heat-exchanger of a gas turbine, said rotary heat-exchanger including a housing having therethrough a low pressure gas passage and a high pressure air passage, and a regenerative rotor rotatable within said housing across said passages to effect the heat exchange between gas flowing through said low pressure gas passage and air flowing through said high pressure air passage, said seal assembly being positioned between said housing and said regenerative rotor to seal between said passages and comprising:

a sliding pad of a solid lubricant having an inner and outer peripheries and opposite surfaces, one of said opposite surfaces being adapted to be in slidable contact with said regenerative rotor to support the same;

a backing of a thin sheet metal in flat contact with the other surface of said sliding pad and having an inner and outer peripheral edges respectively swaged over the inner and outer peripheral edges of said sliding pad to hold the same; said thin sheet metal backing having formed therein with a plurality of spaced slits extending from the inner periphery toward the outer periphery of said thin sheet metal backing; and

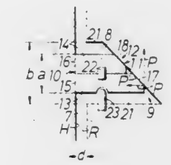
a resilient seal interposed between said sliding pad and said thin sheet metal backing.

4,212,473

MULTIPLE SEAL RING HAVING A TAPERED SURFACE, AND A SEALING DEVICE

Yoshio Arai, 1400 Kamihongo, Matsudo-shi, Chiba-ken, Japan

Filed Mar. 2, 1979, Ser. No. 16,736
Claims priority, application Japan, Jun. 21, 1978, 53-74963
Int. Cl.³ F16J 15/34
U.S. Cl. 277—81 P **6 Claims**



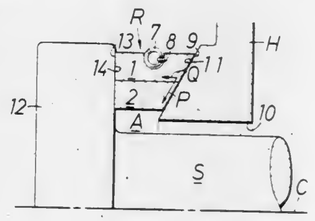
1. A multiple seal ring for sealing between a stationary flat surface and a rotary flat surface and adapted to be received in an annular groove formed in the rotary surface, said seal ring comprising a plurality of annular seal elements of different diameter each having a flat sealing face formed at one end for making sealing contact with said stationary flat surface and a conical sealing face formed at the other end for making sealing contact with a conical bottom surface of said annular groove, said conical sealing face diverging in a radially outward direction toward said flat sealing face, each of said seal elements being cut in a radial direction so as to afford itself a radially outwardly expanding force, said seal elements being closely fitted one over the other in concentric relation with each other with the cut portions of said seal elements being circumferentially displaced from each other, whereby said seal elements are slidable under the action of their own expanding force along said conical bottom surface of said groove to thereby urge the mutually adjacent inner and outer peripheral surfaces of said seal elements into intimate contact with each other for sealing said cut portions of said seal elements.

4,212,474

SEAL RING HAVING TAPERED SURFACE AND SEALING DEVICE INCORPORATING THE SAME

Yoshio Arai, 1400, Kamihongo, Matsudo-shi, Chiba-ken, Japan

Filed May 31, 1979, Ser. No. 44,014
Claims priority, application Japan, Jun. 30, 1978, 53-79380
Int. Cl.² F16J 15/34
U.S. Cl. 277—83 **11 Claims**



1. A seal ring with at least one tapered surface for use in sealing a space between a first and a second members, the first and the second members having opposing annular surfaces to be sealed defining therebetween an outwardly diverging annu-

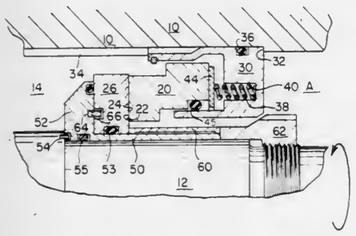
lar gap, said seal ring comprising: an inner ring having an inner and an outer peripheral surfaces and both sealing end surfaces adapted to make close contact with said annular surfaces of said first and second members, said inner ring being divided in the circumferential direction into two sections; an outer ring having an inner peripheral surface fitted over said outer peripheral surface of said inner ring, an outer peripheral surface, and both sealing end surfaces adapted to make close contact with said annular surfaces of said first and second members, said outer ring being divided in the circumferential direction into two sections at points which are offset in the circumferential direction from the points at which said inner ring is divided into two sections; and a tightening resilient member surrounding said outer peripheral surface of said outer ring and adapted to resiliently press said outer and inner rings radially inwardly.

4,212,475

SELF ALIGNING SPIRAL GROOVE FACE SEAL

Josef Sedy, Glenview, Ill., assignor to Crane Packing Co., Morton Grove, Ill.

Filed Jan. 15, 1979, Ser. No. 3,251
Int. Cl.³ F16J *15/34, 15/42*
U.S. Cl. 277—96.1 **6 Claims**



1. In a self aligning spiral groove gas seal having a stationary sealing ring and a primary sealing ring with opposed radially extending faces, one of said rings being sealingly affixed to a housing and the other affixed to the shaft, the improvement comprising:

spiral grooves extending inwardly from one circumference of the face of one of said rings, said grooves having a depth of between approximately 0.0001 and 0.0003 inches, said grooves extending across the face of said ring to provide a dam width ratio of between approximately 0.5 and 0.8 according to one of the following formula

$$\text{Dam Width Ratio} = \frac{GD - ID}{OD - ID}$$

$$\text{Dam Width Ratio} = \frac{OD - GD}{OD - ID}$$

where groove diameter is the diameter of a circle defined by the boundary of the grooved area and the ungrooved area in said face, ID is the internal diameter and OD is the outside diameter; and

said seal having a balance of between 0.8 and 0.9 according to the formula

$$\text{Balance} = \frac{OD^2 - BD^2}{OD^2 - ID^2}$$

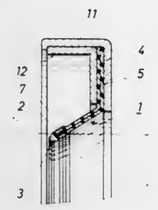
where OD is the outside diameter of the sealing interface, ID is the inside diameter and BD is the balance diameter.

4,212,476

HYDRODYNAMIC SEAL

Hideo Kawabata, Fujisawa, and Tatsuaki Yukimasa, Chigasaki, both of Japan, assignors to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1979, Ser. No. 58,511
Claims priority, application Japan, Jul. 21, 1978, 53-100343[U]
Int. Cl.² F16J *15/32*
U.S. Cl. 277—134 **4 Claims**



1. A hydrodynamic seal comprising a sealing member of a fluorine resin including a sealing lip portion having a conical shape and a fixing portion extending from the sealing lip portion in the radial direction, a gripping support member for gripping and supporting said fixing portion of said sealing member and a coil spring member wound helically in the conical shape on said sealing lip portion of said sealing member,

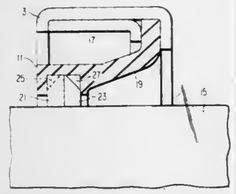
wherein a spiral projection is formed on the peripheral face of said sealing lip portion by said spring member.

4,212,477

CIRCUMFERENTIAL SHAFT SEAL

Lawrence P. Ludwig, Fairview Park, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 31, 1976, Ser. No. 672,219
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—193 **9 Claims**



1. In a circumferential seal for sealing a shaft rotatably journaled in a housing, the improvement comprising:

an elastomeric band spaced from the shaft and adapted to encircle the shaft;

a pair of sealing rings in substantial juxtaposition immovably fitted in the space between the elastomeric band and the shaft, each of said sealing rings having an inner diameter dimensioned so that the sealing rings slidably and sealingly engage the shaft;

each of said rings consisting essentially of a plurality of segments in simultaneous engagement with both said elastomric band and said shaft, the junctions between segments in one of said sealings rings being displaced relative to the junctions between segments in the other of said sealing rings, each of said segments having an outer peripheral surface in engagement with said elastomeric band and an inner peripheral surface in engagement with said shaft so that said elastomeric band maintains said sealing ring in engagement with said shaft; and

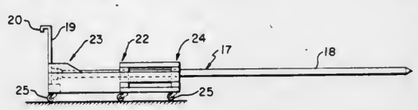
means for sealably engaging the elastomeric band with the housing.

4,212,478

CARPET POLE CADDIE

Donald L. McGrath, Jr., 19 Ramsgate Dr., Palos Park, Ill. 60464

Filed Oct. 31, 1978, Ser. No. 956,393
Int. Cl.² B62B *11/00*
U.S. Cl. 280—79.1 A **4 Claims**



1. A caddie for a carpet pole which is adapted to be engaged by a forward mask of a lift-truck and which has a mounting plate and has a contiguous rod portion extending away from the mounting plate, said caddie comprising:

a framework having

a forward portion, shaped to receive the said mounting plate; and

a rearward portion having a rod-receiving channel for the said rod portion of the said carpet pole;

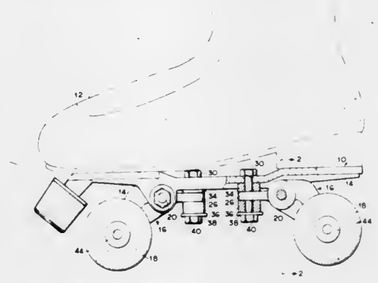
said forward portion supporting the said mounting plate at a level above a level which the mounting plate assumes when engaged with the said forward mask in the bottommost position of the said forward mask.

4,212,479

ROLLER SKATE

Koichi Yoshimoto, 3-15-310, Takaodori, 4-chome, Nata-ku, Kobe-shi, Hyogo-ken, Japan

Filed Sep. 18, 1978, Ser. No. 943,221
Int. Cl.² A63C *17/02*
U.S. Cl. 280—11.28 **1 Claim**



1. A roller skate comprising:

a base plate to be mounted on the bottom of a shoe;

front and rear roller-mounting members that are rotatably mounted on the lower surface of said base plate via shafts which are nearly at right angles to the running direction of the roller skate and which are nearly in parallel with a skating surface, said roller-mounting members having a first portion disposed in parallel with the lower surface of said base plate, and a second portion extending aslantly from one end of said first portion toward the surface of the skating surface;

a shock-absorbing mechanism having a connection rod which penetrates through said base plate and said first portion to connect said first portion of said roller-mounting portion to said base plate, and elastic members which are placed between said base plate and said first portion, and between said first portion and a tip of said connection rod;

a pair of axles attached to a second portion of said roller-mounting member and extending in the opposite directions and toward the skating surface;

hemispherical rollers supported by each of said axles; and

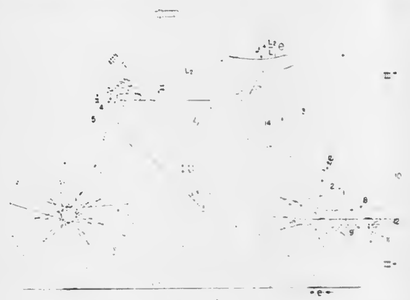
said base plate having a pair of ridges on the lower surface thereof, and a pair of shafts supported between said ridges, each of said shafts supporting said roller-mounting members.

4,212,480

CONVERTIBLE EXERCISE BICYCLE

Stanley J. Mikina, 4782 Coquina Key Dr., St. Petersburg, Fla. 33705, and John A. Mikina, 16975 Fitzgerald St., Livonia, Mich. 48154

Filed Nov. 3, 1978, Ser. No. 964,574
Int. Cl.² B62M *1/20;* **B62H** *1/04*
U.S. Cl. 280—226 R **4 Claims**



1. In a convertible exercise bicycle comprising front and rear wheels, a seat, a pedal and driving mechanism for oscillating said seat substantially vertically, a stowable and expandable stand comprising a substantially U-shaped member surrounding said rear wheel, a spring clip for normally holding said stand horizontally in the raised position, and a pair of foldable bars attached to the sides of said U-shaped member and normally held upwardly closely adjacent said rear wheel, and means for spreading said bars outwardly and locking them when said stand is moved to the ground engaging position so as to lift the rear wheel from the ground to enable free rotation thereof, said bars thereby providing safe lateral support to said stand when the stationary bicycle is used as a jogging exercise machine.

4,212,481

SUSPENSION SYSTEM FOR VEHICLE WHEELS

Valentino Ribi, Genoa, Italy, assignor to Diafil International S.A., Panama, Panama

Filed Sep. 13, 1978, Ser. No. 942,086
Claims priority, application Italy, Sep. 21, 1977, 12769 A/77; Feb. 7, 1978, 12463 A/78
Int. Cl.² B62K *21/02*
U.S. Cl. 280—276 **10 Claims**

1. A suspension system for a vehicle road wheel comprising

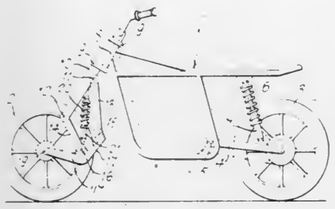
(a) two swinging arms each pivoted at one end to a suspended structure and extending at an angle to one another in a longitudinal plane of the vehicle, each of said two arms being pivoted at its other end to a wheel-carrying element, whereby an articulated quadrilateral is formed by said suspended structure, said two arms and said wheel-carrying element;

(b) resilient means acting on the said articulated quadrilateral;

(c) a prolongation of said wheel-carrying element extending

outside the area of the angle formed by said two swinging arms and beyond the point of pivotal connection to one of the said swinging arms which point is nearer to the ground, said prolongation extending towards the plane passing through the points of pivotal connection of said two swinging arms to said suspended structure;

(d) said wheel being mounted on a wheel mounting provided on said prolongation of said wheel-carrying element;



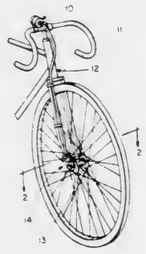
(e) the axis of said wheel being located in the space defined by the plane passing through the two points of pivotal connection of the swinging arm which is closer to the ground and the plane passing through the points of pivotal connection of said two swinging arms to said wheel-carrying element.

4,212,482

HUB DRIVE FOR BICYCLE SPEEDOMETER

Howard J. Rasmussen, Fox River Grove, and William C. Subluskey, Chicago, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Nov. 17, 1978, Ser. No. 961,657
Int. Cl.² G01C *22/00*
U.S. Cl. 280—289 D **10 Claims**



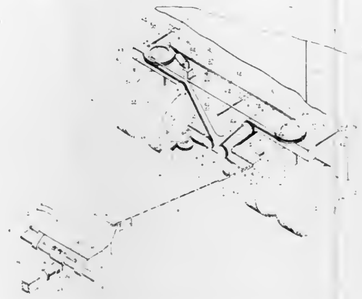
1. A drive assembly for a bicycle speedometer for transmitting rotary motion from the front wheel of the bicycle to a remotely mounted speedometer, comprising; a frame member adapted to be mounted on the bicycle frame adjacent the front wheel hub, a first gear rotatably mounted on said frame about an axis parallel to the front wheel hub, drive means carried by the first gear to transmit rotary motion from the front wheel to the first gear, a second gear rotatably mounted on said frame for rotation about an axis perpendicular to the axis of rotation of the first gear and engageable with the first gear to be driven thereby, a third gear mounted for rotation on said frame about an axis parallel to the second gear and engaging the second gear to be driven thereby, said second and third gears having interengaging surfaces for maintaining the axial position of the third gear along the axis thereof, said third gear being freely movable axially in at least one direction except for the support of said second gear, and coupling means driven by the third gear adapted to be connected to a flexible drive cable that drives the speedometer.

4,212,483

STEERING ASSEMBLY FOR TOWED VEHICLES

Durrell U. Howard, 306 Krameria Dr., San Antonio, Tex. 87200

Continuation-in-part of Ser. No. 876,995, Feb. 13, 1978, abandoned. This application Dec. 13, 1978, Ser. No. 968,884
Int. Cl.² B62D *13/04*
U.S. Cl. 280—444 **42 Claims**



35. Apparatus for coupling a towing vehicle to a towed vehicle having a rear axle and a forward axle supporting at least one steerable wheel, said apparatus comprising:

a coupling means providing for changes in the angle formed between the longitudinal axes of the towing vehicle and the towed vehicle and for changes in lateral offset between said longitudinal axes,

a first sensing means providing a first signal responsive to changes in said angle,

a second sensing means providing a second signal responsive to changes in said offset, and,

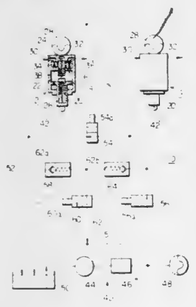
actuator means responsive jointly to said first and second signals for steering said steerable wheel.

4,212,484

HYDROPNEUMATIC SUSPENSION SYSTEM

Masayuki Fujii, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 3, 1978, Ser. No. 957,520
Claims priority, application Japan, Nov. 7, 1977, 52/132435
Int. Cl.² B60G *17/04*
U.S. Cl. 280—707 **15 Claims**



1. In a hydropneumatic suspension system having a source of fluid under pressure, a fluid reservoir and a plurality of self-levelling suspension units which are mounted between wheel supporting means and a body of a wheeled vehicle and equipped with self-levelling valve means operative to communicate interiors of the suspension units through inlets and outlets thereof with the source and the reservoir for maintaining the level of the vehicle body above the ground substantially constant, the improvement comprising:

electrically controlled normally open valve means connected between the source and the inlets of the self-levelling suspension units and operative to obstruct communication therebetween when actuated to close;

electrically controlled normally closed valve means connected between the reservoir and inlets of the self-levelling suspension units and operative to establish communication therebetween when actuated to open; and

relief valve means connected in series with said normally closed valve means so as to maintain the fluid pressure in the interior of each of the self-levelling suspension units above a predetermined value when said normally closed valve means are actuated to open;

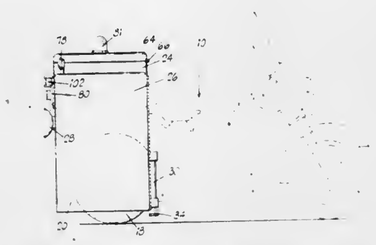
in which said normally open and normally closed valve means are adapted to be actuated synchronously with one another such that, when said valve means are actuated, the level of the vehicle body above the ground is lowered to a predetermined low level effective to afford entry/exit ease and loading/unloading ease.

4,212,485

MEDICAL SERVICE EQUIPMENT FOR MOTORCYCLES

Keneth D. Kramb, 3506 East Shore Dr., Kalamazoo, Mich. 49002

Filed Jan. 22, 1979, Ser. No. 5,316
Int. Cl.² B62J *5/16, 7/04*
U.S. Cl. 280—766 **6 Claims**



1. A case assembly for emergency medical and rescue materials attachable over the rear wheel of a motorcycle comprising:

a first support panel arranged to be secured to support members of a cycle in transversely extending and laterally projecting relation over said rear wheel,

other panels secured to and coacting with said first panel to define therewith a main top case and two side cases depending below said first panel and spaced laterally therealong to overlap the rear wheel of a cycle,

doors hinged to said other panels to close the top of the top case and the laterally outer sides of said side cases,

hydraulic cylinders secured in upright relation to the front side panels of said side cases and having extensible supporting feet on their lower ends,

a pump and driving motor therefor secured to one of said panels and hydraulically connected to said cylinders,

rearwardly facing standard signal and emergency signal lights mounted on said panels,

and a multi-conductor terminal block on a forwardly facing panel of said cases and having exposed switch elements on its forward side connected to control the energization of said rearwardly facing signal lights and said motor from the battery of said cycle.

4,212,486

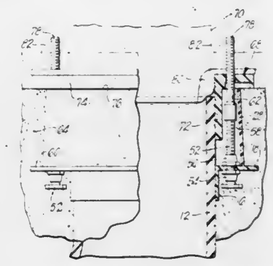
WATER CLOSET PROTECTOR STABILIZER

Duane D. Logsdon, Fullerton, Calif., assignor to The Logsdon Foundation, Stanton, Calif.

Filed May 19, 1978, Ser. No. 907,509
Int. Cl.² F16L *55/00*
U.S. Cl. 285—4 **10 Claims**

1. A water closet protector stabilizer of the type used to secure a plastic soil pipe within the body of a concrete slab and to provide a cavity between the concrete slab and the pipe in which a portion of a closet mounting ring can be inserted and wherein said closet mounting ring is of the type having a tube portion fitting around said pipe and a flange portion attached to the top of said tube portion onto which a water closet abuts with and in conjunction with a gasket seals the flange portion the improvement which comprises:

collar means, said collar means having a cylindrical section



thereof for mating with and attaching to said soil pipe and an annular flnage integrally attached to the top of said cylindrical section,

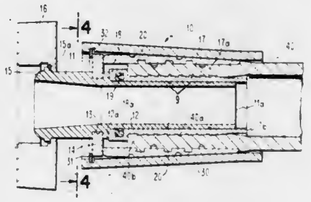
said collar means having a closet retaining means, cover means, said cover means having an upstanding continuous integral wall, said wall defining a chamber within said cover means, said cover means having a top detachably connected to said upstanding wall, attaching means for connecting said cover means to said collar means.

4,212,487

HOSE COUPLING

Walter L. Jones, Arnold, and Willard G. Triest, Annapolis, both of Md., assignors to Hydrasearch Co. Inc., Annapolis, Md.

Filed Nov. 17, 1978, Ser. No. 961,627
Int. Cl.² F16L *33/16*
U.S. Cl. 285—95 **12 Claims**



1. A hose coupling comprising a nipple dimensioned for insertion into a hose, a stem circumscribing and mounted for sliding movement on said nipple, means on said stem for gripping the interior of a hose;

a plurality of longitudinally extending wedge shaped segments radially spaced from said stem and for embracing a length of hose between said stem and wedge shaped segments;

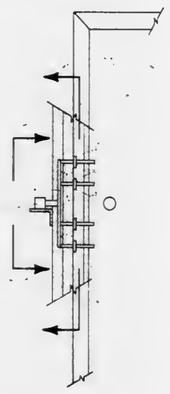
a compression sleeve circumscribing said wedge shaped segments, said sleeve having an interior for engaging and embracing said wedge shaped segments, and means to inhibit axial movement of said compression sleeve relative to said nipple when said coupling is connected to said hose and subject to fluid pressure interiorly thereof for permitting limited axial movement of both said stem and said wedge segments with said hose and relative to said nipple and said sleeve to increase the grip of said wedge segments and said stem against said hose.

4,212,488
FITTING FOR FLEXIBLE WALLED RECEPTACLE
Richard L. Cook, 444 Lake Mary Rd., Flagstaff, Ariz. 86001
Filed Jun. 21, 1978, Ser. No. 917,465
Int. Cl.² F16L *41/00*
U.S. Cl. 285—200 **19 Claims**



1. A fitting for a receptacle of the type having a flexible wall with a plurality of layers comprising:
(a) a unit composed solely of a plurality of plies of sheet material of relatively different degrees of elasticity, the plies being of predetermined shape, of varying sizes, stacked and adhesively united to form inner and outer ring portions, the inner ring portion being substantially rigid and the outer ring portion having the plies thereof spaced to receive and overlap the layers of the receptacle wall, the plies forming the outer ring portion being mechanically connected to certain plies of the inner ring portion, the stacked plies forming the inner ring portion having registering openings for the reception of fastening elements.

4,212,489
ELECTRICALLY OPERATED MULTIPLE SECURITY BOLT DOOR LOCKING DEVICE
Eugene T. Snyder, 5735 W. Florida Ave., Lakewood, Colo. 80206
Filed Jul. 13, 1978, Ser. No. 918,339
Int. Cl.² E05C *1/06*
U.S. Cl. 292—33 **5 Claims**



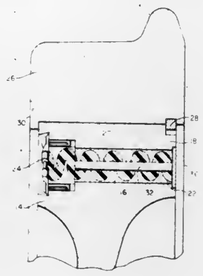
1. A locking system for a hinged door, said door adapted to open and close to a position flush with a face of a door frame, said door connected along one vertical side thereof to the door frame, said door frame and connected door disposed within a wall, said locking system comprising, in combination:
stud means of substantially the same thickness as said wall located immediately adjacent to said door frame across the door frame the hinge connection between the door frame and door;
a plurality of generally planar apertured reinforcements rigidly attached in generally vertical alignment to said stud means, the aperture of each of said reinforcements protruding away from said door when the door is in the closed position;
an equal plurality of bolts integrally connected, parallely aligned and reciprocatively received by the apertures of said reinforcement, said bolts moving in a movement path between an extended position crossing the interface between the door frame and the closed door, said bolts abutting against the closed door, and a withdrawn position wherein said bolts are not extended across the interface between the door frame and the closed door;
at least one generally planar bolt retainer mounted on the face of said door frame across the door frame from the hinge connection with the door, each retainer being biased to extend into the movement path of said bolts thereby preventing the movement of said bolts to the extended position, each bolt retainer further having a flange disposed at one end thereof adapted to engage said door upon closing of said door and to further move each bolt retainer out of the movement path of said bolts thereby permitting the plurality of bolts to extend;
means for selectively withdrawing in concert said bolts from their extended position to their withdrawn position, mounted to said stud means; and
means for biasing said bolts toward their extended position said biasing means operatively connected between said stud means and said bolts.

4,212,490
HEAD SHELL FOR PICK-UP ARMS AND METHOD OF MAKING SAME
Mitsuyoshi Morinaga, and Yasuo Kishida, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 13, 1978, Ser. No. 941,769
Claims priority, application Japan, Sep. 14, 1977, 52-109945; Sep. 14, 1977, 52-109946
Int. Cl.² G11B *3/10*
U.S. Cl. 274—37 **5 Claims**

1. A head shell for pick-up arms comprising
a flat part for mounting a phonograph cartridge formed by machine-pressing one end of a tubular member comprising a material selected from the group consisting of boron fiber, glass fiber, fiber reinforced plastic and carbon fiber so that an opening remains at the other end; and
an electrical connector mounted at the opening of the remaining tubular part adapted for connection to a pick-up arm.

4,212,491
RESILIENT FLANGED WHEEL
Robert L. Pinckney, Glen Mills, Pa., assignor to The Boeing Company, Seattle, Wash.
Filed Oct. 2, 1978, Ser. No. 948,004
Int. Cl.² B60B *17/00*
U.S. Cl. 295—11 **5 Claims**

1. A wheel comprising:
a center hub;
a web integral with and disposed around said hub;
a rim disposed around said web;
a tire connected to and disposed around said rim;
connection means for attaching said rim to said web, said means comprising an elastomer adhesively bonded to mating helical threads on the outer circumference of said web and the inner circumference of said rim; and
locking means connected to said rim and said web by an elastomeric material and passing through said connection means, whereby said rim is prevented from shifting its position relative to said web in the event that said elastomer disbonds.

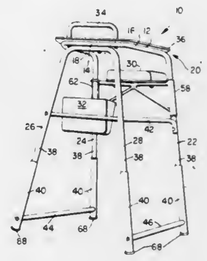


4,212,492
ROLL-UP TRUCK BED COVER
Walter Johnsen, Aurelia, Iowa 51005
Filed Oct. 26, 1978, Ser. No. 954,901
Int. Cl.² B60J *11/00*
U.S. Cl. 296—98 **9 Claims**



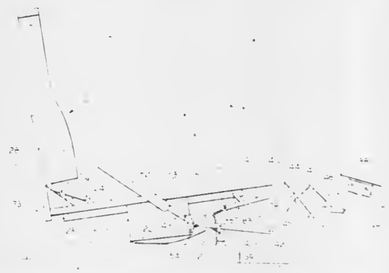
1. A flexible cover unit for an open top cargo bed on a truck and the like having spaced upright first and second sidewalls, a front wall and a back wall, said cover unit comprising:
a flexible cover adapted to overlie the open top of the cargo bed and said first and second sidewalls,
means securing one edge of said cover along the upper edge of said first sidewall,
an elongated flexible member secured at one end to the opposite edge of said cover at a point generally centrally between said front and back walls,
means operatively associated with said opposite edge of said cover for rolling said edge into a cylindrical roll across the top of the cargo bed from said second sidewall to said first sidewall,
the rolling of said cover acting to roll said elongated flexible member in part into the convolutions of said cover whereby a selected length of said elongated flexible member remains extended from the rolled up cover, and
the manual movement of said extended length of said elongated flexible member toward said second sidewall acting independently and directly on said convolutions to unroll said cover back across the cargo bed from said first sidewall to said second sidewall.

4,212,493
APPARATUS FOR ASSISTING SEMI-INVALID PERSON TO WALK
Eugenia A. Ledesky, 323 W. 14th St., New York, N.Y. 10014
Filed Sep. 25, 1978, Ser. No. 945,638
Int. Cl.² A47D *13/04*
U.S. Cl. 297—6 **16 Claims**



1. An apparatus for assisting a semi-invalid person to walk comprising:
(a) a generally U-shaped top rail delineating the front and two sides of the apparatus, the rear of the apparatus being open,
(b) four legs depending from the top rail in the general form of a cubic trapezoid delineating the four upright edges of the apparatus, the front two legs being formed of a unitary U-shaped member, the top rail and the unitary member being co-joined along the front edge of the apparatus,
(c) a seat, pivotally mounted to a first of the rear two legs and having lock means lockingly engageable with a second of the rear two legs for closing the rear of the apparatus, and
(d) a knee pad mounted between the front two legs and situated with respect to the seat so as to permit the user of the apparatus to assume any stance between a standing and a semi-sitting position.

4,212,494
ROCKER RECLINING CHAIR WITH MULTI-POSITION ROCKER LOCK
Upton Dabney, Morristown, Tenn., assignor to Kroehler Mfg. Co., Naperville, Ill.
Filed Jul. 24, 1978, Ser. No. 927,408
Int. Cl.² A47C *1/02*
U.S. Cl. 297—69 **5 Claims**



1. In a combination rocking and reclining chair including a base, a rocking frame mounted on the base for rocking movement, a seat frame, seat frame linkage means mounting said seat frame for forward and upward movement relative to said rocking frame, a backrest, backrest linkage means pivotally mounting said backrest on said seat frame for movement between a generally upright position and a reclining position, the movement of said backrest to reclining position also effecting

conjoint movement of said seat frame forwardly and upwardly, a footrest movable between an extended position projected forwardly from the front of the chair and a retracted position, footrest linkage means mounting said footrest relative to said seat frame, manually operated means for actuating said footrest linkage means for selectively moving said footrest between extended and retracted positions independently of the movement of the backrest, locking means actuated by the movement of said footrest linkage to extended position for selectively locking said rocking frame in one of a plurality of angular positions and for preventing rocking movement of the rocking frame when the footrest is in extended position, said locking means also being actuable upon the forward movement of said seat frame independently of the movement of said footrest linkage means to lock said rocking frame in a selected angular position, and actuating means operated by the movement of said footrest linkage means for automatically releasing said locking means when said footrest is moved to retracted position so as to permit rocking of said rocking frame.

4,212,495

RECLINING CHAIR

John C. Gall, Chicago, Ill., assignor to Sears, Roebuck & Co., Chicago, Ill.

Filed Jan. 26, 1979, Ser. No. 6,588
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—84 **11 Claims**



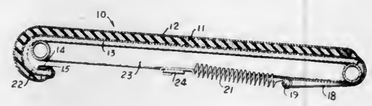
1. A reclining chair adapted to be positioned in close adjacency to a room wall when in upright sitting position and automatically movable away from the wall upon the assumption of a reclined position to avoid physical contact with the same wall, the reclining chair comprising a base frame having a pair of side frame members and supported at its front end on a pair of rotatable floor engaging rollers and at its rear end on a pair of rotatable floor engaging rocker feet, a body supporting unit including a pair of control members each in juxtaposition to a respective side member and a seat and back rest having pivotal relationship with each other, each said control member having forward and rearward cam slots, each side frame member having forward and rearward pins received respectively in said forward and rearward cam slots and mounting the body supporting unit for movement relative to the frame between upright and reclining positions, a leg supporting unit, means for mounting the leg supporting unit relative to the body supporting unit in movements between retracted and extended positions as the body supporting unit is concomitantly moved, and means operatively connecting the body supporting unit and the rocker feet for rocking the rocker feet in one direction to move the frame forwardly away from the wall as transition is made from upright sitting position toward a position of reclination and for rocking the rocker feet in a reverse direction to move the frame rearwardly toward the wall as transition is made from a reclined position toward upright position.

4,212,496

CUSHION FOR SKI LIFT CHAIR

Arthur J. Kirkham, Jr., 9381 Peacock Dr., Sandy, Utah 84070

Filed Apr. 13, 1978, Ser. No. 895,862
Int. Cl.³ A47C *27/00*
U.S. Cl. 297—226 **1 Claim**



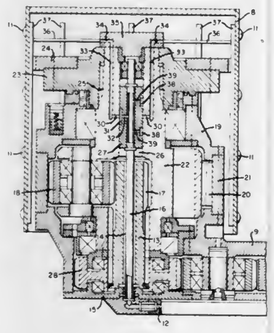
1. A cushion for ski lift chairs and the like comprising
a flat pad of resilient material;
a covering of slick, durable and flexible sheet material entirely covering said pad;
a reversible pocket formed from said sheet material at one end of the pad said pocket being adapted to fit over the front edge of a seat;
a flat bar fully encased in the covering of the pocket and extending substantially the full width of the cushion to hold the pocket flat against the seat edge with a flat surface of the bar holding the covering flat against a flat surface of the seat edge;
a flap formed from the sheet material extending from the opposite end of the pad said flap having a width less than that of the one end of the pad, the edges of said pad being angled to the flap;
a rod inserted into the flat at the end thereof opposite to the pad and extending across the full width of the flap; and
spring means connected to and projecting from the rod to be connected to the undersurface of the seat whereby a substantially uniform pull is applied to the flap and the pad.

4,212,497

LIQUID DISCHARGE APPARATUS FOR A SHEARING-LOADER TYPE MINING MACHINE

Karl-Heinz Borowski, and Heinrich Honke, both of Bochum, Fed. Rep. of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH, Bochum, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,501
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808915
Int. Cl.³ E21C *35/22*
U.S. Cl. 299—53 **9 Claims**



1. In a mining machine having drive means for propelling the mining machine along a course of travel of a mine face, the mining machine including a machinery unit, a pivotal support arm carrying a rotatably-driven shearing drum, the combination therewith of apparatus to discharge liquid from only an arcuate face segment of said shearing drum while directed toward a mine face, said apparatus including;

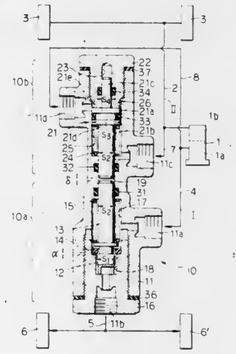
liquid discharge nozzle members circumferentially distributed about the periphery of said shearing drum,
conduit members extending radially in said shearing drum to communicate with the circumferentially-spaced nozzle members,
shaft means about which said shearing drum independently rotates, said shaft means having at least one internal opening to conduct liquid in a direction generally parallel to the rotational axis of the shearing drum, said shaft means including a valve having a valve recess substantially at the longitudinal center within the periphery of said shaft means for communication with the internal opening thereof, said valve recess extending about a peripheral surface of the shaft means through an angle selected to correspond to at least part of the arcuate face of the shearing drum while directed toward the working face of the mine, and
means rotatable with said shearing drum in sealed communication with the valve of said shaft means to control the period while individual ones of said conduit members deliver liquid passed through said valve to said nozzle member.

4,212,498

DUAL TYPE HYDRAULIC CIRCUIT FOR A VEHICLE BRAKE

Hiroshi Kawaguchi, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 17, 1978, Ser. No. 961,602
Claims priority, application Japan, Nov. 19, 1977, 52-139128
Int. Cl.³ B60T *8/26*
U.S. Cl. 303—6 C **8 Claims**



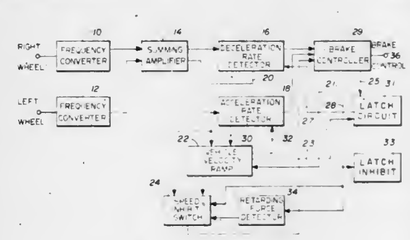
1. A dual type hydraulic circuit for a vehicle brake, which circuit includes (a) a master cylinder provided with first and a second mutually independent pressure chambers in which respective fluid pressure is produced; (b) front wheel cylinders disposed on the left- and right front wheels and rear wheel cylinders disposed on the left- and right rear wheels of a vehicle; (c) a first conduit system connecting a plurality of said wheel cylinders, in which at least one rear wheel cylinder is included, and said first pressure chamber of said master cylinder; (d) a second conduit system connecting all of said wheel cylinders except those connected to said first conduit system and said second pressure chamber of said master cylinder; and (e) a control valve disposed in the midway of said first conduit system for controlling the braking fluid pressure to said rear wheel cylinder connected to said first conduit system, said control valve comprising:
(i) a proportioning valve which has a valve piston to shut a passage formed in said proportioning valve for controlling the hydraulic pressure in said rear wheel cylinder connected to said first conduit system so as to rise at a milder gradient than that in said first pressure chamber of said master cylinder, when the rising hydraulic pressure therein exceeds a predetermined value;
(ii) a differential piston which has a small diameter portion and a large diameter portion, said small diameter portion being adjacent to the end of said valve piston and spaced therefrom a larger distance than the distance required for the movement of said valve piston in shutting said passage, and said large diameter portion having on the same side of said small diameter portion a second pressure-receiving face which is affected by the pressure in said second conduit system and a first pressure-receiving face on the opposite side thereof being larger in area than said second pressure-receiving face and affected by the pressure in said first conduit system; and
(iii) spring means for constantly biasing said differential piston in a direction away from said valve piston, whereby said differential piston controls said proportioning valve in accordance with the balance relation between the force due to the hydraulic power acting on said first and second pressure-receiving faces and the resilient force of said spring means.

4,212,499

VEHICLE VELOCITY RAMP GENERATOR IN A SKID CONTROL VEHICLE BRAKING SYSTEM

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 837,855, Jun. 30, 1969, abandoned.
This application Feb. 25, 1972, Ser. No. 229,345
Int. Cl.³ B60T *8/10*
U.S. Cl. 303—103 **5 Claims**



1. A vehicle velocity ramp generator in a skid control vehicle braking system including brake control means having a pulse output signal varying between a brake inhibit value and a normal braking value and signal generating means for generating a signal varying in accordance with the vehicle wheel speed, comprising in combination:
(a) a storage means for storing a charge proportional to the magnitude of said vehicle wheel speed signal, including a diode connected at one terminal to said signal generating means and at another terminal to one terminal of a capacitor;
(b) charge control means connected to said brake control means for discharging said storage means at a controlled rate when the output of said brake control means is at its brake inhibit value and for inhibiting the discharge of said storage means when the output of said brake control means is at its normal braking value in response to a signal proportional to the output of said brake control means, including a transistor in a circuit connected to the common terminals of said diode and capacitor; and
(c) circuit means connected to said storage means for generating a vehicle velocity ramp current proportional to the vehicle speed, including a transistor having a base electrode connected to said capacitor and a collector electrode connected to an output terminal.

4,212,500

ANTISKID BRAKE CONTROL ARRANGEMENT FOR VEHICLE WHEELS

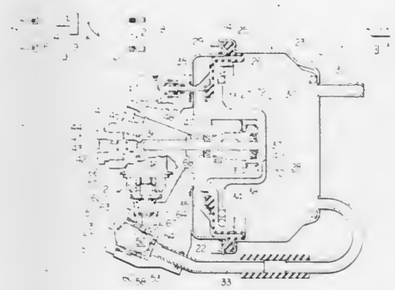
Masamoto Ando; Yoshihisa Nomura, both of Toyotashi, and Takaaki Ohta, Okazakishi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Aichi, Japan

Filed Jun. 1, 1978, Ser. No. 911,667

Claims priority, application Japan, Jun. 2, 1977, 52-65172

Int. Cl.² B60T *8/10, 13/68*

U.S. Cl. 303—115 **4 Claims**



1. An antiskid brake control system for a plurality of wheels of a wheeled vehicle having brakes actuatable from a fluid source of pressure comprising:

a control valve assembly located in hydraulic circuit between a hydraulic master cylinder and cylinder means for said wheels, said control valve assembly comprising,

a diaphragm piston movable within a housing and defining two pneumatic fluid chambers therein;

an on-off control valve located in said hydraulic circuit for interrupting normal hyrdraulic communication between said master cylinder and said wheel cylinder means;

hydraulic pressure reducing valve means located in said control valve assembly and adapted to move so as to increase the effective volume of said hydraulic circuit on the wheel cylinder side of said on-off control valve means, said on-off control valve means and said pressure reducing valve means normally being disposed in an inoperative position by said diaphragm piston,

passage means providing communication between said pneumatic fluid chambers,

electromagnetic means operably located in said passage means for normally allowing communication between said two pneumatic fluid chambers, said electromagnetic means being responsive to a locked condition of at least one of said wheels upon brake application to close communication between said two pneumatic chambers and admit ambient air to one of said chambers, and

deceleration responsive and inertia actuatable fluid flow control means located in said passage means, said flow control means being movable in accordance with vehicle deceleration between a first position allowing a relatively rapid flow of fluid through said passage means and a second position allowing a comparatively restricted flow of fluid through said passage means.

4,212,501

VEHICULAR ANTI-SKID BRAKE DEVICE

Yoshitaka Miyakawa, Kawagoe; Makoto Sato, Kamifukuoka, and Etsuo Fujii, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

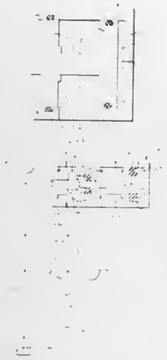
Filed Nov. 29, 1978, Ser. No. 965,306

Claims priority, application Japan, Jun. 28, 1978, 53-78442; Aug. 10, 1978, 53-97722; Sep. 20, 1978, 53-116263

Int. Cl.² B60T *13/70*

U.S. Cl. 303—116 **13 Claims**

1. A vehicular anti-skid brake device comprising a brake oil pressure generating oil source, a separate control oil pressure generating source, at least one braking device provided with a brake oil chamber connected to receive brake oil pressure generated in said brake oil pressure generating source so as to produce a braking force and a control oil chamber connected to receive control oil pressure generated in said control oil pressure generating source; and valve means responsive to



brake oil pressure so that when said brake oil pressure is below a predetermined value, working oil within said control oil chamber and control pressure oil delivered from said control oil pressure generating source are released and when said brake oil pressure exceeds a predetermined level, control pressure oil delivered from said control oil pressure generating source is introduced into said control oil chamber.

4,212,502

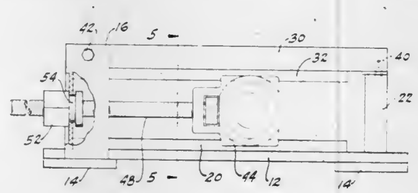
BEARING TAKE-UP FRAME

Ernest R. Ames, Wallingford; Hilarius S. Struttmann, Maysville, both of Ky., and Erwin R. Carrigan, Manchester, Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 3, 1978, Ser. No. 948,279

Int. Cl.² F16C *29/00*

U.S. Cl. 308—3 R **5 Claims**



1. A bearing take-up frame having upper and lower elongated horizontal members and vertical end members extending between said horizontal members at the ends thereof and a guide rail fixed to and extending along each of said horizontal members for guiding a slidably adjustable bearing block therebetween, one of said vertical end members at one end of the frame being fixed to one of said horizontal members and detachably connected to the other horizontal member, the other of said vertical end members at the other end of the frame comprising an upper portion and a lower portion, each of said portions extending vertically substantially halfway between said upper and lower horizontal members and each of said portions being fixed at one end to one of said horizontal members and meeting at its free end with the free end of the other portion along a line midway between said guide rails, each of said end member portions having a semicircular notch in its free end, which notches together form a circular perforation for journalling and retaining a transmission screw nut therein,

and vertical side plates for connecting said horizontal members at said other end of the frame, and said vertical side plates being fixed at one end to one of said horizontal members and detachably connected to the other of said horizontal members.

4,212,503

DRAWERS AND DRAWER RUNNERS

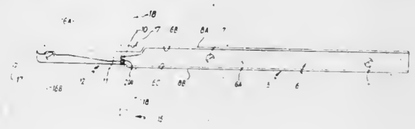
Leon G. Litchfield, and Terence Hardy, both of Nether Heage, England, assignors to L. B. (Plastics) Limited, Derby, England

Filed Apr. 24, 1978, Ser. No. 899,559

Claims priority, application United Kingdom, Nov. 26, 1977, 49329/77

Int. Cl.² F16C *21/00*

U.S. Cl. 308—3.6 **12 Claims**



1. A drawer runner adapted to be mounted on a support structure in a horizontal position with one end of the runner directed towards the front of the structure and so that a pair of such runners mounted at opposite sides of the support structure may slidably support a drawer on upper surfaces thereof for movement relative to the support structure, the drawer runner comprising an elongated member having a longitudinal channel formed in a face thereof which is directed inwardly of the support structure in use, a stop member projecting into said channel at a position spaced inwardly from said front of the runner and having a rearwardly directed face, the stop member being arranged to co-operate with a projection on the drawer to prevent complete withdrawal of the drawer from the support structure, a portion of the upper surface of said runner being cut away in the region of said stop member whereby to permit upward tilting of the drawer about the front end of the runner to disengage the projection from the stop member and enable the drawer to be disengaged from the support structure.

4,212,504

BACKING DEVICE FOR A WORKING ROLL OF A ROLL STAND

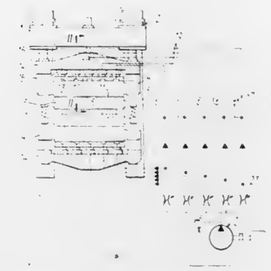
Nikolai I. Krylov, 1 Novokuzminskaya ulitsa, 25, kv. 26, Moscow; Ilya A. Toder, ulitsa Pobedy, 94, korpus 3, kv. 6, Elektrostal Moskovskoi oblasti; Valery A. Tolstykh, Poslannikov pereulok, 11/14, kv. 103, Moscow; Gennady I. Tarabaev, prospekt Juzhny, 3, korpus 4, kv. 74, Elektrostal Moskovskoi oblasti; Igor M. Makeev, Frunzenskaya naberezhnaya, 36, kv. 227, Moscow; Georgy S. Safarov, ulitsa Dzerzhinskogo, 5/8, kv. 12, Belaya Kalitva Rostovskoi oblasti; Alexei V. Birjulev, ulitsa Sverdlova, 50, kv. 24, Belaya Kalitva Rostovskoi oblasti; Anatoly I. Bakanov, ulitsa Dzerzhinskogo, 2/7, kv. 4, Belaya Kalitva Rostovskoi oblasti, and Evgeny I. Sofronov, ulitsa Junykh Lenintsev, 105, korpus 1, kv. 35, Moscow, all of U.S.S.R.

Filed Feb. 26, 1979, Ser. No. 15,166

Int. Cl.² F16C *32/06*

U.S. Cl. 308—9 **12 Claims**

1. A backing device for working roll of a roll stand placed between the housings of said roll stand and mounted in the guide windows of said housings where pressure screws are disposed; said device comprising a back-up roll placed between the housings, the ends of said back-up roll being mounted in the guide windows of said housings; a hydrostatic bearing having a body mounted on said back-up roll and having a shell adapted to adjoin said back-up roll so that the internal surface of said shell is spaced apart from the barrel of said back-up roll and is provided with pockets connected in the course of rolling to a source of fluid under pressure; a supporting beam whose ends are pressed against said back-up roll by said pressure screws; hydraulic cylinders mounted between said supporting beam and said hydrostatic bearing and arranged along said back-up roll so that there is at least one pocket of said bearing shell for each of said hydraulic cylinders, the chambers of said hydraulic cylinders being connected in the course of rolling to the source of fluid under pressure, whereby said hydraulic



cylinders act upon the body of said hydrostatic bearing for regulating the thickness of the stock being rolled; conduits for connecting in the course of rolling the pockets of said shells and the chambers of said hydraulic cylinders to a single source of fluid under pressure; and throttles in the conduits that connect the pockets of said shell to the source of fluid under pressure.

4,212,505

BEARING ASSEMBLIES

Anthony D. Dolton, Maidenhead, England, assignor to Vandervell Products Limited, Maidenhead, England

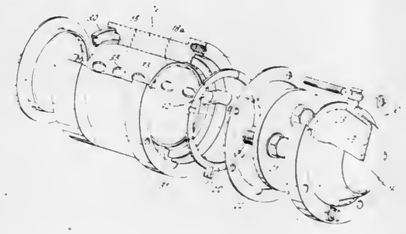
Continuation of Ser. No. 862,612, Dec. 20, 1977, abandoned.

This application Mar. 6, 1979, Ser. No. 18,350

Claims priority, application United Kingdom, Dec. 21, 1976, 53423/76

Int. Cl.² B61F *17/00*; F16C *33/66*

U.S. Cl. 308—79 A **7 Claims**



1. A bearing assembly for supporting an axle for rotation comprising:

a housing having a cylindrical bore, said housing having an opening at one end of the bore to receive an end journal of said axle;

an end cap closing the other end of the bore and providing a lubricant reservoir within said housing bounded by said end cap;

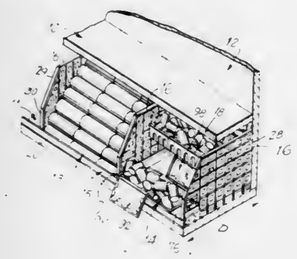
a cylindrical bearing liner seated in the bore for receiving said end journal of said axle;

a plurality of slot openings in the bore of said housing extending along the length of said bore, each slot opening having an open end positioned adjacent said end cap, said open ends of said slot openings communicating directly with said lubricant reservoir, and being spaced circumferentially around said bore, at least one slot opening being disposed near a top portion of said cylindrical bore;

a plurality of opening means in said bearing liner in register

with said plurality of slot openings in said bore, each said plurality of opening means comprising a series of spaced apertures in said bearing liner, each said series being in communication with respective said slot openings in said bore to enable lubricant to pass directly from said lubricant reservoir, through said plurality of slot openings in said bore and respective opening means in said bearing liner to said end journal of said axle rotating within said bearing liner.

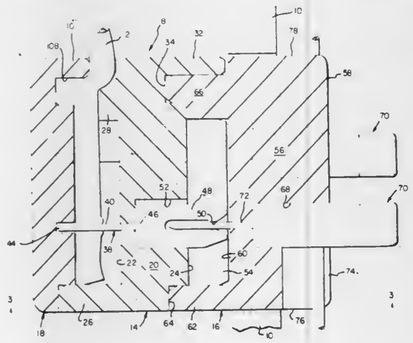
4,212,506
MULTI-COMPARTMENT DISPLAY DEVICE
Milton J. Merl, New City, N.Y., assignor to Marlboro Marketing, Inc., New York, N.Y.
Filed Dec. 18, 1978, Ser. No. 970,335
Int. Cl.² A47B *57/00*
U.S. Cl. 312—118 **10 Claims**



1. An adjustable inventory display device for defining lateral subdivisions of an elongate shelf comprising a plurality of parallel disposed lateral divider members formed of polymeric material, said members including a multiplicity of regularly spaced, vertically and horizontally offset receiver apertures, a plurality of back bin members extending between and connecting said divider members, said back bin members being disposed normal to said divider members and including first and second relatively slidable segments, each said segment including at one end mounting means engaged within receiver aperture portions of one of said dividers, the other ends of said segments being in overlapped relation, a front bin member secured between each adjacent pair of said dividers in forwardly spaced relation to said back bin member, said front bin member being comprised of two segments slidably interconnected, each of said segments having a free end connected to one of said dividers, clamp means formed on said dividers, and an elongate runner member disposed normal to and extending the length between the outermost said dividers, said runner including a longitudinally extending locking channel, said clamp means of said dividers being adjustably fixed within said channel at spaced positions corresponding to the spacing of said dividers whereby said dividers, bins and runner together define a plurality of laterally offset enclosures, the lateral extent of said enclosures being dependent upon the adjusted position of the segments of said back bin and the position of said clamps in said runner.

4,212,507
SELECTIVE INTERCONNECTION SYSTEM AND CONNECTOR
Edward D. Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 11, 1976, Ser. No. 740,999
Int. Cl.² H01R *29/00*
U.S. Cl. 339—18 B **4 Claims**

1. A cross connect system for a plurality of bundles of discrete communications conductors, said system comprising:
a panel having oppositely directed first and second sides, and an electrical connector assembly for each of said bundles removably mounted in said panel,
each of said assemblies comprising a cable connector housing and a cross connection connector housing, each of said cable connector housings having a conductor receiving face and a mating face, said faces being oppositely directed,
each of said cross connection connector housings having a mating face and a cross connecting face, said faces in said cross connection connector housing being oppositely directed and having a plurality of openings extending therebetween,
said housings being mated with each other with said mating faces opposed to each other, said conductor receiving face of said cable connector housings being accessible from said first side of said panel and said cross connecting face of said cross connection connector housing being accessible from said second side of said panel,
a plurality of double ended electrical contact terminals mounted in, and extending between said faces of, said

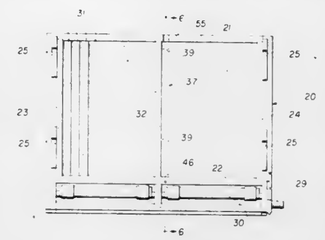


cable connector housing, each of said double ended terminals having a wire-receiving portion at said conductor receiving face and a receptacle portion at said mating face, said conductors of each of said bundles extending to said conductor receiving face of one of said cable connector housings and being connected to said wire-receiving portions of said double ended terminals of said one of said cable connector housings,
a plurality of jumper wires having jumper wire terminals on their ends, each jumper wire extending between two of said cross connection connector housings on said second side of said panel member and having its jumper wire terminals inserted through said openings in said cross connecting faces of said two cross connection connector housings and into said receptacle portions of selected double ended terminals in the mating cable connector housings whereby,
said bundles are disposed adjacent to said first side and said jumper wires are adjacent to said second side, and said conductors of said bundles are changeably interconnected by said jumper wires on said second side.

4,212,508
COMPUTER INTERFACE RECEIVER RETROFIT KIT
Quentin E. Cline, Grottoes, and Paul D. Floyd, Lyndhurst, both of Va., assignors to Virginia Panel Corporation, Waynesboro, Va.
Filed Apr. 17, 1979, Ser. No. 30,759
Int. Cl.³ H01R *29/00*
U.S. Cl. 339—18 B **10 Claims**

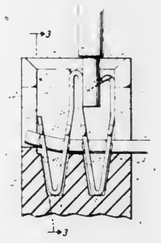
10. In a conversion kit for a receiver which interfaces with a control panel, said receiver having a frame including a pair of spaced opposing parallel rails of rectangular cross section, an adapter bar assembly to span the space between said rails in

right angular relationship thereto and having a pair of spaced locating and locking slots in one longitudinal edge thereof to receive one pair of locator lugs on one side of a control panel, the adapter bar assembly having corner notches which are square in its opposite ends and in its longitudinal edge which is remote from said locating and locking slots, a rigid locking tongue projecting from one surface of one corner notch for



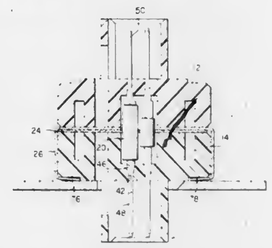
reception in a cooperating locking recess in the opposing face of one rail, a guide projection extending from one surface of the other corner notch at right angles to the notch surface carrying said locking tongue, and a yielding detent means on the second surface of the last-named notch for interengagement with a detent recess in the opposing surface of the other rail.

4,212,509
ELECTRICAL CONNECTOR ASSEMBLY
Hubert C. Brooks, and Alan E. Stroh, both of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.
Filed Dec. 11, 1978, Ser. No. 968,159
Int. Cl.² H01R *9/08*
U.S. Cl. 339—95 D **3 Claims**



1. An electrical connection of a magnet wire having a film type insulation coating thereon to a lead wire conductor comprising:
an insulative housing having at least one connector clip receiving cavity therein; each said cavity being defined by a basewall and four upstanding sidewalls and being open at the end opposite said basewall; said basewall having an upstanding support platform extending toward the open end of said cavity and located between a first pair of opposing sidewalls to define first and second valleys in said cavity; said platform having a top surface spaced from the open end of said cavity; a magnet wire receiving guide slot having an open end and a closed end and being formed in each of said opposing sidewalls; said guide slots extending in said first opposing sidewalls from the open end of said cavity along axes generally parallel to each other and terminating at their closed ends at substantially the same level as the top surface of said platform;
said magnet wire being positioned in said guide slots and extending longitudinally through said cavity across the top surface of said support platform;
a connector clip of a generally W-shaped configuration comprising a single strip of metal stock having an intermediate bight portion, diverging first and second leg sections extending downwardly from opposite ends of the intermediate bight portion, and diverging third and fourth leg sections extending upwardly and connected, respectively, at their lower ends by first and second reverse bends with the lower ends of said first and second downwardly extending leg sections; said first and third leg sections defining a first V-shaped leg structure, and said second and fourth leg sections defining a second V-shaped structure; first and second wire-receiving slot openings formed in said connector clip; said first slot opening bisecting said first reverse bend and extending upwardly in both of said first and third leg sections; said second slot opening bisecting said second reverse bend and extending upwardly in both of said second and fourth leg sections; a wire entry portion of a slot opening extending through each of said return bends having a width which is greater than the diameter of said magnet wire; a respective contact portion of said slot openings in each of said leg sections having a reduced width which is slightly less than the diameter of said magnet wire; said connector clip including contact means for forming an electrical connection with said lead wire conductor; said connector clip including locking means engagable with at least one of said sidewalls for retaining said connector clip in said cavity;
said connector clip being inserted into said cavity with said return bends received in respective valleys of said cavity and with said slot openings in alignment with said guide slots in said opposing walls; said magnet wire extending through said slot opening in each of said leg sections and being wedged between the opposing edges of the reduced width contact portion of each said slot opening to provide eight zones of electrical and mechanical connection between said magnet wire and said connector clip; said leg sections each being inclined relative to the longitudinal axis of said magnet wire; each of said V-shaped leg structures being movable over said magnet wire as said connector clip is inserted into said cavity to provide an insulation coating stripping motion by the opposing edges of each said slot opening which forms said zones of electrical and mechanical connection; said stripping motion having a first component which causes penetration of said insulation coating laterally of the axis of said magnet wire and a second component which causes the insulation coating to be stripped axially on said magnet wire.

4,212,510
FILTERED HEADER
Leon T. Ritchie, Mechanicsburg, and Michael S. Peppler, Lancaster, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 14, 1978, Ser. No. 960,532
Int. Cl.² H01R *3/06*
U.S. Cl. 339—147 R **17 Claims**



1. A filtered header or feedthrough connector comprising:
a pair of hermaphroditic housing members of insulative material each having a planar first mating face and a

profiled second mating face, a recess in each said planar face, said recesses together defining a cavity, each said recess having a profiled periphery and a plurality of free standing posts, said posts and profiled periphery defining a plurality of filter receiving receptacles, and a like plurality of terminal bores each extending from said second faces to a respective receptacle;

a ground system having a conductive rubber sheet with a plurality of apertures therein, each said aperture being aligned with a respective filter receiving receptacle in said housing members, said conductive rubber being held between said first mating faces; and

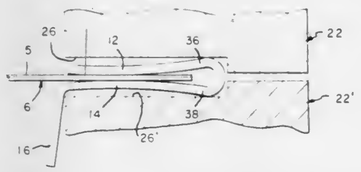
a plurality of filtered terminal assemblies each including an elongated terminal with a filter sleeve secured intermediate the ends thereof and received in said cavity with the filter sleeve engaging said conductive sheet and the ends of the terminal projecting from said second mating faces to engage associated terminals.

4,212,511

ELECTRICAL CONNECTIONS FOR CONDUCTORS IN THIN SUBSTRATES

Robert D. Malucci, Dauphin, and Charles E. Reynolds, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 13, 1978, Ser. No. 960,425
Int. Cl.² H01R *11/08*
U.S. Cl. 339—276 T **7 Claims**



1. A crimped electrical connection between a stamped and formed metallic connecting device and a flat conductor, said crimped electrical connection being characterized in that:

said connecting device comprises a pair of opposed cantilever beams connected by an arcuate bight section, said conductor being between said beams with portions of said beams being against said conductor,

said beams being in a preloaded and flexed condition against said conductor, portions of said bight section being severely plastically deformed and serving to maintain said beams in said preloaded and flexed condition against said conductor whereby,

said one beam is resiliently biased against, and maintained in electrical contact with, said conductor,

the preloaded and flexed condition of said beams and the function of said bight section in maintaining said beams in said preloaded and flexed condition being the sole means serving to maintain said beams against said conductor.

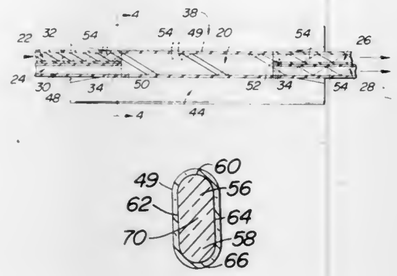
4,212,512

FIBER OPTIC COUPLER FOR TAPPING INTO FIBER OPTIC LINE

Malcolm H. Hodge, Claymont, Del., assignor to TRW Inc., Elk Grove Village, Ill.

Filed Feb. 21, 1978, Ser. No. 879,162
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.15 **17 Claims**

1. In a fiber optic transmission system for transmitting desired portions of light signals between ends of at least one optical fiber and at least two spaced optical fibers, the improvement comprising distributing means for coupling light between and interfacing with the ends of such fibers and having a transverse sectional configuration substantially uniform throughout the length thereof which is determinative of the light distribution between such optical fibers interfacing with said distributing means; said transverse sectional configuration being defined by first and second longitudinal lobes having opposed end surfaces each of which is for interfacing with and



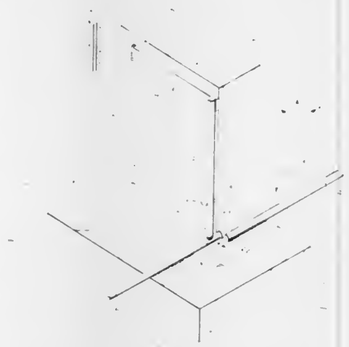
effecting a light signal transmissive connection with an optical fiber end; said distributing means having an interconnecting portion between said first and second lobes predeterminately formed for determining the proportion of light passing between said first and second distributing means lobes when a light signal is passed through at least one of said lobes.

4,212,513

PULSE TRANSFORMER TECHNIQUE FOR OPTICAL SWITCH

Robert L. Gravel, Stow, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,865
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.15 **3 Claims**



1. A switch for use in an optical circuit responsive to a relatively low voltage power source, the circuit having an input portion and at least two output portions cooperating with said switch, comprising:

a piezoelectric device responsive to a relatively high voltage, a cantilever rod mounted for pivotal movement having one end coupled to said piezoelectric device and the other end coupled to an end of the input portion of the optical circuit and wherein said rod switches the input to one of the outputs in response to said piezoelectric device,

a step-up transformer having its secondary windings coupled across said piezoelectric device for providing the relatively high voltage to the piezoelectric device, and

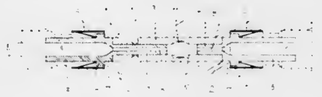
a drive circuit, including a terminal for connection to a relatively low voltage power source, responsive to a drive signal pulse of relatively low voltage, said drive circuit being coupled to the primary windings of said step-up transformer, whereby in response to the relatively low voltage drive signal said drive circuit energizes said step-up transformer such that said piezoelectric device is actuated by the required relatively high voltage, in response thereto, and couples the input portion from one of said output portions to another of the said output portions.

4,212,514

CONNECTORS FOR OPTICAL CONDUCTORS UTILIZING ELASTOMERIC PADS

Jean-Claude Prunier, Herblay, and Yves Bellemon, Le Pecq, both of France, assignors to Societe Nouvelle de Connexion, Boulogne-Billancourt, France

Filed Mar. 3, 1978, Ser. No. 882,995
Claims priority, application France, Mar. 28, 1977, 77 09119
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.21 **12 Claims**



1. A connector for optical conductors, comprising: two opposite bodies provided with complimentary fixing means whereby they may be urged together under axial pressure,

each said body carrying a tubular member adapted to receive and to have fixed therein an end of one of the optical conductors to be connected,

each said tubular member comprising a barrel portion having at its end a central bore adapted to receive therein an optical conductor fixed in such a manner that the end of the optical conductor is located in the same plane as the end of said barrel portion,

a coupling member arranged to receive the ends of said tubular members and having located therein a transparent elastomeric pad having a refractive index close to or substantially the same as that of the optical conductors to be connected and into engagement with which said tubular members can be brought under the action of said complimentary fixing means,

said coupling member and/or said elastomeric pad being so shaped as to define between them a space traversed by a portion of said pad and into which said pad can deform under the axial contact pressure exerted thereon by said tubular members,

said coupling member comprising a sleeve so located in one of said bodies that said pad is constantly in contact with the barrel portion of said tubular member carried by the same body, and

said barrel portion of said other tubular member being capable of penetrating the sleeve by sliding into the latter, and

said pad being a full one-piece pad having a generally cylindrical shape in its rest position and passing through said sleeve into said space into which it may deform whereby the axial contact pressure exerted on said pad by said tubular members is insufficiently significant to introduce into said pad constraints giving rise to deterioration in the transmission of light.

4,212,515

WIDE-VISUAL-FIELD MICROSCOPE OBJECTIVE LENS SYSTEM

Hideo Itaya, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1978, Ser. No. 884,551
Claims priority, application Japan, Mar. 14, 1977, 52-27699
Int. Cl.² G02B *21/02*
U.S. Cl. 350—175 ML **4 Claims**



1. A wide-visual-field microscope objective lens system comprising a front lens group comprising a first negative meniscus lens component having a concave surface on the object side, a second positive lens component and a third positive cemented lens component, and a rear lens group comprising a fourth positive lens component and a fifth negative cemented lens component, said rear lens group is arranged widely apart from said front lens group and said lens system satisfying the following conditions:

(1) $2.8f \leqq d_7$
(2) $0.3f \leqq |r_1| \leqq 0.39f$
(3) $0.85f \leqq |r_{12}| \leqq 1.2f$
(4) $1.1f \leqq f_A \leqq 1.25f$

wherein the reference symbol f represents focal length of the lens system as a whole, the reference symbol f_A designates focal length of said front lens group as a whole, the reference symbol r_1 denotes radius of curvature on the object side surface of the first lens component, the reference symbol r_{12} represents radius of curvature on the image side surface of the fifth lens component and the reference symbol d_7 designates the airspace formed between the front and rear lens groups.

4,212,516

SCANNER WITH MULTIPLE OPTICAL FIBRES

Ichiro Sawamura, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

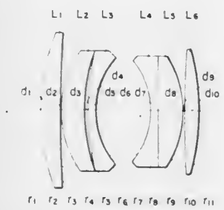
Filed Mar. 6, 1978, Ser. No. 883,882
Claims priority, application Japan, Mar. 14, 1977, 52-29595
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.24 **8 Claims**



1. A scanner with multiple optical fibres, comprising a first array of a multitude of optical fibres having one of their end faces aligned along a rectilinear line and having their other end faces separated from each other and disposed at equal intervals about a circle, said one end faces being adapted to have an image of a specimen to be examined focussed thereon; a second array of a multitude of optical fibres each having one of their end faces disposed in opposing relationship with the said other end faces of the fibres of the first array and having their other end faces collected together at a single location; a scanning disc rotatably disposed between the opposing end faces of the optical fibres of the first and the second array and having formed therein a single signal transmission aperture for passing an image information signal from said other end of an optical

fibre of the first array to said one end of an associated optical fibre of the second array in a sequential manner and also having formed therein a plurality of timing apertures equal in number to the number of optical fibres in said first and second array, respectively and aperture sensing means including a light source and a light receiving element disposed on opposite sides of said disc so as to pass light through said timing apertures in a sequential manner to identify the particular channel through which the signal transmission between the first and the second array occurs; a single phototube disposed in opposing relationship with the collected end faces of the second array for receiving the information signals from all of the optical fibres in said second array.

4,212,517
PHOTOGRAPHIC LENS SYSTEM
Toru Fujii, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 2, 1978, Ser. No. 882,928
Claims priority, application Japan, Mar. 10, 1977, 52-2635177
Int. Cl.[2] G02B *9/60*
U.S. Cl. 350—217 **3 Claims**

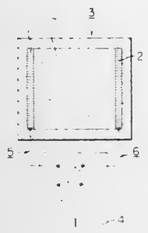


1. A photographic lens system comprising a first, second, third, fourth and fifth lens components, said first lens component being a positive meniscus lens arranged convex toward the object side, said second lens component being a positive meniscus lens arranged convex toward the object side, said third lens component being a negative meniscus lens arranged convex toward the object side, said fourth lens component being a negative cemented meniscus doublet comprising a biconcave lens with its surface of smaller radius of curvature arranged toward the object side and a biconvex lens with its surface of smaller radius of curvature arranged toward the image side, said fifth lens component being a biconvex lens with its surface of smaller radius of curvature arranged toward the image side, said photographic lens system satisfying the following conditions:

(1) $1.69<n_1, n_2<1.75$ $1.68<n_3<1.70$
(2) $48<\nu_1, \nu_2<50$
(3) $30<\nu_3<32$
(4) $n_5, n_6=1.713$
(5) $1.2f<f_1<1.3f$
(6) $0.62f<f_{12}<0.63f$
(7) $3f<f_{123}<3.2f$
(8) $-0.47f<f_4<-0.44f$
(9) $0.5f<f_5<0.6f$
(10) $1.06f<f_6<1.07f$
(11) $4f<r_2<4.5f$
(12) $0.67f<r_4<0.7f$
(13) $1.0f<r_5<1.2f$
(14) $0.29f<r_6<0.3f$
(15) $-0.35f<r_7<-0.29f$
(16) $3.9f<r_{10}<4.7f$
(17) $0.017f<d_4<0.02f$
(18) $0.23f<d_6<0.25f$
(19) $0.13f<d_3+d_4+d_5<0.15f$
(20) $d_7+d_8=0.1319f$
(21) $0.08<n_5-n_4<0.11$

wherein reference symbol f represents the focal length of the lens system as a whole, reference symbol f_1 represents the focal length of the first lens component, reference symbols f_4 and f_5 respectively represent focal lengths of respective lenses constituting the fourth lens component, reference symbol f_6 represents the focal length of the fifth lens component, reference symbol f_{12} represents the total focal length of the first and second lens components, reference symbol f_{123} represents the total focal length of the first, second and third lens components, reference symbol r_2 represents the radius of curvature of the surface on the image side of the first lens component, reference symbol r_4 represents the radius of curvature of the surface on the image side of the second lens component, reference symbols r_5 and r_6 respectively represent radii of curvature of respective surfaces of the third lens component, reference symbols r_7 and r_8 respectively represent radii of curvature of the surface on the object side and cemented surface of the fourth lens component, reference symbol r_{10} represents the radius of curvature of the surface on the object side of the fifth lens component, reference symbol d_4 represents the airspace between the second and third lens components, reference symbol d_6 represents the airspace between the third and fourth lens components, reference symbol $(d_3+d_4+d_5)$ represents the distance from the surface on the object side of the second lens component to the surface on the image side of the third lens component, reference symbol (d_7+d_8) represents the thickness of the fourth lens component, and reference symbols n_1, n_2, n_3, n_4, n_5 and n_6 respectively represent refractive indices of respective lenses in the order from the object side toward the image side, and ν_1, ν_2 and ν_3 respectively represent Abbe's numbers of the first, second and third lens components.

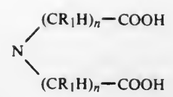
4,212,518
IMAGE DISPLAY DEVICE
Hiroyuki Imataki; Masatsune Kobayashi, and Tokuya Ohta, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 28, 1978, Ser. No. 890,966
Claims priority, application Japan, Feb. 13, 1977, 52-15752; Feb. 14, 1977, 52-15531; Apr. 8, 1977, 52-40012
Int. Cl.[2] G02F *1/17*
U.S. Cl. 350—357 **14 Claims**



1. An improved image display device comprising in combination:

(a) a cell container;
(b) at least a pair of electrodes; and
(c) an electrically responsive electrochromic medium accomodated in said cell container, said electrochromic medium comprising a complexon and a redox reactive organic substance, said complexon being a member selected from the group consisting of:

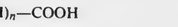
(1) an aminocarboxylic acid compound containing 1 to 3 aminocarboxylic acid groups represented by the following formula(I)



(I)

wherein R_1 represents hydrogen, methyl or hydroxyphenyl and n is 1 or 2;

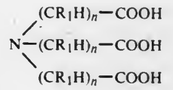
(2) an aminocarboxylic acid compound containing 1 to 2 aminocarboxylic acid groups represented by formula(I) above and 1 to 2 aminocarboxylic acid groups represented by the following formula(II):



(II)

wherein R_1 and n have the same meaning as in formula(I);

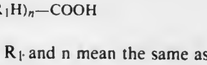
(3) an aminocarboxylic acid compound containing an aminocarboxylic acid group represented by the following formula



(III)

wherein R_1 and n have the same meaning as in formula(I);

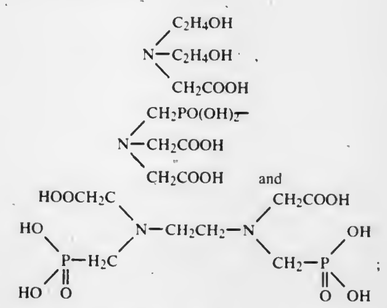
(4) an aminocarboxylic acid compound containing 2 aminocarboxylic acid groups represented by the following formula(IV):



(IV)

wherein R_1 and n mean the same as in formula(I);

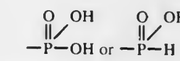
(5) an aminocarboxylic acid compound selected from the group consisting of



(6) nitrogen, phosphorus and arsenic homologues thereof containing 1 to 2 groups represented by the following formula(V):

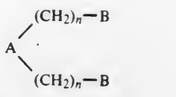
(V)

wherein n is 1 or 2, A represents N, P or As and B represents —COOH,



with the proviso that B is not —COOH when A is N;

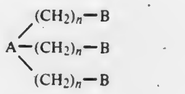
(7) nitrogen, phosphorus and arsenic homologues thereof containing 1 to 2 groups represented by the following formula(VI):



(VI)

wherein n, A and B mean the same as in formula(V);

(8) nitrogen, phosphorus and arsenic homologues thereof containing 1 group represented by the following formula(VII):



(VII)

wherein n, A and B mean the same as in formula(V); and

(9) mixtures thereof.

4,212,519
LIGHT CONTROL DEVICE AND FABRICATION METHODS THEREFOR
Karl H. Drexhage, and Joseph J. Wrobel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 1, 1978, Ser. No. 882,514
Int. Cl.[2] G02F *1/28*
U.S. Cl. 350—362 **27 Claims**



1. A method of manufacturing a light-control device, said method comprising:

(a) forming an array comprising a plurality of discrete light-control elements, each of said elements being located in a precisely predetermined position relative to the other of said elements; and
(b) disposing said array in an elastomeric matrix in a manner maintaining such predetermined positional relation of said elements.

4,212,520
EYE TESTING DEVICE
Ivan Klimsa, 3825 W. 9th St., Waterloo, Iowa 50702
Filed Jan. 3, 1978, Ser. No. 866,764
Int. Cl.[2] A61B *3/02*
U.S. Cl. 351—37 **9 Claims**



1. An eye testing device including a front chart having a

light-colored, opaque outer face and a plurality of cut-out openings in the shape of letters, numerals, or similar characters; and

contrast means located behind said chart and having an opaque surface of a color darker than that of the outer face of said chart for absorbing ambient light transmitted in a direction toward the outer face of said chart and through said cut-out openings to provide a contrast between said cut-out openings and the outer face of said chart,

said contrast means includes a box mounted on the back side of said chart and cooperating therewith to define a light-absorbing chamber which is substantially closed except for said cut-out openings, the interior surfaces of said box being covered with a light-absorbing material.

4,212,521
MOTION PICTURE FILM CASSETTE HAVING REMOVABLE FILM STRIPPING WEB

Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 29, 1978, Ser. No. 974,486
Int. Cl.³ G03C *11/00*
U.S. Cl. 352—130 **4 Claims**



1. A multi-purpose film cassette comprising in combination:

a light-tight housing defined by spaced parallel side walls peripherally joined by end walls and by top and bottom walls, respectively;

a pair of supply and take-up spools rotatably supported between said side walls;

a photographic film strip having opposite ends connected to said spools and comprising a transparent carrier base on which an emulsion comprised of successive layers of photographic materials is provided, said layers including a positive image forming layer adjoining said carrier base and at least an image recording layer superimposed over said positive image forming layer;

film strip guide means for guiding said film strip between said supply and take-up spools in a film path including an exposure station and a processing station, said processing station including means for depositing a thin layer of processing fluid on the emulsion surface as said film strip is rewound from said take-up spool to said supply spool, and wherein the improvement comprises:

a separate stripping web having one end releasably coupled to said supply spool so that said stripping web will be interwound with said film strip in alternate convolutions thereon, the other end opposite said one end initially extended to said take-up spool along a web path separate from said film path and its said stations and interwound with convolutions of said film strip on said take-up spool without connection to said take-up spool, and the length of said web relative to the length of said film strip being such that said other end of said web is drawn from said take-up spool when said film strip is fully rewound on said supply spool;

means defining an exit opening in said housing; and

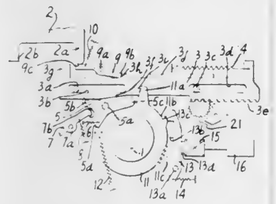
web guide means for engaging and guiding said other end of said stripping web along a path separate from said film path and the initial web path and through said exit opening once said web has been substantially entirely wound on said supply spool and is then unwound therefrom upon unwinding rotation of said supply spool;

so that during processing of said film strip and rewinding thereof in convolutions on said supply spool, said stripping web overlies the processing fluid and said inner layers of said film strip and upon subsequent unwinding of both said film strip and said stripping web and corresponding travel thereof in separate paths, diverging separation of said stripping web from said film strip causes at least a portion of said inner layers to be retained by adhesion on said stripping web as said web is advanced through said exit opening and out of said cassette housing.

4,212,522
SHUTTER CONTROL DEVICE FOR AUTOMATIC FOCUSING CAMERA

Kiyoshi Kitai; Yukio Morino; Shogo Kato, and Ichiro Nemoto, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,731
Claims priority, application Japan, Nov. 18, 1977, 52-138736
Int. Cl.³ G03B *7/08, 9/08*
U.S. Cl. 354—25 **3 Claims**



1. A shutter control device for an automatic focusing camera capable of automatically focusing a photographic lens by a system actuated by a signal produced by a focus detection module when the distance between the photographic object and the camera is detected, the device comprising a shutter control member which controls the operation of a shutter blade, a focusing member for regulating the position of the photographic lens, and a single slidably mounted actuating member having a cam portion for controlling said shutter control member and a spring biasing the actuating member into its rest position such that said actuating member actuates said focusing member and said shutter blade control member in the initial stage and the final stage, respectively, of the return travel thereof to the rest position.

4,212,523
AUTO-FOCUS CAMERA HAVING RANGEFINDER SYSTEM

Seiji Yamada; Shinji Tominaga, both of Sakai; Yasuzi Kogure, Kawanishi, and Toshinori Imura, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 959,776
Claims priority, application Japan, Nov. 18, 1977, 52-139195
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—25 **14 Claims**

1. An automatic focus control system for a camera with an objective lens assembly, said system comprising:

a rangefinder means for generating a zone signal indicative of the distance zone from among a plurality of contiguous distance zones extending along the line of sight path of the objective lens assembly whereat a target object to be photographed is located;

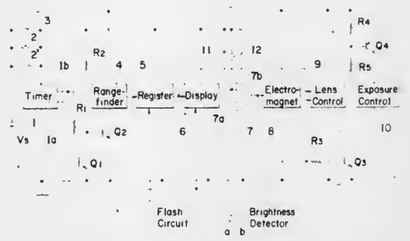
an electric power source;

a manually actuable power switch connected to said electric power source;

a delay means connected to said power switch for generating an output signal a predetermined time after actuation of said power switch, said predetermined time sufficient to enable said rangefinder means to achieve stable operation;

a gating means connected to said rangefinder means and said delay means for passing said zone signal therethrough in response to said output signal of said delay means;

a lens drive mechanism for unidirectional displacement of the objective lens means from a first extreme position toward a second extreme position when released;



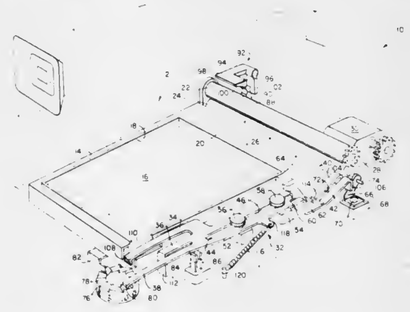
a release means, connected to said delay means and said lens drive mechanism, having an electromagnetic unit for releasing said lens drive mechanism in response to said output signal of said delay means; and

a lens arresting means connected to said gating means and said lens drive mechanism for arresting said displacement of the objective lens means at a position corresponding to said distance zone indicated by said zone signal passed by said gating means.

4,212,524
VARYING FRICTIONAL FORCES ON A FILM ADVANCING APPARATUS

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 2, 1979, Ser. No. 17,055
Int. Cl.³ G03B *17/52, 1/08, 1/32*
U.S. Cl. 354—86 **5 Claims**



1. Photographic apparatus for advancing a film unit of the self-developing type from an exposure plane to a position between a pair of pressure-applying rollers comprising:

means for supporting a film cassette in position to locate a film unit in an exposure plane; means in position to receive a leading end of the film unit therebetween as it is being advanced from the film cassette subsequent to exposure, said rollers being constructed to rupture a container of processing liquid attached to the leading end of the exposed film unit and spread its contents across the exposed photosensitive area of the film unit to initiate the formation of a visible image therein while simultaneously withdrawing the film unit from the film cassette;

an elongate member including film engaging means slidably mounted adjacent one side of said supporting means for reciprocating movement between first and second positions;

means for mounting said elongate member for reciprocating movement;

manually operative means for moving said elongate member from said first position to said second position; and

means engageable by a section of said elongate member during the initial movement of said elongate member from said first position toward said second position for substantially increasing the sliding frictional force between said mounting means and said elongate member during said movement toward said second position while simultaneously moving said film engaging means into alignment with the trailing edge of the film unit located in the exposure plane prior to moving the film unit part way out of the film cassette and into engagement with said rollers.

4,212,525
RELEASE DEVICE IN A CAMERA HAVING A MOTOR DRIVE UNIT

Fumio Urano, Omiya; Akihiro Arai, Urawa; Takumi Kobayashi; Eiji Yamamori, both of Tokyo, and Junji Umetsu, Kita, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1978, Ser. No. 906,511
Claims priority, application Japan, May 23, 1977, 52-59582
Int. Cl.³ G03B *1/18, 17/38*
U.S. Cl. 354—173 **3 Claims**



1. A shutter release device for a camera having a camera release actuating member movable by the camera operator to mechanically actuate said release device and a motor drive unit for actuating said release device when energized, wherein the improvement comprises:

a control member in said motor drive unit movable between a first position in which said motor drive unit is disabled and a second position in which said motor drive unit is enabled;

switch means operable by said release member during movement of said release actuating member by said operator, said switch means being positioned to be switched prior to mechanical actuation of said release device by said release actuating member and to thereby energize said motor drive unit when the latter is enabled;

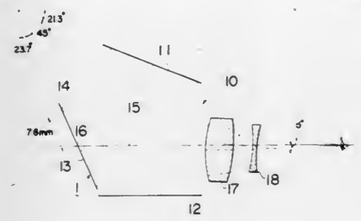
said control member in its first position permitting said release actuating member to travel a sufficient amount to mechanically actuate said release device and in its second position limiting the travel of said release actuating member to an amount sufficient to switch said switch means but insufficient to mechanically actuate said release device, whereby said release actuating member may mechanically actuate said release device and energize said motor drive unit when said control member is in its first and second positions, respectively.

4,212,526

VIEWFINDER FOR SINGLE LENS REFLEX CAMERA

Yasuo Yamazaki, Kawachinagano, and Kazuo Kimura, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 16, 1979, Ser. No. 67,199
Claims priority, application Japan, Aug. 22, 1978, 53-102537
Int. Cl.² G03B *13/08*
U.S. Cl. 354—225 **6 Claims**



1. In a viewfinder for a single lens reflex camera to provide an object image, which includes a focussing plate onto which the object image is projected, an ocular and a pentagonal roof reflecting mirror assembly for transmitting the object image on said focussing plate to said ocular, said assembly having a cavity through which the object image is transmitted including first and second roof reflecting mirrors opposite to said focussing plate and a third mirror operatively juxtapositioned relative to said first and second roof mirrors and said ocular, the improvement comprising:

said third mirror being formed of a concave aspherical surface whose curvature is lesser at its marginal portions than at a portion adjacent to its apex, said apex being located above an intersection of said third mirror with a collimation axis of said viewfinder, and wherein said ocular is separated into at least a first convex lens group and a second concave lens group, in order from said focussing plate, at least one of said first and second lens groups being tilted to form an elevation angle with respect to said collimation axis.

4,212,527

PHOTOGRAPHIC FILM ASSEMBLAGE

Richard V. Fischer, West Warwick, R.I., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 15, 1978, Ser. No. 969,997
Int. Cl.² G03B *17/26*
U.S. Cl. 354—275 **6 Claims**



1. A photographic film assemblage for use with commercially available still picture cameras having means for operably locating a single reel cassette of film of the non-self-developing type which is adapted to have sequentially photographically recorded thereon a plurality of discrete subject images when utilized in such cameras and which has a generally cylindrical housing of a given diameter and a given length with an elongate light sealed opening extending therethrough, a spool mounted within the cylindrical housing for rotation about an axis extending lengthwise of the cylindrical housing and including a central portion around which an elongate strip of non-self-developing type film is coiled with one end thereof extending through the light sealed opening, said photographic film assemblage comprising:

a generally cylindrical housing of substantially said given diameter and said given length, said cylindrical housing including means defining a recess of a given depth in an exterior surface thereof for receiving a container of processing liquid and means defining an elongate light sealed opening extending lengthwise thereof;

support means mounted within said cylindrical housing for rotation about an axis extending lengthwise of said cylindrical housing;

an elongate composite film structure including a first sheet of unprocessed photosensitive self-developing type film having a given length sufficient to accommodate the sequential recording thereon of a plurality of discrete subject images and a second sheet secured in superposed relation to at least said given length of said first sheet, said composite film structure being coiled around said support means with a first end thereof secured to said support means and with a second end thereof extending through said elongate light sealed opening; and

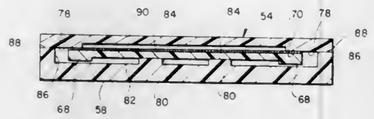
a container of processing liquid adapted to be temporarily releasably secured within said recess, said container having a depth or thickness no greater than said given depth of said recess.

4,212,528

PHOTOGRAPHIC FILM CASSETTE HAVING PRESSURE PAD AND NOZZLE ARRANGEMENT

Paul B. Mason, Magnolia, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 15, 1979, Ser. No. 12,344
Int. Cl.² G03B *17/50*
U.S. Cl. 354—317 **6 Claims**



1. In a film cassette containing a movable strip of photographic film having an emulsion surface thereon, a fluid processor including a nozzle having a doctoring surface for forming a generally uniform processing fluid layer on at least the emulsion surface as the film travels therepast in a given direction of film advancement, and a pressure pad assembly spaced relative to said nozzle and including a spring biased pressure pad which yieldably supports the film with the emulsion surface in spaced relation to the doctoring surface, the improvement comprising:

said nozzle having a pad engaging surface spaced laterally beyond each of the longitudinal margins of the film strip and constructed to engage said pressure pad as the film strip travels between said pad and said nozzle;

nozzle engaging surfaces defined by said pad for engaging said pad engaging surfaces of said nozzle so that the spacing of the emulsion surface relative to said doctoring surface is defined by said engaging surfaces; and

a film supporting member on said pad located between said nozzle engaging surfaces and being spaced from a plane defined by said nozzle engaging surfaces, said engaging surfaces and said spaced supporting member coacting with the film during travel of the film in the given direction so that thickness variations of the film will not cause said pad to substantially move towards or away from said nozzle to thereby substantially avoid altering the prese-

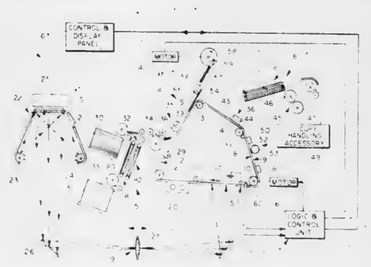
lected spacing between the emulsion surface and the doctoring surface.

4,212,529

APPARATUS FOR PRODUCING DUPLEX COPIES

Robert J. O'Brien, Rochester, and Walter A. Stryjewski, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 6, 1978, Ser. No. 959,126
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 R **9 Claims**



1. In apparatus for producing duplex copies and including a movable image receiving member for receiving first and second unfixed transferable images, copy sheet handling means comprising;

a copy sheet vacuum pick-off member located adjacent to said image receiving member, said pick-off member having a vacuum region for vacuum contacting a copy sheet;

means for mounting said pick-off member for pivotal and reciprocatory movement; and

means for moving said vacuum pick-off member in synchronism with said image-receiving member so that said vacuum region moves through a unidirectional closed loop path (a) to initially vacuum contact the other side of a copy sheet in contact with said image-receiving member and to one side of which a first unfixed image has been transferred, (b) to remove and reorient said copy sheet while said first image is unfixed, and (c) to bring the other side of said copy sheet into transfer relationship with the second transferable image on the image receiving member.

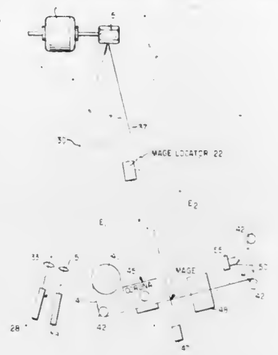
4,212,530

MEANS AND METHOD FOR PRINTING ON LIGHT SENSITIVE MATERIAL

Robert W. Pitts, Jr., Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,187
Int. Cl.² G03G *15/00*; **G03B** *27/32*
U.S. Cl. 355—14 R **4 Claims**

1. High speed printing apparatus for printing on light sensitive material comprising control signal means adapted to receive at least one input signal for providing a control signal in accordance with the received input signal; laser means for scanning the material and providing pulses of light which strike the material, in accordance with the control signal, to expose the material, said laser means includes a continuous laser emitting a beam of light and a pulse laser responsive to the control signal to provide the light pulses; a mirror, having a plurality of reflective surfaces, spatially related to the two lasers, to the control signal means and to the material so that the light from both lasers strike substantially the same point on a surface of the mirror; means connected to the mirror for rotating the mirror at a predetermined rate so that in effect the pulse laser repeatedly scans the material in one direction while the light beam from the continuous laser is reflected by the mirror to repeatedly scan the control signal means in a manner so that the reflected light beam scan corresponds to the scan of the material by the pulse laser; means connected to the control signal means for moving the material a predetermined distance after each scan so that unexposed material is available for



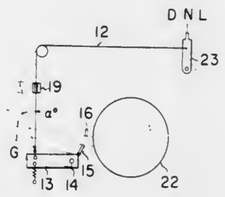
exposure; and means for developing the material so as to provide a printed copy in accordance with the received input signal.

4,212,531

APERTURE-CONTROLLING DEVICE IN A VARIABLE-SCALE PHOTOCOPYING MACHINE

Shozo Shimomura, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,366
Claims priority, application Japan, Jun. 23, 1978, 53-86280[U]
Int. Cl.² G03B *27/32, 27/54*
U.S. Cl. 355—55 **3 Claims**



1. In a variable-scale photocopying machine having an optical system including an optical system unit which is movable for selectively positioning on the optical axis of the optical system, in accordance with a designated photocopying scale, a corresponding lens, a photosensitive drum, and a light source for supplying light through the optical system to be projected as an exposure light beam onto the photosensitive drum, the combination therewith of an aperture-controlling device comprising an aperture-adjusting mechanism for adjusting the width of the exposure light beam, a flexible cord-like structure in tensioned state connected at one end thereof to the aperture-adjusting mechanism for actuation thereof, and a member actuated by a movement of the optical system unit to displace the cord-like structure at a point thereof substantially transversely to the longitudinal direction thereof thereby to actuate the aperture-adjusting mechanism and adjust the width of the exposure light beam in response to the movement of the optical system unit.

4,212,532

SLIT EXPOSURE TYPE COPYING APPARATUS

Hidenori Suzuki, Kawasaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 12, 1978, Ser. No. 941,640
Claims priority, application Japan, Sep. 20, 1977, 52-127226[U]
Int. Cl.² G03B *27/70*
U.S. Cl. 355—60 **8 Claims**



1. In a slit exposure type copying apparatus for obtaining copies at various magnifications of originals held in a first fixed position, the combination comprising a photosensitive member movable at a speed V past a further fixed position, means for projecting successive parts of an image of an original onto said photosensitive member and including a stationary projection lens means for projecting an image of an original at one of a plurality of magnifications during one operation of the apparatus with said photosensitive member moving at speed V and being changable for projecting an image of an original at a different magnification during another operation of the apparatus with said photosensitive member moving at speed V and a mirror means having first and second reflecting means disposed perpendicular to one another, and means for moving said mirror means to scan the successive parts of the image of the original projected by said projection lens means in a direction and having a velocity which has a velocity component V/2 perpendicular to the portions of said optical axis on which the image strikes the first reflecting means and leaves the second reflecting means.

4,212,533

PHOTOGRAPHIC EXPOSURE APPARATUS

Barthel Zeunen, 4750 Clarkston Rd., Clarkston, Mich. 48016

Filed Feb. 9, 1979, Ser. No. 10,628
Int. Cl.² G03B *27/20*
U.S. Cl. 355—91 **16 Claims**

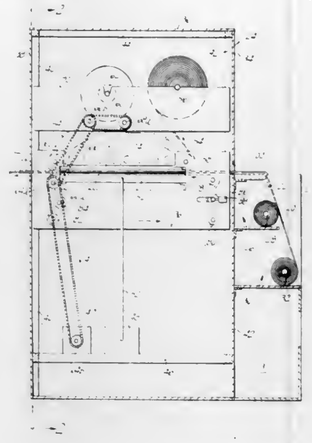
14. A transport system for a photographic exposure apparatus and for driving an original drawing and a film therethrough to expose a copy on the film, comprising:

an upper imperforate belt of transparent material;

a lower perforated belt;

said belts operable to engage the drawing and the film respectively therebetween thus holding one to the other;

a vacuum source;



said perforated belt movable into and out of operative relationship with said vacuum source for providing conjoint movement of the two belts and said film and drawing.

4,212,534

DEVICE FOR CONTACT-FREE MEASURING OF THE DISTANCE OF A SURFACE OF AN OBJECT FROM A REFERENCE PLANE

Viktor Bodlaj, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 933,070
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744130
Int. Cl.² G01C *3/00, 3/08*
U.S. Cl. 356—1 **10 Claims**



1. In a device for contact-free measuring of a distance D of a surface of an object from a reference plane, said surface having a diffusedly reflective property, said device comprising a light source, which produces a sharply focused light beam; a beam deflector, which serves to deflect the light beam and to repeatedly pass it over the surface; a photo detector, which, within a predetermined angle range, responds only to light which reaches it along a sighting line, said photo detector being arranged with it's sighting line being aligned to the surface of the object to be measured and to be intersected at least zone-wise by a light beam which passes over the surface;

and means for determining the distance D of the surface from the reference plane in response to a signal from the detector, the improvements comprising means for measuring intervals of time for travel of the deflected light beam between specific directions as the beam is deflected across the surface. said means for measuring providing a time difference Δt_R, which is the time of travel for the beam between a first predetermined fixed direction and a second predetermined fixed direction, a time difference Δt_{ZDA}, which is the time for the beam to move between said second direction and a third predetermined fixed direction, and a time difference Δt_d which is the time for movement between said third direction and the time at which the photo detector receives a reflected beam from the surface, and said means for determining utilizing the time differences Δt_R, Δt_{ZDA} and Δt_d as varying values to determine the distance D in accordance with

$$\text{distance } D = \frac{A \cdot \cos\beta \cdot \sin\left(B \frac{\Delta t_{ZDA}}{\Delta t_R}\left(c - C\frac{\Delta t_d}{\Delta t_R}\right)\right)}{\cos\alpha \cdot \sin\left(\alpha + \beta + B\frac{\Delta t_{ZDA}}{\Delta t_R}\left(c - C\frac{\Delta t_d}{\Delta t_R}\right)\right)}$$

wherein A is the distance from the reference plane and the beam deflector;

$$B = (\gamma_n/2) \cdot \frac{(\Delta t_{ZDA0})}{\Delta t_{R0}}$$

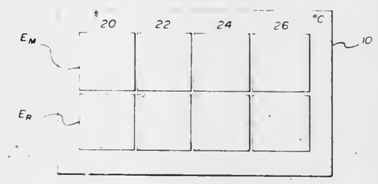
wherein Δt_{ZDA0} and Δt_{R0} are predetermined starting times and γ_n is the entire angle range for the deflected light beam; $C = 2\pi\nu_0 \cdot \Delta t_{R0}$ where ν_0 is a predeterminable starting frequency; $c = \sin(2\pi\nu_0 t_B/\Delta t_{R0})$ where $t_{B=\theta Z}/2\pi\nu_0$ and θ_Z being the angle between the light beam from the source and the second predetermined direction; α is the angle between the second predetermined direction and a normal to the reference plane; β is the angle between the sighting line and the normal of the reference plane; and τ is Ludolf coefficient which constitutes a fixed calculated value.

4,212,535

ULTRAVIOLET RADIATION DOSIMETER

Corey L. Sanders, and David M. Makow, both of Ottawa, Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Aug. 29, 1978, Ser. No. 937,800
Claims priority, application Canada, Nov. 2, 1977, 290110
Int. Cl.² G01J *1/46*
U.S. Cl. 356—51 **2 Claims**



1. A device for detecting, monitoring and measuring visible and ultraviolet radiation exposures or doses comprising at least one first liquid crystal element mounted on a card or plate for positioning in the path of the radiation to be monitored and at least one second liquid crystal element mounted adjacent the first element, said first element covered with a coating layer transparent to radiation, said second element masked or covered with a coating layer impervious to all or part of the radiation and having been pre-exposed to radiation of the kind being measured to cause a color change, the amount of the radiation pre-exposure having been determined and being a measure of the amount of radiation the first liquid crystal element receives when a color change occurs which brings the two colors into a color match condition.

4,212,536

HOLOGRAPHIC SUBTRACTION WITH PHASE MODULATION TO DISTINGUISH PHASE AND AMPLITUDE DIFFERENCES

György Bencze, and András Hamori, both of Budapest, Hungary, assignors to Magyar Tudomanyos Akadémia Központi Fizikai Kutató Intezéte, Budapest, Hungary

Continuation-in-part of Ser. No. 798,451, May 19, 1977, abandoned. This application Oct. 5, 1977, Ser. No. 839,606
Claims priority, application Hungary, May 31, 1976, 2783
Int. Cl.² G06K *9/08;* **G01B** *9/027;* **G03H** *1/16, 1/28*
U.S. Cl. 356—71 **10 Claims**



1. A method of detecting errors on a photomask with respect to a standard photomask by subtraction technique, which comprises the steps of:

preparing a standard hologram from said standard photomask;

passing a reference beam of coherent radiation through said standard hologram to produce a reconstructed standard beam associated with said standard photomask;

passing a part of said coherent radiation through a photomask to be inspected, located in a position corresponding to the location of said standard photomask during the preparation of the standard hologram, to produce an object beam from the inspected photomask;

passing said object beam through said standard hologram together with said reference beam for causing said reconstructed standard beam to interfere with said object beam to form a compound beam carrying information on both said standard and inspected photomasks;

detecting said compound beam; and

adjusting the intensity ratio and contiuously varying the relative path length of the reconstructed standard beam and the object beam concurrently traversing said standard photomask during detection of said compound beam whereby phase and amplitude differences can be distinguished.

4,212,537

SYSTEM FOR TESTING OPTICAL FIBERS

John E. Golob, Olathe, Kans.; Larry D. Looney; Peter B. Lyons, both of Los Alamos, N. Mex.; Melvin A. Nelson, and Terence J. Davies, both of Santa Barbara, Calif., assignors to The United States of America as represented by the Unied States Department of Energy, Washington, D.C.

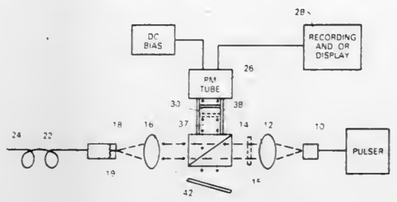
Filed Oct. 24, 1978, Ser. No. 954,381
Int. Cl.² G01N *21/16*
U.S. Cl. 356—73.1 **16 Claims**

1. In a system for locating discontinuities within an optical fiber which includes means for generating a light probe pulse and for injecting said light probe pulse into one end of the fiber, and means for detecting reflections of said pulse incident to said injection to initiate a timing sequence and reflections caused by discontinuities along the length of said fiber, the improvement comprising:

a. means for polarizing said light probe pulse and for inject-

ing only one of the resulting polarized portions into said one end of said fiber, and

b. means for preventing a majority of the reflections of said one polarized portion incident to said injection from



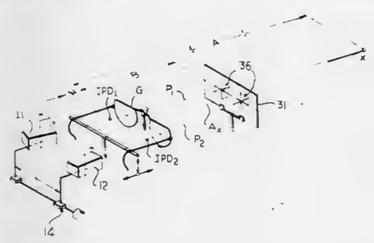
reaching said detecting apparatus and for permitting half of the light which exits from the injection end of the fiber to reach said detecting apparatus, this light having been reflected from fiber discontinuities.

4,212,538

METHOD AND APPARATUS FOR TESTING PRESCRIPTION GLASSES AND OTHER DUAL LENSES OPTICAL DEVICES

William G. Esmond, 800 Country Club Rd., Havre de Grace, Md. 21078

Filed Nov. 29, 1978, Ser. No. 964,607
Int. Cl.³ G01B *9/00*
U.S. Cl. 356—127 **11 Claims**



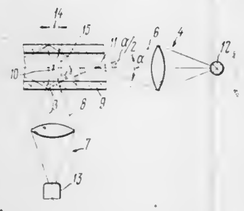
1. An apparatus for testing the alignment of a multi-beam optic device having respective left and right lenses made in accordance with a set of prescribed measurements, said apparatus comprising: at least one light source capable of directing collimated light beams along two separate paths, said paths being equally spaced on opposite sides of a central axis, said paths intersecting at a remote point lying on said central axis; supporting structure for fixably retaining an optic device to be tested in a position normal to said central axis wherein one of said light beams will pass through the left lens while the other of said light beams passes through the right lens; adjusting means for effecting relative movement between said light source and said supporting structure to align said respective light beam to pass directly through the optic axis of the respective lenses when the optic device is properly positioned; calibration means adjustably positioned normal with respect to said central axis and between said light source and said supporting structure, said calibration means having several equally spaced markings representative of measurements by which one may determine the spacing between said light beam paths and readily compare the spacing with a set of prescribed measurements for determination of proper focus for the optic device.

4,212,539

DEVICE FOR GRANULOMETRIC ANALYSIS OF PARTICLES IN FLUIDS

Viktor A. Berber, ulitsa Shelkovichnaya, 184, kv. 65; Evgeny S. Pervushin, ulitsa Shelkovichnaya, 182, kv. 71; Vladimir G. Kholin, ulitsa Shelkovichnaya, 184, kv. 53; Alexandr G. Fedorov, poselok Pervomaisky, 6 proezd, 21, kv. 1, and Boris M. Galishnikov, ulitsa Shelkovichnaya, 190, kv. 27, all of Saratov, U.S.S.R.

Filed Aug. 11, 1978, Ser. No. 933,026
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 **2 Claims**



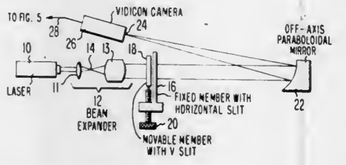
1. A device for granulometric analysis of particles contained in fluids, comprising: a flow-through chamber of an analyzer; an inlet of said flow-through chamber; an outlet of said flow-through chamber; a first window in the wall of said flow-through chamber, which is transparent to a light flux; a lighting means arranged outside said flow-through chamber, opposite said first window, and intended to direct a convergent light beam through said first window into said flow-through chamber; the solid angle α of said convergent light beam being in the range of $0 \leqq \alpha \leqq 2$ Arccos $(1/n_1)$, where n_1 is the refractive index of the fluid subjected to investigation; a light-sensitive means intended to receive light reflected from particles contained in said fluid being investigated, and arranged outside said flow-through chamber; the optical axis of said light-sensitive means extending at a perpendicular to the optical axis of said lighting means and intersecting it inside said flow-through chamber, beyond the focus of said lighting means, in the direction of the light flux; a second window provided in the wall of said flow-through chamber and transparent to light reflected from particles contained in the fluid being investigated, said second window being arranged across the path of reflected light to said light-sensitive means; said second window being shaped as a cylinder whose axis is matched with the optical axis of said lighting means, said cylinder performing the function of the walls of said flow-through chamber.

4,212,540

TESTING THE DIVERGENCE OF A BEAM FROM A LASER

Vitie J. Stakun, Pepperell, and William H. White, Lexington, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,540
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—354 **8 Claims**



1. Apparatus to test the divergence of a beam from a laser, comprising

a beam expander receptive to the light beam from a laser under test,

aperture-forming means providing an aperture in the path of the light from the beam expander,

means to image the beam from the aperture in a Fraunhofer plane,

an opto-electronic transducer positioned to translate the spatial distribution of light energy along a line in said Fraunhofer plane to an electrical signal indicating the difference between a light energy peak and a light energy valley, and

means to alter said aperture-forming means to change the aperture to two apertures which are increasingly separated,

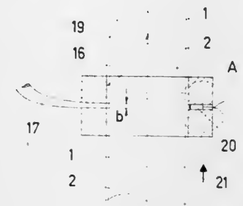
whereby said electrical signal decreases with increasing separation of the apertures according to a function from which the divergence of the light beam from the laser under test can be calculated.

4,212,541

METHOD AND APPARATUS FOR TESTING A FORWARD-MOVING STRAND

Jöel Ducommun, Chavannes, and Philippe Vulliens, Palézieux-Gare, both of Switzerland, assignors to Baumgartner Papiers S.A., Crissier, Switzerland

Filed Jun. 21, 1978, Ser. No. 917,502
Claims priority, application Switzerland, Jun. 21, 1977, 7627/77
Int. Cl.² G01D *21/04*
U.S. Cl. 356—430 **8 Claims**



1. Apparatus for testing a continuously forward-moving strand, such as a cigarette filter strand, in which portions having different optical characteristics follow each other sequentially, said apparatus comprising:

an optical testing station located along the longitudinal path of said forward-moving strand;

means including a ring-shaped body at said station, tightly encircling and confining said filter strand so as to guide the strand steadily and without whipping or vibration at said station as the strand moves forward;

said ring-shaped body being made of a polymeric resin manufactured under vacuum so as to be homogeneous and have no light-reflecting microscopic voids;

said resin being of a dark color which absorbs light;

a source of illuminating light located remotely from said ring-shaped body;

said ring-shaped body having, in a plane perpendicular to the longitudinal axis of said forward-moving strand, a radial bore;

optical fiber light conduction means guiding light from said source of illuminating light and through said radial bore to the surface of said forward-moving strand;

a cavity in said ring-shaped body located in the same plane, perpendicular to the longitudinal axis, as said radial bore, said cavity having an opening, in said plane, on the interior bore of said ring-shaped body;

photoelectric sensing means located in said cavity and responsive to light entering said cavity through said hole;

said photoelectric sensing means being located immediately adjacent said hole and being optically very tightly coupled to the light entering said hole;

said radial bore and said opening being so located, in said plane perpendicular to the longitudinal axis, that illuminating light from the optical fiber light conducting means in said radial bore beams and diffuses through said forward-moving strand to said opening;

whereby said photoelectric sensing means responds only to light which has traversed through said forward moving-strand; and

whereby the amount of light which reaches said photoelectric sensing means, from said remote source of illumination, as modulated by said forward-moving strand, is sufficient to produce an ample response

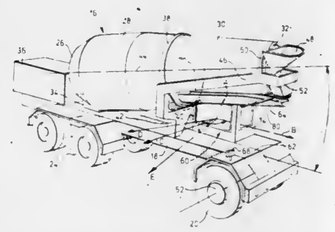
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4,212,542

FRONT END LOADING TRANSIT MIXER

Gerald Beekenkamp, Mississauga, Canada, assignor to London Concrete Machinery Co. a division of Hodgson Machine & Equipment Ltd., London, Canada

Filed Mar. 14, 1979, Ser. No. 20,259
Int. Cl.² B28C *5/20*
U.S. Cl. 366—54 **4 Claims**



1. A front end loading transit mixer for use in transporting and mixing concrete and the like comprising;

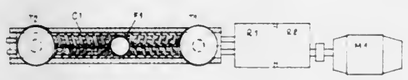
(a) a frame comprising longitudinally elongated main beam means extending in a first generally horizontal plane, said beam means having a front end portion and a back end portion and a longitudinal axis extending therebetween, said front end portion having first and second sides disposed one on either side of said longitudinal axis, front and back road going wheel sets supporting said frame at the front and back portions thereof, respectively, the wheels of each wheel set having an axis of rotation disposed below said first horizontal plane,

(b) a longitudinally elongated mixing drum having; a front end and a back end, a mixing chamber formed within said drum, an opening at the front end of said mixing drum through which concrete may be loaded into or discharged from said mixing chamber, an axis of rotation extending longitudinally between said front and back ends, a front section of said mixing drum having a longitudinally elongated truncated conical shape extending rearwardly from and increasing uniformly in diameter in a direction rearwardly from said front end, said front section having a length which is at least half of the total length of the mixing drum,

(c) mounting means on said frame supporting said mixing drum above said first plane for rotation about said axis of rotation with its back end disposed above said back end portion of said frame and its front end portion disposed above said front end portion of said frame, and said axis of rotation being inclined upwardly in a direction toward the front end portion of said frame in a first inclined plane such that the front end of the mixing drum is spaced a substantial distance above the front end portion of the frame whereby a substantially unobstructed viewing opening is provided in the area extending inwardly from the front end of the frame and located above the front end portion of the frame and below the front section of the mixing drum,

(d) an operator cab having an operator station therein, said cab being mounted on the front end portion of said frame so as to locate the operator station rearwardly from the front wheel set and laterally offset on the first side of said longitudinal axis, said cab being adapted to afford said operator, when in said operator station, a substantially unobstructed line of vision toward said second side of said frame in a generally horizontal plane extending through said viewing passage over an angle of at least 90° from the direction of forward movement of the road going wheeled frame as viewed from the operator station.

4,212,543
TWIN-SCREW, TWO-STAGE AND MULTI-STAGE EXTRUDER HAVING A DOUBLE FEED
Terenzio Bersano, Via Liruti, 12, 33100 Udine, Italy
Filed Aug. 4, 1978, Ser. No. 931,194
Claims priority, application Italy, Aug. 5, 1977, 83450 A/77
Int. Cl.³ B01F *7/00*
U.S. Cl. 366—85 **5 Claims**



1. A multi-stage, twin-screw extruder mechanism, comprising

a first twin-screw extruder including a first barrel having therein two axially spaced inlet openings for receiving materials to be extruded, a discharge port positioned between said spaced inlet openings, a first set of twin-screws rotatable in said first barrel for feeding said materials in opposite directions from said inlet openings to said discharge port,

a second twin-screw extruder including a second barrel extending transversely of said first barrel, said second barrel having an inlet port registering with the discharge port of said first barrel,

means coupling the discharge port of said first barrel to the inlet port of said second barrel to convey said materials from said discharge port to said inlet port,

a second set of twin screws rotatable in said second barrel to draw said materials received from the discharge port of said first barrel, and to feed said materials in one direction and through an extrusion head at one end of said second barrel, and

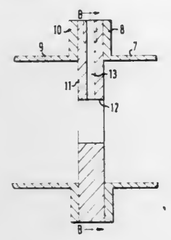
means for driving said first and second sets of twin screws at variable speeds,

said coupling means including adjustable means cooperating with said driving means to cause said materials to be maintained under the desired pressure and temperature conditions as they pass from said first to said second barrel.

4,212,544
ORIFICE PLATE MIXER AND METHOD OF USE
Michael J. Crosby, 1, Thornton Rd., Hensingham, Cumbria, England
Division of Ser. No. 686,432, May 14, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,095
Claims priority, application United Kingdom, May 15, 1975, 20568/75
Int. Cl.² B01F *5/10*
U.S. Cl. 366—150 **13 Claims**

1. A method of mixing a first fluid and a second fluid in a turbulent flow plate mixer which is in the form of an integral, one-piece, thin plate having an axially directed, substantially round orifice therethrough, the method comprising:

passing a first fluid into said orifice via a conduit means which has a cross-sectional size larger than said orifice so that said orifice acts as a sudden constriction to the first fluid supplied therethrough said conduit means, said conduit means being attached to said thin plate at at least one end of the orifice, the orifice having an internal wall extending through the plate and the thickness of the plate (corresponding substantially to the axial length of said orifice) being small relative to the diameter of said orifice;



passing said second fluid through at least one, but no more than four, ports in said thin plate, said ports opening at said internal wall of said orifice and substantially radially extending through said plate substantially perpendicularly to said orifice from the outside edge of said plate to said internal wall, whereby said first and second fluids are mixed.

4,212,545
METHOD FOR CONTINUOUSLY PROCESSING TWO-COMPONENT PAINTS
Csaba Lovasz; Horst-Dieter Maab, both of Stuttgart; Horst Schene, Sindelfingen, and Volker Teubner, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Filed Dec. 29, 1977, Ser. No. 865,728
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1976, 2659273
Int. Cl.² G05D *11/02*
U.S. Cl. 366—152 **7 Claims**



1. A method for processing two-component varnishes of different color shades, said two-component varnishes containing a basic varnish liquid component and a hardener or cross-linking agent liquid component, said method comprising:

(a) withdrawing at least one colored basic varnish liquid component from at least one of a plurality of ring conduits carrying different-colored basic varnishes;

(b) feeding said basic varnish component to a colored-changing block;

(c) withdrawing, through controllable measuring means, a colorless hardener or cross-linking agent liquid component from another ring conduit in a predetermined and previously adjusted mixing ratio with respect to said basic varnish component, said ratio being set by said controllable metering means and maintained by controlling the feed quantity of at least one of said components;

(d) feeding said hardener or cross-linking agent component to said color-changing block wherein the basic varnish component and the hardener or cross-linking agent component are initially admixed;

(e) thoroughly mixing said components;

(f) measuring the dielectric constant of said thoroughly mixed components to generate a signal which is a function of the mixing ratio; and

(g) using said signal to control said metering means to maintain the predetermined mixing ratio.

4,212,546
TILTABLE POWER BLENDER FOR DENTAL IMPRESSION MATERIALS
Don D. Porteous, 2794 Moraga Dr., Los Angeles, Calif. 90024
Filed Sep. 21, 1978, Ser. No. 944,554
Int. Cl.² A61C *5/06*
U.S. Cl. 366—213 **8 Claims**



1. A blending device for dental impression materials comprising:

a substantially rectangular enclosure which includes upper and lower housing halves interlocked along a beltline, said upper housing half having an upper surface conjoint with oppositely disposed side panels and oppositely disposed first and second end panels, said lower housing half having a lower surface conjoint with oppositely disposed side panels and oppositely disposed first and second end panels;

drive means disposed within said enclosure, said drive means including an electric drive motor coupled to a rotational drive shaft through a speed reducing geartrain, said driveshaft passing trough, and in substantially orthogonal alignment with, the upper surface of said upper housing half;

a turntable mounted on said driveshaft, said turntable being disposed above and spaced from said upper surface;

a bowl member removably engaged upon said turntable;

control means for said drive means;

handle means integral with said first end panel of said lower housing half; and

support means, including elastomeric support strips, affixed to the lower surface of the lower housing half of said enclosure.

4,212,547
APPARATUS FOR BLENDING FLUID AND SOFT PARTICULATE FOOD CONSTITUENTS
Meredith C. Thomson, Sheboygan, Wis., assignor to Stoelting, Inc., Kiel, Wis.
Filed Mar. 19, 1979, Ser. No. 21,514
Int. Cl.² B01F *7/08, 7/04*
U.S. Cl. 366—325 **16 Claims**

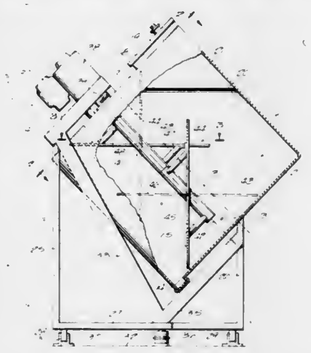
1. Blender apparatus for blending fluid and soft particulate food constituents, said blender comprising:

a wall defining a hollow cylinder and means for closing the bottom end of said cylinder to form a container for said fluid and particulate constituents,

means for supporting said cylinder with its axis at an angle in the range between 30° to 60° with respect to horizontal whereby half of said cylinder will be above and the other half will be below said axis,

a rotatable shaft projecting into said container toward its bottom, the axis of said shaft being in substantial parallelism with the axis of the cylinder,

first and second blade means mounted to said shaft and projecting radially away from said shaft for orbiting about said shaft axis, said blade means being angulated in the same direction and being axially spaced apart and located on generally opposite sides of the shaft axis and being



disposed in planes, respectively, which intersect said shaft axis at angles other than right angles, the angles of said oppositely located blades relative to said shaft axis being such that during rotation of said shaft said blades will oscillate, respectively, from the nearest to horizontal altitude which they can attain on one side of said axis to the nearest to vertical altitude which they can attain on the other side of said axis such that when one blade is nearest to horizontal the other blade will simultaneously be nearest to vertical, said first blade means being nearer to the bottom of said container than second blade means.

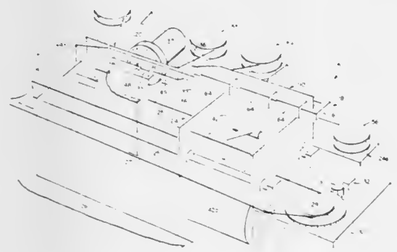
4,212,548
APPARATUS AND METHOD FOR TREATING SLUDGE DEPOSITS
Masao Miyaguchi; Tateo Kawamura, both of Tokyo; Kazuyoshi Nakanishi, Yokohamashi, and Shoji Kohno, Chiba, all of Japan, assignors to Takenaka Komuten Company, Limited, Osaka, Japan
Division of Ser. No. 856,788, Dec. 2, 1977. This application Apr. 9, 1979, Ser. No. 28,560
Int. Cl.² B01F *7/18, 15/02*
U.S. Cl. 366—348 **3 Claims**



1. A method for treating sludge deposits by using a sludge deposit treating apparatus comprising a longitudinal girder including first running means for moving the girder in a direction perpendicular to the longitudinal direction of said girder, second running means for moving kneading means in the longitudinal direction of said girder, lift means moving a kneading zone of said kneading means in the vertical direction, and chemical supply means for supplying a chemical to the kneading zone of said kneading means, said method comprising: placing the girder of the sludge deposit treating apparatus

movably on a sludge deposit layer, feeding the chemical to the kneading zone while moving the kneading zone of said kneading means in said longitudinal direction, moving the kneading means in said longitudinal direction of the girder while continuing said vertical movement of the kneading zone of said kneading means, thus treating one band of the sludge deposit layer while mixing and kneading the sludge deposit with the chemical, moving the girder in a direction perpendicular to said longitudinal direction along a distance corresponding to the width of the treated band of the sludge deposit layer, and repeating the treatment of one band of the sludge deposit layer and the movement of the girder along a distance corresponding to the width of the treated band.

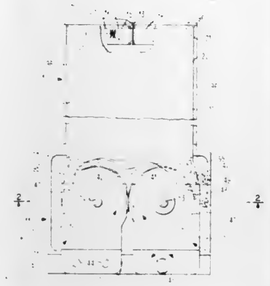
4,212,549
DISC PRINTER
Albert L. Edwards, Thousand Oaks, and Aram S. Arzoumanian, Encino, both of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.
Filed Sep. 5, 1978, Ser. No. 939,328
Int. Cl.² B41J *1/26*
U.S. Cl. 400—154 **12 Claims**



1. A print disc for use in a printing apparatus, said print disc having a flat front face, said apparatus having a stationarily mounted hammer and a rotational mounting means for rotating said print disc at a substantially constant rate while maintaining said print disc at a stationary location with said flat front face opposite said hammer, and means for linearly moving a medium onto which characters are to be printed between said front face and said hammer, said print disc having at least one set of raised type fonts integrally formed on the flat front face thereof and arranged in a spiral, characterized in that said print disc is sufficiently rigid so as to enable said disc to sustain the impact of printing by said hammer without axial distortion or movement, whereby said print disc itself act as the platen for printing.

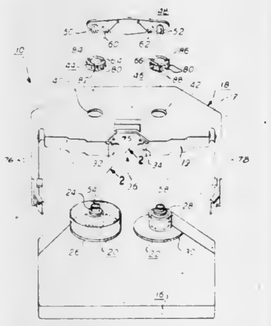
4,212,550
RIBBON STORAGE MECHANISM HAVING ECCENTRICALLY MOUNTED FEEDING ELEMENTS
Edward F. Helinski, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 14, 1978, Ser. No. 924,462
Int. Cl.² B41J *33/10*
U.S. Cl. 400—196.1 **15 Claims**

1. Apparatus for packing a web into a storage compartment comprising:
- at least one stripping means having a stripping edge adjacent said compartment;
- feed means for gripping said web and moving said web into said compartment, said feed means including at least one member movable with respect to said edge and alternately



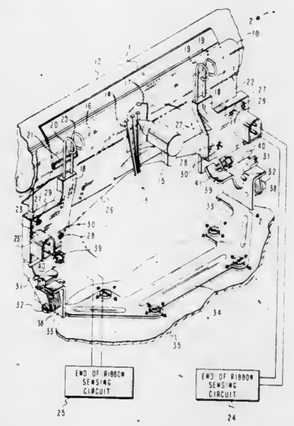
extending a perimetric portion beyond said edge into said compartment and receding therefrom.

4,212,551
RIBBON CARTRIDGE
Joseph A. Marsico, Paterson, N.J., assignor to Litton Business Systems, Inc., Morris Plains, N.J.
Filed Nov. 17, 1977, Ser. No. 852,298
Int. Cl.² B41J *33/14*
U.S. Cl. 400—208 **5 Claims**



1. In a ribbon cartridge for insertion into a printing machine having a printer, a spool drive means, and a platen wherein the cartridge comprises:
- a cassette;
- an inked ribbon in said cassette for extending between said printer and platen;
- movable means in said cassette for storing said ribbon connected thereto, said movable means comprising spools, each of said spools having a spindle and a flange at one end of said spindle;
- means attached to each of said flanges for rotatably engaging said spools with said spool drive means;
- fastening means connected to each of said spindles for fastening said spools to said cassette;
- locking means detachably mounted on said cassette for locking said spools in a preselected position in said cassette along a given direction of movement of said ribbon from one of said spools toward said printer and platen for engagement of said means for rotatably engaging said spools with said spool drive means;
- said locking means comprising at least two ridges, each of said ridges engaging one of said fastening means and locking one of said spools in said preselected position;
- whereby said spools are locked so that said spool drive means may be engaged by said means for rotatably engaging said spools with said spool drive means.

4,212,552
IMPACT PRINTER CARDHOLDER WITH INTEGRAL RIBBON GUIDE AND END OF RIBBON SENSOR
John D. Bemis, Charlotte, N.C., and Willie Goff, Jr., Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 6, 1978, Ser. No. 958,276
Int. Cl.² B41J *35/36*
U.S. Cl. 400—249 **3 Claims**



1. In an impact printer having a curved platen and a cardholder with an inner surface having a curvature corresponding to the curvature of said platen mounted adjacent to but spaced from said platen so that a sheet of a printing medium may be moved between said cardholder and platen, said cardholder having an opening therein through which said sheet may be printed upon by impact means, the improvement wherein said cardholder comprises
- integral ribbon guide means for guiding a printer ribbon in a path spaced along the outer surface of said cardholder across said opening whereby said impact means may selectively drive said ribbon through said opening to print upon said sheet,
- said ribbon guide means including two pairs of electrically conductive members respectively fixed to said cardholder on opposite sides of said opening,
- and circuit means connected to said pairs of conductive members for detecting when a conductive element in an end of said ribbon contacts both conductive members of one of said pairs to provide a conductive path between said members, whereby conductive elements at opposite ends of a printer ribbon may be sensed dependent on the direction of movement of said ribbon.

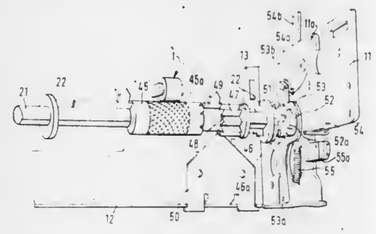
4,212,553
TABULATION CONTROL SYSTEM HAVING TWO ELECTRONIC TAB RACKS
Robert G. Acosta; Michael E. McBride, both of Austin, and Robert A. Pascoe, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 6, 1978, Ser. No. 884,082
Int. Cl.² B41J *25/18*
U.S. Cl. 400—279 **10 Claims**

1. A tabulation system for controlling printout of corresponding lines of sequentially stored columns during playout to form a side-by-side format, said system comprising:
- (a) a first tab storage means for storing tab locations defined before the beginning of the first of said columns to control text positioning during playout;
- (b) a second tab storage means for storing a copy of said tab locations stored in said first tab storage means to control column positioning during playout of said columns; and



- (c) means for causing said copy to be stored in said second tab storage means when said beginning of said first column is reached during playout.

4,212,554
PAPER-FEEDING APPARATUS FOR A PRINTER
Helmut Gelling, Wangen, Switzerland, assignor to Firma Precisa AG Rechenmaschinenfabrik, Zurich, Switzerland
Filed Feb. 2, 1978, Ser. No. 874,564
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1977, 2706161
Int. Cl.² B41J *19/76*
U.S. Cl. 400—550 **3 Claims**



1. In a printer comprising a drive motor, a main shaft rotatably connected to said drive motor, a paper transport cylinder freely rotatable and axially fixed on said shaft, a coupling wedge axially movable on said shaft and rotatable with said shaft, a cam member, spring means urging said wedge against said cam member such that during a printing operation said cam member displaces said wedge into engagement with a recess in said paper transport cylinder to automatically advance paper by one line each time a line has been printed, the improvement wherein:
- a control disk is mounted for movement in the axial direction of said shaft;
- said wedge including a projection engageable with said control disk;
- a key mounted for manual actuation, said key including a portion for displacing said control disk axially to displace said wedge axially into engagement with said recess in said paper transport cylinder, said key being operable, when actuated, to activate said motor to rotate said shaft

and thereby rotate said paper transport cylinder by means of the wedge which drivingly couples said shaft to said transport cylinder.

4,212,555
INK ABSORBENT PRESSURE ROLLERS FOR INK RECORDING DEVICES

Guenter Rosenstock, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

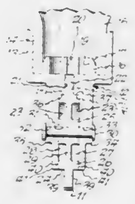
Filed Apr. 13, 1978, Ser. No. 895,958
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 7712267[U]
Int. Cl.² B41J *13/02*
U.S. Cl. 400—639.1 **5 Claims**

1. In a liquid jet ink recording apparatus utilizing a data carrier advanced past a platen with a hinged biased clamp member carried by the apparatus equipped with pressure rollers for biasing the data carrier against the platen downstream of a recording position, the improvement of anti-smear means including at least the part of the pressure rollers contacting the data carrier being constructed of an absorbent material, the absorbent material being capable of absorbing liquid recording ink from the surface of the data carrier to minimize smear, the pressure rollers rotatably affixed to the clamp member and having a total length less than a width of the data carrier, the pressure rollers including a body rotatably mounted on the clamp member, the body carrying a movable ring of ink absorbent material having an outer diameter greater than an outer diameter of the body and of the clamp member whereby liquid ink on the data carrier not absorbed by the data carrier at a contact position in contact with the pressure rollers will be at least partially absorbed by the ring on the rotatable bodies thereby reducing smear.

4,212,556
STRIPER WHEEL ASSEMBLY

Henry A. Kohler, Orchard Park, N.Y., assignor to Truly Magic Products, Inc., Buffalo, N.Y.

Filed Jul. 5, 1978, Ser. No. 921,949
Int. Cl.² B05C *17/02*
U.S. Cl. 401—208 **9 Claims**

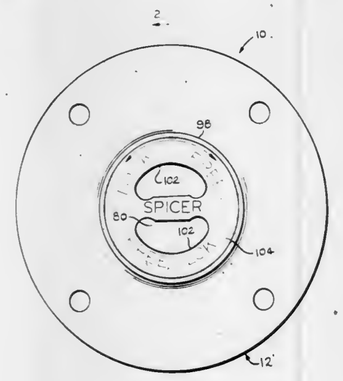


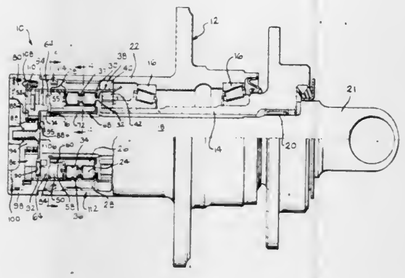
1. A striper device comprising a striper wheel having an outer periphery and an outer circumferential portion of a first thickness and a hub portion of a second thickness which is greater than said first thickness, a wheel housing, means for mounting said striper wheel for rotation on said wheel housing, means in said wheel housing for conducting liquid to said outer periphery, said wheel housing including first spaced housing portions spaced apart substantially the same amount as said first thickness for receiving a segment of said outer circumferential portion, and second spaced housing portions spaced apart substantially the same amount as said second thickness for receiving a segment of said hub portion, whereby said first and second spaced housing portions in conjunction with said segments of said outer circumferential portion and said hub portion, respectively, function as a seal to prevent leakage, said hub portion having a convex surface of a first radius, and said housing having a concave surface of a second radius of substantially the same size as said first radius whereby said hub portion and said housing include substantially touching cylindrical surfaces for providing additional sealing engagement between said striper wheel and said housing.

4,212,557
HUB CLUTCH

Robert B. Overbeek, Janesville, Wis., assignor to Dana Corporation, Toledo, Ohio

Filed Oct. 12, 1978, Ser. No. 950,931
Int. Cl.² B60B *27/00*; F16D *1/06*
U.S. Cl. 403—1 **4 Claims**





1. A clutch for a four-wheel drive vehicle for drivingly connecting a shaft rotatable about an axis and a wheel hub, said clutch comprising:

(a) an axially fixed clutch member connected to the shaft,

(b) an axially movable clutch member slidably connected to the wheel hub and selectively engageable with said fixed clutch member,

(c) a rotatable selector supported by the wheel hub, said selector including a hub having an annular exterior surface,

(d) a follower connected to said movable clutch member,

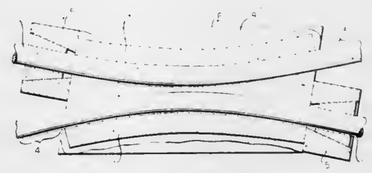
(e) a rotatable cam ring having a cam slot engaged with said follower, said cam ring having an annular interior surface concentrically disposed about said selector hub exterior surface, said surfaces spaced apart and defining an annular chamber therebetween, and

(f) a coiled torsion spring for connecting said rotatable selector and said cam ring, said coiled torsion spring disposed in said annular chamber having first and second ends, said first end connected to said rotatable selector and said second end connected to said cam ring.

4,212,558
COUPLER FOR CABLES TENSIONED ONE END AGAINST ANOTHER END

Frederic A. Lang, Good Hope Rd., Landenberg, Pa. 19350

Continuation-in-part of Ser. No. 714,350, Aug. 16, 1976. This application Sep. 5, 1978, Ser. No. 939,491
Int. Cl.² F16B *2/14*
U.S. Cl. 403—41 **5 Claims**

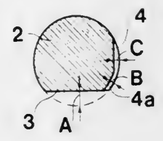


1. A self-equillibrating coupler suitable for simutaneously tensioning of two ends of cable, said coupler having two uniformly curved surfaces in fixed position one to the other throughout a single passage, said two uniformly curved surfaces being continously curved longitudinally throughout the length of said passage, the two curved surfaces curving from each other in an amount sufficient to permit jacking and anchoring of both cable ends outside of the coupler, the two curved surfaces being separated radially at the coupler geometric center, in an amount at least as great as twice the diameter of the cable, and the tangents of the longitudinally curved surfaces at the entering point of each cable that are in the plane of the axis of the two cables being separated perpendicularly in an amount equal to one cable diameter, hence permitting the cables to share a common center line at their point of entry into the coupler.

4,212,559
MEANS FOR CONNECTING A MALE PART WITH A FEMALE PART

Anders E. Persson, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Jun. 7, 1978, Ser. No. 913,540
Int. Cl.² F16B *3/04*
U.S. Cl. 403—348 **11 Claims**

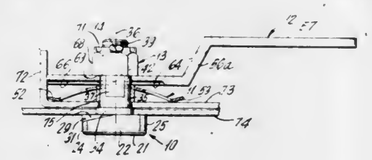


1. In an apparatus for connecting a male part to a female part of the type wherein the female part comprises a hole and a bore extending eccentrically across the hole, a locking pin disposed in the bore and spaced from a portion of the bore adjacent the hole to form a space, said male part comprising a shank, said shank including a groove for engagement with said locking pin, the periphery of said shank including a beveled portion of sufficient depth to allow a lower portion of the shank to pass the locking pin during insertion of said shank into said hole, said groove being disposed in such lower portion of said shank and arranged to receive said locking pin in response to rotation of said shank to prevent withdrawal of said shank, the improvement wherein said groove includes means for bending said pin into said space in a direction away from the axis of said hole during rotation of said shank, to resist reverse rotation of said shank.

4,212,560
QUARTER TURN INDUSTRIAL FASTENER

Frederick J. Pufpaff, Loudonville, and Cuyler Hoen, Rensselaer, both of N.Y., assignors to Simmons Fastener Corporation, Albany, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,015
Int. Cl.² B25G *3/00*
U.S. Cl. 403—353 **15 Claims**



1. An industrial fastener assembly for removably locking together two plates by a one-quarter turn of the fastener, including

a first place having an opening therethrough having an elongated direction and a shortened direction at substantially a right angle thereto;

a second plate having a hole therethrough which is adapted to align with the hole of the first plate upon locking together the two plates;

a cam bolt member having a head portion, said head portion having a top face, a bottom face, elongated opposite sides in its length direction which are parallel to each other and to the bolt axis, and relatively shortened opposite sides in its width direction at a right angle to said elongated sides so that said head portion fits through the hole in said first plate, at least a portion of the diagonally opposite end corners of said bottom face being removed to form two cam surfaces merging the adjacent bottom and side faces, said cam surfaces engaging marginal portions of the hole of said first plate upon locking of said fastener assembly;

said cam bolt member having a shaft portion having at an intermediate position a pair of flattened sides, said shaft portion having external screw threads proximate to its end opposite said head portion;

a spring member of resilient material having a hole through which said shaft protrudes and freely rotates therein, said spring member having a pair of oppositely directed raised portions forming detent ridge means and extending substantially outwardly from said hole along an imaginary bisector of said hole;

a turning means having external means to permit the turning means to be rotated, a hole through said turning means having flattened internal side walls to meet said flattened sides of said cam bolt shaft so that turning of said turning means will turn said cam bolt member, said turning means being slidable on said cam bolt shaft, said turning means having a body portion in a plane vertical to the axis of said cam bolt and having an upper and a lower face, and four indentations in said lower face at a substantially equidistant spacing, said indentations being outwardly directed along imaginary extended radii of said turning means hole, said raised portion of said spring removably detenting two oppositely directed indentations; and

a nut member having internal screw threads which are screwed onto said screw threads of said cam bolt member;

said spring member exerting pressure between said turning means and said second plate.

4,212,561

MARINE STRUCTURE CONNECTING STRUCTURES AT DIFFERENT LEVELS

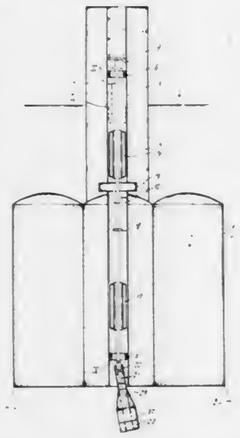
Johannes Wipkink, Sassenheim, Netherlands, assignor to Ingenieursbureau Marcon (Marine Consultants) B.V., Leiden, Netherlands

Filed Jun. 16, 1978, Ser. No. 916,427

Claims priority, application Netherlands, Jun. 17, 1977, 7706724

Int. Cl.² E21B *7/12*

U.S. Cl. 405—195 **12 Claims**



1. A marine structure for guiding ducts from a deeper to a higher device below water, which devices are adapted to make mutual movements characterized in that said marine structure comprises a rigid column having pivot means both at its upper and at its lower end to give a pivoting connection with the deeper and higher devices respectively, a plurality of said ducts rigidly connected to said column, a plurality of higher ducts therefor having pivoting connections to corresponding ones of said first-mentioned ducts, and guide structure for guiding said plurality of higher ducts for longitudinal movement with respect to said higher device.

4,212,562

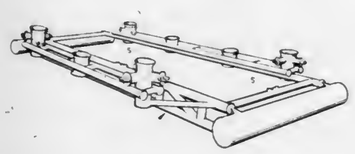
METHOD AND APPARATUS FOR LEVELING TEMPLATES FOR OFFSHORE SUBTERRANEAN WELLS

William B. Stone, Houston, Tex., and Marvin L. Holbert, Jr., Gretna, La., assignors to Lynes, Inc., Houston, Tex.

Filed Jul. 31, 1978, Ser. No. 929,389

Int. Cl.² E02D *21/00, 27/04*

U.S. Cl. 405—195 **14 Claims**



1. Apparatus for leveling a template for use in the drilling, completion or workover of a deep water, subterranean well on a plurality of horizontally spaced hollow piles secured in a vertical position in the ocean floor, comprising: a plurality of vertically disposed sleeves secured to the template at horizontal locations corresponding to said piles, said sleeves having an internal diameter exceeding said piles, permitting each sleeve to be respectively freely passed downwardly over the top ends of said piles; (the top ends of said piles respectively having vertically corrugated surfaces respectively surrounded by said sleeves;) at least one radially shiftable clamp mounted on each said sleeve, said clamp having its inner face engagable with (said vertically corrugated) the adjacent surface portion of the respective pile to lock each said sleeve to the respective pile in any selected one of a plurality of vertical positions; means removably insertable in the top end of each pile and detachably connected to the respective sleeve for raising each said sleeve relative to the enclosed pile to achieve a horizontally level position of the template; and hydraulically activated operating means for radially shifting each said clamp inwardly to lock the respective sleeve in the pre-selected vertical position on its co-operating pile required to level the template.

4,212,563

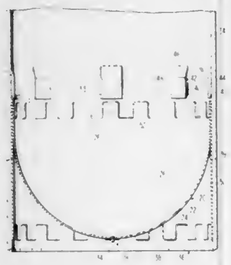
RUPTURABLE CLOSURE PLUG FOR OFFSHORE STRUCTURES

Jay B. Weidler; Bert E. Gracia, both of Houston, and Tommy L. Hull, Sugarland, all of Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Dec. 29, 1978, Ser. No. 974,427

Int. Cl.² E02B *17/00*

U.S. Cl. 405—195 **13 Claims**



1. An offshore structure comprising:

jacket means including

buoyant compartment means defined by jacket leg means;

rupturable closure means defining lower end means of said buoyant compartment means,

said rupturable closure means being operable to be ruptured by pile means impacting on upper side means thereof, when said jacket leg means are in a generally upright orientation;

the improvement in said rupturable closure means comprising:

cup-like cap means defining said rupturable closure means and having

convex under side means, and

concave upper side means;

a plurality of circumferentially spaced, generally radially extending weakened zones in said cap means operable to define generally radially extending rupture zones when said cap means is impacted on said concave upper side by pile means; and

said cup-like cap means, when impacted by said pile means, rupturing along said generally radially extending weakened zones to define a plurality of generally triangular cap segments,

with said generally triangular cap segments being pressed generally radially outwardly of the central axis of said leg means toward the inner periphery of said jacket leg means by said impacting pile means.

4,212,564

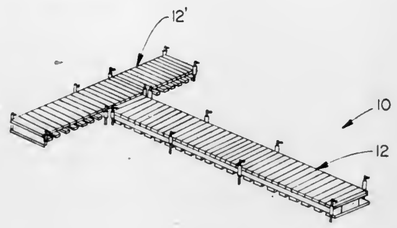
DOCK

Charles Kay, 9390 Whitneyville Ave., Alto, Mich. 49302

Filed Oct. 26, 1978, Ser. No. 955,121

Int. Cl.² E02B *3/20*

U.S. Cl. 405—218 **3 Claims**



1. A dock structure comprising:

spaced, H-shaped anchoring and support mounts, and elongated deck modules supported thereon; each of said mounts including deck support structure and a pair of vertical anchor posts rotational relative to said support structure and having a helical blade to cause said posts to be earth-embedded when rotated; the vertical legs of the H including said posts and including post-receiving and deck-supporting sleeves, and the cross leg of the H interconnects said sleeves; and means for fastening said deck modules to said support structure of said mounts, said deck modules each having an upper compression layer and a lower tension layer spaced therebeneath, flanged stringer plates interconnecting said layers with the flanges thereof embedded in said layers; and said layers having a plurality of transversely extending elements and said stringers being normal thereto.

4,212,565

METHOD AND APPARATUS FOR FORMING A CONTINUOUS ROW OF CAST-IN-PLACE PILES TO FORM A WALL

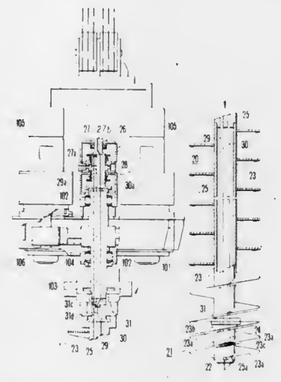
Keiichi Watabe, Matsudo, Japan, assignor to The Shimizu Construction Co., Ltd., Japan

Filed Aug. 24, 1978, Ser. No. 936,488

Claims priority, application Japan, Apr. 17, 1978, 53-45106

Int. Cl.² E02D *5/34*

U.S. Cl. 405—269 **5 Claims**



1. An earth auger device comprising an auger head and a hollow auger shaft rotatably connected to a driving unit, with a water swivel means connected to the upper end of the auger shaft, said auger shaft including a low-pressure mortar pipe line and a high-pressure mortar pipe line disposed therein, said lines extending through the hollow auger shaft into said auger head, said low-pressure line being connected to a pouring port in said auger head for pouring mortar into an excavated hole to form an intermediate pile, said high-pressure line being connected to jet nozzles mounted in said auger head for injecting mortar toward previously-formed piles to displace earth and to form walls connecting said intermediate pile with said previously-formed piles.

4,212,566

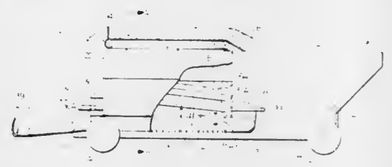
ROTARY FEEDER FOR SOLID PARTICLE INJECTION INTO PRESSURIZED FLUID SYSTEM

David T. Kao, and Don J. Wood, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Feb. 8, 1978, Ser. No. 876,165

Int. Cl.² B65G *53/46*

U.S. Cl. 406—68 **9 Claims**



1. An apparatus for injecting particles into a pressurized fluid system comprising:

a conduit including a flow of pressurized fluid therein for transporting particles and a venturi section which extends along a portion of the conduit from an upstream end to a downstream end;

said venturi section of said conduit including an opening through which particles are injected into said pressurized fluid;

a feeder roller including a plurality of inclined troughs positioned at an angle with respect to an axis of said feeder roller;

said inclined troughs extending along said feeder roller from a lower upstream end to a higher downstream end with respect to said flow of pressurized fluid within said conduit;

a flushing conduit with one end thereof in communication with said flow of pressurized fluid at a point upstream of said venturi section, said flushing conduit including a discharge end being intermittently connected to said inclined troughs at the lower upstream end thereof; and

said flow of pressurized fluid within said conduit and the flow of pressurized fluid within said flushing conduit being in the same direction and effecting an injecting of particles positioned within said inclined troughs through said opening and into said venturi section of said conduit.

4,212,567

MOUNTING ELEMENT FOR A REVERSIBLE TOOL TIP OR THE LIKE

Günter Wermeister, Ratingen, Fed. Rep. of Germany, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Oct. 17, 1978, Ser. No. 952,082

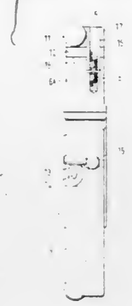
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746958

Int. Cl.² B26D *1/12*

U.S. Cl. 407—46 **5 Claims**

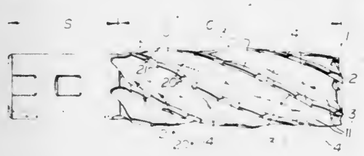
1. A mounting element for use on a rotary tool body for supporting a reversible cutting tip thereon, said supporting element comprising a cylindrical portion and an arm portion formed integrally of one piece, said cylindrical portion being configured for insertion radially into the tool body so that its cylindrical outer surface is arranged to abut an outer wall of the cutting tip to form an axial support therefor, said arm portion projecting at substantially a right angle from said

cylindrical portion to form a radial support for the tool tip, said cylindrical portion being provided with a fastening screw disposed within and projecting beyond said cylindrical portion in a direction radially inwardly of a circumference of the tool



body and being threadably connectible in a threaded radial bore of the tool body, said cylindrical portion being hollow so that the fastening screw is accessible to a screw-actuating tool from a free end of the cylindrical portion.

4,212,568
CUTTING TOOL
Alfonso Minicozzi, Anjou, Canada, assignor to IMW Industries, Inc., Montreal, Canada
Filed Mar. 26, 1979, Ser. No. 24,037
Claims priority, application Canada, Jan. 5, 1979, 319210
Int. Cl.[2] B26D *1/12*
U.S. Cl. 407—53 **12 Claims**



1. A rotary cutting tool comprising a cutting portion having a longitudinal axis and a plurality of teeth extending the length of said cutting portion, each of said teeth having a cutting face and a trailing face and a relieved land surface bridging said two faces, said relieved land surface being interrupted by a plurality of spaced transverse depressions of relatively large radius arcuate cross section to form a plurality of cutting edges at the junction of said cutting face and the uninterrupted portions of said land surface, said cutting edges having a positive rake angle, and said trailing and cutting faces having surfaces which undulate generally sinusoidally from one end of said cutting portion to the other, whereby the rake angle of each cutting edge varies continuously along its length.

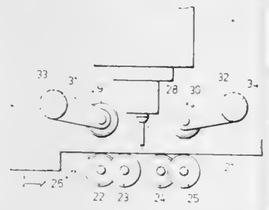
4,212,569
TUBULAR DRILL TOOL
Allan Andersson, Kungsgarden, and Bert Bergström, Sandviken, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden
Filed Oct. 6, 1977, Ser. No. 829,456
Int. Cl.[2] B23B *51/06*
U.S. Cl. 408—59 **8 Claims**

1. Drill tool comprising a tubular drill shank providing an internal longitudinal passage formed by a continuous constant thickness wall of the tubular shank, said passage extending to an outer end of said shank for conducting a cutting medium, said constant thickness wall including two planar wall portions at an angle extending longitudinally of the tool, and a non-planar wall portion extending between the outer ends of the planar wall portions, at least one of said planar wall portions having an external planar face, a cutting element fastened to and extending beyond said planar face so that the element is



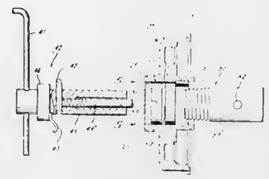
separated from the cutting medium conducted by said passage by said wall of the tubular shank, and at least one guide strip on the shank.

4,212,570
DRILLING AND ROUTING MACHINE FOR PRINTED CIRCUIT BOARDS
Bert G. K. Larsson, Tyresö, Sweden, assignor to Svenska Inhalator AB, Johanneshov, Sweden
Filed Sep. 27, 1978, Ser. No. 946,857
Claims priority, application Sweden, Sep. 27, 1977, 7710817
Int. Cl.[2] B23B *47/00*
U.S. Cl. 408—95 **5 Claims**



1. A machine for drilling and routing of printed circuit boards, comprising support means for holding and supporting a stack of superimposed boards in a predetermined support plane and for moving said stack of boards in a first direction parallel to said support plane, a tool spindle disposed above said support plane and being movable in a second direction parallel to said support plane and perpendicular to said first direction independently of said movement of said boards in said first direction, and pressure exerting means for exerting a pressure force upon said boards towards said support means in a direction substantially perpendicular to said support plane, said pressure exerting means comprising at least one roller-shaped pressing member rotatable about an axis parallel to said second direction in which said tool spindle is movable, said support means including a plurality of rollers for supporting said boards, said rollers being arranged with their axes of rotation mutually parallel and parallel to the axis of rotation of said roller-shaped members.

4,212,571
AUTOMATIC TRANSMISSIONS
Lonnie T. Reedy, and Eddie Smith, both of Freeport, Tex., assignors to Reedy and Smith, Inc., Lake Jackson, Tex.
Continuation-in-part of Ser. No. 692,432, Jun. 3, 1976, Pat. No. 4,098,382. This application Jun. 29, 1978, Ser. No. 920,186
Int. Cl.[2] B23B *41/12, 45/14*
U.S. Cl. 408—82 **4 Claims**



1. A reaming tool for reaming part way into one end of a direct clutch drum, said reaming tool comprising in operable combination,

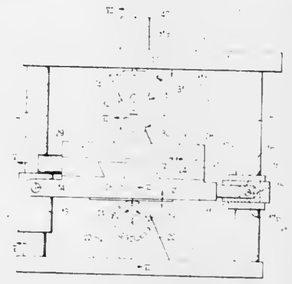
a self-centering tool guide means for insertion in the direct clutch drum, said self-centering tool guide means being provided with a tightening means for firmly positioning the said self-centering tool guide means within said direct clutch drum,

a rotatable shaft for positioning within said self-centering tool guide means, said shaft being provided with an adjustable cutting bit protruding therefrom and having means for tightly fixing said cutting bit in a pre-selected position,

said rotatable shaft being provided with a rotating means and with a depth-setting means for limiting the distance the cutting bit may enter the direct clutch drum,

the rotatable shaft being provided with a means for applying resilient axial force to cause the cutting bit to be firmly applied to the part of the direct clutch drum which is to be reamed.

4,212,572
GEAR TEETH ROTARY-SHAVING OR ROLL-FINISHING MACHINE
Qué Vu-Do, Meudon la-Foret, France, assignor to Renault Industries Equipments et Techniques-Riet, Boulogne-Billancourt, France
Continuation-in-part of Ser. No. 655,288, Feb. 4, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 924,344
Claims priority, application France, Feb. 7, 1975, 75 03825
Int. Cl.[2] B23F *19/06*
U.S. Cl. 409—37 **4 Claims**



1. Machine for finishing gear wheel teeth by shaving or rolling by means of a toothed rotary tool adapted to operate in tight meshing engagement with the gear wheel for finishing the teeth thereof, which comprises means for supporting the tool along its axis of rotation, a motor for rotatably driving said tool, means for supporting said gear wheel along its axis of rotation, the two axes of rotation of the tool and gear wheel, respectively, having at least one common perpendicular, three motorized driving means for generating respectively between said tool support means and said gear wheel support means, three powered relative movements consisting of a movement in a direction parallel to said common perpendicular and of two movements transverse to each other in planes respectively perpendicular to said common perpendicular, and synchronous programmable servo-control means for controlling said motor for rotatably driving said tool and the two motorized driving means for producing said two transverse movements.

4,212,573
BROACHING MACHINE IMPROVEMENTS
George C. Fields, Wilmette, Ill., assignor to Ty Miles, Inc., Westchester, Ill.
Filed Nov. 7, 1977, Ser. No. 848,909
Int. Cl.[2] B26D *37/08, 41/06*
U.S. Cl. 409—251 **11 Claims**



1. A broaching apparatus for use with workpieces and comprising a frame including longitudinal ways, a carriage movable along said ways and having broach holding means thereon, workpiece positioning means mounted on the frame, and a ram connected between the carriage and the frame for reciprocating the carriage, characterized by:

said ways being opposite each other with said carriage therebetween;

said carriage having four sides comprising two pair of sides with the sides of each pair being opposite each other, the sides of one of said pair engaging said ways;

said broach holding means comprising two broach holders, with a respective one being at each of the sides of the other pair;

said ram being secured to the carriage centrally between said ways and centrally between said broach holders; and

said workpiece positioning means comprising two workpiece holders, with a respective one being adjacent each of the sides of the other pair;

whereby during a broaching movement of the carriage the loading of the carriage from the broaches and broach holders is balanced with respect to the mounting of the carriage on the ways and its connection to the ram.

4,212,574
FORAGE UNLOADER DOOR AND LATCH ASSEMBLY
Melvin E. Dreier, Dumont, Iowa 50625
Filed Nov. 1, 1978, Ser. No. 956,584
Int. Cl.[2] B60P *1/40;* **A01F** *21/00;* **A01C** *3/06*
U.S. Cl. 414—502 **9 Claims**

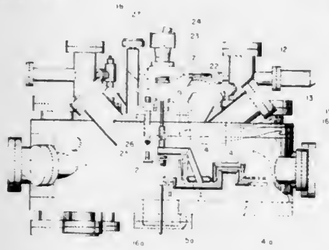
1. A material unloader, comprising:

a closed material containing body provided with an opening for access to the interior thereof,
material unloading mechanism mounted within said body and arranged for delivering material to a point exteriorly thereof,
a drive connection means mounted on said body and operatively connected to said unloading mechanism,
a drive shaft on said drive connection means adapted for connection to a source of power,
a door, means for rotatably mounting said door on said body for respective movements to closed and open positions relative to said opening,



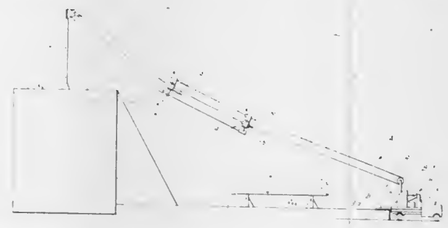
a latch assembly to selectively latch and unlatch said door relative to said body when said door is in closed position,
said door being designed for providing access to said drive shaft when said door is closed for connection of said drive shaft to a source of power,
the rotation of said door to open position causing a portion of said door to intersect a longitudinal plane passing through the connection of said drive shaft to its source of power whereby said drive shaft must be disconnected from its source of power in order to open said door, and
the open position of said door disposed to enclose said drive shaft so that it cannot be connected to its source of power until said door is moved to closed position.

4,212,575
VACUUM SEALED MANIPULATOR
E. Vincent Patrick, Lorton, and Howard K. Dickson, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 2, 1978, Ser. No. 930,437
Int. Cl.[2] B65J *1/10*
U.S. Cl. 414—8 **10 Claims**



1. A manipulator system for transporting a sample between work stations in a substantially cylindrical vacuum chamber of generally circular cross-section with a central axis normal to said cross-section comprising:
a first boom pivoted at a first end for rotation parallel to said cross-section about a boom axel parallel to said central axis;
said boom having a spindle housing and a spindle housing and a spindle jornalled therein rotatable only about the longitudinal axis of said boom;
a frame member attached to said spindle;
a sample holder attached to said frame; and
a first external control means vacuum sealed through a first circular wall of said chamber and attached to said first boom axel to translate said boom axel independently in three orthogonally related directions and to rotate said boom and frame independently about said boom axel and spindle axes, respectively.

4,212,576
PIPE HANDLING APPARATUS
Albert L. George, P.O. Box 3604, Lafayette, La. 70501
Filed Mar. 2, 1978, Ser. No. 882,656
Int. Cl.[2] E21B *19/14*
U.S. Cl. 414—22 **7 Claims**



1. An apparatus for lifting and/or lowering heavy objects and transporting them laterally comprising:
(a) a rigid frame assembly having a boom pivotally mounted thereon;
(b) a rotatable drum carried by said boom and having a helical groove therein for receiving an endless cable loop rove around the drum for frictionally gripping same but not fixedly secured thereto;
(c) a pivotally mounted rotatable sheave for receiving a loop of said endless cable;
(d) a helical groove in said rotatable drum having a sufficient length to receive a length of cable equal to the distance between such drum and said pivotally mounted sheave with a single layer of cable wrapped thereon; and
(e) hydraulic cylinder means operably connected to said pivotally mounted boom for pivoting said boom and moving said rotatable drum through an arc whereby an endless cable rove on the drum and over the pivotally mounted sheave will be slackened or tensioned by pivotal movement of the boom mounted rotatable drum.

4,212,577
GRAPPLE
Ronald V. Swanson, 410 Elm St., Port Moody, British Columbia, Canada (V3H 2Z4)
Filed Dec. 21, 1977, Ser. No. 862,865
Claims priority, application United Kingdom, Jun. 25, 1977, 26735/77
Int. Cl.[2] B65G *47/90*
U.S. Cl. 414—23 **4 Claims**

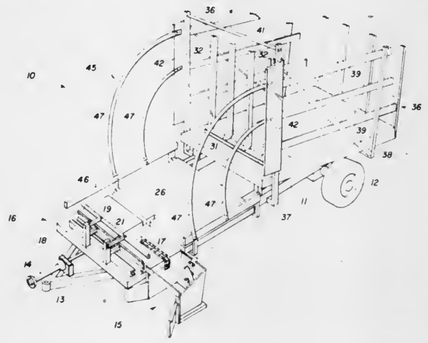
1. A grapple for attachment to a boom of a hoisting machine for handling poles comprising:
an elongated supporting frame,
support saddles mounted adjacent each of said support frame,
means for pivotally attaching said supporting frame to a boom at approximately the mid-point of said supporting frame and means associated with said attaching means for rotating said supporting frame between substantially vertical and substantially horizontal positions,
an arcuate brace plate fixedly attached to said supporting frame at approximately the mid-point thereof,

a pair of arcuate arms each being hingedly connected at one end thereof to said brace plate, said arms each having a first sprocket journalled at the distal end thereof and a second sprocket journalled at approximately the mid-point of the arc of said arms and outside of said arc,
means for pivoting said arms between open and closed positions,
sprocket means attached to said supporting frame and journalled therein,



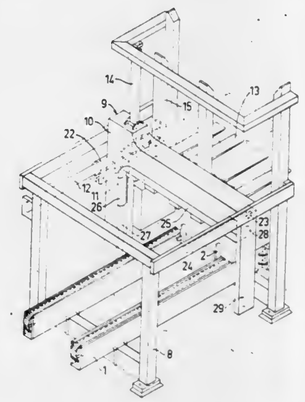
endless chain means passing around said first and second sprockets and said sprocket means and adapted to substantially encircle and grip a pole when said arms are pivoted to said closed position,
means permitting adjustment of said support saddles toward and away from said supporting frame for engaging a pole above and below said arms, and
means for reversibly driving said endless chain means around said first and second sprockets and said sprocket means for rotating a pole gripped thereby about its longitudinal axis.

4,212,578
APPARATUS FOR RETAINING BALES IN POSITION ON A BALE WAGON
L. Dennis Butler, Kingsburg, Calif., assignor to Sperry Corporation, New Holland, Pa.
Filed Mar. 30, 1978, Ser. No. 891,880
Int. Cl.[2] A01D *87/12*; B65G *57/32*
U.S. Cl. 414—39 **7 Claims**



1. In a bale wagon having a mobile chassis, a load bed pivotably affixed to said chassis, a bale-accumulating table pivotably affixed to said chassis forwardly of said load bed to transfer bales in a tier to said load bed, a bale-receiving means affixed to said chassis, forwardly of said bale-accumulating table, means to transfer bales from said bale-receiving means to said bale-accumulating table, and sideboards affixed to said chassis and extending upwardly adjacent opposing sides of said load bed, said bale-accumulating table having a length substantially equal to the distance from said load bed to said bale receiving means, the improvement comprising:
a pair of retainer means laterally positionally adjustable relative to said bale-accumulating table, said pair of retainer means being affixed to said chassis adjacent the respective sides of said bale-accumulating table and extending upwardly and rearwardly to respective sideboards adjacent said load bed and affixed thereto such that said pair of retainer means substantially defines the outer side limits of the path of pivotal movement of said bale-accumulating table during the transfer of bales to said load bed, each said retainer means encompassing an arcuate path corresponding to the pivotal movement of said bale-accumulating table, said arcuate path having a radius substantially equal to said length of said bale-accumulating table, thereby eliminating outward displacement of bales during said transfer.

4,212,579
METHOD AND APPARATUS FOR STACKING BALES
Nils E. Strömberg, Sundsvall, Sweden, assignor to Sunds Aktiebolag, Sweden
Filed Apr. 24, 1978, Ser. No. 899,319
Claims priority, application Sweden, May 4, 1977, 7705178
Int. Cl.[2] B65G *57/30*
U.S. Cl. 414—95 **12 Claims**



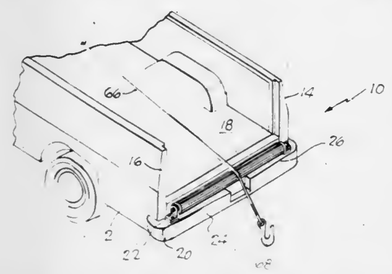
1. A method of stacking bales, comprising the steps of advancing the bales one by one in a first direction along a transport path by means of a feed conveyor to a stacking position, lifting the first bale from said stacking position to a raised position by a fork device, maintaining said first bale in said raised position with said fork device while a subsequent bale is advanced to said stacking position beneath the lifted bale, lowering said fork device toward the subsequent bale, retracting said fork device from between said first bale and said subsequent bale in a direction opposite to the first direction in which said bales are advanced so that said first bale is lowered into contact with said subsequent bale in said stacking position, lowering said retracted fork device so that it is ready to be moved forward to said stacking position, repeating the above-said steps until the desired number of bales have been positioned upon each other to form a stack in said stacking position, and moving the completed stack from said stacking position in said first direction and along said transport path directly to a receiving conveyor substantially aligned with said feed conveyor.

4,212,580
BOAT LAUNCHER FOR TRUCK BED
Ronald O. Fluck, 7th and Vine Sts., Perkasie, Pa. 18944
Filed Jun. 27, 1978, Ser. No. 919,554
Int. Cl.[2] B60P *1/04, 1/52*
U.S. Cl. 414—522 **15 Claims**



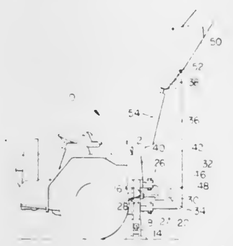
1. A support upon and from which a small boat may be longitudinally loaded and unloaded, said support including an elongated frame having front and rear ends and opposite side longitudinal members, central keel roller means journalled from the rear of said frame centrally intermediate its opposite sides, opposite side roller means journalled from opposite side portions of said frame generally centrally intermediate its opposite ends, the forward ends of said longitudinal members including upright posts, and elevated elongated horizontal transverse abutment means supported from and extending between the upper end portions of said posts for vertical adjustment relative thereto and beneath which the upper bow portion of a small boat supported from said roller means may be snugly received.

4,212,581
REAR BUMPER ROLLING LOADER
Leslie C. Pierce, 2418 Wildwood Dr., Woodward, Okla. 73801
Filed Jul. 21, 1978, Ser. No. 926,996
Int. Cl.[2] B60P *1/52*
U.S. Cl. 414—529 **5 Claims**



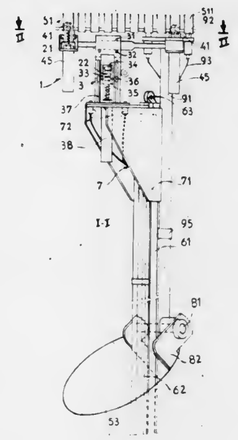
1. A rolling loader adapted to be mounted to the rear bumper of a pickup truck, which comprises:
- first and second L-shaped brackets each including a horizontal plate adapted to be bolted to the top surface of said rear bumper of said pickup truck, and a vertical plate having a circular aperture formed therein;
- a heavy, steel tube having first and second ends positioned between said first and second brackets;
- first and second ball bearing assemblies fitted respectively within said first and second ends of said tube and each including a central aperture formed therein; and
- first and second solid shafts extending through said circular apertures of said first and second brackets, respectively, and through said central apertures of said first and second ball bearing assemblies, respectively, said first and second shafts being fastened to said vertical plates of said first and second brackets, respectively, so as to define a horizontal rotational axis for said tube; wherein said rear bumper includes a rear surface extending downwardly from said top surface, the junction of said top surface and said rear surface defining the rear edge of said bumper, said tube and brackets being fastened on said bumper so that the rearmost portion of said tube extends beyond said rear edge.

4,212,582
LINKAGE TO ALLOW INCREASED ANGULAR ROTATION OF BACKHOE BOOM
Gary L. Stecklein, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Jul. 20, 1978, Ser. No. 926,555
Int. Cl.[3] E02F *3/00*
U.S. Cl. 414—694 **7 Claims**



1. In a backhoe including an upright, transverse support frame, a swing frame connected to one side of the support frame for pivoting about a vertical axis to opposite sides of a centered position, a backhoe boom having one end connected to the swing frame for vertical pivoting movement about a first horizontal axis which extends transversely, when the swing frame is in its centered position, and is spaced beyond the vertical axis from the one side of the support frame and having an opposite end pivotally connected to a dipperstick for allowing relative vertical pivoting movement between the boom and dipperstick about a second axis extending parallel to the first axis and spaced beyond the vertical axis from the one side of the support frame; a first telescopic hydraulic actuator connected between the swing frame and the boom for selectively pivoting the latter vertically through approximately 165° between extreme raised and lowered positions upon being telescoped between first and second extreme positions thereof, and a second telescopic hydraulic actuator connected between the boom and dipperstick for effecting relative pivotal movement therebetween, the improvement residing in the manner of connecting the first actuator between the swing frame and boom and comprising: said actuator having a first end directly pivotally connected to the boom; first and second links being pivotally interconnected to each other and at least one of the links also being pivotally interconnected to a second end of the first actuator, and said first and second links having respective ends respectively pivotally connected to the swing frame at a location spaced vertically from the first axis, and to the boom at a location spaced from but adjacent to the first axis; and said first and second links and said first actuator being so arranged relative to each other and the boom that when the actuator is in its first extreme position the second horizontal transverse axis will be located toward the support frame at least as far as a vertical transverse plane passing through the first horizontal transverse axis and when the actuator is in its second extreme position a line drawn through the respective ends of the first and second links will approximately pass through the first horizontal transverse axis.

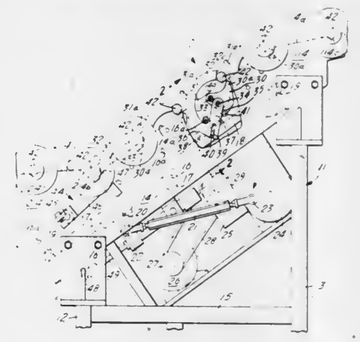
4,212,583
APPARATUS FOR USE IN POSITIONING A UNIT ON A TUBE-PLATE
Bernard Gebelin, Courbevoie, France, assignor to Framatome, Courbevoie, France
Filed Jun. 13, 1978, Ser. No. 915,208
Claims priority, application France, Jun. 15, 1977, 77 18392
Int. Cl.[2] B25J *3/00*
U.S. Cl. 414—728 **7 Claims**



1. Apparatus for use in positioning a unit successively relative to a plurality of tubes of a regular array of tubes supported by a tube-plate within an envelope provided with an access opening, said apparatus comprising: positioning apparatus for supporting the unit comprising:
- two arms,
- connecting means for insertion in the tubes and for connection thereto,
- means mounting said connection means on said arms, and
- means mounting said arms for movement relative to one another in three perpendicular directions of which one is perpendicular to the plane of the plate and two are parallel to the plane of the plate, the amplitudes of movements of said arms parallel to the plane of the plate being integral multiples of the spacing between the tubes; and transporting apparatus associated with said positioning apparatus comprising:
- a rectilinear guide rod for passing through said access opening,
- a carriage,
- means for mounting said carriage on said rod for movement therealong,
- coupling means for releasably coupling said positioning apparatus to said carriage during movement thereof between the outside and the inside of the enclosure and which is disconnectable to permit movement of said positioning means across the plate, and
- means mounting said coupling means on said carriage.

4,212,584
MATERIAL HANDLING APPARATUS
Donald O. Johnson, Matawan, N.J., assignor to American Can Company, Greenwich, Conn.
Filed Oct. 25, 1978, Ser. No. 954,469
Int. Cl.[2] B65H *5/18*
U.S. Cl. 414—748 **11 Claims**

1. In material handling apparatus, conveyor means for moving generally cylindrical articles transversely of their polar axes, comprising: means defining an inclined track for supporting said articles to be moved therealong from a higher to a lower level; a plurality of article-engaging pivotable rocker and finger elements disposed in uniformly spaced relation along said track, said rocker elements being pivotable in a direction to accommodate gravitational movement of an article along said track and present it for engagement with a successive one of said finger elements whereupon said finger element is operable to accommodate gravitational movement of said article along said track and present it for engagement with a successive rocker element, means for driving said rocker and finger elements cyclically in the recited operations thereof to accommodate controlled gravitational movement of



an article along said track from said higher to said lower level; and each said rocker element comprises a head rocker presented to the upper end of said track and a tail rocker presented to the lower end of said track, each said head and tail rocker being pivotable about a common pivot point and including an article engaging portion of generally cuspidate configuration movable above and below the plane of said track in the recited accommodation of movement of an article while engaged by said finger element.

4,212,585
CENTRIFUGAL COMPRESSOR
Michael C. Swarden, Cambridge, Mass.; Shankar S. Magge, Manchester, Conn.; Willem Jansen, Weston, and Anthony F. Carter, Newton Highlands, both of Mass., assignors to Northern Research and Engineering Corporation, Cambridge, Mass.
Filed Jan. 20, 1978, Ser. No. 870,871
Int. Cl.[2] F04D *29/44*
U.S. Cl. 415—53 R **17 Claims**



1. In a centrifugal compressor having casing structure defining inlet and outlet passages and a gas flow path between said passages,
- an impeller in said casing structure mounted for rotation about a compressor axis, said impeller having a circumferentially arranged series of impeller vanes in said gas flow path and arranged to receive gas from said inlet passage

and to discharge gas centrifugally in a radially outward direction, and

a diffuser section in said gas flow path downstream from said impeller, said diffuser section having a circumferentially arranged series of vanes in said gas flow path and extending in a radially outward direction through said diffuser section from said impeller towards said outlet passage,

an improvement for extending the stable operating range of said centrifugal compressor comprising

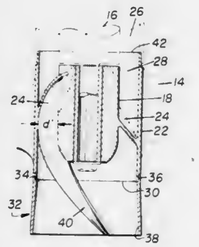
a circumferentially extending series of slots disposed at the periphery of said impeller adjacent the leading edges of the diffuser vanes, each said slot extending generally in the direction of said gas flow path, and said series of slots being disposed such that there is relative motion between said series of slots and said diffuser vanes as said impeller is driven in rotation.

4,212,586

TURBOEXHAUST HUB EXTENSION FOR A MARINE PROPELLER

Mervyn F. Aguiar, 623 Plumas Ct., Martinez, Calif. 94553

Filed Dec. 19, 1978, Ser. No. 964,597
Int. Cl.² B63H *1/16, 1/18*
U.S. Cl. 416—93 A **5 Claims**



5. In a marine propeller having a shaft receiving central hub and a blade mounting hub concentrically mounted about the central hub by radially extending vanes thereby permitting exhaust gases to flow therebetween an improvement comprising:

an annular ring adapted to be received about the hub of a marine propeller distal of the drive shaft, said annular ring having an inside dimension proximal the hub substantially equal to the inside dimension of the hub and an inside dimension distal of the hub at least equal to the inside dimension of the hub said annular ring extension having at least two inwardly projecting helical fins;

said inwardly projecting helical fins formed to meet generally in an end to end relation with the radially extending vanes mounting the mounting hub concentrically about the center hub.

4,212,587

COOLING SYSTEM FOR A GAS TURBINE USING V-SHAPED NOTCH WEIRS

Michael W. Horner, Pattersonville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

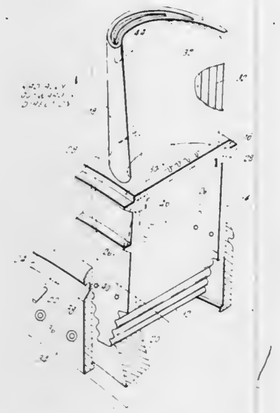
Filed May 30, 1978, Ser. No. 910,500
Int. Cl.² F01D *5/18*
U.S. Cl. 416—96 R **9 Claims**

1. An improved cooling system for a gas turbine of the type including a turbine disk mounted on a shaft rotatably supported in a casing, a plurality of turbine buckets extending radially outward from said disk, each of said buckets including a root portion mounted in said disk, a shank portion extending radially outward from said root portion to a platform portion, and an air foil extending radially outward from said platform portion, said buckets receiving a driving force from a hot fluid moving in a direction generally parallel to the axis of said shaft and the driving force being transmitted to said shaft via said turbine disk, said cooling system comprising:

(A) means located radially inward of said platform for introducing a coolant liquid in a generally radially outward direction into a plurality of shank supply channels formed in said shank portion of each of said buckets, said shank supply channels guiding said coolant liquid into a distribution channel located in said platform of each of said buckets;

(B) platform coolant channels extending from said distribution channels into foil coolant channels located in each of said buckets by which said coolant traverses the surface area of said foil; and

(C) said distribution channel comprising:



(1) a liquid coolant collection trough extending in a direction generally parallel to said axis and adapted to collect coolant liquid supplied by said shank supply channels in such a manner as to form a pool of coolant liquid in said trough;

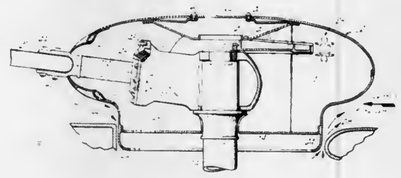
(2) a plurality of metering means for distributing coolant liquid from said pool of coolant liquid into said platform coolant channels in such a manner that each of said platform coolant channels receives a substantially equal supply of coolant liquid, each of said metering means including a V-shaped notch weir formed in said liquid coolant collection trough along the innermost radial portion of said trough such that the coolant collected in said trough can flow into said notches when the level of coolant in said trough reaches a sufficient height.

4,212,588

SIMPLIFIED ROTOR HEAD FAIRING

Evan A. Fradenburgh, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 11, 1978, Ser. No. 904,956
Int. Cl.² B64C *27/38*
U.S. Cl. 416—141 **8 Claims**



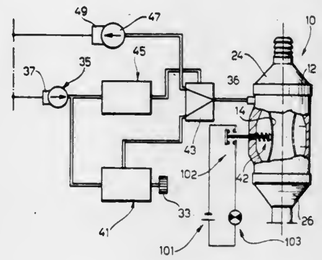
1. A fairing for enclosing the main rotor head of a multi-bladed helicopter comprising an annular streamlined member providing a chamber for said rotor head, said fairing having a plurality of peripheral cutouts, one for each blade of the rotor, and means in said chamber for preventing air which enters said chamber through one of said cutouts due to forward movement of the helicopter in flight from flowing out of said chamber through another of said cutouts, said means comprising a plurality of partitions which divide said chamber into non-communicating compartments, each of which has only one of said cutouts.

4,212,589

DEVICE FOR PRODUCING AN ARTIFICIAL BLOOD CIRCULATION

Roberto Bosio, Via Torino 227, Castiglione Torinese (Torino), Italy

Filed Sep. 20, 1978, Ser. No. 944,211
Claims priority, application Italy, Sep. 21, 1977, 69080 A/77
Int. Cl.² F04B *49/06, 43/06*
U.S. Cl. 417—12 **6 Claims**



1. Pump for producing an artificial blood circulation of the type comprising:

a tubular body having end fittings for connection to a blood circuit,

unidirectional inlet and outlet valves in respective end fittings,

an elastically deformable tubular membrane, located within the tubular body and fixed to the latter at its two ends to define a pumping chamber within the tubular membrane, in communication with the two said end fittings, and to define an annular control chamber between the tubular body and the said tubular membrane;

means for placing said annular control chamber alternately in communication with a source of driving fluid under pressure and with a source of lower pressure to deform the tubular membrane cyclically between an undeformed substantially cylindrical shape and a deformed substantially hourglass shape and vice versa, and

a pressure regulator for regulating the pressure of the driving fluid,

wherein the improvements reside in the further provision of:

a feeler supported in the tubular body of the pump for sliding movement along an axis which is substantially perpendicular to the longitudinal axis of said tubular body and is located at substantially equal distances from the ends of said tubular body;

resilient means urging the inner end of the feeler into contact with the outer surface of the tubular membrane;

a switch having fixed contact means carried by the tubular body of the pump and movable contact means carried by said feeler, said movable contact means coming into contact with said fixed contact means to close the said switch when the feeler, starting from a rest position corresponding to the undeformed configuration of the tubular membrane, has been displaced to a switch closure position corresponding to a predetermined deformation of the tubular membrane;

stop means to prevent further displacement of said feeler under the action of said resilient means after said closure of the switch

an electrical circuit which is completed upon said closure of the switch, and

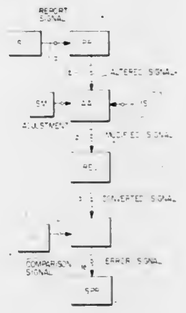
a signalling member in said electrical circuit which is energised upon closure of said switch.

4,212,590

METHOD AND APPARATUS FOR THE CONTINUOUS REGULATION OF ROTARY HYDRODYNAMIC PUMPS

Arne F. Jonsson, Hagfors, Sweden, assignor to Pumpex Production AB, Bandhagen, Sweden

Continuation-in-part of Ser. No. 785,107, Apr. 6, 1977. This application Nov. 22, 1978, Ser. No. 963,122
Claims priority, application Sweden, Nov. 24, 1977, 7713324
Int. Cl.² F04B *49/00*
U.S. Cl. 417—24 **16 Claims**



3. A method of regulating the speed of a rotary dynamic pump in dependence on a selected reference parameter, comprising the steps of:

(a) sensing, by means of a first sensor, one of the acutal and desired values of one of the two parameters, pump speed and flow rate;

(b) snesing, by means of a second sensor, the other of said values of the other of said parameters;

(c) generating an altered signal proportional to a selected power of the parameter sensed by the first sensor;

(d) generating a comparison signal proportional to the parameter sensed by the second sensor;

(e) algebraically adding a selected term to the altered signal to produce a modified signal;

(f) extracting a root of a selected power from the modified signal to produce a converted signal;

(g) feeding said converted and comparison signals into a comparator and obtaining an error signal; and

(h) feeding said error signal into a speed regulator for a pump.

13. A regulator for controlling the speed of a rotary hydrodynamic liquid pump, wherein a pump speed signal is converted into a signal related in value to the flow rate of the pump comprising:

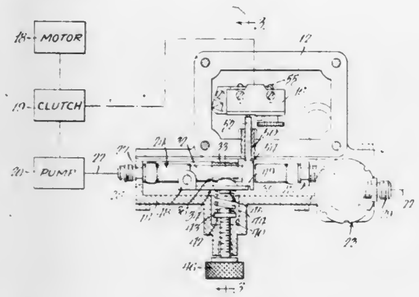
a wedge shaped float for sensing the level of a liquid in a container in fluid communication with the pump and for providing a pump speed signal related in value to a predetermined power of the pump speed;

means providing a set point related in value to a ratio between a static head of the pump and a pressure head generated by the pump at zero flow;

means for providing a signal related to the quantity A′, wherein A′ is proportional to the difference between the pump speed signal and the set point; and

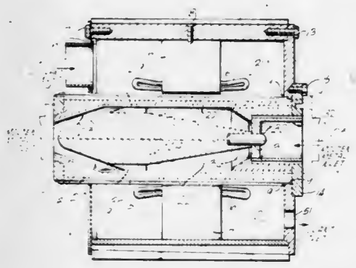
means for generating a flow rate signal responsive to a predetermined root of the quantity A′ for regulating the speed of the pump.

4,212,591
PRESSURE CONTROL FOR PUMPS
Robert E. Lamontagne, Boulder, and Jon V. Scull, Longmont, both of Colo., assignors to Binks Manufacturing Company, Franklin Park, Ill., Croyle; Carlton R.
Filed Aug. 10, 1978, Ser. No. 932,520
Int. Cl.[2] F04B *49/08*
U.S. Cl. 417—38 **5 Claims**



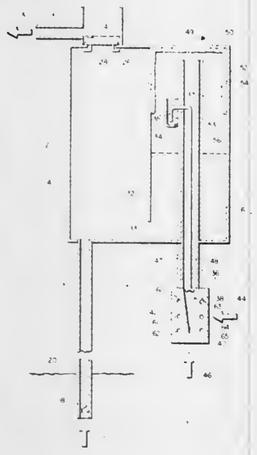
1. A device for controlling the output pressure of a pump or the like, said device comprising: an output line for transmitting fluid under pressure from said pump; said output line including a control hose portion; a plunger urged into engagement with said control hose portion by resilient biasing means for deforming said control hose portion into a predetermined configuration inconsistent with the configuration the control hose portion would assume when subjected to a predetermined variation in internal pressure; said control hose portion being movable between said configurations responsive to variations in the pressure of the fluid in the line; means responsive to the movement of said control hose portion for controlling the pump; and means for adjusting the force of said biasing means.

4,212,592
ELECTROMAGNETIC PUMP FOR MOLTEN METALS
Eugene E. Olich, Aptos, and Robert B. Weissinger, Santa Clara, both of Calif., assignors to General Electric Company, San Jose, Calif.
Filed Oct. 31, 1978, Ser. No. 956,282
Int. Cl.[2] H02N *4/20*
U.S. Cl. 417—50 **40 Claims**



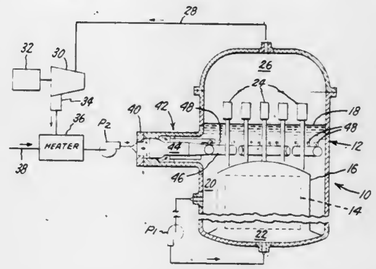
1. An electromagnetic pump for molten metals comprising:
a housing;
a duct through the housing having an inlet and an outlet;
means for introducing molten metal into the inlet of the duct;
means for producing a magnetic field within the duct to produce rotational flow of the molten metal within the duct;
an inductor having an exterior defined by a divergent first conical portion and a convergent second conical portion, said portions having facing bases and a common axis,
the divergent first conical portion having its crown facing the inlet, and the convergent second conical portion having its crown facing the outlet;
means securing the inductor to the duct; and
a plurality of flutes that span the annulus between the interior wall of the duct and exterior of the inductor in the region of the bases said flutes converting at least a substantial portion of the rotational flow of the molten metal to axial flow.

4,212,593
HEAT-POWERED WATER PUMP
Duane G. Chadwick, Logan, Utah, assignor to Utah State University Foundation, Logan, Utah
Filed Jan. 25, 1979, Ser. No. 6,319
Int. Cl.[3] F04B *19/24*
U.S. Cl. 417—53 **26 Claims**



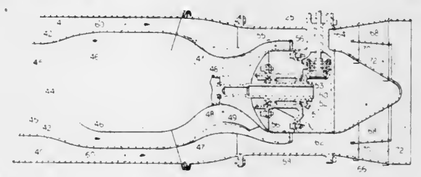
24. A method for pumping water comprising:
forming a pumping chamber with a downwardly oriented opening;
interconnecting a reservoir chamber with the downwardly oriented opening of the pumping chamber;
providing inlet check valve means and outlet check valve means to the reservoir chamber, the inlet check valve means being in fluid communication with a water source;
fabricating a vaporizing means having a predetermined heat capacity to accommodate vaporizing a predetermined quantity of volatile liquid distributed thereto;
heating the vaporizing means;
metering a predetermined quantity of volatile liquid to the vaporizing means thereby generating a vapor;
displacing water from the reservoir chamber through the outlet check valve means by delivering the vapor to the pumping chamber and forcing water from the pumping chamber with the vapor; and
replacing water in the reservoir chamber and the pumping chamber by condensing the vapor in the pumping chamber thereby creating a partial vacuum in the pumping chamber and causing atmospheric pressure to force water from the water source through the inlet check valve means.

4,212,594
LIQUID FEEDING AND MIXING ARRANGEMENT INCLUDING AN EJECTOR THERMAL SLEEVE
Russell E. Sheer, Jr., Cohoes, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jul. 24, 1978, Ser. No. 927,384
Int. Cl.[2] F04F *5/00*
U.S. Cl. 417—54 **6 Claims**



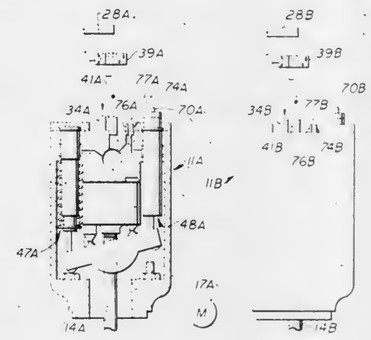
6. In a process for (a) feeding a feed liquid into a pressure vessel containing a body of liquid which is hotter than the feed liquid and (b) mixing the feed liquid with the liquid body wherein a main flow portion of the feed liquid is conducted sequentially through (1) a supply line disposed within the cavity of, and provided with an imperfect seal to, an inlet nozzle connected to the vessel, and (2) a feed liquid distribution member within the liquid body and having at least one outlet port spaced from and directed away from said nozzle such that said main flow portion exits through the port as a high-velocity jet into the liquid body, and another portion of the feed liquid forms a leakage flow past said imperfect seal and along said nozzle, the improvement comprising: providing a member defining a confined leakage flow zone within said cavity, drawing said leakage flow through said zone by suction created by said jet in a downstream portion of said zone disposed in liquid-ejecting register with said port, and ejecting said leakage flow with the main flow exiting said port.

4,212,595
AIR PUMP WITH PRIMARY AND SECONDARY INLET FLOW CHANNELS
Charles Kuintzle, Jr., Monroe, and Joseph P. Murphy, Newtown, both of Conn., assignors to Avco Corporation, Stratford, Conn.
Filed Oct. 4, 1978, Ser. No. 948,405
Int. Cl.[3] F04B *23/08*
U.S. Cl. 417—84 **5 Claims**



1. An air pump useful in pumping gases containing abrasive particles comprising:
an outer cylindrical housing having an axially extending inner duct, said duct having an inlet and an outlet;
a cylindrical shroud mounted within the housing to divide the duct into inner and outer axially extending channels;
a source of primary air flow being relatively free of contaminants connected to the inner channel;
a source of secondary airflow which is desired to be pumped, said source being connected to the outer channel of the duct;
a streamline body of revolution mounted within the housing on the axis thereof, said body positioned at the inlet end of the inner channel to cause a uniform annular primary airflow, said body supported by equi-spaced radial inlet struts connecting said streamline body of revolution with said outer housing, each of said struts along its length penetrating through a close fitting opening in the outer wall separating the primary and secondary flow channels;
a powered rotor mounted within the housing for rotation about the axis thereof, downstream of the streamlined body of revolution, the blades of said rotor extending into the inner channel of the duct to accelerate the primary airflow;
an annular shaped ejector nozzle formed in the outlet end of the shroud downstream of the rotor to cause further acceleration of the primary airflow;
a suction chamber formed in the duct downstream of the ejector nozzle to receive the high velocity primary airflow therefrom, and connected to the outer channel to receive the secondary airflow therefrom, the flow of high velocity primary airflow into said chamber serving to pump the secondary airflow through the outer channel; and
means connected to the suction chamber to dispense the contents of the suction chamber from the pump.

4,212,596
PRESSURIZED FLUID SUPPLY SYSTEM
Walter Z. Ruseff, New Lenox, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 23, 1978, Ser. No. 880,822
Int. Cl.[2] F04B *49/00*
U.S. Cl. 417—216 **12 Claims**



1. A pressurized fluid supply system for a plurality of fluid-operated devices comprising:
a plurality of variable displacement pumps each having a fluid inlet and a pressurized fluid discharge outlet for supplying fluid to a separate one of said devices and each having a displacement control element which may be shifted to vary the displacement thereof between a minimum value and a maximum value, each of said pumps having means for producing net swivel torque forces that urge said control element towards the minimum displacement position,
each of said pumps having a displacement-increasing biasing means acting on said control element for urging said control element towards the maximum displacement position with a force which increases as fluid pressure at said discharge outlet of the pump increases and which decreases as said discharge outlet pressure decreases, and further having a displacement-decreasing biasing means acting on said control element for urging said control element towards the minimum displacement position, said displacement-increasing biasing means exerting a stronger

force on said control element than said displacement-decreasing biasing means, and

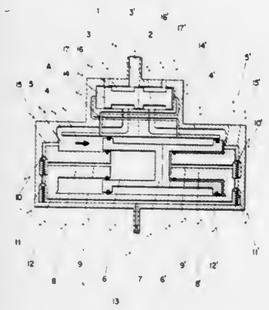
system output-limiting means for causing the discharge pressure of a first of said pumps to supplement the force exerted on said control element of a second of said pumps by said displacement-decreasing biasing means of said second pump to produce a greater displacement decrease at said second pump than occurs at said first pump when the discharge pressure of said first pump approaches a maximum value while the discharge pressure of said second pump is at a lower value.

4,212,597

PNEUMATIC INSTALLATIONS

Salvador Gali Mallofre, Londres, 29, Barcelona, Spain

Filed Jun. 29, 1978, Ser. No. 920,354
Claims priority, application Spain, Mar. 22, 1978, 468.200
Int. Cl.[2] F04B *17/00*
U.S. Cl. 417—225 **5 Claims**



1. A pneumatic device for regulating a flow of compressed fluid to a compressed fluid tank, said tank being used to supply compressed fluid for powering pneumatic machinery and being recompressed by compressed fluid from said device, said device comprising:

a valve housing having a fluid feed inlet, first and second exhaust ports, first and second reversible thrust flow ports, and first and second control ports;

a control piston reciprocatingly slidably mounted within said valve housing, said control piston having a shape for defining with said valve housing first and second opposed chambers at opposite ends of said control piston, and said piston further having first and second distribution chambers for alternately defining passages between said fluid feed inlet and said first and second reversible thrust flow ports, and dimensioned such that when one of said thrust flow ports communicates with said fluid feed inlet, the other of said thrust flow ports communicates with a corresponding one of said exhaust ports, said opposed chambers having said control ports located correspondingly communicating therewith;

a recompression housing having first and second thrust chambers and first and second protrusions at opposite ends thereof, said protrusions having recompression passages therein which communicate with said first and second thrust chambers, respectively, said recompression passages having one way valves therein for allowing fluid flow from said thrust chambers to said recompression passages, said recompression housing having a single outlet conduit leading from said recompression housing, said recompression housing further having first and second tank flow passages respectively connecting said first and second recompression passages with said outlet conduit, said tank flow passages having tank one way valves for allowing fluid flow from said recompression passages to said single outlet conduit;

a recompression piston reciprocatingly slidably mounted within said recompression housing, said recompression piston having a shape whereby said thrust chambers are located at opposite ends thereof, said piston being supported by said protrusions and further shaped for cooperating with said protrusion for defining therewith first and second recompression chambers, each of said recompression chambers communicating with a respective recompression passage;

first and second reversible thrust flow passages connecting said first and second thrust flow ports, respectively, with said first and second thrust chambers;

first and second control passage, connecting said first and second opposed chambers, at said control ports, with said second and first thrust chambers, respectively, only one of said control passages being open at a time according to the position of said recompression piston within said recompression housing; and

whereby all of the above elements cooperate so that when compressed fluid is fed through said fluid feed inlet, said fluid passes through one of said control piston distribution chambers, which defines one of said distribution passages to said first reversible thrust flow passage and into said first thrust chamber and further passes, through said corresponding recompression passage one way valve and recompression passage, into said first recompression chamber, thereby displacing said recompression piston in a first direction and thereby causing compressed fluid in said second thrust chamber and recompression chamber to be expelled through corresponding reversible thrust flow and recompression passages, said fluid in said second thrust chamber passing out through said second exhaust port and said fluid in said second recompression chamber passing through said corresponding recompression passage to said corresponding tank passage valve and further, through said corresponding tank passage to said outlet conduit and therefrom to said compressed air tank, simultaneously, said recompression piston opening said first control passage as a result of said recompression piston movement, and compressed fluid flowing through said first control passage for causing said control piston to move, for causing the elements opposite to those recited cooperating elements to cooperate in the same manner as recited, the operation of said device being cyclical and continuous.

4,212,598

TRAFFIC-OPERATED AIR-POWERED GENERATING SYSTEM

Dwain F. Roche, Manhattan, and Stanley E. Banks, New Strawn, both of Kans., assignors to Energy Development Corporation, New Strawn, Kans.

Filed Jul. 20, 1978, Ser. No. 926,334
Int. Cl.[2] F04B *35/00, 43/05*
U.S. Cl. 417—229 **9 Claims**

1. For use in association with a surface along which recurrent traffic moves, an energy conservation system comprising:

A fluid pump operable through a pumping stroke to emit a slug of fluid through an outlet of the pump,

said pump further being operable through a suction stroke to intake a new supply of fluid through an inlet of the pump;

a first check valve operably associated with said inlet of the pump for permitting fluid flow into the pump through said inlet during said suction stroke and for precluding fluid flow out of the pump through said inlet during said pumping stroke;

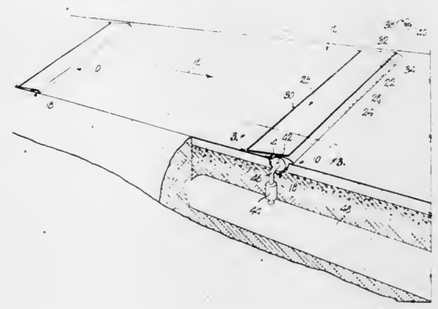
a second check valve operably associated with said outlet of the pump for permitting fluid flow out of the pump through said outlet during said pumping stroke and for precluding retrograde fluid flow into the pump through said outlet during said suction stroke;

means for disposing said pump in force-transmitting relationship to said surface;

a traffic-operated actuator disposed in force-transmitting relationship with said pump in opposition to said surface for receiving operating impulses from said traffic; and

fluid-operated means coupled in flow communication with said outlet of the pump beyond said second check valve for receiving slugs of pressurized fluid from the pump and for performing a work function,

said pump including a resilient device having a variable volume pumping chamber associated therewith, said device flexing to a position of minimum chamber volume during said pumping stroke and returning to a position of maximum chamber volume during said suction stroke,



said device comprising a resiliently walled tube disposed transversely of the path of travel of said traffic,

said tube being provided with a bearing member between the tube and said actuator for preventing direct physical contact between said actuator and the tube,

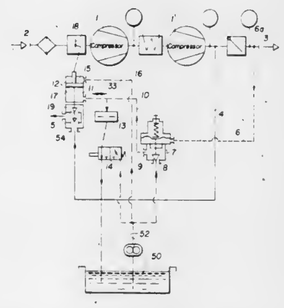
said surface including a recess receiving said tube, said recess having a liner therein between the surface and the tube, said bearing member being hingedly secured to said liner for flexure with the tube during said pumping and suction strokes thereof.

4,212,599

METHOD AND DEVICE FOR REGULATING THE OUTPUT QUANTITY OF COMPRESSED MEDIUM OF SINGLE AND MULTI-STAGE SCREW AND TURBO COMPRESSOR SYSTEMS

Heinz Lantermann, Kirchhellen, Fed. Rep. of Germany, assignor to Gutehoffnungshütte Sterkrade Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 18, 1978, Ser. No. 934,889
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737677
Int. Cl.[2] F04C *29/10*
U.S. Cl. 417—295 **10 Claims**



1. A device for regulating the output quantity of a gaseous medium of a compressor system having a suction for the compressors for receiving the gaseous medium and a discharge for the compressors for discharging compressed gaseous medium, comprising:

flow control means in the suction for throttling the flow of the gaseous medium to the compressor system,

a control piston connected to said flow control means for actuating the throttling of the flow,

a cylinder,

said control piston having a piston part disposed within said cylinder defining a first and second chamber on opposite sides thereof,

a bleed valve having a passage connected to the discharge and to atmosphere and valve seat means adjacent said passage,

valve means connected to said control piston and movable in said passage between a position in which said valve means engages said valve seat means for closing said passage and a position in which said valve means disengages from said valve seat means for opening said passage,

a reservoir for holding a liquid,

pump means for pressurizing and pumping at least part of the liquid from said reservoir,

conduit means connected between said pump means and said cylinder to provide a constant fluid pressure to said first chamber,

a pressure regulator connected between said pump means and said cylinder for passing the pressurized liquid from said pump means to said second chamber responsive to the gaseous pressure in the discharge, said pressure regulator being operatively connected to said discharge,

a fluid throttle shunt means between said pressure regulator and said control piston for delivering liquid to said reservoir, and

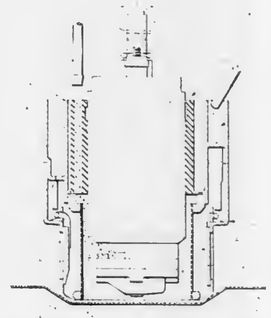
said control piston being operative to open and close said passage of said bleed valve and to actuate said flow control means responsive to the fluid pressure in said first and second chambers.

4,212,600

VEHICLE FUEL TANI. HAVING VENTED INTERNAL FUEL PUMP

Heinz Otto, Wolfsburg; Helmut Hoppmann, and Bodo Henning, both of Brunswick, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,698
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748963
Int. Cl.[2] F04B *17/00;* **F01D** *5/10*
U.S. Cl. 417—360 **3 Claims**



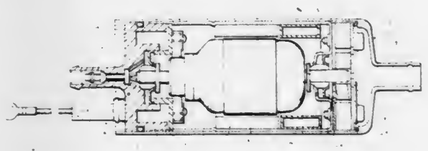
1. A fuel pump assembly for mounting within a vehicle fuel tank comprising a reserve tank which is arranged to stand essentially perpendicularly on the bottom of said fuel tank and

which is equipped with valve means for allowing the influx of and preventing the outflow of fuel, a fuel pump having an inlet and mounted within said reserve tank by at least one noise dampening cylindrical intermediate layer, a filter screen mounted to said reserve tank, surrounding said pump inlet and forming an intake chamber, a vent conduit sealed against fluid entry from said fuel tank and a vent channel bypassing said intermediate layer and connecting said intake chamber upstream of said pump inlet with said vent conduit.

4,212,601
MOTOR PUMP

Yoshifumi Ina, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 802,532, Jun. 1, 1977, Pat. No. 4,181,473. This application Aug. 11, 1978, Ser. No. 932,933
Claims priority, application Japan, Jul. 1, 1976, 51-78567; Jul. 1, 1976, 51-78568; Aug. 22, 1977, 52-100275
Int. Cl.² F04B *17/02, 35/00*
U.S. Cl. 417—365 **5 Claims**



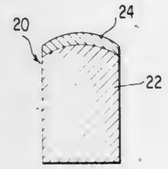
1. A motor pump comprising:
a motor unit including a cup-shaped ferromagnetic yoke member having one end open, the other end being a bottom portion having an opening, magnetic field supplying means in said yoke member, an armature integral with a shaft having a portion extending through said opening in the bottom of said cup-shaped yoke member, a bearing holder sealed securely to said open end of said cup-shaped yoke member having a fluid outlet member, and first and second bearing means secured respectively in said opening in the bottom portion of said cup-shaped yoke member and to said bearing holder for carrying said shaft, and
a pump unit including a pump stator secured to the bottom portion of said cup-shaped yoke member for defining a pump chamber into which said shaft extends, a rotor disposed in said pump chamber, and a fluid inlet member for communicating said fluid inlet member with said pump chamber and a pump outlet member for communicating said pump chamber with the inside of said motor unit,
connecting means including at least one keyway and a key tpe member mating therewith with a gap therebetween for connecting said shaft and rotor,
said pump stator further having means for communicating said connecting means including said gap with said fluid inlet member to cause fluid flow in a direction from said motor unit to said fluid inlet member to prevent rust from gathering on said connecting means including said gap.

4,212,602
WEAR-RESISTANT COATING FOR SEALING STRIPS IN ROTARY ENGINES

Ulrich Buran, and Horst Beyer, both of Burscheid, Fed. Rep. of Germany, assignors to Goetzewerke Friedrich Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Aug. 8, 1975, Ser. No. 603,249
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1974, 2438923
Int. Cl.² F01C *19/04;* **B23K** *9/04*
U.S. Cl. 418—178 **27 Claims**

1. In a method of providing a wear-resistant coating on a sealing strip of a rotary engine having a trochoidal chamber made of a supereutectic aluminum-silicon alloy comprising applying a coating consisting essentially of chromium or a chromium alloy containing at least about 20% by weight chromium, and wherein said alloy contains between about 3% and about 80% of at least one of the alloying elements iron, manganese, nickel, cobalt, molybdenum, tantalum, niobium, tungsten, zirconium, or titanium, the improvement wherein said coating is applied as a powder which contains at least one of the elements hydrogen, nitrogen and oxygen, and

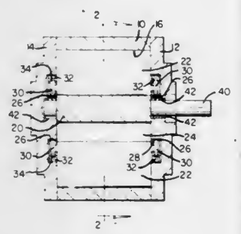


when hydrogen is present in said powder, it is present in an amount of 0.1% to 0.5% by weight;
when nitrogen is present in said powder, it is present in an amount of 0.005% to 0.5% by weight; and
when oxygen is present in said powder, it is present in a level of 0.5% to 2.5% by weight.

4,212,603
ROTARY VANE MACHINE WITH CAM FOLLOWER RETAINING MEANS

Ronald E. Smolinski, 4081 Forest Ridge Blvd., Dayton, Ohio 45424

Filed Aug. 18, 1978, Ser. No. 934,952
Int. Cl.² F01C *1/00;* **F03C** *3/00;* **F04C** *1/00, 17/00*
U.S. Cl. 418—256 **13 Claims**

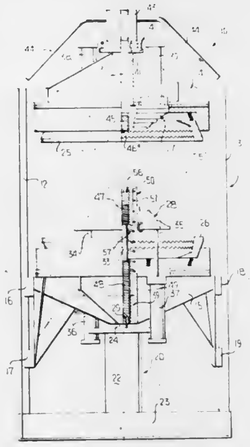


1. A rotary machine comprising:
a stator housing having an inner surface defining a stator chamber, said housing further defining inlet and outlet ports through said housing into said chamber,
a substantially cylindrical rotor rotatably mounted within said chamber for rotation about a rotor axis,
a plurality of vanes slidably received in said rotor and movable therewith about said rotor axis during rotation of said rotor with tip portions of said vanes projecting outwardly toward said inner surface of said stator housing,
continuous, substantially cylindrical, cam surface means defining a camming surface substantially concentric with said inner surface of said stator housing,
cam follower means mounted on each of said vanes contacting said substantially cylindrical camming surface, and
cam follower retaining means being free to rotate with respect to said cam surface means, defining a substantially cylindrical retaining surface concentric with said camming surface, said substantially cylindrical retaining surface being defined within a groove on said cam follower retaining means, said retaining means engaging said cam follower means within said groove and urging said cam follower means against said cam surface means, whereby said cam follower means position said vanes during rotation of said rotor and relative axial movement between said cam follower retaining means and said vanes is prevented.

4,212,604
RIMLESS, PRODUCTION MOLD

Kenneth T. MacMillan, 347 Hazel St., P.O. Box 557, Macon, Ga. 31202

Filed Jan. 9, 1979, Ser. No. 2,064
Int. Cl.² B29H *5/04*
U.S. Cl. 425—19 **20 Claims**



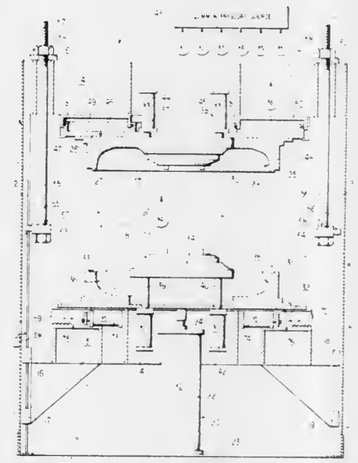
1. A retreading mold comprising first and second relatively movable platens, means for moving said platens between first adjacent closed and second remote open positions, first and second matrices carried by said first and second platens defining in said first position a chamber within which is adapted to be housed a tire to be retreaded, means for locking said platens in said first position, said locking means including a pair of generally coaxial shafts, a first of said shafts being carried by said first platen and a second of said shafts being carried by said second platen, said first and second shafts having respective first and second end portions in generally opposing relationship to each other when said platens are in said first position, means coupling said first and second end portions to each other when said platens are in said first position for locking said platens in said first position, and means positionable between said coupling means and said first shaft when said platens are in said second position for axially adjusting the position of said second platen relative to said second shaft upon rotation of said first shaft whereby said platens can be locked at different distances from each other in said first position.

4,212,605
MOLDING MACHINE WITH EXPANDABLE CHAMBER AND LOCKING MEANS

Kenneth T. MacMillan, Macon, Ga., assignor to Donald MacMillan & Son, Inc., Macon, Ga.

Filed Apr. 23, 1979, Ser. No. 32,401
Int. Cl.² B29H *5/04*
U.S. Cl. 425—20 **21 Claims**

1. A retreading machine comprising in combination:
first and second opposed relatively movable mold bodies defining in a closed position thereof a generally annular mold cavity adapted to receive therein a tire to be retreaded which tire has an inner surface defining an annular tire chamber;
said first and second mold bodies being carried by respective first and second supports;
means for moving said first and second supports relative to each other thereby moving said first and second mold bodies relative to each other between said closed position and an open position at which said first and second mold bodies are in relatively spaced relationship;
a pair of relatively movable telescopic members defining another chamber;
one of said telescopic members being carried by said first support and another of said telescopic members carried by said first support and carrying said first mold body;
said another chamber having an area of a size at least equal to the area of said annular tire chamber;
means for pressurizing said another chamber when said mold bodies are in the closed position thereof thereby to move said telescopic members relative to each other and thereby urge said mold bodies into intimate engaging relationship;
means for pressurizing a tire within said annular tire chamber when said mold bodies are in the closed position thereof;



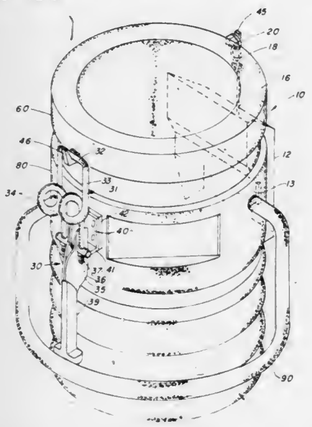
the net effect of said pressurizing means in conjunction with the areas of said another and annular tire chambers being such as to urge the mold bodies at all times in the closed position of said mold bodies into intimate engaging relationship against oppositely acting pressure within said annular tire chamber which tends to urge said mold bodies out of intimate engaging relationship;
first and second axially opposed relatively movable bead aligner wheels;
said second bead aligner wheel being carried by said second support;
said first and second bead aligner wheels being disposed generally centrally of said first and second mold bodies, respectively, and in part defining said annular mold cavity in said closed position;
first and second means for respectively moving said first and second bead aligner wheels individually relative to each other and relative to said first and second mold bodies; and
said first bead aligner wheel and said first moving means therefor being carried by said another telescopic member.

4,212,606

QUENCH STACK REEL ASSEMBLY AND CLAMPING DEVICE

Harold G. Sachleben, Sr., Bellmawr, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 25, 1978, Ser. No. 909,427
Int. Cl.² B29C *25/00*
U.S. Cl. 425—72 S **4 Claims**



1. Apparatus for bringing into proximity and connecting a quench stack and the apparatus next upstream of said quench stack, comprising:

(A) a first keeper element, which is mounted on said upstream apparatus;

(B) a reel assembly, comprising:

(1) a reel which is biased to retract and which is mounted to said quench stack;

(2) a cable, which is engageable at one end to said first keeper element and which is fastened at its other end to and which retracts by means of said reel;

(C) a second keeper element, which is mounted on said upstream apparatus; and

(D) a toggle clamp, which is mounted on said quench stack and which comprises a drawpiece, said drawpiece comprising a rod which is curved into a "U" shape, the base of which engages with said second keeper element, each of the legs of said "U"-shaped rod describing a circle bend prior to terminating in a threaded shank for mounting to said clamp, said rod approximating a circle in cross-section, the ratio of the mean diameter of said circle bend to the diameter of said rod ranging from 3 to 5.

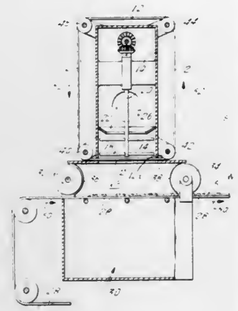
4,212,607

FIBER DISTRIBUTOR

Fredric N. Miller, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jun. 23, 1978, Ser. No. 918,691
Int. Cl.² B28B *5/00*
U.S. Cl. 425—83.1 **2 Claims**

1. An apparatus for forming a uniform web of dry fibers, comprising: a fiber distributor including a housing having a bottom outlet opening; driven impellers in said housing adjacent said opening; means defining a tunnel extending beneath said opening, in air flow communication therewith; a forming wire disposed beneath said opening, and mounted for unidirectional travel through said tunnel; means for sealing the ends of said tunnel against air leakage while accommodating the recited travel of said forming wire; means for producing a vacuum below said forming wire; a screen mounted for unidirectional travel over said bottom outlet opening and above said tunnel, said last recited travel being in the direction of travel of said forming wire, that portion of the screen traveling over said opening being the sole portion thereof confronting said forming wire; and means for introducing dry fibers to said distributor housing for discharge from said bottom outlet opening,



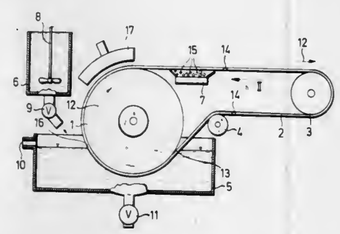
under the influence of said impellers, through said screen onto said forming wire as said screen and said forming wire travel, respectively, above and through said tunnel.

4,212,608

METHOD AND APPARATUS FOR THE PRODUCTION OF MOLD BODIES

Chatty Rao, Bergisch Gladbach, and Bruno Schmitz, Cologne, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jul. 11, 1978, Ser. No. 923,695
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731831
Int. Cl.² B29C *1/00, 25/00*
U.S. Cl. 425—85 **6 Claims**



1. An apparatus for the production of molded bodies comprising:

a container for holding a slurry,

a rotatable suction drum partly immersed in said slurry,

an endless molding belt trained about said drum comprising a plurality of individual molding cavities open at both ends, and

a roller device capable of agitating and classifying the molded bodies formed on said belt and positioned below said belt to receive molded bodies as they drop from said cavities.

4,212,609

METHOD AND APPARATUS FOR PRODUCING SHAPED AND SIZED FOOD ARTICLES

Rudolph J. Fay, 6911 Wildflower Trail, Cincinnati, Ohio 45200

Filed May 17, 1978, Ser. No. 906,452
Int. Cl.² A21C *11/00;* A22C *7/00;* B29C *3/02*
U.S. Cl. 425—100 **16 Claims**

1. A machine for producing configurated products comprising:

a rotary die roll having an open interior and cavities arranged in a series of circumferential rows, the cavities of the circumferential rows being aligned in columns longitudinally of the roll,

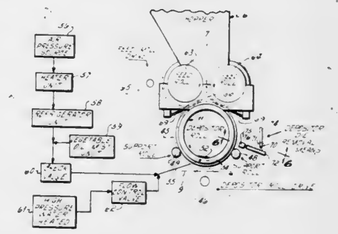
movable dies disposed in each of said cavities, said dies being made from a porous material,

means for introducing said product into said die cavities,

means for ejecting said product from said cavities, said ejection means comprising

means for moving said dies outwardly in said cavities until the outer surfaces of said dies are approximately flush with the surface of said roll, and

gas supply means including longitudinal passages in said die roll for supplying gas at a regulated pressure through said passages in said die roll to the underside of



said porous dies and outwardly through said porous dies as said dies are moved outwardly in said die cavities, said gas being operable to eject said product from said dies and to prevent said product from sticking to and clogging the pores of said porous dies, said gas supply means including a port plate sequentially connectable with said longitudinal passages during rotation of said die roll, conduit means connecting said gas supply means to said port plate, and

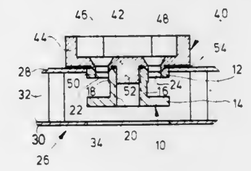
means including control valve means for selectively directing high temperature, high pressure water to said port plate and to said passages during rotation of said die roll so as to clean said passages and cavities of product contained therein.

4,212,610

DEVICE USED IN FIXING WITH A CASTING MATERIAL A SLEEVE INSERT HAVING A TERMINAL FLANGE

Dieter H. Weidlich, Frankfurt am Main, and Willy Brückner, Donauwörth, both of Fed. Rep. of Germany, assignors to Camloc Fastener GmbH, Kelkheim, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,640
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750829
Int. Cl.² E04B *2/38;* B29C *27/00*
U.S. Cl. 425—110 **10 Claims**



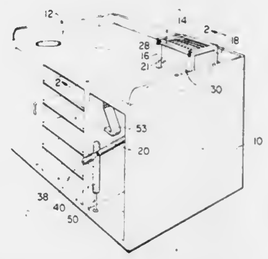
1. For use in setting and sealing a threaded member in a recess in a laminar composite board-like member by injecting casting material into the recess and around the threaded member disposed therein, the threaded member having a flange-like head intended to be secured in or closely adjacent the recess opening in the outer surface of the board-like member, a body portion for extending from the flange-like head into the recess, a threaded bore extending through the flange-like head into the body portion, and charging and venting openings in the flange-like head for communicating with the interior of the recess; a setting device comprising a plate-like body of larger diameter than the recess opening and having charging and venting openings corresponding to those of the threaded member such that the plate-like body can be intimately applied with its underside against the flange-like head of the threaded member with the respective charging and venting openings in alignment, a cylindrical non-threaded member projecting centrally from the underside of said plate-like body for frictional detachable engagement in the threaded bore of the threaded member, and an upstanding collar on the upper side of said plate-like body surrounding the charging and venting openings therein and forming a bowl-like container thereabout to hold any casting material issuing from either of the openings after injection through said charging opening into the interior of the recess, said collar having at least one pair of opposed flattenings on its periphery for application of a wrench, whereby said setting device can be coupled with a threaded member, the threaded member can then be mounted with clearance in a recess in a composite board-like member, casting material can be injected through the charging opening to harden in the recess around the threaded member, with any excess casting material issuing from the venting opening being contained within the bowl-like container formed by said upstanding collar, the setting device can be rotated by a wrench to shear off casting material in the charging opening or the venting opening between the plate-like body and the flange-like head, and the setting device can be removed from the set and sealed threaded member.

4,212,611

APPARATUS FOR FORMING INDIVIDUAL SERVING PORTIONS OF A FROZEN DAIRY CONFECTION

Max B. Hughes, Rte. A, Clear Lake Riviera, Lower Lake, Calif. 95457

Filed Nov. 20, 1978, Ser. No. 962,364
Int. Cl.² A23P *1/00*
U.S. Cl. 425—114 **12 Claims**



1. An apparatus for forming, from a block of frozen dairy confection, individual serving portions, the apparatus comprising:

a die defining a plurality of apertures;

means for retaining said die in a generally horizontal fixed position;

means for moving the block through said die;

a lever arm adapted for rotational movement about an axis between its ends, said lever arm having one end pivotally connected to said block moving means and the other end pivotally connected to said retaining means; and

means connected to said lever arm for controlling the rate of rotation of said lever arm so as to move said block moving means toward said die, and thereby to move a block through said die whereby the individual serving portions exit the apertures defined by said die.

4,212,612

APPARATUS FOR ENCLOSING A PLURALITY OF CONDUCTORS IN A PARTITIONED JACKET

George F. Piper, Baltimore; William C. Vesperman, Bel Air, and Max K. Wilson, Cockeysville, all of Md., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 943,425, Sep. 15, 1978. This application Jul. 5, 1979, Ser. No. 55,129
Int. Cl.[2] B29F *3/10*
U.S. Cl. 425—114 5 Claims



1. An apparatus for enclosing at least two groups of insulated conductors, which are disposed in a planar array, in a common, substantially symmetrical jacket, said apparatus comprising:

means for causing at least two groups of individually insulated conductors which are disposed in a planar array to be moved in adjacent paths along at least an exit portion of which the groups are spaced apart a predetermined distance and then for causing the groups to be moved along converging paths in which each group of conductors is capable of being moved within the array; and

means for flowing a plastic material about the array to enclose it in a jacket and between the groups to achieve an equilibration of pressure in the plastic material about each group and control lateral movement of the groups of conductors within the array while forming a web between the groups which is integral with the jacket and which may vary along the length of the array to compensate for conductor size variations, said means being effective to cause the web which separates the groups in the jacketed array to have a thickness which is substantially less than said predetermined distance.

4,212,613

APPARATUS FOR HANDLING HEAT-SOFTENABLE BATCH MATERIAL

Stephen Seng, Frazeysburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 809,595, Jun. 24, 1977. This application Dec. 1, 1978, Ser. No. 965,632
Int. Cl.[2] B28B *17/00*
U.S. Cl. 425—141 10 Claims



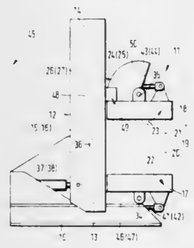
1. In an apparatus for pelletizing a batch of particulate material, said apparatus comprising pellet forming means having a movable surface comprising a slanted rotatable member, means for moving said surface, means for supplying particulate batch material to said pellet forming means, means for supplying liquid to said pellet forming means, said apparatus being so arranged and constructed that said liquid and particulate batch material combine to form pelletized batch material, the improvement comprising means for directly sensing the depth of the batch material on said pellet forming means, and means for changing the ratio of the liquid to the particulate material in response to a change in the depth which is sensed.

4,212,614

DISC BRAKE HOLDING DEVICE FOR PIVOTAL ELEMENTS OF EXPANDABLE PLASTICS MOLDS

Karl Holzinger, Bad Oeynhausen, Fed. Rep. of Germany, assignor to Herbert Kanngiesser GmbH & Co., Vlotho, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,372
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822178
Int. Cl.[2] B29C *1/00*
U.S. Cl. 425—214 4 Claims



1. An apparatus for molding shaped articles from expandable plastics such as polyurethane, including a base support (**10**), a mold holder (**11**) mounted to the support for pivotal movement about a first axis (**36**), a pair of clamping plates (**17**, **18**) mounted to the mold holder for pivotal movement about respective second and third axes (**34**, **35**), said plates being disposed opposite each other and one above the other when said mold holder is in a vertical position, a pair of mating mold parts (**20**, **21**) individually mounted to said clamping plates, means (**28**, **29**) for moving one of said plates toward and away from the other plate, and a special holding device for locking one of the clamping plates or the mold holder to prevent any undesired movement thereof, characterized by:

the special holding device comprising a controllably energizable disc brake unit (**49**) cooperably mounted with respect to a brake disc (**50**).

4,212,615

ROTARY DRUM AGGLOMERATING APPARATUS

Earl W. Bennethum, Coopersburg, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 672,373, Mar. 31, 1976, abandoned. This application Sep. 13, 1977, Ser. No. 832,841
Int. Cl.[2] C10B *1/10;* C22B *1/16, 1/216*
U.S. Cl. 425—222 6 Claims

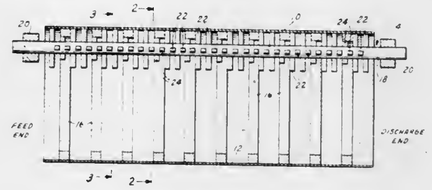
1. Agglomerating apparatus to control the size of carbonaceous material formed into agglomerates in a drum, comprising:

(a) a drum rotatable about a central axis thereof, an exposed inner wall of said drum uniformly spaced from said axis throughout the length of said drum, and feed and discharge means for introducing and removing material therefrom,

(b) a plurality of raised annular ribs affixed to said inner wall,

(c) a rotating shaft extending into said drum, and offset from said central axis of said drum,

(d) a plurality of scraper blades projecting from said shaft, where a predetermined number of said scraper blades are of a given length and adapted to scrape accumulated carbonaceous material from said inner wall of said drum when said drum and shaft are rotated, and



(e) the remainder of said scraper blades having a lesser length, whereby said blades of a lesser length are interposed between said blades of a given length so as to scrape accumulated carbonaceous material from the top portion of said annular ribs about said inner wall.

4,212,616

APPARATUS FOR FORMING BOARDS FROM PLANT FIBERS

Sydney E. Tilby, Victoria, Canada, assignor to Intercane Systems, Inc., Windsor, Canada

Filed Aug. 10, 1978, Ser. No. 932,545
Int. Cl.[2] A01N *9/00*
U.S. Cl. 425—256 18 Claims



1. Apparatus for forming plant fibers into boards comprising:

means for delivering plant fibers in random orientation, said fibers bearing a binder substance;

means for compressing and reorienting said fibers for forming slugs thereof in which said fibers are oriented in substantially parallel relationship;

chamber forming means forming a plurality of chambers for receiving and compressing the slugs;

means for discharging a plurality of said slugs one at a time for said slug forming means into one of said chambers;

said discharging means including plunger means which enters said chamber as said plunger means pushes a slug thereinto, to compress each slug as said slug is inserted into said chamber; and

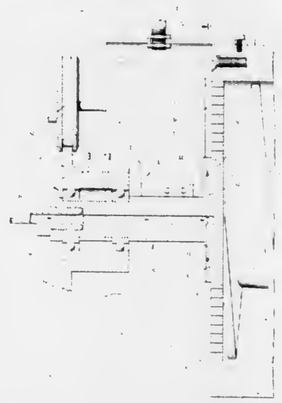
means for sequentially aligning said chambers with said discharging means so that said discharging means successively fills each chamber with slugs, said binder substance being solidified in each chamber as the slugs in each chamber are compressed by said chamber forming means to bond the binder substance and fibers within each chamber to form a board of unified fibers within each chamber.

4,212,617

APPARATUS FOR PRODUCING A FLOW OF SHORT CHEESE STRANDS

Henry J. Bagdan, Rutherford, N.J., and William A. Blain, Spring Valley, N.Y., assignors to Nabisco, Inc., East Hanover, N.J.

Filed Apr. 30, 1979, Ser. No. 34,581
Int. Cl.[2] A01J *27/00, 25/15*
U.S. Cl. 425—311 9 Claims



1. Apparatus for producing a continuous flow of short strands of cheese comprising in combination an extruder having a dieplate formed with a plurality of die aperatures arranged in an annular band for extruding cheese in a plurality of individual strands, a formation positioned centrally with respect to said dieplate and extending away from said extruder, said formation being provided with a plurality of air nozzles spaced about the periphery thereof, each nozzle being directed outwardly adjacent to said dieplate and across said band of aperatures, air passageway means extending through said formation to said nozzles, means for connecting a source of pressurized air to said passageway means whereby air streams issue from said nozzles to case harden the cheese strands, a knife member, means for mounting said knife member in contact with said dieplate for movement along said annular band to periodically sever said cheese strands to produce short strand pieces, conveyor means positioned beneath said extruder to catch said pieces, and means for directing said pieces downwardly toward said conveyor including a downwardly facing hood positioned at the end of said extruder and a downwardly directed air nozzle mounted in the top of said hood.

4,212,618

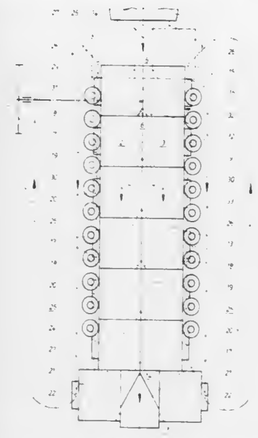
APPARATUS FOR THE MANUFACTURE OF TRANSVERSELY CONTOURED TUBING FROM THERMOPLASTIC MATERIAL

Wilhelm Hegler, Goethestrasse 2, (D-8730), Bad Kissingen, Fed. Rep. of Germany and Ralph-Peter Hegler, Bad Kissingen, Fed. Rep. of Germany, assignors to Wilhelm Hegler, Bad Kissingen, Fed. Rep. of Germany

Filed Jul. 3, 1979, Ser. No. 54,417
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832350
Int. Cl.[2] B29C *17/07;* B29D *7/22*
U.S. Cl. 425—326.1 21 Claims

1. In an apparatus for the manufacture of tubing from a thermoplastic material comprising an extrusion nozzle which supplies a tube of thermoplastic material in a plastic state, a mold train in facing relationship to said extrusion nozzle, which mold train comprises at least two pairs of cooperating mold halves, means for moving said pair of mold halves along a straight molding run, first transfer means for separating said

mold halves, return means for returning the separated mold halves along separate return runs to a position facing the nozzle and second transfer means for re-joining said separated mold halves, and wherein the improvement comprises that said first transfer means, said second transfer means and said return



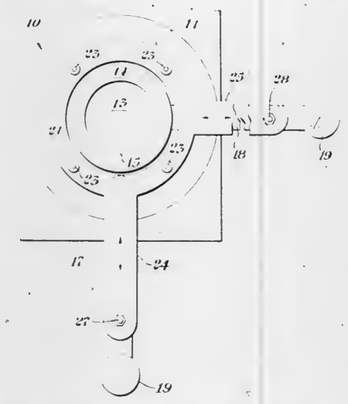
means are a single entity including a carriage, pivotable arm means being attached to said carriage for movably supporting a gripper for releasable attachment to one of said mold halves, there being provided means to cause the continuous motion of said gripper from one end of said molding run to the other.

4,212,619
PLANT FOR CURING CONVEYOR BELTS AND THE LIKE
Giovanni Ballocci, Monza, Italy, assignor to Industrie Pirelli, S.p.A., Milan, Italy
Filed Sep. 29, 1978, Ser. No. 947,189
Claims priority, application Italy, Sep. 30, 1977, 28127 A/77
Int. Cl.[2] B29H *3/00, 7/22;* **B29D** *29/00*
U.S. Cl. 425—373 **2 Claims**



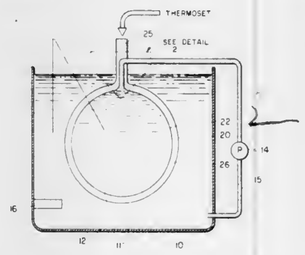
1. A plant for vulcanizing ribbon-like elements comprising:
a continuous curing machine of the type having a rotating drum;
a device for continuously feeding an uncured ribbon-like element to the curing machine; and
a tensioning device between said curing machine and said device, said tensioning device provided with at least one conveyor belt contacting the uncured ribbon-like element in a single flat plane, said conveyor belt travelling at a speed different from that of the continuous curing machine whereby the proper tension and the uniform advancement of the uncured ribbon-like element are obtained.

4,212,620
TUBE EXTRUSION DIE
John W. McLaren, Beaverton, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jul. 3, 1978, Ser. No. 921,683
Int. Cl.[2] B29F *4/03*
U.S. Cl. 425—381 **6 Claims**



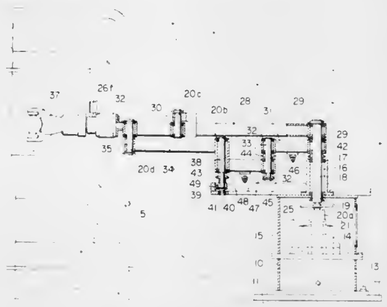
1. In a tubing extrusion die, the die having a die body, a mandrel, a die ring, the die ring in combination with the mandrel and the die body defining a generally annular extrusion passageway, the annular extrusion passageway connecting with a material inlet disposed at a first end of the die, the annular passageway terminating at a discharge or second end of the die in an annular extrusion orifice, the improvement which comprises slideably affixing the die ring to the die body, the die ring having at least two arms extending in a plane which is generally normal to the axis of the annular passageway, each said arm having a terminal end remote from the die ring which is fitted to a means to positively displace the die ring, the die body having at least two arms fixed thereto and extending generally parallel to the arms of the die ring to form at least two pairs of generally parallel arms, each said arm fixed to the die body being fitted to the means to positively displace the die ring, whereby upon adjustment of the means to positively displace the die ring, the arms of each pair of arms move relative to each other to position the die ring relative to the mandrel.

4,212,621
BLADDER MOLDING
Paul E. Michelotti, 59 Bob Hill Rd., Ridgefield, Conn. 06877
Filed Jun. 21, 1979, Ser. No. 50,827
Int. Cl.[2] B29G *7/00*
U.S. Cl. 425—405 H **5 Claims**



1. A device for molding large scale containers of thermosetting plastics comprising a molding tank filled with a fluid of a given specific gravity; a first outer bladder positioned within said molding tank; a second inner bladder within said outer bladder and spaced from said outer bladder; means for filling said inner bladder with a fluid of said given specific gravity; means for filling the space between said outer and said inner bladder with a thermosetting plastic of said given density.

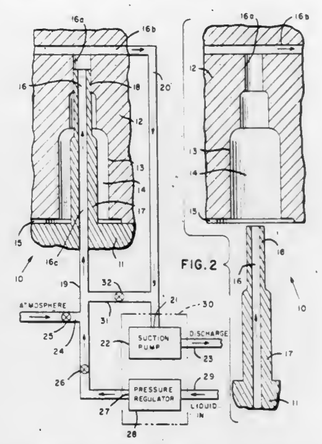
4,212,622
PRODUCT TAKE OUT DEVICES FOR USE IN MOLDING MACHINES
Tsuyoshi Kikuchi, Atsugi, and Kiyoshi Takusagawa, Zama, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Filed May 7, 1979, Ser. No. 36,793
Claims priority, application Japan, May 9, 1978, 53/54790
Int. Cl.[2] B29C *7/00*
U.S. Cl. 425—444 **4 Claims**



1. A product take out device for use in a molding machine, comprising a four arm link mechanism including four arms which are connected together by four pins, one of which pins is used as a stationary point of said link mechanism, a chuck operatively connected to one of said pins diagonally opposite said one pin used as a stationary point for grasping and taking out a product from a mold of said molding machine, a drive shaft provided for one of said arms, means for driving said drive shaft thereby swinging said four arm link mechanism about said stationary point, and guide means for controlling the locus of movement of said drive shaft.

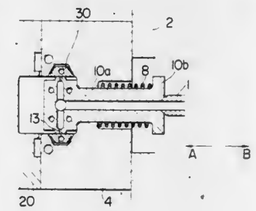
4,212,623
APPARATUS FOR COOLING PLASTIC INJECTION MOLD DIES
Paul E. Allen, Newtown, Conn., assignor to Logic Devices, Inc., Bethel, Conn.
Division of Ser. No. 892,592, Apr. 3, 1978, Pat. No. 4,151,243.
This application Jan. 31, 1979, Ser. No. 7,864
Int. Cl.[2] B29F *1/08*
U.S. Cl. 425—547 **9 Claims**

1. A mold having a mold cavity for producing plastic injection articles comprising a movable die and a stationary die, means forming a portion of a cooling passageway in one die, means forming a portion of a cooling passageway in the other die, said passageways being so formed and positioned to effect



a continuous passageway when the dies are abutting and a discontinuous passageway when the dies are separated.

4,212,624
HOT-RUNNER MOLD AND INJECTION MOLDING METHOD MAKING USE OF THE SAME
Nobuo Ando; Isao Satou, and Kazuo Maehara, all of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jun. 7, 1978, Ser. No. 913,295
Claims priority, application Japan, Dec. 9, 1976, 51-148060
Int. Cl.[2] B29F *1/08*
U.S. Cl. 425—548 **23 Claims**



1. A hot-runner mold comprising:
a hot-runner block having means for maintaining a predetermined high temperature of said hot-running block, a molten resin supply port, gates and molten resin passages through which said gates are communicated with said molten resin supply port;
a cavity block having a contact surface which is contacted by said gates and having means for maintaining a predetermined low temperature of said cavity block and molding cavities having respective molten resin pouring ports; and
a gate-temperature recovering block positioned within said cavity block such that a portion of its surface lies in the same plane as said contact surface of said cavity block, said gate-temperature recovery block having a heating means disposed therein, said heating means being capable of maintaining a higher temperature than the temperature of said cavity block, said gate temperature recovery block functioning to recover a predetermined high temperature at said gates, upon contacting the portion of said hot-runner block around said gates;
wherein said hot-runner block and said cavity block are movable relative to each other such that, at least during

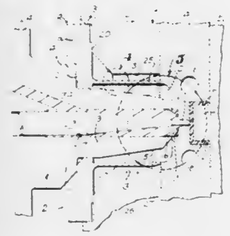
the injection, said gates of said hot-runner block and said molten resin pouring ports of said cavity block are brought into alignment with each other and, after the completion of the injection, said gates and said molten resin pouring ports are moved relatively away from each other, while said gate-temperature recovering block is put into contact with said portion of said hot-runner block around said gates, over at least a portion of the period in which said gates and said molten resin pouring ports are kept away from each other.

4,212,625

HIGH SPEED INJECTOR FOR MOLDING MACHINES

George V. Shutt, 918 Willow Springs La., Glendora, Calif. 91740

Filed Mar. 14, 1978, Ser. No. 886,407
Int. Cl.[2] B29F *1/03*
U.S. Cl. 425—549 4 Claims



1. A molding machine comprising:

a. a mold unit having a mold cavity, means for cooling the mold cavity, an exposed wall surface, and an entrance bore intersecting the exposed wall surface and the mold cavity;

b. a heated nozzle structure having a supply bore and an external surface tapering into close proximity to the periphery of the supply bore to form a nozzle tip of minimum area confronting the exposed wall surface in closely spaced relation thereto, thereby to minimize heat transfer from the nozzle structure to the mold unit and avoid axial compressional load on the nozzle tip;

c. the tapered external surface and confronting wall surface diverging radially outward thereby further minimizing heat transfer from the nozzle structure to the mold unit;

d. means for supplying molding material in a fluid state to the supply bore for transfer to the mold cavity;

e. the extremity of the supply bore forming with the contiguous portion of the wall surface a zone entrapping sufficient molding material to form an internal transistion surface merging into the surface of the entrance bore;

f. the closely spaced relation between the wall surface and the nozzle tip permiting limited discharge of molding material between the diverging end surfaces of the nozzle structure and confronting wall surface while maintaining a seal.

3. A molding machine, comprising:

a. a supporting plate having at least one clearance chamber extending therethrough;

b. a pair of mold plates disposed in mutual contact and defining at least one mold cavity having an access bore exposed to an end of the clearance chamber;

c. a thin wall temperature transfer reducing sleeve extending through the clearance chamber in spaced relation to the walls thereof to form a radially outer and radially inner insulating chambers;

4. A high speed injection molding machine, comprising:

a. an injection mold unit having a mold cavity, circulation passages for temperature transferring fluid, a wall surface, and an entrance bore intersecting the wall surface and the mold cavity;

b. a nozzle structure having a supply bore for discharge of molding material, in a fluid state, and a conical end portion converging toward the supply bore to form therewith a discharge end of approximately zero wall thickness;

c. the discharge end being in contiguous spaced relation to the wall surface of the mold unit for delivery of the molding material to the entrance bore of the mold unit, the spacing being sufficiently large to permit passage of molding material to form a seal;

d. a wall surrounding the nozzle structure and forming therewith an annular insulating chamber increasing in radial dimension toward the discharge end of the nozzle structure;

e. the discharge end portion of the nozzle structure and adjacent wall surface within the boundaries of the supply bore defining an annular entrapment zone for receiving a preselected quantity of molding material forming a heat transfer shield; and

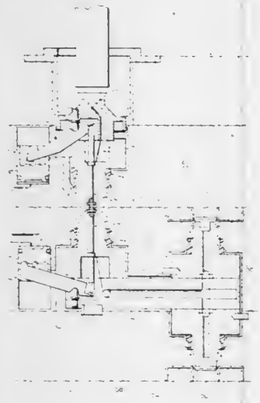
f. a shut-off pin having a tip dimensioned to fit the access bore, the pin being movable between a first position permitting flow of the molding material into the mold cavity and a second position closing the access bore.

4,212,626

STACK INJECTION MOLDING MELT TRANSFER SYSTEM

Jobst U. Gellert, 11 Newton Rd., Brampton, Ontario, Canada

Filed Dec. 18, 1978, Ser. No. 970,388
Int. Cl.[2] B29F *1/05*
U.S. Cl. 425—562 3 Claims



1. Stack injection molding apparatus for conducting pressurized melt to a moveable platen which is actuated between an open and a closed position comprising:

(a) a first melt flow control valve unit securely located in a stationary platen, said first flow control valve unit having a molding machine inlet and a first controlled gates, said molding machine inlet and said first controlled gate being connected by a first runner passage, and

(b) a second melt flow control valve unit securely located in the moveable platen, said second flow control valve unit having a second controlled gate and a second runner passage extending from said second controlled gate, said second flow control valve unit being located in said moveable platen in a position wherein said first and second controlled gates are in conducting communication when the moveable platen is in the closed position,

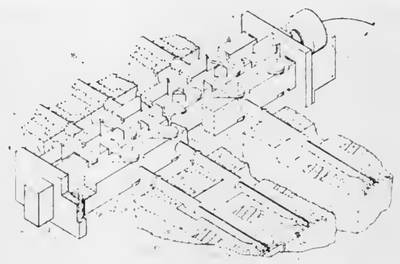
said flow control valve units being actuated to open and then close both of said gates while the moveable platen is in the closed position to provide a flow of pressurized melt from the first runner passage to the second runner passage.

4,212,627

INJECTION MOLDING VALVE PIN ACTUATOR MECHANISM

Jobst U. Gellert, 11 Newton Rd., Brampton, Ontario, Canada

Filed Dec. 14, 1978, Ser. No. 969,345
Claims priority, application Canada, Dec. 8, 1978, 317614
Int. Cl.[2] B29F *1/05*
U.S. Cl. 425—564 7 Claims



1. Mechanism for actuating at least one injection molding valve pin along its longitudinal axis comprising;

(a) a first member reciprocable in a plane substantially transverse to the longitudinal axis of the valve pin, said first member being secured against substantial movement out of said plane,

(b) drive means for reciprocating the first member in said plane,

(c) a second member located between the first member and the valve pin, the second member being reciprocable substantially in the direction of the longitudinal axis of the valve pin, but secured against substantial movement in the directions of the reciprocal motion of the first member, and

(d) first connector means operably connected between the first and second members;

whereby movement of the first member in said plane moves the second member which makes bearing contact with the vale pin and actuates it along its longitudinal axis

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4,212,628

RECOVERY FURNACE SAFETY SYSTEM

William H. Boatwright, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,330
Int. Cl.[2] F27D *7/02, 9/00*
U.S. Cl. 432—4 12 Claims



6. A pulp mill recovery furnace safety appliance comprising:

Barrier means having a mounting bar portion projecting from a liquor spray gun aperture blocking portion;

Pivot means in said bar portion secured to recovery furnace structure adjacent said aperture for pivoting said barrier means to and from an aperture blocking position; and

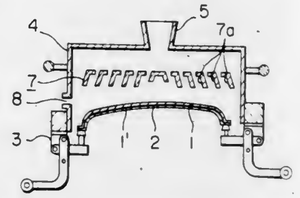
Electrical switch means secured proximate of said barrier means for actuation between closed and open contact conditions by positionment of said barrier means at spray gun aperture blocking and open positions, respectively.

4,212,629

APPARATUS AND METHOD FOR LOCAL FORCED HEATING OF AN AUTO BODY

Yasumasa Nagasaka, Okazaki; Kenichi Sekiyama, and Yasushi Masuyama, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 12, 1978, Ser. No. 923,911
Claims priority, application Japan, Nov. 8, 1977, 52-133910
Int. Cl.[2] F24J *3/00*
U.S. Cl. 432—10 5 Claims



4. A method for local heating of a moving auto body to joint at least two steel plates, comprising the steps of:

placing a hood whose periphery follows the contours of said auto body to minimize the escape of hot air, over a joint of the steel plates which has built up with plastic solder and moving said hood with said auto body;

sending hot air from a hot air blast nozzle axially removably positioned adjacent one side of said hood through a hot air intake located at the center of the hood top;

uniformly diffusing the hot air sent into the hood by passing said hot air over a stream-rectifying plate equipped with a plurality of blades to uniformly diffuse the hot air over the plastic solder built up on the joint of the steel plates;

uniformly heating the joint of steel plates with the hot air thus uniformly diffused, thereby to heat and harden said plastic solder; and

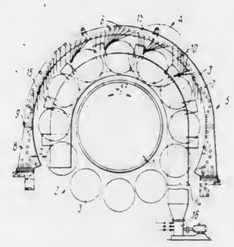
discharging the used hot air through a discharge hole located on the hood wall downstream from said stream-rectifying plate.

4,212,630

APPARATUS FOR REMOVING HEAT FROM CYLINDERS OF THE ROTARY KILN RECUPERATOR COOLER

Leonid T. Vorobeichikov, prospekt Gagarina, 80, kv. 132; Boris F. Fedoryakin, ulitsa Dzerzhinskogo, 46, kv. 11, both of Kharkov; Grigory K. Panchenko, ulitsa Gruzinova, 55, Bakhchisarai Krymskoi oblasti; Grigory N. Gorbanev, ulitsa Gagarina, 3, kv. 85, Bakhchisarai Krymskoi oblasti; Anatoly N. Bevz, ulitsa I. Strelnikova, 6, Bakhchisarai Krymskoi oblasti, and Vladimir I. Satarin, prospekt Lenina, 29a, kv. 16, Kharkov, all of U.S.S.R.

Filed Jul. 25, 1978, Ser. No. 927,878
Int. Cl.[2] F27B *7/38;* F27D *15/02*
U.S. Cl. 432—80 2 Claims



1. An apparatus for removing heat from a rotary kiln recuperator cooler having an axis and a plurality of cylinders

which have outer surfaces and are arranged circumferentially about the axis, the apparatus comprising:

at least two substantially bow-shaped stationary support members spaced from one another in an exial direction and each having a lateral surface which faces toward a lateral surface of the other support member;

a plurality of heat-exchange tube means through which a coolant is adapted to circulate, said tube means being fixed to said lateral surfaces of said support members such that said tube means are spaced from each other in a substantially circumferential direction and arranged radially outwardly of the cylinders in the vicinity of the latter along a wave line, so that a space of variable dimension is defined between said heat-exchange tube means and the outer surfaces of the cylinders thereby permitting the heat-transfer area to be increased, wherein each of said heat-exchange tubes has an axis; and further comprising a plurality of heat-removing elements which are constituted of a high-temperature resistant material and mounted on each of said heat-exchange tubes for rotation about the axis of the same tube so as to be periodically brought into contact with the outer surfaces of the cylinders.

4,212,631

TONER FUSING ARRANGEMENT

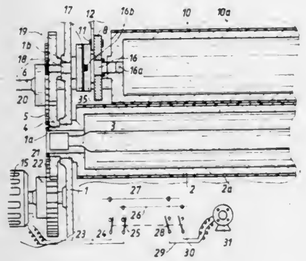
Walter Franke, Bad Aibling, and Ottmar Wolf, Munich, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,326

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747544

Int. Cl.[2] **H05B** *3/10;* **G03G** *15/20*

U.S. Cl. 432—60 **8 Claims**



1. In a xerographic copying machine, an improved fusing arrangement of the type comprising a heated fusing roller and an unheated counterpressure roller between which copy paper bearing toner images to be fused is transported with the toner image in contact with the peripheral surface of the heated fusing roller and a drive mechanism for driving the rollers during copying operations, the improvement comprising means, operative during the stand-by intervals during which the copying machine awaits a copying command, for rotating the counterpressure roller so as to prevent non-uniform heating of the peripheral surface of the unheated counterpressure roller by heat radiating from the heated fusing roller, said means including an auxiliary drive separate from said drive mechanism and serving to steadily rotate said counterpressure roller at a rotary speed lower than the speed at which the counterpressure roller is rotated during copying operations.

4,212,632

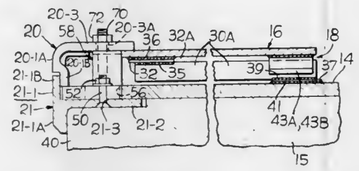
COOLING ARRANGEMENT FOR ROTARY KILN

Ralph M. Conrad, and Robert M. Bliemeister, both of Milwaukee, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 2, 1979, Ser. No. 35,406

Int. Cl.[2] **F27B** *7/24*

U.S. Cl. 432—115 **11 Claims**



1. In combination, a rotary kiln, a cooling cowl mounted on said kiln contiguous the discharge end of the kiln, said cowl being positioned radially outwardly of the outer peripheral surface of the kiln whereby to define an annulus between the inner peripheral surface of said cowl and the outer peripheral surface of said kiln through which cooling air can flow to cool the discharge end of said kiln, means supported by said kiln contiguous the discharge end of said kiln for forming an axial end closure for said annulus, a plurality of spacer bars made of a flexible material and positioned in the annulus between said cowl and said kiln, said spacer bars extending in a direction substantially parallel to the axis of rotation of said kiln and being angularly spaced apart from each other, the respective spacer bars being fixedly secured at one end thereof only to said cowl and at the opposite end thereof only to said kiln.

4,212,633

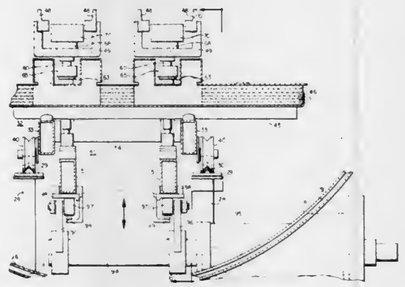
VACUUM ELECTRIC FURNACE

Benjamin A. Kreider, Richboro, and William J. Metalsky, Warminster, both of Pa., assignors to Abar Corporation, Feasterville, Pa.

Filed Nov. 16, 1978, Ser. No. 961,298

Int. Cl.[2] **F27B** *9/14*

U.S. Cl. 432—122 **13 Claims**



1. Apparatus for the support of work pieces in a vacuum electric furnace which comprises, within the furnace tank:

heating elements within the upper part of said tank to provide a heated zone,

fixedly mounted spaced parallel work supporting rails of a material resistant to the temperatures in said heated zone,

a stationary frame disposed below said rails,

supporting members for said rails extending upwardly from said stationary frame,

shielding members interposed between said rails and said stationary frame for preventing radiant heat transmission from said heated zone to said stationary frame,

means for cooling said stationary frame,

means for advancing work pieces along said rails,

said last means comprising

work piece supports movable to positions above and below said rails and longitudinally with respect thereto for elevating work pieces above said rails for advancing movement with respect to said rails, and

a second frame movable with respect to said stationary frame for positioning said work piece supports and having supporting pins for said work piece supports extending upwardly therefrom,

said shielding members preventing radiant heat transfer to said movable frame,

said shielding members include a fixed shield through which supporting members extend, and

a movable shield having openings therethrough for said supporting members,

said fixed shield being in shielding relation to said openings, and

means for cooling said movable frame.

4,212,634

AUXILIARY HEATING SYSTEM FOR A BULK TOBACCO BARN

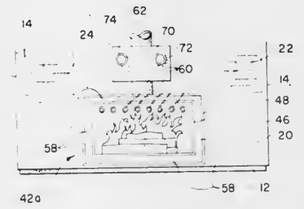
John D. Mitchell, Lewiston, and J. C. Sessoms, Jr., Ahoskie, both of N.C., assignors to Harrington Manufacturing Company, Lewiston, N.C.

Filed Jun. 5, 1978, Ser. No. 912,335

Int. Cl.[2] **F27B** *17/00;* **A24B** *1/02*

U.S. Cl. 432—186 **9 Claims**

1. In a bulk tobacco curing and drying structure having a generally enclosed drying area, means for supporting tobacco in bulk form in said drying area, and a forced air heating system including fan means for generating and circulating a system of air through the tobacco material supported within said drying area and thermostatically controlled heating means for heating the circulated air to effectuate curing and drying of the tobacco material within the structure, the improvement comprising an auxiliary heating system for supplying heat to said system of air to assist in the curing and drying of the tobacco within said drying area, said auxiliary heating system comprising: a heater having a fire box for receiving wood, coal and other burnable material; an outer wall structure surrounding a



substantial portion of said heater so as to form an air passing area therebetween that defines and acts as a heat exchanger when air is moved therethrough; means for directing a portion of air from said system of air being circulated through said structure to said heater and through the heat exchanger disposed about said fire box and back to the system of circulating air moving through the curing and drying structure; and temperature control means operatively associated with said heater and responsive to the temperature within said curing and drying structure for controlling the heat output of said heater and the auxiliary heating system.

4,212,635

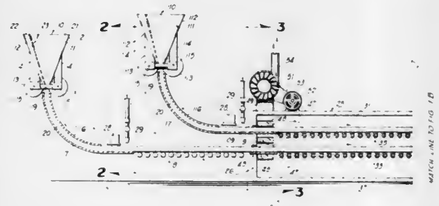
PROCESS AND APPARATUS FOR PRODUCING CELLULATED VITREOUS REFRACTORY MATERIAL IN PRESCRIBED SHAPES AND PRODUCTS THEREFROM

John W. North, 3467 Pierce Dr., NE., Chamblee, Ga. 30341

Continuation-in-part of Ser. No. 888,507, Mar. 20, 1978. This application Jun. 7, 1978, Ser. No. 913,395

Int. Cl.[2] **F27D** *3/00*

U.S. Cl. 432—239 **11 Claims**



7. An apparatus for feeding raw material as a ribbon in a horizontal direction comprising:

(a) a hopper for said raw material, said hopper having an opening in its bottom portion, a pair of spaced transversally opposed compression rollers, the inner peripheries of which are disposed on opposite sides of said opening for engaging on opposite sides and compressing therebetween and progressively feeding said raw material as a stream downwardly;

(b) a third compression roller below said one of said opposed compression rollers, and guide means for guiding a surface of said stream from the other of said opposed compression rollers to the upper periphery to said third compression roller;

(c) said opposed compression rollers compacting and feeding said raw material from said hopper into a stream fed in a downward direction; and

(d) said third compression roller and said one of said opposed compression rollers cooperating to compact and feed said stream as a ribbon of indeterminate length in a horizontal direction.

4,212,636

HEARTH STRUCTURE

Archibald W. Pavlak, 1476 Highview Ave., Eagan, Minn. 55121

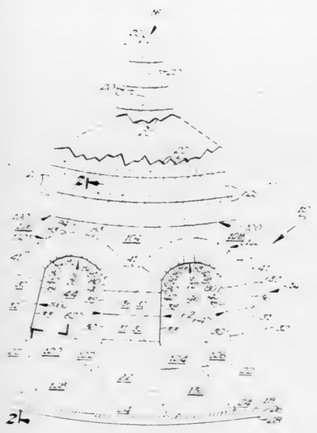
Filed Sep. 11, 1978, Ser. No. 941,190

Int. Cl.[2] **F27D** *1/18*

U.S. Cl. 432—250 **10 Claims**

2. In a incinerator structure including at least one hearth extending from an outer wall towards the center of the incinerator and having at least one drop hole formed in the hearth adjacent the outer wall, with the hearth having a main body of fire brick extending from the center of the incinerator and joining the drop hole area of the hearth, the improvement in the drop hole area of the hearth, comprising: weight supporting projection means extending from the outer wall; at least two side projections of standard size fire brick extending out from and supported by the weight supporting projection means to allow for the desired size of drop hole and forming the sides of the drop hole; generally horizontal closure member of standard size fire brick between the side projections to close the drop hole between the two side projections, with part of

the closure member arranged to support the main body of the hearth, wherein the entire hearth may be constructed from



standard size fire brick and eliminate the necessity of special shapes of fire brick.

4,212,637

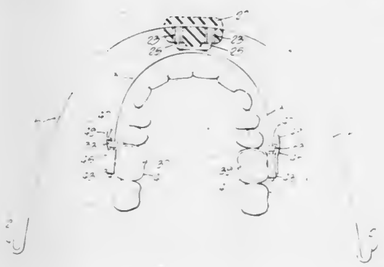
ORTHODONTIC FACE BOW

Harry L. Dougherty, 14434 Hamlin St., Van Nuys, Calif. 91401, and William W. Beazley, 5400 Balboa Blvd., Encino, both of Calif. 91316

Filed Jan. 23, 1976, Ser. No. 651,686

Int. Cl.² A61C *3/00*

U.S. Cl. 433—5 **8 Claims**



1. An orthodontic face bow comprising:
(a) inner bow means,
(b) outer bow means, and
(c) coupling means having first means rigidly connected to said outer bow means and second means rigidly connected to said inner bow means, said first and second means being separably interconnected, said first and second means nonpivotally securely abutting against each other when force is applied to the ends of said outer bow means in a first direction, and readily disconnecting when force is applied to said outer bow means in a second direction.

4,212,638

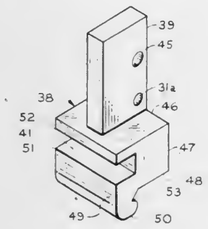
CONVERTIBLE LIGHT WIRE-RECTANGULAR WIRE ORTHODONTIC APPLIANCE SYSTEM

Marcel Korn, 502 Lindell Ave., Leominster, Mass. 01453

Filed Nov. 9, 1978, Ser. No. 958,959

Int. Cl.² A61C *3/00*

U.S. Cl. 433—8 **16 Claims**



1. A convertible light wire-rectangular wire orthodontic appliance system adapted for use with an archwire comprising:
A. A bracket adapted to be attached to a tooth, (and receive an archwire in) said bracket having a channel extending horizontally across the upper surface of said bracket in the mesial-distal direction, said channel being open onto said upper surface and adapted to receive an archwire, said bracket having lock pin-insert receiving means adapted to receive either a lock pin (and) or an insert;
B. a lock pin, said lock pin being adapted to be positioned in said lock pin-insert receiving means and adapted to secure an archwire in said channel when said bracket and lock pin are used in the light wire, orthodontic treatment method;
C. an insert, said insert having an archwire receiving slot extending generally horizontally across said insert in the mesial-distal direction and open onto the buccal or labial surface of said insert, said insert being adapted to be positioned in said lock pin-insert receiving means when said bracket and said insert are used in the rectangular wire orthodontic treatment method;
D. locking means for detachably mounting said insert to said bracket;
wherein said bracket and said lock pin are adapted to be assembled into a light wire orthodontic appliance and wherein said bracket, said insert, and said locking means are adapted to be assembled into a rectangular wire orthodontic appliance.

4,212,639

MEASURING APPARATUS FOR SETTING THE CORRECT PENETRATION DEPTH OF ROOT CANAL INSTRUMENTS

Alfred Schaffner, Breganzona, Switzerland, assignor to Polydent SA, Lugano, Switzerland

Filed Nov. 6, 1978, Ser. No. 958,096

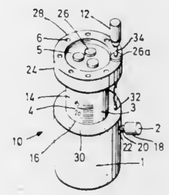
Claims priority, application Switzerland, Nov. 17, 1977, 14217/77

Int. Cl.² A61G *1/14*; A61C *5/02*

U.S. Cl. 433—72 **6 Claims**

1. A measuring device for setting the correct depth of penetration of root canal instruments with stoppers, comprising:
a lower base portion having a top face and a central bore;
an upper portion received in the central bore of and telescopically movable with respect to the lower base portion, said upper portion including a plate member having an upper face, a plurality of holes arranged in said plate member in confronting relation with the top face of the lower base portion for receiving the root canal instruments;

means for releasably fixing said upper and lower portions to one another such that the upper face of the plate member is located at a distance from the top face of the lower base portion;
scale means provided on said upper portion for selectively setting the distance between said top face and upper face



at a predetermined spacing corresponding to the intended depth of penetration of a root canal instrument;
said plate member having recess means for receiving the stoppers used with the root canal instruments, whereby said stoppers can be stored in said recess means and sterilized together with the measuring device.

4,212,640

DENTAL HANDPIECE

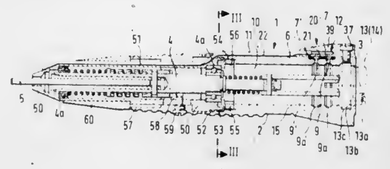
Hans Loge, Biberach an der Riss; Eugen Eibofner; Bernhard Kuhn, both of Biberach, and Heinrich Reich, Hochdorf, all of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

Filed Nov. 22, 1977, Ser. No. 854,015

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1976, 2653588

Int. Cl.² A61C *1/10*

U.S. Cl. 433—82 **27 Claims**



1. A dental handpiece comprising: a handpiece sleeve; a drive shaft extending axially of said sleeve and connectable in use to a dental instrument at one end of the handpiece to drive the instrument; a first coolant supply line provided for the handpiece; a coolant duct provided in the wall of said sleeve and communicating at an inner end with said first coolant supply line, said inner end being located to face the interior of the sleeve; and a second coolant supply line communicating with an opposite outer end of said coolant duct and extending towards said one end of the handpiece; said coolant duct being a generally rectilinear duct extending generally radially between said inner and said outer end of the duct; said second coolant supply line being releasably connected to said outer end of the coolant duct at a location in the wall of said handpiece sleeve which permits manipulation externally of the handpiece to connect together and to release the connection between said second coolant supply line and said outer end of the coolant duct; and a closure member at the handpiece sleeve which is accessible from the exterior and which covers-over said location of the releasable connection, said closure member being arranged to be releasable for making said location accessible; the handpiece sleeve being surrounded by an outer sleeve adapted to be fixed upon it; the second coolant line having a portion projecting in a direction away from the instrument end of the handpiece sleeve into an annular chamber provided within the outer sleeve and into which, as a supplementary closure member, there is screwed an annular cover having an annular socket for receiving the projecting end of the second coolant line.

4,212,641

DENTAL HANDPIECE

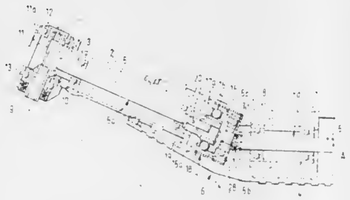
Eugen Eibofner, Biberach, and Heinrich Reich, Hochdorf, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,639

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1976, 2644458

Int. Cl.² A61C *1/12*

U.S. Cl. 433—133 **7 Claims**



1. A dental handpiece comprising: a holding sleeve; a head sleeve inclined to the holding sleeve at an obtuse angle and adapted to mount a dental instrument; a connecting zone providing an interconnection between said holding sleeve and said head sleeve; a drive shaft arranged in said holding sleeve; a drive shaft arranged in said head sleeve; and a ball-type planetary transmission arranged in the connecting zone wholly immediately adjacent to a bisector of said obtuse angle formed between axes of said head sleeve and of said holding sleeve in a straight portion of said head sleeve, said planetary transmission providing a drive-transmitting connection between said drive shaft and said driven shaft; said drive shaft comprising first shaft portion arranged in said holding sleeve, a second shaft portion arranged in said connecting zone, said second shaft portion comprising a driven portion of a rotary-drive transmitting coupling arranged to couple said first and second shaft portions together, said second shaft portion being part of said ball-type planetary transmission and being arranged coaxially with said driven shaft in said head sleeve.

4,212,642
TRANSFER PRINTING DYES

Angelo Della Casa, Basel, and Urs Karlen, Magden, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

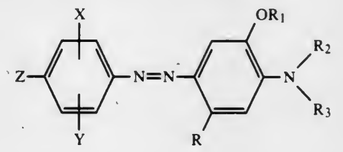
Filed Jul. 20, 1978, Ser. No. 926,404

Claims priority, application Switzerland, Jul. 25, 1977, 9181/77

Int. Cl.[2] D06P *5/20*

U.S. Cl. 8—470 **8 Claims**

1. In the process for the transfer printing of flat-surface structure of synthetic polymer materials which comprises bringing a support printed with a suitable printing ink into close contact with the flat-surface structure to be printed and applying heat, pressure or both heat and pressure to cause dyestuff to be transferred from the support to the flat-surface structure by diffusion and sublimation, the improvement according to which the printing ink printed on the support comprises at least one dyestuff of the formula



wherein

X represents hydrogen, halogen, or a lower alkylsulphone group,

Y represents hydrogen, chlorine, bromine, nitro, cyano, or an alkyl group of 1 to 4 carbon atoms,

Z represents hydrogen, chlorine, nitro, an acylamino group, or a lower alkylsulphonyl group,

R represents an alkyl radical of 1 to 4 carbon atoms, and

R_1, R_2 and R_3, each independently of the other, represent an alkyl radical of 1 to 4 carbon atoms, a cycloalkyl radical of 5 to 7 carbon atoms, an aralkyl or an aryl radical

and the flat-surface structure is composed of synthetic polymer material having affinity for the thus transferred dyestuff.

4,212,643
TRANSFER DYE

Hans P. Kölliker, Münchenstein, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

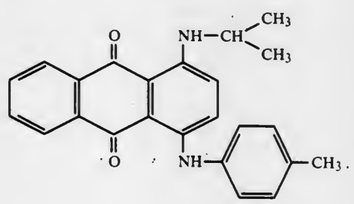
Filed Jun. 1, 1978, Ser. No. 911,958

Claims priority, application Switzerland, Jun. 8, 1977, 7049/77

Int. Cl.[2] C09D *11/02*

U.S. Cl. 8—470 **2 Claims**

1. In the method for the dry tranfer printing of textile material which comprises contacting the material to be printed with the printed side of a printed transfer carrier support and subjecting the carrier support to heating while in contact with the said material to effect transfer of dyestuff from the carrier support to the said material, the improvement according to which the printed transfer carrier support carries a print comprising a dyestuff of the formula



4,212,644
DYED PAPER

Hans-Juergen Degen, Lorsch, and Klaus Grychtol, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

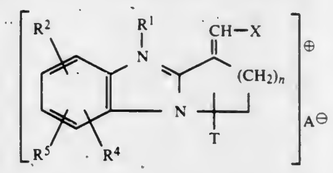
Filed Jul. 25, 1978, Ser. No. 927,947

Claims priority, application Fed. Rep. of Germany, July 25, 1977, 2733468

Int. Cl.[2] D21H *1/46*

U.S. Cl. 8—506 **11 Claims**

1. Paper dyed with a compound of the formula



where

R^1 is alkyl of 1 to 12 carbon atoms, alkyl of 2 to 4 carbon atoms which may be substituted by hydroxyl, alkoxy of 1 to 4 carbon atoms, alkanoyloxy of 1 to 4 carbon atoms, carbamoyl, cyano, chlorine or bromine, benzyl, which is unsubstituted or substituted by methyl, methoxy, ethoxy or chlorine, or phenylethyl,

R^2 is hydrogen, chlorine, alkyl of 1 to 4 carbon atoms, methoxy, ethoxy, nitro, amino, alkylamino, dialkylamino, where alkyl is of 1 to 4 carbon atoms, or alkanoylamino, where alkanoyl is of 1 to 4 carbon atoms,

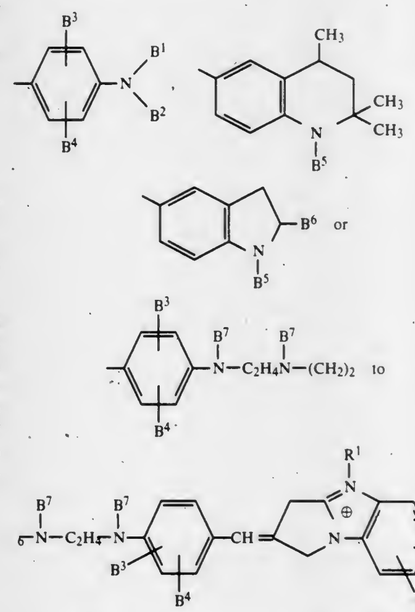
R^3 is hydrogen, chlorine or alkyl of 1 to 4 carbon atoms,

R^4 is hydrogen, chlorine or alkyl of 1 to 4 carbon atoms,

T is hydrogen or alkyl of 1 to 4 carbon atoms,

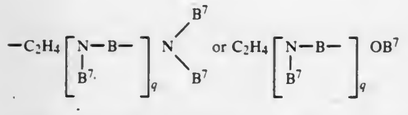
n is 1, 2 or 3,

X is a radical of the formula



B^1 and B^2 independently of one another are alkyl of 1 to 8 carbon atoms, alkyl of 2 to 4 carbon atoms which is substituted by trialkylammonium, where alkyl is of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine, bromine, cyano, alkanoyloxy of 1 to 8 carbon atoms, alkoxycarbonyl, where alkoxy is of 1 to 8 carbon atoms, al-

kylaminocarbonyloxy, where alkyl is of 1 to 4 carbon atoms, or alkanoylamino, where alkanoyl is of 1 to 4 carbon atoms, allyl, cyclohexyl, benzyl which is unsubstituted or substituted by methyl or methoxy, phenylethyl, phenyl which is unsubstituted or substituted by methyl, methoxy or chlorine, or a radical of the formula



B^3 is hydrogen, methyl, ethyl, hydroxyl, methoxy or ethoxy,
B^4 is hydrogen, chlorine, methyl or ethyl,
B^5 is hydrogen, alkyl of 1 to 4 carbon atoms or benzyl,
B^6 is hydrogen, methyl or ethyl,
the radicals B^7 independently of one another are hydrogen, alkyl of 1 to 4 carbon atoms, or alkyl of 2 or 3 carbon atoms substituted by hydroxyl or alkoxy of 1 to 4 carbon atoms



is pyrrolidino, piperidino, morpholino, piperazino, N-methylpiperazino or N-β-hydroxyethylpiperazino,
B is straight-chain or branched C_2 to C_6 alkylene,
q is 0, 1, 2 or 3 and
A^{θ} is an anion.

4,212,645

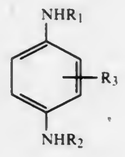
HAIR DYEING COMPOSITION CONTAINING AN ARYLDIAMINE AND A SUBSTITUTED CATECHOL

Nicholas H. Leon, Isleworth, England, and Guy A. G. Ricketts, Tokyo, Japan, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 870,151, Jan. 17, 1978, which is a continuation of Ser. No. 717,831, Aug. 25, 1976, abandoned, which is a continuation-in-part of Ser. No. 539,760, Jan. 9, 1975, abandoned. This application Mar. 13, 1978, Ser. No. 885,705
Claims priority, application United Kingdom, Jan. 18, 1974, 2507/74
Int. Cl.[2] A61K *7/13*
U.S. Cl. 8—406 **5 Claims**

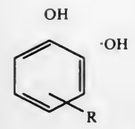
1. A composition for use in the dyeing of keratinous fibres which comprises an aqueous anaerobic solution of

(i) from about 0.1 to about 6% by weight of an aryldiamine or a salt thereof having the structure



where R_1 and R_2 are selected from the group consisting of hydrogen, C_1-C_4 alkyl and C_1-C_4 alkoxy, and where R_3 is selected from the group consisting of C_1-C_4 alkyl and C_1-C_4 alkoxy; and

(ii) from about 0.1 to about 6% by weight of a substituted catechol having the structure



where R is selected from the group consisting of amino, C_1-C_4 alkylamino, C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 hydroxyalkyl, C_1-C_4 aminoalkyl and C_1-C_4 alkoxyalkyl, the molar ratio of aryldiamine to substituted catechol in the solution being from about 1:8 to about 4:1.

4,212,646

PROCESS FOR THE PRINTING OF MIXED FABRICS OF POLYESTER AND CELLULOSE FIBERS

Horst Curtius, Kelkheim; Erich Feess, Hofheim am Taunus, and Willy Gronen, Schöllkrippen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,483
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740587
Int. Cl.[2] C09B *27/00;* **D06P** *1/02*
U.S. Cl. 8—532 **9 Claims**

1. A process for the printing of textile mixed fabrics of polyester and cellulose fibers, which comprises printing on the fabric a printing paste containing coupling components dissolved in an alkaline medium, sodium nitrite and diazotizable primary aromatic amines as a solution or in the form of an aqueous fine dispersion with a particle size of less than 0.03 mm and which are practically non-volatile at drying temperatures and show a minimum basicity with a pKa of at least 2.2, drying the fabric, treating the printed fabric at room temperature with an aqueous developing bath containing 10 to 100 g/l of 85% formic acid to develope the azo dyestuffs by diazotizing the amines and coupling any diazonium compounds formed with the coupling components, and heat-treating the fabric to complete the coupling and fixation of azo dyestuffs formed simultaneously on the polyester fiber portion with high temperature steam for 3 to 10 minutes at a temperature in the range of 170° to 190° C.

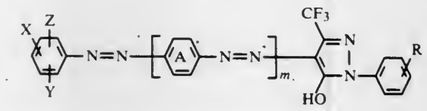
4,212,647

WATER-INSOLUBLE AZO DYESTUFFS WHICH ARE DERIVATIVES OF 1-ARYL-3-TRIFLUOROMETHYL-5-PYRAZOLONES

Jacques A. N. Bernardin, Deuil La Barre, and Jacques P. E. Pechmeze, Paris, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 749,865, Dec. 13, 1976, abandoned. This application Sep. 7, 1978, Ser. No. 940,401
Claims priority, application France, Dec. 17, 1975, 75 38615
Int. Cl.[2] C09B *29/38*
U.S. Cl. 8—662 **12 Claims**

1. A dyestuff of the formula:



wherein

X represents halogen, cyano, nitro, alkyl, polyfluoroalkyl, polyfluoroalkoxy, alkylsulphonyl or sulphonamido, or sulphonamido substituted by one or two alkyl,

Y and Z are the same or different and represent hydrogen, halogen, cyano, nitro, alkyl, polyfluoroalkyl, polyfluoroalkoxy, alkylsulphonyl, sulphonamido or sulphonamido substituted by one or two alkyl,

R represents hydrogen, halogen, cyano, nitro, alkyl, alkoxy, polyfluoroalkyl, polyfluoroalkoxy, alkylsulphonyl, sulphonamido or sulphonamido substituted by one or two alkyl;

m is equal to 0 or 1,

and the nucleus A may be substituted by one or more atoms of chlorine or alkyl, alkoxy or acetylamino,

halogen being chlorine or bromine and the alkyl, alkoxy, polyfluoroalkyl, polyfluoroalkoxy and alkylsulphonyl groups containing 1 or 2 carbon atoms.

4,212,648

PROCESS FOR THE PRINTING OF CELLULOSE FIBER FABRICS

Horst Curtius, Kelkheim; Erich Feess, Hofheim am Taunus, and Willy Gronen, Schöllkrippen, all of Fed. Rep. of Germany. assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,400
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740679
Int. Cl.[2] C09B *27/00;* **D06P** *1/02*
U.S. Cl. 8—466 **2 Claims**

1. A process for the printing of textile cellulose fiber fabrics, in which printing pastes containing coupling components, dissolved in an alkaline medium, sodium nitrite and diazotizable primary aromatic amines are printed on said fabrics, allowed to dry and thereafter the water-insoluble azo dyestuffs are developed on the fibers by diazotizing the amines and coupling the diazonium compounds formed with the coupling components, which comprises developing azo dyestuffs from an amine in a solution or in the form of aqueous fine dispersions wherein the amine has a particle size of less than 0.03 mm, said amines being practically non-volatile under the drying temperatures and showing a minimum basicity degree as measured by pK_α of 2.2 or more, said developing being effected so as to give the azo dyestuffs, following the drying of a printing paste applied by a treatment of a printed fabric, at room temperature, with an aqueous developing bath containing formic acid in an amount corresponding to 10 to 100 g/l of an 85% formic acid, and thereafter completing the coupling without a previous intermediate drying of the fabric, by a passage through a steamer for 3 to 20 seconds, at a temperature in the range of from 100° to 130° C.

4,212,649

METHOD FOR MANUFACTURING HEAT-RESISTANT AND FLAME-RETARDANT SYNTHETIC FIBER

Ichiro Sakurada, Kyoto; Toshio Okada, Kadoma, and Kanako Kaji, Osaka, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Aug. 26, 1977, Ser. No. 828,202
Claims priority, application Japan, Mar. 1, 1977, 52-20906
Int. Cl.[2] D06M *10/00, 15/38*
U.S. Cl. 8—115.5 **14 Claims**

1. A method for manufacturing heat-resistant and flame-retardant polyvinyl chloride fiber which is characterized in comprising successive steps of

(a_1) impregnating the polyvinyl chloride fiber with a ternary mixture of acrylic acid, water and ethylene dichloride in such a composition that the volume ratio of acrylic acid to water is at least 30/70 and the amount of ethylene dichloride is 90 to 100% of the minimum amount above which phase separation of the ternary mixture occurs,

(b_1) irradiating the impregnated polyvinyl chloride fiber with ionizing radiation to cause graft-copolymerization of acrylic acid in an amount at least 15% by weight of the starting fiber, and

(c_1) subjecting the grafted fiber to a heat treatment or converting the graft-copolymerized acrylic acid to a salt of a divalent metal by contacting the grafter fiber with an aqueous solution of a water-soluble divalent metal salt.

4,212,650

DIAGNOSTIC PROCESS

Hartwig W. Bauer, Heidenheim, and Wolfgang Ax, Marburg an der Lahn, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,011
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750521
Int. Cl.[2] G01N *27/26, 33/16*
U.S. Cl. 23—230 B **11 Claims**

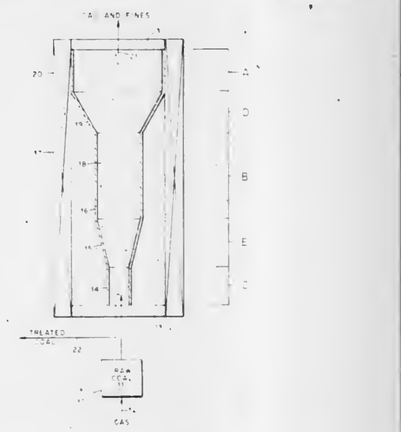
1. An in vitro diagnostic method, which comprises incubating lymphocytes with a synthetic peptide of high basicity whereby the behavior of the lymphocytes in an electric field is modified in a detectable manner, subjecting the incubation mixture to an electric field, and measuring the migration speed of the lymphocytes in the electric field.

4,212,651

HIGH GRADIENT MAGNETIC BENEFICIATION OF DRY PULVERIZED COAL VIA UPWARDLY DIRECTED RECIRCULATING FLUIDIZATION

David M. Eissenberg, Oak Ridge, Tenn., and Yin-An Liu, Opelika, Ala., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,875
Int. Cl.[2] C10L *9/10;* **B03C** *1/00*
U.S. Cl. 44—1 SR **8 Claims**



1. An improved system for the efficient removal of sulfur and ash from dry pulverized raw feed coal comprising a feed chamber containing said coal; a high gradient magnetic separation unit mounted above said feed chamber, said unit comprising a first cylindrical section of a selected diameter and spaced from said feed chamber, a second cylindrical section spaced from and having a selected diameter larger than said first section, a first hollow tapered section connecting said first and second cylindrical sections, a third cylindrical section spaced from and having a selected diameter larger than said second section, a second hollow tapered section connecting said second and third cylindrical sections, an iron-clad solenoidal magnet equipped with a movable pair of pole pieces encompassing said cylindrical and hollow tapered sections and adapted to be connected to a power supply, a matrix of magnetic packing material mounted within the interior of said second cylindrical section; and a source of feed gas connected

to said feed chamber and adapted to be fed thereto at a selected flow velocity for effecting the air-transportation of said feed coal upwardly into said separation unit for a predetermined time, whereby in the operation of said system during said time, the fines and a portion of said feed gas are collected as a top product out from the top of said third cylindrical section, a sufficient retention time for the efficient removal of magnetic particles from said coal is effected inside of said second cylindrical section to the bulk of the fluidized coal stream due to the gradual decrease in the upward fluidization velocity of the coal stream effected by the expanded sections from the bottom to the top of said separation unit thereby effecting a substantial capturing and retention of the magnetic particles in said coal by said matrix, and after said time has expired said flow velocity of said feed gas is adapted to be reduced thus allowing the magnetically beneficiated coal of low sulfur and ash content to be removed from said unit by gravity as a clean coal product after which the magnetic field is adapted to be cut off and the high-sulfur and high-ash residue collected as a waste product from said matrix.

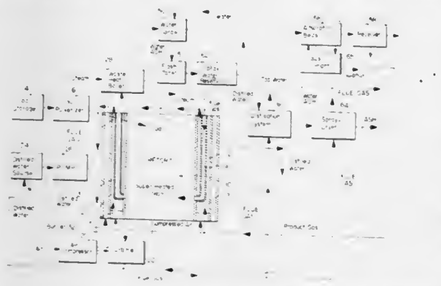
6. An improved method for the efficient removal of sulfur and ash from dry pulverized raw feed coal comprising the steps of feeding a gas through a coal feed chamber to provide a fluidized stream of said feed coal at a selected flow velocity and for a predetermined time upwardly into an iron-clad solenoidal magnetic separation unit equipped with a movable pair of pole pieces and provided with three expanded hollow sections from the bottom to the top thereof with the central section containing a magnetic packing material therewithin, said expanded sections providing a gradual decrease in the upward fluidization velocity of the pulverized coal stream to provide a sufficient retention time within said separation unit to effect a substantial capturing and retention of the magnetic particles in said coal by said matrix, collecting the fines and a portion of said gas out of the top of said unit as a top product during said time, reducing the flow velocity of the gas after said time has expired and collecting by gravity the magnetically beneficiated coal of low sulfur and ash contents from said unit as a clean coal product, and turning off said electromagnet and collecting the high-sulfur and high-ash residue from said matrix as a waste product.

4,212,652

APPARATUS AND SYSTEM FOR PRODUCING COAL GAS

Anthony A. duPont, 2300 Via Pacheco, Palos Verdes Estates, Calif. 90274

Filed Apr. 5, 1978, Ser. No. 893,715
Int. Cl.² C10B *3/02*
U.S. Cl. 48—89 **5 Claims**



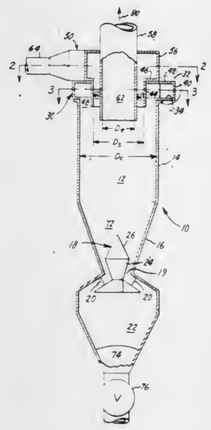
1. Apparatus for producing a gas at a relatively high pressure comprising: a retort having a central reaction column and having an outlet for hot gas produced by the reaction column; means for introducing a pulverized carbon-containing fuel into the reaction column; means for introducing pressurized steam into the central reaction column to react therein with the pulverized fuel to produce the high pressure gas; wall means forming a tapered chamber surrounding said reaction column in coaxial relationship therewith said tapered chamber diminishes in area toward the top so as to achieve uniform heat transfer thereof; burner means coupled to said tapered chamber; compressor means for producing air at relatively high pressure; means for introducing compressed air from said compressor means into said tapered chamber; and means for introducing combustible gas into the tapered chamber to be burned by said burner means so as to produce pressurized hog flue gas passing through the tapered chamber at a high velocity to provide sufficient convective heat transfer to produce enough heat radiation into the central reaction column to react the carbon in the pulverized fuel with steam.

4,212,653

PROCESS AND APPARATUS FOR SEPARATING PARTICULATE MATTER FROM GASEOUS MEDIA

Walter B. Giles, Glenville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 27, 1978, Ser. No. 919,460
Int. Cl.² B01D *45/16*
U.S. Cl. 55—1 **9 Claims**



1. In a process for separating particulate matter from a contaminated gaseous medium containing said particulate matter therein, comprising:

(A) passing said contaminated gaseous medium through a first swirl-inducing zone to form a swirling contaminated gaseous medium,

(B) introducing said swirling contaminated gaseous medium into a cyclonic separation zone via a path adjacent an inner surface of a wall defining a periphery of said separation zone to separate at least a portion of said particulate matter from said swirling contaminated gaseous medium and form a gaseo .s product which is at least partially depleted in said particulate matter, and

(C) removing said gaseous product from said separation zone through a gaseous exhaust flow zone disposed radially inwardly of said first swirl-inducing zone,

the improvement for increasing separation efficiency, which comprises:

(D) passing a substantially contaminant-free gaseous medium through a second swirl-inducing zone to form a co-swirling substantially contaminant-free gaseous medium,

(E) introducing said co-swirling gaseous medium into said separation zone through an introduction zone disposed radially inwardly of said swirling contaminated gaseous medium and radially outwardly of said exhaust flow zone, and

(F) employing an additional wall to separate said introduction zone from the so-introduced swirling contaminated gaseous medium, said additional wall extending into said separation zone, said exhaust flow zone extending into said separation zone further than said additional wall so extends, such that separation of the introduced co-swirling contaminated gaseous medium from the introduced swirling substantially contaminant-free gaseous medium is terminated before the swirling contaminated gaseous medium has passed said exhaust flow zone.

7. In an apparatus for separating particulate matter from a contaminated gaseous medium containing said particulate matter therein, comprising:

(A) means for passing said contaminated gaseous medium through a first swirl-inducing chamber to form a swirling contaminated gaseous medium,

(B) means for introducing said swirling contaminated gaseous medium into a cyclonic separation chamber via a path adjacent an inner surface of a wall defining a periphery of said separation chamber to separate at least a portion of said particulate matter from said swirling contaminated gaseous medium and form a gaseous product which is at least partially depleted in said particulate matter, and

(C) means for removing said gaseous product from said separation chamber through a gaseous exhaust flow conduit disposed radially inwardly of said first swirl-inducing chamber,

the improvement for increasing separation efficiency, which comprises:

(D) means for passing a substantially contaminant-free gaseous medium through a second swirl-inducing chamber to form a co-swirling substantially contaminant-free gaseous medium, and

(E) means for introducing said co-swirling gaseous medium into said separation chamber through an introduction chamber disposed radially inwardly of said swirling contaminated gaseous medium and radially outwardly of said exhaust flow conduit,

and wherein:

(a) said introduction chamber is an annular chamber defined by the outer surface of said exhaust conduit and an additional wall disposed intermediate said outer surface of said exhaust conduit and the inner surface of the wall defining said periphery of said separation chamber, and

(b) said exhaust conduit extends into said separation chamber further than said additional wall so extends.

4,212,654

CENTRIFUGAL WET GAS SCRUBBING METHOD AND APPARATUS

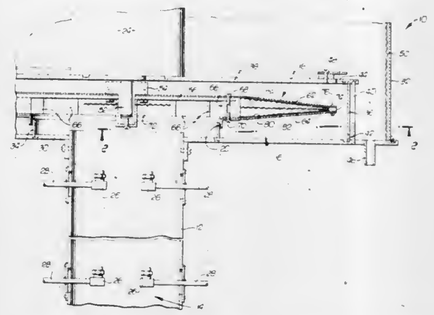
Guy C. Caraway, deceased, late of Downey, Calif., and by Virginia M. Caraway, executrix, 9703 Wiley Burke Ave., Downey, Calif. 90240

Continuation of Ser. No. 786,105, Apr. 11, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,415
Int. Cl.² B01D *47/06*
U.S. Cl. 55—91 **7 Claims**

1. A gas scrubbing method, including the steps of:

(a) uniformly wetting the gas to be scrubbed with water vapor to a relative humidity of substantially 100%; and

(b) centrifugally compressing the wetted gas in an enclosed rotating structure, including impinging the water vapor on a screen in the rotating structure, to a density many times atmospheric to condense and extract therefrom at least part of the water vapor and contaminants in the gas which are contacted by the water vapor.

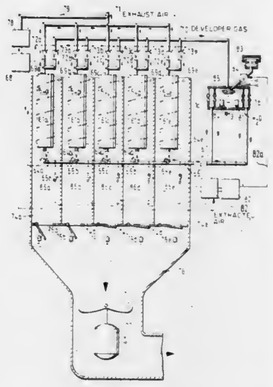


4,212,655

ARRANGEMENT FOR AMMONIA FEED IN COPYING EQUIPMENT

Karl-Heinz Degenhardt, Bad Schwalbach; Gerhard Marx, Taunusstein, and Hermann Frank, Niederwalluf, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 28, 1977, Ser. No. 846,311
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649294
Int. Cl.² B01D *53/06*
U.S. Cl. 55—181 **9 Claims**



1. In an arrangement for ammonia feed in copying equipment with at least four switchable adsorption vessels each containing an adsorbent, at least one adsorption vessel of which in each case, the adsorbent of which is not saturated with ammonia, is charged with ammonia-containing air extracted from a developing chamber before this air leaves the copying equipment as cleaned exhaust air, and at least one adsorption vessel of which after saturation of the adsorbent can be regenerated by heating, and means whereby the liberated ammonia can be fed to the developing chamber,

the improvement comprising means to connect the adsorption vessels to a line for the ammonia-containing air extracted from the developing chamber,

means to heat the individual adsorption vessels,

means to connect a gas outlet of each adsorption vessel to an exhaust line and to a line to the developing chamber,

means whereby a first adsorption vessel of which in each

case can be charged with the air extracted from the developing chamber,

means whereby a second adsorption vessel of which in each case can be heated to liberate ammonia and means whereby it can be connected to the developing chamber,

means whereby a third adsorption vessel of which in each case likewise can be heated to liberate water and means whereby it can be connected to an exhaust air line,

means whereby a fourth adsorption vessel of which in each case, before a renewed charging, with the air discharged from the copying equipment, can be cooled in a cooling air stream,

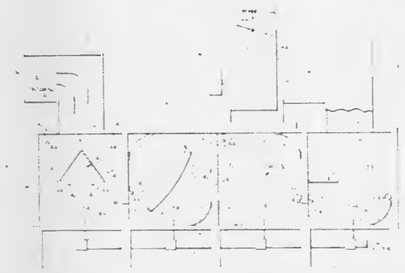
and means whereby the four adsorption vessels can be switched at the same time cyclically, according to the concentration of ammonia measured in the exhaust air, in such a manner that when a predetermined concentration of ammonia is exceeded the fourth adsorption vessel, which has cooled last, can be charged with the air extracted from the developing chamber, that the third adsorption vessel, heated last to liberate water, can be cooled, and the second adsorption vessel, heated last to drive out the ammonia, continues to be heatable but can be connected to the exhaust air line instead of the developing chamber, and the first adsorption vessel charged last with extracted air can be heated to drive out the ammonia and can be connected to the developing chamber, and wherein each adsorption vessel is located in a separate flow duct of a coolant, including means whereby each flow duct can be closed and can be connected to a common duct for the coolant, and including means in said common duct for circulating ambient air as said coolant.

4,212,656

SMOKE SCRUBBING APPARATUS

John G. Lube, 39 Springton Rd., Upper Darby, Pa. 19082

Filed Dec. 4, 1978, Ser. No. 966,004
Int. Cl.[2] B01D *45/08*
U.S. Cl. 55—217 **8 Claims**



8. A scrubbing apparatus for removing solid and soluble gaseous contaminents from smoke and similar gases comprising:

a housing including a top, a bottom, a front side and a rear side, a first end and a second end, said sides and said ends being placed essentially mutually perpendicular to each other and to said top and bottom, said housing being subdivided by a plurality of inner walls parallel to said ends and extending between said sides and substantially from said top to said bottom into;

a first chamber lying between the first end and a first internal wall and further comprising a contaminated gas inlet located in the top thereof, baffle means adapted to cooperate with said inlet to channel and direct said gas past a first steam spray means located beneath said inlet at an angle to said baffle means and then past a second spray means beneath said baffle, said spray being directed to be substantially perpendicular to the channeled gas flow whereby the gas is hydrated for scrubbing, and a first gas outlet in the bottom portion of said first internal wall;

a second chamber lying between the first internal wall, and a second internal wall, adapted to receive the hydrated gas from said first chamber and further comprising water cooled baffle means situated so as to direct said incoming gas past a third steam spray means which in turn are directed to impinge on said water cooled baffle means whereby a partial steam condensation and first scrubbing action occurs, said condensate flowing to the bottom of said chamber, a water filled sump in the bottom of said chamber extending between said sides and through said first gas outlet into said first chamber, said sump further comprising a water inlet for initial liquid charge and make up which is adapted to operate in said first and second chambers and through which the condensate is removed from said chambers while at the same time maintaining the sump water level, and a second gas outlet in the upper portion of said second internal wall through which the partially scrubbed gas exits;

a third chamber lying between said second internal wall, and a third internal wall including baffle means positioned and dimensioned therewithin to be a substantial mirror image of said water cooled baffle means; said third chamber being, adapted to receive the partially scrubbed gas from said second chamber and further comprising a first water quench means whereby the gas stream is cooled and the steam, hydrated solid contaminents and soluble gases are condensed and collected thus achieving a second scrubbing, said scrubbed condensate flowing along with said quench water to the bottom of said chamber, a drain in the bottom of said chamber to remove the quench water and condensate and a third gas outlet in the bottom of said third internal wall through which the cooled scrubbed gas stream is discharged;

a fourth chamber lying between said third internal wall and said second end, adapted to receive the cooled gas stream from said third chamber and further comprising a second quench water means adapted to perform a final scrubbing and cooling of said gas stream, a gas discharge in the top of said chamber from which the cooled cleaned gas exits the system, said discharge further comprising fan means and being constrictable by a variable damper contained therein so as to keep system gas velocity and pressure even, a third water quench means adapted to only operate when the temperature of the existing gas exceeds a preset level, cantilevered baffle means to prevent spray from the second and third quenches from being swept out of said gas outlet and a water filled sump in the bottom of said chamber extending between said sides and through said third gas outlet into said third chamber, said sump further comprising a water inlet for initial charge and makeup, which is adapted to cooperate with elevated drains in both the third and fourth chambers through which the contaminated condensate and quench water are removed from the system to maintain sump depth, and

filter means adapted to receive the discharges from said sumps and further adapted to separate said solid contamination and said drained discharges whereby said solids are removed and the quench water salvaged for reuse.

4,212,657

DEVICE FOR THE REMOVAL OF PARTICLES OF LEAD FROM THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

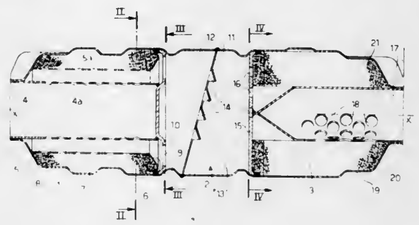
Mario Urbinati, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Dec. 26, 1978, Ser. No. 973,293
Claims priority, application Italy, Jan. 16, 1978, 67069 A/78
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—319 **4 Claims**

1. A device for the removal of pollutant particles, particularly lead particles, from the exhaust gases of an internal combustion engine, comprising in combination:

a casing having internal subdivision means defining first, second and third chambers aligned with each other, said second chamber communicating both with said first and third chambers through openings of said internal subdivision means and said first and third chambers being respectively provided with an exhaust gas inlet and an exhaust gas outlet, so that the exhaust gases can flow in succession through said first, second and third chambers,

a metallic filler within said first and third chambers for conglomerating and trapping some of the pollutant particles,



a partition extending across said second chamber in a plane inclined to a transverse plane orthogonal to the longitudinal axis of the device at an angle of between 10° and 20°, said partition having its upper half closer to said third chamber and its lower half closer to said first chamber and being provided with a plurality of apertures having downwardly deflecting louvres which have deflecting surfaces inclined to the plane of the partition at an angle of between 30° and 40°, so as to be adapted to deflect downwardly the flow of partially purified gases coming from the first chamber in order to close the deposition of pollutant particles in the bottom of the second chamber.

4,212,658

CONNECTION BETWEEN PARALLEL TUBULAR COMPONENTS OF A CYCLONE SEPARATOR

Roger Bessouat, Paris; Gerard Tondeur, Velizy Villacoublay; Patrick Talleu, Chatou, and Jean-Pierre Cerdan, Houilles, all of France, assignors to Stein Industrie, Paris and Electricite de France, Velizy Villacoublay, both of, France

Filed Jan. 24, 1979, Ser. No. 6,304
Claims priority, application France, Feb. 13, 1978, 78 03983
Int. Cl.[2] B01D *45/16*
U.S. Cl. 55—347 **5 Claims**



1. A connection, in a cyclone separator, between parallel tubular components of circular cross-section, said connection comprising:

a pre-cut inlet disc for fluid to be separated,

polygonal adaptors for said tubular components, said adaptors being welded to said inlet disc, and

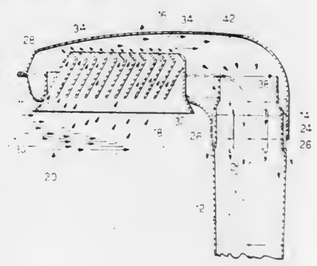
a second disc, coplanar with said first disc and having a predetermined spacing therefrom, and having spaced circular holes therein through which tubular component portions having a circular cross-section project, with said second disc forming a spacer for said tubular component circular cross-section said predetermined spacing being sufficient to substantially eliminate virbration of said tubular components during the operation of said cyclone separator.

4,212,659

AIR-INTAKE DEVICES FOR INTERNAL COMBUSTION ENGINES

Guido Magrini, Brescia, Italy, assignor to Fiat Veicoli Industriali S.p.A., Turin, Italy

Filed Dec. 7, 1978, Ser. No. 967,457
Claims priority, application Italy, Dec. 30, 1977, 69963 A/77
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—385 B **1 Claim**



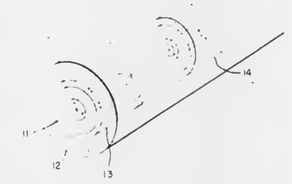
1. An air-intake device for an internal combustion engine comprising a vertically disposed induction conduit, a hollow casing having first and second means defining downwardly opening spaced apart intake and outlet apertures, the upper end of said induction conduit being disposed in said outlet aperture in communication with the interior of said casing, a plurality of baffle plates mounted in said intake aperture and having downstream end portions within said casing directed away from said outlet aperture, first annular water trap means surrounding said intake aperture and second annular water trap means surrounding said upper end of said induction conduit extending into said outlet aperture and means for draining said first and second water trap means.

4,212,660

METHOD FOR MAKING MULTIPLE MODE WAVEGUIDE HAVING CYLINDRICAL PERTURBATIONS

Robert D. Maurer, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 824,152, Aug. 12, 1977. This application Mar. 22, 1979, Ser. No. 22,890
Int. Cl.[2] C03C *25/02*; **C03D** *37/02*
U.S. Cl. 65—3 A **3 Claims**



1. The method of forming an optical waveguide capable of propagating light in multiple modes with power coupling between selected modes comprising:

providing a solid substantially cylindrical starting member having a smooth outside peripheral surface;

applying a plurality of distinct and successive layers of par-

ticular materials to said smooth outside peripheral surface of said solid cylindrical member, each such distinct layer having a substantially uniform composition therethrough, but having a progressively different composition from the preceeding layer so as to form a structure having a stepped radially varying composition, the composition of each said layer forming one of the steps;

modifying the index of refraction of said composition along a plurality of axial distances, each of said axial distances being separated by sapces of composition having unmodified index of refraction;

heating the structure so formed to the drawing temperature of the materials thereof; and,

drawing the heated structure to reduce the cross-sectional area thereof and to form a waveguide having a plurality of cylindrical perturbations along the length thereof, said perturbations including index of refraction variations in concentric rings within said composition.

4,212,661

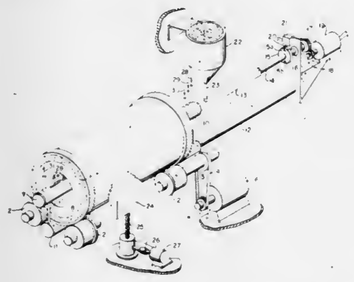
METHOD FOR THE MANUFACTURE OF HOLLOW FUSED QUARTZ OR FUSED SILICA INGOTS

Lothar Jung, 32 Lurline Dr., Millington, N.J. 07946

Division of Ser. No. 897,117, Apr. 17, 1978. This application Feb. 16, 1979, Ser. No. 12,706

Int. Cl.[2] C03B *3/00, 5/14*

U.S. Cl. 65—18 **15 Claims**



1. A method of manufacturing an ingot from a particulate ingot forming material, said method comprising:

(a) providing a rotatable elongated housing, having an inner surface serving as a casting surface for the particulate material, and an elongated hollow feeder tube adapted for insertion into the interior of the housing and having a longitudinal slot of a length corresponding to the length of the casting surface;

(b) rotating the elongated housing in a generally horizontal plane about its longitudinal central axis;

(c) charging the elongated hollow feeder tube with the particulate material through the slot;

(d) inserting the feeder tube into the rotating housing;

(e) revolving the feeder tube within the rotating housing until the slot faces downward, thereby dumping the charged particulate material along the length of the casting surface, the dumped particulate material adhering to the interior wall of the rotating housing by centrifugal force;

(f) heating the particulate material clinging to the interior wall of the housing as it is rotated to the top of the housing to melt the particulate material; and

(g) cooling the melt to solidify and removing the solidified melt as the ingot.

4,212,662

METHOD OF HEATING GLASS SHEETS FOR CONVEYING

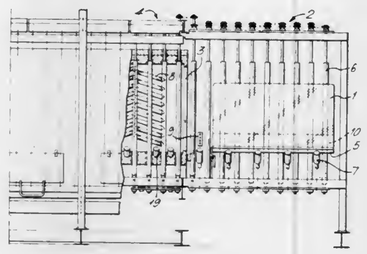
Paul A. Brereton, Moseley, and Roger Challis, Northfield, both of England, assignors to Triplex Safety Glass Company Limited, Birmingham, England

Filed Jan. 2, 1979, Ser. No. 426

Claims priority, application United Kingdom, Jan. 12, 1978, 1275/78

Int. Cl.[2] C03B *23/02*

U.S. Cl. 65—106 **10 Claims**



1. In a method of advancing a glass sheet through contact of a conveyor therewith, the improvement comprising:

heating a peripheral zone of the glass sheet at a rate to differentially heat said peripheral zone relative to the central area of the glass sheet to bend the sheet to a stable anticlastic shape in which said sheet is arched away from the conveyor transversely of the direction of advance of the sheet and in which said sheet has a reverse curvature along the direction of its advance whereby the leading and trailing edges of the sheet are bent away from the conveyor.

8. In a method of advancing a glass sheet through contact of a conveyor therewith, the improvement comprising:

cooling a central area of the glass sheet at a rate to differentially cool said central area relative to a peripheral zone of the sheet to bend the sheet to a stable anticlastic shape in which said sheet is arched away from the conveyor transversely of the direction of advance of the sheet and in which said sheet has a reverse curvature along the direction of its advance whereby the leading and trailing edges of the sheet are bent away from the conveyor.

4,212,663

REACTANTS DELIVERY SYSTEM FOR OPTICAL WAVEGUIDE MANUFACTURING

Mohd A. Aslami, Dhahran, Saudi Arabia, assignor to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 801,659, May 31, 1977, abandoned. This application Jan. 26, 1978, Ser. No. 872,619

Int. Cl.[2] C23C *13/12;* **C03B** *19/06*

U.S. Cl. 65—144 **21 Claims**

9. Apparatus for forming an optical waveguide blank having a radially varying index of refraction, comprising:

vapor deposition means for receiving at least one source material vapor entrained in a carrier gas and directing said vapor towrd a starting member;

means for rotatably disposing a substantially cylindrical starting member in proximity to said vapor deposition means for accumulating source material from said deposition means;

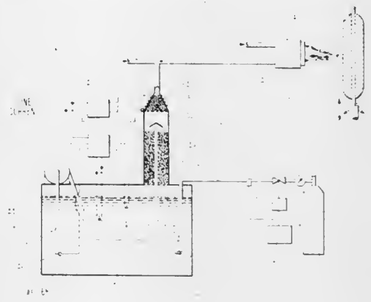
a reservoir for retaining a quantity of the source material in liquid form;

a column disposed above said reservoir and including a porous packing, said column having an outlet disposed above said packing and in fluid flow communication with said deposition means;

pump means for withdrawing the source material from the reservoir and discharging the material into said column at a point above the lowermost end of said packing;

a source of carrier gas;

control means for determining the flow rate of said carrier gas; and



means coupling said control means to said column for introducing carrier gas into said packing at a point below said outlet.

4,212,664

NICOTINAMIDE-AMMONIUM HYDROXIDE PLANT GROWTH REGULATOR COMPOSITIONS

Setsuo Takeuchi, Higashiyamato; Akira Kawarada, Tokyo; Yasuo Ota, and Masayoshi Nakayama, both of Kounosu, all of Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Continuation of Ser. No. 785,868, Apr. 7, 1977, abandoned, which is a continuation of Ser. No. 547,204, Feb. 5, 1975, abandoned, which is a continuation of Ser. No. 402,742, Oct. 2, 1973, abandoned. This application Mar. 20, 1979, Ser. No. 22,274

Claims priority, application Japan, Oct. 3, 1972, 47/99212

Int. Cl.[2] A01N *5/00*

U.S. Cl. 71—94 **6 Claims**

1. A plant growth regulating composition comprising from about 0.005 to about 10% by weight based on the weight of the composition of nicotinamide, a source of NH_4+ ions derived from ammonium hydroxide absorbed on silica gel, and an inert carrier therefor.

4,212,665

DECARBURIZATION OF METALLIC ALLOYS

Bruce L. Barton, Utica; Walter E. Johnson, Clinton, and Anthony J. Notaro, Whitesboro, all of N.Y., assignors to Special Metals Corporation, New Hartford, N.Y.

Filed Jul. 27, 1978, Ser. No. 928,768

Int. Cl.[2] C22B *4/00;* **C21C** *7/10*

U.S. Cl. 75—10 V **5 Claims**

1. In a process for producing a metallic alloy, which process includes the steps of: charging a furnace; melting the charge; decarburizing the melt in a subatmospheric pressure; and casting the melt; the improvement comprising the steps of decarburizing said melt by adding both an oxide of an element of said alloy and a flux, said flux lowering the melting point of said oxide, said flux causing said oxide to assimilate with said melt; and by maintaining said melt at an elevated temperature in said subatmospheric pressure for a period of time sufficient to lower said melts carbon content to a desired level, oxygen within said oxide reacting with carbon within said melt to form gaseous compounds which emerge from said melt.

4,212,666

TIN RECOVERY

Edwin B. King, Dickinson; Wilson R. Barnes, and Luis W. Pommier, both of Seabrook, all of Tex., assignors to Associated Metals & Minerals Corporation, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,087

Int. Cl.[2] C22B *25/00*

U.S. Cl. 75—85 **17 Claims**



1. Removing tin from a tin-bearing material by:

(a) heating the material in the presence of slag-forming fluxing agents and a carbonaceous reducing agent to form a molten slag from which some of the tin separates as molten metal;

(b) separating the molten tin metal from the molten slag;

(c) thereafter adding carbon and a chloride-containing material to the molten slag to cause the tin remaining in the slag to form a volatile tin chloride compound; and

(d) stirring the molten slag in the presence of the chloride-containing material to release the volatile tin compound from the molten slag.

4,212,667

BLAST FURNACE SMELTING OF ZINC

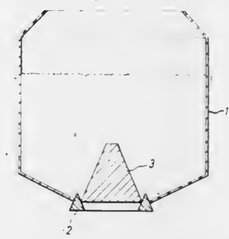
Michael W. Gammon, and Colin F. Harris, both of Bristol, England, assignors to Metallurgical Development Company, Nassau, The Bahamas

Filed Dec. 5, 1978, Ser. No. 966,732

Claims priority, application United Kingdom, Dec. 12, 1977, 51543/77

Int. Cl.[2] C22B *19/08*

U.S. Cl. 75—86 **12 Claims**



1. A method of smelting zinc in a blast furnace wherein the furnace is charged sequentially with separate loads of coke and agglomerated zinc oxide material, comprising, for a major proportion of the total operating time which is devoted to coke

charging, centrally directing from 25% to 50% by weight of the coke charged towards the center of the furnace shaft so as to promote a coke-rich charge core, while annularly directing the remainder of the coke charged towards the furnace walls, and for a minor proportion of said total operating time annularly directing from 80% to 95% by weight of the coke charged towards the walls of the furnace shaft to aid accretion melting, while centrally directing the remainder of the coke charged towards the center of the furnace shaft.

4,212,668

STEEL FOR ATOMIC REACTOR VESSELS

Nikolai N. Zorev, ulitsa Novinki, 6, kv. 23, Moscow; Vladimir A. Tsykanov, ulitsa Angarskaya, 9, kv. 1, Dimitrovgrad Ulyanovskoi oblasti; Igor V. Gorynin, ulitsa Gromova, 16, kv. 50; Lev V. Tupitsyn, ulitsa I Maya, 27/44, kv. 9, both of Leningrad; Georgy P. Fedortsov-Lutikov, ulitsa Zhigulevskaya, 30, kv. 34, Moscow; Anatoly A. Astafiev, ulitsa Sharikopodshipnikovskaya, 2, kv. 34, Moscow; Vladimir S. Dub, ulitsa Festivalnaya, 14, korpus 3, kv. 372, Moscow; Oleg M. Vishkarev, ulitsa Sakhalinskaya, 4, kv. 72, Moscow; Alexandr S. Loboda, Otkrytoe shosse, 6, korpus 3, kv. 48, Moscow; Iraida I. Kalugina, Simonovsky val, 19, kv. 56, Moscow; Nikolai N. Kobelev, ulitsa Azovskaya, 25/22, kv. 16, Moscow; Valentin V. Krasinsky, ulitsa Izumrudnaya, 8, kv. 51, Moscow; Valery A. Litvak, Kolpino, Sovetsky bulvar, 27, kv. 8, Leningrad; Evgeny F. Davydov, prospekt Lenina, 30a, kv. 64; Valentin K. Shamardin, ulitsa Teatralnaya, 4b, kv. 4, both of Dimitrovgrad Ulyanovskoi oblasti; Jury F. Balandin, ulitsa Basseinaya, 117, korpus 1, kv. 35, Leningrad; Vladimir A. Nikolaev, ulitsa Radischeva, 14, kv. 16, Gatchina Leningradskoi oblasti; Jury V. Sobolev, prospekt Lenina, 30/9, kv. 10; Anatoly M. Parshin, prospekt Annikova, 11-1, kv. 43, both of Leningrad, and Vladimir I. Badanin, ulitsa Gagarina, 12, kv. 21, Gatchina Leningradskoi oblasti, all of U.S.S.R.

Filed Jul. 24, 1978, Ser. No. 927,501

Int. Cl.² C22C *38/42*

U.S. Cl. 75—125 **1 Claim**

1. A steel for atomic reactor vessels, said steel consisting essentially of, in weight percent,

carbon	from 0.13 to 0.18
silicon	from 0.15 to 0.30
manganese	from 0.30 to 0.60
chromium	from 1.6 to 2.5
nickel	from 1.0 to 2.0
molybdenum	from 0.5 to 0.7
vanadium	from 0.01 to 0.12
copper	from 0.01 to 0.05
antimony	from 0.0005 to 0.009
tin	from 0.0005 to 0.009
phosphorus	from 0.001 to 0.005
arsenic	from 0.0005 to 0.002
iron,	the balance,

the total amount of phosphorus and arsenic contained in said composition is expressed by the following relationship:

$$P + 5As \geqq 1.10^{-2} \text{ wt.\%}.$$

4,212,669

METHOD FOR THE PRODUCTION OF PRECISION SHAPES

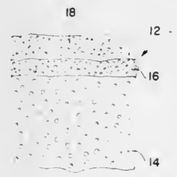
Stewart J. Veeck; William R. Freeman, both of North Muskegon, and Louis E. Dardi, Muskegon, all of Mich., assignors to Howmet Turbine Components Corporation, Muskegon, Mich.

Continuation-in-part of Ser. No. 705,087, Jul. 14, 1976, Pat. No. 4,104,782. This application Aug. 3, 1978, Ser. No. 930,810

Int. Cl.² B22F *5/00*

U.S. Cl. 75—226 **10 Claims**

1. In a process for producing metal shapes from powder particles which includes the steps of shaping the particles into a self-sustaining porous preform, applying a porous coating to the preform, subjecting the coated preform to a vacuum whereby the preform is degasified, conducting a fusion step comprising heating the coated preform, while maintaining the vacuum, to a temperature sufficient to render the coating non-porous and pressure-tight, and subjecting the preform to hot isostatic pressing, the improvement wherein said coating is applied by forming a first barrier layer on the preform, said



barrier layer comprising a composition sufficiently porous to permit said degasification and which remains solid during said fusion step, and applying a second layer over said first layer, said second layer comprising a metal alloy which is initially porous to permit said degasification, which fuses during said fusion step, and which is solid during the subsequent hot isostatic pressing whereby said second layer provides the means for rendering the coating non-porous and pressure-tight.

4,212,670

TITANIUM OXYCARBONITRIDE BASED HARD ALLOY

Gennady P. Shveikin, ulitsa Malysheva, 129, kv. 9; Vladislav D. Ljubimov, ulitsa Lunacharskogo, 182, kv. 122; Boris V. Mitrofanov, Sovetskaya ulitsa, 51, kv. 168; Vladimir A. Privalov, ulitsa Dobroljubova, 2, kv. 2, all of Sverdlovsk; Evgeny K. Plaxin, Kirovgradskaya ulitsa, 3, kv. 27, Kirovgrad Sverdlovskoi oblasti; Dmitry S. Elinson, ulitsa Shartashskaya, 10, kv. 12, Sverdlovsk; Stanislav I. Alyamovsky, ulitsa Lunacharskogo, 87, kv. 64, Sverdlovsk; Jury G. Zainulin, ulitsa Malysheva, 131, kv. 5, Sverdlovsk, and Sergei P. Makarov, ulitsa Gazorezchikov, 8, kv. 1, Sverdlovsk, all of U.S.S.R.

Continuation of Ser. No. 658,693, Feb. 17, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 885,486

Int. Cl.² C22C *1/05, 29/00*

U.S. Cl. 75—233 **1 Claim**

1. A titanium carbonitride-base hard alloy with a nickel-molybdenum binder comprising, in percent by weight:

nickel: 9.5-49.0

molybdenum: 2.5-20.5

uncombined carbon: not greater than 0.6,

and wherein the titanium carbonitride component has the formula $TiC_xN_yO_z$, and contains oxygen in amounts varying from 0.155 to 3.5 percent by weight, said titanium carbonitride constituents having the following ratios: x=0.45 to 0.55, y=0.41 to 0.55, z=0.003 to 0.14, with x+y+z=1; said alloy having a low porosity of from 0.1 to 0.3 percent.

4,212,671

CEMENTED CARBIDE CONTAINING MOLYBDENUM TUNGSTEN CARBONITRIDE HAVING WC TYPE STRUCTURE

Peter Ettmayer, and Richard Kieffer, both of Vienna, Austria, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Jan. 27, 1978, Ser. No. 872,926

Claims priority, application Austria, Jan. 27, 1977, 496/77

Int. Cl.² C22C *29/00*

U.S. Cl. 75—238 **5 Claims**

1. A cemented carbide consisting of one or more hard materials in an amount of 70 to 97% by weight and a binder alloy of iron group metals in amounts of 3 to 30% by weight, characterized in that the hard material part consists of at least 20% by weight of molybdenum-tungsten carbonitride having the structure of tungsten carbide WC.

4,212,672

LITHOGRAPHIC SILVER HALIDE PHOTOSENSITIVE MATERIAL

Yuji Mihara; Haruo Takei, and Noriyuki Inoue, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

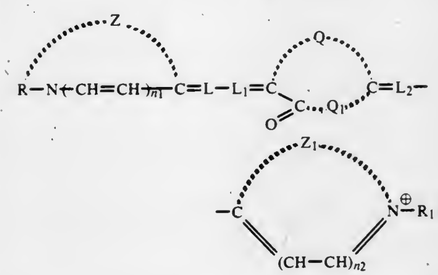
Filed Jul. 12, 1978, Ser. No. 924,108

Claims priority, application Japan, Jul. 12, 1977, 52-83230

Int. Cl.² G03C *5/04, 1/08*

U.S. Cl. 430—494 **10 Claims**

1. A lithographic silver halide photographic material providing superior dot quality comprising a support having thereon a silver halide emulsion layer containing at least one sensitizing dye represented by the following general formula (I):



wherein Z and Z_1, which may be the same or different, each represents the non-metal atoms necessary for completing a 5-membered or 6-membered nitrogen-containing heterocyclic nucleus; R and R_1, which may be the same or different, each represents an alkyl group or an aryl group; Q and Q_1 together represent the non-metal atoms necessary for completing a 4-thiazolidinone nucleus, 5-thiazolidinone nucleus, or 4-imidazolidinone nucleus; L, L_1 and L_2 each represents a methine group; n_1 and n_2 each represents 0 or 1; and m represents 0 or 1, m being 0 when the dye forms an inner salt; with the silver halide emulsion layer or a layer adjacent the silver halide emulsion layer containing at least one compound represented by the following general formula (II):

$$D_1—A—D_2 \quad \text{(II)}$$

wherein D_1 and D_2, which may be the same or different, each represents a condensed polycyclic aromatic heterocyclic residue or an aromatic heterocyclic-substituted amino group, wherein the polycyclic aromatic heterocyclic residue or the aromatic heterocyclic-substituted amino group may contain an $—SO_3M$ group wherein M represents a hydrogen atom or a cation; and —A— represents a divalent aromatic residue, with the proviso that when D_1 or D_2 does not contain an $—SO_3M$ group, —A— contains an $—SO_3M$ group; and with the silver halide photographic material containing at least one polyalkylene oxide compound capable of increasing infections development.

10. A process for forming images which comprises exposing the lithographic silver halide photographic material of claim 1 to neo-helium laser light using a scanner and then subjecting the exposed photographic material to a lithographic development, whereby superior dot images are obtained.

4,212,673

FILM UNIT ASSEMBLY

Gurdip S. Sethi, Rochester; Karl Sperber, Hilton, and Donald G. Tidd, Palmyra, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 4, 1978, Ser. No. 931,079

Int. Cl.² G03C *1/76, 1/72*

U.S. Cl. 430—496 **13 Claims**

1. A photographic film unit comprising:

an annular photosensitive sheet having a central aperture;

a thermoplastic hub received in the central aperture with clearance to permit movement between said sheet and said hub; and



a mass of thermoplastic material melted from said hub into the clearance between said hub and said sheet to immobilize said sheet relative to said hub.

4,212,674

CORROSION PREVENTATIVE PIGMENT AND COMPOSITION

Dieter Strauch, Zofingen, Switzerland, assignor to Plüss-Staufer AG, Oftringen, Switzerland

Filed Jun. 4, 1973, Ser. No. 366,325

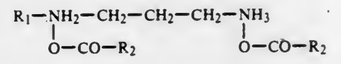
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1972, 2228200

The portion of the term of this patent subsequent to Jan. 15, 1994, has been disclaimed.

Int. Cl.² C09K *3/00*

U.S. Cl. 106—14.05 **11 Claims**

1. A corrosion inhibiting secondary pigment for use in a coating composition, said secondary pigment comprising a first material selected from the group of N-octadecene (9) yl-1,3-propanediammonium dioctadecene (9) ylate; fatty amine salts of the formula:



wherein R_1 is $CH_3—(CH_2)_n$ wherein n is an integer from 15 to 17, and R_2 is $CH_3—(CH_2)_7—CH=CH—(CH_2)_7$; and mixtures thereof; and a second material in the form of fine particles serving as a carrier for the first material, said first material being coated on said particles in the form of a film whereby high surface to volume ratio for said first material is established.

4,212,675

FIREPROOFING

Garnet Robinson, Weston-Super-Mare, England, assignor to Retroflame International Limited, Gloucestershire, England

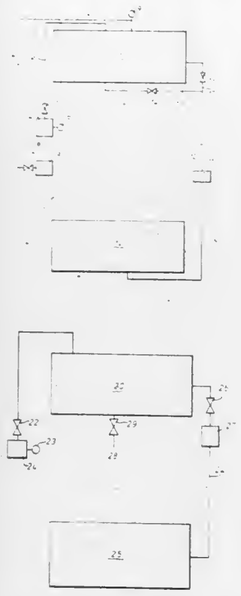
Filed Apr. 3, 1978, Ser. No. 893,198

Int. Cl.² C09D *5/18*

U.S. Cl. 106—18.15 **28 Claims**

1. A fireproofing composition containing an aqueous solution of a fire retardant water-soluble inorganic ammonium salt and a surface tension reducing amount of a surfactant selected from the group consisting of organic polyphosphoric ester-acids and salts thereof, wherein said ester acids are coesters of

an aliphatic alcohol and a nonionic adduct of ethylene oxide and a reactive-hydrogen-containing organic compound in



which coesters less than all of the phosphate protons are consumed by ester bonds.

4,212,676

COMPOSITIONS FOR SOLID WRITING MATERIALS AND WRITING IMPLEMENTS

Ken Ueda, Shijonawate, Japan, assignor to Sakura Color Products Corporation, Japan

Filed Feb. 13, 1979, Ser. No. 11,935
Claims priority, application Japan, Feb. 22, 1978, 53-20284
Int. Cl.[2] C09D *13/00*
U.S. Cl. 106—19 **19 Claims**

1. A composition for a writing material comprising:

(i) about 25 to 50% by weight of at least one emulsifiable polyethylene wax having a penetration value according to JIS K 2530 of about 1 to about 20 and an acid value of about 10 to about 25,

(ii) about 12 to about 25% by weight of at least one liquid organic compound having a boiling point of not lower than 190° C. and a viscosity of about 10 to about 2000 cps at 20° C. and selected from the group consisting of (a) higher aliphatic monohydric alcohols, (b) saturated aliphatic dihydric alcohols, (c) polyalkyleneoxides and (d) glycerine and glycerine derivatives,

(iii) about 20 to about 45% by weight of at least one organic solvent capable of dissolving or uniformly dispersing the components (i) and (ii) and having a boiling point higher than about 90° C. but lower than 190° C. and selected from the group consisting of (a) ethers of glycols, (b) ether esters of glycols, (c) aliphatic monohydric alcohols, (d) cyclic monohydric alcohols and (e) a mixture containing 50 to 99% by weight of at least one of the solvents (a), (b), (c) and (d) and 1 to 50% by weight of non-polar organic solvents, and

(iv) about 2 to about 30% by weight of at least one pigment.

4,212,677

MOLDING SAND MIXTURE FOR THE MANUFACTURE OF MOLDS AND CORES

Jury G. Khmelev, ulitsa Barrikadnaya, 19, kv. 87; Gennady P. Kim, ulitsa Marshala Eremenko, 53, kv. 32, both of Volgograd; Dmitry Y. Zhinkin, ulitsa 5 Parkovaya, 56, korpus 6, kv. 51, and Solomanida I. Kleschevnikova, ulitsa Bazhova, 15, korpus 1, kv. 22, both of Moscow, all of U.S.S.R.

Filed Oct. 25, 1978, Ser. No. 954,575
Int. Cl.[2] B28B *7/34*
U.S. Cl. 106—38.35 **3 Claims**



1. In molding sand mixtures for the manufacture of molds and cores and which comprise a filler, a binder in the form of a solution of hydrolyzed ethylsilicate and a curing agent to cause gelling of the solution of ethylsilicate, the improvement which comprises using as the curing agent an organic solution of a polyorganosilazane of the formula:

$$\{(R_2SiNH)_n[R'Si(NH)_{1.5}]_m\}_k,$$

wherein R is CH_3, R' is selected from the group consisting of CH_3 and C_6H_5, n=1, k=4, m=1-3, the filler, binder and curing agent being present in the following proportions in percent by weight:

[solution of hydrolyzed ethylsilicate] binder	10 to 35
[organic solution of polyorganosilazane[curing agent	0.2 to 2.0
filler	the balance.

4,212,678

RAPIDLY CRYSTALLIZED BETA-SPODUMENE GLASS-CERAMIC MATERIALS

Kenneth Chyung, Painted Post, and John E. Megles, Jr., Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 848,862, Nov. 7, 1977, abandoned. This application Jan. 17, 1979, Ser. No. 4,042
Int. Cl.[2] C03C *3/22*
U.S. Cl. 106—39.7 **7 Claims**

4. A white, opaque, chemically durable, low-expansion glass-ceramic material comprising beta-spodumene solid solution as the principal crystal phase, said material being produced by

(a) selecting for crystallization a glass having an oxide composition falling within one of Ranges I and II below, wherein:

Range I includes compositions consisting essentially, in weight percent, of about 63–67% SiO_2, 18–21% Al_2O_3, 3.0–5.0% Li_2O, 1.0–2.5% MgO, 0.4–2.5% ZnO, 4.0–5.0% $TiO_2$1.5–4.7% PbO, 0–1.0% B_2O_3, 0–1.0% Na_2O, 0–2.0% P_2O_5, and 0–2% total of $B_2O_3+Na_2O+P_2O_5$; and

Range II includes compositions consisting essentially, in weight percent, of about 68–71% SiO_2, 16–18% Al_2O_3, 3.0–5.0% Li_2O, 1.0–2.5% MgO, 0.4–2.5% ZnO, 4.0–5.0% TiO_2, 0–1.0% B_2O_3, 0–1.0% Na_2O, 0–2.0% P_2O_5, and 0.2–2.2% total of $B_2O_3+Na_2O+P_2O_5$; and

(b) converting the selected glass to a white, opaque glass-ceramic material utilizing a crystallization heat treatment wherein the crystallization temperature does not exceed about 1000° C. and the time of exposure to crystallization temperatures in the range of about 900°–1000° C. does not exceed about 2 hours;

said glass-ceramic material exhibiting an average linear coefficient of thermal expansion (25°–300° C.) not exceeding about 13×10^{-7}/°C. and excellent detergent durability.

4,212,679

METHOD OF MAKING MAGNESITE GRAIN

Kermit M. Bonar, Clearfield, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 499,682, Aug. 28, 1974, abandoned. This application Sep. 12, 1978, Ser. No. 941,705
Int. Cl.[2] C04B *35/48, 35/04*
U.S. Cl. 106—57 **8 Claims**

1. A method for making magnesite grain comprising mixing magnesium hydroxide slurry, lime yielding material and zircon in proportions sufficient to provide an MgO content between 85 and 95%, by weight, and calcining the mixture with subsequent dead burning to provide a grain consisting essentially of 2.5 to 7.7%, by weight, calcium zirconate, 2.4 to 7.4%, by weight, dicalcium silicate and the balance periclase.

4,212,680

THIXOTROPIC REFRACTORY BINDER BASED UPON ALUMINUM PHOSPHATE GELLED SILICA SOLS

Lawrence E. Schulz, Park Forest, Ill., assignor to Nalco Chemical Co., Oak Brook, Ill.

Filed Apr. 30, 1979, Ser. No. 34,240
Int. Cl.[2] C03C *35/14, 35/44;* **B01J** *13/00*
U.S. Cl. 106—65 **2 Claims**

1. An improved refractory binder consisting essentially of:

Ingredients	% by Weight
Aqueous colloidal silica sol having an average particle size greater than 35 millimicrons and a silica concentration, (SiO_2), of at least 40% by weight	60–85
Phosphoric acid expressed as P_2O_5	5–35
Al_2O_3 (Alumina)	5–15

4,212,681

METHOD OF ACCELERATING THE HARDENING AND INCREASING THE STRENGTH OF PORTLAND CEMENT

Yordan T. Simeonov, and Nikola B. Djabarov, both of Sofia, Bulgaria, assignors to Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban, Sofia, Bulgaria

Continuation of Ser. No. 839,043, Oct. 3, 1977, abandoned. This application Dec. 14, 1978, Ser. No. 970,056
Int. Cl.[2] C04B *7/35*
U.S. Cl. 106—89 **3 Claims**

1. A method of accelerating the hardening and increasing the strength of Portland cement, which comprises mixing 100 parts by weight of Portland cement with water with a mixture of 4–16 parts by weight, containing dialuminum pentahydroxychloride, calcium sulfate and calcium oxide in weight ratios of Al_2O_3:$CaSO_4$:CaO=1:3.5 to 4.3:1.3 to 1.8 and up to 2 parts by weight of an alkali metal nitrite, at a temperature up to 90° C., thereafter permitting the mixture to harden at a temperature up to 100° C.

4,212,682

PROCESS AND APPARATUS FOR PRODUCING AN AGGREGATE MATERIAL FROM BOTTOM ASH

William E. Burkett, Saltville, Va., assignor to James River Hydrate & Supply Co., Inc., Buchanan, Va.

Filed Mar. 13, 1978, Ser. No. 886,116
Int. Cl.[2] C04B *31/10*
U.S. Cl. 106—288 B **9 Claims**

1. A process for producing a cinder aggregate from solid particles of bottom ash formed by burning coal in a power plant, the process comprising the steps of:

(a) mixing water with the bottom ash at the power plant to form a slurry;

(b) transporting the slurry from the power plant through a conduit to a processing plant;

(c) passing the slurry through a baffled flume in the processing plant to partially dewater the slurry; said step of passing the slurry through the flume including the steps of

(i) directing solid particles in the slurry toward the bottom of the flume by baffles which are inclined downwardly in the direction of flow to produce a concentrated slurry component in the region of the bottom of the flume and an upper slurry component in the region of the top of the flume, said upper slurry component comprising excess water and undesirable proportions of fine particles; and

(ii) directing the uppr, slurry component away from the slurry flow path as a first waste component;

(d) passing the slurry through a classifier subsequent to said step of passing the slurry through the flume to claim the larger particles, said step of passing the slurry through the classifier including the steps of

(i) classifying the material into a second waste component including water and undersized particles and into an aggregate component comprising solid particles of desired size; and

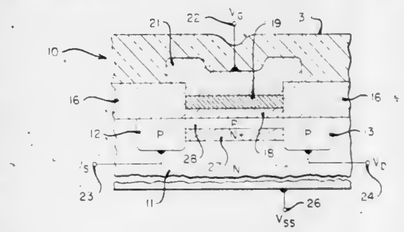
(ii) directing the second waste component away from the flow path, and directing the aggregate component to a stockpile for use as an aggregate.

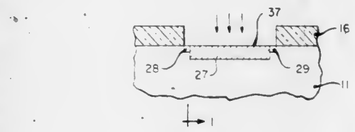
4,212,683

METHOD FOR MAKING NARROW CHANNEL FET

Robert K. Jones, Centerville, and Armand J. van Velthoven, West Carrollton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 27, 1978, Ser. No. 890,425
Int. Cl.[2] H01L *21/265, 29/78*
U.S. Cl. 148—1.5 **24 Claims**





1. In a method for forming a semiconductor device having an electrode formed over a channel region for forming a chan-

nel in a semiconductor substrate, the improvement wherein the channel region comprises at least two sections having different threshold voltages including a section having an effective width of a predetermined dimension, comprising:

forming a mask over the substrate, the mask having an aperture having a width less than the channel region;

depositing in the substrate via the mask aperture impurities of a first conductivity type to form a first channel region section extending the length of the channel region and having a width smaller than the width of the channel region;

removing material from at least a side of the mask aperture to increase the aperture width by the predetermined dimension; and

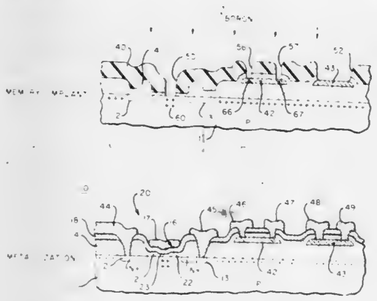
forming the electrode to encompass the mask aperture.

4,212,684

CISFET PROCESSING INCLUDING SIMULTANEOUS DOPING OF SILICON COMPONENTS AND FET CHANNELS

Ronald W. Brower, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 20, 1978, Ser. No. 962,423
Int. Cl.² H01L *29/78, 21/96;* **B01J** *17/00;* **H01L** *11/14*
U.S. Cl. 148—1.5 **12 Claims**



1. In a process for forming an integrated circuit including at least a memory field effect transistor having a channel memory section and at least a polysilicon component on a semiconductor substrate and wherein the memory threshold voltage of the field effect transistor and the resistance of the polysilicon component are determined by the impurity concentration therein, the improvement wherein, prior to forming the transistor gate electrode and circuit interconnections, the memory threshold voltage-determining concentration and the resistance-determining impurity concentration of at least a portion of the polysilicon component are established simultaneously in the partially completed integrated circuit which comprises the substrate having a source and drain formed therein and field insulation formed selectively thereon, by:

forming a layer of polysilicon on the field insulation in a predetermined pattern of at least one component, the size and geometry of the component being selected to provide a given resistance for a given impurity concentration therein;

forming an aperture in the insulating oxide over the location of the transistor channel;

forming a non-memory gate insulator over the transistor channel;

selectively implanting impurities in the channel memory section and in the polysilicon component to establish the given memory threshold voltage-determining and resistance-determining impurity concentration in the channel and in at least the portion of the polysilicon component; and

selectively forming a memory gate insulator over the memory channel section.

4,212,685

PROTECTIVE AND COLOR RECEPTIVE COATING FOR ALUMINUM

James N. Tuttle, Bedford, Mass., assignor to Lea Manufacturing Company, Waterbury, Conn.

Filed Dec. 11, 1978, Ser. No. 968,104
Int. Cl.² C23B *9/02;* **C23F** *7/14*
U.S. Cl. 148—6.1 **19 Claims**

1. A process for forming a coating on an aluminum part that is corrosion resistant, receptive to coating and readily dyed, said process comprising the steps of cleaning the aluminum to the extent necessary and formation of said coating using chemical means consisting of contacting the surface of said aluminum part with an aqueous, alkaline solution of ferric citrate, said solution having a pH between about 10 and 13 and the ferric citrate being present in solution in an amount of at least 0.01 moles per liter of solution.

4,212,686

ZIRCONIUM ALLOYS

Liv Lunde, Nittedal, Norway; Raymond C. Asher, Newbury, England; Gerard Slattery, Leatown, Nr. Preston, England; Frank W. Trowse, Preston, England; Christopher Tyzack, Hale Barns, England; Gustaf C. Östberg, Stockholm, Sweden, and Erich Tolksdorf, Nieder-Roden-Rollwald, Fed. Rep. of Germany, assignors to AB Atomenergi, Nykoping, Sweden; Atomenergikommissionen, Copenhagen, Denmark; Institutt for Atomenergi, Kjeller, Norway; United Kingdom Atomic Energy Authority, London, England and Valtion Teknillinen Tutkimuskeskus, Helsinki, Finland

Continuation of Ser. No. 692,902, Jun. 4, 1976, abandoned, which is a continuation of Ser. No. 489,046, Jul. 16, 1974, abandoned. This application Mar. 3, 1978, Ser. No. 883,175
Int. Cl.² C21D *1/26;* **C22C** *16/00*
U.S. Cl. 148—11.5 F **6 Claims**

1. Zirconium alloys which are characterized by their corrosion resistance and machanical properties, the alloys consisting essentially of 0.25 to 1.50% by weight of niobium, 0.025 to 0.20% by weight of tin, 0.02 to 1.00% by weight of total chromium and molybdenum, each of said chromium and molybdenum being present in respective amounts of at least 100 p.p.m. for chromium and 45 p.p.m. for molybdenum, and the remainder of zirconium.

5. A method for simplified manufacture of corrosion resistant nuclear reactor components of zirconium-base alloys containing minor amounts of niobium, tin and at least one element of the group of elements consisting of chromium and molybdenum, said method including the following steps:

(a) selecting said minor amounts within the ranges of 0.25 to 1.50% by weight of niobium, 0.025 to 0.20% by weight of tin and 0.02 to 1.00% by weight of chromium and molybdenum, said chromium being present in an amount of at least 100 p.p.m and said molybdenum being present in an amount of at least 40 p.p.m,

(b) cold shaping said alloys, and

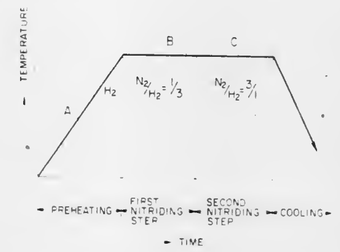
(c) thermally treating said alloys, said thermal treatment consisting of annealing for less than four hours at temperatures less than 700° C. without subsequent quenching or forced cooling, essentially without loss of corrosion resistance and mechanical properties of said alloys.

4,212,687

ION-NITRITING PROCESS

Akio Tanaka, Ono; Mizuo Edamura, Kobe; Satoshi Furuitsu, Kakogawa, and Satoru Kunise, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Oct. 20, 1978, Ser. No. 953,208
Claims priority, application Japan, Oct. 20, 1977, 52-126606
Int. Cl.² C21D *1/48*
U.S. Cl. 148—16.6 **5 Claims**



1. An ion-nitriding process including the steps of subjecting a workpiece having at least one opening area to a DC voltage in an atmosphere of nitrogen-containing gas so as to produce a glow discharge on the workpiece, the process being characterized by a first nitriding step which is carried out in an atmosphere of nitrogen and hydrogen having a mixing ratio of nitrogen to hydrogen which is small enough to suppress arc discharge on the workpiece and a second nitriding step which is carried out under a mixing ratio of nitrogen to hydrogen which is large as compared with the ratio in the first nitriding step so that glow discharge is produced even in the opening area of the workpiece.

4,212,688

ALLOY FOR MAGNETORESISTIVE ELEMENT AND METHOD OF MANUFACTURING THE SAME

Yoshimi Makino, and Tsutomu Okamoto, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 1, 1978, Ser. No. 956,672
Claims priority, application Japan, Feb. 27, 1978, 53-22626
Int. Cl.² C22C *19/00*
U.S. Cl. 148—31.55 **15 Claims**



1. An alloy for a magnetoresistive element having a small magnetostriction constant and a large magnetoresistance anisotropy ratio, said alloy having an ordered phase with superstructure and consisting of nickel and cobalt atoms, the atomic ratio of said nickel atoms to said cobalt atoms being substantially within the range of 40:60 to 60:40.

4,212,689

METHOD FOR PRODUCING GRAIN-ORIENTED ELECTRICAL STEEL SHEETS OR STRIPS HAVING A VERY HIGH MAGNETIC INDUCTION

Yoh Shimizu, Chiba; Yoshiaki Iida, Kobe; Tomomichi Goto, Chiba; Hiromi Mitsunori, Chiba, and Isao Matoba, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 552,223, Feb. 24, 1975, abandoned. This application May 2, 1977, Ser. No. 792,579
Claims priority, application Japan, Feb. 28, 1974, 49-22861
Int. Cl.² H01F *1/04*
U.S. Cl. 148—111 **7 Claims**

1. In a method for producing grain-oriented electrical steel sheets or strips having a very high magnetic induction, in which method a forsterite ceramic coating is deposited on a sheet of silicon steel raw material composed of not more than 0.06% of C, 2.0–4.0% of Si, 0.01–0.20% of Mn, 0.005–0.10% of a total amount of at least one of S and Se and the remainder being Fe, the sheet of silicon steel raw material is hot rolled to a thickness of 2–5 mm, the hot rolled sheet is subjected repeatedly to annealings and cold rollings to prepare a cold rolled sheet having a final gauge of 0.1–0.5 mm, the cold rolled sheet is subjected to a decarburization annealing to decrease the carbon content to not more than 0.005%, and then the decarburized sheet is subjected to a series of final annealing steps, the improvement which comprises the cold rolled sheet containing substantially no Sb and Al, prior to being subjected to the final annealing steps, so as to prevent the deterioration of the forsterite ceramic coating formed on the sheet during the final annealing steps, the cold rolled sheet consisting of not more than 0.06% of C, 2.0–4.0% of Si, 0.01–0.20% of Mn, 0.005–0.10% of a total amount of at least one of S and Se and the remainder being substantially Fe, and containing not more than 0.0045% of N, and the final annealing steps consisting of a step for developing in the sheet fully secondary recrystallized grains, having (110) [001] orientation at a temperature of 800°–900° C., and a step for effecting a purification annealing of the sheet at a temperature of not lower than 1,000° C., so as to form a highly adhesive ceramic coating on the surface of the sheet.

4,212,690

HEAT TREAT FIXTURE AND METHOD OF HEAT TREATING

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Charles S. Beuyukian, Gardena, Calif.; Robert M. Heisman, Palos Verdes Peninsula, Calif.; Cyrus C. Haynie, Newport Beach, Calif., and Emil P. Ruppe, La Crescenta, Calif.

Filed Mar. 23, 1979, Ser. No. 23,501
Int. Cl.² C22F *1/04*
U.S. Cl. 148—131 **9 Claims**

9. A method of heat treating a metal specimen comprising the steps of:

(1) placing the metal specimen between two glide sheets which allow the metal specimen to expand during heat treating without binding;

(2) placing support bars on the outer surfaces of said glide sheets to allow passage of quenching fluid;

(3) placing support plates on the outer faces of said support bars to prevent the metal specimen from warping;

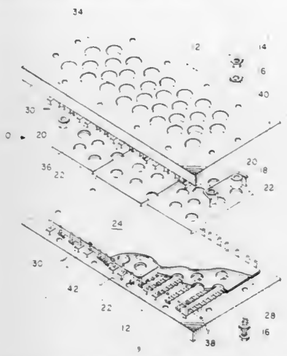
(4) placing spacers between said support plates at their outer edge to limit clamping pressure on the metal specimen;

(5) placing nuts and bolts and washers around the outer edge of said support plates so that the bolts pass through said support plates and are tightened to provide clamping pressure on the metal plates;

(6) heating the assembly comprised of the metal specimen and heat treating fixture to such temperature as appropriate for tempering the specimen;

(7) maintaining the specimen and fixture at elevated temperature for a period of time;

(8) quenching the specimen and fixture in a fluid bath at a predetermined temperature; and



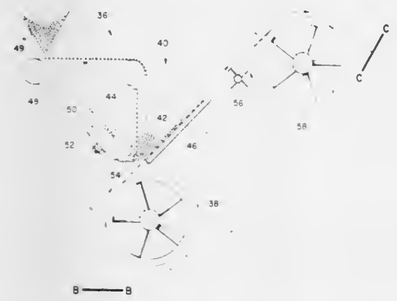
(9) removing the bolts from the support plates, and the support plates and glide sheets from the specimen.

4,212,691

METHODS AND APPARATUS FOR MAKING DECORATIVE INLAID TYPES OF RESILIENT SHEET MATERIALS AND THE LIKE

Milton J. Potosky, Hamilton Square, and Peter J. Rohrbacher, Stockton, both of N.J., assignors to Congoleum Corporation, Kearny, N.J.

Filed Nov. 21, 1978, Ser. No. 962,595
Int. Cl.[2] B32B *5/20, 5/16, 31/20;* **B05C** *19/00*
U.S. Cl. 156—79 **22 Claims**



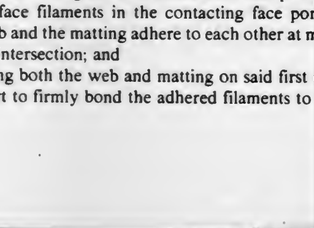
1. A method for making decorative inlaid types of resilient sheet materials which comprises: forming a layer of ungelled resinous polymer composition having a wet, tacky surface; depositing a substantially uniform layer of decorative chips or flakes upon said wet, tacky surface as it is being advanced angularly forwardly and upwardly at an angle greater than the angle of repose of said decorative chips or flakes on said wet tacky surface; advancing said wet, tacky surface with said decorative chips or flakes thereon angularly forwardly and upwardly at an angle greater than the angle of repose for said decorative chips or flakes upon said wet, tacky surface, whereby a portion of said decorative chips or flakes slide backwardly and downwardly; beating or vibrating said wet, tacky surface, whereby an additional portion of said decorative chips or flakes slide backwardly and downwardly; providing a seal substantially in contact with said wet, tacky surface, capable of permitting said wet, tacky surface to be advanced angularly forwardly and upwardly thereunder but capable of preventing said decorative chips or flakes from slipping backwardly or downwardly thereunder, whereby a supply bank of said decorative chips or flakes is formed on said seal and a portion of said wet, tacky surface; and consolidating said layer of ungelled resinous polymer composition and said decorative chips or flakes which remain on said wet, tacky surface, whereby said decorative chips or flakes become substantially completely embedded in said layer of ungelled resinous polymer composition.

4,212,692

MATTING ARTICLE WITH PROCESS AND APPARATUS FOR ITS PRODUCTION

Alfred Rasen; Rolf Vollbrecht, and Klemens Schenesse, all of Obernburg, Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 903,552, May 8, 1978. This application Apr. 27, 1979, Ser. No. 33,909
Claims priority, application Fed. Rep. of Germany, May 6, 1977, 2720403
Int. Cl.[2] D04H *3/16*
U.S. Cl. 156—167 **11 Claims**



1. A process for the manufacture of a coherently self-bonded, low density matting article which comprises:

melt-spinning a plurality of synthetic fiber-forming polymer filaments from a first set of spinning orifices with a diameter of at least about 0.1 mm. vertically downwardly for deposit onto a moving support intersecting the filaments substantially horizontally at a distance of about 3 to 20 cm. below the spinning orifices, said moving support having an undulating peak and valley surface structure to receive and form the freshly melt-spun filaments from said first set of spinning orifices into a corresponding undulating peak and valley three-dimensional matting sheet structure with the filaments from adjacent spinning orifices overlapping and self-bonding with each other at random points of intersection;

melt-spinning another plurality of synthetic fiber-forming polymer filaments from a second set of spinning orifices onto a second separate moving support having a substantially smooth and even surface structure to receive and form the freshly melt-spun filaments from said second set of spinning orifices into a substantially flat nonwoven web of overlapped filamentary loops self-bonding at random points of intersection, said nonwoven web being substantially thinner and exhibiting a substantially lower porosity than said matting structure;

transferring said nonwoven web while still tacky from said second moving support directly onto the free surface of the matting sheet structure as the latter is carried while still tacky on said first moving support;

lightly pressing said nonwoven web against the free surface of the matting sheet structure such that part of the tacky surface filaments in the contacting face portions of the web and the matting adhere to each other at mutual points of intersection; and

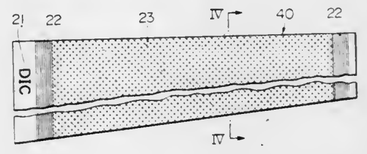
cooling both the web and matting on said first moving support to firmly bond the adhered filaments to each other.

4,212,693

FISHING ROD AND PROCESS FOR ITS PRODUCTION

Koukichi Saito, Asaka, and Nobuo Suzuki, Okegawa, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Jan. 30, 1978, Ser. No. 873,533
Claims priority, application Japan, Feb. 3, 1977, 52-10232
Int. Cl.[2] B65H *81/00;* **B31C** *13/00;* **B65H** *81/03*
U.S. Cl. 156—173 **2 Claims**



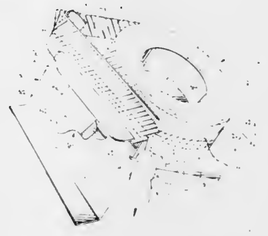
1. A method for producing a fishing rod made of a glass fiber-reinforced synthetic resin which comprises impregnating a glass cloth with a transparent thermosetting synthetic resin to form a prepreg, wrapping the prepreg about a tapered mandrel, curing it under heat, and then pulling out the mandrel, wherein the glass cloth has letters, geometrical figures or other decorative designs printed directly on the whole of its surface prior to impregnation.

4,212,694

TAPE SPLICING DEVICE AND DISPENSER THEREFOR

Arthur Brandwein, 147-37 77 Ave., Flushing, N.Y. 11367

Filed Aug. 11, 1978, Ser. No. 932,861
Int. Cl.[2] B65H *81/00*
U.S. Cl. 156—184 **6 Claims**



1. A method for making a tape splicing device comprising, laminating an adhesive tape to an elongated flexible sheet, the adhesive tape being of lesser width than the sheet, forming an elongated scoreline in the sheet coincident with the adhesive tape to divide the sheet into major and marginal portions with a first portion of the tape lying on the major portion of the sheet, and a second portion of the tape lying on the marginal portion of the sheet, the major and marginal portions of the sheet being of greater width than the respective first and second portions of the tape, forming a first plurality of spaced and parallel severances in the major portion of the sheet and the first portion of tape extending from the scoreline past the first portion of the tape to divide the major portion into elongated tab members that extend from the scoreline between consecutive first severances, and forming a second plurality of spaced and parallel severances respectively continuous with the first spaced and parallel severances, in the second portion of the tape to sever the second portion of tape but not to sever the underlying marginal portion of the sheet so that no slits extend substantially across the marginal portion and the marginal portion remains continuous and in one piece after the second plurality of severances are made and need not be supported by or secured to any carrier sheet, the first and second severances being made to divide the adhesive tape into individual adhesive splicing strips that are adhered to the marginal portion and to the respective elongated tab members, and providing the major and marginal portions of said sheet with adhesive release means to permit release of the adhesive splicing strips from the major and marginal portions.

4,212,695

METHOD OF REINFORCING FLATTENED TUBULAR FILM WITH TAPE LAYERS

Frank Bosse, Tecklenburg, and Karl-Heinz Lage, Lengerich, both of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,314
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2710035
Int. Cl.[2] B29F *3/10*
U.S. Cl. 156—188 **6 Claims**



1. A method of reinforcing an axially-extending tubular film with tape layers which extend axially to and helically about the axis of the tubular film, the method comprising:

passing tubular film to be reinforced about a core floatingly positioned inside the film so that the film is pulled apart;

helically winding a reinforcing tape around the pulled apart film while the film is being supported by the core, the reinforcing tape forming a tape layer extending helically about the tube axis;

flattening the film after the tape has been wound thereabout;

placing a first plurality of spaced parallel tapes on one side of the flattened film;

extruding and pressing a first plastics layer onto the parallel tapes so that the parallel tapes are connected to the one side of the flattened film and the reinforcing tape, the first plastics layer forming a tape layer extending axially to the tube axis;

placing a second plurality of spaced parallel tapes on the other side of the flattened film; and

extruding and pressing a second plastics layer onto the parallel tapes so that the second plurality of parallel tapes are connected to the other side of the flattened film and the reinforcing tape.

4,212,696

METHOD OF MAKING AN ORGANIC COMPOSITE ELECTRICAL INSULATOR SYSTEM

George E. Lusk, Woodstock; Sioe T. Mak, Crystal Lake, and John C. Haarsma, Barrington, all of Ill., assignors to Joslyn Mfg. and Supply Co., Chicago, Ill.

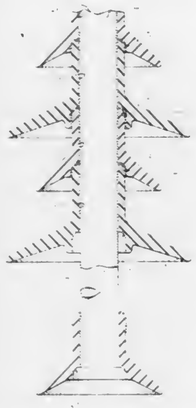
Filed Sep. 29, 1976, Ser. No. 727,757
Int. Cl.[2] H01B *19/00, 17/02, 17/66*
U.S. Cl. 156—294 **9 Claims**

1. A method of manufacturing an electrical insulator system having in an assembled condition a resin-bonded fiberglass core member and a plurality of ethylene-propylene copolymer elastomeric electrically insulating elements disposed about said core member, each one of said plurality of insulating elements having an elongated bore, at least an elongated portion of said bore having an inner diameter less than the outer diameter of said core member prior to disposition of said one insulating element about said core member, comprising the steps of:

applying a silicone adhesive composition to at least some of the interface surfaces of both said plurality of insulating elements and said core member;

completely drying said adhesive composition so that said silicone adhesive composition is non-tacky and exhibits a low coefficient of friction at said interface surfaces;

subsequent to said drving step, assembling said plurality of insulating elements about said core member without the application of further lubrication to said interface surfaces of said plurality of insulating elements over the outer interface surface of said core member to thereby bring



said interface surfaces into direct physical engagement and to thereby compressively load said interface surfaces and;

subsequent to said assembling step, curing said adhesive composition to adhesively bond said plurality of insulating elements to said core member at said interface surfaces.

4,212,697

PROCESS FOR PRODUCING GLASS FIBER-REINFORCED RESIN MOLDED SHEETS

Osamu Yamamoto; Yoshiki Matsumoto; Hiromi Yamada, and Keishin Takehara, all of Chiba, Japan, assignors to Nitto Boseki Co., Ltd., Fukeshima, Japan

Continuation-in-part of Ser. No. 825,511, Aug. 17, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,872
Claims priority, application Japan, Sep. 22, 1976, 51/114119; Mar. 22, 1978, 53/32625
Int. Cl.² B32B *17/04*
U.S. Cl. 427—389.8 **9 Claims**

1. A process for producing a glass fiber-reinforced molded sheet by impregnating glass fibers with a resin syrup and thereafter hardening said resin syrup with which the glass fibers are impregnated, wherein said resin syrup is 20 to 35% by weight vinyl aromatic hydrocarbon and comprises 25 to 50 parts by weight acrylonitrile-vinyl aromatic hydrocarbon copolymer and 75 to 50 parts by weight acrylic acid, methacrylic acid, methacrylic acid ester, acrylic acid ester or mixtures thereof, said copolymer comprising 10 to 50 parts by weight acrylonitrile and 90 to 50 parts by weight vinyl aromatic hydrocarbon and having a viscosity average molecular weight of 30,000 to 100,000.

4,212,698

APPARATUS FOR SETTING FABRIC LOOPS

Thomas O. Blair, 8026 SE. Powell Blvd., Portland, Oreg. 97206

Filed May 4, 1978, Ser. No. 902,893
Int. Cl.² A41H *1/00*; B23Q *3/15*; D05B *35/12*; G01B *5/16*
U.S. Cl. 156—378 **12 Claims**

1. Apparatus for securing a plurality of fabric loops of folded, everted fabric loop material at predetermined spaced-apart positions on an elongated strip of adhesive tape preliminary to transfer of the tape and secured loops to garment material for attachment of the loops to said garment material, the apparatus comprising:

(a) a laterally elongated plate having a transversely extending straight front edge,

(b) a transversely extending elongated stitching line indicator on the plate rearwardly of and parallel to the front edge of the plate,

(c) the laterally elongated area between the front edge and stitching line indicator defining a support area for an enlongated strip of adhesive tape,



(d) a pair of adhesive tape anchors on the plate arranged to secure the opposite ends of an elongated strip of adhesive tape removably to said support area of the plate, with the adhesive surface of the tape facing upward, and

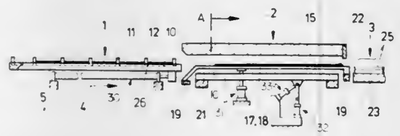
(e) a transversely extending elongated loop size guide on the plate rearwardly of and parallel to the stitching line indicator for registering with said guide the closed ends of a plurality of said fabric loops of everted folded fabric loop material for indicating the size of fabric loops extending between the guide and stitching line indicator.

4,212,699

APPARATUS FOR ASSEMBLING PLANAR WORK PIECES

Hans-Georg Braunschweiler, Riniken, Switzerland, assignor to Georg Fischer Brugg - Oehler AG, Switzerland

Filed Aug. 17, 1978, Ser. No. 934,583
Claims priority, application Switzerland, Sep. 12, 1977, 11544/77
Int. Cl.² B27D *3/00*; B30B *15/30, 15/34*
U.S. Cl. 156—558 **7 Claims**



1. An apparatus for the assembly and adhering together of a plurality of substantially planar sheets of material, such as wood veneer, to form a unitary board therewith comprising:

an upper fixed press platen;

a lower press platen, said lower platen being vertically movable toward and away from said upper platen and shiftable in a direction substantially parallel with said upper platen;

a delivery table for receiving planar sheets of material with adhesive applied thereto, said table being movable to a position below said upper platen; and

fixation means for promoting curing of the adhesive between said upper and lower platens, said fixation means being vertically movable toward and away from said upper platen,

wherein said lower platen is shiftable in the direction of movement of said table, and

wherein the coefficient of friction of the upwardly facing surface of said lower platen is significantly greater than the working surfaces of said upper platen and said fixation means so that shiftable movement of said lower platen when in contact with the planar sheets brings the adjacent planar sheets into an abutting relationship.

4,212,700

LABELING STATION

Rainer Buchholz; Rudolf Zodrow, both of Düsseldorf, and Reinhard Lohse, Haan, all of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 14, 1978, Ser. No. 924,786
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740575
Int. Cl.² B65C *9/12*
U.S. Cl. 156—568 **3 Claims**



1. In a labeling station with a rotating gripper cylinder having gripper elements equally spaced therearound to define label divisions and a carrier rotating in the same sense bearing pickup elements thereon mounted for one of rotary or rocking movement in a contrary sense with respect to the carrier during the label transfer and which movement is controlled such that the receiving surfaces of the pickup elements roll at least in the leading area thereof against the gripper cylinder surface during rotation of the gripper cylinder, the improvement comprising: the arc length of the receiving surface of each pickup element being greater than the arc length of each label division of the gripper cylinder, means disposed on at least one of the gripper cylinder or the leading edges of the pickup elements for lifting the trailing portion of the label taken by the gripper cylinder away from the succeeding gripper elements to clear same for the next label to be taken, and means controlling each pickup element movement during the transfer of the trailing label area exceeding the label division of the gripper cylinder to lift away its receiving surface from the gripper cylinder surface.

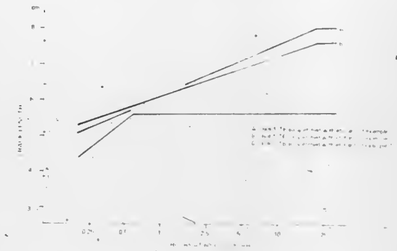
4,212,701

PROCESS AND COMPOSITION OF LOW TOXICITY FOR PREPARING ALUMINUM SURFACES FOR ADHESIVE BONDING

William J. Russel, Sparta, and Elizabeth A. Garnis, Franklin, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 9, 1979, Ser. No. 37,210
Int. Cl.² C23F *1/00*
U.S. Cl. 156—665 **5 Claims**

1. A process for adhesive bonding of aluminum parts, wherein the aluminum parts prior to bonding are subjected to an etching process to produce a surface preparatory to adhesive bonding, which comprises contacting the aluminum part with an etchant composition consisting essentially of about 25 to 35 weight percent sulfuric acid 96%



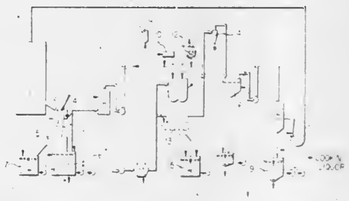
5 weight percent to saturated solution of ferric sulfate 75% 50 to 70 weight percent water.

4,212,702

PROCESS FOR RECOVERY OF CHEMICALS FROM PULPING WASTE LIQUOR

Saburo Mizuguchi; Isao Nomura, both of Tokyo; Takeyuki Naito; Masato Onodera, both of Yokohama, and Kouji Saito, Tokyo, all of Japan, assignors to Ebara Manufacturing Company, Limited, Tokyo, Japan

Continuation of Ser. No. 778,551, Mar. 17, 1977, Pat. No. 4,141,785. This application Aug. 30, 1978, Ser. No. 938,076
Claims priority, application Japan, Mar. 17, 1976, 51/28987; Mar. 17, 1976, 51/28988; May 18, 1976, 51/57135; Dec. 27, 1976, 51/156345; Dec. 27, 1976, 51/156346; Dec. 27, 1976, 51/156347
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.² D21C *11/02*
U.S. Cl. 162—36 **14 Claims**



1. A process for recovery of chemicals from sodium sulfite pulping waste liquor comprising the steps of:

(1) introducing and incompletely dissolving a smelt, obtained by burning a concentrated waste liquor and containing mainly sodium sulfide and sodium carbonate, in a large body of aqueous slurry which is circulated between a smelt receiving means and a smelt dissolving means, and said smelt is introduced into said aqueous slurry in said smelt receiving means, and wherein the amount of said circulating slurry is from 20 to 200 times by weight that of the smelt introduced in said smelt receiving means, and wherein said smelt receiving means comprises a smelt hopper and a screening means, and wherein lumps remaining after said smelt is introduced into said smelt hopper through which is circulated said body of aqueous slurry are separated from smaller solidified smelt particles by said screening means and said separated lumps are separately dissolved in make up water to form a weak green liquor, said large body of aqueous slurry comprising a solid phase the main component of which is sodium carbonate and a liquid phase the main component of which is aqueous sodium sulfide, adding to said body make up

water and a weak aqueous slurry recycled from step (2), and supplying a portion of the resulting aqueous slurry to step (2), maintaining the total solid content of said body of aqueous slurry at from about 35 to about 70% by weight, the proportion of sodium carbonate in the total solid material at lower than that of the smelt, and the temperature at from about 55° to about 90° C.;

(2) separating the slurry supplied from step (1) into (a) a wet cake containing water in a proportion of from about 10 to about 50% by weight and having a molar ratio of S/Na_2O substantially equal to that of said smelt, and (b) a weak aqueous slurry, recycling said weak slurry (b) to step (1), and supplying said wet cake (a) to step (3); and

(3) mixing a feed consisting of said wet cake (a) with hot particles containing sodium sulfite and sodium carbonate while supplying simultaneously a molecular oxygen-containing gas to effect oxidation of sodium present in said feed into sodium sulfite.

4,212,703

PROCESS FOR THE MANUFACTURE OF LAMINATED SHEETS OF CELLULOSIC AND POLYMERIC FIBROUS MATERIALS

Fabrizio D'Amico, San Donato Milanese; Giancarlo Serboli, Saronno, and Vincenzo Foti, Milan, all of Italy, assignors to Anic, S.p.A., Italy

Continuation of Ser. No. 541,341, Jan. 15, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,223

Claims priority, application Italy, Jan. 15, 1974, 19410 A/74

Int. Cl.[2] D21F *11/04*

U.S. Cl. 162—129 **3 Claims**

1. A process of manufacturing a laminated structure of cellulosic and polyolefinic fibrous materials comprising, forming a sheet of cellulosic fibers by feeding a pulp of said fibers to at least one of the inner tables of a multiple plane table cardboard manufacturing machine, forming a sheet of polyolefinic fibrids by feeding a pulp of said fibrids to an outer table of said machine, forming a composite sheet of cellulosic fibers and polyolefinic fibrids by feeding a pulp of said fibers and fibrids to the other outer table of said machine, joining said sheets in superposed position, drying the superposed sheets, and then hot calendering said dried superposed sheets at a temperature not lower than that necessary to melt at least partially said polyolefinic fibrids.

4,212,704

COMPOSITION AND PRODUCTION PROCESS FOR FOURDRINIER FIBERBOARD

Harry W. Durand, and Richard D. Bunker, both of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Continuation of Ser. No. 352,561, Apr. 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 76,310, Sep. 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 807,941, Mar. 17, 1969, abandoned, which is a continuation-in-part of Ser. No. 697,634, Jan. 15, 1968, abandoned. This application Apr. 10, 1975, Ser. No. 566,973

Int. Cl.[2] D21H *3/28*

U.S. Cl. 162—175 **2 Claims**

1. An improved fourdrinier process for the fabrication of fiberboard, the steps of said process comprising:

(a) reacting ungelatinized starch and maleic anhydride in the amount of 0.05% to 6% anhydride based on dry starch to form a reaction slurry of modified starch while maintaining the pH of the reaction slurry in the range of 7 to 11;

(b) mixing fibers with said reacted ungelatinized starch reaction slurry whereby said reacted starch forms 6 to 15% of the total solids on a dry weight basis;

(c) forming the mixture of reaction slurry and fibers into a fiberboard; and

(d) drying said fiberboard at a temperature above the gelatinization temperature of said reacted starch.

4,212,705

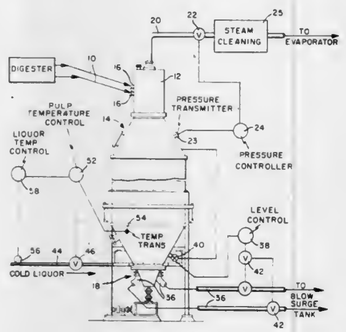
APPARATUS FOR RECOVERING HIGH PRESSURE STEAM FROM A BLOW TANK

William M. Babington, Jr., 1884 Buena Vista Dr., Coshocton, Ohio 43812, and Adam P. Bridge, 223 E. Second St., Franklin, Ohio 45005

Filed May 22, 1978, Ser. No. 908,124

Int. Cl.[2] D21C *7/08, 7/12, 11/06*

U.S. Cl. 162—238 **1 Claim**



1. In a cellulose processing system including a digester for treating cellulose with liquor and steam at pressures substantially in excess of 120 PSIG, the improvement comprising:

a high pressure, discharge outlet from said digester,

a high pressure blow tank for receiving treated cellulose, liquor and high pressure steam from said digester,

means for placing the interior of said blow tank in communication with said high pressure, discharge outlet of said digester,

means for withdrawing cellulose and liquor from said blow tank,

steam discharge valve means for withdrawing steam from said blow tank separately from said cellulose and liquor,

means for measuring pressure in said blow tank,

control means responsive to measured pressure in said blow tank to control said steam discharge valve means and said pressure in said blow tank at a preselected value in a range of 50 to 120 PSIG,

means for cleaning impurities from steam withdrawn from said blow tank through said steam discharge valve means,

means for pumping additional liquor into said blow tank separately from said cellulose, liquor and high pressure steam received from said digester,

first temperature sensing means associated with said blow tank for sensing temperatures therein,

second temperature sensing means for sensing the temperature of said additional liquor,

control means responsive to said first and second temperature sensing means for controlling the flow of said additional liquor into said blow tank,

said means for withdrawing cellulose and liquor from said blow tank including a perforated plate, a rotor mounted above said plate, a discharge line communicating with said perforated plate, and valve means associated with said discharge line,

means for sensing the level of cellulose and liquor in said blow tank,

control means for controlling said blow tank discharge line valve means in response to levels sensed in said blow tank, and

means for spraying liquor into said blow tank to prevent bridging of cellulose therein.

4,212,706

METHOD OF CONTROLLING PRESSURE OF GAS CIRCULATING IN THE COKE DRY QUENCHING APPARATUS

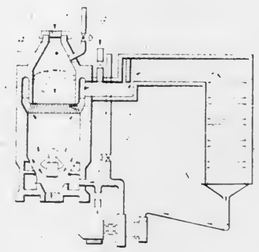
Kunihei Koizumi, Yokohama; Tatu Otani, Yokosuka; Toshinobu Katata, Kanagawa, and Takeshi Ueda, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1977, Ser. No. 815,458

Claims priority, application Japan, Jul. 13, 1977, 51-82479

Int. Cl.[2] C10B *39/02*

U.S. Cl. 201—39 **2 Claims**



1. A method of controlling pressure of gas circulating in a coke dry quenching apparatus including a quenching station having an upper portion, a lower portion, a coke charging port at the top thereof, a coke discharging port at the bottom thereof, a flue therein positioned in the upper portion thereof, and a blower and duct means for circulating quenching gas through said quenching station in a direction such that the gas flows from the lower portion of said quenching station to the upper portion thereof, said method comprising:

(a) controlling the speed of rotation of said blower means to control the flow rate of gas through said quenching station in response to the amount and temperature of the coke charges;

(b) controlling the pressure of the gas flowing through said quenching station such that the diverging point of the gas is fixed at said flue by measuring the pressure of the gas at said flue and adjusting the pressure at said flue such that the gage pressure is 0±5 mm Aq by venting gas from said quenching apparatus.

4,212,707

METHOD OF FABRICATING A COLLIMATOR FOR X AND GAMMA RADIATION

Christopher H. Tosswill, and Clinton J. Beuscher, both of Sturbridge, Mass., assignors to Galileo Electro-Optics Corp., Sturbridge, Mass.

Division of Ser. No. 725,835, Sep. 23, 1976, Pat. No. 4,125,776, which is a continuation-in-part of Ser. No. 558,899, Mar. 17, 1975, abandoned. This application Oct. 31, 1977, Ser. No. 846,882

The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.

Int. Cl.[2] C25D *5/54, 7/04*

U.S. Cl. 204—26 **5 Claims**

1. The method of fabricating a multiple chanel hard-radiation collimator having a plurality of parallel channels with center-to-center spacing in the range 0.3 to 10 mm and channel width in the range 0.1 to 7.5 mm from a multiple element lead glass mosaic substrate having a plurality of parallelly aligned, etchable core columns, said columns having center-to-center spacing in the range 0.3 to 10 mm, wherein the method comprises the successive steps of:

a. etching the cores of each of said columns to form said channels by the successive sub-steps of:

i. immersing said substrate in a 10% hydrobromic acid solution at a temperature in the range 75°–80° F.

ii. rinsing said substrate in deionized water, and

iii. drying said substrate,

b. electroless plating said substrate to form a nickel plating with a thickness in the range 4–6 microns on all surfaces of said substrate by the successive sub-steps of:

i. immersing said substrate in a detergent conditioner for a period in the range 2–5 minutes,

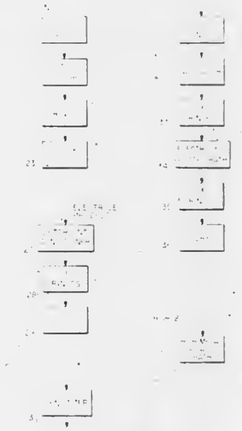
ii. rinsing said substrate in deionized water,

iii. immersing said substrate in 15% hydrochloric acid solution,

iv. immersing said substrate in a metallic colloidal solution for a period in the range 2–5 minutes,

v. rinsing said substrate in deionized water,

vi. immersing said substrate in a metallic activator for a period in the range 2–5 minutes,



vii. rinsing said substrate in deionized water,

viii. immersing said substrate in a uniform temperature, a nickel plating bath, for a period in the range 5–7 minutes,

ix. rinsing said substrate in deionized water,

x. drying said substrate, and

c. lead plating said substrate to form a lead plating with a thickness in the range 50 microns to 200 microns on all surfaces of said substrate by:

immersing said substrate in a lead plating bath, and for a period in the range 16–24 hours, alternatively driving a plating current having a density in the range 60 to 75 amps per square foot from an electrode in said bath to said substrate for 10 minutes and driving a deplating current from said substrate to said electrode for 5 minutes, said deplating current being 25% of said plating current.

4,212,708

GOLD-PLATING ELECTROLYTE

Nina A. Smagunova, ulitsa Mishina, 12, kv. 8; Nina M. Dyatlova, 2 Samotechny pereulok, 4, korpus 1, kv. 4; Alexandr Y. Fridman, Kirovogradskaya ulitsa, 24, kv. 76; Elena V. Shemyakina, Bolshoi Savvinsky pereulok, 19, kv. 3; Vera Y. Temkina, ulitsa Alabiana, 3, kv. 108; Ljudmila K. Nikerova, 3 Frunzenskaya ulitsa, 1, kv. 93, and Alexandr V. Belikin, ulitsa Vilisa Latsisa, 4, korpus 2, kv. 208, all of Moscow, U.S.S.R.

Filed Jun. 5, 1979, Ser. No. 45,848

Int. Cl.[2] C25D *3/48*

U.S. Cl. 204—46 G **2 Claims**

1. A gold-plating electrolyte containing the ingredients in the following proportions, g/l:

hexapotassium μ-ethylenediaminotetracetate bis(gold sulphite /1/): 10.5–123.0
an alkali metal salt of ethylenediaminotetracetic acid: 17.8–140.0
potassium sulphate: 12.6–110.0
potassium hydrogen phosphate: 4.7–40.0
water: the balance

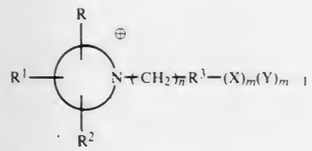
4,212,709

ACIDIC NICKEL ELECTROPLATING BATH CONTAINING SULFOBETAINES AS BRIGHTENERS AND LEVELLING AGENTS

Manfred Patsch, Wachenheim; Dieter Schneider, Ludwigshafen; Guenther Gotsmann, Frankenthal, and Albert Hettche, Hesheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 11, 1979, Ser. No. 38,171
Claims priority, application Fed. Rep. of Germany, [illegible]m. 14, 1978, 2825966
Int. Cl.[2] C25D *3/18*
U.S. Cl. 204—49 **2 Claims**

1. An acidic nickel electroplating bath of conventional composition, containing brighteners and levelling agents, wherein the said brighteners and levelling agents comprise one or more compounds of the formula I



I

where N is a mononuclear or polynuclear heterocyclic-aromatic nitrogen base, R, R^1 and R^2 are hydrogen or C_1–C_4-alkyl, and may be identical or different from one another, R^3 is phenylene or thienylene, either of which is unsubstituted or substituted by chlorine, bromine, C_1–C_4-alkyl, methoxy or ethoxy, X is $SO_3\ominus$, Y is an alkali metal ion, ammonium ion or substituted ammonium ion or half of an alkaline earth metal cation or of a divalent transition metal cation, n is from 1 to 3 and m is from 1 to 2.5.

4,212,710

ELECTROCHEMICAL OXIDATION OF ALKYL AROMATIC COMPOUNDS

Mark A. Halter, Schaumburg, and Thomas P. Malloy, Lake Zurich, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 27, 1979, Ser. No. 52,645
Int. Cl.[2] C25B *3/02*
U.S. Cl. 204—78 **10 Claims**

1. In a process for the electrochemical oxidation of an alkyl aromatic compound, the improvement which comprises effecting said electrochemical oxidation in an electrochemical cell in the presence of an emulsion solution of said alkyl aromatic compound in an aqueous carboxylic acid medium containing a salt of a transition metal, and recovering the resultant oxidized aromatic compound.

4,212,711

ELECTROCHEMICAL OXIDATION OF ALKYL AROMATIC COMPOUNDS

Mark A. Halter, Schaumburg, and Thomas P. Malloy, Lake Zurich, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 27, 1979, Ser. No. 52,646
Int. Cl.[2] C25B *3/02*
U.S. Cl. 204—78 **13 Claims**

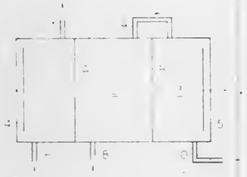
1. In a process for the electrochemical oxidation of an alkyl aromatic compound, the improvement which comprises effecting said electrochemical oxidation in an electrochemical cell in the presence of a semiemulsion solution of said alkyl aromatic compound in a dilute mineral acid solution containing a salt of a transition metal and recovering the resultant aldehyde.

4,212,712

PROCESS FOR THE ELECTROLYTIC TREATMENT OF ALKALI METAL HALIDE SOLUTION USING ION EXCHANGE MEMBRANES

Naohiro Murayama; Makoto Fukuda; Teruo Sakagami; Shirou Suzuki; Yoshikazu Kokubu, and Toshio Enoki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 743,294, Nov. 18, 1976, Pat. No. 4,111,780. This application May 12, 1978, Ser. No. 905,468
Claims priority, application Japan, Nov. 19, 1975, 50-139074
Int. Cl.[2] C25B *1/16, 1/26*
U.S. Cl. 204—98 **6 Claims**



1. A continuous process of electrolyzing an alkali metal halide in an electrolytic bath assembly including an anodic chamber, an intermediate chamber, and a cathodic chamber arranged in series; said anodic chamber being separated from the intermediate chamber by a first cationic permselective membrane; and said cathodic chamber being separated from the intermediate chamber by a second cationic permselective membrane, said process comprising continuously introducing a concentrated aqueous alkali metal halide solution into the anodic chamber while continuously removing resulting dilute aqueous alkali metal halide solution therefrom, continuously introducing water or a dilute aqueous alkali metal hydroxide solution into the intermediate chamber, whereupon the alkali metal ions of the alkali metal halide pass through the first cationic permselective membrane and combine with the hydroxyl ions in the intermediate chamber to form alkali metal hydroxide, continuously transferring a part or all of the thus formed aqueous solution of alkali metal hydroxide in the intermediate chamber to the cathodic chamber, adjusting the concentration of the aqueous alkali metal hydroxide solution in the intermediate chamber to about from 10 to 20 weight percent and adjusting the concentration of the aqueous alkali metal hydroxide solution in the cathodic chamber to about from 30 to 50 weight percent, maintaining these concentrations in the respective intermediate and cathodic chambers to obtain a high concentration of alkali metal hydroxide and high current and power efficiency during the electrolysis, using as the first membrane a cationic permselective membrane which is durable to aqueous alkali metal hydroxide solution and gaseous chlorine, and has a current efficiency exceeding about 80%; and using as the second membrane a cationic permselective membrane which is durable to aqueous alkali metal hydroxide solution, has a low electrical resistance in aqueous alkali metal hydroxide solution, has a high selective penetration performance to alkali metal ions, and has a moderate water and hydrogen ion penetration performance.

4,212,713

ELECTROLYSIS OF AQUEOUS SOLUTION OF ALKALI METAL CHLORIDE

Manabu Suhara, and Kiyotaka Arai, both of Yokohama, Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,009
Claims priority, application Japan, Oct. 21, 1977, 52-125808
Int. Cl.[2] C25B *1/16, 1/26, 13/08*
U.S. Cl. 204—98 **10 Claims**

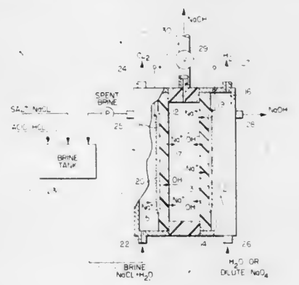
1. An electrolysis of an aqueous solution of an alkali metal chloride to produce an alkali metha hydroxide having a concentration of less than 30 wt.% and chlorine which comprises using a modified cation exchange membrane of a fluorinated polymer having essentially only carboxylic acid type ion exchange groups which has an ion exchange capacity of 1.1 to 2.0 meq/g.dry polymer and wherein one surface layer has a lower ion exchange capacity than that of the major portion of the membrane and is from 0.8 to 1.3 meq/g.dry polymer.

4,212,714

ELECTROLYSIS OF ALKALI METAL HALIDES IN A THREE COMPARTMENT CELL WITH SELF-PRESSURIZED BUFFER COMPARTMENT

Thomas G. Coker, Waltham; Anthony B. LaConti, Lynnfield; Edward N. Balko, Wilmington, and George B. McGray, Wakefield, all of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed May 14, 1979, Ser. No. 38,418
Int. Cl.[2] C25B *1/16, 1/26, 9/00, 13/08*
U.S. Cl. 204—98 **21 Claims**



7. A process for generating chlorine and caustic in a three compartment cell separated by two ion transporting membranes whih comprises electrolyzing an aqueous alkali metal chloride and water at anode and cathode electrodes separated by the ion transporting membranes, at least one of the electrodes taking the form of electrochemically active particles physically bonded to one of the membranes to form a unitary electrode membrane structure, operating the buffer compartment of the three compartment cell at a positive pressure differential with respect to the other compartments, pressurizing the buffer compartment solely by passing current through the cell to transport water into the buffer compartment with ions transported across the membranes so that the sole source of water for the buffer compartment is transported through the ion transporting membranes

4,212,715

PROCESS FOR REDUCING LOSSES OF MERCURY IN ALKALI METAL CHLORIDE ELECTROLYSIS

Siegfried Benninger, Schwalbach, and Adolf Schmidt, Kriftel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 942,266, Sep. 14, 1978, abandoned. This application Mar. 13, 1979, Ser. No. 20,086
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741985
Int. Cl.[2] C25B *1/36*
U.S. Cl. 204—99 **5 Claims**

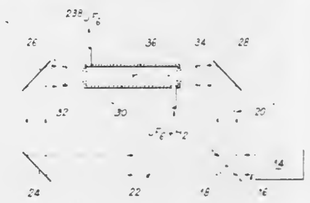
1. A process for reducing loss of mercury in an alkali metal chloride electrolysis plant operating according to the amalgamation process and including an open brine evaporation cooling system, which comprises adjusting the redox potential E_R of the brine to be evaporated so that the value of said redox potential is more than $1391 - 6.66\,(pH) - 5.94\,(pH)^2$ millivolts, but not more than 1100 millivolts, based on the voltage of a standard hydrogen electrode, and the pH of the brine is of from 7.0 to 9.0; and evaporating the brine in the open brine evaporation cooling system.

4,212,716

METHOD AND DEVICE FOR EXCITATION AND SELECTIVE DISSOCIATION BY ABSORPTION OF LASER LIGHT AND APPLICATION TO ISOTOPIC ENRICHMENT

Paul Rigny, Sceaux, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 738,136, Nov. 2, 1976, Pat. No. 4,144,453. This application Apr. 13, 1978, Ser. No. 896,228
Claims priority, application France, Nov. 2, 1976, 75 34503
Int. Cl.[2] H01J *27/00*
U.S. Cl. 204—157.1 R **17 Claims**



1. A method of excitation and of selective dissociation by absorption of the monochromatic light emitted by at least one high-power laser, wherein the excitation is effected by light sent from the laser at a frequency ν_1 into an isotopic mixture of gas molecules in which a certain number of said molecules exhibit transitions between two vibrational levels corresponding to a predetermined isotope and separated by an energy interval $\Delta E_1 = 2h\nu_1$ and wherein the molecules of a predetermined isotopic species are thus preferentially excited.

4,212,717

SEPARATION OF ISOTOPES BY PHOTO-INDUCED PREDISSOCIATION

C. Bradley Moore; John H. Clark, both of Berkeley; Yehuda Haas, Kensington, all of Calif., and Paul L. Houston, Ithaca, N.Y., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 22, 1975, Ser. No. 643,325
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—158 R **13 Claims**

1. A method for producing isotopically enriched material by photoexcitation of gaseous formaldehyde molecules in which at least one element is present as a plurality of isotopes, those said molecules which contain a first said isotope having a significantly greater tendency to absorb a given spectrum

range of light and to be raised to an excited electronic state and to be dissociated thereby, than do those said molecules which contain a second said isotope, comprising the steps of:

submitting said gaseous formaldehyde molecules to light in said given spectrum range and having a wavelength shorter than 330 nm in the presence of a stable paramagnetic gas not reactive with said gaseous formaldehyde molecules, to cause said molecules to be raised to said excited electronic state, thereby dissociating said formaldehyde molecules containing said first isotope, said first isotope entering into a different stable chemical state,

physically separating the matter constituting said first isotope in its different chemical state from the remainder of said matter, and

said paramagnetic gas enhancing the yield of said first isotope in said different chemical state relative to production of other said isotopes in that said state.

4,212,718

PROCESS FOR PRODUCING HYDROXYTELECHELIC OLIGOMERS AND POLYMERS BY PHOTOLYSIS

Christian Pinazzi, Le Bourg Coulans sur Gee; Jean-Claude Lenain, Le Mans, and Jean-Claude Brosse, Connerre, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Continuation of Ser. No. 672,917, Apr. 2, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 897,074

Claims priority, application France, Apr. 4, 1975, 75 10621

Int. Cl.[2] C08F *2/46, 4/00*

U.S. Cl. 204—159.23 **31 Claims**

1. A polymerization process in which an ethylenically unsaturated monomer selected from the group consisting of acrylic acid, methacrylic acid, a lower alkyl acrylate, a lower alkyl methacrylate, acrylamide, vinyl pyrrolidone, vinyl acetate, acrylonitrile, and methacrylonitrile is polymerized by the radical route to form hydroxytelechelic polymers having a multi-modal distribution of molecular weights and including polymers having a number average molecular weight between about 100 and 1 million, said polymerization process comprising effecting the polymerization at room temperature in the presence of oxygen under the effect of ultra-violet radiation having a wave length capable of causing the homolytic splitting of perhydrol into hydroxyl radicals of at least one of said monomers in a reaction mixture including at least about 10% by weight of said monomer and about 1 to about 20% by weight of hydrogen peroxide, and the remainder of the reaction mixture consisting essentially of an alcohol, wherein said alcohol is a good solvent for said hydrogen peroxide and said monomer and a bad solvent for said polymer.

4,212,719

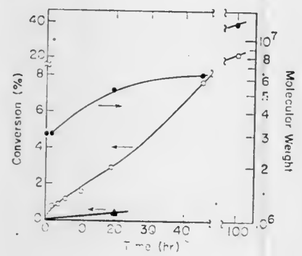
METHOD OF PLASMA INITIATED POLYMERIZATION

Yoshihito Osada, Yokohama, Japan; Alexis T. Bell, Oakland, and Mitchel M. Shen, Piedmont, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 882,124, Feb. 28, 1978, abandoned. This application Aug. 18, 1978, Ser. No. 934,855

Int. Cl.[2] C08F *2/52*

U.S. Cl. 204—165 **32 Claims**



1. A method of plasma initiated polymerization, comprising the steps of:

(a) establishing and maintaining a contained zone of ionized gas plasma in contact with a surface of continuous solid or liquid volume of substantially unpolymerized monomer, said ionized gas phase being established and maintained by an electric field which creates a path of electrical conduction totally within said contained zone,

(b) commencing propagation polymerization of said monomer volume by the creation of active polymerization sites at the interface between said gas plasma and monomer volume caused by activation derived from said ionized gas plasma to partially polymerize said monomer,

(c) terminating contact between said partially polymerized monomer volume and ionized gas plasma substantially prior to the desired conversion of monomer to polymer and the desired final molecular weight of polymer, and

(d) postpolymerizing said partially-polymerized monomer volume in the absence of ionized gas plasma to convert monomer to polymer in a proportion of at least two times that converted prior to termination of plasma contact and to yield the desired high molecular weight.

4,212,720

ELECTRICALLY HEATED ELECTROCHEMICAL SENSOR CONSTRUCTION, PARTICULARLY TO DETERMINE OXYGEN CONCENTRATION IN EXHAUST GASES FROM COMBUSTION ENGINES

Helmut Maurer, Schwieberdingen; Franz Rieger, Aalen-Wasseralfingen; Ernst Linder, Mühlacker, and Rainer Schüssler, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 27, 1978, Ser. No. 919,700

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732743

Int. Cl.[2] G01N *27/58*

U.S. Cl. 204—195 S **8 Claims**

1. Electrically heated electrochemical sensor to determine the oxygen concentration in gases, particularly in combustion exhaust gases, especially from internal combustion engines, comprising the combination of

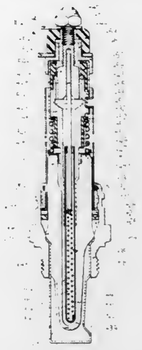
a housing (**18**);

a tubular solid electrolyte body (**11, 68**) secured in the housing; with

an electrical heating element (**35, 35'**) in heat exchange relation with the solid electrolyte body which comprises

a thin-walled, closed metal sleeve (**37, 37'**) coaxially located internally within said body;

a good heat conductive, electrically insulating material (**38, 38'**) packed in the sleeve;



and a resistance wire spirally located within the tube and embedded in said insulating packing.

4,212,721

EQUIPMENT FOR REGULATING, MONITORING, OPTIMIZING AND OPERATING, AND FOR DISPLAYING DATA IN, ALKALI METAL CHLORIDE ELECTROLYSIS PLANTS

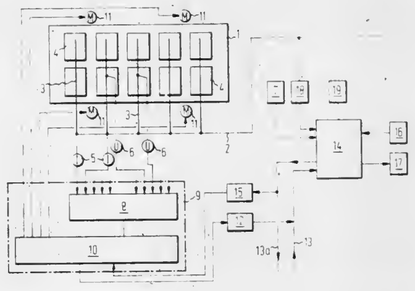
Dieter Bergner, Kelkheim; Erhard Heubach, Sulzbach; Winfried Hofmann, Kelkheim; Ortwin Küster, Hofheim am Taunus, and Lothar Pelz, Rödermark, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,444

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729732

Int. Cl.[2] C25B *15/02, 15/04, 9/00*

U.S. Cl. 204—219 **6 Claims**



1. Apparatus for controlling, monitoring and operating, and for displaying data in, alkali metal chloride electrolysis plants which are operated by the amalgam process, comprising a plurality of groups of electrolytic cells, each group including m cells wherein m is an integer; a plurality of microcomputer control means, each associated with a respective group of electrolytic cells, each said microcomputer control means comprising sensing means for sensing variables representing the operating conditions of said cells in said group to monitor the operation of said cells, and processing means responsive to said sensing means for controlling the operation of said cells in said group such that said cells operate in accordance with the most effective operating conditions; and a central processing computer means common to all of said microcomputer control means, said central processing computer means being connected to each said microcomputer control means for displaying data associated with all of said groups of cells and for supplying to each of said microcomputer control means data representing the overall operation of all of said groups of cells.

4,212,722

APPARATUS FOR ELECTROWINNING METAL FROM METAL BEARING SOLUTIONS

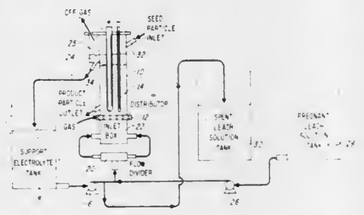
Michael M. Avedesian, Beaconsfield, and Anthony P. Holko, Mount Royal, both of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Division of Ser. No. 793,776, May 4, 1977, Pat. No. 4,141,804. This application Nov. 14, 1978, Ser. No. 960,632

Claims priority, application Canada, May 11, 1976, 252269

Int. Cl.[2] C25D *21/18;* **C25B** *15/08;* **C25C** *5/02, 7/00*

U.S. Cl. 204—222 **9 Claims**



1. An apparatus for continuously electrowinning metal from leach solutions comprising:

(a) at least one cell having a grid supporting a bed of particulate conducting particles;

(b) means for uniformly distributing and continuously recirculating a support solution of predetermined metal concentration through said bed of conducting particles at a sufficiently high flow rate to fluidize and expand said bed by about 5 to 25%;

(c) means for continuously and uniformly feeding gas through the bed of conducting particles at a flow rate such as to contract the bed and operate the bed at low expansion between 5 and 25% while creating an intense particle agitation to maintain good mixing and uniform fluidization of the bed of particles;

(d) an electrode arrangement suspended from the top of the cell and adapted to be immersed in said bed of fluidized particles and consisting of at least one cathode feeder electrode adapted to come in physical contact with the fluidized particles during fluidization to make the particles cathodic and so cause the metal ions to deposit on the particles, and at least one anode electrode separated from the cathodic particles by a membrane which allows the free passage of ions while preventing physical contact with the particles; and

(e) means for adding small seed particles at the top of the cell and means for withdrawing large product particles from the bottom of the cell so as to make the apparatus work continuously or semi-continuously.

4,212,723

COUNTERFLOW EXTRACTION COLUMN

Helmut Schmieder, Karlsruhe; Hubert Goldacker, Linkenheim; Ernst Warnecke, Ladenburg; Manfred Kluth, Neuthard, and Reinhard Schlenker, Eggenstein, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 20, 1978, Ser. No. 943,979

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1977, 2743045

Int. Cl.[2] C25B *15/08, 11/03*

U.S. Cl. 204—272 **5 Claims**

1. In a counterflow extraction column for the liquid-liquid extraction of two phases during simultaneous electrolysis;

including an elongated, upright column tube containing a cathode and an anode; the improvement wherein said anode is a bar extending within said tube coaxially therewith and said cathode is formed of a plurality of spaced perforated plates centrally supported by the anode bar; the improvement further



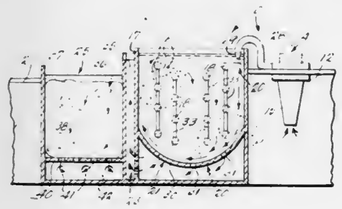
comprising means defining, within said tube, a common chamber defining cathodic zones and anodic zones and being void of separating members between said zones; said common chamber constituting an anode chamber and a cathode chamber; and insulating means for electrically insulating each said perforated plate from said anode bar.

4,212,724

OXIDATION AND COAGULATION FOR AQUARIUM APPLICATIONS

Karl Moeglich, Dunedin, Fla., assignor to Innova, Inc., Clearwater, Fla.

Filed Nov. 21, 1978, Ser. No. 963,940
Int. Cl.² C02B 1/82
U.S. Cl. 204—273 **16 Claims**



1. A water purification assembly comprising
means for withdrawing water from a water source;
means for effecting oxidation and coagulation of metabolites in the water; said means comprising a chamber into which said withdrawing means feeds water; a plurality of naked electrodes disposed in said chamber and connected up to a source of e.m.f., the electrodes being stationary with respect to each other; a plurality of electrically conductive particles each with a relatively large surface area configuration disposed in said chamber; means for violently continuously circulating said particles within said chamber so that they continuously impact all of the electrodes; and means for preventing movement of said electrically conductive particles out of said chamber;
an outlet from said chamber; and
means connected to said chamber outlet for mechanically separating particles and coagulants from the water, and then returning the now purified water to the water source.

4,212,725

ELECTRODES FOR ELECTROLYSIS PURPOSES

Wolfgang Habermann, Mainz; Peter Thoma, Frankenthal, and Klaus Wintermantel, Dossenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 30, 1978, Ser. No. 955,580
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750029
Int. Cl.² C25B 11/08, 11/10, 1/26
U.S. Cl. 204—290 F **9 Claims**

5. An anode for the electrolysis of alkali metal chlorides which comprises:
(a) an alloy of niobium and a metal of the iron group, said iron group metal being present in the alloy in the amount of from 0.5 to 10% by weight;
(b) tantalum, tantalum boride, tantalum carbide or an alloy of tantalum and a metal of the iron group, said alloy containing from 0.5 to 10% by weight of the metal of the iron group; and
(c) a metal of the platinum group applied to the surface of the anode, the content of the platinum metal being from 0.25 to 1.5 g/m² of anode surface.

4,212,726

METHOD FOR INCREASING THE PURITY OF HYDROGEN RECYCLE GAS

Warden W. Mayes, Big Spring, Tex., assignor to Cosden Technology, Inc., Big Spring, Tex.

Filed Nov. 23, 1977, Ser. No. 854,378
Int. Cl.² B01D 47/00; C10G 39/00
U.S. Cl. 208—101 **23 Claims**

1. A method for recovering hydrogen gas of increased purity from a hydrotreatment process effluent stream, containing hydrogen gas in admixture with converted hydrocarbons, consisting essentially of the steps of:
(a) subjecting said hydrotreatment process effluent stream to a gas-liquid separation under conditions sufficient to produce a gaseous hydrogen-containing stream and a liquid phase hydrocarbon stream;
(b) compressing the gaseous hydrogen-containing stream to a pressure above that of said gas-liquid separation step;
(c) admixing the compressed gaseous hydrogen-containing stream with a first portion of the liquid phase hydrocarbon stream obtained in said gas liquid separation and cooling the resulting admixture;
(d) thereafter countercurrently contacting said compressed gaseous hydrogen-containing stream in a first countercurrent extraction step with a first absorber liquid comprising at least a second portion of the liquid phase hydrocarbon stream recovered in said gas-liquid separation, and in a second countercurrent extraction step with a second absorber liquid under conditions sufficient to produce a first product stream of relatively pure hydrogen;
(e) subjecting a combined stream of said first and second absorber liquids exiting from said countercurrent contacting steps to distillative stabilization under conditions sufficient to remove a light hydrocarbon overhead stream and

to produce a second product stream of heavier stabilized converted hydrocarbons; and
(f) recycling at least a portion of said second product stream to said second countercurrent extraction step as said second absorber liquid.

4,212,727

PROCESS FOR THE SIMULTANEOUS PRODUCTION OF A HIGH OCTANE MOTOR FUEL AND ISOBUTANE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 2, 1979, Ser. No. 850
Int. Cl.² C07C 9/12; C10G 35/06, 13/10; B01J 29/12
U.S. Cl. 208—111 **3 Claims**

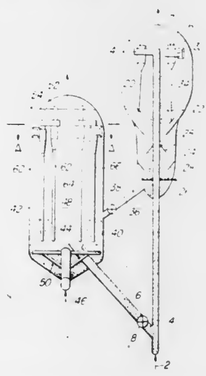
1. A process for the simultaneous production of a high octane motor fuel and isobutane which comprises the steps of:
(a) contacting a hydrocarbon boiling at a temperature of less than about 450° F. and containing cyclic components including aromatics with hydrogen in a reaction zone, containing a commingled physical mixture of a first catalytic composite comprising palladium component and a zeolitic aluminosilicate carrier material and a second catalytic composite comprising alumina, platinum and a platinum promotor selected from the group of rhenium, tin, germanium, cobalt, nickel, iridium, rhodium and ruthenium or combinations of these promoters, at a temperature in the range of about 700° F. to about 1100° F. and at a pressure of from about 100 to about 700 psig.; and
(b) recovering a high octane motor fuel and isobutane from the resulting reaction zone effluent.

4,212,728

CATALYTIC CRACKING OF HYDROCARBONS

Edward J. Demmel, Pitman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 683,115, May 4, 1976, abandoned. This application Mar. 17, 1978, Ser. No. 887,575
Int. Cl.² C10G 11/04; C01B 29/12; B01J 8/24
U.S. Cl. 208—121 **10 Claims**



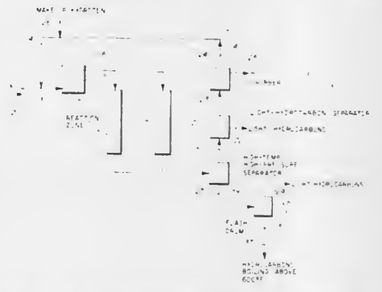
1. An improved method for adding a minute amount of at least one combustion-promoter-metal selected from the group consisting of Pt, Pd, Rh, Ru, Ir, Os and Re to the circulating inventory of cracking catalyst contained in the catalyst section of a fluid catalytic cracking plant, said catalyst section comprising a reactor with a stripping zone, a regenerator wherein coke is combusted with the formation of CO and CO_2, a coked catalyst conduit for passing coked catalyst from said reactor to said regenerator and a regenerated catalyst standpipe for passing regenerated catalyst from said regenerator to said reactor, said circulating inventory of catalyst being at temperatures substantially higher than 600° F., which method comprises flowing a continuous side-stream from said circulating inventory of cracking catalyst through a contact zone and back to said inventory, and contacting said side stream in said contact zone at a temperature of less than about 600° F. with a solution of a compound of said metal dissolved in a solvent boiling above about 140° F. but below 600° F., or with the vapor or an aerosol of said metal, whereby adding to said circulating inventory an amount of combustion-promoter-metal effective to control the combustion of CO in said regenerator without substantially adversely affecting the cracking in said reactor.

4,212,729

PROCESS FOR DEMETALLATION AND DESULFURIZATION OF HEAVY HYDROCARBONS

Albert L. Hensley, Jr., Munster, Ind., and Leonard M. Quick, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 26, 1978, Ser. No. 928,141
Int. Cl.² C10G 23/02
U.S. Cl. 208—210 **37 Claims**



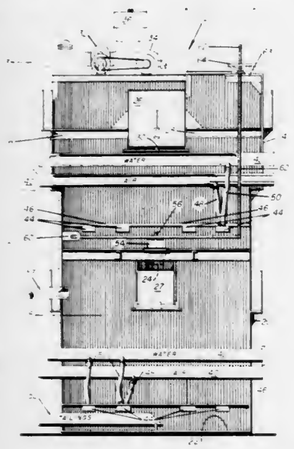
1. A process for the hydrodemetallation and hydrodesulfurization of a hydrocarbon feedstock containing asphaltenes and a substantial amount of metals, said feedstock comprising at least one member selected from the group consisting of crude oil, topped crude oil, petroleum hydrocarbon residua, oils obtained from tar sands, residua derived from tar sands oil, and hydrocarbon streams derived from coal, which process comprises:
(a) contacting said feedstock in a first reaction zone with hydrogen and a first-stage catalyst comprising hydrogenation metal component selected from the group consisting of a Group VIB metal, a Group VIII metal, and a mixture of said Group VIB and Group VIII metals, and a porous inorganic oxide support, said hydrogenation metal being in at least one form selected from the group consisting of the elemental form, the oxide, and the sulfide, and said catalyst having a surface area of about 120 m^2/gm to about 400 m^2/gm, a pore volume of about 0.7 cc/gm to about 1.5 cc/gm, and an average pore diameter of about 125 A to about 350 A; and
(b) contacting the effluent from said first reaction zone in a second reaction zone with a second-stage catalyst consisting essentially of at least one active original hydrogenation metal selected from Group VIB deposed on a catalytically active support comprising alumina, said Group VIB metal being in at least one form selected from the group consisting of the elemental form, the oxide, and the sulfide, said catalyst having a surface area within the range of about 150 m^2/gm to about 300 m^2/gm, having a majority of its pore volume in pore diameters within the range of about 80 A to about 130 A, and a pore volume within the range of about 0.4 cc/gm to about 0.9 cc/gm.

4,212,730

APPARATUS FOR SEPARATING AND CLASSIFYING DIVERSE, LIQUID-SUSPENDED SOLIDS

George C. Brooks, 1414 Collins La., and James R. Brown, 932 Wedgewood La., both of Lakeland, Fla. 33803

Filed Mar. 17, 1978, Ser. No. 887,498
Int. Cl.[2] B03D *1/14*
U.S. Cl. 209—168 11 Claims



1. Apparatus for separating and classifying diverse, liquid-suspended solids, comprising:
a first and second chamber chamber;
said first chamber being positioned over said second chamber in a stacked relationship
means for feeding a slurry of said diverse, liquid-suspended solids into said first chamber;
means in said first chamber for bubbling a fluid having a specific gravity less than that of said liquid through said slurry to float predetermined solids in said slurry upward in said first chamber;
means for feeding said slurry from said first chamber into said second chamber;
means in said second chamber for bubbling said fluid through said slurry in said second chamber to float said predetermined solids therein upwards in said second chamber;
slurry feeding means coupling said first chamber with said second chamber, whereby said slurry may be gravity fed out of said first chamber into said second chamber; and
means for controlling the flow of such slurry through such slurry feeding means, said means for controlling the flow of such slurry having a plug in said slurry feeding means, and means for moving said plug into and out of the flow of said slurry between said first and second chambers.

4,212,731

DRIVE DEVICE WITHOUT TRANSMISSION FOR PRODUCING AN ELLIPTICAL SHAKING MOVEMENT

Hans-Henrik B. Wallin, Smedjebacken, and Eric R. Ericsson, Ludvika, both of Sweden, assignors to Morgardshammar Aktiebolag, Smedjebacken, Sweden

Filed Jul. 7, 1978, Ser. No. 922,597
Claims priority, application Sweden, Jul. 13, 1977, 7708140
Int. Cl.[2] B07D *1/44*
U.S. Cl. 209—366.5 3 Claims

1. Drive device for producing an elliptical oscillating movement in a spring-suspended apparatus, said drive device comprising two oscillation masses eccentrically arranged around individual axes of rotation and rotatable in opposite directions, the product of mass and distance to the respective axis of rotation being different for the two oscillation masses, characterized in that the two oscillation masses are each rotatably arranged independently of the other and are coupled to individual motors with the same nominal rotational speed, and that the center of gravity of the suspended device lies on an Apollonios' circle to the axes of rotation, so determined that the



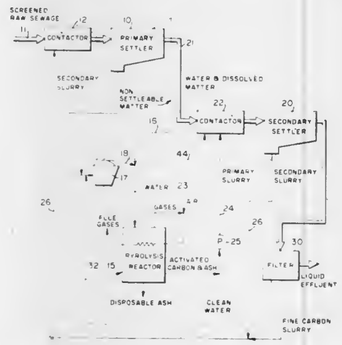
ratio of the distances from the center of gravity to the axes of rotation is inversely proportional to the products of the weights of the respective oscillation masses and their mean distance to the respective axis of rotation.

4,212,732

RAW LIQUID WASTE TREATMENT PROCESS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Marshall F. Humphrey, Duarte, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 549,417, Feb. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 390,467, Aug. 22, 1973, abandoned. This application Jan. 3, 1978, Ser. No. 866,271
Int. Cl.[2] C02B *1/14, 3/00;* C02C *5/02*
U.S. Cl. 210—32 12 Claims



1. A process for treating screened raw aqueous waste, characterized by the absence of a biological digestion stage, including the steps of:
receiving screened raw aqueous waste which comprises an aqueous liquid in which matter is dissolved and nondissolved matter including floatable matter;
mixing the received screened raw aqueous waste with a used activated carbon and ash material to form a first mixture;
permitting said first mixture to stand for a predetermined period for enabling the settling of nondissolved matter in said aqueous liquid, together with the used activated carbon and ash material to form a primary sludge with said floatable matter floating on top of said liquid;
separating the liquid in which matter remains dissolved, representing a first effluent, from said primary sludge and said floatable matter;
pyrolyzing said primary sludge to form fresh activated carbon and ash material;
mixing at least some of the fresh activated carbon and ash material with said first effluent to form a second mixture;
permitting said second mixture to stand for a predetermined interval to enable the fresh activated carbon and ash material therein to adsorb matter in said first effluent, and to thereafter settle as a used carbon and ash material;

separating said settled used carbon and ash material from the rest of said second mixture; and
transferring the separated used carbon and ash material for direct mixing with said received screened raw aqueous waste.

4,212,733

OIL-WATER SEPARATION FILTERS

Yuzuru Goto, Soka; Yukitaka Daigo, Kasukobe, and Mikio Hitotsuyanagi, Soka, all of Japan, assignors to Somar Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 666,998, Mar. 15, 1976, abandoned. This application Dec. 27, 1977, Ser. No. 865,751
Int. Cl.[2] C02B *9/02*
U.S. Cl. 210—36 12 Claims

7. A process for separating oil from water containing oil, which comprises flowing the water containing oil through an oil-water separation filter comprising (1) a porous material comprising a sintered polyethylene powder bonded to (2) a fibrous layer having a thickness of about 0.5 to about 5 mm and a porosity of about 70 to about 90% comprising fibers having a water content of about 0.4 to about 5%, a critical surface tension of about 25 to about 45 dyne/cm and a fiber diameter of about 5 to about 30μ or a mixture of said fibers and fibers having a water content of about 8 to about 15% and a fiber diameter of 5 to about 30μ.

4,212,734

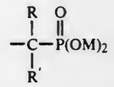
INHIBITING SCALE WITH AMINO-PHOSPHONIC-SULFONIC ACIDS

Derek Redmore, Ballwin, and Frederick T. Welge, St. Louis, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 442,778, Feb. 15, 1974, Pat. No. 4,085,134. This application Dec. 16, 1977, Ser. No. 861,398
Int. Cl.[2] C02B *5/06*
U.S. Cl. 210—58 11 Claims

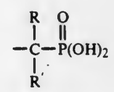
1. A process of inhibiting scale formations in a system in which there is present water containing scale forming compounds which comprises treating the water with an amount effective to diminish scale formation of a compound which is an amine containing the following nitrogen-bonded groups:

$$-(CH_2)_3SO_3M \text{ and}$$



wherein R and R' are hydrogen or an alkyl or aryl group and M is hydrogen or a salt moiety, the nitrogen to which the groups are bonded being amino nitrogen of the amine, the salt moiety being an alkali metal, an alkaline earth metal, ammonium or ammonium form of an amine, the compound in acid form having the

$$-(CH_2)_3SO_3H \text{ and}$$



as the sole acidic groups, the compound with hydrogen in place of said groups being an amine in which said nitrogen is amino nitrogen.

4,212,735

DESTRUCTION METHOD FOR THE WET COMBUSTION OF ORGANICS

Richard A. Miller, Knoxville, Tenn., assignor to Hydroscience, Inc., Emerson, N.J.

Filed Mar. 1, 1979, Ser. No. 16,645
Int. Cl.[2] C02C *5/04*
U.S. Cl. 210—63 R 17 Claims

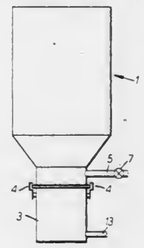
1. In a method for the oxidation of organic compounds in an aqueous system of pH not more than about 4 to reduce the total organic content of the system, the method comprising oxidizing the organic compound by contacting at a sufficient temperature to effect oxidation of the compound with an oxidizing agent in the aqueous system in the presence of a catalytic amount of a cocatalyst system, the improvement comprising increasing the rate of oxidation of the organic compound by using as the cocatalyst system a catalytic combination of:
(1) a catalytic amount of nitrate ions,
(2) at least one of either bromide ions or iodide ions in an amount of at least about 0.001 molar, and
(3) transition metal ions of at least one transition metal having two or more oxidation states in an amount of at least about 10 ppm.

4,212,736

PRODUCTION OF METAL POWDER

John J. Dunkley, Bedford, England, assignor to Davy-Loewy Limited, Sheffield, England

Filed Sep. 22, 1978, Ser. No. 944,729
Claims priority, application United Kingdom, Sep. 22, 1977, 39557/77
Int. Cl.[2] B01D *37/00*
U.S. Cl. 210—73 R 3 Claims



1. In a method of treating metal powder produced by the water atomization of liquid metal in an atomizing vessel, the improvement comprising the steps of:
delivering a slurry of powder and water from the atomizing vessel to a settling tank,
gravity settling the powder on to a filter bed adjacent the base of the tank,
removing excess water above the surface of the powder, and
applying a differential pressure between the surface of the powder and the underside of the filter bed so as to expel residual water through the filter bed.

4,212,737

PROCESSES AND APPARATUS FOR REMOVING SUSPENDED MATTER FROM SUSPENSIONS BY FILTRATION THROUGH FOAMS

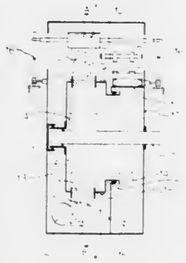
Hans Daucher, Ludwigshafen; Manfred Dressel, Lambsheim; Klaus Hess, Bad Durkheim, and Hubert Engelhardt, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,720

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712414

Int. Cl.² B01D *33/10*

U.S. Cl. 210—77 **2 Claims**



1. A continuous process for removing suspended solid particulate matter from at least partially aqueous liquid suspensions by filtering through a resilient foam of polyurethane blown with water vapor, without interrupting the continuous flow of said suspensions by regenerating the particle-laden foam, comprising:

(a) disposing the foam in a filtration zone so as to separate spatially the suspension and the filtrate afterwards produced;

(b) conveying the foam mechanically through the filtration zone to encounter the suspension moving therethrough, thereby entrapping the suspended solid particulate matter on and in said foam and absorbing substantially only said at least partially aqueous liquid into said foam;

(c) conveying the suspension-laden foam out of the filtration zone;

(d) cleaning the surface of the laden foam by lifting off and removing the suspended matter resting on the foam;

(e) then expressing the aqueous liquid held in said laden foam, the suspended matter deposited in the foam being substantially flushed out and removed as a concentrate; and

(f) conveying the cleaned and expressed foam back into the filtration zone.

2. Apparatus for continuously removing suspended particulate matter from at least partially aqueous liquid suspensions by filtering through a resilient foam of polyurethane blown with water vapor, without interrupting the continuous flow of said suspensions by regenerating the particle-laden foam, comprising:

means for absorbing substantially only said at least partially aqueous liquid and entrapping said particulate matter, including a rotatably mounted drum, which is covered on its outer cylindrical surface with superposed layers of said foam of polyurethane blown with water vapor, said layers having different pore widths, so as to be permeable to at least partially aqueous suspensions in a radial direction,

which drum is closed at one of its faces and which has its axis of rotation horizontally disposed so as to dip partially into said suspension flowing through said apparatus during operation;

a roller, which is adjustable radially to the drum, disposed above the drum for expressing the foam when laden with suspended matter and liquid during operation of the apparatus;

a trough located inside the drum to collect the expressed concentrate of suspended matter produced by the action of said roller;

a line connected with said trough for removing said concentrate from the trough and passing through the open face of the drum; and

partitions providing means to keep the suspension separate from the purified liquid and which make a water-tight fit with the open face of the drum.

4,212,738

ARTIFICIAL KIDNEY

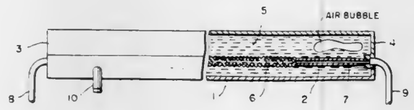
Werner Henne, Wuppertal, Fed. Rep. of Germany, assignor to Akzo N.V., Arnhem, Netherlands

Filed Mar. 23, 1978, Ser. No. 889,401

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713603; Sep. 17, 1977, 2741888

Int. Cl.² B01D *31/00;* **A61M** *1/03*

U.S. Cl. 210—94 **17 Claims**



1. A portable artificial kidney comprising a flexible hollow retentate chamber for the passage of blood formed by at least one dialysis membrane, and a flexible dialysate chamber formed by a jacket displaced outwardly and surrounding said at least one dialysis membrane, the volume of said retentate chamber being about 3 to 50 cm^3 and the volume of said dialysate chamber being about 300 to 5,000 cm^3 with the proviso that the volume of the dialysate chamber is at least about 40 times the volume of the retentate chamber, said dialysate chamber having at least one closable opening for filling or discharging a dialysate liquid and said retentate chamber having blood feed and outlet lines passed through said jacket in fluid-tight relationship, the combined dialysate and retentate chambers being sufficiently flexible to be conformed to a part of the human body and said dialysate chamber being only partially filled with dialysate liquid to provide a gas bubble which is sufficiently large to ensure liquid flow along the dialysis membrane with each natural movement of the body.

4,212,739

DISPOSABLE FILTER CANISTER AND HOUSING

Brian T. Hilton, Norwich, and Paul Staff, Brandon, both of England, assignors to UCC International Limited, Thetford, England

Filed Jun. 30, 1978, Ser. No. 920,821

Claims priority, application United Kingdom, Jul. 4, 1977, 27991/77

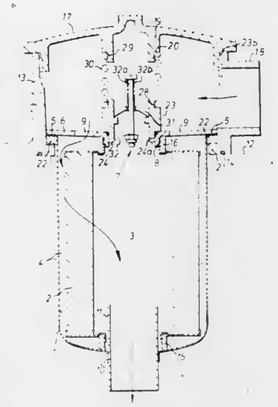
Int. Cl.² B01D *27/10*

U.S. Cl. 210—130 **7 Claims**

1. A filter assembly for fitting to an aperture in the wall of an oil tank of a hydraulic system, comprising in combination:

a separable, disposable filter canister comprising a shell having regions defining a first end wall and regions defining a generally cylindrical side wall, an end plate attached to said shell and defining a second end wall, a tubular filter element fluid-tightly fitted between said first and second end walls to define an outer chamber and an inner chamber between which the only flow path is through said filter element, first regions of said end plate defining a central aperture communicating with said inner chamber and second regions of said end plate defining apertures disposed in a ring about said central aperture and communicating with said outer chamber, and regions of said first end wall defining an aperture communicating with said inner chamber;

a filter head dimensioned to receive said canister and fluid-tightly fitted to the outer face of said tank wall in register with said aperture in said tank wall and having an interior space in fluid communication with said ring of apertures in said canister, a port communicating with said interior space for connection thereto of an oil suction or return pipe, and a fluid-tight cap which is removable to allow said canister to be withdrawn; and



means for supporting said canister in a predetermined axial position relative to said tank wall with said first end wall and at least a major portion of said side wall with in said tank, said supporting means comprising an outwardly projecting member associated with said canister and a cooperating portion of the inner wall of said filter head on which said outwardly projecting member seats so that said canister is suspended by said supporting means from said filter head thereby permitting the canister to be removed as a unit.

4,212,740

FLOATING WEIR AND STRAINER BASKET CONSTRUCTION

Nat Greene, Los Angeles, Calif., assignor to KDI American Products, Inc., North Hollywood, Calif.

Filed Jun. 2, 1978, Ser. No. 911,713

Int. Cl.² E04H *3/20*

U.S. Cl. 210—169 **5 Claims**



1. A floating weir and strainer basket combination for use with a swimming pool skimmer device and the like, the device having a tank adapted to receive the floating weir and strainer basket in telescoping relation with each other, said combination comprising:

an open-ended floating weir having a top end with a flange, a bottom end, and an intermediate wall;

a strainer basket having an open top end with a flange, and a closed but perforated bottom; and

retaining means associated with said floating weir and said strainer basket, for disengageably retaining said weir in said basket, to prevent inadvertent disassociation of said weir from said basket while permitting free telescoping movement of said weir in said basket, wherein said retaining means for disengageably retaining said weir in said basket includes

a plurality of projections disposed on the outer surface of said intermediate wall of said floating weir,

a plurality of corresponding notches disposed on an inside periphery of said strainer basket flange, whereby said weir is inserted in said basket by aligning said projections and notches, and is prevented from subsequent inadvertent removal by rotation of said weir to move said projections and notches out of alignment and grooved rib means affixed inside said strainer basket and extending down from at least one of said notches to prevent realignment of said notches and projections.

4,212,741

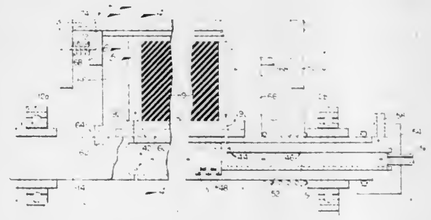
BLOOD PROCESSING APPARATUS

Robert C. Brumfield, 455 S. Oakland Ave., Pasadena, Calif. 91101

Filed Apr. 10, 1978, Ser. No. 895,237

Int. Cl.² B01D *31/00, 33/06;* **A61M** *1/03*

U.S. Cl. 210—241 **13 Claims**



1. In blood treating apparatus of the type having a rotor with peripheral wall through which mass transfer may occur and journaled for rotation in a surrounding casing, first means for supplying blood to the interior of the casing at a first locus, second means for discharging the blood from the casing at a second locus after a desired angular residence with the rotor, and third means for supplying a second fluid, such as oxygen or a dialysate, to the interior of the rotor, the improvements in combination comprising;

(a) said third means including a hollow shaft rotatably supporting the rotor,

(b) means for delivering said second fluid to one end of said shaft for axial flow through the rotor, and

(c) means for discharging said second fluid from the same end of said shaft after flowing through the rotor.

4,212,742

FILTRATION APPARATUS FOR SEPARATING BLOOD CELL-CONTAINING LIQUID SUSPENSIONS

Barry A. Solomon, Bedford, and Michael J. Lysaght, Waltham, both of Mass., assignors to United States of America, Washington, D.C.

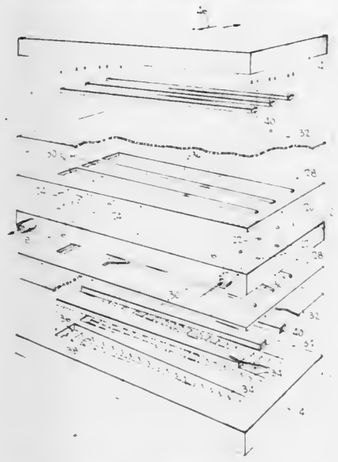
Filed May 25, 1978, Ser. No. 909,459

Int. Cl.² B01D *31/00*

U.S. Cl. 210—247 **7 Claims**

1. In a filtration apparatus for effecting separation of a cellular component-free liquid filtrate from a liquid suspension of blood cellular components in continuous laminar flow under pressure through said apparatus by filtration through a microporous membrane which is permeable to blood proteins and impermeable to blood cellular components, comprising a housing means provided with a suspension inlet port and a suspension outlet port, said suspension inlet port leading into the inlet end of at least one continuous suspension flow channel which

extends within said housing means and terminates at its outlet end in said suspension outlet port, each flow channel having one of its walls formed of a microporous filtration membrane disposed within said housing means, whereby said flow channel defines a filtration flow path along the surface of the upstream side of its membrane wall, said microporous filtration membrane being permeable to blood proteins and impermeable to blood cellular components, and said housing means being further provided with a filtrate exit port disposed on the down-



stream side of said membrane wall, the improvement consisting of each of said flow channels having a width across the surface of its membrane wall which gradually and uniformly increases along the length thereof from its inlet end to its outlet end, each said channel being constructed and arranged so that the membrane wall shear rate of the suspension flowing along said filtration flow path will gradually and uniformly vary along the length of said flow channel from a maximum value at said inlet end to a minimum value at said outlet end.

4,212,743

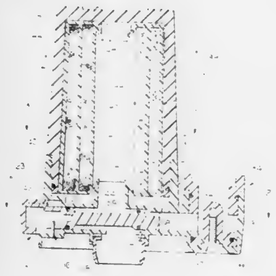
FILTER

Arch Van Meter, Hanover Park, and William J. Gartner, Streamwood, both of Ill., assignors to Universal Water Systems, Inc., West Chicago, Ill.

Filed Jan. 11, 1979, Ser. No. 2,590

Int. Cl.[2] B01D *27/00*

U.S. Cl. 210—282 **6 Claims**



1. A filter cartridge comprising a generally cup-shaped housing having a generally cylindrical side wall, circular first and second end surfaces and fluid inlet and outlet openings, one of said openings being through and generally adjacent the edge of one of said end surfaces and the other of said openings being at the center of said one end surface, partition means within said housing extending between said end surfaces and defining a tortuous fluid flow path between said inlet and outlet openings and a quantity of filter material disposed in said flow path, said tortuous flow path including at least two nearly circular segments which extend in opposite directions around the axis of said housing whereby fluid flows through said flow path in planes which generally intersect the axis of said housing.

4,212,744

HAEMODIALYZER APPARATUS

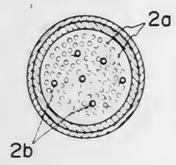
Kazuhiro Oota, Nagoya, Japan, assignor to Asahi Medical Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,354

Claims priority, application Japan, Jun. 21, 1977, 52-73673

Int. Cl.[2] B01D *31/00*

U.S. Cl. 210—321 B **3 Claims**



1. In a haemodialyzer comprising a housing having an inlet and an outlet for blood and an inlet and an outlet for dialyzate, a plurality of membranes positioned in said housing and fixation block means for holding said membranes at their end portions, in a liquid tight connection, in relation to said housing wherein separate liquid passages for said blood and said dialyzate are formed by said plurality of membranes that are separately communicated with said inlet and outlet for blood and with said inlet and outlet for dialyzate, the improvement wherein said membranes comprise a first plurality of semipermeable dialyzing membrane means substantially incapable of passing blood plasma proteins therethrough, said dialyzing membrane means contacting all components of said blood on one side thereof and contacting said dialyzate on the other side thereof, and a second plurality of filter membrane means for passing blood plasma proteins and for not passing blood corpuscles therethrough, wherein said dialyzing membrane means and said filter membrane means are held in said fixation block means.

4,212,745

BELT FILTER

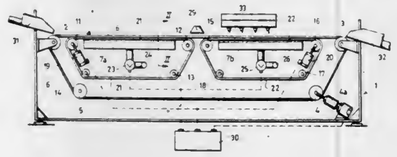
Anne Jellesma, Sneek, Netherlands, assignor to Machinefabriek W. Hubert & Co. B.V., Sneek, Netherlands

Filed Sep. 8, 1978, Ser. No. 940,599

Claims priority, application Netherlands, Sep. 13, 1977, 7710048

Int. Cl.[2] B01D *33/04*

U.S. Cl. 210—401 **2 Claims**



1. A belt filter apparatus comprising:

(a) a filter belt mounted within the apparatus frame supported by at least one longitudinally driven conveyor belt,

(b) a suction casing with opposite upstanding longitudinal side walls and a spaced bottom pan which enclose the conveyor belt further comprising a plurality of aligned interposed conveyor belts,

(c) supporting elements upstanding from the bottom of said casing; wherein said supporting elements in said suction casing have mutual distances closer than the mesh width of said conveyor belt bearing thereon, said mesh widths being larger than those of said filter belt,

(d) the distance between said supporting elements being greater than the mesh of said conveyor belt which is greater than the mesh of said filter belt,

(e) the upstanding side walls of said suction casing being the level of said conveyor belt which diverge outwardly into flared side edges which include a shallow angle with the transverse width of said filter belt and which sealingly support the edges of said filter belt which lie above and to both outer sides of said conveyor belt.

4,212,746

EDGE SEALING FOR FILTER CLOTHS

Edzard Tholema, Odenthal; Heinz-Gerd Nonnenbruch, Leverkusen; Hans Gossmann, Bergisch-Gladbach, and Peter Schultz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 973,302

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800453

Int. Cl.[2] B01D *29/04*

U.S. Cl. 210—495 **4 Claims**

1. In a filter cloth or filter felt having sealing means comprising a polychloroprene latex mixture disposed around the periphary thereof surrounding an unsealed portion for providing thereat means for preventing capillary action of the filter cloth or felt from the unsealed portion to the sealed portion thereby preventing the escape of fluids, the improvement wherein the polychoroprene latex mixture of the means for preventing capillary action contains from 2 to 40% by weight of zinc oxide and from 0 to 50% by weight of a silicate filler in addition to a polychloroprene with carboxyl groups.

4,212,747

SHEAR-THICKENING COMPOSITIONS

Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 12, 1978, Ser. No. 868,965

Int. Cl.[2] E21B *43/26, 43/22*

U.S. Cl. 252—8.55 R **3 Claims**

1. An aqueous shear-thickening composition particularly applicable as a hydraulic fracturing fluid in well stimulation treatments, as a workover fluid in producing or injection wells, as a mobility control fluid in post-primary oil recovery operations, and as a diverting agent to substantially divert fluids during the injection of fluids in a well in communication with a subterranean reservoir containing as essential ingredients:

(a) a small but effective amount in the range of 0.1 to 3.0 weight percent of a high molecular weight polyalkylene oxide selected from the group consisting of polyethylene oxides, polypropylene oxides, and polybutylene oxides and having a molecular weight of about 10,000 to about 10,000,000 and

(b) a small but effective amount in the range of 0.025 to 2.5 weight percent of a synthetic resin comprising the reaction product formed by heating an aqueous alkaline mixture of an aldehyde having from one to four carbon atoms and a phenol compound selected from the group consisting of phenol, catechol, resorcinol, and cresol at a reaction temperature in the range of 100° to 212° F. for a period of time in the range of 5 minutes to 48 hours in a molar ratio of aldehyde to phenol in the range of 0.1:1 to 2:1, and a pH in the range of about 7 to 12, the amounts of (a) and (b) being sufficient to form a shear-thickening composition that is fluid in a quiescent state but becomes gel-like in character on agitation, and

(c) the balance of the composition being water.

4,212,748

POLYMER FLOOD FILTRATION IMPROVEMENT

Howard H. Ferrell; Dell Conley; Burton M. Casad, and Olaf M. Stokke, all of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 777,203, Mar. 14, 1977, abandoned. This application May 26, 1978, Ser. No. 910,158

Int. Cl.[2] E21B *43/22*

U.S. Cl. 252—8.55 D **6 Claims**

1. In a process for recovery of hydrocarbons from a subterranean formation wherein an aqueous fluid is injected into an injection well and hydrocarbons are produced from a production well; wherein at least a portion of the aqueous fluid is thickened with a heteropolysaccharide biopolymer produced by fermentation with Xanthomonas campestris; and wherein the aqueous mixture containing the biopolymer is filtered prior to injection of the biopolymer; the improvement comprising:

adding an amount of a hydrocarbon sulfonate surfactant or a sulfated alkoxylated alcohol surfactant sufficient to improve filterability of the aqueous mixture containing the biopolymer prior to filtration.

4,212,749

LIQUID PREPARATION OF FATTY ACID/ALKANOLAMINE CONDENSATES

Joachim Kolbe, Bergisch-Neukirchen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 592,899, Jul. 3, 1975, abandoned. This application May 31, 1977, Ser. No. 801,916

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1974, 2432296

Int. Cl.[2] D06M *13/18, 13/16*

U.S. Cl. 252—8.75 **4 Claims**

1. In a process for reducing the viscosity of an aqueous preparation of an anti-static agent or textile softener consisting essentially of a fatty acid/alkanolamine condensate containing cationic surface active agents consisting of amino-esters and ester-amides, the improvement comprising incorporating a sulfuric acid ester of the formula

$$R—X—OSO_3^{(-)}M^{(+)}$$

wherein

R is a saturated or unsaturated, straight-chain or branched, aliphatic radical with 8–22 C atoms, an alkylphenyl radical with 4–12 C atoms in the alkyl chain, or a naphthyl radical;

X is a polyglycol ether chain which is derived from ethylene oxide or propylene oxide or mixtures thereof, and wherein the number of chain members is 10–30; and

$M^{(+)}$ is a metal of main group 1 or an ammonium ion into the aqueous preparation of said anti-static agent or textile softener, in an amount of from 10–30% by weight of sulfuric acid ester based on the weight of fatty acid/alkanol amine condensate, to provide a mobile preparation miscible with water in all proportions.

4,212,750

METAL WORKING LUBRICANT

Jeremy W. Gorman, West Simsbury, Conn., assignor to Lubrication Technology, Inc., Weatogue, Conn.

Filed Dec. 15, 1977, Ser. No. 860,682

Int. Cl.[2] C10M *1/06, 3/38, 3/32*

U.S. Cl. 252—32.5 **22 Claims**

1. A water base metal working lubricant comprising about:

(a) 1 to 40 parts by weight of at least one water soluble polyalkylene glycol having a molecular weight of at least 200;

(b) 1 to 35 parts by weight of at least one water emulsifiable

high pressure lubricating ingredient selected from the class consisting of chlorinated paraffins, sulfurized esters of unsaturated fatty acids and chlorinated esters of unsaturated fatty acids;

(c) at least one non-cationic emulsifier present in at least the amount necessary to emulsify said high pressure lubricating ingredient in water; and

(d) sufficient water to comprise from about 10 percent to 96 percent by weight of said lubricant, said high pressure lubricating ingredient being emulsified in said lubricant.

4,212,751

DITHIOPHOSPHORIC ACIDS AND SALTS THEREOF AND OIL COMPOSITIONS CONTAINING THE SALTS

Hendrik Schadenberg; Corrie M. J. Leenaars, and Aaldert J. de Jong, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

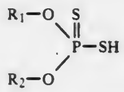
Filed Mar. 6, 1978, Ser. No. 883,761

Claims priority, application United Kingdom, Mar. 18, 1977, 11586/77

Int. Cl.² C10M *7/46*; C07F *9/177*

U.S. Cl. 252—32.7 E **8 Claims**

1. A compound of general formula:



wherein R_1 is a 1,5-dimethylbicyclo[3,2,1]oct-8-yl hydrocarbyl group bound to the oxygen by a ring carbon atom having two beta quarternary carbon atoms, and R_2 is R_1 or a different hydrocarbyl group which R_2 group may contain up to about 15 carbon atoms and may be substituted by chlorine, hydroxyl or ether groups, or a Group I or Group II metal salt thereof.

6. An oil composition comprising a major proportion of an oil of lubricating viscosity and from 0.01 to 10%w, based on the composition of a salt as in claim **1**.

4,212,752

IMPROVED PROCESS FOR THE PRODUCTION OF AN ADDITIVE FOR LUBRICATING OILS AND RELATED PRODUCT

Andrea Peditto, Turin; Franco Fossati, Robassomero; Vincenzo Petrillo, Cirie'; Paolo Peri, Rivoli, all of Italy; Ielena A. Ivanova, Moscow, U.S.S.R.; Aleksandr I. Levin, Moscow, U.S.S.R.; Aleksandr A. Fufaiev, Moscow, U.S.S.R., and Viktor M. Shkolnikov, Moscow, U.S.S.R., assignors to Liquichimica Robassomero S.p.A., Milan, Italy and Vsesoiuznis Nauchij Issledovatelskj Institut Po Pererabotke Nefti Vniinp, Moscow, U.S.S.R.

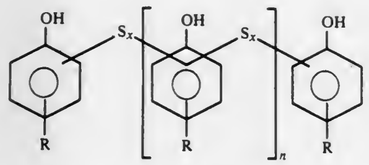
Continuation of Ser. No. 704,074, Jul. 9, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,664

Claims priority, application Italy, Jul. 14, 1975, 25386 A/75

Int. Cl.² C10M *1/54*

U.S. Cl. 252—42.7 **13 Claims**

1. In a process for the preparation of detergent additives for lubricating oils, of the type in which an alkylphenolsulfide having the formula:



wherein R represents a C_8–C_{12} alkyl radical, x has an average Value of between 1 and 2, and n is 0 or 1, is reacted with calcium metal oxide or hydroxide and carbonated with carbon dioxide, the reaction water being then distilled up to refluxing of the solvent, and the reaction product is filtered and then separated from the reaction solvent, the improvement comprising carrying out at least one of (1) the neutralization reaction between said alkylphenolsulfide and the calcium oxide or hydroxide and (2) the carbonating reaction by adding to the mixture 0.1–20% by weight, referred to the weight of the final product, of a promoter comprising a mono- or polyfunctional organic nitrogen derivative which is selected form the group consisting of primary and secondary alkylamines having 1 to 20 carbon atoms, polyalkyleneamines having 2 to 6 nitrogen atoms and the alkylene radical of which has 2 to 5 carbon atoms, aminoacids having 2 to 20 carbon atoms, aminoalcohols and polyalkanolamines having 2 to 12 carbon atoms and oleic acid amide of tetroethyleneysentamine, the reaction being effected in a hydrocarbon solvent containing 6 to 12 carbon atoms.

4,212,753

REACTION PRODUCTS OF SULFURIZED OLEFIN ADDUCTS OF PHOSPHORODITHIOIC ACIDS AND ORGANIC COMPOSITIONS CONTAINING SAME

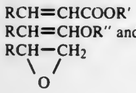
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,716

Int. Cl.² C10M *1/48*

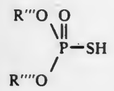
U.S. Cl. 252—46.6 **26 Claims**

1. A product made by reacting diene, acrylonitrile, an unsaturated aldehyde or a compound selected from the formulae



wherein R, R′ and R″ are hydrogen or hydrocarbyl groups or substituted hydrocarbyl groups containing 1 to 30 carbon atoms with the reaction product of

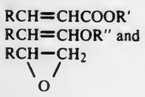
(1) a phosphorodithioic acid of the formulae



wherein R‴ and R⁗ are hydrocarbyl groups containing 1 to 30 carbon atoms and

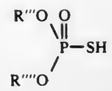
(2) a sulfurized olefin.

14. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or greases prepared therefrom and an antioxidant, an antiwear or a copper corrosion inhibiting amount of a product made by reacting diene, acrylonitrile, an unsaturated aldehyde or a compound selected from the formulae



wherein R, R′ and R″ are hydrogen or hydrocarbyl groups or substituted hydrocarbyl groups containing 1 to 30 carbon atoms with the reaction product of

(1) a phosphorodithioic acid of the formula



wherein R‴ and R⁗ are hydrocarbyl groups containing 1 to 30 carbon atoms and

(2) a sulfurized olefin.

4,212,754

CHELATE DETERGENT AND ANTIWEAR ADDITIVE FOR LUBRICANTS DERIVED FROM HYDROXYALKYLATED BENZOTRIAZOLES

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,079

Int. Cl.² C10M *1/10*

U.S. Cl. 252—49.7 **12 Claims**

1. Chelates prepared by (1) reacting in a 1:1 molar ratio a benzotriazole reactant with a monoepoxide at a temperature between about 25° C. and about 200° C. for between about one hour and about 24 hours to form a mixture of 1- and 2-hydroxyalkylbenzotriazoles, (2) esterifying said mixture or one of the isomers thereof with alkenylsuccinic anhydride at a temperature between about 40° C. and about 130° C. for between about 0.5 hours and about 8 hours to form a monoester, (3) converting said monoester to a salt of a metal selected from Groups IB, IIB, IVB, and VII of the Periodic Table, and (4) complexing said salt with a ligand containing amine, hydroxyl, oxazoline, or imidazoline groups to form a chelate.

2. A chelate of claim **1**, wherein said benzotriazole reactant is benzotriazole, said monoepoxide is propylene oxide, said hydroxyalkylbenzotriazole is hydroxypropylbenzotriazole, said alkenylsuccinic anhydride is polybutenylsuccinic anhydride in which the polybutene has a molecular weight of about 500, said metal is zinc, and ligand is a polybutenylsuccinimide prepared from two moles 1300 molecular weight polybutenylsuccinic anhydride and one mole tetrathylenepentamine.

7. A composition comprising a major proportion of a lubricating oil or a hydrocarbon fuel and an amount sufficient to impart detergency properties thereto of a chelate of claim **1**.

4,212,755

SETTLE RESISTANT LOOSE-FILL PERLITE INSULATION COMPRISING PARTICLES RENDERED SLIGHTLY TACKY BY A COATING THEREON

David L. Ruff, Torrance, and N. Gokul Nath, Carson, both of Calif., assignors to Grefco, Inc., Bala Cynwyd, Pa.

Filed Feb. 6, 1978, Ser. No. 875,632

Int. Cl.² C04B *43/00*

U.S. Cl. 252—62 **12 Claims**

1. Loose-fill thermal insulation comprising particles of expanded perlite rendered slightly tacky by a coating thereon.

4,212,756

DIELECTRIC COMPOSITION STABILIZED AGAINST WATER TREEING WITH ORGANO SILANE COMPOUNDS

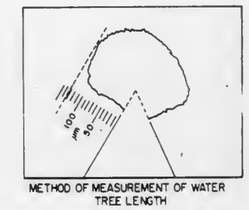
Arnold C. Ashcraft, Hightstown; Robert J. Turbett, Millington, both of N.J., and Timothy R. Burke, Houston, Tex., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 864,751, Dec. 27, 1977, abandoned. This application May 17, 1979, Ser. No. 40,060

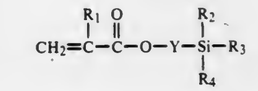
Int. Cl.² H01B *3/44*

U.S. Cl. 252—63.2 **11 Claims**

1. A dielectric composition devoid of filler and resistant to water treeing comprising ethylene polymer, antioxidant for said polymer, and effective amounts, as a water treeing inhibitor, of at least one organo silane of the following formula:



METHOD OF MEASUREMENT OF WATER TREE LENGTH



wherein R_1 is hydrogen or C_1 to C_4 alkyl; Y is C_1 to C_8 alkylene or C_6 to C_{18} substituted or unsubstituted arylene; R_2 is C_1 to C_8 alkyl, C_1 to C_8 alkoxy, C_6 to C_{18} substituted or unsubstituted aryl, C_1 to C_8 acyloxy, C_6 to C_{18} substituted or unsubstituted aryloxy; R_3 and R_4 are independently selected from C_1 to C_8 alkoxy, C_1 to C_8 acyloxy or C_6 to C_{18} substituted or unsubstituted aryloxy.

4,212,757

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Gaylen R. Brubaker, Lawrenceville, and Fred R. Scholer, Cranbury, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 22, 1978, Ser. No. 972,644

Int. Cl.² C11D *7/54, 3/395*

U.S. Cl. 252—95 **12 Claims**

7. A bleaching composition consisting essentially of a peroxygen bleaching compound and as a peroxygen activator, an organophosphorus chlorine compound selected from the class consisting of $R_1OR_2P(O)Cl$, $R_1R_2OP(O)Cl$ and $R_1R_2P(O)Cl$, wherein R_1 and R_2 are selected from the group consisting of an aliphatic radical of 1 to 18 carbon atoms, an aromatic hydrocarbon radical of 6 to 10 carbon atoms while taken together R_1 and R_2 can be an open chain alkylene bridge of 1 to 10 carbon atoms or a closed alkylene chain connected to oxygen atoms in each of the formulas to form a 5 to 6 membered ring.

4,212,758

CLEANSING AGENTS CONTAINING OLEIC ACID, ISOPROPANOL AND ETHYLACETATE

Valentina G. Shashkina, ulitsa Michurina, 23/25, kv. 92, Riga; Gunta Y. Neimane, ulitsa Padomju, 8, kv. 1, Rizhsky raion, Inchukalns; Petr I. Belkevich, ulitsa Kulman, 15, kv. 55, Minsk; Fanya L. Kaganovich, ulitsa Kozlova, 8/1, kv. 88, Minsk; Elena F. Dolidovich, ulitsa D. Serdicha, 3, kv. 58, Minsk; Ljudmila S. Sheremet, ulitsa Slavinskogo, 17, kv. 223, Minsk, and Viktor J. Yachnik, Pukhovichsky raion, poselok Svilosch, Minskaya oblast, all of U.S.S.R.

Filed Oct. 20, 1978, Ser. No. 953,070

Int. Cl.² C11D *3/60*

U.S. Cl. 252—119 **4 Claims**

1. A cleansing agent comprising oleic acid, isopropyl alcohol, triethanolamine, ethanol extract of peat wax resin obtained by the ethanol extraction of peat wax resin at a temperature of the alcohol boiling point, ethyl acetate, 1,2-propylene glycol, polyethyleneglycolic ether of synthetic fatty acids C_{10}–C_{18}, diethanolamides of synthetic fatty acids C_{10}–C_{13}, and water, the components being taken in the following quantities, in percent by weight:

oleic acid	10.0–13.0
isopropyl alcohol	19.0–21.0
triethanolamine	3.0–5.0
ethanol extract of peat wax resin	1.0–1.5
ethyl acetate	10.0–13.0
1,2-propylene glycol	4.0–5.7
polyethyleneglycolic ether of synthetic fatty alcohols C_{10}–C_{18}	4.0–5.5
diethanolamides of synthetic fatty acids C_{10}–C_{13}	5.0–6.5
water	to 100.

4,212,759

ACIDIC HYDROCARBON-IN-WATER EMULSIONS

David W. Young, 2302 John Hancock Center, 875 N. Michigan Ave., Chicago, Ill. 60611, and Donald G. Cherry, c/o Elco Chemicals, Inc., 2454 Palmer Ave., Park Forest, South, Ill. 60466

Continuation of Ser. No. 895,626, Apr. 12, 1978, abandoned, which is a continuation of Ser. No. 781,478, Mar. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 608,639, Aug. 28, 1975, abandoned. This application Jan. 22, 1979, Ser. No. 5,607

Int. Cl.[2] **C11D** *7/20, 7/08*

U.S. Cl. 252—119 **18 Claims**

1. An acidic cleaning composition in the form of a stable hydrocarbon-in-water emulsion for cleaning surfaces comprising about 3 to 20 weight percent liquid hydrocarbon having a boiling range of about 130° C. to 350° C., about 15 to 35 weight percent porous silica absorbent, said absorbent having a surface area of at least about 100 square meters per gram and a particle size in the range of about 10 to 200 microns in diameter; about 0.5 to 7 weight percent moderately strong acid; about 0.5 to 10 weight percent aliphatic monocarboxylic acid having about 10 to 24 carbon atoms; about 0.5 to 5 of secondary or tertiary lower alkanol amine; and water; said composition having a pH of about 1 to 3.

7. An acidic, acid-stable, hydrocarbon-in-water emulsion comprising an emulsion-providing combination consisting essentially of a liquid hydrocarbon, water in an amount to provide a weight ratio of water to liquid hydrocarbon greater than about 2:1, a minor amount of a porous absorbent silica sufficient to stabilize the emulsion, and a minor amount of a moderately strong acid sufficient to provide a pH of about 0.5 to 3.5.

4,212,760

SOLUBILIZED ALKALINE, AQUEOUS SOLUTIONS OF NONIONIC SURFACTANTS

Richard Baur, Mannheim; Knut Oppenlaender, and Dieter Stoeckigt, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 7, 1978, Ser. No. 967,101

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754359

Int. Cl.[2] **C11D** *1/66, 3/20*

U.S. Cl. 252—156 **5 Claims**

1. A process for the preparation of a strongly alkaline, aqueous solution of a nonionic surfactant by mixing the surfactant, aqueous sodium hydroxide solution and a solubilizer and if necessary diluting with water, wherein the solubilizer is a mixture of a monocarboxylic acid of 6 to 11 carbon atoms and from 0.05 to 1 part by weight per part by weight of monocarboxylic acid of an ene-adduct of maleic anhydride with an unsaturated fatty acid of 12 to 24 carbon atoms or a triglyceride thereof, the weight ratio solubilizer:surfactant being from 1:1 to 10:1.

4,212,761

METHOD AND COMPOSITION FOR CLEANING DAIRY EQUIPMENT

Leonard L. Ciaccio, Glen Rock, N.J., assignor to Novo Laboratories, Inc., Wilton, Conn.

Filed Mar. 6, 1978, Ser. No. 883,404

Int. Cl.[2] **C11D** *7/42, 3/386*

U.S. Cl. 252—174.12 **5 Claims**

3. A cleaning solution adapted for cleaning dairy equipment of milk derived deposits which consists essentially of water, a non-ionic or anionic detergent, from 0.5–2.5 grams per liter of sodium carbonate and sodium bicarbonate in a weight ratio of 1:5 to 3:1, from 0.01–1 gram per liter of an alkaline proteinase based upon an enzymatic activity of 1.5 Anson Units per gram or 4.0 KNP Units/gm whichever measurement is appropriate to the enzyme, and from zero to 1.25 grams per liter of sodium tripolyphospate, said cleaning composition having a pH of pH 8.5–11.

4,212,762

LIQUID CRYSTAL MATERIALS HAVING A FORMULA CONTAINING A DIPHENYLETHANE NUCLEUS

Jean-Claude Dubois; Huu Tinh Nguyen, and Annie Zann, all of Paris, France, assignors to Thomson-CSF, Paris, France

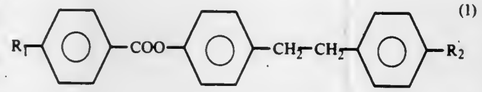
Filed Nov. 21, 1978, Ser. No. 962,692

Claims priority, application France, Nov. 24, 1977, 77 35357

Int. Cl.[2] **C07C** *69/76, 121/60;* **C09K** *3/34*

U.S. Cl. 252—299 **7 Claims**

1. Liquid crystal materials comprising at least one compound of the formula:



(1)

wherein R_1 represents an alkyl or alkoxy group having n carbon atoms (n being an integer from 1 to 10), and R_2 represents an alkyl group having m carbon atoms (m being an integer from 1 to 10), or bromine or the cyanine group.

4,212,763

BIS-TRIAZINYLAMINOSTILBENE COMPOUNDS AND THEIR USE AS FLUORESCENT BRIGHTENING AGENTS

Werner Fringeli, Laufen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

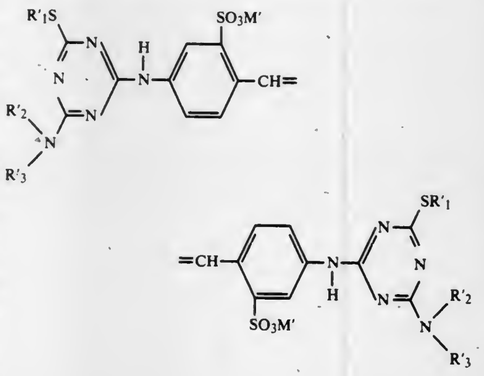
Filed Jun. 26, 1978, Ser. No. 919,115

Claims priority, application Switzerland, Jul. 4, 1977, 8180/77

Int. Cl.[2] **C07D** *403/06, 401/14*

U.S. Cl. 252—301.23 **21 Claims**

1. A bis-triazinylaminostilbene compound, of the formula



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in which R_1' is alkyl having 1 to 6 carbon atoms, R_2' is hydrogen, alkyl having 1 to 6 carbon atoms, cyclohexyl, benzyl, alkyl having 1 to 4 carbon atoms which is substituted by hydroxyl, sulpho or cyano, alkoxyalkyl having a total of 2 to 6 carbon atoms or mono- or di-alkylaminoalkyl each having 1 to 4 carbon atoms per alkyl moiety and R_3' is hydrogen, alkyl having 1 to 6 carbon atoms, alkyl having 1 to 4 carbon atoms which is substituted by hydroxyl or cyano, or alkoxyalkyl having a total of 3 to 6 carbon atoms, or R_2' and R_3' together with the nitrogen atom to which they are bonded are a pyrrolidine, piperidine, hexamethyleneimine, piperazine, N-methylpiperazine or morpholine ring, and M' is hydrogen or an alkali metal ion, and, if R_2' or R_3' is hydroxyalkyl, R_1' is methyl only.

4,212,764

QUATERNARY POLYVINYL HETEROCYCLIC COMPOSITIONS AND USE AS CORROSION INHIBITORS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 3, 1972, Ser. No. 268,549

Int. Cl.[2] **C23F** *11/14, 11/12*

U.S. Cl. 252—392 **13 Claims**

1. A process of inhibiting corrosion in a system which comprises treating said system with a mixture comprising a quaternary polymer of vinyl pyridine, vinyl pyrazine, vinyl piperidine, vinyl quinoline, derivatives or copolymers thereof and an oxyalkylated surfactant of the formula

$$Z[(OA)_nOH]_m$$

where Z is the oxyalkylatable moiety of an oxyalkylatable compound $Z(OH)_m$, A is the alkylene moiety of an alkylene oxide, and n is a number from 1 to 2,000.

4,212,765

PROCESS FOR THE MANUFACTURE OF A CATALYST

Klemens Gutweiler, Niedernhausen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,509

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1978, 2802763

Int. Cl.[2] **C08F** *4/02, 4/22, 4/78*

U.S. Cl. 252—430 **32 Claims**

1. A process for the production of a catalyst, which comprises reacting, in the absence of water and at a temperature of from 0° to 40° C., a chromate ester of the formula

$$(RO)_2CrO_2,$$

wherein R is tertiary alkyl or aralkyl of from 4 to 24 carbon atoms, with an anhydrous carrier selected from the group consisting of oxides of silicon, oxides of aluminum and mixtures thereof; treating the reaction product, in the absence of an unsaturated polymerizable hydrocarbon and at a temperature of from 0° to 40° C., with a first aluminum-organic compound selected from the group consisting of aluminum trialkyls, aluminum dialkyl hydrides, aluminum dialkyl alkoxides, reaction products of aluminum trialkyls with dienes, reaction products of aluminum dialkyl hydrides with dienes, and polyalkyl-aluminum oxides, in a proportion of Cr to Al of 1:1 to 1:50, and mixing said treated reaction product with a second aluminum-organic compound.

4,212,766

PROCESS FOR FORMING MULTI-COMPONENT OXIDE COMPLEX CATALYSTS

James F. Brazdil, Lyndhurst; Dev D. Suresh, Macedonia, and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 823,319, Aug. 10, 1977, Pat. No. 4,148,757. This application Apr. 21, 1978, Ser. No. 898,356

Int. Cl.[2] **B01J** *23/16, 23/28, 23/30, 23/72*

U.S. Cl. 252—432 **11 Claims**

1. In a process for producing a molybdate or tungstate activated oxide complex catalyst in which the elements of the catalyst are combined together in a precatalyst aqueous slurry, the slurry so obtained is dried to form a precatalyst precipitate, and the precatalyst precipitate is then calcined to form said catalyst, the improvement wherein: the key catalytic phase of said catalyst defined as a molybdate or tungstate of Bi, Te, Sb, Sn, Cu or mixtures thereof is preformed prior to combining with the other elements of said catalyst,

provided that when one or more elements in said catalyst is supplied to said precatalyst aqueous slurry in the form of

(a) a source salt having a heat-decomposable cation or anion,

(b) an inorganic salt reaction product of said source salt, or

(c) an aqueous slurry of either (a) or (b)

then the elements of said catalyst are combined in such a way that said precatalyst preciptate contains a substantial amount of at least one of said heat-decomposable anions or cations, said catalyst having a composition defined by the formula:

$$[M_mN_nO_x]_q[A_aC_bD_cE_dF_eN_fO_y]_p$$

wherein

M=Bi, Te, Sb, Sn and/or Cu
N=Mo and/or W
A=alkali, Tl, and/or Sm
C=Ni, Co, Mn, Mg, Be, Ca, Sr, Ba, Zn, Cd and/or Hg
D=Fe, Cr, Ce and/or V
E=P, As, B, Sb
F=rare earth, Ti, Zr, Nb, Ta, Re, Ru, Rh, Ag, Au, Al, Ga, In, Si, Ge, Pb, Th, and/or U, and further

wherein

a=0–4
b=0–20
c=0.01–20
d=0–4
e=0–8
f=8–16
m=0.01–10
n=0.1–30
a+b+c+d+e>0, and
x and y are numbers such that the valence requirements of the other elements for oxygen in the key catalytic phase and the host-catalytic phase, respectively, are satisfied; and the ratio of q/p is 0.1 to 10.

4,212,767

METHOD OF PREPARING AN OXIDATION CATALYST CONTAINING A MOLYBDATE ANION

Chelliah Daniel, Boothwyn, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 17, 1978, Ser. No. 952,177

Int. Cl.[2] **B01J** *27/14, 27/24, 27/02, 27/06*

U.S. Cl. 252—435 **17 Claims**

1. A method of preparing a catalyst comprising:

(a) combining a molybdic acid or non-metallic molybdate salt with a water-soluble, acid or non-metallic salt of an element selected from the group consisting of silicon, phosphorus, arsenic and mixtures thereof in an aqueous solution,

(b) adding an aqueous chloride ion and a compound selected from the group consisting of phosphotungstate, silicotung-

state, vanadium arsenate, silicoarsenate, phosphovanadate, silicovanadate, corresponding acids thereof and mixtures thereof,
(c) drying the resulting combination, and
(d) calcining the dried material to yield a catalyst having the empirical formula:

$$Y_wMo_xA_yO_z$$

where Y is phosphorous, arsenic, silicon or mixtures thereof,
A is tungsten, vanadium, arsenic when Y is not arsenic, or mixtures thereof,
w ranges from 0.5 to 1.5,
x ranges from 10 to 15,
y ranges from 0.1 to 2.0, and
z ranges from 1 to 42 and is an integer necessary to satisfy the valency requirements of the formula.

4,212,768

ELECTROLESS PLATING OF NONCONDUCTIVE SUBSTRATES

Melvin N. Jameson, Rte. 1, St. Marys, W. Va. 26170, and Gerald A. Krulik, Rte. 1, Box 212, Washington, W. Va. 26181

Filed May 5, 1975, Ser. No. 574,498
Int. Cl.[2] B01J *27/06;* C09D *5/00;* C23C *3/00*
U.S. Cl. 252—441 **28 Claims**

1. A concentrated, catalytically active composition, suitable for initiating electroless deposition of metal, the active constituent thereof consisting essentially of the reaction product of: (1) a molten tin salt; (2) a palladium salt; and (3) an effective amount of a metal halide selected from the group consisting of chloride and bromide compatible with said tin and palladium salts, the cation of component (3) selected from the group consisting of alkali metals, alkaline earth metals, rare earth metals and transition metals, said reaction product being substantially free from an extrinsic source of acid and wherein the molar ratio of tin to palladium is at least 2:1.

4,212,769

ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 910,301, May 26, 1978, Pat. No. 4,159,939, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Feb. 21, 1979, Ser. No. 13,490
The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.
Int. Cl.[2] B01J *27/08, 27/10*
U.S. Cl. 252—441 **20 Claims**

1. A catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state, and of a tantalum component.

4,212,770

ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 924,112, Jul. 12, 1978, Pat. No. 4,179,359, which is a continuation-in-part of Ser. No. 739,887, Nov. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,041, Nov. 14, 1975, Pat. No. 4,009,123, which is a division of Ser. No. 522,209, Nov. 8, 1974, Pat. No. 3,960,710. This application Mar. 22, 1979, Ser. No. 22,911
The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.
Int. Cl.[2] B01J *27/08, 27/10*
U.S. Cl. 252—441 **11 Claims**

1. An acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % iridium, about 0.05 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % Group IVA metal, and about 0.1 to about 3.5 wt. % halogen; wherein the platinum or palladium, iridium, Group IVA metallic and catalytically available cobalt components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum or palladium and iridium components are present in the elemental metallic state; wherein substantially all of the Group IVA metallic component is present in an oxidation state above that of the corresponding metal; and wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

4,212,771

METHOD OF PREPARING AN ALUMINA CATALYST SUPPORT AND CATALYST COMPRISING THE SUPPORT

Glen P. Hamner, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 8, 1978, Ser. No. 931,330
Int. Cl.[2] B01J *29/06, 29/04, 23/08*
U.S. Cl. 252—455 Z **36 Claims**

1. A process for the preparation of a catalyst support which comprises the steps of:
(a) grinding a calcined alumina to a powder having a diameter ranging from about 10 to about 400 mesh Tyler, and
(b) extracting the ground alumina with an extractant comprising an acid selected from the group consisting of inorganic acids and organic acids, for a time sufficient to remove at least 1 weight percent of said alumina from said ground alumina.

15. A process for the preparation of a catalyst which comprises the steps of:
compositing at least one catalytic component selected from the group consisting of (i) a crystalline aluminosilicate zeolite, (ii) a metal component selected from the group consisting of a metal or a compound of a metal from the group of IB, IIA, IIIB, IVA, IVB, VB, VIB, VIIB, VIII, rare earth metals and mixtures thereof, with an alumina support prepared by the steps which comprise: (a) grinding a calcined alumina to a powder, and (b) extracting the ground alumina with an extractant comprising an acid selected from the group consisting of inorganic acids and organic acids, for a time sufficient to remove at least one weight percent of said alumina from said ground alumina.

4,212,772

CATALYST FOR THE MANUFACTURE OF ETHYLENE OXIDE

Wolf D. Mross; Eckart Titzenthaler, both of Ludwigshafen; Matthias Schwarzmann, Limburgerhof, and Juergen Koopmann, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 796,062, May 12, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 31,039
Claims priority, application Fed. Rep. of Germany, May 19, 1976, 2622228; Sep. 9, 1976, 2640540; Sep. 11, 1976, 2641000; Feb. 2, 1977, 2704197
Int. Cl.[2] B01J *23/04, 23/50*
U.S. Cl. 252—476 **7 Claims**

1. A catalyst for the manufacture of ethylene oxide by reacting ethylene with oxygen, said catalyst comprising silver and alkali metal compounds on a carrier, in which catalyst are contained, based on the silver present, from 0.1 to 2 atom% of lithium and either from 0.05 to 0.35 atom% of potassium or from 0.003 to 0.25 atom% of rubidium or from 0.0005 to 0.2 atom% of cesium or a mixture of two or more of potassium, rubidium and cesium in amounts exhibiting corresponding catalytic activity.

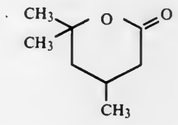
4,212,773

PERFUMERY COMPOSITIONS WITH TRIMETHYL-TETRAHYDROPYRAN-2-ONES

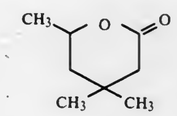
Ulf-Armin Schaper, Düsseldorf, and Klaus Bruns, Krefeld-Traar, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,651
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818244
Int. Cl.[2] C11B *9/00;* A61K *7/46*
U.S. Cl. 252—522 R **6 Claims**

1. A perfumery composition consisting essentially of from 1% to 50% by weight of a trimethyl-tetrahydropyran-2-one selected from the group consisting of
(1) 4,6,6-trimethyl-tetrahydropyran-2-one of the formula



(2) 4,4,6-trimethyl-tetrahydropyran-2-one of the formula



and
(3) mixtures of (1) and (2),
and the remainder customary constituents of perfumery compositions.

4,212,774

RECOVERY OF HIGH-QUALITY POLYCARBONATE FROM POLYCARBONATE SCRAP

Karsten Idel, c/o Bayer AG, Krefeld-Uerdingen, Fed. Rep. of Germany (D 4150)

Continuation of Ser. No. 930,612, Aug. 3, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,840
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737693
Int. Cl.[2] C08J *11/04*
U.S. Cl. 260—2.3 **7 Claims**

1. A process for the recovery of aromatic, high molecular weight, thermoplastic polycarbonates from polycarbonate scrap, in which the polycarbonate scrap is saponified in bulk or in solution at temperatures between about 25° C. and 220° C. to form a saponification mixture, the non-saponified constituents are separated off, and the resulting saponification mixture is then phosgenated and subjected to polycondensation by a two phase boundary polycondensation method, without any further purification steps and treatment steps.

4,212,775

PROCESS FOR THE PURIFICATION OF WASTE LIQUORS IN THE PRODUCTION OF PHENOL-FORMALDEHYDE RESINS

Margarita D. Babina, ulitsa Vostochnaya, 40, kv. 18, Sverdlovsk; Egor F. Vlaskin, Ruzheiny pereulok, 4, kv. 57, Moscow; Evgeny S. Dunjushkin, ulitsa Vyazovskaya, 9, kv. 77, Nizhny Tagil, Sverdlovskoi oblasti; Anna P. Gabets; Ida I. Pereskokova, both of ulitsa Vostochnaya, 40, kv. 18, Sverdlovsk; Galina I. Popova, Bankovsky pereulok, 3, kv. 4, Sverdlovsk; Valentina A. Glumova, ulitsa Sovetskaya, 51, kv. 134, Sverdlovsk; Ljudmila A. Naumova, ulitsa Gagarina, 49/1, kv. 3, Sverdlovsk, and Galina G. Poprygo, ulitsa Moskovskaya, 76a, kv. 3, Sverdlovsk, all of U.S.S.R.

Filed Oct. 13, 1977, Ser. No. 841,984
Int. Cl.[2] C08L *1/02*
U.S. Cl. 260—17.2 **11 Claims**

1. A process for the purification of waste liquors in the production of phenol-formaldehyde resins, comprising:
(a) isolating phenol and partially formaldehyde from waste liquors, in which the molar ratio of phenol and formaldehyde is from 1:1.4 to 1:3.5 by sorption and polycondensation in the presence of a vegetable sorbent, in an amount such that the phenol and formaldehyde are sorbed thereon and after reaction of the phenol and formaldehyde with each other and with components of said sorbent a useful product is formed, at a pH of from 0.65 to 0.8 at the boiling point for a time period sufficient for bonding phenol and to form a useful product as a result of the reaction of phenol and formaldehyde with components of said sorbent, and subsequently separating said product from the liquid phase;
(b) removing methanol from the liquid phase and
(c) isolating residual formaldehyde from the resulting liquid phase from which methanol has been removed, by sorption and polycondensation in the presence of a vegetable sorbent at 60°–100° C. wherein a condensation component is added which is selected from the group consisting of phenol and urea in an amount sufficient to bond formaldehyde and to form a useful product as a result of the reaction of the condensation component, formaldehyde and components of the vegetable sorbent and wherein the sorption and polycondensation are carried out at a pH of 0.65–0.8 when said condensation component is phenol and at a pH of 8–10 when said condensation component is urea and separating the resultant product.

4,212,776

SELF CROSSLINKING WATER DISPERSIBLE EPOXY ESTER-ACRYLATE POLYMERS

Carlos J. Martinez, Edison, and Michael A. Tobias, Bridgewater, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,920
Int. Cl.[2] C09D *3/58, 3/76*
U.S. Cl. 260—18 EP **12 Claims**

1. A copolymer which is water-dispersible comprising the copolymerization product of
(A) a polyglycidyl ether of a bisphenol, which polyglycidyl ether is partially esterified with an ethylenically unsaturated fatty acid or a saturated fatty acid; and
(B) a mixture of monoethylenically unsaturated monomers including methacrylic acid and N-alkoxymethacrylamide or N-alkoxymethylmethacrylamide.

4,212,777

LINEAR, FLEXIBLE, HIGH TENSILE STRENGTH COPOLYAMIDES

Jean Goletto, Ecully, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Oct. 26, 1978, Ser. No. 954,753
Claims priority, application France, Oct. 28, 1977, 77 33341
Int. Cl.[2] C08G *69/14*
U.S. Cl. 260—18 N 32 Claims

1. A polymerizable composition of matter comprising (1) caprolactam, (ii) a dimeric fatty acid, and (iii) hexamethylenediamine, said dimeric fatty acid (ii) having an iodine number less than 30, containing less than about 0.5% by weight of its monobasic fatty acid precursor, and not more than 5% by weight of such acid having a basicity of greater than 2, the said dimeric fatty acid (ii) and the hexamethylenediamine (iii) being present in the composition as a solvent solution of the stoichiometrically balanced salt thereof, and said composition comprising from 40 to 95% by weight caprolactam and from 5 to 60% by weight of the stoichiometrically balanced salt.

4,212,778

PERICLASE REFRACTORY AND ITS METHOD OF MANUFACTURE

Wate T. Bakker, Anne Arundel County, Md., assignor to General Refractories Company, Bala Cynwyd, Pa.

Division of Ser. No. 431,558, Jan. 7, 1974, Pat. No. 3,943,216.
This application Sep. 17, 1975, Ser. No. 613,990
Int. Cl.[2] C08L *91/00*
U.S. Cl. 260—22 A 20 Claims

1. Unfired periclase refractory brick having a green strength of above 30 p.s.i. made from a dry brick batch containing 2.5 to 4.5% of an alkyd resin and 0.1 to 1.5% of an organic or inorganic acid, both based on the weight of the dry batch, the acid giving the brick a green strength of above 30 p.s.i.

11. An improved binder system for the production of periclase refractories, the binder system consisting essentially of an alkyd resin and from about 5 to about 35% by weight of the weight of the alkyd resin of an organic or inorganic acid which gives green brick having a transverse strength in excess of 30 p.s.i., said acid selected from the group consisting of toluene sulfonic acid, xylene sulfonic acid, mixtures thereof, salicylic acid, trichloroacetic acid, sulfonic acid and hydrochloric acid.

4,212,779

CATHODICALLY DEPOSITABLE BINDERS

Gerhard Schmölzer, and Heiner Verdino, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Vienna, Austria

Filed Feb. 17, 1978, Ser. No. 878,772
Claims priority, application Austria, Feb. 18, 1977, 1087/77
Int. Cl.[2] C09D *3/58, 3/66, 5/02, 5/40*
U.S. Cl. 260—22 CQ 11 Claims

1. Cathodically depositable water dilutable coating compositions comprising a basic binder system comprising a blend or partial reaction product of a basic macromolecular component carrying basic nitrogen groups and an acidic macromolecular component having unreacted carboxyl groups, the ratio of basic groups to acid groups as expressed by the amine number and acid number ranging between 97:3 and 65:35.

4,212,780

POLYCHLOROPRENE NON-PHASING SOLVENT CEMENTS

Kenneth D. Fitzgerald, Sugarland, Tex., assignor to Denka Chemical Corporation, Houston, Tex.

Filed Apr. 24, 1978, Ser. No. 899,080
Int. Cl.[2] C08L *93/04, 9/00;* C08K *5/01*
U.S. Cl. 260—27 BB 20 Claims

1. A non-phasing chloroprene polymer adhesive composition comprising:

(a) 100 parts by weight of a chloroprene polymer,

(b) from 4 to 6 parts by weight, based on dry chloroprene polymer, of rosin selected from the group consisting of unmodified rosin, hydrogenated rosin, dehydrogenated rosin, and mixtures thereof, provided said rosin contains less than 2.16 parts by weight of dehydroabietic acid based on dry chloroprene polymer,

(c) 1 to 50 parts by weight of basic metal oxide, and

(d) 5 to 100 parts by weight of modified phenolic resin, said (a), (b), (c) and (d) being admixed with an organic solvent so as to obtain a solids content of said adhesive composition of from 5 to 60% by weight.

8. A process for preparing non-phasing chloroprene polymer adhesive composition comprising:

polymerizing chloroprene in an aqueous emulsion in an emulsifying system containing rosin in the range of 3 to 5 parts by weight per hundred parts of polymerizable monomer, said rosin selected from the group consisting of unmodified rosin, hydrogenated rosin, and dehydrogenated rosin to produce a polymer of chloroprene containing from 4 to 6 parts by weight of said rosin and less than 2.16 parts by weight dehydroabietic acid, based on dry polymer; separating said polymer; and mixing said polymer with basic metal oxide, phenolic resin and solvent in amounts to produce an adhesive composition.

4,212,781

MODIFIED EPOXY RESINS, PROCESSES FOR MAKING AND USING SAME AND SUBSTRATES COATED THEREWITH

James M. Evans, Panama City, Fla., and Vincent W. Ting, Brunswick, Ohio, assignors to SCM Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 685,246, May 11, 1976, abandoned. This application Apr. 18, 1977, Ser. No. 788,611
Int. Cl.[2] C08L *61/28, 63/00*
U.S. Cl. 260—29.4 UA 75 Claims

1. An associatively-formed resinous blend that is dispersible in a basic aqueous vehicle, and that has an oxirane content of no more than 3%, comprising:

(a) carboxylic acid-functional graft polymer,

(b) ungrafted carboxylic acid-functional addition polymer, and

(c) ungrafted aliphatic or aromatic 1,2-epoxy diepoxide resin;

said graft polymer being a 1,2-epoxy diepoxide resin component onto which is grafted an addition polymer component, said graft polymer and said ungrafted addition polymer containing carboxylic acids units furnishing carboxyl groups that contribute at least 5% of the weight of said blend, said graft polymer being formed by the reaction of a 1,2-epoxy diepoxide resin and ethylenically unsaturated monomer in the presence of at least 3% of benzoyl peroxide by weight based on monomer, or under equivalent free radical initiating conditions for the reaction including the use of a peroxide initiator, at a temperature in the range from about 80° C. to 200° C.,

the grafting between said addition polymer component and said epoxy resin component being at aliphatic backbone carbon atoms of said epoxy resin component, to the extent of at least 1½ weight parts of said addition polymer component per 100 weight parts of said epoxy resin equivalent in the blend, the epoxy resin component of said graft polymer having an initial molecular weight of from about 350 to about 20,000 and with said ungrafted epoxy resin constituting from about 5 to 90% of said blend by weight,

the acid-functionality of the reaction product composition being sufficiently high to establish the blend as a dispersion in an aqueous medium containing a base that ionizes the acid-functional polymers.

4,212,782

POLYMERS OF ACID ADDITION SALTS OF METHACRYLIC ACID AND A 2-MONO(LOWER)ALKYLAMINOETHYL METHACRYLATE

Max Klein, Tinton Falls, N.J., assignor to Normac, Inc., Tinton Falls, N.J.

Continuation of Ser. No. 674,990, Apr. 8, 1976, which is a continuation-in-part of Ser. No. 413,043, Nov. 5, 1973, Pat. No. 3,950,398, which is a continuation-in-part of Ser. No. 15,935, Mar. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 488,756, Sep. 20, 1965, abandoned. This application May 8, 1978, Ser. No. 903,566
Int. Cl.[2] C08F *4/04;* C08K *5/19;* C08F *2/28, 18/22*
U.S. Cl. 260—29.6 HN 26 Claims

1. A solid, readily water-soluble, free radical addition polymer of a water-soluble acid addition salt of methacrylic acid and a 2-mono(lower)alkylaminoethyl methacrylate whose lower alkyl group has up to 6 carbons and is straight or branched chain or cyclic, wherein the methacrylic acid and the mono-alkylaminoethyl methacrylate moieties are (i) linked to one another by addition at the respectively original vinyl group of each of them and (ii) present in the ratio of from about 1 mol to about 1.5 mols of one of them per mol of the other, which polymer (a) is insoluble in pentane at below its boiling point, and (b) in aqueous media manifests amphoteric activity.

4,212,783

PAPER SIZES

Hisatake Sato; Shiroh Saitoh, both of Yokohama; Michihiro Mohri, Kawasaki; Akio Miyahara, Tokyo, and Hideo Hayashi, Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Jul. 27, 1978, Ser. No. 928,486
Claims priority, application Japan, Aug. 3, 1977, 52-92508
Int. Cl.[2] C08F *8/12, 8/46*
U.S. Cl. 260—29.6 H 8 Claims

1. A paper size obtained by the steps of:

treating with an acid a C_5 distillate contained in a fraction boiling within the range of 20°–80° C. and containing at least one C_5 acyclic conjugated diolefin in an amount of 10–35 wt.% of the distillate, the fraction being obtained as a by-product by thermocracking, a steam cracking or catalytically cracking petroleum, to obtain a hydrocarbon distillate boiling within the range of 170°–400° C. and having a freezing point of not higher than −20° C.,

reacting 100 parts by weight of the thus obtained hydrocarbon distillate with 25–80 parts by weight of maleic anhydride to obtain a reaction product and then

saponifying the thus obtained reaction product with an alkali thereby to obtain the size.

4,212,784

POLYMERIZATION OF WATER SOLUBLE POLYMERS IN WATER-IN-OIL LATEX FORM TO PRODUCE EMULSIONS CONTAINING HIGH POLYMER SOLIDS LEVELS AND LOW OIL LEVELS

Kenneth G. Phillips, River Forest, and Mary E. Bingham, Palos Hills, both of Ill., assignors to Nalco Chemical Co., Oak Brook, Ill.

Filed May 4, 1979, Ser. No. 36,117
Int. Cl.[2] C08L *33/02*
U.S. Cl. 260—29.6 WQ 2 Claims

1. A method of producing a water-in-oil emulsion of ammonium polyacrylate which comprises polymerizing a water-in-oil emulsion of ammonium acrylate in the presence of a water-in oil emulsifier, and a free radical polymerization catalyst with the amount of oil initially present in said emulsion being at least 15% by weight, continuing said polymerization until substantially all of the ammonium acrylate has polymerized to form ammonium polyacrylate, allowing a major portion of the oil in the oil phase of the emulsion to separate as an upper layer, thus leaving as a lower layer a water-in-oil emulsion of ammonium polyacrylate, which emulsion contains less than 10% by weight of oil.

4,212,785

PROCESS FOR THE PREPARATION OF COPOLYMERS USEFUL AS VISCOSITY-RAISING AGENTS

Ulrich Türck, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huls A.G., Marl, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,884
Int. Cl.[2] C08L *33/02*
U.S. Cl. 260—29.7 H 4 Claims

1. In a process for the preparation of a viscosity-raising copolymer, which comprises copolymerizing at an elevated temperature (a) methacrylic acid, (b) a conjugated diolefin, and (c) an ester of an α,β-ethylenically unsaturated dicarboxylic acid, the improvement wherein (a) 50–60% by weight of methacrylic acid, (b) 15–49% by weight of a conjugated diolefin, and (c) 1–25% by weight of fumaric acid dialkyl ester, maleic acid dialkyl ester or a mixture thereof, wherein each alkyl is of 1–8 carbon atoms, are copolymerized in an aqueous emulsion having a phase ratio of monomer mixture:water of 1:1.7 to 1:2.5, wherein, based on the monomer content, the aqueous phase contains 0.02–1% by weight of an alkaline compound, 0.05–1% by weight of an initiator, 0.01–1% by weight of a molecular weight regulator and 0.1–5% by weight of an emulsifier.

4,212,786

CRAYON COMPOSITIONS

Kimio Murakami, Osaka, Japan, assignor to Sakura Color Products Corporation, Japan

Filed Dec. 8, 1978, Ser. No. 967,855
Claims priority, application Japan, Dec. 12, 1977, 52-149759
Int. Cl.[2] C07D *13/00;* C08K *5/09, 5/05*
U.S. Cl. 260—31.2 R 21 Claims

1. A drawing crayon composition comprising, per 100 parts by weight of the composition,

(a) 10 to 30 parts by weight of at least one member selected from the group consisting of an ester of cellulose, ether or cellulose, polyvinyl butyral, polyvinyl acetate and ethylenevinyl acetate copolymer,

(b) 5 to 30 parts by weight of at least one member selected from the group consisting of a condensation product of cyclohexanone and formaldehyde, a condensation product of meta-xylene and formaldehyde, a condensation product of meta-xylene and formaldehyde which product is modified with an alkyl phenol having C_{1-6} alkyl, an amide resins prepared by the condensation polymerization of dimer acide and di- or poly-amine, a synthetic terpene resin prepared from turpentine oil, a synthetic terpene resin prepared from an unsaturated hydrocarbon and a terpene-phenol copolymer,

(c) 2 to 12 parts by weight of at least one dibenzylidene sorbitol, tribenzylidene sorbitol and derivatives of the sorbitols,

(d) 25 to 60 parts by weight of at least one of glycols, ethers of glycols, ether esters of glycols and benzoic acid esters, and

(e) 20 to 30 parts by weight of a pigment or 2 to 10 parts by weight of an oil-soluble dye.

4,212,787

THERMOPLASTIC ELASTOMER COMPOSITION, BLENDS OF THE COMPOSITION WITH OLEFIN PLASTIC, AND FOAMED PRODUCTS OF THE COMPOSITION AND THE BLENDS

Akira Matsuda; Shizuo Shimizu, and Shunji Abe, all of Ichihara,, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed May 26, 1978, Ser. No. 910,086

Claims priority, application Japan, May 26, 1977, 52-60399; Jun. 1, 1977, 52-63353; Jun. 2, 1977, 52-63937; Jul. 8, 1977, 52-81026; Feb. 24, 1978, 53-19912; Mar. 14, 1978, 53-28201

Int. Cl.[2] C08L *23/16*

U.S. Cl. 260—33.6 AQ 20 Claims

1. A thermoplastic composition which comprises:

100 to 5 parts by weight of (A) a partially cured elastomer composition obtained by dynamic heat-treatment, in the presence of an organic peroxide, of a mixture of 100 to 40 parts by weight of (a) peroxide-curable olefin copolymer rubber selected from the group consisting of ethylene-propylene copolymer rubber and ethylene-propylene-non conjugated diene terpolymer rubber,

0 to 60 parts by weight of (b) a peroxide-decomposing olefin plastic selected from the group consisting of isotactic polypropylene and propylene- alpha olefin copolymer.

wherein the sum of the component (a) and the component (b) is 100 parts by weight, and

5 to 100 parts by weight of (c) at least one member of peroxide-non curable hydrocarbon rubbery material selected from the group consisting of polyisobutylene and butyl rubber, and (d) mineral oil softener; and

0 to 95 parts by weight of (B) an olefin plastic selected from the group consisting of hompolymers of an alpha olefin selected from the group consisting of ethylene, propylene, 1-butene, 1-pentene, 3-methyl-1-butene, 1-hexene, 3-methyl-1-pentene, 4-methyl-1-pentene and 1-octene; copolymers therebetween; and copolymers thereof with 15 mole % or less of another copolymerizable monomer;

wherein the sum of the component (b) and the component B account for not less than 5 parts by weight among 100 parts by weight of the final composition.

4,212,788

PROCESS FOR PRODUCING POLYMALEIC ANHYDRIDE

Raymond N. Birrell, Brooklands, and Norman E. Royle, Urmston, both of England, assignors to Ciba-Geigy (UK) Limited, London, England

Continuation of Ser. No. 813,772, Jul. 7, 1977, abandoned. This application Nov. 16, 1978, Ser. No. 962,566

Claims priority, application United Kingdom, Jul. 22, 1976, 30523/76

Int. Cl.[2] C08F *122/06;* C08K *5/01*

U.S. Cl. 260—33.6 UA 7 Claims

1. In the process for the manufacture of polymaleic anhydride which comprises polymerizing maleic anhydride in a xylene solvent the ortho isomer content of which is up to 99% utilizing di-tertiary butyl peroxide as polymerization catalyst, the improvement according to which a portion of the xylene solvent is replaced by an amount of monochlorobenzene such that the ratio of monochlorobenzene to xylene solvent is from 1:1 to 10:1 by weight.

6. The process of claim 1 wherein the resulting product is hydrolysed using water, an acid or an alkali.

4,212,789

PROCESS FOR PREPARING HIGH IMPACT POLYSTYRENES

Harry D. Anspon, Sewickley Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 21, 1978, Ser. No. 935,410

Int. Cl.[2] C08K *5/01*

U.S. Cl. 260—33.6 AQ 5 Claims

1. Method of making a high impact polystyrene composition useful in making extruded sheet having characteristics suited for deep draw thermoforming comprising

(a) thermally polymerizing while stirring, a polymerization mass comprising styrene, from about 4% to about 8% polybutadiene rubber dissolved therein and having a 1,2 vinyl content of from about 11% to about 22% and a cis content of at least 25%, and about 0.1 ppm to about 10 ppm, based on the weight of the rubber, of a quinone or quinone-imine free-radical terminator, at temperatures from about 235° F. to about 250° F., until about 30% conversion of monomer,

(b) shearing the mass with agitation or stirring to form a rubber particle size in the range of about 1 to about 10 microns,

(c) converting the mass to a suspension by the addition of water under agitation,

(d) adding to said suspension about ½% to about 2% of a high boiling plasticizer,

(e) further polymerizing the suspension by the addition of an effective amount of free-radical catalyst and maintaining the temperature between about 235° F. to about 270° F., and

(f) recovering the high impact polystyrene thus formed from the suspension.

4,212,790

RESIN CONCRETE COMPOSITION

Jyoji Ibata; Yukio Fujita, and Naoya Kominami, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 959,754

Claims priority, application Japan, Nov. 11, 1977, 52-134682

Int. Cl.[2] C08K *3/36*

U.S. Cl. 260—40 R 9 Claims

1. A resin concrete composition comprising an allyl ether-modified unsaturated polyester, at least one ethylenically unsaturated monomer and an aggregate, 20 mole percent or more of the total dicarboxylic acid units in said allyl ether-modified unsaturated polyester being unsaturated dicarboxylic acid units, the ratio of the number of allyl groups/the number of molecules of unsaturated dicarboxylic acid in said unsaturated polyester being 1/10 to 4/1, and said unsaturated polyester having a number average molecular weight of 800 to 7000.

4,212,791

POLY(ALKYLENETEREPHTHALATE) MOLDING COMPOSITIONS CONTAINING OLIGOMERIC POLYESTER AND SEGMENTED COPOLYESTER-POLYETHER ELASTOMER

Noyes L. Avery, and William J. Work, both of Oreland, Pa., assignors to Rohm and Haas, Philadelphia, Pa.

Filed Feb. 23, 1979, Ser. No. 14,405

Int. Cl.[2] C08L *67/02, 67/08, 69/00*

U.S. Cl. 260—40 R 19 Claims

1. Composition comprising poly(alkylene terephthalate) and an inert, particulate nucleating agent, an oligomeric polyester, and a segmented polyester-polyether block copolymer as crystallization promoters.

4,212,792

COUPLED GLASS IN RUBBER MODIFIED THERMOPLASTICS

John I. Davies, Littleborough, England, assignor to TBA Industrial Products Limited, Manchester, England

Filed Jun. 27, 1978, Ser. No. 919,565

Claims priority, application United Kingdom, May 17, 1977, 28260/77

Int. Cl.[2] C08K *7/14*

U.S. Cl. 260—42.18 20 Claims

1. A thermoplastic moulding material comprising, in percent by weight of the molding material,

a styrene acrylonitrile copolymer,

from about 1 to about 30% of an elastomeric material having an elongation at break greater than the styrene acrylonitrile copolymer, from about 0.5 to about 5% of a polyimide pre-polymer that is the reaction product of a polyamine and a bis-imide of an unsaturated carboxylic acid and being capable of reacting further to give a thermoset resin, and

from at least 15% up to not more than 50% of a reinforcing filler selected from the group consisting of glass fibers and mica.

4,212,793

MOLD CORROSION INHIBITION

Robert S. Shue, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 21, 1978, Ser. No. 972,084

Int. Cl.[2] C08K *5/09, 3/32, 3/38*

U.S. Cl. 260—45.85 T 13 Claims

1. A composition of matter comprising poly(arylene sulfide) resin having incorporated therein a corrosion inhibiting amount of a corrosion inhibiting agent consisting essentially of at least one metal salt selected from the group consisting of calcium hypophosphite, sodium tetraborate, trisodium citrate, trisodium phosphate, and tetrasodium pyrophosphate.

4,212,794

AQUEOUS DRILLING FLUID

Karl-Heinz Grodde, Celle, and Alfred Schulz, Hornbostel, both of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 745,017, Nov. 26, 1976, Pat. No. 4,083,790, which is a continuation-in-part of Ser. No. 642,932, Dec. 22, 1975, abandoned, which is a continuation of Ser. No. 363,229, May 23, 1973, abandoned. This application Nov. 21, 1977, Ser. No. 853,057

Claims priority, application Fed. Rep. of Germany, May 23, 1972, 2224959

The portion of the term of this patent subsequent to Apr. 11, 1995, has been disclaimed.

Int. Cl.[2] C09F *1/02;* C09K *7/02*

U.S. Cl. 260—97.6 2 Claims

1. An aqueous drilling fluid lubricating additive consisting of a fractionally distilled tall oil fraction lubricating additive having a fatty acids and fatty oils content of from about 10 to about 25% by weight, a rosin acids content of from about 50% to about 80% by weight, the balance being unsaponifiables and neutrals, said lubricating additive having an initial boiling point in the range of from about 110° to 130° C. at 1.5 mm. Hg., and a final boiling point in the range of from about 185° to 195° C. at 0.5 mm. Hg., the neutralization number thereof being in the range of from about 90 to about 107 and the saponification number being in the range of from about 102 to about 135, and wherein the difference between the neutralization number and the saponification number of said lubricating additive is below 30, said lubricating additive being nonfoaming in an aqueous drilling fluid at a pH up to about 9.

4,212,795

CYCLIZATION OF PEPTIDES

John L. Hughes, Kankakee; Jay K. Seyler, Bourbonnais, and Robert C. Liu, Kankakee, all of Ill., assignors to Armour Pharmaceutical Company, Kankakee, Ill.

Filed Nov. 13, 1978, Ser. No. 960,229

Int. Cl.[2] C07C *103/52*

U.S. Cl. 260—112.5 T 19 Claims

1. In a process for preparing a peptide having a disulfide ring structure, the step of holding a peptide having in its amino acid chain two cysteine residues, one of which has an n-alkylthio group attached thereto, and the other of which has attached thereto an n-alkylthio group or, if said other residue is at the amino terminal position, a cysteine group, in a solution substantially free of oxygen until rearrangement has taken place, to yield a cyclic disulfide peptide.

4,212,796

PROCESS FOR THE PREPARATION OF CYSTEINE-CONTAINING PEPTIDES

Wolfgang König, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,347

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801175

Int. Cl.[2] C07C *103/52;* C07G *7/00*

U.S. Cl. 260—112.5 R 3 Claims

1. A method for detaching the S-trityl group from an S-trityl compound of a peptide containing cysteine protected with an S-trityl group, which method comprises treating said S-trityl compound with a mixture of a mercaptan and trifluoroacetic acid.

4,212,797

SYNTHETIC PENTAPEPTIDE HAVING OPIATE AGONIST ACTIVITY

Brenton G. A. Hanlon, Palo Alto; Jaw-Kang Chang, San Jose, and Bosco T. W. Fong, Sunnyvale, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 2, 1976, Ser. No. 654,641

Int. Cl.[2] C07C *103/52;* A61K *37/00*

U.S. Cl. 260—112.5 R 1 Claim

1. A synthetic pentapeptide with opiate agonist activity having the formula H-Tyr-Gly-Gly-Phe-Met-NH_2.

4,212,798

PROCESS OF PRODUCING SOYBEAN AND/OR SOY PROTEIN PRODUCTS

Osahiro Satou, Kawasaki; Makoto Yamaguchi, and Mikio Hasegawa, both of Yokohama, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed May 10, 1979, Ser. No. 37,821

Claims priority, application Japan, May 11, 1978, 53/55980

Int. Cl.[2] A23J *1/14*

U.S. Cl. 260—123.5 10 Claims

1. A process of producing soybean and/or soy protein products, which comprises the steps of:

(a) contacting a soy protein-containing material with an ethanol-water mixture;

(b) separating the liquid fraction from the suspension of step (a);

(c) dividing the liquid fraction into first and second portions;

(d) diluting the first portion with water to an ethanol concentration of less than 40%;

(e) subjecting the diluted portion to extractive distillation in a tower at a temperature in the range of 80° C. to 95° C.;

(f) removing volatile materials from said diluted portion and recovering distillation bottoms from said extractive distillation;

(g) subjecting the distillation bottoms to azeotropic distillation and recovering the distilled portion thereof; and

(h) combining said distilled portion with said second portion of step (c) as the feed material for step (a).

4,212,799

METHOD FOR PREPARING A PROTEINIC ISOLATE FROM SUNFLOWERSEED MEAL USING ALUMINUM SALTS

Carlo Nuzzolo, Rome; Rodolfo Vignola, Monterotondo, and Antonio Groggia, Rome, all of Italy, assignors to Snam Progetti, S.p.A., Milan, Italy

Filed May 22, 1979, Ser. No. 41,411
Claims priority, application Italy, Jun. 2, 1978, 24136 A/78
Int. Cl.[2] A23J *1/14*
U.S. Cl. 260—123.5 **7 Claims**

1. A method for the preparation of proteinic isolates from vegetable meals which contain undesirable compounds, comprising the steps of directly extracting the proteins with alkaline aqueous solutions while concurrently complexing such undesirable compounds with an Al salt, and subsequently precipitating the proteins by acidification to the isoelectric point in the presence of a compound capable of maintaining aluminum in solution, redissolving the proteins and precipitating them again still in the presence of the compound capable of maintaining aluminum in solution.

4,212,800

INHIBITION OF LANTHIONINE FORMATION DURING ALKALINE TREATMENT OF KERATINOUS FIBERS

Mendel Friedman, Moraga, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 26, 1978, Ser. No. 945,976
Int. Cl.[2] A23J *1/10*; C07G *7/00*
U.S. Cl. 260—123.7 **5 Claims**

1. In the process of treating keratinous fibers containing lysine with alkali, the improvement which comprises reacting the fibers prior to alkaline treatment with an acylating moiety containing from one to eight carbon atoms to inhibit the formation of lanthionine during the alkaline treatment.

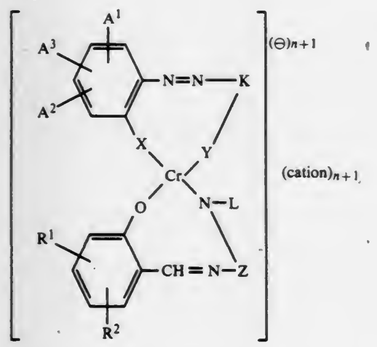
4,212,801

UNSYMMETRICAL 1:2-CHROMIUM COMPLEXES CONTAINING AN AZO AND AN AZOMETHINE BOND

Hans Baumann, Wachenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 23, 1977, Ser. No. 780,669
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1976, 2614201
Int. Cl.[2] C09B *45/06, 45/16, 45/26*; D06P *1/10*
U.S. Cl. 260—145 A **5 Claims**

1. A dye of the formula



in which

A^1 is hydrogen, hydroxysulfonyl, chloro, bromo, methyl, methoxy, ethoxy, nitro, methylsulfonyl, ethylsulfonyl, sulfamoyl, sulfamoyl having one or two C_1 to C_4 alkyl substituents on nitrogen, or N-phenylsulfamoyl;

A^2 is hydrogen, chloro, nitro or hydroxysulfonyl;

A^3 is hydrogen;

A^1 and A^3 together form a fused benzene ring optionally bearing nitro as a substituent;

R^1 is hydrogen, chloro, bromo, nitro, hydroxysulfonyl, phenylazo, phenylazo substituted by chloro, bromo, methyl, methoxy, ethoxy, nitro or hydroxysulfonyl or naphthylazo substituted by hydroxysulfonyl;

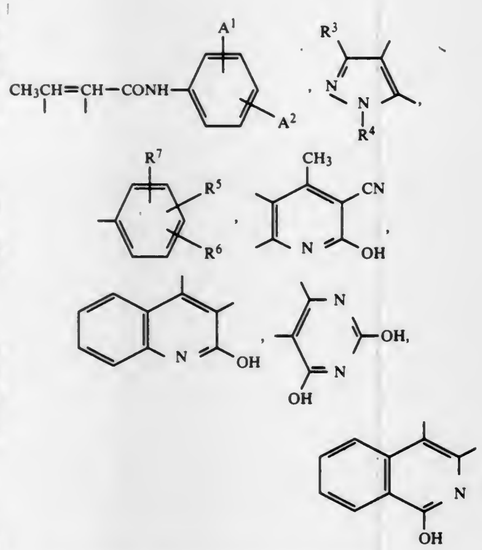
R^2 is hydrogen, chloro, bromo or nitro;

R^1 and R^2 together form a fused benzene ring;

X is —O— or —COO—;

Y is —O— or —NH—;

K is



R^3 is hydrogen, methyl, phenyl or carbamoyl;

R^4 is hydrogen, phenyl or phenyl substituted by methyl, chloro or hydroxysulfonyl;

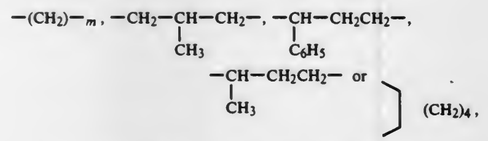
R^5 is methyl, methoxy, acetylamino, propionylamino, benzoylamino, N-phenylamino, dimethylamino or diethylamino;

R^6 is hydrogen or methyl;

R^7 is hydrogen or

R^5 and R^6 together represent a fused benzene ring or a fused benzene ring substituted by bromo, amino, hydroxy, phenylamino, acetylamino, propionylamino, benzoylamino or hydroxysulfonyl, and R^7 is hydroxysulfonyl;

Z is



L is C_1 to C_6 alkyl, C_2 or C_3 hydroxyalkyl, β-cyanoethyl, C_1 to C_4 alkoxyethyl, C_1 to C_4 alkoxypropyl, phenoxyethyl, phenoxypropyl, C_2 to C_4 alkanoylethyl, C_2 to C_4 alkanoylpropyl, benzoyloxyethyl, benzoyloxypropyl, phenylsulfonyloxyethyl, phenylsulfonyloxypropyl, tolylsulfonyloxyethyl, tolylsulfonyloxypropyl, cyclohexyl, benzyl, phenylethyl, phenyl or phenyl bearing chloro, bromo, methyl, ethyl, methoxy, ethoxy or hydroxysulfonyl as a substituent;

m is one of the integers 1, 2 and 3; and

n is the total number of the sulfonic acid groups and of the carboxyl groups which do not participate in the formation of the complex, with the proviso that the number of said sulfonic acid groups is not greater than 2.

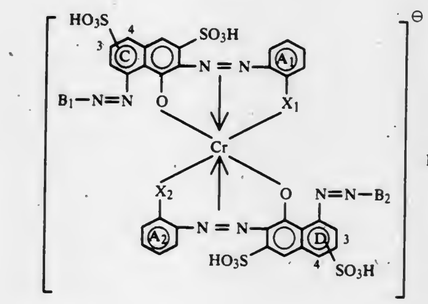
4,212,802

1:2 CHROMIUM COMPLEXES OF DISAZO COMPOUNDS

Claude Vogel, St.-Louis, France, and Heinz Wicki, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Aug. 1, 1978, Ser. No. 930,085
Claims priority, application Switzerland, Aug. 5, 1977, 9634/77; Feb. 21, 1978, 1843/78
Int. Cl.[2] C09B *45/26*
U.S. Cl. 260—145 A **21 Claims**

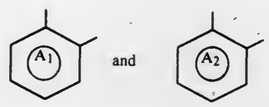
1. A complex of the formula



or a salt thereof,

or a mixture of such complexes in free acid or salt form, wherein

each of



is independently the radical of a diazo component of the benzene series, with the proviso that rings A_1 and A_2 are free from acid groups bound directly thereto and free from fiber-reactive groups,

each of B_1 and B_2 is independently 8-hydroxyquinolyl or substituted phenyl having (i) one or two substituents each of which is independently hydroxy, $—NH_2$, anilino or (C_{1-4}alkyl)phenylamino, with the proviso that not more than one substituent is selected from anilino and (C_{1-4}alkyl)phenylamino, and (ii) a maximum of one substituent selected from the group consisting of C_{1-4}alkyl, C_{1-4}alkoxy and halo,

each of X_1 and X_2 is independently —O— or —COO—, and each of the sulfo groups on rings C and D is independently in the 3- or 4-position,

wherein each halo is independently fluoro, chloro, bromo or iodo.

4,212,803

CATIONIC AZO DYESTUFFS CONTAINING OXYALKYLENE SUBSTITUENT

Winfried Kruckenberg, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 7, 1977, Ser. No. 813,647
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2631030
Int. Cl.[2] C09B *29/08, 29/26, 29/34, 29/36*
U.S. Cl. 260—154 **10 Claims**

1. Cationic dyestuff of the formula

$$[(D—N=N—K)(—R)_n]^m\oplus_{mo}An\ominus$$

wherein

D is a phenyl, thiazolyl, benzthiazolyl, benzisothiazolyl, thiadiazolyl, pyrazolyl, indazolyl, imidazolyl, benzimidazolyl, triazolyl, benztriazolyl, pyridinyl, pyrazolopyridinyl, quinolinyl, or benzoxazolyl radical;

K is a phenyl naphthyl, indolyl, aminopyrazolyl, dihydroindolyl, pyrazolyl, pyrazolonyl, indazolyl, imidazolyl; benzimidazolyl, benztriazolyl, benzisothiazolyl, benzthiazolyl, tetrahydroquinolinyl, or malonodintrilo radical; or the radical of a coupling component selected from the group consisting of acetoacetate, cyanoacetate, cyanoacetic acidamide and acetoacetic acid amide;

m and n independently of one another are 1 or 2;

$An\ominus$ is an anion;

R is

$—A—O—(B_1—O)_p—E$;

$—A—O—CO—F—O—(B_1—O)_p—E_1$; or

$—A—(O—F)_{p1}—CO—O—(B_1—O)_p—E$;

A is C_2–C_4-alkylene unsubstituted or substituted with halogen, hydroxyl, C_1–C_4-alkoxy, or C_1–C_4-alkoxycarbonyl; or a direct bond;

B_1 is C_2–C_4-alkylene; or C_2–C_4-alkylene substituted by halogen, C_1–C_4-alkoxy, hydroxyl, or C_1–C_4-alkoxycarbonyl;

E is C_1–C_6-alkyl; C_2–C_6-alkenyl; C_1–C_6-alkyl substituted by cyano, halogen or C_1–C_4-alkoxy; cyclohexyl; cyclopentyl; cyclohexyl or cyclopentyl substituted by methyl; formyl; (C_1–C_6-alkyl)-carbonyl; (C_2–C_6-alkenyl)-carbonyl; (C_1–C_6-alkyl)carbonyl substituted in the alkyl group by cyano, halogen, or C_1–C_4-alkoxy; hydrogen; phenylcarbonyl; phenyl-(C_1–C_6-alkyl)-carbonyl; phenyloxy-(C_1–C_6-alkyl)-carbonyl; phenyl-(C_1–C_6-alkyl)-phenyl; or phenylcarbonyl, phenyl-(C_1–C_6-alkyl)-carbonyl, phenyloxy-(C_1–C_6-alkyl)-carbonyl, phenyl-(C_1–C_6-alkyl), or phenyl substituted in the phenyl by 1 or 2 members selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy and halogen; wherein the alkenyl groups are straight-chain or branched;

F is C_1–C_6-alkylene;

p is 1 to 3; and

p_1 is 0 or 1;

and wherein at least one of the radicals A or B_1 is substituted.

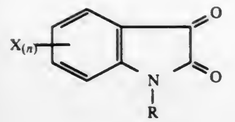
4,212,804

PROCESS FOR THE PREPARATION OF OPTIONALLY SUBSTITUTED 2,3-INDOLINEDIONES

Gary M. Coppola, Budd Lake, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Dec. 4, 1978, Ser. No. 966,200
Int. Cl.[2] C07D *209/38, 209/36*
U.S. Cl. 260—325 R **9 Claims**

1. A process for the preparation of a 2,3-indolinedione of the formula:



wherein

R is hydrogen; C_{1-4} alkyl; C_{3-6} alkenyl;

C_{3-6} alkynyl; unsubstituted phenyl;

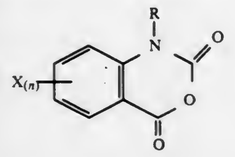
phenyl substituted by one or two substituents independently selected from C_{1-4} alkyl, C_{1-4} alkoxy, fluoro, chloro and bromo; unsubstituted benzyl; or benzyl substituted on the benzene ring by one or two substituents independently selected from C_{1-4} alkyl, C_{1-4} alkoxy, fluoro, chloro and bromo;

X is fluoro; chloro;

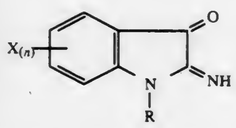
bromo; C_{1-4} alkyl; C_{1-4} alkoxy; or nitro; or two adjacent X's together may also form methylenedioxy; and

n is 0 or an integer 1 or 2, the two X's being the same or different when n is 2,

which comprises reacting a 3,1-benzoxazine of the formula,



wherein R, X and n are as defined above, with an alkali or alkaline earth metal cyanide or a tetra-(C_{1-4}) alkylammonium cyanide in a molar ratio of cyanide compound to benzoxozine compound of about at least 1:1, to decarboxylate said 3,1-benzoxazine and obtain a 2-imino-3-indolinone of the formula,



wherein R, X and n are as defined above, said 2-imino-3-indolinone then being subjected to hydrolysis to obtain said 2,3-indolinedione.

4,212,805

BIS-PHTHALIMIDES

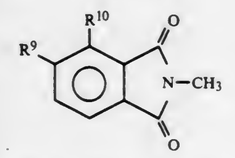
Robert T. Buckler, Edwardsburg, Mich., and Hartmut R. Schroeder, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 927,621, Jul. 24, 1978. This application Apr. 30, 1979, Ser. No. 34,249

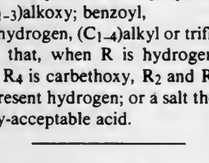
Int. Cl.[2] C07D *209/48, 237/30*

U.S. Cl. 260—326 N **6 Claims**

1. The compound of the formula:



wherein one of R^9 and R^{10} is hydrogen and the other is —$NR^{11}R^{12}$; R^{11} is hydrogen or straight chain alkyl having 1–4 carbon atoms and R^{12} is



wherein n=2–8.

4,212,806

AMINOPYRROLE DERIVATIVES

Giorgio Tarzia, Rome, and Gianbattista Panzone, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

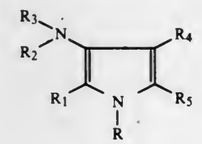
Division of Ser. No. 750,759, Dec. 15, 1976, Pat. No. 4,140,696, which is a continuation-in-part of Ser. No. 716,749, Aug. 23, 1976, abandoned, and a continuation-in-part of Ser. No. 492,564, Jul. 29, 1974, abandoned. This application Nov. 13, 1978, Ser. No. 960,387

Claims priority, application United Kingdom, Aug. 22, 1976, 39790/73

Int. Cl.[2] C07D *207/44, 207/50*

U.S. Cl. 260—326.2 **8 Claims**

1. A compound of the formula



I

wherein:

R is selected from hydrogen, (C_{1-4})alkyl, benzyl and chlorobenzyl;

R_1 selected from hydrogen, (C_{1-4})alkyl, phenyl and phenyl substituted by a radical selected from methyl, ethyl, methoxy, ethoxy, benzyloxy, fluoro, chloro and bromo;

R_2 and R_3 individually represent hydrogen, (C_{1-4})alkyl or, taken together, represent an isopropylidene radical;

R_4 is carbo(C_{1-3})alkoxy; benzoyl,

R_5 represents hydrogen, (C_{1-4})alkyl or trifluoromethyl; with the proviso that, when R is hydrogen, R_1 and R_5 are methyl and R_4 is carbethoxy, R_2 and R_3 cannot simultaneously represent hydrogen; or a salt thereof with a pharmaceutically-acceptable acid.

4,212,807

PROCESS FOR DEACYLATING N-ACYL-6-SUBSTITUTED-2-[2-AMINOETHYLTHIO]-1-CARBADETHIAPEN-2-EM-3-CARBOXYLIC ACIDS

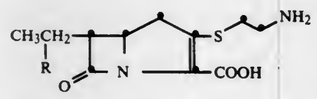
Ronald W. Ratcliffe, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 10, 1978, Ser. No. 932,738

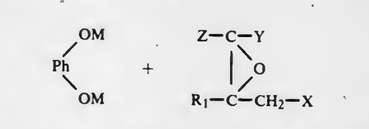
Int. Cl.[2] C07D *487/04*

U.S. Cl. 260—326.31 **1 Claim**

1. A process for preparing



wherein R is hydrogen or hydroxyl, which comprises chlorinating, in the presence of base with a chlorinating agent selected from PCl_5, $SOCl_2$, or $POCl_3$ at a temperature of from −50° to 65° C., the silylated compound



in which the 3-carboxyl group and the hydroxyl group, when R is hydroxyl, are blocked by previous reaction with dimethyldichlorosilane, trimethyl chlorosilane, or hexamethyldisilazane; followed by treating the resulting imino chloride intermediate with an excess of alcohol to yield the corresponding imino ether;

followed by hydrolyzing in aqueous solution at a pH of 3 to 5 at a temperature of from 0°–25° C.; and recovering the desired product thereby produced.

4,212,808

2-OXIRANYL-1,4-BENZODIOXANS

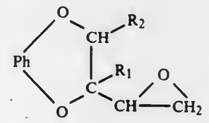
Heinz W. Gschwend, New Providence, and Charles F. Huebner, Chatham, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 940,423, Sep. 7, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 18,958

Int. Cl.[2] C07D *319/08*

U.S. Cl. 260—340.3 **9 Claims**

1. Process for the stereospecific preparation of compounds of the formula



wherein Ph is unsubstituted 1,2-phenylene or 1,2-phenylene substituted by one to three identical or different members selected from lower alkyl, lower alkoxy, lower alkylenedioxy, benzyloxy, halogeno, trifluoromethyl or nitro, and each of R_1 and R_2 is hydrogen or lower alkyl, which comprises condensing compounds of the formulae

wherein M is one equivalent of a strong base, X is a reactively esterified hydroxy group and one of Y and Z is R_2 and the other is CH_2X.

4,212,809

PROCESS FOR THE PREPARATION OF 5-(OXIRANYLMETHYL)-1,3-BENZODIOXOLE

Gebhard Rauleder, Duesseldorf; Helmut Waldmann, Leverkusen; Volker Mues, Wuppertal, and Hermann Seifert, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 7, 1978, Ser. No. 967,448

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757926

Int. Cl.[2] C07D *317/44*

U.S. Cl. 260—340.5 R **13 Claims**

1. Process for the preparation of 5-(oxiranylmethyl)-1, 3-benzodioxole from 5-(2-propenyl)-1,3-benzodioxole and percarboxylic acids, which comprises reacting 5-(2-propylene)-1, 3-benzodioxole with a solution of a per-alkane carboxylic acid with up to 5 carbon atoms whereby the per-alkane carboxylic contains low amounts of water of up to 5% by weight, less than 2% by weight of hydrogen peroxide and less than 50 ppm of mineral acid, in an inert organic solvent, using a molar ratio of 5-(2-propenyl)-1,3-benzodioxole to percarboxylic acid of 1.2 to 20:1 and at a temperature of −20 to +80° C.

4,212,810

NOVEL TRIMETHYLTETRAORGANOTIN COMPOUNDS

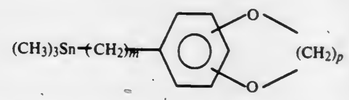
Melvin H. Gitlitz, Edison; John E. Engelhart, Westfield, and David A. Russo, Edison, all of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Division of Ser. No. 845,354, Oct. 25, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,940

Int. Cl.[2] A01N *9/28;* **C07D** *317/50*

U.S. Cl. 260—340.5 R **2 Claims**

1. A novel tetraorganotin compound of the formula



wherein said —O—$CH_2)_p$O— group is bonded to adjacent carbon atoms of the phenyl ring, m is 0 or 1 and p is 1 or 2.

4,212,811

BICYCLIC LACTONE INTERMEDIATES

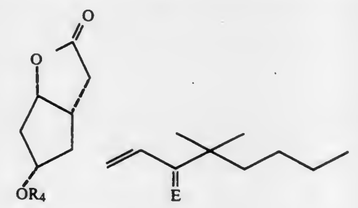
Barney J. Magerlein, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 353,477, Apr. 23, 1973, abandoned, which is a division of Ser. No. 133,842, Apr. 12, 1971, abandoned. This application Mar. 6, 1975, Ser. No. 555,780

Int. Cl.[2] C07D *307/93*

U.S. Cl. 260—343.3 P **15 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof,

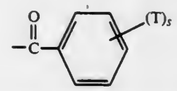
wherein E is O=,

or



and

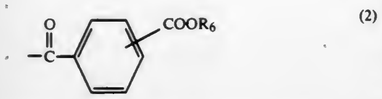
wherein R_4 is



(1)

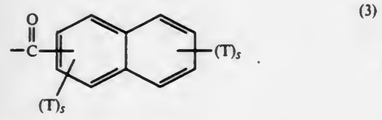
wherein T is alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 10 carbon atoms, inclusive, or nitro, and s is zero to 5, inclusive, provided that not more than two T's are other

than alkyl, and that the total number of carbon atoms in the T's does not exceed 10 carbon atoms;



(2)

wherein R_6 is alkyl of one to 4 carbon atoms, inclusive;

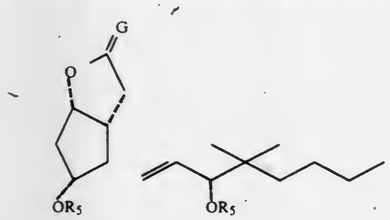


(3)

wherein T and s are as defined above; or

(4) acetyl.

6. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof,

wherein G is O=

and

wherein R_5 is hydrogen or tetrahydropyranyl.

4,212,812

2,2-DIALKYLTETRAHYDROPYRANS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 26, 1979, Ser. No. 15,367

Int. Cl.[2] C07D *309/04*

U.S. Cl. 260—345.1 **9 Claims**

1. A process of producing 2,2-dialkyltetrahydropyrans which comprises contacting a methyl substituted primary or secondary alkenol with a strong acid so that cyclization occurs, said alkenol being characterized by having an olefinic bond in the sixth position relative to the carbon atom carrying the hydroxyl group and at least one methyl group in the fifth position relative to said carbon atom.

4,212,813

PROCESS FOR PRODUCING SUBSTITUTED OR UNSUBSTITUTED NAPHTHALIC ACIDS AND ACID ANHYDRIDES THEREOF

Ryoichi Hasegawa, Yono, Japan, assignor to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1978, Ser. No. 950,407

Int. Cl.[2] C07B *3/00*

U.S. Cl. 260—346.4 **12 Claims**

1. A process for producing naphthalic acid or anhydride thereof, which comprises oxidizing an acenaphthene selected from the group consisting of 5,6-dichloroacenaphthene, 5-chloroacenaphthene, 5-bromoacenaphthene and sodiumacenaphthene-5-sulfonate with molecular oxygen in an organic solvent at a temperature of 30° to 150° C. in the presence of (1) a catalyst which is either (a) a mixture of cobalt salts and other heavy metal salts in which the atomic ratio of cobalt to one of said metals other than cobalt is in the range of 1:0.001 to 2, said mixture being in an amount of 0.005 to 0.3 mole per mole of said acenaphthene derivatives, or (b) a mixture of said (a), and a bromine compound in the range of 5×10^{-5} to 2×10^{-1} mole/liter of the reaction solution; and (2) at least one accelerator selected from the group consisting of a lower fatty acid anhydride, ketone and an aldehyde, and further oxidizing the thus obtained oxidation product with an oxidant selected from the group consisting of a peroxide, hypohalogenate and molecular oxygen in an aqueous alkali solution or a mixture of an aqueous alkali solution and an organic solvent.

4,212,814

BIS-2-FURANIDYL ETHER AND METHOD OF PREPARATION

Eva Schönberger, Givatayim; Zabar Sasson, Rehovoth, and Uri Michael, Natanya, all of Israel, assignors to Abic, Ltd., Israel

Division of Ser. No. 841,023, Oct. 11, 1977. This application Apr. 30, 1979, Ser. No. 34,422

Claims priority, application Israel, Oct. 12, 1976, 50671

Int. Cl.[2] C07D *307/20*

U.S. Cl. 260—347.8 **6 Claims**

1. Bis-2-furanidyl ether.

2. Method of producing bis-2-furanidyl ether, which comprises reacting 2,3-dihydrofuran with water in the presence of a catalytic amount of an acidic catalyst at a pH below 2.5 to form bis-2-furanidyl ether, and distilling off the thus formed ether.

4,212,815

PREPARATION OF VINYLENE FLUORIDES

George A. Boswell, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 799,124, May 20, 1977, abandoned. This application Jul. 5, 1978, Ser. No. 922,048

Int. Cl.[2] C07J *9/00*

U.S. Cl. 260—397.2 **9 Claims**

1. In an improved process for preparing a vinylene fluoride, the improvement comprising reacting under substantially anhydrous conditions in an inert polar solvent at a temperature of −40° C. to about +80° C. a ketone having at least one hydrogen atom on an alpha carbon atom and a disubstitutedaminosulfur trifluoride of the formula RR^1NSF_3 wherein each R and R^1, alike or different, is a primary alkyl group of 1–4 carbon atoms, or when taken together R and R^1 are $-(CH_2)_4-$, $-(CH_2)_5-$or $-CH_2CH_2OCH_2CH_2-$, and recovering a vinylene fluoride.

4,212,816

CARBOXYLIC ACID ESTERS OF PENTAERYTHRITOL

Karl-Heinz Hentschel; Rolf Dhein; Hans Rudolph, all of Krefeld; Karl Nützel, Neulussheim; Klaus Morche, Mannheim, and Wolfgang Krüger, Schwetzingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,389

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758780

Int. Cl.[2] C09F *5/08*; C10M *1/24*

U.S. Cl. 260—410.6 **1 Claim**

1. An ester base stock which comprises pentaerythritol, cyclohexyl carboxylic acid, "isostearic acid" and at least one other C_6-C_{16} saturated aliphatic monocarboxylic acid, the number of carbon atoms per ester molecule being between 47 and 51, from 22 to 54 equivalent % of the alcoholic hydroxyl groups being esterified with cyclohexyl carboxylic acid, from 22 to 40 equivalent % with "isostearic acid" and from 20 to 56 equivalent % with at least one other C_6-C_{16} saturated aliphatic monocarboxylic acid and the content of esterfied cyclohexyl carboxylic acid being at least equivalent to that of "isostearic acid."

4,212,817

CONTROL OF HIGHLY EXOTHERMIC CHEMICAL REACTIONS

Herbert Schmid, Wolfratshausen; Helmut Schneider, Grunwalt, and Allan Watson, Ottobrunn, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 19, 1975, Ser. No. 588,515

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1974, 2430769

Int. Cl.[2] C07C *1/04*

U.S. Cl. 260—449 M **10 Claims**

1. A process for conducting an exothermic chemical reaction comprising:

(a) passing reactants into a reaction chamber zone, and within said reaction zone transferring exothermic heat of reaction indirectly to a liquid coolant in order to at least partially vaporize said liquid, and withdrawing resultant vaporized coolant from said reaction zone;

(b) measuring the temperature inside said reaction zone, and comparing said temperature inside said reaction zone to a fixed maximum design temperature; and

(c) when said temperature in said reaction zone intermittently exceeds said fixed maximum design temperature, surging at least a portion of said withdrawn resultant vapor from step (a) directly into said reaction zone to admix with the reactants and products in order to lower the temperature rapidly in said reaction zone to below the fixed maximum design temperature and

wherein said chemical reaction is effected in several series-connected reaction zones, each zone being provided with a catalyst mass, wherein at least in the first reaction zone the catalyst mass is dimensioned so that the reaction velocity of the reactants is sufficient to produce a desired approach toward the equilibrium, but wherein not more than 95% equilibrium is attained, based on the theoretical quantity of product.

4,212,818

PROCESS FOR THE PRODUCTION OF AMINOMALONIC ACID DINITRILE AS AN AMINOMALONIC ACID DINITRILTOSYLATE PRECIPITATE OR AS AN ACETYLAMINOMALODINITRILE PRECIPITATE

Hans Junek, and Martin Mittelbach, both of Graz, Austria, assignors to Lonza Ltd., Gampel, Switzerland

Filed Jan. 19, 1979, Ser. No. 4,842

Claims priority, application Switzerland, Jan. 20, 1978, 611/78

Int. Cl.[2] C07C *121/42, 121/60*

U.S. Cl. 260—465.4 **11 Claims**

1. A process for the production of aminomalonic acid dinitrile as an aminomalonic acid dinitriltosylate precipitate or as an acetylaminomalodinitrile precipitate comprising converting a malonic acid dinitrile reactant selected from the group consisting of oximinomalonic acid dinitrile and phenylazomalonic acid dinitrile to aminomalonic acid dinitrile by reducing the malonic acid dinitrile reactant with hydrogen at a hydrogen pressure of about 4 to 6 atmospheres and at temperatures of about 10° to 80° C. in the presence of a Raney nickel catalyst and a solvent selected from the group consisting of tetrahydrofurane and acetic anhydride, and precipitating and isolating the resulting aminomalonic acid dinitrile as a precipitate selected from the group consisting of aminomalonic acid dinitriltosylate and acetylaminomalodinitrile, said aminomalonic acid dinitriltosylate being precipitated by treating the resulting aminomalonic dinitrile with p-toluenesulfonic acid.

4,212,819

PROCESS FOR THE PREPARATION OF BENZOYL HALIDE AND HALOSULFONYLBENZOYL HALIDE

F. Howard Day, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

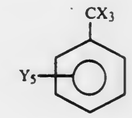
Continuation-in-part of Ser. No. 839,045, Oct. 3, 1977, Pat. No. 4,110,373. This application Jul. 10, 1978, Ser. No. 923,411

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.[2] C07C *51/58, 63/10, 143/38, 143/40*

U.S. Cl. 260—543 R **9 Claims**

1. A process for the co-production of benzoyl halide and meta-halo-sulfonylbenzoyl halide by the reaction of benzotrihalide with sulfuric acid which comprises gradually adding to sulfuric acid, a benzotrihalide of the formula:



wherein X is bromine or chlorine and Y is individually selected from the group consisting of fluorine, chlorine, bromine, iodine, alkyl, halo-substituted alkyl, aryl, and hydrogen, with the proviso that at least one Y substituent at a meta-position is hydrogen.

4,212,820

ACRYLAMIDE OR METHACRYLAMIDE ALKOXYPROPYL QUATERNARY COMPOUNDS

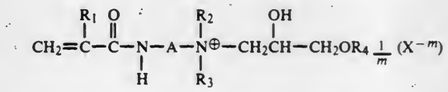
Philip Hotchkiss; Robert M. Gipson, and Edward C. Y. Nieh, all of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,317

Int. Cl.[2] C07C *103/70*

U.S. Cl. 260—561 N **4 Claims**

1. An acrylamide or methacrylamide alkoxypropyl quaternary characterized by the following structural formula:



where R_1 is hydrogen or methyl, R_2 and R_3 are lower alkyl, R_4 is a linear or branched alkyl group containing 7–20 carbon atoms, X is an anion of an organic or mineral acid having a valence m and A is a divalent lower alkyl group.

4,212,821

PROCESS OF MAKING DIAMINODIPHENYLMETHANES

Edward T. Marquis, and Walter H. Brader, Jr., both of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 927,266, Jul. 21, 1978, abandoned. This application Feb. 16, 1979, Ser. No. 12,680

Int. Cl.[2] C07C *85/18*

U.S. Cl. 260—570 D **3 Claims**

1. A method of preparing diaminodiphenylmethane and higher homologues thereof which comprises the step of condensing aniline and formaldehyde in the presence of a hydroxy ethane sulfonic acid catalyst and recovering said catalyst by extraction of the salt thereof with water.

4,212,822

PREPARATION OF O-DIALKYLAMINOMETHYLPHENOLS

Hermann Arold, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

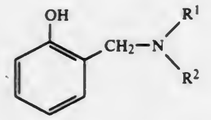
Filed Dec. 30, 1976, Ser. No. 755,905

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1976, 2601782

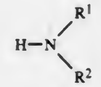
Int. Cl.[2] **C07C** *85/18*

U.S. Cl. 260—570.9 **11 Claims**

1. In the preparation of an o-dialkylaminomethylphenol of the formula



in which R^1 and R^2 each independently is alkyl with 1 to 6 carbon atoms, or R^1 and R^2 conjointly with the adjacent nitrogen atom, form a five-membered or six-membered ring, by reacting phenol, formaldehyde or paraformaldehyde and an amine of the formula



the improvement which comprises carrying out the reaction in the presence of an organic liquid which is immiscible with water but which is a solvent for the phenol and amine employed as starting materials and the o-dialkylaminomethylphenol which is formed.

4,212,823

PROCESS FOR THE MANUFACTURE OF 3-AMINOPHENOLS BY DEHYDROGENATION OF 3-AMINOCYCLOHEXENONES

Werner H. Müller, Bremthal, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 542,423, Jan. 20, 1975, abandoned. This application Jul. 20, 1976, Ser. No. 707,016

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1974, 2402695

Int. Cl.[2] **C07C** *91/44, 85/24*

U.S. Cl. 260—571 **9 Claims**

1. A process for the manufacture of a 3-aminophenol which comprises dehydrogenating, at a temperature of from 150° to 300° C., a pressure of up to 20 atmospheres and in the liquid phase, a 3-aminocyclohexenone which is a primary or secondary amine.

9. The compound N,N'-bis-(3-hydroxyphenyl)-o-dianisidine.

4,212,824

HYDROGENATION CATALYST WITH IMPROVED METALLIC DISTRIBUTION, ITS PREPARATION AND USE FOR THE REDUCTION OF AROMATIC NITRO COMPOUNDS

Robert L. Seagraves, Pennsville, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 11, 1978, Ser. No. 923,568

Int. Cl.[2] **C07C** *85/11;* **B01J** *21/18, 23/42, 23/74*

U.S. Cl. 260—580 **17 Claims**

1. A hydrogenation catalyst consisting essentially of an oleophilic carbon black support having a surface area of 20–100 m^2/g, said support having on its surface about 1–5 percent by weight of the support of platinum metal and iron in the form of its oxide or hydroxide, the molar ratio of iron to platinum being in the range of about 4–8:1, said catalyst having:

(1) a ratio of platinum/carbon ESCA intensity ratio to the total platinum content, expressed by its weight percent concentration/100, of at least about 2.4; and

(2) a ratio of the iron/carbon ESCA intensity ratio to the platinum/carbon ESCA intensity ratio of at least about 1.0.

4,212,825

ALDOL CONDENSATION AND HYDROGENATION PROCESS USING A CATALYST OF NICKEL AND COBALT TOGETHER WITH ZINC OXIDE AND ANOTHER METAL OF GROUPS VIII, IIB, IIIA, IVA AND VA OF THE PERIODIC TABLE

Axel Nissen, Leimen; Gerd Heilen, Frankenthal; Ekkehard Sapper, Ludwigshafen; Werner Fliege, Otterstadt, and Arnold Wittwer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 802,112, May 31, 1977, abandoned. This application Nov. 16, 1977, Ser. No. 851,934

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625541

Int. Cl.[2] **C07C** *45/00*

U.S. Cl. 568—313 **9 Claims**

1. In a process for the manufacture of a saturated carbonyl compound by aldol condensation of a low molecular weight aldehyde or ketone of not less than 2 or 3 carbon atoms, respectively, with itself or with another such low molecular weight aldehyde or ketone and hydrogenation of the aldol condensation product at above 150° C. in the liquid phase and in the presence of a catalyst, the improvement which comprises:

carrying out said condensation and hydrogenation with said catalyst consisting essentially of the components:

(a) nickel and cobalt compounds;

(b) zinc oxide; and

(c) a catalytically active amount of a compound of a metal selected from the group consisting of iron, arsenic, antimony, bismuth, gallium, indium, thallium, germanium, tin, lead, cadmium and mercury,

said components being applied to a chemically inert carrier and said components being obtained in a catalytically active form by drying the catalyst, calcining at about 520° C. and reducing with hydrogen at about 300° C.

4,212,826

PROCESS FOR PRODUCING CYSTEAMINES AND/OR CYSTAMINES

Hachiro Yamaguchi, Hiroshima, Japan, assignor to Wakunaga Yakuhin Kabushiki Kaisha, Osaka, Japan

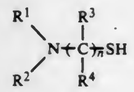
Filed Jun. 5, 1979, Ser. No. 45,679

Claims priority, application Japan, Jun. 16, 1978, 53-72060

Int. Cl.[2] **C07C** *85/24*

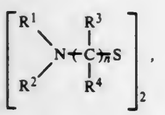
U.S. Cl. 260—583 EE **5 Claims**

1. A process for producing cysteamines of the formula



(I)

and/or cystamines of the formula



(II)

wherein n is 1, 2, or 3, and R^1, R^2, R^3, and R^4 are respectively

and independently H or CH_3, a plurality of R^3 and R^4 not necessarily being the same when n is 2 or 3, which process comprises reacting (A) an aminoalkyl sulfate ester and (B) hydrogen sulfide and an alkali polysulfide formed from an alkali hydrogen sulfide and sulfur.

4,212,827

MANUFACTURE OF CANTHAXANTHIN

Joachim Paust, Neuhofen; Joachim Schneider, and Hagen Jaedicke, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 705,992, Jul. 16, 1976, abandoned. This application Oct. 13, 1977, Ser. No. 841,697

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1975, 2534805

Int. Cl.[2] **C07C** *45/02*

U.S. Cl. 568—347 **15 Claims**

1. A process for the manufacture of canthaxanthin by oxidizing β-carotene, retro-dehydro-carotene, echinenone, 4'-hydroxyechinenone or isozeaxanthin which comprises carrying out the oxidation with chloric or bromic acid or with a salt of chloric or bromic acid in a proportion of 1 to 100 moles of said acid or salt of said acid per mole of β-carotene, retro-dehydrocarotene, echinenone, 4'-hydroxyechinenone or isozeaxanthin, in the presence of bromine or iodine or of an oxide or oxo-acid of selenium or of an element of group Va, VIa or VIIa of the periodic table, or a salt of such an oxo-acid, or of an oxide of an element of group VIII of the periodic table as a catalyst, and in the presence of an inert diluent or solvent, at from 0° to 100° C.

4,212,828

NOVEL PROCESS FOR ASYMMETRIC SYNTHESIS OF OPTICALLY ACTIVE 2-ALKANOYL-1,2,3,4-TETRAHYDRO-2-NAPHTHOL COMPOUNDS

Kenji Koga, and Shiro Terashima, both of Tokyo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

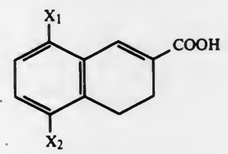
Filed Nov. 24, 1978, Ser. No. 963,174

Claims priority, application Japan, Apr. 14, 1978, 53-44388

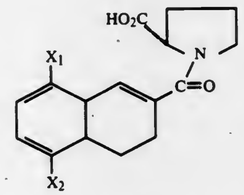
Int. Cl.[2] **C07C** *45/00, 65/14*

U.S. Cl. 568—314 **1 Claim**

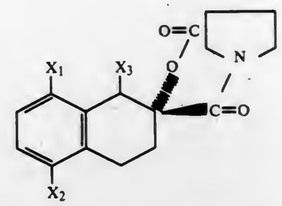
1. A process for asymmetric synthesis of optically active 2-alkanoyl-1,2,3,4-tetrahydro-2-naphthol compounds which comprises treating L-proline or the methyl or ethyl ester thereof with a carboxylic acid of the formula:



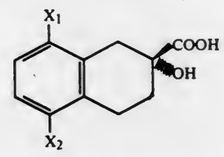
wherein X_1 and X_2 are each hydrogen or lower alkoxy in an organic solvent at a temperature from 0° C. to reflux temperature, subjecting the resulting N-(α,β-unsaturated acyl)-L-proline derivative of the formula:



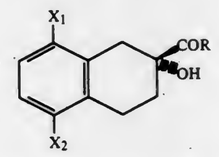
wherein X_1 and X_2 are each as defined above to asymmetric halolactonization by treatment with N-bromosuccinimide in an organic solvent at a temperature from −20° C. to room temperature, subjecting the resultant optically active halolactone of the formula:



wherein X_1 and X_2 are each as defined above and X_3 is halogen to dehalogenation by treatment with a trialkyltin hydride in an organic solvent at a temperature from room temperature to 200° C. and then hydrolysis by treatment with water or an organic solvent at room temperature to 100° C., and treating the thus obtained optically active 2-hydroxy-1,2,3,4-tetrahydro-2-naphthoic acid of the formula:



wherein X_1 and X_2 are each as defined above with an alkyl metal compound in an organic solvent at a temperature from 0° to 100° C. to obtain an optically active 2-alkanoyl-1,2,3,4-tetrahydro-2-naphthol compound of the formula:



wherein X_1 and X_2 are each as defined above and R is lower alkyl.

4,212,829

PREPARATION OF M-(P-BROMOPHENOXY)BENZALDEHYDE

Tadashi Ohsumi, Kyoto, and Nobushige Itaya, Nishinomiya, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

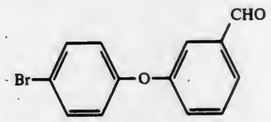
Filed Jan. 22, 1979, Ser. No. 5,170

Claims priority, application Japan, Jan. 25, 1978, 53/7760

Int. Cl.[2] **C07C** *45/00*

U.S. Cl. 568—433 **3 Claims**

1. A process for preparing m-(p-bromophenoxy)benzaldehyde of the formula;



which comprises slowly adding bromine or bromine chloride to m-phenoxybenzaldehyde at room temperature or below.

4,212,830

PROCESS FOR PREPARING INSECT PHEROMONES

Charles J. Wiesner, 123 McKeen St., Fredericton, New Brunswick, Canada (E3A 2P9)

Division of Ser. No. 808,420, Jun. 20, 1977. This application Nov. 16, 1978, Ser. No. 961,156
Claims priority, application Canada, Jan. 28, 1977, 270624
Int. Cl.[2] C07C *47/20*
U.S. Cl. 568—486 7 Claims

1. A process for preparing trans- and cis-11-tetradecenal at the molecular ratio of about 9 trans- form to 1 cis- form which comprises:

(1) treating a compound of the formula:

$$(RO)_2CH(CH_2)_7CH_2X$$

wherein each R separately denotes (lower) alkyl, and X is a halogen with at least an equimolecular amount of magnesium in an inert solvent selected from the group consisting of dialkyl ethers, cyclic ethers and hydrocarbon solvents and the mixtures thereof to form a Grignard reagent having the formula:

$$(RO_2)CH(CH_2)_7CH_2MgX$$

wherein R and X are defined above;

(2) reacting the Grignard reagent thus obtained with at least an equimolecular amount of a mixture of approximately 40% by molecular ratio of 3-halo-1-pentene and approximately 60% by molecular ratio of 1-halo-2-pentene in an inert solvent selected from the group consisting of dialkyl ethers, cyclic ethers and hydrocarbon solvents and the mixtures thereof to form a mixture of trans- and cis-1,1-dialkoxy-11-tetradecene of the formula:

$$(RO)_2CH(CH_2)_9CH{=}CH)CH_2CH_3$$

wherein R is as defined above, at the molecular ratio of about 9 transform to 1 cis- form; and

(3) hydrolyzing the mixture of trans- and cis-1,1-dialkoxy-11-tetradecene with an aqueous acid to form trans- and cis-11-tetradecenal at the molecular ratio of about 9 transform to 1 cis- form.

4,212,831

PROCESS FOR PRODUCING TRIPHENYLPHOSPHINE

Yoshiki Nakayama, Shimizu; Kazushige Hirao, Shizuoka, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Company, Limited, Tokyo, Japan

Filed Mar. 8, 1979, Ser. No. 18,620
Claims priority, application Japan, Mar. 25, 1978, 53-34694
Int. Cl.[2] C07F *9/50*
U.S. Cl. 568—17 3 Claims

1. A process for producing triphenylphosphine which consists of adding a phosphorus trihalide to a dispersion of a phenylalkali in an inert solvent selected from the group consisting of aromatic hydrocarbons, aliphatic hydrocarbons and mixtures thereof; at a temperature lower than 50° C.; wherein the molar ratio of the phenylalkali to the phosphorus trihalide is 3 or more; and wherein said dispersion of a phenylalkali is formed by dispersing an alkali metal in said solvent and then adding a halobenzene to form said phenylalkali dispersion.

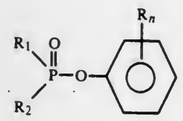
4,212,832

PRODUCTION OF HIGH VISCOSITY PHOSPHORIC AND PHOSPHONIC ACID ARYL ESTERS

Karl-Heinz Mitschke, Odenthal, and Reinhard Schliebs, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 25, 1978, Ser. No. 936,987
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739843
Int. Cl.[2] C07F *9/09*
U.S. Cl. 260—930 4 Claims

1. A process for the production of a relatively high molecular weight phosphoric or phosphonic acid aryl ester, comprising reacting a phosphoric or phosphonic acid aryl ester of the formula



in which

R is a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, a halogen atom, an aryloxy group, or an aryl group;

R_1 is a group of $OC_6H_mR_n$ in which $m+n=5$, an alkyl group, a haloalkyl group or an optionally substituted aryl group;

R_2 is a group of $OC_6H_mR_n$, in which $m+n=5$; and

n is from 1 to 3,

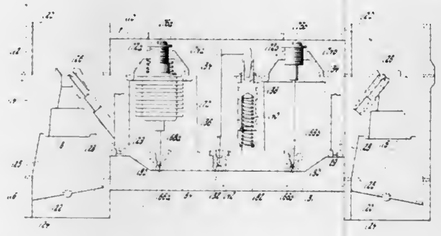
with formaldehyde at a temperature of about 10° to 120° C. and in the presence of at least 1.5 moles of sulphuric acid per mole of ester.

4,212,833

CARBURETOR

David L. Harrington, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1976, Ser. No. 681,786
Int. Cl.[2] F02M *19/06*
U.S. Cl. 261—23 A 2 Claims



1. An internal combustion engine carburetor comprising first and second mixture conduits through which air may flow to the engine, first and second discharge nozzles respectively opening into said mixture conduits for delivering fuel into and mixing such fuel with the air flow through said mixture conduits, first and second main wells respectively extending to said discharge nozzles for supplying fuel thereto, a fuel bowl, a plurality of independently controllable metering orifices opening from said fuel bowl for delivering fuel therefrom at a controlled rate, a metered fuel plenum for receiving fuel delivered by said metering orifices, and first and second flow restrictions respectively opening upwardly from the highest region of said metered fuel plenum to said main wells for dividing fuel received by said plenum for delivery to said first and second main wells, whereby fuel may be initially metered

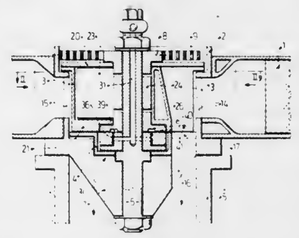
in a unified flow and subsequently divided for delivery to said first and second mixture conduits.

4,212,834

FUEL SUPPLY SYSTEM

Siegfried Holzbaur, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 970,061
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803267
Int. Cl.[2] F02M *9/08*
U.S. Cl. 261—44 A 11 Claims



1. In a fuel supply system for internal combustion engines provided with an intake manifold defining a flow port, an air-flow sensor having an axis extending in the direction of flow, a manually controlled throttle element disposed in tandem with said air-flow sensor within said manifold, a fuel metering valve means, said air-flow sensor including a reset force means and, a rotary element rotatable about said axis, said rotary element of air-flow sensor further being arranged to control said fuel metering valve means to control fuel in accordance with air flow, the improvement wherein said rotary member has a circular periphery and a control chamber defined therewithin, said rotary member including means defining at least one axial recess which cooperates with said manifold flow part to control an air-flow section therebetween, said air-flow sensor further including means defining at least one opening in said control chamber arranged to communicate with said intake manifold between said air-flow sensor and said throttle element, said rotary member including radially extending rib elements limiting said control chamber, said control chamber having at least one wall securely fixed to said manifold, said air-flow sensor further includes means wherein intake manifold pressure upstream from said air-flow sensor acts on said rib elements, whereby, as induced air increases said rotary element of said air-flow sensor is rotated to increase the air-flow section controlled by said means defining said at least one recess and said manifold flow port.

4,212,835

METHOD AND APPARATUS FOR INTRODUCING A QUENCH STREAM IN UPFLOW GAS-LIQUID CONTACTORS

Robert M. Koros, Westfield, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 6, 1971, Ser. No. 140,747
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—116 3 Claims

1. A method of contacting a quench or other secondary fluid stream with a mixed phase primary fluid stream in an up-flow contactor which comprises:

(a) flowing said mixed phase primary fluid stream upward through a constricted passageway;

(b) combining said secondary stream with said primary fluid stream within said constricted passageway; so that the combined primary and secondary streams flow cocurrently upward;

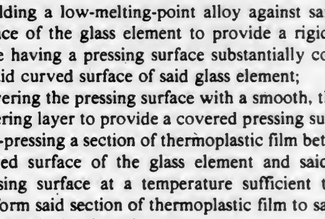
(c) flowing said combined primary and secondary fluid streams upward and thereafter;

(d) changing the flow direction of said combined primary and secondary streams to prevent separation of the phases; and

(e) redistributing said combined streams cocurrently and uniformly across said contactor in an upward direction.

2. A mixing device for up-flow gas-liquid contactors wherein a quench or other secondary stream is contacted with a mixed phase primary fluid stream comprising:

(a) a passageway through which all of said mixed phase primary stream is passed in an upward direction, said passageway having a smaller cross-section than that of said contactor;



(b) means for introducing said quench or other secondary stream into said passageway for combining said quench or other secondary stream with said upward flowing mixed phase primary stream whereby the combined streams flow cocurrently upward, said means for introducing quench or other secondary stream into said passageway comprising a sparger pipe having openings located to evenly distribute said quench or other secondary stream;

(c) continuation passageway means operably disposed relative to said passageway for causing the combined streams to change flow direction thereby preventing separation of the phases; and

(d) means for extracting said streams from said continuation passageway means and redistributing said mixed phase streams occurrently and uniformly across said contactor in an upward direction.

4,212,836

METHOD OF FORMING THIN THERMOPLASTIC ELEMENTS OF COMPLEX CURVATURE

Shy-Hsien Wu, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 5, 1978, Ser. No. 938,871
Int. Cl.[2] B29D *11/00*
U.S. Cl. 264—1 4 Claims

1. A method for making a preformed curved plastic element for a glass-plastic lens comprising both glass and plastic elements, the glass element having a curved surface of aspheric or compound curvature and the plastic element having a curvature precisely matching the aspheric or compound curvature of said curved surface of the glass element, which comprises the steps of:

(a) molding a low-melting-point alloy against said curved surface of the glass element to provide a rigid pressing piece having a pressing surface substantially conforming to said curved surface of said glass element;

(b) covering the pressing surface with a smooth, thin elastic covering layer to provide a covered pressing surface; and

(c) hot-pressing a section of thermoplastic film between said curved surface of the glass element and said covered pressing surface at a temperature sufficient to exactly conform said section of thermoplastic film to said curved surface of said glass element.

4,212,837

METHOD AND APPARATUS FOR FORMING SPHERICAL PARTICLES OF THERMOPLASTIC MATERIAL

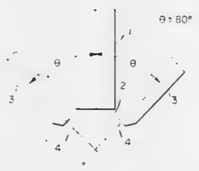
Toshihiko Oguchi, Kawasaki; Ichiyoshi Saito, Tokyo; Tsuyoshi Ueno, and Tsutomu Kubo, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 4, 1978, Ser. No. 902,859

Claims priority, application Japan, May 4, 1977, 52-51514; May 14, 1977, 52-55839; May 14, 1977, 52-55840

Int. Cl.² B29C *23/00*

U.S. Cl. 264—15 **12 Claims**



1. A method for forming spherical particles of thermo-plastic material comprising:

(a) blowing a stream of gas containing therein thermoplastic particles having diameters not greater than 100 μm at a concentration of 2 kg/m³ or less from a point adjacent to, and separated by a gap from, the circumference of a downwardly ejected-jet stream of pressurized hot gas into said jet stream and at an angle of 80° or less in relation to the direction of the hot gas stream, thereby melting the particles of the thermoplastic material into droplets only in said gas stream to cause the reformation of the shape of the individual droplets into substantially spherical form and;

(b) immediately cooling said reformed thermoplastic droplets to a temperature below their melting point and in their reformed shape by means of cooling air drawn downwards through said gap between the jet stream of the hot gas and the stream of thermoplastic particles, and by means of ambient air, thereby solidifying said reformed thermoplastic droplets.

4,212,838

PROCESS FOR MANUFACTURE OF CANTILEVER FOR PICKUP CARTRIDGE

Koichi Azuma, Osaka; Masahiro Nagasawa, Hirakata; Hiroshi Yamazoe, Katano, and Masaki Aoki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

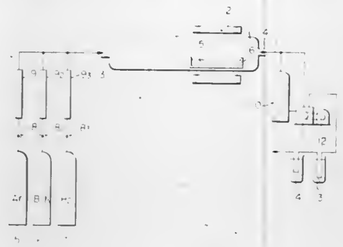
Filed Sep. 13, 1978, Ser. No. 941,908

Claims priority, application Japan, Sep. 20, 1977, 52-113520; Sep. 20, 1977, 52-113521

Int. Cl.² C23C *13/04, 11/00*

U.S. Cl. 264—25 **5 Claims**

1. A process for manufacture of cantilevers for pickup cartridges which comprises providing a base in the form of a solid rod or a pipe from a material which may be chemically or electrolytically etched, forming by vapor deposition a layer of a substance exhibiting a modulus of elasticity ratio higher than



5000 Kg/mm² on said base, said substance being boron or a boride, and removing said base.

4,212,839

PROCESS FOR PREPARING OPEN-CELL SPONGE RUBBER PRINTING MATERIAL HAVING SMALL AND LARGE INTERCONNECTED CELLS

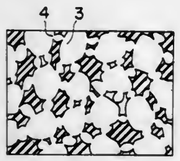
Takaji Funahashi, No. 1, 2-chome, Kitatakasho-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

Filed Nov. 10, 1977, Ser. No. 850,452

Claims priority, application Japan, Nov. 12, 1976, 51-136503; Nov. 26, 1976, 51-142482

Int. Cl.² B29D *27/00*

U.S. Cl. 264—45.3 **3 Claims**



1. In process for preparing a sponge rubber printing material having numerous open cells which comprises mixing a starting rubber material, a curing agent, a filler and a material for forming cells, introducing the resulting mixture into a mold, heating the mixture to effect curing and then washing the cured product to remove cell formers, the improvement comprising using a combination of a finely divided soluble starch having a particle size within the range of from 0.01 to 0.103 mm to form small open cells (a) and a fine powder of a readily water-soluble salt selected from the group consisting of sodium chloride, sodium sulfate, sodium nitrate, and mixtures thereof, having a particle size within the range of from 0.149 to 0.498 mm to form large open cells (b) as the material for forming cells, the amount of the starch being 200 to 1200 parts by weight of the starting rubber and the ratio of the amount of starch to readily water-soluble salt being in the range of from 1:9 to 1:3, whereby the said small and large open cells (a) and (b) are uniformly distributed throughout the rubber substrate in a state wherein said small and large open cells (a) and (b) are interconnected with one another through interconnecting passages free from obstruction.

4,212,840

EXTRUSION APPARATUS AND METHOD FOR EXTRUDING ABRASIVE PASTES

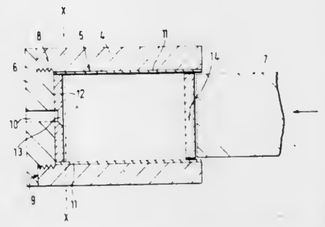
George S. Cliff, and Jack Willocks, both of Macclesfield, England, assignors to Imperical Chemical Industries Limited, London, England

Filed Sep. 8, 1978, Ser. No. 940,872

Claims priority, application United Kingdom, Sep. 19, 1977, 38878/77

Int. Cl.² B28B *7/36*

U.S. Cl. 264—338 **5 Claims**



1. An extrusion apparatus including a piston and cylinder; said cylinder having a bore generally complementary to said piston and leading at its inner end to an external orifice, said bore having a side-wall, and operating means associated with said piston for causing paste-like material to be compressed within said bore and extruded through said external orifice; wherein the improvement consists essentially of

a lining system for said cylinder comprising a tubular liner, a first replaceable disc, and a second replaceable disc, said liner and first and second discs each composed of plastics material selected from the group consisting essentially of polypropylene, polytetrafluoroethylene, high density polyethylene, and nylon;

said tubular liner formed as a thin sheet and having appropriate dimensions and resilience so as to assume an essentially tubular form without overlap when inserted into said bore, closely fitting against and substantially covering said side-wall of said bore;

said first replaceable disc substantially closing the end of said liner nearest said external orifice and defining a central hole having a diameter not larger than the diameter of said orifice; and

said second replaceable disc substantially closing the other end of said liner, and shaped so that it is capable of slidable movement within the space enclosed by said liner under the influence of said piston and said operating means, so that said extrusion apparatus is useful for extruding dental filling compositions or like abrasive paste-like materials.

5. A method of extruding an abrasive paste-like dental filling composition utilizing an extrusion apparatus comprising a piston and cylinder, the cylinder having a bore generally complementary to the piston and leading at its inner end to an external orifice, and an operating device for the piston; said method comprising the steps of

(a) preventing frictional wear occuring to the piston and the bore during utilization thereof by (i) cutting a rectangular thin sheet composed of a material consisting essentially of polypropylene, polytetrafluoroethylene, high density polyethylene, and nylon, to size to form a sheet liner, and inserting into the bore the thin sheet liner so that it assumes a tubular form without overlap, closely fitting against and substantially covering the side-wall of the bore; (ii) inserting into the bore a first replaceable disc having a central opening and composed of a material consisting essentially of polypropylene, polytetrafluoroethylene, high density polyethylene, and nylon, so that the first disc closes the end of the liner nearest the external orifice with the central opening therein in-line with the orifice, and having a diameter no larger than the diameter of the orifice; and (iii) inserting into the bore a second replaceable disc composed of a material consisting essentially of polypropylene, polytetrafluoroethylene, high density polyethylene, and nylon, so that the second disc is capable of slidable movement within the space enclosed by the liner;

(b) moving the piston with the operating device to extrude the filling composition from between the first and second discs and liner through the orifice; and

(c) replacing the tubular liner and first and second discs when they become worn.

4,212,841

MANUFACTURE OF HOLLOW THERMOPLASTIC ARTICLES

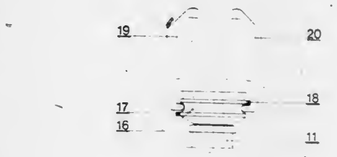
Edmond Michel, Brussels, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Filed Mar. 8, 1978, Ser. No. 884,434

Claims priority, application France, Mar. 9, 1977, 77 07443

Int. Cl.² B29C *17/07*

U.S. Cl. 264—530 **11 Claims**



1. In a process for producing hollow bodies from a thermoplastic material, which includes producing preforms from thermoplastic material by molding, transferring each resulting preform to a final blow-mold, and blow-molding each preform in a blow-mold to produce a desired final body, the improvement wherein said step of producing comprises forming a false neck on each preform and forming at least one positioning lug on the false neck of each preform, and said step of transferring comprises: providing a stop adjacent the false neck of each preform at a defined location about the longitudinal axis of that preform; and causing each preform to undergo rotational movement about its longitudinal axis until its associated lug encounters, and thus comes into blocking engagement with, the stop associated with that preform, whereby each preform is brought into a predetermined angular orientation about its longitudinal axis relative to the blow-mold by the action of the positioning lug.

4,212,842

CORROSION INHIBITION

Francis J. Hartke, Bridgeton, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

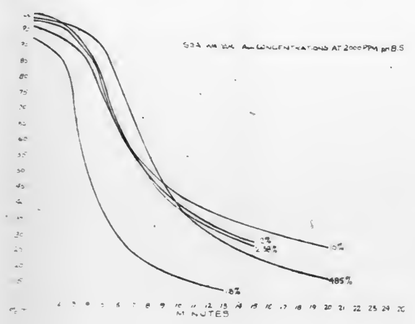
Filed Mar. 24, 1975, Ser. No. 561,605

Int. Cl.² C23F *15/00*

U.S. Cl. 422—12 **16 Claims**

1. A process of inhibiting corrosion of metals by an aqueous system which comprises adding an aqueous soluble hydrohalic,

sulfuric, sulfurous or carboxylic acid salt of a normally water insoluble heterocyclic amine to such an aqueous system having



a pH above about 6, which converts said salt to the free amine, which coats the metal with a corrosion inhibiting film.

4,212,843

Δ-2 TETRAHYDROPYRIMIDINES AS CORROSION INHIBITORS

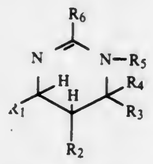
Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 802,347, Jun. 1, 1977, Pat. No. 4,146,714, which is a continuation-in-part of Ser. No. 384,439, Aug. 1, 1973, abandoned, which is a continuation-in-part of Ser. No. 292,494, Sep. 27, 1972, Pat. No. 4,085,104. This application Sep. 15, 1978, Ser. No. 942,733

Int. Cl.² C23F *11/04, 11/12, 11/14*

U.S. Cl. 422—16 **7 Claims**

1. A process of inhibiting corrosion of metals in a system containing a corrosive aqueous medium which comprises adding to said medium a corrosion inhibiting amount of a Δ-2 tetrahydropyrimidine of the formula



where each R may be the same or different and is hydrogen or alkyl, aryl, cycloalkyl, alkaryl alkoxyaryl, aralkyl, or heterocyclic.

4,212,844

RAPID DIAGNOSTIC COMPOSITION FOR THE DETERMINATION OF URIC ACID IN BODY FLUIDS

Wolfgang Werner, Mannheim-Vogelstang, and Walter Rittersdorf, Mannheim-Waldhof, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

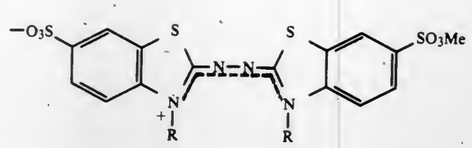
Filed Sep. 18, 1978, Ser. No. 943,518

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744046

Int. Cl.² G01N *21/06, 31/22, 33/16*

U.S. Cl. 422—56 **9 Claims**

1. Rapid diagnostic composition for the determination of uric acid in body fluids by inversion colorimetry comprising at least one adjuvant material selected from the group consisting of buffers, wetting agents, and thickening agents and, as an indicator, a radical of the formula



in which

R is a lower alkyl radical and

Me is an alkali metal atom or an ammonium group.

7. Rapid diagnostic composition as claimed in claim 1, wherein the indicator is impregnated onto an absorbent carrier.

4,212,845

ANALYTICAL APPARATUS

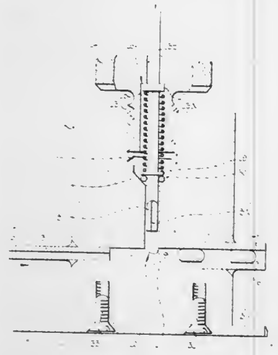
David Stelling, Broadstairs; David H. Barker, Birchington, and Terence E. Weston, Herne Bay, all of England, assignors to The Rank Organisation Limited, London, England

Filed Jul. 5, 1978, Ser. No. 922,109

Claims priority, application United Kingdom, Jul. 6, 1977, 28286/77

Int. Cl.² G01N *1/10, 1/14, 1/18*

U.S. Cl. 422—82 **11 Claims**



1. In a continuous flow analyser wherein a stream of liquid is divided prior to analysis into segments by the introduction of gas bubbles, apparatus for effecting said division of the liquid stream, said apparatus comprising

means defining a conduit along which the liquid stream can flow

means defining a chamber communicating with said conduit at one side thereof, and

means defining a duct of smaller cross section than that of said chamber, said duct communicating with said chamber and being connectable to a source of gas under pressure such that, in use of the apparatus, when a stream of liquid is flowing in said conduit, gas can be introduced through said duct into said chamber at a controlled rate, the gas pressure increasing in the chamber until it overcomes the surface tension of the liquid and the pressure therein and a bubble of gas enters the stream of liquid.

4,212,846

BREATHING APPARATUS CHEMICAL CANISTER WITH DUST SEAL

Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

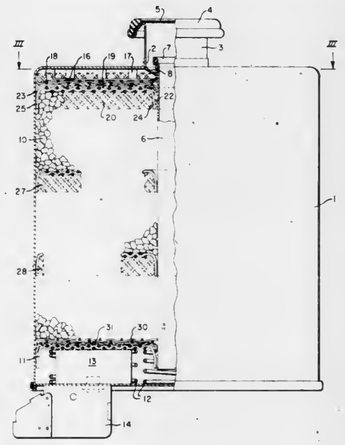
Filed Jan. 19, 1979, Ser. No. 4,660

Int. Cl.² B01J *7/00;* **C10H** *7/00*

U.S. Cl. 422—122 **2 Claims**

1. A breathing apparatus chemical canister comprising a can

having a neck extending upwardly from its top, a tube extending downwardly in the can from the neck to a point near the bottom of the can, a body of chemical granules in the can spaced from its top and bottom, an upper sheet of filtering material covering the top of said body and provided with an opening receiving said tube, said sheet being provided with an inner downwardly extending flange engaging said tube and with an outer downwardly extending flange engaging the side of the can, an upper screen disposed between said chemical



body and filter sheet in engagement with both and having inner and outer downwardly extending flanges pressing said filter sheet flanges against said tube and side of the can to form seals, a lower sheet of filtering material like said upper sheet around the lower end of said tube beneath the chemical body, and a lower screen like said upper screen supporting the lower sheet, the inner and outer flanges of the lower screen pressing the flanges of the lower filter sheet against the tube and side of the can to form seals.

4,212,847

APPARATUS FOR CARRYING OUT POLYMERIZATIONS FROM THE GAS PHASE

Dieter Volmer, Wesseling; Juergen Schwind, Meschenich; Erich Kolk, and Hans Frielingsdorf, both of Bad Duerkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

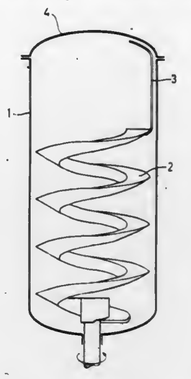
Filed Mar. 22, 1978, Ser. No. 888,926

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1977, 2714812

Int. Cl.² B01J *1/00, 3/00;* **C08F** *10/00*

U.S. Cl. 422—135 **4 Claims**

1. Apparatus for carrying out polymerizations from the gas phase, comprising a sealable reactor with a spiral stirrer which is rotatable in the reactor about a vertical axis to generate circulatory streams of the materials employed, wherein the stirrer rotating within the reactor is surmounted by a stirrer rod, which extends upward beyond the uppermost flight circle of the stirrer and is attached to the stirrer at a distance from the axis of the stirrer which is from 47 to 49% of the reactor diameter, the distance of the side face of the stirrer rod from the reactor wall is at least 10 mm, so that no rubbing or scraping occurs between the stirrer rod and the reactor wall, and the



surface of revolution of the moving rod matches the contour of the reactor in this zone.

4,212,848

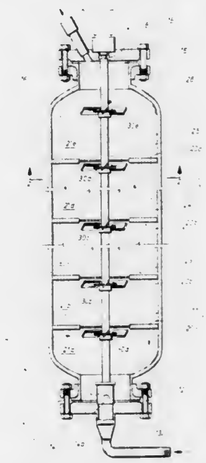
APPARATUS AND PROCESS FOR THE MANUFACTURE OF FIBRILS

Robert E. Boehme, and Clarence R. Murphy, both of Houston, Tex., assignors to Champion International Corporation, Pittsburgh, Pa. and Gulf Oil Corporation, Stamford, Conn.

Division of Ser. No. 715,803, Aug. 19, 1976, Pat. No. 4,076,681. This application Jul. 20, 1977, Ser. No. 817,325

Int. Cl.² B01F *1/00, 7/04*

U.S. Cl. 422—267 **1 Claim**



1. Apparatus for dissolving polymer in a liquid solvent consisting essentially of, in combination:

(a) A vertical tube having a lower fluid inlet and an upper fluid outlet,

(b) Means for pumping fluid containing polymer particles to be dissolved through said tube,

(c) A plurality of horizontal plates positioned within said tube and dividing said tube into a plurality of fluid chambers,

(d) Aligned fluid openings in each of said plates,

(e) Screens positioned within the fluid openings of each of said plates, the upper and lower limits of each of said fluid chambers being defined by their respective upper and lower screens,

(f) Said screens having different meshes, with each screen having a smaller mesh than the screen positioned below it, the upper screen in each said fluid chamber causing larger particles to be retained and recirculated within its respective fluid chamber,
(g) A shaft running through said tube and said screens,
(h) A plurality of sets of stirring blades mounted on said shaft, said blades being pitched at an angle from the plane of the screens,
(e) Each set of said stirring blades being mounted immediately below a screen and in close proximity to its lower face,
(j) Means for rotating said shaft, and
(k) Means for supplying sufficient heat to fluid passing through said apparatus to maintain said fluid at a temperature of at least 190° C.

4,212,849

SIMULTANEOUS EXTRACTION AND RECOVERY OF URANIUM AND VANADIUM FROM WET PROCESS ACIDS

Michael F. Lucid; Wilbert J. Robertson, both of Oklahoma City, and Paul D. Bowerman, Edmond, all of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

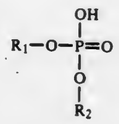
Continuation-in-part of Ser. No. 720,995, Sep. 7, 1976, abandoned. This application Jan. 13, 1978, Ser. No. 869,087

Int. Cl.² B01D *11/00;* **C01G** *56/00*

U.S. Cl. 423—10 **30 Claims**

1. A process for the simultaneous recovery of uranium (VI) and vanadium (V) from an aqueous acidic solution containing the same which comprises: contacting said solution in the presence of at least about 0.25 mole fluoride per mole vanadium with an organic extractant phase comprising

(a) a substantially water-immiscible organic diluent;
(b) an alkyl substituted diaryl phosphoric acid having the formula



where R_1 and R_2 represent aryl radicals at least one of which is substituted with an alkyl group and the total number of carbon atoms in the alkyl substituted diaryl phosphoric acid is at least 13 and
(c) a trialkylphosphine oxide having the formula



where R, R′ and R″ are alkyl radicals containing from 4 to 14 carbon atoms, whereby the uranium and vanadium are preferentially coextracted into the organic phase and, recovering the uranium and vanadium containing organic phase; the alkyl substituted diaryl phosphoric acid and trialkylphosphine oxide being present in the organic extractant phase in an amount sufficient to provide a molar ratio of alkyl substituted diaryl phosphoric acid to trialkylphosphine oxide of from 1:8 to 1:1.

4,212,850

METHOD FOR THE CALCINING OF LIME

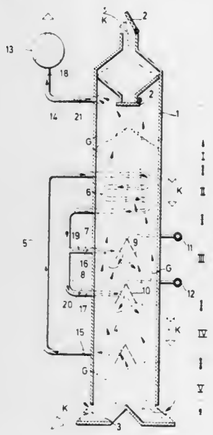
Herbert Deussner, Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,699

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705710

Int. Cl.² C01F *11/06*

U.S. Cl. 423—175 **8 Claims**



1. A countercurrent combustion method for the production of calcined lime in a furnace containing, in sequence, a preheating zone, a combustion zone, and a cooling zone which comprises:

passing the entire combustion air through the cooling zone to thereby preheat said combustion air,
withdrawing a portion of the thus preheated air from the furnace,
heating the withdrawn air in a recuperation zone located between said preheating zone and said combustion zone by contact with exhaust gases emanating from said combustion zone to approximately the limestone deacidification temperature, and
supplying the thus heated air to said combustion zone to convert the limestone into calcined lime.

4,212,851

REGENERATION OF SULFIDED DOLOMITE

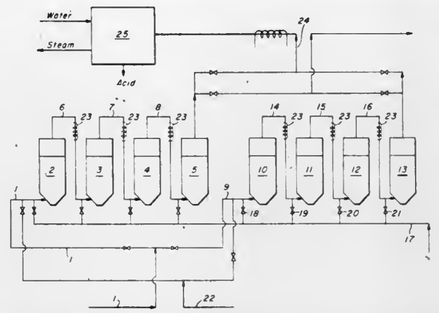
Edward J. Nemeth, Mt. Lebanon Township, Allegheny County; Joseph E. McGreal, Penn Hills Township, Allegheny County, and John L. Howell, North Huntingdon Township, Westmoreland County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 5, 1975, Ser. No. 638,118

Int. Cl.² C01B *17/16;* **C10K** *1/26;* **B01J** *23/92, 21/20*

U.S. Cl. 423—230 **12 Claims**

1. Method of regenerating calcined dolomite sulfided with sulfur from a gas stream for reuse as a desulfurizing medium comprising passing through the sulfided dolomite an oxidizing gas consisting essentially of steam and CO_2 in a volume ratio of about 5:1 to 1:5 and about 0.5% to about 20% oxygen at a temperature in the range of about 1500° F. up to the temperature in which the crystalline structure of the dolomite becomes



permanently altered thereby rendering a major portion of the dolomite inaccessible to the reacting gases.

4,212,852

METHOD OF DEODORIZING GAS CONTAINING HYDROGEN SULFIDE AND AMMONIA AND/OR AMINES

Toshio Aibe, Toyonaka, and Kiyoshi Itoga, Kawanishi, both of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed May 5, 1978, Ser. No. 905,521

Claims priority, application Japan, May 6, 1977, 52/52329; Nov. 25, 1977, 52/141836

Int. Cl.² B01J *8/00, 23/22, 23/28, 23/30*

U.S. Cl. 423—230 **2 Claims**

1. A method for deodorizing malodorous gas which comprises reacting a malodorous gas containing (1) ammonia and/or amines and (2) hydrogen sulfide, wherein the hydrogen sulfide is in stoichiometric excess with respect to the ammonia and/or amines, with oxygen in the presence of activated carbon having supported thereon at least a metal compound selected from the group consisting of vanadium compounds, molybdenum compounds and tungsten compounds.

4,212,853

METHOD FOR THE TREATMENT OF EXHAUST GASES CONTAINING NITROGEN OXIDES

Suguru Fukui, Tokyo, Japan, assignor to Chiyoda Kako Kensetsu Kabushiki Kaisha, Yokohama, Japan

Continuation-in-part of Ser. No. 780,406, Mar. 23, 1977, which is a continuation-in-part of Ser. No. 663,198, Mar. 2, 1976, abandoned, which is a continuation of Ser. No. 504,110, Sep. 9, 1974, abandoned. This application Dec. 27, 1978, Ser. No. 973,702

Claims priority, application Japan, Sep. 7, 1973, 48/100318

Int. Cl.² B01D *53/34*

U.S. Cl. 423—235 **12 Claims**

1. A method of treating exhaust gas containing nitrogen oxides, comprising the steps of forming a neutral aqueous solution containing urea and a catalyst for the removal of said nitrogen oxides from said exhaust gas, said catalyst being a catalytic amount of at least one halogen ion selected from the group consisting of bromine and chlorine ions, and contacting said neutral aqueous solution with exhaust gas containing nitrogen oxides, said process being carried out at a temperature of between about ambient temperature and the boiling point of the solution.

4,212,854

METHOD FOR PURIFICATION OF AIR CONTAINING CARBON MONOXIDE

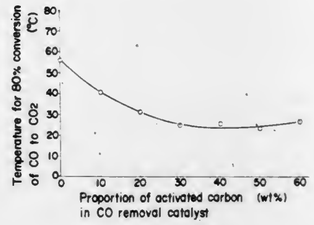
Masao Maki, Nabari; Seiichi Sano, Nara; Kunihiro Tsuruda, Yamatokoriyama, and Ikuo Kobayashi, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 17, 1978, Ser. No. 887,678

Claims priority, application Japan, Mar. 18, 1977, 52/30790; Dec. 29, 1977, 52/157713

Int. Cl.² B01D *53/34*

U.S. Cl. 423—247 **13 Claims**



1. Method for the oxidation of carbon monoxide in admixture with air which comprising contacting carbon monoxide in admixture with air with a catalyst comprising a carrier in the form of a hard substance including powdered activated carbon, an alkali, and a cement and said carrier being impregnated with palladium alone or in combination with one or more elements selected from the group consisting of ruthenium, rhodium, platinum whereby carbon monoxide in said air is oxidized to carbon dioxide.

4,212,855

PROCESS FOR PRODUCING CONCENTRATED SULFURIC ACID

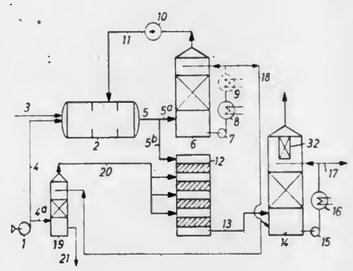
Walter Kerner, Huerth-Hermuehlheim, and Paul Schmitz, Noervenich-Dorweiler, both of Fed. Rep. of Germany, assignors to Davy Powergas GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 5, 1978, Ser. No. 912,644

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725432

Int. Cl.² C01B *17/72, 17/50*

U.S. Cl. 423—522 **10 Claims**



1. In a process for producing concentrated sulfuric acid from hot starting H_2O- and SO_2-containing gases having an H_2O/SO_2 molar ratio above 1.25, the gases being formed by the combustion of H_2S-containing gases or by the thermal cracking of aqueous waste sulfuric acid in a combustion or thermal cracking zone, and the process comprising:

cooling the hot starting gases to a temperature of from 400° to 480° C. and lowering their water content;
oxidizing the SO_2 in the gases to SO_3 in a plurality of contact stages, including a first stage, a last stage and at least one intermediate stage;

cooling the gases between the contact stages; and
absorbing the sulfur trioxide and water vapor to form sulfuric acid;
the improvement which comprises effecting the cooling of the hot starting gases produced in the combustion or thermal cracking zone and the lowering of the water content thereof by:
splitting the H_2O- and SO_2-containing gas stream emanating from the combustion or thermal cracking zone into two gas streams;
feeding one of said two split gas streams into the first contact stage;
cooling the other of said two split gas streams by contacting the gases thereof with an amount of cooling water effective to condense a portion of the water vapor contained in the gases;
separating the condensed water from said gases;
recycling the thus cooled gas stream having lowered water vapor content back to the gas stream emanating from the combustion or thermal cracking zone, such that the recycled cooled gases are mixed with the starting hot gases produced in the zone prior to the point at which said starting hot gases are split into two streams;
the portion of the water vapor condensed in the cooling step and the proportion of gases split into said two split streams being such that the H_2O/SO_2 molar ratio and the temperature of the gases fed into the first contact stage are 1.0 to 1.25 and 400°–480° C., respectively.

4,212,856

TOOTHPASTE

Ronald Hoyles, Epsom Downs, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,727
Claims priority, application United Kingdom, Dec. 7, 1977, 50945/77
Int. Cl.[2] A61K *7/16, 7/18*
U.S. Cl. 424—52 **5 Claims**

1. An anti-caries toothpaste containing sodium monofluorophosphate and alumina trihydrate abrasive, wherein the abrasive imparts to the toothpaste a dentine abrasion value of 30 to 60 units and consists of a mixture of
(A) an alumina trihydrate having an average particle size of from 5 to 13 microns; and
(B) an alumina trihydrate having an average particle size of less than 1 micron,
the weight ratio of (A) to (B) being from 30:70 to 70:30.

4,212,857

METHOD FOR STIMULATING THE PRODUCTION OF IMMUNOGLOBULIN AND TOTAL COMPLEMENT

Leslie L. Balassa, Blooming Grove, and John F. Prudden, Upper Nyack, both of N.Y., assignors to Lescarden Ltd., Goshen, N.Y.

Filed Oct. 29, 1976, Ser. No. 736,770
Int. Cl.[2] A61K *35/12*
U.S. Cl. 424—95 **7 Claims**

1. The method of stimulating the production of increased titers of immunoglobulin and total complement which comprises administering to a patient in need of such treatment an effective amount for stimulating immunoglobulin and total complement of an aqueous solution consisting essentially of at least the aqueous soluble portion of defatted and essentially pure granulated cartilage material substantially free from adhering tissue, said cartilage being derived from a cartilage bearing animal or fish.

4,212,858

ANTIBIOTIC ACULEACIN-Aα, -Aγ, -Dα AND -Dγ AND METHODS FOR THEIR PRODUCTION

Masaru Otani; Shuzo Satoi, and Masaki Takada, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 19, 1978, Ser. No. 897,919
Claims priority, application Japan, Apr. 19, 1977, 52-46078; Apr. 19, 1977, 52-46079; Apr. 19, 1977, 52-46080; Apr. 19, 1977, 52-46081
Int. Cl.[2] A61K *35/70;* **C12P** *1/02*
U.S. Cl. 424—118 **6 Claims**

1. An antifungal antibiotic aculeacin selected from the group consisting of aculeacin-Aα, aculeacin-Aγ, aculeacin-Dα and aculeacin-Dγ, said aculeacins having substantially the following physico-chemical properties:

Elementary analysis:

	C%	H%	N%
Aculeacin-Aα	56.48	8.60	9.24
Aculeacin-Aγ	54.70	8.23	10.51
Aculeacin-Dα	55.96	8.44	9.96
Aculeacin-Dγ	57.55	8.32	8.94

Sulfur and halogen are not detected.

Molecular weight:

	Rast Method	Amino Acid Analysis*	Gel-filtration Method
Aculeacin-Aα	1015	(860)n	800 ± 110
Aculeacin-Aγ	1021	(860)n	800 ± 110
Aculeacin-Dα	1243	(555)n	850 ± 100
Aculeacin-Dγ	1265	(555)n	850 ± 100

*Calculated from detected amount of threonine

Melting point:
Aculeacin-Aα: 174°–177° C.
Aculeacin-Aγ: 172°–175° C.
Aculeacin-Dα: 159°–162° C.
Aculeacin-Dγ: 159°–162° C.
Specific rotation: $[\alpha]_D^{23}$ (c-0.25 methanol)
Aculeacin-Aα: −46.8°
Aculeacin-Aγ: −47.4°
Aculeacin-Dα: −45.7°
Aculeacin-Dγ: −46.7°
Ultraviolet absorption spectrum:
Aculeacin-Aα in methanol (32.4 γ/ml) as shown in FIG. **1** in the accompanying drawings
Aculeacin-Aγ in methanol (32.4 γ/ml) as shown in FIG. **4** in the accompanying drawings
Aculeacin-Dγ in methanol (40 γ/ml) as shown in FIG. **7** in the accompanying drawings
Aculeacin-Dα in methanol (40 γ/ml) as shown in FIG. **10** in the accompanying drawings.

6. A process for the production of an antifungal antibiotic aculeacin selected from the group consisting of aculeacin-Aα, aculeacin-Aγ, aculeacin-Dα and aculeacin-Dγ, comprising culturing the microorganism *Aspergillus aculeatus* NRRL 11270 in a nutrient medium containing assimilable carbon and nitrogen sources, and isolating a said aculeacin therefrom.

4,212,859

2′-HYDROXY-2′-DESAMINO-4,6-DI-O-(AMINOGLYCOSYL)-1,3-DIAMINOCYCLITOLS, METHODS FOR THEIR MANUFACTURE, METHOD FOR THEIR USE AS ANTIBACTERIAL AGENTS, AND COMPOSITIONS USEFUL THEREFOR

Peter J. L. Daniels, Cedar Grove; Stuart McCombie, West Orange, and Tattanahalli L. Nagabhushan, Parsippany, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 809,839, Jun. 24, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,603
Int. Cl.[2] A61K *31/71;* **C07H** *15/22*
U.S. Cl. 424—180 **20 Claims**

1. A 2′-hydroxy-2′-desamino-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol having an amino function at C-6′ selected from the group consisting of

2′-hydroxy-2′-desaminogentamicin C_1,
2′-hydroxy-2′-desaminogentamicin C_{1a},
2′-hydroxy-2′-desaminogentamicin C_2,
2′-hydroxy-2′-desaminogentamicin C_{2a},
2′-hydroxy-2′-desaminogentamicin C_{2b},
2′-hydroxy-2′-desaminosisomicin,
2′-hydroxy-2′-desaminoverdamicin,
2′-hydroxy-2′-desamino-Antibiotic G-52,
2′-hydroxy-2′-desamino-Antibiotic 66-40B,
2′-hydroxy-2′-desamino-Antibiotic 66-40D,
2′-hydroxy-2′-desamino-Antibiotic JI-20B,
2′-hydroxy-2′-desaminotobramycin; and
2′-hydroxy-2′-desamino-3′,4′-dideoxykanamycin B;
the 5-deoxy-, 5-epi-, 5-epi-azido-5-deoxy derivatives thereof;
2′-hydroxy-2′-desamino-Antibiotic Mu-1 and
2′-hydroxy-2′-desamino-Antibiotic Mu-4;
the 1-N-(ω-amino-α-hydroxyalkanoyl) derivatives of the foregoing wherein said alkanoyl has from 3 to 5 carbon atoms, and the 1-N-X derivatives of the foregoing wherein X is a substituent selected from the group consisting of alkyl, cycloalkylalkyl, alkenyl, aralkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, aminohydroxyalkyl, and alkylaminohydroxyalkyl, said alkyl substituent having up to 8 carbon atoms, the carbon in said alkyl substituent adjacent to the aminoglycoside nitrogen being unsubstituted, and when said alkyl substituent is substituted by both hydroxl and amino functions, only one of said functions can be attached at any one carbon atom; and the pharmaceutically acceptable acid addition salts thereof.

10. The method of eliciting an antibacterial response in a warm-blooded animal having a susceptible bacterial infection which comprises administering to said animal a non-toxic, antibacterially effective amount of a 2′-hydroxy-2′-desamino-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol of claim **1**.

4,212,860

4-O-(2,3,5-TRIDEOXY-5-AMINO-α-D-PENTOFURANOSYL)-6-O-AMINOGLYCOSYL-1,3-DIAMINOCYCLITOIS, METHODS FOR THEIR PREPARATION, PHARMACEUTICAL FORMULATIONS THEREOF AND THEIR USE AS ANTIBACTERIAL AGENTS

Stuart McCombie, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 922,605, Jul. 7, 1978, abandoned. This application Nov. 8, 1978, Ser. No. 959,032
Int. Cl.[2] A61K *31/71;* **C07H** *15/22*
U.S. Cl. 424—180 **14 Claims**

1. A 4-O-(2,3,5-trideoxy-5-amino-α-D-pentofuranosyl)-6-O-aminoglycosyl-1,3-diaminocyclitol wherein said 6-O-aminoglycosyl is a member selected from the group consisting of garosaminyl, 3-desmethylgarosaminyl, 4-desmethylgarosaminyl, 4-desmethyl-4-epigarosaminyl, 3,4-bisdesmethylgarosaminyl, and 3,4-bisdesmethyl-4-epigarosaminyl, and wherein said 1,3-diaminocyclitol is 2-deoxystreptamine or a 5-epi-, 5-deoxy-, 5-fluoro-5-deoxy-, 5-epi-fluoro-5-deoxy-, 5-epi-azido-5-deoxy-, or a 5-epi-amino-5-deoxy- derivative thereof;
and the 1-N-substituted derivatives thereof wherein said substituent is $-CH_2X$ or



wherein X is a member selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl, aminoalkyl, N-alkylaminoalkyl, aminohydroxyalkyl, N-alkylaminohydroxyalkyl, phenyl, benzyl, and tolyl, said substituent having up to 8 carbon atoms, and when substituted by both amino and hydroxyl groups, bearing said groups on different carbon atoms;
and the pharmaceutically acceptable acid addition salts thereof.

13. The method of eliciting an antibacterial response in a warm-blooded animal having a susceptible bacterial infection which comprises administering to said animal a non-toxic, antibacterially effective amount of a 4-O-(2,3,5-trideoxy-5-amino-α-D-pentofuranosyl)-6-O-aminoglycosyl-1,3-diaminocyclitol of claim **1**.

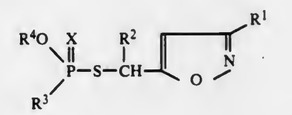
4,212,861

ISOXAZOLE-5-ALKYL DITHIOPHOSPHORIC ACID DERIVATIVES

Hans Theobald, Limburgerhof; Karl Kiehs, Lampertheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 732,205, Oct. 14, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,297
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2549961
Int. Cl.[2] C07D *261/10;* **A01N** *9/36*
U.S. Cl. 424—200 **12 Claims**

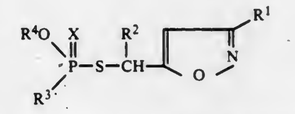
1. Phosphoric acid derivative of the formula



I,

where X denotes oxygen or sulfur, R^1 denotes identical or different, linear or branched alkyl groups of a maximum of 6 carbon atoms, R^2 denotes hydrogen or alkyl of a maximum of 3 carbon atoms, R^3 denotes propylthio or butylthio and R^4 denotes ethyl.

9. A process for controlling pests, wherein the pests or the objects to be protected against pest attack are treated with an effective amount of a phosphoric acid derivative of the formula I



I,

where X denotes oxygen or sulfur, R^1 denotes identical or different, linear or branched alkyl groups of a maximum of 6 carbon atoms, R^2 denotes hydrogen or alkyl of a maximum of 3 carbon atoms, R^3 denotes propylthio or butylthio and R^4 denotes ethyl.

4,212,862

O,O-DIARYL-1-ACYLOXY-2,2,2-TRICHLOROETHYL-PHOSPHONATES AND FUNGICIDES BASED THEREON

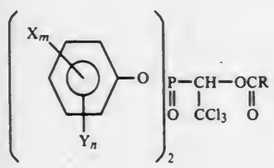
Nikolai K. Bliznjuk, Molodogvardeiskaya ulitsa, 36, korpus 6, kv. 62, Moscow; Ljudmila D. Protasova, Odintsovsky raion, p/o B.Vyazemy, 7, kv. 37, Moskovskaya oblast; Tatyana A. Klimova, Odintsovsky raion, Djutkovo, 5, kv. 65, Moskovskaya oblast; Rimma S. Klopkova, Odintsovsky raion, p/o B.Vyazemy, 16, kv. 20, Moskovskaya oblast; Vasily D. Tkachev, Odintsovsky raion, p/o B.Vyazemy, 8, kv. 4, Moskovskaya oblast; Evgeny F. Granin, ulitsa Oktyabrskaya, 91, kv. 42, Krasnodar; Mikhail P. Umnov, Kutuzovsky prospekt, 5, kv. 334, Moscow; Rev V. Streltsov, Odintsovsky raion, p/o B.Vyazemy, 3, kv. 54; Oleg V. Klimov, Odintsovsky raion, p/o B.Vyazemy, 7, kv. 37, both of Moskovskaya oblast; Sergei G. Zhemchuzhin, ulitsa Dnepropetrovskaya, 23, kv. 66; Rudolf P. Bulankin, ulitsa Menzhinskogo, 28, korpus 3, kv. 196, both of Moscow; Valery P. Chernyshev, Schelkovo, ulitsa Kosmodemyanskoi, 15, korpus 1, kv. 35, Moskovskaya oblast; Fialka G. Safina, ulitsa Komarova, 13-b, kv. 1, Moskovskaya oblast; Alla I. Terekhova, Schelkovo, ulitsa Sirenevaya, 6/1, kv. 80, Moskovskaya oblast; Eleonora I. Zaikina, Schelkovo, ulitsa Sirenevaya, 6/1, kv. 23, Moskovskaya oblast; Alexandr N. Bliznjuk, Molodogvardeiskaya ulitsa, 36, korpus 6, kv. 62; Valentina A. Rusakova, ulitsa Valtera Ulbrikhta, 20, kv. 20, both of Moscow; Julia N. Ivanchenko, Odintsovsky raion, p/o B.Vyazemy, 8, kv. 12, Moskovskaya oblast; Natalya S. Svistunova, Odintsovsky raion, p/o B.Vyazemy, 8, kv. 16, Moskovskya oblast; Viktor K. Promonenkov, Veshnyakovskaya ulitsa, 31, kv. 307, Moscow, all of U.S.S.R.; Lev N. Chudov, deceased, late of Moskovskaya oblast, U.S.S.R.; by Ljudmila A. Chudova, administrator, poselok Zagoryanskaya, ulitsa Dostoevskogo, 13, and by Vladimir L. Chudov, administrator, Schelkovo, ulitsa Pustovskaya, 4, kv. 32, both of Moskovskaya oblast, U.S.S.R.

Filed Oct. 23, 1978, Ser. No. 953,451

Int. Cl.[2] A01N *9/36*; C07F *9/40*

U.S. Cl. 424—212 **7 Claims**

1. O,O-diaryl-1-acyloxy-2,2,2-trichloroethylphosphonates of the formula:



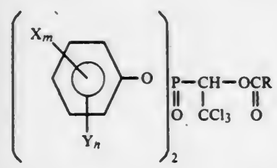
wherein

R is a C_1-C_8-alkyl, phenyl;

X and Y the same or different are each hydrogen, a C_1-C_8-alkyl, phenyl, a halide, or X and Y together form a fragment of a benzene ring;

m and n=1 to 2.

5. A method of suppressing fungal diseases of plants involving the use of a fungicidally active amount of a composition containing, as the active principle, a O,O-diaryl-1-acyloxy-2,2,2-trichloroethylphosphonate of the formula:



wherein R is a C_1-C_8 alkyl, phenyl; X and Y the same or different are each hydrogen, a C_1-C_8 alkyl, phenyl, a halogen, or X and Y together form a fragment of a benzene ring; m and n=1-2, and a carrier therefor.

4,212,863

HIGHLY CONCENTRATED PHARMACEUTICAL FORMULATIONS OF STEROIDS AND PROCESSES FOR THEIR PREPARATION

Lammert Cornelius, Boxmeer, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

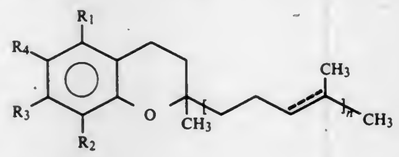
Filed Oct. 23, 1978, Ser. No. 953,877

Claims priority, application Netherlands, Oct. 29, 1977, 7711916

Int. Cl.[2] A61K *31/56*

U.S. Cl. 424—240 **10 Claims**

1. A highly concentrated liquid pharmaceutical steroid formulation comprising (1) at least one steroid of the oestrane, androstane or (19-nor-)pregnane series containing at least a 3-oxo-Δ^4-group and an hydroxy group at position 17 and or 21 (if present) and (2) a solvent for said steroid comprising at least one of tocol or a derivative thereof that is fluid at normal temperatures and of the formula:



where

R_1=H, CH_3, or C_2H_5;

R_2=H, CH_3, or C_2H_5;

R_3=H, CH_3, or C_2H_5;

R_4=H, OH, O-C_{1-2} acyl, OCH_3, or C_2H_5; and

n=1, 2, or 3;

the dotted lines indicate the optional presence of a carbon atom double bond, with the proviso that said tocol or derivative constitutes at least 10% by weight of said formulation.

4,212,864

BRANCHED CHAIN AND CYCLOALIPHATIC ESTERS OF THE ANDROSTANE AND OESTRANE SERIES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Lambert J. W. M. Tax, Macharen, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Nov. 17, 1977, Ser. No. 852,326

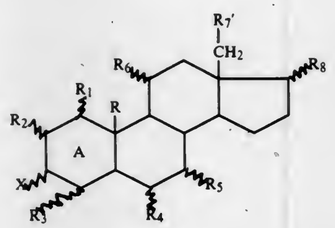
Claims priority, application Netherlands, Nov. 26, 1976, 7613248

Int. Cl.[2] C07J *1/00, 43/00*

U.S. Cl. 424—243 **20 Claims**

18. A pharmaceutical composition adapted for oral administration comprising:

(A) a pharmaceutically effective amount of a compound of the formula:



R_1 is selected from the group consisting of H and CH_3;

R_2 is selected from the group consisting of H and CH_3;

R_3 is selected from the group consisting of H, OH, CH_3 and Cl;

R_4 is selected from the group consisting of H and C_1 to C_4 alkyl;

R_5 is selected from the group consisting of H, C_1 to C_4 alkyl and CF_3;

R_6 is selected from the group consisting of H, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, halogen and β-OH, with the proviso that when R_6 is β-OH, the compound also contains 9α-F; with the further proviso that R_1, R_2, R_3, R_4, R_5, and R_6 represent at least 4 and at most 5 hydrogen atoms

R_7 is H or CH_3;

R_8 is



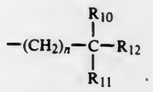
with the proviso that R_8 is OH or



when the compound has an aromatic A-ring and the 3-position is substituted by



R_9 is



n=0, 1 or 2;

R_{10} is C_1 to C_{10} alkyl;

R_{11} is selected from the group consisting of H and C_1 to C_{10} alkyl;

R_{12} is an aliphatic group having 1 to 18 carbon atoms, or R_{10} and R_{12} taken together with the carbon atom to which they are attached form a C_7 to C_{12} cycloaliphatic group with the proviso that the total number of carbon atoms in the carboxylic acid residue is 8 to 20;

ring A has one of the following types of unsaturation; Δ^1; $\Delta^{5(10)}$; $\Delta^{1,4}$; $\Delta^{1,3,5(10)}$; and $\Delta^{5(10)}$; $\Delta^{1,3,5(10)}$;

X is selected from the group consisting of =O and



providing that X is



when the compound has an aromatic ring A; and

(B) a pharmaceutically effective carrier therefor.

4,212,865

AMINE DERIVATIVES OF 2-NITRO-3-PHENYLBENZOFURAN

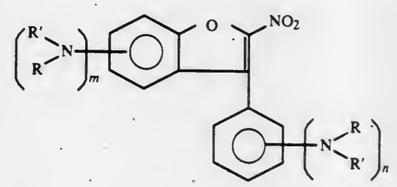
Robert A. Scherrer, White Bear Lake; Richard M. Stern, Cottage Grove, both of Minn., and Vernon R. Fletcher, Davis, Calif., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed Dec. 26, 1978, Ser. No. 973,153

Int. Cl.[2] A01N *9/20*; C07D *307/82*

U.S. Cl. 424—250 **24 Claims**

1. A compound of the formula

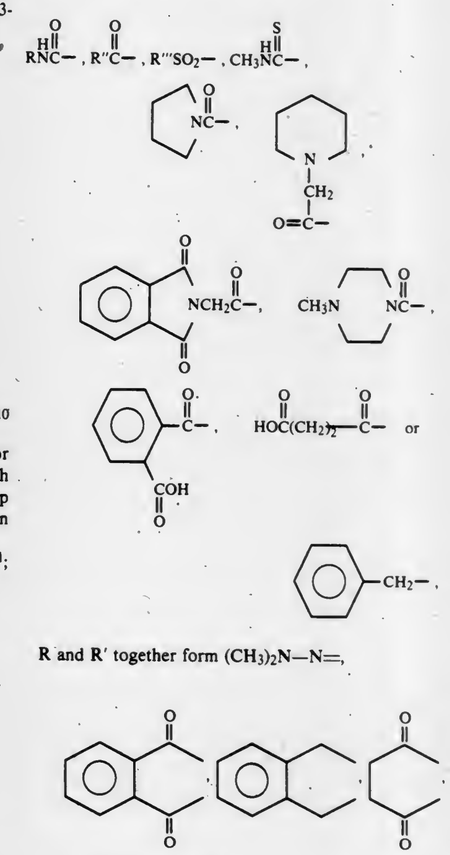


wherein

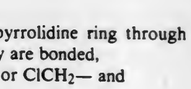
m and n are zero or one and the sum of m and n is one,

R is hydrogen or lower alkyl,

R′ is R,



or



R and R′ together form $(CH_3)_2N$—N=,

or complete a pyrrole or pyrrolidine ring through the nitrogen atom to which they are bonded,

R″ is R, lower alkoxy, CF_3— or $ClCH_2$— and

R''' is lower alkyl or CF_3—, and pharmaceutically acceptable salts thereof.

24. A method for inhibiting or arresting the growth of bacteria comprising contacting said bacteria with a compound according to claim **1** in an amount sufficient to inhibit the growth of said bacteria.

4,212,866

PHARMACEUTICALLY ACTIVE DERIVATIVES OF 9-[3-(4-AMINO-PIPERIDINO)-PROPYL]-ADENINES

Walter-Gunar Friebe, Darmstadt; Max Thiel, Mannheim; Androniki Roesch, Mannheim; Otto-Henning Wilhelms, Heddesheim, and Wolfgang Schaumann, Heidelberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

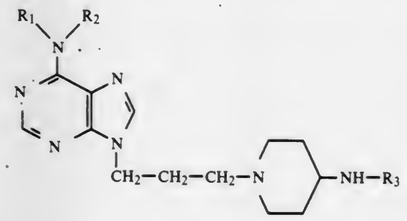
Filed Jan. 24, 1979, Ser. No. 6,050

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804168

Int. Cl.[2] **C07D** *473/00*

U.S. Cl. 424—253 **14 Claims**

1. A 9-[3-(4-amino-piperidino)-propyl]-adenine of the formula



wherein

R_1 is a hydrogen atom or a lower alkyl radical,

R_2 is a hydrogen atom, an aryl radical, a lower alkyl radical, a hydroxy lower alkyl radical, or together with R_1 and the nitrogen atom to which they are attached form a tetramethyleneimino, pentamethyleneimmo or hexamethyleneimino ring, and

R_3 is a hydrogen atom or an acyl radical, or a salt thereof with a pharmacologically acceptable acid.

8. A composition comprising an anti-allergic, anti-inflammatory and anti-oedematous effective amount of an adenine according to claim **1**, in admixture with a pharmacologically compatible diluent.

4,212,867

2-CYANO-5-SUBSTITUTED 1,3,4-OXADIAZOLES AND FUNGICIDAL COMPOSITIONS CONTAINING THEM

Roger Boesch, Vitry, France, assignor to Philagro, France

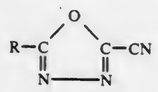
Filed Feb. 28, 1978, Ser. No. 882,061

Claims priority, application France, Mar. 3, 1977, 77 06875; Jan. 23, 1978, 78 02454

Int. Cl.[2] **A01N** *9/22;* **C07D** *271/10, 498/00*

U.S. Cl. 424—263 **5 Claims**

1. A compound of the formula



in which R represents:

the phenyl radical;

a phenyl radical which is substituted by 1 to 3 identical or different substituents chosen from amongst halogen atoms, the nitro radical, the cyano radical, alkyl radicals containing from 1 to 4 carbon atoms, alkoxy radicals, the alkyl part of which contains from 1 to 4 carbon atoms, alkylsulphonyl radicals, the alkyl part of which contains from 1 to 4 carbon atoms, alkylthio radicals containing 1 to 4 carbon atoms, dialkylamino radicals, of which each of the identical or different alkyl parts contains from 1 to 4 carbon atoms, the carbamoyloxy radical which is optionally substituted by 1 to 2 alkyl radicals containing from 1 to 4 carbon atoms, or the trifluoromethyl radical;

a phenyl radical which is substituted by a divalent alkylenedioxy radical in which the alkylene part contains from 1 to 4 carbon atoms;

a naphthyl radical or;

a pyridyl radical optionally substituted by 1 to 2 identical or different substituents chosen from amongst halogen atoms, and alkoxy radicals containing from 1 to 4 carbon atoms.

2. Process for combating fungal diseases in plants, which comprises applying a fungicidally effective amount of a compound defined in claim **1** to said plants.

4,212,868

CERTAIN FUNGICIDAL PYRIDINECARBALDEHYDE PHENYLHYDRAZONES

Michael T. Clark, Sittingbourne, and Pieter ten Haken, Herne Bay, both of England, assignors to Shell Oil Company, Houston, Tex.

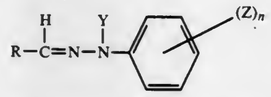
Continuation-in-part of Ser. No. 838,772, Oct. 3, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,650

Claims priority, application United Kingdom, Oct. 5, 1976, 41300/76

Int. Cl.[2] **A01N** *9/22;* **C07D** *213/90*

U.S. Cl. 424—263 **1 Claim**

1. A method for killing unwanted fungi which comprises applying to such fungi a fungicidal amount of a compound, being one of four having the formula:



(I)

the four being individual species wherein the substituent moieties are as follows, the number preceding the moiety, Z, indicating the position of that moiety in the phenyl ring:

R	Y	n	Z
3-pyridyl	H	1	4-chloro
2-pyridyl	H	1	4-chloro
3-pyridyl	H	0	—
3-pyridyl	—CHO	0	—

4,212,869

SUBSTITUTED 1-PYRIDINYLOXY-1-(IMIDAZOLYL)-2-BUTANONE COMPOUNDS AND THEIR USE AS FUNGICIDES

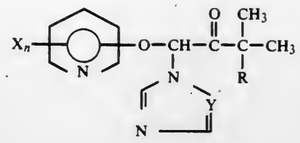
Chrislyn M. Carson; Robert J. Ehr, both of Pittsburg, and Richard B. Rogers, Concord, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 956,957, Nov. 2, 1978. This application Mar. 22, 1979, Ser. No. 22,761

Int. Cl.[2] **A61K** *31/415;* **C07D** *401/02*

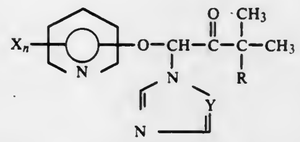
U.S. Cl. 424—263 **15 Claims**

1. A substituted 1-pyridinyloxy-1-(imidazolyl)-2-butanone compound corresponding to the formula



wherein X independently represents halogen, methyl, trichloromethyl, trifluoromethyl, or cyano; n represents an integer of 0 to 3; Y represents —CH; and R represents methyl, methoxy, or ethoxy.

4. A fungicidal composition comprising as active ingredient a fungicidally effective amount of a substituted 1-pyridinyloxy-1-(imidazolyl)-2-butanone compound corresponding to the formula



wherein X independently represents halogen, methyl, trichloromethyl, trifluoromethyl, or cyano; n represents an integer of 0 to 3; Y represents —CH; and R represents methyl, methoxy, or ethoxy, in intimate admixture with an inert carrier therefor.

4,212,870

1-(2,6-DICHLOROBENZOYL)-3-(5-CHLORO-2-PYRIDINYL-N-OXIDE)UREA AND USE AS INSECTICIDE

Charles G. Gibbs, Shawnee Mission, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jun. 18, 1979, Ser. No. 49,381

Int. Cl.[2] **A61K** *31/44;* **C07D** *213/75*

U.S. Cl. 424—263 **5 Claims**

1. The method of killing insect pests on plants which comprises applying to the infested plants an insecticidally effective amount of 1-(2,6-dichlorobenzoyl)-3-(5-chloro-2-pyridinyl-N-oxide)urea.

4,212,871

APPETITE STIMULATING AND ANTIHISTAMINIC 3-HYDROXYMETHYLCYPROHEPTADINE AND ANALOGS

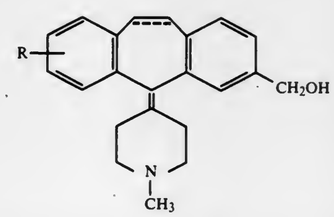
John D. Prugh, Chalfont, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 2, 1979, Ser. No. 16,771

Int. Cl.[2] **A61K** *31/445;* **C07D** *211/70*

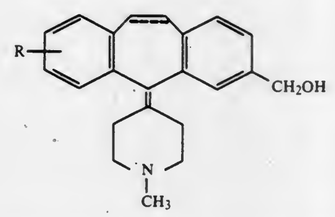
U.S. Cl. 424—267 **8 Claims**

5. A method of producing appetite stimulation comprising the administration to a patient in need of such treatment of an appetite stimulating amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen, C_{1-3} alkyl or fluoro, and the dotted line represents saturation or unsaturation.

7. A method of producing an antihistaminic effect comprising the administration to a patient in need of such treatment of an antihistaminic amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen, C_{1-3} alkyl or fluoro, and the dotted line represents saturation or unsaturation.

4,212,872

2-SUBSTITUTED BENZISOTHIAZOLONES AND USE THEREOF

Keith H. Baggaley, Redhill, England, assignor to Beecham Group Limited, England

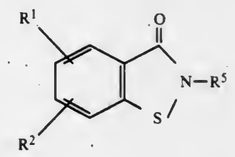
Division of Ser. No. 850,786, Nov. 11, 1977, which is a division of Ser. No. 738,000, Nov. 2, 1976, Pat. No. 4,113,728. This application Aug. 25, 1978, Ser. No. 936,861

Claims priority, application United Kingdom, Nov. 18, 1975, 47373/75

Int. Cl.[2] **C07D** *417/04;* **A61K** *31/425*

U.S. Cl. 424—270 **8 Claims**

1. A compound of the formula (III),



(III)

or a pharmaceutically acceptable non-toxic acid addition salt thereof when there is a basic nitrogen in the molecule wherein R^1 and R^2 are the same or different and each is hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, nitro, amino, acetylamino or halogen, or R^1 and R^2 when attached to adjacent carbon atoms form an alkylene moiety of 3 to 6 carbon atoms or oxy-alkyleneoxy moiety of 1 to 3 carbon atoms; and R^5 is thiazolyl.

5. A pharmaceutical composition useful for the inhibition of platelet aggregation and thrombus formation and for the treatment of arterial thromboses in humans and animals which comprises a platelet-aggregation-inhibitory amount, an amount sufficient to inhibit the formation of thrombs or an anti-arterial thrombotically effective amount of a compound according to claim **1** in combination with a pharmaceutically acceptable carrier.

4,212,873

4-DESOXY-THIAZOLO[5,4-c]RIFAMYCIN DERIVATIVES AND THEIR USE AS ANTIMICROBIAL AGENTS

Renato Cricchio, Varese, and Marisa Berti, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

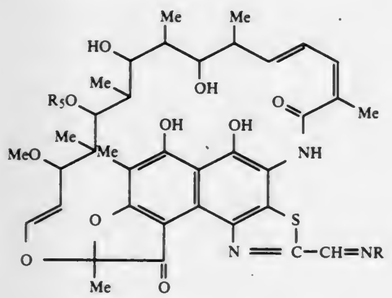
Filed Mar. 19, 1979, Ser. No. 21,866

Claims priority, application Italy, Apr. 27, 1978, 22738 A/78

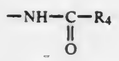
Int. Cl.[2] **C07D** *515/20;* **A61K** *31/425*

U.S. Cl. 424—270 **7 Claims**

1. A 4-desoxy-thiazolo[5,4-c]-rifamycin of the formula



wherein R stands for a group $-OR_1$, $-NR_2R_3$ or



wherein R_1 represents alkyl having 1 to 8 carbon atoms per group and no substitution or halo, amino, mono- or di- (C_{1-4}) alkylamino, C_{1-4} alkoxy, C_{5-8} cycloalkoxy, phenoxy phenyl (C_{1-4}) alkoxy, nitro, cyano, hydroxy, carboxy, carbo (C_{1-4}) alkoxy or carbamoyl substitution; alkenyl having up to 8 carbon atoms per group which contains one or two double bonds, alkynyl having up to 8 carbon atoms per group which contains one or two triple bonds, cycloalkyl having a cycloaliphatic ring containing from 5 to 8 carbon atoms and having up to two C_{1-4} alkyl substituents, aryl or aralkyl wherein aryl as such or in a compound term designates phenyl or phenyl having halo, C_{1-4} alkyl, halo (C_{1-4}) alkyl, C_{1-4} alkenyl, C_{5-8} cycloalkyl, amino, mono- or di- (C_{1-4}) alkylamino, C_{1-4} alkoxy, methylenedioxy, cyano, carboxy, hydroxy, carbo (C_{1-4}) alkoxy, carbamoyl or nitro substitution,

R_2 and R_3 are independently selected from hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl and aralkyl, as defined above, or R_2 and R_3 taken together with the adjacent nitrogen atom may form a 5–7 membered heterocyclic ring wherein the hetero atoms are nitrogen, and

R_4 is a radical selected from the group consisting of alkyl, alkenyl, alkynyl, cycloalkyl, aryl and aralkyl, as defined above and; R_5 is hydrogen or acetyl.

7. Method which comprises contacting a susceptible microbe with an effective antimicrobial amount of a compound as claimed in claim **1**.

4,212,874

GLYOXAL-2-OXIM DERIVATIVES AND A PROCESS FOR RELIEVING PAIN/OR INFLAMMATION THEREWITH

Takaji Honna; Motoaki Tanaka; Syozo Yamada, and Hidekazu Miyake, all of Tokushima, Japan, assignors to Taiho Pharmaceutical Company, Limited, Tokyo, Japan

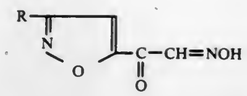
Filed Mar. 2, 1979, Ser. No. 16,821

Claims priority, application Japan, Mar. 9, 1978, 53-27300

Int. Cl.[2] **C07D** *261/08;* **A61K** *31/42*

U.S. Cl. 424—272 **5 Claims**

1. A glyoxal-2-oxim derivative represented by the formula,



[I]

wherein R represents hydrogen, or a lower alkyl of C_{1-4} or phenyl group.

4. Method of relieving pain and/or inflammation in a patient in need of such relief, said method comprising administering an effective amount of a compound of claim **1**.

4,212,875

IMIDAZOLYL ALKYL BISAMIDINES

Graham J. Durant, Welwyn Garden City, and Peter D. Miles, Hitchin, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

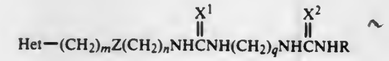
Filed May 2, 1978, Ser. No. 902,145

Claims priority, application United Kingdom, May 5, 1977, 18881/77

Int. Cl.[2] **C07D** *233/64, 233/66;* **A61K** *31/415*

U.S. Cl. 424—273 R **16 Claims**

1. A compound of the structure



in which

Het is imidazole which is attached at a ring carbon and which is optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen or lower alkoxy;

Z is sulphur or methylene;

m is 0, 1 or 2, n is 2 or 3, and m+n is 3 or 4;

R is hydrogen or lower alkyl;

each of X^1 and X^2 is sulphur, a nitromethylene group $CHNO_2$, or an imino group NY, where Y is hydrogen, hydroxy, lower alkyl, cyano or carbamoyl $CONH_2$; and

q is from 2 to 12; in the form of the free base or its pharmaceutically-acceptable acid addition salts.

16. A method of blocking histamine H_2-receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim **1**.

4,212,876

SUBSTITUTED OR UNSUBSTITUTED 2-PHENYLBENZIMIDAZOLES AS ANTI-OBESITY AGENTS

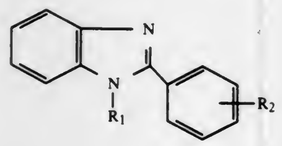
William J. Houlihan, Mt. Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 874,467, Feb. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 810,917, Jun. 29, 1977, abandoned. This application Jun. 21, 1978, Ser. No. 917,413

Int. Cl.[2] **A61K** *31/415*

U.S. Cl. 424—273 B **7 Claims**

1. A method for treating obesity by preventing the absorption of glucose which comprises administering orally or parentally to a mammal in need of said treatment a weight reducing amount of a compound of the formula



wherein

R_1 represents lower alkyl having 1 to 4 carbon atoms, and

R_2 represents hydrogen, fluoro or chloro.

4,212,877

1-ARYLOXY-2-HYDROXY-3-[(BENZIMIDAZOLIN-ONE-SUBSTITUTED ALKYL)-AMINO]-PROPANES AND SALTS THEREOF

Herbert Köppe, Ingelheim am Rhein; Anton Mentrup, Mainz-Kastel; Ernst-Otto Renth; Kurt Schromm, both of Ingelheim am Rhein; Wolfgang Hoefke, Budenheim, and Gojko Muacevic, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

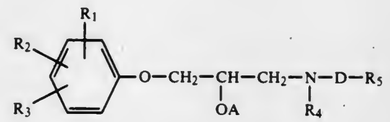
Continuation-in-part of Ser. No. 838,450, Oct. 3, 1977, abandoned. This application Jan. 17, 1979, Ser. No. 4,280

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1976, 2644833

Int. Cl.[2] **A61K** *31/415;* **C07D** *235/26*

U.S. Cl. 424—273 B **7 Claims**

1. A compound of the formula



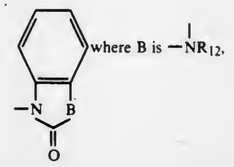
wherein R_1 is hydrogen; halogen; trifluoromethyl; nitro; alkyl of 1 to 8 carbon atoms; alkoxy of 1 to 4 carbon atoms; alkoxyalkyl of 2 to 8 carbon atoms; alkenyl of 2 to 5 carbon atoms; alkynyl of 2 to 5 carbon atoms; alkenyloxy of 3 to 6 carbon atoms; alkynyloxy of 3 to 6 carbon atoms; $-(CH_2)_x-A'$ where x is 1, 2 or 3 and A' is cyano, amino, carboxamido or hydroxyl; or $-CH_2-SO_2-CH_3$;

R_2 is hydrogen; halogen; alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; aralkoxy of 7 to 14 carbon atoms; alkenyl of 2 to 4 carbon atoms; nitro; or, together with R_3, $-CH=CH-CH=CH-$, which is attached to carbon atoms of the phenyl ring in the ortho position with respect to each other;

R_3 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; or benzyloxy;

R_4 is hydrogen; alkyl of 1 to 5 carbon atoms; or aralkyl of 7 to 14 carbon atoms;

R_5 is



where B is $-NR_{12}$,

where R_{12} is hydrogen, lower alkyl, lower alkenyl, or lower alkynyl;

D is alkylene of 1 to 12 carbon atoms; and

A is hydrogen;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

7. The method of blocking the α- and β-adrenergic receptors in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective amount of a compound of claim **1**.

4,212,878

PHENYLACETAMIDE DERIVATIVE ANALGESICS

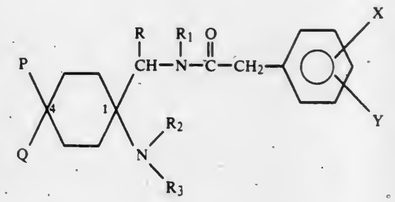
Daniel Lednicer, Evansville, Ind., and Jacob Szmuszkovicz, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 26, 1978, Ser. No. 872,632

Int. Cl.[2] **C07D** *405/04;* **A61K** *31/40;* **C07D** *207/04*

U.S. Cl. 424—274 **18 Claims**

1. A compound of the formula



wherein

R is hydrogen or C_1 to C_3-alkyl;

R_1 is hydrogen or C_1 to C_3-alkyl;

each of R_2 and R_3 is independently a C_1 to C_6-alkyl, or R_2 is a C_3 to C_5-(allylic)alkenyl when R_3 is a C_1 to C_6-alkyl, or R_2 and R_3, taken together with the nitrogen to which they are bonded complete a mono-nitrogen heterocyclic ring having 3 to 4 carbon atoms;

Q and P, taken together, represent an oxo group (O=) or a C_2 to C_3-alkylenedioxy group; taken separately, when P or Q is hydroxy, then the other of P or Q is hydrogen, C_1 to C_3-alkyl or phenyl-(C_1 to C_2)alkyl;

each of X and Y is selected from the group consisting of hydrogen, C_1 to C_3-alkyl, C_1 to C_3-alkyloxy, a halogen having an atomic number of from 9 to 35, nitro, trifluoromethyl and azido, providing that when X is halogen, Y is C_1 to C_3-alkyl, C_1 to C_3-alkyloxy or halogen, and that when X is nitro, trifluoromethyl or azido, Y is hydrogen, and the pharmacologically acceptable salts thereof.

13. A composition useful in pharmaceutical dosage unit form for alleviating pain in warm-blooded mammals which comprises a compound of formula **1** in claim **1** in combination with a pharmaceutically acceptable carrier.

4,212,879

BENZYL PYRROLYL METHYL CARBOXYLATE INSECTICIDES AND ACARICIDES

Tadashi Ohsumi, Kyoto; Nobushige Itaya, Nishinomiya, and Masachika Hirano, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

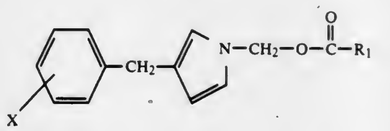
Filed Oct. 3, 1978, Ser. No. 948,049

Claims priority, application Japan, Oct. 7, 1977, 52-121244

Int. Cl.[2] **A01N** *9/22;* **C07D** *207/32*

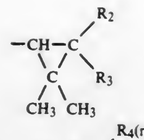
U.S. Cl. 424—274 **7 Claims**

1. A compound of the formula (I),

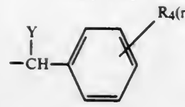


(I)

wherein X is a hydrogen atom, or a C_1-C_3 alkyl or a C_1-C_3 alkoxyl group or a halogen atom linked to the meta or para position and R_1 is a group of the formula (II) or (III),

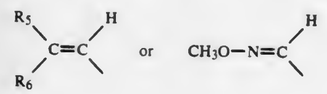


(II)



(III)

wherein R_2 is a hydrogen atom or a methyl group, and when R_2 is a methyl group R_3 is also a methyl group, and when R_2 is a hydrogen atom R_3 is a group of the formula,



wherein R_5 is a halogen atom or a C_1-C_3 alkyl, vinyl or a C_1-C_3 alkoxymethyl group, R_6 is a hydrogen or halogen atom or a methyl group, or taken together, R_5 and R_6 may form a tetramethylene group by connecting together at ends thereof, R_4 is a halogen atom or a lower alkyl, lower alkoxyl or 3,4-methylenedioxy group, n is 1 or 2 and Y is a isopropyl or cyclopropyl group, the esters of the formula (I) including stereoisomers owing to steric configuration of the carboxylic acid and optical isomers owing to the asymmetric carbon of the acid.

7. A method for controlling insects and acarids which comprises applying an insecticidally and acaricidally effective amount of the compound according to claim 1 to insects and acarids.

4,212,880

SYMMETRICALLY SUBSTITUTED PYROMELLITIC DIIMIDES AS RUMINANT FEED ADDITIVES

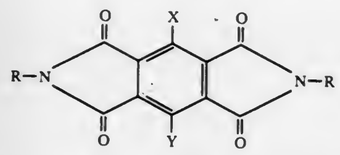
Michael H. Fisher, Bridgewater; Peter Kulsa, Plainfield, and Bruce O. Linn, Bridgewater, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 23, 1978, Ser. No. 954,039

Int. Cl.[2] A61K *31/40*

U.S. Cl. 424—274 **15 Claims**

1. A method for improving the feed efficiency of ruminant animals which comprises orally administering to a ruminant animal an effective amount of a compound having the formula:



wherein each R is the same and represents hydrogen, loweralkyl, loweralkenyl, loweralkynyl, cyclopropyl, nitrophenyl; substituted loweralkyl wherein the substituent is one or two of hydroxy, hydroxyloweralkoxy, hydroxyloweralkylthio, amino, mono- or di-loweralkylamino, mono- or di-(hydroxy substituted loweralkyl)amino, loweralkanoyloxy, loweralkoxy, mercapto, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl or loweralkoxycarbonyl; loweralkanoyl, benzoyl, diloweralkylamino, mono-substituted amino wherein the substituent is loweralkanoyl, benzoyl or loweralkanoyloxy;

X and Y are independently hydrogen, halogen or loweralkyl.

4,212,881

STREPTOVARICIN C DERIVATIVES

Kazuya Sasaki, Higashi Kurume; Hiromi Mitsui, Tokyo, and Kazukiyo Onodera, Nagareyama, all of Japan, assignors to Kaken Chemical Company, Limited, Tokyo, Japan

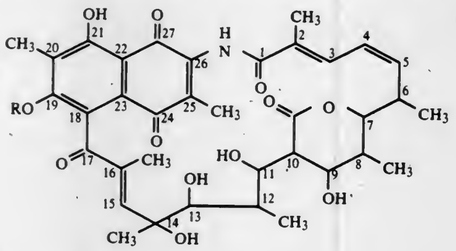
Filed Jan. 16, 1979, Ser. No. 3,802

Claims priority, application Japan, Feb. 17, 1978, 53-16408

Int. Cl.[2] A61K *31/395;* **C07D** *491/08*

U.S. Cl. 424—275 **2 Claims**

1. A Streptovaricin C derivative having the formula:



(I)

wherein R represents an allyl, cyclopentyl, cyclohexyl or adamanthyl group or a C_1-C_{20} alkyl group which can be substituted with hydroxyl, cyano, acetyl, formyl, furoyl, thenoyl, methoxy, carbamyl, phenyl or phenyl group substituted with nitro or ethyl or a phenacyl group which can be substituted with a halogen, methoxy or phenyl group.

2. An antiviral composition comprising an antivirally effective amount of a compound of claim 1 and an adjuvant.

4,212,882

SUBSTITUTED THIOPHENES

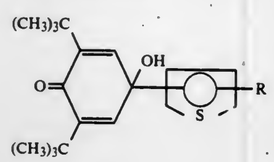
George G.I. Moore, Birchwood, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 893,988, Apr. 6, 1978, which is a continuation-in-part of Ser. No. 797,182, May 16, 1977, abandoned. This application Jul. 6, 1979, Ser. No. 55,333

Int. Cl.[2] A01N *9/00;* **C07D** *333/22*

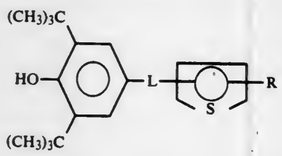
U.S. Cl. 424—275 **11 Claims**

1. A compound of the formula



wherein R is hydrogen, methyl or halogen.

3. A method for combatting inflammatory processes in a mammal which comprises administering an effective dose less than the toxic amount of a compound of the formula



wherein L is carbonyl or a carbon-carbon bond and R is hydrogen, methyl or halogen.

4,212,883

SULFONIC ACID-N'-METHYLAMIDO-N'-SULFENYL-N-METHYL-CARBAMIC ACID ESTERS

Peter Siegel, Cologne; Engelbert Kühle, Berg. Gladbach; Ingeborg Hammann, Cologne; Bernhard Homeyer, Opladen, and Wolfgang Behrenz, Overath-Steinenbrueck, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

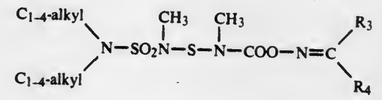
Division of Ser. No. 592,860, Jul. 2, 1975, Pat. No. 4,113,876. This application Apr. 24, 1978, Ser. No. 900,386

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1974, 2434184

Int. Cl.[2] A01N *9/16;* **C07D** *339/02*

U.S. Cl. 424—277 **6 Claims**

1. A sulfonic acid-N'-methylamido-N'-sulfenyl-N-methyl-carbamic acid ester of the formula



in which

R^3 and R^4 each independently is cyano, or alkyl, alkoxy, alkylthio or alkoxycarbonyl with 1-4 carbon atoms in each alkyl group, or R^3 and R^4 together form a ring.

5. A method of combating insects acarids or nematodes which comprises applying to the insects, acarids or nematodes or to a habitat thereof an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim 1.

4,212,884

PREVENTION OF PROSTAGLANDIN-INDUCED ENTEROPOOLING WITH PGI'S AND PGD'S

Andre' Robert, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 905,481, May 12, 1978, abandoned. This application Feb. 5, 1979, Ser. No. 9,216

Int. Cl.[2] A61K *31/19, 31/34, 31/215*

U.S. Cl. 424—285 **6 Claims**

1. In a method consisting essentially of administering a diarrheogenic prostaglandin systemically to a mammal for the induction of a prostaglandin-like pharmacological effect, an improvement which comprises:

concommitantly administering an anti-enteropooling dose of a prostacyclin or 11-oxo-prostaglandin.

4,212,885

INSECTICIDAL COMPOSITIONS CONTAINING CERTAIN TETRAORGANOTIN COMPOUNDS AND METHOD FOR USING SAME

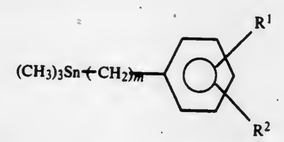
Melvin H. Gitlitz, Edison; John E. Engelhart, Westfield, both of N.J., and Carlos M. Mery, Bogota, Colombia, assignors to M&T Chemicals Inc., Woodbridge, N.J.

Division of Ser. No. 850,856, Nov. 11, 1977, Pat. No. 4,138,483. This application Dec. 6, 1978, Ser. No. 966,947

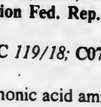
Int. Cl.[2] A01N *9/00, 9/36*

U.S. Cl. 424—288 **4 Claims**

1. A method for killing insects on useful plant crops by applying to said plant crops an insecticidally effective amount of a tetraorganotin compound of the formula



wherein m is 0 or 1, R^1 and R^2 are individually selected from the group consisting of hydrogen, fluorine, chlorine, bromine, iodine, phenyl, $-OR^3$, $-SR^3$, $-NR^4R^5$, $-N\oplus R^4R^5R^6X\ominus$,



$-CO_2H$, $-CO_2\ominus Y\oplus$, $-CO_2R^3$, $-SO_2OR^4$, $-SO_2R^4$, $-SO_3\ominus Y\oplus$, $-PO(OR^4)OR^5$, $-PO(R^4)R^5$ and $C\equiv N$, wherein R is alkyl and contains from 1 to 12 carbon atoms, R^4, R^5 and R^6 are individually selected from the group consisting of hydrogen and alkyl containing from 1 to 12 carbon atoms, $X\ominus$ is an anion selected from the group consisting of chloride, bromide, iodide, bisulfate, acetate and methyl sulfate and $Y\oplus$ is an alkali metal or ammonium.

4,212,886

STABILIZED BENACTYZINE HYDROCHLORIDE

Gerlof Homan, St. Louis, Mo., assignor to Survival Technology, Inc., Bethesda, Md.

Filed Nov. 1, 1978, Ser. No. 956,987

Int. Cl.[2] A61K *31/235*

U.S. Cl. 424—308 **10 Claims**

1. A pharmaceutical composition comprising a therapeutically effective amount of benactyzine hydrochloride dissolved in a solvent mixture consisting of propylene glycol and water, the propylene glycol being present in an amount of 30 to 50% by volume and sufficient to increase the stability of the benactyzine hydrochloride over that in water alone and the water being present in an amount of 70 to 50% by volume and sufficient to prevent dehydration of the benactyzine hydrochloride.

4,212,887

N-METHYL-N-(SULPHONIC ACID AMIDE-N'-SULPHENYL)-CARBAMIC ACID ESTERS

Alfons Hartmann, Beckingen; Engelbert Kühle, Bergisch-Gladbach; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

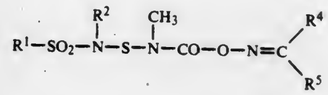
Division of Ser. No. 756,049, Dec. 30, 1976, Pat. No. 4,148,910. This application Oct. 2, 1978, Ser. No. 948,190

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1976, 2600981

Int. Cl.[2] A01N *9/16;* **C07C** *119/18;* **C07F** *9/02;* **A01N** *57/06*

U.S. Cl. 424—304 **8 Claims**

1. An N-methyl-N-(sulphonic acid amide-N'-sulphenyl)-carbamic acid ester of the formula



in which

R^1 is dialkylamino with 1 to 4 carbon atoms in each alkyl radical, phenyl or phenyl carrying at least one halogen, alkyl with 1 to 4 carbon atoms, nitro or trihalogenomethyl substituent,

R^2 is alkyl with 2 to 8 carbon atoms, cyclohexyl, phenyl or cycloalkyl or phenyl carrying at least one halogen, alkyl with 1 to 4 carbon atoms, nitro or trifluoromethyl substituent, and

R^4 and R^5 each independently is cyano or alkyl, alkoxy, alkylthio, alkoxycarbonyl, dialkylcarbamoyl or dialkoxyphosphoryl with up to 4 carbon atoms per alkyl moiety, or

R^4 and R^5, conjointly with the adjacent carbon atom, form an optionally methyl- or phenyl-substituted dithiolane, dithiane, oxathiolane or oxathiane ring.

4,212,888

ANILIDE DERIVATIVES AS ANTIDEPRESSANTS

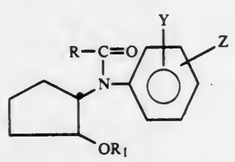
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 796,989, May 16, 1977, Pat. No. 4,128,663, which is a continuation-in-part of Ser. No. 777,599, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 746,191, Nov. 30, 1976, abandoned. This application Aug. 3, 1978, Ser. No. 930,688

Int. Cl.[2] A01K *31/24;* **C07C** *103/38*

U.S. Cl. 424—324 **8 Claims**

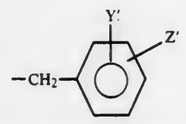
1. A compound of the formula



wherein the heavy dot (•) at the 1-position carbon atom of the cyclopentyl ring denotes the trans-configuration relative to the oxygen group (—OR_1) in the 2-position of the cyclopentyl ring;

R is C_3 to C_6-cycloalkyl;

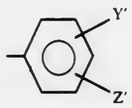
R_1 is hydrogen, C_1 to C_3-alkyl, C_3 to C_5-(allylic)alkenyl, the benzyl group



wherein Y′ and Z′ are as defined below, or the group



where R_2 is hydrogen, C_1 to C_3-alkyl, the benzyl group as above, or a phenyl group



wherein Y′ and Z′ are as defined hereinbelow; and each of Y and Z or Y′ and Z′ is selected from the group consisting of hydrogen, a halogen having an atomic number of from 9 to 35, trifluoromethyl, C_1 to C_3-alkyl and C_1 to C_3-alkyloxy, and Y, Z, or Y′ and Z′ are not necessarily the same at the same time.

4,212,889

METHOD FOR PROCESSING FISH CONTINUOUSLY AND SERIALLY THROUGH A PLURALITY OF VESSELS

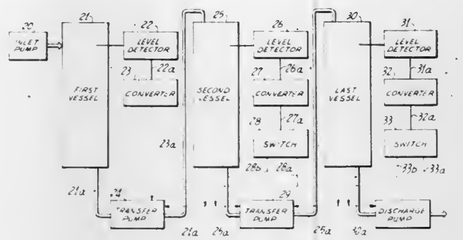
Manuel E. Fuentevilla, Cherry Hill, N.J., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Filed May 18, 1978, Ser. No. 907,335

Int. Cl.[2] A22C *25/00*

U.S. Cl. 426—7 **4 Claims**

1. A method for continuously processing fish to fish solubles and fish solids which comprises continuously passing a mixture of fish and processing reagents serially through a reaction system comprising a plurality of vessels, and controlling the flow of mixture from each vessel to the next, in a first mode of initial introduction of mixture into said system, by transferring the mixture from vessel to vessel in response to the level of mixture in the transferor vessel being above a predetermined level, subsequently changing the second and succeeding vessels to a second mode at the time of first discharge of product from the last vessel or at the time of cessation of introduction of mixture into the system, whichever is later, by transferring the mixture from vessel to vessel in response to the level of



mixture in the transferee vessel being below a predetermined level, and returning each vessel operating in the second mode to the first mode after the preceeding vessel has been emptied of mixture, wherein product can be continuously discharged from the last vessel of said reaction system at a steady rate and fish can be introduced into the first vessel of said reaction system while product is being discharged.

4,212,890

MANUFACTURE OF PELLETS FROM FEED MEALS

Hubert Tiefenbacher, Ludwigshafen; Friedrich Kraus, Mannheim, and Guenther Matthias, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,772

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2729917

Int. Cl.[2] A23K *1/22*

U.S. Cl. 426—69 **3 Claims**

1. A process for the manufacture of pellets of feed meals, comprising:

mixing feed meals, which have not been pretreated with urea, homogeneously with from 0.1 to 2% by weight of a pulverulent urea-formaldehyde resin obtaned by spray-drying a urea-formaldehyde solution said urea-formaldehyde resin having a molar ratio of urea to formaldehyde of from 1:1.6 to 1:2 and having a free formaldehyde content from 1 to 4% by weight with reference to the urea-formaldehyde resin, said free formaldehyde being included in said molar ratio, and without further addition of urea pelletizing the mixture.

4,212,891

METHOD AND APPARATUS FOR STORING FOODSTUFFS

Yuko Fujita, and Hisashi Kudo, both of Kyoto, Japan, assignors to Japan Storage Battery Company Limited, Kyoto, Japan

Filed Aug. 8, 1978, Ser. No. 932,075

Claims priority, application Japan, Sep. 13, 1977, 52/110651; Sep. 14, 1977, 52/110945; Nov. 22, 1977, 52/140356

Int. Cl.[2] A01K *43/00*

U.S. Cl. 426—231 **6 Claims**

1. A method of storing foods in a storage chamber comprising:

applying a D.C. voltage to an electrolytic cell in order to remove oxygen from the atmosphere in said storage chamber, said cell comprising an electrolyte, an oxygen generating anode, and a gas diffusion cathode in contact with the atmosphere in said storage chamber and capable of selectively subjecting oxygen in the atmosphere to electrolytic reduction at the cathode without substantially generating hydrogen; and

introducing air into said storage chamber in order to control the oxygen concentration in said storage chamber to a desired value less than the oxygen concentration in said air.

4,212,892

METHOD OF PREPARING A HIGH-PROTEIN SNACK FOOD

M. Helmy Chahine, and J. Alfred Brothers, both of Dartmouth, Canada, assignors to Nova Scotia Research Foundation Corporation, Canada

Filed Jun. 28, 1977, Ser. No. 810,724

Claims priority, application Canada, Apr. 13, 1977, 276098

Int. Cl.[2] A23J *3/00*

U.S. Cl. 426—289 **19 Claims**

1. A method of preparing a high-protein snack food, comprising admixing a plastic protein gel selected from the group consisting of fish gel, soybean gel, and mixtures of fish gel and soybean gel with about 17 to 50 percent by weight, of the gel, of dry starch or flour to obtain a homogeneous mass of gel-starch material, forming the material into desired shaped, said protein gel containing sufficient water to render said gel pliable without the need for the addition of any further water, and thereafter cooking the material, and wherein all steps prior to cooking are carried out at a temperature of 5° C. or less when fish gel is present.

4,212,893

ACIDIFIED WHOLE MILK BEVERAGE AND METHOD OF PREPARATION

Jungo Takahata, Machida, Japan, assignor to Honey Bee Corporation, Tokyo, Japan

Filed May 30, 1978, Ser. No. 910,286

Claims priority, application Japan, Feb. 10, 1978, 53-14348; Feb. 10, 1978, 53-14349

Int. Cl.[2] A23C *9/08, 9/10;* **A23L** *2/02*

U.S. Cl. 426—330.2 **13 Claims**

1. A method of manufacturing a stable, emulsified, acidified whole milk beverage which comprises

(1) adding an aqueous solution of locust bean gum to whole milk, the amount of locust bean gum being 0.3% by weight based on the total weight of said milk beverage, and agitating to form a whole milk emulsion;

(2) mixing said whole milk emulsion with at least one acidifying agent selected from the group consisting of fruit juice and organic acids acceptable for use with a beverage, at a temperature of 35° to 60° C., to form an acidified emulsion having a pH of between 3.4 and 3.6;

(3) stabilizing said acidified emulsion by stirring for 10 to 30 minutes;

(4) homogenizing said stabilized acidified emulsion of whole milk; and then

(5) sterilizing said stabilized, acidified emulsion of whole milk and placing it into a container, thereby producing a stable, emulsified whole milk, free from segregated curds, having a pH of from 3.4 to 3.6.

6. A stable, emulsified, acidified whole milk beverage free from segregated curds comprising whole milk, water, 0.3% by weight of locust bean gum, based on the total weight of the beverage, as a stabilizing agent, and an amount of at least one acidifying agent, selected from the group consisting of fruit juice and organic acids acceptable for use with beverages, sufficient to impart a pH of between 3.4 and 3.6 to said beverage.

4,212,894

SOFT-MOIST PET FOOD PROCESS

Roger W. Franzen, Jr., Pleasantville, N.Y.; Charles J. Cante, St. Anne, Ill.; Joseph J. Griffin, Bronx, N.Y.; Robert E. Schara, Norwalk, Conn., and Charles T. Stocker, Augusta, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,524

Int. Cl.[2] A23B *4/02, 4/14*

U.S. Cl. 426—332 **20 Claims**

1. An improved process for preparing a meat-containing, intermediate-moisture animal food comprising meaty materials, and sufficient amounts of preservatives to stabilize the final product against microbial deterioration, adapted to be packaged without resort to sterilization and stored for extended periods of time without refrigeration, said process comprising:

(a) preparing a flowable slurry of fresh, uncooked meaty material in a solution containing sufficient preservatives to maintain the meat free from microbial spoilage for a period of at least 5 days without refrigeration and having a moisture content in excess of 50% and an A_w in excess of 0.88;

(b) holding the slurry at a temperature effective to maintain homogeneity of the slurry including dispersed fat until needed for processing;

(c) pasteurizing the meaty material;

(d) shaping the pasteurized meaty material, including any additional nutritional ingredients and preservatives, into the desired form; and

(e) packaging the shaped animal food in a substantially moisture-impermeable package.

4,212,895

PRODUCTION OF ISO-α-ACID

Derek R. J. Laws, Bexleyheath; Nigel A. Bath, Kemsing; Colin S. Ennis, Chislehurst; John A. Pickett, Kimpton, and Alfred G. Wheldon, Galley Wood, all of England, assignors to Brewing Patents Limited, London, England

Filed May 3, 1977, Ser. No. 793,357

Claims priority, application United Kingdom, Oct. 13, 1976, 42613/76

Int. Cl.[2] C12C *3/00, 9/02*

U.S. Cl. 426—600 **2 Claims**

1. A method of making an iso-alpha-acid preparation, suitable for addition to beer without haze formation which method consists essentially of:

(i) extracting hops with liquid carbon dioxide at a temperature of from −5° C. to 20° C. and under a pressure of slightly greater than that of the corresponding vapor pressure of liquid carbon dioxide at the extraction temperature, thereby extracting at least a portion of the alpha-acids contained in the hops into the carbon dioxide;

(ii) evaporating off the liquid carbon dioxide under conditions such that the extract comes in contact only with equipment which is chemically inert to the extract, thereby recovering a primary hop extract of high purity consisting essentially of alpha-acids, beta-acids, hop oil and the following impurities: uncharacterized soft resins up to 3%; hard resins up to 0.5%; tannins up to 0.5%; chlorophyll up to 0.2%; fats and waxes up to 0.2%; fines up to 0.5% and inorganic salts up to 0.5%, the total impurities being up to 4% and said extract being yellow;

(iii) preparing an alkaline aqueous solution containing the extract; and

(iv) boiling this solution to convert substantially all the alpha-acids present therein to iso-alpha-acids.

4,212,896

MOLASSES-CONTAINING ANIMAL FEED HAVING RESILIENT STRUCTURE

Arthur V. Brown, Jr., Bessemer, and Richard J. Karrasch, Sterrett, both of Ala., assignors to The Jim Dandy Company, Birmingham, Ala.

Continuation-in-part of Ser. No. 853,540, Nov. 21, 1977, Pat. No. 4,162,336. This application May 10, 1978, Ser. No. 904,386
The portion of the term of this patent subsequent to Jul. 24, 1996, has been disclaimed.
Int. Cl.[2] A23K *1/02*
U.S. Cl. 426—623 3 Claims

1. a molasses-containing extruded food consisting essentially of

50% to 60% by weight of ground cereal grains,

15% to 35% by weight of a non-adhesive protein inclusive of the protein in said cereal grains,

7½ % to 20% by weight of inverted molasses, and

10% to 15% by weight of water,

said food having a microstructure, as seen by scanning electronmicroscopy at 200×, comprised in its greater part by convoluted layers and in its lesser part by inclusions in fissure-like spaces of elongated chamber-like cells, and being compressively deformable by more than 20% of its thickness without disintegration by crumbling and without loss of substantial elastic resiliency.

4,212,897

ADHERENT CONTROLLED RELEASE PESTICIDES USING ORGANOPOLYSILOXANES

Robert W. Young, New York, N.Y.; Samuel Prussin, Carmel, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to The Young, Prussin, MGK, J.V., New York, N.Y.

Continuation of Ser. No. 696,274, Jun. 15, 1976, abandoned.
This application Jul. 24, 1978, Ser. No. 927,630
Int. Cl.[2] A61K *31/695;* A01N *17/08*
U.S. Cl. 427—2 19 Claims

1. A composition consisting essentially of (a) an organopolysiloxane, soluble in organic solvents, and containing hydroxyl groups or functional groups which are hydrolyzable to hydroxyl groups, (b) a hydrolyzable titanium compound or a partial hydrolyzate thereof wherein said titanium compound is selected from the group consisting of tetraesters, tetraanhydrides, tetraamides and chelates of glycols, hydroxyacids, dicarboxylic acids, diketones, ketoesters and alkanolamines, and (c) an insecticide, said composition being capable of in situ formation of a polymeric coating.

4,212,898

PROCESS FOR THE PRODUCTION OF COATED FUEL PARTICLES FOR HIGH TEMPERATURE REACTORS

Milan Hrovat, Rodenbach; Hans Huschka, and Gerhard Spener, both of Hanau, all of Fed. Rep. of Germany, assignors to HOBEG Hochtemperaturreaktor-Brennelement GmbH, Hanau, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,967
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751132
Int. Cl.[2] C05B *35/51;* G21C *3/58;* C04B *41/06*
U.S. Cl. 427—6 10 Claims

1. In a process for the production of coated nuclear fuel particles by batchwise deposition of a plurality of pyrolytic carbon layers or a mixture of pyrolytic carbon and silicon carbide layers and wherein the first layer is a porous pyrolytic carbon layer and wherein the coated particles are subsequently classified the improvement comprising determining the average density of the classified coated particles, placing all of the classified coated particles in a heavy liquid having a density deviating not more than 20% from said average density and selecting those particles by hydrostatic weighing which have a geometric density which does not deviate from the average value by more than 20% and separating them from the other particles.

4,212,899

PROCESS FOR PRODUCING A COLORANT CONTAINING HIGHLIGHTED COATED SUBSTRATE

Leonard E. Hodakowski, and Richard D. Jenkinson, both of St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 854,258, Nov. 23, 1977, abandoned. This application Apr. 12, 1979, Ser. No. 29,215
Int. Cl.[2] B05D *3/06*
U.S. Cl. 427—44 11 Claims

1. A process for producing a colorant-containing highlighted coated substrate which comprises the steps of:

a. embossing the surface of a substrate to produce on said substrate surface a recessed impression;

b. coating the entire surface of the embossed substrate with a radiation curable fluid coating composition comprising from 20 weight percent to 80 weight percent of radiation reactive oligomer or resin, from 0 weight percent to 50 weight percent of a polyfunctional monomeric acrylate or methacrylate crosslinking agent and from 0.01 to about 15 weight percent of colorant, such that the coating composition follows the embossed surface, said composition being capable of curing to form a hard layer adhering to said substrate;

c. exposing the thus-coated substrate to ionizing or non-ionizing radiation to initiate the desired radiation cure of the coating;

d. continuing to irradiate said coated substrate until the entire coating hardens; and

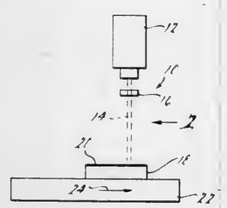
e. recovering a coated substrate on which the coating follows the embossed pattern and in which the recessed areas are highlighted with the colorant.

4,212,900

SURFACE ALLOYING METHOD AND APPARATUS USING HIGH ENERGY BEAM

Richard A. Serlin, 10 Barbour La., Bloomfield Hills, Mich. 48013

Continuation of Ser. No. 792,344, Apr. 29, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,241
Int. Cl.[2] B05D *3/06*
U.S. Cl. 427—53.1 49 Claims



1. A method for forming an alloy on the surface of a substrate at ambient temperature comprising the steps of:

placing a solidified material on the surface of said substrate while it is substantially at ambient temperature, said material being suitable for alloying with said substrate;

directing a beam of high intensity electro-magnetic energy from a source thereof at said material for a predetermined short period of time, the intensity of said high intensity beam and the duration of said predetermined short period of time being selected to: (1) substantially raise the temperature of said material above said ambient temperature solely by virtue of the energy supplied by said high intensity beam so as to melt said material during said predetermined short period of time, (2) cause alloying of said material with said substrate in a surface zone thereof, and (3) limit the amount of thermal energy transmitted to said substrate to prevent substantial elevation of the temperature of said substrate below said surface zone and to allow rapid solidification of said material thereafter due to the dissipation of thermal energy into said substrate.

4,212,901

METHOD FOR TREATING A SUBSTRATE WITH A RADIATION AND CHEMICALLY CURABLE COATING COMPOSITION

Abraham van Neerbos, Tholen, and Adrianus C. J. van Oosterhout, Roosendaal, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Jul. 10, 1978, Ser. No. 923,353
Claims priority, application Netherlands, Jul. 8, 1977, 7707669
Int. Cl.[2] B05D *3/06*
U.S. Cl. 427—53.1 7 Claims

1. A method for treating a substrate with a radiation curable coating composition based on a polyester resin esterified with acrylic acid and/or methacrylic acid, a vinyl compound and a photoinitiator, the coating composition being dried under the influence of light having a wave length of 200 to 600 nm, characterized in that the polyester resin esterified with meth(acrylic) acid has a hydroxyl number in the range of 50 to 250 and an ethylenic unsaturation equivalent weight in the range of 200 to 10,000 grams, and in that the coating composition also contains a polyisocyanate in an amount of 0.7 to 1.3 equivalents of isocyanate per equivalent of hydroxyl contained in the composition.

7. A method for treating a substrate with a radiation-curable coating composition comprising

applying to said substrate a coating composition comprising (1) a polyester resin esterified with acrylic acid and/or methacrylic acid and having an hydroxyl number in the range of 50 to 250 and an ethylenic unsaturation equivalent weight in the range of 200 to 10,000 grams, (2) a polyisocyanate present in an amount of about 0.7 to about 1.3 equivalents of isocyanate per equivalent of hydroxyl contained in said composition, (3) a vinyl compound, and (4) a photoinitiator,

initially curing the applied coating composition under the influence of light having a wave length of 200 to 600 nm, and

completing the curing by reacting the isocyanate groups of said polyisocyanate with the hydroxyl groups of said polyester resin.

4,212,902

METHOD FOR ALUMINIZING IMAGE DISPLAY FACEPLATES

Hugo A. Lopez, Glendale Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Division of Ser. No. 935,032, Aug. 18, 1978. This application Mar. 9, 1979, Ser. No. 19,214
Int. Cl.[2] B05D *5/12;* H01J *31/20;* B05D *3/10*
U.S. Cl. 427—64 2 Claims

1. In a method for aluminizing an image-display faceplate having a phosphor deposit therein, the method being the type including:

(a) applying an organic film on said faceplate,

(b) applying an aluminum film to said organic film, and

(c) baking out the organic film; an improvement which comprises:

(d) rewetting said faceplate prior to step (a) with a solution comprising:

(1) an aqueous colloidal dispersion of silica particles, said particles comprising about 0.5 to 1.5 weight-percent;

(2) a nonionic surfactant comprising about 0.001 to 0.004 weight-percent; and,

(3) an acidic pH-lowering substance in an amount sufficient to lower pH to about 6.2 to 7.8.

4,212,903

IMPROVING THE MAGNETIC PROPERTIES OF GAMMA-IRON (III) OXIDE

Georg Schnell; Fritz Hammon, both of Ludwigshafen, and Manfred Ohlinger, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 490,619, Jul. 22, 1974, abandoned. This application Feb. 22, 1977, Ser. No. 770,989
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1972, 2254810
Int. Cl.[2] H01F *10/00;* B05D *5/12*
U.S. Cl. 427—127 5 Claims

1. A process for improving the magnetic properties of gamma-iron(III) oxide pigments which comprises:

applying to said gamma-iron(III) oxide pigments a basic compound selected from the group consisting of alkali metal hydroxides and alkaline earth metal hydroxides to provide a pigment crystal surface having a pH above 8, which basic compounds can be removed by elution of the said pigments after they have been heated at a temperature of from 400° to 700° C., and

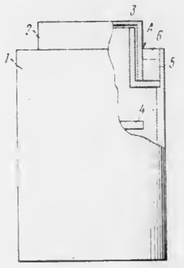
heating said pigments at a temperature of from 400° to 700° C., said surface crystal pH remaining above 8 throughout said heating step, whereby the magnetic properties of said pigments are improved.

4,212,904

METHOD FOR TREATING ITEMS FROM MAGNETICALLY SOFT ALLOYS

Georgy N. Dubinin, Lazovsky pereulok, 4, kv. 35; Vladimir F. Rybkin, Leninsky prospekt, 37a, kv. 208; Mira P. Petrova, I Zborovsky pereulok, 15, kv. 7; Elizaveta L. Avrukh, ulitsa Chusovskaya, 10, korpus 2, kv. 35; Viktor V. Khramtsov, Schelkovskoe shosse, 81, kv. 90; Alexandr D. Zhivotchenko, ulitsa Kosmodemianskikh, 34a, kv. 39, all of Moscow, and Viktor F. Kuznetsov, ultisa Karpinskogo, 36, korpus 1, kv. 77, Leningrad, all of U.S.S.R.

Filed Jun. 4, 1979, Ser. No. 44,971
Int. Cl.[2] C23C *9/02*
U.S. Cl. 427—127 4 Claims



1. A method for treating articles made from magnetically soft alloys, comprising the steps of: chromizing the surface of the articles inside a powder chromizing mixture at a temperature of 800°–1200° C. and cooling subsequently the articles at a rate not exceeding that of recrystallization of a metal of said articles and applying diffusion processes of saturation of said articles, said articles being cooled at a rate close to that of diffusion transformations and of formation of magnetic structure in metal of said articles.

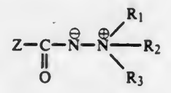
4,212,905

METHOD OF COATING SUPPORTS USING ADDITION COPOLYMERS OF AMINIMIDES

John C. M. Tsibris, Gainesville, Fla., assignor to Board of Regents, for and on behalf of the University of Florida, Tallahassee, Fla.

Division of Ser. No. 701,410, Jun. 30, 1976, Pat. No. 4,162,355.
This application Jun. 20, 1978, Ser. No. 917,276
Int. Cl.[2] C08F *4/04, 14/02;* B05D *7/00;* C03C *17/32*
U.S. Cl. 427—221 5 Claims

1. A method of coating a support with an addition copolymer of (1) at least one aminimide of the formula:



wherein

R_1 and R_2 are the same or different and represent lower alkyl;

R_3 represents an organic group; and

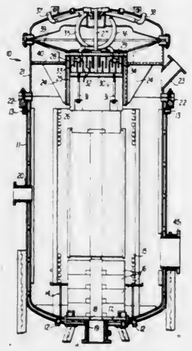
Z represents the residue of a polymerizable vinyl compound, and (2) a vinyl compound having at least one pendant primary halomethyl group, said polymer having coupled thereto by reaction with a portion of the pendant primary halomethyl groups an amine ligand which affords sites for binding in affinity chromatography, comprising contacting a support with a solvent solution of the polymer, removing said solvent and contacting said coated support with a non-solvent for the final polymer containing a primary amine having a pendant hydrophilic group, whereby said amine reacts with the remainder of said primary halomethyl groups and enhances the bond between said polymer and said support.

4,212,906

METHOD FOR THE PRODUCTION OF CARBON/CARBON COMPOSITE MATERIAL

Ronald Fisher, and Norman Smith, both of Rugby, England, assignors to Dunlop Limited, London, England

Division of Ser. No. 822,824, Aug. 8, 1977, Pat. No. 4,134,360.
This application Sep. 19, 1978, Ser. No. 943,854
Claims priority, application United Kingdom, Aug. 11, 1976, 33339/76
Int. Cl.[2] B05D *3/12*
U.S. Cl. 427—237 4 Claims



1. A method for the deposition of carbon on a fibrous compressible substrate to produce an all-carbon composite article, the method comprising locating the fibrous substrate in a furnace provided interiorly with a ram, bringing the ram into contact with the substrate so that the substrate is subjected to pressure by the ram and cracking a hydrocarbon gas in the furnace to deposit carbon on the pressurised substrate.

4,212,907

PRE-TREATMENT FOR MOLYBDENUM OR MOLYBDENUM-RICH ALLOY ARTICLES TO BE PLATED

Ralph R. Wright, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 22, 1979, Ser. No. 22,897
Int. Cl.[2] C25D *5/34*
U.S. Cl. 427—309 8 Claims

1. A pre-treatment for a surface which is to be provided with a metallic plating deposited from solution, said surface being a material selected from molybdenum and molybdenum-rich alloys, comprising:

anodizing said surface in aqueous amino-trimethylenephosphonic acid solution to form thereon a continuous gray molybdenum oxide film, and

removing said film.

8. In the method of electrolessly nickel plating a surface of a metallic material selected from the group consisting of molybdenum and molybdenum-rich alloys, said method including the steps of rendering said surface catalytic for the aqueous-bath reduction of nickel cations to metallic nickel and the corresponding oxidation of hypophosphite anions to phosphite anions and then electrolessly plating the resulting catalytic surface with nickel from an aqueous nickel cation--hypophosphite anion bath, the improvement comprising preceding said rendering step with the following sequence of operations:

electro-etching said surface in chromic acid--nitric acid solution at a current density in the range of from about 0.5 to 1.5 amperes/in^2 to provide it with a film-free matte finish, anodizing the electro-etched surface to form thereon a continuous gray oxide film, and

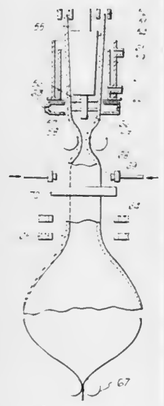
removing said film.

4,212,908

APPARATUS AND METHOD FOR PRODUCING COATED FILM

Brian N. Hendy, Welwyn, England, and John M. Ford, Dumfries, Scotland, assignors to Imperical Chemical Industries Limited, London, England

Filed Nov. 6, 1978, Ser. No. 958,937
Claims priority, application United Kingdom, Nov. 28, 1977, 49346/77
Int. Cl.[2] B05D *3/12*
U.S. Cl. 427—355 10 Claims



7. A method of producing a coated film by depositing a coating medium on the surface of an axially moving cooled thermoplastic polymeric tubular extrudate and reheating and inflating the coated extrudate to form an oriented, coated tubular film comprising the step of substantially circumferentially spreading the deposited coating medium onto the surface of the extrudate, prior to reheating and inflating, by successive contact of the deposited coating medium with each of a plurality of spreading members resiliently biased into engagement with said surface and rotating around the periphery of the extrudate in a common plane substantially normal to the longitudinal axis of said tubular extrudate.

4,212,909

FIREPROOF BARRIER COATING COMPOSITIONS

William F. Brown, Wausau, Wis., assignor to Wausau Homes, Inc., Wausau, Wis.

Division of Ser. No. 949,660, Oct. 10, 1978. This application Jun. 18, 1979, Ser. No. 49,292
Int. Cl.[2] C08L *61/24;* B05D *3/02*
U.S. Cl. 427—393.5 4 Claims

1. A method for fireproofing a flammable substrate comprising the steps of applying to the exposable surfaces of the substrate a continuous coating of a composition comprising an aqueous dispersion containing vinyl acetate, titanium dioxide, pumice, zinc oxide, sodium silicate, hydrated magnesium aluminum silicate, a comminuted high temperature fluorocarbon resin, a furan resin, comminuted charcoal, and a dispersing agent, and allowing said coating to cure to a hardened state.

4,212,910

PET BOTTLE ASSEMBLIES PRODUCED BY USING A HOT MELT ADHESIVE COMPRISING A BLOCK COPOLYMER AND A TACKIFYING RESIN

Thomas R. Taylor, South Somerville, and Paul P. Puletti, Glen Gardner, both of N.J., assignors to National Starch & Chemical Corporation, Bridgewater, N.J.

Filed Apr. 30, 1979, Ser. No. 34,100
Int. Cl.[2] B65D *11/04, 11/22;* C09J *3/14, 5/00*
U.S. Cl. 428—35 11 Claims

1. A PET bottle assembly comprising a PET bottle which has been blow-molded and joined to a HDPE base cup with a hot melt adhesive which consists essentially of a blend of: (1) a block copolymer selected from the class consisting of: (a) an A-B-A block copolymer where A is a monovinyl aromatic hydrocarbon and B is either a conjugated diene or a rubbery mono-olefin and (b) a teleblock copolymer comprising molecules having at least three branches radially branching out from a central hub, each said branch having polystyrene terminal blocks and a butadiene segment in the center; (2) at least one tackifying resin which serves to extend the adhesive properties of the system; (3) at least one stabilizer; and (4) at least one wax or oil diluent.

4,212,911

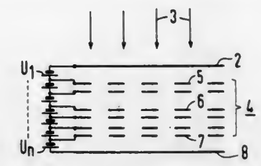
PHOTOCATHODE FOR ELECTRORADIOGRAPHIC AND ELECTROFLUOROSCOPIC APPARATUS AND METHOD FOR MANUFACTURING SAME

Rudolf Bäuerlein, Erlangen; Dieter Uhl, Uttenreuth; Heinrich Diepers, Erlangen, and Karl-Heinz Jablonski, Ebermannstadt, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 23, 1978, Ser. No. 889,524
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715483
Int. Cl.[2] H01J *39/00, 43/00;* B32B *3/10;* B05D *3/06*
U.S. Cl. 428—131 7 Claims

1. A photocathode for electroradiographic and electrofluoroscopic apparatus of the ionography type, for absorption of x-rays using the external x-ray photo effect, comprising:

a stack of more than three foils perforated by an array of holes, said foils made of a material with an atomic number of a value on the order of the value of the atomic number of gold, the holes of each of said foils in said stack taking up at least 30% of the total area of the foil, with the space in between adjacent foils being between 5 μm and 5 mm, the thickness of each perforated foil being smaller than 10 times the range of the photoelectrons generated in the foil material and the total thickness of the stack being at least twice the range of the quanta of the incident radiation in



the foil material for the radiation with which the photocathode is to be used.

4,212,912

ADHESION IMPARTING LAYER OF ACRYLONITRILE-BUTADIENE COPOLYMER ON A BASE MATERIAL FOR PRINTED CIRCUITS

Johann Wartusch, Vellmar, and Helmut Fasbender, Kassel, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main and AEG Isolier- und Kunststoff GmbH, Kassel-Waldau, both of, Fed. Rep. of Germany

Filed Mar. 15, 1977, Ser. No. 777,700
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 2612438
Int. Cl.[2] C23C *3/02*
U.S. Cl. 428—209 7 Claims

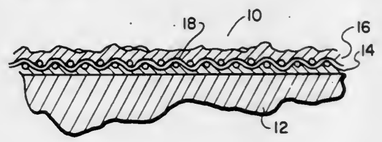
1. In the combination of an insulating material, serving as a base material in the production of a printed circuit board, the base material being comprised of an epoxy resin, or of a phenolic resin, an adhesion imparting layer thereon, and a copper metallic layer on the adhesion imparting layer, the improvement wherein the adhesion imparting layer consists essentially of an elastomer of an acrylonitrile-butadiene copolymer crosslinked with an organic peroxide.

4,212,913

ROOF COATING SYSTEM

Jerry P. Auten, Rte. 6, Box 752, Charlotte, N.C. 28204

Filed May 17, 1979, Ser. No. 39,805
Int. Cl.[2] B32B *7/00*
U.S. Cl. 428—251 12 Claims



1. A roof coating system of high tensile strength and resilience comprising an underlayer of coating material, an intermediate layer of woven fiber glass fabric, and an overlayer of said coating material bonded to said underlayer with said intermediate fiber glass fabric layer embedded between said underlayer and overlayer, said woven fiber glass fabric including strands of bulked yarn in a relatively loose weave, and said coating material comprising an acrylic resin emulsion.

4,212,914

ELECTROINSULATING MATERIAL

Leonty T. Ponomareva; Nina V. Ponomareva, both of Ozerny pereulok, 2, kv. 9; Sergei V. Vasiliev, ulitsa Stoikosti, 2/11, kv. 93, all of Leningrad; Olga V. Maximikhina, Proletarskaya ulitsa, 47, kv. 2, Petrokrepost Leningradskoi; Nina M. Golopolosova, ulitsa Sovetskaya, 48, Tosno Leningradskoi, and Ljudmila I. Belkina, ulitsa Kalyaeva, 14, kv. 25, Leningrad, all of U.S.S.R.

Continuation of Ser. No. 522,250, Nov. 8, 1974, abandoned. This application May 23, 1978, Ser. No. 908,786

Int. Cl.[2] **H01B** *3/04, 3/44*

U.S. Cl. 428—268 **8 Claims**

1. An electroinsulating material consisting essentially of, in percent by weight,

fluorine rubber	20–87
resin	1–10
synthetic rubber	0–30
cross-linking agent	0.1–10
mica	10–60
filler	at least 0.9 and representing the balance

wherein said fluorine rubber is a copolymer of vinylidene fluoride; said resin is a low molecular weight sticky resin selected from the group consisting of epoxy resins based on diphenylolpropane, urea-formaldehyde resins, phenol-formaldehyde resins, aminophenol resins, melamine-formaldehyde resins, urethane resins, xylenol resins, coumarone resins and indene-coumarone resins; said cross-linking agent is a cross-linking agent for said fluorine rubber; the mica consists of particles having a thickness of 1–10 microns;

and said filler is a mineral filler which acts as a distribution agent for said mica.

3. A composite formed by dissolving the electroinsulating material of claim **1** in a solvent and applying said material onto a base as a calibrated layer.

4,212,915

MAT MATERIAL OF MELT-SPUN POLYMERIC FILAMENTS HAVING DISCONTINUOUS CAVITIES

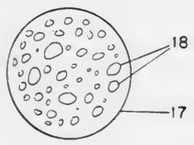
Rolf Vollbrecht, Obernburg, and Karl Ostertag, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 738,985, Nov. 4, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,715

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2550070

Int. Cl.[2] **D04H** *1/58*

U.S. Cl. 428—288 **8 Claims**



1. A mat material containing non-woven melt-spun polymeric filaments of which at least some intersect each other and are fused together at least at some of the points of intersection, said filaments having a diameter of from 0.2 to 3 mm. and a plurality of adjacent, separate, uniform, discontinuous cavities enclosed in an external shell, said cavities comprising hollow spaces having between 20 and 80 volume % of each filament.

4,212,916

DENSE, FLEXIBLE COMPOSITE SHEET MATERIAL

Minoru Tanaka, Gifu; Kenkichi Yagi, Kyoto, and Shunji Mizuguchi, Gifu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jan. 19, 1979, Ser. No. 4,680

Claims priority, application Japan, Feb. 13, 1978, 53-14047

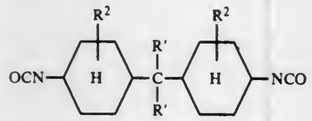
Int. Cl.[2] **B32B** *27/40*

U.S. Cl. 428—290 **23 Claims**

1. A composite sheet material comprising a fibrous sheet which is impregnated with a polyurethane elastomer, wherein said polyurethane elastomer comprises the reaction product of

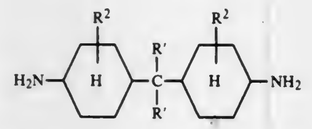
(A) a polymeric diol having a molecular weight of about 800–4000;

(B) an organic diisocyanate having the formula (I):

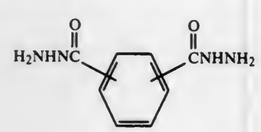


wherein R′ and R^2 are hydrogen or an alkyl group having 1–5 carbon atoms, respectively, and

(C) a chain extender comprising 40–95 mole % organic diamine having the formula (II):



wherein R′ and R^2 are hydrogen or an alkyl group having 1–5 carbon atoms, respectively, and 60–5 mole % phthalic acid dihydrazide having the formula (III):



4,212,917

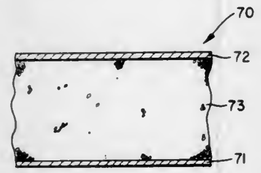
POLYISOCYANURATE FOAM LAMINATE

Michael J. Skowronski, Clearwater, and Alberto DeLeon, St. Petersburg, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Jun. 1, 1978, Ser. No. 911,502

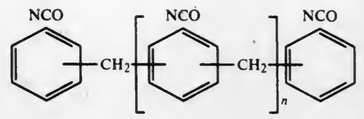
Int. Cl.[2] **B32B** *3/26, 5/20, 31/14*

U.S. Cl. 428—310 **15 Claims**



12. A laminate comprising at least one facing sheet adhered to a polyisocyanurate foam which is the reaction product obtained by reacting:

A. a polymethylene polyphenylisocyanate which is a mixture of polymethylene polyphenylisocyanates having the formula:



wherein the mixture has:

(a) a functionality of 2.1 to 3.2,

(b) an equivalent weight between 120 and 180,

(c) a viscosity at 25° between 150 and 2500 centipoises, and

(d) n is an integer from 0 to 8 inclusive; and

B. a polyol which is a member selected from the group consisting of ethoxylated trimethylol propane, ethoxylated trimethylol ethane, ethoxylated pentaerythritol and ethoxylated glycerin and has an equivalent weight of 75 to 125; in the presence of

C. a catalyst that induces

(a) reaction of the isocyanate with the polyol and

(b) isocyanurate ring formation,

D. a blowing agent, and

E. a surfactant

wherein:

the equivalent ratio of A:B is 2:1 to 6:1,

C comprises from 1 to 5 weight percent of the composition,

D comprises 5 to 20 weight percent of the composition, and

E comprises 0.1 to 2 weight percent of the composition.

13. The laminate of claim **12** wherein:

A. the at least one facing sheet is a member selected from the group consisting of steel, aluminum, plastic, asbestos and felt,

B. the polyol is a member selected from the group consisting of ethoxylated trimethylol propane, ethoxylated pentaerythritol and ethoxylated glycerin,

C. the catalyst is a mixture of 2,4,6-tris-(dimethylaminomethyl)phenol and potassium octoate,

D. the blowing agent is trichlorofluoromethane, and

E. the surfactant is a silicone surfactant.

4,212,918

NONTACKY SHAPED OBJECTS FROM POLYMER LATICES

Mark J. Marquisee, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 700,965, Jun. 29, 1976, abandoned. This application Sep. 30, 1977, Ser. No. 838,365

Int. Cl.[2] **B32B** *5/18*

U.S. Cl. 428—403 **11 Claims**



1. A washed and dried nontacky, elastomeric shaped object which comprises a normally tacky, uncured elastomer containing, based on the total weight of the shaped object, less than 3% by weight of water soluble material and less than 1% by weight of volatile material, and having 0.05 to 3% by weight of an integral, porous coating of a water insoluble, hydrous, inorganic oxide selected from the group consisting of silicic acid polymers, aluminic acid polymers, silicic acid-aluminic acid copolymers, and mixtures thereof, substantially all of said inorganic oxide being present as a coating, and said shaped object having a minimum dimension of 0.01 to 10 millimeters.

4,212,919

STRENGTHENED POLYCHROMATIC GLASSES

Syed N. Hoda, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,937

Int. Cl.[2] **C03C** *21/00, 3/20, 3/04*

U.S. Cl. 428—410 **5 Claims**

1. Polychromatic glasses which, after chemical strengthening, exhibit a surface compression layer having a depth of at least 0.002", **a maximum central tension of at least** 0.7 kg/mm^2, and a modulus of rupture of at least approximately 30,000 psi consisting essentially, by weight on the oxide basis as calculated from the batch, of about 11–18% Na_2O, 60–70% SiO_2, 2–12% ZrO_2, 0.005–0.3% Ag, 1–4% F, and an amount of at least one halide selected from the group of Cl, Br, and I sufficient to react stoichiometrically with the Ag, but not more than about 3%.

4,212,920

FIREPROOFING COMPOSITION COMPRISING SODIUM SILICATE, GUM ARABIC OR OTHER GUM, AND A WATER DISPERSIBLE POLYMER SELECTED FROM THE CLASS OF EPOXY POLYMERS, NATURAL LATICES AND SYNTHETIC LATICES

Winthrop W. Seamans, 56 Hood St., Hayward, Calif. 94541

Filed Jul. 10, 1978, Ser. No. 922,834

Int. Cl.[2] **B32B** *27/38;* **C08L** *5/04*

U.S. Cl. 428—413 **15 Claims**

1. A fire retardant composition useful for surface coating to impart fire resistance to a wood substrate to which the composition is applied, said composition comprising (a) an aqueous solution of alkali metal silicate, (b) a substance selected from the class of natural gums, synthetic gums and water soluble alginates and (c) a water-insoluble, water-dispersible polymer selected from the class of epoxy polymers, natural latices and synthetic latices, said silicate substantially exceeding the amount of components (b) and (c), the combined proportions of (a) and (b) being sufficient to impart fire retardant characteristics to the composition; the amount of (c) being sufficient to impart moisture resistance to wood coated by the composition.

7. Wood coated with the composition of claim 1.

4,212,921

NON TOXIC ACTIVATORS FOR ADHESIVE COMPOSITIONS

Leon E. Wolinski, Cheektowaga, and Peter D. Berezuk, Kenmore, both of N.Y., assignors to Pratt & Lambert, Inc., Buffalo, N.Y.

Division of Ser. No. 858,702, Dec. 8, 1977, Pat. No. 4,155,950, and a continuation-in-part of Ser. No. 705,333, Jul. 14, 1976, Pat. No. 4,080,238, and a continuation-in-part of Ser. No. 763,145, Jan. 27, 1977, Pat. No. 4,126,504. This application Apr. 2, 1979, Ser. No. 26,293

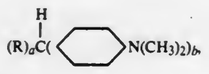
Int. Cl.[2] **B32B** *27/38;* **C08F** *283/04*

U.S. Cl. 428—414 **6 Claims**

1. A coated article comprising a substrate having coated thereon an activatable curable adhesive comprising a non-reactive thermoplastic polyurethane resin or a non-reactive elastomer dissolved in a non-acid methacrylic or acrylic monomer, and a methacrylic acrylic acid monomer, said monomers being essentially devoid of peroxy catalyst activation capability, said solution containing an effective amount of a peroxy catalyst, the said adhesive being activatable by contact with a peroxy catalyst activator; the improvement comprising having in

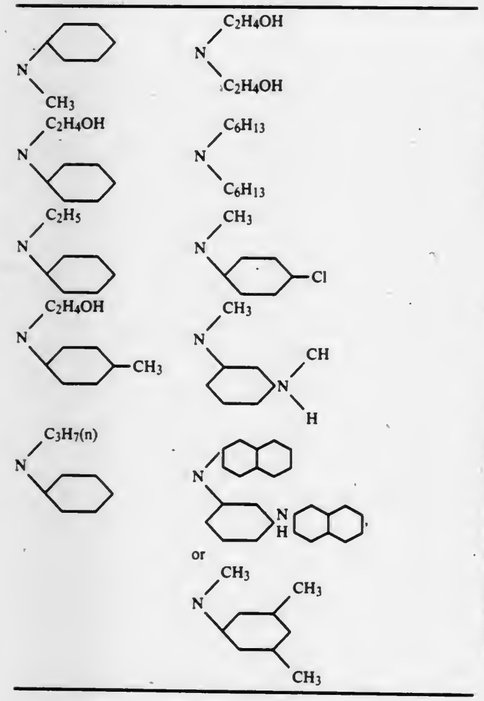
addition in said adhesive a stable, non-toxic, peroxy catalyst activator soluble in the adhesive solution, to activate the peroxy catalyst said activator being selected from the group consisting of:

(a)



R=H or phenyl, a=0 or 1, a+b=3 and when R is phenyl, a is 1,

(b) $CH_2=CH(CH_3)COOCH_2CH(OH)CH_2A$, which is different from the other acrylic or methacrylic monomers in the adhesive, wherein A is one of:



(c) homopolymers of the compounds of (b)

(d) a copolymer of at least 25% by weight of a compound of (b) with a member selected from the group consisting of methyl methacrylate, methyl acrylate, 2-ethyl hexyl acrylate, or butyl acrylate, and

(e) the reaction products of epoxy polymers with secondary amines selected from the group consisting of N-methyl aniline, N-methyl-p-toluidine, N-β-hydroxy ethyl aniline, N-ethyl aniline, N-n-propyl aniline, N-β-hydroxy ethyl-p-toluidine, diethanol amine, dihexyl amine, p-chloro-N-methylaniline, N,N'-dimethyl-p-phenylene diamine, N,N'-di-2-naphthyl-p-phenylene diamine and N-methyl-3,5-xylidene, wherein from 0.25 to one amino equivalent weight is reacted with one oxirane equivalent weight.

4,212,922

POLY(ARYLENE SULFIDE) RESIN COATING

Dale O. Tieszen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 2, 1978, Ser. No. 947,804
Int. Cl.[2] B32B *27/28, 15/18, 27/08*
U.S. Cl. 428—419 **14 Claims**

1. A coated article comprising:

a metal substrate,

a cured first coating adhered to said metal substrate comprising poly(arylene sulfide) and an effective amount ranging from about 5 to 70 weight percent of said first coating of manganese dioxide suitable for improving adhesion of poly(arylene sulfide) to said substrate, and

a cured finish coating comprising poly(arylene sulfide) applied to said first coating.

4,212,923

LAMINATE USING A POLY(ARYLENE SULFIDE)-POLYTETRAFLUOROETHYLENE ADHESIVE

Donnie G. Brady, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 560,394, Mar. 20, 1975, Pat. No. 4,157,273.
This application Feb. 6, 1979, Ser. No. 9,617
Int. Cl.[2] C09J *5/04*
U.S. Cl. 428—419 **10 Claims**

1. A laminate comprising a first material bonded to a second material by an intermediate adhesive comprising a blend of a poly(arylene sulfide) resin and polytetrafluoroethylene wherein said first and second bonded materials are materials which can be heated above the fusion temperature of said poly(arylene sulfide) without substantial deformation.

4,212,924

NOVEL WHITEWARE BODIES AND ENERGY EFFICIENT PROCESS FOR THEIR PRODUCTION

James S. Reed, and Roger H. Moore, both of Alfred, N.Y., assignors to Alfred University Research Foundation, Alfred, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,177
Int. Cl.[2] B32B *17/06;* **C03C** *9/00*
U.S. Cl. 428—428 **18 Claims**

15. A glazed ceramic whiteware body having a glaze composition on a ceramic whiteware body, said body consisting essentially of from about 20% by weight to about 50% by weight of a matrix of an alkali phosphate frit, said alkali phosphate frit having a softening point below the quartz inversion temperature of 573° C., and from about 50% by weight to about 80% by weight of a particulate quartz filler dispersed in said matrix, and said glaze composition comprising an alkali phosphate frit and a sufficient amount of a modifying material to make the thermal expansion coefficient of the glaze compatible with the thermal expansion coefficient of the whiteware body.

4,212,925

HEAT INSULATING ARTICLES

Günter Kratel; Günter Stohr, both of Durach, and Hans Katzer, Munich, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 1, 1978, Ser. No. 965,721
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754517
Int. Cl.[2] B32 *9/04;* **B05D** *3/02*
U.S. Cl. 428—447 **5 Claims**

1. A process for improving heat insulating elements which are prepared via a dry process from silicon dioxide having a surface area of at least 50 m^2/g and opacifiers which comprises treating the surface of the heat insulating elements with at least 1 organosilicon compound containing from 1 to 4 silicon atoms selected from the group consisting of hexamethylcyclotrisiloxane, octamethylcyclotetrasiloxane and silicon compounds of the formulas

$$(R_3Si)_aZ \text{ and } R_a SiZ'_{4-a}$$

in which R is selected from the group consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, Z is selected from the group consisting of hydrogen, halogen, OH, —OR', —NR'X, —ONR'$_2$, —SR', —OOCR', —O—, —NX and —S—, Z' is selected from the group consisting of hydrogen, halogen, —OH, —OR', —NR'X, —ONR'$_2$, —SR' and —OOCR', R' is a radical having from 1 to 4 carbon atoms, X is selected from the groups consisting of hydrogen and R' and a is 1 or 2, and thereafter removing the excess organosilicon compound employed in the treatment of the elements.

4,212,926

PARTS SUBJECT TO WEAR WHICH COME INTO CONTACT WITH METAL MELTS

Günter Gelsdorf, Nordenstadt; Hermann Leupold, Walluf, and Franz Schellberg, Wiesbaden-Frauenstein, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 13, 1976, Ser. No. 714,196
Claims priority, application Fed. Rep. of Germany, May 31, 1976, 2624299
Int. Cl.[2] C04B *7/32, 7/34, 9/00;* **B32B** *15/04*
U.S. Cl. 428—472 **8 Claims**

1. Parts subject to wear which come into contact with a metal melt, said parts comprising means for contacting a steel melt and withstanding stresses caused by said steel melt, said means including a hydraulically setting high-alumina refractory concrete, said refractory concrete having following physical properties:

(a) a compression strength of at least 400 kp/cm^2 as measured cold on a dried crude product;

(b) a compression strength of at least 700 kp/cm^2 after firing at 1400° C.; and

(c) a dimensional stability of at least ±0.2% at said 1400° C.

4,212,927

PROCESS FOR PREPARING ARTIFICIAL LEATHER COMPOSITE

Daniel Gomez, and Giampaolo Bartoli, both of Le Guillermet, France, assignors to Arjomari-Prioux, France

Filed Dec. 12, 1977, Ser. No. 859,871
Claims priority, application France, Dec. 17, 1976, 76 38197
Int. Cl.[2] B05D *1/18, 3/02;* **B32B** *23/08;* **B32D** *27/10*
U.S. Cl. 428—512 **13 Claims**

1. A process for the preparation of an artificial leather composite material for decoration, coating and shaping, in which a support comprising cellulosic fibres is treated to a sequential series of baths, each comprising one of either an aqueous dispersion or a suspension of a macromolecular substance, said process comprising the successive steps of:

(a) subjecting the fibrous support to an aqueous dispersion bath of at least one binding agent thereby introducing said at least one binding agent into said fibrous support;

(b) impregnating the fibrous support by subjecting same to an aqueous bath containing at least one macromolecular substance chosen from the group consisting of acrylic polymers and copolymers,

(c) coating the fibrous support by subjecting same to an aqueous bath containing at least one macromolecular substance chosen from the group consisting of vinylic and acrylic polymers and copolymers, to form an intermediate layer;

(d) coating the coated fibrous support by subjecting same to an aqueous bath containing at least one macromolecular substance chosen from the group consisting of vinylic and acrylic polyers and copolymers and at least one coalescence agent, to form a finishing layer;

wherein the ratio of the introduced said at least one binding agent to the fibrous support in step (a) is in the range of between 5 to 30 parts by weight of said at least one binding agent to 100 parts by weight of said fibrous support;

the ratio of the impregnated at least one macromolecular substance to the fibrous support in step (b) is in the range of between 5 to 25 parts by weight of the impregnated macromolecular substance to 100 parts by weight of the fibrous support;

the ratio of the coated macromolecular substance to the fibrous support in step (c) is in the range of between 5 to 10 parts by weight of the coated macromolecular substance to 100 parts by weight of the fibrous support;

and the ratio of the finishing layer to the coated fibrous support in step (d) is in the range of between 5 to 25 parts by weight of the finishing layer to 100 parts by weight of the coated fibrous support.

13. An artificial leather composite material produced in accordance with the process of claim 1.

4,212,928

WOOD-POLYMER COMPOSITES

William C. Arney, Jr., St. Albans, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 12, 1978, Ser. No. 968,773
Int. Cl.[2] B32B *23/08, 27/10*
U.S. Cl. 428—514 **2 Claims**

1. A composite comprising wood cellulose and as a sealer a polymer of:

(a) 50 to 60 weight percent of methyl methacrylate, and

(b) 35 to 45 weight percent of ethyl acrylate, and

(c) 1 to 8 weight percent of methacrylic acid, and

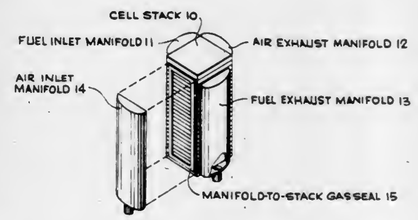
(d) 0.2 to 1 weight percent of pentaerythritol triacrylate.

4,212,929

FUEL CELL MANIFOLD SEALING SYSTEM

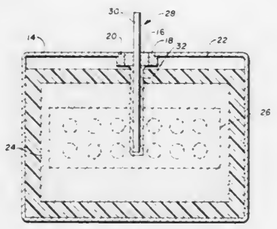
Paul E. Grevstad, West Hartford; Carl K. Johnson, Manchester, and Anthony P. Mientek, Glastonbury, all of Conn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1979, Ser. No. 27,690
Int. Cl.[2] H01M *2/08*
U.S. Cl. 429—37 **11 Claims**



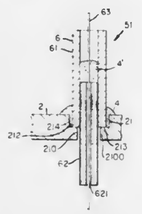
1. A manifold-to-stack seal for a fuel cell stack comprising: means for producing a seal between a manifold and an associated fuel cell stack including a polymer seal frame positioned intermediate lip sections of the manifold and an associated surface of a fuel cell stack, means for urging said manifold lip sections against said seal frame and said seal frame against said fuel cell stack, whereby as the fuel cell stack undergoes compressive creep the polymer seal frame creeps therewith, such as to permit relative motion only between said manifold and said polymer seal frame while maintaining a sealing effect therebetween.

4,212,930
LITHIUM-HALOGEN BATTERIES
Lee F. Athearn, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Mar. 15, 1979, Ser. No. 20,809
Int. Cl.² H01M 2/26
U.S. Cl. 429—101 9 Claims



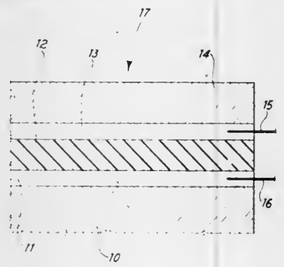
1. A lithium-halogen battery in which at least one of the electrical leads of at least one of the electrodes is provided, on at least a portion of its length, with a protective layer of a lithium halide.

4,212,931
ARRANGEMENT COMPRISING A COMPARTMENT AND A CONDUIT
François Cadart, Ceyrat, and Bernard Pflieger, Chamalieres, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Jun. 19, 1978, Ser. No. 916,482
Claims priority, application France, Jun. 28, 1977, 77 20243
Int. Cl.² H01M 2/30
U.S. Cl. 429—104 17 Claims



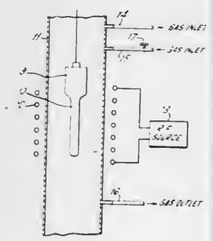
1. Arrangement comprising at least one compartment defined by an envelope in a portion of which there is at least one recess external to the compartment, said recess surrounding at least one opening in which a conduit is arranged, characterized by the fact that the conduit is constituted of at least one outer sheathing and of at least one inner sheathing, the inner sheathing having at least one channel over its length and fitting within the outer sheathing, one end of the outer sheathing constituting a shoulder resting against the bottom of the recess and the inner sheathing being arranged in the opening, and further characterized by the fact that a weld material disposed at least in the recess on the outside of the shoulder forms an assembly between the envelope and the conduit or conduits corresponding to the recess, the shoulder resting against the bottom of the recess either directly or via a thin film of the weld material.

4,212,932
DEVICE FOR THE DIRECT CONVERSION OF RADIANT ENERGY TO ELECTRICAL ENERGY
Seba Calgari; Vittorio Sirtori, and Ignazio R. Bellobono, all of Milan, Italy, assignors to Societe' Nazionale Industria Applicazioni Viscosa S.p.A. (Snia Viscosa), Milan, Italy
Filed Feb. 22, 1979, Ser. No. 14,156
Claims priority, application Italy, Feb. 28, 1978, 20678 A/78; Nov. 24, 1978, 30173 A/78
Int. Cl.² H01M 6/30, 6/36
U.S. Cl. 429—111 22 Claims



1. Cell for the direct conversion of radiant energy to electrical energy, which comprises two layer-like zones each comprising a transparent material and at least one photochromic compound which is a spiro-2H-pyrane, electrical conduction means between said two zones, and two electrodes.

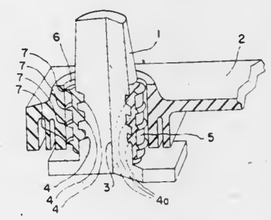
4,212,933
CURRENT COLLECTOR FOR ELECTROCHEMICAL CELLS AND METHOD OF MAKING
Trevor L. Markin, Goring-on-Thames; Roger J. Bones, Abingdon, both of England; Keith R. Linger, Sarnia, Canada; Peter J. Bindin, Runcorn, England; Michael P. J. Brennan, Helsby, via Warrington, England, and Geoffrey J. May, Frodsham, England, assignors to Chloride Silent Power Limited, London, England
Filed May 22, 1978, Ser. No. 908,438
Claims priority, application United Kingdom, Mar. 23, 1977, 21709/77
Int. Cl.² H01M 6/00
U.S. Cl. 429—122 21 Claims



1. A cathode current collector for a sodium-sulphur cell, wherein said collector comprises an electrically conductive substrate having a surface seleected from the group consisting of nickel, a nickel-containing alloy, molybdenum, titanium and tungsten, said substrate being coated with carbon, wherein the coated substrate is the product obtained by a process comprising contacting said substrate with a gas atmosphere comprising an inert gas and a carbon-containing gas and providing a glow discharge in an electric field sufficient to form ions of said inert gas and to bombard said substrate with said ions to thereby substantially clean said substrate, and contacting the resulting clean substrate with a plasma sheath of carbon produced by decomposition of said carbon-containing gas in a glow discharge with the substrate heated to a temperature of 200° C.-1000° C. in the presence of inert gas and in an electric field, wherein said clean substrate is enveloped by said plasma and carbon is deposited on said clean substrate to thereby form a highly adherent and stable coating of carbon on said substrate capable of withstanding conditions in a cathodic region of a sodium sulphur cell.

5. A method of making a cathode current collector for a sodium-sulphur cell, wherein said collector comprises an electrically conductive substrate having a surface selected from the group consisting of nickel, a nickel-containing alloy, molybdenum, titanium and tungsten, said substrate being coated with carbon, wherein said process comprises contacting said substrate with a gas atmosphere comprising an inert gas and a carbon-containing gas and providing a glow discharge in an electric field sufficient to form ions of said inert gas and to bombard said substrate with said ions to thereby substantially clean said substrate, and contacting the resulting clean substrate with a plasma sheath of carbon produced by decomposition of a carbon-containing gas in a glow discharge with the substrate heated to a temperature of 200° C.-1000° C. in the presence of inert gas and in an electric field, wherein said clean substrate is enveloped by said plasma and carbon is deposited on said clean substrate to thereby form a highly adherent and stable coating of carbon on said substrate capable of withstanding conditions in a cathodic region of a sodium sulphur cell.

4,212,934
POLE SEAL FOR STORAGE BATTERIES
Klaus Salamon, Kelkheim, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany
Filed Oct. 10, 1978, Ser. No. 949,749
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757568
Int. Cl.² H01M 2/02
U.S. Cl. 429—181 3 Claims



1. An electric storage battery with poles which are led sealed through the housing lid, which is of synthetic plastic, wherein
- the pole shaft extends in axially displaceable manner through an opening in the housing lid and has a plurality of annular recesses axially spaced along the shaft, and
- the pole shaft is provided with a synthetic plastic mantle which has a plurality of internal annular ribs engaging and interlocking with the recesses in the pole shaft, and a plurality of axially spaced external annular sealing lips, the lips adjoining the inner wall of the opening in frictionally sealing manner,
- the mantle with its ribs and lips forming the only seal between pole shaft and housing lid.

4,212,935
METHOD OF MODIFYING THE DEVELOPMENT PROFILE OF PHOTORESISTS
Benjamin J. Canavello, Stony Point; Michael Hatzakis, Ossining, both of N.Y., and Jane M. Shaw, Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 24, 1978, Ser. No. 880,926
Int. Cl.² G03C 5/00
U.S. Cl. 430—326 24 Claims

1. A method of producing a positive resist image having a sidewall profile with reduced overcut, which consists essentially of the following steps in sequence:
- depositing on a substrate surface a layer comprising a mixture of an alkali soluble resin, a light sensitive sensitizer having diazo and keto groups at adjacent positions on an aromatic ring and a first solvent;
- baking the layer at an elevated temperature to remove most of the solvent in the layer;
- imagewise exposing the layer to actinic light to alter the solubility characteristics of the exposed portion of the layer;
- treating the layer with a second solvent which is incapable of completely dissolving the layer and which is different from but miscible with the solvent still remaining in the layer so as to reduce the alkali solubility of only a surface region of the layer; and
- treating the layer with an alkali developer solution until the exposed portion of the layer has been completely dissolved away, the reduced alkali solubility of the surface region of the layer reducing the overcut of the developed sidewall profile.

17. A method of producing a positive resist image having a sidewall profile with reduced overcut, which consists essentially of the following steps in sequence:
- depositing on a substrate surface a layer comprising a mixture of an alkali soluble resin, a light sensitive sensitizer having diazo and keto groups at adjacent positions on an aromatic ring and a first solvent;
- at least partly drying the layer in air to remove some of the first solvent;
- treating the layer with a second solvent which is incapable of completely dissolving the layer and which is different from but miscible with the solvent still remaining in the layer so as to reduce the alkali solubility of only a surface region of the layer;
- baking the layer at an elevated temperature to remove most of the solvents in the layer;
- imagewise exposing the layer to actinic light to alter the solubility characteristics of the exposed portion of the layer; and
- treating the layer with an alkali developer solution until the exposed portion of the layer has been completely dissolved away, the reduced alkali solubility of the surface region of the layer reducing the overcut of the developed sidewall profile.

23. A method of producing a positive resist image having a sidewall profile with reduced overcut, which consists essentially of the following steps in sequence:
- depositing on a substrate surface a layer comprising a mixture of an alkali soluble resin, a light sensitive sensitizer having diazo and keto groups at adjacent positions on an aromatic ring and a first solvent;
- baking the layer at an elevated temperature to remove most of the solvent in the layer;
- treating the layer with a second solvent which is incapable of completely dissolving the layer and which is different from but miscible with the solvent still remaining in the layer so as to reduce the alkali solubility of only a surface region of the layer;
- imagewise exposing the layer to actinic light to alter the solubility characteristics of the exposed portion of the layer; and
- treating the layer with an alkali developer solution until the

exposed portion of the layer has been completely dissolved away, the reduced alkali solubility of the surface region of the layer reducing the overcut of the developed sidewall profile.

4,212,936

COLOR CONTRAST RADIOGRAPHIC FILM

Claudio Giampieri, Carcare, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 583,404, Jun. 3, 1975, abandoned. This application Nov. 25, 1977, Ser. No. 854,629
Int. Cl.[2] G03C *1/76*
U.S. Cl. 430—503 10 Claims

1. A photographic element for use in radiography which includes a base and, on one side of said base, only two silver halide emulsion layers, said element characterized by the fact that

(1) said two silver halide emulsion layers in the element may contain as couplers only colorless cyan forming couplers and yellow colored couplers;

(2) at least one of said emulsion layers is reactively associated with said colorless cyan forming coupler so as to give a negative colored cyan image upon color development with p-phenylene diamine,

(3) the other of said emulsion layers is reactively associated with said yellow colored coupler so as to leave a yellow colored positive image and a magenta colored negative image upon color development with p-phenylene diamine.

4,212,937

HEAT DEVELOPABLE PHOTOSENSITIVE MATERIALS

Kageyasu Akashi; Minoru Akiyama; Tetsuo Shiga; Takeki Matsui; Yoshio Hayashi; Takeo Kimura, and Hidehiko Kobayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1978, Ser. No. 969,620
Claims priority, application Japan, Dec. 23, 1977, 52-154353; May 31, 1978, 53-64241
Int. Cl.[2] G03C *1/02*
U.S. Cl. 430—620 11 Claims

1. In a heat developable photosensitive material comprising:

(a) an organic silver salt oxidizing agent;

(b) a halogen molecule or an organic haloamide compound; and

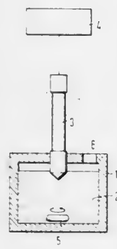
(c) a reducing agent for silver ion; the improvement which comprises incorporating therein (d) at least one nitrogen-containing organic base selected from the group consisting of pyridine, quinoline, isoquinoline, acridine, phenanthridine, pyridazine, pyrimidine, pyrazine, cinnoline, phthalazine, quinazoline, quinoxaline, phenazine, m-, o-, p-phenanthroline, pteridine, pyrazole, imidazole, benzimidazole, 2-chloropyridine, 3-chloropyridine, 2-bromopyridine, 3-bromopyridine, 2-methylpyridine, 3-methylpyridine, 4-methylpyridine, 2,6-diisopropylpyridine, 2-isopropylpyridine, 2-tertbutylpyridine, 3-phenylpyridine, 2,6-di-tert-butylpyridine, 3-acetylpyridine, $\alpha\alpha'$-dipyridyl, β,β'-dipyridyl, γ,γ'-dipyridyl, 5-nitro-1,10-phenanthroline, 2-methylquinoline, 3-methylquinoline, 4-methylquinoline, 2-chloroquinoline, 4-chloroquinoline, 2-methoxyisoquinoline, 4-methylpyrimidine, 2-dimethylaminopyrimidine, 2-methoxyquinazoline, 2-methylquinoxaline, 1-methylpyrazole and 2-methylpyrazole, in an amount of about 0.001 mole to about 1 mole per mole of the organic silver salt oxidizing agent (a).

4,212,938

REAGENT AND METHOD FOR THE DETERMINATION OF CHOLESTEROL

Wolfgang Gruber, Garatshausen; Hans U. Bergmeyer, Tutzing; Erich Bernt, Munich; Alexander Hagen, Tutzing; Peter Roeschlau, Tutzing; Gunter Lang, Tutzing, and Klaus Beaucamp, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed May 15, 1973, Ser. No. 360,515
Claims priority, application Fed. Rep. of Germany, May 17, 1972, 2224132
Int. Cl.[2] C12Q *1/50*
U.S. Cl. 435—11 20 Claims



1. A test composition for determining total cholesterol in a biological fluid sample comprising a chemical system having cholesterol ester hydrolase activity, a chemical system having cholesterol oxidase activity, and means for determining at least one of the reaction products produced when free cholesterol is contacted with said chemical system having cholesterol oxidase activity.

2. Method for the determination of cholesterol in a sample comprising incubating the sample in an aqueous medium with cholesterol esterase and cholesterol oxidase, characterized by its ability to convert cholesterol to cholestenone with the formation of hydrogen peroxide, and determining either the oxygen consumption, the H_2O_2 formed, or cholestenone as a measure of the initial cholesterol content in the sample.

4,212,939

SUBSTRATE SOLUTION FOR CARBOXYLIC ESTER HYDROLASE DETERMINATION

James E. Myrick, Houston, Tex., and Leo M. Hall, Birmingham, Ala., assignors to The University of Alabama, Birmingham, Ala.

Division of Ser. No. 775,470, Mar. 8, 1977, abandoned, and a continuation-in-part of Ser. No. 615,559, Sep. 22, 1975, said Ser. No. 775,470, is a continuation-in-part of Ser. No. 615,559, Sep. 22, 1975, Pat. No. 4,022,667. This application Nov. 22, 1977, Ser. No. 854,046
The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.
Int. Cl.[2] G01N *31/14, 31/22*
U.S. Cl. 435—19 13 Claims

1. A stable, clear reagent solution for the analysis of carboxylic acid ester hydrolases which comprises a water insoluble vinyl ester of carboxylic acid, a nonionic detergent, a buffer, and neutral salts, wherein the value of the HLB of said detergent is from 13 to 18, said HLB value being chosen to obtain the highest specific activity for said ester hydrolase; wherein the ionic strength of said solution is adjusted by inclusion of said neutral salts to obtain the highest specific activity for said ester hydrolase; wherein the amounts of said ester, detergent and buffer, said HLB value and said ionic strength are chosen so that when said hydrolase is mixed with said reagent, the mixture is clear and has a stable spectrophotometric absorbance, and wherein said buffer is N,N-bis(2-hydroxy-ethyl)glycine.

4,212,940

PROCESS FOR THE PREPARATION OF 21-HYDROXY-20-METHYLPREGNANE DERIVATIVES

Alfred Weber; Mario Kennecke, and Rudolf Müller, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 970,885
Int. Cl.[2] C07B *29/02*
U.S. Cl. 435—55 10 Claims

1. In a process for preparing 21-hydroxy-20-methylpregnane derivatives by fermenting a zoosterol or a phytosterol with a culture of Mycobacterium spec. NRRL B-3683 or NRRL B-3805 or a variant or mutant thereof,

the improvement which comprises conducting the fermentation at a pH value of 6.0–8.0 in the presence of an amount of borate ions, triphenylborate or a trialkylborate of the formula

$B(OR_2)_3$,

wherein R_2 represents identical alkyl groups of 1–6 carbon atoms, effective to increase the yield of the 21-hydroxy-20-methylpregnane derivatives produced.

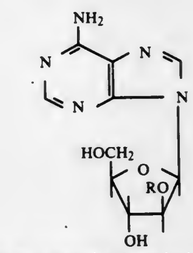
4,212,941

METHOD FOR THE PRODUCTION OF 9-(2-O-ACYL-β-D-ARABINOFURANOSYL)ADENINE COMPOUNDS

David C. Baker, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

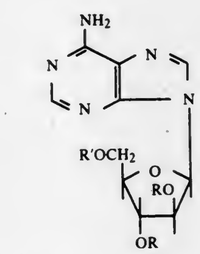
Division of Ser. No. 687,271, May 17, 1976, Pat. No. 4,055,718. This application May 23, 1977, Ser. No. 799,631
Int. Cl.[2] C12P *19/32*
U.S. Cl. 435—92 5 Claims

1. A method for the production of a 9-(2-O-acyl-beta-D-arabinofuranosyl)adenine compound having the formula



I

wherein R is a straight or branched chain alkanoyl group having from 2 to 4 carbon atoms which comprises contacting a 9-(beta-D-arabinofuranosyl)adenine ester compound represented by the formula



II

where R has the same significance and R′ is hydrogen or a lower alkanoyl group with an acylase capable of deacylating the 3 and 5-O-acyl groups; said contacting being carried out at 20°–45° C. at a pH of 6.5–7.5, and recovering the product.

4,212,942

METHOD OF PRODUCING SALINOMYCIN ANTIBIOTICS

Yukio Miyazaki, Ageo; Akira Shibata, Zama; Tateo Yahagi, Kawagoe; Masayuki Hara; Kaoru Hara, both of Tokyo; Singo Yoneda, Kuki; Hiroko Kasahara, Matsudo, and Yuko Nakamura, Tokyo, all of Japan, assignors to Kaken Chemical Company, Limited, Tokyo, Japan

Filed May 31, 1978, Ser. No. 911,231
Claims priority, application Japan, May 31, 1977, 52-62802; Jun. 1, 1977, 52-63215
Int. Cl.[2] C12P *17/18*
U.S. Cl. 435—119 4 Claims

1. A method of producing salinomycins, which comprises culturing a salinomycins-producing Streptomyces microorganism in a medium containing fatty acid or its precursor and ammonia or an ammonium salt and recovering the salinomycins from the culture.

4,212,943

PRODUCTION OF BACTERIAL CELL AGGREGATE

Gerald B. Borglum, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 27, 1978, Ser. No. 890,500
Int. Cl.[2] C12K *1/00, 1/08*
U.S. Cl. 435—180 20 Claims

1. A process for producing an aggregate of *Streptomyces olivaceus* bacterial cells which comprises contacting a mass of *Streptomyces olivaceus* bacterial cells with a cross-linking reaction product of (1) a material selected from the class consisting of glutaraldehyde, cyanuric halide and combinations thereof and (2) a water-soluble cationic polymer obtained by the polymerization of an epihalohydrin with an alkylene polyamine having the formula $R_1R_2NRNH_2$ wherein R is a lower alkylene having from 2 to about 6 carbon atoms, and R_1 and R_2 are each a lower alkyl of from 1 to about 6 carbon atoms, the mole ratio of epihalohydrin to polyamine being from about 0.60:1 to about 2.7:1, said polymerization comprising reacting with the alkylene polyamine from about 50 to about 90 percent of the amount of epihalohydrin to be polymerized, allowing the reaction to continue until the reaction medium attains a substantially uniform viscosity, and reacting the remaining portion of the epihalohydrin incrementally to obtain the cationic polymer, the temperature of polymerization being from about 60° C. to about 120° C., and recovering the resulting aggregate.

4,212,944

PROCESS FOR PRODUCING NOCARDICIN A

Walter D. Celmer, New London; Liang H. Huang, East Lyme; Mark T. Jefferson, Waterford, all of Conn.; Hiroshi Maeda; Kozo Inoue, both of Chita, Japan, and Riichiro Shibakawa, Handa, Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,009
Int. Cl.[2] C12D *9/14*
U.S. Cl. 435—121 1 Claim

1. A process for producing nocardicin A which comprises aerobically propagating *Nocardiopsis atra* Huang sp. nov. ATCC 31511 in an aqueous nutrient medium containing a source of assimilable carbon and a source of assimilable nitrogen until a substantial amount of nocardicin A is obtained.

4,212,945

PROCESS FOR RECOVERING PROTEASE

Yuji Nonaka; Kiyotaka Oyama, and Heijiro Satoh, all of Shinnanyo, Japan, assignors to (Zaidanhojin) Sagami Chemical Research Center and Toyo Soda Manufacturing Co., Ltd., both of Tokyo, Japan

Filed May 18, 1978, Ser. No. 907,006
Claims priority, application Japan, May 23, 1977, 52-58827
Int. Cl.[2] C12N *9/48;* C07G *7/02*
U.S. Cl. 435—212 9 Claims

1. A process for recovering protease which comprises react-

ing a first amino acid whose amino group is protected with a protective group with a second amino acid whose carboxyl group is protected with a protective group in an aqueous medium in the presence of the protease to result in a peptide synthesis and to precipitate the addition compound of a dipeptide and said second C-terminal protected amino acid; dissolving the addition compound into the aqueous medium by adding a polar organic solvent which is miscible with water and separating an insoluble material from the resulting suspension by a solid-liquid separation to isolate the protease as the solid phase.

4,212,946

PROCESS FOR RECOVERING PROTEASE

Yuji Nonaka; Kiyotaka Oyama, and Heijiro Satoh, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd. and (Zaidanhojin) Sagami Chemical Research Center, both of Tokyo, Japan

Filed May 18, 1978, Ser. No. 907,203
Claims priority, application Japan, May 23, 1977, 52-58828
Int. Cl.[2] C12N *9/48*; C07G *7/02*
U.S. Cl. 435—212 **9 Claims**

1. A process for recovering protease which comprises reacting a first amino acid whose amino group is protected with a protective group with a second amino acid whose carboxyl group is protected with a protective group in an aqueous medium in the presence of the protease to result in a peptide synthesis and to deposit as a precipitate the addition compound of a dipeptide and said second C-terminal protected amino acid; dissolving said addition compound by adding an organic solvent to a precipitate separated from the reaction mixture and isolating the protease from said organic solvent.

4,212,947

METHOD FOR OBTAINING MYCELIUM FROM THE GENUS POLYPORUS

Atanas K. Torev, Plovdiv, Bulgaria, assignor to DSO "HRANMASH", Stara Zagora, Bulgaria

Continuation-in-part of Ser. No. 687,817, May 19, 1976, abandoned. This application Feb. 17, 1978, Ser. No. 878,959
Claims priority, application Bulgaria, May 22, 1975, 30055
Int. Cl.[2] C12N *1/14*; C12R *1/645*
U.S. Cl. 435—254 **6 Claims**

1. A method for obtaining mycelium from a strain of polyporus genus selected from the group consisting of cultivated fungi having essentially all the characteristics of *Polyporus squamosus*-PS 64-103 and PS 24-44 and *Polyporus brumalis* PB 33-48, which comprises submerged cultivation of said strain of fungi on a nutrient media containing carbohydrate, nitrogen and phosphorus sources and then harvesting said mycelium.

4. A method for obtaining mycelium from a strain of polyporus genus selected from the group consisting of cultivated fungi having essentially all the characteristics of *Polyporus squamosus*-PS 64-103 and PS 24-44 and *Polyporus brumalis* PB 33-48, which comprises submerged cultivation of said strain of fungi on a nutrient media containing carbohydrate, nitrogen and phosphorus sources at a temperature of 22° to 50° C., a pH from 4.5 to 7.5, and 1 m^3 of nutrient media per minute, whereby there is a rapid increase in the protein concentration of the fungi mycelium, and afterward isolating said mycelium.

4,212,948

APPARATUS FOR DETECTING MICROBIAL PATHOGENS EMPLOYING A CUSHIONING AGENT

Gordon L. Dorn, Dallas, Tex., assignor to J. K. and Susie L. Wadley Research Institute and Blood Bank, Dallas, Tex.

Division of Ser. No. 739,274, Nov. 5, 1976, Pat. No. 4,131,512. This application Oct. 18, 1978, Ser. No. 952,339
Int. Cl.[2] C12M *1/24*
U.S. Cl. 435—296 **22 Claims**

1. An article used for the concentration of microbial pathogens from a sample fluid comprising:

an enclosed centrifugation receptacle sealably closed with injectable closure means, the interior of said receptacle comprising an evacuated spaced maintained at a lower than atmospheric pressure, adjacent a high density, nontoxic to microbial organisms, water immiscible, hydrophobic liquid cushioning agent capable of collecting substantially all of the microbial pathogens which pass out of



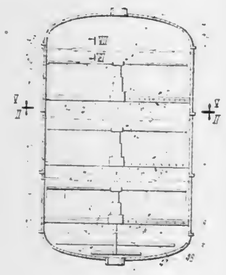
suspension from said sample fluid without a loss of said microbial pathogens to interstitial spaces present in said centrifugation receptacle and wherein the density of the liquid cushioning agent is sufficient so as not to be supported by a mixture of a sample fluid and a treating fluid therefore.

4,212,949

APPARATUS FOR CULTIVATING MICROORGANISMS

Valentin G. Kozhemyakin, Leninsky prospekt, 85, korpus 6, kv. 45; Kalust A. Kaluniants, mikroraion Kapotnya, kvartal 4, 3, kv. 34; Lidia S. Losyakova, prospekt Mira, 89, kv. 181; Leonid I. Golger, Leningradsky prospekt, 43, korpus 9, kv. 31; Leonid F. Ivanov, ulitsa Marshala Birjuzova, 17, kv. 33, and Raisa G. Kozlova, ulitsa Nagornaya, 34, korpus 43, kv. 14, all of Moscow, U.S.S.R.

Filed Aug. 21, 1978, Ser. No. 935,271
Int. Cl.[2] C12M *1/06*
U.S. Cl. 435—315 **12 Claims**



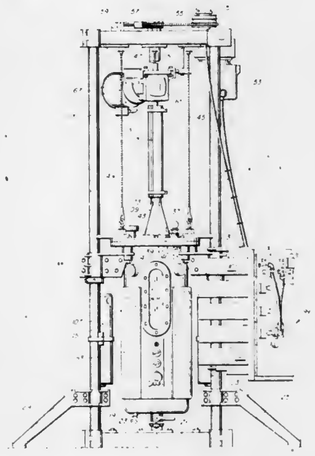
1. An apparatus for cultivating microorganisms, comprising:
a vertical cylindrical vessel;
a top port for charging a seeded granular medium into said cylindrical vessel;
a bottom port for discharging the culture from said cylindrical vessel;
horizontal partitions separating said cylindrical vessel, into vertical sections,
said horizontal partitions being made in the form of partially overlapping circular sectors and having perforation in the form of slots said sectors being moveable relative to each other in a horizontal plane;
a means for shifting said components in a horizontal plane so that, when said medium is being charged into one of said sections, said components form a solid plate, while, during discharge of the culture from said section, a passage is provided for downward movement of the culture, said means being located under said partition;
a plurality of loosening means provided in said vessel, each being located in one of said sections coaxially therewith; each being adapted to comb the contents of a section to keep them loose and means for introducing and letting out air from each compartment.

4,212,950

FERMENTING APPARATUS

Robert P. Adams, Walden, N.Y., assignor to The Virtis Company, Inc., Gardiner, N.Y.

Filed May 8, 1978, Ser. No. 903,594
Int. Cl.[2] C12M *1/02*; 195 *127;139;142;143*
U.S. Cl. 435—316 **6 Claims**



6. A fermenting apparatus comprising:
a fermentation pressure vessel;
a dimpled outer jacket of relatively light gauge material surrounding a relatively large proportion of said pressure vessel;
a closed heat transfer system including the space between said jacket and said pressure vessel;
pumping means to force a pressurized heat transfer fluid through said heat transfer system, said heat transfer fluid passing between said jacket and said pressure vessel to provide a desired temperature in the interior of said pressure vessel;
three vertical mounting columns interconnected at the bottom ends and having suitable base supports, said pressure vessel being secured to said mounting columns to rigidly mount said pressure vessel at a spaced interval above the horizontal base area;
removable modular control elements attached to said mounting columns in an easily accessible area to provide variable control of temperature and pressure conditions in the fermenting apparatus;
a first heat exchanger to heat said heat transfer fluid mounted on said mounting columns;
a second heat exchanger to cool said heat transfer fluid mounted on said mounting columns, said first and second heat exchangers connected in series with said pumping means to provide a continuous temperature control for said heat transfer fluid and hence said pressure vessel;
a removable lid secured to the top of said pressure vessel to selectively permit access to the interior of said pressure vessel;
three horizontal support members interconnecting said mounting columns above said pressure vessel;
three cables connected to said lid of said pressure vessel at spaced points thereon;
a common pulley for said cables mounted on said horizontal support members;
a pulley motor mounted on said support members, said pulley motor being operable to raise and lower said lid;
a drive motor to drive impeller blades in said pressure vessel;
a gear box cooperating with said drive motor to drive said impeller blades, said drive motor and said gear box secured to one of said mounting columns by a common mounting bracket which is pivotable to clear the space above said pressure vessel to permit maximum displacement of said lid during removal;
a drive shaft for the impeller blades in said pressure vessel extending through said removable lid of said pressure vessel; and
a removable drive linkage between said drive shaft and said gear box, said drive linkage being removed during the opening of said lid.

4,212,951

PROCESS FOR THE ISOLATION OF POLYARYLENE ESTERS

Senzo Shimizu, Odawara; Isao Nomura, Hiratsuka; Motohachi Usui, Odawara, and Masahiro Harada, Hiratsuka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,441
Claims priority, application Japan, Nov. 29, 1977, 52-143075
Int. Cl.[2] C08G *63/72, 63/74*
U.S. Cl. 528—495 **13 Claims**

1. A process for the isolation of particulate polyarylene esters having good thermal stability and hydrolytic stability, which comprises adding to a solution of a polyarylene ester in an organic solvent a poor solvent for the polyarylene ester at least in an amount such that said solution reaches a cloud point, followed by subjecting said mixed solution to an aging treatment in which the mixed poor solvent-containing solution is allowed to stand with or without stirring whereby the polyarylene ester precipitates as solids, characterized in that said poor solvent is a mixed poor solvent consisting of 5–95% by weight of an aliphatic alcohol having 1–5 carbons and another poor solvent for the polyarylene ester selected from the class consisting of ketones, esters, aromatic hydrocarbons and aliphatic hydrocarbons, the amount of said mixed poor solvent added being within the range of 100–200% by weight of the amount such that said solution reaches the cloud point and not exceeding the amount of said solution.

4,212,952

N,N,N',N'-TETRAMETHYL-αω-POLYMETHLENEDIAMINES AS CATALYSTS FOR THE PREPARATION OF URETHANE FOAMS

Gerald J. Murphy, Wappingers Falls, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,743
Int. Cl.[2] C08G *18/18*
U.S. Cl. 521—112 **11 Claims**

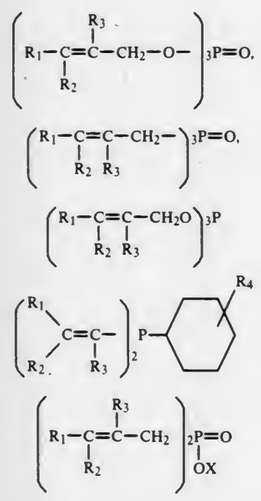
1. In the process for the preparation of a urethane foam which comprises reacting an aromatic polyisocyanate with polyol in the presence of a catalyst and a blowing agent, the improvement which comprises conducting the reaction in the presence of a catalytic amount of an N,N,N,N'-tetramethyl-α,ω-polymethylenediamine compound of the formula $(CH_3)_2NCH_2(CH_2)_nCH_2CH_2N(CH_3)_2$ wherein n is 4, 3, 2, 1, or 0.

4,212,953
FIRE-RETARDANT POLYURETHANE FOAMS

Martin B. Sheratte, Canoga Park, and Lydia H. Simanyi, Santa Ana, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 1, 1978, Ser. No. 938,988
Int. Cl.[2] C08G *18/14, 18/38, 18/62*
U.S. Cl. 521—137 20 Claims

1. A fire resistant polyurethane foam composition comprising an interpenetrating network of polyether based urethane polymer and phosphorus-containing polymer, the phosphorus being present as a pendant group on said last mentioned polymer, said phosphorus-containing polymer being derived from a monomer selected from the group consisting of:



wherein R_1, R_2, R_3 and R_4 are each selected from the group consisting of H, alkyl of from about 1 to about 20 carbon atoms, aryl of from 6 to about 24 carbon atoms, and halogen; and X is vinyl or allyl.

4,212,954
POLYURETHANE FOAM PRODUCT FOR AN IMPACT ABSORBER

Takao Nomura, Nagoya; Kunihiko Terasaka, and Isao Sakata, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Kaisha, Japan

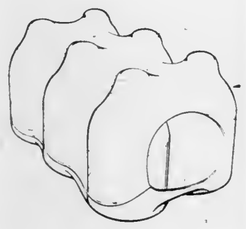
Filed Aug. 9, 1977, Ser. No. 823,193
Claims priority, application Japan, Aug. 10, 1976, 51-95058
Int. Cl.[2] C08G *18/14*
U.S. Cl. 521—159 5 Claims

1. A polyurethane foam product useful as a ideal impact absorber prepared by miximg a high molecular weight polymer polyol (a) having a molecular weight in the range 6000–8000 and a corresponding OH value in the range 14–20, a low molecular weight polyol (b) having an OH value in the range 450–1850, an organic polyisocyanate (c), water and a catalyst and permitting the resulting mixture to react with the formation of said polyurethane foam product.

4,212,955
DEGRADABLE PLASTIC COMPOSITION CONTAINING ORTHO ESTER

John W. Tobias, Perrysburg, and Lynn J. Taylor, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 865,046, Dec. 27, 1977, which is a continuation of Ser. No. 731,486, Oct. 12, 1976, abandoned, which is a continuation of Ser. No. 288,750, Sep. 13, 1972, abandoned. This application Jan. 19, 1978, Ser. No. 870,689
Int. Cl.[2] C08K *5/06*
U.S. Cl. 525—5 17 Claims



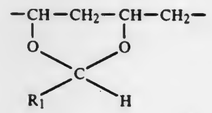
1. As a composition of matter, an environmentally degradable plastic composition comprising an organic polymeric material having dispersed therein at least one trialkyl ortho ester as a readily autoxidizable organic substance.

4,212,956
OLEFIN-VINYL ALCOHOL-VINYL ACETAL COPOLYMERS, PROCESS FOR PREPARATION THEREOF AND LAMINATE STRUCTURES INCLUDING SAID COPOLYMERS

Tadahiko Katsura, Yokohama, Japan, assignor to Toyo Seikan Kaisha Limited, Tokyo, Japan

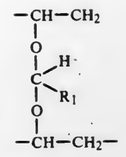
Filed Nov. 22, 1977, Ser. No. 854,007
Claims priority, application Japan, Nov. 25, 1976, 51-140749; Nov. 25, 1976, 51-140750
Int. Cl.[2] C08F *16/06, 216/06, 8/00*
U.S. Cl. 525—60 3 Claims

1. A packaging film material having excellent hot water resistance and excellent oxygen barrier property in combination, which consists essentially of an olefinvinyl alcohol-vinyl acetal copolymer consisting essentially of 20 to 40 mole % of olefin units and 80 to 60 mole % of vinyl units, 50 to 98 mole % of the vinyl units being vinyl alcohol units and 2 to 50 mole % of the vinyl units being at least one kind of vinyl acetal units selected from the group consisting of (A) units represented by the following formula:



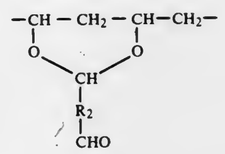
wherein R_1 stands for a hydrogen atom or a molovalent aliphatic, aromatic or aliphatic-aromatic group,

(B) units represented by the following formula:

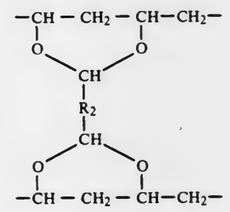


wherein R_1 is as defined above,

(C) units represented by the following formula:



wherein R_2 stands for a direct bond or a divalent aliphatic, aromatic or aliphatic-aromatic group, and (D) units represented by the following formula:



wherein R_2 is as defined above.

4,212,957
PLASTIFIERS, METHOD OF PREPARATION AND PVC COMPOSITIONS CONTAINING SAME

John W. Hirzy, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1977, Ser. No. 864,553
Int. Cl.[2] C08L *27/00, 75/06*
U.S. Cl. 525—131 15 Claims

1. An ordered-random, solid, block copolyesterurethane having from about 15 to about 50 percent by weight amorphous end blocks and from about 85 to about 50 percent by weight random copolymer center block having from about 20 to about 95 percent crystallinity based on heat of fusion, said copolyesterurethane having from about 25 to about 50 percent crystallinity based on heat of fusion, said random copolymer having randomly alternating amorphous and semi-crystalline prepolymer blocks coupled via ester or urethane linkages, said semi-crystalline prepolymer being prepared by reacting dicarboxylic acid with a mixture of non-crystallizing dihydroxy compound and crystallizing dihydroxy compound in a ratio of non-crystallizing dihydroxy compound to crystallizing dihydroxy compound from about 0.1 to about 0.5, and said end blocks and center block being isocyanate-coupled.

3. Composition comprising a halogen-containing polymer and a copolyesterurethane of claim 1.

4,212,958
GRAFT POLYBLEND FLOW IMPROVERS FOR PVC

John C. Falk, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 690,112, May 26, 1976, abandoned. This application Aug. 10, 1978, Ser. No. 932,585
Int. Cl.[2] C08L *23/00*
U.S. Cl. 525—310 3 Claims

1. A polyblend composition consisting of from 50 to 90% by weight of a rubbery substrate selected from the group consisting of hydrogenated homopolymers of 1,3-butadiene having greater than 30% 1,2-polymerized units and hydrogenated copolymers of 1,3-butadiene with up to 60% by weight styrene, from 50 to 3.7% by weight of an acrylate grafting monomer selected from the group consisting of methyl acrylate, ethyl acrylate, methyl methacrylate and mixtures thereof, and from 0 to 35% by weight of a vinyl aromatic grafting monomer selected from the group consisting of styrene, alpha methyl styrene, vinyl toluene and mixtures thereof, wherein said grafting monomers are graft polymerized in the presence of said rubbery substrate, and wherein said rubbery substrate contains no detectable ethylenic unsaturation.

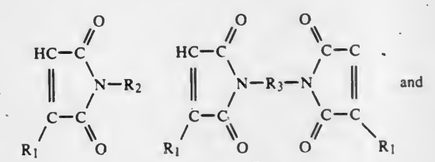
4,212,959
HEAT RESISTANT RESIN COMPOSITION

Akira Fukami, and Hiroyuki Nakajima, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

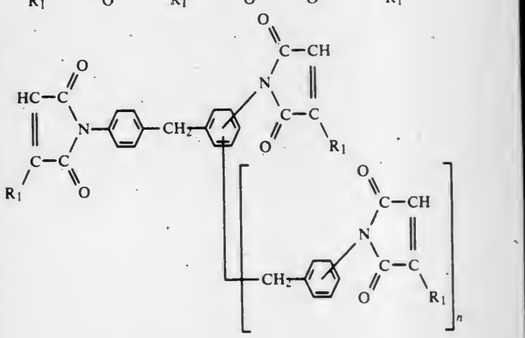
Filed May 9, 1978, Ser. No. 904,266
Int. Cl.[2] C08L *63/00*
U.S. Cl. 525—524 13 Claims

1. A heat resistant resin composition, comprising:

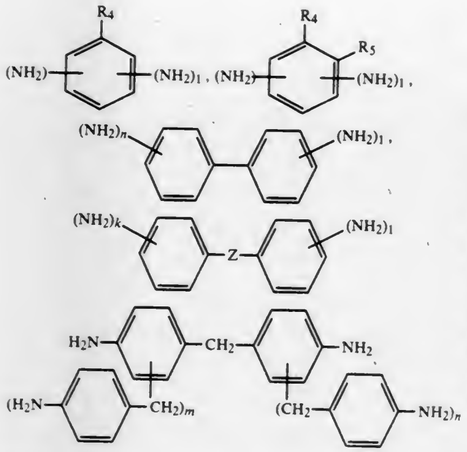
(a) 80 to 5 parts by weight of a mixture of (i) 0 to 95 parts by weight of a first maleimide compound selected from the group consisting of



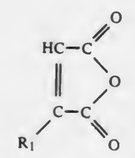
and



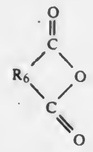
wherein R_1 is alkyl, R_2 is a monovalent organic group, R_3 is a divalent organic group and n is an average of 0.5 to 5 and (ii) 100 to 5 parts by weight of a second maleimide compound formed by reacting an aromatic amine selected from the group consisting of aniline, o-toluidine, p-toluidine, chloroaniline, bromoaniline, aminochlorotoluene, aminoxylene, aminoethylbenzene, aminodiphenylether, aminodiphenylsulfone, aminodiphenylester, aminodiphenylsulfide,



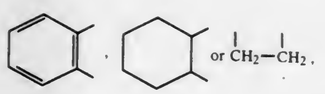
wherein R_4 and R_5 represent alkyl, chlorine or bromine; Z is alkylene, —O—,—NH—, —S—, —SO_2—, —COO—, —CONH—, —OCOO— or —COOCO—; k+1 represents an integer of 1 to 4 and m and n each represents 0 or an integer of 1 to 5 and mixtures thereof with a maleic anhydride compound of the formula:



wherein R_1 is hydrogen or alkyl and a cyclic anhydride compound of the formula:



wherein R_6 is



the weight ratio of said maleic anhydride compound to said cyclic anhydride compound ranging from 2:8 to 8:2 and the amounts of said aromatic amine and maleic anhydride compound and cyclic anhydride being such that the total amount of anhydride is the stoichiometric amount necessary to react with the amino groups of said aromatic amine; and

(b) 20 to 95 parts by weight of a diepoxy compound.

4,212,960

EPOXY RESIN COMPOSITION

Osamu Hayashi; Kazuo Okahashi, and Hiroshi Ono, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1978, Ser. No. 914,947
Claims priority, application Japan, Nov. 5, 1977, 52-132904
Int. Cl.² C08L *63/00*
U.S. Cl. 525—524 **10 Claims**

1. An epoxy resin composition for flexible products, which comprises: (a) from 40 to 80 parts by weight of a liquid epoxy compound having at least two epoxy groups in one molecule; (b) from 60 to 90 parts by weight of an acid anhydride hardener; and (c) from 60 to 20 parts by weight of a reaction product obtained by reacting from 1 to 30 parts by weight of a phenoxy resin component selected from the group consisting of a phenoxy resin and a combination of said phenoxy resin with a high molecular weight epoxy resin with 100 parts by weight of a monohydric alcohol glycidyl ether and a metal salt of a carboxylic acid, the ratio of said metal salt to the total amount of monoglycidyl ether and phenoxy resin component ranging from 0.2 to 1.0%.

4,212,961

PROCESS FOR PRODUCING SOFT RESINS

Akio Kobayashi, Suita, and Kentaro Mashita, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 28, 1978, Ser. No. 946,612
Claims priority, application Japan, Oct. 11, 1977, 52-122079
Int. Cl.² C08F *4/66, 210/02*
U.S. Cl. 526—151 **10 Claims**

1. A process for producing a soft copolymer which comprises copolymerising ethylene and butene-1 in the presence of a catalyst system comprising (1) a reaction product of (A) an organic titanium compound of the formula,

$$Ti(OR)_nX_{4-n}$$

wherein R is a hydrocarbon residue having 1 to 10 carbon atoms, X is a halogen atom and n is a number satisfying the equation $0<n\leqq 4$, and (B) organomagnesium compound, and (2) an organo-aluminum compound of the formula,

$$AlR_{m}'X_{3-m}'$$

wherein R' is a hydrocarbon residue having 1 to 20 carbon atoms, X' is a halogen atom and m is a number satisfying the equation $0<m\leqq 3$, the content of butene-1 in the copolymer being 10 to 30 mole %.

4,212,962

EPSILON-CAPROLACTAM BLOCKED POLYISOCYANATES

Karl Schmitt; Josef Disteldorf, both of Herne, and Felix Schmitt, Wanne-Eickel, all of Fed. Rep. of Germany, assignors to Veba-Chemie Atkiengesellschaft, Gelsenkirchen-Buer, Fed. Rep. of Germany

Continuation of Ser. No. 785,153, Apr. 6, 1977, abandoned, which is a continuation of Ser. No. 630,573, Nov. 10, 1975, abandoned, which is a continuation of Ser. No. 441,785, Feb. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 223,700, Feb. 4, 1972, Pat. No. 3,822,240. This application Feb. 28, 1978, Ser. No. 881,996
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1971, 2105777
Int. Cl.² C08G *18/80;* C07D *211/40*
U.S. Cl. 528—45 **3 Claims**

1. Epsilon-caprolactam blocked polyisocyanates in particulate form, said polyisocyanates being selected from the group of isophorone diisocyanate and the reaction product of isophorone diisocyanate and a polyol, said reaction product containing at least two isocyanate groups.

4,212,963

POLYBUTYLENE TEREPHTHALATES HAVING A LOW CARBOXYL CONTENT AND CONTINUOUS PROCESS FOR THE PRODUCTION THEREOF

Günter Lehr, and Rudolf Binsack, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 829,384, Aug. 31, 1977, abandoned. This application Dec. 13, 1978, Ser. No. 968,892
Claims priority, application Fed. Rep. of Germany, May 4, 1977, 2719969; Aug. 3, 1977, 2734924
Int. Cl.² C08G *63/18*
U.S. Cl. 528—272 **6 Claims**

1. Polybutylene terephthalates having an intrinsic viscosity (determined at 25° C. on a 0.5% by weight solution in a 1:1 by weight mixture of phenol and tetrachloroethane) of from 0.2 to 1.4 dl/g, a molecular non-uniformity of below 1.10, and a carboxyl group content equal to or below 0.07% by weight, based on the polybutylene terephthalate, determined at an intrinsic viscosity of 1.0 dl/g.

3. A continuous process for the production of polybutylene terephthalate which comprises transporting a molten reaction mixture of terephthalic acid mono- and/or bis-(hydroxybutyl) ester or low viscosity polybutylene terephthalate at 160° to 300° C., together with a heated inert gas, in a diphasic annular stream through an externally heated spiral reaction tube (of substantially constant pitch) having a diameter of from 3 to 100 mm and a diameter/length ratio of from 1:400 to 1:2000 by the maintenance of a pressure difference between the beginning and end of the reaction tube, under conditions such that the absolute pressure, determined at the point of entry of the reaction mixture into the tube, is from 1 to 100 bar and the viscosity of the annular stream is from 1 to 10,000 poises (determined at the reaction temperature), and a circular stream between the surface of the melt and the wall of the tube is produced by the curvature of the tube and a stream of gas flowing at a velocity of from 20 to 300 m/sec to accelerate the transport of material between the melt and the inert gas, whereby reaction takes place in the liquid phase and/or at the melt/gas interface.

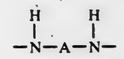
4,212,964

NORMALLY SOLID, MOLDABLE POLYAMIDE FROM BRANCHED CHAIN DIAMINE AND ALIPHATIC DICARBOXYLIC ACID

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

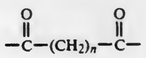
Filed Nov. 25, 1975, Ser. No. 635,004
Int. Cl.² C08G *69/26*
U.S. Cl. 528—340 **27 Claims**

1. A normally solid, moldable polyamide comprising: diamine-derived primary structural units of the formula



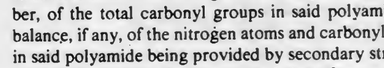
wherein each A is individually selected from the group consisting of 5-methylnonamethylene, 2,4-dimethyloctamethylene, 2,4,6-trimethylheptamethylene, and 4-isopropylheptamethylene; and

diacid-derived primary structural units of the formula



wherein each n is an integer and is 4, 6, 8, or 10;

the nitrogen atoms provided by said diamine-derived primary structural units constituting at least 70 percent, by number, of the total nitrogen atoms in said polyamide; the carbonyl groups provided by said diacid-derived structural units constituting at least 70 percent, by number, of the total carbonyl groups in said polyamide; the balance, if any, of the nitrogen atoms and carbonyl groups in said polyamide being provided by secondary structural units selected from the group consisting of



wherein each R is individually selected from the group consisting of hydrogen and alkyl radicals having from 1 to 6 carbon atoms per radical, each G is a divalent acyclic hydrocarbon radical having 6 to 16 carbon atoms, each Z is a divalent hydrocarbon radical having from 5 to 12 carbon atoms and each J is a divalent acyclic hydrocarbon radical having from 5 to 13 carbon atoms.

4,212,965

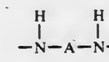
POLYAMIDES WITH ELASTOMERIC CHARACTER FROM 5-METHYLNONAMETHYLENE DIAMINE

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 25, 1975, Ser. No. 635,006
Int. Cl.² C08G *69/26*
U.S. Cl. 528—340 **29 Claims**

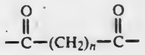
1. A normally solid, moldable polyamide with elastomeric character comprising:

diamine-derived primary structural units of the formula



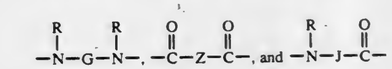
wherein each A is individually selected from the group consisting of 5-methylnonamethylene, 2,4-dimethyloctamethylene, 2,4,6-trimethylheptamethylene, and 4-isopropylheptamethylene; and

diacid-derived primary structural units of the formula



wherein each n is an integer and is 5, 7, 9, or 11;

the nitrogen atoms provided by said diamine-derived primary structural units constituting at least 70 percent, by number, of the total nitrogen atoms in said polyamide; the carbonyl groups provided by said diacid-derived primary structural units constituting at least 70 percent, by number, of the total carbonyl groups in said polyamide; the balance, if any, of the nitrogen atoms and carbonyl groups in said polyamide being provided by secondary structural units selected from the group consisting of



wherein each R is individually selected from the group consisting of hydrogen and alkyl radicals having from 1 to 6 carbon atoms per radical, each G is a divalent acyclic hydrocarbon radical having from 6 to 16 carbon atoms, each Z is a divalent hydrocarbon radical having from 4 to 12 carbon atoms, and each J is a divalent acyclic hydrocarbon radical having from 5 to 13 carbon atoms.

4,212,966

PROCESS OF PREPARING FINELY DIVIDED THERMOPLASTIC RESINS

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers & Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 934,641, Aug. 17, 1978, abandoned. This application Mar. 28, 1979, Ser. No. 24,760

Int. Cl.[2] **536** *56;* **C08F** *6/00*

U.S. Cl. 528—486 **25 Claims**

1. A process for preparing in a finely divided form a solid organic polymeric thermoplastic resin which comprises:

(a) agitating a mixture of the resin while in the molten state, a dispersion-forming amount of water, and a dispersing system comprising a dispersing amount of a surface active agent which is normally incapable of forming a dispersion of said resin in the absence of strong base in combination with a dispersion promoting amount of strong base to provide an aqueous dispersion of the resin said dispersion being formed in the absence of discharge of the hot dispersion through a restricted orifice into a zone of reduced pressure; and,

(b) cooling the dispersion to provide solid particles of resin.

4,212,967

PROCESS FOR CONTINUOUS RECOVERY OF SOLID POLYCARBONATE FROM SOLUTIONS THEREOF IN ORGANIC SOLVENTS

Gabriele Govoni, Renazzo; Giovanni Di Drusco, Milan; Canzio Corazzari, Pilastri, and Pierluigi Guardigli, Ferrara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Feb. 22, 1979, Ser. No. 14,161

Claims priority, application Italy, Feb. 22, 1978, 20509 A/78

Int. Cl.[2] **C08G** *63/72*

U.S. Cl. 528—500 **6 Claims**

1. A continuous process for the recovery of polycarbonates from solutions thereof in organic solvents, said process consisting of the following phases:

(a) feeding of the polycarbonate solution at a temperature comprised between 0° and 120° C., through one or more feeding ducts into the narrow zone or the diverging stretch of a DeLaval-type nozzle run through by water vapor at respectively sonic or ultrasonic speed, maintaining feeding ratios vapor/polycarbonate solution comprised between 1 and 5 kg of vapor per kg of solution, with formation of a dispersion of particles of polycarbonate in the vapor;

(b) continuous feeding of the dispersion resulting from phase (a) to a pipe-in-pipe heat exchanger, directly connected to the diverging stretch of the nozzle, said heat exchanger having a mean thermal exchange coefficient comprised between 500 and 1500 Kcal/hr.sq.mt°C., and a cross-section growing along its development, and in which exchanger the dispersion, maintained at 100°–140° C. for dwell times comprised between 0.05 and 5 seconds, has a flow rate of at least 90 mt/sec. in the initial stretch and from 10 to 50 mt/sec. in its final stretch; thereby obtaining solid minute polycarbonate particles dispersed in the vapor phase consisting of the vapors of the solvent and of water vapor, and separating the solid polycarbonate particles from the vapors.

4,212,968

PROSTAGLANDIN DERIVATIVES

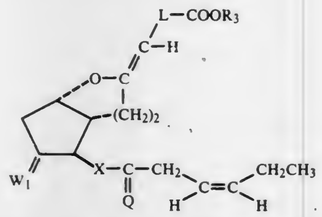
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,982

Int. Cl.[2] **C07D** *311/02*

U.S. Cl. 542—426 **14 Claims**

1. A compound of the formula



wherein W_1 is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH_2OH:β-H;

wherein L is

$-(CH_2)_d-C(R_2)_2$,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, wherein R_3 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,

(g) (p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(h) (p—Ph)—NH—CO—(p—Ph),

(i) —(p—Ph)—NH—CO—CH_3,

(j) —(p—Ph)—NH—CO—NH_2,

(k) —(p—Ph)—CH=N—NH—CO—NH_2,

(l) β-naphthyl, or

(m) $CH(R_{11})$—CO—R_{10},

wherein (p—Ph) is para-phenyl or inter-para-phenylene; wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_{11} is hydrogen or benzoyl, or

(n) a pharmacologically acceptable cation; wherein Q is oxo, α-H:β-H, α-OH:β-R_8 or α-R_8:β-OH wherein R_8 is hydrogen or alkyl or one to 4 carbon atoms, inclusive; and

(l) trans-CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH_2CH_2—; including the lower alkanoates thereof.

4,212,969

1-HYDROXYMETHYL-1-OXO-PROSTANE DERIVATIVES OF THE A_2 SERIES

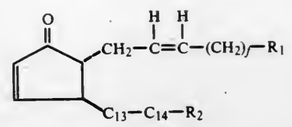
Allan Wissner, Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 8, 1977, Ser. No. 858,579

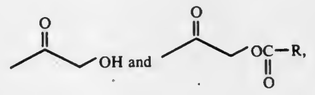
Int. Cl.[2] **C07C** *177/00*

U.S. Cl. 542—429 **189 Claims**

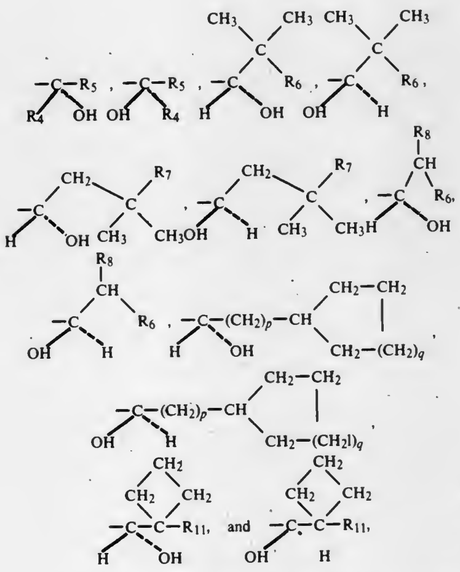
1. An optically active compound of the formula:



wherein f is an integer from 2 to 4, inclusive; C_{13}–C_{14} is selected from the group consisting of ethylene and trans-vinylene; R_1 is a radical selected from the group consisting of

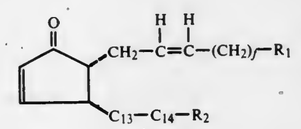


wherein R is selected from the group consisting of C_1–C_4 alkyl; R_2 is a moiety selected from the group consisting of

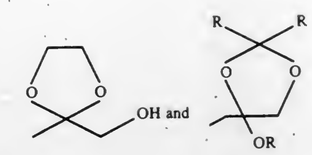


wherein R_4 is selected from the group consisting of hydrogen and methyl, R_5 is selected from the group consisting of C_4–C_7 alkyl, R_6 is selected from the group consisting of C_3–C_5 alkyl, R_7 is selected from the group consisting of C_2–C_4, R_8 is selected from the group consisting of C_1–C_2 alkyl, R_{11} is selected from the group consisting of C_3–C_7 alkyl, p is an integer from 0 to 3, and q is 1 or 2; the racemic mixture thereof; and the mirror image thereof.

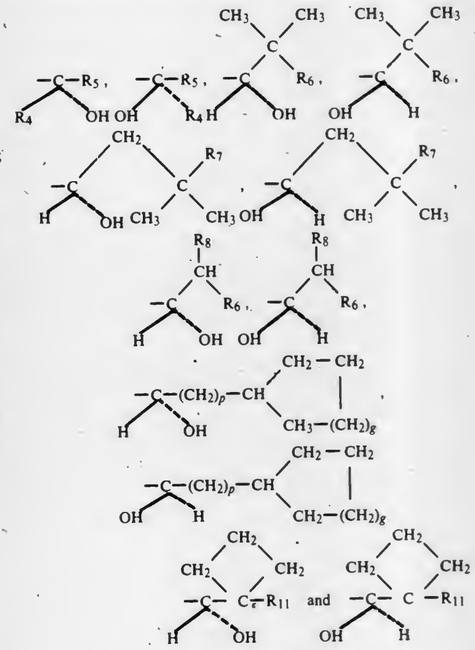
34. An optically active compound of the formula:



wherein f is an integer from 2 to 4, inclusive; C_{13}–C_{14} is selected from the group consisting of ethylene and transvinylene; R_1 is a radical selected from the group consisting of



wherein R is selected from the group consisting of C_1–C_4 alkyl; R_2 is a moiety selected from the group consisting of



wherein R_4 is selected from the group consisting of hydrogen and methyl, R_5 is selected from the group consisting of C_4–C_7 alkyl, R_6 is selected from the group consisting of C_3–C_5 alkyl, R_7 is selected from the group consisting of C_2–C_4, R_8 is selected from the group consisting of C_1–C_2 alkyl, R_{11} is selected from the group consisting of C_3–C_7 alkyl, p is an integer from 0 to 3, and q is 1 or 2; the racemic mixture thereof and the mirror image thereof.

4,212,970

2-HALOMETHYL-5-VINYL-1,3,4-OXADIAZOLE COMPOUNDS

Masayuki Iwasaki, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

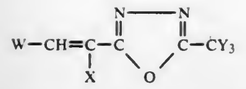
Filed Nov. 22, 1978, Ser. No. 962,851

Claims priority, application Japan, Nov. 28, 1977, 52-142473; Aug. 8, 1978, 53-96306

Int. Cl.[2] **C07D** *271/10, 407/02*

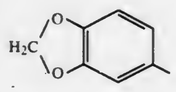
U.S. Cl. 542—455 **11 Claims**

1. Compounds represented by the following general formula (I):



(I)

wherein W represents a phenyl group, a phenyl group substituted with a member selected from the group consisting of a halogen atom, a nitro group, a cyano group, an alkyl group containing 1 to 3 carbon atoms and an alkoxy group containing 1 to 4 carbon atoms, with the number of the substituents being 1 or 2 when said substituent is a halogen atom and 1 when said substituent other than a halogen atom, or an unsubstituted naphthyl group and said phenyl group may take the form of



X represents a hydrogen atom, an unsubstituted phenyl group or an alkyl group containing 1 to 3 carbon atoms, and Y represents a halogen atom.

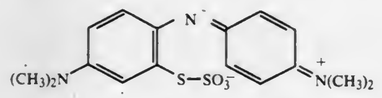
4,212,971

PROCESS FOR PREPARING METHYLENE BLUE

Fredrik V. Randvere, Manville, and Leroy M. Konzelman, Livingston, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 8, 1979, Ser. No. 18,710
Int. Cl.[2] C07D *279/18*
U.S. Cl. 544—37 **6 Claims**

1. In a process for preparing Methylene Blue by (a) reacting a mixture of N,N-dimethyl-p-phenylenediamine, an inorganic oxidizing agent, sodium thiosulfate, and sulfuric acid, or hydrochloric acid, in water to form a solution of 2-amino-5-dimethylaminophenyl thiosulfonic acid, (b) adding to the reaction mixture N,N-dimethylaniline hydrochloride, additional oxidizing agent, and sulfuric acid, or hydrochloric acid, to form a solution containing a compound represented by the formula:



(c) treating the reaction mixture with a mixture of copper sulfate and said oxidizing agent and heating the reaction mixture until the formation of Methylene Blue is completed, and recovering Methylene Blue therefrom, the improvement which comprises: using about 0.8 to 5.0 mole of manganese dioxide as the oxidizing agent in the substantial absence of a dichromate and in the presence of at least 0.017 mole of copper sulfate per mole of N,N-dimethyl-p-phenylenediamine initially charged.

4,212,972

PREPARATION OF CIS-2,6-DIMETHYLMORPHOLINE

Norbert Goetz, Worms; Walter Himmele, Walldorf, and Leopold Hupfer, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,200
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2830998
Int. Cl.[2] C07D *265/30*
U.S. Cl. 544—106 **2 Claims**

1. A process for the preparation of cis-2,6-dimethylmorpholine by isomerizing trans-2,6-dimethylmorpholine, wherein trans-2,6-dimethylmorpholine is isomerized in the presence of hydrogen and of a catalyst which contains one or more metals of group VIII or group Ib of the periodic table of the elements, or contains a mixture of these, at from 120° to 280° C., especially from 150° to 250° C., under a pressure of from 1 to 200 bar.

4,212,973

PREPARATION OF CYCLOPENTANE-1,1-DIACETIC ACID AND INTERMEDIATE

Raymond D. Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 1, 1979, Ser. No. 62,649
Int. Cl.[2] C07D *211/58*
U.S. Cl. 546—16 **5 Claims**

1. The process for preparing β,β-tetramethylene-α,α'-dicyanoglutarimide or its salt comprising reacting the reaction product of cyclopentanone and a cyanoacetate ester with cyanoacetamide and/or the reaction product of cyclopentanone and cyanoacetamide with a cyanoacetate ester, in the presence of a basic catalyst.

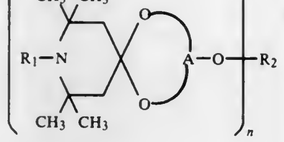
4,212,974

PIPERIDINE DERIVATIVES

Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Toshimasa Toda; Eiko Mori; Hideo Horiuchi; Susumu Higashida; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Hisayou Osawa, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Division of Ser. No. 753,691, Dec. 23, 1976, Pat. No. 4,125,533, which is a division of Ser. No. 553,087, Feb. 26, 1975, Pat. No. 4,016,168, which is a division of Ser. No. 405,570, Oct. 11, 1973, Pat. No. 3,899,464. This application Jul. 14, 1978, Ser. No. 924,665
Claims priority, application Japan, Oct. 26, 1972, 47-107408
Int. Cl.[2] C07D *405/04*
U.S. Cl. 546—19 **10 Claims**

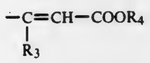
1. A compound having the formula I



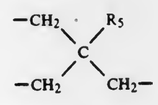
(I)

wherein,
R_1 represents hydrogen atom,
an alkyl group having 1 to 8 carbon atoms,
a substituted alkyl group having 1 to 3 carbon atoms in its alkyl moiety and selected from the group consisting of
a hydroxyalkyl,
an alkoxyalkyl having 1 to 4 carbon atoms in its alkoxy portion,
an alkanoyloxyalkyl having 2 to 18 carbon atoms in its alkanoyl portion,
an alkenoyloxyalkyl having 3 or 4 carbon atoms in its alkenoyl portion,
a benzoyloxyalkyl,
a cyanoalkyl,
a halogenoalkyl,
an epoxyalkyl, and
an alkoxycarbonylalkyl having 1 to 4 carbon atoms in its alkoxy portion,
an alkenyl group having 3 or 4 carbon atoms,
an alkynyl group having 3 or 4 carbon atoms,
benzyl group,
a benzyl group substituted with a halogen atom or a methyl group,
an alkanoyl or alkenoyl group, each having 2 to 8 carbon atoms,

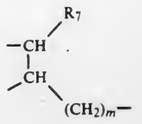
an alkoxycarbonyl group having 2 to 5 carbon atoms or benzoyloxycarbonyl group, n is the number 1 or 2, R_2 represents, when n is 1, hydrogen atom,
an alkanoyl group having 1 to 18 carbon atoms and which may be interrupted in the alkyl portion by sulfur atom,
an alkenoyl group having 3 to 6 carbon atoms, each of which alkanoyl or alkenoyl groups may be substituted by phenyl or phenyl substituted with alkyl having 1 to 4 carbon atoms and/or hydroxy,
a benzoyl or naphthoyl group which may be substituted with an alkyl or alkoxy group having 1 to 4 carbon atoms, a halogen atom or a hydroxy group,
furoyl group,
isonicotinoyl group,
nicotinoyl group,
morpholinocarbonyl group,
an alkyl group having 1 to 18 carbon atoms,
an alkynyl group having 3 or 4 carbon atoms,
benzyl group,
phenyl group,
a o-, m- or p-tolyl group,
a α- or β-naphthyl group,
an alkoxyalkyl or alkoxysulfonylalkyl group having 1 to 4 carbon atoms both in the alkyl and alkoxy portions,
2,3-epoxypropyl group,
an N-substituted carbamoyl or thiocarbaboyl group wherein the substituent is an alkyl group having 1 to 4 carbon atoms, a phenyl group or a cyclohexyl group,
a group derived from benzenesulfinic, benzenesulfonic, methanesulfonic, p-toluenesulfonic, diphenylphosphoric, C_{1-8} dialkylphosphoric, diphenylphosphorus or C_{1-8} dialkylphosphorus acid by removing a hydroxy group, or
a group



in which
R_3 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or phenyl, and
R_4 represents an alkyl group having 1 to 8 carbon atoms, when n is 2, R_2 represents
carbonyl group,
a saturated aliphatic diacyl group having 2 to 18 carbon atoms derived from a saturated dicarboxylic acid and which may be interrupted in the alkylene chain by sulfur atom,
an unsaturated aliphatic diacyl group having 4 to 6 carbon atoms derived from an unsaturated dicarboxylic acid,
terephthaloyl or isophthaloyl group,
an alkylene group having 2 to 6 carbon atoms,
an alkylene group having 4 to 6 carbon atoms,
an alkenylene group having 4 to 6 carbon atoms,
p-xylylene group,
an N-substituted dicarbamoyl group wherein the N-substituent is alkylene having 1 to 6 carbon atoms, phenylene, tolylene or methanediphenylene group, or
a group derived from sulfurous, sulfuric or phenylphosphorus acid by removing two hydroxy groups, A represents a group



or a group



wherein
R_5 represents hydrogen atom or an alkyl group having 1 to 3 carbon atoms,
m is a number 1 or 2, and
R_7 represents hydrogen atom.

4,212,975

PROCESS FOR THE MANUFACTURE OF THE GAMMA-CRYSTAL MODIFICATION OF LINEAR TRANS-QUINACRIDONE

Adolf Kroh, Selters; Otto Fuchs, Frankfurt am Main, and Ernst Spietschka, Idstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 19, 1978, Ser. No. 952,661
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747508
Int. Cl.[2] C09B *48/00*
U.S. Cl. 546—49 **11 Claims**

1. A process for making the gamma-crystal modification of the unsubstituted linear trans-quinacridone which comprises cyclizing 2,5-dianilino-terephthalic acid with a 2,5-fold to 4-fold quantity by weight of a condensing agent that is polyphosphoric acid or an acidic polyphosphoric acid methyl ester, hydrolyzing the reaction mixture in water to form crude quinacridone agglomerates, separating the crude quinacridone agglomerates and mixing them with a solvent selected from alcohols and ketones having up to 6 carbon atoms, intensively milling the quinacridone agglomerates in admixture with the solvent and heating the resulting mixture to a temperature of 80° C. to 200° C.

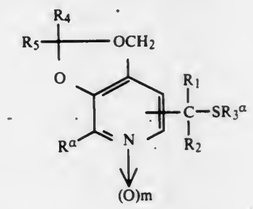
4,212,976

3,4α-DI-O-DERIVATIVES OF MERCAPTOMETHYLPYRIDINE AND PYRIDYLMETHYLDISULFIDE

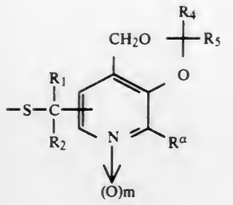
Tsung-Ying Shen, Westfield; Howard Jones, Holmdel; Dennis M. Mulvey, Milford, and Conrad P. Dorn, Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 685,211, May 11, 1976, Pat. No. 4,057,637, which is a division of Ser. No. 470,231, May 16, 1974, Pat. No. 3,971,797, which is a continuation-in-part of Ser. No. 368,774, Jun. 15, 1973, abandoned. This application Sep. 20, 1977, Ser. No. 834,949
Int. Cl.[2] C07D *491/04*
U.S. Cl. 546—115 **3 Claims**

1. The compound of structural formula:



or pharmaceutically acceptable salt thereof, wherein R^{α} is C_{1-5} alkyl R_1 is hydrogen, C_{1-3} alkyl, or phenyl; R_2 is hydroogen or C_{1-3} alkyl; m is 0 or 1; $R_3{}^{\alpha}$ is hydrogen or



and R_4 and R_5 are the same or different and each is hydrogen, C_{1-6} alkyl or phenyl, or taken together, R_4 and R_5 represent =O or =S, with the proviso that if R_4 and R_5 are hydrogen, C_{1-6} alkyl or phenyl, then m is 1.

4,212,977

PROCESS FOR PREPARING N-CHLOROIMIDES

Ta-Sen Chou, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 20, 1978, Ser. No. 971,617

Int. Cl.[2] C07D *211/92, 209/48, 207/46*

U.S. Cl. 546—243 **4 Claims**

1. A process for preparing N-chlorophthalimide, N-chlorosuccinimide, or N-chloroglutarimide comprising contacting phthalimide, succinimide or glutarimide with chlorine at a temperature or from about −10° C. to about +50° C. under substantially non-aqueous conditions in the presence of poly(4-vinylpyridine)-divinylbenzene copolymer in a ratio by weight of said copolymer to phthalimide, succinimide, or glutarimide of between 1:1 and about 1:5, said copolymer containing between about 1% and about 10% cross linking.

4,212,978

PROCESS FOR THE CATALYTIC PRODUCTION OF 2-SUBSTITUTED PYRIDINES

Peter Hardt, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland

Continuation of Ser. No. 724,939, Sep. 20, 1976, abandoned. This application Mar. 22, 1978, Ser. No. 888,937

Claims priority, application Switzerland, Sep. 18, 1975, 12139/75

The portion of the term of this patent subsequent to Apr. 1, 1997, has been disclaimed.

Int. Cl.[2] C07D *213/08*

U.S. Cl. 546—253 **8 Claims**

1. A process for the catalytic production of a 2-substituted pyridine which comprises reacting a cyano compound and acetylene in the presence of cobaltocene, which is a catalyst, said reaction being conducted at a pressure between 3 and 20 atmospheres of acetylene, and said cobaltocene not being converted to a different valence state during the process, whereby said cyano compound has the formula:

A—CN

wherein A is alkyl having 1 to 8 carbons, cycloalkyl having 3 to 9 carbon atoms, alkenyl having 2 to 8 carbon atoms, aryl having 6 to 10 carbon atoms, cyanoaryl wherein the aryl moiety has 6 to 10 carbon atoms, pyridyl, pyrimidyl or



wherein R_1 is hydrogen or alkyl having 1 to 6 carbon atoms, R_2 is hydrogen or alkyl having 1 to 6 carbon atoms, and R_3 is cyanoalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, carbalkoxy alkyl wherein the alkyl moiety has 1 to 6 carbon atoms, or aralkyl wherein the alkyl moiety has 1 to 6 carbon atoms and the aryl moiety has 6 to 10 carbon atoms, or wherein R_1 is hydrogen or alkyl having 1 to 6 carbon atoms, R_2 is cyanoalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, carbalkoxyalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, or aralkyl wherein the alkyl moiety has 1 to 6 carbon atoms and the aryl moiety has 6 to 10 carbon atoms and R_3 is cyanoalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, carbalkoxyalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, or aralkyl wherein the arlkyl moiety has 1 to 6 carbon atoms and the aryl moiety has 6 to 10 carbon atoms,whereby said 2-substituted pyridine is obtained.

4,212,979

2-SUBSTITUTED BENZISOTHIAZOLONES

Keith H. Baggaley, Redhill, England, assignor to Beecham Group Limited, England

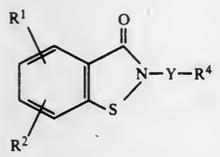
Division of Ser. No. 738,000, Nov. 2, 1976, Pat. No. 4,113,728. This application Nov. 11, 1977, Ser. No. 850,786

Claims priority, application United Kingdom, Nov. 18, 1975, 47373/75

Int. Cl.[2] C07D *513/04*

U.S. Cl. 546—270 **15 Claims**

1. A compound of the formula (II):



(II)

or a pharmaceutically acceptable non-toxic acid addition salt thereof wherein R^1 and R^2 are the same or different and each is hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, nitro, amino, acetylamino or halogen, or R^1 and R^2 when attached to adjacent carbon atoms form an alkylene moiety of 3 to 6 carbon atoms or an oxy-alkylenoxy moiety of 1 to 3 carbon atoms; Y is straight- or branched- chain alkylene of 1 to 12 carbon atoms, and R^4 is pyridyl.

4,212,980

5-PHENOXY-2-PYRIDINECARBONITRILE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

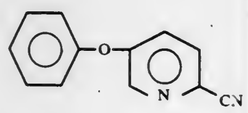
Donald E. Butler, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 13, 1978, Ser. No. 960,323

Int. Cl.[2] C07D *213/57*

U.S. Cl. 546—288 **2 Claims**

1. A compound of the formula



and pharmaceutically-acceptable salts thereof.

4,212,981

PROCESS FOR PREPARING 3-ISOXAZOLYLUREA DERIVATIVES

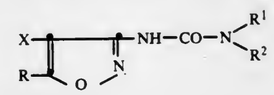
Hisajiro Yukinaga, Kusatsu; Shinzaburo Sumimoto; Ichiro Ishizuka, both of Osaka, and Jitsuo Sugita, Ikeda, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 667,033, Mar. 15, 1976, Pat. No. 4,062,861, which is a continuation of Ser. No. 491,491, Jul. 23, 1974, abandoned. This application Nov. 16, 1977, Ser. No. 852,049

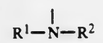
Int. Cl.[2] C07D *261/14*

U.S. Cl. 548—246 **10 Claims**

1. A process for preparing a compound of the formula:

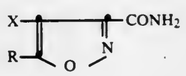


wherein R represents hydrogen, C_1–C_6 alkyl, phenyl, tolyl or xylyl; R^1 represents hydrogen or C_1–C_6 alkyl; R^2 represents C_1–C_6 alkyl, benzyl, phenethyl, phenyl, tolyl or xylyl; or



represents pyrrolidino, piperidino, morpholino or 4-alkylpiperazino; X represents hydrogen or halogen; or R and X form C_3–C_5 alkylene,

which comprises the step of reacting a carboxamide of the formula:



wherein R and X each is as defined above, with an amine of the formula:

R^1—NH—R^2

wherein R^1 and R^2 each is as defined above, in the presence of an alkaline hypohalite and an alkaline hydroxide in aqueous dimethylsulfoxide.

4,212,982

POLYISOCYANATES WITH AT LEAST ONE HYDANTOIN OR THIOHYDANTOIN RING SUBSTITUTED BY CARBOXYLIC ACID AMIDE GROUPS

Jürgen Lewalter, Odenthal; Rudolf Merten, Leverkusen; Wilfried Zecher, Leverkusen, and Willi Dünwald, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

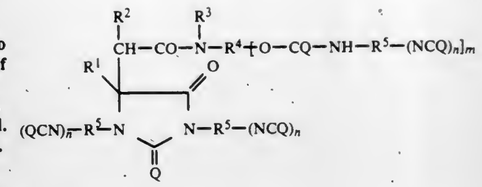
Filed Nov. 8, 1978, Ser. No. 958,690

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1977, 2750772

Int. Cl.[2] C07D *233/78, 233/86*

U.S. Cl. 548—313 **4 Claims**

1. A polyiso(thio)cyanate containing a (thio)hydantoin group of the formula



wherein

R^1 and R^2 are the same or different and each is alkyl having 1-6 carbon atoms, cycloalkyl having 5-8 carbon atoms, alkylaryl having 7-16 carbon atoms, aryl having 6-20 carbon atoms, halogen or hydrogen and when R_1 and R_2 together form a ring, said ring has up to 8 ring members;

R^3 has the same meaning as R^1 and R^2 except that R^3 may not be halogen and may be additionally substituted by hydroxyl when containing two or more carbon atoms;

R^4 is alkyl having 2-10 carbon atoms, cycloalkyl having 5-10 carbon atoms, alkylaryl having 7-16 carbon atoms or aryl having 6-20 carbon atoms;

R^5 is alkyl having 2-20 carbon atoms, cycloalkyl having 5-12 carbon atoms, alkylaryl having 6-20 carbon atoms or aryl having 5-12 carbon atoms all of which are unsubstituted or substituted by halogen;

Q is oxygen or sulfur;

n is an integer from 1-3; and

m is 1 or 2.

4,212,983

MANUFACTURE OF IMIDAZOLINE COMPOUNDS

Brinley M. Phillips, Whitehaven; Robert B. Lace, Egremont, and Alan J. Lambie, Whitehaven, all of England, assignors to Albright & Wilson Limited, Oldbury, England

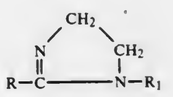
Filed Dec. 20, 1978, Ser. No. 971,449

Claims priority, application United Kingdom, Dec. 22, 1978, 53575/78

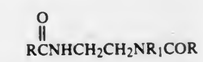
Int. Cl.[2] C07D *233/14, 233/16*

U.S. Cl. 548—352 **11 Claims**

1. A process for the production of an imidazoline of low diamide content which comprises heating a preformed mixture comprising an imidazoline of formula:



and a diamide of the formula



with an amine of the formula

R_2R_3NH

wherein

R represents an alkyl, alkenyl or cycloalkyl group having from 8 to 22 carbon atoms,

R_1 represents an alkyl or alkenyl group having from 1 to 4 carbon atoms or one of said groups containing a hydroxy or an amino substituent,

R_2 represents an aliphatic group having from 1 to 4 carbon atoms or such an aliphatic group containing an amino or hydroxy substituent, and

R_3 represents any of the groups R_2 or a hydrogen atom,

at a temperature of at least 150° C.

4,212,984

PROSTAGLANDIN PRECURSORS

Kiyosi Kondo, Yamato; Daiei Tunemoto, and Teruo Umemoto, both of Sagamihara, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

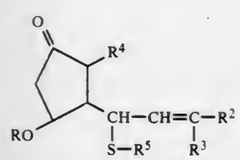
Filed Dec. 20, 1977, Ser. No. 862,329

Claims priority, application Japan, Dec. 27, 1976, 51-156364; Dec. 27, 1976, 51-156365; Dec. 27, 1976, 51-156366; Dec. 27, 1976, 51-156367

Int. Cl.² C07C *177/00*

U.S. Cl. 560—18 **13 Claims**

1. A 4-oxycyclopentanone compound represented by the formula (II)



(II)

wherein R represents a hydrogen atom or a protective group for a hydroxy group, R^2 represents a substituted or unsubstituted alkyl group having 1 to 8 carbon atoms, R^3 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, R^4 represents a hydroxymethyl group, a methylene group ($=CH_2$) or a $-COOR^1$ group wherein R^1 represents an alkyl group having 1 to 4 carbon atoms or an aryl group, and R^5 represents an alkyl group having 1 to 4 carbon atoms or an aryl group.

4,212,985

CIS-4,5-DIDEHYDRO-16-PHENOXY-PGE$_1$ COMPOUNDS

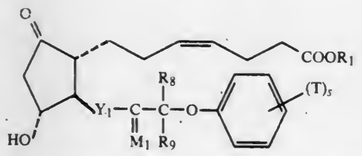
Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 678,948, Apr. 21, 1976. This application Apr. 28, 1978, Ser. No. 900,822

Int. Cl.² C07L *177/00*

U.S. Cl. 560—53 **7 Claims**

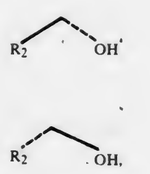
1. An optically active compound of the formula:



or a racemic form of that compound and the enantiomer thereof;

wherein R_1 is hydrogen or alkyl of one to 12 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive;

wherein M_1 is



wherein R_2 is hydrogen, methyl, or ethyl;

wherein Y_1 is trans-CH=CH— or $—CH_2CH_2—$;

wherein R_8 and R_9 are hydrogen or methyl being the same or different; and

wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_3$, wherein R_3 is alkyl of one to 4 carbon atoms, inclusive; and wherein s is zero, one, 2, or 3 with the proviso that not more than two T's are other than alkyl;

including alkanoates of 2 to 8 carbon atoms, inclusive, and pharmacologically acceptable salts thereof when R_1 is hydrogen.

4,212,986

2,2-DIFLUORO-PGE$_2$ ANALOGS

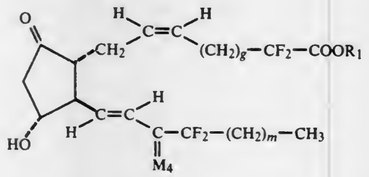
Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 552,708, Feb. 24, 1975, Pat. No. 4,001,300. This application Sep. 17, 1976, Ser. No. 724,109

Int. Cl.² C07C *177/00*

U.S. Cl. 560—121 **6 Claims**

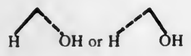
1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof,

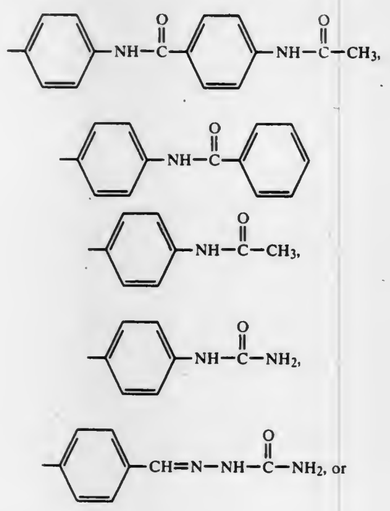
wherein g is 2 to 4, inclusive;

wherein M_4 is

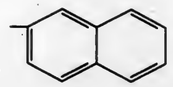


wherein m is 2 to 4, inclusive,

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro, alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation,



-continued



4,212,987

2,2-DIFLUORO-PGE$_1$ ANALOGS

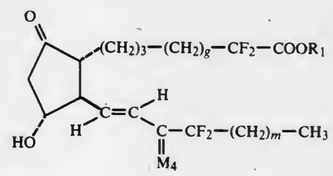
Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 552,708, Feb. 24, 1975, Pat. No. 4,001,300. This application Sep. 17, 1976, Ser. No. 724,159

Int. Cl.² C07C *177/00*

U.S. Cl. 560—121 **6 Claims**

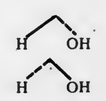
1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof,

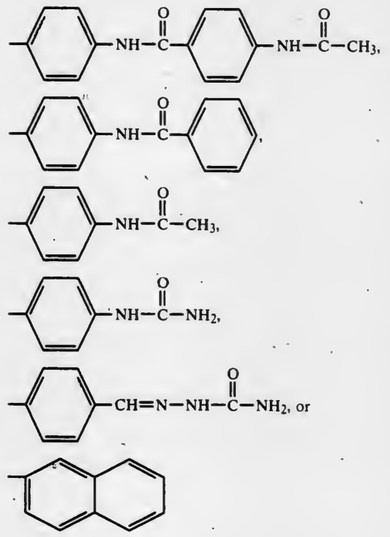
wherein g is 2 to 4, inclusive;

wherein M_4 is



wherein m is 2 to 4, inclusive,

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro, alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation,



4,212,988

PREPARATION OF 2-KETOGULONIC ACID

Glenn C. Andrews, Waterford, Conn., assignor to Pfizer Inc., NY

Continuation-in-part of Ser. No. 965,626, Dec. 1, 1978, abandoned. This application Mar. 26, 1979, Ser. No. 24,284

Int. Cl.² C07C *59/33, 67/30, 69/61*

U.S. Cl. 560—174 **16 Claims**

1. A process for the preparation of a 2-ketogulonate which comprises reducing a 2,5-diketogluconate with an amine-borane selected from those of the formula $R_1R_2HN.BH_3$ and pyridine-borane in solution at a pH between about 2 and 7 at a temperature between about −20° to 70° C., wherein R_1 and R_2, are each selected from hydrogen and alkyl of 1 to 4 carbon atoms; and said 2,5-diketogluconate is selected from 2,5-diketogluconic acid, a normal alkyl ester of said acid wherein said alkyl group is of 1 to 4 carbon atoms, and a salt of said acid having a counterion selected from an alkali metal, an alkaline earth metal, ammonium and tetraalkylammonium having from 1 to 4 carbon atoms in each alkyl group.

4,212,989

PROCESS FOR PRODUCING CARBOXYLIC ACIDS OR ESTERS THEREOF

Tomiya Isshiki, Tokyo; Yasuhiko Kijima, and Yuh Miyauchi, both of Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

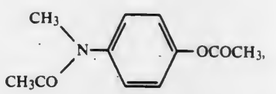
Filed Oct. 26, 1978, Ser. No. 955,411

Claims priority, application Japan, Nov. 1, 1977, 52-131140

Int. Cl.² C07C *67/36, 67/37*

U.S. Cl. 560—232 **2 Claims**

1. In a process for producing a carboxylic acid or its ester by reacting an alcohol or an ether with carbon monoxide in the presence of a catalyst composed of at least one metal of Group VIII of the periodic table and a promoter composed of at least one iodine-containing substance selected from the group consisting of iodine and iodine compounds, said alcohol being an aliphatic alcohol containing 1 to 20 carbon atoms, or an aromatic alcohol containing 7 to 20 carbon atoms and said ether being an aliphatic ether containing 2 to 30 carbon atoms or an aromatic ether containing 7 to 30 carbon atoms, the improvement wherein the reaction is performed in the presence of, as a solvent phenyl formate, phenyl acetate, phenyl propionate, phenyl butyrate, phenyl valerate, tolyl acetate, xylyl acetate, mesityl acetate, cumenyl acetate, ethyl phenyl acetate, propyl phenyl acetate, butyl phenyl acetate, chlorophenyl acetate, nitrophenyl acetate, nitrosophenyl acetate, aminophenyl acetate, cyanophenyl acetate,



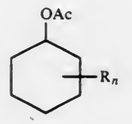
diacetoxybenzene, naphthyl acetate, naphthyl propionate, naphthyl butyrate, diacetoxynaphthalene, diacetoxyanthracene, (diacetoxy)methylanthracene, (diacetoxy)ethylanthracene or (diacetoxy)amylanthracene.

4,212,990
METHOD FOR PRODUCING CYCLOHEXANE DERIVATIVES DIRECTLY FROM AROMATIC HYDROCARBONS

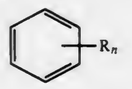
Yutaka Yasuhara; Masaki Nishino, and Seikichi Matsuhira, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 581,788, May 29, 1975, Pat. No. 4,067,915. This application Aug. 5, 1977, Ser. No. 822,140
Int. Cl.[2] C07C *29/00, 35/08, 67/04, 69/14*
U.S. Cl. 560—241 17 Claims

1. A process for producing a cyclohexane derivative having the general formula



wherein Ac is selected from the group consisting of hydrogen, formyl, acetyl and propionyl groups, R is a lower alkyl group having 1 to 3 carbon atoms, and n is an integer of from 0 to 2, which process comprises reacting an aromatic hydrocarbon having the general formula



wherein R and n are the same as above, with hydrogen and a compound having the general formula HOAc wherein Ac is the same as above, in the presence of a strong acid and a hydrogenatin catalyst comprising a combination of at least two noble metals selected from the group consisting of Ru, Rh, Pd, Os, Ir, and Pt.

4,212,991
SINGLE-STAGE PROCESS FOR THE PREPARATION OF TEREPHTHALIC ACID

Jean-Claude Choulet, Meyzieu, and Andre Laily, Venissieux, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed May 5, 1977, Ser. No. 794,134
Claims priority, application France, May 11, 1976, 76 14867
Int. Cl.[2] C07C *51/02*
U.S. Cl. 562—480 9 Claims

1. A process for the preparation of highly pure terephthalic acid comprising reacting di-potassium terephthalate with benzoic acid in an aqueous reaction medium containing potassium benzoate, wherein the initial composition of reactants introduced into said reaction zone comprises less that about 0.40 mole of di-potassium terephthalate per kg of water, between about 0.2 and 0.8 moles of potassium benzoate per kg of water and between about 4 to 12 moles of benzoic acid per mole of di-potassium terephthalate and wherein the reaction zone is maintained at temperatures greater than about 80° C.

4,212,992
FIRE RETARDANTS

David J. Fenoglio, Carol Stream, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 434,347, Jan. 17, 1974, Pat. No. 4,041,016. This application Dec. 16, 1976, Ser. No. 751,133
Int. Cl.[2] C07C *63/44, 49/44*
U.S. Cl. 562—492 6 Claims

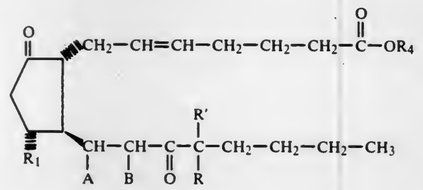
1. A halogen containing compound selected from the group consisting of 1,2,3,4-tetrahalonaphthobornadienes, 1,2,3,4,7,7-hexahalonaphthobornadienes, 1,2,3,4-tetrahalo-7,7-dialkoxynaphthobornadienes, 1,2,3,4-tetrahalo-7-one-naphthobornadiene and 2,3,4-trihalo-9,10; 4a,9a-tetrahydroanthracene-1-carboxylic acid.

4,212,993
16-SUBSTITUTED PROSTAGLANDINS

George W. Holland, and Perry Rosen, both of North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 813,068, Jul. 5, 1977, Pat. No. 4,163,016. This application Apr. 6, 1979, Ser. No. 27,589
Int. Cl.[2] C07C *177/00*
U.S. Cl. 562—503 4 Claims

1. A compound of the formula:



wherein A and B are individually hydrogen; R_4 is hydrogen or lower alkyl; R_1 is lower alkyl; R′ is fluoro, lower alkyl or trifluoromethyl; R is hydrogen, fluoro, or lower alkyl; or their optical antipodes or racemates thereof.

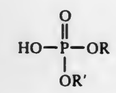
4,212,994
PROCESS FOR THE PREPARATION OF CARBOXYLIC ACID

David A. Wilson, Richwood, and Roy W. Schmidt, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 3, 1978, Ser. No. 921,685
Int. Cl.[2] C07C *51/02*
U.S. Cl. 562—568 10 Claims

1. A process for preparing a carboxylic acid from its corresponding alkali metal-type carboxylate, comprising the steps of:

(a) reacting by contacting an aqueous solution of the alkali metal or ammonium carboxylate with a liquid cation exchange agent in a substantially water-insoluble organic solvent which does not dissolve the corresponding carboxylic acid, said liquid cation exchange agent corresponding to the formula



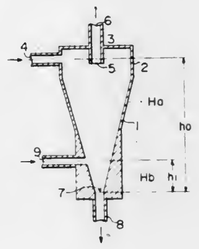
wherein R and R′ are each independently hydrogen, alkyl, aralkyl, alkaryl or aryl with the proviso that the total number of carbon atoms in R plus R′ is at least equal to the integer 1, so as to effect acidification of the carboxylate to the corresponding carboxylic acid in the aqueous medium; and

(b) separating the aqueous solution containing the carboxylic acid from the organic solvent.

4,212,995
PROCESS FOR TREATMENT BY LIQUID CYCLONE FOR PRODUCTION OF TEREPHTHALIC ACID SUSPENSION HAVING REDUCED IMPURITY CONTENT

Shigemi Shiraki, Iwakuni, Japan, assignor to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Aug. 8, 1978, Ser. No. 931,891
Claims priority, application Japan, Aug. 12, 1977, 52-96176
Int. Cl.[2] C07C *51/42*
U.S. Cl. 562—485 5 Claims



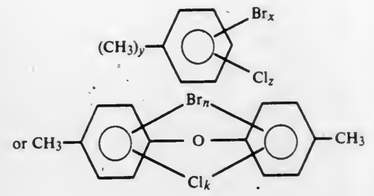
1. A process for treatment by a liquid cyclone for the production of a suspension of terephthalic acid having a reduced impurity content which comprises supplying a fresh and hot lower aliphatic carboxylic acid solvent to a liquid-phase catalytic oxidation product of a p-alkylbenzene or a hot, impurity-containing suspension of terephthalic acid particles in a mother liquor containing a lower aliphatic carboxylic acid solvent, feeding the resulting mixture into a liquid cyclone, treating it in the cyclone at an elevated temperature, withdrawing an impurity-containing liquid composed mainly of said mother liquor from a withdrawal opening provided near one end of the cyclone, and withdrawing a suspension of terephthalic acid particles in a lower aliphatic carboxylic acid solvent consisting mainly of said fresh solvent from a withdrawal opening provided near the other end of the cyclone; wherein a fresh lower aliphatic carboxylic acid solvent is additionally supplied into the cyclone through an opening provided between a position apart from the suspension withdrawal opening of the liquid cyclone toward its mixture-feeding opening by a distance corresponding to about two-thirds of the distance (h_0) from the mixture-feeding opening to the suspension withdrawal opening and a position apart from the suspension withdrawal opening toward its mixture feeding opening by a distance corresponding to about one-tenth of the distance (h_0).

4,212,996
PROCESS FOR THE SIDE-CHAIN CHLORINATION OF PERHALOGENATED METHYL AROMATIC COMPOUNDS

Egon N. Petersen, Neunkirchen-Seelscheid; Hermann Richtzenhain, Much-Schwellenbach, and Klaus Schrage, Königswinter-Uthweiler, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 709,057, Jul. 27, 1976. This application May 15, 1978, Ser. No. 905,662
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1975, 2534210
Int. Cl.[2] C07C *41/00, 17/14*
U.S. Cl. 568—639 21 Claims

1. Process for the side chains chlorination of an aromatic compound perhalogenated in the nucleus or nuclei, containing methyl groups, and having the general formula:



to chlorinate the methyl group(s) to —CH_2Cl, wherein y = 1 or 2, z = 0 to 1, x = 6−(y+z), n = 0 to 8 and k = (8−n), and the methyl groups are, respectively, in the ortho, meta or para position to one another and in the p-position to the oxygen bridge, said compound containing traces of a metal of the group Fe, Fe ion, Al, or Al ion as impurity, consisting essentially of thermally chlorinating said aromatic compound in the liquid phase, in the presence of a complexing agent for said metal, the complexing agent being of the group cyclohexylene-(1,2)-dinitrilotetraacetic acid, bis-(aminoethyl)-glycolether-N,N,N′,N′-tetraacetic acid, (3-aza-3-(carboxymethyl))-pentamethylenedinitrilotetraacetic acid; and ethylenediamine-tetraacetic acid.

4,212,997
PROCESS FOR RECOVERING 2,2-BIS(4-HYDROXYPHENYL)PROPANE FROM AN ADDUCT OF 2,2-BIS(4-HYDROXYPHENYL)PROPANE AND PHENOL

John N. Adams, Pittsburgh, Pa.; Gaylord M. Kissinger, Mt. Vernon, Ind., and Michael C. Lee, Pensacola, Fla., assignors to General Electric Company, Pittsfield, Mass.

Filed Jun. 27, 1978, Ser. No. 919,667
Int. Cl.[2] C07C *37/44*
U.S. Cl. 568—724 11 Claims

1. A process for recovering 2,2-bis(4-hydroxyphenyl)propane in the form of rhombic crystals from a non-crystalline mixture at an elevated temperature above room temperature, the reaction mixture comprising 2,2-bis(4-hydroxyphenyl)propane, organic by-products resulting from the condensation reaction of phenol and acetone, and phenol, wherein said phenol is present in at least an equimolar amount with respect to said 2,2-bis(4-hydroxyphenyl)propane, the process comprising:

(a) lowering the temperature of said mixture from an elevated temperature at which the 2,2-bis(4-hydroxyphenyl)-propane is soluble to a temperature sufficient to cause the separation from said mixture of said 2,2-bis(4-hydroxyphenyl) propane and phenol in equimolar proportions as a crystalline adduct and recovering the adduct;

(b) forming an admixture of said adduct of step (a) with an excess of water at an elevated temperature which is at least sufficient to completely melt the adduct, the water being present in an amount at least sufficient to retain the phenol portion of the adduct upon subsequent crystallization therefrom of the 2,2-bis(4-hydroxyphenyl)propane;

(c) lowering the temperature of said mixture of water and melted adduct to a temperature sufficient to cause the selective separation therefrom of the 2,2-bis(4-hydroxyphenol)propane portion of the adduct in the form of rhombic crystals substantially free of said phenol portion; and

(d) recovering said rhombic crystals of 2,2-bis(4-hydroxyphenyl)propane.

4,212,998

1-PHENYL-3-(3-TRIFLUOROMETHYLPHENYL)-2-PROPANOL AND PROCESS FOR ITS PRODUCTION

David Y. Tang, Eggertsville, and Arthur M. Foster, Snyder, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 14, 1979, Ser. No. 38,762
Int. Cl.[2] C07C *31/14*
U.S. Cl. 568—807 **4 Claims**

1. 1-Phenyl-3-(3-trifluoromethylphenyl)-2-propanol.

2. A method of making 1-phenyl-3-(3-trifluoromethylphenyl)-2-propanol comprising the steps of:

a. condensing 3-trifluoromethylbenzaldehyde with acetophenone under basic conditions to produce a substituted chalcone,

b. epoxidizing said substituted chalcone to produce the corresponding epoxide,

c. converting the epoxide to a chlorohydrin, and

d. hydrogenating said chlorohydrin to produce a diol and subsequently converting said diol into the corresponding alcohol, 1-phenyl-3-(3-trifluoromethylphenyl)-2-propanol.

4,212,999

1-PHENYL-3-(3-TRIFLUOROMETHYLPHENYL)-1,2-PROPANE DIOL AND PROCESS FOR ITS PRODUCTION

David Y. Tang, Eggertsville, and Arthur M. Foster, Snyder, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 14, 1979, Ser. No. 38,763
Int. Cl.[2] C07C *31/14*
U.S. Cl. 568—807 **4 Claims**

1. 1-Phenyl-3-(3-trifluoromethylphenyl)-1,2-propan-diol.

2. The process for producing 1-phenyl-3-(3-trifluoromethylphenyl)-1,2-propan-diol which comprises the steps of:

(a). condensing 3-trifluoromethylbenzaldehyde with acetophenone under basic conditions to produce a substituted chalcone,

(b). epoxidizing said substituted chalcone to produce the corresponding epoxide,

(c). converting the epoxide to a chlorohydrin, and

(d). hydrogenating said chlorohydrin to produce a diol, 1-phenyl-3-(3-trifluoromethylphenyl)-1,2-propan-diol.

4,213,000

REDUCING COLOR FORMERS IN 1,4-BUTANEDIOL

John S. Coates, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1979, Ser. No. 42,945
Int. Cl.[2] C07C *31/20, 29/24*
U.S. Cl. 568—861 **7 Claims**

1. In the process for preparing 1,4-butane-diol by the catalytic hydrogenation of 1,4-butynediol the improvement comprising subjecting the hydrogenation reaction product to acid hydrogenation at a pH of 1–6 and a temperature of 115°–200° C.

4. In the process for preparing 1,4-butanediol by the catalytic hydrogenation of 1,4-butynediol at a temperature of 60°–150° C. and hydrogen pressure of 2500–5500 psig in the presence of a hydrogenation catalyst at a pH of 7–12 to form a hydrogenation reaction product containing 1,4-butanediol, the improvement comprising conducting an acid hydrogenation of the hydrogenation reaction product at a temperature of 115°–200° C., hydrogen pressure of 2500–5500 psig and a pH of 1–6 in the presence of a hydrogenation catalyst to form a reaction product containing 1,4-butanediol.

4,213,001

OLIGOMERIZING ALPHA-OLEFINS WITH A HETEROGENEOUS CATALYST

Ajay M. Madgavkar, Pittsburgh; Harold E. Swift, Gibsonia, and Barrett L. Cupples, Franklin Township, Westmoreland County, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 27, 1978, Ser. No. 955,210
Int. Cl.[2] C07C *3/18*
U.S. Cl. 585—510 **11 Claims**

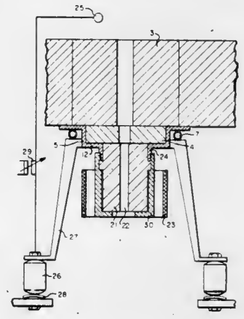
1. The process for oligomerizing an alpha-olefin having from six to twelve carbon atoms and mixtures thereof which comprises contacting a mixture consisting essentially of said alpha-olefin and a suspension of a powdered solid adsorbent having a surface area of at least about 0.1 m^2/g. at a temperature between about −50° and about 150° C. with boron trifluoride at a pressure between about 5 and about 1,000 psig. (about 135 and about 7,000 kPa).

4,213,002

ELECTRICALLY HEATED MELTING FURNACE FOR MINERAL MATERIALS

Helmut Pieper, Lohr, Fed. Rep. of Germany, assignor to Sorg GmbH & Co. KG, Lohr, Fed. Rep. of Germany

Filed Nov. 29, 1978, Ser. No. 964,555
Int. Cl.[2] C03B *5/02, 5/26*
U.S. Cl. 13—6 **6 Claims**



1. In an electrically heated melting furnace for the melting of mineral materials, such as frits, enamels and the like or glass, wherein a bath of molten material contained in a tank is heated by means of electrodes contacting the molten material and having a current flowing therethrough which heats the molten material by Joule's heat, wherein a batch is fed onto the melt or molten bath, and the molten product is withdrawn from the bottom of the tank, the improvement wherein the furnace tank receiving the molten bath has the cross-section of a regular polygon; a plurality of heating elements are arranged above the batch material, and heating electrodes are positioned in the lower portion of the molten bath above the tank bottom; and an outlet port for the molten material is disposed in the tank bottom and comprises a bottom outlet including a cylindrical element, a further underlying, concentrically disposed, circular disc-shaped element of a refractory material being conductive at high temperature and acting as an electrical conductor, which elements are conductively coupled to a current supply line, a metallic annular element retaining the circular disc-shaped element and having a bottom plate portion for supporting same, a shell of a heat resistant metal disposed below said bottom plate portion, a cylindrical part of refractory material inserted in the shell and having a central aperture and an induction coil through which high-frequency alternating current flows surrounding the shell with a space therebetween.

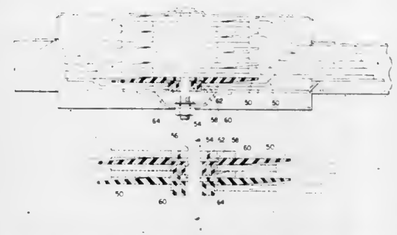
4,213,003

BUS CONDUIT ELECTRICAL DISTRIBUTION SYSTEM

Elmer T. Carlson, 3189 Morningside Blvd., Port St. Lucie, Fla. 33452

Continuation-in-part of Ser. No. 755,446, Dec. 29, 1976, Pat. No. 4,112,249, which is a continuation-in-part of Ser. No. 554,684, Mar. 3, 1975, Pat. No. 4,008,365. This application Feb. 15, 1978, Ser. No. 877,595
Int. Cl.[2] H02G *5/08*
U.S. Cl. 174—88 B **2 Claims**

2. A joint setup in a bus bar system which comprises one set of bus bars having bared ends side by side, another set of bus bars having bared ends side by side adapted to interfit with the first set with corresponding bus bars having flat faces against flat faces of the first set, and a plurality of at least mainly flat insulating members independent of the bus bars adapted to fit between and on the outside of the respective bus bars to insulate them from one another insofar as not joined together and from the outside, the bus bars and the insulating members all having corresponding spaces in the area of the jointure through which a single bolt can pass to join all together, and the respective insulating members nearest to one another having concentric protrusions around these spaces, one protrusion being in the form of a double wall with a recess in between and



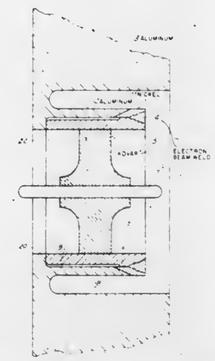
the corresponding protrusion of the other insulating member being in the form of a single wall adapted to interfit into this recess, the whole being enclosed in a suitable joint box.

4,213,004

HERMETIC ELECTRICAL FEEDTHROUGH FOR ALUMINUM HOUSING AND METHOD OF MAKING SAME

Roy M. Acker, Los Angeles, and Kenneth Lui, Fountain Valley, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1978, Ser. No. 921,138
Int. Cl.[2] H01B *17/26*
U.S. Cl. 174—151 **2 Claims**



1. The improvement in mounting a ceramic electrical feedthrough insulator having a low coefficient of expansion nickel-cobalt-iron alloy cylinder with an exterior shoulder, in an aluminum housing comprising the steps of:

a. through-boring a hole in the aluminum housing;

b. machining a channel recess in the aluminum housing concentric with the said through-bore providing an aluminum cylinder having a free end;

c. plating a region of nickel on the said free end of the aluminum cylinder;

d. machining a counter bore in the inner surface of the said aluminum cylinder providing a thin wall cylinder of aluminum having a nickel end region;

e. positioning the said feedthrough insulator in the said counter bore with the said exterior shoulder adjacent the said nickel end region; and

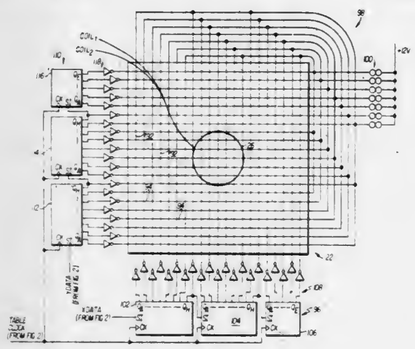
f. electron beam welding the said exterior shoulder of the said feedthrough to the said nickel region.

2. Structure for providing a hermetic electrical feedthrough for an aluminum housing comprising:

a. a cylindrical electrical feedthrough insulator having an exterior nickel-cobalt-iron alloy shell enclosing an insula-

tor and central conductor, with a shoulder of determined diameter positioned at one end of the said shell;
b. a thin walled aluminum cylinder having a free end fabricated in the said aluminum housing having an inside diameter approximately equal to the said shoulder diameter;
c. a nickel region attached to the free end of the said thin walled cylinder;
d. the said cylindrical feedthrough insulator positioned within the said thin walled aluminum cylinder with the said shoulder of the nickel-cobalt-iron shell adjacent the said nickel region; and
e. an electron beam weld fabricated in the said adjacent nickel and nickel-cobalt-iron.

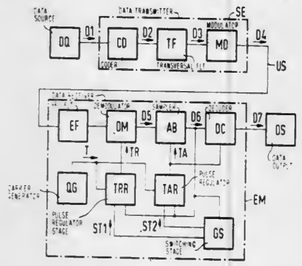
4,213,005
DIGITIZER TABLET
Eugene A. Cameron, Apt. L5, 11700 Old Columbia Pike, Silver Spring, Md. 20904
Filed Dec. 13, 1978, Ser. No. 968,841
Int. Cl.[2] G08C *21/00*
U.S. Cl. 178—18 **32 Claims**



1. A system for locating the position of a cursor along a coordinate axis, said system comprising:
a plurality of parallel conductors spaced along the axis and defining a locus;
means for sequentially energizing said conductors in simultaneously energized lesser pluralities with a fixed energization pattern which steps along said plurality of conductors. thereby generating a current sheet which translates along the locus of and parallel to said conductors;
means for sensing the passage of a particular portion of the current sheet across a reference point carried by the cursor; and
means responsive to the time of passage of the particular portion of the current sheet for generating an output signal representing the position of the cursor along the coordinate axis.

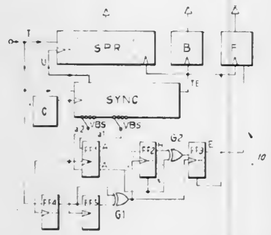
4,213,006
CIRCUIT ARRANGEMENT FOR THE COARSE SYNCHRONIZATION OF CARRIER SIGNALS AND PULSE SIGNALS WITH DATA SIGNALS IN A DATA RECEIVER
Andre Gerges, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Dec. 15, 1977, Ser. No. 861,000
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657914
Int. Cl.[2] H04L *27/06, 25/36*
U.S. Cl. 375—97 **5 Claims**

1. A circuit arrangement for the coarse synchronization of carrier signals and pulse signals with data signals in a data receiver which receives modulated data signals comprising:
a source of carrier signals;
a carrier phase regulation stage connected to said source of carrier signals;
a demodulator, including an input for receiving data modulated carrier signals and an input connected to the output of said carrier phase regulation stage, for demodulating the received signals;
a pulse regulation stage for altering the phase of pulse signals;
a sampler connected to said demodulator, to said pulse regulation stage and to said carrier phase regulation stage for sampling the demodulated signals and providing sampled data signals having momentary values of the demodulated data signals;



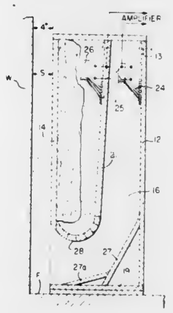
a decoder connected to said sampler to decode the sampled data signals and provide decoded output data; and
a switching stage connected to said sampler and to said carrier and pulse regulation stages, said switching stage providing first control signals to said carrier phase regulation stage for altering the carrier phase and second control signals to said pulse regulation stage for altering the pulse phase in response to and as long as the difference between the momentary values of the sampled data signals and the predetermined theoretical values, averaged over a predetermined duration exceeds a predetermined threshold value.

4,213,007
METHOD AND APPARATUS FOR MONITORING A PULSE-CODE MODULATED DATA TRANSMISSION
Gerhard Funk, Ennetbaden, Switzerland, assignor to Patelhold Patentverwertungs- & Electro-Holding AG, Glarus, Switzerland
Filed Sep. 8, 1978, Ser. No. 940,568
Claims priority, application Switzerland, Sep. 13, 1977, 11146/77
Int. Cl.[2] H04B *3/36*
U.S. Cl. 375—10 **6 Claims**



1. A method for monitoring the received pulses of a transmitted pulse code modulation signal to determine if said received pulses lie within a predetermined pulse distortion tolerance zone, said method comprising the steps of:
monitoring the arrival of edges of said received pulses to determine the number of edges of said received pulses which arrive during first and second consecutive predetermined time zones, the total period of said first and second time zones being equal to the period of the pulse pattern of said received message which would occur in the case of distortionless transmission, said first time zone extending around the position where the pulse edge of said received pulses would be in the case of distortionless transmission; and
generating an error recognition signal when either more than one of said received pulse edges arrives during said first time zone or only one of said received pulse edges arrives during said second time zone.

4,213,008
LOUDSPEAKER ENCLOSURE FOR MID-WALL LOCATION
Edmund R. Helffrich, 3802 Turner St., Allentown, Pa. 18104
Filed Nov. 22, 1978, Ser. No. 963,068
Int. Cl.[2] H04R *1/30*
U.S. Cl. 179—1 E **10 Claims**



7. A loudspeaker enclosure system including a cabinet having a front panel for facing into the listening area a room and having a horn within the cabinet, the horn having a front horn wall common with said front panel and having a rear horn wall spaced from the front wall, said horn walls defining a throat portion of the horn, and the system having loudspeaker driver means at said throat portion and comprising a first loudspeaker mounted in the front horn wall and having a cone facing into the room, a second loudspeaker mounted in the rear horn wall and having a cone facing toward the first loudspeaker, and the loudspeakers being interconnected for receiving electrical drive in such phase relationship that the cones of the loudspeakers move oppositely, whereby either to simultaneously compress or rarefy the air in the horn throat portion while the first loudspeaker radiates directly into the room.

4,213,009
SYSTEM OF CONNECTING A WIRE TELECOMMUNICATION AND A RADIO COMMUNICATION
Koro Suzuki, Tokyo, Japan, assignor to Whyte & Hirschboeck S. C., Milwaukee, Wis.
Continuation of Ser. No. 852,822, Nov. 18, 1977, and a continuation of Ser. No. 678,045, Apr. 19, 1976. This application Nov. 3, 1978, Ser. No. 957,435
Int. Cl.[2] H04Q *7/04*
U.S. Cl. 179—2 EA **5 Claims**

1. A cordless telephone assembly including a portable assembly and coupling assembly for coupling the portable assembly to a telephone line, said portable and coupling assemblies each having a radio transmitter and a radio receiver for communicating with each other, said portable assembly being constructed and arranged to transmit a carrier wave and first and second modulating frequency signals applied to said carrier wave,
means for intermittently interrupting said second modulating frequency signal in accordance with a signal interrupting sequence, said coupling assembly comprising:
first circuit means including line seizure means operative to connect said coupling assembly to said telephone line and gating circuit means connected to said line seizure means,
second circuit means comprising first tone selective means operable in response to said first modulating frequency signal from said portable assembly for producing a first output signal,
third circuit means comprising second tone selective means operable in response to said second modulating frequency signal from said portable assembly for producing a second output signal,
said gating circuit means being connected to said second and third circuit means for receiving said first and second output signals and being operable in response thereto to actuate said line seizure means for connecting said coupling assembly to said telephone line whereby said coupling assembly operates to couple said portable assembly to said telephone line when said first and second modulating frequency signals are received by the radio receiver of said coupling assembly so that said coupling means will not be connected to said telephone line when an extraneous signal is received having either of said first or second frequency signals,
said third circuit means being responsive to the interruptions of said second frequency signal by interrupting and reestablishing its output signal for disabling and enabling said first means in correspondence to said signal interrupting sequence and fourth circuit means coupled to said gating means for maintaining said gating means in an enabled condition when said first output signal disappears, reset means for resetting said fourth circuit means to disable said fourth circuit means when said second signal disappears, and delay means for delaying the operation of said reset means when said second signal is interrupted during a signal interrupting sequence.

4,213,010
FAIL-SAFE MECHANISMS FOR A TELEPHONE ANSWERING DEVICE
Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406
Filed Jul. 17, 1978, Ser. No. 925,370
Int. Cl.[2] H04M *1/65*
U.S. Cl. 179—6 E **5 Claims**

1. In a telephone answering device having a ring detector,

recording means for recording incoming messages on a tape, and message indicator means advanced as said tape is wound onto a takeup reel, the length of said tape being sufficient to record a certain number of such messages, which device having remote controlled playback capability actuated by receipt of a coded signal transmitted via the telephone line and terminated by receipt of a second such coded signal, said device having turn-off means, activated each time said recording means has run for a duration of time corresponding to the time for recording a single incoming message, for turning off said device and thereby terminating the answering cycle, actuation of remote controlled playback disabling said turn-off means so that said device will not be turned off each time said recording means has run for said corresponding time duration while remotely playing out previously recorded incoming messages, the improvement comprising:

a "fail-safe" switch operated when said indicator means indicates that said sufficient length of tape has been wound onto said takeup reel,



first circuit means, cooperating with said "fail-safe" switch, for modifying the ring response time of said ring detector upon operation of said "fail-safe" switch so that receipt of a large number of ring signals is required to cause said ring detector to effectuate answering by said device, whereby said device will not answer an incoming call for which the caller hangs up before occurrence of said large number of rings, but will answer a call in which the caller allows more than said large number of rings to occur, such answering thereby enabling said caller again to actuate remote controlled playback with concomitant rewinding of the incoming messsage tape and resetting of the device normally to answer subsequent incoming calls, and

second circuit means, responsive to operation of said "fail-safe" switch, for enabling said turn-off means to turn off said device when next activated by said recording means, thereby ensuring turn-off of said device even in the event that remote controlled playout is not terminated because the second coded signal is not received.

4,213,011

PROCESS FOR T.D.M. FRAME SYNCHRONIZATION EMPLOYING VARIABLE SYNCHRONIZING WORDS

Ludwig Hoelzl, Sauerlach, and Konrad Reisinger, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

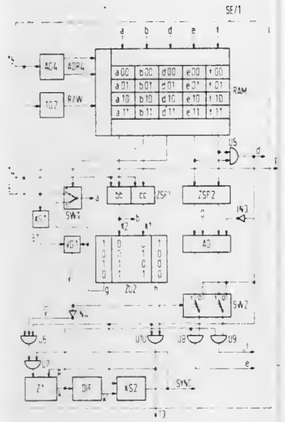
Filed Aug. 10, 1978, Ser. No. 932,482

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 2740997

Int. Cl.[2] H04J *3/06*

U.S. Cl. 370—100 **4 Claims**

1. A process for t.d.m. frame synchronization at a receiver employing variable synchronizing words, and in which at the transmitter there is produced a t.d.m. signal which consists of groups each comprising p bits and one marker bit and, each multiplex frame contains a total of m marker bits of which in each case s marker bits form the synchronizing words and, at the transmitter s−1 marker bits determine the following s-th marker bit, and the t.d.m. signal is transmitted to the receiver and stored in a storage means wherein p+1 addresses are produced which are periodically assigned to the p bits and marker bits of each group, and at the receiver for each address the s-th bit is obtained from s−1 bits, which is stored in the storage means with the t.d.m. signal and compared with the corresponding received bit of the t.d.m. signal, and in the event an identity occurs an identity pulse is produced and consecutive identity pulses having a like address are counted and depending upon the counting result, a frame synchronizing signal is produced with the aid of which the receiver t.d.m. frame is set up, characterized in that in the non-synchronous



state the received t.d.m. signal (E) is fed to the storage means (RAM), and when synchronism has been achieved the pulses (V) which occur during the addresses of the marker bits and are complementary to the identity pulses (V) are produced and in place of the t.d.m. signal (E) the s-th bits obtained at the receiving end are fed to the storage means (RAM) as long as the number of complementary pulses (V) per multiplex frame is smaller than a given number, and that the furnishing of the t.d.m. signal (E) to the storage means is reintroduced when, in the synchronous state, the number of complementary pulses (V) per multiplex frame (r) is greater than said given number.

4,213,012

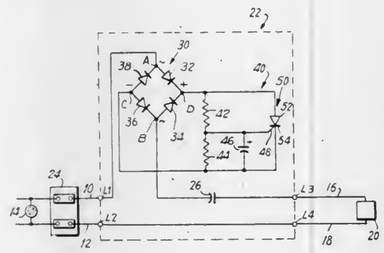
DISCRIMINATING MEANS FOR TELEPHONE CIRCUITS

Michael H. Carroll; Richard J. Taylor, and Peter J. McCubbin, all of Owen Sound, Canada, assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 3, 1978, Ser. No. 957,379

Int. Cl.[2] H04M *1/74*

U.S. Cl. 179—84 R **1 Claim**



1. In a telephone system including a dial means connected across telephone lines and a buzzer device, the improvement

which comprises symmetrical means for discriminating against a succession of short time period dialing pulses or the like so that such pulses will not actuate said buzzer device, while permitting ringing signals to be transmitted to said device, said discriminating means comprising

a voltage divider, including a pair of resistors connected directly in series, a capacitor in shunt with one of said resistors;

a latching device, having a gate electrode and output electrodes, the output electrodes thereof being connected to the ends of said pair of resistors;

said capacitor being connected to the gate electrode of said latching device such that a transmission path for ringing signals is established, regardless of polarity of said signals, when said latching device has been rendered conductive in response to a threshold voltage built up on said capacitor;

said other resistor and said capacitor forming a timing network such that a predetermined time period must be exceeded for said threshold voltage to be attained such that said latching device will e actuated;

a full wave rectifying bridge network including a plurality of diodes, said resistors directly connected in series being connected to opposite apexes of said bridge network, the other apexes of said bridge network being connected in series with said buzzer device across said telephone lines.

4,213,013

TELEPHONE NETWORK/SUBSCRIBER INTERFACE DEVICE

Jiulio E. Perna, Naperville, and Gerhard R. Mache, Hoffman Estates, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 17, 1978, Ser. No. 879,021

Int. Cl.[2] H04Q *1/02*

U.S. Cl. 179—98 **16 Claims**



1. A modular interface device comprising:

a housing;

first connector means mounted to said housing and engageable with a plurality of telephone network trunk lines, each said trunk line including a plurality of conductors;

second connector means mounted to said housing and engageable with a plurality of subscriber telephone lines, each said subscriber line including a plurality of conductors;

an array of contact members disposed within said housing and aligned in a plurality of rows, the contact members of each said row being electrically connected to one of said connector means so as to electrically connect each row of contact members with the conductors engaged with said one said connector means;

means for interengaging one contact member from each said row of contact members to electrically interconnect the conductors of one said trunk line with the conductors of one said subscriber line, said interengaging means further including means for avoiding interconnection between a trunk line conductor and a subscriber line conductor when said interengaging means are improperly oriented; and

means including terminal elements on said housing having contact surfaces engageable with appropriate closed circuit test set means, and a test probe electrically connected to said terminal elements and engageable with the contact members of each of said network trunk lines and each of said subscriber telephone lines to permit ready testing of the electrical circuit of each said network trunk line and each said subscriber telephone line being tested.

4,213,014

HALF ECHO-SUPPRESSOR FOR A FOUR-WIRE TELEPHONE LINE

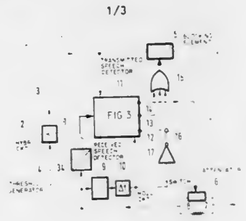
Jacques Luder, Ris Orangis, France, assignor to Societe Anonyme, Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Sep. 21, 1978, Ser. No. 944,282

Claims priority, application France, Oct. 3, 1977, 77 29637

Int. Cl.[2] H04B *3/20*

U.S. Cl. 179—170.2 **4 Claims**



1. A half echo-suppressor for a terminal of a fourwire telephone circuit, said suppressor comprising:

a send channel including a controlled transmission blocking element;

a receive channel including a controlled transmission attenuator; and

first and second speech detectors, respectively connected to said send and receive channels, for directing said transmission blocking element to block said send channel when said second speech detector detects speech on said receive channel and for directing said attenuator to attenuate said receive channel when said first speech detector detects speech on said send channel, wherein said first speech detector comprises:

means, connected to said send channel, for periodically assigning an index to said send signal, the resulting indices being representative of the amplitude characteristics of the speech signal present on said send channel, said assigning means assigning a negative index to noise;

a digital accumulator, connected to said assigning means, for accumulating said indices, said send channel being considered active when the contents of said accumulator reaches an upper limit, and inactive when the contents of said accumulator reaches a lower limit; and

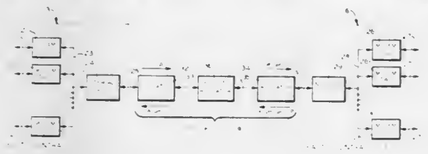
at least one digital comparator connected to said accumulator, for generating a send channel unblocking command for said blocking element when the contents of said accumulator, when increasing, exceeds a first threshold intermediate said upper and lower limits, said unblocking command being discontinued when the content of said accumulator, while decreasing, falls below a second threshold lower than the first.

4,213,015

FAILURE ALARM FOR A TRANSMISSION LINE COMMUNICATIONS SYSTEM

Mahlon D. Kimbrough, Hurst, Tex., assignor to Reliance Telecommunication Electronics Company, Bedford, Tex.

Filed Dec. 4, 1978, Ser. No. 966,000
Int. Cl.[2] H04J *1/12;* **H04B** *1/16*
U.S. Cl. 179—175.2 C **21 Claims**



11. In a telephone system having a trunk line connected between two end central offices, each end central office having means for transmitting and receiving continuous information carrier signals over the trunk line, an alarm means comprising:

means responsive to the carrier signals received at one of the end central offices for generating a signal representing the power level of at least one of the received carrier signals;

means responsive to said power level signal for generating an alarm condition signal when the power level of said one carrier signal falls below a predetermined magnitude; and

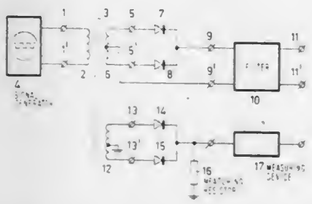
means responsive to said alarm condition signal for generating an alarm idle signal, the receiving means at said one end central office being responsive to said alarm idle signal for releasing the carrier signals.

4,213,016

ARRANGEMENT FOR MEASURING THE LINE CONDITION OF A SUBSCRIBER'S LINE CIRCUIT BY MEANS OF A MEASURING RESISTOR

Klaus-Dieter K. Brockmann, Hilversum, and Eise C. Dijkmans, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1978, Ser. No. 912,455
Claims priority, application Netherlands, Mar. 6, 1978, 7802422
Int. Cl.[2] H04B *3/46;* **H04M** *19/00*
U.S. Cl. 179—175.3 R **9 Claims**



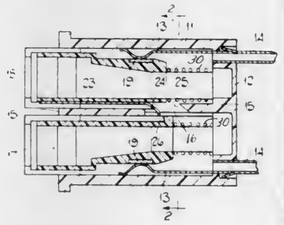
7. A system for monitoring a telephone subscriber's line circuit comprising, a signal generator for generating a signal having a periodic waveform, an AC/DC converter, circuit means coupling the signal generator to the subscriber's line circuit via the AC/DC converter, a measuring resistor, means for inductively coupling the measuring resistor to the subscriber's line circuit via a part of said circuit means in which the periodic waveform signal flows, and a measuring device coupled to the measuring resistor for measuring the signal developed thereacross.

4,213,017

MULTIPLE SWITCH ASSEMBLY WITH DETENT AND INTERLOCK

Keith Lewis, Lancashire, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 10, 1978, Ser. No. 876,927
Claims priority, application United Kingdom, Mar. 26, 1977, 12793/77
Int. Cl.[2] H01H *9/24*
U.S. Cl. 200—5 B **3 Claims**



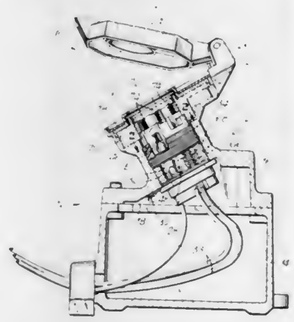
1. An electrical switch assembly including first and second push-push switches including respective first and second detent means as hereinbefore defined, said first and second switches being positioned side by side, the operating member of the first switch carrying first abutment means which during movement of the first operating member from its first position to its second position with the second operating member in its first position, engages corresponding second abutment means on the second operating member to move the second operating member from its first position to its second position, and said second operating member carrying a resilient component which, during movement of the second operating member beyond its second position to release the second switch detent means, is deflected towards the first operating member so that in the event that the first operating member is in its second position, then said resilient component engages an abutment on the first operating member so as to move the first operating member with the second operating member so releasing the first switch detent means whereby both of said first and second operating members return to their first position.

4,213,018

EXPLOSION-PROOF CONTACT ASSEMBLY AND METHOD OF FORMING THE SAME

Thomas P. Piston, Baldwinsville, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y.

Filed Jun. 6, 1978, Ser. No. 913,220
Int. Cl.[2] H01R *33/30, 33/54*
U.S. Cl. 200—51.12 **7 Claims**



1. An explosion proof contact assembly comprising a base

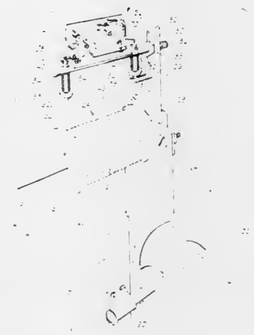
member; a plurality of electrical contacts arranged in pairs with the two contacts of each pair being disposed on opposite sides of said base member; means for providing electrical continuity between the two contacts of each pair, said electrical contacts and base member together forming a substantially rigid contact unit; and a contact body suitable for mounting in a contact assembly which receives said contact unit to form two compartments for said contacts, said contact body covering and sealingly contacting the peripheral surfaces of said base member while exposing said electrical contacts in each compartment and forming a flame path which is defined as the path having the shortest distance between said compartments as measured along the areas of contact between said contact unit and said contact body.

4,213,019

OVERHEAD DOOR CABLE SAFETY DEVICE

Robert L. Houp, St. Joseph, Mo., assignor to J. R. Weaver, Inc., St. Joseph, Mo.

Filed Jun. 26, 1978, Ser. No. 919,409
Int. Cl.[2] B65H *25/14;* **B66D** *1/48*
U.S. Cl. 200—61.13 **1 Claim**



1. An overhead door cable safety device for suspending above an overhead door cable wrapped around a cable drum, the device used for signaling the operator of the overhead door or stopping the operation of the overhead door, the device comprising:

a mounting bracket adjacent one end of the cable drum;

an elongated bolt having one end attached to said mounting bracket, said elongated bolt parallel to and disposed above the length of the cable drum;

a monitoring arm having a structure defined by a pair of apertures and including a first end portion, a second end portion, and a center portion, disposed adjacent to and above the cable wrapped around the cable drum, the first end portion and second end portion slidably mounted in said apertures of said elongated bolt; and

electric switch means disposed adjacent the ends of the first end portion and second end portion of said monitoring arm, said electric switch means having contact arms for being engaged by said first end portion and said second end portion to open or close an electrical circuit as required to signal the operator, said electric switch means activated when contacted by the ends of the first end portion and second end portion of said monitoring arm when the center portion of said monitoring arm is contacted by the cable on the cable drum;

said electrical switch means includes an electric switch mounting bracket attached to said elongated bolt and a pair of electrical switches attached to said electrical switch mounting bracket, said electrical switches having said contact arms disposed adjacent the ends of the first end portion and second end portion of said monitoring arm;

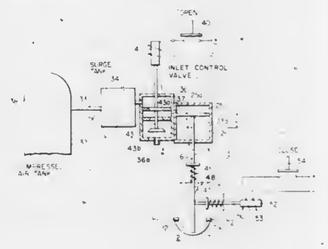
coil springs disposed around the first end portion and second end portion of said monitoring arm for biasing said monitoring arm toward the cable wrapped around the cable drum, the tension force of said springs overcome when the cable on the cable drum contacts the center portion of said monitoring arm thereby allowing said monitoring arm to be raised on said elongated bolt with the first end portion and second end portion of said monitoring arm contacting the contact arms of said electrical switches; and guide arms attached to and extending outwardly from said mounting bracket and positioned on both sides of the second end portion of said monitoring arm for guiding said monitoring arm when said monitoring arm is contacted by the cable; said mounting bracket having a structure defined by a vertical slot to raise or lower said elongated bolt.

4,213,020

PNEUMATIC OPERATING MECHANISM FOR A CIRCUIT-BREAKER

Willie B. Freeman, Irwin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 26, 1977, Ser. No. 845,769
Int. Cl.[2] H01H *35/24*
U.S. Cl. 200—81 R **13 Claims**



1. A circuit-interrupter including a pair of cooperable separable contacts, at least one of which is movable, a pneumatic operating mechanism for effecting opening and closing motions of said one movable contact, said pneumatic operating mechanism including a main high-pressure gas-reservoir tank (**32**) and an inlet control valve (**36**), a movable driving piston reciprocally operable within a stationary operating cylinder, linkage means interconnecting said movable driving piston to said one movable contact, said inlet control valve controlling the admission of high-pressure operating gas from said main high-pressure gas-reservoir tank (**32**) to the driving side of the movabe driving piston for effecting the operation thereof, a separate surge tank (**34**) of appreciable volume interposed in the pneumatic operating mechanism extending between the main high-pressure gas-reservoir tank and the inlet control valve for increasing the initial high-pressure gas supplied to the driving piston, and there being no valve in said mechanism between said tanks, whereby pressure in the surge tank is substantially equal to that in said main tank to effect operation of the piston when the inlet control valve is opened.

4,213,021

INDICATING CHECK VALVE

Richard M. Alexander, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Continuation-in-part of Ser. No. 935,529, Aug. 15, 1978, abandoned. This application Jan. 19, 1979, Ser. No. 4,698
Int. Cl.[2] H01H *35/38*
U.S. Cl. 200—81.9 M **5 Claims**

1. An indicating check valve comprising:

a. a valve body having a bore extending therethrough with

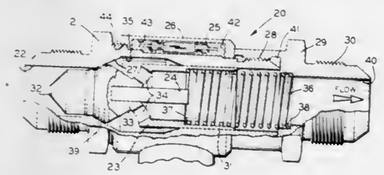
inlet and outlet ports for the passage of fluid flowing under pressure;

b. a poppet valve having a pressure side adjacent said inlet port and disposed within said valve body for movement in said bore for opening and closing said inlet port;

c. a magnet carried by said poppet valve on the side opposite said pressure side for movement therewith;

d. switch means associated with said valve body and responsive to movements of said magnet carried by said poppet valve;

e. biasing means disposed within said valve body for urging said poppet valve to a position closing said inlet port; and



f. an elongated cylindrical nose portion disposed on the pressure side of said poppet valve and extending into said inlet port, said nose portion including a reduced diameter cylindrical portion for correlating the travel of said poppet valve away from said inlet port by a first predetermined fluid flow rate and toward said inlet port by a reduced predetermined fluid flow rate whereby said first predetermined fluid flow rate activates said switch means when said poppet valve is in an open position, and said reduced predetermined fluid flow rate permits said poppet valve to return toward said inlet port deactivating said switch means.

4,213,022

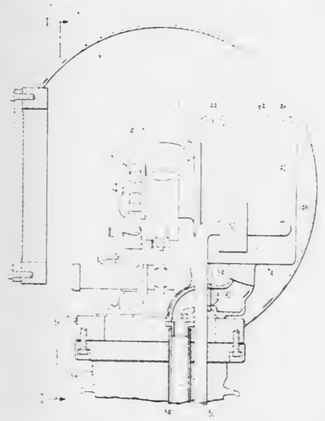
TWO-PRESSURE TYPE CIRCUIT INTERRUPTER

Werner S. Emmerich, Churchill Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1978, Ser. No. 902,008

Int. Cl.² H01H *33/82*

U.S. Cl. 200—148 R **5 Claims**



1. A high compression two-pressure type circuit interrupter comprising a housing, a stationary contact within the housing, a movable contact within the housing and separable from the stationary contact to establish an arc, mounting means for mounting and moving the movable contact, means for directing a blast of an interrupting gas into the zone between the separating contacts to extinguish an arc and comprising a puffer cylinder and conduit means extending between the cylinder and said zone, the puffer cylinder being separated into two unconnected compartments by a pressure responsive divider, one compartment having an outlet port communicating with the conduit means and containing an arc extinguishing gas, the other compartment communicating with a source of pressurized fluid, and valve means for releasing the fluid into said other compartment in response to a current overload to push the gas from the one compartment to the zone.

4,213,023

HIGH FREQUENCY ENERGY APPARATUS WITH AUTOMATIC HEATING CYCLE CONTROL

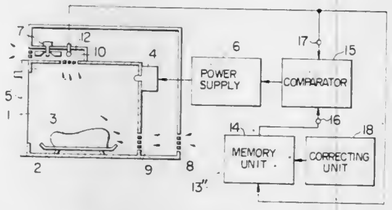
Kenji Satoh; Hajime Tachikawa, and Mitsuru Watanabe, all of Yokohama, Japan, assignors to Hitachi Heating Appliances Co., Ltd., Japan

Filed Oct. 4, 1977, Ser. No. 839,257

Claims priority, application Japan, Oct. 6, 1976, 51/120040; Oct. 20, 1976, 51/125706

Int. Cl.² H05B *9/06;* **G05D** *23/20*

U.S. Cl. 219—10.55 B **25 Claims**



1. A high frequency energy apparatus for heating an object to be heated by using high frequency energy comprising:

a heating chamber in which the object is placed to be heated;

means for generating high frequency energy;

means for supplying the high frequency energy generated by said high frequency energy generating means to said heating chamber;

first temperature sensing means for sensing the temperature of selected one of air within said heating chamber and air flowing out of said heating chamber;

means for memorizing a temperature sensed by said first temperature sensing means at a predetermined time point;

comparing means for comparing a temperature being sensed by said first temperature sensing means with the value memorized in said memory means; and

means for controlling the supply of high frequency energy from said high frequency energy generating means in accordance with an output signal from said comparing means.

4,213,024

BUTT WELDING PROCESS

Eugene J. Costley, Coos Bay, Oreg., assignor to JDC Welding and Research, Inc., Coos Bay, Oreg.

Continuation-in-part of Ser. No. 755,080, Dec. 28, 1976, abandoned. This application Aug. 4, 1978, Ser. No. 930,992

Int. Cl.² B23K *9/24*

U.S. Cl. 219—61 **2 Claims**

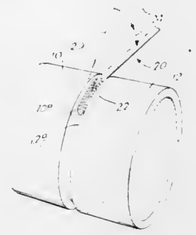
1. A method for butt welding pipe sections together, each pipe section having a beveled end, comprising:

positioning the pipe sections adjacent one another so that the beveled ends define a weld groove;

locating filler material of elongate dimension having a triangular cross-section so that an edge portion thereof protrudes through the weld groove;

fusing said filler material to said weld groove by striking an inert gas-shielded arc between an electrode and the beveled ends and advancing the electrode relative to said filler material so that a weld bead is formed; and

progressively angularly displacing said filler material about the weld puddle, simultaneously during advancement of



the electrode, so that an edge portion of said filler material protrudes through said weld groove to thereby maintain a gap at the bottom of the weld groove.

4,213,025

APPARATUS FOR CONNECTING METALLIC PARTS BY MEANS OF ARC FUSION WELDING

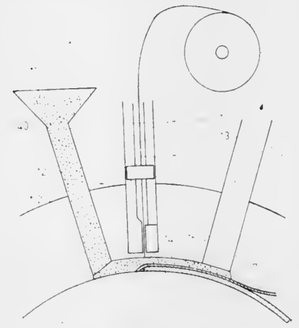
Gottfried Kuhnen, Oberrohrdorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Division of Ser. No. 809,122, Jun. 22, 1977. This application Dec, 14, 1978, Ser. No. 960,469

Claims priority, application Switzerland, Jul. 2, 1976, 8490/76

Int. Cl.² B23K *9/18*

U.S. Cl. 219—73.2 **12 Claims**



1. An apparatus for interconnecting metallic parts by arc fusion welding with a low volume welding seam (narrow gap welding) comprising:

means for feeding and guiding a welding wire;

means for infeeding welding powder;

said guiding means for the welding wire comprising a tool incorporating a wire feed clamp;

said wire feed clamp being pivotable transversely to the wire feed direction through a predetermined angle and fixedly adjustable in a desired position;

said wire feed clamp comprising:

arm means equipped with a guide groove extending essentially in the lengthwise direction of said arm means;

said arm means being formed of a material of high electrical conductivity;

a freely rotatably mounted lever arm containing a pivotable guide shoe equipped with a guide groove;

means interconnecting the lever arm with said arm means;

tube means arranged between the overhang arm means and the lever arm for infeeding the welding wire to a contact location of the wire feed clamp;

spring means;

means for adjusting said spring means;

said welding wire being pressed by the lever arm and guide shoe, under the action of the spring means, into the guide groove of said arm means;

clamping plate means;

support bolt means containing lengthwise extending bore means;

means for attaching said arm means and the lever arm and said clamping plate means to said support bolt means; and

pin means for securing said arm means at said support bolt.

4,213,026

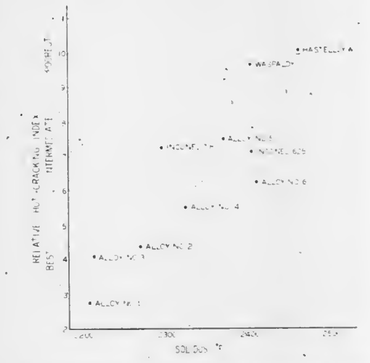
AGE HARDENABLE NICKEL SUPERALLOY WELDING WIRES CONTAINING MANGANESE

David S. Duvall, Cobalt; William H. King, Higganum, and William A. Owczarski, Cheshire, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 731,410, Oct. 12, 1976, abandoned. This application Jun. 6, 1978, Ser. No. 914,720

Int. Cl.² B23K *35/30*

U.S. Cl. 219—75 **2 Claims**



1. A method for reducing cracking in the gaseous tungsten arc welding of nickel base superalloy articles using age hardenable nickel base filler material which consists essentially of 14-22% Cr, 5-15% Co, 0-5% Fe, 0-8% Mo, 0.7-3% Al, 0.5-4% Ti, 0-6% Ta+Cb, 0.5-3% Mn, 0-0.1% C, 0-0.05% B, 0-0.1% Zr, with the sum of Al+Ti exceeding 3%, balance essentially Ni.

4,213,027

METHOD OF TREATING ELECTRODES INTENDED FOR OPERATION IN ARGON AS CATHODES OF AN ELECTRIC ARC

David G. Bykhovsky, and Albert A. Voropaev, both of Leningrad, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky i Teknologichesky Institut Elektrosvarochnogo Oborudovania, Leningrad, U.S.S.R.

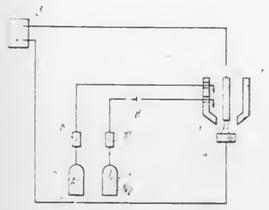
Continuation of Ser. No. 761,778, Jan. 24, 1977, abandoned. This application Mar. 6, 1979, Ser. No. 18,285

Int. Cl.² B23K *9/06*

U.S. Cl. 219—75 **5 Claims**

1. A method for treating electrodes operating in argon as electric arc cathodes in a welding process wherein said electrodes comprise a holder with an active insert made of a substance selected from the group consisting of elements of rare-earth metals, yttrium, alkali earth-metals, elements of Group IV A of the Periodic System, and compounds thereof, separately and in combination; the method comprising contacting the cathode area of the arc with a mixture of argon and an active gas selected from the group consisting of nitrogen or oxygen, for a period of time lasting at least 100 times less than

that of the period of operation of the electrode in argon alone, with the current not exceeding the upper limit of the working



current range, and the volumetric concentration of said active gas in the mixture varying from 0.1 to 100 percent.

4,213,028

ELECTRIC HEATING DEVICE FOR VEHICLE WINDOWS

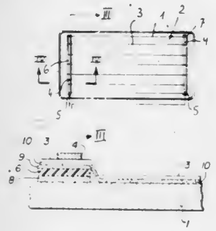
Arend Wolf, Wijverweg 1, Wassenaar, Netherlands

Filed Mar. 16, 1978, Ser. No. 887,390

Claims priority, application United Kingdom, Mar. 26, 1977, 12850/77

Int. Cl.[2] H05B *3/06;* **H01C** *1/012;* **E06B** *7/12*

U.S. Cl. 219—203 **10 Claims**



1. In a heating device for a glass surface or the like, of the type including a lattice arrangement of laterally-spaced electrically-conductive foil strips electrically connected in parallel at their ends by transversely-extending electrical terminals for coupling the strips to a source of direct current, the improvement comprising:

two elongated carrier strips each made of an electrically non-conductive material and having an adhesive layer on both sides thereof, said strips being securable to the glass surface by means of one of their adhesive layers in spaced-apart, generally parallel relationship so as to laterally delimit the surface area of the glass encompassed by the heating device;

said foil strips comprising a plurality of thin, electrically conductive, foil strips, cut from an arbitrarily divisible continuous strip supply, each of which has an adhesive layer on one side, said strips extending between and disposed generally normally to, said carrier strips and being secured to said carrier strips and the surface of the glass therebetween in spaced apart relationship by means of said adhesive layer thereof, the ends of each foil strip overlying said carrier strips; and

said terminals comprise two strip-shaped electrical conductors, one of said conductors being fastened onto a respective one of said carrier strips by the other adhesive layer on the carrier strip exposed between said foil strip ends, said conductors overlaying the ends of each of said foil strips and being in electrically conductive engagement therewith.

4,213,029

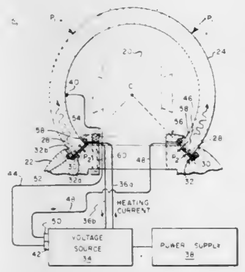
RADIATION TRANSMISSIVE HOUSING HAVING A HEATED LOAD BEARING GASKET

Donald L. Endicott, Jr., San Diego, and Jerry D. Stachiw, El Cajon, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 21, 1979, Ser. No. 13,719

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—209 **13 Claims**



1. Housing apparatus comprising:

a window comprising a spherical segment and formed of material which is transmissive to radiation of selected frequencies, said window having a seating surface;

mounting means for providing forces to support said window and to resist external pressure applied to said window, said mounting means having a bearing surface for transmitting said supporting and said pressure resisting forces;

heated bearing gasket means abutting said bearing surface and also abutting said seating surface, said gasket means for transferring said supporting and said pressure resisting forces from said bearing surface of said mounting means to said seating surface of said window, and for transferring selected amounts of heat to said window;

heat regulating means coupled between said window and said gasket means for controlling the amount of heat transferred to said window by said gasket means; and

holding means for maintaining said window, said mounting means and said gasket means in joined relationship.

4,213,030

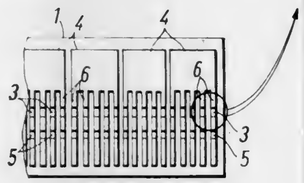
SILICON-SEMICONDUCTOR-TYPE THERMAL HEAD

Takao Kawamura, Osaka, and Kokichi Ishibitsu, Shiga, both of Japan, assignors to Kyoto Ceramic Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 21, 1977, Ser. No. 817,742

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—216 **9 Claims**



1. A silicon semiconductor type thermal head comprising:

a substrate of α-alumina ceramic single crystalline sapphire;

a silicon layer of high electrical resistance formed on the upper surface of said substrate; and

a plurality of exothermic dots defined by a plurality of exposed areas of a silicon layer of low electrical resistance integrally formed on the high resistance silicon layer.

4,213,031

HEAT SEALING ROLLER HAVING A TEMPERATURE SELF-CONTROLLED PTC HEATING RESISTOR FOR WELDING THERMOPLASTIC FOILS

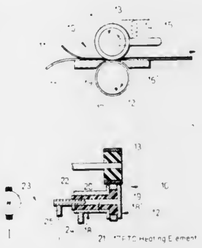
Karl-Heinz Färber, Giengen, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,299

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647444

Int. Cl.[2] H05B *3/10;* **B21B** *27/08;* **B30B** *15/34*

U.S. Cl. 219—244 **8 Claims**



1. In a welding device for sealing at least two superimposed foils of thermoplastic synthetic material having at least one electrically heated temperature-controlled sealing roller and a counterpressure organ cooperating with the sealing roller between which is a heated zone in which the foils are tightly welded while pressure is being applied, the improvement comprising the sealing roller equipped with a circular disk-like PTC (positive temperature coefficient) resistor which serves as the heating element and the temperature control, with the PTC resistor having a resistance characteristic which rises steeply in the range of the operating temperature of the sealing roller, the PTC resistor serving as the heating element being the effective part of the sealing roller which acts directly on the foils to be welded together, the disk-like PTC resistor having electrically conductive axially opposite end faces, each provided with a disk-like metallic contact surface rotatable with said resistor and in electrical contact with the end face of the resistor, and the welding device including means for supplying electric current for heating to the PTC resistor through the axial end faces thereof via said contact surfaces.

4,213,032

CONTROL SYSTEM FOR CHARGING AND DISCHARGING AN ELECTRIC STORAGE HEATER

Gunnar E. R. Olsen, and Poul C. C. Iversen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

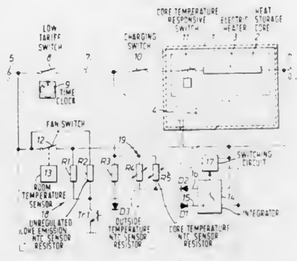
Continuation of Ser. No. 717,249, Aug. 24, 1976, abandoned. This application Mar. 10, 1978, Ser. No. 885,196

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1975, 2539117

Int. Cl.[2] H05B *1/02;* **F24H** *7/04;* **F24D** *11/00*

U.S. Cl. 219—364 **3 Claims**

1. An electric storage heater assembly comprising, a heat storage core, a low tariff period switch and a charging switch in series with said resistance heater, means including an integrator for operating said charging switch, a time clock for operating said low tariff switch, feed circuit means only effective when said tariff switch is open and being responsive to at least one environmental temperature indicative of discharge of heat from said core for charging said integrator, scanning circuit means, controlled by operation of said low tariff switch, for discharging said integrator, switching circuit means responsive to the discharge of said integrator for actuating said charging switch to terminate the charging period, said scanning circuit means including means responsive to at least one other environmental temperature whereby said switching circuit means actuates said charging switch to terminate the charging period at the end of a time period determined by the



charge on said integrator and said other environmental temperature, said environmental temperature responsive means of said scanning circuit means including temperature responsive NTC resistor means to vary the length of said time period inversely relative to said other environmental temperature.

4,213,033

ELECTRIC TOASTER

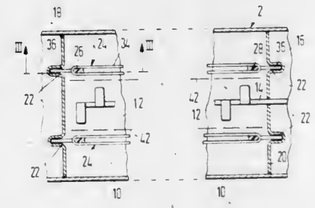
Otto Bjarsch, Traunreut, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany

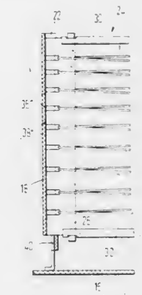
Filed Jun. 13, 1978, Ser. No. 915,151

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1977, 7718602

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—385 **3 Claims**





1. In an electric toaster with a toasting chamber of rectangular-like shape with a length greater than the width, which chamber has a heater extending parallel to each long side of the toasting chamber and which heaters are bounded by crosswise walls on the two narrow sides, with the heaters, composed of insulating parts on which are disposed heater conductors,

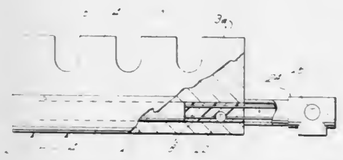
supported by the crosswise walls, the improvement comprising, having the crosswise walls on each narrow side of the toasting chamber with vertical slots, the heater being of unitary construction having a vertical strip made of insulating material at each narrow side of the toasting chamber, each vertical strip having recesses and legs at its end with the legs extending into the slot of the crosswise wall, said recesses being deeper than said slots, heater conductors which engage in the recesses out of contact with the crosswise wall and extend between the vertical strips at each narrow side of the toasting chamber, a horizontal, metal member disposed above the heater conductors, connecting the top of the vertical strips at each narrow side of the toasting chamber, a horizontal metal member disposed below the heater conductors, connecting the bottoms of the vertical strips at each narrow side of the toasting chamber, the horizontal metal members ending at a distance from the slots of the crosswise walls.

4,213,034

CONDUCTION HEATING ASSEMBLY

David C. Goss, and Richard A. Hageman, both of San Marcos, Tex., assignors to Thermon Manufacturing Company, San Marcos, Tex.

Filed Jul. 3, 1978, Ser. No. 921,265
Int. Cl.[2] H05B *3/58*
U.S. Cl. 219—535 **3 Claims**



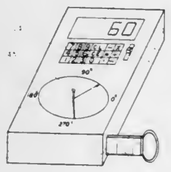
1. A heating assembly for use in heating an instrument, comprising:
- a heating element adapted to be mounted to the exterior of the instrument to be heated, said heating element including a heat transfer means and a heating means;
- said heat transfer means having a first surface and a heat transfer surface substantially perpendicular and adjacent to said first surface;
- said heat transfer surface for engaging an external surface of the instrument;
- said heat transfer means having an opening formed therethrough extending substantially perpendicularly through said heat transfer surface, said opening also formed adjacent said first surface to receive a mounting means therethrough;
- said mounting means extending through said heat transfer surface, said mounting means substantially perpendicular to said heat transfer surface for securing said heating element to the instrument;
- said heating means formed with said heat transfer means, said heating means having a hollow longitudinal portion with the axis thereof substantially parallel to said first surface at the midpoint thereof and substantially parallel to the plane of said heat transfer surface for receiving an electrical heating element;
- said opening disposed between said first surface and said heating means; and
- said electrical heating element to provide heat to the heating means.

4,213,035

ELECTRONIC COMBINED PROTRACTOR AND CALCULATOR CAPABLE OF MEASURING LENGTH AND ANGLE OF AN OBJECT

Isamu Washizuka, Kyoto, and Nobuyasu Kakutani, Yao, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 7, 1977, Ser. No. 858,411
Claims priority, application Japan, Dec. 10, 1976, 51/148880; Dec. 10, 1976, 51/148881
Int. Cl.[2] G06M *3/14;* G01B *3/12*
U.S. Cl. 235—92 DN **23 Claims**



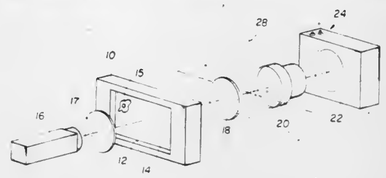
1. An electronic combined protractor and scale comprising:
- a housing;
- an extensible member means coiled within said housing for attachment to an object to be measured;
- two index means for respective alignment with the two sides of an angle to be measured, one of said two index means being arranged on the lower half of said housing;
- a rotatory reel means for accommodating and storing said extensible member, said rotatory reel means fixedly supporting the other of said two index means in a frame thereof and having a plurality of slits therein;
- a detector means responsive to rotation of said rotatory reel means for sensing the rotation of said rotatory reel means and for providing counting signals in response thereto; and
- a controller means for receiving said counting signals and for generating a plurality of control signals the number of control signals generated being proportional to the amount of rotation of the other of said two index means, said controller means further comprising an angle measure counter means for converting said counting signals into a first control signal indicative of angular measure and representing the number of degrees of said angle to be measured;
- a decimal counter means for converting said counting signals to an intermediate control signal indicative of the length of said extensible member when pulled out from said housing;
- compensation means responsive to said intermediate control signal for modifying said intermediate control signal to generate a second control signal, thereby compensating for the variation in rotational velocity of said rotatory reel means when said extensible member is pulled out from said housing, said second control signal representing the compensated true length of said extensible member when pulled out from said housing; and
- digital display means for displaying said first and second control signals, respectively.

4,213,036

METHOD FOR CLASSIFYING BIOLOGICAL CELLS

Richard E. Kopp, Smithtown ; Joseph Lisa, Ronkonkoma; Jay Mendelsohn, Old Bethpage; Benjamin J. Pernick, Brooklyn; Harvey Stone, Flushing, and Martin R. Wohlers, Cold Spring Harbor, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 581,799, May 29, 1975, abandoned.
This application Dec. 27, 1977, Ser. No. 864,495
Int. Cl.[2] G06M *11/02*
U.S. Cl. 235—92 PC **6 Claims**



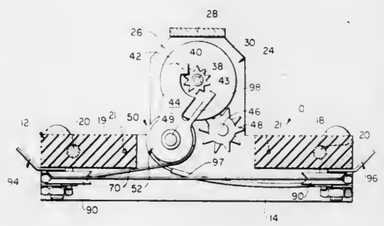
1. A method for recognizing normal and cancerous cell structures, said method comprising the steps of:
- obtaining a diffraction pattern of light representative of a cell image;
- generating first signals from the diffraction pattern of light of a level of radial energy over a preselected limited frequency range from selected portions of said diffracted pattern of light and from the total energy of said diffraction pattern of light;
- generating second signals of each frequency used to obtain signals of a level of radial energy at each individual frequency used;
- generating a sequence of signals representative of a multiple of first signals of level of radial energy and the square of said second signals of the individual frequency used where said first signals are derived;
- generating a third signal representative of the slope of the sequence of signals; and
- displaying normal or cancerous indication from differences in said third signal between cancerous and normal cell structures of the slope of said sequence of signals representing radial intensity at a radial frequency.

4,213,037

ELECTRICAL COUNTING MECHANISM

Donald W. Fleischer, Wethersfield, and Einar Asmundsson, Middle Haddam, both of Conn., assignors to Veeder Industries Inc., Hartford, Conn.

Filed Oct. 19, 1978, Ser. No. 952,716
Int. Cl.[2] G01C *22/00;* G06M *1/04*
U.S. Cl. 235—92 B **4 Claims**



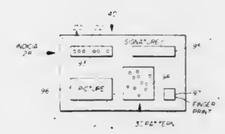
1. In an electrical counting device having a rotary counter and electrical indexing means for indexing the rotary counting in stepwise fashion comprising drive means mounted for predetermined oscillation in opposite operative directions thereof for indexing the counter, spring means biasing the drive means in one operative direction thereof, and electrical actuating means operable upon energization thereof to actuate the drive means in the opposite operative direction thereof against the bias of the spring means, the improvement wherein the electrical actuating means comprises an elongated tension wire conductor having a first fixed end and a second end connected to the drive means to retain the drive means against oscillation in its said one operative direction by the spring means, and electrical connection means connected to the conductor wire for conducting an electrical current through the wire to heat and thereby lengthen the wire for oscillating the drive means in its said one operative direction by the spring means and, upon subsequent cooling of the wire for oscillating the drive means in its opposite operative direction by the tension wire.

4,213,038

ACCESS SECURITY SYSTEM

Daniel Silverman, 5969 S. Birmingham Ave., Tulsa, Okla. 74105, and Everett A. Johnson, 15 S. Prospect Ave., Park Ridge, Ill. 60068

Filed Dec. 20, 1976, Ser. No. 752,568
The portion of the term of this patent subsequent to Jun. 18, 1991, has been disclaimed.
Int. Cl.[2] G06K *5/00;* G07F *7/08*
U.S. Cl. 235—382 **12 Claims**



1. An access security system for monitoring access by authentication of a control member on presentation comprising
- (a) a bank of unique authenticating master coded micropatterns of micro altered areas of web means and a corresponding group of macropatterns of machine readable indicia, each indicia corresponding to selected micropatterns and providing an index to the corresponding micropattern;
- (b) a plurality of control members, each such member having at least one of said macropatterns of machine readable indicia and the corresponding coded micropattern of micro altered areas; and
- (c) means for authenticating a presented control member comprising
  - (1) means for reading said macropatterns,
  - (2) means responsive to said means for reading, including means for selecting the corresponding micropattern from said bank indexed by said macro indicia; and
  - (3) means for comparing the micropattern on said member with the indexed micropattern in said bank.

4,213,039

DYNAMIC CARD READER

Donald S. Schasser, Pontiac, Mich., assignor to Automatic Parking Devices, Inc., Farmington, Mich.

Filed Oct. 16, 1978, Ser. No. 951,760
Int. Cl.[2] G06K *7/08, 19/06;* G11B *25/04, 5/38*
U.S. Cl. 235—449 **17 Claims**

5. In a card reader for use with a card carrying indicia comprising magnetic zones in said card readable in the form of a binary code at preselected parallel track locations thereon and including means for providing a slot for receiving a card such

that said track locations are parallel to the direction of card insertion into said slot and means disposed at preselected locations adjacent said slot and responsive to magnetic indicia on a card inserted into said slot for providing a binary coded signal as a function of said indicia, the improvement wherein said means comprises a plurality of magnetic sensor means disposed laterally of said slot one adjacent each said preselected parallel track location for providing sensor signals in response to proximity of magnetic indicia adjacent the corresponding said sensor means, output means for providing a reader output



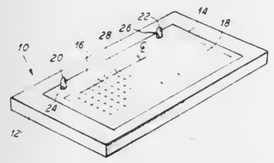
signal in response to said sensor signals and including input means for receiving signals from each said sensor means, said sensor means comprising Hall effect sensor each having a pair of signal electrodes for connection to said input means for providing said binary coded signal to said input means, and differentiating means comprising a pair of capacitors connected in series one between each of said electrodes and said input means such that said output means is responsive to dynamic changes in magnetic polarity adjacent each said sensor means as a card is inserted into said slot.

4,213,040

DIGITAL MICROFICHE AND APPARATUS FOR ACCURATELY POSITIONING THE MICROFICHE

Phillip E. Gokey; Donovan W. Hurlbut; Emma Lou Sederholm, and Angel F. Terry, all of Whitewater, Wis., assignors to News Log International, Incorporated, Whitewater, Wis.

Filed Jul. 7, 1978, Ser. No. 922,798
Int. Cl.[2] G06K *13/24, 7/14, 19/06*
U.S. Cl. 235—476 **44 Claims**



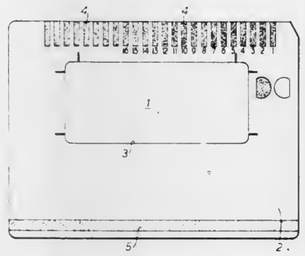
1. A digital microfiche for use with an optical scanner, comprising:
- a first storage area bearing optically retrievable first information arranged in a plurality of parallel rows;
- a second storage area bearing identification codes for at least one of said rows and first alignment codes for said one row; and
- a third storage area bearing second alignment codes for said one row identical to said first alignment codes; and
- a centering mark, said centering mark located on the centerline of said one row.

4,213,041

MASTER CARDS FOR HECTOGRAPHIC PRINTING

Colin H. S. Smith, Cambridge, England, assignor to Data Card (U.K.) Limited, Hampshire, England

Filed Apr. 17, 1978, Ser. No. 897,195
Claims priority, application United Kingdom, Apr. 20, 1977, 16321/77
Int. Cl.[2] G06K *19/00;* **G11B** *25/04;* **B41M** *5/00;* **G06K** *19/02*
U.S. Cl. 235—487 **13 Claims**



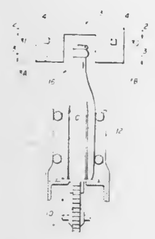
1. A method for making a master card for use in a hectographic printing machine, comprising the steps of
- (a) securing a layer of carbon receiving paper material between a pair of layers of synthetic plastic material, said layers of synthetic plastic material containing aligned window apertures, respectively, said paper layer extending completely across said aligned window apertures;
- (b) applying a magnetically encoded strip on the outer surface of one of said synthetic plastic layers; and
- (c) printing a plurality of information-bearing spaced opaque bars on said outer surface, whereby said card may be used to control the operation of a hectographic printing machine.

4,213,042

CONTAINER CHIPPED CROWN RING DETECTOR

Donald J. Beach, Warson Woods, and Robert J. Smith, Florissant, both of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.

Filed Oct. 2, 1978, Ser. No. 947,771
Int. Cl.[2] G01N *21/32*
U.S. Cl. 250—223 B **8 Claims**



1. Container crown ring defect detector means comprising: means for moving containers in single file through an inspection station with the crown rings moving in a common path; defect detection means adjacent the common path of the crown rings in the inspection station, said defect detection means incorporating a plurality of pairs of elements in which there is a light emitter and a light receiver in each pair in beam path alignment through the container crown rings moved through the inspection station; circuit means connected to said plurality of pairs of elements for energizing said light emitters in a predetermined order and for simultaneously monitoring said receivers in the order of energization of said light emitters;

and means connected with said receivers for rejecting a container associated with the activation of a receiver by light from its paired light emitter.

4,213,043

METHOD FOR FLOWING A LARGE VOLUME OF PLASMA THROUGH AN EXCITATION REGION

John M. Dawson, Pacific Palisades, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 20, 1977, Ser. No. 817,328
Int. Cl.[2] B01D *59/44;* **H01J** *27/00*
U.S. Cl. 250—283 **13 Claims**



1. In an apparatus for separating a selected isotope of an element from other isotopes thereof, the combination comprising:
- (a) an elongated substantially evacuated container having a longitudinal axis;
- (b) means for providing a magnetic field extending substantially parallel to said axis within said container;
- (c) means for providing, within said magnetic field, a substantially neutral plasma including ions of an element having at least two isotopes;
- (d) means applying an alternating electric field to at least a portion of the plasma for imparting more kinetic energy to selected-isotope ions than to other-isotope ions so that the selected-isotope ions travel in helical paths of increasing diameter within the magnetic field;
- (e) means for augmenting the magnetic field strength in a region adjacent each end of said container to thereby provide a pair of longitudinally spaced magnetic mirrors for reflecting and containing the more energetic selected-isotope ions while allowing the less energetic other-isotope ions to pass longitudinally out of the region between the magnetic mirrors;
- (f) a plurality of electrically distinct electrodes disposed within said container for electrically contacting the plasma so that the electric potentials within different longitudinally extending portions of the plasma are determined by the potential of the electrode contacting each such portion;
- (g) means for applying a different direct-current potential to each of said electrodes and thereby producing, within the plasma, a d-c electric field extending in a predetermined direction substantially normal to the longitudinal axis so that helically orbiting charged particles are subjected to an E×B drift force and caused to move in a direction substantially normal to that of both the magnetic field and the electric field; and
- (h) collection means, located adjacent the plasma at the side thereof toward which said E×B drift force is directed, for collecting ions which have been moved transversely of the plasma by the action of said E×B drift force.

4,213,044

METHOD AND APPARATUS FOR DETERMINING OIL MIST IN COMPRESSED AIR

Kenneth A. Perrotta, Methuen, Mass., assignor to Whatman Reeve Angel Limited, Maidstone, England

Filed Dec. 18, 1978, Ser. No. 970,246
Int. Cl.[2] G01T *1/167, 1/169*
U.S. Cl. 250—301 **21 Claims**



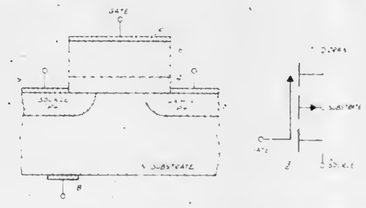
1. A method of determining the amount of oil mist in a compressed-air stream, which method comprises:
- (a) bleeding a small sample of compressed air from the compressed-air line through a bleed orifice of predetermined dimensions for a defined bleed-time period at a known pressure;
- (b) directly impinging the bleed-air sample in a substantially perpendicular direction onto the surface of a plate spaced apart a predetermined distance from the orifice, the plate containing an ultraviolet phosphor indicator, which phosphor indicator is inhibited in fluorescence by the oil mist in the compressed-air sample;
- (c) comparing the coated plate on which the bleed-air sample has been impinged with a standard plate under ultraviolet radiation sufficient to fluoresce the ultraviolet phosphor indicator; and
- (d) determining from such comparison of said plates the amount of oil mist present in the compressed-air stream.

4,213,045

METAL NITRIDE OXIDE SEMICONDUCTOR (MNOS) DOSIMETER

Ronald G. Fraass, USAF Academy, Colo., and Roger W. Tallon, Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 29, 1978, Ser. No. 937,909
Int. Cl.[2] G01T *1/24*
U.S. Cl. 250—370 **5 Claims**



1. A dosimeter for measuring ionizing radiation doses of X-ray, gamma ray or E-beam energy, comprising:
- a. a metal nitride oxide semiconductor (MNOS) transistor capable of storing an electric charge within its gate structure, and further capable of dissipating that stored charge

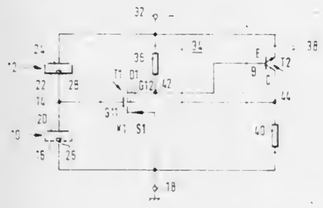
with separable and independent effects attributable to the time elapsed and the total ionizing radiation dose imposed;
b. a voltage source attachable to the gate and substrate of the MNOS transistor to create a stored charge; and
c. a device for measuring the voltage at the gate of the transistor required to produce a prescribed small current flow between the source and drain of the MNOS transistor, for measuring the undissipated stored charge.

4,213,046

IONIZATION FIRE-SIGNAL DEVICE

Hartwig Beyersdorf, Konsulweg 29, D-2409 Scharbeutz, Fed. Rep. of Germany

Filed Feb. 17, 1978, Ser. No. 878,803
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1977, 2707409
Int. Cl.² G08B *17/10*
U.S. Cl. 250—381 **11 Claims**



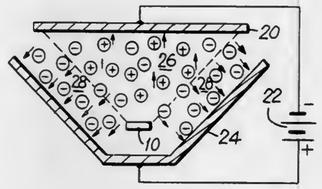
1. An ionization fire-signal device comprising a pair of signal device terminals, an ionized measuring chamber penetrable by the ambient air, a reference element series connected with the measuring chamber between the signal device terminals, an amplifier stage connected between the signal device terminals and controlled by the potential at the junction of the measuring chamber and the reference element, the amplifier stage including a field-effect transistor, said field-effect transistor having a separate substrate terminal and forming a main current path, said amplifier stage having a resistor in series with the main current path of the field-effect transistor, and a signal circuit connected between the signal device terminals, said signal circuit including a transistor and a load resistor connected in series with each other, the signal circuit being connected so as to be controlled by the voltage drop across the resistor of the amplifier stage, said measuring chamber having a pair of electrodes, one electrode of the measuring chamber being directly connected to one signal device terminal, the amplifier stage being connected to cause the transistor of the signal circuit to become conductive when a predetermined threshold value of the smoke content of the ambient air passes through the chamber, said transistor being connected to remain conductive during a subsequent decrease of the smoke density below the threshold value, characterized in that the resistor of the amplifier stage is connected to that signal device terminal to which the reference element is connected, that the load resistor of the signal circuit is connected to that signal device terminal to which one electrode of the measuring chamber is connected, and that the substrate of the field-effect transistor is connected so that said field-effect transistor remains conductive during said subsequent decrease of said smoke density below said threshold value.

4,213,047

SMOKE DETECTOR HAVING UNIPOLAR IONIZATION CHAMBER

Herbert W. McCord, Warren, N.J., assignor to General Signal Corporation, Stamford, Conn.

Filed Oct. 25, 1978, Ser. No. 954,395
Int. Cl.² H01J *39/28*
U.S. Cl. 250—381 **8 Claims**



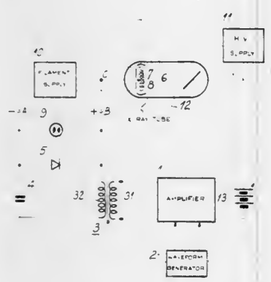
1. An ionization smoke detector device which includes a chamber having a bipolar region in which pairs of oppositely charged carriers exist and a unipolar region in which substantially only one polarity of charge carriers exist comprising:
a pair of electrodes defining said chamber;
a source of power connected to said electrodes;
an ionization source within said chamber for radiating alpha particles in a forward direction pattern, the first of said electrodes being located so as to confront said source at a distance therefrom so as to obstruct said pattern, thereby to produce a conical pattern of radiation;
the second of said electrodes being shaped or formed in a truncated conical or dish-like configuration so as to conform to said conical radiation pattern, said second electrode being behind the resultant conical radiation pattern, whereby said unipolar region is produced adjacent said second electrode.

4,213,048

METHOD AND CIRCUIT ARRANGEMENT FOR IMPROVING THE RADIOLOGICAL DEFINITION OF THE FOCAL SPOTS OF X-RAY TUBES

Dang T. Quang; Jacques Leguen, and Jacques Delair, all of Paris, France, assignors to Compagnie Generale de Radiologie, Paris, France

Filed Oct. 18, 1978, Ser. No. 952,352
Claims priority, application France, Oct. 21, 1977, 77 31743
Int. Cl.² H05G *1/00*
U.S. Cl. 250—402 **10 Claims**



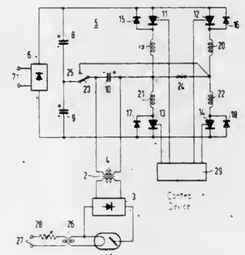
1. A method for improving the definition of the focal spot of an X-ray tube having, inside of an evacuated, vacuum-tight envelope, a cathode made up from a filament for emitting electrons, an anode for accelerating and receiving said emitted electrons and for emitting an X-ray beam, and a concentrating electrode surrounding said filament on its side opposite to the one facing the anode for forming an electron beam directed towards the latter, a high-voltage direct-current supply being respectively connected to said anode and cathode, a low-voltage supply being connected to supply heating current to the filament and a bias voltage supply being connected to said concentrating electrode and said filament for controlling the shape of the emitted electron beam, while said tube is being operated, said method consisting of modulating said bias voltage by means of an alternating-current periodic voltage waveform having a frequency of at least ten kilohertz for said concentrating electrode bias voltage to periodically vary between a minium and a maximum negative value relatively to said cathode, said minimum value being at least equal to zero, during each period of operation of said tube, whereby to periodically vary the size and shape of the focal spot substantially independently of the anode current intensity.

4,213,049

X-RAY DIAGNOSTIC GENERATOR COMPRISING AN INVERTER FEEDING THE HIGH VOLTAGE TRANSFORMER

Gerd Seifert, Spardorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,862
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802505
Int. Cl.² H05G *1/30*
U.S. Cl. 250—408 **2 Claims**



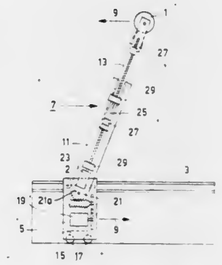
1. An x-ray diagnostic generator comprising an x-ray tube, a high voltage transformer feeding the x-ray tube, an inverter connected to the input of the high voltage transformer, a DC source comprising a rectifier energized by AC mains, said DC source having respective poles for feeding the inverter, characterized in that the d.c. voltage source (**8, 9**) has an output conductor (**25**) with an electric potential midway between the electric potentials of the respective poles thereof, the inverter (**5**) has a pulsing means (**11** through **22**) for alternately connecting said transformer input with the poles of the d.c. voltage source (**8, 9**), said pulsing means including two branch circuits each extending between said poles and having respective midpoints, and in that change-over switching means (**23, 24**) are present by means of which said transformer input in a first switching condition of the switching means is connected between said output conductor (**25**) of the d.c. voltage source (**8, 9**) and the midpoints of the branch circuits which are connected together and in a second switching condition of said switching means is connected between the midpoints of said branch circuits which are disconnected from each other the change-over switching means (**23, 24**) in said second switching condition connecting said branch circuits so that said transformer is simultaneously energized by both poles of the DC source, and in said first switching configuration connecting the midpoints of the branch circuits (**11, 15, 19; 13, 17, 21**; and **12, 16, 20; 14, 18, 22**) so that said transformer is alternately energized by each pole of said DC source.

4,213,050

SERVO CONTROL FOR X-RAY TOMOGRAPHY

Gerrit J. Meek, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 12, 1978, Ser. No. 905,224
Claims priority, application Netherlands, Jun. 16, 1977, 7706616
Int. Cl.² H05G *1/00*
U.S. Cl. 250—445 T **6 Claims**



1. In an examining device comprising:
a source of penetrating radiation; a radiation detector which is movable in a plane; a column having a first end coupled to the source and a second end coupled to the detector, the column comprising two column portions which are movable with respect to each other along the longitudinal direction of the column; movement means which function to move the column portions with respect to each other; swiveling means which function to swivel the column about an axis which extends perpendicular to the longitudinal direction of the column, parallel to and substantially in the movement plane of the raidation detector; a position detector which produces a feedback signal which is a measure of the position of the two column portions with respect to each other; drive circuit means which function to produce an angle signal which is a function of the angle α between the longitudinal direction of the column and a line perpendicular to the movement plane of the detector; and a control circuit having an output connected to operate the movement means, a first input connected to receive the feedback signal and a second input connected to receive the angle signal; the improvement wherein:
the drive circuit means further function to generate a correction signal which is substantially proportional to the product of the angle α multiplied by the rate of change of the angle α, d α/dt, and to supply the sum of the angle signal and the correction signal to the control circuit.

4,213,051

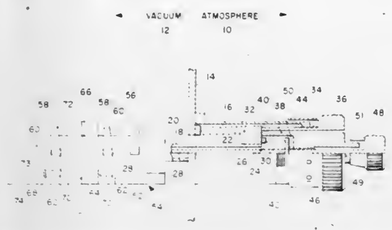
DUAL ACTING SLIT CONTROL MECHANISM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Gustav L. Struthoff, Seal Beach, Calif.

Filed Sep. 8, 1978, Ser. No. 940,689
Int. Cl.² H01J *9/38*; G21F *5/04*
U.S. Cl. 250—457 **8 Claims**

1. An apparatus for control of two independent mechanisms within a vacuum environment comprising:
a vacuum chamber;
a single opening defined in said vacuum chamber;
at least two shafts carried by said vacuum chamber and having portions thereof projecting into said chamber through said single opening;
means for moving each of said shafts independently relative to said vacuum chamber and relative to each other;
a collinator frame means of a mass spectrometer within said vacuum chamber attached to and operated by the first of said shafts;
slit adjustment means of a mass spectrometer within said

vacuum chamber attached to and operated by the second of said shafts; and



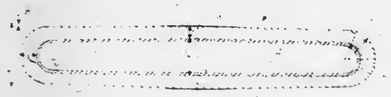
vacuum seal means joining the shafts to the vacuum chamber for maintaining the vacuum integrity of the chamber.

4,213,052

MINIATURE RADIOACTIVE LIGHT SOURCE AND METHOD OF ITS MANUFACTURE

Thomas E. Caffarella; George J. Radda, and Harry H. Dooley, Jr., all of Tucson, Ariz., assignors to American Atomics Corporation, Tucson, Ariz.

Filed Jun. 19, 1978, Ser. No. 916,876
Int. Cl.² F21K *2/00*
U.S. Cl. 250—462 **12 Claims**



1. A miniature radioactive light source comprising:
a glass tube laser sealed at its ends, the glass tube having an elongated cross section, two wide side faces, and two narrow side faces;
a radioactive gas contained in the tube; and
an energy transducer in the tube responsive to the gas, the improvement characterized in that the narrow side faces are thicker than the wide side faces and the ratio of the total glass thickness of the wide side faces to the spacing between the wide side faces is approximately 0.7.

4,213,053

ELECTRON BEAM SYSTEM WITH CHARACTER PROJECTION CAPABILITY

Hans C. Pfeiffer, Ridgefield, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 823,352, Aug. 10, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,511
Int. Cl.² H01J *37/00*
U.S. Cl. 250—492 A **5 Claims**

1. An electron beam column adapted for writing entire characters or portions thereof on a wafer comprising
a source directing a beam of electrons along a column axis toward a target area where said wafer is located,
first aperture means having a rectangular aperture formed therein for intercepting portions of the beam to form a beam cross section corresponding to the aperture,
character aperture means spaced along said axis downstream of the first aperture means having a plurality of apertures formed therein of the shape of entire characters or portions of characters, at least some of the apertures being oriented at off axis locations with respect to the said column axis,
means for focusing the image of the first aperture means in the plane of the second aperture means, and for focusing the image of the source between said apertures,
deflection means located between the first aperture means and the character aperture means for selectively deflecting the rectangular image of the first aperture to intercept one or more apertures or portions thereof of the character aperture means to form a composite image of the first aperture image and the intercepted portions of the apertures of the character aperture means,



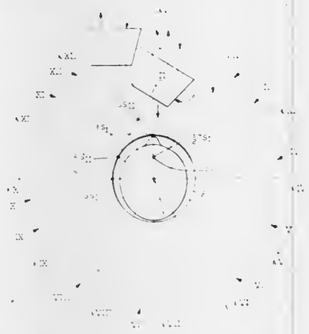
means for focusing the composite image in a target area, and compensating means located between the lens means and the second aperture means for correcting imperfections in the target image due to spherical aberration caused by deflection of the beam through off axis apertures of the character aperture means.

4,213,054

TRANSVERSE SECTION BRAIN IMAGER SCANNING MECHANISM

Edward J. Doherty, III, Halifax, Mass., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 30, 1977, Ser. No. 866,016
Int. Cl.² G02B *5/00*; G01T *1/20*
U.S. Cl. 250—505 **1 Claim**



1. A scanning apparatus for an array of highly focused collimators comprising a base plate having (i) a plurality of first tangent drive slots arranged symmetrically about and equidistant from an axis normal to said base plate with each slot being tangent to a common circle centered on said axis (ii) a first prime mover drive slot parallel to one of said tangent drive slots and spaced further from said axis than said parallel tangent slot; a rotatable disk member rotatably engaged to said base plate on one side thereof being rotatable about said normal axis, said disk member having (i) a plurality of equally angularly spaced radially extending translation slots each of which overlaps one of said tangent drive slots (ii) a driver member affixed to said disk having a radially extending slot outward

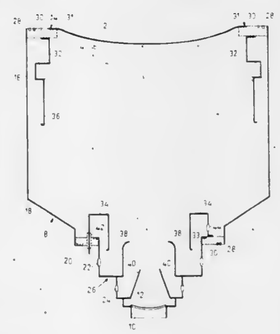
from and in alignment with one of said translation slots and overlapping said first prime mover drive slot; a plurality of equally angularly spaced radially aligned guide means mounted on said base plate on the side opposite from said disk, each of said guide means being arranged opposite and extending in a direction normal to one of said tangent drive slots, with alternate guide means being located radially inward from said tangent drive slots and the remaining guide means being located radially outward from said tangent drive slots; a plurality of track members respectively arranged transverse to and slidably mounted on said guide means; a plurality of carriages respectively mounted on said track means, the carriages mounted on radially inward guide means having outwardly extending slotted members parallel to said guide means and arranged overlapping a respective tangent drive slot and the carriages mounted on radially outward guide means having inwardly extending slotted members parallel to said guide means and arranged overlapping a respective tangent drive slot; a drive block slidably mounted in each tangent drive slot and engaging an overlapping slotted member of a carriage on one end and an overlapping translation slot of the disk member on the other end, a prime mover drive block slidably mounted in the first prime mover drive slot engaged to the radially extending overlapping slot of said driver member; first driving means engaged to said first prime mover drive block to cause said prime mover drive block to travel a predetermined distance in said first prime mover drive slot and rotate said disk member and impart a predetermined tangential travel motor to said carriages; a plurality of engaged adjacently oppositely rotating bevel gears arranged radially inward from said tangential drive slots and said track members, each of said bevel gears being respectively engaged to a radially adjacent track member by a threaded coupling for imparting alternate inward and outward radial motion to said track members; second driving means engaged to a threaded coupling of only one said threaded coupling; and a plurality of inwardly focused collimators respectively mounted on said carriages to provide a circular array of closely adjacent collimators when said track means are at a predetermined common distance from said tangent drive slots and said carriages are centered with respect to their respective predetermined tangential travel.

4,213,055

IMAGE INTENSIFIER TUBE

Joost E. Schrijvers, and Martinus W. A. Boers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,551
Claims priority, application Netherlands, Oct. 24, 1977, 7711633
Int. Cl.² G01T *1/00*; H01J *31/50*
U.S. Cl. 250—483 **13 Claims**



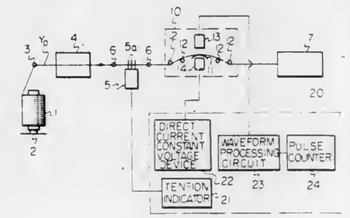
1. An image intensifier tube comprising:
an envelope which includes a jacket, a metal foil entrance window, and an exit window;
an entrance detection screen, mounted in the envelope adjacent to the entrance window;
an exit screen, mounted in the envelope adjacent to the exit window;
an electron-optical system mounted in said envelope for imaging electrons, emerging from the entrance detection screen, on the exit screen;
wherein the envelope is provided with at least one reinforcement in the form of a supporting ring connected to the entrance window and to the jacket in a vacuum-tight manner.

4,213,056

METHOD AND APPARATUS FOR DETERMINING THE STATE OF INTERLACING IN INTERLACED MULTIFILAMENT YARNS

Seiji Matsumura, and Nobuo Kusumoto, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sep. 7, 1978, Ser. No. 940,482
Claims priority, application Japan, Sep. 12, 1977, 108901; Sep. 12, 1977, 108902
Int. Cl.² G01N *21/30*
U.S. Cl. 250—559 **24 Claims**



1. A method for determining the state of interlacing in interlaced multifilament yarns, which comprises causing an interlaced multifilament yarn to run while being in contact with a contact member under a predetermined contact pressure, thereby to produce temporary changes of the configuration in the yarn according to the state and structure of the yarn, detecting the changes of the configuration in the form of time series values and processing the detected values to determine interlacing characteristics of the yarn.

4,213,057

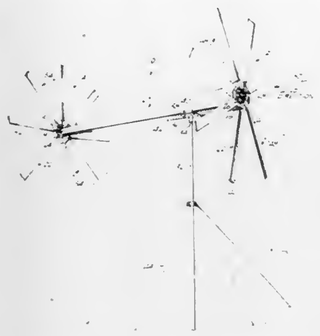
WIND ENERGY CONVERSION DEVICE

Endel Are, 119 E. Lucy St., Florida City, Fla. 33034

Filed May 8, 1978, Ser. No. 903,487
Int. Cl.² F03D *1/02*
U.S. Cl. 290—44 **23 Claims**

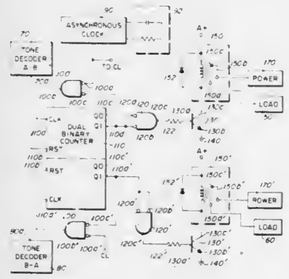
1. A wind energy conversion device to convert the wind energy to electrical energy comprising a main elongated generally horizontally disposed housing, a generator in said housing including inner and outer rotors, a front end multi-bladed propeller, journaled through a front end portion of said housing and being directly coupled to a first of said inner and outer rotors, said blades of said front end propeller being pitched in a first direction to rotate said first rotor in a first direction when said front propeller is exposed to and rotated by wind pressures; a rear end multi-bladed propeller, journaled through a rear end of said housing and being directly coupled to a second of said inner and outer rotors, said blades of said rear end propeller being pitched in a second direction to rotate said second rotor in a second direction, opposed to said first direction of said first rotor, when exposed to and rotated by the wind pressures; means to transmit electrical energy generated

by said rotation of the first and second rotors of said generator to a remote location and means to support said housing at a



predetermined elevation above ground level for proper exposure to prevailing wind forces.

4,213,058
LOAD SHEDDING TIMER FOR A POWER MANAGEMENT SYSTEM
Greg M. Townsend, Rolling Meadows, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 21, 1978, Ser. No. 927,268
Int. Cl.[2] H02J *13/00*
U.S. Cl. 307—40 **5 Claims**



1. In a power management system wherein a remote location at a power load site is responsive to a command from a central controller to shed the load for a time interval determined by a timer, an improvement in said timer comprising:

timing means responsive to said central controller command to cause the load to be shed for a random time period between predetermined minimum and maximum time limits.

4,213,059
POWER SWITCHING CIRCUIT
Peter Deacey, Beaconsfield, Canada, assignor to PDM Electrical Products Ltd., Quebec, Canada
Filed Aug. 28, 1978, Ser. No. 937,288
Claims priority, application Canada, Sep. 12, 1977, 286491
Int. Cl.[2] H01H *51/27*
U.S. Cl. 307—41 **6 Claims**

1. A power switching circuit comprising

(a) a base plate carrying a first annular slip ring having a gap forming a break in continuity,

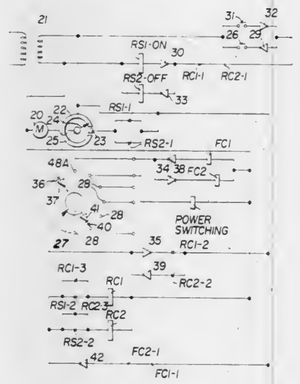
(b) an isolated contact on the base plate within the gap at the same radius as the ring,

(c) a second continuous slip ring concentric with the contact ring,

(d) a contact arm driven by a motor connecting the second ring to the contact ring,

(e) means connecting the first ring and the second ring in series with a motor across a source of a.c. current, whereby current can be fed to the motor until the contact arm reaches the gap,

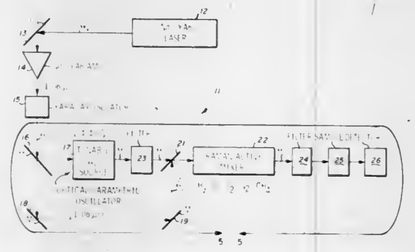
(f) a third continuous annular slip ring concentric with the first and second rings,



(g) a multiplicity of contacts in a ring at equal radii from the centre of the first and second rings,

(h) means connecting the third slip ring and each of the contacts in sequence as the motor rotates, whereby external circuits connected individually to each of the contacts are energized once as the motor rotates, the motor stopping when the contact arm reaches said gap.

4,213,060
TUNABLE INFRARED SOURCE EMPLOYING RAMAN MIXING
Robert L. Byer, Stanford, and Richard L. Herbst, Menlo Park, both of Calif., assignors to The Board of Trustees of Leland Stanford University, Stanford, Calif.
Filed Feb. 14, 1977, Ser. No. 768,275
Int. Cl.[2] H03F *7/00*
U.S. Cl. 307—426 **18 Claims**



1. In a method for generation of coherent infrared radiation the steps of:

irradiating a medium of Raman active gaseous atoms or molecules with coherent radiation of a pump frequency ω_p to excite the resonant Raman mode at the frequency ω_R within the irradiated medium where the pump frequency ω_p minus the Stokes frequency ω_s is equal to the Raman mode frequency ω_R;

irradiating the resonant Raman active medium with radiation of an input frequency ω_i to generate output radiation of an output frequency ω_o related to the Raman mode frequency ω_R and to the input wave energy frequency ω_i by the relation $\omega_o=\omega_i\pm\omega_R$; and

wherein the ratio of the phase velocity mismatch Δk of the medium to the electric field exponential gain coefficient Γ within the medium is in the range of 0.1 to 5, where $\Delta k=-(k_p-k_s)+(k_i-k_o)$ where k is the respective wave vector which is the equal to $(2\pi n/\lambda)$ where λ is the respective wavelength and n is index of refraction of the medium and where $\Gamma=\omega_s/2n_sc\cdot X''_R|E_p|^2$, where n_s is the index of refraction of the medium, X''_R is the on-resonance Raman susceptibility of the medium, c is the velocity of light, and E_p is the intensity of the pump electric field within the medium.

4,213,061
ELECTRONICALLY ACTUATED ELECTRIC SWITCH
Charles C. Conner, 4207 SE. 11th Ave., Portland, Oreg. 97202
Filed Jan. 30, 1978, Ser. No. 873,256
Int. Cl.[2] H01H *35/00*
U.S. Cl. 307—116 **10 Claims**



1. A switch for controlling an electric load in an alternating current supply circuit, comprising:

(a) electrically actuated load-control bi-directional switch means arranged to be connected across an alternating current supply circuit in series with a load to be controlled,

(b) electrical actuator means for the load-control switch,

(c) full wave rectifier means having an alternating current input and a direct current output,

(d) the electric load-control switch actuator means and the input of the rectifier means being connected together electrically in series and said series being connected across the load-control switch means,

(e) electrically actuated shunting switch means connected across the output of the rectifier means for releasably shunting said output and operable when actuated to shunt the direct current output of the rectifier means and apply alternating current from the supply circuit to the electrical actuator means for the load-control switch means, whereby to activate the latter and connect the electric load across the alternating current supply,

(f) electrical actuator means for the shunting switch means,

(g) electric drive signal generating means connected to the shunting switch actuator means and operable when activated by an electric control signal of predetermined polarity to provide an electric drive signal to said shunting switch actuator means to actuate the shunting switch means,

(h) electric control signal generating means having an output connected to the electric drive signal generating means and operable upon successive applications of an electric trigger signal to produce alternate positive-going and negative-going electric control signals,

(i) electric trigger signal generating means connected to the electric control signal generating means and including an impedance member,

(j) a source of electric potential connected to the trigger signal generating means, and

(k) an electrically conductive proximity member connected to the impedance member and arranged for contact or close proximity by a source of electric potential different from the potential applied to the trigger signal generating means, whereby to produce an electric trigger signal.

4,213,062
METHOD AND APPARATUS FOR PRESCRIBING A TIME OF DAY
Aksel Jespersen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Apr. 11, 1978, Ser. No. 895,444
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1977, 2716517
Int. Cl.[2] H01H *43/00, 35/00*
U.S. Cl. 307—117 **4 Claims**



1. Apparatus for indicating a prescribed time of day, comprising, photosensitive means for detecting a daylight period beginning with sunrise and ending with sunset, said photosensitive means having a daylight output signal indicating the existence of said daylight period and a night-time output signal indicating the night-time period, signal generating means responsive to said daylight and night-time signals for generating a first signal of a predetermining magnitude for said daylight period and a second signal of twice said magnitude for said night-time period, integrating means for sequentially integrating said first and second signals and outputting a corresponding summation signal, comparator means connected to the output of said integrating means and being adjustable to a value to be compared which exceeds the expected summation value of said first signal and corresponds to a selected prescribed time of day, and resetting means responsive to the initiation of said daylight signal for resetting said integrating means at sunrise.

4,213,063
ROOM OCCUPANCY POWER PROGRAMMER
John L. Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif. 91105
Filed Apr. 27, 1978, Ser. No. 900,734
Int. Cl.[2] H01H *43/02*
U.S. Cl. 307—141 **5 Claims**

2. In a room occupancy electrical power programmer adapted to controlling the power output of a room wiring power circuit with a calendar real-time schedule, the combination comprising:

an electrical power pulse microcircuit source means;

a real-time microcircuit clock means adapted to provide calendar real-time signals from said power pulse source;

a real-time storage microcircuit first register means;

an ON-time storage microcircuit second register means;

an OFF-time storage microcircuit third register means;

a rapid-time pulse generator microcircuit means;

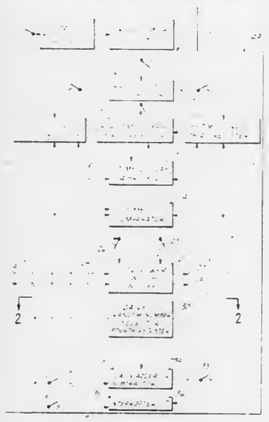
a digital time display means;

switching and microcircuit connecting means adapted to interconnect said real-time clock means, with said real-time first register means, with said ON-time register means, with said OFF-time register means, with said rapid-time generator means, and with said time display means, as each are required;

a time comparator means separately adapted to interconnect said real-time first register means with said ON-time second register means, and separately with said OFF-time third register means, said comparator means providing an equivalence signal when said ON-time second register means and said real-time first register means have the same time value, said comparator means providing a separate equivalence signal when said OFF-time third register means and said real-time first register means have the same value, and said comparator means providing a separate operational signal on a separate signal of ON and OFF equivalence;

a power switch conductively connecting the room utility power wiring and said time comparator means, said power switch operating ON and OFF with respect to said power wiring when a separate signal of ON and OFF equivalence is received from said time comparator means;

a daily number selector having a microcircuit chip comprising binary bit counting and storage means, said selector



adapted to provide a small number on input signal from the connected said real-time clock indicating the passage of 24 hours real-time, and said selector operatively connected to a daily adder/subtracter, said selector being disposable in aforesaid outlet box;

a daily adder/subtracter having a microcircuit chip comprising binary bit counting and storage means, said adder/subtracter adapted to adding and subtracting a selected number input signal from said random number selector on operatively connecting said adder/subtracter to said ON-time storage second register, and on operatively connecting said adder/subtracter to said OFF-time storage third register, said adder/subtracter alternatively operating in the add and subtraction mode as directed by a (+) and (−) operation key, said adder/subtracter being disposable in aforesaid outlet box; and,

all aforesaid combination adapted to and sized to be secured inside a conventional standard size room wall electrical outlet box and conductively connected to the electrical room wiring disposed in said outlet box.

4,213,064

REDUNDANT OPERATION OF COUNTER MODULES

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Satoshi Nagano, Long Beach, Calif.

Filed Apr. 4, 1978, Ser. No. 893,903

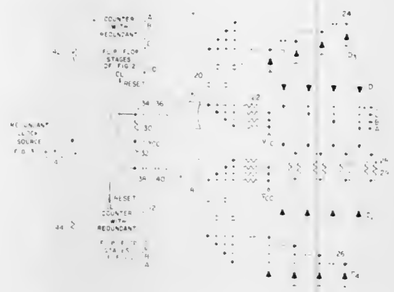
Int. Cl.[2] **G06F** *11/08*

U.S. Cl. 307—219 **18 Claims**

1. In a system having a plurality of multistage counters for operation in parallel to provide a counter output code representative of a plurality of states, including a state representing a count of zero, for continued operation of said system in the event of failure of any one counter, the combination comprising

separate detecting means connected to each counter for detecting the zero state thereof, thus providing a number of detecting means equal to the number of counters, one detecting means for each counter,

separate AC coupling means connected to each of said detecting means for setting to the zero state all others of said counters upon detecting said zero state in any one counter,



two single set of output terminals for all stages of said counters, one terminal for each stage of one counter shared by corresponding stages of all other counters, and

unidirectional AC coupling means coupling each terminal of said set of output terminals to corresponding stages of said counters, whereby continued operation of any one counter will continue to provide a counter output code at said set of output terminals.

4,213,065

DEVICE FOR PROVIDING A SELECTIVELY VARIABLE PROPORTION OF AN ELECTRICAL SIGNAL

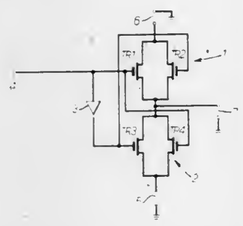
Richard Morcom, London, England, assignor to Hughes Microelectronics Limited, Fife, Scotland

Filed Mar. 13, 1978, Ser. No. 886,200

Claims priority, application United Kingdom, Mar. 15, 1977, 10962/77

Int. Cl.[2] **H03K** *17/68*

U.S. Cl. 307—251 **12 Claims**



1. A device for providing a selectively variable proportion of an electrical signal comprising:

(a) first and second inputs for receiving said signal;

(b) first and second switching means each for being switched between relatively high and low conductivity states for alternating as well as direct current voltages and being connected in series between said inputs;

(c) an output connected to the series connection of said switching means; and

(d) control means for controlling the conductivity states of said switching means and including means arranged to operate said switching means cyclically between said high and low states such that when one of said switching means is in its high conductivity state the other of the switching means is in its low conductivity state, and means for controlling selectively the relative durations that said switching means remain in said high and low conductivity state.

4,213,066

SOLID STATE SWITCH

Wesley A. Rogers, Grosse Pointe Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 11, 1978, Ser. No. 932,716

Int. Cl.[2] **H03K** *17/72*

U.S. Cl. 307—252 C **3 Claims**



1. A control circuit for biasing a gate controlled switch on and off comprising means defining a reference voltage level, first and second input terminals, means connecting said second input terminal to said reference voltage level, means for selectively applying to said first input terminal a voltage level substantially equal to said reference voltage level or a higher voltage level, a gate controlled switch having an anode, a cathode, and a gate, a resistor connected between the cathode of said gate controlled switch and said reference voltage level, a diode having an anode connected to said first input terminal and a cathode connected to the gate of said gate controlled switch whereby said diode is operative to conduct turn-on bias current to said gate when said higher voltage level is applied to said first input terminal, a transistor having a base, an emitter, and a collector, means connecting the collector of said transistor to said reference voltage level, means connecting the base of said transistor to said first input terminal and to the anode of said diode, and means connecting the emitter of said transistor to the cathode of said diode and to the gate of said gate controlled switch whereby once the gate controlled switch is biased on and said reference voltage level is applied to said frist input terminal, said transistor is biased conductive in its emitter-collector circuit, reversing the bias on the gate-cathode circuit of said gate controlled switch to bias said gate controlled switch off.

4,213,067

INTEGRATED GATE TURN-OFF DEVICE WITH NON-REGENERATIVE POWER PORTION AND LATERAL REGENERATIVE PORTION HAVING SPLIT EMISSION PATH

Gordon B. Spellman, Mequon; Herman P. Schutten, Elm Grove, and Stanley V. Jaskolski, Sussex, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 22, 1978, Ser. No. 972,444

Int. Cl.[2] **H03K** *17/60*; **H01L** *29/74*

U.S. Cl. 307—252 C **5 Claims**

1. A monolithically integrated gate turn-off device comprising:

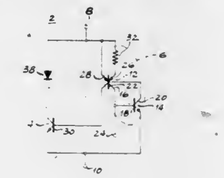
a pair of main terminals for carrying load current;

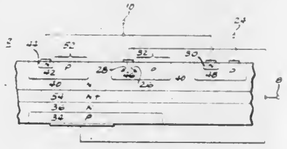
a control terminal which enables said device to be turned ON by signal current of one polarity, and be turned OFF by signal current of the opposite polarity;

non-regenerative switching means formed by a plurality of regions in a substrate, and connected between said main terminals for carrying load current when biased into conduction by base drive current, and being non-conductive in the absence of said base drive current whereby said device is OFF;

regenerative switching means formed by a plurality of serially laterally contiguous regions in said substrate one of which is a gate region connected to said control terminal, said regenerative switching means being connected in parallel with said non-regenerative switching means between said main terminals for carrying current when gated into conduction by said signal current of said one polarity applied to said control terminal, and remaining conductive upon removal of said signal current because of regenerative loop current flowing through said regenerative switching means between said main terminals, another region of said regenerative switching means being an emitter region connected to one of said main terminals, said emitter region having a split emission current path comprising a first emission current path supplying current for the remaining regions of said regenerative switching means to supply said regenerative loop current therethrough, and a second emission current path supplying current to said non-regenerative switching as said base drive current;

said device being turned ON by said signal current of said





one polarity applied to said control terminal rendering said regenerative switching means conductive, including current emission from said emitter region in both said emission paths, said second emission path supplying said base drive current to said non-regenerative switching means rendering the latter conductive to thus carry load current between said main terminals; and

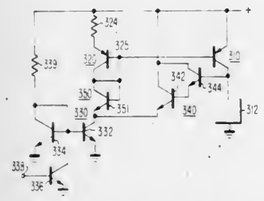
resistance means in said first emission current path causing higher emission in said second emission current path, such that said device in said ON state carries high capacity load current through said non-regenerative switching means between said main terminals, and carries a small low level holding current through said regenerative switching means between said main terminals of sufficient magnitude to maintain said regenerative loop;

said device being easily turned OFF by a small signal current of opposite polarity applied to said control terminal, which readily renders said regenerative switching means non-conductive because of the low level of said holding current, whereby emission from said emitter region is stopped, thus terminating said base drive current supplied through said second emission current path and rendering said non-regenerative switching means non-conductive, hence terminating load current between said main terminals;

whereby there is afforded the combination of a lateral low

level regenerative loop, afforded by said regenerative switching means, having a split emission current path, the second of which controls a higher current capacity, afforded by said non-regenerative switching means, in order to achieve high turn-off gain by breaking the regenerative loop with a small signal.

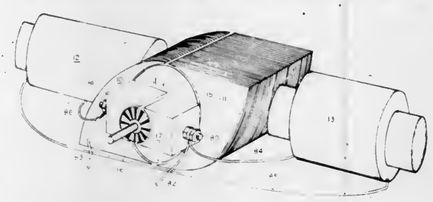
4,213,068
TRANSISTOR SATURATION CONTROL
Adel A. A. Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Jan. 30, 1978, Ser. No. 873,610
Int. Cl.² H03K *3/26, 17/60, 23/22*
U.S. Cl. 307—255 **6 Claims**



1. A circuit arrangement for improving the characteristics of a transistor operated in saturation, comprising:
first transistor means including first and second electrodes defining a first controllable current conducting path and also including a control electrode, said controllable current conducting path coupling a source of energizing potential with a load;
conduction control means coupled to said control electrode of said first transistor means for establishing a control current therein for establishing the desired conductivity of said controlled current conducting path;
second transistor means including first and second electrodes defining a second controllable current path and also including a control electrode, said second controllable current path being coupled to said first and control electrodes of said first transistor means for controlling said control current in said first transistor means;
means coupling said control electrode of said second transistor means to said second electrode of said first transistor means thereby forming a degenerative feedback loop which reduces the effect of said conduction control means when said first transistor means is saturated; wherein:
said first, second and control electrodes of said first and second transistor means comprise emitter, collector and base electrodes, respectively;
said emitter electrode of said first transistor means is coupled to a first terminal of said source of energizing potential and said collector electrode is coupled to said load, said first transistor means being of PNP conductivity type; and
said second transistor means comprises first and second compound-connected transistors of NPN conductivity type having effective emitter, collector and base electrodes corresponding to said first, second and control electrodes, respectively of said second transistor means.

4,213,069
ELECTRIC MOTOR
Leroy W. Pryor, Box 596, Ladd, Ill. 61329
Filed Apr. 10, 1978, Ser. No. 894,922
Int. Cl.² H02K *7/00*
U.S. Cl. 310—46 **7 Claims**

1. An electric motor comprising:
a stator including north and south pole stator sections setting up a stator magnetic field gradient that tapers from strong to weak;
a rotor including a plurality of windings having south and north pole seeking sections tapering from strong to weak, said windings setting up a rotor magnetic field gradient tapering from strong to weak;
means for maintaining said rotor magnetic field gradient oriented such that the weakest north and south pole seeking sections of said windings are adjacent the strongest



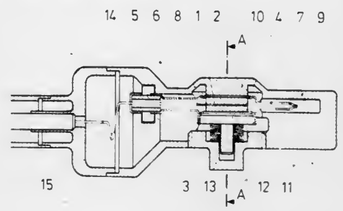
south and north pole sections of said stator magnetic field gradient, respectively, and the strongest south and north pole seeking sections of said windings are adjacent the weakest north and south pole sections of said stator magnetic field gradient, respectively.

4,213,070
CONNECTING DEVICE FOR THE STATOR WINDING OF AN ELECTRIC MACHINE
Egon Lund; Per G. Sorensen, both of Sonderborg; Poul Petersen; Sverre M. Borgen, both of Nordborg, and Jorgen C. Stannow, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 10, 1978, Ser. No. 932,433
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736831
Int. Cl.² H02K *11/00*
U.S. Cl. 310—71 **4 Claims**



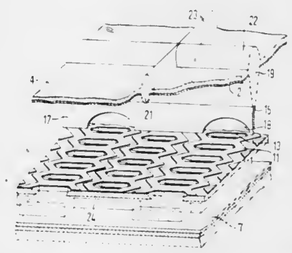
1. An electric machine having a stator lamination packet with a central opening and grooves arranged circumferentially relative to said opening, said packet having a flat end face, a winding head adjacent said end face having skeins extending into said grooves, a cover for said winding head, a connecting device having a head portion with parallel grooves for receiving winding ends of said winding head and external connecting leads, said connecting device having a foot portion which extends between winding parts of said winding head, said head portion being larger than said foot portion thereof with concave surfaces being between said head and foot portions to allow nesting of said connecting device in said winding head, said connecting device being held down by said cover.

4,213,071
OXYGEN FILLED, SEALED HOUSING FOR PIEZOCERAMIC ELECTROACOUSTIC TRANSDUCER
Jan Podgorski, Bergisch Gladbach, Fed. Rep. of Germany, assignor to INTERATOM Internationale Atomreaktorbau GmbH, Bergisch Gladbach, Fed. Rep. of Germany
Filed Oct. 13, 1977, Ser. No. 841,756
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646389
Int. Cl.² H01L *41/10*
U.S. Cl. 310—344 **6 Claims**



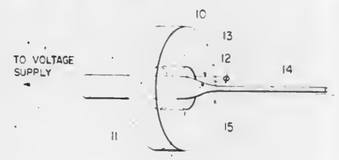
1. Electroacoustic transducer having a piezoceramic transducer element comprising an enclosure wherein the tranducer element is received, said enclosure defining spaces therein filled with oxygen and being oxygen-impermeable and oxygen-nonabsorbing at temperatures exceeding the temperature at which the transducer element decomposes when the ambient partial pressure of oxygen is lower than the partial pressure of oxygen in the transducer element itself.

4,213,072
GAS DISCHARGE DISPLAY DEVICE INCLUDING WEB SHAPED SPACING ELEMENTS
Werner Veith, Heidelberg, and Christian Stein, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Nov. 1, 1978, Ser. No. 956,640
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750587
Int. Cl.² H01J *61/067, 61/30, 61/42*
U.S. Cl. 313—217 **18 Claims**



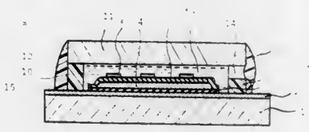
1. Gas discharge display device comprising a gas filled gastight enclosure having a front plate, a rear plate and a plate-shaped control structure sub-dividing the interior of said enclosure into a gas discharge chamber and a post acceleration chamber, said plate-shaped control structure having mutually parallel elongated conductors on each side forming a matrix with row electrodes and column electrodes, said row electrodes facing the gas discharge chamber and said column electrodes facing the post accelerating chamber, said control structure being perforated in the intersection points of said matrix, said gas discharge chamber including at least one plasma electrode running parallel to said control structure, said post accelerating chamber including one post acceleration anode and spacing elements separating said post acceleration anode from said column electrodes by a minimal distance, said distance being such that a voltage of several kV will still fail to trigger a gas discharge, said spacing elements comprising struts with a wall thickness which is substantially constant, said struts extending in the plane of said control structure and being conveyed past said perforations of said control structure and running alternatively in sections, essentially parallel to said column and at an angle relative to the column conductor extension, respectively, said struts being electrically conductive, at least at their surface, such that a strut charging—which may possibly be produced by an electron beam entering said post acceleration chamber—will have faded away again until the next possible return of said electron beam.

4,213,073
ROD PINCH DIODE
Redge A. Mahaffey, Wheaton; Shyke A. Goldstein, Rockville; Jeffry Golden, Laurel, and Gerald Cooperstein, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 20, 1978, Ser. No. 944,238
Int. Cl.² H01J *1/14, 1/20, 11/14*
U.S. Cl. 313—310 **8 Claims**



1. In an electron pinch diode receiving an electrical pulse from a high-voltage pulse generator, the improvement comprising:
a cathode, having a bore which extends through the cathode, said cathode being formed from a material which rapidly emits electrons during the early stage of said electrical pulse; and
an anode, fabricated from an electrically conductive material and formed in the shape of a rod having a section of wide diameter, a section of narrow diameter, and a medial taper therebetween, said anode extending through said bore of the cathode and being spaced from the cathode, and electrically connected to the pulse generator for pinching said electrons emitted from the cathode and propagating the electrons along the length of said anode.

4,213,074
THIN-FILM ELECTROLUMINESCENT DISPLAY PANEL SEALED BY GLASS SUBSTRATES AND THE FABRICATION METHOD THEREOF
Masashi Kawaguchi; Hiroshi Kishishita, both of Nara; Etsuo Mizukami, and Yoshiharu Kanatani, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 14, 1978, Ser. No. 915,447
Claims priority, application Japan, Mar. 16, 1978, 53-30819
Int. Cl.² H05B *33/04, 33/10*
U.S. Cl. 313—509 **20 Claims**



1. A thin-film electroluminescent element comprising:
a pair of substrates disposed to define a cavity therebetween;
a composite comprising a thin-film electroluminescent layer sandwiched between a pair of dielectric layers, said composite being disposed within said cavity, at least one of said pair of substrates being transparent to the light emit-

ted by said electroluminescent layer when properly engaged;

a pair of opposing electrodes positioned to define said composite therebetween; and

a protective liquid disposed within said cavity defined by said substrates and being in contact with the dielectric layers, said protective liquid being adapted to impregnate into pin holes caused in the dielectric layers, said protective liquid being inert with respect to the thin-film electroluminescent layer and the two dielectric layers, resistant to high voltage, high humidity, and high temperature, and having a small vapor pressure and a small coefficient of thermal expansion.

4,213,075

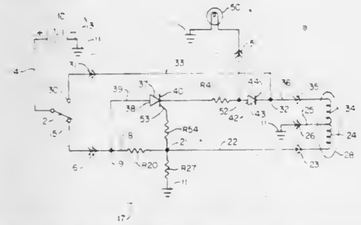
SAFETY CIRCUIT FOR ELECTRICAL LOADS

William A. Ericson, Rte. 8, Sturgeon, Wis. 54235

Filed Jul. 24, 1978, Ser. No. 927,643

Int. Cl.[2] H05B *39/10*; B60Q *1/04*

U.S. Cl. 315—83 **3 Claims**



1. A self-activating headlight safety control circuit for energizing a second headlamp filament when a first headlamp filament fails, comprising:

(a) a source of direct current, having a positive side and a ground side;

(b) a grounded first headlamp filament connected from the positive side of the source of direct current serially through a switch, a first junction, a first resistor, and a second junction;

(c) a grounded second headlamp filament connected from the positive side of the source of direct current serially through the switching means to a third junction;

(d) a silicon controlled rectifier having a cathode, an anode and a gate connection, with the anode connected to the first junction, the cathode connected serially through a second resistor and a diode to the third junction, the gate connected through a third resistor to the second junction, and with the silicon controlled rectifier unbiased to present an open circuit when the first headlamp filament is activated and biased to present a closed circuit to the second headlamp filament when the first headlamp filament fails; and

(e) a fourth resistor connected between the second junction and the source of direct current ground.

4,213,076

CONSTANT-CURRENT TRANSFORMER FOR GAS-DISCHARGE TUBES

Alfred Walz, Am Kurzarm 7, Emmendingen, Fed. Rep. of Germany (D-7830)

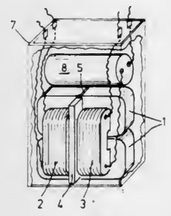
Filed Jul. 5, 1978, Ser. No. 922,238

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812757

Int. Cl.[2] H05B *41/16, 41/233*

U.S. Cl. 315—282 **13 Claims**

1. In a constant-current transformer for gas-discharge tubes with a series-resonance capacitor in a secondary load circuit and provided with an iron core made of grain-oriented magnetic sheet material, with electrically isolated primary and secondary windings, the improvement wherein at least one nonmagnetic gap with a total length δ and a mean iron path length l_m is provided in a main magnetic circuit, with at least two stray-field yokes adjacent said gap, $\delta/l_m > 0.002$, a maximum magnetic induction B_{max} of at least 17,000 gauss is achieved with rated line voltage on said primary winding, and including means for completely electrically isolating active iron and copper winding parts, a heat-conductive can surrounding said windings and said core which serves primarily to carry away heat losses, said parts being installed in said can



tightly pressing against the latter, wherein the surface of said can is at least 40% greater than the surface of the active transformer parts, and wherein impregnation of the completely assembled transformer, consisting at least of said primary and secondary windings, said core and said stray-field yokes, with said gap being determined by a nonmagnetic spacer in the main magnetic and stray-field circuits, is carried out following installation in said can using an epoxy resin in an overpressure centrifuging process.

4,213,077

SPEED CONTROL CIRCUIT FOR A UNIVERSAL ELECTRIC MOTOR

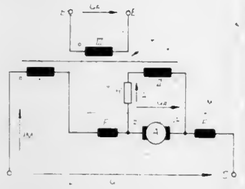
Friedrich Hornung, Stuttgart, and Martin Gerschner, Leinfelden-Echterdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 24, 1978, Ser. No. 936,324

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741525

Int. Cl.[2] H02K *23/00*

U.S. Cl. 318—245 **18 Claims**



1. A speed control circuit for a universal electric motor of the kind having a transformer of which a primary winding is connected in series with the motor and of which a secondary winding is connected with the input of a regulation circuit, further comprising the improvement which consists in that:

said transformer has a second primary winding wound so as to oppose the first-mentioned primary winding and connected in series with a resistance, the series combination thereby formed being connected so as to be affected by the voltage across at least one winding of said motor, and

said first and secondary primary windings are so constituted that for a given value of said resistance (R), they balance each other out, with respect to their effect on said secondary winding, at a predetermined operating condition of said motor.

4,213,078

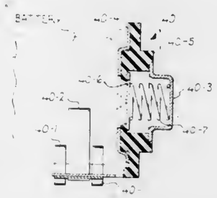
BATTERY HOLDER AND CONNECTOR FOR A RADIO RECEIVER OR THE LIKE

Sherwood W. Ferrell, Rustburg; Friedrich H. Mann, and Henry A. Schaefer, both of Lynchburg, all of Va., assignors to General Electric Company, Lynchburg, Va.

Division of Ser. No. 708,866, Jul. 26, 1976, Pat. No. 4,083,011. This application Nov. 11, 1977, Ser. No. 850,553

Int. Cl.[2] H04B *1/034*; H01M *10/46*

U.S. Cl. 320—2 **2 Claims**



1. In a battery powered radio receiver or the like that requires a battery to be charged while said battery is positioned in said radio receiver or the like, an improved battery contact arrangement for said radio receiver or the like comprising:

a. a metallic member having an opening therethrough;

b. an insulating member positioned adjacent said metallic member, said insulating member having a first opening therethrough substantially in alignment with said opening in said metallic member, and said insulating member further having an enlarged opening adjacent to said first opening and located on the side of said first opening away from said metallic member;

c. a metallic contact positioned in said enlarged opening in said insulating member in the vicinity of said first opening in said insulating member, said metallic contact being larger than said first opening in said insulating member for retention in said enlarged opening in said insulating member;

d. a metallic spring positioned in said enlarged opening in said insulating member against said metallic contact;

e. and a metallic charging projection having a contact portion for engaging an external battery charging terminal and having a base portion, said metallic charging projection being positioned with said base portion in contact with said insulating member on the side thereof away from said metallic member and with said contact portion in contact with said spring, and said metallic charging projection holding said spring in said enlarged opening in said insulating member between said metallic contact and said contact portion of said charging projection.

4,213,079

BATTERY CHARGER ADAPTER

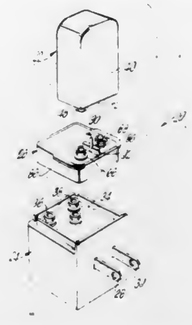
Ferdinand H. Mullersman, Gainesville, Fla., assignor to General Electric Company, Worthington, Ohio

Filed Feb. 13, 1978, Ser. No. 877,299

Int. Cl.[2] H01M *10/46*; H02J *7/00*

U.S. Cl. 320—2 **19 Claims**

1. A charging adapter comprising a housing including a top portion and a bottom portion, said top and bottom portions having juxtaposed surfaces defining a cavity therebetween; said bottom portion having a first portion and a recessed portion, a pair of snap-type terminal contacts in said recessed portion; a pair of contact terminals extending from said top



portion; circuit means in said cavity for electrically coupling one contact of one pair to one contact of the other pair.

4,213,080

AUTOMATIC ELECTRIC BATTERY CHARGING APPARATUS

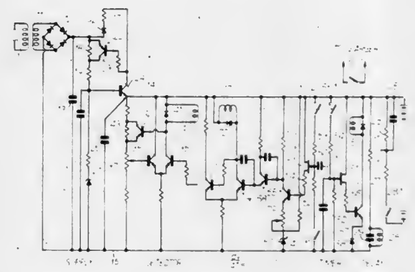
Alan Rock, Wombourne, England, assignor to Chloride Group Limited, London, England

Filed Mar. 31, 1978, Ser. No. 892,270

Claims priority, application United Kingdom, Apr. 7, 1977, 14863/77

Int. Cl.[2] H02J *7/04*

U.S. Cl. 320—21 **6 Claims**



1. Automatic electric battery charging apparatus including terminating means responsive to the rate of change of a control signal, dependent on the battery voltage while on charge for initiating the termination of a phase of the charge when the rate of change of the said signal falls below a predetermined value, the terminating means including a capacitor and a bistable circuit having set and reset conditions, means for supplying the control signal dependent on battery voltage on charge through the capacitor to an input of the bistable circuit, so as to set the circuit when the battery voltage increases, capacitor charge adjusting means operative when the bistable circuit is set, for supplying current to the capacitor to adjust the charge of the latter until it re-sets the bistable circuit, and a timer arranged to be reset by the bistable circuit in its set state, and means to terminate the charge or reduce the average charging current if the timer is not reset within a predetermined time.

4,213,081

METHOD AND APPARATUS FOR CHARGING SEALED NI-CAD BATTERIES

Earnest R. Taylor, P.O. Box 1254, Rosamond, Calif. 93560

Filed Feb. 27, 1978, Ser. No. 881,179
Int. Cl.[2] H02J *7/04*
U.S. Cl. 320—40 **9 Claims**



1. An electrical energy storage system comprising:
a sealed nickel-cadmium battery having first and second terminals;
a source of charging current;
disconnectable means for applying a large charging current from the source to the battery;
a diode and a capacitor connected in series between the first and second terminals of the battery, the diode being connected to the first terminal and the capacitor being connected to the second terminal to form therebetween a junction, the diode being poled to charge the capacitor as the battery voltage increases;
comparing means having first and second inputs;
means for connecting the junction to the first input of the comparing means;
a connection from the first terminal of the battery to the second input of the comparing means including means for compensating for the voltage drop across the diode; and
means responsive to the comparing means for disconnecting the applying means when the voltage at the second input drops below the voltage at the first input.

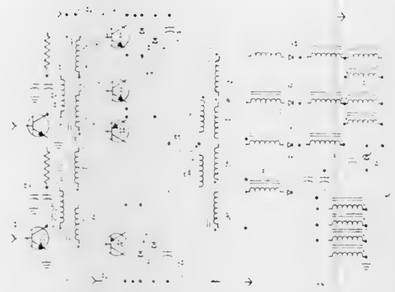
6. Charging apparatus for a sealed nickel-cadmium battery having a terminal voltage comprising:
a source of charging current;
disconnectable means for applying a large charging current from the source to the battery;
means for storing the maximum value attained by the battery terminal voltage on an ongoing basis, the storing means comprising a pulsed oscillator, means for counting the oscillations of the oscillator, means for converting the counted oscillations to an analog signal, and means for actuating the oscillator as long as the analog signal is less than the battery terminal voltge to cause the counted oscillations to follow the maximum value of the terminal voltage of the battery;
means for comparing the stored maximum value with the instantaneous value of the terminal voltage, the comparing means comprising a comparator having a first input to which the analog signal is applied and a second input to which the battery terminal voltage is applied; and
means responsive to the comparing means for disconnecting the applying means when the instantaneous value of the terminal voltage is less than the stored maximum value of the terminal voltage.

4,213,082

VOLTAGE REGULATOR

Daniel A. Wisner, Milan, and Truman T. Schmalzriedt, Farmington Hills, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 27, 1978, Ser. No. 955,253
Int. Cl.[2] G05F *1/56*
U.S. Cl. 323—17 **12 Claims**



1. A voltage regulator for receiving an unregulated input voltage from an electrical energy source and supplying a regulated D.C. voltage at its output, said voltage regulator comprising:
a first transformer means including a magnetic core having first and second electrical windings disposed in inductive relation therewith;
driver switch means, operably connected to said first electrical winding and having on and off states for, when on, supplying energizing current from said electrical energy source to said first transformer means;
regulating means, operably connected to said driver switch means and reponsive to the magnitude of said output voltage of said voltage regulator, for controlling the length of time said driver switch means is in the on state so as to control the amount of energizing current applied to said first transformer means;
second transformer means for providing an output voltage of a predetermined magnitude;
output switch means, having on and off states and operably connected to said second electrical winding of said first transformer means and to second transformer means, for, when switched to said on state by said first transformer means, supplying energizing current to said second transformer means; and
capacitance means, coupled in parallel with said first electrical winding of said first transformer means, for short-circuiting said first electrical winding when said driver switch means is switched to said off state so as to decrease the turnoff time of said output switch means.

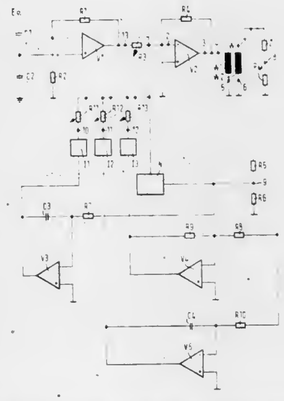
4,213,083

CIRCUIT ARRANGEMENT FOR COMPENSATING TRANSMISSION ERRORS OF A TRANSFORMER

Hanz-Joachim Freygang, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 29, 1977, Ser. No. 828,422
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1976, 2641581
Int. Cl.[2] H01F *40/14*
U.S. Cl. 323—44 R **8 Claims**

1. A circuit arrangement for compensating for the transmission errors occurring in a desired signal as a result of passage of said desired signal through a transformer, said transformer having a primary winding and secondary winding, said secondary winding being adapted to be connected to a load impedance, said circuit arrangement comprising:
phase shift means adapted to be responsive to the output of said secondary winding for generating a compensating signal having a phase and amplitude adjusted so as to result in the substantial cancellation of the transmission errors occurring in said desired signal when combined with said desired signal and passed therewith through said transformer;
combining means for combining said compensating signal and said desired signal for application to said primary winding of said transformer;



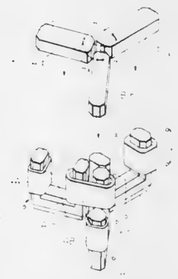
first means responsive to the output of said secondary winding applied to said load impedance for generating a signal which is in phase with the current flowing through said load impedance and whose amplitude is proportional to the amplitude of said current; and
second means for coupling the signal generated by said first means to said phase shift means.

4,213,084

VARIABLE LEAKAGE TRANSFORMER

Hirayama Hiromitsu, Funabashi, Japan, assignor to TDK Electronics Company Limited, Tokyo, Japan

Filed Mar. 9, 1978, Ser. No. 884,953
Claims priority, application Japan, May 20, 1977, 52-57749; May 26, 1977, 52-66946[U]; Jun. 30, 1977, 52-85426[U]
Int. Cl.[2] H01F *29/10, 29/12*
U.S. Cl. 323—56 **1 Claim**



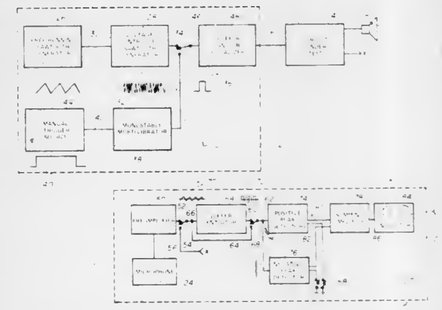
1. A variable leakage transformer, comprising:
first, second and third magnetic core pieces, each forming a closed magnetic path and having a common leg and another leg,
said common legs being in mutual juxtaposition, with each of said core pieces being rotatable about the common leg thereof,
a primary winding wound about said juxtaposed common legs of said core pieces,
a secondary winding wound about the other leg of said first core piece,
a control winding wound about at least one of the other legs of said second and third core pieces, and
means coupled to said control winding for controlling the magnetic flux in said common leg of said first core piece.

4,213,085

PHASE INVERSION TEST DEVICE

Daniel J. Ramer, 4 Hillside Rd., Kinnelon, N.J. 07405

Filed Aug. 28, 1978, Ser. No. 937,244
Int. Cl.[2] G01R *27/00, 19/16, 19/14*
U.S. Cl. 324—57 R **8 Claims**



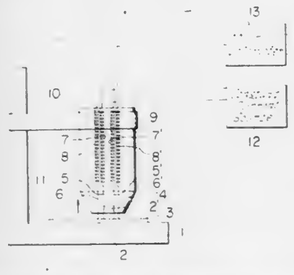
1. A device for testing phase inversion of a circuit under test which comprises:
signal generator means for generating an assymetrical test signal;
means for electrically coupling said assymetrical test signal to said circuit under test;
means for receiving a plurality of output signals from said circuit under test;
first switching means for selectively testing a first output signal of said plurality of output signals from said circuit under test;
differentiator means electrically coupled to said first switching means for generating a plurality of voltages proportional to the slopes of said assymetrical test signal;
means for electrically by-passing said differentiator means;
polarity oriented peak detector means, electrically coupled to said means for electrically by-passing, for generating D.C. voltages and isolating said plurality of voltages porportional to the slopes of said assymetrical test signal when said differentiator means is utilized, said D.C. voltages are proportional to peak amplitudes of said assymetrical test signal when said differentiator means is by-passed, and for integrating frequency dependent variations within a sweep range of said assymetrical test signal;
summing amplifier means for summing the output of said peak detector means and amplifying the difference between said D.C. voltages generated therefrom; and
indicator means, electrically coupled to said amplifier means for registering a change in polarity in response to the output of said amplifier means, said indicator means calibrated to represent no phase inversion for a positive polarity indication from said indicator means and a phase inversion for a negative polarity indication from said indicator means.

4,213,086

SELECTOR DEVICE FOR THE DETERMINATION OF THE TYPE OF ELECTROCONDUCTIVITY IN SEMICONDUCTOR WAFERS

Yoshiya Iida, Annaka, and Shoichiro Ohga, Higashikurume, both of Japan, assignors to Shin-Etsu Handotal Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1978, Ser. No. 922,284
Claims priority, application Japan, Jul. 8, 1977, 52-81036
Int. Cl.[2] G01R *27/00, 31/26*
U.S. Cl. 324—62 **1 Claim**



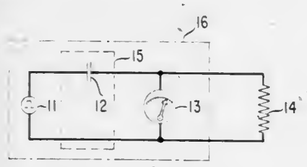
1. A selector device for the determination of the type of electroconductivity in a semiconductor wafer utilizing the polarity of the electromotive force produced in the semiconductor wafer by the Hall effect, said device comprising first and second pairs of probes in a diagonal arrangement to be contacted with the surface of the semiconductor wafer under measurement, one of said pairs of probes supplying an electric current through the wafer, and the other of said pairs of probes detecting the electromotive force produced in the wafer by the Hall effect, and a pair of permanent magnets opposed to each other with a gap in which the semiconductor wafer to be measured is placed when under measurement, one of said permanent magnets being positioned within the circumference determined by said probes, wherein said one of said permanent magnets positioned within the circumference determined by said probes has dimensions such as to be confined within the circle or ellipse inscribed to a square or rhombus having corners at the contact points between said probes and the surface of the semiconductor wafer under measurement.

4,213,087

METHOD AND DEVICE FOR TESTING ELECTRICAL CONDUCTOR ELEMENTS

Alan T. English, Summit, and Gabriel L. Miller, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 847,213, Oct. 31, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,578
Int. Cl.[2] G01R *27/02*
U.S. Cl. 324—62 **17 Claims**



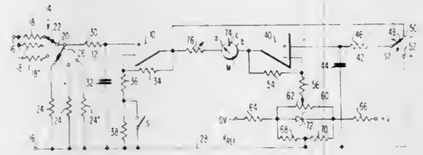
1. In the manufacture of integrated circuit devices, a method for testing at least one electrical conductor element by determining nonlinearity of electrical resistance of said element as a function of current flowing in said element characterized in that said method comprises the steps of (1) electrically connecting said element to the output terminals of an AC-coupled linear electrical network whose input terminals are connected to an electrical wave generator, (2) activating said wave generator, and (3) measuring the average voltage across said element.

4,213,088

VOLTAGE MEASURING CIRCUIT

Edward J. Nossen, Camden, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 20, 1978, Ser. No. 952,969
Int. Cl.[2] G01R *17/02, 15/08*
U.S. Cl. 324—98 **15 Claims**



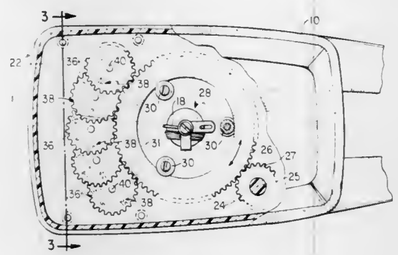
1. A voltage measuring circuit comprising:
voltage indicator means having first and second inputs for indicating the relative difference in potentials applied to said inputs,
means for applying a reference voltage to one of said inputs during the quiescent state of said circuit,
means for applying an adjustable bias voltage to the other of said inputs,
means for applying a first voltage proportional to the voltage being measured to said one input,
said means for applying said bias voltage including means for maintaining the voltage level at said other input at the level of said bias voltage for one polarity of said first voltage, and
means for adding to said bias voltage a second voltage at an amplitude level proportional to said first voltage and of the same polarity as said first voltage for the opposite polarity of said first voltage.

4,213,089

VARIABLE SCALE READOUT FOR MULTI-METER USE

Leonard N. Liebermann, La Jolla, Calif., assignor to TIF Instruments, Inc., Miami, Fla.

Filed Oct. 2, 1978, Ser. No. 947,642
Int. Cl.[2] G01R *15/08*
U.S. Cl. 324—115 **5 Claims**



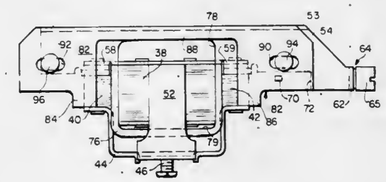
1. Apparatus for adjusting a selected meter scale of pointer-type meters for uncluttered readout comprising:
(a) a housing;
(b) a meter plate supported by said housing having a plurality of display windows arranged in an arcuate configuration;
(c) a plurality of geared display wheels mounted in non-engageable relation with each other and imprinted with scale numerals arranged about each display wheel face enabling the numerals to be brought into register with the windows on the meter plate to permit arcuate readout of the selected meter scale;
(d) a ring gear rotatably mounted for simultaneous engagement of the display gears;
(e) a drive gear rotatably mounted for engaging the ring gear whereby rotation of the drive gear rotates the ring gear causing rotation of the display gears whereby a desired meter scale is set and can be read through the windows on the meter plate; and
(f) means for rotating the drive gear.

4,213,090

INTEGRAL FLUX LAGGING AND LIGHT LOAD ADJUSTMENT ASSEMBLY FOR WATTHOUR METERS

Joseph M. Keever, and George W. Lipscomb, both of Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1978, Ser. No. 954,383
Int. Cl.[2] G01R *11/02*
U.S. Cl. 324—138 **8 Claims**



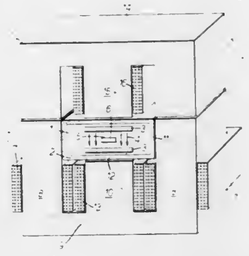
1. An induction watthour meter including an electromagnet assembly with voltage and current magnetic sections and a rotatable disc driven at a rate responsive to voltage and current magnetic fluxes directed from the magnetic sections into said disc, wherein said voltage magnetic section comprises:
a voltage magnetic core including a main pole terminating at a main pole face and two adjacent flux return poles terminating at coplanar auxiliary pole faces on opposite sides of said main pole face;
a one piece electroconductive bracket and lag loop member having a platform carrying two mounting tabs at one side thereof fixedly attached to said flux return poles, said one piece member further having a continuous current conducting loop portion including an inverted U-shaped extension projecting from said one side of said platform and around said main pole face for producing a predetermined phase lagging effect in a working voltage magnetic flux component directed from said main pole face and into said disc;
magnetic means extending over said auxiliary pole faces in substantially coplanar relationship with said inverted U-shaped extension and being slidably mounted on a bottom surface of said platform, said magnetic means being movable within a secondary voltage magnetic flux component extending between said disc and said coplanar auxiliary pole faces for varying the increasing and decreasing disc torque producing effects of the secondary voltage flux component; and
manual operator means mounted on the top surface of said platform and being connected to said magnetic means for varying a light load adjustment position of said magnetic means.

4,213,091

METHOD AND APPARATUS FOR TESTING A MAGNETIC DOMAIN DEVICE

Paul V. Cooper, Kingsley, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed May 16, 1978, Ser. No. 906,623
Claims priority, application United Kingdom, May 21, 1977, 21503/77
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—210 **7 Claims**



1. A method of testing a magnetic domain device to determine whether the device operates at the centre of a preselected range of bias magnetic field strengths, the device having a substrate for supporting magnetic domains, bias field means for providing the bias magnetic field substantially normal to the substrate and a magnetic shield surrounding the substrate and the bias field means, the method including the steps of: applying an external magnetic field to opposed sides of the shield, which are substantially parallel to the bias field, to provide a magnetic field within the shield, which superimposes linearly on said bias magnetic field without saturating the shield; and monitoring the operation of the device whilst adjusting the value of said external field to determine whether said bias field is set to said centre of the preselected range of bias magnetic field strengths.

4,213,092

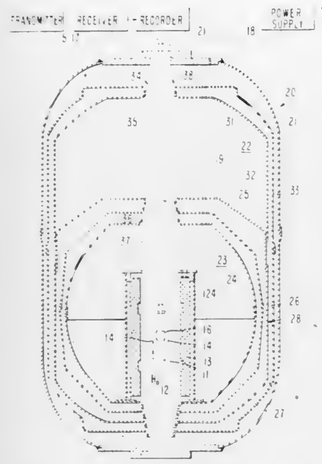
NMR SPECTROMETER WITH SUPERCONDUCTING COIL HAVING RECTANGULAR CROSS-SECTION WIRE

George D. Kneip, Jr., Menlo Park, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 21, 1978, Ser. No. 879,291
Int. Cl.[2] G01R *33/08*
U.S. Cl. 324—319 **15 Claims**

1. An NMR spectrometer for testing a sample comprising
a transmitting coil for applying an rf field to the sample,
a receiver coil coupled to the sample for deriving a signal indicative of the NMR properties of the sample,
a solenoid coil having a longitudinal axis about which the coil is wound and a central core in which said transmitting and receiver coils and said sample are positioned, said coil applying a homogeneous DC magnetic field to the sample,
said coil being formed of superconducting wire having a rectangular cross-section, said wire being formed of a non-superconducting metal having a relatively low room temperature material surrounding superconductor material having a small enough cross sectional area that a magnetic field resulting from current flowing in the superconductor material has a relatively constant location relative to the cross section of the wire, said wire being wound as a plurality of helices each of which is concentric

with the coil longitudinal axis, immediately adjacent helices having oppositely directed pitches and faces that abut



substantially against each other, adjacent turns of the same helix having faces that abut against each other.

4,213,093

PORTABLE BURIED OBJECT DETECTION SYSTEM WITH ERROR REDUCING SIGNAL PROCESSING

Peter M. Pecori, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 774,574, Mar. 4, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,511
Int. Cl.[2] G01V *3/08*
U.S. Cl. 324—329 **4 Claims**



1. In a device for detecting objects buried within the earth's surface of the type that is swept back and forth in an arc over the ground to be searched, the improvement comprising:

a. means for generating a signal representing the endpoints of the sweep arc;

b. means for transmitting a signal into the ground and receiving a returning signal from the ground;

c. means connected to said means for transmitting and receiving for processing said returning signal and for developing a background level for use in creating a triggering detection threshold; and

d. means connected to said means for generating a signal and connected to said means for processing and developing, for preventing said returning signal from being utilized in creating said detection threshold in response to receiving an endpoint representing signal therefrom.

4,213,094

POLY-PHASE MODULATION SYSTEMS

Wilhelm A. H. Wood, Walpole, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jul. 13, 1978, Ser. No. 924,115
Int. Cl.[2] H04L *27/20*
U.S. Cl. 370—12 **14 Claims**



1. A phase modulator used in the generation of a multiphase carrier comprising phase shift means for providing orthogonal pairs of carrier reference signals on pairs of output leads for use as pairs of reference vectors, independent resistive elements coupled to each pair of said output leads to provide at the output of a resistive element a separately adjusted phase vector, and an addressable digital multiplexer coupled to the output of each resistive element to provide a phase modulated carrier representing input data to said digital multiplexer.

4,213,095

FEEDFORWARD NONLINEAR EQUALIZATION OF MODULATED DATA SIGNALS

David D. Falconer, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 4, 1978, Ser. No. 931,026
Int. Cl.[2] H03H *7/40*
U.S. Cl. 375—14 **25 Claims**



1. In an arrangement responsive to samples of a received modulated data signal for forming decisions as to the values of data symbols contained in said signal, each of said samples being represented by a complex number, that improvement which comprises

means (**51–55, 61–65**) for forming a plurality of signal products associated with an individual one of said samples, each multiplicand of each product being derived from a respective one of said samples, each said respective one of said samples bearing a predetermined temporal relationship to said individual one of said samples, and at least one multiplicand of individual ones of said signal products being the complex conjugate of the sample from which said one multiplicand is derived,

means (**71–75**) for multiplying each of said products by an associated coefficient to form a plurality of weighted products,

means (**81–86**) for combining said weighted products with each other to generate a feedforward nonlinear signal, and

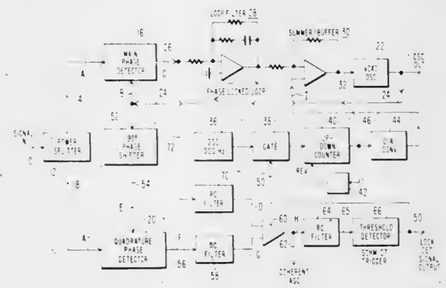
means (**12, 14, 17, 43**) for forming an individual one of said decisions in response to said feedforward nonlinear signal.

4,213,096

PHASELOCK RECEIVER WITH PHASELOCK DETECTOR

James W. Daniel, Jr., Camden, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 26, 1978, Ser. No. 900,129
Int. Cl.[2] H04B *1/16*
U.S. Cl. 455—260 **5 Claims**



1. A phaselock receiver including a phaselock detector, comprising

a phase lock loop including a voltage-controlled oscillator, and a main phase detector receptive to an output of said oscillator and a received signal,

a 90° phase shifter receptive to an output of said oscillator,

a quadrature phase detector receptive to a quadraturephase-shifted oscillation from said phase shifter and said received signal, and

means to subtract the direct-current component of the output of said main phase detector from the direct-current component of the output of said quadrature phase detector to provide a phaselock-indicating signal which is substantially zero when the oscillator is out-of-lock with the received signal.

4,213,097

HYBRID AUTOMATIC GAIN CONTROL CIRCUIT

Ran F. Chiu; Philip F. Kromer, III; Ming L. Kao, all of Miami, and Henry H. Parrish, Miami Springs, all of Fla., assignors to Racal-Milgo, Inc., Miami, Fla.

Filed Oct. 19, 1978, Ser. No. 952,650
Int. Cl.[2] H03G *3/20*
U.S. Cl. 330—51 **11 Claims**



1. An automatic gain control circuit for controlling the gain provided to an input signal comprising:

analog means responsive to a first control signal for adjusting said gain to provide a partially gain-corrected signal;

means for converting said partially gain-corrected signal to a digital signal;

digital means responsive to a second control signal for adjusting the gain of said digital signal to produce a second gain-corrected signal; and

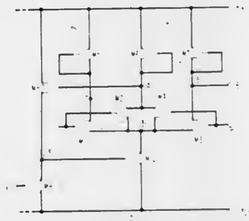
means responsive to said second gain-corrected signal for producing said first and second control signals.

4,213,098

SEMICONDUCTOR DIFFERENTIAL AMPLIFIER HAVING FEEDBACK BIAS CONTROL FOR STABILIZATION

Yannis Tsividis, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,737
Int. Cl.[2] H03F *3/45, 3/16*
U.S. Cl. 330—253 **15 Claims**



1. An MOS differential amplifier circuit including a pair of substantially identical branches, each branch having a separate signal input MOS transistor (M_1, M_3) in series with a separate MOS load transistor (M_5, M_7), both branches being connected to the drain of a common current-source MOS transistor (M_{10}), CHARACTERIZED IN THAT said circuit further includes an auxiliary branch including a pair of substantially identical auxiliary input signal MOS transistors (M_2, M_4), each of whose gate electrodes is connected to a gate electrode of a different one of the separate signal transistors (M_1, M_3), each of whose drains is connected to a common-mode feedback node (**14**), and each of whose sources is connected to the drain of said common current source transistor (M_{10}), the common-mode feedback node (**14**) being connected to an auxiliary load device (M_6) and to the gate electrode of a feedback MOS transistor (M_8), the source of which is connected to the gate electrode of the common current-source transistor (M_{10}).

4,213,099

HYDROPHONE PREAMPLIFIER AND CALIBRATION CIRCUIT

Craig K. Brown, Winter Garden, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 20, 1978, Ser. No. 962,406
Int. Cl.[2] H03F *17/00, 3/16*
U.S. Cl. 330—297 **6 Claims**



1. A preamplifier for use with an AC signal source and having terminals for connection to a two-wire cable, one wire of which goes to a remote load and the other wire of which goes to a remote DC voltage supply source comprising, in combination:

amplifier means for producing an amplified voltage input

signal corresponding to the signals from said AC signal source, said amplifier means also having terminals for connection to said remote DC supply source terminal and said remote-load terminal;

current driver means, receiving the output of said amplifier means, for converting the AC output signal to a corresponding signal current having a DC level on which the AC signal components are superimposed, said current driver means having terminals for connection to said remote DC supply source terminal and said remote-load terminal;

constant-current supply means, inserted in series with the DC supply source by being connected between the DC supply source terminals of said amplifier means and said current driver means, for maintaining a constant DC current supply at its amplifier-means side;

current-compensation means, connected across said amplifier means from its DC supply voltage terminal to its remote-load terminal, for compensating for the difference between the constant current supplied by said constant-current supply means and the varying current demand of said amplifier means; and

optoisolator means for coupling an AC calibration signal to the input of said amplifier means.

4,213,100

GAS DISCHARGE LASER

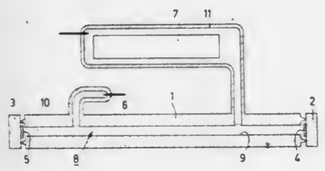
Robertus A. J. Keijser; Gustaaf A. Wesselink; Bram J. Derksema, and Johannes A. T. Verhoeven, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1978, Ser. No. 903,887

Claims priority, application Netherlands, May 23, 1977, 7705623

Int. Cl.² H01S *3/03*

U.S. Cl. 331—94.5 D **7 Claims**



1. A gas discharge laser comprising: a glass envelope containing a lasing gas medium for producing a discharge and with a part of the envelope forming a laser tube having an axis, first and second laser mirrors arranged so that the optical axis thereof coincides with the axis of the laser tube and forming therewith a resonant cavity, first and second electrodes positioned in spaced relationship in said glass envelope for exciting the lasing gas, and wherein at least an inner wall of the laser tube comprises a gehlenite glass.

4,213,101

PSEUDO-RANDOM BINARY SEQUENCE GENERATOR

Gerard Policand, La Marche EA, 1 rue de Nozay, 91310 Montlhery; Jacques Trompette, Residence du Parc, Bat. Les Thuyas, 91700 Villiers sur Orge, and Francis Bourrinet, 13 rue Fleming, Le Village A, 91400 Orsay, all of France

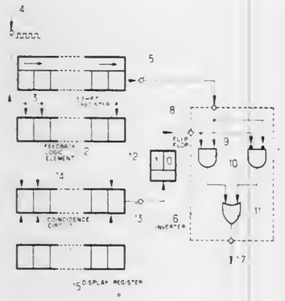
Continuation of Ser. No. 663,692, Mar. 4, 1976, abandoned. This application Jun. 15, 1977, Ser. No. 806,838

Claims priority, application France, Mar. 12, 1975, 75 07647

Int. Cl.² H03K *3/84;* **G06F** *7/38;* **H03B** *29/00*

U.S. Cl. 331—78 **3 Claims**

1. A pseudo-random binary sequence generator arrangement with inverter means; comprising a periodically operated shift register (1) having a counting cycle and feedback logic means receiving predetermined outputs of said shift register and feeding back binary information to said shift register, said shift register having an input responsive to the binary information from said feedback logic means, said feedback logic means being responsive to a logic signal combination of the logic states of at least two stages of said shift register, said inverter



means being a switchable inverter (6) having a data input connected to the output (5) of said shift register (1), a control input (8) and an output (7), said inverter delivering to said output the output sequence of said shift register alternately inverted and non-inverted, said inverter being switched over via said control input once per cycle of said register.

4,213,102

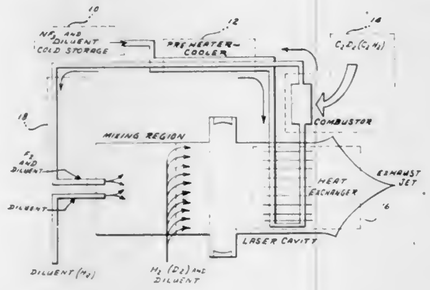
FLUORINE GENERATOR FOR CHEMICAL LASERS

Walter R. Warren, Jr., Rancho Palos Verdes; Donald A. Durran, Manhattan Beach, and Donald J. Spencer, Torrance, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 21, 1978, Ser. No. 888,813

Int. Cl.² H01S *3/22*

U.S. Cl. 331—94.5 G **3 Claims**



1. In a DF or HF chemical laser having a gas mixing region, a resonant cavity, a gas exhaust region, means for introducing a first fluorine gaseous reactant into said mxing region, and means for introducing a second gaseous reactant selected from the group consisting of HF and DF into said mixing region, the improvement which comprises means for the cold storage of an NF_3 gaseous component capable of generating said first fluorine gaseous reactant, means for preheating said stored gaseous component, means for effecting the dissociation of said preheated gaseous component to fluorine, means for cooling said dissociated gaseous fluorine, and means for presenting said cooled, dissociated, gaseous fluorine to said gas mixing region.

4,213,103

CIRCUIT FOR DETECTING AND CONTROLLING SIMULTANEOUS CONDUCTION OF TWO SWITCHES CONNECTED IN SERIES

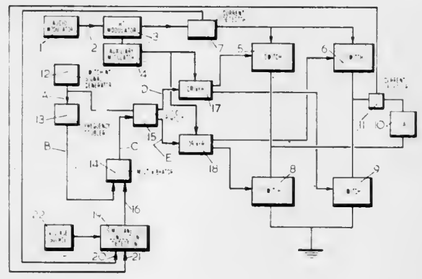
David R. Birt, Oxted, England, assignor to Communications Patents Limited, London, England

Filed May 10, 1978, Ser. No. 904,413

Claims priority, application United Kingdom, Jun. 9, 1977, 24179/77; Jul. 12, 1977, 50844/77; Sep. 26, 1977, 39971/77

Int. Cl.² H03K *7/10;* **H02M** *7/48*

U.S. Cl. 332—9 T **14 Claims**



1. A switching system comprising at least one pair of semiconductor switches connected in series across a D.C. supply and providing means for energizing a load, the load being connected to the junction between the pair of switches, a means for returning to the supply current passing through the load when one switch of the pair is conductive, a means for supplying current from the supply to the load when the other switch of the pair is conductive, means for providing a series of "off" command and a series of "on" command signals, the pair of switches being sequentially operable by the series of "on" and "off" command signals, means for providing a delay interval between the sequential application of one of the "off" command signals to one switch of the pair and the subsequent application of one of the "on" command signals to the other switch of the pair, and for preventing simultaneous conduction of each switch of said pair of switches, means for detecting simultaneous conduction of the two series connected switches, and means for increasing the duration of the delay interval when simultaneous conduction is detected.

4,213,104

VACUUM ENCAPSULATION FOR SURFACE ACOUSTIC WAVE (SAW) DEVICES

Donald E. Cullen, and Robert A. Wagner, both of Manchester, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 25, 1978, Ser. No. 945,359

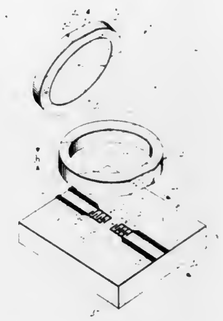
Int. Cl.² H03H *9/10, 9/04, 9/30*

U.S. Cl. 333—150 **17 Claims**

1. A vacuum encapsulated surface acoustic wave (SAW) structure, comprising:

a SAW device including a substrate of desired material having a major surface on which electro-acoustic transducers and associated electrical conductors are disposed along an acoustic wave propagation path on said substrate, said transducers and propagation path defining an active signal region on said major surface, said electrical conductors providing electrical connections for external signals presented to and received from the active signal region; and

a cover, formed of material having substantially the same thermal characteristics and the same crystallographic orientation as the material comprising said substrate, said cover being bonded through a vacuum tight seal to said



major surface of said substrate to enclose said active signal region in a vacuum environment.

4,213,105

TRANSVERSAL FILTER HAVING AT LEAST ONE ANALOG SHIFT REGISTER, AND A METHOD FOR ITS OPERATION

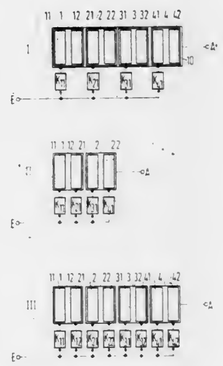
Karl Knauer, Gauting, and Hans J. Pfleiderer, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 856,004

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658524

Int. Cl.² H03H *7/28;* **H03K** *5/13;* **G11C** *19/18, 27/00*

U.S. Cl. 333—165 **2 Claims**



1. A transversal filter comprising at least one analog shift register having a series of successive storage locations, a number of parallel inputs and a series output, having an additional number of individual valuator circuits which can be preset to represent respective individual valuation factors, each valuator circuit having at least one signal input for the input of the signal to be filtered, and at least one output, each valuator circuit supplying at its output a quantity of charge which is a function of the preset individual valuation factor thereof and a differential amount equal to the respective signal value of the signal to be filtered minus a prescribed minimum value smaller than or equal to the value of the signal minimum, or a differential amount equal to a maximum value larger than or equal to the value of the signal maximum minus the respective signal value, the output of each valuator circuit being connected to an apertaining paralel input of the shift register, and the holding capacity of each storage location of the shift register being

at least such that said storage location can always accommodate the maximum quantity of charge supplied by a preceding storage location and can additionally always accommodate the maximum charge supplied by an assigned valuator circuit, the analog shift register being a charge shifting device having at least one series of capacitor elements providing respective ones of the successive storage locations, each comprising a substrate of doped semiconductor material and outer electrode means for forming at least one respective insulating layer capacitor and/or barrier layer capacitor on a surface of the substrate, said charge shifting device being operable in response to a number of at least two shift pulse sequences, phase-shifted in relation to one another, and applied to the outer electrode means of respective sets of said capacitor elements, and said charge shifting device having a number of valuator circuits preset to represent individual valuation factors which number is sufficient for the realization of a given filter function, and having one of the respective capacitor elements thereof connected to the output of each of the respective valuator circuits, the number of capacitor elements of said series being essentially equal to the number of said valuator circuits.

4,213,106

TUNING APPARATUS AND METHOD OF PRODUCING THE SAME

Toyoaki Tunematu, Shiga; Seiichi Takeno; Testuo Yamaguchi, both of Youkaichi, and Muneharu Egawa, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Apr. 3, 1978, Ser. No. 892,947

Claims priority, application Japan, Sep. 30, 1977, 52-132654[U]

Int. Cl.[2] H03H *7/10, 1/00;* **H01R** *13/16, 13/66*

U.S. Cl. 333—185 **16 Claims**



1. A tuning apparatus comprising a capacitor chip, a coil, a base member which has a hollow space for receiving said capacitor chip and on which said coil is mounted, and a plurality of external terminals projecting from said base member and electrically connected to said capacitor chip and coil,

said plurality of external terminals being prepared of comb-shaped formed parts in the form of electrically conductive metal members each having a plurality of comb teeth, wherein at least two comb teeth selected from said plurality of comb teeth are inserted at their front ends into said hollow space of said base member and fixed in position by resin poured into said hollow space, the roots of said comb teeth being then severed to separate said comb teeth from each other, thereby providing at least two independent external terminals,

said capacitor chip having its two terminals directly connected to the portions of said at least two external terminals corresponding to said front ends of said comb teeth, whereby said capacitor chip and the front ends of said comb teeth are covered with said resin within said hollow space,

said apparatus further comprising a third comb tooth of said formed part inserted into said hollow space in addition to said two comb teeth, said third comb tooth abutting against that surface of said capacitor, the resilience of said third comb tooth acting to press said capacitor chip between said two comb teeth.

4,213,107

ELECTRO-MECHANICAL FILTER

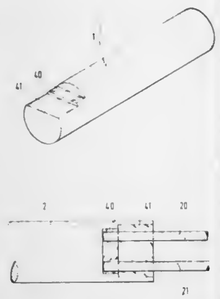
Christian Bremon, Clamart; Anne Grannec, Paris; Remy Pery, Saint Jean le Blanc, and Joël Philippe, Orleans, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jan. 31, 1979, Ser. No. 8,198

Claims priority, application France, Feb. 10, 1978, 78 03792

Int. Cl.[2] H03H *9/24, 9/26, 9/00*

U.S. Cl. 333—197 **3 Claims**



1. An electro-mechanical frequency band-pass filter comprising an inlet electro-mechanical transducer, an outlet electro-mechanical transducer and a mechanical filter, said mechanical filter comprises a set of resonators, each vibrating longitudinally at a half wavelength of the central frequency of the filter, and a set of couplers, connecting the resonators to each other and to the inlet and outlet transducers, each vibrating longitudinally at a quarter wavelength of the central frequency of the filter, the improvement wherein each coupler is fixed to a first recessed, stepped flat in the surface of the corresponding resonator, said first recessed flat being formed near one of the ends of the resonator and at the level of a node point in bending vibration of the resonator, and wherein the resonator has a second recessed, stepped flat which is adjacent to the first flat and extends to the face of said near end of the resonator, and said second flat forming a deeper step in the surface of the resonator than that formed by said first flat.

4,213,108

SWITCH STRUCTURE HAVING PARTS EMBEDDED IN PLASTIC

Harry R. Gross, 127 Carpenter St., West Branch, Mich. 48661

Division of Ser. No. 632,405, Nov. 17, 1975, Pat. No. 4,112,576.

This application Jul. 10, 1978, Ser. No. 922,994

Int. Cl.[2] H01H *50/02*

U.S. Cl. 335—131 **32 Claims**

1. Switch structure which comprises,

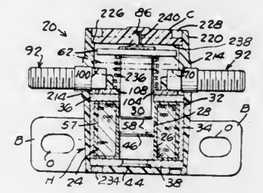
a solenoid unit having a casing, a coil therein and a plunger opening within the coil,

a plurality of terminals, each terminal having a shank and a head, each head being provided with a contact surface,

said unit and portions of said shank and head of each terminal all being embedded in an integral, common body of plastic injection molded therearound,

the portions of said plastic molded around said terminal portions of themselves being effective to anchor said terminals so that said surfaces thereof are secured in a predetermined location and orientation relative to said solenoid unit,

said plastic having molded therein an opening aligned with said plunger opening,



a magnetic plunger movable within said openings and a contact member on said plunger movable to and from engagement with said contact surfaces responsive to actuation and deactuation of said solenoid unit.

4,213,109

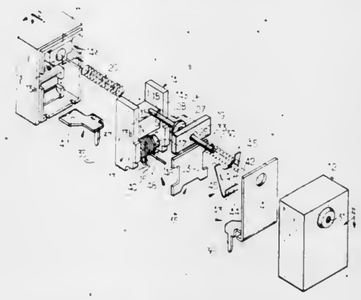
ELECTROMAGNETIC TRIPPING DEVICE

Bruno Marcoz, Nogent-sur-Marne, France, assignor to Compagnie Generale d'Appareillage Electrique C.G.A.E., Paris, France

Filed Jul. 28, 1978, Ser. No. 929,694

Int. Cl.[2] H01H *9/20*

U.S. Cl. 335—174 **8 Claims**



1. An electromagnetic tripping device comprising in combination:

(a) two magnetic flux conductive side-walls spaced in substantially parallel relationship to each other with each side-wall including an edge which is coplanar with an edge of the other side-wall;

(b) bar magnet means extending between the side-walls for forming a magnetic holding flux in a direction perpendicular to said side-walls;

(c) energizing coil means extending between said side-walls for producing a magnetic breaking flux in a direction parallel to said magnetic holding flux in response to an electrical signal being applied thereto, said energizing coil means including first and second leads across which said electrical signal is applied;

(d) a magnetic flux conductive transverse plate adjacent said side-walls, said transverse plate being movable from a contact position in which said plate is in contact with both of said coplanar edges to close a magnetic circuit of said holding flux through said side-walls and said bar magnet means, and a break position in which said transverse plate is spaced from both of said coplanar edges, said transverse plate being held in said contact position by said holding flux and said transverse plate including an opening therethrough;

(e) an actuating rod freely passing through said opening, and guide means for guiding said actuating rod and transverse plate in translation along a same direction of displacement which is perpendicular to said direction of said magnetic holding flux;

(f) return spring means coupled to said actuating rod and said transverse plate for applying a tripping force thereon in a direction which will move said transverse plate from said contact position; and

(g) a breaking circuit including said energizing coil means, a first collecting pole adjacent said side-walls and electrically connected to said first lead of said energizing coil means, a second collecting pole arranged parallel with said first collecting pole and including a first terminal, a contact blade located between said first and second collecting poles, said contact blade including one end secured to said second collecting pole, another end in the path of movement of said transverse plate and a flexible portion extending between said one and said other end, said contact blade being movable by said transverse plate from being in electrical contact with said first collecting pole and closing said breaking circuit when said transverse plate is in said contact position to being out of contact with said first collecting pole and opening said breaking circuit when said transverse plate is in said break position, and a third collecting pole electrically connected to said second lead of said energizing coil means and including a second terminal, so that when said transverse plate is in said contact position and an electrical signal in excess of a predetermined value is applied across said first and second terminals said breaking flux reduces said holding flux so that said transverse plate is moved to said break position by said return spring means which moves said contact blade and opens said breaking circuit.

4,213,110

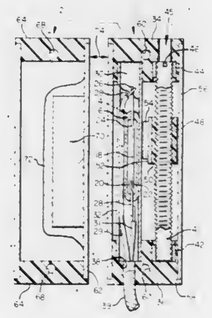
PROXIMITY SWITCH HAVING ADJUSTABLE SENSITIVITY

Thomas J. Holce, 10905 SW. 5th #250, Beaverton, Oreg. 97005

Filed Jul. 20, 1978, Ser. No. 926,443

Int. Cl.[2] H01H *36/00*

U.S. Cl. 335—207 **10 Claims**



1. A switch device for controlling an electrical circuit in response to the presence of an external magnetic field, said device comprising:

(a) a reed switch having at least a first contact and a second contact, said reed switch including magnetic reed means for causing relative movement between said contacts in response to the presence of an external magnetic field, said magnetic reed means having a longitudinal axis;

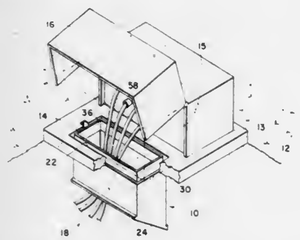
(b) an elongate permanent biasing magnet having an axis of polarity;

(c) screw means for moving said elongate permanent biasing magnet parallel to said longitudinal axis for adjusting the sensitivity of said reed switch to said external magnetic field; and

(d) adhesive means for attaching said elongate permanent

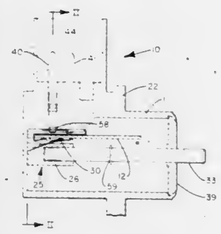
biasing magnet to said screw means such that said axis of polarity is parallel to said longitudinal axis of said magnetic reed means and a predetermined distance therefrom.

4,213,111
GROUND LEVEL TRANSFORMER UNIT
Robert J. Lux, Jr., Broken Arrow, Okla., assignor to Thermodynamics Corporation, Broken Arrow, Okla.
Filed Aug. 28, 1978, Ser. No. 937,517
Int. Cl.[2] H01F *15/02*
U.S. Cl. 336—65 **4 Claims**



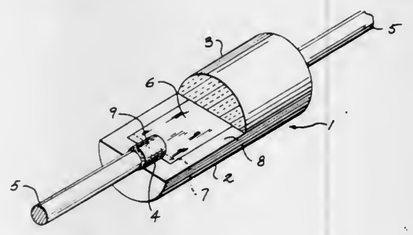
1. A ground level transformer unit for connection to underground cables, including:
a horizontal pad having an upper and a lower surface, the lower surface being adapted to rest upon the earth, and the upper surface adapted to receive a transformer thereon, the pad having a vertical cable opening providing means to receive underground cables therethrough; and
a transformer positioned on said pad having means for connection to underground cable extending through said cable opening, the improvement comprising:
a cable vault of vertical, hollow, open-top and open-bottom construction, and of cross-sectional dimensions to receive underground cables therethrough while providing space to accept slack in the cables, the cable vault having an upper shoulder portion of dimensions less than the dimension of said pad cable opening and the shoulder portion being slidably received in said pad cable opening permitting relative vertical movement between said pad and the cable vault.

4,213,112
VARIABLE RESISTANCE POTENTIOMETER
Donald W. Alman, Whittier; Paul F. Gerwitz, West Covina, and Charles M. Tygard, Diamond Bar, all of Calif., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Jan. 22, 1979, Ser. No. 4,968
Int. Cl.[2] H01C *10/44*
U.S. Cl. 338—183 **2 Claims**



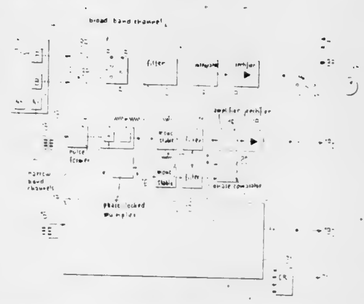
1. A potentiometer including
a housing,
a resistance element positioned within the housing having a base member of an electrically insulating material,
an electrical resistance track mounted on one side of the base member,
an electrically conductive track mounted on the same side of the base member in spaced relationship with the resistance track, and
electrical conductors mounted on the same side of said base member, and electrically connected to the opposite ends of the resistance track,
said electrical conductors and said conductive track terminating in terminating pads to provide input and output terminals for said resistance track and conductive track,
a contact member having first and second electrically connected wiper sections arranged in slidable contact with the resistance track and the conductive track respectively,
carriage means within the housing to support the contact member for slidable movement along the length of said resistance track and conductive track,
actuating means extending into the housing to move the carriage means and the contact member with respect to the resistance element,
terminal posts to connect said terminating pads to an external electrical circuit, one end of said terminal post extending into the housing adjacent to the terminating pads of the electrical conductors and conductive track of the resistance element, and having an undercut portion within the housing,
clip means to electrically connect the terminating pads of the resistance track and the conductive track of the resistance element to said terminal posts in the housing, each clip comprising an S-shaped, resilient, electrically conductive member having an upper section, an intermediate section and a lower section, the intermediate section and the lower section positioned to straddle and resiliently clamp the resistance element, said lower section being formed with two legs which are concaved toward the intermedeate section and positioned in electrical contact with one of the terminating pads, and the upper section positioned in a spaced relationship with said intermediate section and having bifurcated arms which are laterally deflectable to engage the undercut portion of the terminal posts, thereby holding the resistance element and the terminal posts in position and providing reliable electrical contact between the resistance element and the external electrical circuit in undesirable operation conditions caused by vibrations.

4,213,113
ELECTRICAL RESISTOR ELEMENT AND METHOD OF MANUFACTURING THE SAME
Ivan L. Brandt, Milwaukee; Theodor von Alten, Grafton; Richard E. Voss, New Berlin, and Oscar L. Denes, Milwaukee, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.
Division of Ser. No. 851,031, Nov. 14, 1977, Pat. No. 4,155,064. This application Sep. 8, 1978, Ser. No. 941,096
Int. Cl.[2] H01C *1/012*
U.S. Cl. 338—309 **3 Claims**



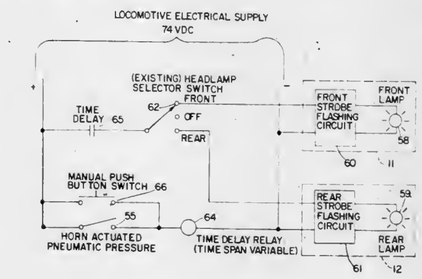
1. A resistor element comprising an insulating substrate member for a variable resistor, said member being formed of a ceramic-glass composition, a track of resistive material comprising conductive particles dispersed in a glass matrix and deposited on said substrate member, a conductive collector track of conductive material deposited on said substrate member, a layer of metallic termination material capable of being soldered to a terminal lead member and deposited on selected areas of said substrate member, said areas respectively connected to said resistive track and to said collector track, said termination material having a softening temperature higher than the sintering temperature of the substrate member and of the resistive track.

4,213,114
VIBRATION MONITORING SYSTEM FOR AN AIRCRAFT ENGINE
Michel Cochard, Villars-sur-Glane, Switzerland, assignor to Vibro-Meter SA, Fribourg, Switzerland
Filed Mar. 7, 1979, Ser. No. 18,420
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—27 R **12 Claims**



1. A vibration monitoring system for an aircraft engine, comprising at least two measuring feelers responsive to vibration, such feelers having similar characteristics and being exposed to the same vibration, means for producing measuring signals corresponding to the output at each of said feelers, comparator means for comparing said measuring signals and logic means interconnected with indicating means for detecting and indicating a normal condition when said measuring signals are substantially equal, a defect condition when said measuring signals differ from each other and an alarm condition when both said measuring signals exceed a safety limit.

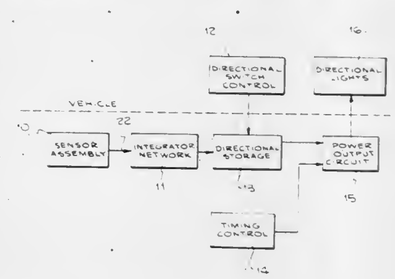
4,213,115
VISUAL WARNING SIGNAL FOR A LOCOMOTIVE
Donald C. Wetzel, 63 Jacqueline Dr., Berea, Ohio 44017
Filed Mar. 10, 1978, Ser. No. 885,310
Int. Cl.[2] B61L *5/00;* **G08B** *7/00;* **B60Q** *1/26*
U.S. Cl. 340—47 **11 Claims**



1. A visual warning system for a locomotive having an audible warning device, which comprises:
a signal unit for mounting on the locomotive, said unit having a stroboscopic-type lamp connected to a stroboscopic-type flashing circuitry, portions of said unit surrounding said lamp having a coating of phosphorescent material for extending the perceived duration of each flash of said lamp; and
means responsive to the audible warning device on said locomotive for actuating said signal unit.

4. A visual warning system for a locomotive having an actuatable audible warning device, which system comprises:
pressure-responsive means for sensing the operation of said audible warning device;
a signal unit for mounting on the locomotive;
means connected to said sensing means for triggering said signal unit whereby said signal unit is actuated whenever said audible warning device is in operation; and
delay means for maintaining the actuation of said signal unit after operation of said audible warning device.

4,213,116
VEHICLE TURN DETECTION APPARATUS
Norman Holtzman, 3142 Barry Ave., Los Angeles, Calif. 90066; Robert J. Hromadka, 1301 Brockton Ave., Los Angeles, Calif. 90025, and Herbert H. Halperin, 13909 Riverside Dr., Sherman Oaks, Calif. 91403
Filed Jan. 22, 1979, Ser. No. 5,085
Int. Cl.[2] B60Q *1/34*
U.S. Cl. 340—73 **11 Claims**



1. A vehicle turn detection apparatus for use with a vehicle having directional signals comprising:
(a) a manual directional turn switch control having at least first and second switch positions;
(b) linear motion acceleration sensor means for detecting lateral movement of the vehicles, said linear motion acceleration detection means being mounted upon the vehicle;
(c) first and second memory storage elements having set and reset signal inputs, each having an output which comprises a signal responsive to the first or second position respectively of the manual directional turn switch control, the set input of said first and second memory storage elements being coupled to the first and second positions respectively of the manual directional turn switch control;
(d) integrator means for processing the value of an electrical signal, said integrator means connected intermediate said linear motion acceleration sensor means and the reset inputs of said first and second memory storage elements;
(e) timing control means for outputting an electrical signal which alternates between a high and low signal level; and
(f) first and second means for combining the output signals of said first and second memory storage elements respectively with the output electrical signal of said timing control means, said first and second means being connected to the directional signals.

4,213,117

METHOD AND APPARATUS FOR DETECTING POSITIONS OF CHIPS ON A SEMICONDUCTOR WAFER

Yukio Kembo, Yokohama; Asahiro Kuni, Tokyo, and Hiroshi Makihira, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 28, 1978, Ser. No. 964,353

Claims priority, application Japan, Nov. 28, 1977, 52-141643; Apr. 3, 1978, 53-38135; Apr. 12, 1978, 53-42115; Apr. 14, 1978, 53-43226

Int. Cl.[2] G06K *9/04*

U.S. Cl. 340—146.3 H **11 Claims**



1. A method for detecting positions of chips on a semiconductor wafer comprising the steps of:

an illuminating step for illuminating obliquely the semiconductor wafer from above including at least a position detecting direction;

an optically totalizing step for optically totalizing irregular reflecting rays reflecting at the semiconductor wafer illuminated at said illuminating step in the direction orthogonal to the position detecting direction;

a video signal detecting step for producing a video signal with coordinates lying in the position detecting direction by photographing an image resulting from optical totalization in said optical totalizing step by an image pickup device; and

a street position detecting step for detecting a street position between chips by extracting a specific ordinate with a wide width and a level corresponding to dark from the video signal produced at the video signal detecting step.

4,213,118

COMBINATION CHANGING SYSTEM AND METHOD

Leonard J. Genest, Santa Ana, and Vache B. Madenlian, Huntington Beach, both of Calif., assignors to Chromalloy Electronics Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 739,927, Nov. 8, 1976, abandoned. This application May 26, 1978, Ser. No. 910,052

Int. Cl.[2] H04Q *3/00;* **E05B** *49/00*

U.S. Cl. 340—149 R **10 Claims**

1. A method of operating an electronic security device having an active memory means comprising the steps of

(1) storing a first code combination having a first field and a second field in the active memory means for defining a first stored code combination;

(2) applying key code combination having a first and a second field to the security device;

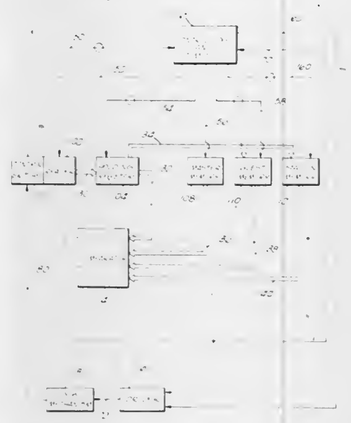
(3) comparing the first and second fields of the first stored code combination with the first and second fields of the key code combination respectively;

(4) generating a first match signal when the aforesaid compared code combination fields correspond;

(5) utilizing said first match signal to open the security device;

(6) comparing the second field of the first stored code combination with the first field of the key code combination when the aforesaid compared fields do not correspond;

(7) generating a second match signal when the second field of the first stored code combination and the first field of the key code combination correspond;



(8) storing, in the active memory means, the key code combination in place of the first stored code combination when a second match signal is generated; and

(9) opening the security device when a second match signal is generated.

4,213,119

REMOTE METER READING SYSTEM PROVIDING DEMAND READINGS AND LOAD CONTROL FROM CONVENTIONAL KWH METERS

Ernest M. Ward; Steven M. Ward, both of El Paso, Tex., and Michael A. Dils, Phoenix, Ariz., assignors to Energy Optics, Inc., Las Cruces, N. Mex.

Continuation-in-part of Ser. No. 681,502, Apr. 29, 1976. This application Nov. 7, 1977, Ser. No. 848,998

The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.

Int. Cl.[2] H04Q *9/00;* **G01K** *11/64*

U.S. Cl. 340—151 **16 Claims**



1. An electro-optical remote electrical utility meter reading system comprising:

first means generating a plurality of signals with each signal representing a predetermined quantity of the utility measured and with the number of signals generated being quantitatively in direct proportion to the utility measured by the meter;

second means associated with said first means and being adapted to convert said signals into digital pulses;

third means having a memory receiving and storing said digital pulses;

fourth means having a memory module with logic circuitry providing time correlated intelligence reflecting the rate at which increments of electrical power are consumed;

fifth means comprising an electro-optical transponder effective in response to interrogation by laser radiation pulses to cause said third means to transfer pulses from said third means to said fifth means, and to emit said pulses in the form of laser radiation;

sixth means comprising an interrogator at a location remote from said transponder to trigger said interrogation and to receive said pulses from said transponder;

seventh means receiving signals from said interrogator for selectively providing intelligence reflecting the measured quantities.

4,213,120

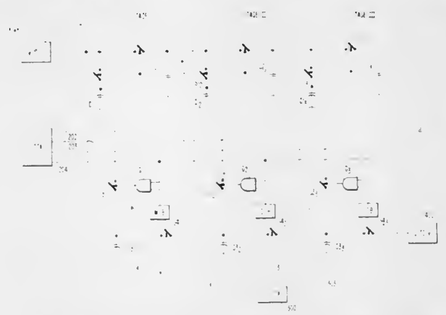
CCD DIGITAL-TO-ANALOG CONVERTER

James E. Buchanan, Bowie, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 6, 1978, Ser. No. 883,440

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 DA **9 Claims**



1. A digital-to-analog converter having an input and an output, said converter comprising:

(a) a plurality of identical sequential electronic stages each having an input and first and second outputs, said plurality of stages including a first stage, at least one intermediate stage, and a last stage, the inputs of each of said intermediate stages coupled to the first output of the immediately preceding stage, the first output of each of said intermediate stages coupled to the input of the immediately succeeding stage:

(b) means for supplying an analog reference signal to the input of said first stage;

(c) a first charge storage means associated with each of said plurality of stages, said first charge storage means including potential well means;

(d) each of said plurality of stages having:

(1) a second charge storage means including first and second potential wells for dividing charge in said second charge storage means,

(2) transfer means for transferring charge in said first potential well to the associated first charge storage means in accordance with a predetermined digital signal, said transfer means including an AND gate having at least two inputs and including means for applying a digital signal to one of the inputs of said AND gate;

(e) sensing means coupled to the output of said converting means for sensing and measuring charge in said first charge storage means.

4,213,121

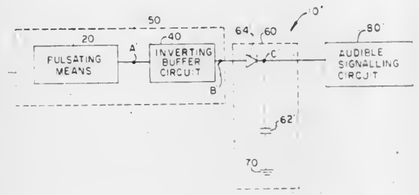
CHIME TONE AUDIO SYSTEM UTILIZING A PIEZOELECTRIC TRANSDUCER

Richard L. Learn, Indianapolis, and Louis P. Sweany, Carmel, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 8, 1978, Ser. No. 913,732

Int. Cl.[2] G08B *3/00*

U.S. Cl. 340—384 E **15 Claims**



1. An audio system producing a chime tone audible signal comprising an audible signalling circuit including a piezoelectric transducer, circuit means for driving said audible signalling circuit and for causing a pulsed audible signal to be produced by said piezoelectric transducer, and means electrically interposed between said circuit means and said audible signalling circuit for exponentially decaying said pulsed audible signal to thereby produce a chime tone audible signal.

4,213,122

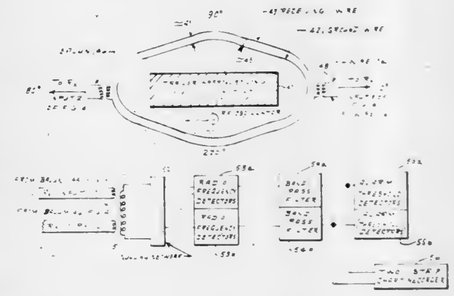
INTRUSION DETECTION SYSTEM

Walter Rotman, Brighton; Nicholas V. Karas, Lowell; Ronald L. Fante, Reading, and Peter R. Franchi, Winchester, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 23, 1978, Ser. No. 936,159

Int. Cl.[2] G08B *13/18*

U.S. Cl. 340—552 **9 Claims**

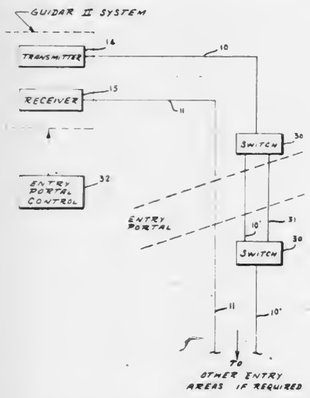


1. An intrusion detection system comprising a metallic structure to be protected from intrusion, a first loop of wire surrounding said metallic structure, a second loop of wire near and approximately concentric to said first loop of wire, means to radio frequency energize said metallic structure against ground to concentrate a near electromagnetic field pattern in the vicinity of said first and second wires, said first wire being a ground wire, said second wire being a receiver wire, said ground wire effecting concentration of the near electromagnetic field and in conjunction with said receiver wire defining a detection zone, said receiver wire intercepting and being responsive to the electromagnetic field radiated by said metallic structure, and means coupled to said receiver wire to detect any changes from the quiescent, undesturbed state of the concentrated near electromagnetic field pattern.

4,213,123
INTEGRAL ENABLE-DISABLE MEANS FOR GUIDED WAVE RADAR INTRUSION DETECTOR SYSTEM PORTALS

J. Leon Poirier, Chelmsford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 7, 1979, Ser. No. 10,093
Int. Cl.² G08B *13/18*
U.S. Cl. 340—552 **6 Claims**



1. In a guided wave radar intrusion detection system having first and second juxtaposed leaky transmission lines with means for transmitting radar signals along said first first leaky transmission line and receiving radar signals received by said second leaky transmission line, the improvement residing in an integral portal intrusion detection enabling-disabling device, said portal intrusion detection enabling-disabling device comprising, at each selected portal,

a segment of non-radiating transmission line traversing the portal in proximate paralled relationship to said first leaky transmission line, and

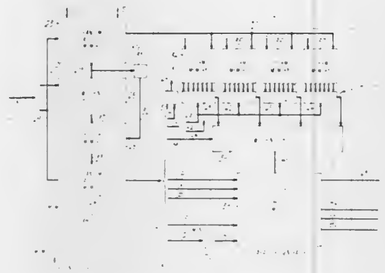
a switching means for selectively switching said segment of non-radiating transmission line and a substantially equal length of said first leaky transmission line alternately into and out of said first leaky transmission line.

4,213,124
SYSTEM FOR DIGITALLY TRANSMITTING AND DISPLAYING TEXTS ON TELEVISION SCREEN

Jean F. Barda, Gentilly; Roger Brusq, Betton; Bernard Marti, Noyal sur Vilaine, and Alain Poignet, Rennes, all of France, assignors to Etablissement Public de Diffusion dit "Telediffusion de France" and L'Etat Francais, both of Montrouge, France

Filed Sep. 14, 1977, Ser. No. 833,157
Claims priority, application France, Sep. 22, 1976, 76 29034
Int. Cl.² G06F *3/14*
U.S. Cl. 340—706 **4 Claims**

1. A receiver for a teletext system for digitally transmitting and displaying texts on a television screen, wherein a transmitter station broadcasts signals representing said text, said signals being in the form of data packs, sent over several channels, the data packs from different channels being randomly time multiplexed, each pack comprising a prefix signal for enabling a receiver to accept the data packs received over at least a selected channel and to reject data packs received over other channels, each of said data packs including the transmission in sequence of eight-bit words comprising, in addition to said prefix, page flags followed by page numbers and row flags followed by row numbers, escape eight-bit words followed by type identity eight-bit words, type identity eight-bit words, followed by a sequence of coded words identifying characters which are to be displayed in the same type which is identified by the identity words as determined by the preceding type identity words, said words receiver comprising first random access memory means for storing the coded character words at certain addresses, second random access memory means for storing the type identity words at the same certain addresses as the addresses of corresponding character words stored in the first random access memory, means for reading the words

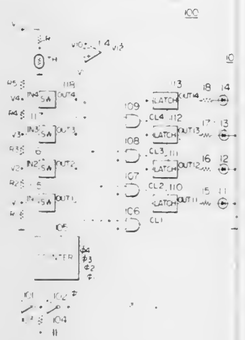


stored in the first random access memory means and at the same time as the read out if the words stored in the second random access memory, thereby simultaneously selecting a character and a type identity, and permanent memory means responsive to the read out of said second random access memory means for giving the shape of the characters read out from the first random access memory.

4,213,125
DISPLAY SYSTEM HAVING VOLTAGE COMPARATOR CIRCUIT

Shizuhisa Watanabe, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 28, 1978, Ser. No. 891,035
Claims priority, application Japan, Mar. 30, 1977, 52/34623
Int. Cl.² G06F *3/14*
U.S. Cl. 340—753 **2 Claims**



1. A display system wherein a plurality of display elements are driven by a voltage comparator circuit which produces output signals corresponding to a plurality of voltages preset for plural input signals when the voltage level of said input signals reaches the preset voltages respectively, said voltage comparator circuit comprising:

switch means for alternately supplying said plural input signals for predetermined time intervals in its alternate change-over action;

a comparator having one input terminal applied with said input signals alternately supplied from said switch means, the other output terminal applied with said present voltages, and an output terminal;

counter means for generating a timing signal;

control means for effecting the alternate change-over action of said switch means in accordance with said timing signal from said counter means and for successively applying said preset voltages to the other input terminal of said comparator in accordance with said timing signal from said counter means, so that said comparator successively produces said output signals corresponding to said preset voltages in synchronism with said timing signal;

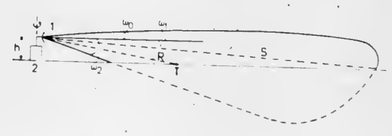
a plurality of gate means connected between the output terminal of said comparator and said display elements respectively; and

means for selectively enabling said gate means in synchronism with said timing signal to energize the display element associated with the enabled gate means and corresponding to the preset voltage being applied to said comparator.

4,213,126
AIRPORT SURFACE DETECTION EQUIPMENT (ASDE)

Willem Mulder, Borne; Dorotheus C. L. Vaessen, Hengelo, and Nicolaas H. De Lange, Rekken, all of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Dec. 13, 1978, Ser. No. 968,941
Claims priority, application Netherlands, Jan. 6, 1978, 7800163
Int. Cl.² G01S *7/34*
U.S. Cl. 343—5 SM **4 Claims**



1. An ASDE radar comprising an antenna having an elevation-depending gain factor

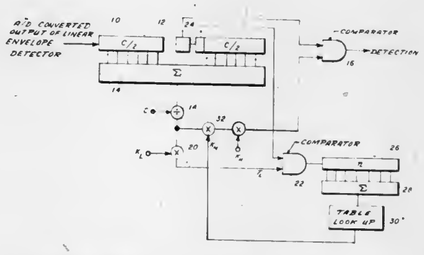
$$G(\omega) = G(\omega_1) \cdot \frac{\csc \omega}{\csc \omega_1}$$

for $\omega_1 \leqq \omega < \omega_2$ where ω_1, ω and ω_2 represent angles of depression and a receiver having a sensitivity time control circuit.

4,213,127
DOUBLY ADAPTIVE CFAR APPARATUS

Lanier G. Cole, Crofton, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 31, 1979, Ser. No. 8,144
Int. Cl.² G01S *9/02*
U.S. Cl. 343—5 CF **3 Claims**



1. A doubly adaptive constant false alarm rate detector apparatus comprising in combination:

a shift register having a plurality of stages, said shift register receiving a digital input signal, each stage of said plurality of stages having an output, a stage one being selected to provide a first target output, said stage one being located substantially in the center of said plurality of stages, a stage two which is located subsequent to said stage one, being selected to provide a second target output,

a summing unit connected to said shift register to receive the output from each stage in said plurality of stages excluding stages one and two, said summing unit summing the outputs from said shift register to provide a total sum, said summing unit including a dividing means, said dividing means dividing said total sum by the number of stages in said shift register to provide a mean output,

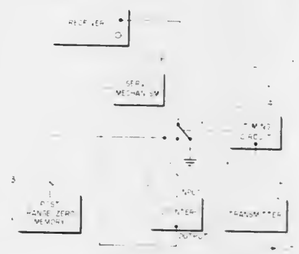
a first detection means receiving said mean output, said first detection means receiving said second target output, said first detection means providing a first threshold signal in response to said mean output, said first detection means comparing said first threshold signal and said target output to provide a target level signal, said first detection means providing a control signal in response to said target level signal, and

a second detection means receiving said mean output, said second detection means receiving said control signal, said second detection means receiving a constant factor, said second detection means multiplying said means output first by said control signal and then by said constant factor to provide a second threshold signal, said second detection means receiving said first target output, said second detection means comparing said first target output and said second threshold signal to provide a target detection signal in response to the signal comparison.

4,213,128
METHOD FOR DECREASING THE JAMMING SUSCEPTIBILITY OF SHORT RANGE INTERROGATORS

David M. Longinotti, Brick Town, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 572,537, Apr. 30, 1975, abandoned. This application Jul. 18, 1977, Ser. No. 819,448
Int. Cl.² G01S *7/36*
U.S. Cl. 343—6.5 R **3 Claims**



1. A method for decreasing the susceptibility of short range interrogators of the types which utilizes the delay time of the reply pulse as a code means to pulse jamming and spoofing comprising:

sampling the jamming and spoofing environment by counting replies received prior to range zero for each interrogation;

comparing the number of replies received prior to range zero to an acceptable reference number for each interrogation;

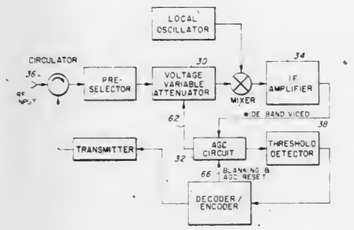
reducing the receiver sensitivity when the comparison indicates a number of replies received prior to range zero greater than said referenced number.

4,213,129

DELAY STABILIZING SYSTEM

Howard L. Kennedy, Scottsdale, and Keith M. Kingsbury, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1978, Ser. No. 960,255
Int. Cl.[2] G01S *9/56*
U.S. Cl. 343—6.8 R **9 Claims**



1. A method for stabilizing delay of a second pulse in a transponder when a first pulse of equal amplitude to that of the second pulse and the second pulse are sequentially present in at least a single pulse train in a receiver of the transponder, the method comprising the steps of:

measuring the amplitude of the first pulse in the receiver of the transponder;

controlling gain of the receiver as a function of said measured amplitude, said gain being held constant over a period of time including said second pulse;

detecting a preset threshold level of only the second pulse at an output of said receiver; and

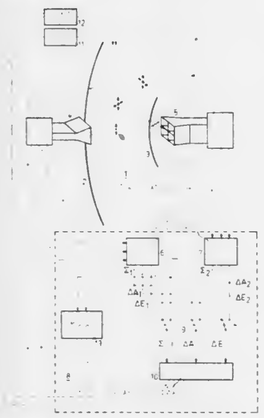
triggering a transmitted signal from the transponder responsive to said threshold detection.

4,213,130

MONOPULSE RADAR APPARATUS

Dorotheus C. L. Vaessen, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Oct. 16, 1978, Ser. No. 951,683
Claims priority, application Netherlands, Nov. 7, 1977, 7712216
Int. Cl.[2] G01S *9/22*
U.S. Cl. 343—16 M **6 Claims**



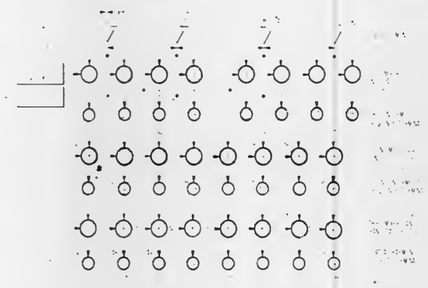
1. A monopulse radar system for automatic angle tracking of a moving target, said system comprising a first and a second monopulse cluster both adapted to receive r.f. signals in four receiving patterns symmetrically disposed with respect to the antenna axis of symmetry and to convert the r.f. signals into first and second sum signals and into first and second difference signals, said monopulse clusters being tuned to the same frequency band and arranged to receive mutually orthogonal polarisations with r.f. signals being transmitted through one monopulse cluster only; a receiver provided with a switching unit, said receiver, in response to the sum and the difference signals from the two monopulse clusters, delivering angular error signals, the amplitude and the polarity of each of said error signals being dependent upon the amplitude ratio between either the first sum signals and the relevant first difference signals, or the second sum signals and the relevant second difference signals, said amplitude ratio varying in accordance with target deviation with respect to the antenna axis of symmetry; and a tracking circuit for each of the angle coordinates, said tracking circuit being controlled by the relevant angular error signal from the receiver.

4,213,131

SCANNABLE BEAM FORMING INTERFEROMETER ANTENNA ARRAY SYSTEM

Julius A. Kaiser, Jr., Kensington, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 14, 1979, Ser. No. 39,031
Int. Cl.[2] H01Q *3/26*
U.S. Cl. 343—844 **9 Claims**



1. A scannable, beam-forming interferometer antenna array system, comprising:

a plurality of antenna elements spaced from one another by integral multiples of a portion of the wavelength of the signal frequency, at least three pairs of antenna elements being selectable from said plurality of antenna elements,

first and second coherent local oscillators generating output signals having first and second frequencies, respectively,

a first plurality of mixers twice the number of said plurality of antenna elements, each antenna element being connected to a pair of mixers of said first plurality of mixers, the first mixer of each pair of mixers being supplied with the output signal of said first coherent local oscillator and the second mixer of each pair of mixers being supplied with the output signal of said second coherent local oscillator,

a second plurality of mixers, the inputs of each mixer of said second plurality of mixers being connected to the outputs of selected pairs of mixers of said first plurality of mixers to form interferometer pairs and obtain outputs having spatial frequencies determined by the spacing between the corresponding interferometer pairs, and

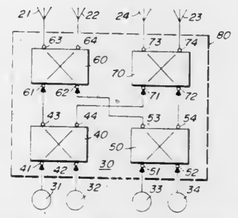
a third plurality of mixers, the inputs of each mixer of said third plurality of mixers being connected to the outputs of selected pairs of mixers of said second plurality of mixers to obtain outputs having spatial harmonics corresponding to the interferometer pairs.

4,213,132

ANTENNA SYSTEM WITH MULTIPLE FREQUENCY INPUTS

Allen R. Davidson, Crystal Lake, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 797,158, May 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 601,560, Aug. 4, 1975, abandoned. This application Jul. 19, 1978, Ser. No. 926,043
Int. Cl.[2] H01Q *21/00*
U.S. Cl. 343—854 **44 Claims**



1. An improved multiple transmitter antenna system comprising:

a plurality of at least three electrical sources each generating an independent input signal at a different predetermined radio frequency;

a combining network means consisting of broadband components having bandwidths including all of the frequencies generated by said electrical sources, said network means simultaneously coupled to said plurality of sources for simultaneously receiving each of said input signals, maintaining isolation between said input signals, and substantially losslessly producing a number of isolated output signals equal in number to at least the number of said input signals, each one of said output signals being related to each and every one of said input signals; and

an antenna array coupled to said combining network, said array comprising a plurality of antenna element means, each of said antenna element means receiving and simultaneously radiating an associated one of said output signals, each of said antenna element means including means for shaping the associated radiated signal in a substantially independent directive associated radiation pattern having a single main unidirectional lobe, each lobe being directed away from all other antenna element means and in a substantially different direction than all other lobes and wherein said independently radiated lobes combine to form a desired composite radiation pattern for each of said plurality of electrical sources,

said respective electrical sources having said independent input signals and predetermined frequencies operating within a predetermined bandwidth to produce a composite radiation pattern substantially identical in shape and directivity for each of said plurality of different frequency electrical sources.

4,213,133

LINEAR ANTENNA ARRAYS

Kazutaka Hidaka, Yamato, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1978, Ser. No. 960,227
Claims priority, application Japan, Nov. 10, 1977, 52-135002; Aug. 28, 1978, 53-103803
Int. Cl.[2] H01Q *3/26*
U.S. Cl. 343—854 **13 Claims**

1. An antenna array for providing a plurality of frequency independent, variable null point directions comprising:

a linear antenna array including three or more individual antenna elements,

a plurality of individual power dividers each having a common port coupled to one of said individual antenna elements,

each of said individual power dividers also being provided with a number P_i of split ports where P_i is a binomial coefficient expressed by the equation

$$P_i = {}_{n-1}C_{i-1}$$

wherein n represents the number of antenna elements and i the number of a particular individual antenna element counted from one end of said array,

a plurality of phase shifting means coupled to said split ports for producing frequency dependent phase shift,



a common power divider having a single input port and a plurality of split ports coupled to said phase shifting means; and,

phase inversion means coupled to said individual antenna elements for reversing the phase signals applied to alternate antenna elements,

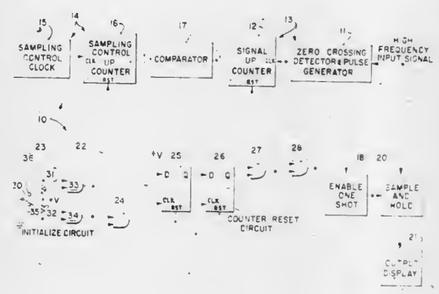
whereby a signal pattern is produced having a plurality of frequency independent null points, said null points positionable in predetermined directions.

4,213,134

CIRCUIT AND METHOD FOR THE RECORDER DISPLAY OF HIGH FREQUENCY PERIODIC SIGNALS

Chun-Fu Chen, North Canton, Ohio, assignor to The University of Akron, Akron, Ohio

Filed Feb. 26, 1979, Ser. No. 15,145
Int. Cl.[2] G01D *9/00;* **H03K** *5/00, 17/00;* **G01D** *4/10*
U.S. Cl. 346—1.1 **13 Claims**



8. A method for the display of a high frequency periodic signal on a display having a maximum response frequency less than the periodic signal frequency, comprising the steps of:

counting in a signal period counter the number of periods in the high frequency periodic signal;

counting in a sampling control counter at a frequency substantially greater than the frequency of the high frequency periodic signal;

comparing the counts in said signal period counter and said sampling control counter and indicating a match thereof; and

sampling some electrical parameter of the high frequency

periodic signal when said match count is indicated and holding the same until the next said match count is indicated, and

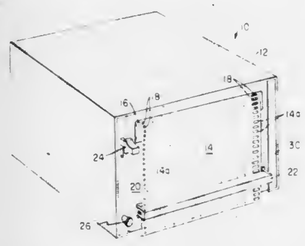
accurately reproducing the high frequency periodic signal at another frequency in a range of frequencies from zero up to and including the maximum response frequency of the display.

4,213,135

STRIP CHART RECORDER

Eugene Medvecky, Bridgeport, Conn., assignor to American Home Products Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,511
Int. Cl.[2] G01D *15/10, 15/24, 15/00*
U.S. Cl. 346—76 PH **38 Claims**



1. A device for recording graphical information on a strip chart which is movable with respect to the device, said recording device comprising:

a plurality of printing means arranged in side-by-side alignment transversely with respect to the direction of movement of the strip chart, each printing means including a plurality of independently actuable elements for marking the strip chart;

means for retaining said strip chart in contact with said printing means;

means for supporting each of said printing means for independent floating movement with respect to said retaining means; and

means for transporting said strip chart past said printing means.

4,213,136

ELECTRICAL CONTACT FOR CONDUCTIVE-BACKED PAPER

Leonard E. Jenkins, Jr., Denver, and Peter R. Lowe, Colorado Springs, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 2, 1978, Ser. No. 947,900
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—139 C **3 Claims**

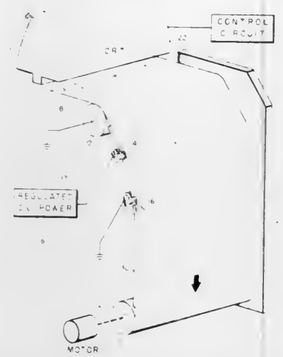
1. In a recorder for recording on a conductive-backed web, an apparatus for conducting electrical energy to the conductive backing on said paper comprising in combination;

a plate over which said web passes;

a slot in said plate;

an insulating member disposed beneath said slot;

a comb-like structure having a plurality of resilient fingers extending from a common base affixed to said insulating member;



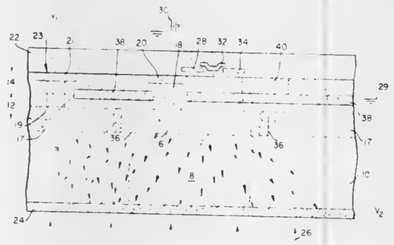
said fingers having a compound curve shape with the apex of one curve extending through said slot with the ends of said fingers disposed beneath said slot.

4,213,137

MONOLITHIC VARIABLE SIZE DETECTOR

Michael Y. Pines, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 16, 1976, Ser. No. 742,316
Int. Cl.[2] H01L *27/14, 31/00*
U.S. Cl. 357—30 **12 Claims**



1. In an image detector of the type having at least one optical detector operable to generate electrical charge signals in response to optical radiation, and having means for processing said signals comprising a charge coupled signal collecting device for transferring charge to a utilization circuit, the improvement comprising:

(a) a semiconductor substrate of a first conductivity type having first and second adjacent epitaxial layers of a second conductivity type monolithically formed thereon;

(b) at least one optical detector region formed in said substrate and having at least one surface accessible to optical radiation and operative to generate charge in response to received radiation;

(c) a degeneratively doped layer of a second conductivity type disposed in the vicinity of a predetermined portion of the interface between said first epitaxial layer and said second epitaxial layer, whereby said degeneratively doped layer shields said substrate from said charge coupled device;

(d) means adjacent to said semiconductor substrate for collecting and transferring charge from a predetermined portion of said semiconductor substrate to a predetermined portion of said second epitaxial layer;

(e) means adjacent to said semiconductor substrate for controlling the effective size of said optical detector region;

(f) an insulating layer of dielectric material formed on said second epitaxial layer;

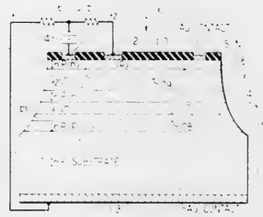
(g) a plurality of electrode means spaced from said second epitaxial layer by at least a portion of said insulating layer for forming said charge coupled signal processing device in said insulating and second epitaxial layers to transfer signal charges from said detector element through said collection and transfer means and through said second epitaxial layer to said utilization circuit in response to cyclical voltage applied to said electrode means to thereby control the potential profile in said second epitaxial layer.

4,213,138

DEMULTIPLEXING PHOTODETECTOR

Joe C. Campbell, Middletown, and Tien P. Lee, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 14, 1978, Ser. No. 969,346
Int. Cl.[2] H01L *27/14, 29/161*
U.S. Cl. 357—30 **6 Claims**



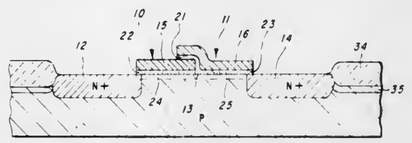
1. A multiwavelength semiconductor device comprising a substrate, a bottom semiconductor layer of one conductivity type epitaxially grown on said substrate, a plurality of semiconductor layers of the opposite conductivity type epitaxially grown on said bottom layer, and a top semiconductor layer of said one conductivity type epitaxially grown on said plurality of layers, characterized in that the layer in said plurality of layers adjacent to said bottom layer and the layer in said plurality of layers adjacent to said top layer have unequal bandgaps each one of which is less than the bandgap of said top and bottom layers, each of said two adjacent layers having a diffused pn junction within the layer, said two adjacent layers being separated by at least one barrier layer having a bandgap higher than either of said adjacent layers, and an electrode means for independently coupling potentials to the pn junction in each of said adjacent layers.

4,213,139

DOUBLE LEVEL POLYSILICON SERIES TRANSISTOR CELL

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 18, 1978, Ser. No. 907,234
Int. Cl.[2] H01L *27/02*
U.S. Cl. 357—41 **6 Claims**



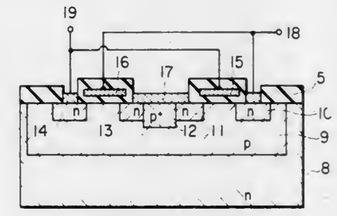
1. A semiconductor device comprising a pair of series-connected transistors formed in a face of a semiconductor body, each transistor having a source-to-drain path and a conductive gate, the conductive gates being composed of polycrystalline silicon, a thin inversion layer being formed beneath the conductive gate of either transistor when a gate voltage greater than a threshold is applied, one end of the source-to-drain path of a first of the transistors being integrally connected in series with one end of the source-to-drain path of the second of the transistors via said inversion layers, the source or drain of each of the transistors at said one end of the source-to-drain paths being formed by the edge of said inversion layer beneath the gate of the other of the transistors, the gate of the second transistor being adjacent to and partially overlying the gate of the first transistor but insulated therefrom by an insulating layer, a pair of heavily-doped regions in the face in the semiconductor body at the other ends of the source-to-drain paths of the first and second transistors forming sources or drains self-aligned at one edge with edges of said conductive gates, there being no heavily-doped source or drain region in the face of the semiconductor body between the pair of transistors.

4,213,140

INSULATED-GATE SEMICONDUCTOR DEVICE

Takeaki Okabe, Kokubunji; Isao Yoshida, Tokyo; Mineo Katsueda, Kokubunji; Hidefumi Ito; Masatomo Furumi, both of Takasaki, and Shikayuki Ochi, Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1978, Ser. No. 922,371
Claims priority, application Japan, Jul. 22, 1977, 52-87396
Int. Cl.[2] H01L *27/07*
U.S. Cl. 357—41 **16 Claims**



1. An insulated-gate semiconductor device comprising a semiconduetor substrate of one conductivity type, a first region which is formed in a surface of said substrate and which has a conductivity type opposite to that of said substrate, and first and second insulated-gate FET's which are formed within said region and all of which are one channel type insulated-gate FET's; a drain of said first insulated-gate FET, a drain of said second insulated-gate FET and said first region being electrically connected; a gate of said first insulated-gate FET and a source of said second insulated-gate FET being electrically connected; a gate of said second insulated-gate FET and a source of said first insulated-gate FET being electrically connected.

4,213,141

HYBRID TRANSISTOR

Elio J. Colussi, Ambler, Pa., assignor to Solid State Scientific Inc.

Filed May 12, 1978, Ser. No. 905,213
Int. Cl.[2] H01L *23/02, 23/12, 39/02*
U.S. Cl. 357—74 **11 Claims**

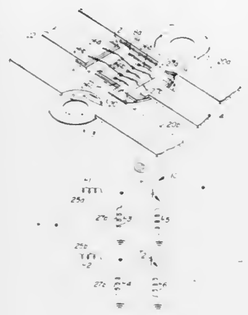
1. A semiconductor device to provide in an input circuit a substantially low reactance and a relatively high resistance within a range of operating frequencies to improve the impedance match between the semiconductor device and an energy source comprising

an electrically insulating body member, said body member having disposed thereon an input and an additional metallic contact area in an electrically insulated and spaced relationship with each other,

a semiconductor die disposed on the body member and having at least an input and a common bonding terminal having capacitance and resistance between said bonding terminals,

at least a first bond lead electrically connecting said input bonding terminal to said input metallic contact area,

means connecting at least a second bond lead between said common bonding terminal and said additional metallic contact area, and



at least a third bond lead electrically connecting said input bonding terminal to said additional metallic contact area forming an inductance to interact with said capacitance of said semiconductor die within the operating range of frequencies for increasing the input impedance.

4,213,142

SEMICONDUCTOR DEVICE AND METHOD

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 797,273, May 16, 1977, which is a division of Ser. No. 573,676, May 1, 1975. This application Apr. 23, 1979, Ser. No. 32,597

Int. Cl.[2] H01L *29/72*

U.S. Cl. 357—91 **8 Claims**



1. A semiconductor device formed at a face of a semiconductor body having particular regions in the body at said face and layers on the body at said face, the regions and layers determining the operative characteristics of the device, at least one of said layers being offset with respect to an underlying one of the regions sufficiently to produce a portion of misregistration thereby correspondingly creating a potentially defective area, and an ion implanted region at said face within the semiconductor body at said potentially defective area, said ion implanted region having a charge carrier concentration greater than semiconductor material underlying it to prevent inversion from ambient impurities and thereby prevent potential defects from developing.

4,213,143

COLOR TELEVISION CONVERSION APPARATUS FOR USE WITH A CONVENTIONAL DOMESTIC REPRODUCER

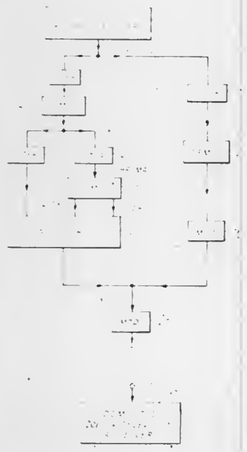
Sidney C. Jones, Thorn House, Upper St. Martin's La., London W02H 9ED; Henry R. Lindsay, 22 Kinloch Dr., Kingsbury London N.W. 9, and Denis W. Heightman, Thorn House, Upper St. Martin's La., London W02H 9ED, all of England

Filed Nov. 9, 1977, Ser. No. 849,903

Claims priority, application United Kingdom, Nov. 10, 1976, 46821/76

Int. Cl.[2] H04N *5/79*

U.S. Cl. 358—4 **2 Claims**



1. Colour television conversion apparatus comprising,

(a) mechanism for moving a colour television record past a pick-up device at a speed to reproduce colour television signals recorded on the record in accordance with the field and line standards in the United States of America of 60 field scans and 525 line scans per picture,

(b) decoding apparatus,

(c) means to apply the said reproduced signals to the said decoding apparatus to recover the luminance and demodulated colour-difference signals therefrom,

(d) encoding apparatus, and

(e) means to apply said recovered luminance and demodulated colour-difference signals to said encoding apparatus to produce therefrom a hybrid signal in which the field and line scanning frequencies are in accordance with the standards of the United States of America and the colour-difference signals are encoded therewith in accordance with the European PAL or SECAM standards.

4,213,144

METHOD OF MODULATING A COMPOSITE COLOR TELEVISION SIGNAL ON A CARRIER SIGNAL AND DEVICE FOR CARRYING OUT SAID METHOD

Eeltje de Boer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 15, 1978, Ser. No. 933,960

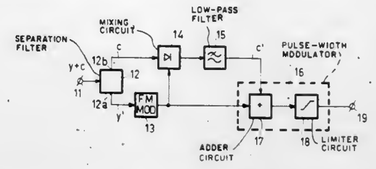
Claims priority, application Netherlands, May 16, 1978, 7805231

Int. Cl.[2] H04N *9/02*

U.S. Cl. 358—12 **12 Claims**

1. A method of modulating a composite colour television signal, having a luminance signal and a chrominance signal with a fixed chrominance subcarrier wave frequency, on a carrier wave, the luminance signal being frequency-modulated on the carrier wave and the chrominance signal being modulated on the carrier wave whereby the original composite

colour television signal can be recovered by a single frequency demodulation of said modulated carrier wave, wherein said method comprises translating the chrominance signal to the frequency of a subcarrier wave which is situated at a frequency



distance equal to the chrominance signal frequency below the frequency of the carrier wave which has been frequency modulated by the luminance signal, and then pulse-width modulating said frequency-modulated carrier wave with the chrominance subcarrier wave.

4,213,145

SOLID STATE COLOR TELEVISION CAMERA

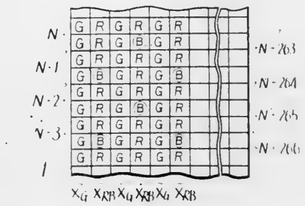
Fumio Nagumo, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 15, 1979, Ser. No. 3,727

Claims priority, application Japan, Jan. 30, 1978, 53-9141

Int. Cl.[2] H04N *9/07*

U.S. Cl. 358—43 **9 Claims**



1. A solid state color camera employing at least one solid state image sensing device which simultaneously reads out signals of adjacent two rows of sensing elements as a video signal of a single horizontal scan line in sequence with an interlacing technique, comprising:

(A) color coding filter means having a plurality of color elements corresponding to respective sensing elements of said solid state image sensing device, said filter means being arranged to have successive sets of color elements each consisting of a first color element and three second color elements in the vertical direction, and

(B) color signal processing means for separating first and second color signals corresponding to said first and second color elements by arranging two adjacent lines of video signals derived from said solid state imaging device.

4,213,146

SCANNING SYSTEM FOR LIGHT BEAM DISPLAYS

Theodore H. Maiman, Marina del Réy, Calif., assignor to Laser Video, Inc., Los Angeles, Calif.

Division of Ser. No. 484,551, Jul. 1, 1974, Pat. No. 4,084,182. This application Mar. 24, 1978, Ser. No. 889,724

Int. Cl.[2] H04N *9/14, 5/74, 3/08;* **G02B** *27/17*

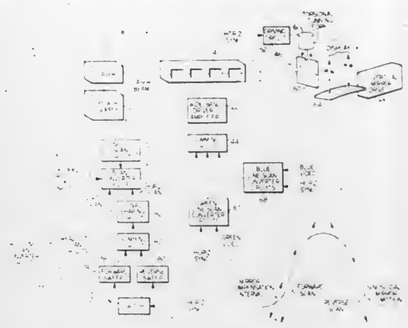
U.S. Cl. 358—63 **7 Claims**

1. A system for line scanning at a high repetition rate, and with linear motion, a light beam modulated with data signals provided in successive line form comprising:

light intensity modulator means disposed in the path of the light beam;

an electromechanical scanning mechanism disposed in the light beam path subsequent to said modulator means, said scanning mechanism operating with a cyclic forward and reverse motion to deflect the light beam in a line scanning fashion;

and modulator energizing means coupled to said modulator



means, said energizing means including line converter means responsive to the data signals for alternately reversing the time sequences of alternate data signal lines read out to said modulator means.

4,213,147

SYSTEM FOR BUILD-UP AND REPRODUCTION OF ULTRASONIC IMAGES ON REPRODUCTION MEDIA

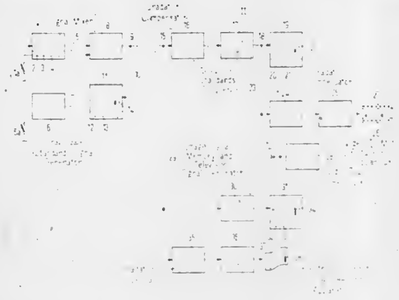
Heinrich von Buenau, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 20, 1977, Ser. No. 834,914

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644190

Int. Cl.[2] H04N *7/18*

U.S. Cl. 358—112 **6 Claims**



1. A method for the buildup of ultrasonic images which are obtained on the basis of scanning of a subject by means of ultrasonic waves, and for converting these images, arriving as a sequence of ultrasonic echoes, into an optical visual image; and utilizing:

an ultrasonic image signal processing apparatus which radiates ultrasonic impulses into the subject to be examined and which again receives the ultrasonic echoes reflected in the subject and converts them into ultrasonic image representing electric signals, the ultrasonic image signal processing apparatus including adjustment means for the purpose of adjusting parameters with regard to radiated or received ultrasonic waves, respectively; and

an optical reproduction apparatus for the purpose of reproducing the ultrasonic echoes in the form of an optical visual image; and

an ultrasonic image signal transmission path for the ultra-

sonic image representing electric signals; characterized by the following method steps:

(a) mixing into the ultrasonic image signal transmission path between the ultrasonic image signal processing apparatus and the optical reproduction apparatus a gray-scale signal, and as a first step adjusting all brightness and contrast controls affecting the image display by the optical reproduction apparatus to be viewed by the operator of the ultrasonic image signal processing apparatus during reference to the display of the gray-scale signal as a gray-scale representation on the optical reproduction apparatus, so as to optimize such optical reproduction apparatus for medical diagnosis of an ultrasonic image;

(b) transmitting via said ultrasonic image signal transmission path the ultrasonic image representing signals supplied by the ultrasonic image signal processing apparatus to said optical reproduction apparatus for display of an optical visual image in accordance with the sequence of ultrasonic echoes reflected in the subject on the optical reproduction apparatus; and mixing into the ultrasonic image signal transmission path, concurrently with the transmission of the ultrasonic image representing signals thereby, the gray-scale signal so that the gray-scale representation is displayed on the optical reproduction apparatus along with the display of the optical visual image in accordance with the sequence of ultrasonic echoes; and

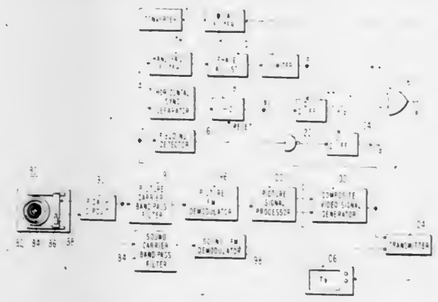
(c) during display of the sequence of ultrasonic echoes and the gray-scale representation according to step (b), and after completion of all brightness and contrast adjustments, as specified in step (a), adjusting the ultrasonic image signal processing apparatus as to ultrasonic parameters including depth compensation and dynamic compression by means of said adjustment means in such a fashion that there results on the optical reproduction apparatus a correspondingly adjusted optical visual image while the optical reproduction apparatus remains adjusted with reference to the display of said gray-scale representation.

4,213,148

RECORDING/PLAYBACK APPARATUS USING A SINGLE PILOT TONE FOR ACTIVE TRACKING AND CONTROL OF A VIDEO DISC PICKUP DEVICE

Jon K. Clemens, Skillman, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 1, 1978, Ser. No. 938,963
Int. Cl.[2] H04N *5/76;* **G11B** *3/38*
U.S. Cl. 358—128.6 **20 Claims**



1. In a playback apparatus for use with a disc record having an information track comprising a plurality of convolutions containing recorded representations of signal information including phase reference information and a pilot signal, said pilot signal being recorded such that each convolution of said information track contains a non-integral number of cycles of said pilot signal, the phase of said pilot signal in a given convolution having a known relationship with respect to the phase of said pilot signal in an immediately preceding convolution and the phase of said pilot signal in the convolution immediately succeeding said given convolution, said playback apparatus including a signal pickup means for sensing said recorded representations along said information track during playback rotation of said disc, the tracking control apparatus comprising:

means responsive to the signals provided by said signal pickup means for providing a first signal representing the sensed phase content of said pilot signal recovered from said given convolution and from said preceding and succeeding convolutions;

means responsive to said signals provided by said signal pickup means sensed from said given convolution for providing a phase reference signal;

means for comparing the phase of said first signal and said phase reference signal for providing an error signal; and

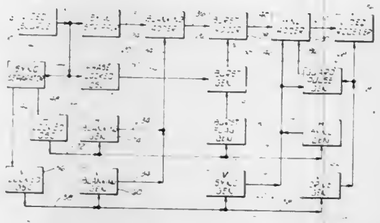
means responsive to said error signal for maintaining said signal pickup means in a desired location along said information track.

4,213,149

APPARATUS FOR PREVENTING VIDEO TAPE DUPLICATION

Mike A. Janko, 5821 Cheyenne Ct., Oklahoma City, Okla. 73132

Filed Dec. 26, 1978, Ser. No. 972,906
Int. Cl.[2] H04N *5/78*
U.S. Cl. 358—153 **6 Claims**



1. A video processor for processing a video input signal provided by a video source, the video input signal including at least one vertical sync pulse of first predetermined amplitude relative to a reference potential and of first predetermined time duration, and for providing a video output signal having modified vertical sync pulses, the video processor comprising:

a video processing circuit connected to the video source, the video processing circuit receiving the video input signal and guard pulses, and adding the received guard pulses to the received video input signal at a second pre-determined amplitude which is less than the first predetermined amplitude relative to the reference potential for output as the video output signal having modified vertical sync pulses; and

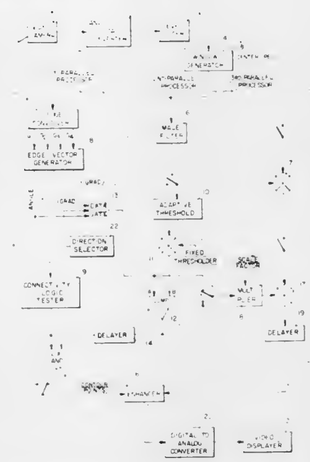
a sync generator connected to the video source and to the video processing circuit, the sync generator receiving the video input signal, detecting the vertical sync pulses of the received video input signal, and providing the guard pulses a second predetermined time duration after each detected vertical sync pulse, the second predetermined time duration being less than the first predetermined time duration.

4,213,150

REAL-TIME EDGE PROCESSING UNIT

Guner S. Robinson, Los Angeles, and James J. Reis, La Palma, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 21, 1978, Ser. No. 898,970
Int. Cl.[2] H04N *5/14*
U.S. Cl. 358—166 **4 Claims**



1. A system for processing video data in digital form to identify and enhance pictorial edges comprising:

a. window generator means for operating on the input video data for generating digital data in parallel form which represents a sequence of 3×3 arrays of picture elements, and generating digital data representing a sequence of picture elements at the centers of the 3×3 arrays,

b. two parallel processing means comprising one parallel processor means for operating on the digital data, which represents the sequence of 3×3 arrays of picture elements, to identify and locate pictorial edges within the sequence of 3×3 arrays by means of edge sensitive masks and connectivity requirements, and another parallel processor means for operating on the digital data representing the sequence of center picture elements for introducing a time delay in the data equal to the time delay introduced by the first parallel processing means,

c. enhancer means for receiving the outputs of the two parallel processor means and selectably increasing or decreasing the magnitude or brightness of the center picture elements as represented by the digital data output from the second of the two parallel processor means, in response to the output from the first of the two parallel processor means.

4,213,151

AGC KEYING SIGNAL CIRCUIT

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

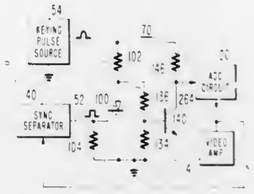
Filed Aug. 18, 1978, Ser. No. 934,835
Int. Cl.[2] H04N *5/52*
U.S. Cl. 358—178 **12 Claims**

1. In an automatic gain control circuit of the type including an automatic gain control voltage generator keyed by a keying signal and responsive to the signal level of synchronizing signal components of a composite video signal for providing a gain control potential, an automatic gain control keying signal circuit comprising:

a source of synchronizing signals comprising pulses of different time duration;

a source of recurrent pulses normally in a substantially constant phase relationship with said synchronizing signal pulses, said recurrent pulses having a substantially constant time duration which is longer than the shortest duration ones of said synchronizing pulses;

a controlled current path responsive to said synchronizing signal pulses and said recurrent pulses which is rendered



conductive upon the coincidence of a synchronizing signal pulse and a recurrent pulse and which ceases conduction only upon the termination of said recurrent pulse; and

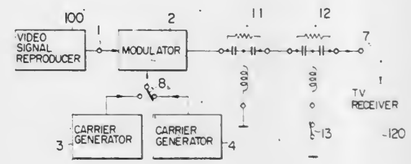
means for generating a keying signal for said automatic gain control voltage generator in response to conduction by said controlled current path.

4,213,152

OUTPUT CIRCUIT FOR VIDEO TAPE RECORDER

Kazuaki Kakinuma, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 25, 1979, Ser. No. 6,515
Claims priority, application Japan, Jan. 25, 1978, 53-6800[U]
Int. Cl.[2] H04N *5/76, 5/44*
U.S. Cl. 358—186 **3 Claims**



1. An output circuit for a video signal reproducing apparatus which delivers a video signal acceptable to an RF input stage of a television receiver, comprising:

means for selectively generating carriers corresponding to two adjacent television channels having successive frequencies;

modulating means for modulating an output carrier from said carrier generating means with a video signal;

a first filter connected to an output of said modulating means for eliminating the lower sideband wave of the signal of the lower frequency carrier modulated with the video signal; and

a second filter connected in series with said first filter in an output path of said modulating means and adapted to be ganged with the selection of the carrier by said carrier generating means for eliminating the lower sideband wave of the signal of the higher frequency carrier when the higher frequency carrier is selected.

4,213,153

PROCESS FOR THE OPTICAL DISPLAY OF INFORMATION USING LASERS

Fritz P. Schäfer, Göttingen-Nikolausberg, Fed. Rep. of Germany, assignor to Max-planck-Gesellschaft zur Fordenberg der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Aug. 16, 1978, Ser. No. 934,245

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1977, 2739081

Int. Cl.[2] H04N *5/66, 9/12*

U.S. Cl. 358—231 **23 Claims**

1. A display process for the optical presentation of information, which process comprises impinging laser beams modulated as to their direction, intensity and/or frequency, upon a transparent target consisting of a transparent sheet, film, or liquid layer containing ions or dyes capable of fluorescence which is excited by said laser beams to optical fluoresence.

4,213,154

FACSIMILE COMMUNICATION SYSTEM

Fumitaka Ono; Takayoshi Semasa; Yutaka Ueno; Syuzi Iwata, and Ryoichi Ohnishi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1978, Ser. No. 930,505

Int. Cl.[2] H04N *7/12*

U.S. Cl. 358—260 **3 Claims**

1. A facsimile communication system comprising: a subject copy formed of a multiplicity of picture elements arranged in rows and columns; means for successively providing predicted values for object picture elements through the prediction conversion of a picture signal from each of said object picture elements effected by referring to the associated picture elements located adjacent to each object picture element including a logic circuit for calculating a binary predicted value $X_{m,n}$ of a picture element signal $X_{m,n}$ for an object picture element located at an intersection of the m-th column and n-th row in accordance with a prediction function expressed by

$$X_{m,n} = \underline{X}_{m-1,n} \cdot X_{m,n-1} + (\underline{X}_{m-1,n-1} \cdot \overline{T} + X_{m-1,n-1} \cdot T) \cdot (\underline{X}_{m-1,n} + \underline{X}_{m,n-1})$$

where

$$T = \underline{X}_{m,n-1} \cdot \underline{X}_{m-1,n-1} \cdot \underline{X}_{m+1,n-1} \cdot \overline{X}_{m-2,n-1} + \underline{X}_{m,n-1} \cdot \overline{X}_{m-1,n-1} \cdot \underline{X}_{m+1,n-1} \cdot X_{m-2,n-1} + \underline{X}_{m,n-1} \cdot \underline{X}_{m-1,n-2} \cdot \overline{X}_{m-1,n-1} + \overline{X}_{m,n-1} \cdot \overline{X}_{m-1,n-2} \cdot X_{m-1,n-1}$$

and X and T designate inversions of the X and T respectively; means for successively comparing said predicted values with actual values of said object picture elements to provide a series of prediction error signals, and means for encoding and transmitting said series of said prediction error signals.

4,213,155

PROCESS FOR IMPROVING IMAGE QUALITY IN PICTURE TELEGRAPHY

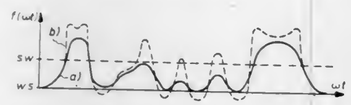
Jüergen Müenchow, Kiel, and Ruediger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed May 4, 1978, Ser. No. 902,900

Int. Cl.[2] H04N *1/36*

U.S. Cl. 358—262 **13 Claims**

1. An improved facsimile system comprising scanning signal generating means connected to a scanning means which scans an original to be transmitted, a pulse forming network including a differentiator receiving the output signal of said scanning signal generating means to differentiate it, a two level to three level converter receiving the output signal of said pulse forming network which includes an inverter which inverts said output signal, a first switch receiving said output signal a second switch receiving the output of said inverter, the outputs



of said first and second switches connected together, a comparator receiving the output of said pulse forming network, a pair of OR gates receiving first inputs from said comparator, a flip-flop circuit receiving the output of said comparator and supplying inputs to said pair of OR gates, and the outputs of said pair of OR gates respectively connected to said first and second switches to turn them on and off.

4,213,156

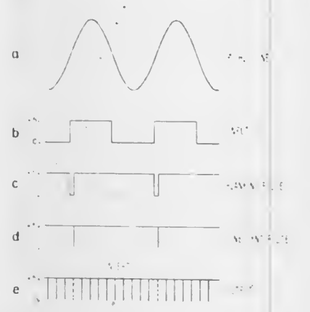
SYSTEM FOR THE PHASE LOCKING SYNTHESIZED HIGH FREQUENCY PULSES TO A LOW FREQUENCY SIGNAL

Douglas G. Jarrett, Altamonte Springs, Fla., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 24, 1978, Ser. No. 899,273

Int. Cl.[2] H04N *1/36;* **H03B** *3/06*

U.S. Cl. 358—275 **9 Claims**



6. A facsimile system comprising:
transducer means;
means for scanning a document or copy medium with said transducer means;
motor means coupled to said scanning means; and
drive means coupled to said motor means, said drive means comprising
a source of clock pulses;
a synthesizer of said higher frequency pulses coupled to said source, said synthesizer comprising dividing means reset in response to each of said higher frequency pulses; and
insertion means responsive to said low frequency signal for generating pulses to be periodically inserted between said higher frequency pulses, said inserted pulses having a frequency equal to said low frequency signal, said inserted pulses also resetting said dividing means.

4,213,157

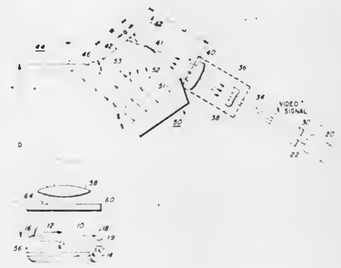
SELF TRACKING LASER SCANNING APPARATUS

Leonard C. DeBenedictis, Los Angeles, and Gary K. Starkweather, Saratoga, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 5, 1979, Ser. No. 9,628

Int. Cl.[2] H04N *1/04*

U.S. Cl. 358—293 **12 Claims**



1. An improved flying spot scanning system for scanning the surface of a medium comprising:
means for providing a beam of radiant energy;
scanning means having at least said first and second reflective surfaces;
means for imaging said beam upon said first reflective surface of said scanning means, said scanning means being positioned in the optical path of said imaged beam; and
an optical element positioned adjacent said scanner, the light reflected from said first reflective surface being incident on said optical element and directed back thereby to said second reflective surface, said scanner means scanning said imaged spot across said medium by rotating said second reflective surface a desired angle to impart the information content of said beam to said medium, said beam being caused to track said second reflective surface during the rotation thereof.

4,213,158

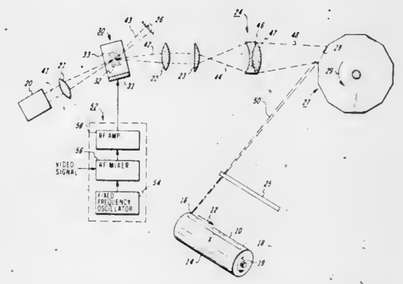
OPTICAL DATA RECORDING SYSTEM UTILIZING ACOUSTIC PULSE IMAGING TO MINIMIZE IMAGE BLUR

Leonard C. DeBenedictis, Los Angeles, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 28, 1978, Ser. No. 920,314

Int. Cl.[2] G11B *7/00;* **H04N** *5/76*

U.S. Cl. 358—296 **7 Claims**



1. An optical data recording system for recording information on a light sensitive member comprising:
means for providing a beam of radiant energy;
a Bragg diffraction light-sound interaction medium including a transducer coupled to an acoustic wave transmitting medium characterized by a predetermined acoustic wave propagation velocity,
scanning means having at least one reflective surface positioned in the optical path of said beam for scanning said beam across said member by rotating said reflective surface a desired angle to impart the information content of said beam to said member;
a video modulating signal source coupled to said transducer for propagating intensity-modulated acoustic waves in said medium at a predetermined velocity,
means for projecting through said medium in a direction transverse to said acoustic waves said light beam to produce in said medium a moving image of information corresponding to said modulating signal, said image moving at said predetermined velocity; and
optical means interposed in the path of said intensity modulated beam and having magnification M associated therewith, said moving image being projected onto said scanned member within the envelope of said beam in a manner such that the velocity of said moving image is substantially equal to and in an opposite direction as the velocity of said scanning beam, the direction of movement of said beam and said image being substantially orthogonal to the direction of rotation of said medium.

4,213,159

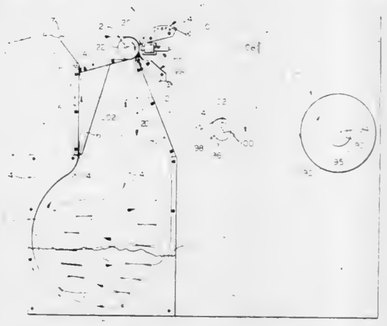
PNEUMATIC CLAMPS AND THERMOMAGNETIC DUPLICATION

James L. King, Southboro, Mass., assignor to King Instrument Corporation, Westboro, Mass.

Filed Oct. 27, 1978, Ser. No. 955,373

Int. Cl.[2] G11B *5/86, 15/60*

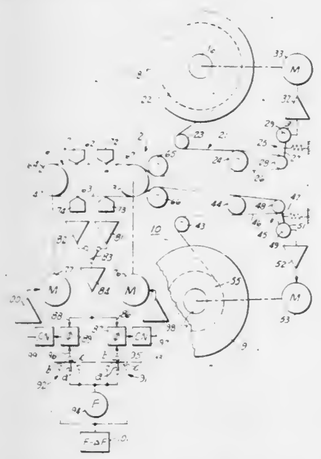
U.S. Cl. 360—16 **36 Claims**



1. Apparatus for maintaining at least one moving web in tight engagement with a roller comprising:
a nip member having a web-guiding surface with at least one passageway therein and means for connecting said at least one passageway to a source of pressurized gas;
support means for supporting said nip member for reciprocal movement relative to said support means whereby movement of said nip member relative to said support means results in a change of position of said web-guiding surface along a selected path;
said support means being adapted to support said nip member in proximity to a selected roller so that movement of said nip member in a first direction relative to said support means will result in movement of said surface along said selected path toward said selected roller; and
fluid-operated means for urging said nip member to move in said first direction relative to said support means so as to advance said surface toward engagement with a selected roller located in proximity to said nip member;
said surface and said at least one passageway being arranged so that pressurized gas exiting from said at least one passageway will be directed against a selected roller con-

fronting said surface, whereby if a web is disposed between said surface and said selected roller, the gas exiting said at least one passageway will press said web into engagement with said selected roller and will exert a back pressure on said surface urging said surface away from said roller and web.

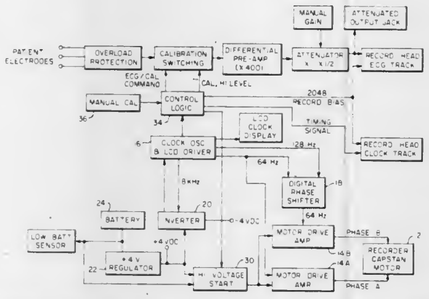
4,213,160
METHODS AND APPARATUS FOR DRIVING INFORMATION CARRIER TAPE
Edward K. Shum, Villa Park; Henry M. Martija, La Verne, and Leon E. Head, West Covina, all of Calif., assignors to Bell & Howell Company, Chicago, Ill.
Filed Aug. 21, 1978, Ser. No. 935,189
Int. Cl.[2] G11B *19/28*
U.S. Cl. 360—73 **44 Claims**



17. In a method of driving an information carrier tape with spaced distinct first and second capstans relative to information transducing means situated at the space between said capstans, the improvement comprising in combination the steps of:
arranging said tape with said capstans in a U-shaped tape path having a pair of leg portions spaced from each other by said first capstan and extending to said second capstan and having a bight portion formed by said second capstan and interconnecting said leg portions;
driving said tape with said first capstan;
driving said tape with said second capstan; and
electrically slaving the driving of one of said first and second capstans to the other of said first and second capstans.

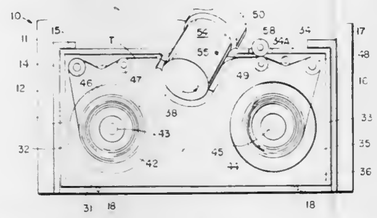
4,213,161
MOTOR CONTROL FOR SLOW SPEED TAPE RECORDER
Edwin A. Dokus, Winchester, and David Banks, South Hamilton, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Nov. 2, 1978, Ser. No. 956,829
Int. Cl.[2] G11B *15/46, 19/02*
U.S. Cl. 360—73 **4 Claims**

1. In a battery-powered slow-speed tape recorder for recording physiological information of an ambulatory patient, said recorder including tape transport means including a capstan tape drive and a take-up reel drive, a synchronous AC motor operatively coupled to at least said capstan, and battery means for supplying DC current to power said motor, an improved motor control comprising:
voltage regulating means for supplying current from said battery at a predetermined regulated voltage less than full battery voltage;
inverter means connected to said regulator means for converting DC current to a square wave DC current of predetermined frequency, said square wave being modulated to regulated voltage plus and minus about the common of said battery voltage;
phase-shifting means connected to said inverter means to supply a phase-shifted square wave DC current at said predetermined frequency;



means connecting said square wave DC and said phase-shifted square wave DC to said AC synchronous motor; and
means for selectively supplying current at full battery voltage, square wave inverted and phase-shifted, to said AC synchronous motor in lieu of said regulated supply voltage whereby to afford synchronous operation of said motor throughout the full operating interval of the recorder.

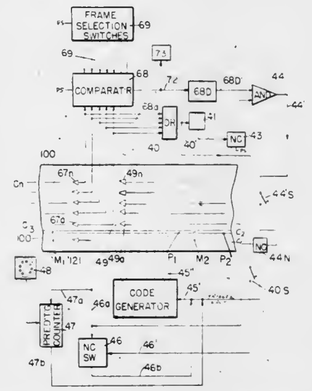
4,213,162
MAGNETIC TAPE CARTRIDGE TRANSDUCING APPARATUS AND METHOD
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Filed Dec. 30, 1977, Ser. No. 865,951
Int. Cl.[2] G11B *5/52, 15/60, 23/04*
U.S. Cl. 360—85 **14 Claims**



1. Magnetic tape transducing apparatus comprising in combination with a magazine containing magnetic tape, supply means for said tape and means for guiding a free length of said tape from said supply means,
a support including means for receiving and predeterminately positioning said magazine on said support,
take-up means for said tape,
magnetic transducing means,
rotatable drum means having an elongated cylindrical surface rotatably supported by said support and supporting said transducing means with the operating end of said transducing means disposed at the cylindrical surface of said rotatable drum means,
concave arcuate surface means supported by said magazine for cooperating with said cylindrical surface of said rotatable drum means whereby the transducing means supported by said rotatable drum means may scan said tape,

power means for rotating said rotatable drum means,
means for driving said tape from said supply means to said take-up means while said tape is engaged against said cylindrical surface by said concave arcuate surface means and while said rotatable means rotates to cause said transducing means to transversely scan said tape and to permit said transducing means to transduce signals with respect to said tape.

4,213,163
VIDEO-TAPE RECORDING
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of Ser. No. 668,348, Jun. 27, 1957, Pat. No. 3,051,777. This application Aug. 27, 1962, Ser. No. 225,173
Int. Cl.[2] H04N *5/78*
U.S. Cl. 360—35 **25 Claims**

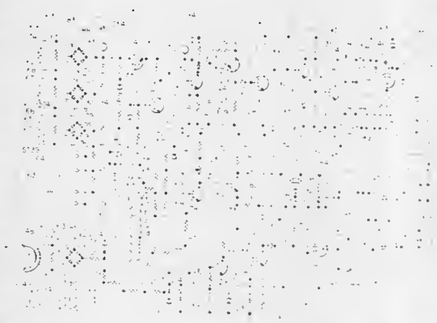


1. A method for recording a series of discontinuous images in spaced relationship along a continuous magnetic tape so as to produce a signal-bearing tape adapted to be played continuously and thereby provide a sequential display of said images and produce the illusion of animation, comprising: providing a first image showing an arrangement at a first instant in time; scanning said first image with a scanner to produce a recordable signal at a recording head; relatively moving said tape and recording head along the axis of length of the tape during the scanning operation at a rate of movement proportional to the rate of tape movement during playback and recording the signal on the tape until the image is scanned and recorded on a first portion of the tape; stopping said relative movement; and then providing second and successive images representing the appearance of said arrangement at later, discrete and discontinuous second and successive instants in time, and re-establishing said relative movement and repeating the scanning and recording processes on second and successive portions of the tape spaced from said first portion for each of said second and successive images so as to produce a sequence of adjacent magnetically reproducible representations of said images on said tape, whereby upon playback of the tape, the images are visually reproducible at evenly spaced intervals of time to produce an animated sequence of visible images.

4,213,164
ELECTRONIC PROTECTION CIRCUIT INCORPORATING VOLTAGE DIVIDER SENSING, GATING AND TRIGGERING
Robert F. Gaertner, San Marcos, Tex., assignor to Esquire, Inc., New York, N.Y.
Filed Jun. 14, 1978, Ser. No. 915,395
Int. Cl.[2] H02H *3/20*
U.S. Cl. 361—56 **9 Claims**

1. An electronic protection circuit for providing a trigger to a circuit to be protected in the presence of an ac source voltage exceeding a predetermined amplitude, comprising
charge storage means responsive to storing a charge from a first polarity of an applied ac voltage,
switch means connected to the ac source operably switched on when the first polarity of the ac source exceeds a predetermined amplitude for a predetermined length of time, and
gated semiconductor means connected to said charge storage means and to said switch means, switching on of said switch means gating on said gated semiconductor means to permit the charge stored on said charge storage means to be applied therethrough as an outgoing trigger.

4,213,165
CIRCUIT BREAKER HAVING AN ELECTRONIC FAULT SENSING AND TRIP INITIATING UNIT
Henry J. Zylstra, Alburnette, and Harley W. Jansen, Marion, both of Iowa, assignors to Square D Company, Palatine, Ill.
Filed Mar. 16, 1978, Ser. No. 887,109
Int. Cl.[2] H02H *3/08*
U.S. Cl. 361—94 **2 Claims**



1. A circuit protective device to detect fault conditions in an electrical power circuit having a plurality of conductors and protect said power circuit against such fault conditions, including:
separable contact means for each conductor,
circuit interruption means operable to separate said contact means and interrupt said power circuit on occurrence of a fault condition,
manually operable means for operating said interruption means to separate the contact means for each conductor to interrupt said power circuit,
transformer means associated with each conductor, each transformer means including a current transformer for each conductor supplying a respective step up transformer having a respective rectifier bridge connected to the output of the respective step up transformer secondary with the output of each bridge connected in common to

provide a D.C. output signal proportional to the current in said conductors and to supply power,

solid state interruption initiating means energized by the power supplied from the bridges and controlled by the D.C. signal in response to the development of a respective predetermined current in any one of said conductors to detect the occurrence of a respective fault condition in said power circuit and to provide a fault output signal corresponding to the fault condition,

a single trip coil having one terminal connected directly in common to each bridge and a second terminal connected to said solid state means for energization by said transformer means and said fault output signal for operating said circuit interruption means to separate the contact means for each conductor, said coil effective to operate said circuit interruption means in response to energization by current flowing in a selected direction,

a base carrying said conductors, circuit interruption means, transformer means and coil,

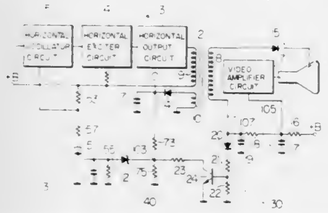
a cover engaged with said base and carrying said solid state means,

a pair of terminal positions on said cover accessible from the exterior of said cover,

means interconnecting said second terminal of said coil with said solid state means in response to the engagement of said cover with said base and connecting each of said coil terminals to a respective terminal position on said cover accessible from the exterior of said cover for connection to a power source remote from said cover and base to enable energization of said coil from a remote location and operation of said circuit interruption means to initiate interruption of said power circuit independently of said solid state means and transformer means,

and last means connected between a selected terminal position and said coil for ensuring the energization of said coil from said remote location by current flowing in said selected direction.

4,213,166
HIGH VOLTAGE PROTECTION CIRCUIT
Masanobu Watanabe, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 17, 1978, Ser. No. 897,119
Claims priority, application Japan, Apr. 18, 1977, 52-43570
Int. Cl.² H02H *3/20*
U.S. Cl. 361—86 **7 Claims**



1. In a high voltage protection circuit for a television receiver including a picture tube, comprising:

(a) periodic pulse generating means for generating a periodic pulse;

(b) boost means for boosting said periodic pulse and for producing a D.C. high voltage for said picture tube from the thus boosted periodic pulse;

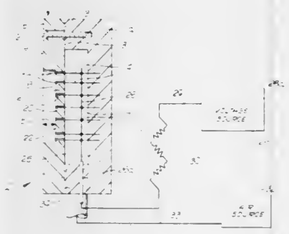
(c) stopping means having an input terminal for rendering said picture tube inoperative to stop the radiation of harmful X-rays when a control voltage supplied to said input terminal exceeds a predetermined voltage;

(d) rectifying means for rectifying said periodic pulse; and

(e) supply means connected to said rectifying means for smoothing the rectified periodic pulse to produce the D.C. control voltage and for supplying said D.C. control voltage to said input terminal:

the improvement comprising control means connected between said supply means and a beam current path of said picture tube through which a beam current of said picture tube flows for operatingly reducing said D.C. control voltage supplied to said input terminal when said beam current is less than a predetermined value, a reduced amount of said D.C. control voltage increasing in accordance with decrement in said beam current.

4,213,167
PLANAR GAS AND ION DISTRIBUTION
James M. Cumming, 4571 Comber Ave., Encino, Calif. 91316, and Donald G. Saurenman, 6787 Worsham Dr., Whittier, Calif. 90602
Filed Mar. 31, 1978, Ser. No. 892,140
Int. Cl.² H05F *3/00*
U.S. Cl. 361—213 **1 Claim**



1. In apparatus for treating a strip of photographic film during processing thereof, the film transported in a longitudinal direction, the combination comprising

(a) a carrier body, including a first body block section defining a first transversely elongated recess, and a second body block section overlying said recess and defining a second transversely elongated recess parallel to and overlying the first recess, there being a wall separating said two recesses, and closing the first recess, the second recess being laterally open along its entire length,

(b) needles entirely supported by said first body section, the needles having tips defining a plane toward and through which the film is adapted to pass, the needles having wire configuration,

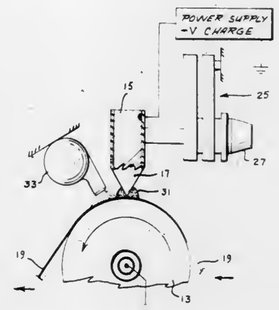
(c) said wall defining orifices within which the respective needles project, the orifices communicating between said recesses, the orifices spaced lengthwise of said recesses, said tips located at said walls,

(d) means for supplying pressurized gas to said orifices via said first recess and at pressure in excess of about 25 psi to produce gas jets which sweep over said tips and treat both sides of the film, said jets directed generally laterally relative to said longitudinal direction of film transport,

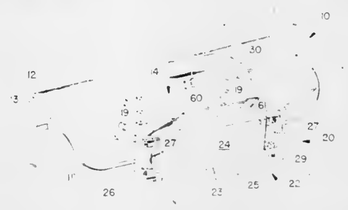
(e) and means for supplying voltage to said tips via said needles at a level or levels to effect production of ions distributed laterally with the gas jets for neutralizing static on both sides of the film passing through said plane, said means including a bus wire extending in said first recess and electrically connected to said needles.

4,213,168
ELECTRET CHARGE TECHNIQUE
Matthew G. Garbett, Los Altos Hills, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jul. 20, 1978, Ser. No. 926,360
Int. Cl.² B05C *1/04*
U.S. Cl. 361—225 **4 Claims**

1. An electret charging apparatus for electrostatically charging dielectric tapes to a high level charge density comprising, a motor driven capstan having a dielectric tape positioned thereover for movement therewith, a sponge assembly positioned above said tape in close proximity thereto, the lower portion of said sponge being substantially conical in configuration, said sponge assembly being charged by a high DC voltage, a dielectric fluid disposed within said sponge in sufficient amount to form a fluid bead between the lowermost portion of said sponge assembly and the upper surface of said dielectric tape through a process of electrophoresis such that the tape becomes evenly wetted with the fluid mixture as the capstan with the tape thereover rotates and passes under the sponge assembly.



4,213,169
COVERED VISOR MIRROR
Gordon B. Kempkers, Hamilton, Mich., assignor to Prince Corporation, Holland, Mich.
Filed Nov. 9, 1978, Ser. No. 958,968
Int. Cl.² B60Q *1/00*
U.S. Cl. 362—74 **23 Claims**



1. A body and cover member including hinge means pivotally attaching the cover to the body, said hinge means comprising:

elongated socket means on one of said body or cover for receiving a pintle, said socket means including a longitudinally extending arcuate interior surface extending around a substantial portion of the interior of said socket, said socket further including a camming surface angularly spaced from said arcuate surface within said socket and detent means formed at the junction of said camming surface and said arcuate surface; and

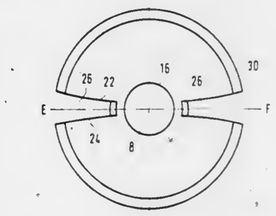
pintle means on the other of said body or cover for fitting in said socket, said pintle means including a curvilinear surface mating with the arcuate surface of said socket and a camming surface angularly spaced from said curvilinear surface and cooperating with said camming surface and detent means of said socket as said cover is rotated about the axis of said pintle for urging said cover to a predetermined position in which said camming surface of said pintle engages said detent means for holding said cover in said predetermined position.

4,213,170
REFLECTOR LAMP WITH LENS HAVING LIGHT-MODIFYING COATING
Stephen F. Kimball, Andover, and Roy C. Martin, Salem, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.
Filed Feb. 6, 1978, Ser. No. 875,287
Int. Cl.² F21V *29/00*
U.S. Cl. 362—267 **1 Claim**



1. An electric lamp comprising: a curved reflector having a circular front and a peripheral edge thereat; a double ended tungsten halogen lamp disposed within the curved reflector; and a circular lens, having a light-modifying coating on the inner surface thereof and having a peripheral edge, fastened to the circular front of the reflector by means of a split metal ring that encircles said edges of the reflector and lens and clamps them together, said split metal ring being essentially U shaped and bent into a circle, one leg of the U bearing against the back of the peripheral edge of the reflector and the other leg of the U bearing against the front of the peripheral edge of the lens.

4,213,171
LIGHTING FIXTURE WITH SIDE ESCAPE WINDOW
Knut O. Sassmannshausen, Wexford, Ireland
Filed Jun. 21, 1977, Ser. No. 808,726
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628243; Oct. 18, 1976, 2646930; Austria, Jan. 31, 1977, 11586/77; Ireland, Apr. 29, 1977, 865/77
Int. Cl.² F21V *7/00*
U.S. Cl. 362—310 **50 Claims**



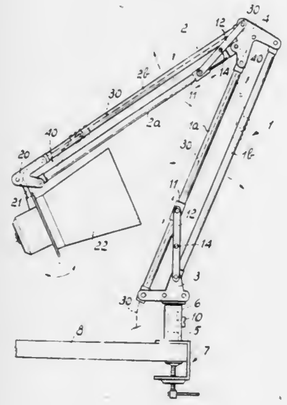
1. Lighting fixture comprising an enclosure, means disposed in said enclosure for supplying a central source of light therein, a concave reflector for directing a main beam of light out of said enclosure from said source generally along a given optical axis, said concave collector having a light-penetrable region thereof disposed at least at one side of said optical axis in a common horizontal plane with said central light source and forming an escape window for part of the light from said source out of said enclosure.

4,213,172

MOVABLE STAND, PARTICULARLY FOR LAMPHOLDERS AND LAMP CARRIER THEREON

Antonio Scattolin, Via Sardegna, 45, and Sergio Bernardi, Via B. Verro, 17/A, both of Milan, Italy

Filed Feb. 16, 1978, Ser. No. 878,549
Claims priority, application Italy, Jul. 29, 1977, 21939/77[U]
Int. Cl.[2] F21S *1/12;* F29V *29/00;* F21V *21/00, 21/18*
U.S. Cl. 362—413 6 Claims



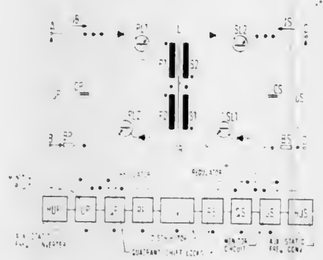
1. A movable stand particularly for lampholders and other objects, comprising a supporting base defining a main axis of the stand, at least one articulated parallelogram member of elongated extension, including a first and a second articulated elongated rod members parallel and laterally spaced with respect to each other and a first and a second articulated link members pivotally connecting said first and said second elongated rod members at opposite ends thereof to form said articulated parallelogram, said articulated parallelogram member being associated with one said link members thereof selectively to said supporting base and to a lampholder or the like and to another articulated parallelogram, friction means acting at least on said first longitudinal rod member in order to balance said articulated parallelogram member, wherein according to the improvement said friction means comprise at least one pair of shoes arranged to clamp therebetween in a frictional manner said first rod member, a pair of coextensive, laterally spaced apart resilient, leaf-spring like bars, each having one end thereof connected with one said shoes pivotally about a first axis perpendicular to the longitudinal extension of said first rod and another end thereof pivotally connected to a point of said articulated parallelogram remote from said first rod member, the pivotal connection being about a second axis parallel to said first axis, an adjustable tie member extending transverse to said leaf-spring like bars and connecting one intermediate point of one said leaf-spring like bars with another intermediate point of another said leaf-spring like bars, said tie member having screw means for adjusting the mutual distance between said leaf-spring like bars thereby to regulate the resilient pressing and friction action thereof on said shoes and thereby against said first rod member frictionally clamped between said shoes.

4,213,173

POLARITY-AND-LOAD INDEPENDENT CIRCUIT ARRANGEMENT FOR CONVERTING ELECTRICAL ENERGY

Klaus Link, Munich, and Werner Lochter, Emmering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 911,719
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728377
Int. Cl.[2] H02M *5/293*
U.S. Cl. 363—163 22 Claims



1. A circuit arrangement for converting electrical energy with the air of a static-frequency converter which operates at a higher frequency than the frequency to be produced, comprising:

a static frequency converter including a primary side winding means and a secondary side winding means;

a plurality of rectifiers and a plurality of heavy-duty switching transistors, said rectifiers connected in series with a respective switching transistor and a respective transformer winding means and poled for a respective current direction;

a primary side input connected to two of the rectifier-transistor series combinations;

a secondary side output connected to another two of the rectifier-transistor series combinations;

first high pass and low pass filters connected to said primary side input;

second high pass and low pass filters connected to said secondary side output; and

master control means connected to said transistors, to said primary side input and to said secondary side output for determining the output flow direction, said master control means including

first and second regulating circuits connected to said input and output, respectively, and operable to provide regulation of the output voltage independently of the input voltage and load changes,

first and second quadrant shift locks connected to said input and output, respectively, for providing output signals indicative of input and output current and voltage directions,

first and second auxiliary frequency converters connected to said input and output, respectively, for deriving operating voltages for said circuit arrangement,

first and second voltage monitoring circuits connected to said input and output, respectively, and to the respective regulating circuits and quadrant shift locks and operable to indicate the input and output polarities,

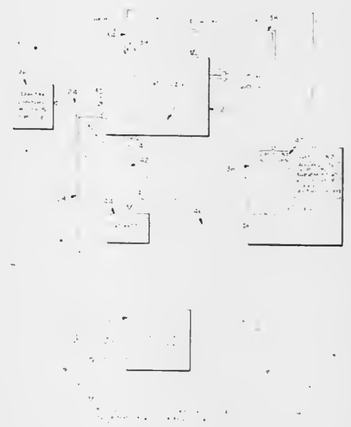
a distributor circuit connected to said plurality of transistors and connected in circuit with said auxiliary frequency converters, said quadrant shift locks, said monitoring circuits and said regulating circuits, and operable in response to the outputs of said monitoring circuits, said regulating circuits and said quadrant shift locks to selectively operate said transistors and determine the output flow direction.

4,213,174

PROGRAMMABLE SEQUENCE CONTROLLER WITH DRUM EMULATION AND IMPROVED POWER-DOWN POWER-UP CIRCUITRY

Richard E. Morley, Mason; Michael A. Bromberg, Nashua, and William A. Taylor, Campton, all of N.H., assignors to Andover Controls Corporation, Andover, Mass.

Filed May 31, 1977, Ser. No. 802,261
Int. Cl.[2] G06F *15/46, 9/00;* G05B *11/32*
U.S. Cl. 364—104 57 Claims



44. A programmable sequence controller for the control of at least one external device or system, the device or system generating inputs to the controller and the controller generating output driver signals for driving said device or system, said controller comprising:

(A) input circuitry communicating with the inputs from the external device or system, and responsive thereto, for generating signals of selected inputs;

(B) output driver circuitry, interconnected to the device or system for generating output driver signals; and

(C) a central processing unit communicating with the input circuitry and output driver circuitry, said central processing unit programmed to execute a control program representing the desired state of the output driver signals in relationship to the state of selected inputs from the external device or system, generated by the input circuitry, said control program comprising a plurality of addressable drum lines defining a simulated sequence drum, each drum line defining selected output driver signals as being as selected states and said drum line able to specify at least two sets of exit conditions, each set of exit conditions specifying a drum line to be next executed by the controller, the sets of exit conditions specifying the states of specified inputs from the external device or system and specified output driver signals, the central processing unit further programmed to execute one of the drum lines during scan of the simulated sequence drum, and to examine the sets of exit conditions of the executed drum line so as to next execute a drum line specified by a set of exit conditions if these exit conditions are satisfied;

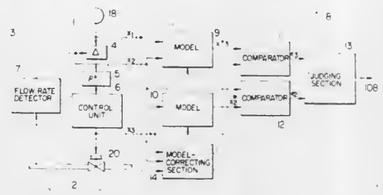
whereby the controller executes one line of at least two specifiable different lines of said drum if one of the sets of exit conditions for the presently executed line is satisfied and thereby providing for branching capability.

4,213,175

FAULT-DETECTING APPARATUS FOR CONTROLS

Nobuo Kurihara, Hitachiota, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 921,074
Claims priority, application Japan, Jul. 4, 1977, 52-79122
Int. Cl.[2] G05B *17/00, 13/02;* G06F *15/46*
U.S. Cl. 364—119 7 Claims



1. In a fault-detecting apparatus (8) for a closed-loop control system (1, 2 and 3) having an object for fault detection which makes up part of said control system, said apparatus being supplied with digital signals obtained by sampling input and output of said object with a fixed periodic time, and detecting an abnormal state of said object on the basis of said digital signals so as to notify the occurrence of said abnormal state, said apparatus (8) comprising:

mathematical model means (B4-B10) simulating an input-output characteristic of said object included in said control system (1, 2 and 3), said model means being supplied with the digital signals corresponding to the input of said object with every sampling, and generating the digital signals corresponding to the output of said object;

first means (B11-B15) for comparing the output of said model means with the output of said object with every sampling, and for detecting an abnormal state of said object so as to notify the occurrence of the abnormal state;

second means (B17-B30) for receiving time-series digital signals relating to one of input and output of said object for a predetermined period when the presence of a model correction signal is confirmed, for determining an average value of said time-series digital signals received during the predetermined period, and for generating a signal corresponding to the degree of the deviation of said time-series digital signals from said average value;

third means (B31) for determining whether or not the correction of the characteristic of said model means is possible, on the basis of said signal corresponding to the degree of the deviation;

fourth means (B33-B45) for correcting the characteristic of said model means on the basis of said time-series digital signal received during the same period as said predetermined period of said second means when said third means decides that the correction is possible,

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4,213,176

SYSTEM AND METHOD FOR INCREASING THE OUTPUT DATA THROUGHPUT OF A COMPUTER

Paul J. Cooper, Acton, Mass., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 22, 1976, Ser. No. 753,398
Int. Cl.[2] G06F *3/00*
U.S. Cl. 364—200 14 Claims

1. A method of increasing the output from an n bit processor to a plurality of utilization devices wherein said processor is interconnected to said utilization devices by n data lines and m address lines wherein n and m are whole integers, comprising the steps of:

(a) forming data words having a length equal to n plus m data bits for data to be transferred to a selected one of said utilization devices and determining a count of said data words to be transferred;

(b) selecting said utilization device which is to receive said data words and disabling the remaining non-selected utilization devices for a predetermined time interval;
(c) entering said count on a counter means;



(d) transferring said data words over said n data lines and m address lines during said predetermined time interval; and
(e) ending said predetermined time interval when said count of data words to be transferred has been transferred to said selected utilization device.

4,213,177

EIGHT BIT STANDARD CONNECTOR BUS FOR SIXTEEN BIT MICROCOMPUTER USING MIRRORED MEMORY BOARDS

Robert W. Schmidt, Stafford, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 24, 1978, Ser. No. 898,735
Int. Cl.[2] G06F *13/00*
U.S. Cl. 364—200 **9 Claims**



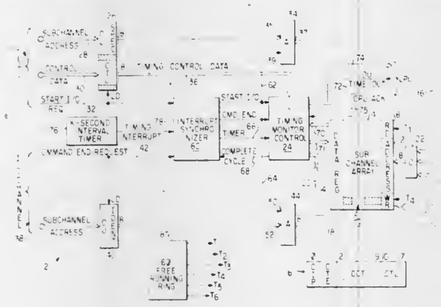
1. A microcomputer comprising: a processor board containing a microprocessor having sixteen-bit bidirectional data terminals; at least two memory boards each containing separate eight-bit unidirectional Data In and Data Out lines, each memory board containing a memory array with an input and an output and unidirectional coupling means connecting the array to the Data In lines and to the Data Out lines to transfer data to and from the array; a connector board containing a standardized bus with a plurality of plug-in connectors to receive the processor board and memory boards, the connector board having separate eight-bit Data In and Data Out lines for connection to said lines on the memory boards; said unidirectional coupling means on the memory board connecting the eight-bit Data In and Data Out lines to the input and output, respectively, of the memory array on both of the memory boards, said unidirectional coupling means selectively connecting the eight-bit Data In and Data Out lines to the output and input, respectively, of the memory array on one of said memory boards whereby coupling is in opposite directions on said one of the memory boards relative to the other; and connecting means in the processor board to connect the sixteen-bit bidirectional data terminals to the two separate eight-bit Data In and Data Out lines of the connector board, said microprocessor including means for simultaneously receiving sixteen bits to or from said memory arrays by utilizing said Data In and Data Out lines as a sixteen-bit bidirectional bus.

4,213,178

INPUT/OUTPUT COMMAND TIMING MECHANISM

Mark F. Diez; David O. Lewis, and Thomas S. Robinson, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,672
Int. Cl.[2] G06F *3/00*
U.S. Cl. 364—200 **4 Claims**



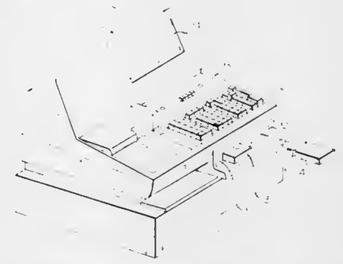
1. A circuit for overseeing input/output activity in a digital computing system comprising a processing unit, digital storage, and a plurality of input/output operation units, the input-/output operation units being connected to an input/output channel bus for communication with the processing unit and storage, the circuit comprising:
(a) a memory array having a plurality of storage locations capable of storing a plurality of subchannel status words, each subchannel status word corresponding to an input-/output operation unit and encoding control information for an input/output operation by the input/output operation unit, each subchannel status word having a timing monitor field including a current-count subfield, a count-limit subfield, and a command-in-progress subfield;
(b) load-timing-control-data circuit means connected to the central-processing unit and to the memory array for loading subchannel status words selected by the central processing unit with timing control data in response to control signals from the central processing unit, the count-limit subfield being loaded with data from the central processing unit encoding a count-limit number, the command-in-progress bit position being set to a state indicating that an input/output operation had been requested of the corresponding input/output operation unit, and the current-count subfield being cleared to a state encoding the number zero;
(c) an interval timer for emitting clock signals at timed intervals;
(d) count-incrementer circuit means connected to the interval timer and to the memory array for repetitively incrementing numbers encoded in the current-count subfields of subchannel status words for which the command-in-progress subfield indicates that an input/output operation has been requested, the repetitive incrementing being carried out in response to clock signals from the interval timer so that the number encoded in the current-count subfield of a particular subchannel status word measures the approximate time from the most recent request to the corresponding input/output operation unit for an input-/output operation;
(e) comparator-search circuit means for testing each subchannel status word for which the command-in-progress bit position indicates an input/output operation request has been made by comparing the number encoded in the current-count subfield with the number encoded in the count-limit subfield and for generating a response overdue signal if the count limit has been exceeded; and
(f) command-end circuit means connected to the input/output channel bus and to the memory array for accessing subchannel status words identified over the input/output channel bus to clear the command-in-progress subfield to a state indicating that the request for an input/output operation has been satisfied.

4,213,179

DATA PROCESSING APPARATUS FOR ELECTRONIC CASHIER REGISTERS

Koichi Hamano; Takao Morimoto; Junko Watanabe; Kaoru Ono, and Norio Yagi, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1978, Ser. No. 944,591
Claims priority, application Japan, Oct. 8, 1977, 52-121101; Oct. 8, 1977, 52-121104
Int. Cl.[2] G06F *15/02, 15/20*
U.S. Cl. 364—405 **6 Claims**



1. A data processing apparatus for an electronic cash register comprising:
a keyboard including a plurality of entry keys, a store key and a plurality of keys for sales information selection;
printing means;
memory means;
at least one memory pack for storing sales information;
at least one interface circuit with which said memory pack for storing sales information is mechanically, electrically and removably coupled; and
a data processing unit coupled to said keyboard, printing means and memory means, and being responsive to the operation of at least one of the sales information selection keys and said store key of said keyboard to energize said memory pack, and to read out the sales information corresponding to the operated sales information key and write the readout sales information into said memory means and to then apply a command signal to said printing means to cause said printing means to print said sales information stored in said memory means.

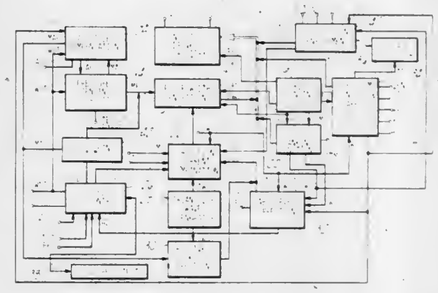
4,213,180

CLOSED LOOP SENSOR CONDITION DETECTOR

Roman O. Marchak, Northville, and Douglas R. Verner, Orchard Lake, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 918,297
Int. Cl.[2] G06F *15/46;* **F02M** *7/00*
U.S. Cl. 364—431 **18 Claims**

1. An electronic control unit for the management of the air/fuel ratio of an internal combustion engine; said electronic control unit comprising:
open loop calibration means for regulating the air/fuel ratio of the engine in response to sensed engine operating parameters, said open loop calibaration means regulating the air/fuel ratio by applying the sensed parameters to a schedule representative of the desired air/fuel ratio and generating an air/fuel ratio control signal therefrom;
closed loop calibration means for correcting said open loop calibration with a correction signal in response to the constituent composition of the exhaust gas of said internal combustion engine, said closed loop calibration means including an exhaust gas sensor for providing a bilevel voltage output where one voltage level indicates a rich



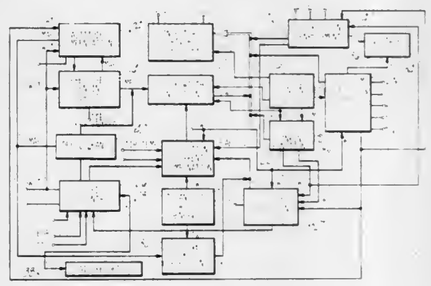
air/fuel ratio and the other voltage level indicates a lean air/fuel ratio; and
a failure indication means for sensing the failure of operation of the exhaust gas sensor and for providing a failure condition signal; said operational failure of the exhaust gas sensor being sensed by the lack of a transition between the output levels of the sensor during a delay time wherein said delay time is varied with at least one operating parameter of the internal combustion engine related to sensor operation.

4,213,181

ENERGY DISSIPATION CIRCUIT FOR ELECTROMAGNETIC INJECTION

Ralph W. Carp; Robert E. Weber, and William R. Groff, all of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 918,732
Int. Cl.[2] F02M *51/00*
U.S. Cl. 364—431 **10 Claims**



1. An electronic fuel management system for regulating the air/fuel ratio of an internal combustion engine, said management system comprising:
computational circuit means for calculating a fuel pulse signal whose duration is dependent upon at least one operational parameter of the internal combustion engine;
injector driver means, responsive to said fuel pulse signal from the computational circuit means, for opening and closing a plurality of solenoid operated injector valves

with an injector driver signal having a leading and trailing edge; and

energy dissipation means for dissipating the energy stored in the inductance of said solenoids upon deenergization of the solenoids, wherein said energy dissipation speeds up one of the opening and closing of the valves at one of the leading and trailing edges of the injector driver signal, said energy dissipation means including:

an active power device, for dissipating said stored energy, whose conductance between its power terminals is controlled by a predetermined voltage connected to a control terminal of said power device, at least one of said power terminals electrically coupled to said inductance, wherein said predetermined voltage is generated by the collapsing field of said solenoids and causes the power device to dissipate the stored energy at a rate dependent upon the voltage and the gain of the active device.

4,213,182

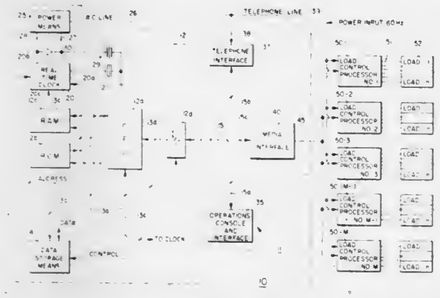
PROGRAMMABLE ENERGY LOAD CONTROLLER SYSTEM AND METHODS

Charles W. Eichelberger, and Edward B. Miller, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 871,989, Jan. 24, 1978, abandoned. This application Dec. 6, 1978, Ser. No. 966,816

Int. Cl.[2] G01R *21/00;* **G06F** *15/06*

U.S. Cl. 364—493 **43 Claims**



1. A system for programmably controlling the energy utilization condition of a multiplicity of loads, comprising:

a plurality of load control processors, each associated with at least one of said loads and adapted to enable the associated loads individually to a desired one of a plurality of energy utilization conditions, each load control processor having a unique address assigned thereto;

a central facility including memory means for storing data defining each of a plurality of sectors, each sector including at least one different one of said multiplicity of loads, said memory means also for storing data for at least one map defining the energy utilization conditions of a plurality of loads during a particular time interval;

a real-time clock;

central processing unit (CPU) means for addressing said real-time clock to receive time data for comparison agains: the particular time interval associated with each map stored in said memory means, said CPU means selecting that one of said maps to be currently enabled responsive to a favorable comparison of the time data and the map time interval; and

first means for transmitting data from said central facility to said plurality of load control processors;

said CPU means controlling said first means to sequentially transmit the unique address of a plurality of load control processors and data for causing each addressed load control processor to implement the energy utilization condition of loads coupled thereto in accordance with that one of said maps then required to be enabled responsive to the favorable time comparison.

4,213,183

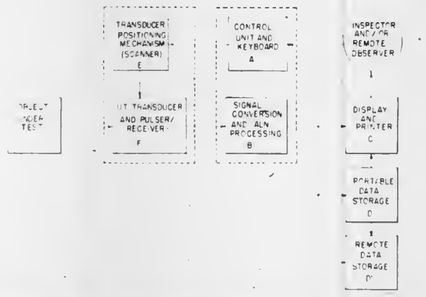
SYSTEM FOR NONDESTRUCTIVE EVALUATION OF MATERIAL FLAW CHARACTERISTICS

Roger L. Barron, Annandale, Va.; Anthony N. Mucciardi, Silver Spring, Md., and Claire L. Brown, Vienna, Va., assignors to Adaptronics, Inc., McLean, Va.

Continuation of Ser. No. 838,169, Sep. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 825,107, Aug. 16, 1977, abandoned. This application Mar. 22, 1979, Ser. No. 22,753

Int. Cl.[2] G01N *29/04*

U.S. Cl. 364—507 **22 Claims**



1. A method of nondestructive testing and evaluation of signals representative of characteristics of an object under test, which comprises the steps of:

(a) providing a data base comprising data indicative of predetermined characteristics of said object under test,

(b) positioning transducer means relative to said object under test in response to data in said data base,

(c) receiving an energy waveform emanating from said object under test at said transducer means after said positioning,

(d) performing an analysis at selected points on said waveform to extract waveform features thereof,

(e) comparing the extracted waveform features of said analysis with said data base by a cluster test,

(f) classifying said wav. form features from said comparison, and

(g) indicating the existence and parameters of said characteristics of said object under rest from said classifying.

4,213,184

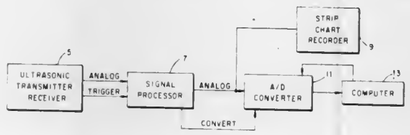
SIGNAL PROCESSOR FOR PROCESSING ULTRASONIC RECEIVER SIGNALS

George E. Fasching, Morgantown, W. Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 10, 1978, Ser. No. 949,598

Int. Cl.[2] G06G *7/18;* **G06J** *1/00*

U.S. Cl. 364—574 **7 Claims**



1. A signal processor for processing the output signals from an ultrasonic receiver including an analog output signal and a reference trigger signal to reduce random noise contained in said signal relative to the desired useful signal, comprising:

means for repeatedly sampling said analog signal a selected number of sampling times in response to sample command signals applied thereto at each of a plurality of separate points in time of said analog singal relative to said reference trigger signal and temporarily holding the sample values;

an integrator connected to receive said sample values;

a recording means for separately recording the integral values of each of said plurality of separate points of sampling of said analog signal;

relay means for transferring integral values of said integrator to said recording means in response to a relay control signal; and

timing control means operable in response to said reference trigger signal for generating and applying said sample command signals to said sampling means and generating said relay control signal applied to said relay means each time the selected number of samples of said plurality of separate points of sampling of said analog signal is completed.

4,213,185

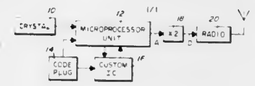
MICROPROCESSOR TONE SYNTHESIZER WITH REDUCED QUANTIZATION ERROR

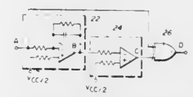
David L. Muri, Lauderdale Lakes, and James T. Doyle, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 18, 1978, Ser. No. 943,037

Int. Cl.[2] G06F *1/02;* **H03B** *19/00*

U.S. Cl. 364—721 **4 Claims**





1. An encoder for use in communications apparatus and comprising in combination:

a stable signal source for supplying high frequency clock signals at a predetermined frequency;

a code source for supplying data signals representative of a predetermined set of tone codes;

synthesizer means coupled to the output of said stable signal source for receiving said clock signals, and coupled to the code source for receiving said tone code data signals and for providing first square wave signals at frequencies which are one-half of the frequencies called for by said tone codes;

multiplier means coupled to an output of the synthesizer means and comprising integrator means for integrating the first square wave signals, zero crossing detector means coupled to the output of the integrator means, logic gating means coupled to receive the output signals of the detector means and the first square waves for providing second square wave signals at the frequencies called for by said tone codes.

4,213,186

PULSE INTERPOLATION SYSTEM

Kazuo Murata, and Terukazu Kito, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1978, Ser. No. 932,186

Claims priority, application Japan, Aug. 19, 1977, 52-98768

Int. Cl.[2] G06F *15/46*

U.S. Cl. 364—723 **5 Claims**



1. A pulse interpolation system comprising

(a) a pulse generator for providing reference instruction pulses,

(b) a counter for counting the pulses from the pulse generator,

(c) a register for storing the content of said counter and for resetting said counter to zero,

(d) a first register group for storing a predetermined value from a programmed instruction tape,

(e) a second register group for storing a temporary value,

(f) a multiplier for providing the product of the output of the first register group and the output of said register,

(g) an adder for obtaining the sum of the output of the second register group and the product of said multiplier and applying the remainder of the sum of the addition to said second register group with the integer part of the addition producing an output interpolation numeral,

(h) a converter for changing said interpolation numeral to interpolation pulses,

(i) means responsive to said converter for operating through an interpolation cycle.

4,213,187

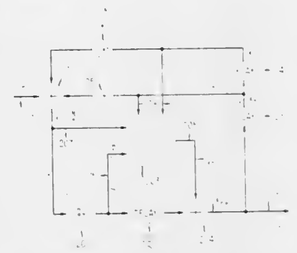
DIGITAL FILTERS WITH CONTROL OF LIMIT CYCLES

Victor B. Lawrence, Matawan, and Debasis Mitra, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 14, 1978, Ser. No. 969,416

Int. Cl.[2] G06F *15/34, 7/48*

U.S. Cl. 364—724 **9 Claims**



1. A second order recursive digital filter adapted to receive an input signal U_n including

a quantizer **(201)** adapted to provide a fixed length output word p in response to an input word y, where $p<y<p+k$ and k is the quantizer step size;

means **(103, 104)** for providing once and twice delayed

versions (X_n and X_{n-1}, respectively) of the output X_{n+1} of said filter;

means (**105**, **106**) for forming the products of said once and twice delayed versions with multiplier coefficients a and b, respectively;

means (**107**) for combining said products and said input signal U_n to generate said input word y; and

means (**204**) for selecting said filter output X_{n+1} as p or p+k,

CHARACTERIZED BY

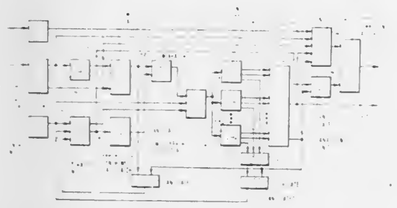
Nogic means (**203**) for selecting $X_{n+1}=p+k$ if (**1**) $X_{n-1}>p+k$ or (**2**) $X_{n-1}=p$ and $|X_n+Sgn(a)X_{n-1}| \geqq T$ or (**3**) if $X_{n-1}=p+k$ and $|X_n+Sgn(a)X_{n-1}|<T$, where T is a fixed threshold value and Sgn(a) is the sign of said multiplier coefficient a.

4,213,188

APPARATUS FOR DETECTING AND CORRECTING ERRORS IN ARITHMETIC PROCESSING OF DATA REPRESENTED IN THE NUMERICAL SYSTEM OF RESIDUAL CLASSES

Gennady G. Smolko, 103536, korpus 501, kv. 19; Izrail Y. Akushsky, Volokolamskoe shosse, 1, kv. 119, and Vladimir M. Burtsev, ulitsa 26 Bakinskikh Komissarov, 11, kv. 8, all of Moscow, U.S.S.R.

Filed Aug. 30, 1978, Ser. No. 937,930
Int. Cl.² G06F *11/10*
U.S. Cl. 364—739 **7 Claims**



1. An apparatus for detecting and correcting errors in the arithmetic processing of data represented in the numerical system of residual classes, wherein the result of each arithmetic operation is an operand under check (hereinafter called the check operand) comprised of the residues to the bases in the working range and of the real residue to a check base, said apparatus comprising:

first and second input buses;

a register to store said check operand having an input and outputs, said input being coupled to said first input bus;

a constant storage unit to store the constants to be added algebraically to said check operand so that possible errors occurring in it are corrected and to store the binary digits which determine erroneous residues, said constant storage unit having inputs and outputs;

an error correcting adder to provide the corrected operand by adding said check operand to the constant determined by an error in the check operand, said error correcting adder having inputs and an output;

a single error detector to discriminate the erroneous residue of the check operand by multiple analysis of the binary digit found at a location in which an error is assumed to be in the check operand, said single error detector having an input and outputs;

an analyzing unit to signal the occurrence of errors in the check operand, said analyzing unit having inputs and outputs, said first one of said outputs being coupled to a first output bus;

said apparatus further comprising:

a residue calculator to calculate the residue of the check operand to the check base with which the check operand is provided to allow for the detection of errors in it; an input and an output of said residue calculator, said input being coupled to said first output of said register;

an error syndrome calculator; an input and an output of said error syndrome calculator, said input being coupled to said first output of said constant storage unit;

a modulo adder to calculate the syndrome of the check operand by algebraically adding the real residue to the check base and the calculated residue to the check base of the check operand; inputs and an output of said modulo adder, said first one of said inputs being coupled to said output of said residue calculator, and said second input being coupled to said second output of said register;

a comparator responsive to the representations of the error syndrome and the syndrome of the check operand to determine whether or not an error takes place in the latter; inputs and an output of said comparator, said first one of said inputs being coupled to said outputs of said modulo adder, and said second input being coupled to said output of said error syndrome calculator;

first, second and third groups of AND gates each provided with inputs and an output;

a group of OR gates; inputs and and output of said group of OR gates;

k multiple error detectors to discriminate the erroneous residues of the check operand by multiple analysis of the binary digit found at the locations in which errors are assumed to be in the check operand depending on the error syndromes; an input and outputs of each of said multiple error detectors, said inputs being coupled with said input of said single error detector and coupled, via said first group of AND gates, to said output of said comparator, said first and second outputs of said single error detector and of said k multiple error detectors coupled to said inputs of said analyzing unit; said inputs of said group of OR gates coupled to said third outputs of said analyzing unit; said output of said group of OR gates coupled to said second input of said constant storage unit via said second group of AND gates;

a logic unit which is activated after the locations of the errors in the check operand have been established and allows the application of the check operand to said error correcting adder; inputs and an output of said logic unit; said first and second ones of said inputs coupled to said outputs of said register; said third and fourth inputs coupled to said first and second outputs of said analyzing unit; and said output coupled to said first input of said error correcting adder;

a control flip-flop to select the operating modes of the apparatus; an input and an output of said control flip-flop; said input coupled to said second input bus; said output coupled to said fifth input of said logic unit;

a control unit to control the operation of the means responsible for the correction of the erroneous operand; an output of said control unit; said output coupled to said first input of said constant storage unit and to said second input of said first group of AND gates; said third input of said first group of AND gates coupled to said second output of said constant storage unit; said third input of said constant storage unit coupled to said output of said third group of AND gates; said first input of said third group of AND gates coupled to said output of said modulo adder; said second input of said third group of AND gates coupled to said second output of said analyzing unit;

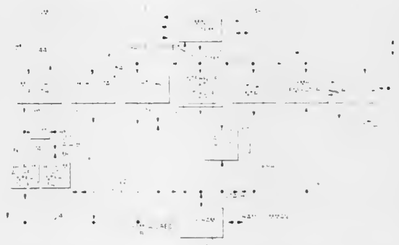
a fourth group of AND gates; inputs and an output of said fourth group of AND gates; said first input coupled to said output of said constant storage unit; said second input coupled to said second output of said analyzing unit; said output coupled to said second input of said error correcting adder; and said output of said error correcting adder coupled to a second output bus.

4,213,189

REACTIVE COMPUTER SYSTEM ADAPTIVE TO A PLURALITY OF PROGRAM INPUTS

David J. Mueller, Elk Grove Village; Daniel G. Prysby, Chicago; John V. Moravec, Berwyn, all of Ill., and George A. Watson, Tustin, Calif., assignors to Admiral Corporation, Schaumburg, Ill.

Filed Jun. 13, 1977, Ser. No. 806,304
Int. Cl.² G06F *3/00;* **G06K** *15/20*
U.S. Cl. 364—100 **53 Claims**



1. A data processing and display system for transferring data between said system and a data storage unit, the data storage unit storing a set of characters from which a plurality of composite images may be formed, image data identifying the arrangement of the characters to form a desired image, and color information identifying a palette of colors from which the characters may be colored, said system comprising:

(a) color display means for displaying images of a selected arrangement of characters chosen from the set and characters colored with selected colors from the palette;

(b) means for reading data from the data storage unit;

(c) addressable storage means coupled to said reading means for receiving therefrom and for storing data derived from the storage unit indicative of the set of characters and the palette of colors; and

(d) display control means for first addressing the image data in a first portion of said addressable storage means to obtain a first readout, and secondly for using the first readout data and being coupled to said color display means to receive data identifying the currently displayed image by said color display means for addressing a second portion of said storage means to obtain signals indicative of the character color then to be applied to and displayed by said color display means.

4,213,190

PROGRAMMED COPIER CONTROL

David E. Finlay, Boulder; Wayne E. Robbins, Longmont, and Terence Travis, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

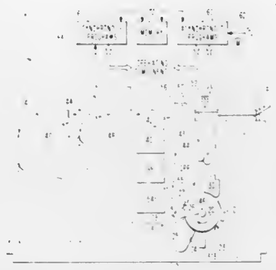
Filed Aug. 28, 1978, Ser. No. 937,396
Int. Cl.² G03G *15/00*
U.S. Cl. 364—900 **9 Claims**

1. A copy production machine having copy production means, image input means coupled to said copy production means for supplying images thereto, and output means for receiving copies produced by said copy producing portion, and control panel means for providing input parameters, characterized by;

programmed control means for controlling the machine and having a read/write memory means for storing status signals representative of machine copy producing states and programmed control states,

asynchronous means in said programmed control for periodically and asynchronously scanning machine states including machine operating states and control panel parameters, said asynchronous means including means in communication relations with said memory means for exchanging signals therewith representative of the machine states, and

synchronous means responsive to said copy production means for operating a predetermined portion of said machine in synchronism with said copy production means and including means in communication relationship with



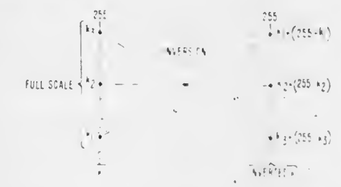
said memory means for exchanging data signals therewith whereby said asynchronous and synchronous means operate independently except for communication therebetween using said memory means wherein both said means exchange signals representative of the execution of the respective functions therein.

4,213,191

VARIABLE LENGTH DELAY LINE

Robert S. Gemp, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 774,726, Mar. 7, 1977, Pat. No. 4,131,936.
This application Mar. 16, 1978, Ser. No. 887,288
Int. Cl.² G11C *13/00*
U.S. Cl. 365—73 **3 Claims**



1. In a digital delay line apparatus including a delay line having a plurality of memory locations; and

means for addressing said memory locations in a write mode to store therein in a recirculated manner a digital signal and for addressing said memory locations in a read mode to retrieve the stored digital signal; the combination of:

free-running counter means for generating a first instantaneous count;

said addressing means being responsive to said first instantaneous count as a write address for said memory locations in the write mode for storing said digital signal; and

means responsive to said first instantaneous count and to a predetermined count for generating a second instantaneous count, said second instantaneous count differing from said first instantaneous count by said predetermined count;

said addressing means being responsive to said second instantaneous count as a read address for said memory locations in the read mode for retrieving said stored digital signal;

whereby said digital signal is retrieved with a delay equal to said predetermined count.

4,213,192

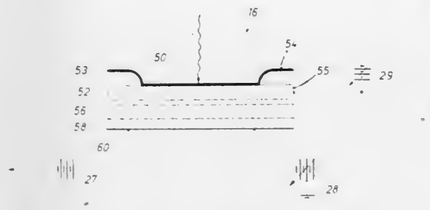
ELECTRON BEAM ACCESSED READ-WRITE-ERASE RANDOM ACCESS MEMORY

Alton O. Christensen, Sr., 3455 Homestead Rd. #47, Santa Clara, Calif. 95051

Continuation of Ser. No. 761,922, Jan. 24, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,501

Int. Cl.[2] G11C *11/21, 11/23*

U.S. Cl. 365—118 **27 Claims**



1. An electron beam storage apparatus comprising:

(a) an electron beam source which forms an electron beam directed toward a target;

(b) a target which is formed of a semiconductor into which the electron beam is directed forming ionized charged pairs therein, and further incorporating a dielectric adjacent to said semiconductor which dielectric stores charges therein from said adjacent semiconductor; and

(c) an accelerating voltage source connected to spaced terminals for applying an accelerating voltage for imparting energy to electrons of the electron beam sufficient to penetrate into said semiconductor, but which energy level is not sufficient to penetrate through said semiconductor to said dielectric layer.

4,213,193

HOLOGRAPHIC DATA STORAGE SYSTEMS

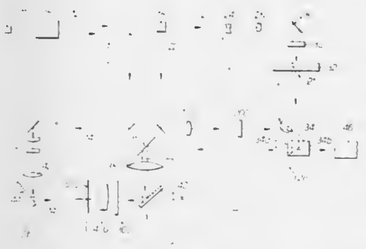
Douglas C. J. Reid, Moulton, and Peter Waterworth, Eastcote, Nr. Towcester, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Apr. 21, 1978, Ser. No. 898,888

Claims priority, application United Kingdom, Apr. 23, 1977, 16973/77

Int. Cl.[2] G11C *13/04*

U.S. Cl. 365—125 **8 Claims**



1. A holographic data storage system for the storage and retrieval of data which includes in combination input means adapted to produce a number of coherent beams; optical means for converting data into holographic form for illuminating a storage medium, said storage medium being adapted to store a number of data tracks, and capable of movement in a plane perpendicular to the plane of incidence; stepping means which is adapted to direct the number of beams produced by the input means on to the storage medium in a manner whereby a number of data tracks are recorded or retrieved, and read out means capable of controllable selective retrieval of data, in which said optical means comprises a first path for generating at least one reference beam, in which the object beams are directed onto the storage medium with a wavefront having a curvature which is substantially different from the wavefront of the at least one reference beam, thereby allowing said holograms to be overlapped on said storage medium while being discriminatable on replay.

4,213,194

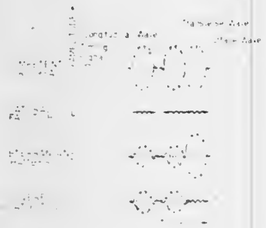
ACOUSTIC ARCHEOLOGICAL MAPPING METHOD

Eugene M. Spurlock, Menlo Park, Calif., and Carl W. Smith, Albuquerque, N. Mex., assignors to SRI International, Menlo Park, Calif.

Filed May 11, 1978, Ser. No. 904,748

Int. Cl.[2] G01V *1/20*

U.S. Cl. 367—14 **10 Claims**



8. In a method of near-surface underground acoustic mapping for locating surface faults and near-surface underground faults and voids, through which faults and voids substantially no acoustic wave energy is transmitted, the steps comprising,

generating pulse acoustic wave which include longitudinal, transverse and surface waves in rock at a transmitting site,

receiving at a plurality of receiving sites spaced from the transmitting site separately identifiable longitudinal, transverse and surface acoustic waves travelling near the surface of the earth from the transmitting site,

comparing the magnitude of separately identified transmitted longitudinal, transverse and surface acoustic waves received at the receiving sites, compensated for distance differences where said receiving sites are not equally spaced from the transmitting site, for identifying, and distinguishing between, surface faults and near-surface underground faults and voids.

4,213,195

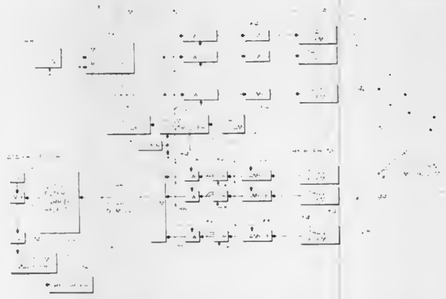
SONIC DIRECTION SYSTEM

Roger G. Pridham, Providence, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 12, 1976, Ser. No. 676,445

Int. Cl.[3] G01S *15/06*

U.S. Cl. 367—92 **5 Claims**



1. A system for measuring the direction of a source of radiant energy in a non-linear medium propagative of such radiant energy comprising:

means for projecting a beam of said radiant energy in a direction opposite said source;

means for directing a receiving beam into said projected beam to receive radiant energy scattered back toward said directing means by scattering mechanisms within said non-linear medium, said medium inducing a non-linear interaction between said projected beam of radiant energy and energy radiated by said source;

means for inhibiting the coupling of radiant energy into said receiving beam from a region within said projected beam, said region being between said projecting means and a predetermined distance therefrom, said predetermined distance being longer than a virtual end-fire array produced by said non-linear interaction; and

means coupled to said directing means for extracting data from signals of radiant energy within said receiving beam.

4,213,196

ULTRASONIC TYPE MOTION DETECTOR

Mikio Kondo, Tsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 21, 1978, Ser. No. 879,593

Int. Cl.[2] G01D *21/04*

U.S. Cl. 367—94 **4 Claims**



1. An ultrasonic type motion detector, wherein an ultrasonic wave is generated by a transmitting element driven with an output signal of an oscillating circuit which is frequency-divided by a frequency dividing circuit, an output signal of an element for receiving said generated ultrasonic wave is amplified by an amplifying circuit, the frequencies of the transmitted wave signal and the received wave signal are detected by a detecting section comprising a quadrature detecting circuit and phase difference detecting circuit for producing a pair of output signals, one of the pair of output signals only is inverted and combined with the other output signal to provide a standard voltage source, the respective output signals of the detecting section are each integrated in an integrating circuit to produce first and second threshold voltage signals which are respectively fed to a pair of comparators which are connected in parallel with each other and which have the output voltage signal of the standard voltage source connected thereto as input signals, to thereby produce an output signal when the output voltage signal of the standard voltage source does not lie between said first and second threshold voltage levels.

4,213,197

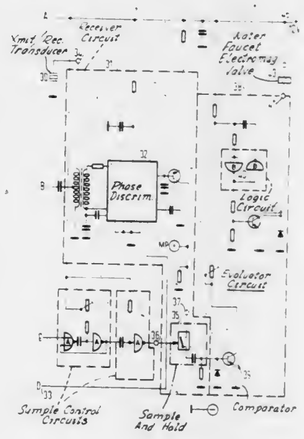
CIRCUIT ARRANGEMENT OF AN ULTRASONIC-PRESENCE MOTION DETECTOR, PARTICULARLY FOR A NON-CONTACT CONTROL OF A WATER FAUCET

Valentin Magori, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 13, 1978, Ser. No. 895,950

Int. Cl.[2] G01S *9/66*

U.S. Cl. 367—94 **3 Claims**



1. In a circuit arrangement suitable for ultrasonic-presence motion detection to operate an electromechanical valve of a water faucet, and being of the type having an ultrasonic transducer as a transmitting transducer and as a receiving transducer, in which an oscillator produces an AC voltage for the transmitting transducer and a gate circuit is provided in order to chronologically control the feeding of wave trains of the oscillator AC voltage to the transducer, and wherein a receiving circuit is connected to the transducer and obtains a received signal therefrom, and wherein an evaluation circuit is provided, the improvement therein comprising:

means connected to said gate circuit and operable to produce a gate pulse to feed the oscillator AC voltage to the transducer for a period of time determined by the length of the gate pulse which defines the length of a distance range over which said circuit arrangement is responsive to motion;

a phase discriminator in the receiver circuit connected to said gate circuit to receive the oscillator AC voltage and connected to said transducer for receiving the respective received signal;

an electronic storage circuit including a sample and hold circuit connected to said phase discriminator for storing the output signal thereof at prescribably periodically recurring time points which are determined by read-out signals applied to said sample and hold circuit;

means connected to said sample and hold circuit for generating the read-out pulse signals; and

a comparator circuit in said evaluation circuit connected to said sample and hold circuit for comparing signal values stored by said sample and hold circuit, said comparator circuit having a threshold function and means operable to provide an output signal to the electromechanical valve of the water faucet indicative of the presence phenomenon in response to comparison in which the compared values

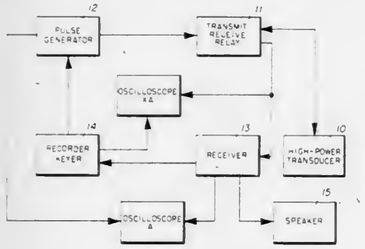
differ from one another by more than a predetermined value.

4,213,198

METHOD FOR CLASSIFICATION OF SONAR ECHOES

Louis R. Padberg, Jr., San Diego, Calif.; Frederick D. Parker, late of San Diego, Calif. (by Mrs. Frederick D. Parker, executrix); Carl L. Schaniel, Jr., San Diego, Calif., and Kenneth D. Kleager, La Mesa, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 20, 1955, Ser. No. 516,808
Int. Cl.[2] G01S *9/68*
U.S. Cl. 367—113 **5 Claims**



1. A method for distinguishing between submarine and non-submarine sonar targets comprising the steps of producing a series of permanent displays of sonar target echoes having fixed electrical characteristics by projecting a beam of energy pulses of more than one and less than ten milliseconds duration toward a known submarine target of predetermined range along a number of converging paths, then transmitting a succession of energy pulses of the same duration toward an unknown target along a number of converging paths, producing successive signals of durations which successively vary in accordance with the extent of said target along consecutive pulse paths, indicating the maximum and minimum signal duration, and gating a series of sonar echo displays responsive to the same electrical characteristics as those producing the permanent displays, of said unknown target between said maximum and minimum signal duration whereby a homologous echo production of the permanent displays is obtained only when echo is from said submarine type.

4,213,199

ACOUSTIC DATA LINK

Kenneth B. Labaw, Ridgecrest, Calif.; Gary Lowe, Prague, Okla., and Myren L. Iverson, Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 20, 1978, Ser. No. 944,118
Int. Cl.[2] H04B *11/00*
U.S. Cl. 367—117 **1 Claim**

1. An acoustic data communication link for a frame ship comprising:

a plurality of signal generators located at predetermined sites through said ship for generating predetermined signals characteristic of each site upon the ocurrence of a predetermined event at any of said sites;

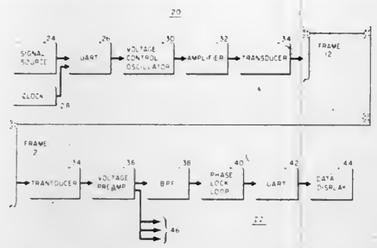
a psuedo-noise modulator connected to each signal generator for encoding said predetermined signals;

an emitting piezoelectric crystal transducer connected between each modulator and said frame for inputting said coded signals as physical vibrations in said frame;

a receiving piezoelectric crystal transducer at a predetermined location on said frame for receiving said physical vibrations and converting them back into said coded signals;

a bandpass filter connected to said receiving transducer for eliminating background noise not in the desired frequency range of said coded signal;

a pseudo-noise demodulator connected to said band pass



filter for decoding said filtered reconverted coded signal; and

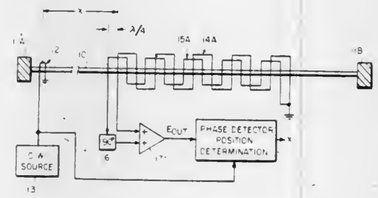
means for displaying said identified source connected to said demodulator.

4,213,200

POSITION DETERMINING DEVICES

Leslie E. Matson, Jr., Weston, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation of Ser. No. 851,886, Nov. 16, 1977, abandoned.
This application Mar. 8, 1979, Ser. No. 18,522
Int. Cl.[2] G01S *1/72*
U.S. Cl. 367—117 **6 Claims**



1. A position determining apparatus comprising

at least one delay line element;

at least one driver transducer means coupled to said delay element at a first position;

means for activating said driver transducer means to produce a continuous-wave signal which travels in said delay element and has a phase which varies linearly with the distance traveled along said delay element;

first receiver transducer means having a periodic configuration and coupled to said delay element at a second position to be determined relative to said driver transducer means, said first receiver transducer means detecting said continuous-wave signal at said first receiver transducer means and detecting a reflected continuous-wave signal at said first receiver transducer means, which reflected signal travels in said delay element and has a phase which varies linearly with distance traveled along said delay element, the detected continuous-wave output signal from said first receiver transducer means having a phase which varies non-linearly with distance along the delay element;

second receiver transducer means having a periodic configuration substantially the same as said first receiver transducer and coupled to said delay element at a third position which is displaced from said second position by a distance equal to g times $\lambda/4$ where λ is the wave length of the continuous-wave signal produced by said activated driver transducer means and g has a value which is between zero and about unity, said second receiver transducer means detecting said continuous-wave signal at said second receiver transducer means, the detected continuous-wave output signal from said second receiver transducer means having a phase which varies non-linearly with distance along the delay element;

means responsive to the detected continuous-wave output signal from said second receiver transducer means for phase-shifting said detected signal by g times 90° to produce a phase-shifted, detected signal;

means for summing the detected continuous-wave output signal from said first receiver transducer means and the phase-shifted, detected output signal from said second receiver transducer means to produce a combined detected output signal, the phase of which varies linearly with distance along the delay element; and

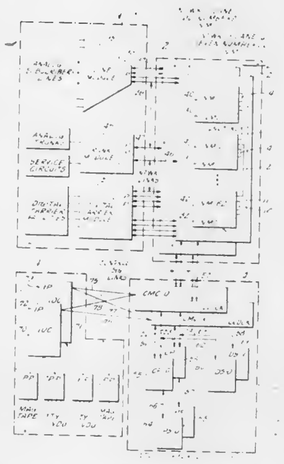
means responsive to the phase of said combined detected output signal and to the phase of said activated continuous-wave signal at said driver transducer means for determining the position of said first receiver transducer means relative to said driver transducer means.

4,213,201

MODULAR TIME DIVISION SWITCHING SYSTEM

Real Gagnier, Hull; Ernst A. Munter; John B. Bourne, both of Ottawa; Ceasar Cesaratto, Alymer; Conrad W. Lewis, Ottawa; Brian T. Paley, Munster; Robert G. Wood, and John J. den Otter, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 28, 1978, Ser. No. 919,901
Claims priority, application Canada, Jun. 5, 1978, 304726
Int. Cl.[2] H04Q *11/04*
U.S. Cl. 370—62 **40 Claims**



1. In a time-division electronic communication switching system comprising a central processing unit, a network of time-switch containing network modules and an array of peripheral modules each serving for connecting a multiplicity of two-way communication channels with the switching system,

each peripheral module being connected by at least one time-division multiplex two-way link with, respectively, at least one network module of said network,

each network module having switches organized in at least one stage of incoming time-division switching and switches organized in at least one stage of outgoing time-division switching and having a peripheral side at which said multiplex two-way links are connected to switches of said incoming and outgoing switching stages and having a junctor side at which time-division multiplex junctors each interconnect switches respectively of said incoming and outgoing switching stages of said network modules,

said peripheral modules being constituted to provide time-multiplexed digitally coded bytes of communication traffic of said network modules for passage through time-switched connections and to receive such bytes from said network modules after passage through time-switched connections,

said switching system having the improvement which consists in that:

each said network module has a network message controller, each of which is connected through a two-way control signal link with said central processing unit and is capable of recognizing at least some defective received messages as being defective, of commanding a repetition of a message recognized as defective when first received and of repeating the sending of a message in response to an indication that it was defectively received;

said central processing unit is connected so that it exchanges signals, including system control signals, with said peripheral modules only through said network message controllers, and also so as to control said switches of said network modules through said control signal links and said network message controllers;

at least one time-division serial digital data channel in each of said multiplex links connects, in each case, the control circuits of one of said peripheral modules with one of said network message controllers for exchanging signals with said central processing unit, and

each said control signal link connecting one of said network message controllers with said central processing unit serves both for transmission of signals regarding the setting of the time-switches of the network module of which said one of said network message controllers forms a part, and also for transmission of signals passing between said central processing unit and any of those of said peripheral modules that are connected to said one of said network message controllers.

20. In a time-division telephone switching system comprising duplicate central processing units, duplicate networks of time-switch-containing network modules and an array of peripheral modules each serving for connecting a multiplicity of two-way telephone channels with the switching system,

each peripheral module being connected by at least one time-division multiplex two-way network link with a network module of the other of said networks which is connected to the same peripheral module as said one network module of said one of said networks,

each network module having switches organized in at least one stage of outgoing time-division switching and switches organized in at least one stage of outgoing time-division switching and having a peripheral side at which said multiplex two-way links are connected to said switches of said incoming and outgoing switching stages and having a junctor side at which time-division multiplex junctors each interconnect switches respectively of said incoming and outgoing switching stages of the network modules,

at least some peripheral modules having means for encoding speech signals into successions of PCM codes speech samples, for decoding PCM speech sample successions into speech signals, and for time-multiplexing and demultiplexing PCM speech sample successions, so that all speech signals provided to network modules are in the form of PCM speech samples, said switching system having the improvement which consists in that: each network module has a network message controller each of which is connected through a two-way control signal link with each of said central processing units and is capable of recognizing at least some defective received messages as being defective, of commanding a repetition of a message recognized as defective when first received, and of repeating the sending of a message in response to an indication that it was defectively received;

said central processing units are connected so that they can exchange signals, including system control signals, with said peripheral modules only through said network message controllers, and also so as to control said switches of

said network modules through said control signal links and said network message controllers;

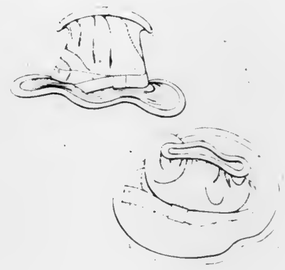
at least one time-division serial digital data channel in each of said time-division multiplex network links connects, in each case, the control circuits of one of said peripheral modules with one of said network message controllers for exchanging signals with one of said central processing units, and

each said control signal link connecting one of said network message controllers with one of said central processing units serves both for transmission of signals regarding the setting of the time-switches of the network module of which one of said network message controllers forms a part and also for transmission of signals passing between said one of said central processing units and any of those of said peripheral modules that are connected to said one of said network message controllers.

DESIGNS

JULY 15, 1980

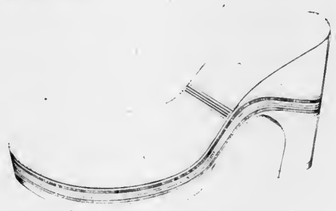
255,840
CRUSHABLE HAT
Patricia A. Day, 220 W. Seventh St., The Dalles, Oreg. 97058
Filed Dec. 22, 1978, Ser. No. 972,219
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—257



255,841
SHOE BOTTOM
Paul R. Goldman, 8 Joyce Ter., Andover, Mass. 01810
Filed Sep. 19, 1977, Ser. No. 834,371
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



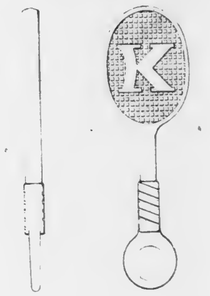
255,842
SHOE BOTTOM
Paul R. Goldman, 8 Joyce Ter., Andover, Mass. 01810
Filed Sep. 19, 1977, Ser. No. 834,383
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



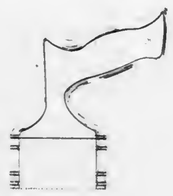
255,843
SHOE BOTTOM
Paul R. Goldman, 8 Joyce Ter., Andover, Mass. 01810
Filed Sep. 19, 1977, Ser. No. 834,397
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



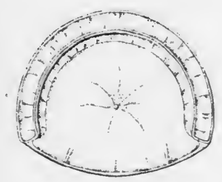
255,844
PULL FOR A ZIPPER SLIDE
Katsuhiko Otani, Tokyo, Japan, assignor to Kabushiki Kaisha Otani, Tokyo, Japan
Filed Dec. 8, 1978, Ser. No. 968,095
Claims priority, application Japan, Aug. 21, 1978, 53-35316
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—415



255,845
PISTOL GRIP BRUSH
Edward A. Wood, 41 Brougham St., New Plymouth, New Zealand
Filed Aug. 31, 1978, Ser. No. 938,535
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D4—38



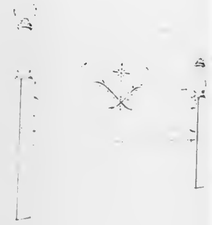
255,846
CHAIR
Michael A. Bick, Manhattan Beach, Calif., assignor to Shelly & Anderson Furniture Mfg. Co., Inc., Compton, Calif.
Filed Feb. 3, 1978, Ser. No. 874,820
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



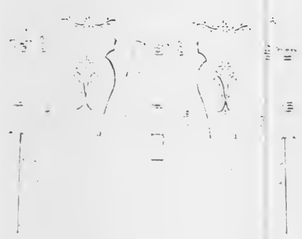
255,847
BED HEADBOARD
Melbourne F. Smith, Jr., Rte. 10, Box 879, Hickory, N.C. 28601
Filed Oct. 30, 1978, Ser. No. 956,209
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



255,848
BED HEADBOARD
Melbourne F. Smith, Jr., Rte. 10, Box 879, Hickory, N.C. 28601
Filed Oct. 30, 1978, Ser. No. 956,210
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



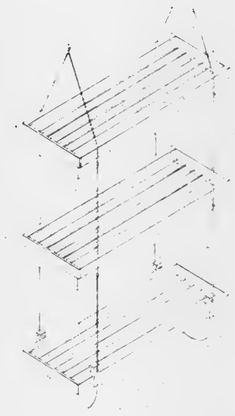
255,849
BED HEADBOARD
Melbourne F. Smith, Jr., Rte. 10, Box 879, Hickory, N.C. 28601
Filed Oct. 30, 1978, Ser. No. 956,212
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



255,850
RECORD TURNTABLE SUPPORT STAND
Richard C. Meyer, 2757 Cormvey Ct., Marietta, Ga. 30062
Filed Apr. 24, 1978, Ser. No. 899,023
Term of patent 14 years
Int. Cl. D6—*06, 03*
U.S. Cl. D6—113



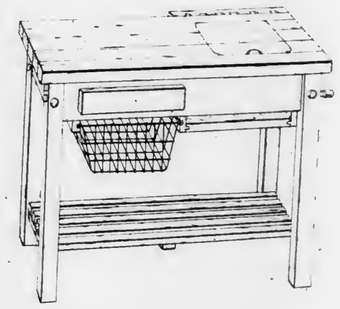
255,851
LIGHTED DISPLAY FIXTURE
Roy B. Crane, Wilmington, Mass., assignor to Keene Corporation, New York, N.Y.
Filed Apr. 26, 1978, Ser. No. 900,290
Term of patent 14 years
Int. Cl. D6—*04;* D26—*05;* D20—*02*
U.S. Cl. D6—113



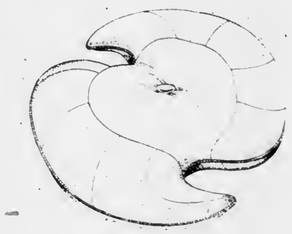
255,852
DISPENSER FOR TEA BAGS AND THE LIKE
Wilfred J. Fogarty, 1236 Deerpark Dr., No. 70, Fullerton, Calif. 92631
Filed Jul. 13, 1978, Ser. No. 924,293
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



255,853
FOOD PROCESSING TABLE
Philip L. Tome, Malta, Ohio, assignor to Taylor Woodcraft, Malta, Ohio
Continuation-in-part of Ser. No. 891,941, Mar. 30, 1978. This application Dec. 18, 1978, Ser. No. 970,371
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



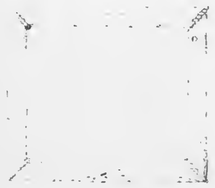
255,854
SWIRL PILLOW
Annette J. Gay, Phoenix, Ariz., assignor to Josephine C. Lijewski, a part interest
Filed Jun. 15, 1978, Ser. No. 915,954
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



255,855
PICTURE FRAME
Rudolf A. Glogovcsan, 17701 Miranda St., Encino, Calif. 91316
Filed Nov. 6, 1978, Ser. No. 957,879
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—235



255,856
PICTURE FRAME OR THE LIKE
James E. Higson, Rte. 5, Box 526, Greenville, N.C. 27602
Filed Jul. 26, 1978, Ser. No. 928,255
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—242



255,857
SERVING PLATE
Joerg Zimmermann, Uhingen, Fed. Rep. of Germany, assignor to Wurttenbergische Metallwaren Fabrik, Fed. Rep. of Germany
Filed Mar. 27, 1978, Ser. No. 890,228
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—1

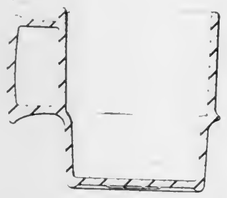




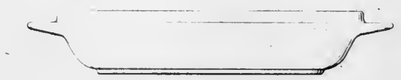


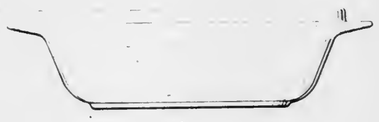
255,858
CUP OR THE LIKE
Harold P. Ashton, Providence, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 26, 1976, Ser. No. 652,454
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9





255,859
GLASS DISH
Allen J. Samuels, Ann Arbor, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 21, 1978, Ser. No. 935,446
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—28



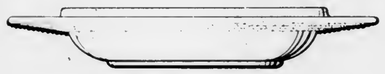




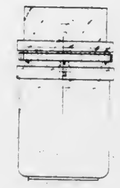
255,860
GLASS PLATE
Allen J. Samuels, Ann Arbor, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 21, 1978, Ser. No. 935,448
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—28







255,861
CHEESE GRATER
Junior C. S. Hsu, 4th Floor, No. 16, Min Tsu East Rd., Taipei, Taiwan
Filed Jun. 23, 1978, Ser. No. 918,507
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47





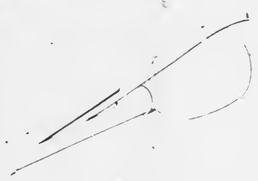
255,862
CUP
Kenneth Ferrin, Aspen, Colo., assignor to East Hampton Industries, Inc.
Filed Aug. 10, 1978, Ser. No. 932,756
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—66



255,863
TRANSPORTABLE OUTDOOR BARBECUE GRILL
Ben F. Futch, P.O. Box 129, Valdosta, Ga. 31601
Filed Jun. 21, 1978, Ser. No. 917,680
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—108



255,864
AIR-OPERATED CLEANER
Burton K. Bennett, 2011 L W. Cone Blvd., Greensboro, N.C. 27408
Filed Aug. 28, 1978, Ser. No. 937,157
Term of patent 14 years
Int. Cl. D7—*05;* D15—*05*
U.S. Cl. D7—164



255,865
TRASH CAN COVER
Robert G. Hartman, and Clayton J. Ammondson, both of Reidsville, N.C., assignors to Zarn, Inc., Reidsville, N.C.
Filed Feb. 13, 1978, Ser. No. 877,424
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194



255,866
BOTTLE OPENER
Mihail Panos, 600 N. Harbor Blvd., La Habra, Calif. 90631
Filed Oct. 10, 1978, Ser. No. 949,775
Term of patent 14 years
Int. Cl. D08—*99*
U.S. Cl. D8—38

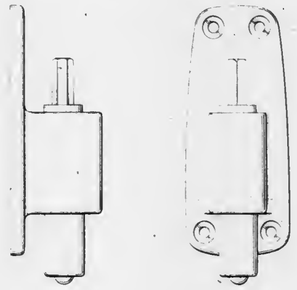




255,867
RAZOR KNIFE WITH FRANGIBLE SHEATH
Clemens A. Iten, Staunton, Va., assignor to American Safety Razor Company, Verona, Va.
Filed Apr. 12, 1978, Ser. No. 895,876
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98



255,868
HINGE DESIGN
Irving L. Berkowitz, Binghamton, and John J. Bourgeois, Kirkwood, both of N.Y., assignors to Kason Industries, Inc., Binghamton, N.Y.
Filed Feb. 13, 1978, Ser. No. 877,422
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—323



255,869
ROOFING SAFETY BRACKET
John H. Glynn, 7 Richgrove Dr., Apt. 1006, and Patrick J. Glynn, 21 Richgrove Dr., Apt. 712, both of Weston, Ontario, Canada (M9R 2L2)
Filed Apr. 18, 1978, Ser. No. 897,570
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



255,870
BOTTLE
Michael O'Donovan, Maynooth, and Alan F. Lennox, Dublin, both of Ireland, assignors to Loctite Corporation
Filed Aug. 23, 1978, Ser. No. 936,143
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2



255,871
BOTTLE
Michael O'Donovan, Maynooth, and Alan F. Lennox, Dublin, both of Ireland, assignors to Loctite Corporation
Filed Aug. 23, 1978, Ser. No. 936,144
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2



255,872
BOTTLE
Dennis F. Shine, Huntington Beach, Calif., and Gunther W. Torau, Buffalo Grove, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Oct. 5, 1973, Ser. No. 404,075
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—169



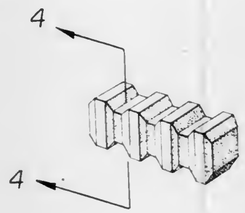
255,873
GASOLINE CAN
Al W. Hustrei, 6108 Sally Ave., Bakersfield, Calif. 93308
Filed May 17, 1978, Ser. No. 907,244
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175



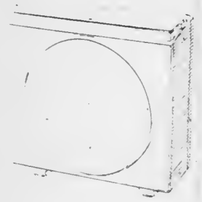
255,874
PACKING BOX
Kazumi Fujimoto, Hino, and Yoshiko Hotani, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 13, 1977, Ser. No. 815,430
Claims priority, application Japan, Jan. 19, 1977, 52/1197
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



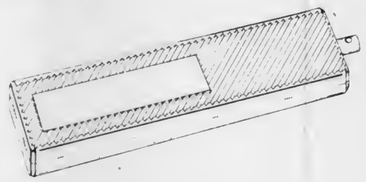
255,875
LOOSE-FILL PACKING ELEMENT
Harry D. Atkins, 5802 Troost Ave., North Hollywood, Calif. 91601
Filed Sep. 26, 1977, Ser. No. 836,518
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



255,876
CLOCK
Dietrich Lubs, Bad Homburg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Jun. 13, 1978, Ser. No. 915,101
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 73 MR8670
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—26



255,877
DIGITAL WATCH
Masafumi Yamagami, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Mar. 21, 1978, Ser. No. 888,689
Claims priority, application Japan, Sep. 21, 1977, 52/38492
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—30



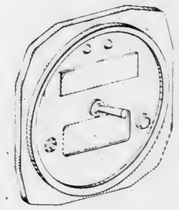
255,878
SPARK PLUG GAPPER
George G. Martin, 1743 Walnut Rd., Kent, Ohio 44240
Filed May 12, 1978, Ser. No. 905,231
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



255,879
RADIO DIRECTION FINDER
Peter J. Price, Camberley, England, assignor to A.P.T. Electronics Limited, Reading, England
Filed May 3, 1978, Ser. No. 902,787
Claims priority, application United Kingdom, Nov. 4, 1977, 982160/77
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65



255,880
COURSE ERROR AND DISTANCE INDICATOR OR SIMILAR ARTICLE
Allan A. Beale, Scottsdale, and Cecil N. LaVance, Paradise Valley, both of, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 9, 1978, Ser. No. 914,094
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—67



255,881
RETRACTABLE MEASURING TAPE WITH FINGER GUARD
Alexander C. Atienza, 3550 Marguerite St., Los Angeles, Calif. 90065
Filed Mar. 15, 1978, Ser. No. 886,690
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—72

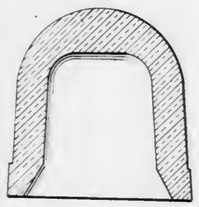


255,882
ALARM AND PAGE SIGNAL TRANSMITTER
Kiil Kim, 3450 Wilshire Blvd., Los Angeles, Calif. 90010
Filed Apr. 21, 1978, Ser. No. 899,100
Term of patent 14 years
Int. Cl. D10—*05*; D13—*03*
U.S. Cl. D10—121



255,883
LENS FOR WARNING LIGHT
Robert A. Ferenc, Middletown, Conn., assignor to Whelen Engineering Company, Inc., Deep River, Conn.
Filed Jun. 28, 1978, Ser. No. 919,867
Term of patent 14 years
Int. Cl. D10—*06*; D26—*06*
U.S. Cl. D10—121





255,884
BRACELET
Charitee B. Trapp, 17580 Continental Dr., Brookfield, Wis. 53005
Filed Apr. 10, 1978, Ser. No. 895,281
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6



255,885
PLASTIC PIERCED EARRING OR SIMILAR ARTICLE
Donna M. Andrews, 3321 Victor Apt. 3, Wichita, Kans. 67208
Filed Sep. 11, 1978, Ser. No. 935,241
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—43



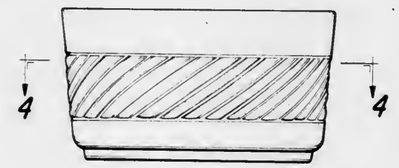
255,886
HOLDER FOR TABULAR CONTAINERS OF PLANT GROWTH MEDIUM
Richard Flynn, Convent Rd., Rush, County Dublin, Ireland
Filed Aug. 9, 1977, Ser. No. 823,182
Claims priority, application Ireland, Feb. 11, 1977, 17/77
Term of patent 14 years
Int. Cl. D11—*02*; D23—*01*; D25—*03*
U.S. Cl. D11—156



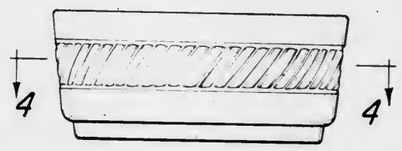
255,887
FLOWER VASE
Martin J. Waterfield, Birmingham, Mich., assignor to Florists' Transworld Delivery Association
Filed Jul. 11, 1979, Ser. No. 56,447
Term of patent 7 years
Int. Cl. D11—*02*; D7—*01*
U.S. Cl. D11—146



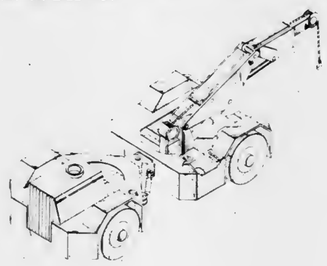
255,888
PLANTER BOWL
Martin J. Waterfield, Birmingham, Mich., assignor to Florists' Transworld Delivery Association
Filed Jul. 11, 1979, Ser. No. 56,449
Term of patent 7 years
Int. Cl. D11—*02*; D7—*01*
U.S. Cl. D11—152



255,889
PLANTER BOWL
Martin J. Waterfield, Birmingham, Mich., assignor to Florists' Transworld Delivery Association
Filed Jul. 11, 1979, Ser. No. 56,450
Term of patent 7 years
Int. Cl. D11—*02*; D7—*01*
U.S. Cl. D11—152



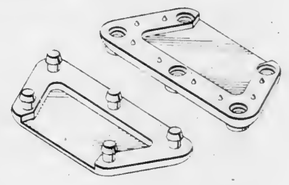
255,890
UNDERGROUND CRANE
Ted W. Wilkes, Jr., and Darel L. Wentworth, both of Lander, Wyo., assignors to Timberline, Inc., Lander, Wyo.
Filed Jan. 5, 1978, Ser. No. 867,359
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57



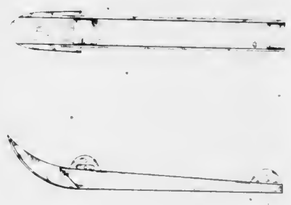
255,891
BOAT
Patrick L. Gibbs, deceased, late of Estill Springs, Tenn., and Beverly K. Gibbs, executrix, Rte. 1, Estill Springs, Tenn. 37330
Continuation-in-part of Ser. No. 630,423, Nov. 10, 1975, abandoned. This application Jun. 17, 1977, Ser. No. 807,416
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



255,892
BATTEN POCKET PROTECTOR
John Fehlberg, 139 Simmat Ave., Bankstown, New South Wales, 2200, Australia
Filed Apr. 25, 1978, Ser. No. 899,836
Claims priority, application Australia, Nov. 1, 1977, 73231
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—70



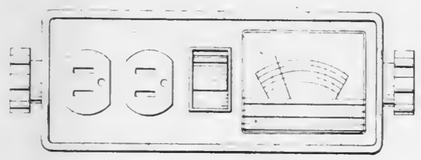
255,893
SNOWMOBILE SKI
Lawrence E. Fritz, 4916 Rondo Dr., Fort Worth, Tex. 76106
Filed May 12, 1978, Ser. No. 905,318
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—7



255,894
ACCESSORY CONSOLE FOR MOTORCYCLES
Tommy W. Dixson, 1509 W. Willetta, Phoenix, Ariz. 85007
Filed Jul. 3, 1978, Ser. No. 921,869
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



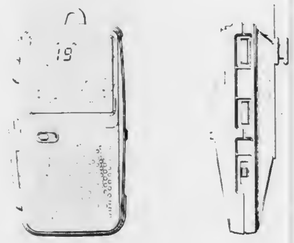
255,895
POWER CONVERTER
Phillip H. Mitchell, Yukon, Okla., assignor to JMJ Electronics Corp., Oklahoma City, Okla.
Filed Oct. 27, 1978, Ser. No. 954,116
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—11



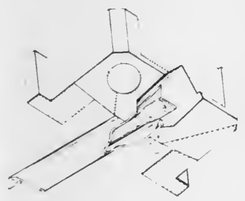
255,896
ELECTROMAGNETIC TRANSDUCER
Seymour Barth, Searingtown, N.Y., assignor to Astrosystems, Inc., Lake Success, N.Y.
Filed Jun. 8, 1978, Ser. No. 913,882
Term of patent 14 years
Int. Cl. D13—*99, 1*
U.S. Cl. D13—99



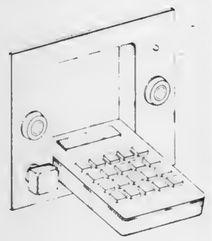
255,897
CB MICROPHONE OR SIMILAR ARTICLE
Fuminori Yamagata, Yokohama, Japan, assignor to General Electric Company
Filed Jun. 23, 1978, Ser. No. 918,659
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



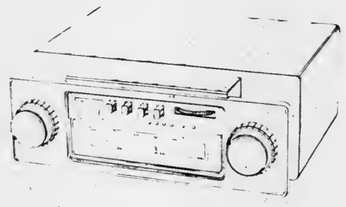
255,898
PHONOGRAPH STYLUS
James P. Thomsen, Mt. Prospect, and Ronald G. Thielmann, Arlington Heights, both of Ill., assignors to Shure Brothers, Inc., Evanston, Ill.
Filed Jul. 20, 1977, Ser. No. 817,508
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—28



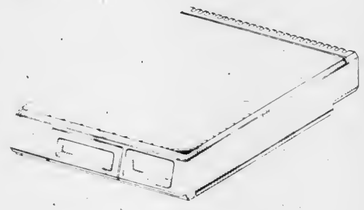
255,899
CODE ENTRY TERMINAL FOR SECURITY ACCESS SYSTEM
Joseph W. Karas; Robert F. Pfeifer, and Robert Samson, all of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 8, 1978, Ser. No. 913,929
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—42



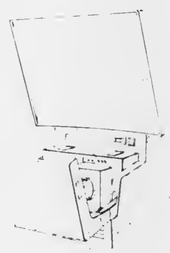
255,900
MOTOR VEHICULAR CITIZENS' BAND TRANSCEIVER
Kikuo Ohta; Toshio Igo, both of Katano, and Satoru Usami, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jul. 20, 1977, Ser. No. 817,292
Claims priority, application Japan, Jan. 20, 1977, 52-1484
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



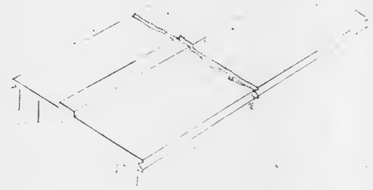
255,901
VEHICULAR RADIO HOUSING OR SIMILAR ARTICLE
Masaru Tokiyama, Arlington, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 21, 1978, Ser. No. 898,369
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



255,902
PROJECTION TELEVISION RECEIVER
Chuichi Inoue, Uji, and Minoru Hashimoto, Ibaragi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Apr. 11, 1978, Ser. No. 895,418
Claims priority, application Japan, Oct. 14, 1977, 52-40944
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—79



255,903
GUIDE RAIL
H. Edward Cable, Pittsburgh, Pa., assignor to Weld Tooling Corporation, Pittsburgh, Pa.
Filed Nov. 9, 1977, Ser. No. 849,842
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139

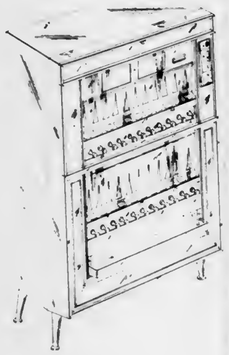


255,904
PIANO KEYBOARD LEVEL ADJUSTING BAR
Gilles Therrien, 10405 boulevard Saint-Michel, Montreal Nord, Quebec, Canada
Filed Oct. 20, 1977, Ser. No. 844,052
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—9

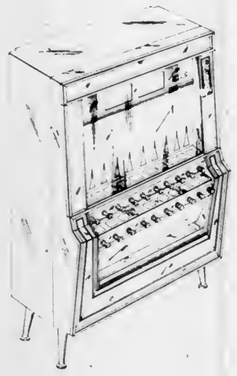
255,905
GUITAR OR THE LIKE
Emil H. Soika, 2312 E. Grand Ave., Lindenhurst, Ill. 60046, and Robert R. Genc, 117 E. Grove, Mundelein, Ill. 60060, assignors to Emil Henry Soika and Robert Russell Genc
Filed Jul. 21, 1977, Ser. No. 817,789
Term of patent 7 years
Int. Cl. D17—*03*
U.S. Cl. D17—14



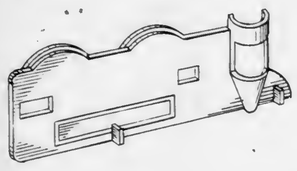
255,907
CIGARETTE VENDING MACHINE
Walter E. Moore, Bel-Nor, and Albert K. Grethey, Bridgeton, both of Mo., assignors to UMC Industries, Inc., Stamford, Conn.
Filed Sep. 22, 1978, Ser. No. 944,882
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—4



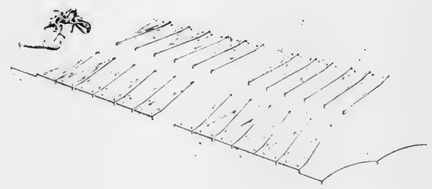
255,908
CIGARETTE VENDING MACHINE
Walter E. Moore, Bel-Nor, and Albert K. Grethey, Bridgeton, both of Mo., assignors to UMC Industries, Inc., Stamford, Conn.
Filed Sep. 22, 1978, Ser. No. 944,881
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—4



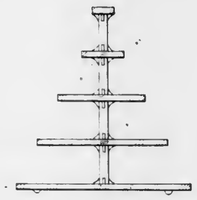
255,906
COMBINED PERPETUAL CALENDER AND WRITING INSTRUMENT HOLDER
Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to RB Toy Development Co., Skokie, Ill.
Filed Mar. 6, 1978, Ser. No. 884,044
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—23



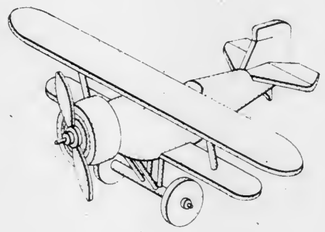
255,909
FLEXIBLE GAME BOARD
Glenn L. Miller, Box 9, Mokelumne Hill, Calif. 95245
Filed Jul. 21, 1978, Ser. No. 926,708
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—15



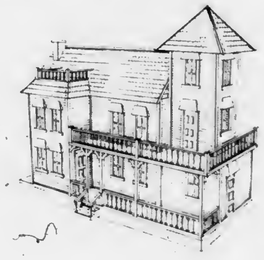
255,910
MULTI-LEVEL CHESSBOARD
Michael D. Bergman, 4932 Golf Glen Rd., Bonita, Calif. 92002
Filed Nov. 17, 1978, Ser. No. 961,584
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—23



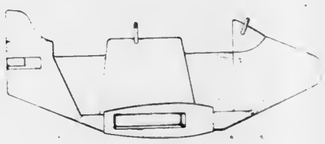
255,911
TOY AIRPLANE
Michael G. Theodore, 11925 Leighwood Dr., Plymouth, Mich. 48170
Filed Apr. 17, 1978, Ser. No. 896,973
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—90



255,912
DOLLHOUSE
Milo G. Chapman, Newberg, and David E. Christie, Aurora, both of Oreg., assignors to Dura-Craft, Inc., Aurora, Oreg.
Filed Jun. 30, 1978, Ser. No. 921,362
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114



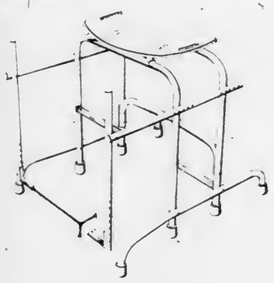
255,913
JET AIRPLANE SHAPED SEAT FOR PLAYGROUND APPARATUS
Steven A. Lofton, Litchfield, and David C. Mulligan, Blissfield, both of Mich., assignors to Game Time, Inc., Fort Payne, Ala.
Filed Aug. 23, 1978, Ser. No. 936,072
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—250



255,914
FIGURINE WITH BLINKING EYE
Rocco J. Starniri, 1607 Ferry, Easton, Pa. 18042
Filed Aug. 15, 1978, Ser. No. 934,054
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—168



255,915
LEG EXERCISER
Leslie T. Applegate, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed Jul. 24, 1978, Ser. No. 927,748
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191



255,916
PANDA BEAR SHAPED SEAT FOR PLAYGROUND APPARATUS
Steven A. Lofton, Litchfield, and David C. Mulligan, Blissfield, both of Mich., assignors to Game Time, Inc., Fort Payne, Ala.
Filed Aug. 23, 1978, Ser. No. 936,073
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—247



255,917
PISTOL
Rex R. Merrill, P.O. Box 187, Rockwell City, Iowa 50579
Filed Mar. 30, 1978, Ser. No. 891,933
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1



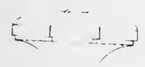
255,918
FISH LURE
William E. Hogreff, 295 D St., Apt. B, Chula Vista, Calif. 92010
Filed May 4, 1978, Ser. No. 902,998
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



255,919
FISHING BOBBER
James R. Crofton, 500 Olive St., West Concord, Minn. 55985
Filed Dec. 22, 1978, Ser. No. 973,234
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30

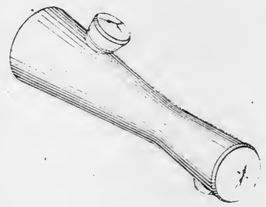


255,920
SPRINKLER HEAD
Frank R. Antonell, 18 Country Corners Rd., Wayland, Mass. 01778
Filed Aug. 30, 1978, Ser. No. 938,119
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34





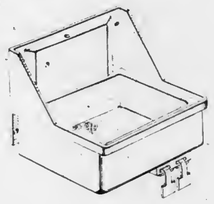
255,921
WALL SPOUT
Donald W. Doman, Janesville, Wis., assignor to Kohler Co.
Division of Ser. No. 779,926, Mar. 21, 1977, Pat. No. Des. 248,564. This application Apr. 21, 1978, Ser. No. 899,022
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



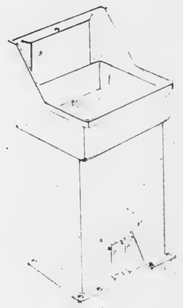
255,922
CHILD'S DISPOSABLE TOILET SEAT
Ronald V. Price, and Marilyn E. Price, both of 3926 Josephine St., Lynnwood, Calif. 90262
Filed Dec. 21, 1978, Ser. No. 971,958
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—53



255,923
SINK
Alan F. Rosenkranz, East Northport, N.Y., assignor to United Utensils Company, Inc.
Filed Oct. 23, 1978, Ser. No. 953,414
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58

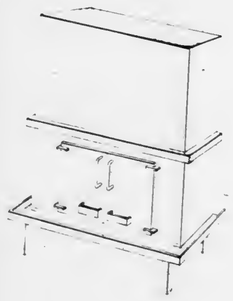


255,924
SINK
Alan F. Rosenkranz, Northport, N.Y., assignor to United Utensils Company, Inc.
Filed Oct. 23, 1978, Ser. No. 953,420
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—61



255,925
BLANK FOR A COMBINED VENT AND BAFFLE
Bruce K. Ward, 2904 Virginia Ave. South, St. Louis Park, Minn. 55426
Division of Ser. No. 746,526, Dec. 1, 1976, Des. Pat. No. 247,628. This application Mar. 20, 1978, Ser. No. 888,520
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139

255,926
FIREPLACE
Niilo H. Teeri, Korppaantie 8 D, SF-00300 Helsinki 30, Finland
Filed Apr. 25, 1978, Ser. No. 900,023
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



255,927
ROOM HUMIDIFIER
James E. Vesper, 2408 Stratton Dr., Potomac, Md. 20854
Filed Mar. 30, 1978, Ser. No. 891,780
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—147



255,928
DISPENSER FOR AIR TREATING MATERIAL
Earl Hoyt, Franklin Lakes, N.J., assignor to Airwick Industries, Inc., Carlstadt, N.J.
Filed Sep. 29, 1978, Ser. No. 948,051
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150





255,929
IMPROVED DENTAL HANDPIECE
George K. Austin, Jr., P.O. Box 209, Rte. 2, Box 254, Newberg, Oreg. 97132
Filed Feb. 15, 1978, Ser. No. 878,172
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



255,930
DENTAL HANDPIECE
John D. Nilles, Roselle, and Stanley L. Stankiewicz, Chicago, both of Ill., assignors to American Hospital Supply Corporation
Filed May 30, 1978, Ser. No. 910,970
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—12

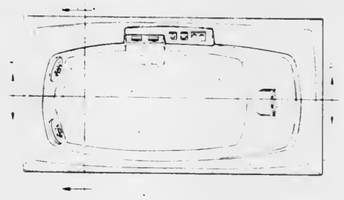


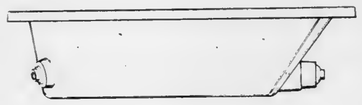


255,931
ORTHODONTIC HARNESS
Donald R. Therrien, 190 Woodland Ave., Laconia, N.H. 03246
Filed Dec. 12, 1977, Ser. No. 859,980
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—33

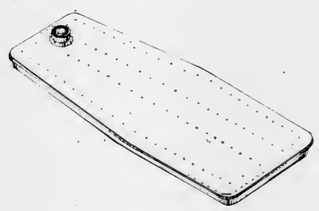


255,932
HYDROMASSAGE TUB
Ralph D'Innocente, Pleasant Hill, and Roy A. Jacuzzi, Moraga, both of Calif., assignors to Jacuzzi Whirlpool Bath, Inc.
Filed Feb. 21, 1978, Ser. No. 879,710
Term of patent 14 years
Int. Cl. D24—*01*; D23—*02*
U.S. Cl. D24—36

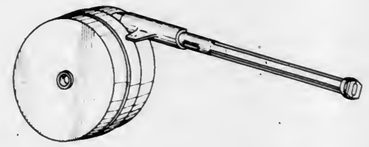




255,933
PORTABLE AIR BUBBLE MAT
Harold J. Link, 1207 SE. 16th St., Ocala, Fla. 32670
Filed Aug. 4, 1978, Ser. No. 931,108
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—38



255,934
UNIDIRECTIONAL CATHETER PLACEMENT UNIT, OR THE LIKE
Richard M. Chittenden, Grayslake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Nov. 25, 1977, Ser. No. 854,859
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54





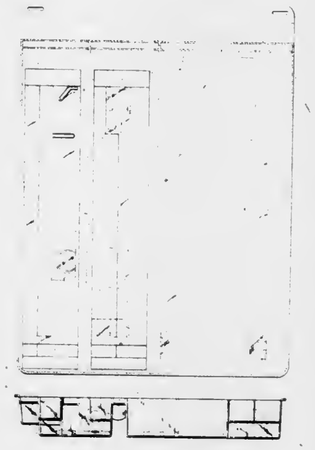
255,935
BLOOD PROCESSING CONTAINER
Herbert M. Cullis, Silver Spring, Md., and Richard I. Brown, Northbrook, Ill., assignors to Baxter Travenol Laboratories, Inc.
Filed Nov. 7, 1977, Ser. No. 849,482
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—58



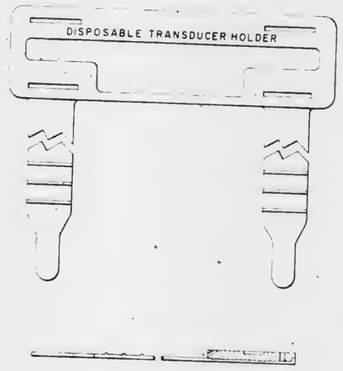
255,936
BLOOD PROCESSING CONTAINER
Herbert M. Cullis, Silver Spring, Md., and Richard I. Brown, Northbrook, Ill., assignors to Baxter Travenol Laboratories, Inc.
Filed Nov. 7, 1977, Ser. No. 849,487
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—58



255,937
PLEURAL CAVITY DRAINAGE CONTAINER
Leonard D. Kurtz, Woodmere, and Robert E. Bidwell, Melville, both of N.Y., assignors to Howmedica Inc., New York, N.Y.
Division of Ser. No. 810,579, Jun. 27, 1977, Des. Pat. No. 250,207. This application Mar. 31, 1978, Ser. No. 892,468
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—59



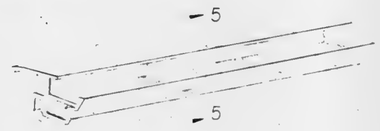
255,938
TRANSDUCER HOLDER
David Hawke, LaVerne, and M. Janet Kirkwood, Montebello, both of Calif., assignors to Eaton Corporation, Cleveland, Ohio
Filed Dec. 12, 1977, Ser. No. 859,451
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—99



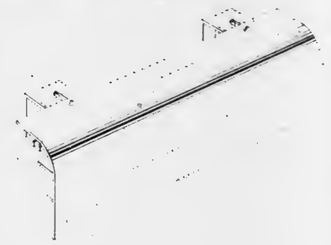
255,939
PLASTIC STORM DOOR
Peter R. Emanuel, Marine City, Mich., assignor to International Telephone & Telegraph Corporation, New York, N.Y.
Filed Jan. 16, 1978, Ser. No. 869,941
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48



255,940
FRAME EXTRUSION MOLDING
Gerald A. Kwan, Pasadena, and George E. DeStepheno, San Dimas, both of Calif., assignors to Le Van Specialty Co., Inc., City of Industry, Calif.
Filed Jul. 17, 1978, Ser. No. 925,440
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



255,941
PORTABLE GALLERY LAMP
Darwin D. Grant, 8757 E. Monterosa, Scottsdale, Ariz. 85251
Filed Nov. 27, 1978, Ser. No. 964,331
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—76



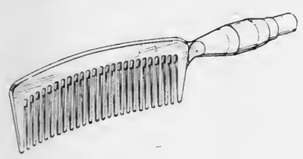
255,942
PIPE STAND
Morry Karp, 2850 E. 44th St., Los Angeles, Calif. 90058
Filed Jun. 2, 1978, Ser. No. 911,775
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—02



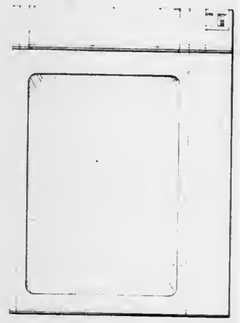
255,943
SCOOP WITH CLEANING SLOTS FOR SMOKING TOBACCO AND THE LIKE
Eugene Hernandez, Box 101, Garner Valley, Mountain Center, Calif. 92361
Filed Jan. 16, 1978, Ser. No. 869,809
Term of patent 7 years
Int. Cl. D7—*04;* D27—*99;* D30—*99*
U.S. Cl. D27—51



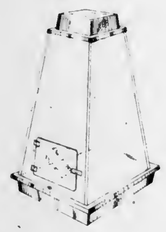
255,944
COMBINED COMB AND SPRAY ATOMIZER
William E. Haselrig, Riveria, Ariz., assignor to Transwestern Sales, Inc., Los Angeles, Calif.
Filed Jan. 11, 1978, Ser. No. 868,511
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—25



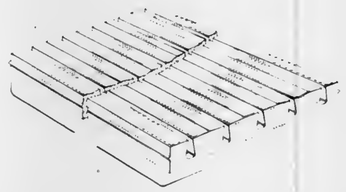
255,945
LIGHTED TRAVELING MIRROR
Francis W. MacGregor, New Britain, Conn., assignor to Clairol Incorporated
Filed Jul. 31, 1978, Ser. No. 929,767
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—67



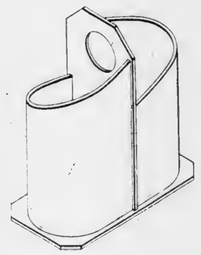
255,946
WILDLIFE HABITAT OR SIMILAR ARTICLE
Donald J. Galbreath, 2320 Lee St., Evanston, Ill. 60202
Filed Dec. 5, 1977, Ser. No. 857,862
Term of patent 7 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



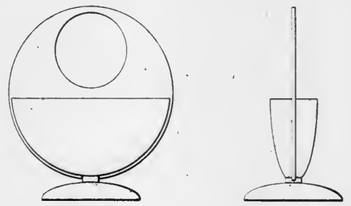
255,947
INTERLOCKING FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, and Roy J. Hancock, both of Phoenix, Ariz., assignors to Corral Industries, Inc., Phoenix, Ariz.
Filed Jun. 12, 1978, Ser. No. 914,584
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



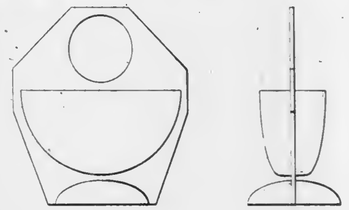
255,948
AQUARIUM OR SIMILAR ARTICLE
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77057
Filed Feb. 26, 1979, Ser. No. 15,727
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—6



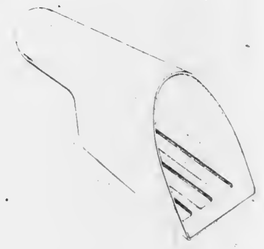
255,949
AQUARIUM OR SIMILAR ARTICLE
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77057
Filed Nov. 22, 1978, Ser. No. 963,169
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—8

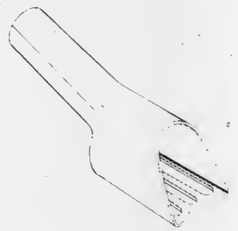


255,950
AQUARIUM OR SIMILAR ARTICLE
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77057
Filed Jan. 2, 1979, Ser. No. 285
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—8



255,951
SOLIDS SEPARATION SCOOP FOR USE IN CLEANING PET LITTER
Kenneth F. Halls, Denver; Robert R. Gibbons, Lakewood, both of Colo., and D. Harrison Miller, P.O. Box 84, Fort Collins, Colo. 80522, assignors to D. Harrison Miller, Fort Collins, Colo.
Continuation-in-part of Ser. No. 754,612, Dec. 27, 1976, abandoned. This application Feb. 6, 1978, Ser. No. 870,891
Term of patent 14 years
Int. Cl. D30—*99;* D7—*04, 99*
U.S. Cl. D30—99





LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Akerlund & Rausing: *See—*
Jeppsson, Jan-Bertil, 4,212,409, Cl. 220-276.000.

AB Atomenergi: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

AB Svenska Flaktabriken: *See—*
Andersson, Karl-Hugo S., 4,212,113, Cl. 34-156.000.

Abar Corporation: *See—*
Kreider, Benjamin A.; and Metalsky, William J., 4,212,633, Cl. 432-122.000.

Abe, Shunji: *See—*
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Abic, Ltd.: *See—*
Schonberger, Eva; Sasson, Zabar; and Michael, Uri, 4,212,814, Cl. 260-347.800.

Able, Edward T.: *See—*
Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., 4,212,196, Cl. 73-136.00R.

ACF Industries, Incorporated: *See—*
Basch, Walter E.; and Wallis, Roger G., 4,212,316, Cl. 137-543.170.
Behle, Gunter R., 4,212,447, Cl. 251-98.000.
Randolph, Robert W., 4,212,333, Cl. 141-98.000.

Acker, Roy M.; and Lui, Kenneth, to United States of America, Air Force. Hermetic electrical feedthrough for aluminum housing and method of making same. 4,213,004, Cl. 174-151.000.

Acosta, Robert G.; McBride, Michael E.; and Pascoe, Robert A., to International Business Machines Corporation. Tabulation control system having two electronic tab racks. 4,212,553, Cl. 400-279.000.

Adams, John N.; Kissinger, Gaylord M.; and Lee, Michael C., to General Electric Company. Process for recovering 2,2-bis(4-hydroxyphenyl)propane from an adduct of 2,2-bis(4-hydroxyphenyl)propane and phenol. 4,212,997, Cl. 568-724.000.

Adams, Robert P., to Virtis Company, Inc., The. Fermenting apparatus. 4,212,950, Cl. 435-316.000.

Adaptronics, Inc.: *See—*
Barron, Roger L.; Mucciardi, Anthony N.; and Brown, Claire L., 4,213,183, Cl. 364-507.000.

Adcock, Gerald L. Downhole weight control device for impact rock drilling tool. 4,212,359, Cl. 175-26.000.

Adler, Howard, to Adler's Seeds, Inc. Seed corn dryer apparatus. 4,212,115, Cl. 34-215.000.

Adler's Seeds, Inc.: *See—*
Adler, Howard, 4,212,115, Cl. 34-215.000.

Admiral Corporation: *See—*
Mueller, David J.; Prysby, Daniel G.; Moravec, John V.; and Watson, George A., 4,213,189, Cl. 364-100.000.

Adolphi, Heinrich: *See—*
Theobald, Hans; Kiehs, Karl; and Adolphi, Heinrich, 4,212,861, Cl. 424-200.000.

AEG Isolier- und Kunststoff GmbH: *See—*
Wartusch, Johann; and Fasbender, Helmut, 4,212,912, Cl. 428-209.000.

Aeroquip Corporation: *See—*
Alexander, Richard M., 4,213,021, Cl. 200-81.90M.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Pinazzi, Christian; Lenain, Jean-Claude; and Brosse, Jean-Claude, 4,212,718, Cl. 204-159.230.

AGFA-Gevaert, A.G.: *See—*
Franke, Walter; and Wolf, Ottmar, 4,212,631, Cl. 432-60.000.

Agostino Ferrari & C. S.n.C: *See—*
Ferrari, Franco, 4,212,092, Cl. 16-35.00R.

Aguiar, Mervyn F. Turboexhaust hub extension for a marine propeller. 4,212,586, Cl. 416-93.00A.

Ahler, Wilhelm: *See—*
Krone, Bernard; and Ahler, Wilhelm, 4,212,149, Cl. 56-341.000.

Ahmed, Adel A. A., to RCA Corporation. Transistor saturation control. 4,213,068, Cl. 307-255.000.

Aibe, Toshio; and Itoga, Kiyoshi, to Takeda Chemical Industries, Ltd. Method of deodorizing gas containing hydrogen sulfide and ammonia and/or amines. 4,212,852, Cl. 423-230.000.

Air Products and Chemicals, Inc.: *See—*
Daniel, Chelliah, 4,212,767, Cl. 252-435.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Ando, Masamoto; Nomura, Yoshihisa; and Ohta, Takaaki, 4,212,500, Cl. 303-115.000.

Ajinomoto Company, Incorporated: *See—*
Satou, Osahiro; Yamaguchi, Makoto; and Hasegawa, Mikio, 4,212,798, Cl. 260-123.500.

Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Heat developable photosensitive materials. 4,212,937, Cl. 430-620.000.

Akiyama, Minoru: *See—*
Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.

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Akzo N.V.: *See—*
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Henne, Werner, 4,212,738, Cl. 210-94.000.
van Neerbos, Abraham; and van Oosterhout, Adrianus C. J., 4,212,901, Cl. 427-53.100.

Akzona Incorporated: *See—*
Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, 4,212,692, Cl. 156-167.000.
Tax, Lambert J. W. M., 4,212,864, Cl. 424-243.000.
Vollbrecht, Rolf; and Ostertag, Karl, 4,212,915, Cl. 428-288.000.

Albright & Wilson Limited: *See—*
Phillips, Brinley M.; Lace, Robert B.; and Lambie, Alan J., 4,212,983, Cl. 548-352.000.

Alexander, Richard M., to Aeroquip Corporation. Indicating check valve. 4,213,021, Cl. 200-81.90M.

Alfred University Research Foundation: *See—*
Reed, James S.; and Moore, Roger H., 4,212,924, Cl. 428-428.000.

Algoship International Limited: *See—*
Campbell, George T. R.; and Morioke, Yukitoshi, 4,212,404, Cl. 212-238.000.

Allen-Bradley Company: *See—*
Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., 4,213,113, Cl. 338-309.000.

Allen, Derek R. Angularly related dual stethoscope head. 4,212,368, Cl. 181-131.000.

Allen, Donald C.; and Smith, Alan T., to EPS (Research & Development) Limited. Measurement of equilibrium relative humidity. 4,212,194, Cl. 73-73.000.

Allen Organ Company: *See—*
Woron, Robert P., 4,212,221, Cl. 84-1.260.

Allen, Paul E., to Logic Devices, Inc. Apparatus for cooling plastic injection mold dies. 4,212,623, Cl. 425-547.000.

Allen, Robert H.; and Robertson, Victor J., to Moore Business Forms, Inc. Envelope assembly. 4,212,396, Cl. 206-629.000.

Alley, Donald E. Edge and corner cushion for palletized packages and the like. 4,212,394, Cl. 206-586.000.

Allied Chemical Corporation: *See—*
Narasimnan, Mandayam C., 4,212,343, Cl. 164-64.000.
Sachleben, Harold G., Sr., 4,212,606, Cl. 425-72.00S.

Allis-Chalmers Corporation: *See—*
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Alman, Donald W.; Gerwitz, Paul F.; and Tygard, Charles M., to Carrier Corporation. Variable resistance potentiometer. 4,213,112, Cl. 338-183.000.

Alsthom-Atlantique: *See—*
Genevey, Jacques, 4,212,326, Cl. 138-40.000.

Alyamovsky, Stanislav I.: *See—*
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.

Amerace Corporation: *See—*
Kotski, Edward J.; Siebens, Larry N.; and Perry, Donald D., 4,212,387, Cl. 206-223.000.

American Atomics Corporation: *See—*
Caffarella, Thomas E.; Radda, George J.; and Dooley, Harry H., Jr., 4,213,052, Cl. 250-462.000.

American Can Company: *See—*
Johnson, Donald O., 4,212,584, Cl. 414-748.000.
Miller, Fredric N., 4,212,607, Cl. 425-83.100.
Wolfelsperger, Robert O.; and Pasco, William R., 4,212,213, Cl. 83-56.000.

American Cyanamid Company: *See—*
Randvere, Fredrik V.; and Konzelman, Leroy M., 4,212,971, Cl. 544-37.000.
Wissner, Allan, 4,212,969, Cl. 542-429.000.

American Home Products Corporation: *See—*
Medvecky, Eugene, 4,213,135, Cl. 346-76.0PH.

American Optical Corporation: *See—*
Bragg, Robert C., Jr.; and Hawley, John T., 4,212,224, Cl. 85-1.00K.
Dokus, Edwin A.; and Banks, David, 4,213,161, Cl. 360-73.000.

Ames, Ernest R.; Struttmann, Hilarius S.; and Carrigan, Erwin R., to Emerson Electric Co. Bearing take-up frame. 4,212,502, Cl. 308-3.00R.

AMP Incorporated: *See—*
Bunnell, Edward D., 4,212,507, Cl. 339-18.00B.
Malucci, Robert D.; and Reynolds, Charles E., 4,212,511, Cl. 339-276.00T.
Ritchie, Leon T.; and Peppler, Michael S., 4,212,510, Cl. 339-147.00R.

Anaconda Company, The: *See—*
Schauffelle, Siegfried A.; Barone, Angelo P.; and Beamish, Lloyd W., 4,212,151, Cl. 57-9.000.

Andersson, Allan; and Bergstrom, Bert, to Sandvik Aktiebolag. Tubular drill tool. 4,212,569, Cl. 408-59.000.

Andersson, Karl-Hugo S., to AB Svenska Flaktabriken. Apparatus for drying an air-borne web. 4,212,113, Cl. 34-156.000.

Ando, Masamoto; Nomura, Yoshihisa; and Ohta, Takaaki, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Antiskid brake control arrangement for vehicle wheels. 4,212,500, Cl. 303-115.000.

Ando, Nobuo; Satou, Isao; and Maehara, Kazuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Hot-runner mold and injection molding method making use of the same. 4,212,624, Cl. 425-548.000.

Andover Controls Corporation: *See—*
Morley, Richard E.; Bromberg, Michael A.; and Taylor, William A., 4,213,174, Cl. 364-104.000.

Andreoli, Mario. Modular element radiator-convector. 4,212,350, Cl. 165-129.000.

Andrews, Glenn C., to Pfizer Inc. Preparation of 2-ketogulonic acid. 4,212,988, Cl. 560-174.000.

Andros, Frank E.; and Shay, Robert J. E., to International Business Machines Corporation. Micro bellows thermo capsule. 4,212,349, Cl. 165-105.000.

Anic, S.p.A.: *See—*
D'Amico, Fabrizio; Serboli, Giancarlo; and Foti, Vincenzo, 4,212,703, Cl. 162-129.000.

Anspon, Harry D., to United States Steel Corporation. Process for preparing high impact polystyrenes. 4,212,789, Cl. 260-33.6AQ.

Anthony Manufacturing Corp.: *See—*
Choi, Mansam, 4,212,426, Cl. 239-230.000.

Antos, George J., to UOP Inc. Process for the simultaneous production of a high octane motor fuel and isobutane. 4,212,727, Cl. 208-111.000.

Antos, George J., to UOP Inc. Attenuated superactive multimetallic catalytic composite. 4,212,769, Cl. 252-441.000.

Aoki, Masaki: *See—*
Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, 4,212,838, Cl. 264-25.000.

Apanovitch, Agaton P. Positive displacement, continuous combustion rotary engine. 4,212,282, Cl. 123-204.000.

Arad, Avi, to Louis Marx & Co., Inc. Pinball game with plural re-projectors actuable by single solenoid acted upon by single switch. 4,212,465, Cl. 273-121.00A.

Arai, Akihiro: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, 4,212,525, Cl. 354-173.000.

Arai, Kiyotaka: *See—*
Suhara, Manabu; and Arai, Kiyotaka, 4,212,713, Cl. 204-98.000.

Arai, Yoshio. Multiple seal ring having a tapered surface, and a sealing device. 4,212,473, Cl. 277-81.00P.

Arai, Yoshio. Seal ring having tapered surface and sealing device incorporating the same. 4,212,474, Cl. 277-83.000.

Are, Endel. Wind energy conversion device. 4,213,057, Cl. 290-44.000.

Arjomari-Prioux: *See—*
Gomez, Daniel; and Bartoli, Giampaolo, 4,212,927, Cl. 428-512.000.

Armour Pharmaceutical Company: *See—*
Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., 4,212,795, Cl. 260-112.50T.

Arney, William C., Jr., to Union Carbide Corporation. Wood-polymer composites. 4,212,928, Cl. 428-514.000.

Arold, Hermann, to Bayer Aktiengesellschaft. Preparation of o-dialkylaminomethylphenols. 4,212,822, Cl. 260-570.900.

Arvin Industries: *See—*
Williams, Ronald S.; and Hill, Robert S., 4,212,099, Cl. 29-507.000.

Arzoumanian, Aram S.: *See—*
Edwards, Albert L.; and Arzoumanian, Aram S., 4,212,549, Cl. 400-154.000.

Asahi Glass Company, Limited: *See—*
Suhara, Manabu; and Arai, Kiyotaka, 4,212,713, Cl. 204-98.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.
Ando, Nobuo; Satou, Isao; and Maehara, Kazuo, 4,212,624, Cl. 425-548.000.
Ibata, Jyoji; Fujita, Yukio; and Kominami, Naoya, 4,212,790, Cl. 260-40.00R.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, 4,212,525, Cl. 354-173.000.

Asahi Medical Co., Ltd.: *See—*
Oota, Kazuhiro, 4,212,744, Cl. 210-321.00B.

Ascani, Leonard A., Jr.; Rickey, Burton C.; Riggs, Merle E.; and Shoemaker, Andrew R., to United States of America, Air Force. Wing pivot assembly for variable sweep wing aircraft. 4,212,441, Cl. 244-46.000.

Ashcraft, Arnold C.; Turbett, Robert J.; and Burke, Timothy R., to Union Carbide Corporation. Dielectric composition stabilized against water treeing with organo silane compounds. 4,212,756, Cl. 252-63.200.

Asher, Raymond C.: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

Aslami, Mohd A., to Corning Glass Works. Reactants delivery system for optical waveguide manufacturing. 4,212,663, Cl. 65-144.000.

Asmundsson, Einar: *See—*
Fleischer, Donald W.; and Asmundsson, Einar, 4,213,037, Cl. 235-92.00B.

Aso, Minosaku: *See—*
Takebe, Katsuhiko; Fukuda, Masao; Shiratori, Minoru; and Aso, Minosaku, 4,212,154, Cl. 368-248.000.

Associated Metals & Minerals Corporation: *See—*
King, Edwin B.; Barnes, Wilson R.; and Pommier, Luis W., 4,212,666, Cl. 75-85.000.

Astafiev, Anatoly A.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Astec: *See—*
Buys, Bruno, 4,212,215, Cl. 83-109.000.

Athearn, Lee F., to Medtronic, Inc. Lithium-halogen batteries. 4,212,930, Cl. 429-101.000.

Atomenergikommissionen: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

Auten, Jerry P. Roof coating system. 4,212,913, Cl. 428-251.000.

Automatic Parking Devices, Inc.: *See—*
Schasser, Donald S., 4,213,039, Cl. 235-449.000.

Avco Corporation: *See—*
Kuintzle, Charles, Jr.; and Murphy, Joseph P., 4,212,595, Cl. 417-84.000.

Avedesian, Michael M.; and Holko, Anthony P., to Noranda Mines Limited. Apparatus for electrowinning metal from metal bearing solutions. 4,212,722, Cl. 204-222.000.

Avery, Noyes L.; and Work, William J., to Rohm and Haas. Poly(alkyleneterephthalate) molding compositions containing oligomeric polyester and segmented copolyester-polyether elastomer. 4,212,791, Cl. 260-40.00R.

Avrukh, Elizaveta L.: *See—*
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.

Ax, Wolfgang: *See—*
Bauer, Hartwig W.; and Ax, Wolfgang, 4,212,650, Cl. 23-230.00B.

Axen, Udo F., to Upjohn Company, The. 2,2-Difluoro-PGE$_2$ analogs. 4,212,986, Cl. 560-121.000.

Axen, Udo F., to Upjohn Company, The. 2,2-Difluoro-PGE$_1$ analogs. 4,212,987, Cl. 560-121.000.

Aymard, Reni: *See—*
Voituriez, Henry; and Aymard, Reni, 4,212,253, Cl. 110-182.500.

Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, to Matsushita Electric Industrial Co., Ltd. Process for manufacture of cantilever for pickup cartridge. 4,212,838, Cl. 264-25.000.

B. F. Goodrich Company, The: *See—*
Enright, John J.; and Holzworth, William T., 4,212,376, Cl. 188-218.0XL.

B. K. Sweeney Manufacturing Company: *See—*
Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., 4,212,196, Cl. 73-136.00R.

Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G. Process for the purification of waste liquors in the production of phenol-formaldehyde resins. 4,212,775, Cl. 260-17.200.

Babington, William M., Jr.; and Bridge, Adam P. Apparatus for recovering high pressure steam from a blow tank. 4,212,705, Cl. 162-238.000.

Badanin, Vladimir I.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Bagdan, Henry J.; and Blain, William A., to Nabisco, Inc. Apparatus for producing a flow of short cheese strands. 4,212,617, Cl. 425-311.000.

Baggaley, Keith H., to Beecham Group Limited. 2-Substituted benzisothiazolones and use thereof. 4,212,872, Cl. 424-270.000.

Baggaley, Keith H., to Beecham Group Limited. 2-Substituted benzisothiazolones. 4,212,979, Cl. 546-270.000.

Bakanov, Anatoly I.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.

Baker, David C., to Warner-Lambert Company. Method for the production of 9-(2-O-acyl-β-D-arabinofuranosyl)adenine compounds. 4,212,941, Cl. 435-92.000.

Bakker, Wate T., to General Refractories Company. Periclase refractory and its method of manufacture. 4,212,778, Cl. 260-22.00A.

Balandin, Jury F.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Balassa, Leslie L.; and Prudden, John F., to Lescarden Ltd. Method for stimulating the production of immunoglobulin and total complement. 4,212,857, Cl. 424-95.000.

Baldwin, Blair F.; and Stoddard, Deborah, to Baldwin, Stoddard & Company. System of interactive blocks. 4,212,117, Cl. 35-31.00C.

Baldwin, Blair F.; and Stoddard, Deborah, to Baldwin, Stoddard & Company. System of interactive blocks. 4,212,118, Cl. 35-31.00C.

Baldwin, Stoddard & Company: *See—*
Baldwin, Blair F.; and Stoddard, Deborah, 4,212,117, Cl. 35-31.00C.
Baldwin, Blair F.; and Stoddard, Deborah, 4,212,118, Cl. 35-31.00C.

Balko, Edward N.: *See—*
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,212,714, Cl. 204-98.000.

Ballard Medical Products, Inc.: *See—*
Moorehead, Harvey R., 4,212,309, Cl. 128-766.000.

Ballocci, Giovanni, to Industrie Pirelli, S.p.A. Plant for curing conveyor belts and the like. 4,212,619, Cl. 425-373.000.

Banks, David: *See—*
Dokus, Edwin A.; and Banks, David, 4,213,161, Cl. 360-73.000.

Banks, Stanley E.: *See—*
Roche, Dwain F.; and Banks, Stanley E., 4,212,598, Cl. 417-229.000.

Barber, Donald L., Jr.; and Caron, Bernard G., to Corning Glass Works. Method and apparatus for dispensing frit having a hydraulically actuated piston. 4,212,413, Cl. 222-1.000.

Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, to Etablissement Public de Diffusion dit "Telediffusion de France"; and L'Etat Francais. System for digitally transmitting and displaying texts on television screen. 4,213,124, Cl. 340-706.000.

Barker, David H.: *See—*
Stelling, David; Barker, David H.; and Weston, Terence E., 4,212,845, Cl. 422-82.000.

Barnes, Wilson R.: *See—*
King, Edwin B.; Barnes, Wilson R.; and Pommier, Luis W., 4,212,666, Cl. 75-85.000.

Barnett, David L. Fishing rod. 4,212,126, Cl. 43-24.000.

Barone, Angelo P.: *See—*
Schauffelle, Siegfried A.; Barone, Angelo P.; and Beamish, Lloyd W., 4,212,151, Cl. 57-9.000.

Barron, Roger L.; Mucciardi, Anthony N.; and Brown, Claire L., to Adaptronics, Inc. System for nondestructive evaluation of material flaw characteristics. 4,213,183, Cl. 364-507.000.

Barry-Wehmiller Company: *See—*
Beach, Donald J.; and Smith, Robert J., 4,213,042, Cl. 250-223.00B.

Bartoli, Giampaolo: *See—*
Gomez, Daniel; and Bartoli, Giampaolo, 4,212,927, Cl. 428-512.000.

Barton, Bruce L.; Johnson, Walter E.; and Notaro, Anthony J., to Special Metals Corporation. Decarburization of metallic alloys. 4,212,665, Cl. 75-10.00V.

Barton, Harvey R., Jr.: *See—*
Rauchfuss, Charles G., Jr.; Herman, Ralph; and Barton, Harvey R., Jr., 4,212,422, Cl. 226-196.000.

Basch, Walter E.; and Wallis, Roger G., to ACF Industries, Incorporated. Control valve. 4,212,316, Cl. 137-543.170.

BASF Aktiengesellschaft: *See—*
Baumann, Hans, 4,212,801, Cl. 260-145.00A.
Baur, Richard; Oppenlaender, Knut; and Stoeckigt, Dieter, 4,212,760, Cl. 252-156.000.
Daucher, Hans; Dressel, Manfred; Hess, Klaus; and Engelhardt, Hubert, 4,212,737, Cl. 210-77.000.
Degen, Hans-Juergen; and Grychtol, Klaus, 4,212,644, Cl. 8-506.000.
Goetz, Norbert; Himmele, Walter; and Hupfer, Leopold, 4,212,972, Cl. 544-106.000.
Habermann, Wolfgang; Thoma, Peter; and Wintermantel, Klaus, 4,212,725, Cl. 204-290.00F.
Mross, Wolf D.; Titzenthaler, Eckart; Schwarzmann, Matthias; and Koopmann, Juergen, 4,212,772, Cl. 252-476.000.
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,212,825, Cl. 568-313.000.
Patsch, Manfred; Schneider, Dieter; Gotsmann, Guenther; and Hettche, Albert, 4,212,709, Cl. 204-49.000.
Paust, Joachim; Schneider, Joachim; and Jaedicke, Hagen, 4,212,827, Cl. 568-347.000.
Schnell, Georg; Hammon, Fritz; and Ohlinger, Manfred, 4,212,903, Cl. 427-127.000.
Schoettle, Klaus; Hoffmann, Werner; and Kaemmer, Eduard, 4,212,436, Cl. 242-192.000.
Theobald, Hans; Kiehs, Karl; and Adolphi, Heinrich, 4,212,861, Cl. 424-200.000.
Tiefenbacher, Hubert; Kraus, Friedrich; and Matthias, Guenther, 4,212,890, Cl. 426-69.000.
Volmer, Dieter; Schwind, Juergen; Kolk, Erich; and Frielingsdorf, Hans, 4,212,847, Cl. 422-135.000.

Bath, Nigel A.: *See—*
Laws, Derek R. J.; Bath, Nigel A.; Ennis, Colin S.; Pickett, John A.; and Wheldon, Alfred G., 4,212,895, Cl. 426-600.000.

Battle, Jno R. Nail-less horseshoe. 4,212,356, Cl. 168-18.000.

Bauer, Hartwig W.; and Ax, Wolfgang, to Behringwerke Aktiengesellschaft. Diagnostic process. 4,212,650, Cl. 23-230.00B.

Bauer, Werner R., to Robershaw Controls Company. Reversing valve construction and method of making the same. 4,212,324, Cl. 137-625.660.

Bauerlein, Rudolf; Uhl, Dieter; Diepers, Heinrich; and Jablonski, Karl-Heinz, to Siemens Aktiengesellschaft. Photocathode for electroradiographic and electrofluoroscopic apparatus and method for manufacturing same. 4,212,911, Cl. 428-131.000.

Baumann, Hans, to BASF Aktiengesellschaft. Unsymmetrical 1:2-chromium complexes containing an azo and an azomethine bond. 4,212,801, Cl. 260-145.00A.

Baumgartner Papiers S.A.: *See—*
Ducommun, Joel; and Vulliens, Philippe, 4,212,541, Cl. 356-430.000.

Baur, Richard; Oppenlaender, Knut; and Stoeckigt, Dieter, to BASF Aktiengesellschaft. Solubilized alkaline, aqueous solutions of nonionic surfactants. 4,212,760, Cl. 252-156.000.

Bayer Aktiengesellschaft: *See—*
Arold, Hermann, 4,212,822, Cl. 260-570.900.
Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,212,887, Cl. 424-304.000.
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.
Kolbe, Joachim, 4,212,749, Cl. 252-8.750.
Kruckenberg, Winfried, 4,212,803, Cl. 260-154.000.
Lehr, Gunter; and Binsack, Rudolf, 4,212,963, Cl. 528-272.000.
Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, 4,212,982, Cl. 548-313.000.
Mitschke, Karl-Heinz; and Schliebs, Reinhard, 4,212,832, Cl. 260-930.000.
Rauleder, Gebhard; Waldmann, Helmut; Mues, Volker; and Seifert, Hermann, 4,212,809, Cl. 260-340.50R.
Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,212,883, Cl. 424-277.000.
Tholema, Edzard; Nonnenbruch, Heinz-Gerd; Gossmann, Hans; and Schultz, Peter, 4,212,746, Cl. 210-495.000.

BBC Brown, Boveri & Company, Limited: *See—*
Fuchs, Walter; Gessinger, Gernot H.; Kunzli, Roland; and Schonfeld, Erwin, 4,212,189, Cl. 72-478.000.
Kuhnen, Gottfried, 4,213,025, Cl. 219-73.200.

Beach, Donald J.; and Smith, Robert J., to Barry-Wehmiller Company. Container chipped crown ring detector. 4,213,042, Cl. 250-223.00B.

Beamish, Lloyd W.: *See—*
Schauffelle, Siegfried A.; Barone, Angelo P.; and Beamish, Lloyd W., 4,212,151, Cl. 57-9.000.

Beaucamp, Klaus: *See—*
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.

Beazley, William W.: *See—*
Dougherty, Harry L.; and Beazley, William W., 4,212,637, Cl. 433-5.000.

Beckman Instruments, Inc.: *See—*
Hanlon, Brenton G. A.; Chang, Jaw-Kang; and Fong, Bosco T. W., 4,212,797, Cl. 260-112.50R.

Becton, Dickinson and Company: *See—*
Percarpio, Edward P., 4,212,308, Cl. 128-766.000.

Beecham Group Limited: *See—*
Baggaley, Keith H., 4,212,872, Cl. 424-270.000.
Baggaley, Keith H., 4,212,979, Cl. 546-270.000.

Beekenkamp, Gerald, to London Concrete Machinery Co. a division of Hodgson Machine & Equipment Ltd. Front end loading transit mixer. 4,212,542, Cl. 366-54.000.

Behle, Gunter R., to ACF Industries, Incorporated. Operating handle for bottom operated railway tank car valve. 4,212,447, Cl. 251-98.000.

Behrenz, Wolfgang: *See—*
Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,212,887, Cl. 424-304.000.
Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,212,883, Cl. 424-277.000.

Behringwerke Aktiengesellschaft: *See—*
Bauer, Hartwig W.; and Ax, Wolfgang, 4,212,650, Cl. 23-230.00B.

Belikin, Alexandr V.: *See—*
Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V., 4,212,708, Cl. 204-46.00G.

Belkevich, Petr I.: *See—*
Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.

Belkina, Ljudmila I.: *See—*
Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I., 4,212,914, Cl. 428-268.000.

Bell, Alexis T.: *See*—
Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., 4,212,719, Cl. 204-165.000.
Bell & Howell Company: *See*—
Shum, Edward K.; Martija, Henry M.; and Head, Leon E., 4,213,160, Cl. 360-73.000.
Bell Telephone Laboratories, Incorporated: *See*—
Brohard, Ivan E.; and Freeburg, James R., 4,212,101, Cl. 29-622.000.
Campbell, Joe C.; and Lee, Tien P., 4,213,138, Cl. 357-30.000.
English, Alan T.; and Miller, Gabriel L., 4,213,087, Cl. 324-62.000.
Falconer, David D., 4,213,095, Cl. 375-14.000.
Lawrence, Victor B.; and Mitra, Debasis, 4,213,187, Cl. 364-724.000.
Tsividis, Yannis, 4,213,098, Cl. 330-253.000.
Bellemon, Yves: *See*—
Prunier, Jean-Claude; and Bellemon, Yves, 4,212,514, Cl. 350-96.210.
Bellobono, Ignazio R.: *See*—
Calgari, Seba; Sirtori, Vittorio; and Bellobono, Ignazio R., 4,212,932, Cl. 429-111.000.
Bemis, John D.; and Goff, Willie, Jr., to International Business Machines Corporation. Impact printer cardholder with integral ribbon guide and end of ribbon sensor. 4,212,552, Cl. 400-249.000.
Benatar, Victor. Pressurized apparatus for discharging powdered reagent from a shipping container. 4,212,331, Cl. 141-67.000.
Beneze, Gyorgy; and Hamori, Andras, to Magyar Tudomanyos Akademia Kozponti Fizikai Kutato Intezete. Holographic subtraction with phase modulation to distinguish phase and amplitude differences. 4,212,536, Cl. 356-71.000.
Bendix Corporation, The: *See*—
Carp, Ralph W.; Weber, Robert E.; and Groff, William R., 4,213,181, Cl. 364-431.000.
Marchak, Roman O.; and Verner, Douglas R., 4,213,180, Cl. 364-431.000.
Melotti, Angelo R., 4,212,277, Cl. 123-343.000.
Schmidt, Charles C., 4,212,202, Cl. 73-304.00C.
Steer, John E., 4,212,411, Cl. 220-347.000.
Tang, Louis S., 4,212,166, Cl. 60-582.000.
Bennethum, Earl W., to Bethlehem Steel Corporation. Rotary drum agglomerating apparatus. 4,212,615, Cl. 425-222.000.
Bennett, Richard N., to National Instrument Company, Inc. Fine tune adjusting mechanism for tandem-operated filling units of a filling machine. 4,212,416, Cl. 222-267.000.
Benninger, Siegfried; and Schmidt, Adolf, to Hoechst Aktiengesellschaft. Process for reducing losses of mercury in alkali metal chloride electrolysis. 4,212,715, Cl. 204-99.000.
Berber, Viktor A.; Pervushin, Evgeny S.; Kholin, Vladimir G.; Fedorov, Alexandr G.; and Galishnikov, Boris M. Device for granulometric analysis of particles in fluids. 4,212,539, Cl. 356-336.000.
Berezuk, Peter D.: *See*—
Wolinski, Leon E.; and Berezuk, Peter D., 4,212,921, Cl. 428-414.000.
Bergmeyer, Hans U.: *See*—
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.
Bergner, Dieter; Heubach, Erhard; Hofmann, Winfried; Kuster, Ortwin; and Pelz, Lothar, to Hoechst Aktiengesellschaft. Equipment for regulating, monitoring, optimizing and operating, and for displaying data in, alkali metal chloride electrolysis plants. 4,212,721, Cl. 204-219.000.
Bergstrom, Bert: *See*—
Andersson, Allan; and Bergstrom, Bert, 4,212,569, Cl. 408-59.000.
Bernardi, Sergio: *See*—
Scattolin, Antonio; and Bernardi, Sergio, 4,213,172, Cl. 362-413.000.
Bernardin, Jacques A. N.; and Pechmeze, Jacques P. E., to Produits Chimiques Ugine Kuhlmann. Water-insoluble azo dyestuffs which are derivatives of 1-aryl-3-trifluoromethyl-5-pyrazolones. 4,212,647, Cl. 8-662.000.
Bernt, Erich: *See*—
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.
Bersano, Terenzio. Twin-screw, two-stage and multi-stage extruder having a double feed. 4,212,543, Cl. 366-85.000.
Berti, Marisa: *See*—
Cricchio, Renato; and Berti, Marisa, 4,212,873, Cl. 424-270.000.
Bertrand, Marcel J.: *See*—
van der Burg, Sjirk; Grosch, Karl A.; and Bertrand, Marcel J., 4,212,340, Cl. 152-355.000.
Bessouat, Roger; Tondeur, Gerard; Talleu, Patrick; and Cerdan, Jean-Pierre, to Stein Industrie; and Electricite de France, Connection between parallel tubular components of a cyclone separator. 4,212,658, Cl. 55-347.000.
Bethlehem Steel Corporation: *See*—
Bennethum, Earl W., 4,212,615, Cl. 425-222.000.
Beuscher, Clinton J.: *See*—
Tosswill, Christopher H.; and Beuscher, Clinton J., 4,212,707, Cl. 204-26.000.
Beuyukian, Charles S.: *See*—
United States of America, National Aeronautics and Space Administration; Beuyukian, Charles S.; Heisman, Robert M.; Haynie, Cyrus C.; and Ruppe, Emil P., 4,212,690, Cl. 148-131.000.
Bevz, Anatoly N.: *See*—
Vorobeichikov, Leonid T.; Fedoryakin, Boris F.; Panchenko, Grigory K.; Gorbanev, Grigory N.; Bevz, Anatoly N.; and Satarin, Vladimir I., 4,212,630, Cl. 432-80.000.
Beyens, Jozef, to Konstruktie J. Lambrechts p.v.b.a. Liquid dispensing head with rinsing fluid inlet and installation. 4,212,414, Cl. 222-148.000.
Beyer, Horst: *See*—
Buran, Ulrich; and Beyer, Horst, 4,212,602, Cl. 418-178.000.
Beyersdorf, Hartwig. Ionization fire-signal device. 4,213,046, Cl. 250-381.000.
Bianchi, John E. Shoulder holster with improved shoulder strap arrangement. 4,212,418, Cl. 224-206.000.
Bikle, Paul F.; and Montoya, Lawrence C., to United States of America, National Aeronautics and Space Administration. System for use in conducting wake investigation for a wing in flight. 4,212,199, Cl. 73-861.660.
Billet, Rene, to Societe Anonyme Francaise du Ferodo. Torsion damping assembly for friction clutches. 4,212,380, Cl. 192-106.200.
Bindin, Peter J.: *See*—
Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., 4,212,933, Cl. 429-122.000.
Bingham, Mary E.: *See*—
Phillips, Kenneth G.; and Bingham, Mary E., 4,212,784, Cl. 260-29.6WQ.
Binks Manufacturing Company: *See*—
Lamontagne, Robert E.; and Scull, Jon V., 4,212,591, Cl. 417-38.000.
Binsack, Rudolf: *See*—
Lehr, Gunter; and Binsack, Rudolf, 4,212,963, Cl. 528-272.000.
Bippus, Jacob R., to Rockwell International Corporation. Anti-kickback device. 4,212,214, Cl. 83-102.100.
Birjulev, Alexei V.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.
Birrell, Raymond N.; and Royle, Norman E., to Ciba-Geigy (UK) Limited. Process for producing polymaleic anhydride. 4,212,788, Cl. 260-33.6UA.
Birt, David R., to Communications Patents Limited. Circuit for detecting and controlling simultaneous conduction of two switches connected in series. 4,213,103, Cl. 332-9.00T.
Bizilia, George. Foot holding device for use in performing sit-up exercises. 4,212,458, Cl. 272-93.000.
Bjarsch, Otto, to Bosch-Siemens Hausgerate GmbH. Electric toaster. 4,213,033, Cl. 219-385.000.
Blain, William A.: *See*—
Bagdan, Henry J.; and Blain, William A., 4,212,617, Cl. 425-311.000.
Blair, Thomas O. Apparatus for setting fabric loops. 4,212,698, Cl. 156-378.000.
Blanpain, Guy; and Grandfils, Pierre, to Charbonnages de France. Device for causing translation of a tracked machine. 4,212,362, Cl. 180-6.480.
Blaskowski, Henry J., to Combustion Engineering, Inc. Combined cycle power plant using low Btu gas. 4,212,160, Cl. 60-39.120.
Blattler, Joseph F. Pipe expander. 4,212,186, Cl. 72-393.000.
Bliemeister, Robert M.: *See*—
Conrad, Ralph M.; and Bliemeister, Robert M., 4,212,632, Cl. 432-115.000.
Bliznjuk, Alexandr N.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev. V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; by Chudova, Ljudmila A., administrator; and by Chudov, Vladimir L., administrator. O,O-Diaryl-1-acyloxy-2,2,2-trichloroethylphosphonates and fungicides based thereon. 4,212,862, Cl. 424-212.000.
Board of Reagents, for and on behalf of the University of Florida: *See*—
Tsibris, John C. M., 4,212,905, Cl. 427-221.000.
Boatwright, William H., to Westvaco Corporation. Recovery furnace safety system. 4,212,628, Cl. 432-4.000.
Bobrick Corporation, The: *See*—
Walker, Randall B., 4,212,434, Cl. 242-55.200.
Bockelmann, Manfred. Separation of materials. 4,212,397, Cl. 209-589.000.
Bodlaj, Viktor, to Siemens Aktiengesellschaft. Device for contact-free measuring of the distance of a surface of an object from a reference plane. 4,212,534, Cl. 356-1.000.

Boehme, Robert E.; and Murphy, Clarence R., to Champion International Corporation; and Gulf Oil Corporation. Apparatus and process for the manufacture of fibrils. 4,212,848, Cl. 422-267.000.
Boehringer Ingelheim GmbH: *See*—
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,212,877, Cl. 424-273.00B.
Boehringer Mannheim GmbH: *See*—
Friebe, Walter-Gunar; Thiel, Max; Roesch, Androniki; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, 4,212,866, Cl. 424-253.000.
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.
Werner, Wolfgang; and Rittersdorf, Walter, 4,212,844, Cl. 422-56.000.
Boeing Company, The: *See*—
Pinckney, Robert L., 4,212,491, Cl. 295-11.000.
Pinson, George T., 4,212,188, Cl. 72-413.000.
Stephan, Leonard P., 4,212,444, Cl. 244-182.000.
Boers, Martinus W. A.: *See*—
Schrijvers, Joost E.; and Boers, Martinus W. A., 4,213,055, Cl. 250-483.000.
Boesch, Roger, to Philagro. 2-Cyano-5-substituted 1,3,4-oxadiazoles and fungicidal compositions containing them. 4,212,867, Cl. 424-263.000.
Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, to Lindemann Maschinenfabrik GmbH. Comminuting machine and housing with a rotor journalled in the housing and a tool connected to the housing. 4,212,432, Cl. 241-285.00B.
Bonar, Kermit M., to Dresser Industries, Inc. Method of making magnesite grain. 4,212,679, Cl. 106-57.000.
Bones, Roger J.: *See*—
Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., 4,212,933, Cl. 429-122.000.
Borg Instruments Inc.: *See*—
Frey, LaVerne L., 4,212,157, Cl. 368-87.000.
Borg-Warner Corporation: *See*—
Falk, John C., 4,212,958, Cl. 525-310.000.
Borgen, Sverre M.: *See*—
Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., 4,213,070, Cl. 310-71.000.
Borglum, Gerald B., to Miles Laboratories, Inc. Production of bacterial cell aggregate. 4,212,943, Cl. 435-180.000.
Borowski, Karl-Heinz; and Honke, Heinrich, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH. Liquid discharge apparatus for a shearing-loader type mining machine. 4,212,497, Cl. 299-53.000.
Bosch-Siemens Hausgerate GmbH: *See*—
Bjarsch, Otto, 4,213,033, Cl. 219-385.000.
Farber, Karl-Heinz, 4,213,031, Cl. 219-244.000.
Bosio, Roberto. Device for producing an artificial blood circulation. 4,212,589, Cl. 417-12.000.
Bosse, Frank; and Lage, Karl-Heinz, to Windmoller & Holscher. Method of reinforcing flattened tubular film with tape layers. 4,212,695, Cl. 156-188.000.
Boswell, George A., Jr., to Du Pont de Nemours, E. I., and Company. Preparation of vinylene fluorides. 4,212,815, Cl. 260-397.200.
Bouchard, Craig T.; Rothrock, Elmer W.; and Maher, James B., to Chicago Bridge & Iron Company. Power producing dry-type cooling system. 4,212,168, Cl. 60-661.000.
Bourne, John B.: *See*—
Gagnier, Real; Munter, Ernst, A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.
Bourrinet, Francis: *See*—
Policand, Gerard; Trompette, Jacques; and Bourrinet, Francis, 4,213,101, Cl. 331-78.000.
Bova, Anthony J. Waterbed filling unit. 4,212,335, Cl. 141-382.000.
Bowerman, Paul D.: *See*—
Lucid, Michael F.; Robertson, Wilbert J.; and Bowerman, Paul D., 4,212,849, Cl. 423-10.000.
Bowerman, William J.; Hollister, Geoffrey L.; James, Stanley L.; and Vixie, Dennis E., to BRS, Inc. Track shoes having straight last and improved spike placement. 4,212,120, Cl. 36-129.000.
Boyd, Edward S., to Rockwell International Corporation. Variable heat transfer device. 4,212,346, Cl. 165-32.000.
Brader, Walter H., Jr.: *See*—
Marquis, Edward T.; and Brader, Walter H., Jr., 4,212,821, Cl. 260-570.00D.
Brady, Donnie G., to Phillips Petroleum Company. Laminate using a poly(arylene sulfide)-polytetrafluoroethylene adhesive. 4,212,923, Cl. 428-419.000.
Bragg, Robert C., Jr.; and Hawley, John T., to American Optical Corporation. Jacking screw type fastener. 4,212,224, Cl. 85-1.00K.
Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., to Allen-Bradley Company. Electrical resistor element and method of manufacturing the same. 4,213,113, Cl. 338-309.000.
Brandwein, Arthur. Tape splicing device and dispenser therefor. 4,212,694, Cl. 156-184.000.
Braner Enterprises, Inc.: *See*—
Braner, Harold R.; and Matsunaga, Douglas S., 4,212,218, Cl. 83-479.000.
Braner, Harold R.; and Matsunaga, Douglas S., to Braner Enterprises, Inc. Slitter having liftable pivoted multiple spaced pairs of arbors. 4,212,218, Cl. 83-479.000.
Brans, Bernhard: *See*—
Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, 4,212,432, Cl. 241-285.00B.
Braunschweiler, Hans-Georg, to Georg Fischer Brugg - Oehler AG. Apparatus for assembling planar work pieces. 4,212,699, Cl. 156-558.000.
Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., to Standard Oil Company. Process for forming multi-component oxide complex catalysts. 4,212,766, Cl. 252-432.000.
Bremon, Christian; Grannec, Anne; Pery, Remy; and Philippe, Joel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Electro-mechanical filter. 4,213,107, Cl. 333-197.000.
Brennan, Michael P. J.: *See*—
Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., 4,212,933, Cl. 429-122.000.
Brereton, Paul A.; and Challis, Roger, to Triplex Safety Glass Company Limited. Method of heating glass sheets for conveying. 4,212,662, Cl. 65-106.000.
Bretschneider, Erich, to Schloemann-Siemag Aktiengesellschaft. Rolling mill. 4,212,178, Cl. 72-97.000.
Brewer, Robert L.: *See*—
Shumate, Billy R., 4,212,129, Cl. 43-113.000.
Brewing Patents Limited: *See*—
Laws, Derek R. J.; Bath, Nigel A.; Ennis, Colin S.; Pickett, John A.; and Wheldon, Alfred G., 4,212,895, Cl. 426-600.000.
Bridge, Adam P.: *See*—
Babington, William M., Jr.; and Bridge, Adam P., 4,212,705, Cl. 162-238.000.
Bridgestone Tire Company Limited: *See*—
Yamamoto, Megumi, 4,212,328, Cl. 138-138.000.
Bristol-Myers Company: *See*—
McKenzie, Robert T., 4,212,392, Cl. 206-571.000.
Brockmann, Klaus-Dieter K.; and Dijkmans, Eise C., to U.S. Philips Corporation. Arrangement for measuring the line condition of a subscriber's line circuit by means of a measuring resistor. 4,213,016, Cl. 179-175.30R.
Brohard, Ivan E.; and Freeburg, James R., to Bell Telephone Laboratories, Incorporated. Method for adjusting piezoelectric relay operating gaps. 4,212,101, Cl. 29-622.000.
Brokamp, Hans J. B. Modular planting box system including liquid level and insert. 4,212,134, Cl. 47-82.000.
Bromberg, Michael A.: *See*—
Morley, Richard E.; Bromberg, Michael A.; and Taylor, William A., 4,213,174, Cl. 364-104.000.
Brooks, George C.; and Brown, James R. Apparatus for separating and classifying diverse, liquid-suspended solids. 4,212,730, Cl. 209-168.000.
Brooks, Hubert C.; and Stroh, Alan E., to Essex Group, Inc. Electrical connector assembly. 4,212,509, Cl. 339-95.00D.
Brosse, Jean-Claude: *See*—
Pinazzi, Christian; Lenain, Jean-Claude; and Brosse, Jean-Claude, 4,212,718, Cl. 204-159.230.
Brothers, J. Alfred: *See*—
Chahine, M. Helmy; and Brothers, J. Alfred, 4,212,892, Cl. 426-289.000.
Brower, Ronald W., to NCR Corporation. CISFET Processing including simultaneous doping of silicon components and FET channels. 4,212,684, Cl. 148-1.500.
Brown, Arthur V., Jr.; and Karrasch, Richard J., to Jim Dandy Company, The. Molasses-containing animal feed having resilient structure. 4,212,896, Cl. 426-623.000.
Brown, Claire L.: *See*—
Barron, Roger L.; Mucciardi, Anthony N.; and Brown, Claire L., 4,213,183, Cl. 364-507.000.
Brown, Craig K., to United States of America, Navy. Hydrophone preamplifier and calibration circuit. 4,213,099, Cl. 330-297.000.
Brown, James R.: *See*—
Brooks, George C.; and Brown, James R., 4,212,730, Cl. 209-168.000.
Brown & Root, Inc.: *See*—
Maybury, Richard W., 4,212,248, Cl. 104-138.00G
Weidler, Jay B.; Gracia, Bert E.; and Hull, Tommy L., 4,212,563, Cl. 405-195.000.
Brown, William F., to Wausau Homes, Inc. Fireproof barrier coating compositions. 4,212,909, Cl. 427-393.500.
Brownlee, J. O. Agricultural machine. 4,212,148, Cl. 56-328.00R.
BRS, Inc.: *See*—
Bowerman, William J.; Hollister, Geoffrey L.; James, Stanley L.; and Vixie, Dennis E., 4,212,120, Cl. 36-129.000.
Brubaker, Gaylen R.; and Scholer, Fred R., to FMC Corporation Peroxygen bleaching and compositions therefor. 4,212,757, Cl. 252-95.000.
Bruckner, Willy: *See*—
Weidlich, Dieter H.; and Bruckner, Willy, 4,212,610, Cl. 425-110.000.
Brumfield, Robert C. Blood processing apparatus. 4,212,741, Cl. 210-241.000.
Bruns, Klaus: *See*—
Schaper, Ulf-Armin; and Bruns, Klaus, 4,212,773, Cl. 252-522.00R
Brusq, Roger: *See*—
Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, 4,213,124, Cl. 340-706.000.

Bubik, Leslie, to Vulcan Equipment Company Limited. Vehicle hoist. 4,212,374, Cl. 187-8.430.

Buchanan, James E., to Westinghouse Electric Corp. CCD Digital-to-analog converter. 4,213,120, Cl. 340-347.0DA.

Buchholz, Rainer; Zodrow, Rudolf; and Lohse, Reinhard, to Jagenberg Werke AG. Labeling station. 4,212,700, Cl. 156-568.000.

Buchsteiner, Renate, to Johannes Buchsteiner GmbH & Co KG. Stand for holding utensils to be dried. 4,212,400, Cl. 211-41.000.

Buckler, Robert T.; and Schroeder, Hartmut R., to Miles Laboratories, Inc. Bis-phthalimides. 4,212,805, Cl. 260-326.00N.

Buczkowski, Fred E.: *See—*
Payne, Robert D.; Buczkowski, Fred E.; and Szpitalak, Wesley J., 4,212,266, Cl. 118-712.000.

Bulankin, Rudolf P.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Bunker Ramo Corporation: *See—*
Perna, Jiulio E.; and Mache, Gerhard R., 4,213,013, Cl. 179-98.000.

Bunker, Richard D.: *See—*
Durand, Harry W.; and Bunker, Richard D., 4,212,704, Cl. 162-175.000.

Bunnell, Edward D., to AMP Incorporated. Selective interconnection system and connector. 4,212,507, Cl. 339-18.00B.

Buran, Ulrich; and Beyer, Horst, to Goetzewerke Friedrich Goetze AG. Wear-resistant coating for sealing strips in rotary engines. 4,212,602, Cl. 418-178.000.

Burgess, William F., to Thomas Hill (Rotherham) Limited. Mine locomotive. 4,212,250, Cl. 105-50.000.

Burke, Timothy R.: *See—*
Ashcraft, Arnold C.; Turbett, Robert J.; and Burke, Timothy R., 4,212,756, Cl. 252-63.200.

Burkett, William E., to James River Hydrate & Supply Co., Inc. Process and apparatus for producing an aggregate material from bottom ash. 4,212,682, Cl. 106-288.00B.

Burklin, Max: *See—*
Dreher, Ernst; Wolf, Richard; and Burklin, Max, 4,212,370, Cl. 181-230.000.

Burlington Industries, Inc.: *See—*
Roman, Alfred R., 4,212,152, Cl. 57-207.000.

Burroughs Corporation: *See—*
Drinkard, John H., Jr., 4,212,102, Cl. 29-741.000.
Wisner, Daniel A.; and Schmalzriedt, Truman T., 4,213,082, Cl. 323-17.000.

Burtsev, Vladimir M.: *See—*
Smolko, Gennady G.; Akushsky, Izrail Y.; and Burtsev, Vladimir M., 4,213,188, Cl. 364-739.000.

Buss, Robert R.: *See—*
West, Perry C.; and Buss, Robert R., 4,212,205, Cl. 73-579.000.

Butler, Donald E., to Warner-Lambert Company. 5-Phenoxy-2-pyridinecarbonitrile compounds and methods for their production. 4,212,980, Cl. 546-288.000.

Butler, J. R.: *See—*
Hulsey, Eldon E., 4,212,321, Cl. 137-625.320.

Butler, L. Dennis, to Sperry Corporation. Apparatus for retaining bales in position on a bale wagon. 4,212,578, Cl. 414-39.000.

Buxton, Howard D., to Motorola, Inc. Tinning apparatus for multiple solder surfaces. 4,212,265, Cl. 118-700.000.

Buys, Bruno, to Astec. Apparatus for cutting a tube of semi-rigid material. 4,212,215, Cl. 83-109.000.

Buyze Allan W.: *See—*
Glovak, Danny W.; and Buyze, Allan W., 4,212,462, Cl. 273-424.000.

Byer, Robert L.; and Herbst, Richard L., to Leland Stanford University, The Board of Trustees of. Tunable infrared source employing Raman mixing. 4,213,060, Cl. 307-426.000.

Bykhovsky, David G.; and Voropaev, Albert A., to Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky i Teknologichesky Institut Elektrosvarochnogo Oborudovania. Method of treating electrodes intended for operation in argon as cathodes of an electric arc. 4,213,027, Cl. 219-75.000.

C. A. Pemberton & Co.: *See—*
Heppner, John B., 4,212,217, Cl. 83-277.000.

Cadart, Francois; and Pflieger, Bernard, to Compagnie Generale des Etablissements Michelin. Arrangement comprising a compartment and a conduit. 4,212,931, Cl. 429-104.000.

Caffarella, Thomas E.; Radda, George J.; and Dooley, Harry H., Jr., to American Atomics Corporation. Miniature radioactive light source and method of its manufacture. 4,213,052, Cl. 250-462.000.

Cagan, Bernard J.; and McQuary, Kenneth L., to Placo Products Company. Dart gun and dart therefor. 4,212,285, Cl. 124-67.000.

Calgari, Seba; Sirtori, Vittorio; and Bellobono, Ignazio R., to Societe' Nazionale Industria Applicazioni Viscosa S.p.A. (Snia Viscosa). Device for the direct conversion of radiant energy to electrical energy. 4,212,932, Cl. 429-111.000.

California Institute of Technology: *See—*
United States of America, National Aeronautics and Space Administration; and Humphrey, Marshall F., 4,212,732, Cl. 210-32.000.

Cameron, Eugene A. Digitizer tablet. 4,213,005, Cl. 178-18.000.

Camloc Fastener GmbH: *See—*
Weidlich, Dieter H.; and Bruckner, Willy, 4,212,610, Cl. 425-110.000.

Campbell, George T. R.; and Morioke, Yukitoshi, to Algoship International Limited. Device for lifting crane boom. 4,212,404, Cl. 212-238.000.

Campbell, Joe C.; and Lee, Tien P., to Bell Telephone Laboratories, Incorporated. Demultiplexing photodetector. 4,213,138, Cl. 357-30.000.

Campbell, Robert W., to Phillips Petroleum Company. Normally solid, moldable polyamide from branched chain diamine and aliphatic dicarboxylic acid. 4,212,964, Cl. 528-340.000.

Campbell, Robert W., to Phillips Petroleum Company. Polyamides with elastomeric character from 5-methylnonamethylene diamine. 4,212,965, Cl. 528-340.000.

Canadian Patents & Development Ltd.: *See—*
Sanders, Corey L.; and Makow, David M., 4,212,535, Cl. 356-51.000.

Canavello, Benjamin J.; Hatzakis, Michael; and Shaw, Jane M., to International Business Machines Corporation. Method of modifying the development profile of photoresists. 4,212,935, Cl. 430-326.000.

Canon Kabushiki Kaisha: *See—*
Imataki, Hiroyuki; Kobayashi, Masatsune; and Ohta, Tokuya, 4,212,518, Cl. 350-357.000.
Knechtel, Wilhelm; and Tokiwa, Taisuke, 4,212,264, Cl. 118-653.000.

Cante, Charles J.: *See—*
Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., 4,212,894, Cl. 426-332.000.

Caraway, Guy C., deceased; and by Caraway, Virginia M., executrix. Centrifugal wet gas scrubbing method and apparatus. 4,212,654, Cl. 55-91.000.

Caraway, Virginia M., executrix: *See—*
Caraway, Guy C., deceased; and Caraway, Virginia M., executrix, 4,212,654, Cl. 55-91.000.

Carlson, Elmer T. Bus conduit electrical distribution system. 4,213,003, Cl. 174-88.00B.

Caron, Bernard G.: *See—*
Barber, Donald L., Jr.; and Caron, Bernard G., 4,212,413, Cl. 222-1.000.

Carp, Ralph W.; Weber, Robert E.; and Groff, William R., to Bendix Corporation, The. Energy dissipation circuit for electromagnetic injection. 4,213,181, Cl. 364-431.000.

Carrier Corporation: *See—*
Alman, Donald W.; Gerwitz, Paul F.; and Tygard, Charles M., 4,213,112, Cl. 338-183.000.

Carrigan, Erwin R.: *See—*
Ames, Ernest R.; Struttmann, Hilarius S.; and Carrigan, Erwin R., 4,212,502, Cl. 308-3.00R.

Carroll, Michael H.; Taylor, Richard J.; and McCubbin, Peter J., to General Signal Corporation. Discriminating means for telephone circuits. 4,213,012, Cl. 179-84.00R.

Carson, Chrislyn M.; Ehr, Robert J.; and Rogers, Richard B., to Dow Chemical Company, The. Substituted 1-pyridinyloxy-1-(imidazolyl)-2-butanone compounds and their use as fungicides. 4,212,869, Cl. 424-263.000.

Carter, Anthony F.: *See—*
Swarden, Michael C.; Magge, Shankar S.; Jansen, Willem; and Carter, Anthony F., 4,212,585, Cl. 415-53.00R.

Casad, Burton M.: *See—*
Ferrell, Howard H.; Conley, Dell; Casad, Burton M.; and Stokke, Olaf M., 4,212,748, Cl. 252-8.55D.

Caterpillar Tractor Co.: *See—*
Peterson, Laurel L.; and Hickman, Alan J., 4,212,375, Cl. 187-9.00R.
Ruseff, Walter Z., 4,212,596, Cl. 417-216.000.
Shoup, Stephen G., 4,212,139, Cl. 52-721.000.

Cattaneo, Filippo; and Corolla, Rosolino, to Innocenti Santeustacchio S.p.A. Device for controlling the rotation of the working rollers in a tube rolling mill. 4,212,180, Cl. 72-249.000.

Cecil, Howard E.: *See—*
Kutik, Louis F.; and Cecil, Howard E., 4,212,332, Cl. 141-98.000.

Cecka, Andrew M.; and Pawling, Paul G., to Fansteel Inc. Composite high strength to weight structure having shell and weight controlled core. 4,212,461, Cl. 273-73.00F.

Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, to Pfizer Inc. Process for producing nocardicin A. 4,212,944, Cl. 435-121.000.

Celotex Corporation, The: *See—*
Skowronski, Michael J.; and DeLeon, Alberto, 4,212,917, Cl. 428-310.000.

Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban: *See—*
Simeonov, Yordan T.; and Djabarov, Nikola B., 4,212,681, Cl. 106-89.000.

Cerdan, Jean-Pierre: *See—*
Bessouat, Roger; Tondeur, Gerard; Talleu, Patrick; and Cerdan, Jean-Pierre, 4,212,658, Cl. 55-347.000.

Cesaratto, Ceasar: *See—*
Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.

Chadwick, Duane G., to Utah State University Foundation. Heat-powered water pump. 4,212,593, Cl. 417-53.000.

Chahine, M. Helmy; and Brothers, J. Alfred, to Nova Scotia Research Foundation Corporation. Method of preparing a high-protein snack food. 4,212,892, Cl. 426-289.000.

Challis, Roger: *See—*
Brereton, Paul A.; and Challis, Roger, 4,212,662, Cl. 65-106.000.

Champion International Corporation: *See—*
Boehme, Robert E.; and Murphy, Clarence R., 4,212,848, Cl. 422-267.000.
Korte, Ralph J., 4,212,395, Cl. 206-611.000.
Schillinger, Joseph F., 4,212,391, Cl. 206-434.000.

Chandler, Arthur R.; and Moody, Victor, to Weatherford/Lamb, Inc. Rotary drive apparatus. 4,212,212, Cl. 81-57.170.

Chang, Jaw-Kang: *See—*
Hanlon, Brenton G. A.; Chang, Jaw-Kang; and Fong, Bosco T. W., 4,212,797, Cl. 260-112.50R.

Chapman, Paul W., to Sanders Associates, Inc. Aquaculture habitat. 4,212,268, Cl. 119-2.000.

Charbonnages de France: *See—*
Blanpain, Guy; and Grandfils, Pierre, 4,212,362, Cl. 180-6.480.

Charles Stark Draper Laboratory, Inc., The: *See—*
Matson, Leslie E., Jr., 4,213,200, Cl. 367-117.000.

Chaumont, Gerard P. L., to Sperry Corporation. Deflector means for mower-conditioner. 4,212,143, Cl. 56-14.400.

Chemische Werke Huls A.G.: *See—*
Turck, Ulrich, 4,212,785, Cl. 260-29.70H.

Chen, Chun-Fu, to University of Akron, The. Circuit and method for the recorder display of high frequency periodic signals. 4,213,134, Cl. 346-1.100.

Chernyshev, Valery P.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Cherry, Donald G.: *See—*
Young, David W.; and Cherry, Donald G., 4,212,759, Cl. 252-119.000.

Chesher, Keith, to Pye (Electronics Products) Limited. Load measuring arrangements for fork lift trucks or the like. 4,212,360, Cl. 177-139.000.

Chibnik, Sheldon, to Mobil Oil Corporation. Chelate detergent and antiwear additive for lubricants derived from hydroxyalkylated benzotriazoles. 4,212,754, Cl. 252-49.700.

Chicago Bridge & Iron Company: *See—*
Bouchard, Craig T.; Rothrock, Elmer W.; and Maher, James B., 4,212,168, Cl. 60-661.000.

Chimura, Kozo: *See—*
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,212,155, Cl. 368-250.000.

Chiu, Ran F.; Kromer, Philip F., III; Kao, Ming L.; and Parrish, Henry H., to Racal-Milgo, Inc. Hybrid automatic gain control circuit. 4,213,097, Cl. 330-51.000.

Chiyoda Kako Kensetsu Kabushiki Kaisha: *See—*
Fukui, Suguru, 4,212,853, Cl. 423-235.000.

Chloride Group Limited: *See—*
Rock, Alan, 4,213,080, Cl. 320-21.000.

Chloride Silent Power Limited: *See—*
Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., 4,212,933, Cl. 429-122.000.

Choi, Mansam, to Anthony Manufacturing Corp. Protective housing for irrigation sprinklers. 4,212,426, Cl. 239-230.000.

Chou, Ta-Sen, to Eli Lilly and Company. Process for preparing N-chloroimides. 4,212,977, Cl. 546-243.000.

Choulet, Jean-Claude; and Laily, Andre, to Rhone-Poulenc Industries. Single-stage process for the preparation of terephthalic acid. 4,212,991, Cl. 562-480.000.

Christensen, Alton O., Sr. Electron beam accessed read-write-erase random access memory. 4,213,192, Cl. 365-118.000.

Chromalloy Electronics Corporation: *See—*
Genest, Leonard J.; and Madenlian, Vache B., 4,213,118, Cl. 340-149.00R.

Chrysler Corporation: *See—*
Warmbold, Helmut, 4,212,318, Cl. 137-590.000.

Chudov, Lev N., deceased. *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Chudov, Vladimir L., administrator: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Chudova, Ljudmila A., administrator: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Chyung, Kenneth; and Megles, John E., Jr., to Corning Glass Works. Rapidly crystallized beta-spodumene glass-ceramic materials. 4,212,678, Cl. 106-39.700.

Ciaccio, Leonard L., to Novo Laboratories, Inc. Method and composition for cleaning dairy equipment. 4,212,761, Cl. 252-174.120.

Ciba-Geigy AG: *See—*
Della Casa, Angelo; and Karlen, Urs, 4,212,642, Cl. 8-470.000.
Kolliker, Hans P., 4,212,643, Cl. 8-470.000.

Ciba-Geigy Corporation: *See—*
Fringeli, Werner, 4,212,763, Cl. 252-301.230.
Gschwend, Heinz W.; and Huebner, Charles F., 4,212,808, Cl. 260-340.300.

Ciba-Geigy (UK) Limited: *See—*
Birrell, Raymond N.; and Royle, Norman E., 4,212,788, Cl. 260-33.6UA.

Cities Service Company: *See—*
LaDelfa, Christopher J.; and Greene, Marvin, 4,212,112, Cl. 34-9.000.

Citizen Watch Co., Ltd.: *See—*
Tamaru, Munetaka, 4,212,158, Cl. 368-80.000.

Clark, John H.: *See—*
Moore, C. Bradley; Clark, John H.; Haas, Yehuda; and Houston, Paul L., 4,212,717, Cl. 204-158.00R.

Clark, Michael T.; and ten Haken, Pieter, to Shell Oil Company. Certain fungicidal pyridinecarbaldehyde phenylhydrazones. 4,212,868, Cl. 424-263.000.

Clark, Raymond D., to Eastman Kodak Company. Preparation of cyclopentane-1,1-diacetic acid and intermediate. 4,212,973, Cl. 546-16.000.

Clarke, Geoffrey C.: *See—*
Webb, Victor A.; Wells, Arthur D.; Clarke, Geoffrey C.; and Peecock, Charles P. R., 4,212,259, Cl. 115-73.000.

Clemens, Jon K., to RCA Corporation. Recording/playback apparatus using a single pilot tone for active tracking and control of a video disc pickup device. 4,213,148, Cl. 358-128.600.

Clements, Boyd D.; Hines, Charles E.; and Kubat, James J., to Outboard Marine Corporation. Turf aerating device. 4,212,357, Cl. 172-22.000.

Cliff, George S.; and Willocks, Jack, to Imperical Chemical Industries Limited. Extrusion apparatus and method for extruding abrasive pastes. 4,212,840, Cl. 264-338.000.

Cline, Quentin E.; and Floyd, Paul D., to Virginia Panel Corporation. Computer interface receiver retrofit kit. 4,212,508, Cl. 339-18.00B.

Coal Industry (Patents) Limited: *See—*
Williams, Morgan J., 4,212,382, Cl. 198-502.000.

Coates, John S., to Du Pont de Nemours, E. I., and Company. Reducing color formers in 1,4-butanediol. 4,213,000, Cl. 568-861.000.

Cochard, Michel, to Vibro-Meter SA. Vibration monitoring system for an aircraft engine. 4,213,114, Cl. 340-27.00R.

Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., to General Electric Company. Electrolysis of alkali metal halides in a three compartment cell with self-pressurized buffer compartment. 4,212,714, Cl. 204-98.000.

Cole, Lanier G., to United States of America, Air Force. Doubly adaptive CFAR apparatus. 4,213,127, Cl. 343-5.0CF.

Colgate-Palmolive Company: *See—*
Karami, Hamzeh, 4,212,302, Cl. 128-287.000.

Collins, H. Dale, to International Submarine Services, S.A. Underwater apparatus for acoustically inspecting a submerged object. 4,212,258, Cl. 114-312.000.

Colussi, Elio J., to Solid State Scientific Inc. Hybrid transistor. 4,213,141, Cl. 357-74.000.

Combustion Engineering, Inc.: *See—*
Blaskowski, Henry J., 4,212,160, Cl. 60-39.120.
Mabery, Thomas L., 4,212,183, Cl. 72-318.000.

Commissariat a l'Energie Atomique: *See—*
Rigny, Paul, 4,212,716, Cl. 204-157.10R.

Communications Patents Limited: *See—*
Birt, David R., 4,213,103, Cl. 332-9.00T.

Compagnie Generale d'Appareillage Electrique C G A E.: *See—*
Marcoz, Bruno, 4,213,109, Cl. 335-174.000.

Compagnie Generale de Radiologie: *See—*
Quang, Dang T.; Leguen, Jacques; and Delair, Jacques, 4,213,048, Cl. 250-402.000.

Compagnie Generale des Etablissements Michelin: *See—*
Cadart, Francois; and Pflieger, Bernard, 4,212,931, Cl. 429-104.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Bremon, Christian; Grannec, Anne; Pery, Remy; and Philippe, Joel, 4,213,107, Cl. 333-197.000.

Compak Systems Inc.: *See—*
Penick, Ib; and Volkert, John K., 4,212,231, Cl. 93-1.00F.

Componentry Research & Development Enterprises, Inc.: *See*—
Zakow, Gilbert, 4,212,175, Cl. 70-58.000.
Concast AG: *See*—
Linder, Sten; and Spijkerman, Johan, 4,212,342, Cl. 164-4.000.
Concord Laboratories, Inc.: *See*—
Raitto, Russell G., 4,212,307, Cl. 128-763.000.
Congoleum Corporation: *See*—
Potosky, Milton J.; and Rohrbacher, Peter J., 4,212,691, Cl. 156-79.000.
Conley, Dell: *See*—
Ferrell, Howard H.; Conley, Dell; Casad, Burton M.; and Stokke, Olaf M., 4,212,748, Cl. 252-8.55D.
Conner, Charles C. Electronically actuated electric switch. 4,213,061, Cl. 307-116.000.
Conoco, Inc.: *See*—
Ferrell, Howard H.; Conley, Dell; Casad, Burton M.; and Stokke, Olaf M., 4,212,748, Cl. 252-8.55D.
Conrad, Ralph M.; and Bliemeister, Robert M., to Allis-Chalmers Corporation. Cooling arrangement for rotary kiln. 4,212,632, Cl. 432-115.000.
Conradi, Joseph J., to Shell Oil Company. Ultrasonic tube inspection. 4,212,207, Cl. 73-623.000.
Conroy, Reid A.: *See*—
Kydonieus, Agis F.; Smith, Inja K.; Conroy, Reid A.; and Pedicano, Ernest A., 4,212,153, Cl. 368-62.000.
Continental Group, Inc., The: *See*—
Miller, Donald E., 4,212,185, Cl. 72-354.000.
Payne, Robert D.; Buczkowski, Fred E.; and Szpitalak, Wesley J., 4,212,266, Cl. 118-712.000.
Continental Gummi-Werke Aktiengesellschaft: *See*—
Tiemann, Reinhard, 4,212,338, Cl. 152-158.000.
Cook, Martin E. Anti-runout device and conveyor apparatus. 4,212,381, Cl. 193-40.000.
Cook, Richard L. Fitting for flexible walled receptacle. 4,212,488, Cl. 285-200.000.
Cooper, Paul J., to NCR Corporation. System and method for increasing the output data throughput of a computer. 4,213,176, Cl. 364-200.000.
Cooper, Paul V., to Plessey Handel und Investments AG. Method and apparatus for testing a magnetic domain device. 4,213,091, Cl. 324-210.000.
Cooperstein, Gerald: *See*—
Mahaffey, Redge A.; Goldstein, Shyke A.; Golden, Jeffry; and Cooperstein, Gerald, 4,213,073, Cl. 313-310.000.
Coover, Stephen R.; and Reist, Parker C., to Research Triangle Institute. Acoustical particle detector and method. 4,212,190, Cl. 73-28.000.
Coppola, Gary M., to Sandoz, Inc. Process for the preparation of optionally substituted 2,3-indolinediones. 4,212,804, Cl. 260-325.00R.
Corazzari, Canzio: *See*—
Govoni, Gabriele; Di Drusco, Giovanni; Corazzari, Canzio; and Guardigli, Pierluigi, 4,212,967, Cl. 528-500.000.
Cornelius, Lammert, to Akzo N.V. Highly concentrated pharmaceutical formulations of steroids and processes for their preparation. 4,212,863, Cl. 424-240.000.
Corning Glass Works: *See*—
Aslami, Mohd A., 4,212,663, Cl. 65-144.000.
Barber, Donald L., Jr.; and Caron, Bernard G., 4,212,413, Cl. 222-1.000.
Chyung, Kenneth; and Megles, John E., Jr., 4,212,678, Cl. 106-39.700.
Hoda, Syed N., 4,212,919, Cl. 428-410.000.
Maurer, Robert D., 4,212,660, Cl. 65-3.00A.
Wu, Shy-Hsien, 4,212,836, Cl. 264-1.000.
Corolla, Rosolino: *See*—
Cattaneo, Filippo; and Corolla, Rosolino, 4,212,180, Cl. 72-249.000.
Correll, Curtis V., Sr.; and West, William F. Munition arming device. 4,212,225, Cl. 89-1.50D.
Cosden Technology, Inc.: *See*—
Mayes, Warden W., 4,212,726, Cl. 208-101.000.
Costley, Eugene J., to JDC Welding and Research, Inc. Butt welding process. 4,213,024, Cl. 219-61.000.
Crane Packing Co.: *See*—
Sedy, Josef, 4,212,475, Cl. 277-96.100.
Cricchio, Renato; and Berti, Marisa, to Gruppo Lepetit S.p.A. 4-Desoxy-thiazolo[5,4-c]rifamycin derivatives and their use as antimicrobial agents. 4,212,873, Cl. 424-270.000.
Crosby, Michael J. Orifice plate mixer and method of use. 4,212,544, Cl. 366-150.000.
Crouse-Hinds Company: *See*—
Piston, Thomas P., 4,213,018, Cl. 200-51.120.
Cullen, Donald E.; and Wagner, Robert A., to United Technologies Corporation. Vacuum encapsulation for surface acoustic wave (SAW) devices. 4,213,104, Cl. 333-150.000.
Cumming, James M.; and Saurenman, Donald G. Planar gas and ion distribution. 4,213,167, Cl. 361-213.000.
Cupples, Barrett L.: *See*—
Madgavkar, Ajay M.; Swift, Harold E.; and Cupples, Barrett L., 4,213,001, Cl. 585-510.000.
Curry, Paul F. Articulating mine car coupling. 4,212,365, Cl. 180-139.000.
Curtius, Horst; Feess, Erich; and Gronen, Willy, to Hoechst Aktiengesellschaft. Process for the printing of mixed fabrics of polyester and cellulose fibers. 4,212,646, Cl. 8-532.000.
Curtius, Horst; Feess, Erich; and Gronen, Willy, to Hoechst Aktiengesellschaft. Process for the printing of cellulose fiber fabrics. 4,212,648, Cl. 8-466.000.
Cuvelier, Jean-Philippe; and Gistau, Henri, to Societe Miniere et Metallurgique de Penarroya. Method and an apparatus for controlling a crusher. 4,212,429, Cl. 241-26.000.
Dabney, Upton, to Kroehler Mfg. Co. Rocker reclining chair with multi-position rocker lock. 4,212,494, Cl. 297-69.000.
Daigo, Yukitaka: *See*—
Goto, Yuzuru; Daigo, Yukitaka; and Hitotsuyanagi, Mikio, 4,212,733, Cl. 210-36.000.
Daimler-Benz Aktiengesellschaft: *See*—
Lovasz, Csaba; Maab, Horst-Dieter; Schene, Horst; and Teubner, Volker, 4,212,545, Cl. 366-152.000.
Zeilinger, Karl, 4,212,369, Cl. 181-224.000.
Dainippon Ink and Chemicals, Inc.: *See*—
Saito, Koukichi; and Suzuki, Nobuo, 4,212,693, Cl. 156-173.000.
Dale, John D.; and Knotter, David G., to Deering Precision Instruments Co. Hand-held pulverizer. 4,212,430, Cl. 241-89.400.
D'Amico, Fabrizio; Serboli, Giancarlo; and Foti, Vincenzo, to Anic, S.p.A. Process for the manufacture of laminated sheets of cellulosic and polymeric fibrous materials. 4,212,703, Cl. 162-129.000.
Dana Corporation: *See*—
Overbeek, Robert B., 4,212,557, Cl. 403-1.000.
Danfoss A/S: *See*—
Jespersen, Aksel, 4,213,062, Cl. 307-117.000.
Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., 4,213,070, Cl. 310-71.000.
Olsen, Gunnar E. R.; and Iversen, Poul C. C., 4,213,032, Cl. 219-364.000.
Daniel, Chelliah, to Air Products and Chemicals, Inc. Method of preparing an oxidation catalyst containing a molybdate anion. 4,212,767, Cl. 252-435.000.
Daniel, James W., Jr., to RCA Corporation. Phaselock receiver with phaselock detector. 4,213,096, Cl. 455-260.000.
Daniels, Dennis. Power plane for transporting fishing line. 4,212,127, Cl. 43-43.120.
Daniels, Peter J. L.; McCombie, Stuart; and Nagabhushan, Tattanahalli L., to Schering Corporation. 2'-Hydroxy-2'-desamino-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitols, methods for their manufacture, method for their use as antibacterial agents, and compositions useful therefor. 4,212,859, Cl. 424-180.000.
Dardi, Louis E.: *See*—
Veeck, Stewart J.; Freeman, William R.; and Dardi, Louis E., 4,212,669, Cl. 75-226.000.
Dart Industries Inc.: *See*—
Lahay, Charles A., 4,212,305, Cl. 128-354.000.
Data Card (U.K.) Limited: *See*—
Smith, Colin H. S., 4,213,041, Cl. 235-487.000.
Dataproducts Corporation: *See*—
Edwards, Albert L.; and Arzoumanian, Aram S., 4,212,549, Cl. 400-154.000.
Daucher, Hans; Dressel, Manfred; Hess, Klaus; and Engelhardt, Hubert, to BASF Aktiengesellschaft. Processes and apparatus for removing suspended matter from suspensions by filtration through foams. 4,212,737, Cl. 210-77.000.
Davidson, Allen R., to Motorola, Inc. Antenna system with multiple frequency inputs. 4,213,132, Cl. 343-854.000.
Davies, John I., to TBA Industrial Products Limited. Coupled glass in rubber modified thermoplastics. 4,212,792, Cl. 260-42.180.
Davies, Terence J.: *See*—
Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., 4,212,537, Cl. 356-73.100.
Davis, David J.: *See*—
Taylor, Brian P.; Davis, David J.; and Wasdell, Roy N., 4,212,469, Cl. 274-23.00A.
Davy-Loewy Limited: *See*—
Dunkley, John J., 4,212,736, Cl. 210-73.00R.
Davy Powergas GmbH: *See*—
Kerner, Walter; and Schmitz, Paul, 4,212,855, Cl. 423-522.000.
Davydov, Evgeny F.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
Dawson, John M., to TRW Inc. Method for flowing a large volume of plasma through an excitation region. 4,213,043, Cl. 250-283.000.
Day, F. Howard, to Hooker Chemicals & Plastics Corp. Process for the preparation of benzoyl halide and halosulfonylbenzoyl halide. 4,212,819, Cl. 260-543.00R.
Dayco Corporation: *See*—
Haren, Doyle V.; and Edwards, William M., 4,212,327, Cl. 138-125.000.
De Laval Separator Company, The: *See*—
Fuentevilla, Manuel E., 4,212,889, Cl. 426-7.000.
Deacey, Peter, to PDM Electrical Products Ltd. Power switching circuit. 4,213,059, Cl. 307-41.000.
DeBenedictis, Leonard C.; and Starkweather, Gary K., to Xerox Corporation. Self tracking laser scanning apparatus. 4,213,157, Cl. 358-293.000.

DeBenedictis, Leonard C., to Xerox Corporation. Optical data recording system utilizing acoustic pulse imaging to minimize image blur. 4,213,158, Cl. 358-296.000.
de Boer, Eeltje, to U.S. Philips Corporation. Method of modulating a composite color television signal on a carrier signal and device for carrying out said method. 4,213,144, Cl. 358-12.000.
DeCourcy, Charles N. Baking mold assembly. 4,212,234, Cl. 99-426.000.
Deep Oil Technology, Inc.: *See*—
Horton, Edward E., 4,212,329, Cl. 138-155.000.
Deere & Company: *See*—
Dobberpuhl, Dale R., 4,212,364, Cl. 180-19.00R.
Grant, Rodger B., 4,212,427, Cl. 239-676.000.
Stecklein, Gary L., 4,212,582, Cl. 414-694.000.
Deering Precision Instruments Co.: *See*—
Dale, John D.; and Knotter, David G., 4,212,430, Cl. 241-89.400.
deFries, Jan R.: *See*—
Stoll, Kurt; and deFries, Jan R., 4,212,320, Cl. 137-625.600.
Degen, Hans-Juergen; and Grychtol, Klaus, to BASF Aktiengesellschaft. Dyed paper. 4,212,644, Cl. 8-506.000.
Degenhardt, Karl-Heinz; Marx, Gerhard; and Frank, Hermann, to Hoechst Aktiengesellschaft. Arrangement for ammonia feed in copying equipment. 4,212,655, Cl. 55-181.000.
de Jong, Aaldert J.: *See*—
Schadenberg, Hendrik; Leenaars, Corrie M. J.; and de Jong, Aaldert J., 4,212,751, Cl. 252-32.70E.
Delair, Jacques: *See*—
Quang, Dang T.; Leguen, Jacques; and Delair, Jacques, 4,213,048, Cl. 250-402.000.
De Lange, Nicolaas H.: *See*—
Mulder, Willem; Vaessen, Dorotheus C. L.; and De Lange, Nicolaas H., 4,213,126, Cl. 343-5.0SM.
DeLeon, Alberto: *See*—
Skowronski, Michael J.; and DeLeon, Alberto, 4,212,917, Cl. 428-310.000.
Della Casa, Angelo; and Karlen, Urs, to Ciba-Geigy AG. Transfer printing dyes. 4,212,642, Cl. 8-470.000.
del Valle, Leon. Battery operated eyelash curler. 4,212,311, Cl. 132-31.00A.
Demmel, Edward J., to Mobil Oil Corporation. Catalytic cracking of hydrocarbons. 4,212,728, Cl. 208-121.000.
Dempster Industries, Inc.: *See*—
Walker, John H., 4,212,428, Cl. 239-677.000.
Denes, Oscar L.: *See*—
Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., 4,213,113, Cl. 338-309.000.
Denka Chemical Corporation: *See*—
Fitzgerald, Kenneth D., 4,212,780, Cl. 260-27.0BB.
den Otter, John J.: *See*—
Gagnier, Real; Munier, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.
Derksema, Bram J.: *See*—
Keijser, Robertus A. J.; Wesselink, Gustaaf A.; Derksema, Bram J.; and Verhoeven, Johannes A. T., 4,213,100, Cl. 331-94.50D.
Design Maintenance Corporation: *See*—
Hill, Duncan E., Jr., 4,212,110, Cl. 33-174.00G.
Deussner, Herbert, to Klockner-Humboldt-Deutz AG. Method for the calcining of lime. 4,212,850, Cl. 423-175.000.
Deutsche Texaco Aktiengesellschaft: *See*—
Grodde, Karl-Heinz; and Schulz, Alfred, 4,212,794, Cl. 260-97.600.
Dhein, Rolf: *See*—
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.
Diafil International S.A.: *See*—
Ribi, Valentino, 4,212,481, Cl. 280-276.000.
Dickson, Howard K.: *See*—
Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., 4,212,317, Cl. 137-565.000.
Patrick, E. Vincent; and Dickson, Howard K., 4,212,575, Cl. 414-8.000.
Didier-Werke AG: *See*—
Gelsdorf, Gunter; Leupold, Hermann; and Schellberg, Franz, 4,212,926, Cl. 428-472.000.
Di Drusco, Giovanni: *See*—
Govoni, Gabriele; Di Drusco, Giovanni; Corazzari, Canzio; and Guardigli, Pierluigi, 4,212,967, Cl. 528-500.000.
Diepers, Heinrich: *See*—
Bauerlein, Rudolf; Uhl, Dieter; Diepers, Heinrich; and Jablonski, Karl-Heinz, 4,212,911, Cl. 428-131.000.
Diesel Kiki Co., Ltd.: *See*—
Ohtani, Yoshio, 4,212,279, Cl. 123-352.000.
Diez, Mark F.; Lewis, David O.; and Robinson, Thomas S., to International Business Machines Corporation. Input/output command timing mechanism. 4,213,178, Cl. 364-200.000.
Dijkmans, Eise C.: *See*—
Brockmann, Klaus-Dieter K.; and Dijkmans, Eise C., 4,213,016, Cl. 179-175.30R.
Dils, Michael A.: *See*—
Ward, Ernest M.; Ward, Steven M.; and Dils, Michael A., 4,213,119, Cl. 340-151.000.
DiMartino, John M., to Line Fast Corporation. Key actuated stacker locking device. 4,212,251, Cl. 24-73.00R.
Disteldorf, Josef: *See*—
Schmitt, Karl; Disteldorf, Josef; and Schmitt, Felix, 4,212,962, Cl. 528-45.000.
Divine, David L., to Texaco Inc. Borehole pressure sensing system. 4,212,198, Cl. 73-151.000.
Djabarov, Nikola B.: *See*—
Simeonov, Yordan T.; and Djabarov, Nikola B., 4,212,681, Cl. 106-89.000.
Dmochowski, Frank M. Rake attachment for garden tool. 4,212,150, Cl. 56-400.060.
Dobberpuhl, Dale R., to Deere & Company. Drive axle support frame for a walk-behind, self-propelled lawn mower. 4,212,364, Cl. 180-19.00R.
Dobson, Robert L., to Goodyear Tire & Rubber Company, The. Tire/-wheel assembly with low molecular weight coolant-lubricant. 4,212,339, Cl. 152-158.000.
Dr. Ing. Rudolf Hell GmbH: *See*—
Muenchow, Juergen; and Sommer, Ruediger, 4,213,155, Cl. 358-262.000.
Doherty, Edward J., III, to Union Carbide Corporation. Transverse section brain imager scanning mechanism. 4,213,054, Cl. 250-505.000.
Dokus, Edwin A.; and Banks, David, to American Optical Corporation. Motor control for slow speed tape recorder. 4,213,161, Cl. 360-73.000.
Dolidovich, Elena F.: *See*—
Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.
Dolton, Anthony D., to Vandervell Products Limited. Bearing assemblies. 4,212,505, Cl. 308-79.00A.
Domanick, Edward J.; and Haskins, Lewis B., to Johns-Manville. Universal mounting pad for electrical transformers. 4,212,446, Cl. 248-678.000.
Donald MacMillan & Son, Inc.: *See*—
MacMillan, Kenneth T., 4,212,605, Cl. 425-20.000.
Donovan Wire & Iron Company: *See*—
Rickert, William, 4,212,211, Cl. 74-538.000.
Dooley, Harry H., Jr.: *See*—
Caffarella, Thomas E.; Radda, George J.; and Dooley, Harry H., Jr., 4,213,052, Cl. 250-462.000.
Dorn, Conrad P.: *See*—
Shen, Tsung-Ying; Jones, Howard; Mulvey, Dennis M.; and Dorn, Conrad P., 4,212,976, Cl. 546-115.000.
Dorn, Gordon L., to J. K. and Susie L. Wadley Research Institute and Blood Bank. Apparatus for detecting microbial pathogens employing a cushioning agent. 4,212,948, Cl. 435-296.000.
Dougherty, Harry L.; and Beazley, William W. Orthodontic face bow. 4,212,637, Cl. 433-5.000.
Dougherty, John J.; and Rudge, George T., to General Electric Company. Insolation integrator. 4,212,287, Cl. 126-419.000.
Douglas, Lawrence M., to Polaroid Corporation. Varying frictional forces on a film advancing apparatus. 4,212,524, Cl. 354-86.000.
Douglas, Paul M.; and Kenny, Andrew A., to Eaton Corporation. Linear vacuum programmer. 4,212,322, Cl. 137-625.480.
Dover Corporation: *See*—
Fahl, Richard L.; and Pemberton, Eugene B., 4,212,315, Cl. 137-377.000.
Dow Chemical Company, The: *See*—
Carson, Chrislyn M.; Ehr, Robert J.; and Rogers, Richard B., 4,212,869, Cl. 424-263.000.
McLaren, John W., 4,212,620, Cl. 425-381.000.
Wilson, David A.; and Schmidt, Roy W., 4,212,994, Cl. 562-568.000.
Doyel, John S. Food processing unit. 4,212,431, Cl. 241-100.000.
Doyle, James T.: *See*—
Muri, David L.; and Doyle, James T., 4,213,185, Cl. 364-721.000.
Dreher, Ernst; Wolf, Richard; and Burklin, Max, to Robert Bosch GmbH. Sound absorber for an intermittently discharged gaseous working medium. 4,212,370, Cl. 181-230.000.
Dreier, Melvin E. Forage unloader door and latch assembly. 4,212,574, Cl. 414-502.000.
Dressel, Manfred: *See*—
Daucher, Hans; Dressel, Manfred; Hess, Klaus; and Engelhardt, Hubert, 4,212,737, Cl. 210-77.000.
Dresser Industries, Inc.: *See*—
Bonar, Kermit M., 4,212,679, Cl. 106-57.000.
Upton, Thomas E., 4,212,352, Cl. 166-206.000.
Drexhage, Karl H.; and Wrobel, Joseph J., to Eastman Kodak Company. Light control device and fabrication methods therefor. 4,212,519, Cl. 350-362.000.
Drinkard, John H., Jr., to Burroughs Corporation. IC Socket insertion tool. 4,212,102, Cl. 29-741.000.
DSO "HRANMASH": *See*—
Torev, Atanas K., 4,212,947, Cl. 435-254.000.
Dub, Vladimir S.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.;

and Kuznetsov, Viktor F. Method for treating items from magnetically soft alloys. 4,212,904, Cl. 427-127.000.

Dubois, Jean-Claude; Nguyen, Huu Tinh; and Zann, Annie, to Thomson-CSF. Liquid crystal materials having a formula containing a diphenylethane nucleus. 4,212,762, Cl. 252-299.000.

Ducommun, Joel; and Vulliens, Philippe, to Baumgartner Papiers S.A. Method and apparatus for testing a forward-moving strand. 4,212,541, Cl. 356-430.000.

Dudar, Walter H. Tire inflating unit. 4,212,334, Cl. 141-197.000.

Duncan, Damon H.; and Klemes, Martin S., to Sperry Corporation. Strapped down attitude and heading reference system for aircraft employing skewed axis two-degree-of-freedom rate gyros. 4,212,443, Cl. 244-177.000.

Dunjushkin, Evgeny S.: *See—*
Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.

Dunkley, John J., to Davy-Loewy Limited. Production of metal powder. 4,212,736, Cl. 210-73.00R.

Dunlop Limited: *See—*
Fisher, Ronald; and Smith, Norman, 4,212,906, Cl. 427-237.000.

Dunmire, Howard L.: *See—*
Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., 4,212,317, Cl. 137-565.000.

Dunwald, Willi: *See—*
Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, 4,212,982, Cl. 548-313.000.

duPont, Anthony A. Apparatus and system for producing coal gas. 4,212,652, Cl. 48-89.000.

Du Pont de Nemours, E. I., and Company: *See—*
Boswell, George A., Jr., 4,212,815, Cl. 260-397.200.
Coates, John S., 4,213,000, Cl. 568-861.000.
Marquisee, Mark J., 4,212,918, Cl. 428-403.000.
Seagraves, Robert L., 4,212,824, Cl. 260-580.000.

Durand, Harry W.; and Bunker, Richard D., to Grain Processing Corporation. Composition and production process for Fourdrinier fiberboard. 4,212,704, Cl. 162-175.000.

Durant, Graham J.; and Miles, Peter D., to Smith Kline & French Laboratories Limited. Imidazolyl alkyl bisamidines. 4,212,875, Cl. 424-273.00R.

Durkoppwerke GmbH: *See—*
Grube, Erwin, 4,212,384, Cl. 198-684.000.

Durran, Donald A.: *See—*
Warren, Walter R., Jr.; Durran, Donald A.; and Spencer, Donald J., 4,213,102, Cl. 331-94.50G.

Duvall, David S.; King, William H.; and Owczarski, William A., to United Technologies Corporation. Age hardenable nickel superalloy welding wires containing manganese. 4,213,026, Cl. 219-75.000.

Dyatlova, Nina M.: *See—*
Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V., 4,212,708, Cl. 204-46.00G.

Dynamit Nobel Aktiengesellschaft: *See—*
Petersen, Egon N.; Richtzenhain, Hermann; and Schrage, Klaus, 4,212,996, Cl. 568-639.000.

Dzsida, Matthias: *See—*
Eisinger, Norbert; Wesch, Paul; and Dzsida, Matthias, 4,212,278, Cl. 123-319.000.

Eastman, George Y., to Thermacore, Inc. Unfurlable heat pipe. 4,212,347, Cl. 165-46.000.

Eastman Kodak Company: *See—*
Clark, Raymond D., 4,212,973, Cl. 546-16.000.
Drexhage, Karl H.; and Wrobel, Joseph J., 4,212,519, Cl. 350-362.000.
O'Brien, Robert J.; and Stryjewski, Walter A., 4,212,529, Cl. 355-3.00R.
Sethi, Gurdip S.; Sperber, Karl; and Tidd, Donald G., 4,212,673, Cl. 430-496.000.

Eaton Corporation: *See—*
Douglas, Paul M.; and Kenny, Andrew A., 4,212,322, Cl. 137-625.480.
Johnson, Oliver W., 4,212,229, Cl. 91-446.000.
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,213,067, Cl. 307-252.00C.

Eaton, Jefferson O.; and Lunt, Wilbur B., to United States of America, Navy. Fuze electronic circuitry. 4,212,246, Cl. 102-270.000.

Ebara Manufacturing Company, Limited: *See—*
Mizuguchi, Saburo; Nomura, Isao; Naito, Takeyuki; Onodera, Masato; and Saito, Kouji, 4,212,702, Cl. 162-36.000.

Eckley, James N. Power saw blade change assist. 4,212,455, Cl. 269-236.000.

Edamura, Mizuo: *See—*
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,212,687, Cl. 148-16.600.

Edwards, Albert L.; and Arzoumanian, Aram S., to Dataproducts Corporation. Disc printer. 4,212,549, Cl. 400-154.000.

Edwards, William M.: *See—*
Haren, Doyle V.; and Edwards, William M., 4,212,327, Cl. 138-125.000.

Egawa, Muneharu: *See—*
Tunematu, Toyoaki; Takeno, Seiichi; Yamaguchi, Testuo; and Egawa, Muneharu, 4,213,106, Cl. 333-185.000.

Ehr, Robert J.: *See—*
Carson, Chrislyn M.; Ehr, Robert J.; and Rogers, Richard B., 4,212,869, Cl. 424-263.000.

Ehrlich, Louis. Ottoman convertible. 4,212,090, Cl. 5-14.000.

Eibofner, Eugen; and Reich, Heinrich, to Kaltenbach & Voigt GmbH & Co. Dental handpiece. 4,212,641, Cl. 433-133.000.

Eibofner, Eugen: *See—*
Loge, Hans; Eibofner, Eugen; Kuhn, Bernhard; and Reich, Heinrich, 4,212,640, Cl. 433-82.000.

Eichelberger, Charles W.; and Miller, Edward B., to General Electric Company. Programmable energy load controller system and methods. 4,213,182, Cl. 364-493.000.

Eickmann, Karl. Slide faces of piston shoes in radial piston machines. 4,212,230, Cl. 92-58.000.

Eisenhower, Walter D., Jr.: *See—*
Paivinen, John; Eisenhower, Walter D., Jr.; and Helfrich, Ernest R., 4,212,100, Cl. 29-571.000.

Eisinger, Norbert; Wesch, Paul; and Dzsida, Matthias, to Motoren-Werke Mannheim AG. Safety device for diesel engines. 4,212,278, Cl. 123-319.000.

Eissenberg, David M.; and Liu, Yin-An, to United States of America, Energy. High gradient magnetic beneficiation of dry pulverized coal via upwardly directed recirculating fluidization. 4,212,651, Cl. 44-1.0SR.

Eistert, Theodor, to VEB Kombinat Fortschritt. Universal cutting and feed assembly for multirow stalk-crop harvester. 4,212,146, Cl. 56-98.000.

Electricite de France: *See—*
Bessouat, Roger; Tondeur, Gerard; Talleu, Patrick; and Cerdan, Jean-Pierre, 4,212,658, Cl. 55-347.000.

Eli Lilly and Company: *See—*
Chou, Ta-Sen, 4,212,977, Cl. 546-243.000.

Elinson, Dmitry S.: *See—*
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.

Eltra Corporation: *See—*
Sand, William T., 4,212,098, Cl. 29-460.000.

Emerson Electric Co.: *See—*
Ames, Ernest R.; Struttmann, Hilarius S.; and Carrigan, Erwin R., 4,212,502, Cl. 308-3.00R.

Emhart Industries, Inc.: *See—*
Learn, Richard L.; and Sweany, Louis P., 4,213,121, Cl. 340-384.00E.

Emmerich, Werner S., to Westinghouse Electric Corp. Two-pressure type circuit interrupter. 4,213,022, Cl. 200-148.00R.

Endicott, Donald L., Jr.; and Stachiw, Jerry D., to United States of America, Navy. Radiation transmissive housing having a heated load bearing gasket. 4,213,029, Cl. 219-209.000.

Energy Development Corporation: *See—*
Roche, Dwain F.; and Banks, Stanley E., 4,212,598, Cl. 417-229.000.

Energy Optics, Inc.: *See—*
Ward, Ernest M.; Ward, Steven M.; and Dils, Michael A., 4,213,119, Cl. 340-151.000.

Engelhardt, Hubert: *See—*
Daucher, Hans; Dressel, Manfred; Hess, Klaus; and Engelhardt, Hubert, 4,212,737, Cl. 210-77.000.

Engelhart, John E.: *See—*
Gitlitz, Melvin H.; Engelhart, John E.; and Russo, David A., 4,212,810, Cl. 260-340.50R.
Gitlitz, Melvin H.; Engelhart, John E.; and Mery, Carlos M., 4,212,885, Cl. 424-288.000.

English, Alan T.; and Miller, Gabriel L., to Bell Telephone Laboratories, Incorporated. Method and device for testing electrical conductor elements. 4,213,087, Cl. 324-62.000.

Ennis, Colin S.: *See—*
Laws, Derek R. J.; Bath, Nigel A.; Ennis, Colin S.; Pickett, John A.; and Wheldon, Alfred G., 4,212,895, Cl. 426-600.000.

Enoki, Toshio: *See—*
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.

Enright, John J.; and Holzworth, William T., to B. F. Goodrich Company, The. Caliper brake rotor. 4,212,376, Cl. 188-218.0XL.

EPS (Research & Development) Limited: *See—*
Allen, Donald C.; and Smith, Alan T., 4,212,194, Cl. 73-73.000.

Erb, Robert A., to Franklin Institute, The. Batten for mounting a unitary solar collector panel. 4,212,291, Cl. 126-445.000.

Ericson, Kurt S. B. Waste water outlet sanitary plant comprising a siphon. 4,212,314, Cl. 137-216.200.

Ericson, William A. Safety circuit for electrical loads. 4,213,075, Cl. 315-83.000.

Ericsson, Eric R.: *See—*
Wallin, Hans-Henrik B.; and Ericsson, Eric R., 4,212,731, Cl. 209-366.500.

Ernest, Robert P., to Ford Motor Company. Low weight reciprocating engine. 4,212,281, Cl. 123-193.00H.

Esmond, William G. Method and apparatus for testing prescription glasses and other dual lenses optical devices. 4,212,538, Cl. 356-127.000.

Esquire, Inc.: *See—*
Gaertner, Robert F., 4,213,164, Cl. 361-56.000.

Essex Group, Inc.: *See—*
Brooks, Hubert C.; and Stroh, Alan E., 4,212,509, Cl. 339-95.00D.

Etablissement Public de Diffusion dit "Telediffusion de France": *See—*
Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, 4,213,124, Cl. 340-706.000.

Ethridge, Noel H., to United States of America, Army. Differential pressure gauge. 4,212,191, Cl. 73-861.470.

Ethyl Corporation: *See—*
Shepherd, Lawrence H., Jr., 4,212,812, Cl. 260-345.100.

Ettmayer, Peter; and Kieffer, Richard, to Sandvik Aktiebolag. Cemented carbide containing molybdenum tungsten carbonitride having WC type structure. 4,212,671, Cl. 75-238.000.

Evans, James M.; and Ting, Vincent W., to SCM Corporation. Modified epoxy resins, processes for making and using same and substrates coated therewith. 4,212,781, Cl. 260-29.4UA.

Exxon Research & Engineering Co.: *See—*
Hamner, Glen P., 4,212,771, Cl. 252-455.00Z.
Jarrett, Douglas G., 4,213,156, Cl. 358-275.000.
Koros, Robert M., 4,212,835, Cl. 261-116.000.

Fage, Etienne, to Societe ASTECH. Thrust reverser. 4,212,442, Cl. 244-110.00B.

Fahl, Richard L.; and Pemberton, Eugene B., to Dover Corporation. Shroud for pressure vacuum vent. 4,212,315, Cl. 137-377.000.

Falch, Hans. Manufacture of foil containers. 4,212,184, Cl. 72-340.000.

Falconer, David D., to Bell Telephone Laboratories, Incorporated. Feedforward nonlinear equalization of modulated data signals. 4,213,095, Cl. 375-14.000.

Falk, John C., to Borg-Warner Corporation. Graft polyblend flow improvers for PVC. 4,212,958, Cl. 525-310.000.

Falk, Richard A. Molten metal stream sampler with fill gauge. 4,212,203, Cl. 73 425.40R.

Fansteel Inc.: *See—*
Cecka, Andrew M.; and Pawling, Paul G., 4,212,461, Cl. 273-73.00F.
Pelouch, Milan S., 4,212,464, Cl. 273-416.000.

Fante, Ronald L.: *See—*
Rotman, Walter; Karas, Nicholas V.; Fante, Ronald L.; and Franchi, Peter R., 4,213,122, Cl. 340-552.000.

Farber, Karl-Heinz, to Bosch-Siemens Hausgerate GmbH. Heat sealing roller having a temperature self-controlled PTC heating resistor for welding thermoplastic foils. 4,213,031, Cl. 219-244.000.

Fasbender, Helmut: *See—*
Wartusch, Johann; and Fasbender, Helmut, 4,212,912, Cl. 428-209.000.

Fasching, George E., to United States of America, Energy. Signal processor for processing ultrasonic receiver signals. 4,213,184, Cl. 364-574.000.

Fay, Rudolph J. Method and apparatus for producing shaped and sized food articles. 4,212,609, Cl. 425-100.000.

Fedorov, Alexandr G.: *See—*
Berber, Viktor A.; Pervushin, Evgeny S.; Kholin, Vladimir G.; Fedorov, Alexandr G.; and Galishnikov, Boris M., 4,212,539, Cl. 356-336.000.

Fedortsov-Lutikov, Georgy P.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Fedoryakin, Boris F.: *See—*
Vorobeichikov, Leonid T.; Fedoryakin, Boris F.; Panchenko, Grigory K.; Gorbanev, Grigory N.; Bevz, Anatoly N.; and Satarin, Vladimir I., 4,212,630, Cl. 432-80.000.

Feess, Erich: *See—*
Curtius, Horst; Feess, Erich; and Gronen, Willy, 4,212,646, Cl. 8-532.000.
Curtius, Horst; Feess, Erich; and Gronen, Willy, 4,212,648, Cl. 8-466.000.

Fenoglio, David J., to Standard Oil Company (Indiana). Fire retardants. 4,212,992, Cl. 562-492.000.

Ferrari, Franco, to Agostino Ferrari & C. S.n.C. Castor-wheel for armchairs and the like. 4,212,092, Cl. 16-35.00R.

Ferrell, Howard H.; Conley, Dell; Casad, Burton M.; and Stokke, Olaf M., to Conoco, Inc. Polymer flood filtration improvement. 4,212,748, Cl. 252-8.55D.

Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., to General Electric Company. Battery holder and connector for a radio receiver or the like. 4,213,078, Cl. 320-2.000.

Ferris, Carlisle K. Camouflaged and deceptive distorted vehicle and method of assembling such vehicles. 4,212,440, Cl. 244-1.00R.

Festo-Maschinenfabrik Gottlieb Stoll: *See—*
Stoll, Kurt; and deFries, Jan R., 4,212,320, Cl. 137-625.600.

Fiat Societa per Azichi: *See—*
Urbinati, Mario, 4,212,657, Cl. 55-319.000.

Fiat Veicoli Industriali S.p.A.: *See—*
Magrini, Guido, 4,212,659, Cl. 55-385.00B.

Fields, George C., to Ty Miles, Inc. Broaching machine improvements. 4,212,573, Cl. 409-251.000.

Finlay, David E.; Robbins, Wayne E.; and Travis, Terence, to International Business Machines Corporation. Programmed copier control. 4,213,190, Cl. 364-900.000.

Finney, Roy P., to Medical Engineering Corp. Uretheral catheter stent. 4,212,304, Cl. 128-349.00R.

Fischer, Richard V., to Polaroid Corporation. Photographic film assemblage. 4,212,527, Cl. 354-275.000.

Fisher, Eric V., to Impact Products Pty. Ltd. Sun screen blinds and the like. 4,212,341, Cl. 160-84.00R.

Fisher, Michael H.; Kulsa, Peter; and Linn, Bruce O., to Merck & Co., Inc. Symmetrically substituted pyromellitic diimides as ruminant feed additives. 4,212,880, Cl. 424-274.000.

Fisher, Ronald; and Smith, Norman, to Dunlop Limited. Method for the production of carbon/carbon composite material. 4,212,906, Cl. 427-237.000.

Fitzgerald, Kenneth D., to Denka Chemical Corporation. Polychloroprene non-phasing solvent cements. 4,212,780, Cl. 260-27.0BB.

Flatau, Abraham. Small arms ammunition. 4,212,244, Cl. 102-38.0MM.

Fleischer, Donald W. and Asmundsson, Einar, to Veeder Industries Inc. Electrical counting mechanism. 4,213,037, Cl. 235-92.00B.

Fletcher, Vernon R.: *See—*
Scherrer, Robert A.; Stern, Richard M.; and Fletcher, Vernon R., 4,212,865, Cl. 424-250.000.

Flexible Steel Lacing Company: *See—*
Pray, Winston C., 4,212,094, Cl. 24-31.00B.

Fliege, Werner: *See—*
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,212,825, Cl. 568-313.000.

Floyd, Paul D.: *See—*
Cline, Quentin E.; and Floyd, Paul D., 4,212,508, Cl. 339-18.00B.

Fluck, Ronald O. Boat launcher for truck bed. 4,212,580, Cl. 414-522.000.

Fluid Engineering Co.: *See—*
Heaton, Floyd L., 4,212,228, Cl. 91-170.000.

FMC Corporation: *See—*
Brubaker, Gaylen R.; and Scholer, Fred R., 4,212,757, Cl. 252-95.000.

Fong, Bosco T. W.: *See—*
Hanlon, Brenton G. A.; Chang, Jaw-Kang; and Fong, Bosco T. W., 4,212,797, Cl. 260-112.50R.

Ford, John M.: *See—*
Hendy, Brian N.; and Ford, John M., 4,212,908, Cl. 427-355.000.

Ford Motor Company: *See—*
Ernest, Robert P., 4,212,281, Cl. 123-193.00H.

Fortune, Jeffrey L. Thermosensitive safety valve. 4,212,424, Cl. 236-93.00R.

Fossati, Franco: *See—*
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Jelena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.

Foster, Arthur M.: *See—*
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Tang, David Y.; and Foster, Arthur M., 4,212,999, Cl. 568-807.000.

Foti, Vincenzo: *See—*
D'Amico, Fabrizio; Serboli, Giancarlo; and Foti, Vincenzo, 4,212,703, Cl. 162-129.000.

Fraass, Ronald G.; and Tallon, Roger W., to United States of America, Air Force. Metal nitride oxide semiconductor (MNOS) dosimeter. 4,213,045, Cl. 250-370.000.

Fradenburgh, Evan A., to United Technologies Corporation. Simplified rotor head fairing. 4,212,588, Cl. 416-141.000.

Framatome: *See—*
Gebelin, Bernard, 4,212,583, Cl. 414-728.000.

Franchi, Peter R.: *See—*
Rotman, Walter; Karas, Nicholas V.; Fante, Ronald L.; and Franchi, Peter R., 4,213,122, Cl. 340-552.000.

Frank, Hermann: *See—*
Degenhardt, Karl-Heinz; Marx, Gerhard; and Frank, Hermann, 4,212,655, Cl. 55-181.000.

Franke, Walter; and Wolf, Ottmar, to AGFA-Gevaert, A.G. Toner fusing arrangement. 4,212,631, Cl. 432-60.000.

Franklin Institute, The: *See—*
Erb, Robert A., 4,212,291, Cl. 126-445.000.

Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., to General Foods Corporation. Soft-moist pet food process. 4,212,894, Cl. 426-332.000.

Fraula, Louis F.; and Hoying, Gary V., to Hobart Corporation. Method and apparatus for removing moisture from wet pulp. 4,212,239, Cl. 100-37.000.

Freeburg, James R.: *See—*
Brohard, Ivan E.; and Freeburg, James R., 4,212,101, Cl. 29-622.000.

Freeman, William R.: *See—*
Veeck, Stewart J.; Freeman, William R.; and Dardi, Louis E., 4,212,669, Cl. 75-226.000.

Freeman, Willie B., to Westinghouse Electric Corp. Pneumatic operating mechanism for a circuit-breaker. 4,213,020, Cl. 200-81.00R.

Fresow, Jurgen; and Wurst, Bert, to Robert Bosch GmbH. Ignition system for internal combustion engines. 4,212,280, Cl. 123-611.000.

Frey, LaVerne L., to Borg Instruments Inc. Solid state clock. 4,212,157, Cl. 368-87.000.

Freygang, Hanz-Joachim, to Siemens Aktiengesellschaft. Circuit arrangement for compensating transmission errors of a transformer. 4,213,083, Cl. 323-44.00R.

Fridman, Alexandr Y.: *See—*
Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V., 4,212,708, Cl. 204-46.00G.

Friebe, Walter-Gunar; Thiel, Max; Roesch, Androniki; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, to Boehringer Mannheim GmbH. Pharmaceutically active derivatives of 9-[3-(4-amino-piperidino)-propyl]-adenines. 4,212,866, Cl. 424-253.000.

Friedman, Mendel, to United States of America, Agriculture. Inhibition of lanthionine formation during alkaline treatment of keratinous fibers. 4,212,800, Cl. 260-123.700.

Frielingsdorf, Hans: *See—*
Volmer, Dieter; Schwind, Juergen; Kolk, Erich; and Frielingsdorf, Hans, 4,212,847, Cl. 422-135.000.

Fringeli, Werner, to Ciba-Geigy Corporation. Bis-triazinylaminostilbene compounds and their use as fluorescent brightening agents. 4,212,763, Cl. 252-301.230.

Fuchs, Francis J., Jr., to Western Electric Company, Inc. Apparatus for continuous extrusion. 4,212,177, Cl. 72-41.000.

Fuchs, Otto: *See—*
Kroh, Adolf; Fuchs, Otto; and Spietschka, Ernst, 4,212,975, Cl. 546-49.000.

Fuchs, Walter; Gessinger, Gernot H.; Kunzli, Roland; and Schonfeld, Erwin, to BBC Brown, Boveri & Company, Limited. Tool for isothermal forging. 4,212,189, Cl. 72-478.000.

Fuentevilla, Manuel E., to De Laval Separator Company, The. Method for processing fish continuously and serially through a plurality of vessels. 4,212,889, Cl. 426-7.000.

Fufaiev, Aleksandr A.: *See—*
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.

Fuji Photo Film Co., Ltd.: *See—*
Iwasaki, Masayuki, 4,212,970, Cl. 542-455.000.
Mihara, Yuji; Takei, Haruo; and Inoue, Noriyuki, 4,212,672, Cl. 430-494.000.

Fujii, Etsuo: *See—*
Miyakawa, Yoshitaka; Sato, Makoto; and Fujii, Etsuo, 4,212,501, Cl. 303-116.000.

Fujii, Masayuki, to Nissan Motor Company, Limited. Hydropneumatic suspension system. 4,212,484, Cl. 280-707.000.

Fujii, Toru, to Olympus Optical Co., Ltd. Photographic lens system. 4,212,517, Cl. 350-217.000.

Fujita, Yukio: *See—*
Ibata, Jyoji; Fujita, Yukio; and Kominami, Naoya, 4,212,790, Cl. 260-40.00R.

Fujita, Yuko; and Kudo, Hisashi, to Japan Storage Battery Company Limited. Method and apparatus for storing foodstuffs. 4,212,891, Cl. 426-231.000.

Fukami, Akira; and Nakajima, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Heat resistant resin composition. 4,212,959, Cl. 525-524.000.

Fukuda, Makoto: *See—*
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.

Fukuda, Masao: *See—*
Takebe, Katsuhiko; Fukuda, Masao; Shiratori, Minoru; and Aso, Minosaku, 4,212,154, Cl. 368-248.000.

Fukui, Suguru, to Chiyoda Kako Kensetsu Kabushiki Kaisha. Method for the treatment of exhaust gases containing nitrogen oxides. 4,212,853, Cl. 423-235.000.

Fuller Company: *See—*
Wentzel, William C., 4,212,114, Cl. 34-167.000.

Funahashi, Takaji. Process for preparing open-cell sponge rubber printing material having small and large interconnected cells. 4,212,839, Cl. 264-45.300.

Funk, Gerhard, to Patelhold Patentverwertungs- & Electro-Holding AG. Method and apparatus for monitoring a pulse-code modulated data transmission. 4,213,007, Cl. 375-10.000.

Furuitsu, Satoshi: *See—*
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,212,687, Cl. 148-16.600.

Furumi, Masatomo: *See—*
Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.

Gabets, Anna P.: *See—*
Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.

Gaertner, Robert F., to Esquire, Inc. Electronic protection circuit incorporating voltage divider sensing, gating and triggering. 4,213,164, Cl. 361-56.000.

Gaetano, John. Golf score keeping device. 4,212,261, Cl. 116-224.000.

Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., to Northern Telecom Limited. Modular time division switching system. 4,213,201, Cl. 370-62.000.

Galer, Herbert W., to United States Steel Corporation. Gravity dump shipping crate for poultry. 4,212,410, Cl. 220-324.000.

Gali Mallofre, Salvador. Pneumatic installations. 4,212,597, Cl. 417-225.000.

Galileo Electro-Optics Corp.: *See—*
Tosswill, Christopher H.; and Beuscher, Clinton J., 4,212,707, Cl. 204-26.000.

Galishnikov, Boris M.: *See—*
Berber, Viktor A.; Pervushin, Evgeny S.; Kholin, Vladimir G.; Fedorov, Alexandr G.; and Galishnikov, Boris M., 4,212,539, Cl. 356-336.000.

Gall, John C., to Sears, Roebuck & Co. Reclining chair. 4,212,495, Cl. 297-84.000.

Gammill, Paul. Frame for wall-mountable displays. 4,212,124, Cl. 40-155.000.

Gammon, Michael W.; and Harris, Colin F., to Metallurgical Development Company. Blast furnace smelting of zinc. 4,212,667, Cl. 75-86.000.

Garbett, Matthew G., to United States of America, Air Force. Electret charge technique. 4,213,168, Cl. 361-225.000.

Garnis, Elizabeth A.: *See—*
Russel, William J.; and Garnis, Elizabeth A., 4,212,701, Cl. 156-665.000.

Gartner, William J.: *See—*
Van Meter, Arch; and Gartner, William J., 4,212,743, Cl. 210-282.000.

Gates Rubber Company, The: *See—*
Juergens, Tristan D., 4,212,179, Cl. 72-148.000.

Gaviorno, Alexander R., Jr. Ladder attachment. 4,212,371, Cl. 182-121.000.

Gaylord, Norman G.: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,212,897, Cl. 427-2.000.

Gebelin, Bernard, to Framatome. Apparatus for use in positioning a unit on a tube-plate. 4,212,583, Cl. 414-728.000.

Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH: *See—*
Borowski, Karl-Heinz; and Honke, Heinrich, 4,212,497, Cl. 299-53.000.

Gellert, Jobst U. Stack injection molding melt transfer system. 4,212,626, Cl. 425-562.000.

Gellert, Jobst U. Injection molding valve pin actuator mechanism. 4,212,627, Cl. 425-564.000.

Gelling, Helmut, to Precisa AG Rechenmaschinenfabrik, Firma. Paper-feeding apparatus for a printer. 4,212,554, Cl. 400-550.000.

Gelsdorf, Gunter; Leupold, Hermann; and Schellberg, Franz, to Didier-Werke AG. Parts subject to wear which come into contact with metal melts. 4,212,926, Cl. 428-472.000.

Gemp, Robert S., to Westinghouse Electric Corp. Variable length delay line. 4,213,191, Cl. 365-73.000.

General Electric Company: *See—*
Adams, John N.; Kissinger, Gaylord M.; and Lee, Michael C., 4,212,997, Cl. 568-724.000.
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,212,714, Cl. 204-98.000.
Dougherty, John J.; and Rudge, George T., 4,212,287, Cl. 126-419.000.
Eichelberger, Charles W.; and Miller, Edward B., 4,213,182, Cl. 364-493.000.
Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., 4,213,078, Cl. 320-2.000.
Giles, Walter B., 4,212,653, Cl. 55-1.000.
Horner, Michael W., 4,212,587, Cl. 416-96.00R.
Mullersman, Ferdinand H., 4,213,079, Cl. 320-2.000.
Olich, Eugene E.; and Weissinger, Robert B., 4,212,592, Cl. 417-50.000.
Sheer, Russell E., Jr., 4,212,594, Cl. 417-54.000.

General Foods Corporation: *See—*
Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., 4,212,894, Cl. 426-332.000.

General Motors Corporation: *See—*
Harrington, David L., 4,212,833, Cl. 261-23.00A.
Hawk, Rufus L., 4,212,272, Cl. 123-339.000.
Rogers, Wesley A., 4,213,066, Cl. 307-252.00C.

General Refractories Company: *See—*
Bakker, Wale T., 4,212,778, Cl. 260-22.00A.

General Signal Corporation: *See—*
Carroll, Michael H.; Taylor, Richard J.; and McCubbin, Peter J., 4,213,012, Cl. 179-84.00R.
McCord, Herbert W., 4,213,047, Cl. 250-381.000.
Young, John E. G., 4,212,164, Cl. 60-452.000.

Genest, Leonard J.; and Madenlian, Vache B., to Chromalloy Electronics Corporation. Combination changing system and method. 4,213,118, Cl. 340-149.00R.

Genevey, Jacques, to Alsthom-Atlantique. Flow rate limiter for a hydraulic circuit. 4,212,326, Cl. 138-40.000.

Georg Fischer Brugg - Oehler AG: *See—*
Braunschweiler, Hans-Georg, 4,212,699, Cl. 156-558.000.

George, Albert L. Pipe handling apparatus. 4,212,576, Cl. 414-22.000.

Gerges, Andre, to Siemens Aktiengesellschaft. Circuit arrangement for the coarse synchronization of carrier signals and pulse signals with data signals in a data receiver. 4,213,006, Cl. 375-97.000.

Gerschner, Martin: *See—*
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Gerwitz, Paul F.: *See—*
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Gessinger, Gernot H.: *See—*
Fuchs, Walter; Gessinger, Gernot H.; Kunzli, Roland; and Schonfeld, Erwin, 4,212,189, Cl. 72-478.000.

Gezari, Walter A., to Hart Associates, Inc. Thermodilution injector. 4,212,298, Cl. 128-215.000.

Ghiz, George J.: *See—*
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Giampieri, Claudio, to Minnesota Mining and Manufacturing Company. Color contrast radiographic film. 4,212,936, Cl. 430-503.000.

Gibbs, Charles G., to Gulf Oil Corporation. 1-(2,6-Dichlorobenzoyl)-3-(5-chloro-2-pyridinyl-N-oxide)urea and use as insecticide. 4,212,870, Cl. 424-263.000.

Giles, Walter B., to General Electric Company. Process and apparatus for separating particulate matter from gaseous media. 4,212,653, Cl. 55-1.000.

Gipson, Robert M.: *See—*
Hotchkiss, Philip; Gipson, Robert M.; and Nieh, Edward C. Y., 4,212,820, Cl. 260-561.00N.

Gistau, Henri: *See—*
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Gitlitz, Melvin H.; Engelhart, John E.; and Russo, David A., to M&T Chemicals Inc. Novel trimethyltetraorganotin compounds. 4,212,810, Cl. 260-340.50R.

Gitlitz, Melvin H.; Engelhart, John E.; and Mery, Carlos M., to M&T Chemicals Inc. Insecticidal compositions containing certain tetraorganotin compounds and method for using same. 4,212,885, Cl. 424-288.000.

Glovak, Danny W.; and Buyze, Allan W. Hydroplaning disc. 4,212,462, Cl. 273-424.000.

Glumova, Valentina A.: *See—*
Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.

Gobin, Donald L.: *See—*
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Goettl, John M.; and Ghiz, George J., to Ghiz, George J. Apparatus for cleaning swimming pools. 4,212,088, Cl. 4-490.000.

Goetz, Norbert; Himmele, Walter; and Hupfer, Leopold, to BASF Aktiengesellschaft. Preparation of cis-2,6-dimethylmorpholine. 4,212,972, Cl. 544-106.000.

Goetzewerke Friedrich Goetze AG: *See—*
Buran, Ulrich; and Beyer, Horst, 4,212,602, Cl. 418-178.000.

Goff, Willie, Jr.: *See—*
Bemis, John D.; and Goff, Willie, Jr., 4,212,552, Cl. 400-249.000.

Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma Lou; and Terry, Angel Fr, to News Log International, Incorporated. Digital microfiche and apparatus for accurately positioning the microfiche, 4,213,040, Cl. 235-476.000.

Goldacker, Hubert: *See—*
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Goldberger Doll Mfg. Co., Inc.: *See—*
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Golden, Jeffry: *See—*
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Goldstein, Shyke A.: *See—*
Mahaffey, Redge A.; Goldstein, Shyke A.; Golden, Jeffry; and Cooperstein, Gerald, 4,213,073, Cl. 313-310.000.

Goletto, Jean, to Rhone-Poulenc Industries. Linear, flexible, high tensile strength copolyamides. 4,212,777, Cl. 260-18.00N.

Golger, Leonid I.: *See—*
Kozhemyakin, Valentin G.; Kaluniants, Kalust A.; Losyakova, Lidia S.; Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G., 4,212,949, Cl. 435-315.000.

Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., to United States of America, Energy. System for testing optical fibers. 4,212,537, Cl. 356-73.100.

Golopolosova, Nina M.: *See—*
Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I., 4,212,914, Cl. 428-268.000.

Gomez, Daniel; and Bartoli, Giampaolo, to Arjomari-Prioux. Process for preparing artificial leather composite. 4,212,927, Cl. 428-512.000.

Goodyear Tire & Rubber Company, The: *See—*
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Gorbanev, Grigory N.: *See—*
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Gorman, Jeremy W., to Lubrication Technology, Inc. Metal working lubricant. 4,212,750, Cl. 252-32.500.

Gorrell, Bruce L. Utility meter reader alert device. 4,212,262, Cl. 116-307.000.

Gorynin, Igor V.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Goss, David C.; and Hageman, Richard A., to Thermon Manufacturing Company. Conduction heating assembly. 4,213,034, Cl. 219-535.000.

Gossmann, Hans: *See—*
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Goto, Tomomichi: *See—*
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Goto, Yuzuru; Daigo, Yukitaka; and Hitotsuyanagi, Mikio, to Somar Manufacturing Co., Ltd. Oil-water separation filters. 4,212,733, Cl. 210-36.000.

Gotsmann, Guenther: *See—*
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Govoni, Gabriele; Di Drusco, Giovanni; Corazzari, Canzio; and Guardigli, Pierluigi, to Montedison S.p.A. Process for continuous recovery of solid polycarbonate from solutions thereof in organic solvents. 4,212,967, Cl. 528-500.000.

Gracia, Bert E.: *See—*
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Grain Processing Corporation: *See—*
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Grandfils, Pierre: *See—*
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Granin, Evgeny F.: *See—*
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Grannec, Anne: *See—*
Bremon, Christian; Grannec, Anne; Pery, Remy; and Philippe, Joel, 4,213,107, Cl. 333-197.000.

Grant, Rodger B., to Deere & Company. Gate attachment for manure spreader. 4,212,427, Cl. 239-676.000.

Grasselli, Robert K.: *See—*
Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., 4,212,766, Cl. 252-432.000.

Gravel, Robert L., to Sperry Corporation. Pulse transformer technique for optical switch. 4,212,513, Cl. 350-96.150.

Greene, Marvin: *See—*
LaDelfa, Christopher J.; and Greene, Marvin, 4,212,112, Cl. 34-9.000.

Greene, Nat, to KDI American Products, Inc. Floating weir and strainer basket construction. 4,212,740, Cl. 210-169.000.

Greenville Steel Car Co.: *See—*
Hart, James D.; and Lightner, Joseph C., 4,212,252, Cl. 105-406.00R.

Grefco, Inc.: *See—*
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Gretag Aktiengesellschaft: *See—*
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Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., to United States of America, Energy. Fuel cell manifold sealing system. 4,212,929, Cl. 429-37.000.

Griffin, Joseph J.: *See—*
Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., 4,212,894, Cl. 426-332.000.

Grodde, Karl-Heinz; and Schulz, Alfred, to Deutsche Texaco Aktiengesellschaft. Aqueous drilling fluid. 4,212,794, Cl. 260-97.600.

Groff, William R.: *See—*
Carp, Ralph W.; Weber, Robert E.; and Groff, William R., 4,213,181, Cl. 364-431.000.

Groggia, Antonio: *See—*
Nuzzolo, Carlo; Vignola, Rodolfo; and Groggia, Antonio, 4,212,799, Cl. 260-123.500.

Gronen, Willy: *See—*
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Grosch, Karl A.: *See—*
van der Burg, Sjirk; Grosch, Karl A.; and Bertrand, Marcel J., 4,212,340, Cl. 152-355.000.

Gross, Harry R. Switch structure having parts embedded in plastic. 4,213,108, Cl. 335-131.000.

Grubbs, Harvey J.: *See—*
Van Auken, Thomas V.; Grubbs, Harvey J.; and Johnson, William R., Jr., 4,212,310, Cl. 131-17.00R.

Grube, Erwin, to Durkoppwerke GmbH. Circulating conveyor. 4,212,384, Cl. 198-684.000.

Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, to Boehringer Mannheim GmbH. Reagent and method for the determination of cholesterol. 4,212,938, Cl. 435-11.000.

Grumman Aerospace Corporation: *See—*
Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.

Gruppo Lepetit S.p.A.: *See—*
Cricchio, Renato; and Berti, Marisa, 4,212,873, Cl. 424-270.000.
Tarzia, Giorgio; and Panzone, Gianbattista, 4,212,806, Cl. 260-326.200.

Grychtol, Klaus: *See—*
Degen, Hans-Juergen; and Grychtol, Klaus, 4,212,644, Cl. 8-506.000.

Gschwend, Heinz W.; and Huebner, Charles F., to Ciba-Geigy Corporation. 2-Oxiranyl-1,4-benzodioxans. 4,212,808, Cl. 260-340.300.

GTE Sylvania Incorporated: *See—*
Kimball, Stephen F.; and Martin, Roy C., 4,213,170, Cl. 362-267.000.

Guardigli, Pierluigi: *See—*
Govoni, Gabriele; Di Drusco, Giovanni; Corazzari, Canzio; and Guardigli, Pierluigi, 4,212,967, Cl. 528-500.000.

Guenther, Joachim, to Xerox Corporation. Pre/post-collation copying system. 4,212,457, Cl. 271-288.000.

Guillen, D. Fernando, M., to Industrias Rumbo, S.A. Dual position yogurt making device. 4,212,236, Cl. 99-467.000.

Gunn, Jerry H., to Service Fracturing Company and Airry, Inc. Method for injecting carbon dioxide into a well. 4,212,354, Cl. 166-303.000.

Gulf Oil Corporation. *See*—
Boehme, Robert E.; and Murphy, Clarence R., 4,212,848, Cl. 422-267.000.
Gibbs, Charles G., 4,212,876, Cl. 424-263.000.

Gulf Research & Development Company. *See*—
Madgavkar, Ajay M.; Swift, Harold E.; and Cupples, Barrett L., 4,213,001, Cl. 585-510.000.

Gutehoffnungshutte Sterkrade Aktiengesellschaft. *See*—
Lantermann, Heinz, 4,212,599, Cl. 417-295.000.

Gutweiler, Klemens, to Hoechst Aktiengesellschaft. Process for the manufacture of a catalyst. 4,212,765, Cl. 252-430.000.

Haarsma, John C. *See*—
Lusk, George E.; Mak, Siee T.; and Haarsma, John C., 4,212,696, Cl. 156-294.000.

Haas, Yehuda. *See*—
Moore, C. Bradley; Clark, John H., Haas, Yehuda; and Housman, Paul L., 4,212,717, Cl. 204-158.00R

Habermann, Wolfgang; Thoma, Peter, and Wintermantel, Klaus, to BASF Aktiengesellschaft. Electrodes for electrolysis purposes. 4,212,725, Cl. 204-290.00F

Haegermann, Helmut. Installation for the stamping of advancing rolling stock in rolling mills and continuous casting plants. 4,212,243, Cl. 101-4.000.

Hageman, Richard A. *See*—
Goss, David C., and Hageman, Richard A., 4,213,034, Cl. 219-535.000.

Hagen, Alexander. *See*—
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.

Hagen, Magnus F. Adjustable mounting, and securing and fastening assembly with channel bar. 4,212,445, Cl. 248-245.000.

Hajduch, James D. Training apparatus for visually impaired person. 4,212,116, Cl. 35-29.00R.

Hall, Leo M. *See*—
Myrick, James E., and Hall, Leo M., 4,212,939, Cl. 435-19.000.

Hall, Wilbur L., to Texaco Inc. Hydraulic mining technique for recovering bitumen from tar sand deposit. 4,212,353, Cl. 166-303.000.

Halperin, Herbert H. *See*—
Holtzman, Norman; Hromadka, Robert J.; and Halperin, Herbert H., 4,213,116, Cl. 340-73.000.

Halter, Mark A.; and Malloy, Thomas P., to UOP Inc. Electrochemical oxidation of alkyl aromatic compounds. 4,212,710, Cl. 204-78.000.

Halter, Mark A.; and Malloy, Thomas P., to UOP Inc. Electrochemical oxidation of alkyl aromatic compounds. 4,212,711, Cl. 204-78.000.

Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, to Tokyo Electric Co., Ltd. Data processing apparatus for electronic cashier registers. 4,213,179, Cl. 364-405.000.

Hamano, Kunihiro. *See*—
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Hammann, Ingeborg. *See*—
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Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,212,883, Cl. 424-277.000.

Hammon, Fritz. *See*—
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Hamner, Glen P., to Exxon Research & Engineering Co. Method of preparing an alumina catalyst support and catalyst comprising the support. 4,212,771, Cl. 252-455.00Z.

Hamori, Andras. *See*—
Bencze, Gyorgy; and Hamori, Andras, 4,212,536, Cl. 356-71.000.

Hanlon, Brenton G. A.; Chang, Jaw-Kang; and Fong, Bosco T. W., to Beckman Instruments, Inc. Synthetic pentapeptide having opiate agonist activity. 4,212,797, Cl. 260-112.50R.

Hannebauer, Haribert. *See*—
Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, 4,212,432, Cl. 241-285.00B.

Hara, Kaoru. *See*—
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Hara, Masayuki. *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.

Harada, Masahiro. *See*—
Shimizu, Senzo; Nomura, Isao; Usui, Motohachi; and Harada, Masahiro, 4,212,951, Cl. 528-495.000.

Hardt, Peter, to Lonza Ltd. Process for the catalytic production of 2-substituted pyridines. 4,212,978, Cl. 546-253.000.

Hardy, Terence. *See*—
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Haren, Doyle V.; and Edwards, William M., to Dayco Corporation. Polymeric hose. 4,212,327, Cl. 138-125.000.

Harford, Jack R., to RCA Corporation. AGC keying signal circuit. 4,213,151, Cl. 358-178.000.

Harrington, David L., to General Motors Corporation. Carburetor. 4,212,833, Cl. 261-23.00A

Harrington Manufacturing Company. *See*—
Mitchell, John D., and Sessoms, J. C., Jr., 4,212,634, Cl. 432-186.000.

Harris, Colin F. *See*—
Gammon, Michael W.; and Harris, Colin F., 4,212,667, Cl. 75-86.000.

Hart Associates, Inc.: *See*—
Gezari, Walter A., 4,212,298, Cl. 128-215.000.

Hart, James D.; and Lightner, Joseph C., to Greenville Steel Car Co. Gondola-type railway car. 4,212,252, Cl. 105-406.00R.

Hartemann, Pierre; and Torguet, Roger, to Thomson-CSF. Ultrasonic system for the visual display of a thin section of a body. 4,212,206, Cl. 73-606.000.

Hartke, Francis J., to Petrolite Corporation. Corrosion inhibition. 4,212,842, Cl. 422-12.000.

Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. N-Methyl-N-(sulphonic acid amide-n'-sulphenyl)-carbamic acid esters. 4,212,887, Cl. 424-304.000.

Hasegawa, Mikio. *See*—
Satou, Osahiro; Yamaguchi, Makoto; and Hasegawa, Mikio, 4,212,798, Cl. 260-123.500.

Hasegawa, Ryoichi, to Nippon Kayaku Kabushiki Kaisha. Process for producing substituted or unsubstituted naphthalic acids and acid anhydrides thereof. 4,212,813, Cl. 260-346.400.

Haskins, Lewis B. *See*—
Domanick, Edward J.; and Haskins, Lewis B., 4,212,446, Cl. 248-678.000.

Hatzakis, Michael. *See*—
Canavello, Benjamin J.; Hatzakis, Michael; and Shaw, Jane M., 4,212,935, Cl. 430-326.000.

Hawk, Rufus L., to General Motors Corporation. Idle speed control device for internal combustion engine. 4,212,272, Cl. 123-339.000.

Hawley, John T. *See*—
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Hayashi, Hideo. *See*—
Sato, Hisatake; Saitoh, Shiroh; Mohri, Michihiro; Miyahara, Akio, and Hayashi, Hideo, 4,212,783, Cl. 260-29.60H.

Hayashi, Osamu; Okahashi, Kazuo; and Ono, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Epoxy resin composition. 4,212,960, Cl. 525-524.000.

Hayashi, Yoshio. *See*—
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Hayes, John C.; and Pollitzer, Ernest L., to UOP Inc. Acidic multimetallic catalytic composite. 4,212,770, Cl. 252-441.000.

Haynie, Cyrus C.: *See*—
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Head, Leon E.: *See*—
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Heaton, Floyd L., to Fluid Engineering Co. Power plant. 4,212,228, Cl. 91-170.000.

Hebert, Raymond T. Solar shutter or blind system for windows. 4,212,289, Cl. 126-428.000.

Hegedus, Charles C. Automobile trunk lock security device. 4,212,176, Cl. 70-417.000.

Hegler, Ralph-Peter: *See*—
Hegler, Wilhelm; and Hegler, Ralph-Peter, 4,212,618, Cl. 425-326.100.

Hegler, Wilhelm; and Hegler, Ralph-Peter, to Hegler, Wilhelm. Apparatus for the manufacture of transversely contoured tubing from thermoplastic material. 4,212,618, Cl. 425-326.100.

Heightman, Denis W.: *See*—
Jones, Sidney C.; Lindsay, Henry R.; and Heightman, Denis W., 4,213,143, Cl. 358-4.000.

Heilen, Gerd: *See*—
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,212,825, Cl. 568-313.000.

Heisman, Robert M.: *See*—
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Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, 4,212,432, Cl. 241-285.00B.

Helffrich, Edmund R. Loudspeaker enclosure for mid-wall location. 4,213,008, Cl. 179-1.00E.

Helfrich, Ernest R.: *See*—
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Helinski, Edward F., to International Business Machines Corporation. Ribbon storage device. 4,212,420, Cl. 226-118.000.

Helinski, Edward F., to International Business Machines Corporation. Ribbon storage mechanism having eccentrically mounted feeding elements. 4,212,550, Cl. 400-196.100.

Helpinstill, Charles T., II. Magnetic sensor for a musical instrument and method of constructing same. 4,212,220, Cl. 84-1.140.

Hendy, Brian N.; and Ford, John M., to Imperical Chemical Industries Limited. Apparatus and method for producing coated film. 4,212,908, Cl. 427-355.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Schaper, Ulf-Armin; and Bruns, Klaus, 4,212,773, Cl. 252-522.00R.

Henkle, Ted. Violin shoulder rest. 4,212,222, Cl. 84-278.000.

Henne, Werner, to Akzo N.V. Artificial kidney. 4,212,738, Cl. 210-94.000.

Henning, Bodo: *See*—
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Hensley, Albert L., Jr.; and Quick, Leonard M., to Standard Oil Company (Indiana). Process for demetallation and desulfurization of heavy hydrocarbons. 4,212,729, Cl. 208-210.000.

Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph Hans, Nutzel, Karl, Morche, Klaus; and Kruger, Wolfgang, to Bayer Aktiengesellschaft. Carboxylic acid esters of pentaerythritol. 4,212,816, Cl. 260-410.600.

Heppner, John B., to C. A. Pemberton & Co. Web dispenser. 4,212,217, Cl. 83-277.000.

Herbert Kanngiesser GmbH & Co.: *See*—
Holzinger, Karl, 4,212,614, Cl. 425-214.000

Herbst, Richard L.. *See*—
Byer, Robert L.; and Herbst, Richard L., 4,213,060, Cl. 307-426.000.

Hercules Protective Fabrics Corporation: *See*—
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Herrmann, Herbert: *See*—
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Herron, William L.; and Rummel, Edward W., to Singer Company, The. Sewing machine full and low bobbin indicator. 4,212,257, Cl. 112-278.000.

Hess, Klaus: *See*—
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Hidaka, Kazutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Linear antenna arrays. 4,213,133, Cl. 343-854.000.

Higashida, Susumu: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.

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Hill, Duncan E., Jr., to Design Maintenance Corporation. Apparatus for marking building panels. 4,212,110, Cl. 33-174.00G.

Hill, Robert S.: *See*—
Williams, Ronald S.; and Hill, Robert S., 4,212,099, Cl. 29-507.000.

Hillhouse, Charles R., to Tasope' Limited. Printing plate processing machine. 4,212,263, Cl. 118-37.000.

Hilton, Brian T.; and Staff, Paul, to UCC International Limited. Disposable filter canister and housing. 4,212,739, Cl. 210-130.000.

Himmele, Walter: *See*—
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Hines, Charles E.: *See*—
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Hirano, Masachika: *See*—
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Hirao, Kazushige: *See*—
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Hiromitsu, Hirayama, to TDK Electronics Company Limited. Variable leakage transformer. 4,213,084, Cl. 323-56.000.

Hirsch, John M.; and Stapleton, Robert G., to Shell Oil Company. Ultrasonic sensor. 4,212,201, Cl. 73-290.00V.

Hirzy, John W., to Monsanto Company. Plastifiers, method of preparation and PVC compositions containing same. 4,212,957, Cl. 525-131.000.

Hitachi Heating Appliances Co., Ltd.: *See*—
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Hitachi, Ltd.: *See*—
Kakinuma, Kazuaki, 4,213,152, Cl. 358-186.000.
Kembo, Yukio; Kuni, Asahiro; and Makihira, Hiroshi, 4,213,117, Cl. 340-146.30H.
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Okabe, Takeaki, Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi, Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.
Watanabe, Masanobu, 4,213,166, Cl. 361-86.000.
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Hobart Corporation: *See*—
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HOBEG Hochtemperaturreaktor-Brennelement GmbH: *See*—
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Hoda, Syed N., to Corning Glass Works. Strengthened polychromatic glasses. 4,212,919, Cl. 428-410.000.

Hodakowski, Leonard E.; and Jenkinson, Richard D., to Union Carbide Corporation. Process for producing a colorant containing highlighted coated substrate. 4,212,899, Cl. 427-44.000.

Hodge, Malcolm B., to TRW Inc. Fiber optic coupler for tapping into fiber optic line. 4,212,512, Cl. 350-96.150.

Hoechst Aktiengesellschaft. *See*—
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Bergner, Dieter; Heubach, Erhard; Hofmann, Winfried; Kuster, Ortwin; and Pelz, Lothar, 4,212,721, Cl. 204-219.000.
Curtius, Horst; Feess, Erich; and Gronen, Willy, 4,212,646, Cl. 8-532.000.
Curtius, Horst; Feess, Erich; and Gronen, Willy, 4,212,648, Cl. 8-466.000.
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Konig, Wolfgang, 4,212,796, Cl. 260-112.50R.
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Hoefke, Wolfgang: *See*—
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Hoelzl, Ludwig; and Reisinger, Konrad, to Siemens Aktiengesellschaft. Process for T.D.M. frame synchronization employing variable synchronizing words. 4,213,011, Cl. 370-100.000.

Hoen, Cuyler: *See*—
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Hoffmann-La Roche Inc.: *See*—
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Hoffmann, Werner: *See*—
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Hofmann, Winfried: *See*—
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Holce, Thomas J. Proximity switch having adjustable sensitivity. 4,213,110, Cl. 335-207.000.

Holko, Anthony P.: *See*—
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Holland, George W.; and Rosen, Perry, to Hoffmann-La Roche Inc. 16-Substituted prostaglandins. 4,212,993, Cl. 562-503.000.

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Vaessen, Dorotheus C. L., 4,213,130, Cl. 343-16.00M.

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Hollister Incorporated: *See*—
Nolan, John L., 4,212,303, Cl. 128-346.000.

Holtzman, Norman; Hromadka, Robert J.; and Halperin, Herbert H. Vehicle turn detection apparatus. 4,213,116, Cl. 340-73.000.

Holzbaur, Siegfried, to Robert Bosch GmbH. Fuel supply system. 4,212,834, Cl. 261-44.00A.

Holzinger, Karl, to Herbert Kanngiesser GmbH & Co. Disc brake holding device for pivotal elements of expandable plastics molds. 4,212,614, Cl. 425-214.000.

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Homan, Gerlof, to Survival Technology, Inc. Stabilized benactyzine hydrochloride. 4,212,886, Cl. 424-308.000.

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Honda Giken Kogyo Kabushiki Kaisha: *See*—
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Honey Bee Corporation: *See—*
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Honeywell Inc.: *See—*
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Newbold, William F.; and Singh, Gurnam, 4,212,209, Cl. 73-721.000.
Honke, Heinrich: *See—*
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Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, to Taiho Pharmaceutical Company, Limited. Glyoxal-2-oxim derivatives and a process for relieving pain/or inflammation therewith. 4,212,874, Cl. 424-272.000.
Hoo, Ong S. Rotary engine. 4,212,283, Cl. 123-210.000.
Hooker Chemicals & Plastics Corp.: *See—*
Day, F. Howard, 4,212,819, Cl. 260-543.00R.
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Tang, David Y.; and Foster, Arthur M., 4,212,999, Cl. 568-807.000.
Hoppmann, Helmut: *See—*
Otto, Heinz; Hoppmann, Helmut; and Henning, Bodo, 4,212,600, Cl. 417-360.000.
Horiuchi, Hideo: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
Horner, Michael W., to General Electric Company. Cooling system for a gas turbine using V-shaped notch weirs. 4,212,587, Cl. 416-96.00R.
Hornung, Friedrich; and Gerschner, Martin, to Robert Bosch GmbH. Speed control circuit for a universal electric motor. 4,213,077, Cl. 318-245.000.
Horodysky, Andrew G., to Mobil Oil Corporation. Reaction products of sulfurized olefin adducts of phosphorodithioic acids and organic compositions containing same. 4,212,753, Cl. 252-46.600.
Horton, Edward E., to Deep Oil Technology, Inc. Pipe construction and method of making same. 4,212,329, Cl. 138-155.000.
Hoshino, Kazuhisa: *See—*
Yokokoji, Shyoji; and Hoshino, Kazuhisa, 4,212,299, Cl. 128-272.000.
Hosokawa, Minoru: *See—*
Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,212,156, Cl. 368-85.000.
Hotchkiss, Philip; Gipson, Robert M.; and Nieh, Edward C. Y., to Texaco Development Corporation. Acrylamide or methacrylamide alkoxypropyl quaternary compounds. 4,212,820, Cl. 260-561.00N.
Houlihan, William J., to Sandoz, Inc. Substituted or unsubstituted 2-phenylbenzimidazoles as anti-obesity agents. 4,212,876, Cl. 424-273.00B.
Houp, Robert L., to J. R. Weaver, Inc. Overhead door cable safety device. 4,213,019, Cl. 200-61.130.
Houston, Paul L.: *See—*
Moore, C. Bradley; Clark, John H.; Haas, Yehuda; and Houston, Paul L., 4,212,717, Cl. 204-158.00R.
Howard, Durrell U. Steering assembly for towed vehicles. 4,212,483, Cl. 280-444.000.
Howell, John L.: *See—*
Nemeth, Edward J.; McGreal, Joseph E.; and Howell, John L., 4,212,851, Cl. 423-230.000.
Howmet Turbine Components Corporation: *See—*
Veeck, Stewart J.; Freeman, William R.; and Dardi, Louis E., 4,212,669, Cl. 75-226.000.
Hoying, Gary V.: *See—*
Fraula, Louis F.; and Hoying, Gary V., 4,212,239, Cl. 100-37.000.
Hoyles, Ronald, to Lever Brothers Company. Toothpaste. 4,212,856, Cl. 424-52.000.
Hromadka, Robert J.: *See—*
Holtzman, Norman; Hromadka, Robert J.; and Halperin, Herbert H., 4,213,116, Cl. 340-73.000.
Hrovat, Henry J. Device for de-icing power cables. 4,212,378, Cl. 191-62.000.
Hrovat, Milan; Huschka, Hans; and Spener, Gerhard, to HOBEG Hochtemperaturreaktor-Brennelement GmbH. Process for the production of coated fuel particles for high temperature reactors. 4,212,898, Cl. 427-6.000.
Hsieh, Jack. Apparatus for the direct reduction of iron ore. 4,212,452, Cl. 266-156.000.
Hsu, Tauan-Yuan. Automatic asparagus peeling machine. 4,212,237, Cl. 99-589.000.
Huang, Liang H.: *See—*
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.
Hubbard, Dana L. Harmonica stand. 4,212,219, Cl. 84-1.060.
Huber, Ernst, to Gretag Aktiengesellschaft. Strip guiding device. 4,212,419, Cl. 226-23.000.
Huebner, Charles F.: *See—*
Gschwend, Heinz W.; and Huebner, Charles F., 4,212,808, Cl. 260-340.300.
Hughes Aircraft Company: *See—*
Pines, Michael Y., 4,213,137, Cl. 357-30.000.
Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., to Armour Pharmaceutical Company. Cyclization of peptides. 4,212,795, Cl. 260-112.50T.
Hughes, Max B. Apparatus for forming individual serving portions of a frozen dairy confection. 4,212,611, Cl. 425-114.000.
Hughes Microelectronics Limited: *See—*
Morcom, Richard, 4,213,065, Cl. 307-251.000.
Hukuba, Hiroshi. Inspection device for cavities. 4,212,105, Cl. 433-30.000.
Hull, Tommy L.: *See—*
Weidler, Jay B.; Gracia, Bert E.; and Hull, Tommy L., 4,212,563, Cl. 405-195.000.
Hulsey, Eldon E., to Butler, J. R.; Hulsey, Eldon S.; Hulsey, Joe; and Pipe Line Tech., Inc. Low noise rotary control valve. 4,212,321, Cl. 137-625.320.
Hulsey, Eldon S.: *See—*
Hulsey, Eldon E., 4,212,321, Cl. 137-625.320.
Hulsey, Joe: *See—*
Hulsey, Eldon E., 4,212,321, Cl. 137-625.320.
Humphrey, Marshall F.: *See—*
United States of America, National Aeronautics and Space Administration; and Humphrey, Marshall F., 4,212,732, Cl. 210-32.000.
Hupfer, Leopold: *See—*
Goetz, Norbert; Himmele, Walter; and Hupfer, Leopold, 4,212,972, Cl. 544-106.000.
Hurlbut, Donovan W.: *See—*
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma Lou; and Terry, Angel F., 4,213,040, Cl. 235-476.000.
Huschka, Hans: *See—*
Hrovat, Milan; Huschka, Hans; and Spener, Gerhard, 4,212,898, Cl. 427-6.000.
Hutchison, Gary. Portable confined surface sand blast apparatus. 4,212,138, Cl. 51-427.000.
Hydrasearch Co. Inc.: *See—*
Jones, Walter L.; and Triest, Willard G., 4,212,487, Cl. 285-95.000.
Hydroscience, Inc.: *See—*
Miller, Richard A., 4,212,735, Cl. 210-63.00R.
Ibata, Jyoji; Fujita, Yukio; and Kominami, Naoya, to Asahi Kasei Kogyo Kabushiki Kaisha. Resin concrete composition. 4,212,790, Cl. 260-40.00R.
Idel, Karsten. Recovery of high-quality polycarbonate from polycarbonate scrap. 4,212,774, Cl. 260-2.300.
Ihara Chemical Industry Company, Limited: *See—*
Nakayama, Yoshiki; Hirao, Kazushige; and Yazawa, Chihiro, 4,212,831, Cl. 568-17.000.
Iida, Yoshiaki: *See—*
Shimizu, Yoh; Iida, Yoshiaki; Goto, Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, 4,212,689, Cl. 148-111.000.
Iida, Yoshiya; and Ohga, Shoichiro, to Shin-Etsu Handotai Co., Ltd. Selector device for the determination of the type of electroconductivity in semiconductor wafers. 4,213,086, Cl. 324-62.000.
Ikeda, Masaki, to Tomy Kogyo Co., Inc. Turntable article holder with ejector. 4,212,412, Cl. 221-81.000.
Imataki, Hiroyuki; Kobayashi, Masatsune; and Ohta, Tokuya, to Canon Kabushiki Kaisha. Image display device. 4,212,518, Cl. 350-357.000.
Impact Products Pty. Ltd.: *See—*
Fisher, Eric V., 4,212,341, Cl. 160-84.00R.
Imperical Chemical Industries Limited: *See—*
Cliff, George S.; and Willocks, Jack, 4,212,840, Cl. 264-338.000.
Hendy, Brian N.; and Ford, John M., 4,212,908, Cl. 427-355.000.
Imura, Toshinori: *See—*
Yamada, Seiji; Tominaga, Shinji; Kogure, Yasuzi; and Imura, Toshinori, 4,212,523, Cl. 354-25.000.
IMW Industries, Inc.: *See—*
Minicozzi, Al, 4,212,568, Cl. 407-53.000.
Ina, Yoshifumi, to Nippondenso Co., Ltd. Motor pump. 4,212,601, Cl. 417-365.000.
Industrias Rumbo, S.A.: *See—*
Guillen, D. Fernando M., 4,212,236, Cl. 99-467.000.
Industrie Pirelli, S.p.A.: *See—*
Ballocci, Giovanni, 4,212,619, Cl. 425-373.000.
Portinari, Antonio; and Longoni, Sergio, 4,212,097, Cl. 29-450.000.
Inertia Switch Limited: *See—*
Weale, John L.; and Wiles, Stephen P., 4,212,208, Cl. 73-652.000.
Ingenieursbureau Marcon (Marine Consultants) B.V.: *See—*
Wipkink, Johannes, 4,212,561, Cl. 405-195.000.
Innocenti Santeustacchio S.p.A.: *See—*
Cattaneo, Filippo; and Corolla, Rosolino, 4,212,180, Cl. 72-249.000.
Innova, Inc.: *See—*
Moeglich, Karl, 4,212,724, Cl. 204-273.000.
Inoue, Kozo: *See—*
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.
Inoue, Mitsumasa, to Nissan Motor Company, Limited. Carburetor. 4,212,275, Cl. 123-549.000.
Inoue, Noriyuki: *See—*
Mihara, Yuji; Takei, Haruo; and Inoue, Noriyuki, 4,212,672, Cl. 430-494.000.
Institutt for Atomenergi: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.
INTERATOM Internationale Atomreaktorbau GmbH: *See—*
Podgorski, Jan, 4,213,071, Cl. 310-344.000.
Intercane Systems, Inc.: *See—*
Tilby, Sydney E., 4,212,616, Cl. 425-256.000.
Interlake, Inc.: *See—*
Simmons, James R.; and Weller, Frank C., 4,212,238, Cl. 100-32.000.

International Business Machines Corporation: *See—*
Acosta, Robert G.; McBride, Michael E.; and Pascoe, Robert A., 4,212,553, Cl. 400-279.000.
Andros, Frank E.; and Shay, Robert J. E., 4,212,349, Cl. 165-105.000.
Bemis, John D.; and Goff, Willie, Jr., 4,212,552, Cl. 400-249.000.
Canavello, Benjamin J.; Hatzakis, Michael; and Shaw, Jane M., 4,212,935, Cl. 430-326.000.
Diez, Mark F.; Lewis, David O.; and Robinson, Thomas S., 4,213,178, Cl. 364-200.000.
Finlay, David E.; Robbins, Wayne E.; and Travis, Terence, 4,213,190, Cl. 364-900.000.
Helinski, Edward F., 4,212,420, Cl. 226-118.000.
Helinski, Edward F., 4,212,550, Cl. 400-196.100.
Pfeiffer, Hans C., 4,213,053, Cl. 250-492.00A.
International Flavors & Fragrances Inc.: *See—*
Lindauer, Jerome, 4,212,089, Cl. 4-228.000.
International Harvester Company: *See—*
Miner, Robert C., 4,212,142, Cl. 56-14.400.
International Submarine Services, S.A.: *See—*
Collins, H. Dale, 4,212,258, Cl. 114-312.000.
International Tool & Supply Company, Inc.: *See—*
Lee, Harlan E.; and Toelke, Lester W., 4,212,240, Cl. 100-53.000.
Ishibitsu, Kokichi: *See—*
Kawamura, Takao; and Ishibitsu, Kokichi, 4,213,030, Cl. 219-216.000.
Ishii, Hiroshi: *See—*
Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,212,156, Cl. 368-85.000.
Ishikawa, Katsumi: *See—*
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Ishizuka, Ichiro: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,212,981, Cl. 548-246.000.
Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, to Mitsubishi Gas Chemical Company, Inc. Process for producing carboxylic acids or esters thereof. 4,212,989, Cl. 560-232.000.
Itaya, Hideo, to Olympus Optical Co., Ltd. Wide-visual-field microscope objective lens system. 4,212,515, Cl. 350-175.0ML.
Itaya, Nobushige: *See—*
Ohsumi, Tadashi; and Itaya, Nobushige, 4,212,829, Cl. 568-433.000.
Ohsumi, Tadashi; Itaya, Nobushige; and Hirano, Masachika, 4,212,879, Cl. 424-274.000.
Itek Corporation: *See—*
Robbins, Daniel H., 4,212,389, Cl. 206-316.000.
Ito, Hidefumi: *See—*
Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.
Ito, Shigeyasu: *See—*
Uedaira, Satoru; and Ito, Shigeyasu, 4,212,344, Cl. 164-87.000.
Itoga, Kiyoshi: *See—*
Aibe, Toshio; and Itoga, Kiyoshi, 4,212,852, Cl. 423-230.000.
Ivanchenko, Julia N.: *See—*
Blizniuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Ivanov, Leonid F.: *See—*
Kozhemyakin, Valentin G.; Kaluniants, Kalust A.; Losyakova, Lidia S.; Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G., 4,212,949, Cl. 435-315.000.
Ivanova, Ielena A.: *See—*
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.
Iversen, Poul C. C.: *See—*
Olsen, Gunnar E. R.; and Iversen, Poul C. C., 4,213,032, Cl. 219-364.000.
Iverson, Myren L.: *See—*
Labaw, Kenneth B.; Lowe, Gary; and Iverson, Myren L., 4,213,199, Cl. 367-117.000.
Ives, Frank E. Deflector for attachment to fiber chopper nozzle. 4,212,216, Cl. 83-165.000.
Iwasaki, Masayuki, to Fuji Photo Film Co., Ltd. 2-Halomethyl-5-vinyl-1,3,4-oxadiazole compounds. 4,212,970, Cl. 542-455.000.
Iwata, Syuzi: *See—*
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; Iwata, Syuzi; and Ohnishi, Ryoichi, 4,213,154, Cl. 358-260.000.
Izumi, Tetsuro: *See—*
Nishiwaki, Yoshiro; and Izumi, Tetsuro, 4,212,471, Cl. 274-38.000.
J. K. and Susie L. Wadley Research Institute and Blood Bank: *See—*
Dorn, Gordon L., 4,212,948, Cl. 435-296.000.
J. R. Weaver, Inc.: *See—*
Houp, Robert L., 4,213,019, Cl. 200-61.130.
Jablonski, Karl-Heinz: *See—*
Bauerlein, Rudolf; Uhl, Dieter; Diepers, Heinrich; and Jablonski, Karl-Heinz, 4,212,911, Cl. 428-131.000.
Jackson, Hubert H. Layout tool for framing studs. 4,212,108, Cl. 33-174.00G.
Jacobson, Sava. Fail-safe mechanisms for a telephone answering device. 4,213,010, Cl. 179-6.00E.
Jaedicke, Hagen: *See—*
Paust, Joachim; Schneider, Joachim; and Jaedicke, Hagen, 4,212,827, Cl. 568-347.000.
Jagenberg Werke AG: *See—*
Buchholz, Rainer; Zodrow, Rudolf; and Lohse, Reinhard, 4,212,700, Cl. 156-568.000.
James River Hydrate & Supply Co., Inc.: *See—*
Burkett, William E., 4,212,682, Cl. 106-288.00B.
James, Stanley L.: *See—*
Bowerman, William J.; Hollister, Geoffrey L.; James, Stanley L.; and Vixie, Dennis E., 4,212,120, Cl. 36-129.000.
Jameson, Melvin N.; and Krulik, Gerald A. Electroless plating of nonconductive substrates. 4,212,768, Cl. 252-441.000.
Janko, Mike A. Apparatus for preventing video tape duplication. 4,213,149, Cl. 358-153.000.
Jansen, Harley W.: *See—*
Zylstra, Henry J.; and Jansen, Harley W., 4,213,165, Cl. 361-94.000.
Jansen, Willem: *See—*
Swarden, Michael C.; Magge, Shankar S.; Jansen, Willem; and Carter, Anthony F., 4,212,585, Cl. 415-53.00R.
Japan Atomic Energy Research Institute: *See—*
Sakurada, Ichiro; Okada, Toshio; and Kaji, Kanako, 4,212,649, Cl. 8-115.500.
Japan Storage Battery Company Limited: *See—*
Fujita, Yuko; and Kudo, Hisashi, 4,212,891, Cl. 426-231.000.
Jarrett, Douglas G., to Exxon Research & Engineering Co. System for the phase locking synthesized high frequency pulses to a low frequency signal. 4,213,156, Cl. 358-275.000.
Jaskolski, Stanley V.: *See—*
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,213,067, Cl. 307-252.00C.
JDC Welding and Research, Inc.: *See—*
Costley, Eugene J., 4,213,024, Cl. 219-61.000.
Jefferson, Mark T.: *See—*
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.
Jellesma, Anne, to Machinefabriek W. Hubert & Co. B.V. Belt filter. 4,212,745, Cl. 210-401.000.
Jenkins, Leonard E., Jr.; and Lowe, Peter R., to Honeywell Inc. Electrical contact for conductive-backed paper. 4,213,136, Cl. 346-139.00C.
Jenkinson, Richard D.: *See—*
Hodakowski, Leonard E.; and Jenkinson, Richard D., 4,212,899, Cl. 427-44.000.
Jeppsson, Jan-Bertil, to AB Akerlund & Rausing. Container closure members. 4,212,409, Cl. 220-276.000.
Jespersen, Aksel, to Danfoss A/S. Method and apparatus for prescribing a time of day. 4,213,062, Cl. 307-117.000.
Jidosha Kiki Co., Ltd.: *See—*
Ohtuka, Tadao; Ohe, Takeshi; and Hamano, Kunihiro, 4,212,366, Cl. 180-141.000.
Jim Dandy Company, The: *See—*
Brown, Arthur V., Jr.; and Karrasch, Richard J., 4,212,896, Cl. 426-623.000.
Jimenez, Antonio, to Mefina S.A. Detachable sole plate. 4,212,256, Cl. 112-240.000.
Johannes Buchsteiner GmbH & Co.KG: *See—*
Buchsteiner, Renate, 4,212,400, Cl. 211-41.000.
Johns-Manville: *See—*
Domanick, Edward J.; and Haskins, Lewis B., 4,212,446, Cl. 248-678.000.
Johnsen, Walter. Roll-up truck bed cover. 4,212,492, Cl. 296-98.000.
Johnson, Carl K.: *See—*
Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., 4,212,929, Cl. 429-37.000.
Johnson, Donald O., to American Can Company. Material handling apparatus. 4,212,584, Cl. 414-748.000.
Johnson, Everett A.: *See—*
Silverman, Daniel; and Johnson, Everett A., 4,213,038, Cl. 235-382.000.
Johnson, John E., Jr.: *See—*
United States of America, National Aeronautics and Space Administration; Johnson, John E., Jr.; and Swartz, Paul F., 4,212,297, Cl. 128-207.140.
Johnson, Oliver W., to Eaton Corporation. Controller for fluid pressure operated devices. 4,212,229, Cl. 91-446.000.
Johnson, Roy A., to Upjohn Company, The. Prostaglandin derivatives. 4,212,968, Cl. 542-426.000.
Johnson, Russell L., to Kimberly-Clark Corporation. Digital tampon. 4,212,301, Cl. 128-285.000.
Johnson, Walter E.: *See—*
Barton, Bruce L.; Johnson, Walter E.; and Notaro, Anthony J., 4,212,665, Cl. 75-10.00V.
Johnson, William R., Jr.: *See—*
Van Auken, Thomas V.; Grubbs, Harvey J.; and Johnson, William R., Jr., 4,212,310, Cl. 131-17.00R.
Jolliff, Norman E.: *See—*
von Kaler, Roland L.; and Jolliff, Norman E., 4,212,210, Cl. 74-375.000.

Jones, Howard. *See*—
Shen, Tsung-Ying; Jones, Howard; Mulvey, Dennis M.; and Dorn, Conrad P., 4,212,976, Cl. 546-115.000.

Jones, James J., to Texas Instruments Incorporated. Vehicle velocity ramp generator in a skid control vehicle braking system. 4,212,499, Cl. 303-103.000.

Jones, John L., Sr. Room occupancy power programmer. 4,213,063, Cl. 307-141.000.

Jones, Marcus C. Wiper apparatus for a viewing surface. 4,212,091, Cl. 15-250.00B.

Jones, Robert K.; and van Velthoven, Armand J., to NCR Corporation. Method for making narrow channel FET. 4,212,683, Cl. 148-1.500.

Jones, Sidney C.; Lindsay, Henry R.; and Heightman, Denis W. Color television conversion apparatus for use with a conventional domestic reproducer. 4,213,143, Cl. 358-4.000.

Jones, Walter L.; and Triest, Willard G., to Hydrasearch Co. Inc. Hose coupling. 4,212,487, Cl. 285-95.000.

Jonsson, Arne F., to Pumpex Production AB. Method and apparatus for the continuous regulation of rotary hydrodynamic pumps. 4,212,590, Cl. 417-24.000.

Joslyn Mfg. and Supply Co.: *See*—
Lusk, George E.; Mak, Sioe T.; and Haarsma, John C., 4,212,696, Cl. 156-294.000.

Juergens, Tristan D., to Gates Rubber Company, The. Driven mandrel and method. 4,212,179, Cl. 72-148.000.

Junek, Hans; and Mittelbach, Martin, to Lonza Ltd. Process for the production of aminomalonic acid dinitrile as an aminomalonic acid dinitriltosylate precipitate or as an acetylaminomalodinitrile precipitate. 4,212,818, Cl. 260-465.400.

Jung, Lothar. Method for the manufacture of hollow fused quartz or fused silica ingots. 4,212,661, Cl. 65-18.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,212,156, Cl. 368-85.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Kawaharazaki, Takashi, 4,212,435, Cl. 242-107.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kobayashi, Akira, 4,212,162, Cl. 60-39.630.

Kaemmer, Eduard: *See*—
Schoettle, Klaus; Hoffmann, Werner; and Kaemmer, Eduard, 4,212,436, Cl. 242-192.000.

[illegible] Fanya L.: *See*—
[illegible] Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; [illegible]ovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.

Kaiser, Julius A., Jr., to United States of America, National Aeronautics and Space Administration. Scannable beam forming interferometer antenna array system. 4,213,131, Cl. 343-844.000.

Kaji, Kanako: *See*—
Sakurada, Ichiro; Okada, Toshio; and Kaji, Kanako, 4,212,649, Cl. 8-115.500.

Kaken Chemical Company, Limited: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.
Sasaki, Kazuya; Mitsui, Hiromi; and Onodera, Kazukiyo, 4,212,881, Cl. 424-275.000.

Kakinuma, Kazuaki, to Hitachi, Ltd. Output circuit for video tape recorder. 4,213,152, Cl. 358-186.000.

Kakutani, Nobuyasu: *See*—
Washizuka, Isamu; and Kakutani, Nobuyasu, 4,213,035, Cl. 235-92.0DN.

Kalina, Alexander I. Dynamic-compensating magnetic support apparatus. 4,212,249, Cl. 104-281.000.

Kaltenbach & Voigt GmbH & Co.: *See*—
Eibofner, Eugen; and Reich, Heinrich, 4,212,641, Cl. 433-133.000.
Loge, Hans; Eibofner, Eugen; Kuhn, Bernhard; and Reich, Heinrich, 4,212,640, Cl. 433-82.000.

Kalugina, Iraida I.: *See*—
Zorev, Nikolai N., Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Kaluniants, Kalust A.: *See*—
Kozhemyakin, Valentin G.; Kaluniants, Kalust A.; Losyakova, Lidia S.; Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G., 4,212,949, Cl. 435-315.000.

Kamp, Ewald A., to Union Carbide Corporation. Closure fastening device. 4,212,337, Cl. 150-3.000.

Kanatani, Yoshiharu: *See*—
Kawaguchi, Masashi; Kishishita, Hiroshi; Mizukami, Etsuo; and Kanatani, Yoshiharu, 4,213,074, Cl. 313-509.000.

Kaneda, Yoshihisa, to Toyo Kogyo Co., Ltd. Automobile evaporative emission control device. 4,212,276, Cl. 123-516.000.

Kanner, Bernard: *See*—
Murphy, Gerald J.; and Kanner, Bernard, 4,212,952, Cl. 521-112.000.

Kao, David T.; and Wood, Don J., to University of Kentucky Research Foundation. Rotary feeder for solid particle injection into pressurized fluid system. 4,212,566, Cl. 406-68.000.

Kao, Ming L.: *See*—
Chiu, Ran F.; Kromer, Philip F., III; Kao, Ming L.; and Parrish, Henry H., 4,213,097, Cl. 330-51.000.

Karami, Hamzeh, to Colgate-Palmolive Company. Absorbent article with spaced hydrocolloid material. 4,212,302, Cl. 128-287.000.

Karas, Nicholas V.: *See*—
Rotman, Walter; Karas, Nicholas V.; Fante, Ronald L.; and Franchi, Peter R., 4,213,122, Cl. 340-552.000.

Karlen, Urs. *See*—
Della Casa, Angelo; and Karlen, Urs, 4,212,642, Cl. 8-470.000.

Karrasch, Richard J.: *See*—
Brown, Arthur V., Jr.; and Karrasch, Richard J., 4,212,896, Cl. 426-623.000.

Kasahara, Hiroko: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.

Katata, Toshinobu: *See*—
Koizumi, Kunihei; Otani, Tatu; Katata, Toshinobu; and Ueda, Takeshi, 4,212,706, Cl. 201-39.000.

Kato, Masao, and Kishida, Kosuke, to Mitsubishi Jukogyo Kabushiki Kaisha. Method and apparatus for dredging having bow-stern movement of the suction means. 4,212,121, Cl. 37-58.000.

Kato, Shogo: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, 4,212,522, Cl. 354-25.000.

Katsueda, Mineo: *See*—
Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.

Katsura, Tadahiko, to Toyo Seikan Kaisha Limited. Olefin-vinyl alcohol-vinyl acetal copolymers, process for preparation thereof and laminate structures including said copolymers. 4,212,956, Cl. 525-60.000.

Katzer, Hans: *See*—
Kratel, Gunter; Stohr, Gunter; and Katzer, Hans, 4,212,925, Cl. 428-447.000.

Kawabata, Hideo; and Yukimasa, Tatsuaki, to Nippon Oil Seal Industry Co., Ltd. Hydrodynamic seal. 4,212,476, Cl. 277-134.000.

Kawaguchi, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Manual lever for a vehicle. 4,212,367, Cl. 180-271.000.

Kawaguchi, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Dual type hydraulic circuit for a vehicle brake. 4,212,498, Cl. 303-6.00C.

Kawaguchi, Masashi; Kishishita, Hiroshi; Mizukami, Etsuo; and Kanatani, Yoshiharu, to Sharp Kabushiki Kaisha. Thin-film electroluminescent display panel sealed by glass substrates and the fabrication method thereof. 4,213,074, Cl. 313-509.000.

Kawaharazaki, Takashi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Seatbelt retractor. 4,212,435, Cl. 242-107.000.

Kawai, Masayasu; and Ishikawa, Katsumi, to Kyowa Electronic Instruments Co., Ltd. Strain gage load converter. 4,212,197, Cl. 73-141.00A.

Kawamura, Takao; and Ishibitsu, Kokichi, to Kyoto Ceramic Kabushiki Kaisha. Silicon-semiconductor-type thermal head. 4,213,030, Cl. 219-216.000.

Kawamura, Tateo: *See*—
Miyaguchi, Masao; Kawamura, Tateo; Nakanishi, Kazuyoshi; and Kohno, Shoji, 4,212,548, Cl. 366-348.000.

Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, to Kabushiki Kaisha Suwa Seikosha. Step motor control mechanism for electronic timepiece. 4,212,156, Cl. 368-85.000.

Kawarada, Akira: *See*—
Takeuchi, Setsuo; Kawarada, Akira; Ota, Yasuo; and Nakayama, Masayoshi, 4,212,664, Cl. 71-94.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,212,687, Cl. 148-16.600.

Kawasaki Steel Corporation: *See*—
Shimizu, Yoh; Iida, Yoshiaki; Goto, Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, 4,212,689, Cl. 148-111.000.

Kay, Charles. Dock. 4,212,564, Cl. 405-218.000.

KDI American Products, Inc.: *See*—
Greene, Nat, 4,212,740, Cl. 210-169.000.

Keever, Joseph M.; and Lipscomb, George W., to Westinghouse Electric Corp. Integral flux lagging and light load adjustment assembly for watthour meters. 4,213,090, Cl. 324-138.000.

Keijser, Robertus A. J.; Wesselink, Gustaaf A.; Derksema, Bram J.; and Verhoeven, Johannes A. T., to U.S. Philips Corporation. Gas discharge laser. 4,213,100, Cl. 331-94.50D.

Kelly, Edmund R.; and Orona, Thomas V., Sr., to Rax-Unlimited. Garment display rack. 4,212,402, Cl. 211-105.300.

Kembo, Yukio; Kuni, Asahiro; and Makihira, Hiroshi, to Hitachi, Ltd. Method and apparatus for detecting positions of chips on a semiconductor wafer. 4,213,117, Cl. 340-146.30H.

Kempkers, Gordon B., to Prince Corporation. Covered visor mirror. 4,213,169, Cl. 362-74.000.

Kendall Company, The: *See*—
Schaar, Charles H., 4,212,296, Cl. 128-156.000.
Taylor, Glenn N., 4,212,192, Cl. 73-45.500.

Kennecke, Mario: *See*—
Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, 4,212,940, Cl. 435-55.000.

Kennedy, Howard L.; and Kingsbury, Keith M., to Motorola, Inc. Delay stabilizing system. 4,213,129, Cl. 343-6.80R.

Kenny, Andrew A.: *See*—
Douglas, Paul M.; and Kenny, Andrew A., 4,212,322, Cl. 137-625.480.

Kerner, Walter; and Schmitz, Paul, to Davy Powergas GmbH. Process for producing concentrated sulfuric acid. 4,212,855, Cl. 423-522.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Schmieder, Helmut; Goldacker, Hubert; Warnecke, Ernst; Kluth, Manfred; and Schlenker, Reinhard, 4,212,723, Cl. 204-272.000.

Kerr-McGee Corporation: *See*—
Lucid, Michael F.; Robertson, Wilbert J.; and Bowerman, Paul D., 4,212,849, Cl. 423-10.000.

Khmelev, Jury G.; Kim, Gennady P.; Zhinkin, Dmitry Y.; and Kleschevnikova, Solomanida I. Molding sand mixture for the manufacture of molds and cores. 4,212,677, Cl. 106-38.350.

Kholin, Vladimir G.: *See*—
Berber, Viktor A.; Pervushin, Evgeny S.; Kholin, Vladimir G.; Fedorov, Alexandr G.; and Galishnikov, Boris M., 4,212,539, Cl. 356-336.000.

Khramtsov, Viktor V.: *See*—
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.

Kieffer, Richard: *See*—
Ettmayer, Peter; and Kieffer, Richard, 4,212,671, Cl. 75-238.000.

Kiehs, Karl: *See*—
Theobald, Hans; Kiehs, Karl; and Adolphi, Heinrich, 4,212,861, Cl. 424-200.000.

Kijima, Yasuhiko: *See*—
Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, 4,212,989, Cl. 560-232.000.

Kikuchi, Tsuyoshi; and Takusagawa, Kiyoshi, to Toshiba Kikai Kabushiki Kaisha. Product take out devices for use in molding machines. 4,212,622, Cl. 425-444.000.

Kim, Bong Kon: *See*—
Kim, Chin K., 4,212,125, Cl. 43-16.000.

Kim, Chin K., to Kim, Bong Kon, a part interest. Hook setting fishing rod attachment. 4,212,125, Cl. 43-16.000.

Kim, Gennady P.: *See*—
Khmelev, Jury G.; Kim, Gennady P.; Zhinkin, Dmitry Y.; and Kleschevnikova, Solomanida I., 4,212,677, Cl. 106-38.350.

Kimball, Stephen F.; and Martin, Roy C., to GTE Sylvania Incorporated. Reflector lamp with lens having light-modifying coating. 4,213,170, Cl. 362-267.000.

Kimberly-Clark Corporation: *See*—
Johnson, Russell L., 4,212,301, Cl. 128-285.000.

Kimbrough, Mahlon D., to Reliance Telecommunication Electronics Company. Failure alarm for a transmission line communications system. 4,213,015, Cl. 179-175.20C.

Kimura, Kazuo: *See*—
Yamazaki, Yasuo; and Kimura, Kazuo, 4,212,526, Cl. 354-225.000.

Kimura, Takeo: *See*—
Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.

King, Edwin B.; Barnes, Wilson R.; and Pommier, Luis W., to Associated Metals & Minerals Corporation. Tin recovery. 4,212,666, Cl. 75-85.000.

King Instrument Corporation: *See*—
King, James L., 4,213,159, Cl. 360-16.000.

King, James L., to King Instrument Corporation. Pneumatic clamps and thermomagnetic duplication. 4,213,159, Cl. 360-16.000.

King, William H.: *See*—
Duvall, David S.; King, William H.; and Owczarski, William A., 4,213,026, Cl. 219-75.000.

Kingsbury, Keith M.: *See*—
Kennedy, Howard L.; and Kingsbury, Keith M., 4,213,129, Cl. 343-6.80R.

Kirkham, Arthur J., Jr. Cushion for ski lift chair. 4,212,496, Cl. 297-226.000.

Kishida, Kosuke: *See*—
Kato, Masao; and Kishida, Kosuke, 4,212,121, Cl. 37-58.000.

Kishida, Yasuo: *See*—
Morinaga, Mitsuyoshi; and Kishida, Yasuo, 4,212,490, Cl. 274-37.000.

Kishishita, Hiroshi: *See*—
Kawaguchi, Masashi; Kishishita, Hiroshi; Mizukami, Etsuo; and Kanatani, Yoshiharu, 4,213,074, Cl. 313-509.000.

Kissinger, Gaylord M.: *See*—
Adams, John N.; Kissinger, Gaylord M.; and Lee, Michael C., 4,212,997, Cl. 568-724.000.

Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, to Seiko Koki Kabushiki Kaisha. Shutter control device for automatic focusing camera. 4,212,522, Cl. 354-25.000.

Kitano, Masao: *See*—
Mizuno, Toru; and Kitano, Masao, 4,212,472, Cl. 277-12.000.

Kito, Terukazu: *See*—
Murata, Kazuo; and Kito, Terukazu, 4,213,186, Cl. 364-723.000.

Kleager, Kenneth D.: *See*—
Padberg, Louis R., Jr.; Parker, Frederick D.; Schaniel, Carl L., Jr.; and Kleager, Kenneth D., 4,213,198, Cl. 367-113.000.

Klein, Max, to Normac, Inc. Polymers of acid addition salts of methacrylic acid and a 2-mono(lower)alkylaminoethyl methacrylate. 4,212,782, Cl. 260-29.6HN.

Klemes, Martin S.: *See*—
Duncan, Damon H.; and Klemes, Martin S., 4,212,443, Cl. 244-177.000.

Kleschevnikova, Solomanida I.: *See*—
Khmelev, Jury G.; Kim, Gennady P.; Zhinkin, Dmitry Y.; and Kleschevnikova, Solomanida I., 4,212,677, Cl. 106-38.350.

Klimov, Oleg V.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Klimova, Tatyana A.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Klimsa, Ivan. Eye testing device. 4,212,520, Cl. 351-37.000.

Klockner-Humboldt-Deutz AG: *See*—
Deussner, Herbert, 4,212,850, Cl. 423-175.000.
Rao, Chatty; and Schnutz, Bruno, 4,212,608, Cl. 425-85.000.

Klopkova, Rimma S.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Klotzbucher, Hansjong; Kolb, Erwin, and Hilge, Bernhard, to Swiss Aluminium Ltd. Installation for the production of continuously cast billets. 4,212,451, Cl. 266-50.000.

Kluth, Manfred: *See*—
Schmieder, Helmut; Goldacker, Hubert; Warnecke, Ernst; Kluth, Manfred; and Schlenker, Reinhard, 4,212,723, Cl. 204-272.000.

Knauer, Karl; and Pfleiderer, Hans J., to Siemens Aktiengesellschaft Transversal filter having at least one analog shift register, and a method for its operation. 4,213,105, Cl. 333-165.000.

Knechtel, Wilhelm; and Tokiwa, Taisuke, to Canon Kabushiki Kaisha Apparatus for supplying electrophotographic developer. 4,212,264, Cl. 118-653.000.

Kneip, George D., Jr., to Varian Associates, Inc. Cryostat for superconducting NMR spectrometer. 4,212,169, Cl. 62-45.000.

Kneip, George D., Jr., to Varian Associates, Inc. NMR Spectrometer with superconducting coil having rectangular cross-section wire. 4,213,092, Cl. 324-319.000.

Knott, Philip H. Pressure sensitive game apparatus. 4,212,468, Cl. 273-240.000.

Knotter, David G.: *See*—
Dale, John D.; and Knotter, David G., 4,212,430, Cl. 241-89.400.

Kobayashi, Akio; and Mashita, Kentaro, to Sumitomo Chemical Company, Limited. Process for producing soft resins. 4,212,961, Cl. 526-151.000.

Kobayashi, Akira, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Constant combustion engine. 4,212,162, Cl. 60-39.630.

Kobayashi, Hidehiko: *See*—
Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.

Kobayashi, Ikuo: *See*—
Maki, Masao; Sano, Seiichi; Tsuruda, Kunihiro; and Kobayashi, Ikuo, 4,212,854, Cl. 423-247.000.

Kobayashi, Masatsune: *See*—
Imataki, Hiroyuki; Kobayashi, Masatsune; and Ohta, Tokuya, 4,212,518, Cl. 350-357.000.

Kobayashi, Takumi: *See*—
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, 4,212,525, Cl. 354-173.000.

Kobayashi, Toshiyuki. Heat-radiating floor board. 4,212,348, Cl. 165-49.000.

Kobelev, Nikolai N.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Koenig, Eugene W.: *See*—
Newirth, David M.; and Koenig, Eugene W., 4,212,161, Cl. 60-39.28R.

Koga, Kenji; and Terashima, Shiro, to Sumitomo Chemical Company, Limited. Novel process for asymmetric synthesis of optically active

2-alkanoyl-1,2,3,4-tetrahydro-2-naphthol compounds. 4,212,828, Cl. 568-314.000.

Kogure, Yasuzi: *See—*
Yamada, Seiji; Tominaga, Shinji; Kogure, Yasuzi; and Imura, Toshinori, 4,212,523, Cl. 354-25.000.

Kohler, Henry A., to Truly Magic Products, Inc. Striper wheel assembly. 4,212,556, Cl. 401-208.000.

Kohno, Shoji: *See—*
Miyaguchi, Masao; Kawamura, Tateo; Nakanishi, Kazuyoshi; and Kohno, Shoji, 4,212,548, Cl. 366-348.000.

Koizumi, Kunihei; Otani, Tatu; Katata, Toshinobu; and Ueda, Takeshi, to Nippon Kokan Kabushiki Kaisha. Method of controlling pressure of gas circulating in the coke dry quenching apparatus. 4,212,706, Cl. 201-39.000.

Kokubu, Yoshikazu: *See—*
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.

Kolb, Erwin: *See—*
Klotzbucher, Hansjong; Kolb, Erwin; and Hilge, Bernhard, 4,212,451, Cl. 266-50.000.

Kolbe, Joachim, to Bayer Aktiengesellschaft. Liquid preparation of fatty acid/alkanolamine condensates. 4,212,749, Cl. 252-8.750.

Kolk, Erich: *See—*
Volmer, Dieter; Schwind, Juergen; Kolk, Erich; and Frielingsdorf, Hans, 4,212,847, Cl. 422-135.000.

Kolliker, Hans P., to Ciba-Geigy AG. Transfer dye. 4,212,643, Cl. 8-470.000.

Kominami, Naoya: *See—*
Ibata, Jyoji; Fujita, Yukio; and Kominami, Naoya, 4,212,790, Cl. 260-40.00R.

Kondo, Kiyosi; Tunemoto, Daiei; and Umemoto, Teruo, to Sagami Chemical Research Center. Prostaglandin precursors. 4,212,984, Cl. 560-18.000.

Kondo, Mikio, to Matsushita Electric Works, Ltd. Ultrasonic type motion detector. 4,213,196, Cl. 367-94.000.

Konig, Wolfgang, to Hoechst Aktiengesellschaft. Process for the preparation of cysteine-containing peptides. 4,212,796, Cl. 260-112.50R.

Konstruktie J. Lambrechts p.v.b.a.: *See—*
Beyens, Jozef, 4,212,414, Cl. 222-148.000.

Konzelman, Leroy M.: *See—*
Randvere, Fredrik V.; and Konzelman, Leroy M., 4,212,971, Cl. 544-37.000.

Koopmann, Juergen: *See—*
Mross, Wolf D.; Titzenthaler, Eckart; Schwarzmann, Matthias; and Koopmann, Juergen, 4,212,772, Cl. 252-476.000.

Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., to Grumman Aerospace Corporation. Method for classifying biological cells. 4,213,036, Cl. 235-92.0PC.

Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, to Boehringer Ingelheim GmbH. 1-Aryloxy-2-hydroxy-3-[(benzimidazolin-one-substituted alkyl)-amino]-propanes and salts thereof. 4,212,877, Cl. 424-273.00B.

Korn, Marcel. Convertible light wire-rectangular wire orthodontic appliance system. 4,212,638, Cl. 433-8.000.

Koros, Robert M., to Exxon Research & Engineering Co. Method and apparatus for introducing a quench stream in upflow gas-liquid contactors. 4,212,835, Cl. 261-116.000.

Korte, Ralph J., to Champion International Corporation. Multi-angled perforated opening device. 4,212,395, Cl. 206-611.000.

Kotobuki Sangyo Kabushiki Kaisha: *See—*
Shimada, Hiroaki, 4,212,181, Cl. 72-250.000.

Kotski, Edward J.; Siebens, Larry N.; and Perry, Donald D., to Amerace Corporation. Cable repair kit. 4,212,387, Cl. 206-223.000.

Kozhemyakin, Valentin G.; Kaluniants, Kalust A.; Losyakova, Lidia S.; Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G. Apparatus for cultivating microorganisms. 4,212,949, Cl. 435-315.000.

Kozlova, Raisa G.: *See—*
Kozhemyakin, Valentin G.; Kaluniants, Kalust A.; Losyakova, Lidia S.; Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G., 4,212,949, Cl. 435-315.000.

Krablin, James B. Anti-backflow device for sillcocks. 4,212,319, Cl. 137-614.200.

Kraft, Donald J. Hollow water-filled game toy. 4,212,460, Cl. 273-58.00B.

Kramb, Keneth D. Medical service equipment for motorcycles. 4,212,485, Cl. 280-766.000.

Krasinsky, Valentin V.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Kratel, Gunter; Stohr, Gunter; and Katzer, Hans, to Wacker-Chemie GmbH. Heat insulating articles. 4,212,925, Cl. 428-447.000.

Kraus, Friedrich: *See—*
Tiefenbacher, Hubert; Kraus, Friedrich; and Matthias, Guenther, 4,212,890, Cl. 426-69.000.

Kreider, Benjamin A.; and Metalsky, William J., to Abar Corporation. Vacuum electric furnace. 4,212,633, Cl. 432-122.000.

Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., to B. K. Sweeney Manufacturing Company. Single beam torque readout and multiplier apparatus. 4,212,196, Cl. 73-136.00R.

Kroehler Mfg. Co.: *See—*
Dabney, Upton, 4,212,494, Cl. 297-69.000.

Kroh, Adolf; Fuchs, Otto; and Spietschka, Ernst, to Hoechst Aktiengesellschaft. Process for the manufacture of the gamma-crystal modification of linear trans-quinacridone. 4,212,975, Cl. 546-49.000.

Kromer, Philip F., III: *See—*
Chiu, Ran F.; Kromer, Philip F., III; Kao, Ming L.; and Parrish, Henry H., 4,213,097, Cl. 330-51.000.

Krone, Bernard; and Ahler, Wilhelm, to Maschinenfabriken Bernard Krone GmbH. Crop baling machines. 4,212,149, Cl. 56-341.000.

Kruckenberg, Winfried, to Bayer Aktiengesellschaft. Cationic azo dyestuffs containing oxyalkylene substituent. 4,212,803, Cl. 260-154.000.

Kruger, Wolfgang: *See—*
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.

Krulik, Gerald A.: *See—*
Jameson, Melvin N.; and Krulik, Gerald A., 4,212,768, Cl. 252-441.000.

Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I. Backing device for a working roll of a roll stand. 4,212,504, Cl. 308-9.000.

Kubat, James J.: *See—*
Clements, Boyd D.; Hines, Charles E.; and Kubat, James J., 4,212,357, Cl. 172-22.000.

Kubo, Tsutomu: *See—*
Oguchi, Toshihiko; Saito, Ichiyoshi; Ueno, Tsuyoshi; and Kubo, Tsutomu, 4,212,837, Cl. 264-15.000.

Kudo, Hisashi: *See—*
Fujita, Yuko; and Kudo, Hisashi, 4,212,891, Cl. 426-231.000.

Kuhle, Engelbert: *See—*
Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,212,887, Cl. 424-304.000.
Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,212,883, Cl. 424-277.000.

Kuhn, Bernhard: *See—*
Loge, Hans; Eibofner, Eugen; Kuhn, Bernhard; and Reich, Heinrich, 4,212,640, Cl. 433-82.000.

Kuhn S.A.: *See—*
Werner, Anton, 4,212,147, Cl. 56-228.000.

Kuhnen, Gottfried, to BBC Brown, Boveri & Company, Limited. Apparatus for connecting metallic parts by means of arc fusion welding. 4,213,025, Cl. 219-73.200.

Kuintzle, Charles, Jr.; and Murphy, Joseph P., to Avco Corporation. Air pump with primary and secondary inlet flow channels. 4,212,595, Cl. 417-84.000.

Kulsa, Peter: *See—*
Fisher, Michael H.; Kulsa, Peter; and Linn, Bruce O., 4,212,880, Cl. 424-274.000.

Kuni, Asahiro: *See—*
Kembo, Yukio; Kuni, Asahiro; and Makihira, Hiroshi, 4,213,117, Cl. 340-146.30H.

Kunise, Satoru: *See—*
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,212,687, Cl. 148-16.600.

Kunzli, Roland: *See—*
Fuchs, Walter; Gessinger, Gernot H.; Kunzli, Roland; and Schonfeld, Erwin, 4,212,189, Cl. 72-478.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.

Kurihara, Nobuo, to Hitachi, Ltd. Fault-detecting apparatus for controls. 4,213,175, Cl. 364-119.000.

Kurumada, Tomoyuki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.

Kuster, Ortwin: *See—*
Bergner, Dieter; Heubach, Erhard; Hofmann, Winfried; Kuster, Ortwin; and Pelz, Lothar, 4,212,721, Cl. 204-219.000.

Kusumoto, Nobuo: *See—*
Matsumura, Seiji; and Kusumoto, Nobuo, 4,213,056, Cl. 250-559.000.

Kutik, Louis F.; and Cecil, Howard E., to Security Plastics, Inc. Manually operated pump for dispensing product from a container. 4,212,332, Cl. 141-98.000.

Kuznetsov, Viktor F.: *See—*
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.

Kydonieus, Agis F.; Smith, Inja K.; Conroy, Reid A.; and Pedicano, Ernest A., to Herculite Protective Fabrics Corporation. Time color indicator. 4,212,153, Cl. 368-62.000.

Kyoto Ceramic Kabushiki Kaisha: *See—*
Kawamura, Takao; and Ishibitsu, Kokichi, 4,213,030, Cl. 219-216.000.

Kyowa Electronic Instruments Co., Ltd.: *See—*
Kawai, Masayasu; and Ishikawa, Katsumi, 4,212,197, Cl. 73-141.00A.

L. B. (Plastics) Limited: *See—*
Litchfield, Leon G.; and Hardy, Terence, 4,212,503, Cl. 308-3.600.

Labaw, Kenneth B.; Lowe, Gary; and Iverson, Myren L., to United States of America, Navy. Acoustic data link. 4,213,199, Cl. 367-117.000.

Lace, Robert B.: *See—*
Phillips, Brinley M.; Lace, Robert B.; and Lambie, Alan J., 4,212,983, Cl. 548-352.000.

LaConti, Anthony B.: *See—*
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,212,714, Cl. 204-98.000.

LaDelfa, Christopher J.; and Greene, Marvin, to Cities Service Company. Method for drying solid carbonaceous materials. 4,212,112, Cl. 34-9.000.

Lage, Karl-Heinz: *See—*
Bosse, Frank; and Lage, Karl-Heinz, 4,212,695, Cl. 156-188.000.

Lahay, Charles A., to Dart Industries Inc. Disposable forceps. 4,212,305, Cl. 128-354.000.

Laily, Andre: *See—*
Choulet, Jean-Claude; and Laily, Andre, 4,212,991, Cl. 562-480.000.

Laimer, Friedrich; and Herrmann, Herbert, to Voest-Alpine Aktiengesellschaft. Plant for refining pig iron. 4,212,453, Cl. 266-158.000.

Lambert, R. Bruce, to Santa Fe International Corporation. Jacking apparatus. 4,212,450, Cl. 254-108.000.

Lambie, Alan J.: *See—*
Phillips, Brinley M.; Lace, Robert B.; and Lambie, Alan J., 4,212,983, Cl. 548-352.000.

Lamontagne, Robert E.; and Scull, Jon V., to Binks Manufacturing Company. Pressure control for pumps. 4,212,591, Cl. 417-38.000.

Lang, Frederic A. Coupler for cables tensioned one end against another end. 4,212,558, Cl. 403-41.000.

Lang, Gunter: *See—*
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.

Lantermann, Heinz, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Method and device for regulating the output quantity of compressed medium of single and multi-stage screw and turbo compressor systems. 4,212,599, Cl. 417-295.000.

Larsson, Bert G. K., to Svenska Inhalator AB. Drilling and routing machine for printed circuit boards. 4,212,570, Cl. 408-95.000.

Laser Video, Inc.: *See—*
Maiman, Theodore H., 4,213,146, Cl. 358-63.000.

Lawrence, Victor B.; and Mitra, Debasis, to Bell Telephone Laboratories, Incorporated. Digital filters with control of limit cycles. 4,213,187, Cl. 364-724.000.

Laws, Derek R. J.; Bath, Nigel A.; Ennis, Colin S.; Pickett, John A.; and Wheldon, Alfred G., to Brewing Patents Limited. Production of iso-α-acid. 4,212,895, Cl. 426-600.000.

Lea Manufacturing Company: *See—*
Tuttle, James N., 4,212,685, Cl. 148-6.100.

Leach, John M. Article accumulation conveyor. 4,212,385, Cl. 198-781.000.

Learn, Richard L.; and Sweany, Louis P., to Emhart Industries, Inc. Chime tone audio system utilizing a piezoelectric transducer. 4,213,121, Cl. 340-384.00E.

Ledesky, Eugenia A. Apparatus for assisting semi-invalid person to walk. 4,212,493, Cl. 297-6.000.

Lednicer, Daniel; and Szmuszkovicz, Jacob, to Upjohn Company, The. Phenylacetamide derivative analgesics. 4,212,878, Cl. 424-274.000.

Lee, Gee Y. Method of producing a foldable container. 4,212,232, Cl. 93-49.00M.

Lee, Harlan E.; and Toelke, Lester W., to International Tool & Supply Company, Inc. Trash compactor. 4,212,240, Cl. 100-53.000.

Lee, Michael C.: *See—*
Adams, John N.; Kissinger, Gaylord M.; and Lee, Michael C., 4,212,997, Cl. 568-724.000.

Lee, Norman J., to Matburn (Holdings) Limited. Operation table. 4,212,454, Cl. 269-328.000.

Lee, Tien P.: *See—*
Campbell, Joe C.; and Lee, Tien P., 4,213,138, Cl. 357-30.000.

Leenaars, Corrie M. J.: *See—*
Schadenberg, Hendrik; Leenaars, Corrie M. J.; and de Jong, Aaldert J., 4,212,751, Cl. 252-32.70E.

Leguen, Jacques: *See—*
Quang, Dang T.; Leguen, Jacques; and Delair, Jacques, 4,213,048, Cl. 250-402.000.

Lehr, Gunter; and Binsack, Rudolf, to Bayer Aktiengesellschaft. Polybutylene terephthalates having a low carboxyl content and continuous process for the production thereof. 4,212,963, Cl. 528-272.000.

Leland Stanford University, The Board of Trustees of: *See—*
Byer, Robert L.; and Herbst, Richard L., 4,213,060, Cl. 307-426.000.

Lemelson, Jerome H. Magnetic tape cartridge transducing apparatus and method. 4,213,162, Cl. 360-85.000.

Lemelson, Jerome H. Video-tape recording. 4,213,163, Cl. 360-35.000.

Lenain, Jean-Claude: *See—*
Pinazzi, Christian; Lenain, Jean-Claude; and Brosse, Jean-Claude, 4,212,718, Cl. 204-159.230.

Lenkoff, Leon G. Magic pictures. 4,212,393, Cl. 206-575.000.

Leon, Nicholas H.; and Ricketts, Guy A. G., to Lever Brothers Company. Hair dyeing composition containing an aryldiamine and a substituted catechol. 4,212,645, Cl. 8-406.000.

Lescarden Ltd.: *See—*
Balassa, Leslie L.; and Prudden, John F., 4,212,857, Cl. 424-95.000.

L'Etat Francais: *See—*
Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, 4,213,124, Cl. 340-706.000.

Letner, Eugene; and Gobin, Donald L., to Roper Corporation. Twist-type control handle for lawn mowers. 4,212,363, Cl. 180-19.00H.

Leupold, Hermann: *See—*
Gelsdorf, Gunter; Leupold, Hermann; and Schellberg, Franz, 4,212,926, Cl. 428-472.000.

Lever Brothers Company: *See—*
Hoyles, Ronald, 4,212,856, Cl. 424-52.000.
Leon, Nicholas H.; and Ricketts, Guy A. G., 4,212,645, Cl. 8-406.000.

Levin, Aleksandr I.: *See—*
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.

Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, to Bayer Aktiengesellschaft. Polyisocyanates with at least one hydantoin or thiohydantoin ring substituted by carboxylic acid amide groups. 4,212,982, Cl. 548-313.000.

Lewanoni, Dov, to Goldberger Doll Mfg. Co., Inc. Doll with embracing arm movement. 4,212,132, Cl. 46-118.000.

Lewis, Conrad W.: *See—*
Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.

Lewis, David O.: *See—*
Diez, Mark F.; Lewis, David O.; and Robinson, Thomas S., 4,213,178, Cl. 364-200.000.

Lewis, Keith, to Lucas Industries Limited. Multiple switch assembly with detent and interlock. 4,213,017, Cl. 200-5.00B.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Wartusch, Johann; and Fasbender, Helmut, 4,212,912, Cl. 428-209.000.

Liebermann, Leonard N., to TIF Instruments, Inc. Variable scale readout for multi-meter use. 4,213,089, Cl. 324-115.000.

Lightner, Joseph C.: *See—*
Hart, James D.; and Lightner, Joseph C.; 4,212,252, Cl. 105-406.00R.

Lindauer, Jerome, to International Flavors & Fragrances Inc. Process for aromatizing and/or deodorizing the environment surrounding the flush tank of a toilet. 4,212,089, Cl. 4-228.000.

Linde Aktiengesellschaft: *See—*
Schmid, Herbert; Schneider, Helmut; and Watson, Allan, 4,212,817, Cl. 260-449.00M.

Lindemann Maschinenfabrik GmbH: *See—*
Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, 4,212,432, Cl. 241-285.00B.

Linder, Ernst: *See—*
Maurer, Helmut; Rieger, Franz; Linder, Ernst; and Schussler, Rainer, 4,212,720, Cl. 204-195.00S.

Linder, Sten; and Spijkerman, Johan, to Concast AG. Method and apparatus for regulating the bath level of a continuous casting mold. 4,212,342, Cl. 164-4.000.

Lindsay, Henry R.: *See—*
Jones, Sidney C.; Lindsay, Henry R.; and Heightman, Denis W., 4,213,143, Cl. 358-4.000.

Line Fast Corporation: *See—*
DiMartino, John M., 4,212,251, Cl. 24-73.00R.

Linger, Keith R.: *See—*
Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., 4,212,933, Cl. 429-122.000.

Link, Klaus; and Lochter, Werner, to Siemens Aktiengesellschaft. Polarity-and-load independent circuit arrangement for converting electrical energy. 4,213,173, Cl. 363-163.000.

Linn, Bruce O.: *See—*
Fisher, Michael H.; Kulsa, Peter; and Linn, Bruce O., 4,212,880, Cl. 424-274.000.

Lipinski, Vincent B. Window-mounted solar heating and humidifying device. 4,212,288, Cl. 126-428.000.

Lipscomb, George W.: *See—*
Keever, Joseph M.; and Lipscomb, George W., 4,213,090, Cl. 324-138.000.

Liquichimica Robassomero S.p.A.: *See—*
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.

Lisa, Joseph: *See—*
Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.

Litchfield, Leon G.; and Hardy, Terence, to L. B. (Plastics) Limited. Drawers and drawer runners. 4,212,503, Cl. 308-3.600.

Litton Business Systems, Inc.: *See—*
Marsico, Joseph A., 4,212,551, Cl. 400-208.000.

Litvak, Valery A.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.;

Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Liu, Robert C.: *See—*
Hughes, John L., Seyler, Jay K.; and Liu, Robert C., 4,212,795, Cl. 260-112.50T.

Liu, Yin-An: *See—*
Eissenberg, David M.; and Liu, Yin-An, 4,212,651, Cl. 44-1.05R.

Ljubimov, Vladislav D.: *See—*
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.

Loboda, Alexandr S.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Lochter, Werner: *See—*
Link, Klaus; and Lochter, Werner, 4,213,173, Cl. 363-163.000.

Loge, Hans, Eibofner, Eugen; Kuhn, Bernhard; and Reich, Heinrich, to Kaltenbach & Voigt GmbH & Co. Dental handpiece. 4,212,640, Cl. 433-82.000.

Logic Devices, Inc.: *See—*
Allen, Paul E., 4,212,623, Cl. 425-547.000.

Logsdon, Duane D., to Logsdon Foundation, The. Water closet protector stabilizer. 4,212,486, Cl. 285-4.000.

Logsdon Foundation, The: *See—*
Logsdon, Duane D., 4,212,486, Cl. 285-4.000.

Lohse, Reinhard: *See—*
Buchholz, Rainer; Zodrow, Rudolf; and Lohse, Reinhard, 4,212,700, Cl. 156-568.000.

Lombard, Paul W., to Market Forge, Division of Beatrice Foods Co. Self-aligning mechanism for swivel caster. 4,212,093, Cl. 16-35.00D.

London Concrete Machinery Co., a division of Hodgson Machine & Equipment Ltd.: *See—*
Beekenkamp, Gerald, 4,212,542, Cl. 366-54.000.

Longinotti, David M., to United States of America, Army. Method for decreasing the jamming susceptibility of short range interrogators. 4,213,128, Cl. 343-6.50R.

Longoni, Sergio: *See—*
Portinari, Antonio; and Longoni, Sergio, 4,212,097, Cl. 29-450.000.

Lonza Ltd.: *See—*
Hardt, Peter, 4,212,978, Cl. 546-253.000
Junek, Hans, and Mittelbach, Martin, 4,212,818, Cl. 260-465.400.

Looney, Larry D.: *See—*
Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., 4,212,537, Cl. 356-73.100.

Lopez, Hugo A., to Zenith Radio Corporation. Method for aluminizing image display faceplates. 4,212,902, Cl. 427-64.000.

Losyakova, Lidia S.: *See—*
Kozhemyakin, Valentin G.; Kalunians, Kalusi A.; Losyakova, Lidia S., Golger, Leonid I.; Ivanov, Leonid F.; and Kozlova, Raisa G., 4,212,949, Cl. 435-315.000.

Louis Marx & Co., Inc.: *See—*
Arad, Avi, 4,212,465, Cl. 273-121.00A

Lovasz, Csaba; Maab, Horst-Dieter; Schene, Horst; and Teubner, Volker, to Daimler-Benz Aktiengesellschaft. Method for continuously processing two-component paints. 4,212,545, Cl. 366-152.000.

Lowe, Gary: *See—*
Labaw, Kenneth B.; Lowe, Gary; and Iverson, Myren L., 4,213,199, Cl. 367-117.000.

Lowe, Peter R.: *See—*
Jenkins, Leonard E., Jr.; and Lowe, Peter R., 4,213,136, Cl. 346-139.00C

Lube, John G. Smoke scrubbing apparatus. 4,212,656, Cl. 55-217.000.

Lubrication Technology, Inc.: *See—*
Gorman, Jeremy W., 4,212,750, Cl. 252-32.500.

Lucas Industries Limited: *See—*
Lewis, Keith, 4,213,017, Cl. 200-5.00B.

Lucid, Michael F.; Robertson, Wilbert J.; and Bowerman, Paul D., to Kerr-McGee Corporation. Simultaneous extraction and recovery of uranium and vanadium from wet process acids. 4,212,849, Cl. 423-10.000.

Luder, Jacques, to Societe Anonyme, Compagnie Industrielle des Telecommunications Cit-Alcatel. Half echo-suppressor for a four-wire telephone line. 4,213,014, Cl. 179-170.200.

Ludwig, Lawrence P., to United States of America, National Aeronautics and Space Administration. Circumferential shaft seal. 4,212,477, Cl. 277-193.000.

Lufkin, Lindsey D. Picture frame vase. 4,212,133, Cl. 47-41.00R.

Lui, Kenneth: *See—*
Acker, Roy M.; and Lui, Kenneth, 4,213,004, Cl. 174-151.000.

Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., to Danfoss A/S. Connecting device for the stator winding of an electric machine. 4,213,070, Cl. 310-71.000.

Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, to AB Atomenergi; Atomenergikommissionen; Institutt for Atomenergi; United Kindom Atomic Energy Authority; and Valtion Teknillinen Tutkimuskeskus. Zirconium alloys. 4,212,686, Cl. 148-11.50F.

Lunt, Wilbur B.: *See—*
Eaton, Jefferson O.; and Lunt, Wilbur B., 4,212,246, Cl. 102-270.000.

Lusk, George E.; Mak, Sioe T.; and Haarsma, John C., to Joslyn Mfg. and Supply Co. Method of making an organic composite electrical insulator system. 4,212,696, Cl. 156-294.000.

Lusk, Kenneth P. Transit system. 4,212,247, Cl. 104-124.000.

Lux, Robert J., Jr., to Thermodynamics Corporation. Ground level transformer unit. 4,213,111, Cl. 336-65.000.

Lydon, Bart J. Fire extinguishing waste receptacle. 4,212,407, Cl. 220-88.00R.

Lynes, Inc.: *See—*
Reardon, Daniel R., 4,212,355, Cl. 166-336.000.
Stone, William B.; and Holbert, Marvin L., Jr., 4,212,562, Cl. 405-195.000.

Lyons, Peter B.: *See—*
Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., 4,212,537, Cl. 356-73.100.

Lysaght, Michael J.: *See—*
Solomon, Barry A.; and Lysaght, Michael J., 4,212,742, Cl. 210-247.000.

M&T Chemicals Inc.: *See—*
Gitlitz, Melvin H.; Engelhart, John E.; and Russo, David A., 4,212,810, Cl. 260-340.50R.
Gitlitz, Melvin H.; Engelhart, John E.; and Mery, Carlos M., 4,212,885, Cl. 424-288.000.

Maab, Horst-Dieter: *See—*
Lovasz, Csaba; Maab, Horst-Dieter; Schene, Horst; and Teubner, Volker, 4,212,545, Cl. 366-152.000.

Mabery, Thomas L., to Combustion Engineering, Inc. Upsetting of tube ends. 4,212,183, Cl. 72-318.000.

Mache, Gerhard R.: *See—*
Perna, Jiulio E.; and Mache, Gerhard R., 4,213,013, Cl. 179-98.000.

Machinefabriek W. Hubert & Co. B.V.: *See—*
Jellesma, Anne, 4,212,745, Cl. 210-401.000.

MacMillan, Kenneth T. Rimless, production mold. 4,212,604, Cl. 425-19.000.

MacMillan, Kenneth T., to Donald MacMillan & Son, Inc. Molding machine with expandable chamber and locking means. 4,212,605, Cl. 425-20.000.

Madenlian, Vache B.: *See—*
Genest, Leonard J.; and Madenlian, Vache B., 4,213,118, Cl. 340-149.00R.

Madgavkar, Ajay M.; Swift, Harold E.; and Cupples, Barrett L., to Gulf Research & Development Company. Oligomerizing alpha-olefins with a heterogeneous catalyst. 4,213,001, Cl. 585-510.000.

Maeda, Hiroshi: *See—*
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.

Maehara, Kazuo: *See—*
Ando, Nobuo; Satou, Isao; and Maehara, Kazuo, 4,212,624, Cl. 425-548.000.

Magerlein, Barney J., to Upjohn Company, The. Bicyclic lactone intermediates. 4,212,811, Cl. 260-343.30P.

Magerlein, Barney J., to Upjohn Company, The. cis-4,5-Didehydro-16-phenoxy-PGE_1 compounds. 4,212,985, Cl. 560-53.000.

Magge, Shankar S.: *See—*
Swarden, Michael C.; Magge, Shankar S.; Jansen, Willem; and Carter, Anthony F., 4,212,585, Cl. 415-53.00R.

Magori, Valentin, to Siemens Aktiengesellschaft. Circuit arrangement of an ultrasonic-presence motion detector, particularly for a non-contact control of a water faucet. 4,213,197, Cl. 367-94.000.

Magrini, Guido, to Fiat Veicoli Industriali S.p.A. Air-intake devices for internal combustion engines. 4,212,659, Cl. 55-385.00B.

Magyar Tudomanyos Akademia Kozponti Fizikai Kutato Intezete: *See—*
Bencze, Gyorgy; and Hamori, Andras, 4,212,536, Cl. 356-71.000.

Mahaffey, Redge A.; Goldstein, Shyke A.; Golden, Jeffry; and Cooperstein, Gerald, to United States of America, Navy. Rod pinch diode. 4,213,073, Cl. 313-310.000.

Maher, James B.: *See—*
Bouchard, Craig T.; Rothrock, Elmer W.; and Maher, James B., 4,212,168, Cl. 60-661.000.

Mahmud, Khalid. Breast examination device and method. 4,212,306, Cl. 128-665.000.

Maiman, Theodore H., to Laser Video, Inc. Scanning system for light beam displays. 4,213,146, Cl. 358-63.000.

Maisonneuve, Leo. Cigarette case. 4,212,386, Cl. 206-37.000.

Mak, Sioe T.: *See—*
Lusk, George E.; Mak, Sioe T.; and Haarsma, John C., 4,212,696, Cl. 156-294.000.

Makarov, Sergei P.: *See—*
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.

Makeev, Igor M.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.

Maki, Masao; Sano, Seiichi; Tsuruda, Kunihiro; and Kobayashi, Ikuo, to Matsushita Electric Industrial Co., Ltd. Method for purification of air containing carbon monoxide. 4,212,854, Cl. 423-247.000.

Makihira, Hiroshi: *See—*
Kembo, Yukio; Kuni, Asahiro; and Makihira, Hiroshi, 4,213,117, Cl. 340-146.30H.

Makino, Yoshimi; and Okamoto, Tsutomu, to Sony Corporation. Alloy for magnetoresistive element and method of manufacturing the same. 4,212,688, Cl. 148-31.550.

Makow, David M.: *See—*
Sanders, Corey L.; and Makow, David M., 4,212,535, Cl. 356-51.000.

Malloy, Thomas P.: *See—*
Halter, Mark A.; and Malloy, Thomas P., 4,212,710, Cl. 204-78.000.
Halter, Mark A.; and Malloy, Thomas P., 4,212,711, Cl. 204-78.000.

Malucci, Robert D.; and Reynolds, Charles E., to AMP Incorporated. Electrical connections for conductors in thin substrates. 4,212,511, Cl. 339-276.00T.

Mann, Friedrich H.: *See—*
Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., 4,213,078, Cl. 320-2.000.

Manno, Anthony C., to Manno, Anthony C. Fiberglass airconditioner air pre-cooler. 4,212,172, Cl. 62-305.000.

Marchak, Roman O.; and Verner, Douglas R., to Bendix Corporation, The. Closed loop sensor condition detector. 4,213,180, Cl. 364-431.000.

Marcoz, Bruno, to Compagnie Generale d'Appareillage Electrique C.G.A.E. Electromagnetic tripping device. 4,213,109, Cl. 335-174.000.

Market Forge, Division of Beatrice Foods Co.: *See—*
Lombard, Paul W., 4,212,093, Cl. 16-35.00D.

Markin, Trevor L.; Bones, Roger J.; Linger, Keith R.; Bindin, Peter J.; Brennan, Michael P. J.; and May, Geoffrey J., to Chloride Silent Power Limited. Current collector for electrochemical cells and method of making. 4,212,933, Cl. 429-122.000.

Marks, Burton W.: *See—*
Noble, Robert T.; Penz, Perry A.; and Marks, Burton W., 4,212,159, Cl. 368-82.000.

Marlboro Marketing, Inc.: *See—*
Merl, Milton J., 4,212,506, Cl. 312-118.000.

Marquis, Edward T.; and Brader, Walter H., Jr., to Texaco Development Corporation. Process of making diaminodiphenylmethanes. 4,212,821, Cl. 260-570.00D.

Marquisee, Mark J., to Du Pont de Nemours, E. I., and Company. Nontacky shaped objects from polymer latices. 4,212,918, Cl. 428-403.000.

Marsico, Joseph A., to Litton Business Systems, Inc. Ribbon cartridge. 4,212,551, Cl. 400-208.000.

Marti, Bernard: *See—*
Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, 4,213,124, Cl. 340-706.000.

Martija, Henry M.: *See—*
Shum, Edward K.; Martija, Henry M.; and Head, Leon E., 4,213,160, Cl. 360-73.000.

Martin, Roy C.: *See—*
Kimball, Stephen F.; and Martin, Roy C., 4,213,170, Cl. 362-267.000.

Martinez, Carlos J.; and Tobias, Michael A., to Mobil Oil Corporation. Self crosslinking water dispersible epoxy ester-acrylate polymers. 4,212,776, Cl. 260-18.0EP.

Maruoka, Hiroyuki. Air fuel supply system and oxygen sensor therefor. 4,212,273, Cl. 123-438.000.

Marx, Gerhard: *See—*
Degenhardt, Karl-Heinz; Marx, Gerhard; and Frank, Hermann, 4,212,655, Cl. 55-181.000.

Maschinenfabriken Bernard Krone GmbH: *See—*
Krone, Bernard; and Ahler, Wilhelm, 4,212,149, Cl. 56-341.000.

Mashita, Kentaro: *See—*
Kobayashi, Akio; and Mashita, Kentaro, 4,212,961, Cl. 526-151.000.

Mason, Paul B., to Polaroid Corporation. Photographic film cassette having pressure pad and nozzle arrangement. 4,212,528, Cl. 354-317.000.

Masuyama, Yasushi: *See—*
Nagasaka, Yasumasa; Sekiyama, Kenichi; and Masuyama, Yasushi, 4,212,629, Cl. 432-10.000.

Matburn (Holdings) Limited: *See—*
Lee, Norman J., 4,212,454, Cl. 269-328.000.

Matoba, Isao: *See—*
Shimizu, Yoh; Iida, Yoshiaki; Goto, Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, 4,212,689, Cl. 148-1.51.000.

Matson, Leslie E., Jr., to Charles Stark Draper Laboratory, Inc., The. Position determining devices. 4,213,200, Cl. 367-117.000.

Matsuda, Akira; Shimizu, Shizuo; and Abe, Shunji, to Mitsui Petrochemical Industries Ltd. Thermoplastic elastomer composition, blends of the composition with olefin plastic, and foamed products of the composition and the blends. 4,212,787, Cl. 260-33.6AQ.

Matsuhira, Seikichi: *See—*
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhira, Seikichi, 4,212,990, Cl. 560-241.000.

Matsui, Isamu; and Suganuma, Buro, to Murata Kikai Kabushiki Kaisha. Cop supplying apparatus for automatic winding machine. 4,212,433, Cl. 242-35.50A.

Matsui, Katsuaki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.

Matsui, Takeki: *See—*
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Matsumoto, Yoshiki: *See—*
Yamamoto, Osamu; Matsumoto, Yoshiki; Yamada, Hiromi; and Takehara, Keishin, 4,212,697, Cl. 427-389.800.

Matsumura, Seiji; and Kusumoto, Nobuo, to Teijin Limited. Method and apparatus for determining the state of interlacing in interlaced multifilament yarns. 4,213,056, Cl. 250-559.000.

Matsunaga, Douglas S.: *See—*
Braner, Harold R.; and Matsunaga, Douglas S., 4,212,218, Cl. 83-479.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, 4,212,838, Cl. 264-25.000.
Maki, Masao; Sano, Seiichi; Tsuruda, Kunihiro; and Kobayashi, Ikuo, 4,212,854, Cl. 423-247.000.

Matsushita Electric Works, Ltd.: *See—*
Kondo, Mikio, 4,213,196, Cl. 367-94.000.

Matthias, Guenther: *See—*
Tiefenbacher, Hubert; Kraus, Friedrich; and Matthias, Guenther, 4,212,890, Cl. 426-69.000.

Maurer, Helmut; Rieger, Franz; Linder, Ernst; and Schussler, Rainer, to Robert Bosch GmbH. Electrically heated electrochemical sensor construction, particularly to determine oxygen concentration in exhaust gases from combustion engines. 4,212,720, Cl. 204-195.00S.

Maurer, Robert D., to Corning Glass Works. Method for making multiple mode waveguide having cylindrical perturbations. 4,212,660, Cl. 65-3.00A.

Max-planck-Gesellschaft zur Fordenberg der Wissenschaften e.V.: *See—*
Schafer, Fritz P., 4,213,153, Cl. 358-231.000.

Maximikhina, Olga V.: *See—*
Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I., 4,212,914, Cl. 428-268.000.

May, Geoffrey J.: *See—*
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Maybury, Richard W., to Brown & Root, Inc. Apparatus and method for reducing interline twisting. 4,212,248, Cl. 104-138.00G.

Mayes, Warden W., to Cosden Technology, Inc. Method for increasing the purity of hydrogen recycle gas. 4,212,726, Cl. 208-101.000.

McBride, Michael E.: *See—*
Acosta, Robert G.; McBride, Michael E.; and Pascoe, Robert A., 4,212,553, Cl. 400-279.000.

McClain, Dorothee M., to National Distillers & Chemical Corporation. Process of preparing finely divided thermoplastic resins. 4,212,966, Cl. 528-486.000.

McCombie, Stuart, to Schering Corporation. 4-O-(2,3,5-Trideoxy-5-amino-α-D-pentofuranosyl)-6-O-aminoglycosyl-1,3-diaminocyclitols, methods for their preparation, pharmaceutical formulations thereof and their use as antibacterial agents. 4,212,860, Cl. 424-180.000.

McCombie, Stuart: *See—*
Daniels, Peter J. L.; McCombie, Stuart; and Nagabhushan, Tattanahalli L., 4,212,859, Cl. 424-180.000.

McCord, Herbert W., to General Signal Corporation. Smoke detector having unipolar ionization chamber. 4,213,047, Cl. 250-381.000.

McCubbin, Peter J.: *See—*
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McDonnell Douglas Corporation: *See—*
Sheratte, Martin B.; and Simanyi, Lydia H., 4,212,953, Cl. 521-137.000.

McElroy, David J., to Texas Instruments Incorporated. Semiconductor device and method. 4,213,142, Cl. 357-91.000.

McGrath, Donald L., Jr. Carpet pole caddie. 4,212,478, Cl. 280-79.10A.

McGray, George B.: *See—*
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,212,714, Cl. 204-98.000.

McGreal, Joseph E.: *See—*
Nemeth, Edward J.; McGreal, Joseph E.; and Howell, John L., 4,212,851, Cl. 423-230.000.

McKenzie, Robert T., to Bristol-Myers Company. Medical emergency treatment kit. 4,212,392, Cl. 206-571.000.

McLaren, John W., to Dow Chemical Company, The. Tube extrusion die. 4,212,620, Cl. 425-381.000.

McQuary, Kenneth L.: *See—*
Cagan, Bernard J.; and McQuary, Kenneth L., 4,212,285, Cl. 124-67.000.

Meals, Roy A. Rubber band powered piston valve aspirator. 4,212,300, Cl. 128-276.000.

Medical Engineering Corp.: *See—*
Finney, Roy P., 4,212,304, Cl. 128-349.00R.

Medtronic, Inc.: *See—*
Athearn, Lee F., 4,212,930, Cl. 429-101.000.

Medvecky, Eugene, to American Home Products Corporation. Strip chart recorder. 4,213,135, Cl. 346-76.0PH.

Meek, Gerrit J., to U.S. Philips Corporation. Servo control for X-ray tomography. 4,213,050, Cl. 250-445.00T.

Mefina S.A.: *See—*
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Megles, John E., Jr.: *See—*
Chyung, Kenneth; and Megles, John E., Jr., 4,212,678, Cl. 106-39.700.

Melotti, Angelo R., to Bendix Corporation, The. Economy throttle body for hot fuel handling. 4,212,277, Cl. 123-343.000.

Mendelsohn, Jay: *See—*
Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.

Mentrup, Anton: *See—*
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Merck & Co., Inc.: *See—*
Fisher, Michael H.; Kulsa, Peter; and Linn, Bruce O., 4,212,880, Cl. 424-274.000.
Prugh, John D., 4,212,871, Cl. 424-267.000.
Ratcliffe, Ronald W., 4,212,807, Cl. 260-326.310.
Shen, Tsung-Ying; Jones, Howard; Mulvey, Dennis M.; and Dorn, Conrad P., 4,212,976, Cl. 546-115.000.

Merl, Milton J., to Marlboro Marketing, Inc. Multi-compartment display device. 4,212,506, Cl. 312-118.000.

Merten, Rudolf: *See—*
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Mery, Carlos M.: *See—*
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Messer Griesheim GmbH: *See—*
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Metallurgical Development Company: *See—*
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Metalsky, William J.: *See—*
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Mettler Instruments AG: *See—*
Stocker, Rudolf, 4,212,361, Cl. 177-200.000.

Meyer, Burton C.: *See—*
Wildman, John R.; and Meyer, Burton C., 4,212,466, Cl. 273-121.00R.

Mezzasalma, Orazio. Lens measuring method and apparatus. 4,212,107, Cl. 33-174.00A.

Michael, Uri: *See—*
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Michel, Edmond, to Solvay & Cie. Manufacture of hollow thermoplastic articles. 4,212,841, Cl. 264-530.000.

Michelotti, Paul E. Bladder molding. 4,212,621, Cl. 425-405.00H.

Middleton, Carlisle A. Tobacco harvester with in-line harvesting system. 4,212,145, Cl. 56-27.500.

Mientek, Anthony P.: *See—*
Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., 4,212,929, Cl. 429-37.000.

Mihara, Yuji; Takei, Haruo; and Inoue, Noriyuki, to Fuji Photo Film Co., Ltd. Lithographic silver halide photosensitive material. 4,212,672, Cl. 430-494.000.

Mikina, John A.: *See—*
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Mikina, Stanley J. Heat engine. 4,212,163, Cl. 60-39.630.

Mikina, Stanley J.; and Mikina, John A. Convertible exercise bicycle. 4,212,480, Cl. 280-226.00R.

Miles Laboratories, Inc.: *See—*
Borglum, Gerald B., 4,212,943, Cl. 435-180.000.
Buckler, Robert T.; and Schroeder, Hartmut R., 4,212,805, Cl. 260-326.00N.

Miles, Peter D.: *See—*
Durant, Graham J.; and Miles, Peter D., 4,212,875, Cl. 424-273.00R.

Miller, Donald E., to Continental Group, Inc., The. Hydraulic press system. 4,212,185, Cl. 72-354.000.

Miller, Edward B.: *See—*
Eichelberger, Charles W.; and Miller, Edward B., 4,213,182, Cl. 364-493.000.

Miller, Fredric N., to American Can Company. Fiber distributor. 4,212,607, Cl. 425-83.100.

Miller, Gabriel L.: *See—*
English, Alan T.; and Miller, Gabriel L., 4,213,087, Cl. 324-62.000.

Miller, Richard A., to Hydroscience, Inc. Destruction method for the wet combustion of organics. 4,212,735, Cl. 210-63.00R.

Mims, James R., to Raytheon Company. Magnetron anode manufacture. 4,212,423, Cl. 228-136.000.

Mine Safety Appliances Company: *See—*
Wise, Layton A., 4,212,846, Cl. 422-122.000.

Miner, Robert C., to International Harvester Company. Crop deflector control. 4,212,142, Cl. 56-14.400.

Minicozzi, Al, to IMW Industries, Inc. Cutting tool. 4,212,568, Cl. 407-53.000.

Minnesota Mining and Manufacturing Company: *See—*
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Minolta Camera Kabushiki Kaisha: *See—*
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Yamada, Seiji; Tominaga, Shinji; Kogure, Yasuzi; and Imura, Toshinori, 4,212,523, Cl. 354-25.000.
Yamazaki, Yasuo; and Kimura, Kazuo, 4,212,526, Cl. 354-225.000.

Mirsch, Miroslav; Rosberg, Frantisek; and Ruzicka, Miroslav, to Tos Hostivar, narodni podnik. Method of adaptive control of a recessing cycle on a grinding machine and apparatus therefor. 4,212,135, Cl. 51-165.710.

Mitchell, John D.; and Sessoms, J. C., Jr., to Harrington Manufacturing Company. Auxiliary heating system for a bulk tobacco barn. 4,212,634, Cl. 432-186.000.

Mitra, Debasis: *See—*
Lawrence, Victor B.; and Mitra, Debasis, 4,213,187, Cl. 364-724.000.

Mitrofanov, Boris V.: *See—*
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovskỳ, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.

Mitschke, Karl-Heinz; and Schliebs, Reinhard, to Bayer Aktiengesellschaft. Production of high viscosity phosphoric and phosphonic acid aryl esters. 4,212,832, Cl. 260-930.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Fukami, Akira; and Nakajima, Hiroyuki, 4,212,959, Cl. 525-524.000.
Hayashi, Osamu; Okahashi, Kazuo; and Ono, Hiroshi, 4,212,960, Cl. 525-524.000.
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; Iwata, Syuzi; and Ohnishi, Ryoichi, 4,213,154, Cl. 358-260.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
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Shimizu, Senzo; Nomura, Isao; Usui, Motohachi; and Harada, Masahiro, 4,212,951, Cl. 528-495.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Kato, Masao; and Kishida, Kosuke, 4,212,121, Cl. 37-58.000.

Mitsui, Hiromi: *See—*
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Mitsui Petrochemical Industries Ltd.: *See—*
Matsuda, Akira; Shimizu, Shizuo; and Abe, Shunji, 4,212,787, Cl. 260-33.6AQ.
Shiraki, Shigemi, 4,212,995, Cl. 562-485.000.

Mitsunori, Hiromi: *See—*
Shimizu, Yoh; Iida, Yoshiaki; Goto, Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, 4,212,689, Cl. 148-111.000.

Mittelbach, Martin: *See—*
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Mittelmann, Gerhard, to Swiss Aluminium Ltd. Container, in particular for transporting freight by air. 4,212,406, Cl. 220-1.500.

Miyaguchi, Masao; Kawamura, Tateo; Nakanishi, Kazuyoshi; and Kohno, Shoji, to Takenaka Komuten Company, Limited. Apparatus and method for treating sludge deposits. 4,212,548, Cl. 366-348.000.

Miyahara, Akio: *See—*
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Miyakawa, Yoshitaka; Sato, Makoto; and Fujii, Etsuo, to Honda Giken Kogyo Kabushiki Kaisha. Vehicular anti-skid brake device. 4,212,501, Cl. 303-116.000.

Miyake, Hidekazu: *See—*
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,212,874, Cl. 424-272.000.

Miyauchi, Yuh: *See—*
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Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, to Kaken Chemical Company, Limited. Method of producing salinomycin antibiotics. 4,212,942, Cl. 435-119.000.

Miyazawa, Takeshi; Ogano, Takeo; Ono, Naotoshi; and Sato, Kazunobu, to Honda Giken Kogyo Kabushiki Kaisha. Lawn mower. 4,212,141, Cl. 56-11.800.

Mizuguchi, Saburo; Nomura, Isao; Naito, Takeyuki; Onodera, Masato; and Saito, Kouji, to Ebara Manufacturing Company, Limited. Process for recovery of chemicals from pulping waste liquor. 4,212,702, Cl. 162-36.000.

Mizuguchi, Shunji: *See—*
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Mizukami, Etsuo: *See—*
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Mizuno, Toru; and Kitano, Masao, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Seal assembly for rotary heat-exchanger. 4,212,472, Cl. 277-12.000.

Mobil Oil Corporation: *See—*
Chibnik, Sheldon, 4,212,754, Cl. 252-49.700.
Demmel, Edward J., 4,212,728, Cl. 208-121.000.
Horodysky, Andrew G., 4,212,753, Cl. 252-46.600.
Martinez, Carlos J.; and Tobias, Michael A., 4,212,776, Cl. 260-18.0EP.

Mock, James H.: *See—*
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Moeglich, Karl, to Innova, Inc. Oxidation and coagulation for aquarium applications. 4,212,724, Cl. 204-273.000.

Mohri, Michihiro: *See—*
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Molychem, Inc.: *See—*
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Monsanto Company: *See—*
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Montedison S.p.A.: *See—*
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Montoya, Lawrence C.: *See—*
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Moody, Victor: *See—*
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Moore Business Forms, Inc.: *See—*
Allen, Robert H.; and Robertson, Victor J., 4,212,396, Cl. 206-629.000.

Moore, C. Bradley; Clark, John H.; Haas, Yehuda; and Houston, Paul L., to University of California, The Regents of the. Separation of isotopes by photo-induced predissociation. 4,212,717, Cl. 204-158.00R.

Moore, George G.I., to Riker Laboratories, Inc. Substituted thiophenes. 4,212,882, Cl. 424-275.000.

Moore, Roger H.: *See—*
Reed, James S.; and Moore, Roger H., 4,212,924, Cl. 428-428.000.

Moorehead, Harvey R., to Ballard Medical Products, Inc. Blood gas sampler. 4,212,309, Cl. 128-766.000.

Moravec, John V.: *See—*
Mueller, David J.; Prysby, Daniel G.; Moravec, John V.; and Watson, George A., 4,213,189, Cl. 364-100.000.

Morche, Klaus: *See—*
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.

Morcom, Richard, to Hughes Microelectronics Limited. Device for providing a selectively variable proportion of an electrical signal. 4,213,065, Cl. 307-251.000.

Morgardshammar Aktiebolag: *See—*
Wallin, Hans-Henrik B.; and Ericsson, Eric R., 4,212,731, Cl. 209-366.500.

Mori, Eiko: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.

Morimoto, Takao: *See—*
Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,213,179, Cl. 364-405.000.

Morimura, Syoji: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.

Morinaga, Mitsuyoshi, to Trio Kabushiki Kaisha. Head shell for pick-up arms and method of making same. 4,212,470, Cl. 274-37.000.

Morinaga, Mitsuyoshi; and Kishida, Yasuo, to Trio Kabushiki Kaisha. Head shell for pick-up arms and method of making same. 4,212,490, Cl. 274-37.000.

Morino, Yukio: *See—*
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, 4,212,522, Cl. 354-25.000.

Morioke, Yukitoshi: *See—*
Campbell, George T. R.; and Morioke, Yukitoshi, 4,212,404, Cl. 212-238.000.

Morley, Richard E.; Bromberg, Michael A.; and Taylor, William A., to Andover Controls Corporation. Programmable sequence controller with drum emulation and improved power-down power-up circuitry. 4,213,174, Cl. 364-104.000.

Mortensen, LaVaugh L. Prosthetic leg with a hydraulic control. 4,212,087, Cl. 3-1.200.

MOS Technology, Inc.: *See—*
Paivinen, John; Eisenhower, Walter D., Jr.; and Helfrich, Ernest R., 4,212,100, Cl. 29-571.000.

Motoren-Werke Mannheim AG: *See—*
Eisinger, Norbert; Wesch, Paul; and Dzsida, Matthias, 4,212,278, Cl. 123-319.000.

Motorola, Inc.: *See—*
Buxton, Howard D., 4,212,265, Cl. 118-700.000.
Davidson, Allen R., 4,213,132, Cl. 343-854.000.
Kennedy, Howard L.; and Kingsbury, Keith M., 4,213,129, Cl. 343-6.80R.
Muri, David L.; and Doyle, James T., 4,213,185, Cl. 364-721.000.
Townsend, Greg M., 4,213,058, Cl. 307-40.000.

Mross, Wolf D.; Titzenthaler, Eckart; Schwarzmann, Matthias; and Koopmann, Juergen, to BASF Aktiengesellschaft. Catalyst for the manufacture of ethylene oxide. 4,212,772, Cl. 252-476.000.

Muacevic, Gojko: *See—*
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,212,877, Cl. 424-273.00B.

Mucciardi, Anthony N.: *See—*
Barron, Roger L.; Mucciardi, Anthony N.; and Brown, Claire L., 4,213,183, Cl. 364-507.000.

Mueller, David J.; Prysby, Daniel G.; Moravec, John V.; and Watson, George A., to Admiral Corporation. Reactive computer system adaptive to a plurality of program inputs. 4,213,189, Cl. 364-100.000.

Muenchow, Juergen; and Sommer, Ruediger, to Dr. Ing. Rudolf Hell GmbH. Process for improving image quality in picture telegraphy. 4,213,155, Cl. 358-262.000.

Mues, Volker: *See—*
Rauleder, Gebhard; Waldmann, Helmut; Mues, Volker; and Seifert, Hermann, 4,212,809, Cl. 260-340.50R.

Mulder, Willem; Vaessen, Dorotheus C. L.; and De Lange, Nicolaas H., to Hollandse Signaalapparaten B.V. Airport surface detection equipment (ASDE). 4,213,126, Cl. 343-5.0SM.

Muller, Rudolf: *See—*
Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, 4,212,940, Cl. 435-55.000.

Muller, Werner H., to Hoechst Aktiengesellschaft. Process for the manufacture of 3-aminophenols by dehydrogenation of 3-aminocyclohexenones. 4,212,823, Cl. 260-571.000.

Mullersman, Ferdinand H., to General Electric Company. Battery charger adapter. 4,213,079, Cl. 320-2.000.

Mulvey, Dennis M.: *See—*
Shen, Tsung-Ying; Jones, Howard; Mulvey, Dennis M.; and Dorn, Conrad P., 4,212,976, Cl. 546-115.000.

Munter, Ernst A.: *See—*
Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.

Murakami, Kimio, to Sakura Color Products Corporation. Crayon compositions. 4,212,786, Cl. 260-31.20R.

Murata, Kazuo; and Kito, Terukazu, to Oki Electric Industry Co., Ltd. Pulse interpolation system. 4,213,186, Cl. 364-723.000.

Murata Kikai Kabushiki Kaisha: *See—*
Matsui, Isamu; and Suganuma, Buro, 4,212,433, Cl. 242-35.50A.

Murata Manufacturing Co., Ltd.: *See—*
Tunematu, Toyoaki; Takeno, Seiichi; Yamaguchi, Testuo; and Egawa, Muneharu, 4,213,106, Cl. 333-185.000.

Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, to Sankyo Company Limited. Piperidine derivatives. 4,212,974, Cl. 546-19.000.

Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for the electrolytic treatment of alkali metal halide solution using ion exchange membranes. 4,212,712, Cl. 204-98.000.

Muri, David L.; and Doyle, James T., to Motorola, Inc. Microprocessor tone synthesizer with reduced quantization error. 4,213,185, Cl. 364-721.000.

Murphy, Clarence R.: *See—*
Boehme, Robert E.; and Murphy, Clarence R., 4,212,848, Cl. 422-267.000.

Murphy, Frank P. Orthopedic fracture fixation device. 4,212,294, Cl. 128-92.0BC.

Murphy, Gerald J.; and Kanner, Bernard, to Union Carbide Corporation. N,N,N',N'-Tetramethyl-α,ω-polymethlenediamines as catalysts for the preparation of urethane foams. 4,212,952, Cl. 521-112.000.

Murphy, Joseph P.: *See—*
Kuintzle, Charles, Jr.; and Murphy, Joseph P., 4,212,595, Cl. 417-84.000.

Murphy, William C.; and Myers, Lyle G., to Molychem, Inc. Lubrication process and apparatus. 4,212,372, Cl. 184-15.00B.

Myers, Lyle G.: *See—*
Murphy, William C.; and Myers, Lyle G., 4,212,372, Cl. 184-15.00B.

Myrick, James E.; and Hall, Leo M., to University of Alabama, The. Substrate solution for carboxylic ester hydrolase determination. 4,212,939, Cl. 435-19.000.

Nabisco, Inc.: *See—*
Bagdan, Henry J.; and Blain, William A., 4,212,617, Cl. 425-311.000.

Nagabhushan, Tattanahalli L.: *See—*
Daniels, Peter J. L.; McCombie, Stuart; and Nagabhushan, Tattanahalli L., 4,212,859, Cl. 424-180.000.

Nagano, Satoshi: *See—*
United States of America, National Aeronautics and Space Administration; and Nagano, Satoshi, 4,213,064, Cl. 307-219.000.

Nagasaka, Yasumasa; Sekiyama, Kenichi; and Masuyama, Yasushi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus and method for local forced heating of an auto body. 4,212,629, Cl. 432-10.000.

Nagasawa, Masahiro: *See—*
Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, 4,212,838, Cl. 264-25.000.

Nagashima, Eiji: *See—*
Saito, Tatsuoki; and Nagashima, Eiji, 4,212,096, Cl. 29-235.000.

Nagumo, Fumio, to Sony Corporation. Solid state color television camera. 4,213,145, Cl. 358-43.000.

Naito, Takeyuki: *See—*
Mizuguchi, Saburo; Nomura, Isao; Naito, Takeyuki; Onodera, Masato; and Saito, Kouji, 4,212,702, Cl. 162-36.000.

Nakajima, Hiroyuki: *See—*
Fukami, Akira; and Nakajima, Hiroyuki, 4,212,959, Cl. 525-524.000.

Nakamura, Yuko: *See—*
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.

Nakanishi, Kazuyoshi: *See—*
Miyaguchi, Masao; Kawamura, Tateo; Nakanishi, Kazuyoshi; and Kohno, Shoji, 4,212,548, Cl. 366-348.000.

Nakanishi, Kiyoshi; and Okumura, Takeshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Cooling system for an internal combustion engine. 4,212,270, Cl. 123-41.090.

Nakayama, Masayoshi: *See—*
Takeuchi, Setsuo; Kawarada, Akira; Ota, Yasuo; and Nakayama, Masayoshi, 4,212,664, Cl. 71-94.000.

Nakayama, Yoshiki; Hirao, Kazushige; and Yazawa, Chihiro, to Ihara Chemical Industry Company, Limited. Process for producing triphenylphosphine. 4,212,831, Cl. 568-17.000.
Nalco Chemical Co.: *See*—
Phillips, Kenneth G.; and Bingham, Mary E., 4,212,784, Cl. 260-29.6WQ.
Schulz, Lawrence E., 4,212,680, Cl. 106-65.000.
Narasimnan, Mandayam C., to Allied Chemical Corporation. Continuous casting method and apparatus for structurally defined metallic strips. 4,212,343, Cl. 164-64.000.
Nath, N. Gokul: *See*—
Ruff, David L.; and Nath, N. Gokul, 4,212,755, Cl. 252-62.000.
National Distillers & Chemical Corporation: *See*—
McClain, Dorothee M., 4,212,966, Cl. 528-486.000.
National Instrument Company, Inc.: *See*—
Bennett, Richard N., 4,212,416, Cl. 222-267.000.
National Starch & Chemical Corporation: *See*—
Taylor, Thomas R.; and Puletti, Paul P., 4,212,910, Cl. 428-35.000.
Naumova, Ljudmila A.: *See*—
Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.
NCR Corporation: *See*—
Brower, Ronald W., 4,212,684, Cl. 148-1.500.
Cooper, Paul J., 4,213,176, Cl. 364-200.000.
Jones, Robert K.; and van Velthoven, Armand J., 4,212,683, Cl. 148-1.500.
Neely, Raymond J., to Refreshment Machinery Incorporated. Housing and module therefor. 4,212,415, Cl. 222-231.000.
Neimane, Gunta Y.: *See*—
Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.
Nelson, Melvin A.: *See*—
Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., 4,212,537, Cl. 356-73.100.
Nemeth, Edward J.; McGreal, Joseph E.; and Howell, John L., to United States Steel Corporation. Regeneration of sulfided dolomite. 4,212,851, Cl. 423-230.000.
Nemoto, Ichiro: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, 4,212,522, Cl. 354-25.000.
Newbold, William F.; and Singh, Gurnam, to Honeywell Inc. Differential pressure to electric current transducer employing a strain sensitive resistive pattern on a substrate having a high modulus of elasticity. 4,212,209, Cl. 73-721.000.
Newirth, David M.; and Koenig, Eugene W., to United Technologies Corporation. Simulated parameter control for gas turbine engine. 4,212,161, Cl. 60-39.28R.
News Log International, Incorporated: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma Lou; and Terry, Angel F., 4,213,040, Cl. 235-476.000.
Nguyen, Huu Tinh: *See*—
Dubois, Jean-Claude; Nguyen, Huu Tinh; and Zann, Annie, 4,212,762, Cl. 252-299.000.
Nieh, Edward C. Y.: *See*—
Hotchkiss, Philip; Gipson, Robert M.; and Nieh, Edward C. Y., 4,212,820, Cl. 260-561.00N.
Nikerova, Ljudmila K.: *See*—
Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V., 4,212,708, Cl. 204-46.00G.
Nikolaev, Vladimir A.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
Hasegawa, Ryoichi, 4,212,813, Cl. 260-346.400.
Nippon Kokan Kabushiki Kaisha: *See*—
Koizumi, Kunihei; Otani, Tatu; Katata, Toshinobu; and Ueda, Takeshi, 4,212,706, Cl. 201-39.000.
Nippon Oil Company, Ltd.: *See*—
Sato, Hisatake; Saitoh, Shiroh; Mohri, Michihiro; Miyahara, Akio; and Hayashi, Hideo, 4,212,783, Cl. 260-29.60H.
Nippon Oil Seal Industry Co., Ltd.: *See*—
Kawabata, Hideo; and Yukimasa, Tatsuaki, 4,212,476, Cl. 277-134.000.
Nippondenso Co., Ltd.: *See*—
Ina, Yoshifumi, 4,212,601, Cl. 417-365.000.
Mizuno, Toru; and Kitano, Masao, 4,212,472, Cl. 277-12.000.
Nishino, Masaki: *See*—
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhira, Seikichi, 4,212,990, Cl. 560-241.000.
Nishiwaki, Yoshiro; and Izumi, Tetsuro, to Victor Company of Japan, Limited. Device for cutting a sound groove on a disc recording medium. 4,212,471, Cl. 274-38.000.
Nissan Motor Company, Limited: *See*—
Fujii, Masayuki, 4,212,484, Cl. 280-707.000.
Inoue, Mitsumasa, 4,212,275, Cl. 123-549.000.
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, to BASF Aktiengesellschaft. Aldol condensation and hydrogenation process using a catalyst of nickel and cobalt together with zinc oxide and another metal of groups VIII, IIb, IIIa, IVa and Va of the periodic table. 4,212,825, Cl. 568-313.000.
Nite Train-R Enterprises, Inc.: *See*—
Snyder, Joe W., 4,212,295, Cl. 128-138.00A.
Nitto Boseki Co., Ltd.: *See*—
Yamamoto, Osamu; Matsumoto, Yoshiki; Yamada, Hiromi; and Takehara, Keishin, 4,212,697, Cl. 427-389.800.
Noble, Robert T.; Penz, Perry A.; and Marks, Burton W., to Texas Instruments Incorporated. Electronic timepiece. 4,212,159, Cl. 368-82.000.
Nolan, John L., to Hollister Incorporated. Umbilical cord clamp. 4,212,303, Cl. 128-346.000.
Nomura, Isao: *See*—
Mizuguchi, Saburo; Nomura, Isao; Naito, Takeyuki; Onodera, Masato; and Saito, Kouji, 4,212,702, Cl. 162-36.000.
Shimizu, Senzo; Nomura, Isao; Usui, Motohachi; and Harada, Masahiro, 4,212,951, Cl. 528-495.000.
Nomura, Takao; Terasaka, Kunihiko; and Sakata, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Polyurethane foam product for an impact absorber. 4,212,954, Cl. 521-159.000.
Nomura, Yoshihisa: *See*—
Ando, Masamoto; Nomura, Yoshihisa; and Ohta, Takaaki, 4,212,500, Cl. 303-115.000.
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, to (Zaidanhojin) Sagami Chemical Research Center; and Toyo Soda Manufacturing Co., Ltd. Process for recovering protease. 4,212,945, Cl. 435-212.000.
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, to Toyo Soda Manufacturing Co., Ltd.; and (Zaidanhojin) Sagami Chemical Research Center. Process for recovering protease. 4,212,946, Cl. 435-212.000.
Nonnenbruch, Heinz-Gerd: *See*—
Tholema, Edzard; Nonnenbruch, Heinz-Gerd; Gossmann, Hans; and Schultz, Peter, 4,212,746, Cl. 210-495.000.
Noranda Mines Limited: *See*—
Avedesian, Michael M.; and Holko, Anthony P., 4,212,722, Cl. 204-222.000.
Normac, Inc.: *See*—
Klein, Max, 4,212,782, Cl. 260-29.6HN.
North, John W. Process and apparatus for producing cellulated vitreous refractory material in prescribed shapes and products therefrom. 4,212,635, Cl. 432-239.000.
Northern Research and Engineering Corporation: *See*—
Swarden, Michael C.; Magge, Shankar S.; Jansen, Willem; and Carter, Anthony F., 4,212,585, Cl. 415-53.00R.
Northern Telecom Limited: *See*—
Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar, Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.
Northrop Corporation: *See*—
Robinson, Guner S.; and Reis, James J., 4,213,150, Cl. 358-166.000.
Norton Company: *See*—
Rue, Charles V., 4,212,137, Cl. 51-206.400.
Nossen, Edward J., to RCA Corporation. Voltage measuring circuit. 4,213,088, Cl. 324-98.000.
Notaro, Anthony J.: *See*—
Barton, Bruce L.; Johnson, Walter E.; and Notaro, Anthony J., 4,212,665, Cl. 75-10.00V.
Nova Scotia Research Foundation Corporation: *See*—
Chahine, M. Helmy; and Brothers, J. Alfred, 4,212,892, Cl. 426-289.000.
Novo Laboratories, Inc.: *See*—
Ciaccio, Leonard L., 4,212,761, Cl. 252-174.120.
Nugent, Duane C., to Owens-Illinois, Inc. Modular tubular solar energy collector apparatus. 4,212,293, Cl. 126-450.000.
Nutzel, Karl: *See*—
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.
Nuzzolo, Carlo; Vignola, Rodolfo; and Groggia, Antonio, to Snam Progetti, S.p.A. Method for preparing a proteinic isolate from sunflowerseed meal using aluminum salts. 4,212,799, Cl. 260-123.500.
O'Brien, Robert J.; and Stryjewski, Walter A., to Eastman Kodak Company. Apparatus for producing duplex copies. 4,212,529, Cl. 355-3.00R.
Ochi, Shikayuki: *See*—
Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.
Oerlikon Buhrle USA Incorporated: *See*—
Winkler, Otto, 4,212,170, Cl. 62-55.500.
Ogano, Takeo: *See*—
Miyazawa, Takeshi; Ogano, Takeo; Ono, Naotoshi; and Sato, Kazunobu, 4,212,141, Cl. 56-11.800.
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, to Seiko Koki Kabushiki Kaisha. Time detecting switch for clock. 4,212,155, Cl. 368-250.000.
Oguchi, Toshihiko; Saito, Ichiyoshi; Ueno, Tsuyoshi; and Kubo, Tsutomu, to Tokyo Shibaura Electric Co., Ltd. Method and apparatus for forming spherical particles of thermoplastic material. 4,212,837, Cl. 264-15.000.
Ohe, Takeshi: *See*—
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Ohga, Shoichiro: *See*—
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Ohlinger, Manfred: *See*—
Schnell, Georg; Hammon, Fritz; and Ohlinger, Manfred, 4,212,903, Cl. 427-127.000.
Ohnishi, Ryoichi: *See*—
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; Iwata, Syuzi; and Ohnishi, Ryoichi, 4,213,154, Cl. 358-260.000.
Ohsumi, Tadashi; and Itaya, Nobushige, to Sumitomo Chemical Company, Limited. Preparation of m-(p-bromophenoxy)benzaldehyde. 4,212,829, Cl. 568-433.000.
Ohsumi, Tadashi; Itaya, Nobushige; and Hirano, Masachika, to Sumitomo Chemical Company, Limited. Benzyl pyrrolyl methyl carboxylate insecticides and acaricides. 4,212,879, Cl. 424-274.000.
Ohta, Noriyuki: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
Ohta, Takaaki: *See*—
Ando, Masamoto; Nomura, Yoshihisa; and Ohta, Takaaki, 4,212,500, Cl. 303-115.000.
Ohta, Tokuya: *See*—
Imataki, Hiroyuki; Kobayashi, Masatsune; and Ohta, Tokuya, 4,212,518, Cl. 350-357.000.
Ohtani, Yoshio, to Diesel Kiki Co., Ltd. Electronic-mechanical governor for diesel engines. 4,212,279, Cl. 123-352.000.
Ohtuka, Tadao; Ohe, Takeshi; and Hamano, Kunihiro, to Jidosha Kiki Co., Ltd. Power steering control device. 4,212,366, Cl. 180-141.000.
Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, to Hitachi, Ltd. Insulated-gate semiconductor device. 4,213,140, Cl. 357-41.000.
Okada, Toshio: *See*—
Sakurada, Ichiro; Okada, Toshio; and Kaji, Kanako, 4,212,649, Cl. 8-115.500.
Okahashi, Kazuo: *See*—
Hayashi, Osamu; Okahashi, Kazuo; and Ono, Hiroshi, 4,212,960, Cl. 525-524.000.
Okamoto, Tsutomu: *See*—
Makino, Yoshimi; and Okamoto, Tsutomu, 4,212,688, Cl. 148-31.550.
Okamura, Masatoshi: *See*—
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Okazaki, Sakiho: *See*—
Kawamura; Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,212,156, Cl. 368-85.000.
Oki Electric Industry Co., Ltd.: *See*—
Murata, Kazuo; and Kito, Terukazu, 4,213,186, Cl. 364-723.000.
Okumura, Takeshi: *See*—
Nakanishi, Kiyoshi; and Okumura, Takeshi, 4,212,270, Cl. 123-41.090.
Olich, Eugene E.; and Weissinger, Robert B., to General Electric Company. Electromagnetic pump for molten metals. 4,212,592, Cl. 417-50.000.
Olsen, Gunnar E. R.; and Iversen, Poul C. C., to Danfoss A/S. Control system for charging and discharging an electric storage heater. 4,213,032, Cl. 219-364.000.
Olympus Optical Co., Ltd.: *See*—
Fujii, Toru, 4,212,517, Cl. 350-217.000.
Itaya, Hideo, 4,212,515, Cl. 350-175.0ML.
Sawamura, Ichiro, 4,212,516, Cl. 350-96.240.
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; Iwata, Syuzi; and Ohnishi, Ryoichi, to Mitsubishi Denki Kabushiki Kaisha. Facsimile communication system. 4,213,154, Cl. 358-260.000.
Ono, Hiroshi: *See*—
Hayashi, Osamu; Okahashi, Kazuo; and Ono, Hiroshi, 4,212,960, Cl. 525-524.000.
Ono, Kaoru: *See*—
Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,213,179, Cl. 364-405.000.
Ono, Naotoshi: *See*—
Miyazawa, Takeshi; Ogano, Takeo; Ono, Naotoshi; and Sato, Kazunobu, 4,212,141, Cl. 56-11.800.
Onodera, Kazukiyo: *See*—
Sasaki, Kazuya; Mitsui, Hiromi; and Onodera, Kazukiyo, 4,212,881, Cl. 424-275.000.
Onodera, Masato: *See*—
Mizuguchi, Saburo; Nomura, Isao; Naito, Takeyuki; Onodera, Masato; and Saito, Kouji, 4,212,702, Cl. 162-36.000.
Oota, Kazuhiro, to Asahi Medical Co., Ltd. Haemodialyzer apparatus. 4,212,744, Cl. 210-321.00B.
Oppenlaender, Knut: *See*—
Baur, Richard; Oppenlaender, Knut; and Stoeckigt, Dieter, 4,212,760, Cl. 252-156.000.
Orion Industries, Inc.: *See*—
Valenzona, Joseph F., 4,212,408, Cl. 220-254.000.
Orona, Thomas V., Sr.: *See*—
Kelly, Edmund R.; and Orona, Thomas V., Sr., 4,212,402, Cl. 211-105.300.
Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., to University of California, The Regents of the. Method of plasma initiated polymerization. 4,212,719, Cl. 204-165.000.
Osawa, Hisayou: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
Ostberg, Gustaf C.: *See*—
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.
Ostertag, Karl: *See*—
Vollbrecht, Rolf; and Ostertag, Karl, 4,212,915, Cl. 428-288.000.
Ota, Yasuo: *See*—
Takeuchi, Setsuo; Kawarada, Akira; Ota, Yasuo; and Nakayama, Masayoshi, 4,212,664, Cl. 71-94.000.
Otani, Masaru; Satoi, Shuzo; and Takada, Masaki, to Toyo Jozo Kabushiki Kaisha. Antibiotic aculeacin-Aα, -Aγ, -Dα and -Dγ and methods for their production. 4,212,858, Cl. 424-118.000.
Otani, Tatu: *See*—
Koizumi, Kunihei; Otani, Tatu; Katata, Toshinobu; and Ueda, Takeshi, 4,212,706, Cl. 201-39.000.
Otto, Heinz; Hoppmann, Helmut; and Henning, Bodo, to Volkswagenwerk Aktiengesellschaft. Vehicle fuel tank having vented internal fuel pump. 4,212,600, Cl. 417-360.000.
Oude Alink, Bernardus A., to Petrolite Corporation. Δ-2 Tetrahydropyrimidines as corrosion inhibitors. 4,212,843, Cl. 422-16.000.
Outboard Marine Corporation: *See*—
Clements, Boyd D.; Hines, Charles E.; and Kubat, James J., 4,212,357, Cl. 172-22.000.
Overbeek, Robert B., to Dana Corporation. Hub clutch. 4,212,557, Cl. 403-1.000.
Owczarski, William A.: *See*—
Duvall, David S.; King, William H.; and Owczarski, William A., 4,213,026, Cl. 219-75.000.
Owens-Corning Fiberglas Corporation: *See*—
Seng, Stephen, 4,212,613, Cl. 425-141.000.
Owens-Illinois, Inc.: *See*—
Nugent, Duane C., 4,212,293, Cl. 126-450.000.
Tobias, John W.; and Taylor, Lynn J., 4,212,955, Cl. 525-5.000.
Oyama, Kiyotaka: *See*—
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,945, Cl. 435-212.000.
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,946, Cl. 435-212.000.
Padberg, Louis R., Jr.; Parker, Frederick D.; Schaniel, Carl L., Jr.; and Kleager, Kenneth D., to United States of America, Navy. Method for classification of sonar echoes. 4,213,198, Cl. 367-113.000.
Paivinen, John: Eisenhower, Walter D., Jr.; and Helfrich, Ernest R., to MOS Technology, Inc. Stable N-channel MOS structure. 4,212,100, Cl. 29-571.000.
Paley, Brian T.: *See*—
Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.
Panchenko, Grigory K.: *See*—
Vorobeichikov, Leonid T.; Fedoryakin, Boris F.; Panchenko, Grigory K.; Gorbanev, Grigory N.; Bevz, Anatoly N.; and Satarin, Vladimir I., 4,212,630, Cl. 432-80.000.
Panzone, Gianbattista: *See*—
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Parker, Frederick D.: *See*—
Padberg, Louis R., Jr.; Parker, Frederick D.; Schaniel, Carl L., Jr.; and Kleager, Kenneth D., 4,213,198, Cl. 367-113.000.
Parker, Ralph M.; and Mock, James H., to Pet Incorporated. Particle separating device. 4,212,398, Cl. 209-500.000.
Parrish, Henry H.: *See*—
Chiu, Ran F.; Kromer, Philip F., III; Kao, Ming L.; and Parrish, Henry H., 4,213,097, Cl. 330-51.000.
Parshin, Anatoly M.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
Pasco, William R.: *See*—
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Pascoe, Robert A.: *See*—
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Patelhold Patentverwertungs- & Electro-Holding AG: *See*—
Funk, Gerhard, 4,213,007, Cl. 375-10.000.
Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., to United States of America, Army. Vacuum interlock. 4,212,317, Cl. 137-565.000.
Patrick, E. Vincent; and Dickson, Howard K., to United States of America, Army. Vacuum sealed manipulator. 4,212,575, Cl. 414-8.000.
Patsch, Manfred; Schneider, Dieter; Gotsmann, Guenther; and Hettche, Albert, to BASF Aktiengesellschaft. Acidic nickel electroplating bath containing sulfobetaines as brighteners and levelling agents. 4,212,709, Cl. 204-49.000.
Patterson, Irvin G. Insect study station. 4,212,267, Cl. 119-1.000.
Paust, Joachim; Schneider, Joachim; and Jaedicke, Hagen, to BASF Aktiengesellschaft. Manufacture of canthaxanthin. 4,212,827, Cl. 568-347.000.
Pavlak, Archibald W. Hearth structure. 4,212,636, Cl. 432-250.000.

Pawling, Paul G.: *See—*
Cecka, Andrew M.; and Pawling, Paul G., 4,212,461, Cl. 273-73.00F.

Payne, Robert D.; Buczkowski, Fred E.; and Szpitalak, Wesley J., to Continental Group, Inc., The. Catcher and return device for over-sprayed powder. 4,212,266, Cl. 118-712.000.

PDM Electrical Products Ltd.: *See—*
Deacey, Peter, 4,213,059, Cl. 307-41.000.

Pechmeze, Jacques P. E.: *See—*
Bernardin, Jacques A. N.; and Pechmeze, Jacques P. E., 4,212,647, Cl. 8-662.000.

Pecori, Peter M., to United States of America, Army. Portable buried object detection system with error reducing signal processing. 4,213,093, Cl. 324-329.000.

Pedicano, Ernest A.: *See—*
Kydonieus, Agis F.; Smith, Inja K.; Conroy, Reid A.; and Pedicano, Ernest A., 4,212,153, Cl. 368-62.000.

Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., to Liquichimica Robassomero S.p.A.; and Vsesoiuznis Nauchij Issledovatelskj Institut Po Pererabotke Nefti Vniinp. Improved process for the production of an additive for lubricating oils and related product. 4,212,752, Cl. 252-42.700.

Peecock, Charles P. R.: *See—*
Webb, Victor A.; Wells, Arthur D.; Clarke, Geoffrey C.; and Peecock, Charles P. R., 4,212,259, Cl. 115-73.000.

Pelouch, Milan S., to Fansteel Inc. Dart body. 4,212,464, Cl. 273-416.000.

Pelz, Lothar: *See—*
Bergner, Dieter; Heubach, Erhard; Hofmann, Winfried; Kuster, Ortwin; and Pelz, Lothar, 4,212,721, Cl. 204-219.000.

Pemberton, Eugene B.: *See—*
Fahl, Richard L.; and Pemberton, Eugene B., 4,212,315, Cl. 137-377.000.

Pemper, Steven J. Device for forming holes in a foundry sand mold. 4,212,345, Cl. 164-149.000.

Penick, Ib; and Volkert, John K., to Compak Systems Inc. Method of making a promotional novelty device. 4,212,231, Cl. 93-1.00F.

Penney, William H. Shoe mounting apparatus. 4,212,399, Cl. 211-35.000.

Penz, Perry A.: *See—*
Noble, Robert T.; Penz, Perry A.; and Marks, Burton W., 4,212,159, Cl. 368-82.000.

Peppler, Michael S.: *See—*
Ritchie, Leon T.; and Peppler, Michael S., 4,212,510, Cl. 339-147.00R.

Percarpio, Edward P., to Becton, Dickinson and Company. Parallel-flow one-way blood sampling device. 4,212,308, Cl. 128-766.000.

Pereskokova, Ida I.: *See—*
Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.

Peri, Paolo: *See—*
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.

Perna, Jiulio E.; and Mache, Gerhard R., to Bunker Ramo Corporation. Telephone network/subscriber interface device. 4,213,013, Cl. 179-98.000.

Pernick, Benjamin J.: *See—*
Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.

Perrotta, Kenneth A., to Whatman Reeve Angel Limited. Method and apparatus for determining oil mist in compressed air. 4,213,044, Cl. 250-301.000.

Perry, Donald D.: *See—*
Kotski, Edward J.; Siebens, Larry N.; and Perry, Donald D., 4,212,387, Cl. 206-223.000.

Persson, Anders E., to Sandvik Aktiebolag. Means for connecting a male part with a female part. 4,212,559, Cl. 403-348.000.

Pervushin, Evgeny S.: *See—*
Berber, Viktor A.; Pervushin, Evgeny S.; Kholin, Vladimir G.; Fedorov, Alexandr G.; and Galishnikov, Boris M., 4,212,539, Cl. 356-336.000.

Pery, Remy: *See—*
Bremon, Christian; Grannec, Anne; Pery, Remy; and Philippe, Joel, 4,213,107, Cl. 333-197.000.

Pet Incorporated: *See—*
Parker, Ralph M.; and Mock, James H., 4,212,398, Cl. 209-590.000.

Petersen, Egon N.; Richtzenhain, Hermann; and Schrage, Klaus, to Dynamit Nobel Aktiengesellschaft. Process for the side-chain chlorination of perhalogenated methyl aromatic compounds. 4,212,996, Cl. 568-639.000.

Petersen, Poul: *See—*
Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., 4,213,070, Cl. 310-71.000.

Peterson, Laurel L.; and Hickman, Alan J., to Caterpillar Tractor Co. Aligning apparatus for material handling system. 4,212,375, Cl. 187-9.00R.

Petrillo, Vincenzo: *See—*
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.

Petrolite Corporation: *See—*
Hartke, Francis J., 4,212,842, Cl. 422-12.000.
Oude Alink, Bernardus A., 4,212,843, Cl. 422-16.000.
Quinlan, Patrick M., 4,212,764, Cl. 252-392.000.
Redmore, Derek; and Welge, Frederick T., 4,212,734, Cl. 210-58.000.

Petrova, Mira P.: *See—*
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.

Pfeiffer, Hans C., to International Business Machines Corporation. Electron beam system with character projection capability. 4,213,053, Cl. 250-492.00A.

Pfizer Inc.: *See—*
Andrews, Glenn C., 4,212,988, Cl. 560-174.000.
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.

Pfleiderer, Hans J.: *See—*
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Pflieger, Bernard: *See—*
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Philagro: *See—*
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Philip Morris Incorporated: *See—*
Van Auken, Thomas V.; Grubbs, Harvey J.; and Johnson, William R., Jr., 4,212,310, Cl. 131-17.00R.

Philippe, Joel: *See—*
Bremon, Christian; Grannec, Anne; Pery, Remy; and Philippe, Joel, 4,213,107, Cl. 333-197.000.

Phillips, Brinley M.; Lace, Robert B.; and Lambie, Alan J., to Albright & Wilson Limited. Manufacture of imidazoline compounds. 4,212,983, Cl. 548-352.000.

Phillips, Evan M. Pulsator valves. 4,212,325, Cl. 137-627.500.

Phillips, Kenneth G.; and Bingham, Mary E., to Nalco Chemical Co. Polymerization of water soluble polymers in water-in-oil latex form to produce emulsions containing high polymer solids levels and low oil levels. 4,212,784, Cl. 260-29.6WQ.

Phillips Petroleum Company: *See—*
Brady, Donnie G., 4,212,923, Cl. 428-419.000.
Campbell, Robert W., 4,212,964, Cl. 528-340.000.
Campbell, Robert W., 4,212,965, Cl. 528-340.000.
Shue, Robert S., 4,212,793, Cl. 260-45.85T.
Swanson, Billy L., 4,212,747, Cl. 252-8.55R.
Tieszen, Dale O., 4,212,922, Cl. 428-419.000.

Pickett, John A.: *See—*
Laws, Derek R. J.; Bath, Nigel A.; Ennis, Colin S.; Pickett, John A.; and Wheldon, Alfred G., 4,212,895, Cl. 426-600.000.

Pieper, Helmut, to Sorg GmbH & Co. KG. Electrically heated melting furnace for mineral materials. 4,213,002, Cl. 13-6.000.

Pierce, Leslie C. Rear bumper rolling loader. 4,212,581, Cl. 414-529.000.

Pietro Laverda S.P.A.: *See—*
Raineri, Giuseppe, 4,212,144, Cl. 56-15.800.

Pinazzi, Christian; Lenain, Jean-Claude; and Brosse, Jean-Claude, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for producing hydroxytelechelic oligomers and polymers by photolysis. 4,212,718, Cl. 204-159.230.

Pinckney, Robert L., to Boeing Company, The. Resilient flanged wheel. 4,212,491, Cl. 295-11.000.

Pines, Michael Y., to Hughes Aircraft Company. Monolithic variable size detector. 4,213,137, Cl. 357-30.000.

Pinette-Emidecau S.A.: *See—*
Pinette, Gerard, 4,212,241, Cl. 100-116.000.

Pinette, Gerard, to Pinette-Emidecau S.A. Process of extracting juice from a sample of liquid-containing matter such as sugarcane and an extractor press. 4,212,241, Cl. 100-116.000.

Pinson, George T., to Boeing Company, The. Apparatus for forming sheet metal. 4,212,188, Cl. 72-413.000.

Pipe Line Tech., Inc.: *See—*
Hulsey, Eldon E., 4,212,321, Cl. 137-625.320.

Piper, George F.; Vesperman, William C.; and Wilson, Max K., to Western Electric Company, Inc. Apparatus for enclosing a plurality of conductors in a partitioned jacket. 4,212,612, Cl. 425-114.000.

Piston, Thomas P., to Crouse-Hinds Company. Explosion-proof contact assembly and method of forming the same. 4,213,018, Cl. 200-51.120.

Pitts, Robert W., Jr., to Texaco Inc. Means and method for printing on light sensitive material. 4,212,530, Cl. 355-14.00R.

Placo Products Company: *See—*
Cagan, Bernard J.; and McQuary, Kenneth L., 4,212,285, Cl. 124-67.000.

Plaxin, Evgeny K.: *See—*
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.

Plessey Handel und Investments AG: *See—*
Cooper, Paul V., 4,213,091, Cl. 324-210.000.
Reid, Douglas C. J.; and Waterworth, Peter, 4,213,193, Cl. 365-125.000.
Taylor, Brian P.; Davis, David J.; and Wasdell, Roy N., 4,212,469, Cl. 274-23.00A.

Pluss-Staufer AG: *See—*
Strauch, Dieter, 4,212,674, Cl. 106-14.050.

Podgorski, Jan, to INTERATOM Internationale Atomreaktorbau GmbH. Oxygen filled, sealed housing for piezoceramic electroacoustic transducer. 4,213,071, Cl. 310-344.000.

Poignet, Alain: *See—*
Barda, Jean F.; Brusq, Roger; Marti, Bernard; and Poignet, Alain, 4,213,124, Cl. 340-706.000.

Poirier, J. Leon, to United States of America, Air Force. Integral enable-disable means for guided wave radar intrusion detector system portals. 4,213,123, Cl. 340-552.000.

Polaroid Corporation: *See—*
Douglas, Lawrence M., 4,212,524, Cl. 354-86.000.
Fischer, Richard V., 4,212,527, Cl. 354-275.000.
Mason, Paul B., 4,212,528, Cl. 354-317.000.
Stella, Joseph A., 4,212,521, Cl. 352-130.000.

Policand, Gerard; Trompette, Jacques; and Bourrinet, Francis. Pseudo-random binary sequence generator. 4,213,101, Cl. 331-78.000.

Pollitzer, Ernest L.: *See—*
Hayes, John C.; and Pollitzer, Ernest L., 4,212,770, Cl. 252-441.000.

Polydent SA: *See—*
Schaffner, Alfred, 4,212,639, Cl. 433-72.000.

Pommier, Luis W.: *See—*
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Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I. Electroinsulating material. 4,212,914, Cl. 428-268.000.

Ponomareva, Nina V.: *See—*
Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I., 4,212,914, Cl. 428-268.000.

Popova, Galina I.: *See—*
Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.

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Babina, Margarita D.; Vlaskin, Egor F.; Dunjushkin, Evgeny S.; Gabets, Anna P.; Pereskokova, Ida I.; Popova, Galina I.; Glumova, Valentina A.; Naumova, Ljudmila A.; and Poprygo, Galina G., 4,212,775, Cl. 260-17.200.

Porteous, Don D. Tiltable power blender for dental impression materials. 4,212,546, Cl. 366-213.000.

Portinari, Antonio; and Longoni, Sergio, to Industrie Pirelli S.p.A. Method and apparatus for manufacturing optical cable elements. 4,212,097, Cl. 29-450.000.

Potosky, Milton J.; and Rohrbacher, Peter J., to Congoleum Corporation. Methods and apparatus for making decorative inlaid types of resilient sheet materials and the like. 4,212,691, Cl. 156-79.000.

Poynton, Bertram G.; and Waite, Phillip S., to Ti Fords Limited. Apparatus for restoring distorted articles to their true cross-sectional shape. 4,212,140, Cl. 53-289.000.

Pratt, Enoch B.: *See—*
Repinski, Robert J.; and Pratt, Enoch B., 4,212,463, Cl. 273-418.000.

Pratt & Lambert, Inc.: *See—*
Wolinski, Leon E.; and Berezuk, Peter D., 4,212,921, Cl. 428-414.000.

Pray, Winston C., to Flexible Steel Lacing Company. Belt fasteners. 4,212,094, Cl. 24-31.00B.

Precisa AG Rechenmaschinenfabrik, Firma: *See—*
Gelling, Helmut, 4,212,554, Cl. 400-550.000.

Pridham, Roger G., to Raytheon Company. Sonic direction system. 4,213,195, Cl. 367-92.000.

Prince Corporation: *See—*
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Propper Manufacturing Co., Inc.: *See—*
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Protasova, Ljudmila D.: *See—*
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Prudden, John F.: *See—*
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Pruett, Lloyd L. Hydraulic brake system. 4,212,167, Cl. 60-594.000.

Prugh, John D., to Merck & Co., Inc. Appetite stimulating and antihistaminic 3-hydroxymethylcyproheptadine and analogs. 4,212,871, Cl. 424-267.000.

Prunier, Jean-Claude; and Bellemon, Yves, to Societe Nouvelle de Connexion. Connectors for optical conductors utilizing elastomeric pads. 4,212,514, Cl. 350-96.210.

Prussin, Samuel: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,212,897, Cl. 427-2.000.

Pryor, Leroy W. Electric motor. 4,213,069, Cl. 310-46.000.

Prysby, Daniel G.: *See—*
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Pufpaff, Frederick J.; and Hoen, Cuyler, to Simmons Fastener Corporation. Quarter turn industrial fastener. 4,212,560, Cl. 403-353.000.

Puletti, Paul P.: *See—*
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Pumpex Production AB: *See—*
Jonsson, Arne F., 4,212,590, Cl. 417-24.000.

Pye (Electronics Products) Limited: *See—*
Chesher, Keith, 4,212,360, Cl. 177-139.000.

Quang, Dang T.; Leguen, Jacques; and Delair, Jacques, to Compagnie Generale de Radiologie. Method and circuit arrangement for improving the radiological definition of the focal spots of X-ray tubes. 4,213,048, Cl. 250-402.000.

Quick, Leonard M.: *See—*
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,212,729, Cl. 208-210.000.

Quick, Thomas E. Pollution emission control and fuel saving device for internal combustion engines. 4,212,274, Cl. 123-548.000.

Quinlan, Patrick M., to Petrolite Corporation. Quaternary polyvinyl heterocyclic compositions and use as corrosion inhibitors. 4,212,764, Cl. 252-392.000.

Qureshi, Azam S., to Tomco, Inc. Power assist proportional remote controller. 4,212,323, Cl. 137-625.610.

Racal-Milgo, Inc.: *See—*
Chiu, Ran F.; Kromer, Philip F., III; Kao, Ming L.; and Parrish, Henry H., 4,213,097, Cl. 330-51.000.

Raczkowski, Jan; and Speelman, Irving A., to Propper Manufacturing Co., Inc. Wound clip rack. 4,212,390, Cl. 206-339.000.

Radda, George J.: *See—*
Caffarella, Thomas E.; Radda, George J.; and Dooley, Harry H., Jr., 4,213,052, Cl. 250-462.000.

Raineri, Giuseppe, to Pietro Laverda S.P.A. Machine for cutting and conditioning forage. 4,212,144, Cl. 56-15.800.

Raitto, Russell G., to Concord Laboratories, Inc. Blood sampling syringe. 4,212,307, Cl. 128-763.000.

Ramel, Francois: *See—*
Rousseau, Alain; and Ramel, Francois, 4,212,200, Cl. 73-861.470.

Ramer, Daniel J. Phase inversion test device. 4,213,085, Cl. 324-57.00R.

Randolph, Robert W., to ACF Industries, Incorporated. Quick fill-/empty tank car system. 4,212,333, Cl. 141-98.000.

Randvere, Fredrik V.; and Konzelman, Leroy M., to American Cyanamid Company. Process for preparing methylene blue. 4,212,971, Cl. 544-37.000.

Rank Organisation Limited, The: *See—*
Stelling, David; Barker, David H.; and Weston, Terence E., 4,212,845, Cl. 422-82.000.

Rao, Chatty; and Schmitz, Bruno, to Klockner-Humboldt-Deutz AG. Method and apparatus for the production of mold bodies. 4,212,608, Cl. 425-85.000.

Rao, G. R. Mohan, to Texas Instruments Incorporated. Double level polysilicon series transistor cell. 4,213,139, Cl. 357-41.000.

Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, to Akzona Incorporated. Matting article with process and apparatus for its production. 4,212,692, Cl. 156-167.000.

Rasmussen, Howard J.; and Subluskey, William C., to Stewart-Warner Corporation. Hub drive for bicycle speedometer. 4,212,482, Cl. 280-289.00D.

Ratcliffe, Ronald W., to Merck & Co., Inc. Process for deacylating N-acyl-6-substituted-2-[2-aminoethylthio]-1-carbadethiapen-2-em-3-carboxylic acids. 4,212,807, Cl. 260-326.310.

Rauchfuss, Charles G., Jr.; Herman, Ralph; and Barton, Harvey R., Jr., to RCA Corporation. Web position controller for web transport systems. 4,212,422, Cl. 226-196.000.

Rauleder, Gebhard; Waldmann, Helmut; Mues, Volker; and Seifert, Hermann, to Bayer Aktiengesellschaft. Process for the preparation of 5-(oxiranylmethyl)-1,3-benzodioxole. 4,212,809, Cl. 260-340.50R.

Rax-Unlimited: *See—*
Kelly, Edmund R.; and Orona, Thomas V., Sr., 4,212,402, Cl. 211-105.300.

Raytheon Company: *See—*
Mims, James R., 4,212,423, Cl. 228-136.000.
Pridham, Roger G., 4,213,195, Cl. 367-92.000.
Wood, Wilhelm A. H., 4,213,094, Cl. 370-12.000.

RCA Corporation: *See—*
Ahmed, Adel A. A., 4,213,068, Cl. 307-255.000.
Clemens, Jon K., 4,213,148, Cl. 358-128.600.
Daniel, James W., Jr., 4,213,096, Cl. 455-260.000.
Harford, Jack R., 4,213,151, Cl. 358-178.000.
Nossen, Edward J., 4,213,088, Cl. 324-98.000.
Rauchfuss, Charles G., Jr.; Herman, Ralph; and Barton, Harvey R., Jr., 4,212,422, Cl. 226-196.000.

Stakun, Vitie J.; and White, William H., 4,212,540, Cl. 356-354.000.
Reardon, Daniel R., to Lynes, Inc. Tubing manipulated test valve and latch assembly. 4,212,355, Cl. 166-336.000.
Redmore, Derek; and Welge, Frederick T., to Petrolite Corporation. Inhibiting scale with amino-phosphonic-sulfonic acids. 4,212,734, Cl. 210-58.000.
Reed, James S.; and Moore, Roger H., to Alfred University Research Foundation. Novel whiteware bodies and energy efficient process for their production. 4,212,924, Cl. 428-428.000.
Reedy, Lonnie T.; and Smith, Eddie, to Reedy and Smith, Inc. Automatic transmissions. 4,212,571, Cl. 408-82.000.
Reedy and Smith, Inc.: *See*—
Reedy, Lonnie T.; and Smith, Eddie, 4,212,571, Cl. 408-82.000.
Refreshment Machinery Incorporated: *See*—
Neely, Raymond J., 4,212,415, Cl. 222-231.000.
Reich, Heinrich: *See*—
Eibofner, Eugen; and Reich, Heinrich, 4,212,641, Cl. 433-133.000.
Loge, Hans; Eibofner, Eugen; Kuhn, Bernhard; and Reich, Heinrich, 4,212,640, Cl. 433-82.000.
Reid, Douglas C. J.; and Waterworth, Peter, to Plessey Handel und Investments AG. Holographic data storage systems. 4,213,193, Cl. 365-125.000.
Reim, Paul. Framing means for framing a picture or other object. 4,212,122, Cl. 40-152.100.
Reinert, Charles P., to Solarein, Inc. Solar collector. 4,212,292, Cl. 126-449.000.
Reis, James J.: *See*—
Robinson, Guner S.; and Reis, James J., 4,213,150, Cl. 358-166.000.
Reisinger, Konrad: *See*—
Hoelzl, Ludwig; and Reisinger, Konrad, 4,213,011, Cl. 370-100.000.
Reist, Parker C.: *See*—
Coover, Stephen R.; and Reist, Parker C., 4,212,190, Cl. 73-28.000.
Reliance Telecommunication Electronics Company: *See*—
Kimbrough, Mahlon D., 4,213,015, Cl. 179-175.20C.
Renault Industries Equipments et Techniques-Riet: *See*—
Vu-Do, Que, 4,212,572, Cl. 409-37.000.
Renth, Ernst-Otto: *See*—
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,212,877, Cl. 424-273.00B.
Repinski, Robert J.; and Pratt, Enoch B. Humane bleeder arrow. 4,212,463, Cl. 273-418.000.
Research-Cottrell, Inc.: *See*—
Wagner, David A., 4,212,383, Cl. 198-616.000.
Research Triangle Institute: *See*—
Coover, Stephen R.; and Reist, Parker C., 4,212,190, Cl. 73-28.000.
Reticon Corporation: *See*—
West, Perry C.; and Buss, Robert R., 4,212,205, Cl. 73-579.000.
Retroflame International Limited: *See*—
Robinson, Garnet, 4,212,675, Cl. 106-18.150.
Reynolds, Charles E.: *See*—
Malucci, Robert D.; and Reynolds, Charles E., 4,212,511, Cl. 339-276.00T.
Rhone-Poulenc Industries: *See*—
Choulet, Jean-Claude; and Laily, Andre, 4,212,991, Cl. 562-480.000.
Goletto, Jean, 4,212,777, Cl. 260-18.00N.
Rhythm Watch Co. Ltd.: *See*—
Takebe, Katsuhiko; Fukuda, Masao; Shiratori, Minoru; and Aso, Minosaku, 4,212,154, Cl. 368-248.000.
Ribi, Valentino, to Diafil International S.A. Suspension system for vehicle wheels. 4,212,481, Cl. 280-276.000.
Richtzenhain, Hermann: *See*—
Petersen, Egon N.; Richtzenhain, Hermann; and Schrage, Klaus, 4,212,996, Cl. 568-639.000.
Rickert, William, to Donovan Wire & Iron Company. Parking brake lever assembly. 4,212,211, Cl. 74-538.000.
Ricketts, Guy A. G.: *See*—
Leon, Nicholas H.; and Ricketts, Guy A. G., 4,212,645, Cl. 8-406.000.
Rickey, Burton C.: *See*—
Ascani, Leonard A., Jr.; Rickey, Burton C.; Riggs, Merle E.; and Shoemaker, Andrew R., 4,212,441, Cl. 244-46.000.
Ricoh Company, Ltd.: *See*—
Shimomura, Shozo, 4,212,531, Cl. 355-55.000.
Rieger, Franz: *See*—
Maurer, Helmut; Rieger, Franz; Linder, Ernst; and Schussler, Rainer, 4,212,720, Cl. 204-195.00S.
Riggs, Merle E.: *See*—
Ascani, Leonard A., Jr.; Rickey, Burton C.; Riggs, Merle E.; and Shoemaker, Andrew R., 4,212,441, Cl. 244-46.000.
Rigny, Paul, to Commissariat a l'Energie Atomique. Method and device for excitation and selective dissociation by absorption of laser light and application to isotopic enrichment. 4,212,716, Cl. 204-157.10R.
Rigterink, Dale L. Radial torque internal combustion engine. 4,212,271, Cl. 123-43.00B.
Rikagaku Kenkyusho: *See*—
Takeuchi, Setsuo; Kawarada, Akira; Ota, Yasuo; and Nakayama, Masayoshi, 4,212,664, Cl. 71-94.000.
Riker Laboratories, Inc.: *See*—
Moore, George G.I., 4,212,882, Cl. 424-275.000.
Scherrer, Robert A.; Stern, Richard M.; and Fletcher, Vernon R., 4,212,865, Cl. 424-250.000.
Ritchie, Leon T.; and Peppler, Michael S., to AMP Incorporated. Filtered header. 4,212,510, Cl. 339-147.00R.
Rittersdorf, Walter: *See*—
Werner, Wolfgang; and Rittersdorf, Walter, 4,212,844, Cl. 422-56.000.
Robbins, Daniel H., to Itek Corporation. Cartridge having a skewed side wall for containing photosensitive material. 4,212,389, Cl. 206-316.000.
Robbins, Wayne E.: *See*—
Finlay, David E.; Robbins, Wayne E.; and Travis, Terence, 4,213,190, Cl. 364-900.000.
Robershaw Controls Company: *See*—
Bauer, Werner R., 4,212,324, Cl. 137-625.660.
Robert, Andre', to Upjohn Company, The. Prevention of prostaglandin-induced enteropooling with PGI's and PGD's. 4,212,884, Cl. 424-285.000.
Robert Bosch GmbH: *See*—
Dreher, Ernst; Wolf, Richard; and Burklin, Max, 4,212,370, Cl. 181-230.000.
Fresow, Jurgen; and Wurst, Bert, 4,212,280, Cl. 123-611.000.
Holzbaur, Siegfried, 4,212,834, Cl. 261-44.00A.
Hornung, Friedrich; and Gerschner, Martin, 4,213,077, Cl. 318-245.000.
Maurer, Helmut; Rieger, Franz; Linder, Ernst; and Schussler, Rainer, 4,212,720, Cl. 204-195.00S.
Zirps, Wilhelm, 4,212,165, Cl. 60-486.000.
Roberts, Richard Dean: *See*—
Shumate, Billy R., 4,212,129, Cl. 43-113.000.
Robertson, Victor J.: *See*—
Allen, Robert H.; and Robertson, Victor J., 4,212,396, Cl. 206-629.000.
Robertson, Wilbert J.: *See*—
Lucid, Michael F.; Robertson, Wilbert J.; and Bowerman, Paul D., 4,212,849, Cl. 423-10.000.
Robin, Martin I. Positioning device. 4,212,123, Cl. 40-152.100.
Robinson, Garnet, to Retroflame International Limited. Fireproofing. 4,212,675, Cl. 106-18.150.
Robinson, Guner S.; and Reis, James J., to Northrop Corporation. Real-time edge processing unit. 4,213,150, Cl. 358-166.000.
Robinson, Thomas S.: *See*—
Diez, Mark F.; Lewis, David O.; and Robinson, Thomas S., 4,213,178, Cl. 364-200.000.
Roche, Dwain F.; and Banks, Stanley E., to Energy Development Corporation. Traffic-operated air-powered generating system. 4,212,598, Cl. 417-229.000.
Rock, Alan, to Chloride Group Limited. Automatic electric battery charging apparatus. 4,213,080, Cl. 320-21.000.
Rockwell International Corporation: *See*—
Bippus, Jacob R., 4,212,214, Cl. 83-102.100.
Boyd, Edward S., 4,212,346, Cl. 165-32.000.
Roesch, Andronik: *See*—
Friebe, Walter-Gunar; Thiel, Max; Roesch, Andronik; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, 4,212,866, Cl. 424-253.000.
Roeschlau, Peter: *See*—
Gruber, Wolfgang; Bergmeyer, Hans U.; Bernt, Erich; Hagen, Alexander; Roeschlau, Peter; Lang, Gunter; and Beaucamp, Klaus, 4,212,938, Cl. 435-11.000.
Rogers, Richard B.: *See*—
Carson, Chrislyn M.; Ehr, Robert J.; and Rogers, Richard B., 4,212,869, Cl. 424-263.000.
Rogers, Wesley A., to General Motors Corporation. Solid state switch. 4,213,066, Cl. 307-252.00C.
Rohm and Haas: *See*—
Avery, Noyes L.; and Work, William J., 4,212,791, Cl. 260-40.00R.
Rohrbacher, Peter J.: *See*—
Potosky, Milton J.; and Rohrbacher, Peter J., 4,212,691, Cl. 156-79.000.
Rolls-Royce Limited: *See*—
Webb, Victor A.; Wells, Arthur D.; Clarke, Geoffrey C.; and Peecock, Charles P. R., 4,212,259, Cl. 115-73.000.
Roman, Alfred R., to Burlington Industries, Inc. Yarn blending with air attachment on coning machine. 4,212,152, Cl. 57-207.000.
Roper Corporation: *See*—
Letner, Eugene; and Gobin, Donald L., 4,212,363, Cl. 180-19.00H.
Rosberg, Frantisek: *See*—
Mirsch, Miroslav; Rosberg, Frantisek; and Ruzicka, Miroslav, 4,212,135, Cl. 51-165.710.
Rosen, Perry: *See*—
Holland, George W.; and Rosen, Perry, 4,212,993, Cl. 562-503.000.
Rosenstock, Guenter, to Siemens Aktiengesellschaft. Ink absorbent pressure rollers for ink recording devices. 4,212,555, Cl. 400-639.100.
Ross, Alexander D., Jr. High utility disk toy. 4,212,131, Cl. 46-74.00D.
Rothrock, Elmer W.: *See*—
Bouchard, Craig T.; Rothrock, Elmer W.; and Maher, James B., 4,212,168, Cl. 60-661.000.
Rotman, Walter; Karas, Nicholas V.; Fante, Ronald L.; and Franchi, Peter R., to United States of America, Air Force. Intrusion detection system. 4,213,122, Cl. 340-552.000.
Rousseau, Alain; and Ramel, Francois, to Transformateurs BC and EFFA. Instantaneous flow meter for automobile vehicles. 4,212,200, Cl. 73-861.470.
Royle, Norman E.: *See*—
Birrell, Raymond N.; and Royle, Norman E., 4,212,788, Cl. 260-33.6UA.
Rudge, George T.: *See*—
Dougherty, John J.; and Rudge, George T., 4,212,287, Cl. 126-419.000.

Rudolph, Hans: *See*—
Hentschel, Karl-Heinz; Dhein, Rolf; Rudolph, Hans; Nutzel, Karl; Morche, Klaus; and Kruger, Wolfgang, 4,212,816, Cl. 260-410.600.
Rue, Charles V., to Norton Company. Segmental grinding wheel and composite abrading segments therefor. 4,212,137, Cl. 51-206.400.
Ruenzi, Kurt. Apparatus for automatically feeding individual sheets from a stack through an office machine. 4,212,436, Cl. 271-4.000.
Ruff, David L.; and Nath, N. Gokul, to Grefco, Inc. Settle resistant loose-fill perlite insulation comprising particles rendered slightly tacky by a coating thereon. 4,212,755, Cl. 252-62.000.
Rummel, Edward W.: *See*—
Herron, William L.; and Rummel, Edward W., 4,212,257, Cl. 112-278.000.
Runyon, Clinton A. Mouthpiece for woodwind musical instruments. 4,212,223, Cl. 84-383.00R.
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United States of America, National Aeronautics and Space Administration; Beuyukian, Charles S.; Heisman, Robert M.; Haynie, Cyrus C.; and Ruppe, Emil P., 4,212,690, Cl. 148-131.000.
Rusakova, Valentina A.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Rusbach, Maurice, to Sarmac S.A. Bottom fuse. 4,212,245, Cl. 102-249.000.
Ruseff, Walter Z., to Caterpillar Tractor Co. Pressurized fluid supply system. 4,212,596, Cl. 417-216.000.
Russel, William J.; and Garnis, Elizabeth A., to United States of America, Army. Process and composition of low toxicity for preparing aluminum surfaces for adhesive bonding. 4,212,701, Cl. 156-665.000.
Russo, David A.: *See*—
Gitlitz, Melvin H.; Engelhart, John E.; and Russo, David A., 4,212,810, Cl. 260-340.50R.
Ruti-Te Strake B.V., a Dutch Company: *See*—
van Donk, Cornelis; and van Mullekom, Hubert P., 4,212,330, Cl. 139-435.000.
Ruzicka, Miroslav: *See*—
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Rybkin, Vladimir F.: *See*—
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.
Saari, Stanley T. Snowmobile clutch adjusting tool. 4,212,111, Cl. 33-181.00R.
Sachleben, Harold G., Sr., to Allied Chemical Corporation. Quench stack reel assembly and clamping device. 4,212,606, Cl. 425-72.00S.
Safarov, Georgy S.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.
Safina, Fialka G.: *See*—
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Sagami Chemical Research Center: *See*—
Kondo, Kiyosi; Tunemoto, Daiei; and Umemoto, Teruo, 4,212,984, Cl. 560-18.000.
St. Amand, Elmer F. Pipette and method of making same. 4,212,204, Cl. 73-425.600.
Saito, Ichiyoshi: *See*—
Oguchi, Toshihiko; Saito, Ichiyoshi; Ueno, Tsuyoshi; and Kubo, Tsutomu, 4,212,837, Cl. 264-15.000.
Saito, Kouji: *See*—
Mizuguchi, Saburo; Nomura, Isao; Naito, Takeyuki; Onodera, Masato; and Saito, Kouji, 4,212,702, Cl. 162-36.000.
Saito, Koukichi; and Suzuki, Nobuo, to Dainippon Ink and Chemicals, Inc. Fishing rod and process for its production. 4,212,693, Cl. 156-173.000.
Saito, Tatsuoki; and Nagashima, Eiji, to Tokico Ltd. Automatic resilient ring fitting device. 4,212,096, Cl. 29-235.000.
Saitoh, Shiroh: *See*—
Sato, Hisatake; Saitoh, Shiroh; Mohri, Michihiro; Miyahara, Akio; and Hayashi, Hideo, 4,212,783, Cl. 260-29.60H.
Sakagami, Teruo: *See*—
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.
Sakata, Isao: *See*—
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Sakura Color Products Corporation: *See*—
Murakami, Kimio, 4,212,786, Cl. 260-31.20R.
Ueda, Ken, 4,212,676, Cl. 106-19.000.
Sakurada, Ichiro; Okada, Toshio; and Kaji, Kanako, to Japan Atomic Energy Research Institute. Method for manufacturing heat-resistant and flame-retardant synthetic fiber. 4,212,649, Cl. 8-115.500.
Salamon, Klaus, to Varta Batterie Aktiengesellschaft. Pole seal for storage batteries. 4,212,934, Cl. 429-181.000.
Sand, William T., to Eltra Corporation. Method and apparatus for aligning a bearing. 4,212,098, Cl. 29-460.000.
Sanders Associates, Inc.: *See*—
Chapman, Paul W., 4,212,268, Cl. 119-2.000.
Sanders, Corey L.; and Makow, David M., to Canadian Patents & Development Ltd. Ultraviolet radiation dosimeter. 4,212,535, Cl. 356-51.000.
Sandoz, Inc.: *See*—
Coppola, Gary M., 4,212,804, Cl. 260-325.00R.
Houlihan, William J., 4,212,876, Cl. 424-273.00B.
Sandoz Ltd.: *See*—
Vogel, Claude; and Wicki, Heinz, 4,212,802, Cl. 260-145.00A.
Sandvik Aktiebolag: *See*—
Andersson, Allan; and Bergstrom, Bert, 4,212,569, Cl. 408-59.000.
Ettmayer, Peter; and Kieffer, Richard, 4,212,671, Cl. 75-238.000.
Persson, Anders E., 4,212,559, Cl. 403-348.000.
Wermeister, Gunter, 4,212,567, Cl. 407-46.000.
Sankyo Company Limited: *See*—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
Sano, Seiichi: *See*—
Maki, Masao; Sano, Seiichi; Tsuruda, Kunihiro; and Kobayashi, Ikuo, 4,212,854, Cl. 423-247.000.
Santa Fe International Corporation: *See*—
Lambert, R. Bruce, 4,212,450, Cl. 254-108.000.
Sapper, Ekkehard: *See*—
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,212,825, Cl. 568-313.000.
Sarmac S.A.: *See*—
Rusbach, Maurice, 4,212,245, Cl. 102-249.000.
Sasaki, Kazuya; Mitsui, Hiromi; and Onodera, Kazukiyo, to Kaken Chemical Company, Limited. Streptovaricin C derivatives. 4,212,881, Cl. 424-275.000.
Sassmannshausen, Knut O. Lighting fixture with side escape window. 4,213,171, Cl. 362-310.000.
Sasson, Zabar: *See*—
Schonberger, Eva; Sasson, Zabar; and Michael, Uri, 4,212,814, Cl. 260-347.800.
Satarin, Vladimir I.: *See*—
Vorobeichikov, Leonid T.; Fedoryakin, Boris F.; Panchenko, Grigory K.; Gorbanev, Grigory N.; Bevz, Anatoly N.; and Satarin, Vladimir I., 4,212,630, Cl. 432-80.000.
Sato, Hisatake; Saitoh, Shiroh; Mohri, Michihiro; Miyahara, Akio; and Hayashi, Hideo, to Nippon Oil Company, Ltd. Paper sizes. 4,212,783, Cl. 260-29.60H.
Sato, Kazunobu: *See*—
Miyazawa, Takeshi; Ogano, Takeo; Ono, Naotoshi; and Sato, Kazunobu, 4,212,141, Cl. 56-11.800.
Sato, Makoto: *See*—
Miyakawa, Yoshitaka; Sato, Makoto; and Fujii, Etsuo, 4,212,501, Cl. 303-116.000.
Satoh, Heijiro: *See*—
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,945, Cl. 435-212.000.
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,946, Cl. 435-212.000.
Satoh, Kenji; Tachikawa, Hajime; and Watanabe, Mitsuru, to Hitachi Heating Appliances Co., Ltd. High frequency energy apparatus with automatic heating cycle control. 4,213,023, Cl. 219-10.55B.
Satoi, Shuzo: *See*—
Otani, Masaru; Satoi, Shuzo; and Takada, Masaki, 4,212,858, Cl. 424-118.000.
Satou, Isao: *See*—
Ando, Nobuo; Satou, Isao; and Maehara, Kazuo, 4,212,624, Cl. 425-548.000.
Satou, Osahiro; Yamaguchi, Makoto; and Hasegawa, Mikio, to Ajinomoto Company, Incorporated. Process of producing soybean and/or soy protein products. 4,212,798, Cl. 260-123.500.
Saurenman, Donald G.: *See*—
Cumming, James M.; and Saurenman, Donald G., 4,213,167, Cl. 361-213.000.
Sawamura, Ichiro, to Olympus Optical Co., Ltd. Scanner with multiple optical fibres. 4,212,516, Cl. 350-96.240.
Scattolin, Antonio; and Bernardi, Sergio. Movable stand, particularly for lampholders and lamp carrier thereon. 4,213,172, Cl. 362-413.000.
Schaar, Charles H., to Kendall Company, The. Bandage with protective member. 4,212,296, Cl. 128-156.000.
Schadenberg, Hendrik; Leenaars, Corrie M. J.; and de Jong, Aaldert J., to Shell Oil Company. Dithiophosphoric acids and salts thereof and oil compositions containing the salts. 4,212,751, Cl. 252-32.70E.
Schaefer, Henry A.: *See*—
Ferrell, Sherwood W.; Mann, Friedrich H.; and Schaefer, Henry A., 4,213,078, Cl. 320-2.000.

Schafer, Fritz P., to Max-planck-Gesellschaft zur Fordenberg der Wissenschaften e.V. Process for the optical display of information using lasers. 4,213,153, Cl. 358-231.000.

Schaffner, Alfred, to Polydent SA. Measuring apparatus for setting the correct penetration depth of root canal instruments. 4,212,639, Cl. 433-72.000.

Schaniel, Carl L., Jr.: *See*—
Padberg, Louis R., Jr.; Parker, Frederick D.; Schaniel, Carl L., Jr.; and Kleager, Kenneth D., 4,213,198, Cl. 367-113.000.

Schaper, Ulf-Armin; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Perfumery compositions with trimethyl-tetrahydropyran-2-ones. 4,212,773, Cl. 252-522.00R.

Schara, Robert E.: *See*—
Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., 4,212,894, Cl. 426-332.000.

Schasser, Donald S., to Automatic Parking Devices, Inc. Dynamic card reader. 4,213,039, Cl. 235-449.000.

Schatteman, Etienne A. M., to Star S.A. Fast rewind mechanism for bidirectional tape transports for cassettes. 4,212,438, Cl. 242-201.000.

Schauffelle, Siegfried A.; Barone, Angelo P.; and Beamish, Lloyd W., to Anaconda Company, The. Manufacture of compacted strand. 4,212,151, Cl. 57-9.000.

Schaumann, Wolfgang: *See*—
Friebe, Walter-Gunar; Thiel, Max; Roesch, Androniki; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, 4,212,866, Cl. 424-253.000.

Schellberg, Franz: *See*—
Gelsdorf, Gunter; Leupold, Hermann; and Schellberg, Franz, 4,212,926, Cl. 428-472.000.

Schene, Horst: *See*—
Lovasz, Csaba; Maab, Horst-Dieter; Schene, Horst; and Teubner, Volker, 4,212,545, Cl. 366-152.000.

Schenesse, Klemens: *See*—
Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, 4,212,692, Cl. 156-167.000.

Schering Aktiengesellschaft: *See*—
Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, 4,212,940, Cl. 435-55.000.

Schering Corporation: *See*—
Daniels, Peter J. L.; McCombie, Stuart; and Nagabhushan, Tattanahalli L., 4,212,859, Cl. 424-180.000.
McCombie, Stuart, 4,212,860, Cl. 424-180.000.

Scherrer, Robert A.; Stern, Richard M.; and Fletcher, Vernon R., to Riker Laboratories, Inc. Amine derivatives of 2-nitro-3-phenylbenzofuran. 4,212,865, Cl. 424-250.000.

Schillinger, Joseph F., to Champion International Corporation. Glassware carrier. 4,212,391, Cl. 206-434.000.

Schlenker, Reinhard: *See*—
Schmieder, Helmut; Goldacker, Hubert; Warnecke, Ernst; Kluth, Manfred; and Schlenker, Reinhard, 4,212,723, Cl. 204-272.000.

Schlick, Horst, to VDO Adolf Schindling AG. Electrically heated windshield washer spray nozzle assembly. 4,212,425, Cl. 239-133.000.

Schliebs, Reinhard: *See*—
Mitschke, Karl-Heinz; and Schliebs, Reinhard, 4,212,832, Cl. 260-930.000.

Schloemann-Siemag Aktiengesellschaft: *See*—
Bretschneider, Erich, 4,212,178, Cl. 72-97.000.
Steyvers, Weinfried; and Zilges, Franz-Josef, 4,212,182, Cl. 72-253.00A.

Schmalzriedt, Truman T.: *See*—
Wisner, Daniel A.; and Schmalzriedt, Truman T., 4,213,082, Cl. 323-17.000.

Schmid, Herbert; Schneider, Helmut; and Watson, Allan, to Linde Aktiengesellschaft. Control of highly exothermic chemical reactions. 4,212,817, Cl. 260-449.00M.

Schmidt, Adolf: *See*—
Benninger, Siegfried; and Schmidt, Adolf, 4,212,715, Cl. 204-99.000.

Schmidt, Charles C., to Bendix Corporation, The. Distributed compensation for capacitance-type fluid measuring apparatus. 4,212,202, Cl. 73-304.00C.

Schmidt, George A. Aluminum panel container or trailer body. 4,212,405, Cl. 220-1.500.

Schmidt, Robert W., to Texas Instruments Incorporated. Eight bit standard connector bus for sixteen bit microcomputer using mirrored memory boards. 4,213,177, Cl. 364-200.000.

Schmidt, Roy W.: *See*—
Wilson, David A.; and Schmidt, Roy W., 4,212,994, Cl. 562-568.000.

Schmieder, Helmut; Goldacker, Hubert; Warnecke, Ernst; Kluth, Manfred; and Schlenker, Reinhard, to Kernforschungszentrum Karlsruhe GmbH. Counterflow extraction column. 4,212,723, Cl. 204-272.000.

Schmitt, Felix: *See*—
Schmitt, Karl; Disteldorf, Josef; and Schmitt, Felix, 4,212,962, Cl. 528-45.000.

Schmitt, Karl; Disteldorf, Josef; and Schmitt, Felix, to Veba-Chemie Atkiengesellschaft. Epsilon-caprolactam blocked polyisocyanates. 4,212,962, Cl. 528-45.000.

Schmitz, Bruno: *See*—
Rao, Chatty; and Schmitz, Bruno, 4,212,608, Cl. 425-85.000.

Schmitz, Paul: *See*—
Kerner, Walter; and Schmitz, Paul, 4,212,855, Cl. 423-522.000.

Schmolzer, Gerhard; and Verdino, Heiner, to Vianova Kunstharz, A.G. Cathodically depositable binders. 4,212,779, Cl. 260-22.0CQ.

Schneider, Dieter: *See*—
Patsch, Manfred; Schneider, Dieter; Gotsmann, Guenther; and Hettche, Albert, 4,212,709, Cl. 204-49.000.

Schneider, Helmut: *See*—
Schmid, Herbert; Schneider, Helmut; and Watson, Allan, 4,212,817, Cl. 260-449.00M.

Schneider, Joachim: *See*—
Paust, Joachim; Schneider, Joachim; and Jaedicke, Hagen, 4,212,827, Cl. 568-347.000.

Schnell, Georg; Hammon, Fritz; and Ohlinger, Manfred, to BASF Aktiengesellschaft. Improving the magnetic properties of gamma-iron (III) oxide. 4,212,903, Cl. 427-127.000.

Schoettle, Klaus; Hoffmann, Werner; and Kaemmer, Eduard, to BASF Aktiengesellschaft. Tape transport apparatus having a central capstan. 4,212,436, Cl. 242-192.000.

Scholer, Fred R.: *See*—
Brubaker, Gaylen R.; and Scholer, Fred R., 4,212,757, Cl. 252-95.000.

Scholz, Oscar P. Method and apparatus for resizing torque converter impeller drive shafts. 4,212,187, Cl. 72-393.000.

Schonberger, Eva; Sasson, Zabar; and Michael, Uri, to Abic, Ltd. Bis-2-furanidyl ether and method of preparation. 4,212,814, Cl. 260-347.800.

Schonfeld, Erwin: *See*—
Fuchs, Walter; Gessinger, Gernot H.; Kunzli, Roland; and Schonfeld, Erwin, 4,212,189, Cl. 72-478.000.

Schrage, Klaus: *See*—
Petersen, Egon N.; Richtzenhain, Hermann; and Schrage, Klaus, 4,212,996, Cl. 568-639.000.

Schrijvers, Joost E.; and Boers, Martinus W. A., to U.S. Philips Corporation. Image intensifier tube. 4,213,055, Cl. 250-483.000.

Schroeder, Hartmut R.: *See*—
Buckler, Robert T.; and Schroeder, Hartmut R., 4,212,805, Cl. 260-326.00N.

Schromm, Kurt: *See*—
Koppe, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,212,877, Cl. 424-273.00B.

Schultz, Peter: *See*—
Tholema, Edzard; Nonnenbruch, Heinz-Gerd; Gossmann, Hans; and Schultz, Peter, 4,212,746, Cl. 210-495.000.

Schulz, Alfred: *See*—
Grodde, Karl-Heinz; and Schulz, Alfred, 4,212,794, Cl. 260-97.600.

Schulz, Lawrence E., to Nalco Chemical Co. Thixotropic refractory binder based upon aluminum phosphate gelled silica sols. 4,212,680, Cl. 106-65.000.

Schuman-Hoole, April. Razor. 4,212,103, Cl. 30-32.000.

Schussler, Rainer: *See*—
Maurer, Helmut; Rieger, Franz; Linder, Ernst; and Schussler, Rainer, 4,212,720, Cl. 204-195.00S.

Schutten, Herman P.: *See*—
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,213,067, Cl. 307-252.00C.

Schwarzmann, Matthias: *See*—
Mross, Wolf D.; Titzenthaler, Eckart; Schwarzmann, Matthias; and Koopmann, Juergen, 4,212,772, Cl. 252-476.000.

Schweizer, Eduard H. Device for storing objects, in particular card-like objects. 4,212,401, Cl. 211-81.000.

Schwind, Juergen: *See*—
Volmer, Dieter; Schwind, Juergen; Kolk, Erich; and Frielingsdorf, Hans, 4,212,847, Cl. 422-135.000.

SCM Corporation: *See*—
Evans, James M.; and Ting, Vincent W., 4,212,781, Cl. 260-29.4UA.

Scott, Leroy A. Spare tire carrier for pick-up trucks. 4,212,417, Cl. 224-42.210.

Scott, Robert F. Retrieval and storage device for flexible elements. 4,212,421, Cl. 226-127.000.

Scragg, Edgar P. Dosing a flowing fluid. 4,212,373, Cl. 184-56.00A.

Scull, Jon V.: *See*—
Lamontagne, Robert E.; and Scull, Jon V., 4,212,591, Cl. 417-38.000.

Seagraves, Robert L., to Du Pont de Nemours, E. I., and Company. Hydrogenation catalyst with improved metallic distribution, its preparation and use for the reduction of aromatic nitro compounds. 4,212,824, Cl. 260-580.000.

Seamans, Winthrop W. Fireproofing composition comprising sodium silicate, gum arabic or other gum, and a water dispersible polymer selected from the class of epoxy polymers, natural latices and synthetic latices. 4,212,920, Cl. 428-413.000.

Sears, Roebuck & Co.: *See*—
Gall, John C., 4,212,495, Cl. 297-84.000.

Security Plastics, Inc.: *See*—
Kutik, Louis F.; and Cecil, Howard E., 4,212,332, Cl. 141-98.000.

Sederholm, Emma Lou: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma Lou; and Terry, Angel F., 4,213,040, Cl. 235-476.000.

Sedy, Josef, to Crane Packing Co. Self aligning spiral groove face seal. 4,212,475, Cl. 277-96.100.

Seifert, Gerd, to Siemens Aktiengesellschaft. X-Ray diagnostic generator comprising an inverter feeding the high voltage transformer. 4,213,049, Cl. 250-408.000.

Seifert, Hermann: *See*—
Rauleder, Gebhard; Waldmann, Helmut; Mues, Volker; and Seifert, Hermann, 4,212,809, Cl. 260-340.50R.

Seiko-Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Nemoto, Ichiro, 4,212,522, Cl. 354-25.000.
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,212,155, Cl. 368-250.000.

Sekiguchi, Fumio, to Sony Corporation. Magnetic tape recording and/or reproducing apparatus. 4,212,439, Cl. 242-206.000.

Sekiyama, Kenichi: *See*—
Nagasaka, Yasumasa; Sekiyama, Kenichi; and Masuyama, Yasushi, 4,212,629, Cl. 432-10.000.

Semasa, Takayoshi: *See*—
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; Iwata, Syuzi; and Ohnishi, Ryoichi, 4,213,154, Cl. 358-260.000.

Seng, Stephen, to Owens-Corning Fiberglas Corporation. Apparatus for handling heat-softenable batch material. 4,212,613, Cl. 425-141.000.

Serboli, Giancarlo: *See*—
D'Amico, Fabrizio; Serboli, Giancarlo; and Foti, Vincenzo, 4,212,703, Cl. 162-129.000.

Serlin, Richard A. Surface alloying method and apparatus using high energy beam. 4,212,900, Cl. 427-53.100.

Service Fracturing Company and Airry, Inc.: *See*—
Guinn, Jerry H., 4,212,354, Cl. 166-303.000.

Sessoms, J. C., Jr.: *See*—
Mitchell, John D.; and Sessoms, J. C., Jr., 4,212,634, Cl. 432-186.000.

Sethi, Gurdip S.; Sperber, Karl; and Tidd, Donald G., to Eastman Kodak Company. Film unit assembly. 4,212,673, Cl. 430-496.000.

Seyler, Jay K.: *See*—
Hughes, John L.; Seyler, Jay K.; and Liu, Robert C., 4,212,795, Cl. 260-112.50T.

Shaffer, Robert H. Blower unit for wall heater having slotted front panel. 4,212,233, Cl. 98-108.000.

Shamardin, Valentin K.: *See*—
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Shane, Robert K.; and White, Glenn E. Sheet metal fireplace type stove. 4,212,286, Cl. 126-77.000.

Sharp Kabushiki Kaisha: *See*—
Kawaguchi, Masashi; Kishishita, Hiroshi; Mizukami, Etsuo; and Kanatani, Yoshiharu, 4,213,074, Cl. 313-509.000.
Washizuka, Isamu; and Kakutani, Nobuyasu, 4,213,035, Cl. 235-92.0DN.

Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J. Cleansing agents containing oleic acid, isopropanol and ethylacetate. 4,212,758, Cl. 252-119.000.

Shaw, Jane M.: *See*—
Canavello, Benjamin J.; Hatzakis, Michael; and Shaw, Jane M., 4,212,935, Cl. 430-326.000.

Shay, Robert J. E.: *See*—
Andros, Frank E.; and Shay, Robert J. E., 4,212,349, Cl. 165-105.000.

Sheer, Russell E., Jr., to General Electric Company. Liquid feeding and mixing arrangement including an ejector thermal sleeve. 4,212,594, Cl. 417-54.000.

Shell Oil Company: *See*—
Clark, Michael T.; and ten Haken, Pieter, 4,212,868, Cl. 424-263.000.
Conradi, Joseph J., 4,212,207, Cl. 73-623.000.
Hirsch, John M.; and Stapleton, Robert G., 4,212,201, Cl. 73-290.00V.
Schadenberg, Hendrik; Leenaars, Corrie M. J.; and de Jong, Aaldert J., 4,212,751, Cl. 252-32.70E.
Titus, Paul E., 4,212,312, Cl. 137-13.000.

Shemyakina, Elena V.: *See*—
Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V., 4,212,708, Cl. 204-46.00G.

Shen, Mitchel M.: *See*—
Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., 4,212,719, Cl. 204-165.000.

Shen, Tsung-Ying; Jones, Howard; Mulvey, Dennis M.; and Dorn, Conrad P., to Merck & Co., Inc. 3,4α-Di-O-derivatives of mercaptomethylpyridine and pyridylmethyldisulfide. 4,212,976, Cl. 546-115.000.

Shepherd, Lawrence H., Jr., to Ethyl Corporation. 2,2-Dialkyltetrahydropyrans. 4,212,812, Cl. 260-345.100.

Shepherd, Michael W. Lay-in yarn feed. 4,212,174, Cl. 66-9.00R.

Sheratte, Martin B.; and Simanyi, Lydia H., to McDonnell Douglas Corporation. Fire-retardant polyurethane foams. 4,212,953, Cl. 521-137.000.

Sheremet, Ljudmila S.: *See*—
Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.

Shiba, Haruo; and Okamura, Masatoshi, to TDK Electronics Company Limited. Tape cassette. 4,212,437, Cl. 242-199.000.

Shibakawa, Riichiro: *See*—
Celmer, Walter D.; Huang, Liang H.; Jefferson, Mark T.; Maeda, Hiroshi; Inoue, Kozo; and Shibakawa, Riichiro, 4,212,944, Cl. 435-121.000.

Shibata, Akira: *See*—
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.

Shiga, Tetsuo: *See*—
Akashi, Kageyasu; Akiyama, Minoru; Shiga, Tetsuo; Matsui, Takeki; Hayashi, Yoshio; Kimura, Takeo; and Kobayashi, Hidehiko, 4,212,937, Cl. 430-620.000.

Shimada, Hiroaki, to Kotobuki Sangyo Kabushiki Kaisha. Mechanism for automatically centering sub-guide rollers and for adjusting clamping condition of sub-guide rollers, for use in material guiding apparatus of rolling mill. 4,212,181, Cl. 72-250.000.

Shimizu Construction Co., Ltd., The: *See*—
Watabe, Keiichi, 4,212,565, Cl. 405-269.000.

Shimizu, Senzo; Nomura, Isao; Usui, Motohachi; and Harada, Masahiro, to Mitsubishi Gas Chemical Company, Inc. Process for the isolation of polyarylene esters. 4,212,951, Cl. 528-495.000.

Shimizu, Shizuo: *See*—
Matsuda, Akira; Shimizu, Shizuo; and Abe, Shunji, 4,212,787, Cl. 260-33.6AQ.

Shimizu, Yoh; Iida, Yoshiaki; Goto, Tomomichi; Mitsunori, Hiromi; and Matoba, Isao, to Kawasaki Steel Corporation. Method for producing grain-oriented electrical steel sheets or strips having a very high magnetic induction. 4,212,689, Cl. 148-111.000.

Shimomura, Shozo, to Ricoh Company, Ltd. Aperture-controlling device in a variable-scale photocopying machine. 4,212,531, Cl. 355-55.000.

Shin-Etsu Handotal Co., Ltd.: *See*—
Iida, Yoshiya; and Ohga, Shoichiro, 4,213,086, Cl. 324-62.000.

Shinozaki, Nobuo: *See*—
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,212,155, Cl. 368-250.000.

Shionogi & Co., Ltd.: *See*—
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,212,981, Cl. 548-246.000.

Shiraki, Shigemi, to Mitsui Petrochemical Industries Ltd. Process for treatment by liquid cyclone for production of terephthalic acid suspension having reduced impurity content. 4,212,995, Cl. 562-485.000.

Shiratori, Minoru: *See*—
Takebe, Katsuhiko; Fukuda, Masao; Shiratori, Minoru; and Aso, Minosaku, 4,212,154, Cl. 368-248.000.

Shiratori, Yukio. Golf club. 4,212,467, Cl. 273-163.00A.

Shkolnikov, Vicktor M.: *See*—
Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.

Shoemaker, Andrew R.: *See*—
Ascani, Leonard A., Jr.; Rickey, Burton C.; Riggs, Merle E.; and Shoemaker, Andrew R., 4,212,441, Cl. 244-46.000.

Shoup, Stephen G., to Caterpillar Tractor Co. Heavy duty drawbar. 4,212,139, Cl. 52-721.000.

Shue, Robert S., to Phillips Petroleum Company. Mold corrosion inhibition. 4,212,793, Cl. 260-45.85T.

Shum, Edward K.; Martija, Henry M.; and Head, Leon E., to Bell & Howell Company. Methods and apparatus for driving information carrier tape. 4,213,160, Cl. 360-73.000.

Shumate, Billy R., to Roberts, Richard Dean; and Brewer, Robert L., part interest to each. Insect trap. 4,212,129, Cl. 43-113.000.

Shutt, George V. High speed injector for molding machines. 4,212,625, Cl. 425-549.000.

Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P. Titanium oxycarbonitride based hard alloy. 4,212,670, Cl. 75-233.000.

Siebens, Larry N.: *See*—
Kotski, Edward J.; Siebens, Larry N.; and Perry, Donald D., 4,212,387, Cl. 206-223.000.

Siegel, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Sulfonic acid-N'-methylamido-N'-sulfenyl-N-methyl-carbamic acid esters. 4,212,883, Cl. 424-277.000.

Siemens Aktiengesellschaft: *See*—
Bauerlein, Rudolf; Uhl, Dieter; Diepers, Heinrich; and Jablonski, Karl-Heinz, 4,212,911, Cl. 428-131.000.
Bodlaj, Viktor, 4,212,534, Cl. 356-1.000.
Freygang, Hanz-Joachim, 4,213,083, Cl. 323-44.00R.
Gerges, Andre, 4,213,006, Cl. 375-97.000.
Hoelzl, Ludwig; and Reisinger, Konrad, 4,213,011, Cl. 370-100.000.
Knauer, Karl; and Pfleiderer, Hans J., 4,213,105, Cl. 333-165.000.
Link, Klaus; and Lochter, Werner, 4,213,173, Cl. 363-163.000.
Magori, Valentin, 4,213,197, Cl. 367-94.000.
Rosenstock, Guenter, 4,212,555, Cl. 400-639.100.
Seifert, Gerd, 4,213,049, Cl. 250-408.000.
Veith, Werner; and Stein, Christian, 4,213,072, Cl. 313-217.000.
von Buenau, Heinrich, 4,213,147, Cl. 358-112.000.

Silverman, Daniel; and Johnson, Everett A. Access security system. 4,213,038, Cl. 235-382.000.

Simanyi, Lydia H.: *See*—
Sheratte, Martin B.; and Simanyi, Lydia H., 4,212,953, Cl. 521-137.000.

Simeonov, Yordan T.; and Djabarov, Nikola B., to Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban. Method of accel-

erating the hardening and increasing the strength of Portland cement. 4,212,681, Cl. 106-89.000.

Simmons Fastener Corporation: *See—*
Pufpaff, Frederick J.; and Hoen, Cuyler, 4,212,560, Cl. 403-353.000.

Simmons, James R.; and Weller, Frank C., to Interlake, Inc. Rotary dog assembly. 4,212,238, Cl. 100-32.000.

Singer Company, The: *See—*
Herron, William L.; and Rummel, Edward W., 4,212,257, Cl. 112-278.000.
Wolf, Paulus W., 4,212,255, Cl. 112-217.100.

Singh, Gurnam: *See—*
Newbold, William F.; and Singh, Gurnam, 4,212,209, Cl. 73-721.000.

Sirtori, Vittorio: *See—*
Calgari, Seba; Sirtori, Vittorio; and Bellobono, Ignazio R., 4,212,932, Cl. 429-111.000.

Skowronski, Michael J.; and DeLeon, Alberto, to Celotex Corporation, The. Polyisocyanurate foam laminate. 4,212,917, Cl. 428-310.000.

Slattery, Gerard: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V. Gold-plating electrolyte. 4,212,708, Cl. 204-46.00G.

Smith, Alan T.: *See—*
Allen, Donald C.; and Smith, Alan T., 4,212,194, Cl. 73-73.000.

Smith, Carl W.: *See—*
Spurlock, Eugene M.; and Smith, Carl W., 4,213,194, Cl. 367-14.000.

Smith, Colin H. S., to Data Card (U.K.) Limited. Master cards for hectographic printing. 4,213,041, Cl. 235-487.000.

Smith, Eddie: *See—*
Reedy, Lonnie T.; and Smith, Eddie, 4,212,571, Cl. 408-82.000.

Smith, Harry M. Multi-diameter, hemisphere, center-of-hole locating probe. 4,212,106, Cl. 33-172.00D.

Smith, Inja K.: *See—*
Kydonieus, Agis F.; Smith, Inja K.; Conroy, Reid A.; and Pedicano, Ernest A., 4,212,153, Cl. 368-62.000.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; and Miles, Peter D., 4,212,875, Cl. 424-273.00R.

Smith, Norman: *See—*
Fisher, Ronald; and Smith, Norman, 4,212,906, Cl. 427-237.000.

Smith, Robert J.: *See—*
Beach, Donald J.; and Smith, Robert J., 4,213,042, Cl. 250-223.00B.

Smith, William C. Screwdriver. 4,212,336, Cl. 145-61.00L.

Smolinski, Ronald E. Rotary vane machine with cam follower retaining means. 4,212,603, Cl. 418-256.000.

Smolko, Gennady G.; Akushsky, Izrail Y.; and Burtsev, Vladimir M. Apparatus for detecting and correcting errors in arithmetic processing of data represented in the numerical system of residual classes. 4,213,188, Cl. 364-739.000.

Snam Progetti, S.p.A.: *See—*
Nuzzolo, Carlo; Vignola, Rodolfo; and Groggia, Antonio, 4,212,799, Cl. 260-123.500.

Snyder, Eugene T. Electrically operated multiple security bolt door locking device. 4,212,489, Cl. 292-33.000.

Snyder, Joe W., to Nite Train-R Enterprises, Inc. Moisture responsive pad for treatment of enuresis. 4,212,295, Cl. 128-138.00A.

Snyder, Vernon W. Barbecue food holder. 4,212,235, Cl. 99-441.000.

Snyder, Wesley L. Windage and elevation mechanism for laser aimed weapons. 4,212,109, Cl. 33-241.000.

Sobolev, Jury V.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Societe Anonyme, Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Luder, Jacques, 4,213,014, Cl. 179-170.200.

Societe Anonyme Francaise du Ferodo: *See—*
Billet, Rene, 4,212,380, Cl. 192-106.200.

Societe ASTECH: *See—*
Fage, Etienne, 4,212,442, Cl. 244-110.00B.

Societe Miniere et Metallurgique de Penarroya: *See—*
Cuvelier, Jean-Philippe; and Gistau, Henri, 4,212,429, Cl. 241-26.000.

Societe' Nazionale Industria Applicazioni Viscosa S.p.A. (Snia Viscosa): *See—*
Calgari, Seba; Sirtori, Vittorio; and Bellobono, Ignazio R., 4,212,932, Cl. 429-111.000.

Societe Nouvelle de Connexion: *See—*
Prunier, Jean-Claude; and Bellemon, Yves, 4,212,514, Cl. 350-96.210.

Soecknick, Erhard, to Messer Griesheim GmbH. Device in the form of a double-walled pipe for cooling continuous profiles. 4,212,171, Cl. 62-63.000.

Sofronov, Evgeny I.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.

Solarein, Inc.: *See—*
Reinert, Charles P., 4,212,292, Cl. 126-449.000.

Solid State Scientific Inc.: *See—*
Colussi, Elio J., 4,213,141, Cl. 357-74.000.

Solomon, Barry A.; and Lysaght, Michael J., to United States of America, America. Filtration apparatus for separating blood cell-containing liquid suspensions. 4,212,742, Cl. 210-247.000.

Solvay & Cie.: *See—*
Michel, Edmond, 4,212,841, Cl. 264-530.000.

Somar Manufacturing Co., Ltd.: *See—*
Goto, Yuzuru; Daigo, Yukitaka; and Hitotsuyanagi, Mikio, 4,212,733, Cl. 210-36.000.

Sommer, Ruediger: *See—*
Muenchow, Juergen; and Sommer, Ruediger, 4,213,155, Cl. 358-262.000.

Sony Corporation: *See—*
Makino, Yoshimi; and Okamoto, Tsutomu, 4,212,688, Cl. 148-31.550.
Nagumo, Fumio, 4,213,145, Cl. 358-43.000.
Sekiguchi, Fumio, 4,212,439, Cl. 242-206.000.
Uedaira, Satoru; and Ito, Shigeyasu, 4,212,344, Cl. 164-87.000.

Sorensen, Per G.: *See—*
Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., 4,213,070, Cl. 310-71.000.

Sorg GmbH & Co. KG: *See—*
Pieper, Helmut, 4,213,002, Cl. 13-6.000.

Special Metals Corporation: *See—*
Barton, Bruce L.; Johnson, Walter E.; and Notaro, Anthony J., 4,212,665, Cl. 75-10.00V.

Speelman, Irving A.: *See—*
Raczkowski, Jan; and Speelman, Irving A., 4,212,390, Cl. 206-339.000.

Speer, Richard. Pneumatically-operated ball projecting device. 4,212,284, Cl. 124-56.000.

Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., to Eaton Corporation. Integrated gate turn-off device with non-regenerative power portion and lateral regenerative portion having split emission path. 4,213,067, Cl. 307-252.00C.

Spencer, Donald J.: *See—*
Warren, Walter R., Jr.; Durran, Donald A.; and Spencer, Donald J., 4,213,102, Cl. 331-94.50G.

Spener, Gerhard: *See—*
Hrovat, Milan; Huschka, Hans; and Spener, Gerhard, 4,212,898, Cl. 427-6.000.

Sperber, Karl: *See—*
Sethi, Gurdip S.; Sperber, Karl; and Tidd, Donald G., 4,212,673, Cl. 430-496.000.

Sperry Corporation: *See—*
Butler, L. Dennis, 4,212,578, Cl. 414-39.000.
Chaumont, Gerard P. L., 4,212,143, Cl. 56-14.400.
Duncan, Damon H.; and Klemes, Martin S., 4,212,443, Cl. 244-177.000.
Gravel, Robert L., 4,212,513, Cl. 350-96.150.

Spietschka, Ernst: *See—*
Kroh, Adolf; Fuchs, Otto; and Spietschka, Ernst, 4,212,975, Cl. 546-49.000.

Spijkerman, Johan: *See—*
Linder, Sten; and Spijkerman, Johan, 4,212,342, Cl. 164-4.000.

Splan, Robert. Automobile headlight reminder device. 4,212,260, Cl. 116-28.00R.

Spurlock, Eugene M.; and Smith, Carl W., to SRI International. Acoustic archeological mapping method. 4,213,194, Cl. 367-14.000.

Square D Company: *See—*
Zylstra, Henry J.; and Jansen, Harley W., 4,213,165, Cl. 361-94.000.

SRI International: *See—*
Spurlock, Eugene M.; and Smith, Carl W., 4,213,194, Cl. 367-14.000.

Stachiw, Jerry D.: *See—*
Endicott, Donald L., Jr.; and Stachiw, Jerry D., 4,213,029, Cl. 219-209.000.

Staff, Paul: *See—*
Hilton, Brian T.; and Staff, Paul, 4,212,739, Cl. 210-130.000.

Stakun, Vitie J.; and White, William H., to RCA Corporation. Testing the divergence of a beam from a laser. 4,212,540, Cl. 356-354.000.

Standard Oil Company: *See—*
Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., 4,212,766, Cl. 252-432.000.

Standard Oil Company (Indiana): *See—*
Fenoglio, David J., 4,212,992, Cl. 562-492.000.
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,212,729, Cl. 208-210.000.

Stannow, Jorgen C.: *See—*
Lund, Egon; Sorensen, Per G.; Petersen, Poul; Borgen, Sverre M.; and Stannow, Jorgen C., 4,213,070, Cl. 310-71.000.

Stapleton, Robert G.: *See—*
Hirsch, John M.; and Stapleton, Robert G., 4,212,201, Cl. 73-290.00V.

Star S.A.: *See—*
Schatteman, Etienne A. M., 4,212,438, Cl. 242-201.000.

Starkweather, Gary K.: *See—*
DeBenedictis, Leonard C.; and Starkweather, Gary K., 4,213,157, Cl. 358-293.000.

Stecklein, Gary L., to Deere & Company. Linkage to allow increased angular rotation of backhoe boom. 4,212,582, Cl. 414-694.000.

Steer, John E., to Bendix Corporation, The. Master cylinder reservoir cover. 4,212,411, Cl. 220-347.000.

Stein, Christian: *See—*
Veith, Werner; and Stein, Christian, 4,213,072, Cl. 313-217.000.

Stein Industrie: *See—*
Bessouat, Roger; Tondeur, Gerard; Talleu, Patrick; and Cerdan, Jean-Pierre, 4,212,658, Cl. 55-347.000.

Stella, Joseph A., to Polaroid Corporation. Motion picture film cassette having removable film stripping web. 4,212,521, Cl. 352-130.000.

Stelling, David; Barker, David H.; and Weston, Terence E., to Rank Organisation Limited, The. Analytical apparatus. 4,212,845, Cl. 422-82.000.

Stephan, Leonard P., to Boeing Company, The. Gust bias signal-generating circuit for aircraft throttle control system. 4,212,444, Cl. 244-182.000.

Stern, Richard M.: *See—*
Scherrer, Robert A.; Stern, Richard M.; and Fletcher, Vernon R., 4,212,865, Cl. 424-250.000.

Stertzbach, Glenn A., to Vonscot Industries. Abrading elements. 4,212,136, Cl. 51-204.000.

Stewart, Paul E., to United States of America, Army. Dual-mode firing mechanism. 4,212,227, Cl. 89-129.00B.

Stewart-Warner Corporation: *See—*
Rasmussen, Howard J.; and Subluskey, William C., 4,212,482, Cl. 280-289.00D.

Steyvers, Weinfried; and Zilges, Franz-Josef, to Schloemann-Siemag Aktiengesellschaft. Indirect metal extrusion and tube press and a sealing plate and a pressure plate therefor. 4,212,182, Cl. 72-253.00A.

Stocker, Charles T.: *See—*
Franzen, Roger W., Jr.; Cante, Charles J.; Griffin, Joseph J.; Schara, Robert E.; and Stocker, Charles T., 4,212,894, Cl. 426-332.000.

Stocker, Rudolf, to Mettler Instruments AG. Electrical scale with improved immunity to environmental disturbances. 4,212,361, Cl. 177-200.000.

Stoddard, Deborah: *See—*
Baldwin, Blair F.; and Stoddard, Deborah, 4,212,117, Cl. 35-31.00C.
Baldwin, Blair F.; and Stoddard, Deborah, 4,212,118, Cl. 35-31.00C.

Stoeckigt, Dieter: *See—*
Baur, Richard; Oppenlaender, Knut; and Stoeckigt, Dieter, 4,212,760, Cl. 252-156.000.

Stoelting, Inc.: *See—*
Thomson, Meredith C., 4,212,547, Cl. 366-325.000.

Stohr, Gunter: *See—*
Kratel, Gunter; Stohr, Gunter; and Katzer, Hans, 4,212,925, Cl. 428-447.000.

Stokke, Olaf M.: *See—*
Ferrell, Howard H.; Conley, Dell; Casad, Burton M.; and Stokke, Olaf M., 4,212,748, Cl. 252-8.55D.

Stoll, Kurt; and deFries, Jan R., to Festo-Maschinenfabrik Gottlieb Stoll. Multiway valve. 4,212,320, Cl. 137-625.600.

Stone, Harvey: *See—*
Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.

Stone, William B.; and Holbert, Marvin L., Jr., to Lynes, Inc. Method and apparatus for leveling templates for offshore subterranean wells. 4,212,562, Cl. 405-195.000.

Strauch, Dieter, to Pluss-Staufer AG. Corrosion preventative pigment and composition. 4,212,674, Cl. 106-14.050.

Streltsov, Rev V.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Stroh, Alan E.: *See—*
Brooks, Hubert C.; and Stroh, Alan E., 4,212,509, Cl. 339-95.00D.

Stromberg, Nils E., to Sunds Aktiebolag. Method and apparatus for stacking bales. 4,212,579, Cl. 414-95.000.

Struthoff, Gustav L.: *See—*
United States of America, National Aeronautics and Space Administration; and Struthoff, Gustav L., 4,213,051, Cl. 250-457.000.

Struttmann, Hilarius S.: *See—*
Ames, Ernest R.; Struttmann, Hilarius S.; and Carrigan, Erwin R., 4,212,502, Cl. 308-3.00R.

Stryjewski, Walter A.: *See—*
O'Brien, Robert J.; and Stryjewski, Walter A., 4,212,529, Cl. 355-3.00R.

Subluskey, William C.: *See—*
Rasmussen, Howard J.; and Subluskey, William C., 4,212,482, Cl. 280-289.00D.

Suganuma, Buro: *See—*
Matsui, Isamu; and Suganuma, Buro, 4,212,433, Cl. 242-35.50A.

Sugita, Jitsuo: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,212,981, Cl. 548-246.000.

Suhara, Manabu; and Arai, Kiyotaka, to Asahi Glass Company, Limited. Electrolysis of aqueous solution of alkali metal chloride. 4,212,713, Cl. 204-98.000.

Sumimoto, Shinzaburo: *See—*
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, 4,212,981, Cl. 548-246.000.

Sumitomo Chemical Company, Limited: *See—*
Kobayashi, Akio; and Mashita, Kentaro, 4,212,961, Cl. 526-151.000.
Koga, Kenji; and Terashima, Shiro, 4,212,828, Cl. 568-314.000.
Ohsumi, Tadashi; and Itaya, Nobushige, 4,212,829, Cl. 568-433.000.
Ohsumi, Tadashi; Itaya, Nobushige; and Hirano, Masachika, 4,212,879, Cl. 424-274.000.

Sunds Aktiebolag: *See—*
Stromberg, Nils E., 4,212,579, Cl. 414-95.000.

Suresh, Dev D.: *See—*
Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., 4,212,766, Cl. 252-432.000.

Survival Technology, Inc.: *See—*
Homan, Gerlof, 4,212,886, Cl. 424-308.000.

Suzuki, Hidenori, to Minolta Camera Kabushiki Kaisha. Slit exposure type copying apparatus. 4,212,532, Cl. 355-60.000.

Suzuki, Koro, to Whyte & Hirschboeck S. C. System of connecting a wire telecommunication and a radio communication. 4,213,009, Cl. 179-2.0EA.

Suzuki, Nobuo: *See—*
Saito, Koukichi; and Suzuki, Nobuo, 4,212,693, Cl. 156-173.000.

Suzuki, Shirou: *See—*
Murayama, Naohiro; Fukuda, Makoto; Sakagami, Teruo; Suzuki, Shirou; Kokubu, Yoshikazu; and Enoki, Toshio, 4,212,712, Cl. 204-98.000.

Svenska Inhalator AB: *See—*
Larsson, Bert G. K., 4,212,570, Cl. 408-95.000.

Svistunova, Natalya S.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Swanson, Billy L., to Phillips Petroleum Company. Shear-thickening compositions. 4,212,747, Cl. 252-8.55R.

Swanson, Ronald V. Grapple. 4,212,577, Cl. 414-23.000.

Swarden, Michael C.; Magge, Shankar S.; Jansen, Willem; and Carter, Anthony F., to Northern Research and Engineering Corporation. Centrifugal compressor. 4,212,585, Cl. 415-53.00R.

Swartz, Paul F.: *See—*
United States of America, National Aeronautics and Space Administration; Johnson, John E., Jr.; and Swartz, Paul F., 4,212,297, Cl. 128-207.140.

Sweany, Louis P.: *See—*
Learn, Richard L.; and Sweany, Louis P., 4,213,121, Cl. 340-384.00E.

Swift, Harold E.: *See—*
Madgavkar, Ajay M.; Swift, Harold E.; and Cupples, Barrett L., 4,213,001, Cl. 585-510.000.

Swiss Aluminium Ltd.: *See—*
Klotzbucher, Hansjong; Kolb, Erwin; and Hilge, Bernhard, 4,212,451, Cl. 266-50.000.
Mittelmann, Gerhard, 4,212,406, Cl. 220-1.500.

Szmuszkovicz, Jacob, to Upjohn Company, The. Anilide derivatives as antidepressants. 4,212,888, Cl. 424-324.000.

Szmuszkovicz, Jacob: *See—*
Lednicer, Daniel; and Szmuszkovicz, Jacob, 4,212,878, Cl. 424-274.000.

Szpitalak, Wesley J.: *See—*
Payne, Robert D.; Buczkowski, Fred E.; and Szpitalak, Wesley J., 4,212,266, Cl. 118-712.000.

Tachikawa, Hajime: *See—*
Satoh, Kenji; Tachikawa, Hajime; and Watanabe, Mitsuru, 4,213,023, Cl. 219-10.55B.

Taiho Pharmaceutical Company, Limited: *See—*
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,212,874, Cl. 424-272.000.

Takada, Masaki: *See—*
Otani, Masaru; Satoi, Shuzo; and Takada, Masaki, 4,212,858, Cl. 424-118.000.

Takahata, Jungo, to Honey Bee Corporation. Acidified whole milk beverage and method of preparation. 4,212,893, Cl. 426-330.200.

Takebe, Katsuhiko; Fukuda, Masao; Shiratori, Minoru; and Aso, Minosaku, to Rhythm Watch Co. Ltd. Time striking device for electronic timepiece. 4,212,154, Cl. 368-248.000.

Takeda Chemical Industries, Ltd.: *See—*
Aibe, Toshio; and Itoga, Kiyoshi, 4,212,852, Cl. 423-230.000.

Takehara, Keishin: *See—*
Yamamoto, Osamu; Matsumoto, Yoshiki; Yamada, Hiromi; and Takehara, Keishin, 4,212,697, Cl. 427-389.800.

Takei, Haruo: *See—*
Mihara, Yuji; Takei, Haruo; and Inoue, Noriyuki, 4,212,672, Cl. 430-494.000.

Takenaka Komuten Company, Limited: *See—*
Miyaguchi, Masao; Kawamura, Tateo; Nakanishi, Kazuyoshi; and Kohno, Shoji, 4,212,548, Cl. 366-348.000.

Takeno, Seiichi: *See—*
Tunematu, Toyoaki; Takeno, Seiichi; Yamaguchi, Testuo; and Egawa, Muneharu, 4,213,106, Cl. 333-185.000.

Takeuchi, Setsuo; Kawarada, Akira; Ota, Yasuo; and Nakayama, Masayoshi, t Rikagaku Kenkyusho. Nicotinamide-ammonium hydroxide plant growth regulator compositions. 4,212,664, Cl. 71-94.000.

Takusagawa, Kiyoshi: *See—*
Kikuchi, Tsuyoshi; and Takusagawa, Kiyoshi, 4,212,622, Cl. 425-444.000.

Talleu, Patrick: *See—*
Bessouat, Roger; Tondeur, Gerard; Talleu, Patrick; and Cerdan, Jean-Pierre, 4,212,658, Cl. 55-347.000.

Tallon, Roger W.: *See—*
Fraass, Ronald G.; and Tallon, Roger W., 4,213,045, Cl. 250-370.000.

Tamaru, Munetaka, to Citizen Watch Co., Ltd. Electronic timepiece. 4,212,158, Cl. 368-80.000.

Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, to Kawasaki Jukogyo Kabushiki Kaisha. Ion-nitriting process. 4,212,687, Cl. 148-16.600.

Tanaka, Minoru; Yagi, Kenkichi; and Mizuguchi, Shunji, to Toray Industries, Inc. Dense, flexible composite sheet material. 4,212,916, Cl. 428-290.000.

Tanaka, Motoaki: *See—*
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,212,874, Cl. 424-272.000.

Tang, David Y.; and Foster, Arthur M., to Hooker Chemicals & Plastics Corp. 1-Phenyl-3-(3-trifluoromethylphenyl)-2-propanol and process for its production. 4,212,998, Cl. 568-807.000.

Tang, David Y.; and Foster, Arthur M., to Hooker Chemicals & Plastics Corp. 1-Phenyl-3-(3-trifluoromethylphenyl)-1,2-propane diol and process for its production. 4,212,999, Cl. 568-807.000.

Tang, Louis S., to Bendix Corporation, The. Hydraulic brake booster and relief valve therefor. 4,212,166, Cl. 60-582.000.

Tanner, David E.: *See—*
Van Hagan, Thomas H.; and Tanner, David E., 4,212,351, Cl. 165-160.000.

Tarabaev, Gennady I.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.

Tarzia, Giorgio; and Panzone, Gianbattista, to Gruppo Lepetit S.p.A. Aminopyrrole derivatives. 4,212,806, Cl. 260-326.200.

Tasope' Limited: *See—*
Hillhouse, Charles R., 4,212,263, Cl. 118-37.000.

Tax, Lambert J. W. M., to Akzona Incorporated. Branched chain and cycloaliphatic esters of the androstane and oestrane series and pharmaceutical compositions containing same. 4,212,864, Cl. 424-243.000.

Taylor, Brian P.; Davis, David J.; and Wasdell, Roy N., to Plessey Handel und Investments AG. Disc record players. 4,212,469, Cl. 274-23.00A.

Taylor, Earnest R. Method and apparatus for charging sealed Ni-Cad batteries. 4,213,081, Cl. 320-40.000.

Taylor, Glenn N., to Kendall Company, The. Balloon testing device. 4,212,192, Cl. 73-45.500.

Taylor, Lynn J.: *See—*
Tobias, John W.; and Taylor, Lynn J., 4,212,955, Cl. 525-5.000.

Taylor, Richard J.: *See—*
Carroll, Michael H.; Taylor, Richard J.; and McCubbin, Peter J., 4,213,012, Cl. 179-84.00R.

Taylor, Thomas R.; and Puletti, Paul P., to National Starch & Chemical Corporation. PET Bottle assemblies produced by using a hot melt adhesive comprising a block copolymer and a tackifying resin. 4,212,910, Cl. 428-35.000.

Taylor, William A.: *See—*
Morley, Richard E.; Bromberg, Michael A.; and Taylor, William A., 4,213,174, Cl. 364-104.000.

TBA Industrial Products Limited: *See—*
Davies, John I., 4,212,792, Cl. 260-42.180.

TDK Electronics Company Limited: *See—*
Hiromitsu, Hirayama, 4,213,084, Cl. 323-56.000.
Shiba, Haruo; and Okamura, Masatoshi, 4,212,437, Cl. 242-199.000.

Tecumseh Products Company: *See—*
von Kaler, Roland L.; and Jolliff, Norman E., 4,212,210, Cl. 74-375.000.

Teijin Limited: *See—*
Matsumura, Seiji; and Kusumoto, Nobuo, 4,213,056, Cl. 250-559.000.

Teltscher, Erwin S. Device and method of illuminating a target by the eye-motion of an operator. 4,212,226, Cl. 89-41.00L.

Temkina, Vera Y.: *See—*
Smagunova, Nina A.; Dyatlova, Nina M.; Fridman, Alexandr Y.; Shemyakina, Elena V.; Temkina, Vera Y.; Nikerova, Ljudmila K.; and Belikin, Alexandr V., 4,212,708, Cl. 204-46.00G.

ten Haken, Pieter: *See—*
Clark, Michael T.; and ten Haken, Pieter, 4,212,868, Cl. 424-263.000.

Terasaka, Kunihiko: *See—*
Nomura, Takao; Terasaka, Kunihiko; and Sakata, Isao, 4,212,954, Cl. 521-159.000.

Terashima, Shiro: *See—*
Koga, Kenji; and Terashima, Shiro, 4,212,828, Cl. 568-314.000.

Terekhova, Alla I.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Terry, Angel F.: *See—*
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma Lou; and Terry, Angel F., 4,213,040, Cl. 235-476.000.

Teubner, Volker: *See—*
Lovasz, Csaba; Maab, Horst-Dieter; Schene, Horst; and Teubner, Volker, 4,212,545, Cl. 366-152.000.

Texaco Development Corporation: *See—*
Hotchkiss, Philip; Gipson, Robert M.; and Nieh, Edward C. Y., 4,212,820, Cl. 260-561.00N.
Marquis, Edward T.; and Brader, Walter H., Jr., 4,212,821, Cl. 260-570.00D.

Texaco Inc.: *See—*
Divine, David L., 4,212,198, Cl. 73-151.000.
Hall, Wilbur L., 4,212,353, Cl. 166-303.000.
Pitts, Robert W., Jr., 4,212,530, Cl. 355-14.00R.

Texas Instruments Incorporated: *See—*
Jones, James J., 4,212,499, Cl. 303-103.000.
McElroy, David J., 4,213,142, Cl. 357-91.000.
Noble, Robert T.; Penz, Perry A.; and Marks, Burton W., 4,212,159, Cl. 368-82.000.
Rao, G. R. Mohan, 4,213,139, Cl. 357-41.000.
Schmidt, Robert W., 4,213,177, Cl. 364-200.000.

Theobald, Hans; Kiehs, Karl; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Isoxazole-5-alkyl dithiophosphoric acid derivatives. 4,212,861, Cl. 424-200.000.

Theobald, Jurgen: *See—*
Bohne, Gunther; Brans, Bernhard; Hannebauer, Haribert; Helfenbein, Manfred; and Theobald, Jurgen, 4,212,432, Cl. 241-285.00B.

Thermacore, Inc.: *See—*
Eastman, George Y., 4,212,347, Cl. 165-46.000.

Thermodynamics Corporation: *See—*
Lux, Robert J., Jr., 4,213,111, Cl. 336-65.000.

Thermon Manufacturing Company: *See—*
Goss, David C.; and Hageman, Richard A., 4,213,034, Cl. 219-535.000.

Thiel, Max: *See—*
Friebe, Walter-Gunar; Thiel, Max; Roesch, Androniki; Wilhelms, Otto-Henning; and Schaumann, Wolfgang, 4,212,866, Cl. 424-253.000.

Tholema, Edzard; Nonnenbruch, Heinz-Gerd; Gossmann, Hans; and Schultz, Peter, to Bayer Aktiengesellschaft. Edge sealing for filter cloths. 4,212,746, Cl. 210-495.000.

Thoma, Peter: *See—*
Habermann, Wolfgang; Thoma, Peter; and Wintermantel, Klaus, 4,212,725, Cl. 204-290.00F.

Thomas Hill (Rotherham) Limited: *See—*
Burgess, William F., 4,212,250, Cl. 105-50.000.

Thomson-CSF: *See—*
Dubois, Jean-Claude; Nguyen, Huu Tinh; and Zann, Annie, 4,212,762, Cl. 252-299.000.
Hartemann, Pierre; and Torguet, Roger, 4,212,206, Cl. 73-606.000.

Thomson, Meredith C., to Stoelting, Inc. Apparatus for blending fluid and soft particulate food constituents. 4,212,547, Cl. 366-325.000.

Ti Fords Limited: *See—*
Poynton, Bertram G.; and Waite, Phillip S., 4,212,140, Cl. 53-289.000.

Tidd, Donald G.: *See—*
Sethi, Gurdip S.; Sperber, Karl; and Tidd, Donald G., 4,212,673, Cl. 430-496.000.

Tiefenbacher, Hubert; Kraus, Friedrich; and Matthias, Guenther, to BASF Aktiengesellschaft. Manufacture of pellets from feed meals. 4,212,890, Cl. 426-69.000.

Tiemann, Reinhard, to Continental Gummi-Werke Aktiengesellschaft. Vehicle wheel with annular emergency support. 4,212,338, Cl. 152-158.000.

Tieszen, Dale O., to Phillips Petroleum Company. Poly(arylene sulfide) resin coating. 4,212,922, Cl. 428-419.000.

TIF Instruments, Inc.: *See—*
Liebermann, Leonard N., 4,213,089, Cl. 324-115.000.

Tilby, Sydney E., to Intercane Systems, Inc. Apparatus for forming boards from plant fibers. 4,212,616, Cl. 425-256.000.

Ting, Vincent W.: *See—*
Evans, James M.; and Ting, Vincent W., 4,212,781, Cl. 260-29.4UA.

Titus, Paul E., to Shell Oil Company. Fragmented polymers as friction reducers in pipeline transportation of products. 4,212,312, Cl. 137-13.000.

Titzenthaler, Eckart: *See—*
Mross, Wolf D.; Titzenthaler, Eckart; Schwarzmann, Matthias; and Koopmann, Juergen, 4,212,772, Cl. 252-476.000.

Tkachev, Vasily D.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Tobias, John W.; and Taylor, Lynn J., to Owens-Illinois, Inc. Degradable plastic composition containing ortho ester. 4,212,955, Cl. 525-5.000.

Tobias, Michael A.: *See—*
Martinez, Carlos J.; and Tobias, Michael A., 4,212,776, Cl. 260-18.0EP.

Toda, Toshimasa: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.

Toder, Ilya A.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.

Toelke, Lester W.: *See—*
Lee, Harlan E.; and Toelke, Lester W., 4,212,240, Cl. 100-53.000.

Tokico Ltd.: *See—*
Saito, Tatsuoki; and Nagashima, Eiji, 4,212,096, Cl. 29-235.000.

Tokiwa, Taisuke: *See—*
Knechtel, Wilhelm; and Tokiwa, Taisuke, 4,212,264, Cl. 118-653.000.

Tokyo Electric Co., Ltd.: *See—*
Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,213,179, Cl. 364-405.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hidaka, Kazutaka, 4,213,133, Cl. 343-854.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Oguchi, Toshihiko; Saito, Ichiyoshi; Ueno, Tsuyoshi; and Kubo, Tsutomu, 4,212,837, Cl. 264-15.000.

Tolksdorf, Erich: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

Tolstykh, Valery A.: *See—*
Krylov, Nikolai I.; Toder, Ilya A.; Tolstykh, Valery A.; Tarabaev, Gennady I.; Makeev, Igor M.; Safarov, Georgy S.; Birjulev, Alexei V.; Bakanov, Anatoly I.; and Sofronov, Evgeny I., 4,212,504, Cl. 308-9.000.

Tomatis, Ange A. A., to Tomatis, Ange Alfred Auguste. Audio-vocal integrator apparatus. 4,212,119, Cl. 35-35.00C.

Tomatis, Ange Alfred Auguste: *See—*
Tomatis, Ange A. A., 4,212,119, Cl. 35-35.00C.

Tomeo, Inc.: *See—*
Qureshi, Azam S., 4,212,323, Cl. 137-625.610.

Tominaga, Shinji: *See—*
Yamada, Seiji; Tominaga, Shinji; Kogure, Yasuzi; and Imura, Toshinori, 4,212,523, Cl. 354-25.000.

Tomy Kogyo Co., Inc.: *See—*
Ikeda, Masaki, 4,212,412, Cl. 221-81.000.

Tondeur, Gerard: *See—*
Bessouat, Roger; Tondeur, Gerard; Talleu, Patrick; and Cerdan, Jean-Pierre, 4,212,658, Cl. 55-347.000.

Toppan Printing Co., Ltd.: *See—*
Yokokoji, Shyoji; and Hoshino, Kazuhisa, 4,212,299, Cl. 128-272.000.

Toray Industries, Inc.: *See—*
Tanaka, Minoru; Yagi, Kenkichi; and Mizuguchi, Shunji, 4,212,916, Cl. 428-290.000.
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhira, Seikichi, 4,212,990, Cl. 560-241.000.

Torev, Atanas K., to DSO "HRANMASH". Method for obtaining mycelium from the genus Polyporus. 4,212,947, Cl. 435-254.000.

Torguet, Roger: *See—*
Hartemann, Pierre; and Torguet, Roger, 4,212,206, Cl. 73-606.000.

Tos Hostivar, narodni podnik: *See—*
Mirsch, Miroslav; Rosberg, Frantisek; and Ruzicka, Miroslav, 4,212,135, Cl. 51-165.710.

Toshiba Kikai Kabushiki Kaisha: *See—*
Kikuchi, Tsuyoshi; and Takusagawa, Kiyoshi, 4,212,622, Cl. 425-444.000.

Tosswill, Christopher H.; and Beuscher, Clinton J., to Galileo Electro-Optics Corp. Method of fabricating a collimator for X and gamma radiation. 4,212,707, Cl. 204-26.000.

Townsend, Greg M., to Motorola, Inc. Load shedding timer for a power management system. 4,213,058, Cl. 307-40.000.

Toyo Jozo Kabushiki Kaisha: *See—*
Otani, Masaru; Satoi, Shuzo; and Takada, Masaki, 4,212,858, Cl. 424-118.000.

Toyo Kogyo Co., Ltd.: *See—*
Kaneda, Yoshihisa, 4,212,276, Cl. 123-516.000.

Toyo Seikan Kaisha Limited: *See—*
Katsura, Tadahiko, 4,212,956, Cl. 525-60.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,945, Cl. 435-212.000.
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,946, Cl. 435-212.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ando, Masamoto; Nomura, Yoshihisa; and Ohta, Takaaki, 4,212,500, Cl. 303-115.000.
Kawaguchi, Hiroshi, 4,212,367, Cl. 180-271.000.
Kawaguchi, Hiroshi, 4,212,498, Cl. 303-6.00C.

Mizuno, Toru; and Kitano, Masao, 4,212,472, Cl. 277-12.000.
Nagasaka, Yasumasa; Sekiyama, Kenichi; and Masuyama, Yasushi, 4,212,629, Cl. 432-10.000.
Nakanishi, Kiyoshi; and Okumura, Takeshi, 4,212,270, Cl. 123-41.090.
Nomura, Takao; Terasaka, Kunihiko; and Sakata, Isao, 4,212,954, Cl. 521-159.000.

Transformateurs BC and EFFA: *See—*
Rousseau, Alain; and Ramel, Francois, 4,212,200, Cl. 73-861.470.

Travis, Terence: *See—*
Finlay, David E.; Robbins, Wayne E.; and Travis, Terence, 4,213,190, Cl. 364-900.000.

Triest, Willard G.: *See—*
Jones, Walter L.; and Triest, Willard G., 4,212,487, Cl. 285-95.000.

Trio Kabushiki Kaisha: *See—*
Morinaga, Mitsuyoshi, 4,212,470, Cl. 274-37.000.
Morinaga, Mitsuyoshi; and Kishida, Yasuo, 4,212,490, Cl. 274-37.000.

Triplex Safety Glass Company Limited: *See—*
Brereton, Paul A.; and Challis, Roger, 4,212,662, Cl. 65-106.000.

Trompette, Jacques: *See—*
Policand, Gerard; Trompette, Jacques; and Bourrinet, Francis, 4,213,101, Cl. 331-78.000.

Trowse, Frank W.: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

Truly Magic Products, Inc.: *See—*
Kohler, Henry A., 4,212,556, Cl. 401-208.000.

TRW Inc.: *See—*
Dawson, John M., 4,213,043, Cl. 250-283.000.
Hodge, Malcolm H., 4,212,512, Cl. 350-96.150.

Tsibris, John C. M., to Board of Reagents, for and on behalf of the University of Florida. Method of coating supports using addition copolymers of aminimides. 4,212,905, Cl. 427-221.000.

Tsividis, Yannis, to Bell Telephone Laboratories, Incorporated. Semiconductor differential amplifier having feedback bias control for stabilization. 4,213,098, Cl. 330-253.000.

Tsujimura, Tozaburo, to Yasui Sangyo Co., Ltd. Swing-arm device for a vehicle lift. 4,212,449, Cl. 254-89.00H.

Tsuruda, Kunihiro: *See—*
Maki, Masao; Sano, Seiichi; Tsuruda, Kunihiro; and Kobayashi, Ikuo, 4,212,854, Cl. 423-247.000.

Tsykanov, Vladimir A.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Tunematu, Toyoaki; Takeno, Seiichi; Yamaguchi, Testuo; and Egawa, Muneharu, to Murata Manufacturing Co., Ltd. Tuning apparatus and method of producing the same. 4,213,106, Cl. 333-185.000.

Tunemoto, Daiei: *See—*
Kondo, Kiyosi; Tunemoto, Daiei; and Umemoto, Teruo, 4,212,984, Cl. 560-18.000.

Tupitsyn, Lev V.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.

Turbett, Robert J.: *See—*
Ashcraft, Arnold C.; Turbett, Robert J.; and Burke, Timothy R., 4,212,756, Cl. 252-63.200.

Turck, Ulrich, to Chemische Werke Huls A.G. Process for the preparation of copolymers useful as viscosity-raising agents. 4,212,785, Cl. 260-29.70H.

Turley, John W. Apparatus and method for determining the moment of inertia of golf clubs and like objects. 4,212,193, Cl. 73-65.000.

Tuttle, James N., to Lea Manufacturing Company. Protective and color receptive coating for aluminum. 4,212,685, Cl. 148-6.100.

Ty Miles, Inc.: *See—*
Fields, George C., 4,212,573, Cl. 409-251.000.

Tygard, Charles M.: *See—*
Alman, Donald W.; Gerwitz, Paul F.; and Tygard, Charles M., 4,213,112, Cl. 338-183.000.

Tyzack, Christopher: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.

UCC International Limited: *See—*
Hilton, Brian T.; and Staff, Paul, 4,212,739, Cl. 210-130.000.

Ueda, Ken, to Sakura Color Products Corporation. Compositions for solid writing materials and writing implements. 4,212,676, Cl. 106-19.000.

Ueda, Takeshi: *See—*
Koizumi, Kunihei; Otani, Tatu; Katata, Toshinobu; and Ueda, Takeshi, 4,212,706, Cl. 201-39.000.

Uedaira, Satoru; and Ito, Shigeyasu, to Sony Corporation. Method of manufacturing an amorphous alloy. 4,212,344, Cl. 164-87.000.

Ueno, Tsuyoshi: *See—*
Oguchi, Toshihiko; Saito, Ichiyoshi; Ueno, Tsuyoshi; and Kubo, Tsutomu, 4,212,837, Cl. 264-15.000.
Ueno, Yutaka: *See—*
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; Iwata, Syuzi; and Ohnishi, Ryoichi, 4,213,154, Cl. 358-260.000.
Uhl, Dieter: *See—*
Bauerlein, Rudolf; Uhl, Dieter; Diepers, Heinrich; and Jablonski, Karl-Heinz, 4,212,911, Cl. 428-131.000.
Umemoto, Teruo: *See—*
Kondo, Kiyosi; Tunemoto, Daiei; and Umemoto, Teruo, 4,212,984, Cl. 560-18.000.
Umetsu, Junji: *See—*
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Umnov, Mikhail P.: *See—*
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Union Carbide Corporation: *See—*
Arney, William C., Jr., 4,212,928, Cl. 428-514.000.
Ashcraft, Arnold C.; Turbett, Robert J.; and Burke, Timothy R., 4,212,756, Cl. 252-63.200.
Doherty, Edward J., III, 4,213,054, Cl. 250-505.000.
Hodakowski, Leonard E.; and Jenkinson, Richard D., 4,212,899, Cl. 427-44.000.
Kamp, Ewald A., 4,212,337, Cl. 150-3.000.
Murphy, Gerald J.; and Kanner, Bernard, 4,212,952, Cl. 521-112.000.
Union Siderurgique du Nord et de l'Est de la France: *See—*
Voituriez, Henry; and Aymard, Reni, 4,212,253, Cl. 110-182.500.
United Kindom Atomic Energy Authority: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.
U.S. Industries, Inc.: *See—*
White, Charles A.; and Williams, W. Ronald, 4,212,269, Cl. 119-17.000.
United States of America
Agriculture: *See—*
Friedman, Mendel, 4,212,800, Cl. 260-123.700.
Air Force: *See—*
Acker, Roy M.; and Lui, Kenneth, 4,213,004, Cl. 174-151.000.
Ascani, Leonard A., Jr.; Rickey, Burton C.; Riggs, Merle E.; and Shoemaker, Andrew R., 4,212,441, Cl. 244-46.000.
Cole, Lanier G., 4,213,127, Cl. 343-5.0CF.
Fraass, Ronald G.; and Tallon, Roger W., 4,213,045, Cl. 250-370.000.
Garbett, Matthew G., 4,213,168, Cl. 361-225.000.
Poirier, J. Leon, 4,213,123, Cl. 340-552.000.
Rotman, Walter; Karas, Nicholas V.; Fante, Ronald L.; and Franchi, Peter R., 4,213,122, Cl. 340-552.000.
Warren, Walter R., Jr.; Durran, Donald A.; and Spencer, Donald J., 4,213,102, Cl. 331-94.50G.
America: *See—*
Solomon, Barry A.; and Lysaght, Michael J., 4,212,742, Cl. 210-247.000.
Army: *See—*
Ethridge, Noel H., 4,212,191, Cl. 73-861.470.
Longinotti, David M., 4,213,128, Cl. 343-6.50R.
Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., 4,212,317, Cl. 137-565.000.
Patrick, E. Vincent; and Dickson, Howard K., 4,212,575, Cl. 414-8.000.
Pecori, Peter M., 4,213,093, Cl. 324-329.000.
Russel, William J.; and Garnis, Elizabeth A., 4,212,701, Cl. 156-665.000.
Stewart, Paul E., 4,212,227, Cl. 89-129.00B.
Energy: *See—*
Eissenberg, David M.; and Liu, Yin-An, 4,212,651, Cl. 44-1.0SR.
Fasching, George E., 4,213,184, Cl. 364-574.000.
Golob, John E.; Looney, Larry D.; Lyons, Peter B.; Nelson, Melvin A.; and Davies, Terence J., 4,212,537, Cl. 356-73.100.
Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., 4,212,929, Cl. 429-37.000.
Van Hagan, Thomas H.; and Tanner, David E., 4,212,351, Cl. 165-160.000.
Wright, Ralph R., 4,212,907, Cl. 427-309.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Beuyukian, Charles S.; Heisman, Robert M.; Haynie, Cyrus C.; and Ruppe, Emil P. Heat treat fixture and method of heat treating. 4,212,690, Cl. 148-131.000.
Humphrey, Marshall F., to California Institute of Technology. Raw liquid waste treatment process. 4,212,732, Cl. 210-32.000.
Johnson, John E., Jr.; and Swartz, Paul F. Micro-fluid exchange coupling apparatus. 4,212,297, Cl. 128-207.140.
Nagano, Satoshi. Redundant operation of counter modules. 4,213,064, Cl. 307-219.000.
Struthoff, Gustav L. Dual acting slit control mechanism. 4,213,051, Cl. 250-457.000.
National Aeronautics and Space Administration: *See—*
Bikle, Paul F.; and Montoya, Lawrence C., 4,212,199, Cl. 73-861.660.
Kaiser, Julius A., Jr., 4,213,131, Cl. 343-844.000.
Ludwig, Lawrence P., 4,212,477, Cl. 277-193.000.
Navy: *See—*
Brown, Craig K., 4,213,099, Cl. 330-297.000.
Eaton, Jefferson O.; and Lunt, Wilbur B., 4,212,246, Cl. 102-270.000.
Endicott, Donald L., Jr.; and Stachiw, Jerry D., 4,213,029, Cl. 219-209.000.
Labaw, Kenneth B.; Lowe, Gary; and Iverson, Myren L., 4,213,199, Cl. 367-117.000.
Mahaffey, Redge A.; Goldstein, Shyke A.; Golden, Jeffry; and Cooperstein, Gerald, 4,213,073, Cl. 313-310.000.
Padberg, Louis R., Jr.; Parker, Frederick D.; Schaniel, Carl L., Jr.; and Kleager, Kenneth D., 4,213,198, Cl. 367-113.000.
U.S. Philips Corporation: *See—*
Brockmann, Klaus-Dieter K.; and Dijkmans, Eise C., 4,213,016, Cl. 179-175.30R.
de Boer, Eeltje, 4,213,144, Cl. 358-12.000.
Keijser, Robertus A. J.; Wesselink, Gustaaf A.; Derksema, Bram J.; and Verhoeven, Johannes A. T., 4,213,100, Cl. 331-94.50D.
Meek, Gerrit J., 4,213,050, Cl. 250-445.00T.
Schrijvers, Joost E.; and Boers, Martinus W. A., 4,213,055, Cl. 250-483.000.
United States Steel Corporation: *See—*
Anspon, Harry D., 4,212,789, Cl. 260-33.6AQ.
Galer, Herbert W., 4,212,410, Cl. 220-324.000.
Nemeth, Edward J.; McGreal, Joseph E.; and Howell, John L., 4,212,851, Cl. 423-230.000.
United Technologies Corporation: *See—*
Cullen, Donald E.; and Wagner, Robert A., 4,213,104, Cl. 333-150.000.
Duvall, David S.; King, William H.; and Owczarski, William A., 4,213,026, Cl. 219-75.000.
Fradenburgh, Evan A., 4,212,588, Cl. 416-141.000.
Newirth, David M.; and Koenig, Eugene W., 4,212,161, Cl. 60-39.28R.
Universal Water Systems, Inc.: *See—*
Van Meter, Arch; and Gartner, William J., 4,212,743, Cl. 210-282.000.
University of Akron, The: *See—*
Chen, Chun-Fu, 4,213,134, Cl. 346-1.100.
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Myrick, James E.; and Hall, Leo M., 4,212,939, Cl. 435-19.000.
University of California, The Regents of the: *See—*
Moore, C. Bradley; Clark, John H.; Haas, Yehuda; and Houston, Paul L., 4,212,717, Cl. 204-158.00R.
Osada, Yoshihito; Bell, Alexis T.; and Shen, Mitchel M., 4,212,719, Cl. 204-165.000.
Winters, Harry K., 4,212,313, Cl. 137-39.000.
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Kao, David T.; and Wood, Don J., 4,212,566, Cl. 406-68.000.
UOP Inc.: *See—*
Antos, George J., 4,212,727, Cl. 208-111.000.
Antos, George J., 4,212,769, Cl. 252-441.000.
Halter, Mark A.; and Malloy, Thomas P., 4,212,710, Cl. 204-78.000.
Halter, Mark A.; and Malloy, Thomas P., 4,212,711, Cl. 204-78.000.
Hayes, John C.; and Pollitzer, Ernest L., 4,212,770, Cl. 252-441.000.
Upjohn Company, The: *See—*
Axen, Udo F., 4,212,986, Cl. 560-121.000.
Axen, Udo F., 4,212,987, Cl. 560-121.000.
Johnson, Roy A., 4,212,968, Cl. 542-426.000.
Lednicer, Daniel; and Szmuszkovicz, Jacob, 4,212,878, Cl. 424-274.000.
Magerlein, Barney J., 4,212,811, Cl. 260-343.30P.
Magerlein, Barney J., 4,212,985, Cl. 560-53.000.
Robert, Andre', 4,212,884, Cl. 424-285.000.
Szmuszkovicz, Jacob, 4,212,888, Cl. 424-324.000.
Upton, Thomas E., to Dresser Industries, Inc. Gripping member for well tools. 4,212,352, Cl. 166-206.000.
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Release device in a camera having a motor drive unit. 4,212,525, Cl. 354-173.000.
Urbinati, Mario, to Fiat Societa per Azichi. Device for the removal of particles of lead from the exhaust gases of an internal combustion engine. 4,212,657, Cl. 55-319.000.
Usui, Motohachi: *See—*
Shimizu, Senzo; Nomura, Isao; Usui, Motohachi; and Harada, Masahiro, 4,212,951, Cl. 528-495.000.
Utah State University Foundation: *See—*
Chadwick, Duane G., 4,212,593, Cl. 417-53.000.
Vacha, Fred P. Portable rust inhibitor applicator for a vehicle. 4,212,388, Cl. 206-230.000.
Vaessen, Dorotheus C. L., to Hollandse Signaalapparaten B.V. Monopulse radar apparatus. 4,213,130, Cl. 343-16.00M.
Vaessen, Dorotheus C. L.: *See—*
Mulder, Willem; Vaessen, Dorotheus C. L.; and De Lange, Nicolaas H., 4,213,126, Cl. 343-5.0SM.
Valenzona, Joseph F., to Orion Industries, Inc. Beverage drinking container. 4,212,408, Cl. 220-254.000.

Valtion Teknillinen Tutkimuskeskus: *See—*
Lunde, Liv; Asher, Raymond C.; Slattery, Gerard; Trowse, Frank W.; Tyzack, Christopher; Ostberg, Gustaf C.; and Tolksdorf, Erich, 4,212,686, Cl. 148-11.50F.
Van Auken, Thomas V.; Grubbs, Harvey J.; and Johnson, William R., Jr., to Philip Morris Incorporated. Unitary pack of smoking tobacco products containing polymeric alcohol flavorant-release compositions. 4,212,310, Cl. 131-17.00R.
Vance, Reginald W. Animal trap. 4,212,128, Cl. 43-81.000.
van der Burg, Sjirk; Grosch, Karl A.; and Bertrand, Marcel J. Radial tire with bead reinforcing elements. 4,212,340, Cl. 152-355.000.
Vandervell Products Limited: *See—*
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van Donk, Cornelis; and van Mullekom, Hubert P., to Ruti-Te Strake B.V., a Dutch Company. Reed baulk unit. 4,212,330, Cl. 139-435.000.
Van Hagan, Thomas H.; and Tanner, David E., to United States of America, Energy. Articulated module flow guide system. 4,212,351, Cl. 165-160.000.
Van Meter, Arch; and Gartner, William J., to Universal Water Systems, Inc. Filter. 4,212,743, Cl. 210-282.000.
van Mullekom, Hubert P.: *See—*
van Donk, Cornelis; and van Mullekom, Hubert P., 4,212,330, Cl. 139-435.000.
van Neerbos, Abraham; and van Oosterhout, Adrianus C. J., to Akzo N.V. Method for treating a substrate with a radiation and chemically curable coating composition. 4,212,901, Cl. 427-53.100.
van Oosterhout, Adrianus C. J.: *See—*
van Neerbos, Abraham; and van Oosterhout, Adrianus C. J., 4,212,901, Cl. 427-53.100.
van Velthoven, Armand J.: *See—*
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Kneip, George D., Jr., 4,213,092, Cl. 324-319.000.
Varta Batterie Aktiengesellschaft: *See—*
Salamon, Klaus, 4,212,934, Cl. 429-181.000.
Vasiliev, Sergei V.: *See—*
Ponomareva, Leonty T.; Ponomareva, Nina V.; Vasiliev, Sergei V.; Maximikhina, Olga V.; Golopolosova, Nina M.; and Belkina, Ljudmila I., 4,212,914, Cl. 428-268.000.
VDO Adolf Schindling AG.: *See—*
Schlick, Horst, 4,212,425, Cl. 239-133.000.
VEB Kombinat Fortschritt: *See—*
Eistert, Theodor, 4,212,146, Cl. 56-98.000.
Veba-Chemie Atkiengesellschaft: *See—*
Schmitt, Karl; Disteldorf, Josef; and Schmitt, Felix, 4,212,962, Cl. 528-45.000.
Veeck, Stewart J.; Freeman, William R.; and Dardi, Louis E., to Howmet Turbine Components Corporation. Method for the production of precision shapes. 4,212,669, Cl. 75-226.000.
Veeder Industries Inc.: *See—*
Fleischer, Donald W.; and Asmundsson, Einar, 4,213,037, Cl. 235-92.00B.
Veith, Werner; and Stein, Christian, to Siemens Aktiengesellschaft. Gas discharge display device including web shaped spacing elements. 4,213,072, Cl. 313-217.000.
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Verhoeven, Johannes A. T.: *See—*
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Vesperman, William C.: *See—*
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Vianova Kunstharz, A.G.: *See—*
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Virtis Company, Inc., The: *See—*
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Vishkarev, Oleg M.: *See—*
Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I., 4,212,668, Cl. 75-125.000.
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Voest-Alpine Aktiengesellschaft: *See—*
Laimer, Friedrich; and Herrmann, Herbert, 4,212,453, Cl. 266-158.000.
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Voituriez, Henry; and Aymard, Reni, to Union Siderurgique du Nord et de l'Est de la France. Support device for a blast downpipe of a blast-furnace. 4,212,253, Cl. 110-182.500.
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Volkswagenwerk Aktiengesellschaft: *See—*
Otto, Heinz; Hoppmann, Helmut; and Henning, Bodo, 4,212,600, Cl. 417-360.000.
Vollbrecht, Rolf; and Ostertag, Karl, to Akzona Incorporated. Mat material of melt-spun polymeric filaments having discontinuous cavities. 4,212,915, Cl. 428-288.000.
Vollbrecht, Rolf: *See—*
Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, 4,212,692, Cl. 156-167.000.
Volmer, Dieter; Schwind, Juergen; Kolk, Erich; and Frielingsdorf, Hans, to BASF Aktiengesellschaft. Apparatus for carrying out polymerizations from the gas phase. 4,212,847, Cl. 422-135.000.
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von Buenau, Heinrich, to Siemens Aktiengesellschaft. System for build-up and reproduction of ultrasonic images on reproduction media. 4,213,147, Cl. 358-112.000.
von Kaler, Roland L.; and Jolliff, Norman E., to Tecumseh Products Company. Multi-speed transmission with H-pattern shift. 4,212,210, Cl. 74-375.000.
Vonscot Industries: *See—*
Stertzbach, Glenn A., 4,212,136, Cl. 51-204.000.
Vorobeichikov, Leonid T.; Fedoryakin, Boris F.; Panchenko, Grigory K.; Gorbanev, Grigory N.; Bevz, Anatoly N.; and Satarin, Vladimir I. Apparatus for removing heat from cylinders of the rotary kiln recuperator cooler. 4,212,630, Cl. 432-80.000.
Voropaev, Albert A.: *See—*
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Voss, Richard E.: *See—*
Brandt, Ivan L.; von Alten, Theodor; Voss, Richard E.; and Denes, Oscar L., 4,213,113, Cl. 338-309.000.
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Peditto, Andrea; Fossati, Franco; Petrillo, Vincenzo; Peri, Paolo; Ivanova, Ielena A.; Levin, Aleksandr I.; Fufaiev, Aleksandr A.; and Shkolnikov, Vicktor M., 4,212,752, Cl. 252-42.700.
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Bykhovsky, David G.; and Voropaev, Albert A., 4,213,027, Cl. 219-75.000.
Vu-Do, Que, to Renault Industries Equipments et Techniques-Riet. Gear teeth rotary-shaving or roll-finishing machine. 4,212,572, Cl. 409-37.000.
Vulcan Equipment Company Limited: *See—*
Bubik, Leslie, 4,212,374, Cl. 187-8.430.
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Wagner, David A., to Research-Cottrell, Inc. Drag conveyor and hopper assembly. 4,212,383, Cl. 198-616.000.
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Waldmann, Helmut: *See—*
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Walker, John H., to Dempster Industries, Inc. Hydraulic power and control system for granular fertilizer spreaders. 4,212,428, Cl. 239-677.000.
Walker, June F. Playhouse with elements based on two modular units. 4,212,130, Cl. 46-12.000.
Walker, Randall B., to Bobrick Corporation, The. Theft deterrent toilet roll spindles. 4,212,434, Cl. 242-55.200.
Wallin, Hans-Henrik B.; and Ericsson, Eric R., to Morgardshammar Aktiebolag. Drive device without transmission for producing an elliptical shaking movement. 4,212,731, Cl. 209-366.500.
Wallis, Roger G.: *See—*
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Walter J. Best Company, The: *See—*
Wikoff, Mark W., 4,212,104, Cl. 30-380.000.

Walz, Alfred. Constant-current transformer for gas-discharge tubes. 4,213,076, Cl. 315-282.000.
Warchol, Henry A. Bearing components and methods of making same. 4,212,095, Cl. 29-148.40C.
Ward, Ernest M.; Ward, Steven M.; and Dils, Michael A., to Energy Optics, Inc. Remote meter reading system providing demand readings and load control from conventional KWH meters. 4,213,119, Cl. 340-151.000.
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Ward, Ernest M.; Ward, Steven M.; and Dils, Michael A., 4,213,119, Cl. 340-151.000.
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Baker, David C., 4,212,941, Cl. 435-92.000.
Butler, Donald E., 4,212,980, Cl. 546-288.000.
Warnken, Warren L. Solar collector. 4,212,290, Cl. 126-438.000.
Warren, Walter R., Jr.; Durran, Donald A.; and Spencer, Donald J., to United States of America, Air Force. Fluorine generator for chemical lasers. 4,213,102, Cl. 331-94.50G.
Wartusch, Johann, and Fasbender, Helmut, to Licentia Patent-Verwaltungs-G.m.b.H.; and AEG Isolier- und Kunststoff GmbH. Adhesion imparting layer of acrylonitrile-butadiene copolymer on a base material for printed circuits. 4,212,912, Cl. 428-209.000.
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Washizuka, Isamu; and Kakutani, Nobuyasu, to Sharp Kabushiki Kaisha. Electronic combined protractor and calculator capable of measuring length and angle of an object. 4,213,035, Cl. 235-92.0DN.
Watabe, Keiichi, to Shimizu Construction Co., Ltd., The. Method and apparatus for forming a continuous row of cast-in-place piles to form a wall. 4,212,565, Cl. 405-269.000.
Watanabe, Junko: *See—*
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Watanabe, Masanobu, to Hitachi, Ltd. High voltage protection circuit. 4,213,166, Cl. 361-86.000.
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Satoh, Kenji; Tachikawa, Hajime; and Watanabe, Mitsuru, 4,213,023, Cl. 219-10.55B.
Watanabe, Shizuhisa, to Hitachi, Ltd. Display system having voltage comparator circuit. 4,213,125, Cl. 340-753.000.
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Watson, Allan: *See—*
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Watson, George A.: *See—*
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Webb, Victor A.; Wells, Arthur D.; Clarke, Geoffrey C.; and Peecock, Charles P. R., to Rolls-Royce Limited. Marine vessel noise attenuating structure. 4,212,259, Cl. 115-73.000.
Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, to Schering Aktiengesellschaft. Process for the preparation of 21-hydroxy-20-methylpregnane derivatives. 4,212,940, Cl. 435-55.000.
Weber, Robert E.: *See—*
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Weidler, Jay B.; Gracia, Bert E.; and Hull, Tommy L., to Brown & Root, Inc. Rupturable closure plug for offshore structures. 4,212,563, Cl. 405-195.000.
Weidlich, Dieter H.; and Bruckner, Willy, to Camloc Fastener GmbH. Device used in fixing with a casting material a sleeve insert having a terminal flange. 4,212,610, Cl. 425-110.000.
Weinreb, Robert. Convertible bag. 4,212,377, Cl. 190-52.000.
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Welge, Frederick T.: *See—*
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Wentzel, William C., to Fuller Company. Apparatus for preheating solid particulate material. 4,212,114, Cl. 34-167.000.
Wermeister, Gunter, to Sandvik Aktiebolag. Mounting element for a reversible tool tip or the like. 4,212,567, Cl. 407-46.000.
Werner, Anton, to Kuhn S.A. Fodder mower-conditioner. 4,212,147, Cl. 56-228.000.
Werner, Wolfgang; and Rittersdorf, Walter, to Boehringer Mannheim GmbH. Rapid diagnostic composition for the determination of uric acid in body fluids. 4,212,844, Cl. 422-56.000.
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Western Electric Company, Inc.: *See—*
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Gemp, Robert S., 4,213,191, Cl. 365-73.000.
Keever, Joseph M.; and Lipscomb, George W., 4,213,090, Cl. 324-138.000.
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Wicki, Heinz: *See—*
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Wiesner, Charles J. Process for preparing insect pheromones. 4,212,830, Cl. 568-486.000.
Wikoff, Mark W., to Walter J. Best Company, The; and Wolf Machine Company, The. Blade guide roller assembly for a band saw. 4,212,104, Cl. 30-380.000.
Wildman, John R.; and Meyer, Burton C. Game apparatus. 4,212,466, Cl. 273-121.00R.
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Williams, Ronald S.; and Hill, Robert S., to Arvin Industries. Method of making tube-to-plate connection. 4,212,099, Cl. 29-507.000.
Williams, W. Ronald: *See—*
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Willis, Kenneth L. Can crushing device. 4,212,242, Cl. 100-233.000.
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Wilson, Max K.: *See—*
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Windmoller & Holscher: *See—*
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Winkler, Otto, to Oerlikon Buhrle USA Incorporated. Cryopump. 4,212,170, Cl. 62-55.500.
Wintermantel, Klaus: *See—*
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Winters, Harry K., to University of California, The Regents of the. Shock shutoff valve. 4,212,313, Cl. 137-39.000.
Wipkink, Johannes, to Ingenieursbureau Marcon (Marine Consultants) B.V. Marine structure connecting structures at different levels. 4,212,561, Cl. 405-195.000.
Wisbrock, Kenneth R. Posthole digging apparatus. 4,212,358, Cl. 173-27.000.
Wise, Layton A., to Mine Safety Appliances Company. Breathing apparatus chemical canister with dust seal. 4,212,846, Cl. 422-122.000.

Wisner, Daniel A.; and Schmalzriedt, Truman T., to Burroughs Corporation. Voltage regulator. 4,213,082, Cl. 323-17.000.
Wissner, Allan, to American Cyanamid Company. 1-Hydroxymethyl-1-oxo-prostane derivatives of the A_2 series. 4,212,969, Cl. 542-429.000.
Wittwer, Arnold: *See—*
Nissen, Axel; Heilen, Gerd; Sapper, Ekkehard; Fliege, Werner; and Wittwer, Arnold, 4,212,825, Cl. 568-313.000.
Wohlers, Martin R.: *See—*
Kopp, Richard E.; Lisa, Joseph; Mendelsohn, Jay; Pernick, Benjamin J.; Stone, Harvey; and Wohlers, Martin R., 4,213,036, Cl. 235-92.0PC.
Wolf, Arend. Electric heating device for vehicle windows. 4,213,028, Cl. 219-203.000.
Wolf Machine Company, The: *See—*
Wikoff, Mark W., 4,212,104, Cl. 30-380.000.
Wolf, Ottmar: *See—*
Franke, Walter; and Wolf, Ottmar, 4,212,631, Cl. 432-60.000.
Wolf, Paulus W., to Singer Company, The. Sewing machine treadle with a variable length control linkage. 4,212,255, Cl. 112-217.100.
Wolf, Richard: *See—*
Dreher, Ernst; Wolf, Richard; and Burklin, Max, 4,212,370, Cl. 181-230.000.
Wolf, Tobin. Racing game. 4,212,459, Cl. 273-1.00E.
Wolfelsperger, Robert O.; and Pasco, William R., to American Can Company. Web severing device and process for severing a web. 4,212,213, Cl. 83-56.000.
Wolinski, Leon E.; and Berezuk, Peter D., to Pratt & Lambert, Inc. Non toxic activators for adhesive compositions. 4,212,921, Cl. 428-414.000.
Wood, Don J.: *See—*
Kao, David T.; and Wood, Don J., 4,212,566, Cl. 406-68.000.
Wood, Robert G.: *See—*
Gagnier, Real; Munter, Ernst A.; Bourne, John B.; Cesaratto, Ceasar; Lewis, Conrad W.; Paley, Brian T.; Wood, Robert G.; and den Otter, John J., 4,213,201, Cl. 370-62.000.
Wood, Wilhelm A. H., to Raytheon Company. Poly-phase modulation systems. 4,213,094, Cl. 370-12.000.
Work, William J.: *See—*
Avery, Noyes L.; and Work, William J., 4,212,791, Cl. 260-40.00R.
Woron, Robert P., to Allen Organ Company. Method and apparatus for note attack and decay in an electronic musical instrument. 4,212,221, Cl. 84-1.260.
Wright, Ralph R., to United States of America, Energy. Pre-treatment for molybdenum or molybdenum-rich alloy articles to be plated. 4,212,907, Cl. 427-309.000.
Wrobel, Joseph J.: *See—*
Drexhage, Karl H.; and Wrobel, Joseph J., 4,212,519, Cl. 350-362.000.
Wu, Shy-Hsien, to Corning Glass Works. Method of forming thin thermoplastic elements of complex curvature. 4,212,836, Cl. 264-1.000.
Wulf, Gunther, to Hermann Waldner KG. Shut-off valve. 4,212,448, Cl. 251-184.000.
Wurst, Bert: *See—*
Fresow, Jurgen; and Wurst, Bert, 4,212,280, Cl. 123-611.000.
Xerox Corporation: *See—*
DeBenedictis, Leonard C.; and Starkweather, Gary K., 4,213,157, Cl. 358-293.000.
DeBenedictis, Leonard C., 4,213,158, Cl. 358-296.000.
Guenther, Joachim, 4,212,457, Cl. 271-288.000.
Yachnik, Viktor J.: *See—*
Shashkina, Valentina G.; Neimane, Gunta Y.; Belkevich, Petr I.; Kaganovich, Fanya L.; Dolidovich, Elena F.; Sheremet, Ljudmila S.; and Yachnik, Viktor J., 4,212,758, Cl. 252-119.000.
Yagi, Kenkichi: *See—*
Tanaka, Minoru; Yagi, Kenkichi; and Mizuguchi, Shunji, 4,212,916, Cl. 428-290.000.
Yagi, Norio: *See—*
Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,213,179, Cl. 364-405.000.
Yahagi, Tateo: *See—*
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.
Yamada, Hiromi: *See—*
Yamamoto, Osamu; Matsumoto, Yoshiki; Yamada, Hiromi; and Takehara, Keishin, 4,212,697, Cl. 427-389.800.
Yamada, Seiji; Tominaga, Shinji; Kogure, Yasuzi; and Imura, Toshinori, to Minolta Camera Kabushiki Kaisha. Auto-focus camera having rangefinder system. 4,212,523, Cl. 354-25.000.
Yamada, Syozo: *See—*
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,212,874, Cl. 424-272.000.
Yamaguchi, Hachiro, to Wakunaga Yakuhin Kabushiki Kaisha. Process for producing cysteamines and/or cystamines. 4,212,826, Cl. 260-583.0EE.
Yamaguchi, Makoto: *See—*
Satou, Osahiro; Yamaguchi, Makoto; and Hasegawa, Mikio, 4,212,798, Cl. 260-123.500.
Yamaguchi, Testuo: *See—*
Tunematu, Toyoaki; Takeno, Seiichi; Yamaguchi, Testuo; and Egawa, Muneharu, 4,213,106, Cl. 333-185.000.
Yamamori, Eiji: *See—*
Urano, Fumio; Arai, Akihiro; Kobayashi, Takumi; Yamamori, Eiji; and Umetsu, Junji, 4,212,525, Cl. 354-173.000.
Yamamoto, Megumi, to Bridgestone Tire Company Limited. Wear resistant rubber hose. 4,212,328, Cl. 138-138.000.
Yamamoto, Osamu; Matsumoto, Yoshiki; Yamada, Hiromi; and Takehara, Keishin, to Nitto Boseki Co., Ltd. Process for producing glass fiber-reinforced resin molded sheets. 4,212,697, Cl. 427-389.800.
Yamazaki, Yasuo; and Kimura, Kazuo, to Minolta Camera Kabushiki Kaisha. Viewfinder for single lens reflex camera. 4,212,526, Cl. 354-225.000.
Yamazoe, Hiroshi: *See—*
Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, 4,212,838, Cl. 264-25.000.
Yasuhara, Yutaka; Nishino, Masaki; and Matsuhira, Seikichi, to Toray Industries, Inc. Method for producing cyclohexane derivatives directly from aromatic hydrocarbons. 4,212,990, Cl. 560-241.000.
Yasui Sangyo Co., Ltd.: *See—*
Tsujimura, Tozaburo, 4,212,449, Cl. 254-89.00H.
Yazawa, Chihiro: *See—*
Nakayama, Yoshiki; Hirao, Kazushige; and Yazawa, Chihiro, 4,212,831, Cl. 568-17.000.
Yokokoji, Shyoji; and Hoshino, Kazuhisa, to Toppan Printing Co., Ltd. Container bag. 4,212,299, Cl. 128-272.000.
Yoneda, Singo: *See—*
Miyazaki, Yukio; Shibata, Akira; Yahagi, Tateo; Hara, Masayuki; Hara, Kaoru; Yoneda, Singo; Kasahara, Hiroko; and Nakamura, Yuko, 4,212,942, Cl. 435-119.000.
Yoshida, Isao: *See—*
Okabe, Takeaki; Yoshida, Isao; Katsueda, Mineo; Ito, Hidefumi; Furumi, Masatomo; and Ochi, Shikayuki, 4,213,140, Cl. 357-41.000.
Yoshimoto, Koichi. Roller skate. 4,212,479, Cl. 280-11.280.
Yoshioka, Takao: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 4,212,974, Cl. 546-19.000.
Young, David W.; and Cherry, Donald G. Acidic hydrocarbon-in-water emulsions. 4,212,759, Cl. 252-119.000.
Young, John E. G., to General Signal Corporation. Variable delivery pump control system. 4,212,164, Cl. 60-452.000.
Young, Michael R. System to measure fuel consumption of a vehicle. 4,212,195, Cl. 73-114.000.
Young, Prussin, MGK, J.V., The: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,212,897, Cl. 427-2.000.
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V., The. Adherent controlled release pesticides using organopolysiloxanes. 4,212,897, Cl. 427-2.000.
Yukimasa, Tatsuaki: *See—*
Kawabata, Hideo; and Yukimasa, Tatsuaki, 4,212,476, Cl. 277-134.000.
Yukinaga, Hisajiro; Sumimoto, Shinzaburo; Ishizuka, Ichiro; and Sugita, Jitsuo, to Shionogi & Co., Ltd. Process for preparing 3-isoxazolylurea derivatives. 4,212,981, Cl. 548-246.000.
(Zaidanhojin) Sagami Chemical Research Center: *See—*
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,945, Cl. 435-212.000.
Nonaka, Yuji; Oyama, Kiyotaka; and Satoh, Heijiro, 4,212,946, Cl. 435-212.000.
Zaikina, Eleonora I.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.
Zainulin, Jury G.: *See—*
Shveikin, Gennady P.; Ljubimov, Vladislav D.; Mitrofanov, Boris V.; Privalov, Vladimir A.; Plaxin, Evgeny K.; Elinson, Dmitry S.; Alyamovsky, Stanislav I.; Zainulin, Jury G.; and Makarov, Sergei P., 4,212,670, Cl. 75-233.000.
Zakow, Gilbert, to Componentry Research & Development Enterprises, Inc. Cable lock for portable property. 4,212,175, Cl. 70-58.000.
Zann, Annie: *See—*
Dubois, Jean-Claude; Nguyen, Huu Tinh; and Zann, Annie, 4,212,762, Cl. 252-299.000.
Zecher, Wilfried: *See—*
Lewalter, Jurgen; Merten, Rudolf; Zecher, Wilfried; and Dunwald, Willi, 4,212,982, Cl. 548-313.000.
Zeigler, Bert A.: *See—*
Zeigler, Michael R.; Zeigler, Robert P.; and Zeigler, Bert A., 4,212,403, Cl. 211-119.000.
Zeigler, Michael R.; Zeigler, Robert P.; and Zeigler, Bert A. Drapery hanger. 4,212,403, Cl. 211-119.000.
Zeigler, Robert P.: *See—*
Zeigler, Michael R.; Zeigler, Robert P.; and Zeigler, Bert A., 4,212,403, Cl. 211-119.000.
Zeilinger, Karl, to Daimler-Benz Aktiengesellschaft. Sound-absorbing covering, especially radiator covering for motor vehicles. 4,212,369, Cl. 181-224.000.
Zenith Radio Corporation: *See—*
Lopez, Hugo A., 4,212,902, Cl. 427-64.000.
Zeunen, Barthel. Photographic exposure apparatus. 4,212,533, Cl. 355-91.000.

Zhemchuzhin, Sergei G.: *See—*
Bliznjuk, Nikolai K.; Protasova, Ljudmila D.; Klimova, Tatyana A.; Klopkova, Rimma S.; Tkachev, Vasily D.; Granin, Evgeny F.; Umnov, Mikhail P.; Streltsov, Rev V.; Klimov, Oleg V.; Zhemchuzhin, Sergei G.; Bulankin, Rudolf P.; Chernyshev, Valery P.; Safina, Fialka G.; Terekhova, Alla I.; Zaikina, Eleonora I.; Bliznjuk, Alexandr N.; Rusakova, Valentina A.; Ivanchenko, Julia N.; Svistunova, Natalya S.; Promonenkov, Viktor K.; Chudov, Lev N., deceased; Chudova, Ljudmila A., administrator; and Chudov, Vladimir L., administrator, 4,212,862, Cl. 424-212.000.

Zhinkin, Dmitry Y.: *See—*
Khmelev, Jury G.; Kim, Gennady P.; Zhinkin, Dmitry Y.; and Kleschevnikova, Solomanida I., 4,212,677, Cl. 106-38.350.

Zhivotchenko, Alexandr D.: *See—*
Dubinin, Georgy N.; Rybkin, Vladimir F.; Petrova, Mira P.; Avrukh, Elizaveta L.; Khramtsov, Viktor V.; Zhivotchenko, Alexandr D.; and Kuznetsov, Viktor F., 4,212,904, Cl. 427-127.000.

Zilges, Franz-Josef: *See—*
Steyvers, Weinfried; and Zilges, Franz-Josef, 4,212,182, Cl. 72-253.00A.

Zirps, Wilhelm, to Robert Bosch GmbH. Hydraulic control arrangement. 4,212,165, Cl. 60-486.000.

Zodrow, Rudolf: *See—*
Buchholz, Rainer; Zodrow, Rudolf; and Lohse, Reinhard, 4,212,700, Cl. 156-568.000.

Zoino, Hugo A. Conical clutch. 4,212,379, Cl. 192-66.000.

Zorev, Nikolai N.; Tsykanov, Vladimir A.; Gorynin, Igor V.; Tupitsyn, Lev V.; Fedortsov-Lutikov, Georgy P.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Loboda, Alexandr S.; Kalugina, Iraida I.; Kobelev, Nikolai N.; Krasinsky, Valentin V.; Litvak, Valery A.; Davydov, Evgeny F.; Shamardin, Valentin K.; Balandin, Jury F.; Nikolaev, Vladimir A.; Sobolev, Jury V.; Parshin, Anatoly M.; and Badanin, Vladimir I. Steel for atomic reactor vessels. 4,212,668, Cl. 75-125.000.

Zumbahlen, Vincent J. Tiller planter with modified seed bed finishing implement. 4,212,254, Cl. 111-52.000.

Zylstra, Henry J.; and Jansen, Harley W., to Square D Company. Circuit breaker having an electronic fault sensing and trip initiating unit. 4,213,165, Cl. 361-94.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Argus Chemical Corporation: *See—*
Kauder, Otto S., Re. 30,338, Cl. 260-23.0XA.

Caterpillar Tractor Co.: *See—*
Gordon, Phillip B., Jr.; and Hunt, Keats E., Re. 30,333, Cl. 60-605.000.

Cincinnati Milacron Inc.: *See—*
Johansson, Oskar R., Re. 30,335, Cl. 425-548.000.

Coles, Carl R., to Zero-Seal, Inc. Pressure compensated hermetically sealed transmission system. Re. 30,334, Cl. 74-18.100.

Connor, David T.; and von Strandtmann, Maximilian, to Warner-Lambert Company. Conversion of acid S, produced by the organism *Polyangium cellulosum* var. *fulvum* into acid F. Re. 30,339, Cl. 542-430.000.

Frank, Robert I.: *See—*
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., Re. 30,336, Cl. 136-89.0PC.

Goodrich, Joel L.: *See—*
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., Re. 30,336, Cl. 136-89.0PC.

Gordon, Phillip B., Jr.; and Hunt, Keats E., to Caterpillar Tractor Co. Ebullient cooled turbocharger bearing housing. Re. 30,333, Cl. 60-605.000.

Hunt, Keats E.: *See—*
Gordon, Phillip B., Jr.; and Hunt, Keats E., Re. 30,333, Cl. 60-605.000.

Johansson, Oskar R., to Cincinnati Milacron Inc. Nozzle shut-off device. Re. 30,335, Cl. 425-548.000.

Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., to Massachusetts Institute of Technology. Solar-cell array. Re. 30,336, Cl. 136-89.0PC.

Kauder, Otto S., to Argus Chemical Corporation. Organotin stabilizer composition containing more than 20 percent tin and resin compositions containing the same. Re. 30,338, Cl. 260-23.0XA.

Loudas, Basil L., to Minnesota Mining and Manufacturing Company. Textile treatment composition. Re. 30,337, Cl. 252-8.750.

Massachusetts Institute of Technology: *See—*
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel L., Re. 30,336, Cl. 136-89.0PC.

Minnesota Mining and Manufacturing Company: *See—*
Loudas, Basil L., Re. 30,337, Cl. 252-8.750.

von Strandtmann, Maximilian: *See—*
Connor, David T.; and von Strandtmann, Maximilian, Re. 30,339, Cl. 542-430.000.

Wallshein, Melvin. Multi-stranded coiled orthodontic arch wire. Re. 30,332, Cl. 433-20.000.

Warner-Lambert Company: *See—*
Connor, David T.; and von Strandtmann, Maximilian, Re. 30,339, Cl. 542-430.000.

Zero-Seal, Inc.: *See—*
Coles, Carl R., Re. 30,334, Cl. 74-18.100.

LIST OF PLANT PATENTEES

Bailey, Catherine H.; and Hough, L. Fredric, to Stark Brothers Nurseries & Orchards Company. Peach cultivar. 4,572, 7-15-80, Cl. 43.000.

Chakerian, Jonathan P.; and Surabian, Dennis G., to Surabian Brothers. Nectarine tree. 4,570, 7-15-80, Cl. 41.000.

Driscoll Strawberry Associates, Inc.: *See—*
Johnson, Harold A., Jr., 4,573, Cl. 48.000.
Johnson, Harold A., Jr., 4,574, Cl. 48.000.

Hough, L. Fredric: *See—*
Bailey, Catherine H.; and Hough, L. Fredric, 4,572, Cl. 43.000.

Johnson, Harold A., Jr., to Driscoll Strawberry Associates, Inc. Strawberry plant. 4,573, 7-15-80, Cl. 48.000.

Johnson, Harold A., Jr., to Driscoll Strawberry Associates, Inc. Strawberry plant. 4,574, 7-15-80, Cl. 48.000.

Krieger, Larry A., to Stark Brothers Nurseries & Orchards Company. Rhubarb plant - K-1 variety. 4,575, 7-15-80, Cl. 89.000.

Stark Brothers Nurseries & Orchards Company: *See—*
Bailey, Catherine H.; and Hough, L. Fredric, 4,572, Cl. 43.000.
Krieger, Larry A., 4,575, Cl. 89.000.

Surabian Brothers: *See—*
Chakerian, Jonathan P.; and Surabian, Dennis G., 4,570, Cl. 41.000.

Surabian, Dennis G.: *See—*
Chakerian, Jonathan P.; and Surabian, Dennis G., 4,570, Cl. 41.000.

Zaiger, Chris F. Peach tree. 4,571, 7-15-80, Cl. 43.000.

LIST OF DESIGN PATENTEES

A.P.T. Electronics Limited: *See—*
Price, Peter J., 255,879, Cl. D10-65.000.

Abbott Laboratories: *See—*
Chittenden, Richard M., 255,934, Cl. D24-54.000.

Airwick Industries, Inc.: *See—*
Hoyt, Earl, 255,928, Cl. D23-150.000.

American Hospital Supply Corporation: *See—*
Nilles, John D.; and Stankiewicz, Stanley L., 255,930, Cl. D24-12.000.

American Safety Razor Company: *See—*
Iten, Clemens A., 255,867, Cl. D8-98.000.

Ammondson, Clayton J.: *See—*
Hartman, Robert G.; and Ammondson, Clayton J., 255,865, Cl. D7-194.000.

Andrews, Donna M. Plastic pierced earring or similar article. 255,885, 7-15-80, Cl. D11-43.000.

Antonell, Frank R. Sprinkler head. 255,920, 7-15-80, Cl. D23-34.000.

Applegate, Leslie T., to Surgical Appliance Industries, Inc. Leg exerciser. 255,915, 7-15-80, Cl. D21-191.000.

Ashton, Harold P., to Dart Industries Inc. Cup or the like. 255,858, 7-15-80, Cl. D7-9.000.

Astrosystems, Inc.: *See—*
Barth, Seymour, 255,896, Cl. D13-99.000.

Atienza, Alexander C. Retractable measuring tape with finger guard. 255,881, 7-15-80, Cl. D10-72.000.

Atkins, Harry D. Loose-fill packing element. 255,875, 7-15-80, Cl. D9-294.000.

Austin, George K., Jr. Improved dental handpiece. 255,929, 7-15-80, Cl. D24-10.000.

Barth, Seymour, to Astrosystems, Inc. Electromagnetic transducer. 255,896, 7-15-80, Cl. D13-99.000.

Baxter Travenol Laboratories, Inc.: *See—*
Cullis, Herbert M.; and Brown, Richard I., 255,935, Cl. D24-58.000.
Cullis, Herbert M.; and Brown, Richard I., 255,936, Cl. D24-58.000.
Shine, Dennis F.; and Torau, Gunther W., 255,872, Cl. D9-169.000.

Beale, Allan A.; and LaVance, Cecil, to Motorola, Inc. Course error and distance indicator or similar article. 255,880, 7-15-80, Cl. D10-67.000.

Bennett, Burton K. Air-operated cleaner. 255,864, 7-15-80, Cl. D7-164.000.

Bergman, Michael D. Multi-level chessboard. 255,910, 7-15-80, Cl. D21-23.000.

Berkowitz, Irving L.; and Bourgeois, John J., to Kason Industries, Inc. Hinge design. 255,868, 7-15-80, Cl. D8-323.000.

Bick, Michael A., to Shelly & Anderson Furniture Mfg. Co., Inc. Chair. 255,846, 7-15-80, Cl. D6-71.000.

Bidwell, Robert E.: *See—*
Kurtz, Leonard D.; and Bidwell, Robert E., 255,937, Cl. D24-59.000.

Bourgeois, John J.: *See—*
Berkowitz, Irving L.; and Bourgeois, John J., 255,868, Cl. D8-323.000.
Braun Aktiengesellschaft: *See—*
Lubs, Dietrich, 255,876, Cl. D10-26.000.
Brown, Richard I.: *See—*
Cullis, Herbert M.; and Brown, Richard I., 255,935, Cl. D24-58.000.
Cullis, Herbert M.; and Brown, Richard I., 255,936, Cl. D24-58.000.
Bunger, Richard E.; and Hancock, Roy J., to Corral Industries, Inc. Interlocking flume platform panel for animal confinement pens. 255,947, 7-15-80, Cl. D30-2.000.
Cable, H. Edward, to Weld Tooling Corporation. Guide rail. 255,903, 7-15-80, Cl. D15-139.000.
Chapman, Milo G.; and Christie, David E., to Dura-Craft, Inc. Dollhouse. 255,912, 7-15-80, Cl. D21-114.000.
Chittenden, Richard M., to Abbott Laboratories. Unidirectional catheter placement unit, or the like. 255,934, 7-15-80, Cl. D24-54.000.
Christie, David E.: *See—*
Chapman, Milo G.; and Christie, David E., 255,912, Cl. D21-114.000.
Clairol Incorporated: *See—*
MacGregor, Francis W., 255,945, Cl. D28-67.000.
Corral Industries, Inc.: *See—*
Bunger, Richard E.; and Hancock, Roy J., 255,947, Cl. D30-2.000.
Crane, Roy B., to Keene Corporation. Lighted display fixture. 255,851, 7-15-80, Cl. D6-113.000.
Crofton, James R. Fishing bobber. 255,919, 7-15-80, Cl. D22-30.000.
Cullis, Herbert M.; and Brown, Richard I., to Baxter Travenol Laboratories, Inc. Blood processing container. 255,935, 7-15-80, Cl. D24-58.000.
Cullis, Herbert M.; and Brown, Richard I., to Baxter Travenol Laboratories, Inc. Blood processing container. 255,936, 7-15-80, Cl. D24-58.000.
Dart Industries Inc.: *See—*
Ashton, Harold P., 255,858, Cl. D7-9.000.
Day, Patricia A. Crushable hat. 255,840, 7-15-80, Cl. D2-257.000.
DeStepheno, George E.: *See—*
Kwan, Gerald A.; and DeStepheno, George E., 255,940, Cl. D25-74.000.
D'Innocente, Ralph; and Jacuzzi, Roy A., to Jacuzzi Whirlpool Bath, Inc. Hydromassage tub. 255,932, 7-15-80, Cl. D24-36.000.
Dixson, Tommy W. Accessory console for motorcycles. 255,894, 7-15-80, Cl. D12-114.000.
Doman, Donald W., to Kohler Co. Wall spout. 255,921, 7-15-80, Cl. D23-32.000.
Dura-Craft, Inc.: *See—*
Chapman, Milo G.; and Christie, David E., 255,912, Cl. D21-114.000.
East Hampton Industries, Inc.: *See—*
Ferrin, Kenneth, 255,862, Cl. D7-66.000.
Eaton Corporation: *See—*
Hawke, David; and Kirkwood, Janet M., 255,938, Cl. D24-99.000.
Emanuel, Peter R., to International Telephone & Telegraph Corporation. Plastic storm door. 255,939, 7-15-80, Cl. D25-48.000.
Fehlberg, John. Batten pocket protector. 255,892, 7-15-80, Cl. D12-70.000.
Ferenc, Robert A., to Whelen Engineering Company, Inc. Lens for warning light. 255,883, 7-15-80, Cl. D10-121.000.
Ferrin, Kenneth, to East Hampton Industries, Inc. Cup. 255,862, 7-15-80, Cl. D7-66.000.
Florists' Transworld Delivery Association: *See—*
Waterfield, Martin J., 255,887, Cl. D11-146.000.
Waterfield, Martin J., 255,888, Cl. D11-152.000.
Waterfield, Martin J., 255,889, Cl. D11-152.000.
Flynn, Richard. Holder for tabular containers of plant growth medium. 255,886, 7-15-80, Cl. D11-156.000.
Fogarty, Wilfred J. Dispenser for tea bags and the like. 255,852, 7-15-80, Cl. D6-130.000.
Fritz, Lawrence E. Snowmobile ski. 255,893, 7-15-80, Cl. D12-7.000.
Fujimoto, Kazumi; and Hotani, Yoshiko, to Sony Corporation. Packing box. 255,874, 7-15-80, Cl. D9-224.000.
Futch, Ben F. Transportable outdoor barbecue grill. 255,863, 7-15-80, Cl. D7-108.000.
Galbreath, Donald J. Wildlife habitat or similar article. 255,946, 7-15-80, Cl. D30-1.000.
Game Time, Inc.: *See—*
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665 4,212,306
763 4,212,307
766 4,212,308
4,212,309

CLASS 131

17 R 4,212,310

CLASS 132

31 A 4,212,311

CLASS 136

89 PC Re.30,336

CLASS 137

13 4,212,312
39 4,212,313
216.2 4,212,314
377 4,212,315
543.17 4,212,316
565 4,212,317
590 4,212,318
614.2 4,212,319
625.32 4,212,321
625.48 4,212,322
625.6 4,212,320
625.61 4,212,323
625.66 4,212,324
627.5 4,212,325

CLASS 138

40 4,212,326
125 4,212,327
138 4,212,328
155 4,212,329

CLASS 139

435 4,212,330

CLASS 141

67 4,212,331
98 4,212,332
4,212,333
197 4,212,334
382 4,212,335

CLASS 145

61 L 4,212,336

CLASS 148

1.5 4,212,683
4,212,684
6.1 4,212,685
11.5 F 4,212,686
16.6 4,212,687
31.55 4,212,688
111 4,212,689
131 4,212,690

CLASS 150

3 4,212,337

CLASS 152

158 4,212,338
4,212,339
355 4,212,340

CLASS 156

79 4,212,691
167 4,212,692
173 4,212,693
184 4,212,694
188 4,212,695
294 4,212,696
378 4,212,698
558 4,212,699
568 4,212,700
665 4,212,701

CLASS 160

84 R 4,212,341

CLASS 162

36 4,212,702
129 4,212,703
175 4,212,704
238 4,212,705

CLASS 164

4 4,212,342
64 4,212,343
87 4,212,344
149 4,212,345

CLASS 165

32 4,212,346
46 4,212,347
49 4,212,348
105 4,212,349
129 4,212,350
160 4,212,351

CLASS 166

206 4,212,352
303 4,212,353
4,212,354
336 4,212,355

CLASS 168

18 4,212,356

CLASS 172

22 4,212,357

CLASS 173

27 4,212,358

CLASS 174

88 B 4,213,003
151 4,213,004

CLASS 175

26 4,212,359

CLASS 177

139 4,212,360
200 4,212,361

CLASS 178

18 4,213,005

CLASS 179

1 E 4,213,008
2 EA 4,213,009
6 E 4,213,010
84 R 4,213,012
98 4,213,013
170.2 4,213,014
175.2 C 4,213,015
175.3 R 4,213,016

CLASS 180

6.48 4,212,362
19 H 4,212,363
19 R 4,212,364
139 4,212,365
141 4,212,366
271 4,212,367

CLASS 181

131 4,212,368
224 4,212,369
230 4,212,370

CLASS 182

121 4,212,371

CLASS 184

15 B 4,212,372
56 A 4,212,373

CLASS 187

8.43 4,212,374
9 R 4,212,375

CLASS 188

218 XL 4,212,376

CLASS 190

52 4,212,377

CLASS 191

62 4,212,378

CLASS 192

66 4,212,379
106.2 4,212,380

CLASS 193

40 4,212,381

CLASS 198

502 4,212,382
616 4,212,383
684 4,212,384
781 4,212,385

CLASS 200

5 B 4,213,017
51.12 4,213,018
61.13 4,213,019
81 R 4,213,020
81.9 M 4,213,021
148 R 4,213,022

CLASS 201

39 4,212,706

CLASS 204

26 4,212,707
46 G 4,212,708
49 4,212,709
78 4,212,710
4,212,711
98 4,212,712
4,212,713
4,212,714
99 4,212,715
157.1 R 4,212,716
158 R 4,212,717
159.23 4,212,718
165 4,212,719
195 S 4,212,720
219 4,212,721
222 4,212,722
272 4,212,723
273 4,212,724
290 F 4,212,725

CLASS 206

37 4,212,386
223 4,212,387
230 4,212,388
316 4,212,389
339 4,212,390
434 4,212,391
571 4,212,392
575 4,212,393
586 4,212,394
611 4,212,395
629 4,212,396

CLASS 208

101 4,212,726
111 4,212,727
121 4,212,728
210 4,212,729

CLASS 209

168 4,212,730
366.5 4,212,731
589 4,212,397
590 4,212,398

CLASS 210

32 4,212,732
36 4,212,733
58 4,212,734
63 R 4,212,735
73 R 4,212,736
77 4,212,737
94 4,212,738
130 4,212,739
169 4,212,740
241 4,212,741
247 4,212,742
282 4,212,743
321 B 4,212,744
401 4,212,745
495 4,212,746

CLASS 211

35 4,212,399
41 4,212,400
81 4,212,401
105.3 4,212,402
119 4,212,403

CLASS 212

238 4,212,404

CLASS 219

10.55 B 4,213,023
61 4,213,024
73.2 4,213,025
75 4,213,026
4,213,027
203 4,213,028
209 4,213,029
216 4,213,030
244 4,213,031
364 4,213,032
385 4,213,033
535 4,213,034

CLASS 220

1.5 4,212,405
4,212,406
88 R 4,212,407
254 4,212,408
276 4,212,409
324 4,212,410
347 4,212,411

CLASS 221

81 4,212,412

CLASS 222

1 4,212,413
148 4,212,414
231 4,212,415
267 4,212,416

CLASS 224

42.21 4,212,417
206 4,212,418

CLASS 226

23 4,212,419
118 4,212,420
127 4,212,421
196 4,212,422

CLASS 228

136 4,212,423

CLASS 235

92 B 4,213,037
92 DN 4,213,035
92 PC 4,213,036
382 4,213,038
449 4,213,039
476 4,213,040
487 4,213,041

CLASS 236

93 R 4,212,424

CLASS 239

133 4,212,425
230 4,212,426
676 4,212,427
677 4,212,428

CLASS 241

26 4,212,429
89.4 4,212,430
100 4,212,431
285 B 4,212,432

CLASS 242

35.5 A 4,212,433
55.2 4,212,434
107 4,212,435
192 4,212,436
199 4,212,437
201 4,212,438
206 4,212,439

CLASS 244

1 R 4,212,440
46 4,212,441
110 B 4,212,442
177 4,212,443
182 4,212,444

CLASS 248

245 4,212,445
678 4,212,446

CLASS 250

223 B 4,213,042
283 4,213,043
301 4,213,044
370 4,213,045
381 4,213,046
4,213,047
402 4,213,048
408 4,213,049
445 T 4,213,050
457 4,213,051
462 4,213,052
483 4,213,055
492 A 4,213,053
505 4,213,054
559 4,213,056

CLASS 251

98 4,212,447
184 4,212,448

CLASS 252

8.55 D 4,212,748
8.55 R 4,212,747
8.75 Re.30,337
4,212,749
32.5 4,212,750
32.7 E 4,212,751
42.7 4,212,752
46.6 4,212,753
49.7 4,212,754
62 4,212,755
63.2 4,212,756
95 4,212,757
119 4,212,758
4,212,759
156 4,212,760
174.12 4,212,761
299 4,212,762
301.23 4,212,763
392 4,212,764
430 4,212,765
432 4,212,766
435 4,212,767
441 4,212,768
4,212,769
4,212,770
455 Z 4,212,771
476 4,212,772
522 R 4,212,773

CLASS 254

89 H 4,212,449
108 4,212,450

CLASS 260

2.3 4,212,774
17.2 4,212,775
18 EP 4,212,776
18 N 4,212,777
22 A 4,212,778
22 CQ 4,212,779
23 XA Re.30,338
27 BB 4,212,780
29.4 UA 4,212,781
29.6 H 4,212,783
29.6 HN 4,212,782
29.6 WQ 4,212,784
29.7 H 4,212,785
31.2 R 4,212,786
33.6 AQ 4,212,787
4,212,789
33.6 UA 4,212,788
40 R 4,212,790
4,212,791
42.18 4,212,792
45.85 T 4,212,793
97.6 4,212,794
112.5 R 4,212,796
4,212,797
112.5 T 4,212,795
123.5 4,212,798
4,212,799
123.7 4,212,800
145 A 4,212,801
4,212,802
154 4,212,803
325 R 4,212,804
326 N 4,212,805
326.2 4,212,806
326.31 4,212,807
340.3 4,212,808
340.5 R 4,212,809
4,212,810
343.3 P 4,212,811
345.1 4,212,812
346.4 4,212,813
347.8 4,212,814
397.2 4,212,815
410.6 4,212,816
449 M 4,212,817
465.4 4,212,818
543 R 4,212,819
561 N 4,212,820
570 D 4,212,821
570.9 4,212,822
571 4,212,823
580 4,212,824
583 EE 4,212,826
930 4,212,832

CLASS 261

23 A 4,212,833
44 A 4,212,834
116 4,212,835

CLASS 264

1 4,212,836
15 4,212,837
25 4,212,838
45.3 4,212,839
338 4,212,840
530 4,212,841

CLASS 266

50 4,212,451
156 4,212,452
158 4,212,453

CLASS 269

236 4,212,455
328 4,212,454

CLASS 271

4 4,212,456
288 4,212,457

CLASS 272

93 4,212,458

CLASS 273

1 E 4,212,459
58 B 4,212,460
73 F 4,212,461
121 A 4,212,465
121 R 4,212,466
163 A 4,212,467
240 4,212,468
416 4,212,464
418 4,212,463
424 4,212,462

CLASS 274

23 A 4,212,469
37 4,212,470
4,212,490
38 4,212,471

CLASS 277

12 4,212,472
81 P 4,212,473
83 4,212,474
96.1 4,212,475
134 4,212,476
193 4,212,477

CLASS 280

11.28 4,212,479
79.1 A 4,212,478
226 R 4,212,480
276 4,212,481
289 D 4,212,482
444 4,212,483
707 4,212,484
766 4,212,485

CLASS 285

4 4,212,486
95 4,212,487
200 4,212,488

CLASS 290

44 4,213,057

CLASS 292

33 4,212,489

CLASS 295

11 4,212,491

CLASS 296

98 4,212,492

CLASS 297

6 4,212,493
69 4,212,494
84 4,212,495
226 4,212,496

CLASS 299

53 4,212,497

CLASS 303

6 C 4,212,498
103 4,212,499
115 4,212,500
116 4,212,501

CLASS 307

40 4,213,058
41 4,213,059
116 4,213,061
117 4,213,062
141 4,213,063
219 4,213,064
251 4,213,065
252 C 4,213,066
4,213,067
255 4,213,068
426 4,213,060

CLASS 308

3 R 4,212,502
3.6 4,212,503
9 4,212,504
79 A 4,212,505

CLASS 310

46 4,213,069
71 4,213,070
344 4,213,071

CLASS 312

118 4,212,506

CLASS 313

217 4,213,072
310 4,213,073
509 4,213,074

CLASS 315

83 4,213,075
282 4,213,076

CLASS 318

245 4,213,077

CLASS 320

2 4,213,078
4,213,079
21 4,213,080
40 4,213,081

CLASS 323

17 4,213,082
44 R 4,213,083
56 4,213,084

CLASS 324

57 R 4,213,085
62 4,213,086
4,213,087
98 4,213,088
115 4,213,089
138 4,213,090
210 4,213,091
319 4,213,092
329 4,213,093

CLASS 330

51 4,213,097
253 4,213,098
297 4,213,099

CLASS 331

78 4,213,101
94.5 D 4,213,100
94.5 G 4,213,102

CLASS 332

9 T 4,213,103

CLASS 333

150 4,213,104
165 4,213,105
185 4,213,106
197 4,213,107

CLASS 335

131 4,213,108
174 4,213,109
207 4,213,110

CLASS 336

65 4,213,111

CLASS 338

183 4,213,112
309 4,213,113

CLASS 339

18 B 4,212,507
4,212,508
95 D 4,212,509
147 R 4,212,510
276 T 4,212,511

CLASS 340

27 R 4,213,114
47 4,213,115
73 4,213,116
146.3 H 4,213,117
149 R 4,213,118
151 4,213,119
347 DA 4,213,120
384 E 4,213,121
552 4,213,122
4,213,123
706 4,213,124
753 4,213,125

CLASS 343

5 CF 4,213,127
5 SM 4,213,126
6.5 R 4,213,128
6.8 R 4,213,129
16 M 4,213,130
844 4,213,131
854 4,213,132
4,213,133

CLASS 346

1.1 4,213,134
76 PH 4,213,135
139 C 4,213,136

CLASS 350

96.15 4,212,512
4,212,513
96.21 4,212,514
96.24 4,212,516
175 ML 4,212,515
217 4,212,517
357 4,212,518
362 4,212,519

CLASS 351

37 4,212,520

CLASS 352

130 4,212,521

CLASS 354

25 4,212,522
4,212,523
86 4,212,524
173 4,212,525
225 4,212,526
275 4,212,527
317 4,212,528

CLASS 355

3 R 4,212,529
14 R 4,212,530
55 4,212,531
60 4,212,532
91 4,212,533

CLASS 356

1 4,212,534
51 4,212,535
71 4,212,536
73.1 4,212,537
127 4,212,538
336 4,212,539
354 4,212,540
430 4,212,541

CLASS 357

30 4,213,137
4,213,138
41 4,213,139
4,213,140
74 4,213,141
91 4,213,142

CLASS 358

4 4,213,143
12 4,213,144
43 4,213,145
63 4,213,146
112 4,213,147
128.6 4,213,148
153 4,213,149
166 4,213,150
178 4,213,151
186 4,213,152
231 4,213,153
260 4,213,154
262 4,213,155
275 4,213,156
293 4,213,157
296 4,213,158

CLASS 360

16 4,213,159
35 4,213,163
73 4,213,160
4,213,161
85 4,213,162

CLASS 361

56 4,213,164
86 4,213,166
94 4,213,165
213 4,213,167
225 4,213,168

CLASS 362

74 4,213,169
267 4,213,170
310 4,213,171
413 4,213,172

CLASS 363

163 4,213,173

CLASS 364

100 4,213,189
104 4,213,174
119 4,213,175
200 4,213,176
4,213,177
4,213,178
405 4,213,179
431 4,213,180
4,213,181
493 4,213,182
507 4,213,183
574 4,213,184
721 4,213,185
723 4,213,186
724 4,213,187
739 4,213,188
900 4,213,190

CLASS 365

73 4,213,191
118 4,213,192
125 4,213,193

CLASS 366

54 4,212,542
85 4,212,543
150 4,212,544
152 4,212,545
213 4,212,546
325 4,212,547
348 4,212,548

CLASS 367

14 4,213,194
92 4,213,195
94 4,213,196
4,213,197
113 4,213,198
117 4,213,199
4,213,200

CLASS 368

62 4,212,153
80 4,212,158
82 4,212,159

85 4,212,156
87 4,212,157
248 4,212,154
250 4,212,155

CLASS 370

12 4,213,094
62 4,213,201
100 4,213,011

CLASS 375

10 4,213,007
14 4,213,095
97 4,213,006

CLASS 400

154 4,212,549
196.1 4,212,550
208 4,212,551
249 4,212,552
279 4,212,553
550 4,212,554
639.1 4,212,555

CLASS 401

208 4,212,556

CLASS 403

1 4,212,557
41 4,212,558
348 4,212,559
353 4,212,560

CLASS 405

195 4,212,561
4,212,562
4,212,563
218 4,212,564
269 4,212,565

CLASS 406

68 4,212,566

CLASS 407

46 4,212,567
53 4,212,568

CLASS 408

59 4,212,569
82 4,212,571
95 4,212,570

CLASS 409

37 4,212,572
251 4,212,573

CLASS 414

8 4,212,575
22 4,212,576
23 4,212,577
39 4,212,578
95 4,212,579
502 4,212,574
522 4,212,580
529 4,212,581
694 4,212,582
728 4,212,583
748 4,212,584

CLASS 415

53 R 4,212,585

CLASS 416

93 A 4,212,586
96 R 4,212,587
141 4,212,588

CLASS 417

12 4,212,589
24 4,212,590
38 4,212,591
50 4,212,592
53 4,212,593
54 4,212,594
84 4,212,595
216 4,212,596
225 4,212,597
229 4,212,598
295 4,212,599
360 4,212,600
365 4,212,601

CLASS 418

178 4,212,602
256 4,212,603

CLASS 422

12 4,212,842
16 4,212,843
56 4,212,844
82 4,212,845
122 4,212,846
135 4,212,847
267 4,212,848

CLASS 423

10 4,212,849
175 4,212,850
230 4,212,851
4,212,852
235 4,212,853
247 4,212,854
522 4,212,855

CLASS 424

52 4,212,856
95 4,212,857
118 4,212,858
180 4,212,859
4,212,860
200 4,212,861
212 4,212,862
240 4,212,863
243 4,212,864
250 4,212,865
253 4,212,866
263 4,212,867
4,212,868
4,212,869
4,212,870
267 4,212,871
270 4,212,872
4,212,873
272 4,212,874
273 B 4,212,876
4,212,877
273 R 4,212,875
274 4,212,878
4,212,879
4,212,880
275 4,212,881
4,212,882
277 4,212,883
285 4,212,884
288 4,212,885
304 4,212,887
308 4,212,886
324 4,212,888

CLASS 425

19 4,212,604
20 4,212,605
72 S 4,212,606
83.1 4,212,607
85 4,212,608
100 4,212,609
110 4,212,610
114 4,212,611
4,212,612
141 4,212,613
214 4,212,614
222 4,212,615
256 4,212,616
311 4,212,617
326.1 4,212,618
373 4,212,619
381 4,212,620
405 H 4,212,621
444 4,212,622
547 4,212,623
548 Re.30,335
4,212,624
549 4,212,625
562 4,212,626
564 4,212,627

CLASS 426

7 4,212,889
69 4,212,890
231 4,212,891
289 4,212,892
330.2 4,212,893
332 4,212,894
600 4,212,895
623 4,212,896

CLASS 427

2 4,212,897
6 4,212,898
44 4,212,899
53.1 4,212,900
4,212,901
64 4,212,902
127 4,212,903
4,212,904
4,212,905
221 4,212,906
237 4,212,907
309 4,212,908
355 4,212,697
389.8 4,212,909
393.5

CLASS 428

35 4,212,910
131 4,212,911
209 4,212,912
251 4,212,913
268 4,212,914
288 4,212,915
290 4,212,916
310 4,212,917
403 4,212,918
410 4,212,919
413 4,212,920
414 4,212,921
419 4,212,922
4,212,923
428 4,212,924
447 4,212,925
472 4,212,926
512 4,212,927
514 4,212,928

CLASS 429

37 4,212,929
101 4,212,930
104 4,212,931
111 4,212,932
122 4,212,933
181 4,212,934

CLASS 430

326 4,212,935
494 4,212,672
496 4,212,673
503 4,212,936
620 4,212,937

CLASS 432

4 4,212,628
10 4,212,629
60 4,212,631
80 4,212,630
115 4,212,632
122 4,212,633
186 4,212,634
239 4,212,635
250 4,212,636

CLASS 433

5 4,212,637
8 4,212,638
20 Re.30,332
30 4,212,105
72 4,212,639
82 4,212,640
133 4,212,641

CLASS 435

11 4,212,938
19 4,212,939
55 4,212,940
92 4,212,941
119 4,212,942
121 4,212,944
180 4,212,943
212 4,212,945
4,212,946
254 4,212,947
296 4,212,948
315 4,212,949
316 4,212,950

CLASS 455

260 4,213,096

CLASS 521

112 4,212,952
137 4,212,953
159 4,212,954

CLASS 525

5 4,212,955
60 4,212,956
131 4,212,957
310 4,212,958
524 4,212,959
4,212,960

CLASS 526

151 4,212,961

CLASS 528

45 4,212,962
272 4,212,963
340 4,212,964
4,212,965
486 4,212,966
495 4,212,951
500 4,212,967

CLASS 542

426 4,212,968
429 4,212,969
430 Re.30,339
455 4,212,970

CLASS 544

37 4,212,971
106 4,212,972

CLASS 546

16 4,212,973
19 4,212,974
49 4,212,975
115 4,212,976
243 4,212,977
253 4,212,978
270 4,212,979
288 4,212,980

CLASS 548

246 4,212,981
313 4,212,982
352 4,212,983

CLASS 560

18 4,212,984
53 4,212,985
121 4,212,986
4,212,987
174 4,212,988
232 4,212,989
241 4,212,990

CLASS 562

480 4,212,991
485 4,212,995
492 4,212,992
503 4,212,993
568 4,212,994

CLASS 568

17 4,212,831
313 4,212,825
314 4,212,828
347 4,212,827
433 4,212,829
486 4,212,830
639 4,212,996
724 4,212,997
807 4,212,998
4,212,999
861 4,213,000

CLASS 585

510 4,213,001

CLASSIFICATION OF DESIGNS

D2— 257 255,840
322 255,841
255,842
415 255,844
D4— 38 255,845
D6— 71 255,846
79 255,847
255,848
255,849
113 255,850
255,851
130 255,852
179 255,853
201 255,854
235 255,855
242 255,856
D7— 1 255,857
9 255,858
28 255,859
255,860
47 255,861
66 255,862
108 255,863
164 255,864
194 255,865
D8— 38 255,866
98 255,867
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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 22, 1980



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
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Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

June 17, 1980.

Errata

The information appearing in the Patent Suits of Nov. 6, 1979 at page 988 OG 3 for 3,214,510 is in error. It should read as follows:

3,214,520, Avakian and Buegler, QUERY-REPLY SIGNAL PROCESSING APPARATUS, filed May 11, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c1681, Bunker Ramo Corp. v. Western Electric Company Inc. Transferred to D.C., S.D.N.Y. on Mar. 23, 1979.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before August 28, 1980.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

June 26, 1980.

A

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REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,089,309, Re. S.N. 150,015, Filed May 15, 1980, Cl. 123/119 B, CRANKCASE EMISSION SEPARATOR AND COLLECTOR, Elmer W. Bush, Owner of Record: *Inventor,* Attorney or Agent: Stephen S. Townsend, et al., Ex. Gp.: 342

4,092,182, Re. S.N. 150,945, Filed May 19, 1980, Cl. 148/23, SOLDERING FLUX COMPOSITION, Gordon Francis Arbib, et al., Owner of Record: *Multicore Solders Limited, Hertfordshire, #P2 4RF, England,* Attorney or Agent: Alvin Frowdy, et al., Ex. Gp.: 111

4,146,340, Re. S.N. 151,479, Filed May 19, 1980, Cl. 403/27, CALIBRATED REPLACEMENT TORQUE ROD, Joseph E. Smith, Jr., Owner of Record: *Gulf & Western Manufacturing Company, Southfield, Mich.,* Attorney or Agent: Claude A. Patalidis, et al., Ex. Gp.: 353

4,147,550, Re. S.N. 148,108, Filed May 9, 1980, Cl. 430/87 A, PHOTOGRAPHIC SILVER HALIDE ELEMENT WITH A LAYER OF SULFONATED POLYMER, Gerald A. Campbell, et al., Owner of Record: *Eastman Kodak Company, Rochester, N.Y.,* Attorney or Agent: J. J. Hawley, et al., Ex. Gp.: 166

4,184,128, Re. S.N. 147,872, Filed May 8, 1980, Cl. 331/113 A, HIGH EFFICIENCY PUSH-PULL INVERTERS, Ole K. Nilssen, Owner of Record: *Inventor,* Attorney or Agent: William E. Lucas, et al., Ex. Gp.: 252

PATENT NOTICES

Certificates of Correction for the Week of July 22, 1980

Re. 30,209	4,175,632	4,190,853	4,196,175
Re. 30,256	4,177,064	4,190,907	4,196,309
D. 254,136	4,177,189	4,191,676	4,196,555
3,859,263	4,178,468	4,192,042	4,196,568
3,953,335	4,178,538	4,192,353	4,197,167
4,032,473	4,179,786	4,192,354	4,197,278
4,070,344	4,180,598	4,192,356	4,197,314
4,076,092	4,181,821	4,192,436	4,197,422
4,080,540	4,181,826	4,192,441	4,197,606
4,081,365	4,183,341	4,192,451	4,198,095
4,090,693	4,183,772	4,192,531	4,198,097
4,091,204	4,183,797	4,192,745	4,198,238
4,098,981	4,184,011	4,192,891	4,198,279
4,110,327	4,184,327	4,193,036	4,198,350
4,124,407	4,185,270	4,193,089	4,198,611
4,127,131	4,185,936	4,193,113	4,198,652
4,137,604	4,186,208	4,193,272	4,198,682
4,143,317	4,186,226	4,193,274	4,198,712
4,150,830	4,186,306	4,193,453	4,198,718
4,152,369	4,187,052	4,193,690	4,199,034
4,153,070	4,187,467	4,193,936	4,199,374
4,153,940	4,187,748	4,194,321	4,199,392
4,157,173	4,187,952	4,194,471	4,199,486
4,162,016	4,187,977	4,194,495	4,199,525
4,163,011	4,188,032	4,194,547	4,199,672
4,163,734	4,188,067	4,194,552	4,199,691
4,166,797	4,188,227	4,194,606	4,199,897
4,166,866	4,188,373	4,194,899	4,200,023
4,166,873	4,188,387	4,195,030	4,201,044
4,167,255	4,188,399	4,195,154	4,201,784
4,171,932	4,188,511	4,195,277	4,202,412
4,173,121	4,189,273	4,195,312	4,202,507
4,173,126	4,189,653	4,195,489	4,202,866
4,173,530	4,190,089	4,195,594	4,203,292
4,174,211	4,190,192	4,195,669	4,204,488
4,174,415	4,190,596	4,195,987	4,204,489
4,174,519	4,190,676	4,196,061	
4,175,225	4,190,852	4,196,155	

Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,819,547, W. O. Pillar, R. A. Sutton SELF-EXTINGUISHING POLYMER COMPOSITIONS CONTAINING HEXABROMO-2- BUTENE, Interference No. 99,327, decided February 13, 1980, claim 6.

Patent No. 3,913,225, E. W. Tietjens, D. J. Van Hemman, DRY SHAVING APPARATUS WITH SHEAR PLATE BIASING MEANS, Interference No. 99,560, decided June 5, 1979, claims 1, 2, 5 and 7.

Patent No. 3,919,563, D. J. Lautier, L. L. Maeder, P. E. Mayer, CONTROLLABLY SELF-RELEASABLE SAFETY FASTENER AND METHOD OF UNLOCKING SAME, Interference No. 99,759, decided April 10, 1980, claims 7, 9, 11-14, 25 and 27.

Patent No. 3,922,739, I. A. Babintsev, APPARATUS FOR CONVERTING SEA WAVE ENERGY INTO ELECTRICAL ENERGY, Interference No. 99,543, decided January 28, 1980, claim 1.

Patent No. 3,934,652, C. B. Cochran, APPARATUS AND METHOD FOR CEMENTING WELL LINERS, Interference No. 99,680, decided April 9, 1980, claim 7.

Patent No. 3,937,695, D. Sarantakis, P-GLU-TRP-SER-TYR-D-LYS-LEU-ARG-PRO-GLY-NH2 AND INTERMEDIATES, Interference No. 100,096, decided April 2, 1980, claim 1.

Patent No. 3,972,285, C. H. Brown, OBJECT ARRAY PLACEMENT DEVICE, Interference No. 99, 621, decided February 29, 1980, claims 1-5, 7 and 10.

Patent No. 3,987,212, R. D. Seeley, H. J. Hartmann, D. R. Sidoti, CHOLESTEROL FREE EGG PRODUCT, Interference No. 100,123, decided April 30, 1980, claims 1-3, 6, 7, 9 and 10.

Patent No. 4,057,169, J. R. Payne, DUAL TONGUE AND SLOT CONTAINER LOCK, Interference No. 100,271, decided April 10, 1980, claims 1, 3-10.

Patent No. 4,042,417, R. Kaplow, R. I. Frank, PHOTOVOLTAIC SYSTEM INCLUDING A LENS STRUCTURE, Interference No. 100,136, decided April 14, 1980, claims 1, 2, 5 and 7.

Disclaimers

3,969,930.—*Dusan Ciril Prevoreck, Young Doo Kwon* and *Raj Kumar Sharma,* Morristown, and *Edward T. Gilliam,* Lake Hiawatha, N.J. TESTING VISCOELASTIC SOLIDS. Patent dated July 20, 1976. Disclaimer filed Mar. 13, 1980, by the assignee, *Allied Chemical Corporation.*

Hereby enters this disclaimer to claims 1, 2, 4, 6, 8 and 19-22 of said patent.

4,072,611.—*Steven S. Davis,* Bountiful, Utah. BELT DEWRINKLING AND ALIGNMENT METHOD AND APPARATUS. Patent dated Feb. 7, 1978. Disclaimer filed Apr. 28, 1980, by the assignee, *Envirotech Corporation.*

Hereby enters this disclaimer to claim 9 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

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DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent application 6-085,453, Windscreen Angular Deviation Measurement Device. Filed Oct. 16, 1979.

Patent application 6-085,663. Near Millimeter Bistable Device. Filed Oct. 17, 1979.

Patent application 6-090,383. Measurement of Windscreen Distortion Using Optical Diffraction. Filed Nov. 1, 1979.

Patent application 6-090,384. Waveguide Line Spread Function Analyzing Apparatus. Filed Nov. 1, 1979.

Patent application 6-091,991. Feedback Display System for Microscopic Optical Instruments. Filed Nov. 7, 1979.

Patent application 6-097,594. Laser Autoalignment System. Filed Nov. 26, 1979.

Patent application 6-100,578. Chemical-Biological Agent Protective Hood. Filed Dec. 5, 1979.

Patent 4,181,435. Holographic Field Lens Detector. Filed June 29, 1973. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,181,774. Electromagnetic Interference Filter Window. Filed Dec. 19, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,185,254. Annular Laser Having Adjustable and Interchangeable Laser Windows. Filed Oct. 13, 1977. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,919. Quadrant Detection System. Filed June 8, 1973. Patented Jan. 29, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administrative Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6-047,172. Process for Preservation of Stored Wood Chips. Filed June 8, 1979.

Patent application 6-080,735. Control of Winged Waterprimrose and Northern Jointvetch With Fungal Pathogens. Filed Oct. 1, 1979.

Patent 4,179,446. Sex Pheromone Produced by the Female Japanese Beetle: Specificity of Male Response to Enantioners. Filed Aug. 8, 1978. Patented Dec. 18, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW. Washington, D.C. 20240

Patent application 6-066,999. Extensometer Anchor. Filed Aug. 16, 1979.

Patent application 6-072,955. Electrodeposition of Lead. Filed Sept. 6, 1979.

Patent application 6-072,956. Electrolytic Stripping Cell. Filed Sept. 6, 1979.

Patent application 6-072,957. Removal of Impurities From Clay. Filed Sept. 6, 1979.

Patent application 6-080,824. Recovery of Alumina From Clay. Filed Oct. 1, 1979.

Patent application 6-081,505. Passive Explosion Barrier for Mines. Filed Oct. 3, 1979.

Patent application 6-081,506. Dust Controlling Method Using a Coal Cutter Bit. Filed Oct. 3, 1979.

Patent application 6-082,383. Improved Discriminating Circuit Breaker Protection System for Direct Current Power Distribution Systems. Filed Oct. 5, 1979.

Patent 4,170,415. System for Producing Orthophotographs. Filed July 15, 1977. Patented Oct. 9, 1979. Not available NTIS.

Patent 4,170,668. Method for Wood Precharring. Filed Sept. 15, 1978. Patented Oct. 9, 1979. Not available NTIS.

Patent 4,172,255. HF Constal Current Mapping Radar System. Filed Aug. 8, 1977. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,173,140. Trigger Device for Explosion Barrier. Filed Feb. 3, 1978. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,174,966. High Coercive Force Rare Earth Metal-Cobalt Magnets Containing Copper and Magnesium. Filed Dec. 15, 1978. Patented Nov. 20, 1979. Not available NTIS.

Patent 4,180,628. Resin for Sorption of Tungsten. Filed July 18, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,181,630. Catalyst for Synthesis of Methanol. Filed Nov. 30, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,184,884. Process for Producing a Metastable Precursor Powder and for Producing Sialon From This Powder. Filed Oct. 23, 1978. Patented Jan. 22, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research Code 302, Arlington, Va. 22217

Patent application 6-072,820. Frustrated Total Internal Reflection Fiber-Optic Small-Motion Sensor for Hydrophone Use. Filed Sept. 4, 1979.

Patent application 6-087,270. Apparatus and Process for Determining the Composition of Fluid-Filled Cavities. Filed Oct. 22, 1979.

Patent 4,166,694. Method for Optically Distorting Readout Reticles. Filed Mar. 28, 1978. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,176,339. Propagation Sampled Acoustic Line Array. Filed Feb. 2, 1978. Patented Nov. 27, 1979. Not available NTIS.

Patent 4,176,919. Passive High-Speed Automatic Shutter for Imaging Devices. Filed Jan. 31, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,178,577. Low Frequency Hydrophone. Filed Feb. 6, 1978. Patented Dec. 11, 1979. Not available NTIS.

TENNESSEE VALLEY AUTHORITY
Division of Law, Muscle Shoals, Ala. 35660

Patent 4,180,545. Uranium Recovery From Wet-Process Phosphoric Acid. Filed Aug. 25, 1977. Patented Dec. 25, 1979. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA Code GP-2, Washington, D.C. 20546

Patent 4,040,940. Electrophoretic Fractional Elution Apparatus Employing a Rotational Seal Fraction Collector. Filed Dec. 21, 1976. Patented Aug. 9, 1977. Not available NTIS.

Patent 4,158,775. High Resolution Threshold Photoelectron Spectroscopy by Electron Attachment. Filed Nov. 30, 1977. Patented June 19, 1979. Not available NTIS.

Patent 4,164,718. Electromagnetic Power Absorber. Filed Sept. 15, 1977. Patented Aug. 14, 1979. Not available NTIS.

Patent 4,172,883. Method of Purifying Metallurgical Grade Silicon Employing Reduced Pressure Atmospheric Control. Filed June 23, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,176,360. Antenna Deployment Mechanism for Use With a Spacecraft. Filed Sept. 18, 1978. Patented Nov. 27, 1979. Not available NTIS.

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Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 14, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids: Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-2-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	7-5-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	10-15-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-27-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-31-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	10-10-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-18-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-12-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers, Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats: Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-17-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-11-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements, Clutches.	2-1-79

Expiration of patents: The patents within the range of numbers indicated below expire during June 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,091,768 to 3,095,571, inclusive
Plant Patents ..... Numbers 2,262 to 2,268, inclusive

REISSUE PATENTS

GRANTED JUL. 22, 1980

ERRATA

For CLASS	See PATENT NO.
433-126	30,340
081-009.5 B	30,342
272-065	30,344

REISSUES

JULY 22, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,340

DENTAL HANDPIECE

John V. Borden, 3815 Chanel Rd., Annandale, Va. 22003

Original No. 3,324,553, dated Jun. 13, 1967, Ser. No. 679,552, Aug. 22, 1957. Continuation-in-part of Ser. No. 634,860, Jan. 18, 1957, abandoned. Application for reissue Nov. 9, 1978, Ser. No. 959,435

Int. Cl.[2] **A61C** *1/10*

U.S. Cl. 433—126 **56 Claims**



1. A high speed dental handpiece comprising a housing having opposite ends provided with fluid discharge means therein, a shaft within said housing extending between said opposite ends thereof, means on one end of said shaft to connect a dental tool thereto, a rotor carried by said shaft between the opposite ends thereof, bearings having anti-friction members movable therein and supported within said housing to support rotatably said shaft respectively adjacent opposite ends of said rotor, each of said bearings having an opening therethrough, impeller means on said rotor extending generally axially of said rotor and terminating adjacent the opposite ends thereof, means to direct gaseous fluid under pressure against said impeller means to rotate said rotor, and means on said rotor operable to discharge driving gaseous fluid in opposite directions directly from said impeller means and through said openings in each of said bearings for exhaust from said housing through said discharge means in said opposite ends thereof.

Re. 30,341

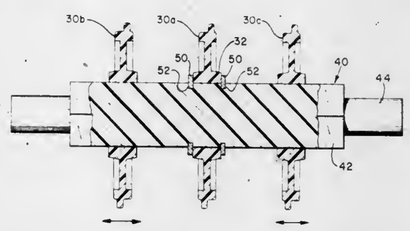
CONVEYOR DRIVE

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Original No. 3,724,285, dated Apr. 3, 1973, Ser. No. 244,773, Apr. 17, 1972. Application for reissue Jun. 22, 1978, Ser. No. 918,329

Int. Cl.[2] **F16H** *55/30*

U.S. Cl. 198—834 **17 Claims**



1. A sprocket and drive shaft assembly for a chain link conveyor belt subject to variations in width comprising, in combination:

a drive shaft with a substantially uniform, noncircular cross section; and

a plurality of sprockets mounted in driven engagement on said shaft for supporting and driving a conveyor belt; one of said sprockets being releasably locked against axial motion to provide for proper belt tracking, all other of said sprockets being free to move axially.

Re. 30,342

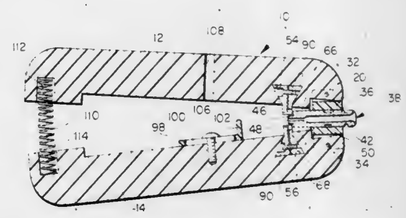
WIRE STRIPPER HAVING REPLACEABLE BLADES

Joseph A. Perrino, Rehoboth, Mass., assignor to Micro Electronics, Inc., Rehoboth, Mass.

Original No. 4,108,028, dated Aug. 22, 1978, Ser. No. 770,984, Feb. 22, 1977. Application for reissue May 3, 1979, Ser. No. 35,555

Int. Cl.[2] **H02G** *1/12*

U.S. Cl. 81—9.5 B **3 Claims**



1. A device for stripping insulation from relatively small diameter electrical wire, comprising a pair of hand-held elongated grip members, means for pivotally interconnecting said grip members at one end thereof, the other ends of said grip members being movable relative to each other to provide for the pivotal movement of said members to and from a closed stripping position thereof, an elongated tubular guide located in said interconnecting means intermediate the said grip members and receiving therein in guiding relation the lead-in portion of a wire from which insulation is to be stripped, a reduced projection formed on the innermost end of said tubular guide, each of said grip members having a laterally extending slot formed therein, opposed blade assemblies removably secured in the slots in said grip members for movement with said grip members to the closed position thereof, each of said blade assemblies including an inner and outer holder element having flat opposed faces, a flat blade element located between the flat opposed faces of the holder elements in sandwiched relation and having a cutting edge in which a notch is formed, wherein the opposed blades in the closed stripping position define an opening of predetermined size for receiving the wire from which insulation is to be stripped, each of said holder elements having a circular notch formed therein that is aligned with the notch in the adjacent blade element, [the diameter of the notch in said outer holder element being greater than the diameter of the notch in said inner holder element,] the notches in the outer holder element of both blade assemblies forming an opening when the grip members are moved to the closed stripping position, the size of which is just slightly larger than that of said reduced projection, so that the reduced projection is received in snug-fitting relation between the notches of the outer holder elements, thereby axially aligning said tubular guide and wire extending therethrough and centering said wire for engagement by said blade elements during the severing of the wire insulation during said stripping operation, whereafter a longitudinal retracting movement of said wire will strip the insulation from the lead-in portion thereof that has been threaded through said tubular guide.

Re. 30,343

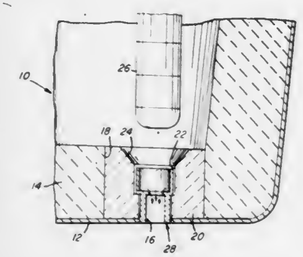
METHOD AND SINGLE PIECE ANNULAR NOZZLE TO PREVENT ALUMINA BUILDUP DURING CONTINUOUS CASTING OF Al-KILLED STEEL

Eugene A. Golas, Middle Township, Bucks County, and Shri N. Singh, Penn Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Original No. 4,117,959, dated Oct. 3, 1978, Ser. No. 794,290, May 5, 1977. Continuation-in-part of Ser. No. 715,603, Aug. 18, 1976, abandoned. Application for reissue Mar. 16, 1979, Ser. No. 21,147

Int. Cl.[2] **B22D** *41/08*

U.S. Cl. 222—590 **17 Claims**



2. A refractory article of manufacture [adapted to provide a passage for pouring] *defining a nozzle for metering the flow of* molten metal from a bottom pour teeming vessel comprising:

(a) a body having a substantially cylindrical axial bore therethrough defining a metal pour passage;

(b) a disc-like member having a planar upper surface extending substantially perpendicular to the axis of said bore;

(c) an axial opening through the planar surface of said member of a diameter less than the diameter of said bore to define a flow control orifice; and

(d) said disc-like member having an axial thickness no greater than about twice the diameter of said orifice and having said upper surface axially spaced from the inlet end of said bore to define a bore portion upstream of said orifice formed of a depth-to-diameter dimensional ratio operative to define a region of flow stagnation capable of damping turbulent fluctuations in said vessel to stabilize the flow stream through said orifice.

Re. 30,344

ROUND TRAMPOLINE

Harold L. McNeil, Tallahassee, Fla., assignor to Temple Baptist Church, Tallahassee, Fla., a part interest

Original No. 3,948,515, dated Apr. 6, 1976, Ser. No. 457,555, Apr. 3, 1974. Application for reissue Apr. 4, 1978, Ser. No. 893,350

Int. Cl.[2] **A63B** *5/00*

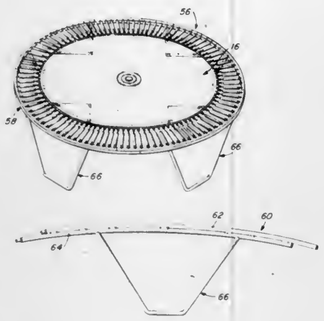
U.S. Cl. 272—65 **7 Claims**

1. A round trampoline, comprising, in combination:

a. a sectional, substantially circular frame, the frame including a plurality of sections each formed by a pair of arcuate rails connected together to form a double rail, one of the rails staggered with respect to the other of the rails in order to form a staggered joint with an adjoining frame section and to lock the joint and prevent rotation or flexation of the adjoining sections;

b. leg means provided on the sections of the frame for supporting the frame on a support surface;

c. fastener means connecting the sections of the frame together;



d. a mat; and

e. resilient means for connecting the mat to the frame.

Re. 30,345

Patent Not Issued For This Number

Re. 30,346

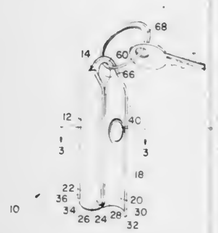
FOLDABLE PEN

Michael C. Klaber, 10526 Caminito Obra, San Diego, Calif. 92126

Original No. 4,081,217, dated Mar. 28, 1978, Ser. No. 726,471, Sep. 27, 1976. Application for reissue May 24, 1979, Ser. No. 42,069

Int. Cl.[2] **B43K** *23/02, 29/00*

U.S. Cl. 401—131 **6 Claims**



6. A foldable pen or like writing instrument comprising:

a first elongated member having a writing nib extending from a first end thereof;

a second elongated member pivotally connected at a first end thereof to a second end of said first elongated member and capable of being rotated from an opened writing position wherein said elongated members are disposed substantially coaxially with one another to a closed position wherein said members are disposed parallel and alongside each other;

means for releasable locking said pen in said open position,

means for releasably locking said pen in said closed position; and

an extension projecting laterally from said second end of said second elongated member toward the location of the first end of said first elongated member when the foldable pen is in the closed position, said extension having means for contacting with said first end leaving a gap large enough to be engaged by a keyring between said first and second members whereby the projecting extension, the first member and the second member form a closed loop around said gap which may be interlocked with said keyring.

Re. 30,347

CORRECTIONS FOR SEISMIC DATA OBTAINED FROM EXPANDING-SPREAD

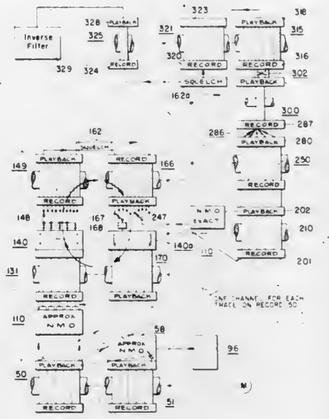
Albert W. Musgrave, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Original No. 3,697,939, dated Oct. 10, 1972, Ser. No. 101,776, Dec. 28, 1970. Continuation of Ser. No. 496,735, Sep. 30, 1965, abandoned, which is a continuation-in-part of Ser. No. 95,111, Mar. 13, 1961, abandoned. Application for reissue Jul. 14, 1977, Ser. No. 815,518

Int. Cl.[2] **G01V** *1/36*

U.S. Cl. 367—51 **48 Claims**

49. The method of dynamically time correcting seismic traces comprised of expanded spread data with a correcting function, the values of which are determined by the velocities of the earth formations traversed by reflected energy from a multiplicity of subsurface bedding planes comprising the steps of (1) applying time shifts to each set of reflected energies along hyperbolic-like sweeping functions, (2) adding the reflected energies along each of said functions to obtain a maximum value, each maximum value being related uniquely to one of said sweeping functions and to a specific velocity, (3) establishing with said velocities said correcting function, (4) time shifting said traces under control of said correcting function, and (5) stacking said time-shifted traces to obtain a single trace with an enhanced signal to raise ratio.



PLANT PATENTS

GRANTED JULY 22, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,576

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Mar. 12, 1979, Ser. No. 19,311
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its very vigorous, well branched, upright habit of growth, its primarily Signal Red flower color, blooms of 35 to 40 petals, and its very slight fragrance.

4,577

AFRICAN VIOLET PLANT

Hermann Holtkamp, Sr., Kueningsmuehle, 2 Dingden, 4236 Hamminkeln, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,473
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant as shown and described, characterized by the combined features of vigorous and compact growth habit; intensive blue-violet flowers carried on 7-9 flower stems, with up to 12 or more flowers per stem; attractive dark green, shiny leaves, and by its long lasting and non-dropping flowers.

4,578

AFRICAN VIOLET PLANT

Hermann Holtkamp, Sr., Kueningsmuehle, 2 Dingden, 4236 Hamminkeln, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,474
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet as shown and described, characterized by the combined features of vigorous growth habit; strong and upright flower stems, each carrying 7-9 large single star-shaped purple-violet flowers; prominent bright yellow anther cells, and by its round to heart-shaped leaves carried on strong petioles.

PATENTS

GRANTED JUL. 22, 1980

ERRATA

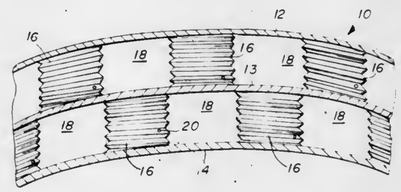
For CLASS	See PATENT NO.
433–126	4,213,243
368–263	4,213,291
368–204	4,213,292
368–152	4,213,293
368–082	4,213,294
368–236	4,213,295
082–001 C	4,213,354
410–064	4,213,590
206–045.14	4,213,598
355–077	4,213,698
430–432	4,213,782
430–533	4,213,783
430–616	4,213,784
435–291	4,213,825
430–114	4,213,872
548–250	4,213,903
556–419	4,213,914
568–424	4,213,920
568–455	4,213,921
370–031	4,214,123
375–114	4,214,124
370–112	4,214,128
370–057	4,214,129
362–311	4,214,168
455–020	4,214,205
374–004	4,214,206
455–095	4,214,207
455–001	4,214,208
375–001	4,214,209
455–282	4,214,210
455–287	4,214,211
455–190	4,214,212
367–027	4,214,226
371–040	4,214,228
357–044	4,214,315

PATENTS

GRANTED JULY 22, 1980

GENERAL AND MECHANICAL

4,213,202
SHOCK DISTRIBUTING PANEL
Ronald G. Larry, 2426 Mulberry, Bloomfield Hills, Mich. 48013
Filed Mar. 2, 1979, Ser. No. 16,880
Int. Cl.[2] A41D *13/00*
U.S. Cl. 2—2 **9 Claims**



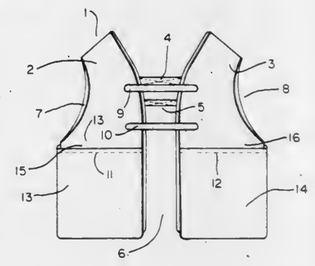
1. A shock distributing panel comprising:
an outer flexible sheet;
an inner flexible sheet spaced from the outer sheet;
a center flexible sheet disposed between the inner sheet and the outer sheet;
a plurality of shock distributing bellows disposed between the outer sheet and the center sheet, and between the inner sheet and the center sheet, the bellows between the outer and center sheets being laterally spaced apart from the bellows between the inner and center sheets in alternate rows and the bellows in each row being spaced apart from each other, thereby forming a void between bellows.

4,213,203
WOMAN'S OUTER GARMENT AND PATTERN THEREFOR
Willa Dean L. Ratliff, 2838 Linhaven Dr., Mesquite, Tex. 75150
Filed Oct. 31, 1977, Ser. No. 847,269
Int. Cl.[2] A41D *1/06*
U.S. Cl. 2—79 **8 Claims**



1. A garment, comprising:
a single garment piece forming first and second, mirror-image halves of the bodice portion and lower garment portion of the garment said first and second mirror-image halves forming the left and right side sections, respectively, of said garment;
the bodice portion defined by said garment piece having arm openings and a neck opening defined by substantially all of the front edge of the bodice portion of said mirror-image halves.

4,213,204
RESCUE VEST FOR NEW-BORN BABIES
Frances M. Donlon, 9200 Peabody St., and Jerry H. Van Buskirk, 8015 Urbanna Rd., both of Manassas, Va. 22110
Filed Jul. 23, 1979, Ser. No. 59,491
Int. Cl.[2] A41D *1/00, 1/04*
U.S. Cl. 2—94 **3 Claims**



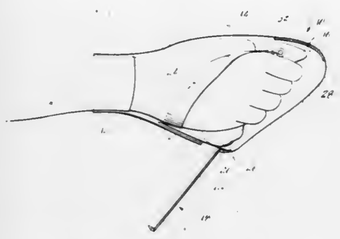
1. A wrap-around garment in the form of a vest which may be readily donned to provide safe and secure protection during rapid evacuation of a plurality of new-born babies from a nursery in the event of an emergency, such as fire, comprising;
a pair of above knee length spaced unitary panels, joined at the upper back, inwardly extending edges thereof, by a plurality of fabric straps attached thereto, and defining a space between the two panels, to adapt the garment to fit adults of varying size and stature,
each panel having on its upper mid-section an opening to receive an arm of the wearer, thereby leaving the arms of the wearer free and unencumbered for other duties,
a plurality of fabric straps attached to the front upper leading edge of one of the panels, the opposite panel having fastening means on its upper front leading edge to temporarily but firmly secure said straps to maintain the garment in position on the wearer, and,
each panel having secured by stitching at a point below the base of the armhole, an elongated fabric pocket, open at the upper end, and of a size sufficient to accomodate at least two new-born babies wrapped in crib blankets, the pockets being so located on the panels as to afford proper balance and weight distribution, and to insure safe handling of the babies without bumping by the knees of the wearer during hasty evacuation.

4,213,205
SKI MITTEN
Nancy O. Smith, 191 Hill Brook La., Fairfield, Conn. 06430
Filed Aug. 11, 1978, Ser. No. 933,096
Int. Cl.[2] A41D *19/00;* **A14D** *13/08*
U.S. Cl. 2—161 A **9 Claims**

1. A ski mitten comprising:
a cuff of flexible material for encircling the wrist,
a thumbless enclosure of flexible hand-protecting material extending forwardly from said cuff having a rounded configuration of sufficient size to enclose the whole hand when the hand is grasping the handle of a ski pole,
said enclosure having an aperture in the bottom for permitting the shank of the ski pole to extend out of the bottom of the mitten while the pole handle is being held in normal

position for use during skiing with the shank of the pole extending downwardly and rearwardly relative to the hand and wrist of the user, and

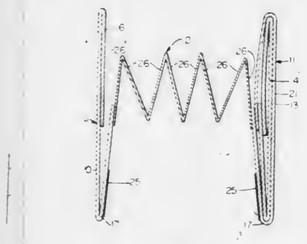
the flexible material surrounding said aperture being sufficiently flexible and stretchable for enabling the mitten to be retracted into a position over the wrist by projecting



the whole hand out through said aperture for exposing the whole hand whenever the user wishes,

whereby the mitten remains conveniently available on the wrist, avoiding a chance of loss, and ready to be repositioned over the whole hand whenever desired without releasing the pole handle from the hand.

4,213,206
ADJUSTABLE PAPER CAP
Thomas P. Maney, 535 Greenglade Ave., Worthington, Ohio 43085
Filed Feb. 7, 1979, Ser. No. 10,012
Int. Cl.[2] A42B *1/00, 1/22*
U.S. Cl. 2—197 **5 Claims**



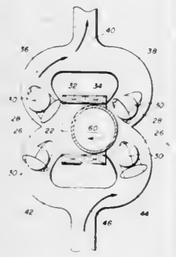
1. An adjustable cap comprising

first and second elongated side panels with respective opposite ends adapted to be disposed in co-extensive relationship with each panel having opposed upper and lower longitudinally extending edges, each of said first and second panels having a marginal edge portion at each longitudinally extending edge folded relatively inwardly thereof into superimposed relationship between two said panels, said upper and lower marginal edge portions overlapping with the lower edge portion projecting a distance upwardly to partially cover the upper edge portion,

said second panel being formed with a front section and a rear section extending in longitudinally aligned overlapping relationship, with adjacent ends of the front and rear sections telescopically interconnected to permit relative longitudinal displacement thereof for selective size adjustment, said interconnection having the overlapping marginal edge portions of the rear section telescopically positioned interiorly to the overlapping marginal edge portions of the front section, each of said front and rear sections having their opposite ends connecting with a respective end of said first panel, and

an elongated crown formed from flexible sheet material and having a plurality of longitudinally extending pleated panels with an outermost pleat panel at each side thereof projecting downwardly and secured to an inwardly facing surface of a respective lower marginal edge portion of said first and second panel, said pleated panels disposed in coplanar relationship to said side panels when said crown is collapsed to a fully folded configuration.

4,213,207
ARTIFICIAL HEART AND METHOD OF PUMPING BLOOD
Frederick M. Wilson, 2308 Lakeside Dr., Arlington, Tex. 76013
Filed Apr. 7, 1978, Ser. No. 894,546
Int. Cl.[2] A61F *1/24;* A61M *1/03*
U.S. Cl. 3—1.7 **16 Claims**



1. A construction having utility as a replacement for one chamber of a human heart, comprising:

(a) a hollow and firm cylindrical member of non-magnetic material having a length of more than one inch, with the two ends of the cylindrical member being closed, and there being an inlet port and an outlet port at each end of the cylindrical member;

(b) a check valve mounted in association with each of the ports, with one of the check valves at each end being oriented so as to admit blood to the cylindrical member in response to a low pressure therein, and the other check valve at a given end of the cylindrical member being oriented to discharge blood from the cylindrical member in response to a high pressure therein;

(c) a movable member sized to translate within the cylindrical member and being configured as a ball that is slightly smaller in diameter than the inner diameter of the cylindrical member, whereby translating the ball at a substantial speed will cause blood ahead of the ball to be pushed forwardly; and

(d) means for causing the movable member to translate within the cylindrical member at a desired time.

4,213,208
METATARSO-PHALANGEAL JOINT IMPLANT
Sheldon Marne, 10631 NW. 29 Ct., Sunrise, Fla. 33322
Filed Dec. 5, 1977, Ser. No. 857,786
Int. Cl.[2] A61F *1/24*
U.S. Cl. 3—1.91 **3 Claims**



1. A metatarso-phalangeal joint prosthesis comprising;

a male joint member, said male joint member including a medullary shaft, a stem integrally connected to said shaft and a metallic cylinder coupled to said stem, said stem and shaft consisting of a tissue-inert material, a portion of said stem being embedded within said cylinder, said embedded portion within said cylinder having and forming recessed

walls within said cylinder, said shaft and stem longitudinal axis intersecting the longitudinal axis of said cylinder;

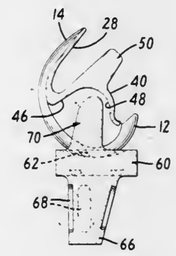
a female member, said female member having a medullary shaft disposed adjacent one end and integrally formed therein at the opposite end a socket, said socket having a partially cylindrical wall of a predetermined arcuate length, said socket being sized to receive said cylindrical head of said male member, said female member medullary shaft having a longitudinal axis that intersects the axis of said socket, said socket including at least one inwardly disposed protuberance, said protuberance being aligned along the axis of said socket;

said female member socket having an arcuate wall of a predetermined length which engages the stem on said male member to permit relative movement between the medullary shafts of the male and female members from a first position of ninety degrees to a second position between forty-five and sixty degrees which represents dorsi and plantar flexion;

a flexible cap coupled to and encapsulating said socket body, said cap being shaped so as to not be compressed while there is stress upon the joint in dorsi flexion, said cap being aligned with the stem and axis of rotation of the joint when connected; and

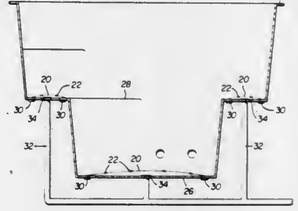
said medullary shafts including at least one flange to prevent rotation of said joint.

4,213,209
KNEE JOINT PROSTHESIS
John N. Insall, New York, N.Y., and Peter S. Walker, Ridgewood, N.J., assignors to New York Society for the Relief of the Ruptured and Crippled, New York, N.Y.
Filed May 22, 1978, Ser. No. 908,130
Int. Cl.[2] A61F *1/24*
U.S. Cl. 3—1.911 **4 Claims**



1. A knee joint prosthesis comprising a femoral component adapted to be implanted on the condylar portion of the femur and having a pair of laterally spaced-apart condylar portions, each of which has an external surface that is smoothly convexly curved in the antero-posterior direction and generally matches the shapes in lateral profile of the condylar surfaces of the femur and that is smoothly convexly curved in all cross sections along its antero-posterior extent, and a box-like intercondylar portion interconnecting the condylar portions and defining an intercondylar recess having spaced-apart lateral surfaces, an anterior surface and a posterior surface; and a tibial component adapted to be implanted on the tibial plateau and including a plate-like platform portion having on its superior surface a pair of laterally spaced-apart concavities, each of which is adapted to receive in nested relation one of the condylar portions of the femoral component, and a post extending superiorly from the platform portion which is adapted to be received in the intercondylar recess of the femoral component, the post having lateral surfaces, an anterior surface and a posterior surface, the relative positions and shapes of the anterior surfaces of the post and recess of the prosthesis as implanted in the knee joint being such that when the leg is at and near full extension and the femur tends to dislocate posteriorly relative to the tibia, the anterior surfaces engage each other to prevent posterial dislocation of the femoral component and when the leg is partly flexed the anterior surfaces are spaced from each other and permit relatively free relative antero-posterior translation of the components but restraining excessive anterior and posterior movements, the relative positions and shapes of the posterior surfaces of the post and recess of the prosthesis as implanted in the knee joint being such that when the leg approaches full flexure and the femur tends to dislocate anteriorly, the posterior surfaces engage each other to prevent anterial dislocation of the femoral component and when the leg is partly flexed or is extended the posterior surfaces are spaced-apart and permit essentially free, relative antero-posterior translation of the components, and the adjacent lateral surfaces of the post and recess diverging superiorly relative to the platform portion of the tibial component to permit essentially free normal lateral angulation.

4,213,210
AIR CHANNEL DEVICE
Chris N. Scourtes, Westland, Mich., assignor to Aqua Star Pool Company, Westland, Mich.
Filed May 21, 1979, Ser. No. 40,814
Int. Cl.[3] A47K *3/00;* A61H *33/02*
U.S. Cl. 4—543 **3 Claims**



1. In a bath unit which includes a base, said base having at least one interior surface formed therein on which a user may sit or rest his feet, the improvement comprising:

a flexible mat mounted on said interior surface, said mat having a plurality of perforations therein to permit the entry of air into a liquid in said base for aerating said liquid;

said mat mounted on said interior surface by retainer means, said retainer means securing the periphery of said mat to said interior surface, said retainer means including a bottom retainer portion and a top snap portion, said bottom retainer portion integrally mounted to said interior surface around the periphery of said mat, said mat stretched across said bottom retainer portion, and said top snap portion fitted onto said bottom retainer portion with said mat interposed therebetween thereby sealing the periphery of said mat to said interior surface; and

means for blowing air into said bath unit through a sealed opening in said interior surface, said sealed opening being beneath said mat, said air escaping into said liquid through said perforations in said mat, and said interior surface of said bath unit and said mat forming an air channel for providing a cushioning effect to said user due to the air which is compressed between said mat and said interior surface.

4,213,211

TOILET SEAT ELEVATOR DEVICE

Richard A. Bemis, and John E. Rummele, both of Sheboygan, Wis., assignors to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Filed Sep. 15, 1976, Ser. No. 723,381
Int. Cl.² A47K *13/06, 13/12*
U.S. Cl. 4—239 **1 Claim**



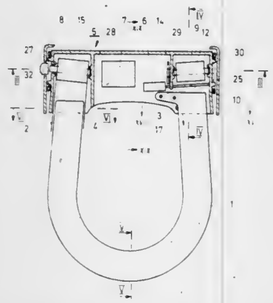
1. A toilet seat elevator assembly comprising in combination
(A) a generally ring-shaped tubular elevator member:
(1) having a shaped upper surface that in plan view approximates the shape of a toilet seat and which is adapted to support a toilet seat thereon,
(2) having a shaped lower surface that approximates the shape of a toilet seat bowl and which is adapted to rest on the top of a toilet seat bowl,
(3) having side walls extending between said upper surface and said lower surface, said side walls having a height of between about 3 and 6 inches,
(4) having as an integral part thereof a rearwardly extending section that contains means for connecting said elevator member to both a toilet bowl upon which the lower surface of the elevator member is to rest and to a toilet seat that is to be supported by the upper surface of the elevator member, said means including an elongated passageway extending completely through said rearwardly extending section,
(B) connector means for connecting said elevator member to a toilet bowl, said connector means including
(1) a flat horizontally disposed section of metal having two spaced apart holes therein which are spaced apart the same distance as the standard distance between the openings in the toilet bowl through which seat bolts are normally passed,
(2) a cantilevered leaf extending vertically upward and forwardly from each end of said flat horizontally disposed section of metal, each of said leaves having a hole in the upper portion thereof, said holes being horizontally aligned with each other along a line which is in front of the forward edge of said flat horizontally disposed section of metal, and
(C) an elongated bolt extending through the elongated passageway set forth in (A)(4) and through the horizontally aligned holes of the forwardly cantilevered leaves set forth in (B)(2),
whereby when said elevator member is attached to a toilet bowl by said connector means said elevator member can be pivoted from a substantially horizontal "down" position through an arc exceeding 90° to a generally vertical "up" position.

4,213,212

ARRANGEMENT FOR FITTING AND CHANGING A TUBULAR COVER MADE OF PLASTIC FILM ON A TOILET SEAT, AND METHOD FOR FORMING A TUBE

Bela Hefty, Sursee, and Arpad Hefty, Manensee, both of Switzerland, assignors to Hygomat AG, Switzerland

Filed Aug. 31, 1978, Ser. No. 938,351
Claims priority, application Switzerland, Sep. 7, 1977, 10935/77; Nov. 4, 1977, 13426/77
Int. Cl.² A47K *13/14, 13/20, 13/22*
U.S. Cl. 4—243 **21 Claims**



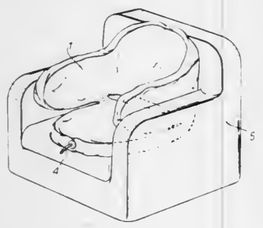
1. A device for supplying a tubular cover on a toilet seat comprising
a toilet seat having gap means through which the tubular cover is passed to encircle the body of the toilet seat,
reel means to store a length of tubular cover material, said reel means comprising a storage reel of unused tubular cover material located at the back end of the toilet seat,
a take-up reel for used cover material which has passed the length of the toilet seat,
drive means to advance the cover material a predetermined length corresponding to the length of the toilet seat covered; and
protective housing means to cover said drive means, said storage reel and said take-off reel.

4,213,213

SUPPORT DEVICE

John S. Burnett, "New Cottage", 51 Coldharbour La., Bushey, Herts., England (WD2 3NU)

Filed Aug. 11, 1978, Ser. No. 932,956
Int. Cl.² A47C *3/00*
U.S. Cl. 5—450 **6 Claims**



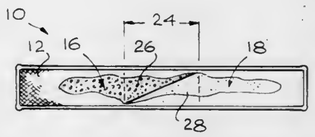
1. A device for supporting a human body in a chair, comrpising
(a) a hollow airtight bag member having a generally cruciform configuration;
(b) a particulate material arranged within said bag member; and
(c) means for controlling the degree of inflation of said bag member between a flexible partially inflated condition and a rigid deflated condition, whereby when said bag is partially inflated, said particulate material is distributed within said bag member to conform with the configuration of the body being supported, and when said bag member is deflated, said bag member and said particulate material rigidly support the body in a chair.

4,213,214

MULTIPLE FIRMNESS MULTIPLE SLEEPER MATTRESS

James E. Gilhooly, 31550 Agoura Rd., Apt. 5, Westlake Village, Calif. 91361

Filed Dec. 26, 1978, Ser. No. 972,927
Int. Cl.² A47C *27/15, 23/00*
U.S. Cl. 5—464 **11 Claims**



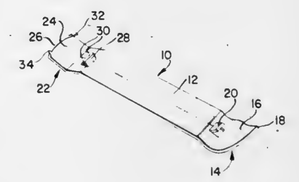
1. An improved multiple firmness, multiple sleeper mattress, said mattress comprising integral resilient means defining three separate areas of different firmness extending along the width of said mattress, each of said separate areas being in a side-by-side relationship with each area extending the full length of said mattress, including:
(a) First means, defining a first area extending along the entire length of the left side of said mattress which has a substantially constant first firmness and which is adapted to support a first sleeper,
(b) Second means defining a second area extending along the entire length of the right side of said mattress which has a substantially constant second firmness which is different from said first firmness, and which as adapted to support a second sleeper,
(c) Said second means extending generally parallel to said first means, and
(d) Third means, defining an intermediate area extending along the entire length of the mid-portion of said mattress and disposed between and integrally connected to both said first and second means,
(e) Said intermediate area having a constantly varying firmness extending across its width, with the firmness of the third means adjacent to the first means approximating the firmness of said first means and the firmness of the third means adjacent to the second means approximating the firmness of the second means.

4,213,215

CONTAINER OPENER

A. Douglass Hall, David's Hill Rd., Bedford Hills, N.Y. 10507

Filed Mar. 28, 1978, Ser. No. 891,051
Int. Cl.² B67B *7/00*
U.S. Cl. 7—152 **4 Claims**



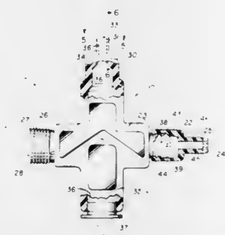
1. In a container opener having at least a bottle opener at one end of a handle including a lip for engaging the top of a bottle cap and a tang for engaging under the skirt of the cap for prying the cap from a bottle, wherein the improvement comprises:
means for piercing the skirt of a threaded bottle cap projecting from the tang; and
a first pair of curved spaced apart teeth projecting from the free end of the lip each terminating in a point for engaging the top of the threaded bottle cap at two locations, wherein the curve of the first of said pair of teeth projecting from the lip is directed toward the tang and the curve of the second of said pair of teeth is directed away from the tang so that when the tang piercing means engages the skirt of the threaded bottle cap and each of the pair of teeth of the lip are in piercing engagement with the top of the threaded bottle cap counterclockwise rotation of the opener will rotatably facilitate removal of the threaded bottle cap.

4,213,216

SERVICE TOOL

Richard V. Strybel, Elk Grove Village, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 13, 1978, Ser. No. 950,955
Int. Cl.² B25F *1/00*
U.S. Cl. 7—170 **14 Claims**



1. A service tool structure for forcibly coaxially installing an annular gasket in a complementary hose coupling recess defining a threaded outer portion and an inner portion having an axially adjustable valve depressor coaxially therein, said tool structure comprising:
a handle;
a first projection on the handle defining means for releasably carrying the gasket coaxially thereon for coaxial insertion of the projection and gasket thereon into an outer portion of the coupling recess to retain initially an axially inner portion of the gasket in the recess coaxially about an axially outer portion of the valve depressor in a partially installed disposition thereof; and
a second projection on the handle defining a transverse end surface defining means for engaging the outer end of the gasket fully about the annular extent thereof and defining threaded means for cooperating with the threaded recess portion of the coupling for threadedly urging said end surface coaxially toward the valve depressor and thereby urge the gasket coaxially inwardly about the valve depressor to a fully installed disposition thereof.

4,213,217

PROCESS FOR CONTINUOUSLY WASHING A PRINTED TEXTILE SHEET-LIKE STRUCTURE

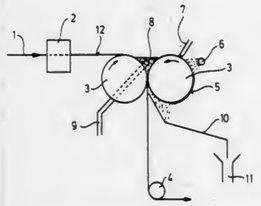
Alfred Kretschmer; Wilhelm Ruettiger, both of Ludwigshafen, and Albrecht Wuerz, Maikammer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,233

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757988

Int. Cl.² D06B *3/10*

U.S. Cl. 8—151 **4 Claims**



1. A process for continuously washing a printed textile sheet-like structure, wherein water or an aqueous wash liquor is applied to the sheet-like structure in open width so that it takes up from 80 to 500% by weight of water based on the weight of the sheet-like structure, and the sheet-like structure is then squeezed off against a squeeze roller or rollers so as to remove at least 30% by weight of water based on the weight of the sheet-like structure, whereby removable material on the surface of the sheet-like structure is sheared off from the sheet-like structure and is transferred to the squeeze roller(s), from which it is then removed.

4,213,218

IMPREGNATOR/RINSER

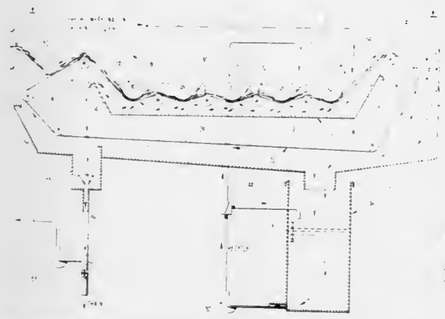
Allen R. Winch, Westfield, N.J., assignor to Cotton Incorporated, New York, N.Y.

Division of Ser. No. 859,167, Dec. 9, 1977, Pat. No. 4,158,237

This application Mar. 7, 1979, Ser. No. 18,137

Int. Cl.² D06B *3/02*

U.S. Cl. 8—151 **10 Claims**



1. A method of impregnating a moving fibrous batt with fluid by intermittently squeezing the batt, the method including the steps of:

conveying the moving batt in a generally longitudinal direction within a longitudinal tank of fluid on a single endless conveyor belt, the batt being arranged on an upper surface of the belt;

gently squeezing the batt while within the fluid in a nip defined between a first squeeze roller and the endless conveyor belt by passing the web and belt below the first squeeze roller provided within the tank;

carrying the batt on the conveyor belt above a singular roller to permit the batt to absorb fluid while within the fluid;

intermittently gently squeezing the batt by passing the batt alternately between at least one other squeeze roller and the belt and above both the batt and at least one other singular roller; and

conveying the batt from a squeeze roller out of the longitudinal tank.

4,213,219

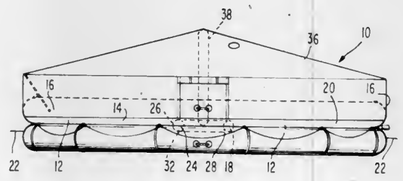
TENSIONING DEVICE FOR AN INFLATABLE STRUCTURE

Clarence Melander, Newark, Del., assignor to East Wind Industries, Inc., Dover, Del.

Filed Jun. 30, 1978, Ser. No. 920,866

Int. Cl.² B63C *9/02*

U.S. Cl. 9—4 R **10 Claims**



1. A tensioning device for an inflatable structure comprising:

(a) a deck means adapted to extend horizontally and provide a floor surface upon inflation of the inflatable structure;

(b) an outer inflatable member secured around the periphery of said deck means to support said deck means horizontally along the surface of the water upon inflation of said outer inflatable member; and

(c) an inner inflatable member integrally connected to said deck means to provide additional buoyancy to the central area of said deck means, said inner inflatable member integrally including a portion of the material of said deck means as a portion of the walls of said member to cause tightening and tensioning of said deck means upon inflation of said inner inflatable member, said inner inflatable member comprising:

(1) an upper wall section;

(2) a lower wall section formed by a portion of said deck area; and

(3) a continuous connecting means located around the periphery of said upper and lower wall sections to join each together for defining a hermetically sealed chamber to provide said inner inflatable member and to increase the central buoyancy and the tension applied to said deck means.

4,213,220

PROCESS FOR THE BINDING OF BOOKS, MAGAZINES AND THE LIKE

Luis J. A. Lopez-Martinez, 22B, c/Orense, Madrid 20, Spain

Filed Oct. 24, 1978, Ser. No. 954,239

Claims priority, application Spain, Nov. 4, 1977, 463.840

Int. Cl.² B42C *5/04, 9/00*

U.S. Cl. 11—1 R **6 Claims**

1. A process for the binding of books, magazines and the like without the use of staples or sewing, comprising forming a plurality of spaced notched cuts along the central fold line of each page section to be bound, each notched cut extending to one side of the fold line, a projection portion comprising that portion of the page between the bottom of the notched cut and said central fold line, folding each page section along said central fold line so that said projection portions project from the fold line on the opposite side of the fold line from the notched cut, nesting the page sections one within another with the projection portions on an inner page passing through the notched cut in each of the pages outwardly thereof so that the corresponding projection portions on adjacent pages overlap, and gluing together the overlapping projection portions of adjacent pages.



4,213,221

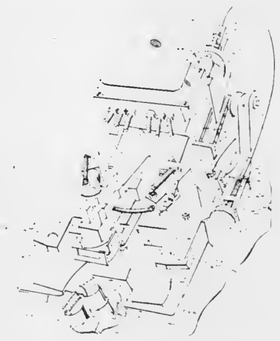
WIPER MOTION STOP

Alphonse C. Kulik, Ipswich, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Oct. 25, 1978, Ser. No. 954,484

Int. Cl.² A43D *21/00*

U.S. Cl. 12—12.4 **5 Claims**



1. A shoe lasting machine for lasting a variety of sizes and styles of shoes therewith, said machine comprising:

a frame for supporting a wiper arrangement thereon; said wiper arrangement including:

a pair of wipers mounted on a wiper head;

a pair of wiper carriers for holding and guiding said wipers;

a wiper support plate arranged beneath said wiper carriers;

a cam plate arranged over said pair of wiper carriers to hold said wiper carriers against said support plate and help guide them therebetween in their opening and closing movements;

a piston and cylinder arrangement connected between said wipers and said frame for effecting the movement of said wipers with respect to said frame of said machine;

means for preselecting the rotational distance of travel of said wipers against the forepart of a shoe being lasted on said machine, permitting said machine to effectively and safely inwipe a variety of shoes.

4,213,222

CLEANING APPARATUS FOR A WEB OF PLASTICS FILM HAVING A MAGNETIC COATING

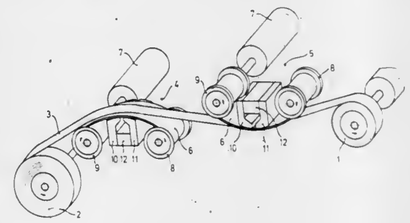
Klaus Schoettle, Heidelberg; Peter Dobler, Ludwigshafen; Helmut Lewin, Bobenheim-Roxheim, and Eberhard Koester, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 28, 1978, Ser. No. 973,799

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1978, 7801442[U]

Int. Cl.² B08B *11/00*

U.S. Cl. 15—100 **3 Claims**



1. An apparatus for continuously cleaning the surface of a web of plastics film provided with a magnetic coating, especially the surface of a magnetic tape, the surface to be cleaned being kept in close contact with a tape of nonwoven fabric by virtue of the configuration of the path of travel of the web, wherein the poles of a magnet, which define an air gap, are located in the region of the contact area, behind the tape of nonwoven fabric, on the side facing away from the web of coated plastics film.

4,213,223

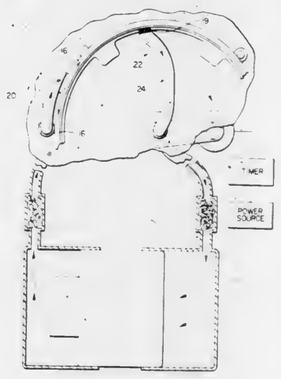
TAPE CARTRIDGE STRAP CLEANER

Phillip A. Cosby, Arlington, Tex., assignor to Graham Magnetics Incorporated, Ft. Worth, Tex.

Filed Oct. 5, 1978, Ser. No. 948,704

Int. Cl.² B08B *5/02, 5/04*

U.S. Cl. 15—304 **13 Claims**



1. Apparatus for cleaning the interior surface of a generally cylindrical ring-shaped article comprising an air passage between the interior and exterior walls thereof and without contaminating said passage, said apparatus containing

(a) means to mount said cylindrical object in a fixed position

(b) positive pressure supply means to continuously supply air into apertures in said exterior wall and through said passage to apertures in the interior wall

(c) suction cleaning means mounted for relative rotation

with, respect to and cleaning contact with, the interior wall of said cylindrical article

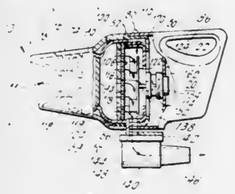
(d) said positive pressure means serving to continuously bar any debris, loosened by said cleaning means during said cleaning, from entering said apertures and said passage during cleaning.

4,213,224

BY-PASS TYPE PORTABLE VACUUM CLEANER

Jonathan Miller, Williamsport, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Aug. 21, 1978, Ser. No. 935,265
Int. Cl.[2] A47L *5/24*
U.S. Cl. 15—344 **6 Claims**



1. A vacuum cleaner, of the portable variety, or the like, comprising:

a main housing; an inlet into said main housing, said main housing inlet facing in one direction;

a filter in said housing for passing air therethrough and for trapping particulate materials thereon;

a main fan of the centrifugal type in said main housing and placed for drawing air through said main housing inlet and past said filter; said main fan having an inlet which is axial of said main housing and is placed to receive air that has been moved through said filter; said main fan having an outlet to which said main fan blows air; said outlet from said main fan is radial of said main housing;

an outlet from said main housing and communicating with said main fan outlet, whereby air is blown out of said main housing through said main housing outlet; said main housing outlet being placed radially outwardly of said fan outlet;

a chamber comprising a plenum, located outside said main housing and being in communication with said housing outlet for receiving air therefrom; an outlet from said chamber directed to blow air in a direction away from said one direction; a sound muffler in said plenum;

a motor connected with said main fan for driving said main fan; a motor cooling fan for blowing air over said motor; said motor cooling fan also being connected with said motor for being driven thereby;

a motor housing for containing said motor and said motor cooling fan; said motor housing being located in said main housing; said motor housing having an inlet through which air is drawn by said motor cooling fan for being blown over said motor; said motor housing having an outlet spaced from said motor housing inlet for outlet of air that has blown over said motor;

a divider in said main housing for dividing said main housing into separate portions such that air blown over said motor by said motor cooling fan from said motor housing inlet to said motor housing outlet does not mix in said main housing with air blown by said main fan, and such that air blown by said main fan from said main housing inlet to said main housing outlet does not blow over said motor; said motor housing outlet being at one side of said divider of said main housing, and said main fan, said main fan outlet and said main housing outlet being at the other side of said divider.

4,213,225

CASTOR ASSEMBLY

Hendrikus J. M. Timmer, Tiel, Netherlands, assignor to SKF Industrial Trading and Development Company B.V., Nieuwegein, Netherlands

Filed Jul. 11, 1977, Ser. No. 814,349
Int. Cl.[2] B60B *33/00*
U.S. Cl. 16—21 **5 Claims**



1. A castor assembly comprising an upper fixing plate of cup-like form including a planar flange forming a top plate, an outer bearing race projecting downwardly from said flange, a swivelling fork having an inner race for the bearing, a plurality of rolling elements in the annular space between the inner and outer races, a cover mounted to said flange overlying said races, said cover having tubular projections which fit into holes for bolts in the top plate of the rolling bearing, said projections being slightly longer than the material thickness of the top plate at the place of the holes for the bolts such that during mounting of the castor on a device, the projections can function as lock-nuts.

4,213,226

BUSHING AND GREASE RETAINER FOR CASTERS

Carl J. Demrick, Birmingham, Mich., assignor to Herder, N.V., Curacao

Filed Jan. 29, 1979, Ser. No. 7,480
Int. Cl.[2] B60B *33/00*
U.S. Cl. 16—36 **5 Claims**



1. A bushing and grease retainer for casters comprising a generally cup-shaped bushing having a closed bottom end, said bushing having a cylindrical outer wall, and an integral shroud extending radially outward at the top end of the bushing and downwardly around the bushing providing an enclosure adjacent said top end encircling a portion of the bushing, said cylindrical wall being of a major diameter for a major extent of the bushing, and a smaller diameter of said wall for a relatively lesser extent of the bushing adjacent said bottom end, an outer positioning bead extending vertically of the bushing as a projection from said cylindrical wall, an interior bearing surface provided throughout said major extent of the bushing, an interior pocket adjacent said bottom end, and an upwardly tapering surface extending between said pocket and said interior bearing surface.

4,213,227

TELESCOPING HEAT RESPONSIVE RELEASING MEANS

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Division of Ser. No. 779,044, Mar. 18, 1977, Pat. No. 4,099,292, which is a continuation-in-part of Ser. No. 676,483, Apr. 13, 1976, Pat. No. 4,041,570, and Ser. No. 676,413, Apr. 13, 1976, Pat. No. 4,040,304. This application Mar. 13, 1978, Ser. No. 885,519
Int. Cl.[2] E05F *15/20*
U.S. Cl. 16—48.5 **14 Claims**



1. A heat responsive releasing device, comprising:

(a) a mounting member;

(b) a pawl member slidably engaging said mounting member, said pawl member tracking relatively along said mounting member between at least restrained and activated positions defined along said mounting member; and

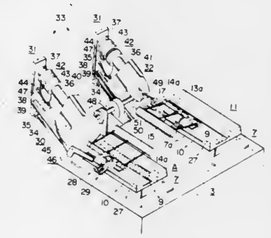
(c) bimetallic means mounted on said mounting member for restraining said pawl member relative to said mounting member in response to a preselected normal ambient temperature and for releasing said pawl member in response to at least a preselected increase in said ambient temperature whereby said pawl member and said mounting member may then slide relative to each other.

4,213,228

DEVICE FOR CUTTING OFF THE NECK MEAT OF A FOWL

Seigi Komatsu, and Hiroshi Kitajima, both of Kobe, Japan, assignors to Seigi Komatsu, Japan

Filed Nov. 1, 1978, Ser. No. 956,802
Int. Cl.[2] A22C *21/00*
U.S. Cl. 17—11 **6 Claims**



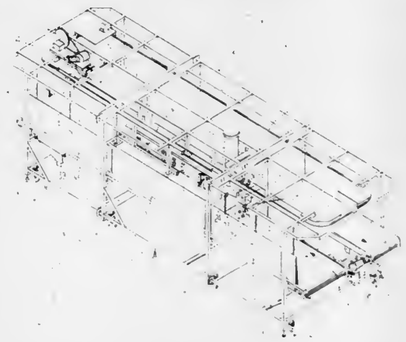
1. A device for cutting meat from the neck of a fowl, said device comprising a machine frame, a suction blower mounted on said machine frame, vacuum chamber defining means connected with said suction blower so as to have its interior brought under vacuum by said suction blower, said vacuum chamber defining means having an elongated suction hole formed in the upper portion thereof communicating with its interior, an elongated cutting blade located adjacent said suction hole and having an elongated cutting edge extending generally parallel to the longitudinal axis of said suction hole, said cutting blade forming a gap between its cutting edge and said vacuum chamber defining means which gap is of substantially smaller width than the neck bone of a fowl neck to be processed whereby the meat from such neck may be drawn into said gap by the vacuum existing in said vacuum chamber means while said bone is precluded from entering said gap, a stationary support blade overlying said cutting blade and having an elongated edge spaced rearwardly a small distance from said cutting edge of said cutting blade, and means for reciprocating said cutting blade along the length of said suction hole.

4,213,229

MECHANICAL DEBONING OF POULTRY

Warren D. Helmer, Lindenwold, and Robert E. Small, Voorhees, both of N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed May 25, 1978, Ser. No. 909,380
Int. Cl.[2] A22C *21/00, 17/04*
U.S. Cl. 17—46 **7 Claims**



1. Apparatus for dry centrifugal separation of poultry meat from bone comprising means for holding at least one poultry leg-thigh section at an end thereof, motor means for imparting rotational motion to said holding means, which rotational motion may be controlled by said motor means at an acceleration rate within the range of from one to 40 radians per second per second, and means for collecting fragments of separated meat.

2. A method of dry centrifugal separation of poultry meat from bone comprising the steps of:

(a) attaching a poultry piece to a holding means;

(b) gradually imparting rotational motion to said holding means at speeds sufficient to cause pieces of meat to separate from bone due to centrifugal forces alone, said speeds being insufficient to cause the holding means to fracture the bone; and

(c) collecting said pieces of meat.

4,213,230

ROTATABLE LOCKING FASTENER

Cuyler Hoen, Rennesselaer, N.Y., assignor to Simmons Fastener Corporation, Albany, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,842
Int. Cl.[2] A44B *17/00;* **F16B** *21/07*
U.S. Cl. 24—217 R **6 Claims**

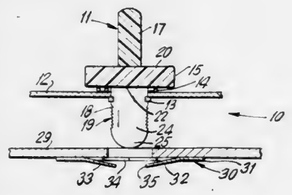
1. A locking type fastener comprising a turn member assembly attached to a first panel and a receptacle member attached to a second panel;

said turn member assembly including a cap attached to said first panel, a turn member rotatably mounted relative to said cap, a turn member spring positioning means to resiliently and rotationally orient said turn member with re-

spect to said first panel by returning said turn member to a preselected position after unlocking of said fastener;

said turn member assembly further including a first stop means to limit the rotation of said turn member to no more than one-quarter turn in the direction it unlocks said fastener and a second stop means to limit the return of said turn member by said spring positioning means upon unlocking said fastener so that said turn member returns to its preselected position to be relocked;

said turn member including a turning means to rotate said turn member and a stud having a body portion, said stud body portion being an elongated sheet metal body member with flat opposed sides, parallel opposed serrated edges and a blunt nose portion, said turn member further including panel attachment means to rotatably attach said stud to said first panel;



said receptacle member comprising a base, two downwardly articulated spring flanges connected to said base and having free edges, an elongated opening through which the stud body portion protrudes on fully closing the fastener and which limits the rotational turning of said stud body portion, and means for securing said receptacle to said second panel;

wherein on partial or full closing of said first panel to said second panel said stud is inserted through said opening to bend said flanges downwardly, thereby permitting said free edges of said flanges to grip the serrated edges of said stud body portion; and

wherein on turn member rotation said body portion will disengage from said flanges producing fastener unlock and permitting withdrawal of said turn member from said receptacle and consequent panel separation.

4,213,231

MANUFACTURE OF METAL STRIP

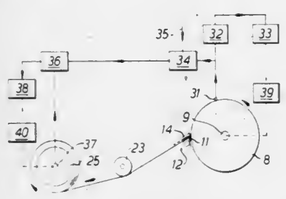
Andrew Middlemiss, and Dalip T. Malkani, both of Sheffield, England, assignors to British Steel Corporation, London, England

Filed Jul. 14, 1978, Ser. No. 924,723

Claims priority, application United Kingdom, Jul. 13, 1977, 29804/77

Int. Cl.² B21C *37/04, 37/02*

U.S. Cl. 29—18 **8 Claims**



1. A method of manufacturing metal strip from a cylindrical workpiece which comprises the steps of rotating the workpiece about its axis, feeding a cutting tool at a predetermined rate continuously into the peripheral surface of the rotating workpiece to produce a continuous metal strip peeled from the periphery of the workpiece, collecting the peeled strip by winding it around a rotating coiler, controlling the rotational speed of (a) the workpiece and (b) the coiler, to maintain their peripheral speed substantially constant, and controlling the angular velocity of (b) the coiler and (a) the workpiece, respectively, in accordance with a time-dependent derived relationship to maintain a predetermined ratio between the peripheral speeds of (a) the workpiece and (b) the coiler, the peripheral speed of the workpiece being kept constant when the angular velocity of the coiler is being controlled in accordance with said time-dependent derived relationship, the peripheral speed of the coiler being kept constant when the angular velocity of the workpiece is being controlled in accordance with said time-dependent derived relationship.

4,213,232

CONTROLLED DEFLECTION ROLL

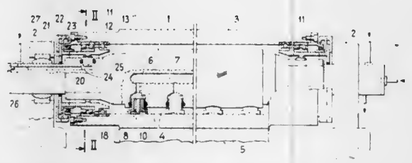
Mario Biondetti, and Ignazio Marchioro, both of Shio, Italy, assignors to Escher Wyss Limited, Zürich, Switzerland

Filed May 23, 1979, Ser. No. 41,762

Claims priority, application Switzerland, Jun. 2, 1978, 6068/78

Int. Cl.² B21B *13/02*

U.S. Cl. 29—116 AD **2 Claims**



1. A controlled deflection roll comprising:

a stationary roll support;

a roll shell;

means for mounting said roll shell to be rotatable about said stationary roll support;

pressure elements arranged between said roll support and said roll shell;

said roll shell having opposed end regions;

guide elements for rotatably mounting said opposed end regions of said roll shell;

said roll support having guide surface means;

each guide element having a guide opening bounded by two substantially parallel guide surfaces guided at said guide surface means of said roll support;

each of said guide elements having an inner surface;

each opposed end region of the roll shell having an outer surface spaced from said inner surface of the related guide element to define therebetween a gap;

a respective piston arranged in the roll support at the region of each guide element and actuatable by a pressurized fluid medium for axial movement in said gap in the direction of said inner surface of the related guide element;

said piston having a pressure-exerting direction essentially in a pressure plane of the controlled deflection roll and effective in a direction opposite to the direction of pressure exertion by the pressure elements; and

each said piston, when actuated, serving to contact said inner surface of the related guide element.

4,213,233

METHOD OF MAKING A PILOT OPERATED VALVE POSITIONER

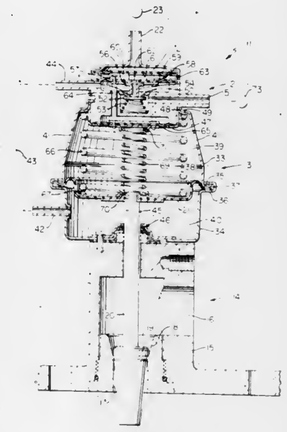
Harold G. Brakebill, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 800,299, May 25, 1975, Pat. No. 4,143,850. This application Dec. 11, 1978, Ser. No. 968,022

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.² B23P *15/00;* **F16K** *31/12*

U.S. Cl. 29—157.1 R **5 Claims**



1. In a method of making a pilot operated valve positioner having pilot valve means operated by a pneumatic signal to pneumatically operate an actuator means carrying a main valve member to position the same relative to its main valve seat in a valve unit in relation to the magnitude of said pneumatic signal, said actuator means having a range spring and a feedback spring for said pilot valve means, said springs being coiled compression springs and being substantially concentrically mounted, the improvement comprising the step of disposing part of the housing means of the pilot valve means concentrically within one end of said range spring of said actuator means so that a positioning diaphragm means of said pilot valve means is also concentrically disposed in said one end of said range spring and engages one end of said feedback spring to render said valve positioner relatively small and compact.

4,213,234

METHOD AND APPARATUS FOR MANUFACTURING VEHICLE WHEEL RIMS FROM SPIRALLY WOUND SHEET METAL

Peter G. Ware, Rugby, England, assignor to Dunlop Limited, London, England

Filed Apr. 8, 1977, Ser. No. 785,960

Claims priority, application United Kingdom, Apr. 20, 1976, 15864/76; Jun. 12, 1976, 24465/76; Aug. 11, 1976, 33338/76

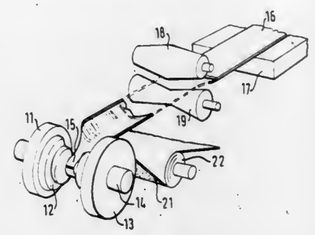
Int. Cl.² B21H *1/02;* **B65H** *81/00*

U.S. Cl. 29—159.1 **25 Claims**

1. A method of manufacturing a wheel rim for a pneumatic tire, said rim having bead retention flanges upstanding from its axially outer sides, the method comprising:

winding a strip of thin ductile sheet metal spirally onto a former having a profiled peripheral configuration corresponding to the interior configuration of the rim with portions on its axial width of different diameters;

deforming the strip as it is wound into a configuration having said bead retention flanges by maintaining it under longitudinal tension while winding;



interposing an adhesive between superimposed turns of the strip.

4,213,235

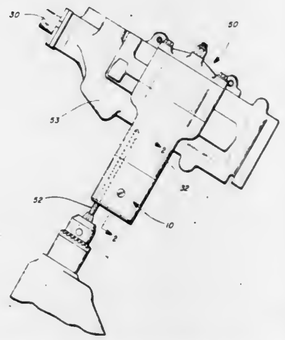
SEAL REMOVER

Gary Kemmerling, 7165 Fillmore Rd., Mentor, Ohio 44060

Filed Oct. 13, 1978, Ser. No. 951,023

Int. Cl.² B23P *19/02*

U.S. Cl. 29—235 **4 Claims**



1. An apparatus for use in removing from within a mechanism, annular seals surrounding a shaft extending from said mechanism, the apparatus comprising:

(a) a body including a central bore therethrough having two portions;

(b) one of said bore portions for coacting with and engaging the end contour of the shaft, said one portion being threaded and adapted to threadedly engage the end of the extending shaft;

(c) the second portion of said bore having a diameter larger than the diameter of the first bore portion so that clearance is provided for the non-engaged portions of the extending shaft;

(d) the body further including a reduced diameter end section adapted to enter the bore of the mechanism from which the shaft extends to minimize relative lateral movement between the apparatus and the mechanisms;

(e) means for locking said body to said shaft; and,

(f) at least one drill guide hole disposed longitudinally between the outer wall and the central bore of said body.

4,213,236

TOOL FOR DEFORMING A PLURALITY OF GROOVE DEFINING FLANGES AGAINST INSULATING BARS IN THE GROOVES

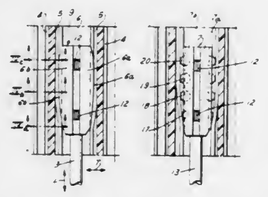
Manfred Diels; Karl W. Dienstuhl, both of Meinerzhagen; Tilo Jäger, and Eitel Höcker, both of Bielefeld, all of Fed. Rep. of Germany, assignors to Otto Fuchs KG, Meinerzhagen and Schüco Heinz Schürmann GmbH & Co., Bielefeld, both of, Fed. Rep. of Germany

Division of Ser. No. 872,121, Jan. 24, 1978, which is a division of Ser. No. 744,177, Nov. 22, 1976, Pat. No. 4,096,678. This application Dec. 8, 1978, Ser. No. 967,738

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1975, 2552700

Int. Cl.[2] B23P *11/00*

U.S. Cl. 29—243.5 **4 Claims**



1. A tool for making a construction element from a pair of elongated metallic profiles each formed with two parallel grooves each formed in turn by a respective pair of parallel flanges and each receiving one side of a respective bar of insulating material whose other side is received in the respective groove of the other profile, said tool comprising a pair of side parts defining a pair of opposite faces each engageable with one of said flanges of the two pairs of flanges receiving a respective bar; means for drawing said side parts longitudinally along said profiles between said bars with one of said faces engaging two of said flanges and the other said faces engaging another two of said flanges; and means for urging said side parts transversely apart and against the flanges in contact with said faces for plastically and permanently deforming said flanges in contact with said faces into tight contact with the respective bars.

4,213,237

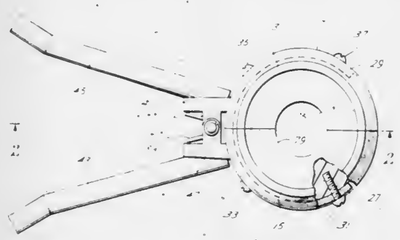
STABBING GUIDE

Winslow Whiting, 10030 Briar Forest, Houston, Tex. 77018

Filed Sep. 25, 1978, Ser. No. 945,987

Int. Cl.[2] B25B *27/14*

U.S. Cl. 29—272 **5 Claims**



1. A stabbing guide tool for facilitating makeup of threaded pin and box tubing connectors comprising

an infundibulum made of lubricous plastics material having a hardness greater than that of elastomer rubber (above 90 Shore A scale) and less than that of steel,

said infundibulum being split diametrally into two parts with hinge means at one end of the split, torsion spring means biasing the two parts together into closed position,

a pair of arcuate aluminum plates each extending about said infundibulum on opposite sides thereof from adjacent said hinge means over half way toward the other end of the split, screws means securing the plates to the infundibulum, and

a handle extending generally radially from each plate adjacent the hinge, the handles diverging to a hand grip spacing, whereby upon pressing the handles together with the hand the infundibulum is opened.

4,213,238

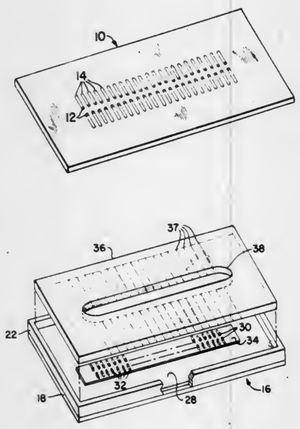
METHOD OF FORMING A LEAD TO AN ELECTRODE ON A CHARGE PLATE

James L. Gudorf, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 912,495, Jun. 5, 1978. This application Feb. 26, 1979, Ser. No. 15,198

Int. Cl.[2] H05K *3/00*

U.S. Cl. 29—878 **9 Claims**



1. A method of producing a charge plate for an ink jet printer comprising the steps of:

(a) fabricating a master plate including a series of regularly spaced orifices,

(b) coating a side of said master plate with photoresist material, exposing the photoresist material through a positive working mask containing open areas corresponding to the areas immediately adjacent said orifices and lines extending from each individual orifice, developing the photoresist material, and removing that portion of the material from the exposed areas,

(c) casting, in a mold fixture, an elastomeric molding material against said master plate and into said orifices, thereby producing an elastomeric mold comprising a base, a series of pins projecting outwardly from said base, and a series of ribs extending outwardly from each of said pins,

(d) separating said master from said elastomeric mold while maintaining said elastomeric mold in said mold fixture,

(e) producing a series of electrodes and leads by coating said pins and ribs with a transferrable coating of electrically conductive material,

(f) fabricating a rigid and durable support plate structure having a medially extending elongated slot,

(g) placing said support plate against said elastomeric mold with said slot surrounding said pins,

(h) casting into said slot and against said elastomeric mold and said coated pins and ribs an electrically nonconductive polymeric casting material of a type which is curably adherent to aid support plate and said electrodes and leads,

(i) curing said polymeric casting material to define a charge plate structure having a series of regularly spaced charge electrodes and leads,

(j) separating said charge plate structure from said elastomeric mold, and

(k) removing excess material from the surfaces of said charge plate structure.

4,213,239

TUBE EXTRACTOR

Burt Filer, c/o Heat Exchanger Tool Corporation, P. O. Box 2, Trevose, Pa. 19047

Filed Oct. 11, 1978, Ser. No. 950,276

Int. Cl.[2] B23P *19/02*

U.S. Cl. 29—726 **10 Claims**



1. A tube extractor for extracting expanded tube ends from the tube sheet of a heat exchanger which comprises

an outer housing having a forward extension for engagement with the tube sheet and having a cylinder therein,

a piston within said cylinder,

expansible broach means secured to said piston and having cutting teeth for insertion into one of said tube ends,

a mandrel actuated by said piston for intermittent movement thereof,

said mandrel having a forwardly converging end portion for engagement with interior portions of said broach means,

a fluid pressure supply connected to said cylinder for moving said piston to expand said broach means into cutting engagement with a tube end, and

clutch means actuated by longitudinal movement of said piston for first rigidly locking and then upon further movement releasing said mandrel to move with said broach member for tube extraction.

4,213,240

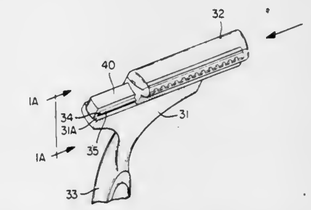
LADIES' RAZOR SYSTEM

Frank A. Ferraro, Trumbull, and Ernest F. Kiraly, Fairfield, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 787,657, Apr. 14, 1977, abandoned. This application Oct. 20, 1978, Ser. No. 953,306

Int. Cl.[2] B24B *21/22, 21/14, 21/52*

U.S. Cl. 30—47 **9 Claims**



1. A replaceable blade cartridge shaving system comprising:

an elongated handle member having a head portion extending transversely thereof, the head portion including a pair of longitudinally extending co-planar opposed flange members extending substantially perpendicular to the head portion and a substantially rigid protuberance member located medially of the flanges and extending a predetermined significant distance beyond the plane containing the flanges; and

a replaceable blade cartridge having coupling structure defining two opposed spaced grooves adapted for longitudinal slidable engagement with the flange members for attaching the cartridge to the handle in a desired shaving position, and a clearance recess between the coupling grooves for accepting the protuberance member when the cartridge is slidingly coupled to the handle, said protuberance member having a particular geometry transversely of the longitudinal extent of said flange members, and the geometry of said clearance recess transversely of the longitudinal extent of said cartridge being sufficient to clear said protuberance member at least from one end of said cartridge continuously to a position enabling said attachment of said cartridge with said handle in said desired shaving position.

4,213,241

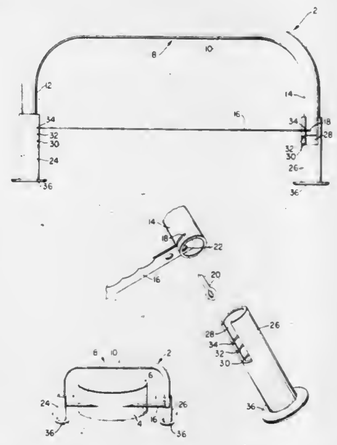
CAKE LAYER CUTTER

Ray E. Haapala, Rte. 3, Box 76, Dassel, Minn. 55325

Filed Mar. 30, 1979, Ser. No. 25,344

Int. Cl.[3] A21C *5/00*

U.S. Cl. 30—115 **1 Claim**



1. A cake-layer cutter comprising:

a U-frame having a bight portion and a pair of spaced parallel hollow tubular legs extending therefrom,

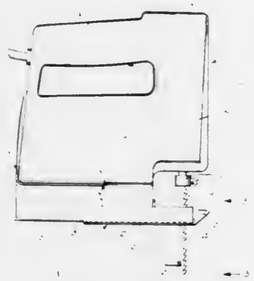
an elongate flat blade having opposite end portions respectively disposed in slots in the legs which extend in the circumferential directions of the legs, and

leg extension means extending from free ends of said legs and having free end portions adapted to slide along a table top upon which a cake-layer is supported,

said leg extension means comprising tubular members telescopically engaged on the frame legs and being slidable lengthwise along the frame legs,

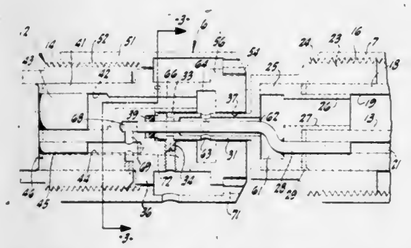
each said leg extension means having a lengthwise slot therein for providing clearance over a blade end portion when the leg extension means is slid along the length of a frame leg and a plurality of other slot means extending in the circumferential direction of the leg extension means from the edge of the lengthwise slot therein and being spaced from one another in the lengthwise direction of the leg extension means, said other slots being selectively engagable over a blade end portion whereby to provide incremental adjustability of the distance between the blade and the free end portion thereof.

4,213,242
ATTACHMENT FOR SABER SAW
Everett J. Partington, 620 S. Elizabeth, Oconomowoc, Wis. 53066
Filed Jan. 22, 1979, Ser. No. 5,555
Int. Cl.[2] B27B *11/02, 19/09*
U.S. Cl. 30—374 **11 Claims**



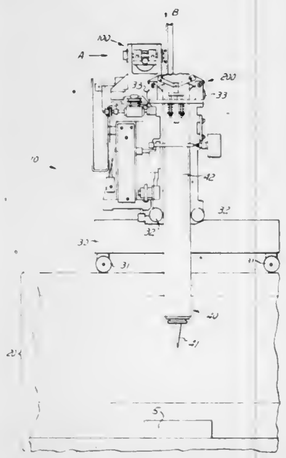
1. an attachment to be used with a saber saw, said saber saw having a casing and a generally flat base secured to the casing and having a reciprocating blade extending through a slot in said base, said attachment comprising a plate to be attached to the base and having a slot aligned with the slot in the base to receive the blade, a fin extending downwardly from the outer surface of the plate and disposed in fore-to-aft alignment with the slot, said fin adapted to be disposed in edgewise abutting relation with the rear edge of the blade to support the blade as a cut is made, and guide means on the forward edge of the fin and defining a vertical slot adapted to receive the lower portion of the blade to prevent deflection of the blade in a lateral direction.

4,213,243
ROTARY CONNECTOR FOR A DENTAL HANDPIECE
Lloyd P. Flatland, 15 Quisisana Dr., Kentfield, Calif. 94904
Filed Jan. 2, 1979, Ser. No. 534
Int. Cl.[2] A61C *1/12*
U.S. Cl. 433—126 **8 Claims**



1. A rotary connector for a dental handpiece having an external handpiece thread and for a dental hose having a mating internal hose thread comprising a plug generally symmetrical about an axis and having a plug external thread adapted to engage said internal hose thread, a spindle extending from said plug along said axis, a socket generally symmetrical about said axis and journalled on said spindle for rotation about said axis, means interengaging said socket and said spindle for releasably precluding axial displacement thereof, a shoulder on said socket, a collar having a flange adapted to abut said shoulder and having internal threads adapted to engage said external handpiece thread, means defining in said plug an air inlet passage open to said hose and extending partway through said spindle and open through an orifice in the side of said spindle, means defining in said socket an air outlet passage open to said orifice and open to said handpiece, means including a tube defining in said plug a water inlet passage open to said hose and extending through said air inlet passage and projecting axially from said spindle, and means defining in said socket a water outlet passage open to said tube and open to said handpiece.

4,213,244
COORDINATE MEASURING MACHINE HAVING A FAILSAFE PROTECTION SYSTEM
Frederick K. Bell, Centerville, and John J. Tuss, Englewood, both of Ohio, assignors to The Bendix Corporation, Southfield, Mich.
Filed May 8, 1978, Ser. No. 904,172
Int. Cl.[2] G01B *5/20*
U.S. Cl. 33—1 M **6 Claims**

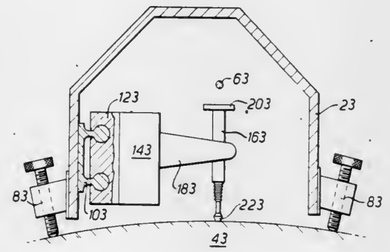


1. In combination with an apparatus for measuring coordinates on a part, said apparatus being of the type having a base; a carriage mounted to the base for horizontal movement with respect to said base; a probe for engaging the part for measuring its coordinates, said probe including a portion extending vertically and mounted to said carriage to allow vertical movement of the probe with respect to said carriage, and means for counterbalancing said vertically mounted probe, the improvement wherein said apparatus additionally includes:
- a braking member movably mounted to the carriage and positioned adjacent to the probe, said braking member including an inclined braking surface adapted to engage the probe in an interfering position when the braking member is moved;
- means for sensing a failure of the counterbalance system and generating a signal in response to the failure; and
- means coupled to said braking member and responsive to the sensing means for moving the braking member toward the probe in response to the sensing means, whereby when a failure of the counterbalance is sensed by the sensing means which moves the braking member into an interfering position with respect to the probe to stop the downward movement of the probe.

4,213,245
PROFILE GAUGING
David A. Armstrong, Swansea, Wales, assignor to British Steel Corporation, London, England
Filed Feb. 3, 1978, Ser. No. 875,107
Claims priority, application United Kingdom, Feb. 8, 1977, 5180/77; Jul. 14, 1977, 29624/77; Nov. 2, 1977, 45580/77
Int. Cl.[2] G01B *7/28, 7/34*
U.S. Cl. 33—174 P **22 Claims**

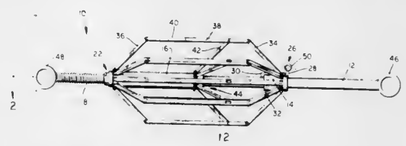
1. Apparatus for gauging the surface profile of a workpiece

comprising a reference element extending at least the length of the workpiece surface to be gauged and having a reference surface against which the surface under test can be compared, means for maintaining said element under tension in the direction of its length, together with a sensor assembly supported by a carriage means enabling the sensor assembly to move along said element, said sensor assembly incorporating a pair of relatively moveable probes, one of the probes being supported in a manner whereby it follows the surface profile of the workpiece surface under test when moved along same, and the other probe being supported in spaced relationship adjacent said



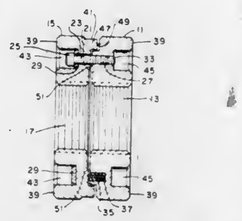
reference surface and including a sensing means for sensing the electrical reactance between the sensing means and the reference surface, said other probe and sensing means moveable along said reference surface in spaced relationship with respect thereto, and means for moving said sensing means relative to said carriage means towards or away from said reference surface in response to the electrical reactance between the sensing means and the reference surface, whereby the sensing means and the reference surface can be maintained apart a predetermined distance while the sensor assembly is moved therealong.

4,213,246
COLLAPSIBLE AND ADJUSTABLE GAGE APPARATUS
Daniel M. Stevens, 545 Pine Forest Dr., Athens, Ga. 30606
Filed Jul. 20, 1978, Ser. No. 926,522
Int. Cl.[2] G01B *3/02;* **E21B** *17/10*
U.S. Cl. 33—178 F **6 Claims**



1. A collapsible and adjustable gage apparatus for inspecting the inside of pipe, said apparatus having an expanded and a collapsed configuration and comprising:
- a shaft;
- first collar mounted on said shaft;
- second collar mounted on said shaft;
- a plurality of wear link members for engaging the innerwalls of pipe;
- at least two articulated mechanical arms having one end of said arms pivotally attached to each of said wear link members, with the other end of one of said arms pivotally attached to said first collar and the other end of the other of said arms being pivotally attached to said second collar;
- means for adjusting said first collar relative to said shaft, whereby said apparatus in said expanded configuration rigidly adjusts the position of said wear link members to engage the inner walls of different diameter pipe; and
- means for releasing said second collar, whereby said apparatus is collapsed to a reduced size.

4,213,247
THREAD COMPLIANCE GAUGE
Ernest H. Romine, 2301 Walnut Blvd., Walnut Creek, Calif. 94596
Filed Feb. 7, 1979, Ser. No. 9,796
Int. Cl.[2] G01B *3/36*
U.S. Cl. 33—199 R **5 Claims**



1. A thread compliance gauge for determining the accuracy with which screw threads have been formed on a shaft comprising
- first and second ring members formed with internally threaded apertures which are threadably engagable with said shaft,
- means for interlocking said ring members together and permitting relative rotation thereof with respect to each other for a portion of a revolution whereby as said members are rotated apart when interlocked and engaged on said threaded shaft the members tighten on the flank surfaces of the threads of the shaft and thereby center on the axis of generation of the threads of the shaft, said means for interlocking said ring members including at least one projecting stud formed on one of said ring members and disposed parallel to the axis of generation of the internal threads of said ring member, said stud extending through a corresponding arc shaped slot formed in the other of said ring members and having a flange which is disposed on the opposite side of the slotted ring member from the studded ring member so that as said ring members are moved apart by rotation during the centering process said flange prevents said ring members from separating beyond a limit permitted by the flange on the stud whereby said ring members are interconnected and permit limited relative rotation with respect to each other, said stud and flange being formed to create an equidistant gap between the ring members when said members are separated to the limit permitted by the flange on the stud; and
- a cylindrical surface formed on one of said members concentric to the axis of generation of the internal threads thereof whereby when said members are interlocked and engaged with said shaft and centered with respect to the axis of generation of the threads thereof the shaft may be rotated and the concentricity of the screw threads formed thereon may be checked with respect to the axis of rotation of the shaft by measuring the concentricity of the rotating cylindrical surface with respect to the axis of rotation of the shaft.

4,213,248
NAVIGATIONAL AID DEVICE FOR DETERMINING DIRECTION IN A CHART
Lars-Olow Jerhammar, Kanalgatan 112, 603 65 Norrköping, Sweden
Filed Feb. 9, 1979, Ser. No. 10,679
Claims priority, application Sweden, Feb. 9, 1978, 7801534
Int. Cl.[2] B43L *5/00, 13/04*
U.S. Cl. 33—431 **6 Claims**

1. A device to define the direction relative to a reference direction from one point to a second one on a chart, comprising a base having a base surface for the chart, a member having a direction indicating index and being rotatable and displaceable relative to the base surface, said member being carried by

two mutually co-operating support means of which a first one is displaceable relative to the base surface in one direction along a stationary rectilinear guide means located on said base adjacent said base surface, and the second one is displaceable in a direction perpendicular thereto along a rectilinear guide means carried by said first support means, characterized by said first displaceable support means constituting a first rectangular transparent frame (**8**), said first frame at each one of two mutually opposite edges (**8***a*) having guide means respectively co-operative with each one rectilinear guide means (**6**) which is stationary relative to the base surface and along which said



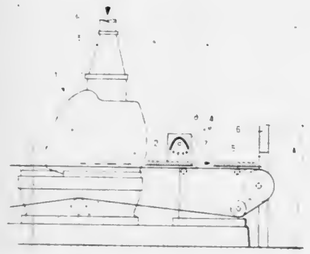
first frame is displaceable in said first direction, said first support means on each one of its two mutually opposite edges (**8***c*) extending perpendicularly to said stationary guide means comprising guide means (**8***d*) for slidably carrying said second support means, said second support means as well forming a transparent frame (**9**) and having at two opposite and mutually parallel edges guide means (*ab*) co-operating with the last mentioned guide means (**8***d*) of said first frame, the direction indicating member (**10**) being journalled in said second frame with its axis of rotation substantially half-way between said guide means of said second frame.

4,213,249

METHOD FOR PRECONDITIONING LUMPS OF SUGAR

Louis G. Corse, Chaumont-sur-Tharonne, France, assignor to Machines Chambon, Orleans-Cedex, France

Filed Nov. 29, 1978, Ser. No. 964,492
Claims priority, application France, Dec. 8, 1977, 77 37075
Int. Cl.[2] **F26B** *3/30*
U.S. Cl. 34—12 **6 Claims**



1. A method for the preconditioning of moulded sugar lumps obtained from humidified and agglomerated caster sugar before the lumps are dried in a drying oven to avoid any thermal shock being applied to the lumps utilizing infra-red radiation upon entry thereof into the oven after moulding, comprising:

heating the sugar lumps after moulding and prior to their insertion into a drying oven for a very short period of time, but a sufficient period of time to form a cloud of steam-saturated atmosphere around each lump;

the steam-saturated atmospheric cloud forming a barrier against the infra-red radiation and avoiding the rapid drying of the lump; and,

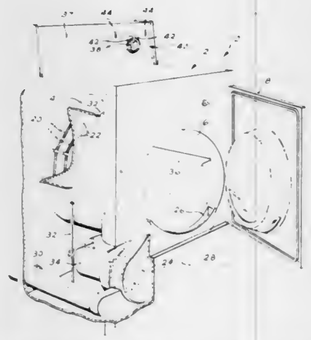
carrying out said heating so that the temperature attained upon entering the oven after moulding is higher than the dew point.

4,213,250

TEMPERATURE COMPENSATION FOR CLOTHES DRYER TIMER SELECTORS

Larry L. Hawkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 23, 1978, Ser. No. 954,038
Int. Cl.[2] **F26B** *11/04*
U.S. Cl. 34—53 **3 Claims**



1. A clothes dryer having at least one timer-controlled operational cycle for the drying of clothing articles placed therein, the control arrangement comprising:

timer means including a manually-settable control member and a reference, and means responsive to the setting of said control member with respect to said reference arranged to control the dryer run time of the operational cycle;

temperature compensation means including an element responsive to ambient room temperature and also including:

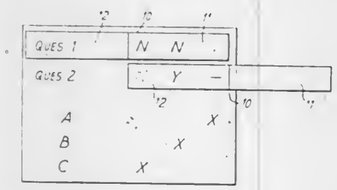
means cooperative between the temperature responsive element and said timer means to vary the dryer run time for said operational cycle for a given setting of said control member with respect to said reference in correspondence with changes in ambient temperature.

4,213,251

APPARATUS FOR DETERMINING THE RESULT OF ANSWERS TO A SET OF RELATED QUESTIONS

Stavros Foundos, Wembley Park, England, assignor to National Research Development Corporation, London, England

Filed Sep. 7, 1978, Ser. No. 940,312
Claims priority, application United Kingdom, Sep. 19, 1977, 38926/77
Int. Cl.[2] **G09B** *3/06*
U.S. Cl. 35—9 R **11 Claims**



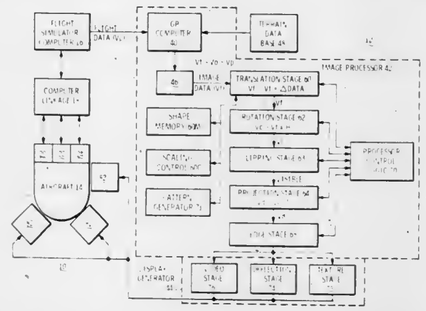
1. Apparatus for determining the result of answers to a plurality of questions each having at least two answers, comprising a record member, a plurality of references recorded on the record member, each said reference representing the result of a combination of answers which includes an answer to each question, the apparatus further comprising a plurality of answer devices, one for every question, for presenting answer symbols, each said answer device being operable in accordance with an answer selected by the operator to present answer symbols representing the selected answer to the associated question, the presented answer symbols representing the selected answer to any one question being disposed in a line, whereby after operation of answer devices in accordance with answers selected for every question, the presented answer symbols are disposed in a plurality of lines, one line for every question, the said lines being arranged side-by-side immediately adjacent the said references on the record member, the answer symbols presented after operation of all the answer devices defining not more than one path across the lines of presented answer symbols, the said one path leading the operator to one of the said references on the record member, the said one reference being the reference to the result of the combination of the selected answers to the questions.

4,213,252

REPEATING PATTERN SIMULATION OF A POLYGON FACE OBJECT SYSTEM

John B. Sullivan, Santa Clara, and David R. Marsh, Los Altos, both of Calif., assignors to The Singer Company, Binghamton, N.Y.

Filed May 8, 1978, Ser. No. 903,414
Int. Cl.[2] **G09B** *9/08;* **H04N** *7/18*
U.S. Cl. 35—10.24 **16 Claims**



1. An image data system for providing a two dimensional perspective display of object items within a three dimensional object coordinate system formed by polygon faces, including at least one object item formed by at least one series of equally spaced polygon pattern units of identical size and shape, each series of pattern units having an initial pattern unit which has an initial point, comprising:

data source means for providing image data in accordance with a predetermined data format including the following types of image data

initial position data for defining the position of the initial point with respect to the object coordinate system for the initial pattern unit of each of the series of pattern units,

shape data for defining the relative positions of the vertices of each initial pattern unit with respect to the initial point for that pattern unit,

increment data for defining the uniform spacing between adjacent pattern units within each series of identical pattern units,

series data for defining the number of identical pattern units within each series of identical pattern units,

other data associated with each initial point for defining other visual parameters for each series of identical pattern units therefor, the image data having codes bits associated therewith for distinguishing between the initial position data and the shape data and the other data;

image data decoder means responsive to the code bits for processing each type of image data;

storage means for receiving shape data and increment data in response to the image data control means and for repeatedly providing the data in response to the initial position data;

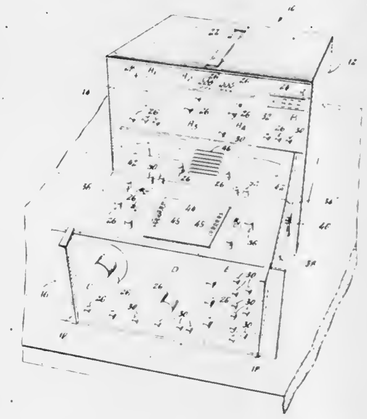
series means for receiving series data and terminating the retrieval of the shape data and increment data from the storage means when the proper number of identical pattern units have been processed.

4,213,253

ELECTRONIC TEACHING AND TESTING DEVICE

Drasutis Gudelis, Cos Cob, and David D. Vetrane, Shelton, both of Conn., assignors to Nida Corporation

Filed Jun. 12, 1978, Ser. No. 914,564
Int. Cl.[2] **G09B** *23/18*
U.S. Cl. 35—19 A **4 Claims**

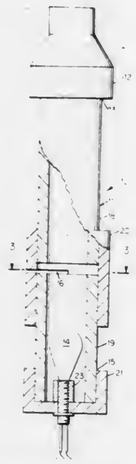


1. A portable, self-contained, dual function electronic instrumentation device for teaching the principles of electricity and electronics and as a laboratory test instrument for testing electrical systems, comprising:

a housing; control, display and terminal elements extending externally of said housing; electrical circuit means arranged within said housing and electrically coupled to said control, display and terminal elements for transmitting electrical signals thereto; said housing having an exterior surface with at least some of said control, display and terminal elements extending outwardly therefrom, said exterior surface having a movable portion and a fixed portion; said movable portion being mechanically coupled to a normally concealed display surface having second display and control elements so that said display surface is exposed when said movable portion is moved relative to said fixed portion; said display surface having a receptacle with circuit card receiving means thereon for direct electrical coupling to a circuit card without the use of conductive wires when said display surface is exposed; said control, display and terminal elements of said housing with said second display elements, said second control elements and said receptacle of said display surface being interconnected with said electrical circuit means so that when said display surface and receptacle is concealed, electrical devices may be tested by electrically coupling an electrical device to said terminal elements by means of external conductive leads, and when said display surface and receptacle is exposed, a circuit card may be electrically coupled to said receptacle for teaching the principles of

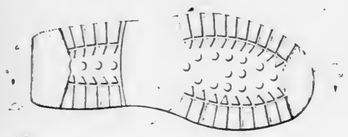
electricity and electronics by way of the various display and control elements without use of external conductive leads.

4,213,254
ASTRONOMICAL OPTICAL SIMULATOR
Thomas A. Whiting, 5715 Old French Rd., Erie, Pa. 16509
Filed May 15, 1978, Ser. No. 905,931
Int. Cl.[2] G09B *9/00*; G03B *21/00*
U.S. Cl. 35—43 **8 Claims**



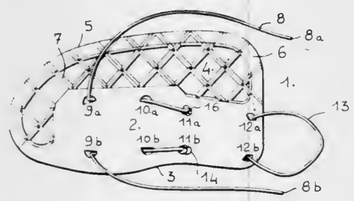
1. A device for simulating an astronomical view as seen through a telescope comprising,
- a hollow tubular barrel made up of a first tubular member, a second tubular member and a sleeve,
- said sleeve receiving a first end of said first tubular member and a first end of said second tubular member,
- an eyepiece on the second end of said first tubular member,
- a light source in said second tubular member adapted to project light towards said eyepiece,
- an outwardly extending slot in said sleeve between said eyepiece and said light source,
- a disk made of a thin, black, opaque material in said slot having holes formed therein to simulate the astronomical view as viewed through a telescope.

4,213,255
SOLE FOR HIKING BOOTS AND THE LIKE
Norbert J. Olberz, 429 Starlight Crest Dr., La Canada, Calif. 91011, and Artie Hagmueller, La Canada, Calif., assignors to Norbert J. Olberz, La Canada, Calif., a part interest
Filed Apr. 20, 1978, Ser. No. 898,379
Int. Cl.[2] A43B *13/04*
U.S. Cl. 36—32 R **18 Claims**



1. A sole member adapted to be affixed to an upper portion of a hiking boot and the like, the sole member having a heel portion at a rear end thereof, a toe portion at a front end thereof, a top surface and a bottom tread surface, the tread surface between first and second locations intermediate the ends of the sole member being disposed in a base plane of the sole member, the rear end of the sole member having a distinct substantially straight extent substantially perpendicular to the length of the sole member whereby the sole member has a substantially square heel when viewed from the top, the tread surface being curved concave upward proceeding rearwardly therealong from the first location so that the heel portion when viewed from the side along a line substantially parallel to the top surface has a first curved configuration in which the tread surface extends substantially cylindrically curvilinearly away from the base plane substantially to the top surface to the substantially straight extent of the sole member at the rear end thereof, the tread surface being curved concave upward proceeding forwardly therealong from the second location so that the toe portion when viewed from the side along said line has a second curved configuration in which the tread surface extends curvilinearly away from the base plane substantially to the top surface, whereby in use of a hiking boot and the like incorporating the sole member the configuration of the sole member tread surface adjacent the rear end of the member affords substantially line contact between the sole and a ground surface and tends to direct the boot and the like to roll straight ahead.

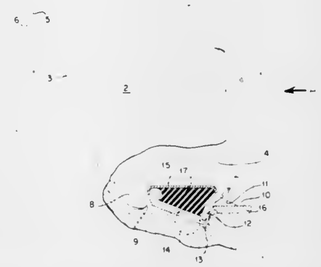
4,213,256
SNOW SHOE
Henri Mas, 14 Quai Antoine Ier, and Paul Lacroix, 8 bd du Jardin Exotique, both of, Monaco
Filed Jul. 18, 1978, Ser. No. 925,686
Claims priority, application France, Jul. 18, 1977, 77 22995; Jun. 20, 1978, 78 19400
Int. Cl.[2] A43B *5/04*
U.S. Cl. 36—124 **11 Claims**



1. A snow shoe comprising, within a frame, a plain portion on which the foot of the wearer rests, and, between the plain portion and the frame, a perforated portion, means for securing the wearer's shoe to the snow shoe, and means on the underside of the snow shoe to grip the snow, the snow being elongated and the axis of said plain portion forming a small acute angle with the axis of the snow shoe.

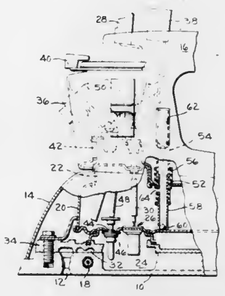
4,213,257
SECURING MEMBER FOR WEAR PARTS FOR EARTH-MOVING MACHINES
Arne Johansson, and Torsten Larsson, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden
Filed Sep. 5, 1978, Ser. No. 939,732
Claims priority, application Sweden, Sep. 6, 1977, 7709969
Int. Cl.[2] F16B *19/02*
U.S. Cl. 37—142 R **40 Claims**

1. Locking apparatus for securing teeth to excavators, loaders, scarifiers, dredge cutters and the like of the type in which each tooth is removably installed in a holder which secures the tooth against movement in all directions except the one from which the tooth is installed and removed, the holder and the tooth defining an open-mouthed recess therebetween within which the locking apparatus can be at least partially placed, the recess having an inner stopping edge located in either the tooth or the holder for limiting movement of the locking apparatus in the direction of installation of the tooth and an outer blocking edge located in either the holder or the tooth for limiting movement of the locking apparatus in the direction of removal of the tooth, said locking apparatus comprising:
- a first elongated edge member;
- a second elongated edge member;



- an elastic body located between and fastened to said first and second edge members; and
- means provided on at least one of said edge members for permitting said edge member to buckle into contact with the outer blocking edge when said edge member is subjected to compressive stress.

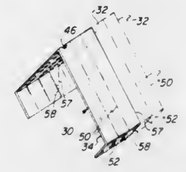
4,213,258
STEAM IRON WATER GAUGE
Kenneth A. Reinstadler, Derby, and William E. Davidson, Milford, both of Conn., assignors to General Electric Company, New York, N.Y.
Filed Oct. 23, 1978, Ser. No. 955,105
Int. Cl.[2] D06F *75/06*
U.S. Cl. 38—77.2 **6 Claims**



1. In a steam iron with a connected handle and having steam control means, a fill opening to an interior water tank, a ported soleplate, a steam generating boiler with coverplate forming steam distribution passages and a water sight gauge connected to said tank, an improvement in said gauge comprising,
- an opening forward in the top of said tank, closed top tube means sealed in and extending through said opening into said tank, aperture means through said tube within the tank upper portion,
- a window extending and aligned along part of said tube and including the top thereof, and float means in said tube to indicate water level in said tank through said window,

whereby said gauge indicates water level and empty horizontally and indicates full water level in heel rest position to limit overfilling.

4,213,259
WALL-MOUNTED DISPLAYS
Alfred Coda, 48 Wyandemere Dr., Woodcliff Lake, N.J. 07675
Filed Nov. 17, 1978, Ser. No. 961,545
Int. Cl.[2] G09F *1/12, 7/20*
U.S. Cl. 40—152.1 **16 Claims**

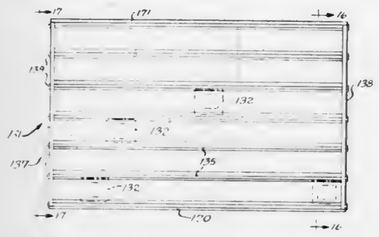


1. A mounting kit for wall mounting an item in a display, such as a picture frame, a plaque and the like, with the display spaced a selected distance from the wall, said kit comprising:
- a mounting board having an obverse surface for receiving the item to be displayed, and an opposite reverse surface;
- a sheet of material which normally is flat for storage and transportation and is capable of being erected into at least a partially tubular member having axially opposite ends; and
- means for securing one of said opposite ends of the tubular member to the reverse surface of the mounting board such that the sheet of material is maintained in the erected tubular state, and the other of said opposite ends is spaced axially from the reverse surface for bearing against the wall to space the mounting board axially away from the wall, the means for securing one of said opposite ends of the tubular member to the reverse surface of the mounting board including
- a groove in the reverse surface of the mounting board, the groove following a diamond-shaped plan configuration and including legs of equal lengths; and
- an edge located along said one end of tubular member, the groove being complementary to the edge such that the edge is receivable within the groove, and the tubular member having at least a partial diamond-shaped cross-sectional configuration which, when inserted into the groove, extends fully along two contiguous legs thereof and at least partially along two further legs thereof.

4,213,260
OVERLAY DEVICE FOR USE WITH AN ILLUMINATED TRANSPARENCY VIEWER
Donald J. Brown, Naperville, Ill., assignor to Knox Manufacturing Co., Wood Dale, Ill.
Filed Jan. 12, 1978, Ser. No. 868,982
Int. Cl.[2] G09F *1/10*
U.S. Cl. 40—158 B **7 Claims**

1. A device for releasably holding a plurality of flat, relatively stiff photographic slides of similar size each in a planar condition when in viewing position comprising:
- a series of generally parallel elongate members each being spaced from an adjacent elongate member to permit the passage of light therebetween, adjacent elongate members having an opposed pair of generally parallel, longitudinally extending surfaces for supporting each photographic slide therebetween in viewing position, the opposed surfaces being spaced a greater distance than the height of each photographic slide to be supported therebetween;
- frame members transverse to said elongate members and connected thereto for maintaining said elongate members in fixed relation; and

resilient cushioning material carried by at least one surface of each of said pairs of opposed surfaces and being spaced from the other surface of each of said pairs of opposed surfaces a distance less than the height of each photographic slide to be supported in said viewing position,



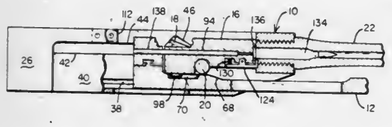
each slide being releasably held in its planar condition between opposed surfaces of adjacent elongate members by depressing the cushioning material and aligning the slide in viewing position between the opposed surfaces.

4,213,261

BREECH LOCKING MECHANISM

James P. Claypool, 2124 Como Ave., St. Paul, Minn. 55108, assignor to James P. Claypool and James E. Trombley, both of St. Paul, Minn.

Filed Jun. 27, 1978, Ser. No. 919,501
Int. Cl.[2] F41C *11/06*
U.S. Cl. 42—16 **7 Claims**



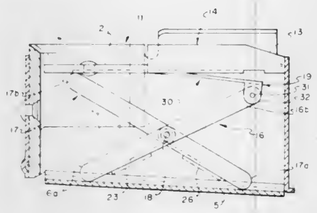
1. A breech lock mechanism for a firearm comprising:
(a) a receiver member having a first longitudinally extending guide track formed in a bottom surface thereof, first and second longitudinally extending guide slots formed in parallel and spaced apart side surfaces thereof and a barrel receiving bore formed in an end surface thereof and generally aligned with said first and second guide slots, there being first and second locking pin receiving slots formed in said side surfaces below and at a predetermined angle with respect to said guide slots;
(b) an elongated operating rod disposed in said longitudinally extending guide track in said receiver member for reciprocating motion therein;
(c) a bolt carrier coupled to said operating rod and having first and second, parallel and spaced apart fingers adapted to pass along said first and second guide slots in said receiver member as said operating rod is moved;
(d) a bolt member disposed between said first and second fingers of said bolt carrier and coupled to said operating rod for movement therewith; and
(e) a locking pin extending transversely to said longitudinally extending guide track and passing through said first and second locking pin receiving slots in said receiver member.

4,213,262

BOX MAGAZINE FOLLOWER SYSTEM

Joseph A. Badali, Mountain Green, Utah, assignor to Browning Arms Company, Morgan, Utah

Filed Sep. 19, 1978, Ser. No. 943,700
Int. Cl.[3] F41C *25/02*
U.S. Cl. 42—50 **4 Claims**



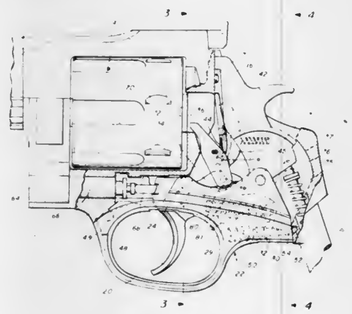
1. A magazine follower assembly, comprising:
a magazine box adapted to receive cartridges through its top and including a floor plate;
a first strut oriented diagonally within said magazine box with a lower end slidably supported by said floor plate and an upper end;
a second strut oriented diagonally within said magazine to effect an intersection with said first strut, pivotally connected to said first strut at said intersection, said second strut also having a lower end supported by said floor plate and an upper end;
spring means biasing said struts to pivot so that their corresponding upper ends move toward each other, thereby causing said upper ends to lift with respect to said floor plate; and
a follower member, including a first element oriented approximately horizontally with respect to said magazine box, and a second element pivotally connected to the upper end of one said strut and connected to said first element in the vicinity of the upper end of the other said strut, within said magazine box such that its orientation remains approximately horizontal within said box when it is pushed down towards said floor plate.

4,213,263

FIREARM TRIGGER GUARD ASSEMBLY

Paul E. Brouthers, Monson, Mass., assignor to D.W.A. Associates, Inc., Monson, Mass.

Filed Jun. 8, 1978, Ser. No. 913,644
Int. Cl.[2] F41C *1/00*
U.S. Cl. 42—59 **10 Claims**



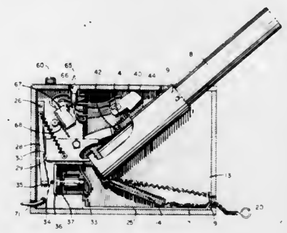
1. For a firearm having a frame, trigger and hammer, the improvement of a removable trigger guard assembly comprising, a trigger guard frame having means for pivotally supporting said trigger, lug and socket means at the front of said trigger guard frame for providing a first support point for the trigger guard assembly to the frame, a biased plunger at the rear of said trigger guard assembly having a wedged end coacting with a slot in the frame for providing a second support point for the trigger guard assembly, said trigger guard frame having ear means at a top of the trigger guard frame adapted to fit within a recess in the frame, and means extending through the ear means, the frame and a base of the hammer to pivotally support the hammer and provide a third support point for the trigger guard assembly.

4,213,264

AUTOMATIC FISHING APPARATUS

James W. Robinson, Jr., 109 Lake Mead Dr., Henderson, Nev. 89015

Filed Oct. 19, 1978, Ser. No. 952,713
Int. Cl.[3] A01K *91/06*
U.S. Cl. 43—16 **7 Claims**



1. Automatic fishing apparatus comprising a housing, a pivotally mounted rod-holding tube, a pivoted sleeve mounted substantially coaxially to the tube and movable relative thereto, the tube and sleeve being movable between a cocked position and a released position, first biasing means for urging the sleeve toward the released position, latch means for maintaining the sleeve in the cocked position, second biasing means for urging the rod-holding tube into the released position, and trigger means actuated by movement of the rod-holding tube to release the latch means.

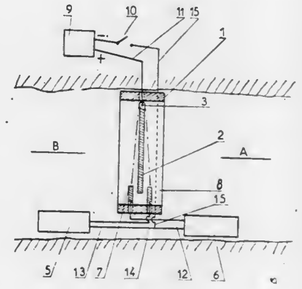
4,213,265

EXPLOSIVE TRAP FOR ANIMALS

Claude Denninger, Chazay d'Azergues, and Louis Moutton, Craponne, both of France, assignors to SOGEMARIC, Societe de Gestion et de Marketing pour Industries de Consommation, Ecully, France

Filed Sep. 6, 1978, Ser. No. 940,143
Claims priority, application France, Sep. 19, 1977, 77 28677
Int. Cl.[2] A01M *27/00*
U.S. Cl. 43—84 **10 Claims**

1. An electrically fired explosive animal trap consisting essentially of:
(a) an open-ended, protective tubular envelope which is adapted to be placed inside an animal run, the diameter of said envelope being greater than its length,
(b) a displaceable trigger and movable electrical contact of which at least part is composed of an electrically conductive material disposed within and positioned in the central part of the protective envelope and which is capable of being displaced inside the protective envelope from a central position towards two end positions situated on either side of the central position,
(c) two electrically fired deflagrating explosive charges each disposed externally of one of the ends of the protective envelope,
(d) two electrical contact stops of an electrically conductive material which are integral with and disposed within the protective envelope on either side of the trigger so that part of the displaceable central trigger which is made of electrically conductive material comes into contact with one or other of these stops when the trigger moves from the central position into one or other of the end positions situated on either side of this central position,
(e) a source of electrical energy, and
(f) an electrical circuit connecting together the electrically



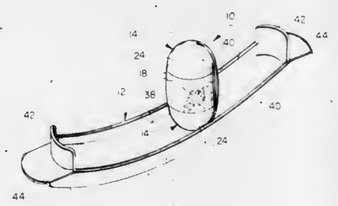
conductive part of the trigger, the explosive charges, the electrical contact stops and the source of electrical energy, and wired so that the action of an animal on any of the faces of the central trigger results in closure of said electrical circuit and in firing of the explosive charge situated on that side of the trigger where the animal has exerted such action.

4,213,266

TUMBLING TOY

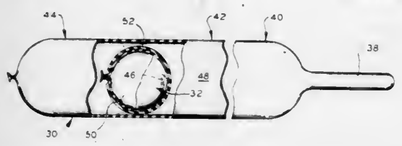
Joseph F. Hyland; Barbara B. Hyland, both of Ridgewood, N.J.; A. Edward Fogarty; Bonnie R. Fogarty, both of Sarasota, Fla., and Frank A. Spinale, N. Attleboro, Mass., assignors to Hasbro Industries, Inc., Pawtucket, R.I.

Filed Feb. 21, 1978, Ser. No. 879,908
Int. Cl.[2] A63H *33/00, 15/08;* A63B *37/00*
U.S. Cl. 46—1 R **13 Claims**



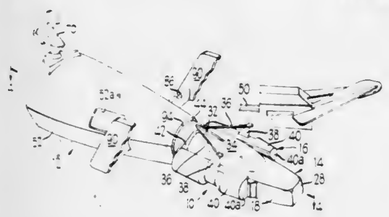
1. A tumbling toy, comprising a hollow housing that includes spaced, opposed end caps and an outer cylindrical sleeve located therebetween, each of said end caps having a hemispherical configuration that includes a rounded end wall, an inner tubular member located within said outer sleeve in coaxial relation thereto and being secured at the ends thereof to said end caps, the opposed ends of said inner tubular member extending inwardly within the opposed end caps for engagement with an interior portion of said end caps, and a weighted ball captured within said inner tubular member and end caps and having rolling movement between said end caps to produce a tumbling end-over-end action for said housing when an exterior force is applied thereto, or when said toy is placed on a downwardly inclined surface.

4,213,267
COMPOSITE BALLOON FIGURE AND METHOD OF MAKING THE SAME
Eugene E. Curtis, 708 S. Byrne Rd., Toledo, Ohio 43609
Filed Jan. 2, 1979, Ser. No. 1
Int. Cl.[2] A63H *3/06*
U.S. Cl. 46—87 **3 Claims**



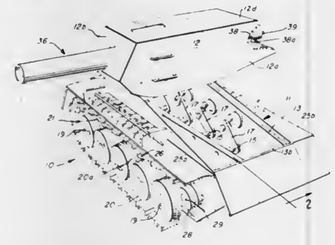
1. A method of forming a composite balloon figure having a small balloon within a parent balloon comprising the steps of:
inflating and sealing the parent balloon;
squeezing a portion of said parent balloon to form a discrete second balloon connected to said parent balloon by a substantially reduced cross-section interface region;
substantially sealing said interface region by compressing said interface region;
moving said second balloon inwardly into said parent balloon until said second balloon is entirely encased by said parent balloon;
tearing the skin of said parent balloon that is disposed adjacent to the outer end of the inserted second balloon to disengage said second balloon from said parent balloon with said second balloon remaining within said parent balloon; and
sealing said parent balloon adjacent said torn skin portion with said second balloon therein.

4,213,268
MULTI-STAGE VEHICLE TOY
Erick E. Erickson, Chicago; John R. Wildman, North Riverside, and Burton C. Meyer, Downers Grove, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 29, 1979, Ser. No. 7,337
Int. Cl.[2] A63H *17/14*
U.S. Cl. 46—202 **13 Claims**



1. A toy vehicle comprising:
a front portion including wheel means for supporting the same for rolling movement over a support surface;
a separate rear portion including wheel means for supporting the same for rolling movement over said support surface;
biasing means for ejecting said front portion away from said rear portion and means for connecting said biasing means to said vehicle;
detachable connector means for securing said front and rear portions nested together as a unit against the force of said biasing means until said unit is impacted in a forward direction to travel on said support surface.

4,213,269
AMUSEMENT VEHICLE
Charles J. Grogg, Sr., 2964 Sunflower St., Thousand Oaks, Calif. 91360
Filed Mar. 3, 1978, Ser. No. 883,210
Int. Cl.[2] A63H *17/04*
U.S. Cl. 46—219 **10 Claims**

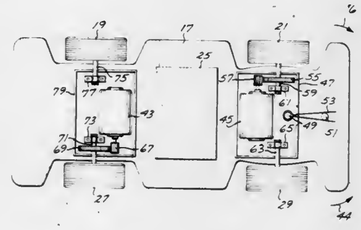


1. An amusement vehicle having articulated multi-element tracks and a projectile feeding and dispensing system comprising; a chassis composed of a platform means including a pair of spaced parallel walls, a plurality of suspension arms each carried in trailing relation by a torsionally biased rotatable pin which extends normally through the middle portion of said walls; roller members each supported for free rotary movement in parallel relation to said walls at the arm end opposite said pin end for permitting controlled arcuate swinging motion of said roller members about said pin axis, idler means supported in parallel relation to said walls near the topmost section thereof for rotary movement, track means composed of articulated links hingeably interconnected along an elongated part of each for forming a chain loop to run about said roller members and said idler means as a pair of tracks each extending normally to one of said walls and said biased suspension arms acting to tension said tracks, resilient means connected between the said pins and said walls for urging each said arms carried thereon to bias said roller members carried thereby into engagement with the inner circumference of said track, a hollow enclosure supported for pivotal movement relative to said platform means for containing a projectile dispenser including an aiming device of tubular configuration having a companion plunger for permitting sliding mating inter engagement therebetween, force means connected between said plunger and said enclosure for selectively driving said plunger in said aiming device to propel projectiles therein through said device at increasing velocity, a supply means carried atop said hollow enclosure for containing and feeding projectiles to said plunger aiming device when said plunger for same is drawn to a cocked position, interconnecting means between said plunger and a projectile transportation means carried for shuttled movements upon said supply means to push each projectile from the containing portion of said supply means along a feeding channel for receipt therefrom in the breech of said aiming device as said plunger is drawn to its fully cocked position.

4,213,270
RADIO CONTROLLED WHEEL TOY
Nobuo Oda, 2-26-12 Noge, Setagayaku,Tokyo, Japan
Filed Aug. 7, 1978, Ser. No. 931,936
Int. Cl.[2] A63H *30/04*
U.S. Cl. 46—254 **9 Claims**

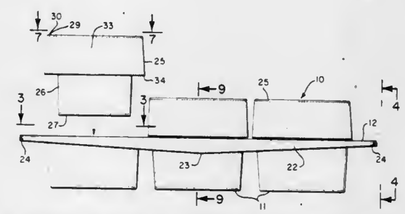
1. A radio-controlled wheel toy having a first pair and a second pair of wheels wherein a hand-held transmitter with a manually manipulateable means therein transmits signals to a receiver mounted on a support platform of the wheel toy for controlling the direction of movement of said wheel toy, the improvement therein comprising: p1 said first pair of wheels rotatably mounted on a wheel platform, said platform being

mounted for pivotal movement relative to said support platform of the wheel toy;
a first motor means mounted on said wheel platform in proximity to said first pair of wheels and connected for driving one of said pair of wheels; and



a second motor means mounted in proximity to said second pair of wheels and connected for driving at least one of said second pair of wheels wherein the wheel that is driven by the second motor is positioned on the opposite side of the car from at least one of the wheels driven by said first motor.

4,213,271
PLANTER
Thomas G. Petruzzi, Orlando, Fla.; Harold P. Ashton, Providence, R.I., and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed May 3, 1979, Ser. No. 35,741
Int. Cl.[3] A01G *9/02*
U.S. Cl. 47—39 **9 Claims**



1. A planter including a combined tray support and vessel wherein said tray support incorporates at least one compartment formed by a base and upstanding wall arrangement and a peripheral flange portion positioned about said compartment intermediate the longitudinal extent thereof, said vessel being formed by a side wall structure, an integral bottom wall having at least one opening therethrough and a skirt affixed to said side wall structure and positioned such that a terminal edge thereof lies in a plane intermediate said bottom wall and the top edge of said side wall structure, said skirt being in close juxtaposition about said compartment above said terminal edge in abutment with said flange portion and said side wall structure and bottom wall being within said compartment and in juxtaposition with said upstanding wall arrangement and base respectively.

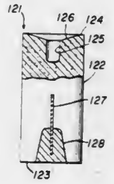
4,213,272
DEVICE FOR SUPPORTING TOMATO PLANTS
Frank J. Nievelt, 423 S. Campbell, Royal Oak, Mich. 48067
Filed Aug. 2, 1978, Ser. No. 930,378
Int. Cl.[2] A01G *17/06*
U.S. Cl. 47—45 **2 Claims**

1. A device for use with growing tomatoes vines comprising a series of horizontal light transmitting plates spaced vertically to form at least three tiers, each plate having a circular periphery and a substantially imperforate solid surface extending inwardly therefrom to near the center thereof with a central opening through which the tomato vine stalk may grow upwardly with its side tomato bearing shoots spreading outwardly and laterally over the upper surfaces of the plates, said plates forming supporting shelves for the entire area between said central opening and the outer periphery, a series of vertical struts between the plates of each tier, each strut having a portion of reduced diameter with an intermediate shoulder, said plates each having a series of circumferentially spaced holes in the substantially imperforate solid shelf-forming surface for receiving said struts with said shoulder abutting said solid surface, at least two stakes for insertion into the ground,



each of said stakes extending through each of said plates, said central opening in said plates being substantially less than one-third the diameter of said plate permitting vertical growth therethrough of the vines and support of the lateral growth and the tomatoes developed on said vines by said plates; in which each of said plates is substantially the same as the others, with eight circumferentially spaced holes, there being four struts between each tier with said reduced end portions inserted in alternate of the eight holes in the first tier, the four struts in the next adjacent tier being inserted in the unfilled holes of said first tier, and wherein also the cut out portions in each plate are star shaped and in vertical alignment.

4,213,273
FIELD TRANSPLANT SYSTEMS AND METHODS AND COMPONENTS THEREOF
Richard R. Dedolph, Naperville, Ill., assignor to Gravi-Mechanics Co., Naperville, Ill.
Division of Ser. No. 772,094, Feb. 25, 1977, Pat. No. 4,130,072.
This application Jul. 28, 1978, Ser. No. 928,839
The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.
Int. Cl.[2] A01G *9/02*
U.S. Cl. 47—74 **7 Claims**



1. A polymerized soil plug for growing a plant therein from seed comprising a body of spongy open-celled hydrophilic polymer, a quantity of particles of soil mix distributed throughout said body of spongy polymer, and a quantity of foam-forming synthetic organic plastic resin being reacted in situ to form said body of spongy open-celled hydrophilic polymer binding said particles of soil mix therein and into a cohesive soil plug, said resin comprising from about 20% to about 80% by dry weight of said soil plug thereby to provide a unitary self-supporting polymerized soil plug, said soil plug having a generally

longitudinally extending side wall and generally transversely extending end walls, one of said end walls having a seed receiving recess therein with the end wall sloping from adjacent to the periphery of said soil plug inwardly toward said seed recess, said inwardly sloping wall directing fluids into said seed recess during germination of the seeds therein.

4,213,274

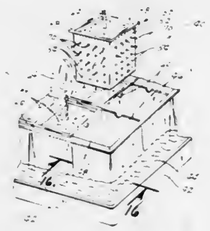
AERATED CONTINUOUSLY WATERED PLANT AND SEED ORGANIC GROWING MEDIUM AND CONTAINER FOR SAME

William A. Skaife, Dubuque, Iowa, assignor to Vivian A. Skaife, Irrevocable Trust, Dubuque, Iowa, Margaret R. Skaife, Trustee

Continuation of Ser. No. 704,190, Jul. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 693,637, Jun. 7, 1976, abandoned, which is a continuation of Ser. No. 577,863, May 15, 1970, Pat. No. 3,961,444. This application Dec. 22, 1977, Ser. No. 863,086

Int. Cl.[2] A01G *27/00*

U.S. Cl. 47—81 **5 Claims**



1. A potted growing medium adapted for all seed and plants growing together at the ame time which is continuously aerated and watered comprising,

a pot container having a wall,

a growing medium in said container, said growing medium being sufficiently porous to allow air to freely circulate therethrough and having properties allowing capillary action to transmit water throughout the growing medium,

an unregulated water supply in continuous contact with said growing medium fully supplying said growing medium with as much water as it will naturally hold to substantially saturate said growing medium and maintain it in a substantially saturated condition throughout,

a fresh air source in continuous communication with said growing medium to provide a substantially continuous supply of fresh air throughout said growing medium with said air having been humidified by passing through said saturated growing medium and thereby supplying fresh humidified air to seed or plant roots in the growing medium,

said container including a plurality of pots in side-by-side spaced relationship and each pot including a growing medium and said container and water supply including standing water in communication with the bottom of each of said growing mediums through openings in the bottom of said pots, and

said container further including a plurality of side-by-side chambers in which said pots are positioned and each of said pots being smaller than said chamber to provide an air space between said chamber wall and said pot wall with said air source being in communication with said air space and said pot wall having openings in its substantial area for placing said growing medium in communication with said air chamber whereby plant roots have access to humid air.

4,213,275

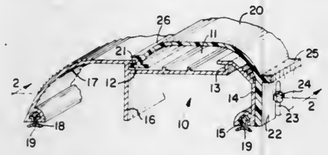
THRESHOLD AND DOOR SEALING STRUCTURE

Robert G. Oehmig, 1921 NE. 150th St., N. Miami, Fla. 33181

Filed Apr. 2, 1979, Ser. No. 25,898

Int. Cl.[2] E06B *1/70*

U.S. Cl. 49—468 **5 Claims**



1. A threshold and door sealing structure including a substantially rigid threshold member and a relatively flexible sealing member, said threshold member having at least one undercut groove adjacent a top surface thereof and at least one depending flange, said flange being located at one side of the threshold member spaced from said groove, said sealing member having a flange along one edge thereof secured in said undercut groove, said sealing member extending upwardly and over the threshold member and downwardly over said depending flange, fastening members securing the sealing member to said depending flange, the sealing member being vertically adjustable relative to said fastenings, the portion of the sealing member extending downwardly over said depending flange comprising a vertical wall of substantially greater thickness than the portion extending over the threshold member and of substantially greater stiffness than such last-named portion, and an outstanding flange on said vertical wall adjacent the top thereof.

4,213,276

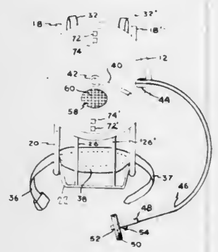
BACK PACK GRINDING APPARATUS

Garman C. Jennings, 386 1/2 3rd St., Laguna Beach, Calif. 92651

Filed May 9, 1977, Ser. No. 794,844

Int. Cl.[2] B24B *23/02;* **A45F** *3/04*

U.S. Cl. 51—170 R **12 Claims**



1. A portable grinding apparatus comprising:

a frame defined by parallel standards and interconnected cross bars with interconnectable strap means to permit securing said frame on the back of an operator;

a support plate peripherally secured to said frame;

a base plate rotatably mounted on said support plate and parallel thereto to permit its complete rotation in a plane substantially parallel to the back of said operator;

motor means secured to said base plate;

flexible shaft means extending from said motor to a remote distally attached abrasion means;

handle means distally carried on said flexible shaft means adjacent said abrasion means; and

detachable lock means carried on said frame and engaging said base plate to fixedly secure said base plate against rotation whereby said base plate can be released to permit the operator to rotate said plate and shift said flexible shaft and abrasion means from side to side.

4,213,277

METHOD FOR DRESSING A GRINDING WHEEL

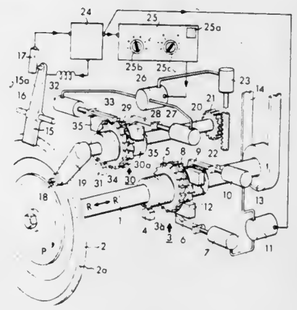
Daniel A. Fivian, Horgen, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Apr. 24, 1978, Ser. No. 899,221

Claims priority, application Switzerland, May 5, 1977, 5626/77

Int. Cl.[2] B24B *1/00, 53/00*

U.S. Cl. 51—325 **6 Claims**



1. A method for the intermittent dressing of an active rim of an axially displaceable dished grinding wheel of a gear grinding machine and which active rim machines a workpiece, comprising the steps of:

controlling the position of the active rim of the grinding wheel;

adjusting the position of the grinding wheel by a number of compensating advances such that the active rim is retained essentially at the same location independent of its wear;

employing at least one axially movable dressing tool for dressing the active rim of the grinding wheel once within a predetermined dressing interval; and

feeding said dressing tool towards said grinding wheel when, within said dressing interval, the number of compensating advances of the grinding wheel falls below a predetermined total number of compensating advances, said dressing tool being fed towards said grinding wheel an amount corresponding to the amount by which the number of compensating advances of the grinding wheel falls below said predetermined total number of compensating advances.

4,213,278

CYLINDRICAL CLAMPING MANDREL FOR A BUFFING OR POLISHING PAD OF SPECIFIC SIZE

Walter Oberer, Käferholzstr. 167, CH-8046 Zürich, Switzerland

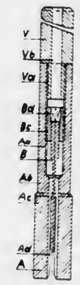
Filed Jun. 2, 1978, Ser. No. 911,946

Claims priority, application Switzerland, Jun. 2, 1977, 6829/77

Int. Cl.[2] B24B *5/46*

U.S. Cl. 51—368 **4 Claims**

1. A cylindrical buffing or polishing mandrel comprising; a hollow cylinder (A) having a clamping shaft portion (Ab), a continuous bore (Aa,Ac) therethrough that is centrally located, and a longitudinal slot (Ad) in communication with said bore (Ac) and extending diametrically of said hollow cylinder; said bore having a greater diameter portion (Aa) in the region beyond said longitudinal slot; a clamping mandrel rotatably disposed in said bore and including a stud portion (Bc) rotatably connected in the greater diameter portion (Aa) of said continuous bore, and a thin clamping pin portion (B) having a width greater than the thickness thereof extending forwardly from said stud portion in said bore (Ac) adjacent said longitudinal slot (Ad) substantially throughout the length thereof, the width of said clamping pin portion being slightly less than the diameter of said bore (Ac) adjacent said longitudinal slot; a polishing pad (E) extending around said hollow cylinder (A) and having opposite ends (Ea) extending inwardly across substantially the entire diametrical length of said longitudinal slot (Ad) and the polishing surfaces thereof positioned on opposite sides of said clamping pin portion; and said clamping



pin portion having beveled knife-like edges forming knife-like gripping points (Be) along the opposite longitudinal edges thereof adapted to penetrate the polishing surfaces of said opposite ends (Ea) substantially along a plane through the axis of said bore (Ac) and at right angles to said longitudinal slot (Ad) to clamp the ends (Ea) of said polishing pad against the surface of said bore (Ac) when said clamping mandrel is rotated in said bore.

4,213,279

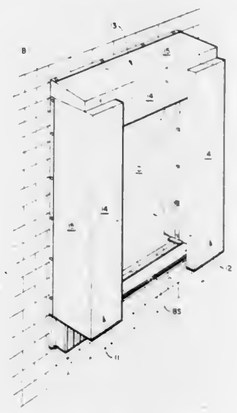
DOCK SEAL FOR BUILDING DOORWAY

Richard C. Layne, 155 Superior St., Marion, Ohio 43302

Filed Aug. 9, 1978, Ser. No. 932,205

Int. Cl.[2] E06B *7/23, 9/00*

U.S. Cl. 52—173 DS **10 Claims**



1. A dock seal for use around a door opening having substantially vertical jambs and a horizontal header, said seal comprising a resiliently flexible and compressible seal member of L-shape form, having attaching means at one of its edges for attaching the seal member at a jamb to support the seal with an inner flange extending forwardly outwardly from the jamb and with a laterally extending outer flange which is adapted to project over the opening so as to be engaged by a backing vehicle to be loaded or unloaded through the door opening, said inner flange extending sufficiently outwardly from the

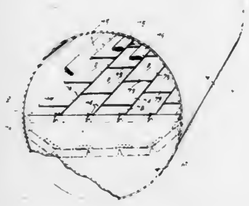
jamb to position said outer flange sufficiently away from the jamb to permit a vehicle to be backed against the jamb and bend the laterally projecting flange rearwardly and outwardly away from the vehicle opening to wipe against and hug the side of the vehicle.

4,213,280

MODULAR UNIT FOR THE CONSTRUCTION OF FLOATING DECKS OF LIQUID STORAGE TANKS

Edmund B. Sandborn, Burlington, Canada, assignor to Novaro Investments Limited, Montreal, Canada

Filed Sep. 6, 1978, Ser. No. 939,961
Int. Cl.[2] B65D *87/20;* **E04C** *2/26*
U.S. Cl. 52—309.9 **12 Claims**



1. A modular unit for use in the building of a floating deck used for controlling liquid evaporation in a liquid storage tank, said unit comprising:

a rigid cellular foam plastic core, and;

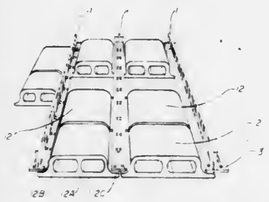
an envelope sealingly encasing said core defining a barrier against liquid or vapor absorption in said core, said envelope comprising a layer of electrically conductive flexible metal and a layer of plastic material located directly between said metal and said core of foam plastic to provide an increased bond between said core and said metal.

4,213,281

CONSTRUCTION OF ROOFS, FLOORS AND BEAMS

Agustin F. Zarzosa-Castilla, and Ma. Hilda Parcero-de Zarzosa, both of Escobedo Sur 733-201, Monterrey, Nuevo Leon, Mexico

Filed Dec. 12, 1977, Ser. No. 859,467
Int. Cl.[2] E04B *5/30*
U.S. Cl. 52—323 **1 Claim**



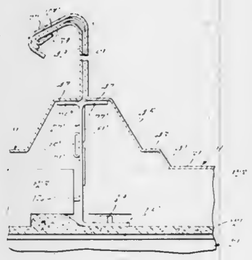
1. A self-supporting reinforced structure for reinforcing concrete roofs and floor forming a beam with hollows comprising, in combination, a pair of bolster beams disposed in spaced relationship, a plurality of crossbars extending between the bolster beams securedly joining the bolster beams together, rib means disposed on the top of the crossbars and secured thereto for providing structural strength to the beam, and counter brace means for supporting the beam and providing structural strength to the beam so that said beam is self-supporting after an agglutinatable filler material has been poured over the beam prior to the time said filler material becomes partially agglutinated, and a pair of hollow filler block elements disposed in spaced relationship, each of said filler elements having a respective extension, said extensions of two adjacent filler elements comprising substantially flat surfaces extending toward and disposed proximally adjacent each other to form a hollow for receiving said counter brace and beams thereon and for receiving thereover filler material poured into the hollow, said counter brace means being engagingly supported before filling said hollow solely by the flat surfaces of said extensions, thereby providing said additional strength enabling the pouring of the filler material to be accomplished without using other counter braces.

4,213,282

METAL PANEL ROOFING STRUCTURE

Robert E. Heckelsberg, Germantown, Tenn., assignor to AMCA International Corporation, Hanover, N.H.

Filed Feb. 6, 1978, Ser. No. 875,524
Int. Cl.[2] E04B *1/76*
U.S. Cl. 52—404 **5 Claims**



1. In a roof structure having horizontally extending support purlins, the combination of a plurality of elongated roof panels located side by side and supported on said purlins, the lengths of said panels extending transversely to the lengths of said purlins, adjacent panels having edges interlocked with each other to form joints that join the panels together, an insulative layer supported on said purlins between and in contact with said panels and purlins and covering substantially the same total area as said panels, panel mounting clips having upwardly projecting tab portions secured to said panels and base portions bearing against the upper side of said insulative layer and secured to said purlins to provide means for attaching the panels to the purlins, said tab portions extending into said joints to mechanically secure said clip to said adjacent panels, means flexibly attaching said tab portions to said base portions in relatively movable relationship to provide for movement of said panels relative to said purlins, and insulative thermal blocks extending lengthwise of and directly over said purlins and bearing against the upper side of said insulative layer on said purlins, said blocks extended between the base portions of adjacent panel mounting clips, said base portions having tangs thereon which project into ends of said thermal blocks holding said blocks in place, said panels being supported on the tops of said thermal blocks.

4,213,283

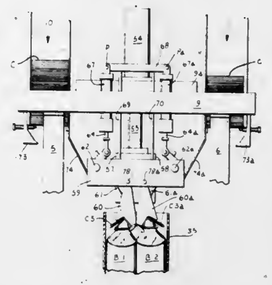
MACHINE FOR APPLYING AN ARTICLE CARRIER TO A PLURALITY OF BOTTLES

Rodney K. Calvert, Dunwoody; Dale K. Scott, Jonesboro, and Alton J. Fishback, Austell, all of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 15, 1978, Ser. No. 960,736
Int. Cl.[3] B65B *21/00*
U.S. Cl. 53—48 **15 Claims**

1. A machine for applying an article carrier having apertures therein to a row of bottles to cause the neck of each bottle to be enveloped by a carrier aperture, said machine comprising conveyor means (**4**) for moving a group of bottles arranged in

side by side relationship into a loading station, vertically reciprocable plunger means (**55,59**) disposed above said loading station, at least one applicator member (**60**) pivotally mounted on said plunger means and disposed to receive carriers in sequence and movable downwardly to cause the carrier aper-



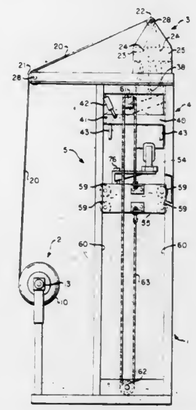
tures to envelope the necks of bottles at said loading station, and cam means (**80,81**) arranged to swing said applicator member about its pivotal mounting in a plane transverse to said row of bottles following application of a carrier to a group of bottles so as to cause said applicator to disengage the carrier.

4,213,284

AUTOMATIC BAGGING APPARATUS

John H. Silverman, Nesconset, N.Y., and James P. Cahill, River Vale, N.J., assignors to Precise Metal Parts Company, Emerson, N.Y.

Filed Jan. 24, 1979, Ser. No. 6,281
Int. Cl.[2] B65B *57/12, 43/46*
U.S. Cl. 53—74 **13 Claims**



1. In an apparatus for repeatedly forming garment bags, each bag formed about a garment on a hanger with a hook, each bag formed from a length of tubular heat sealable material pulled and cut free from a supply roll of said material, said apparatus being the type which includes a support for holding said hanger mounted garment in position for bagging, a supply roll holder which permits rotation of said roll, a pulling means including a motor drive for advancing said tubular material by pulling said tube length from said roll along a path of movement and over said garment, a cutting means for transversely cutting free said tube length, and heat seal means for effecting a transverse closure of said tube length with said support extending through said closure, the improvement comprising:

(a) an anti pull-back means proximate said support on the side thereof towards said supply roll holder for preventing pull-back of said tubular heat sealable material after each said length thereof has been cut free;

(b) brake means for restraining rotation of said supply roll when said roll is within said holder;

(c) means for deactivating said brake means when said pulling means is activated;

(d) means for controlling said pulling means to limit the linear acceleration of said tubular material during pulling; and

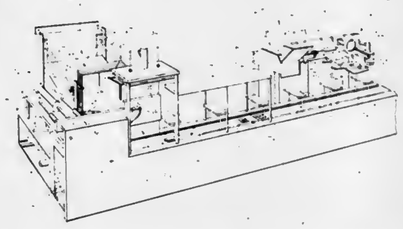
(e) a flywheel connected to said supply roll for rotation therewith when said roll is within said holder, whereby as said supply roll is diminished by each pull of a tube length, the portion of the pulling force necessary to rotationally accelerate said diminished supply roll is decreased but, since the required angular acceleration of said diminished supply roll is increased, the regular acceleration of said fixed inertia flywheel is likewise increased to substantially correspondingly require an increase in another portion of said pulling force to maintain said total pulling force substantially constant.

4,213,285

CARTONING APPARATUS

Derek V. Mancini, Etobicoke, Canada, assignor to Consumers Glass Company Limited, Etobicoke, Canada

Filed Oct. 31, 1978, Ser. No. 956,246
Int. Cl.[2] B65B *7/20, 43/28*
U.S. Cl. 53—137 **13 Claims**



8. Carton forming and filling apparatus comprising: means for supplying flat carton blanks to a set-up station; means for loading and means for opening a carton blank in the set-up station; conveyor means for intermittently conveying the open carton blanks and subsequently formed cartons in fixed spaced relation to one another; carton bottom forming means consisting of bottom folding means; means for taping the folded bottoms, means for restricting upward movement of the open carton blanks cooperating with the carton bottom forming means in forming the carton bottoms; carton filling means; carton top folding means; and top taping means for taping the folded carton tops, either of said taping means comprises a tape contact member and tape plunger means downstream of the tape contact member; the arrangement being such that said tape contact member applies a strip of tape along and extending between the folded tops of adjacent spaced apart cartons with said tape plunger being adapted to move into the space between the adjacent cartons when the conveyor is stationary to sever the extended strip of tape thereby provideing a pair of free tape ends and to apply the free tape ends to opposing end walls of the adjacent cartons.

4,213,286

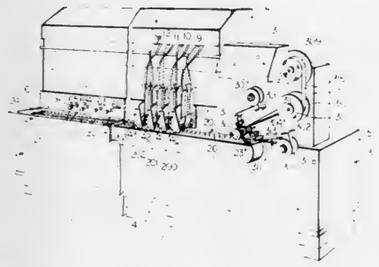
COMPONENT SEQUENCING AND TAPING MACHINE

Phillip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,619
Int. Cl.[2] B65B *57/10, 13/04, 27/10*
U.S. Cl. 53—493 **3 Claims**

1. A machine for increased rate of sequencing and taping

electrical components said components being characterized by having a body portion and at least one lead extending from each end of said body portion, which comprises in combination: a continuous conveyor movable along a horizontal path at a constant rate; a group of dispensers, dispensers of said group being disposed at spaced points along the path of travel of said conveyor; means for actuating said dispensers; a taping mechanism adapted to apply tape to components deposited on said conveyor by said dispensers, said conveyor and said taping mechanism being adapted to run continuously; and control means, said control means including memory means adapted to control operation of said actuating means such that said dispensers of said group are actuated in a preferred sequence to deposit components into a plurality of notches of said conveyor to form successive predetermined groups of components to be taped and such that one component of each of said groups is in every sequential one of said plurality of notches by the time said conveyor reaches said taping mechanism; said notches opening upwardly to receive said leads of said components deposited on said conveyor, the pitch distance between said notches in the direction of movement of said conveyor being a submultiple less than or equal to one-fifth of the distance between said spaced points of said dispensers, whereby even when said conveyor is moved at a slower constant rate, the output of said machine is increased.



4,213,287

FILLING MACHINE FOR VALVE BAGS

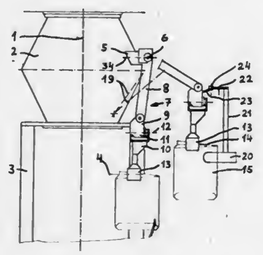
Günter Knorr, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Hamburg, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,893

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817436; May 24, 1978, 2822678

Int. Cl.[2] B65B *43/26*

U.S. Cl. 53—573 **19 Claims**



1. A filling machine for filling bags, comprising

a rotor having a plurality of filling stations and

a delivery arm for each station, the delivery arms each having a gripping device for gripping the bags and being movable relative to a stationary magazine for the bags, and including an articulated section operable to compensate for the rotational speed of the rotor and arms relative to the magazine, whereby the gripping device is caused to move in a direction opposite to the direction of approach to the magazine so that the relative movement between the gripping device and a bag at the magazine is very low during gripping of the bag, thus facilitating accurate gripping of the bag.

4,213,288

POWER TRANSMISSION DEVICE FOR A POWER-OPERATED LAWN MOWER

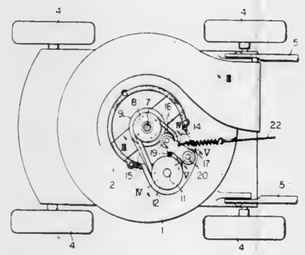
Masayuki Takeuchi; Kenji Nakamura, both of Asaka, and Masahiro Handa, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1978, Ser. No. 910,526

Claims priority, application Japan, Jun. 2, 1977, 52/5270757[U]

Int. Cl.[2] A01D *69/08*

U.S. Cl. 56—11.6 **1 Claim**



1. In a power transmission device for a power-operated lawn mower having a steering handle, a main body housing, a prime mover, an output shaft extending from said prime mover to transmit driving force thereof, a driving pulley, a driven pulley, a cutting blade, a drive belt, oscillatable control arm means, a tension-imparting pulley supported at one end of the control arm means to impart tension to said drive belt at the time of driving said cutting blade, and brake applying means, the improvement which comprises: said driving pulley and a first driven pulley being concentrically fitted on said output shaft, the former being rigidly mounted thereon and the latter being fitted thereon in a freely rotatable manner; the cutting blade being fastened to said first driven pulley; a second driven pulley separately provided from said driving pulley and said first driven pulley on a separate supporting shaft disposed in parallel with said output shaft in a freely rotatable manner; a first drive belt loosely extended between said driving pulley and said second driven pulley; a second drive belt tightly extended between said first driven pulley and said second driven pulley; and said brake applying means provided on one part of said oscillatable arm means to apply braking force to said second driven pulley simultaneously with loosening of said first drive belt when said oscillatable arm means is biased toward said second driven pulley by spring force, control of said oscillatable arm means being effected by a control lever provided on said steering handle of said lawn mower to be operated by an operator through flexible means connecting said lever and said oscillatable arm means.

4,213,289

FAN DEVICE FOR ROTARY MOWERS

Holger Kamppinen, 428 Williams Ave. North, Renton, Wash. 98055

Filed May 21, 1979, Ser. No. 40,975

Int. Cl.[3] A01D *55/18*

U.S. Cl. 56—295 **5 Claims**

1. A fan device for use with a rotary mower blade mounted on an upright mower shaft within a mower housing, comprising:

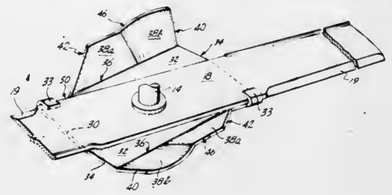
a plate structure extending laterally of said blade at each side of its axis of rotation axisward of the cutting edges of the blade;

each said plate structure providing during rotation a leading edge and a following edge;

said edges being disposed at like but opposite acute angles relative the longitudinal axis of the mower blade;

a fan blade secured axisward of each cutting edge along each side of said plate structure and rising thereabove and above the mower blade at an obtuse angle relative the plane structure; and

said fan blades upon rotation above grass-covered earth creating an appreciable lift on the vegetation to cause the same to stand substantially upright in the path of the rotating mower blade and also producing a scouring action on the housing inner surfaces as cut airborne vegetation is moved for outward discharge from the housing.



4,213,290

RING SPINNING FRAME WITH DRAWING MECHANISM STOP MOTION

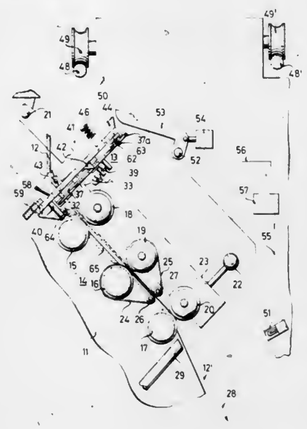
Wilhelm Küpper, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 18, 1978, Ser. No. 934,678

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737599

Int. Cl.[2] D01H *13/16*

U.S. Cl. 57—85 **5 Claims**



1. Ring spinning machine comprising a drawing frame having, at a given location therein, a draw-up roll for drawing therethrough in a given direction a roving being spun in a thread, and a roving-clamping device responsive to a break in the thread for clamping the roving, said roving-clamping device being controllably deflectable to move the roving transversely to said given drawing direction in vicinity of said given location, said roving-clamping device being latchable in made-ready position thereof, having an unlatching device responsive to a thread break and comprising a two-part clamp including a lower clamping member spring-biased into made-ready position thereof and an upper clamping member held by said unlatching device in made-ready position against a spring-biasing force, said upper clamping member, after unlatching of said roving-clamping device, pressing the roving against said lower clamping member and deflecting both the roving and said lower clamping member transversely to said given drawing direction, and including stop means for limiting the deflection of the roving and said lower clamping member.

4,213,291

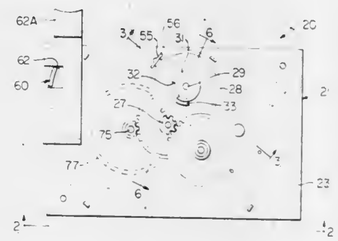
ALARM CLOCK CONSTRUCTION

Robert L. Wooding, Wolcott, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 29, 1977, Ser. No. 828,611

Int. Cl.[2] G04C *71/16*

U.S. Cl. 368—263 **11 Claims**



1. In an alarm clock construction having frame means carrying time means and a timer motor for driving said time means, said time means including an alarm setting means for selecting a predetermined time said clock construction is to sound an alarm, said alarm sound being adapted to be created by a reed member pivotally carried by said frame means and being controlled by an on-off alarm member movably carried by said frame means, the improvement wherein said reed member has an intermediate pivot point that pivots on said frame means to permit said reed member to pivot to an alarm producing position when said time means reaches said predetermined time, said on-off alarm member having biasing means for acting on said reed member on one side of said intermediate pivot point to tend to bias said reed member to said alarm producing position when said on-off alarm member is in the "on" position thereof and for acting on said reed member on the other side of said intermediate pivot point to tend to bias said reed member out of said alarm producing position when said on-off alarm member is in the "off" position thereof, said biasing means of said on-off alarm member comprising a leaf spring member engageable with and slidable relative to said reed member, said reed member having a slot therein that extends from one side of said pivot to the other side of said pivot point, said leaf spring member having a tang disposed in said slot to guide movement of said on-off alarm member relative to said reed member.

4,213,292

THERMOELECTRICALLY-POWERED WRIST WATCH

Zdenek Dolezal, and Urs J. Hof, both of Biel, Switzerland, assignors to Bulova Watch Company, Inc., Flushing, N.Y.

Filed Apr. 27, 1979, Ser. No. 34,012

Claims priority, application Switzerland, May 10, 1978, 5060/78

Int. Cl.[2] G04C *3/00;* **H02J** *7/00*

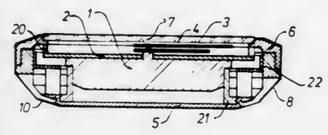
U.S. Cl. 368—204 **9 Claims**

1. A thermoelectrically-powered wrist watch comprising:

A a casing having an upper component exposed to the atmosphere and therefore relatively cool and a back structure

provided with a metallic section in physical contact with the wrist of the wearer and heated thereby;

B an electronic watch movement housed in said casing and including a rechargeable battery to power said movement, said movement including a metallic carrier which is thermally insulated from the upper component of said casing



and is also thermally insulated from the metallic section of said back structure; and

C an electric generator disposed in said housing to produce a voltage for charging said battery, said generator having a hot pole thermally coupled to said metallic back section and a cold pole thermally coupled to said upper component of the casing.

4,213,293

RECEIVING UNIT FOR TIMEPIECES

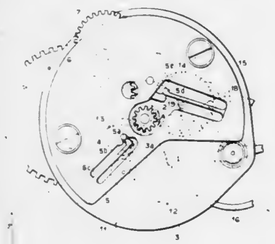
Hiroshi Mabuchi, Tokyo, and Isao Yabe, Tokorozawa, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 950,055

Claims priority, application Japan, Oct. 15, 1977, 52-138424[U]

Int. Cl.² G04B *3/12, 5/04*

U.S. Cl. 368—152 **10 Claims**



1. In a receiving unit for timepieces arranged to support a self-winding mechanism having a weight wheel pinion secured to a weight, a reduction wheel train for transmitting the rotational movement of said weight wheel pinion to a main spring to wind up said main spring, and a control means for controlling said reduction wheel train, the improvement comprising:

(a) a bearing portion provided on and integral with said receiving unit for rotatably supporting said reduction wheel train;

(b) a cutout formed in a predetermined position of said receiving unit; and

(c) said control means including a leaf spring integral with said receiving unit and projecting into said cutout from said receiving unit and a movable member movably arranged on said receiving unit to be urged in a given direction by means of said leaf spring.

4,213,294

ANALOG DISPLAYS FOR ELECTRONIC TIMEPIECES

Alfred B. Freeman, 20418 Seaboard Rd., Malibu, Calif. 90265

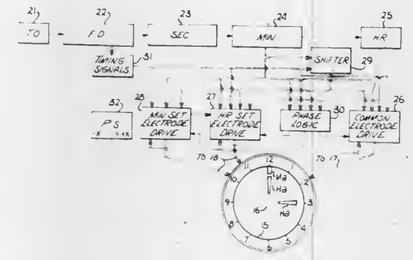
Filed Apr. 12, 1977, Ser. No. 786,962

Int. Cl.² G04B *19/30, 19/06*

U.S. Cl. 368—82 **22 Claims**

1. In an electronic timepiece having a time register and a time display consisting of a plurality of electro-optical elements disposed in first and second loops on the face of said timepiece, the combination of:

(a) first means responsive to the minute position held in said time register for activating one of said elements in said first loop;



(b) second means responsive to the minute position held in said time register for activating one of said elements in said second loop; and

(c) means for operating said first and second activating means in sequence repetitively at a perceptible rate.

4,213,295

ARRANGEMENT FOR SECURING A DIAL TO A PLATE IN A TIMEPIECE

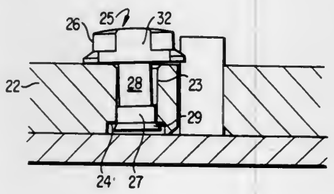
Friedrich Perrot, Lengnau, Switzerland, assignor to ETA A.G. Ebauches-Fabrik, Solothurn, Switzerland

Continuation-in-part of Ser. No. 716,349, Aug. 20, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 892,751

Claims priority, application Switzerland, Sep. 12, 1975, 11855/75

Int. Cl.² G04B *19/06*

U.S. Cl. 368—236 **1 Claim**



1. An arrangement for securing a dial to a plate in a timepiece, said plate comprising a first bore and a second bore, and said dial comprising a foot extending through said first bore, rotatable attachment means being associated with said foot and with said second bore, said attachment means comprising a head resting against said plate and including a collar concentric with the axis of rotation of said attachment means, surrounding said head and taking the form of a cutting edge, which except for a chordwise flat portion is of a diameter to form an interference fit with said foot, said collar being of constant thickness at any given radial distance, and a shank extending into said second bore and including a first cylindrical portion and a second cylindrical portion smaller in diameter than said first cylindrical portion, wherein said second cylindrical portion is disposed between said head and said first cylindrical portion, said shank further comprising at the end thereof remote from said head a radially projecting bead larger in diameter than said first cylindrical portion, and said plate further comprising a recess for receiving said bead, whereby said attachment means is prevented from being dislodged from said associated second bore.

4,213,296

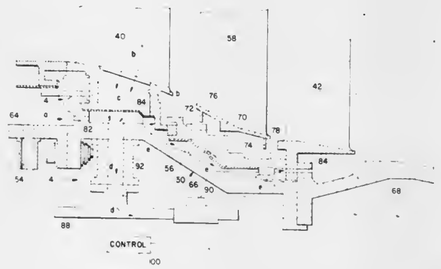
SEAL CLEARANCE CONTROL SYSTEM FOR A GAS TURBINE

Frederick M. Schwarz, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1977, Ser. No. 862,748

Int. Cl.² F02C *7/26*

U.S. Cl. 60—39.14 R **6 Claims**



1. In a gas turbine engine having a compressor defining a flow path from which a fluid-working medium is discharged at an elevated pressure, a combustion section receiving the working medium discharged from the compressor and combining the medium with a fuel in a combustion process to generate a high-velocity stream of combustion gases, a turbine section having a turbine including a plurality of peripheral turbine blades situated in a gas flow path carrying the high-velocity combustion gases from the combustion section through the turbine to drive the turbine, an engine casing enclosing the turbine and turbine seal means supported from the casing closely adjacent the tips of the turbine blades in the gas flow path, an improved seal clearance control system comprising: heat exchanging means for controlling thermal expansion of the engine casing and the seal means and including fluid conduit means extending into the turbine section in heat exchange relationship with the engine casing, the fluid conduit means having a fluid connection at an upstream end with the compressor to receive a portion of the relatively cool working medium from the compressor and another upstream connection with the gas flow path in the turbine section to receive the relatively hot combustion gases and also having a downstream end from which the working medium and the hot combustion gases are discharged, the intermediate portion of the conduit between the upstream connection and the downstream end being in heat exchange relationship with the engine casing supporting the turbine seal means; and flow control means associated with the heat exchanging means for regulating the flow of both the relatively cool working medium and the hot combustion gases through the conduit means in heat exchange relationship with the casing whereby expansion and contraction of the engine casing and the clearance between the seal means and the blade tips in the turbine may be controlled, the flow control means including vent valve means connected with the fluid conduit means between the upstream and downstream ends for controlling pressure within the fluid conduit means and the resulting flow of the relatively cool working medium and hot combustion gases through the conduit means in heat exchange relation with the engine casing.

4,213,297

VEHICULAR PROPULSION GAS TURBINE MOTOR

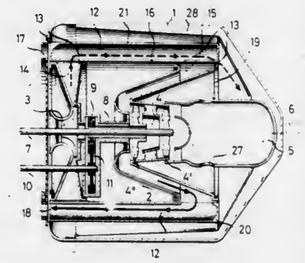
Siegfried Förster, Alsdorf; Günter Hewing, Julich, and Manfred Kleemann, Bergheim, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Oct. 3, 1978, Ser. No. 948,245

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744899

Int. Cl.² F02C *7/08*

U.S. Cl. 60—39.51 R **12 Claims**



1. A vehicular propulsion gas turbine motor comprising, in addition to the gas turbine and its upstream combustion chamber with its fuel and air supply ducts, an air input compressor driven by said gas turbine and a counter-current recuperative heat exchanger for heating the air input supplied by said compressor with heat supplied by combustion product gases discharged by said gas turbine, said turbine, compressor, combustion chamber and heat exchanger being arranged symmetrically around a common axis of symmetry that coincides with the axes of rotation of said turbine and of said compressor, and said heat exchanger being composed of a multiplicity of ceramic elements arranged in a ring around said compressor, turbine and combustion chamber with sealing means being provided between adjacent elements, said motor further comprising the improvement which consists in that:

the ceramic elements of said heat exchanger in said annular arrangement are constituted for counter-current flow of heat exchanging gases directed mainly parallel to said axis of symmetry, although both inputs thereto are perpendicular to said axis and directed from the space within said annular arrangement toward the inner side of said elements, respectively at opposite axial ends thereof, and the compressed air path connecting with said heat exchanger communicates with confined space radially beyond said heat exchanger so that said heat exchanger elements are urged inwardly by the pressure of said compressor output, and

seals provided adjacent to the elements of said heat exchanger, including said seals between said elements, are improved by the effects of said pressure of said compressor output.

4,213,298

SELF-REVERSING HYDRAULIC CONTROL SYSTEM AND SELF-REVERSING PUMP INCORPORATING SUCH SYSTEM

Jerome H. Milgram, Cambridge, Mass., assignor to Offshore Devices, Inc., Peabody, Mass.

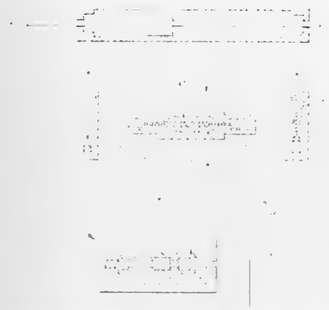
Filed Jul. 3, 1978, Ser. No. 921,458

Int. Cl.² F15B *15/18*

U.S. Cl. 60—369 **10 Claims**

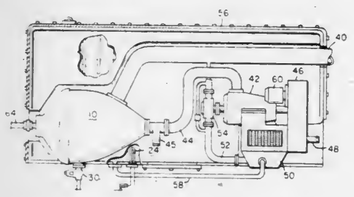
1. A self-reversing hydraulic control system for use with a device to be driven in opposite directional modes, said driven device having hydraulic lines connected to its opposite sides to apply hydraulic fluid under pressure to one side of the device and apply exhaust conditions to the other side of the device, and vice versa,

said control system including a flow sensing element disposed to sense flow associated with movement of said driven device and adapted to generate a stop signal responsive to the termination of said flow, said termination



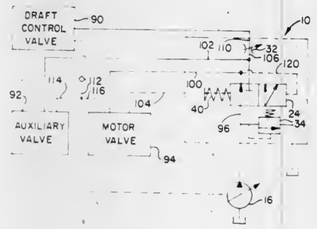
denoting stoppage of said driven device, and means responsive to said stop signal to shift the system from one directional mode to the other to cause said hydraulic fluid under pressure and said exhaust conditions to be oppositely applied to the opposite sides of the driven device.

4,213,299
HEAT TRANSFER LENS STEAM TURBINE
Stephen T. Sharar, P.O. Box 236, Woodbury, Pa. 16695
Filed Jul. 3, 1978, Ser. No. 921,885
Int. Cl.³ F01K *13/00*
U.S. Cl. 60—676 **16 Claims**



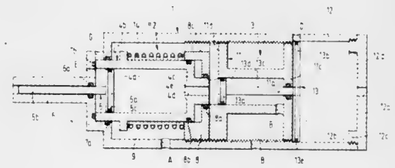
1. A steam turbine device comprising in combination:
an outer boiler shell;
an inner boiler positioned within said outer boiler shell;
a heat transfer lens device positioned in the end portion of said inner boiler;
a jet burner device positioned in said outer boiler shell, adjacent to said heat transfer lens device and adapted to directing a flame against said heat transfer lens device;
a spraying mechanism positioned within said inner boiler adjacent to the inner portion of said heat transfer lens device, said spraying mechanism being in communication with a reservoir of fluid;
a steam delivery tube in communication with said inner boiler;
a steam pressure valve positioned within said steam delivery tube and adapted to control steam there passing through;
a steam turbine connected to said steam delivery tube;
a steam condenser connected to said steam turbine and adapted to condense steam from said turbine;
a gear reduction unit connected to said turbine adapted to convert the rotation speed of said turbine;
a combination starter-motor and generator unit connected to said turbine, said motor and generator unit connected specifically to the gear reduction unit of said steam turbine and adapted to (1) rotate said turbine for starting purposes and (2) to generate electrical energy;
a water pump connected to said condenser and in communication with said fluid-spraying mechanism;
a control mechanism associated with said water pump and adapted to control the fluid pressure output of said water pump and a water storage tank encasing said outer boiler shell and said turbine, said water tank being in communication with said condenser;
a control system adapted to monitor and control the operation of said inner boiler and said turbine.

4,213,300
VARIABLE FLOW RATE CONTROL WITH MECHANICAL OVERRIDE FOR CLOSED CENTER VALVE
Kestutis Biskis, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Jan. 22, 1979, Ser. No. 5,049
Int. Cl.² F15B *11/20*
U.S. Cl. 60—420 **2 Claims**



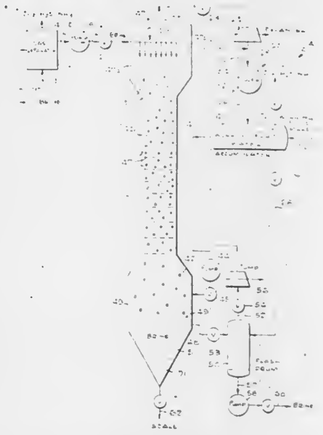
1. In an agricultural tractor having a hydraulically operated hitch control system including a position control valve, a motor valve, an auxiliary valve, a motor priority valve incorporating a variable raise rate device and a compensator adjusted variable displacement pump the priority valve assembly comprising:
a housing having a plurality of internal passages and ports including a fluid input port for receiving fluid from said variable displacement pump, a pump source passage with access to said fluid input port, a motor valve passage connected to said pump source passage, a motor valve delivery port accessing said motor valve passage to said motor valve, an auxiliary valve passage connected to said pump source passage, an auxiliary valve delivery passage accessing said auxiliary valve delivery passage to said auxiliary valve, a motor valve signal line passage connected to said motor valve, a variable orifice source passage connected to said auxiliary valve delivery passage and a variable orifice delivery passage connecting said variable orifice source passage to said draft control valve;
a priority valve spool having a multi-diameter body with a smaller diameter portion between larger diameter end portions, said priority valve spool spring and pressure biased to a first position and pressure biased to a second position, said priority valve spool being in said first position when said variable displacement pump is pumping fluid at an unrestricted rate to said motor valve passage and said priority valve spool being in said second position when said variable displacement pump is pumping fluid at a rate greater than the rate of fluid flowing through said motor valve passage;
a variable orifice interposed between said variable orifice source passage and said variable orifice delivery passage, incuding a rotary metering valve having an edge that may be rotated across an orifice connecting said variable orifice source passage with said variable orifice delivery passage to increase the area of said orifice, said variable orifice being mechanically adjustable through linkage means mounted on said rotary metering valve.

4,213,301
COMPRESSED AIR APPARATUS FOR DRIVING FASTENING ELEMENTS
Elmar Maier, Tisis, Austria, and Othmar Heeb, Ruggell, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Feb. 27, 1979, Ser. No. 15,612
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1978, 2811083
Int. Cl.² F15B *11/06*
U.S. Cl. 60—407 **6 Claims**



1. Apparatus for inserting fastening elements, such as bolts, nails and the like, into a receiving material using compressed air as the driving force, comprising first means defining a first axially extending chamber having a front end and a rear end spaced apart in the axial direction of the chamber, an inlet in the rear end of said chamber for supplying compressed air thereto, a first piston axially displaceably mounted within said first chamber for axial movement therethrough from the rear end toward the front end of the chamber for driving a fastening element from the apparatus, said first piston having a first piston head against which the compressed air acts, said piston head being displaceable betweeen a rear end position and a front end position, in the rear end position said piston head forming a closure for the inlet into the rear end of said chamber, second means for supplying compressed air in said chamber through the inlet in the rear end of said chamber, said second means including a second piston chamber and a third piston chamber each aligned axially with the first piston chamber with the second chamber located between the first chamber and third chamber, the second chamber being in communication with the first chamber through the inlet in the rear end of said first chamber so that compressed air can be supplied from the second chamber into said first chamber through the inlet in the rear end thereof, said third chamber having a considerably greater transverse cross-sectional area than said second chamber, said second means including a storage chamber in communication with said second chamber for storing compressed air to be used for displacing said first piston from the rear end toward the front end of said first chamber, said second means also including a double-headed piston with one head thereof located in said second chamber and the other head thereof located in said third chamber, and a piston shaft interconnecting said heads, said third chamber having a first opening thereto for admitting compressed air into the third chamber for acting against said other head, said second chamber having an opening thereto, said double-headed piston arranged to supply a sufficient amount of compressed air to said storage chamber for driving said first piston from the rear end to the front end of said first chamber, before said first piston is driven by the stored compressed air.

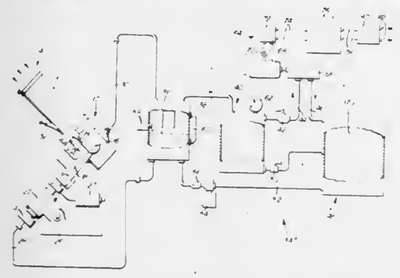
4,213,302
PROCESS AND SYSTEM FOR RECOVERY OF ENERGY FROM GEOTHERMAL BRINES AND OTHER WATER CONTAINING SOURCES
Samuel G. Woinsky, Irvine, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 589,068, Jun. 23, 1975, and Ser. No. 611,310, Jun. 23, 1975, Pat. No. 4,089,175, and Ser. No. 763,533, Jan. 28, 1977. This application Sep. 26, 1977, Ser. No. 836,293
Int. Cl.² F03G *7/00*
U.S. Cl. 60—641 **29 Claims**



1. Process for recovery of energy from elevated temperature or hot water-containing fluids which contain uncondensible gas, including geothermal brines and other elevated temperature water sources, which comprises
(a) contacting said water-containing fluid which contains uncondensible gas in heat exchange relation with a working fluid in liquid form in a heat transfer zone, to produce a cooled water-containing fluid,
(b) heating said working fluid by such contact at a temperature to produce boiling thereof in the upper portion of said heat transfer zone, said heat transfer zone being maintained at a pressure below the critical pressure of said working fluid, to produce resulting vapors of working fluid and water together with uncondensible gas,
(c) expanding the resulting vapors and gas in an expander to produce work, and discharging the expanded vapors and gas from said expander,
(d) withdrawing cooled water-containing fluid from said heat transfer zone of step (a) containing working fluid,
(e) flashing said cooled water-containing fluid of step (d) in a flash zone to flash off the working fluid therein including uncondensible gas, and leave cooled liquid, and discharging said cooled liquid,
(f) compressing the flashed-off working fluid and said gas,
(g) mixing said compressed working fluid and said gas from step (f) with the expanded vapors and gas discharged from said expander of step (c) to form a mixture,
(h) cooling said mixture and condensing the expanded working fluid vapor and water vapor therein, to form condensed working fluid and condensed water vapor,
(i) separating, in an accumulator zone, condensed working fluid from condensed water vapor and recycled uncondensible gas from step (h),
(j) returning said condensed working fluid to said heat transfer zone for reheating therein, and
(k) carrying out said flashing in step (e) of said cooled water-containing fluid at a pressure sufficiently high in relation to the pressure in said accumulator zone so that the recycle of flashed-off uncondensible gas from said flash zone

to said accumulator zone is reduced to a level such that there is essentially little or no vent gas discharged from said accumulator zone.

4,213,303
SUN TRACKING SOLAR ENERGY BOILER
William E. Lane, 1200 Central Ave., Wilmette, Ill. 60091
Filed Apr. 21, 1978, Ser. No. 898,876
Int. Cl.[3] F03G *7/02*
U.S. Cl. 60—641 **10 Claims**



1. A sun tracking solar energy boiler comprising, in combination, a solar radiation collector and tracking assembly, a boiler assembly, and an electric power generating assembly, said collector and tracking assembly comprising a lens, a hollow crown plate located approximately at the focal point of the lens, said lens being movable by a diurnal drive means and a declination drive means for moving said lens in tracking relationship with the sun, said boiler assembly comprising a preheat tank having an upper vapor-containing portion and a lower water-containing portion, a steam pressure tank connected to the upper portion of the preheat tank, a steam engine connected to the steam pressure tank with a control valve interposed therebetween, a water reservoir tank connected with said steam engine, and level control means for maintaining water in the lower portion of said preheat tank through a pump connected with said water reservoir tank, said electric power generating means being powered by said steam engine, said preheat tank having a water inlet line connecting the lower portion thereof with and furnishing water to said crown plate, said crown plate being adapted to vaporize said water into vapor passing into a steam outlet line connected with the upper portion of said preheat tank, the water level in the lower portion of said preheat tank being adjustable by said level control means to enable said water in said water inlet line to rise to a level near the rounded surface of said crown plate to permit vaporization of said water in said crown plate.

4,213,304
BOILER CONTROL SYSTEM
Richard H. Morse, Oreland, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.
Filed Nov. 24, 1978, Ser. No. 963,259
Int. Cl.[3] F01K *3/22*
U.S. Cl. 60—664 **9 Claims**

1. The method for controlling the boiler outlet pressure of a fuel fired drum type boiler connected to supply steam through a throttle valve to a turbine-generator, which comprises the steps of:

measuring a quantity P_1 indicative of the rate of energy input to the turbine;

measuring a quantity P_t indicative of the actual throttle pressure;

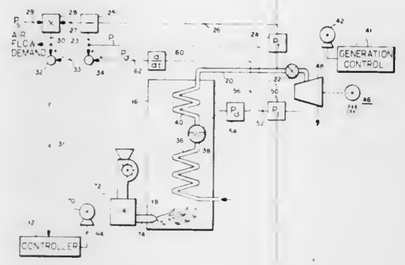
providing a quantity P_s indicative of the desired throttle pressure;

measuring a quantity P_d indicative of the rate of change of the drum pressure; and

controlling the fuel input to the boiler so as to vary the heat released in the boiler as represented by the expression

$$P_1+P_d$$

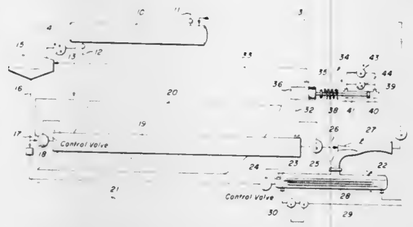
in accordance with a demand quantity represented by the expression



$$P_1(P_s/P_t)$$

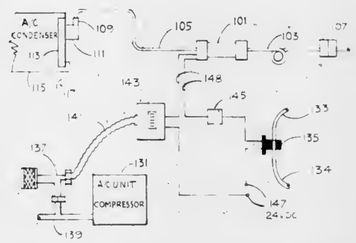
indicative of the energy input rate to the turbine which will occur at the existing throttle valve opening when throttle pressure is at its desired value so that effectively the response of the control action to P_s and P_t is only to their ratio.

4,213,305
SOLAR POWERED COOLING APPARATUS
Arie M. De Geus, 6625 4th St., S., St. Petersburg, Fla. 33705
Filed Sep. 13, 1976, Ser. No. 941,755
Int. Cl.[2] F25B *27/00, 1/06*
U.S. Cl. 62—2 **5 Claims**



1. Solar powered cooling apparatus comprising a collector-/evaporator and reflector means positioned to concentrate incident solar radition on the collector, an evaporator forming part of a cooling device, aspirator means operated by the pressurized refrigerant vapor produced in said collector-/evaporator for reducing the pressure in the evaporator of said cooling device and thereby cooling the refrigerant liquid therein, an overhead condenser for condensing the mixture of vapors produced by said aspirator, said overhead condenser draining into an overhead gathering vessel, means for supplying liquid refrigerant from said gathering vessel to the evaporator of said cooling device, said supplying means including the head of liquid established by said gathering vessel, and means for imposing upon said head of liquid the pressure generated by said collector/evaporator, whereby said liquid refrigerant is supplied to said collector/evaporator from said gathering vessel.

4,213,306
METHOD AND APPARATUS FOR INCREASING AIR CONDITIONER EFFICIENCY
William A. Peabody, 7918 E. 18th Pl., Tucson, Ariz. 85710, and Ernest M. Schaaf, Tucson, Ariz., assignors to William A. Peabody, Tucson, Ariz.
Filed Jun. 7, 1978, Ser. No. 913,528
Int. Cl.[2] F25B *47/00;* **F28D** *5/00*
U.S. Cl. 62—85 **17 Claims**



1. Apparatus for increasing air conditioner efficiency by cooling the air conditioner compressor pump high temperature high pressure refrigerant gas outlet pipeline by water spray at the air conditioner condenser comprising means to treat water, said means including a fluid stabilizer rod in communication with the water to retain in the water particulate matter dissolved and suspended in the water; and means to bathe a portion of the compressor gas output pipeline with a spray of water so treated, said means including a nozzle and a shield to selectively direct the water to a portion of the pipeline, said nozzle located interiorly to said shield, and said shield attached to the air conditioner condenser adjacent said compressor gas output pipeline whereby the refrigerant gas is cooled by the spray of water and the particulate matter in the water does not precipitate out to form scale upon the compressor gas output pipeline or cooling fins of the air conditioner condenser.

12. A method for increasing air conditioner efficiency by cooling the air conditioner compressor pump high temperature high pressure refrigerant gas output pipeline with water at the air conditioner condenser comprising the steps of:

(a) treating water to retain in the water particulate matter dissolved and suspended therein,

(b) sensing the air conditioner compressor pump input refrigerant gas pressure, and

(c) sensing the compressor pump refrigerant gas output temperature, and

(d) controllably bathing the compressor pump refrigerant gas output pipeline with the treated water in accordance with compressor input gas pressure and output temperature so sensed whereby the water carries off the heat from the high temperature high pressure refrigerant gas output pipeline and the pipeline is not scaled by the particulate matter in the treated water.

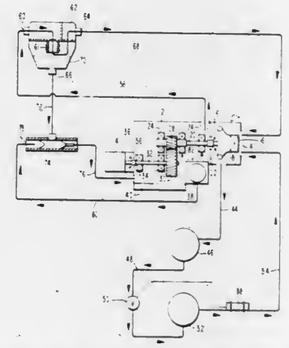
4,213,307
OIL SEPARATION AND RETURN SYSTEM FOR CENTRIFUGAL REFRIGERANT COMPRESSORS
Thomas E. Watson, Staunton, Va., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 13, 1978, Ser. No. 960,362
Int. Cl.[2] F25B *31/00*
U.S. Cl. 62—192 **6 Claims**

1. In combination with a high speed centrigugal refrigerant compressor including a motor housing, a separate gear and bearing housing containing an oil sump, and a separate compressor casing containing a high speed impeller driven by a shaft extending into said casing from said gear and bearing housing, a system for venting refrigerant gas from said gear and bearing housing to the suction space of said compressor and continuously returning oil entrained in said vented refrigerant gas to said gear and bearing housing, comprising:

a relatively small coalescing filter housing having an oil and gas inlet, a gas outlet, and an oil outlet;

a high efficiency coalescing filter medium in said housing with the upstream side of said medium being in communication with said inlet, and both said gas and oil outlets being in communication with the downstream side of said medium;

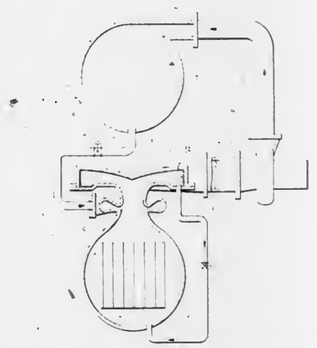
an oil and refrigerant gas line connecting the interior of said gear and bearing housing to said oil and gas inlet of said filter housing;



a refrigerant gas line connecting said gas outlet to said suction space to provide a source of suction for venting refrigerant and entrained oil from said gear and bearing housing; and

first oil pump means having an inlet connected to receive oil from said coalescing filter housing oil outlet and having an outlet connected to the interior of said gear and bearing housing to continuously return to said gear and bearing housing oil extracted from said coalescing filter medium while said compressor is operating.

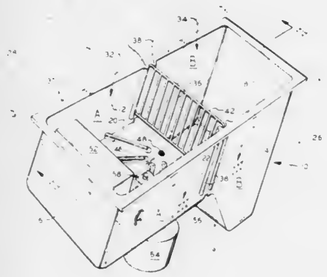
4,213,308
VORTEX GENERATOR FOR SEPARATING A GASEOUS AND LIQUID REFRIGERANT
J. Hilbert Anderson, 2422 S. Queen St., York, Pa. 17402
Filed Oct. 12, 1978, Ser. No. 950,570
Int. Cl.[2] F25B *41/00*
U.S. Cl. 62—196 R **8 Claims**



1. In a refrigeration system embodying a compressor, condenser and evaporator connected by suitable conduits in a closed circuit, a vortex generating means for separating a gaseous and liquid refrigerant and located downstream of said evaporator, said vortex means including a lower chamber and

upper chamber, said condenser connected to said lower chamber for delivering a stream of vapor and liquid thereto, said evaporator communicating with said lower chamber for delivering a stream of vapor thereto for mixing with the condenser stream of vapor and liquid, said mixture swirling outwardly into said upper chamber to separate the liquid from the vapor with said vapor flowing to said compressor with the vapor contained in the stream of vapor and liquid from said condenser by-passing said evaporator.

4,213,309
RECREATIONAL VEHICLE MULTI-LEVEL COOLER
William J. Pifer, 8100 Denwood, Apt. 106, Sterling Heights, Mich. 48077
Filed Nov. 13, 1978, Ser. No. 960,239
Int. Cl.[2] F25B *25/00*
U.S. Cl. 62—332 **8 Claims**



1. A cooler particularly suitable for use with recreational vehicles comprising, in combination, a receptacle defined by first and second end walls, first and second side walls, a first bottom disposed adjacent said first end wall and a second bottom disposed adjacent said second end wall, said side walls each including a first portion intersecting said first end wall and said first bottom, a second portion intersecting said second end wall and said second bottom and a central region disposed intermediate said first and second bottoms, the vertical dimension of said first wall portions and said first end wall being less than the vertical dimension of said second wall portions and said second end wall whereby said first bottom is located at a higher vertical elevation than said second bottom, a drain opening defined in said first bottom, a plurality of block ice supporting ridges homogeneously defined in said first bottom extending upwardly from the general configuration of said first bottom, partition supporting means defined in said side walls at said central region thereof, and a vertically disposed partition supported within said partition supporting means.

4,213,310
THERMAL CONTAINER WITH QUICK-RELEASE LID-MOUNTED FLASK
Kenton A. Buss, Oxford, Kans., assignor to Igloo Corporation, Houston, Tex.
Filed Apr. 3, 1979, Ser. No. 18,002
Int. Cl.[2] F25D *3/08*
U.S. Cl. 62—457 **12 Claims**

1. A container for maintaining the temperature of the contents placed therein comprising
a body having a cavity for holding the contents,
a lid pivotally secured to the body for closing the cavity of the body, said lid having a top, and an underside,
a flask for holding a thermal material which is heated or cooled as desired to maintain a hot or cold temperature in the cavity, and



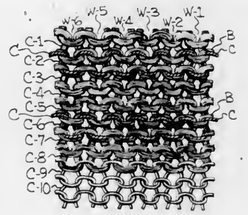
a single locking means mounted on the lid for simultaneously locking the lid and the body together and for releasably securing the flask in position on the underside of the lid.

4,213,311
SUPERLEAK
Adrianus P. Severijns, and Frans A. Staas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 13, 1978, Ser. No. 960,370
Claims priority, application Netherlands, Dec. 16, 1977, 7713951
Int. Cl.[2] F25B *19/00*
U.S. Cl. 62—514 R **4 Claims**

1. A superleak which comprises a duct, a filler mass of low heat conductivity in said duct, said filler mass being capable of passing superfluid ^4He, a housing formed in said duct at an intermediate location thereof, and an integral filler mass of higher heat conductivity in said housing, said integral filler mass effecting heat transfer in a direction transverse to the ^4He flow direction, said integral filler mass being a mixture of a low heat-conductivity filler material and a higher heat-conductivity filler material and having the same or substantially the same effective cross-sectional flow area as the filler mass in the duct.

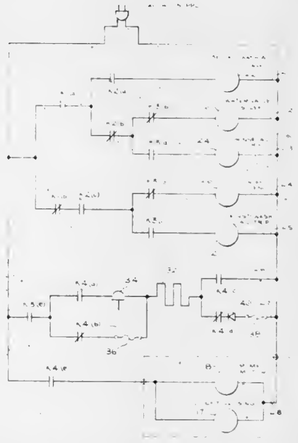
4,213,312
PANTY HOSE WITH STRETCH-COTTON PANTY
Sam C. Safrit, Pfafftown; Edward L. Cassidy, Sr.; William B. Cothran, both of Burlington, and Roscoe M. Farrell, Pittsboro, all of N.C., assignors to Alamance Industries, Inc., Burlington, N.C.
Filed May 1, 1978, Ser. No. 901,434
Int. Cl.[2] A41B *9/02, 9/04, 9/10*
U.S. Cl. 66—177 **11 Claims**

1. A lightweight stretchable panty hose garment including a panty portion characterized by an outer face knit of thermoplastic textured main body yarn and having substantially stretchable, retractable, and smooth conforming fit characteristics in combination with an inner surface of nonstretchable staple cotton yarn, said cotton yarn being knitted in plated relationship with the main body yarn substantially throughout some courses so as to lie on the inner surface of the main body yarn loops adjacent the skin of the wearer, the courses containing cotton yarn being noncontiguous and being spaced apart by at least two courses of said main body yarn, whereby the stretchable open lightweight characteristics of the main body yarn fabric are not restricted by the cotton yarn, and said



courses of cotton yarn plated with said main body yarn being spaced apart by no more than about three courses of said main body yarn so that the courses containing the cotton yarn are sufficiently close together to provide a soft, sanitary, nontoxic and moisture absorbing inner surface on said panty portion.

4,213,313
RELAY CONTROL CIRCUIT FOR WASHING APPLIANCE
George E. Kiefer, and LeRoy J. Herbst, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Apr. 2, 1979, Ser. No. 26,104
Int. Cl.[3] D06F *33/02*
U.S. Cl. 68—12 R **5 Claims**



1. A control circuit for controlling a predetermined number of washing appliance functions comprising:
a plurality of relays, said number of relays being less than said predetermined number of functions;
the contacts of said relays being interconnected to form a plurality of distinct relay combinations;
means for performing each of said functions;
each one of said performing means being placed in its operative state in response to the selection of a different one of said relay combinations; and
controller means for selecting each of said distinct relay combinations by selectively activating and inactivating different ones of said plurality of relays;
said plurality of distinct relay combinations including at least one transition relay combination which is automatically selected by said controller means in changing from at least one desired operative relay combination to a second desired operative relay combination, to prevent the initiation of unwanted functions resulting from the inadvertent selection of an incompatible relay combination in changing between said desired operative relay combinations, said transition combination being compatible with said second desired combination;
whereby performance of each of said functions is initiated by selection of the specific combination of activated and inactivated relays associated with that function.

4,213,314
HANDBAG LOCK
David A. Trader, 11308 Dockside Cir., Reston, Va. 22091
Filed Dec. 27, 1978, Ser. No. 973,729
Int. Cl.[2] E05B *67/38*
U.S. Cl. 70—68 **19 Claims**



1. A locking device for a receptacle having an elongated opening defining first and second ends for access into said receptacle and an elongated carry member, said locking device comprising:
means for closing said receptacle opening, said closing means including a longitudinally traveling fastening element for interengaging the opposing sides of said receptacle opening, said fastening element having a handle thereon for gripping said fastening element, said closing means being arranged so that said receptacle opening is closed when said fastening element is at said first end of said receptacle opening;
said handle having an opening therein;
said carry member having two ends, a first end having an engagement member thereon and second end permanently attached to said receptacle; and,
engaging and locking means connected to said receptacle adjacent said first end of said receptacle opening for engaging and locking said engagement member of said carry member, said engagement member and said handle being adapted so that said engagement member may be passed through said handle opening to hold said handle in position when said engaging and locking means engages and locks said engagement member.

4,213,315
KEY ACTUATED SECURITY ENTRY SYSTEM
Bernard R. Lewis, 2049 S. Ocean Dr., Hallandale, Fla. 33009
Filed Mar. 17, 1978, Ser. No. 887,472
Int. Cl.[2] E05B *65/00*
U.S. Cl. 70—94 **1 Claim**

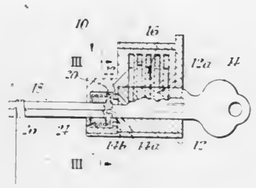
1. A security system to prevent unauthorized entry to an inwardly opening door, comprising:
a doorstop pivotally mounted to the inwardly opening side of said door, said doorstop moveable from a first position above the floor surface to a second position engaged with the floor surface;
a cable; and
a key-actuated tumbler lock having a housing, a tumbler core, and a plurality of tumblers, said lock mounted through said door, said key-actuated tumbler lock having a shaft having a first position moveable and free of said

lock housing and a second position locked to the lock housing, said cable connected between said shaft and said doorstop whereby rotation of the shaft by a proper key effects lifting of the doorstop;

said tumbler core movable by insertion of the proper key with key bits for aligning the tumblers to effect rotation of the core;

said lock housing having a ring having a plurality of teeth disposed inwardly fixed to the housing;

said shaft including a disc having a plurality of rachet teeth



disposed around its periphery, said shaft being mounted so that said disc engages said ring of said housing in said second position;

a spring connected to said housing and said shaft disc for holding said shaft disc within said ring teeth, said shaft being aligned with the tumbler core and movable longitudinally against the spring tension whenever a proper key is inserted therein;

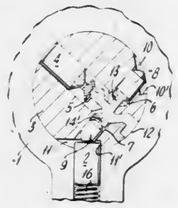
said shaft disc includes a recess having a shape to permit entry of a key tip to effect rotation of said shaft when the shaft is separated from the housing ring.

4,213,316

CYLINDER-LOCK MECHANISM AND KEY MEANS THEREFORE

Werner Tietz, Britzer Damm 196, 1000 Berlin 47, Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,500
Int. Cl.[2] E05B *27/06*
U.S. Cl. 70—35 B **11 Claims**



1. A cylinder lock, comprising a casing having a primary bore, a cylinder rotatable in the bore and having a longitudinally extending insertion slot for reception and longitudinal guidance of an inserted substantially flat key, coacting pin-tumbler means carried by said casing and cylinder and establishing a predetermined rotationally locked angular relation of said cylinder and casing in the absence of insertion of a key having a correct pin-tumbler actuating profile, said pin-tumbler means comprising a longitudinally distributed plurality of case pins and core pins and pin-guide bores in said casing and cylinder and aligned with each other when in said locked angular relation, spring means carried by said casing and normally urging said core pins via their associated said case pins to a radially inner position in which said case pins simultaneously engage both of the associated aligned pin bores to thereby retain the locked angular relation in the absence of such key insertion as will elevate the locus of all pin-to-pin abutments to a rotary-release position at the effective radius of said cylinder, said cylinder having a transversely extending blocking-pin bore substantially normal to the general plane of the path of the flat of the key-insertion passage via the slotted opening, said blocking-pin bore having at its outer end an enlarged generally radially shouldered recess of size and radial-plane alignment as to accommodate limited radially inward entry of one of said case pins in the event that said recess is unoccupied upon cylinder rotation to the extent of aligning the pin-guide bore of the casing with said recess, a blocking pin in said blocking-pin bore and therefore on one side of the path of key insertion, the effective length of said blocking pin being less than the effective length of blocking-pin bore in which it is guided, whereby upon insertion of a key having a side-rib projecting profile to engage and sufficiently elevate said blocking pins to substantially the geometrical cylindrical surface of said cylinder, and upon thereafter rotating said cylinder, said core pin will be prevented from entering the applicable one of said recesses, and further whereby upon insertion of a key having effectively less than said side-rib projecting profile, said core pin will be resiliently urged to dog said cylinder against continued rotation in said casing.

4,213,317

BLANK FILLER PLATE FOR LOCK EDGE CUT-OUT

Robert O. Ruff, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,348
Int. Cl.[2] E05B *9/08, 63/00*
U.S. Cl. 70—450 **8 Claims**



1. A blank filler plate adapted to be mounted in a lock edge cut-out of a steel door, the blank filler plate comprising:

a generally elongated rectangular member having latch means integrally formed along opposed vertical edges thereof and adapted to releasably couple with the respective edges of the lock edge cut-out; and

resilient compressible means mounted on the inner surface of said plate so that said resilient compressible means urges said blank filler plate member outwardly of said lock edge cut-out whereby said latch means biases against the respective edges of said lock edge cut-out to hold said plate in position.

4,213,318

APPARATUS FOR FITTING AN EXTRUSION DIE HOLDER ONTO THE PRESS STEM OF AN INDIRECT METAL EXTRUSION PRESS

Fritz Priebe, Duisburg, Fed. Rep. of Germany, assignor to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 973,535
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757964
Int. Cl.[2] B21C *25/02, 33/00*
U.S. Cl. 72—21 **10 Claims**

1. Apparatus for fitting an extrusion die holder onto the press stem of an indirect extrusion press, the apparatus comprising:

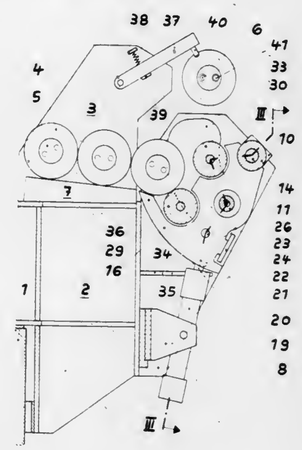
a stationary frame;

a swing arm mounted on the frame and having an upper edge;

two cylindrical rollers mounted for rotation at the upper edge of the swing arm;

feed means for feeding die holders to the upper edge of the swing arm;

means for pivoting the swing arm about an axis between a first position where the feed means feeds a die holder onto the arm so that the holder is supported on said upper edge and on one of the two rollers, and a second position where the die holder is supported on both rollers;



drive means for driving both rollers in the same direction of rotation, when the swing arm is in said second position, to rotate the die holder;

sensing means following the surface of the die holder as the holder rotates, and arranged to stop said drive means when the holder reaches a predetermined orientation; and

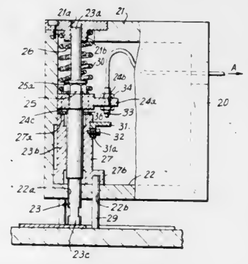
a push-on device for pushing the oriented holder axially in a direction parallel to the pivot axis of the swing arm.

4,213,319

THICKNESS GAUGE

Vance B. Gold, Lombard, and Robert P. Vandlik, Mount Prospect, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 5, 1978, Ser. No. 948,714
Int. Cl.[2] B21C *51/00;* **B21D** *28/00*
U.S. Cl. 72—34 **12 Claims**



1. A housed instrument to be carried on a press ram for movement therewith to and from the working plane of the press for measuring the stock skeleton thickness in the press comprising:

(a) a housing affixed to the press ram and having a hollow inside to enclose said instrument;

(b) a first means resiliently mounted within said housing for movement relative to the direction of travel of the press ram and being housed in alignment with and normal to the working plane of the press for engaging the stock skeleton lying thereon and flattening the stock skeleton against press bed to remove residual strain;

(c) a second means resiliently associated with said housing and carried from the direction of press ram movement in sliding engagement with said first means for alignment with the normal to the working plane of the press for engagement therewith whereby stock skeleton thickness thereby displaces said first means relative to said second means in response to said cut material lying over the press working plane and lying under said first means;

(d) an inter-engaging means being facing portions of said first and second means adapted to move said first means with said second means as a unit relative to said housing when said second means is moved opposite the direction of ram travel beyond a predetermined distance; and

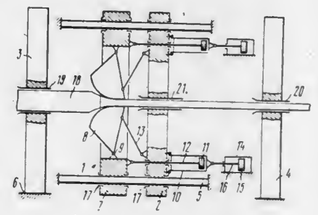
(e) measuring means carried within said housing and responsive to changes in said displacement between said first and second means for establishing a signal indicative of said relative displacement being the stock skeleton thickness.

4,213,320

ROLL-FORGING MILL

Vladimir N. Vydrin, ulitsa Timiryazeva, 28, kv. 27; Evgeny N. Berezin, ulitsa Engelsa, 28, kv. 72, and Vladimir G. Dremin, ulitsa Beloretskaya, 70, kv. 22, all of Chelyabinsk, U.S.S.R.

Filed Nov. 1, 1978, Ser. No. 956,619
Claims priority, application U.S.S.R., Nov. 1, 1977, 2531851
Int. Cl.[2] B21B *13/18*
U.S. Cl. 72—189 **5 Claims**



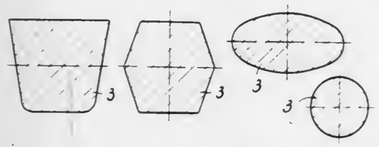
1. A roll-forging mill for working metal along a passline comprising: a frame; a roll stand mounted on said frame for reciprocation along a passline; an actuator for controlling movement of said roll stand; working tools mounted on said roll stand for rocking motion to thereby perform reduction of a metal being worked; stationary guides disposed in parallel to the passline; a support stand mounted on said guides for movement along the passline; a plurality of bars, each bar having one end pivotally connected to said support stand and the other end eccentrically pivoted to one of said working tools for imparting rocking motion to said working tools; power cylinder means secured on said frame and connected with said support stand for coordinating the travelling speed of the roll stand with the speed of the metal being worked during reduction; said roll stand actuator being mounted on said support stand and connected with the roll stand for reciprocating said roll stand thereby transmitting rocking motion to said working tools.

4,213,321

ROLLING METHOD AND ROLLING MILL FOR AN INGOT ORIGINATING FROM A CONTINUOUS CASTING MACHINE OF THE WHEEL-AND-BELT TYPE

Giulio Properzi, via Pietro Cossa, 1 Milano, Italy

Filed Jan. 25, 1978, Ser. No. 872,216
Claims priority, application Italy, Mar. 31, 1977, 21928 A/77
Int. Cl.[2] B21B *1/00*
U.S. Cl. 72—235 **8 Claims**



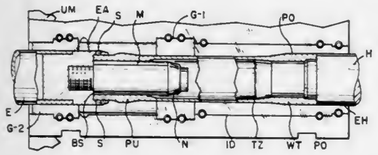
1. A rolling method for an ingot originating from a continuous casting machine of the wheel-and-belt type, and having a substantially trapezoidal cross-section, wherein before being rolled by rolling stands comprising two rolls alternately arranged at 90° to each other, the ingot of substantially trapezoidal cross-section is first rolled simultaneously on the side corresponding to the minor base of the substantially trapezoidal cross-section and on the edges of the major base of the substantially trapezoidal cross-section by three rolls having flat profiles arranged to form a rough-rolled product with a cross-section having two orthogonal axes of symmetry.

4,213,322

METHOD AND APPARATUS FOR UPSETTING PIPE

Floyd A. Barnes, Jr., Pittsburgh, Pa., assignor to Youngstown Sheet and Tube Company, Pittsburgh, Pa.

Filed Oct. 16, 1978, Ser. No. 951,988
Int. Cl.[2] B21D *41/00*
U.S. Cl. 72—357 **12 Claims**



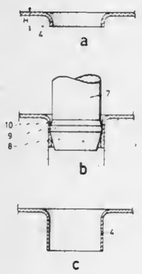
1. A method of upsetting one end of a pipe having an enlarged opposite end, which method comprises:
placing said pipe in an upset die cavity having an upset header entrance end, said cavity having an axial extent longer than said pipe with said enlarged end being within an enlarged cavity portion;
gripping the circumference of said pipe by means positioned within said die and between said enlarged cavity portion and said upset header entrance end; and
inserting an upset header and moving it axially inwardly of said die to axially displace part of the terminal portion of said pipe and through the cojoint action of the upset header and said die enlarging the wall thickness of said pipe at said one end.

4,213,323

METHOD AND APPARATUS FOR EXTRUDING A BURRED EDGE OF A HOLE IN A METAL SHEET

Johannes A. G. De Deugd, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,644
Claims priority, application Netherlands, Dec. 20, 1976, 7614120
Int. Cl.[2] B21D *22/00*
U.S. Cl. 72—358 **6 Claims**



1. A method of extruding a burr edge of a hole in a metal sheet, from a burr wall thickness S_k to a wall thickness S_v after extrusion, comprising
supporting the outside of the burr by a die,
selecting a punch having a conical end portion with a half apex angle between 10° and 20°, and an adjoining cylindrical portion having a diameter greater than the inside diameter of the burr and a cylindrical portion length approximately equal to the value l satisfying the relationship

$$l \leqq \frac{S_v\sqrt{3}}{m} - 2 \ln \frac{S_k}{S_v}$$

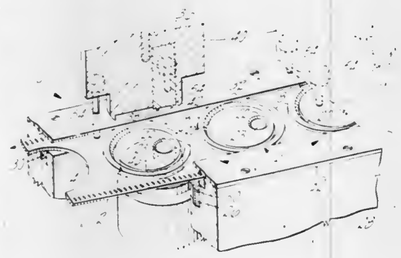
where m is the coefficient of friction between said portions and the burr wall,
and then extruding the burr by passing, the punch through the die supported burr.

4,213,324

PUNCH PRESS AND METHOD FOR MAKING CAN ENDS WITH CLOSURES

John S. Kelley, Wenham; Frederick G. J. Grise, Osterville, and Walter C. Lovell, Wilbraham, all of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Jul. 21, 1978, Ser. No. 926,881
Int. Cl.[2] B21D *43/05*
U.S. Cl. 72—405 **10 Claims**



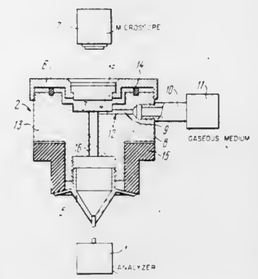
1. In a punch press having a carrier means for holding and sequentially moving sheet metal workpieces with limited lateral and heightwise play to and through at least two stations, each of the stations including at least one pair of upper and lower axially cooperative forming dies, the improvement comprising: at least an initial one of the pairs of the series of dies adapted to form a registerable feature in each workpiece, and mechanism for relieving holding pressure between the carrier means and the workpieces when at a station subsequent to the initial one and during an initial phase of die closure whereby a die of each pair following said initial one is enabled to register with said feature as the workpiece is thereby allowed self-positioning accommodation immediately prior to die forming operatiohs at the successive stations.

4,213,325

DEVICE FOR INTRODUCING PARTICLES INTO ANALYZER OF DUSTINESS OF GASEOUS MEDIUM

Evgeny S. Tumanov, ulitsa Shelkovichnaya, 184, kv. 48; Nikolai V. Zhamkov, ulitsa Mokhovaya, 33/1, and Lev A. Kudryavtsev, ulitsa Shelkovichnaya, 182, kv. 72,, all of Saratov, U.S.S.R.

Filed Sep. 26, 1978, Ser. No. 946,029
Int. Cl.[2] G01N *15/00*
U.S. Cl. 73—1 G **3 Claims**



1. A device for introducing a determinable quantity of particles into an analyzer of dustiness of a gaseous medium, the particles being used to calibrate the analyzer, said device comprising:
a cell having a wall, a bottom and a transparent cover;
a through guide duct made in said wall of said cell;
a vertical feed duct made in said bottom of said cell, intended for communication with the analyzer and having an inner surface;
a horizontal channel made in said bottom of said cell, which is an extension of said through guide duct, intersects said vertical feed duct, and has an inner surface, said horizontal channel receiving particles to be sensed by an analyzer being calibrated;
a microscope arranged above said transparent cover of said cell; and
a source of a pure gaseous medium, intended for supplying said pure gaseous medium under pressure and having an outlet communicating with said through guide duct.

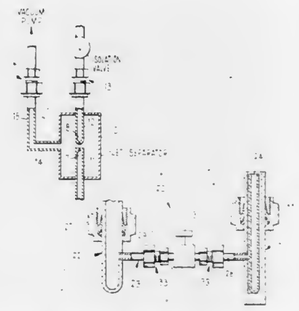
4,213,326

SAMPLE SUPPLY DEVICE

Thomas F. Brodasky, Oshtemo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 14, 1979, Ser. No. 12,067
Int. Cl.[2] G01N *31/08*
U.S. Cl. 73—23.1 **13 Claims**

1. A sample introduction device for introducing a vaporized sample to the ion source of a mass spectrometer, with there being an isolation valve for controlling flow of vaporized sample to said ion source and a vacuum source separate from said mass spectrometer for removing air from the sample, said sample introduction device comprising:
a sample holding tube for holding a sample in a non-gaseous state, said sample holding tube having on the exterior thereof a fitting member adapted to be releasably sealingly secured to a cooperating fitting member of said isolation valve so that the sample contained in said sample holding tube can be vaporized therein and transported through said isolation valve to said ion source of said mass spectrometer; and



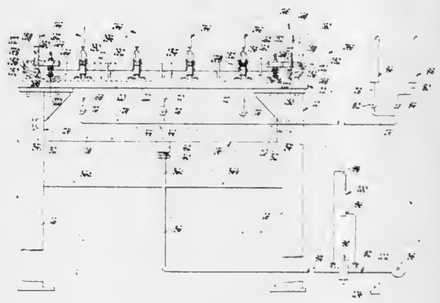
conduit means releasably sealingly connectable to said vacuum source and connected to said sample holding tube whereby air can be evacuated from said sample holding tube, and a vacuum control valve in said conduit means for opening and closing communication between said vacuum source and said sample holding tube.

4,213,327

FLOW BENCH

John F. Prescott, Jr., Danville, and William H. Roberts, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1979, Ser. No. 2,754
Int. Cl.[2] G01M *3/02*
U.S. Cl. 73—38 **2 Claims**



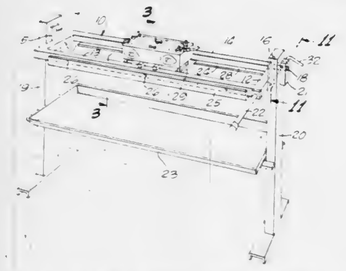
1. An air flow test apparatus for determining the rate of air flow across a porous laminated metal panel of controlled porosity established by pores of controlled size extending through the lamina and distributed over the area of the lamina comprising: a top, a sealed box secured to said top, said box having an internal cavity and an upward facing opening therein, means for locating said panel in said top, seal means fixedly securing the panel to the top to cover the opening while simultaneously sealing the top, bottom and edge of the panel, means for supplying air pressure at spaced points therein into said box for producing a controlled uniform pressure differential across the sheet throughout its planar extent, and means for preventing the porous panel buckling upon application of air pressure to the box.

4,213,328

APPARATUS FOR FLUID PRESSURE TESTING OF ENGINE CYLINDER HEADS AND SIMILAR PARTS

Ronald C. Roeschlaub, Los Angeles, and Albert Fegel, Whittier, both of Calif., assignors to Irontite Products, Inc., El Monte, Calif.

Filed Feb. 27, 1979, Ser. No. 15,850
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—49.7 **6 Claims**



1. Apparatus for the fluid pressure testing of engine cylinder heads and similar parts having a fluid circulating jacket containing communicating ports which open into a mating connecting surface comprising:

(a) a frame structure possessing a pair of end rails connected to a pair of side rails so as to form a rigid rectangular framework;

(b) means for supporting said frame structure;

(c) means pivotally connecting said frame structure to said frame support means so that said frame structure is free to pivot about an axis longitudinal of said frame structure;

(d) means for locking said pivoting connecting means of said frame structure in one or more fixed positions to prevent pivoting of said frame structure;

(e) means for supporting the part to be tested on said frame structure with said part's mating surface exposed and substantially above the plane of said frame structure, said part supporting means extending across and immediately above said side rails;

(f) means for securing the part to be tested to said frame structure so that said part supporting means and said part are rigidily affixed to said frame structure;

(g) a plurality of port closure members for individually covering and sealing said ports when pressure is applied to the top surface of said closure member;

(h) means for independently clamping and mechanically applying pressure uniformly to said closure members, sealing said ports; and

(i) means for introducing a pressurized fluid into the sealed fluid-jacket conduits for the purpose of detecting cracks or leaks in the part being tested.

4,213,329

METHOD AND APPARATUS FOR INSPECTING CONTAINERS

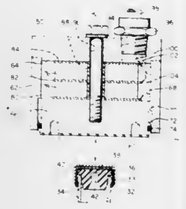
Samuel O. Raymond, North Falmouth, and Gary G. Hayward, Falmouth, both of Mass., assignors to Benthos, Inc., N. Falmouth, Mass.

Filed Jan. 23, 1979, Ser. No. 5,799
Int. Cl.[2] G01M *3/00*
U.S. Cl. 73—52 **28 Claims**

1. Method of inspecting vacuum packed containers to determine the level of vacuum therein comprising:

subjecting a vacuum packed container of a liquid or semi-liquid to a sharp force applied so that successively (1) at least one cavity is formed in the liquid or semi-liquid as a result of relative vertical displacement of said container and contents in a first direction and (2) the cavity is eliminated and an audible sound is produced as a result of relative vertical displacement of said container and contents in a second opposite direction;

providing a first signal representative of the interval between the time at which said container is subjected to said force and the time at which said sound is detected; and



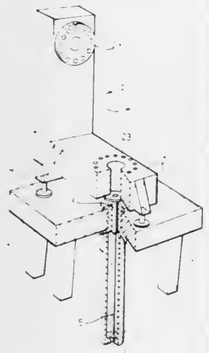
generating in response to said first signal a second signal indicative of whether the level of vacuum in said container is less than or exceeds a predetermined value.

4,213,330

MACHINE FOR MEASURING THE MOMENTS OF INERTIA

Rudolf Brozel, 22 Allee de Chaponval, F 78590 Noisy-le-Roi, France; Kurt Beckel, B. Zweerslaan 4, NL-Voorscmoten, and Jan Berkhout, Van Iersellaan 25, NL-Noordwykerhout, both of Netherlands

Filed Oct. 23, 1978, Ser. No. 953,846
Claims priority, application Belgium, Oct. 28, 1977, 0182183
Int. Cl.[2] G01M *1/12*
U.S. Cl. 73—65 **3 Claims**



1. A machine for measuring the difference between two moments of inertia of an engine or unit about two ortogonal axes, the said machine comprising: a fixed horizontal plate having a central opening, an oscillating table mounted with a vertical rotary shaft coupled with a torsion bar so as to be capable of oscillation about the longitudinal axis of said rotary shaft,

said oscillating table comprising a horizontal part having first fastening means for securing the engine or unit and a vertical part rigidly fixed to the horizontal part, said vertical part having second fastening means for the engine or unit,

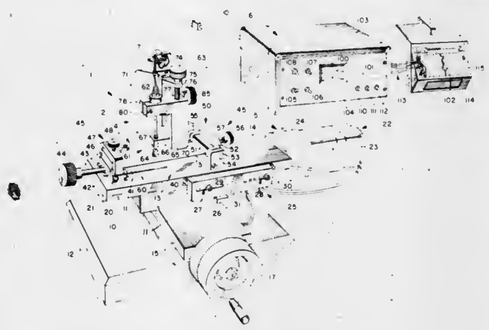
said oscillating table being supported on the fixed plate by means of a plurality of pneumatic support devices spaced from an arranged symmetrically around the rotary shaft, with the said rotary shaft extending through the fixed plate and being centered in the central opening in said fixed plate by radial bearing means.

4,213,331

SURFACE IRREGULARITY ANALYZER

John P. Porter, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 20, 1978, Ser. No. 971,577
Int. Cl.[3] G01B *5/28*
U.S. Cl. 73—105 **46 Claims**



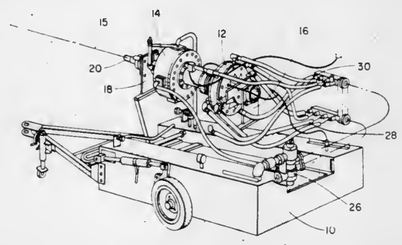
1. Apparatus for measuring surface characteristics of a specimen, comprising: support means for supporting a specimen, said support means including means for stretching such specimen; transducer means for directly mechanically engaging such specimen to produce a transducer signal indicating the surface characteristic of discrete surface portions of such specimen; motion means for effecting relative movement between said support means and said transducer means to scan the latter on the surface of such specimen; and output means for analyzing such transducer signal to produce output information representing surface characteristics of a scanned portion of such specimen.

4,213,332

ROTOR-STATOR CONFIGURATION FOR WATER BRAKE DYNAMOMETER

Melvin E. Bonomo, Bloomington; Kenneth M. Coldren, Colfax; Verne O. Lemke, Gibson City; Loren L. Rathbun, Colfax, all of Ill., and Ronald D. Towner, Tucson, Ariz., assignors to M & W Gear Company, Gibson City, Ill.

Filed Jan. 15, 1979, Ser. No. 3,587
Int. Cl.[2] G01L *5/00*
U.S. Cl. 73—134 **8 Claims**



1. In a water brake dynamometer of the type including a stator housing having a longitudinal axis;

pivot mounting means for mounting the stator housing on the axis;

a rotor mounted on a shaft in the stator housing;

means for circulating fluid through the stator housing including means for supplying a constant volume of fluid at constant pressure to the housing; and

means for sensing torque imparted from the rotor to the stator housing, the improvement of an improved fluid momentum transfer configuration for the rotor and stator housing comprising,

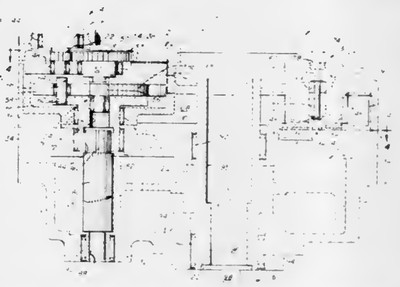
a rotor disc having an axis of rotation coincident with the stator housing axis, said disc having planar, spaced, disc surfaces transverse to the axis, said stator including opposed surfaces parallel to and spaced from the rotor surfaces, each of said rotor surfaces and each of said stator housing surfaces having an identical surface pattern of depressions including a series of equispaced radial walls extending from the shaft, the number of radial walls on the rotor surface being distinct from the number on the stator surface; and a series of equispaced concentric walls, one concentric wall being at the outer edge of the rotor disc in opposed relation with a concentric wall in the stator surface, the remaining concentric walls of the stator disc being positioned intermediate the outer edge and the shaft and also in opposed relation with concentric walls in the stator surface; said rotor and stator surfaces including radial cuts in selected concentric walls.

4,213,333

HIGH TORQUE MULTIPLIER AND READOUT APPARATUS

Raymond L. Krieger, Denver; Ralph W. Weaver, Aurora, and Edward T. Able, Denver, all of Colo., assignors to B. K. Sweeney Manufacturing Co., Denver, Colo.

Filed Oct. 31, 1978, Ser. No. 956,402
Int. Cl.[3] G01L *3/02*
U.S. Cl. 73—136 R **20 Claims**



1. A torque multiplier and readout apparatus, comprising:

a housing;

a main input shaft and a main output shaft rotatably received by said housing;

torque multiplying means operatively interconnecting said main input and said main output shafts for rotation, said torque multiplying means operatively increasing the torque applied to the main input shaft and supplying the increased torque to the main output shaft;

pivot means pivotably attached to said housing;

deflection means operatively connected between said pivot means and said housing for biasing said pivot means toward an initial position, said deflection means applying biasing force to said pivot means in predetermined magnitude related to the amount of pivoting of the pivot means away from the initial position, said deflection means comprising a plurality of elongated beam members, each beam member having deflection characteristics, each beam member being operatively connected at one end to said pivot means and operatively connected at the other end to said housing, at least two of said beam members being operatively connected at different positions to said pivot means;

reaction coupling means operatively connecting said pivot means with said torque multiplying means, said reaction coupling means coupling to said pivot means reaction torque resulting from torque multiplication by said torque multiplying means, the magnitude of reaction torque cou-

pled to said pivot means bearing a predetermined relation to the increased torque applied to the output shaft;

a torque meter apparatus attached to said housing, said torque meter apparatus including a meter input member for operating said meter apparatus to indicate torque; and

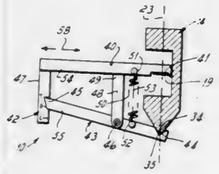
means operatively connecting said pivot means and said meter input member for operatively transforming movement from said pivot means to activate the meter input member of said torque meter assembly to indicate torque applied by said output shaft.

4,213,334

TENSIOMETER

Mark W. Wikoff, Cincinnati, Ohio, assignor to Best & Donovan, Cincinnati, Ohio

Filed Jan. 2, 1979, Ser. No. 159
Int. Cl.³ G01L *5/06*
U.S. Cl. 73—144 **10 Claims**



1. A portable tensiometer for use with a band saw, said tensiometer comprising

a first arm having indicator indicia at one end, and a second arm having a pointer at one end, said first and second arms being pivotally connected together intermediate the ends thereof so that said pointer cooperates with said indicator indicia,

first joinder means for connecting the other end of said first arm with said saw's blade, said first joinder means preventing relative motion between said arm and said blade in a direction normal to the travel path of said blade when said tensiometer is in operational relation with said band saw,

second joinder means for connecting the other end of said second arm with said saw's housing, said second joinder means preventing relative motion between said second arm and said housing in a direction normal to the travel path of said blade when said tensiometer is in operational relation with said band saw, and

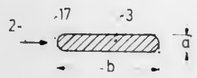
a spring connecting said two arms together one with another so that the first and second joinder means of said two arms are continuously spring loaded toward one another when assembled in operational relation with said band saw, said spring functioning to releasably connect said tensiometer with said saw's housing and said blade for connecting said blade and said tensiometer in operational relation, and functioning to deflect said blade toward that portion of said housing to which connection is effected for determining the tension in said blade through use of said indicator indicia and said pointer.

4,213,335

FLOW RATE METER WITH TEMPERATURE DEPENDENT RESISTOR

Cornelius Peter, Stuttgart, and Bernd Kraus, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 6, 1978, Ser. No. 913,138
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1977, 2728060
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **4 Claims**



1. In a flow rate meter for measuring the rate of flow of induced air flowing in one direction in the induction tube of an internal combustion engine which includes:

a temperature-dependent resistor, disposed in said induced air and connected to receive electrical current;

circuit means, connected to said resistor for providing said electrical current thereto and for measuring the resistance thereof, the improvement comprising:

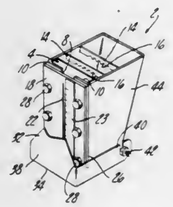
said temperature-dependent resistor being configured in the form of a flat strip extending in a direction substantially transverse to said one flow direction of said induced air whereby said electrical current flows through said resistor in said substantially transverse direction, said strip having a cross-sectional shape to provide an arcuate leading surface which extends substantially transverse to said one flow direction and wherein the height of said arcuate leading surface is substantially smaller than the width of said strip extending substantially in said one flow direction.

4,213,336

DEVICE FOR MEASURING FLOW OF WEAK CELL LIQUOR

Albert J. Schweickart, Southgate, and Thomas F. Mooney, III, Dearborn, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 27, 1976, Ser. No. 754,289
Int. Cl.² G01F *1/20*
U.S. Cl. 73—215 **4 Claims**



1. A device for measuring the rate of flow of weak cell liquor being discharged from a perk arm of a chlor-alkali cell, said device comprising, in combination,

an open-topped box means having side walls, a back-wall and a front portion,

a plate means having therein an orifice and a vertically extending slot above said orifice, said plate means having thereon and extending alongside said slot indicia adapted to identify the locations along the length of said slot, the dimensions of said orifice and said slot being such as to permit flows in the range of 3 to 7 liters per minute to be read with a sensitivity corresponding to changes of 4 to 10 milliliters per change of one liter per minute in the flow rate being metered,

means sealingly securing said plate means to said front portion of said box means, and

deflector means operatively associated with said box means to deflect liquid issuing from said orifice,

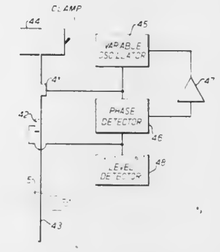
wherein said box means further has means for mounting said box to a discharge end of a perk arm of a chlor-alkali cell, wherein said means for mounting said box means comprises a spaced pair of band-like members, each of said band-like members having upon its lower side a plurality of serrations, said band-like members extending from one to another of the side walls of said box means in the vicinity of the top thereof.

4,213,337

LIQUID LEVEL SENSING DEVICES

Roger M. Langdon, Sible Hedingham, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Sep. 6, 1978, Ser. No. 939,987
Claims priority, application United Kingdom, Sep. 13, 1977, 38016/77
Int. Cl.² G01F *23/28;* G01S *3/80*
U.S. Cl. 73—290 V **2 Claims**



1. A liquid-level sensing device comprising, in combination:

an elongate member adapted to be partially submerged in a liquid, with one end out of said liquid;

transmitting means in contact with a portion of said member which is out of said liquid for inducing sinusoidal motion along said member in opposite directions from said portion;

means mounted on said member for absorbing said motion travelling from said portion toward said one end of the member;

flexure wave receiving means in contact with said member in spaced relation to said portion thereof beyond the level of the liquid for receiving the motion induced by said transmitting means;

means connected both to said transmitting means and to said receiving means for detecting and comparing the phase of the motion at the transmitting means with the phase at the receiving means so as to obtain a phase difference measurement representative of the transit time of motion induced by said transmitting means and detected by said receiving means; and

means for converting said obtained phase difference measurement into a form indicating the extent to which said elongate member is immersed in said liquid.

4,213,338

LIQUID LEVEL INDICATOR

Albert L. Hardy, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

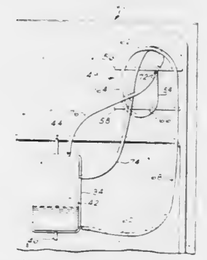
Filed Feb. 21, 1979, Ser. No. 13,335
Int. Cl.² G01F *23/16*
U.S. Cl. 73—299 **9 Claims**

1. A liquid level indicator for a tank, said tank being movably mounted to be alternately positioned in a first or second position, said second position vertically tilted from said first position, said indicator arrangement comprising:

an air column fluid passage in fluid communication with the lower region of the interior of said tank, with said tank in said first position, said air column fluid passage including a first portion extending generally horizontally away from said tank, and the portion thereof immediately adjacent said tank elevated with respect to said tank with said tank in said second position;

said air column fluid passage including a second portion extending upwardly from said tank and said first portion of said air column fluid passage with said tank in said first position;

a vertically reversely curved fluid passage section in fluid communication with said air column at a location remote from said tank with said reversely curved sections forming



a U-tube disposed in a vertical position with said tank in said first position;

means for venting the upper end of the U-tube leg remote from said air column fluid passage;

means for venting said tank to the atmosphere;

viewing gage means associated with said remote leg of said U-tube;

a volume of indicator liquid retained in said U-tube;

whereby said remote leg acts as an indicator leg indicating the level of liquid in said tank by movement of said liquid into said first portion of said air column fluid passage by positioning of said tank in said first position, and the resulting compression of air in said air column fluid passage indicating liquid in said U-tube enabling liquid level indication by the position of indicating liquid in said indicator leg and in viewing of said liquid level by the aid of said viewing gage means.

4,213,339

RESERVOIR SENSOR

Joseph W. Shannon, Kent, Ohio, assignor to McNeil Corporation, Akron, Ohio

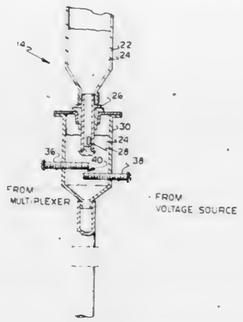
Filed Feb. 6, 1978, Ser. No. 875,201
Int. Cl.² B67D *5/08;* G01F *23/24;* G06F *15/46*
U.S. Cl. 73—304 R **10 Claims**

1. The improvement, in apparatus for sensing the presence of a particular level of fluid within each of a plurality of reservoirs, each of the reservoirs having an inlet and an outlet, comprising:

a pair of electrical contacts maintained within each of the reservoirs at the particular level and in adjustable diametrically opposed spaced relationship to each other for passing signals through the fluid, said spaced relationship determining the resistance of an electrical path between each said pair of electrical contacts at the particular level;

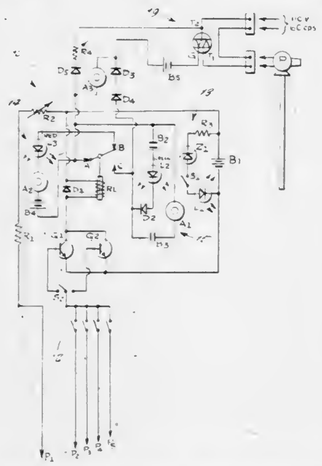
first means connected to said electrical contacts selectively applying electrical signals thereto for enabling the passing of said signals through the fluid of certain of the reservoirs, and

sensing means connected to said electrical contacts for sensing the passing of said signals and thereupon producing an



output indicating the presence of the fluid between said pair of contacts.

4,213,340
OIL-WATER INTERFACIAL DETECTOR
Sheng-Hsiung Cheng, P.O. Box 17092, West Hartford, Conn. 06117
Filed Nov. 13, 1978, Ser. No. 960,306
Int. Cl.[3] G01F *23/24*
U.S. Cl. 73—304 R **3 Claims**



1. An oil-water interfacial detector, comprising in combination, an instrument including a dip stick attached thereto; said instrument including therein an electrical circuit that has a first portion of said circuit for detecting a water presence below an interface, and a second circuit portion for detecting an oil presence above said interface; said electrical circuit additionally including an attached portion for connection to a pump for pumping out either said water or said oil; said dip stick including a first probe at its lowermost end connected by a first conductor to said circuit, and a plurality of probes vertically spaced apart from each other and said first probe, all said probes protruding from a same side of said dip stick, said plurality of probes each being selectively connected by an individual switch to a second conductor and to said circuit; said circuit including a relay having a contact arm that shifts between a first contact point and a second contact point, said first contact point being in said first circuit portion which includes a green lamp, an alarm and a power source, and said second contact point being in a second said circuit portion which includes a red lamp, an alarm and a power source, said first circuit portion being closed by presence of water between two said probes, and said second circuit portion being closed by presence of electrically non-conductive liquid such as oil between two said probes.

4,213,341
APPARATUS FOR SAMPLING A FLOW OF LIQUID FROM A FLUID AT LEAST SOME OF WHICH IS A LIQUID
Douglas L. Wenham, Hamilton, New Zealand, assignor to AHI Operations Limited, Auckland, New Zealand
Filed Dec. 5, 1978, Ser. No. 966,731
Claims priority, application New Zealand, Dec. 9, 1977, 185923; Dec. 9, 1977, 185924; Dec. 9, 1977, 185925
Int. Cl.[2] G01N *1/14*
U.S. Cl. 73—421 A **7 Claims**



1. Apparatus for sampling a flow of liquid from a fluid at least some of which is a liquid, said apparatus comprising a body, an inlet conduit in said body terminating in an inlet orifice, said conduit being arranged in use so that said conduit is substantially vertical and said orifice is above said conduit, a curved dome mounted in use above said orifice and arranged relative thereto so that liquid in fluid passed up said conduit and through said orifice is substantially evenly distributed over the inner surface of said dome at least one set of flow dividing means arranged relative to said flow distributing surface, each said flow dividing means comprising at least four vanes on said distributing surface arranged so that the rate of flow of liquid in the space between a pair of intermediate vanes of said at least four vanes is not substantially different from the rate of flow over an equivalent space elsewhere in said substantially evenly distributed flow and for each said flow dividing means an outlet port in said body arranged to collect liquid from the area between two intermediate vanes in said flow dividing means, collecting means connected to said outlet port and further delivery means in said body arranged to collect and deliver from said body and dome the remainder of the fluid passing through said apparatus.

4,213,342
LIQUID SAMPLER DEVICE
Wendall C. Gates, Box 2216, Santa Cruz, Calif. 95063
Filed Dec. 11, 1978, Ser. No. 968,513
Int. Cl.[2] G01N *1/14*
U.S. Cl. 73—421 B **18 Claims**

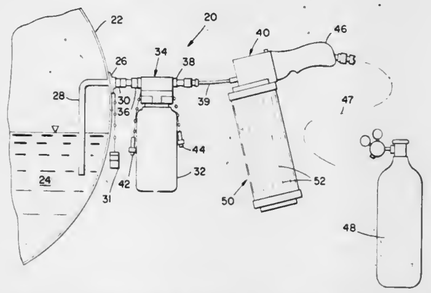
1. A device for taking liquid samples from a storage tank or other liquid containment while minimizing the exposure of the sample taker to the liquid or vapor therefrom, said device comprising:

A. a sample container with an opening at one end;

B. head means on said container covering said opening and having inlet means and outlet means for said container, said inlet means being adapted to be connected to an outlet from a vessel or conduit from which a sample is to be taken;

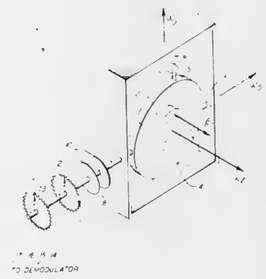
C. movable float means within said container and operative in response to the filling of said container for forcing out vapor through said outlet means and closing said outlet means when said container is substantially full of liquid;

D. filter means connected to said container outlet for trapping the vapor forced from said container as it is filled with liquid;



E. and control means adapted for connection to a source of gas under pressure and including a first valve means operable for forcing a purging stream of compressed gas from said source through said container head means and its inlet means, and a second valve means operable after closure of said first valve means for admitting liquid from the vessel or conduit through said inlet means into said sample container.

4,213,343
KINEMATIC INERTIAL SENSOR
Jay Hoffman, Livingston, N.J., assignor to The Singer Company, Little Falls, N.J.
Filed Apr. 30, 1979, Ser. No. 34,110
Int. Cl.[3] G01P *15/08*
U.S. Cl. 73—505 **2 Claims**



1. A kinematic inertial sensor for measuring angular velocity and position relative to inertial space about one or more measurement axes including:

an angular rate sensor having a ring of conducting fluid contained in a housing which is mounted for rotation on an axis passing through and parallel to the plane of the ring and which has an electric signal output proportional to the rate of movement of the fluid in response to angular rate inputs in directions normal to the spindle axis,

a set of gimbals for supporting the angular rate sensor for motion about axes orthogonal to the spindle axis,

means for generating electric signals relating position of the rate sensor about an axis normal to the spindle axes,

means for applying accelerating torque to each of the gimbals,

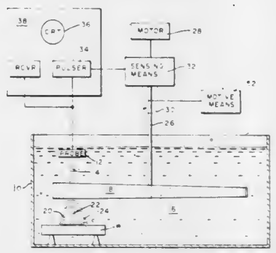
means for measuring the angle of each gimbal with respect to a vehicle frame,

means for resolving the angular rate proportional signal of the accelerometer into components related to the measurement axes,

means for processing each component to produce a signal proportional to the angular rate, and

means for applying the control signals so produced to the gimbal torquers to offset the angular rate experienced by the rate sensor.

4,213,344
METHOD AND APPARATUS FOR PROVIDING DYNAMIC FOCUSSING AND BEAM STEERING IN AN ULTRASONIC APPARATUS
Joseph L. Rose, Churchville, Pa., assignor to Krautkramer-Branson, Incorporated, Stratford, Conn.
Filed Oct. 16, 1978, Ser. No. 951,490
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—620 **14 Claims**



1. An ultrasonic apparatus for changing the path and focal zone length of an ultrasonic energy search beam comprising:

ultrasonic energy transmitting means coupled for transmitting an ultrasonic energy search beam toward an object to be examined;

acoustic lens means interposed in the path of said search beam from said transmitting means to the object, said lens means having a contoured groove surface for changing the focal zone length and the path of said search beam, and

motive means coupled to said lens means for causing said search beam responsive to motion of said lens means in a plane substantially normal to the search beam path to change focal zone length and beam path in a predetermined scan pattern to cause a scan of the object portion in the path of said beam.

4,213,345
PIPE INSPECTION SYSTEM AND METHOD
Martin J. Dufour, Crowley, La., assignor to W. C. Lamb, Lafayette, La.
Filed Jul. 25, 1978, Ser. No. 927,944
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—637 **7 Claims**

1. A carriage/inspection wheel assembly for holding the inspection wheel thereof in continuous contact with a rotating pipe where there is relative longitudinal movement between the assembly and the pipe, comprising:

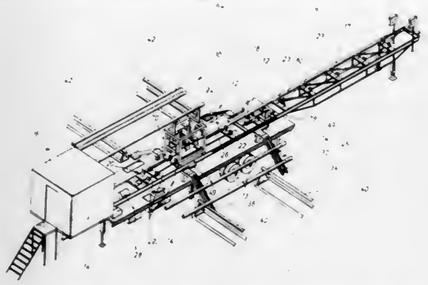
a frame defining a major axis substantially parallel to the axis of the pipe being inspected;

a fluid cylinder having an associated rod and being mounted on said frame, said rod being disposed substantially perpendicular to the axis of the pipe;

an ultrasonic inspection wheel;

a head assembly comprising an inspection wheel housing for rotatably mounting the inspection wheel with the axis of rotation of the inspection wheel substantially parallel to the major axis of the frame;

each wheel housing being connected to a plurality of support rollers which engage the rotating pipe, said support rollers being angled at an acute angle relative to a plane perpendicular to the pipe axis where such acute angle



approximates the pitch angle of the helix that the wheel traces on the pipe; and

a shock absorber connection assembly for connecting the cylinder rod and the inspection wheel housing.

4,213,346

METHOD AND APPARATUS FOR TESTING CYCLICALLY OPERATED MECHANICAL MEMBERS FOR DEFECTS

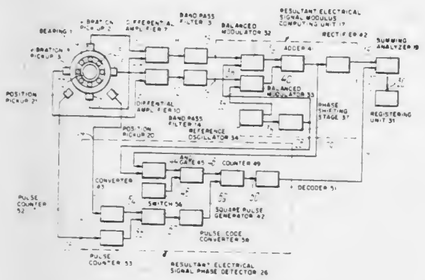
Sergei V. Polovnikov, dom 3, kv. 207; Anatoly M. Zaznobin, dom 22, kv. 9, both of Krasnoobsk Novosibirskoi oblasti; Gennady F. Masalov, 1 Televizionny pereulok, 7, Novosibirsk, and Alexandr A. Mischenkov, dom 3, kv. 24, Krasnoobsk Novosibirskoi oblasti, all of U.S.S.R.

Filed Oct. 6, 1978, Ser. No. 949,376

Claims priority, application U.S.S.R., Dec. 5, 1977, 2551865

Int. Cl.[2] G01N *29/04*

U.S. Cl. 73—660 **3 Claims**



3. A device for testing cyclically operated mechanical members for defects, said device comprising

at least two vibration pickups adapted to sense the vibration of a cyclically operated mechanical member under test, said vibration pickups having operating axes arranged at right angle to each other, mounted on said test member, and each having an output;

a plurality of adjustable band pass filters adapted to select a frequency range corresponding to the defects of the test member, each having inputs coupled to said outputs of said vibration pickups and each having an output;

a resultant electrical signal modulus computing unit having a plurality of inputs equal in number to said adjustable band pass filters and coupled to said outputs of said adjustable band pass filters, said computing unit having three outputs;

a summing analyzer having two inputs and an output, the first input of said summing analyzer being coupled to a first output of said three outputs of said resultant electrical signal modulus computing unit;

a registering unit having an input coupled to said output of said summing analyzer;

at least two position pickups adapted to determine the position of the test member, said position pickups being mounted on the test member and each having an output; and

a resultant electrical signal phase detector having a plurality of inputs, two of said inputs of said signal phase detector being coupled to two outputs of said resultant electrical signal modulus computing unit, said signal phase detector having an output coupled to said second input of said summing analyzer,

respective inputs of said resultant electrical signal phase detector being coupled to said outputs of said position pickups.

4,213,347

INDICATING DEVICE FOR MEASURING AND CONTROL APPARATUS

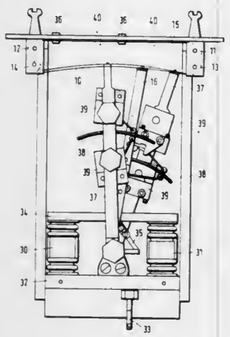
Walter Metz, Moosbrunn, Fed. Rep. of Germany, assignor to Metz Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,744

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816209

Int. Cl.[2] G01L *13/02, 19/12*

U.S. Cl. 73—716 **11 Claims**



1. In an indicating device for measuring and control apparatus, having a planar scale, a flexible, endless indicator tape movable along said scale, at least two rotatable rigidly supported rolls tensionally supporting said tape, a pivotally mounted lever linkage connected at a point thereon to said tape, and means for rotating said lever linkage in an arcuate movement at said connection point thereon in response to measurement of a given physical parameter, means for compensating a lengthening of said tape caused by the arcuate movement of said lever linkage and tape at said connection point.

4,213,348

SELF-CALIBRATING AUTOMATIC ZEROING STRAIN GAUGE CIRCUIT

John E. Reinertson, Cedar Rapids, Iowa, and John L. Wells, Los Altos, Calif., assignors to MedaSonics, Inc., Mountain View, Calif.

Filed Aug. 1, 1979, Ser. No. 62,718

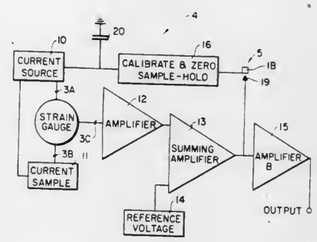
Int. Cl.[3] G01L *9/04, 27/00*

U.S. Cl. 73—765 **13 Claims**

1. A circuit for calibrating and providing an output from a strain gauge after said strain gauge is fitted to an object to be measured comprising:

a constant current source for providing a constant current in said strain gauge;

a source of a reference voltage; means responsive to an error signal corresponding to a difference between a voltage drop across said strain gauge due to said constant current and said reference voltage during a predetermined time period for adjusting the magnitude of the current from said current source in said strain gauge to reduce said



difference between said strain gauge voltage drop and said reference voltage; and

means responsive to a difference between said voltage drop across said strain gauge and said reference voltage after said adjusting of said current in said strain gauge for providing an output of said voltage difference relative to said reference voltage.

4,213,349

METHOD OF AND APPARATUS FOR MEASURING STIFFNESS

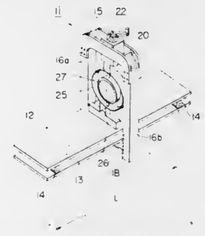
Koryo Miura, 3-9-7, Tsurukawa, Machida-Shi, Tokyo-To, Japan

Continuation of Ser. No. 754,240, Dec. 27, 1976, abandoned. This application Jan. 16, 1978, Ser. No. 869,940

Claims priority, application Japan, Dec. 27, 1976, 51-159579

Int. Cl.[3] G01N *3/20*

U.S. Cl. 73—847 **9 Claims**



1. A method of measuring the stiffness of a test piece comprising the steps of combining an elastic member having a known stiffness, said test piece, and a rigid frame by means of fulcrums in a mirror image relationship so as to form a dynamics system, forcing said dynamics system to undergo a definite relative displacement through said fulcrums such that the deformation of said elastic member and that of said test piece will effect with each other without varying the linear relation between the load and the displacement of said system, and detecting the amount of relative displacement of said elastic member thereby determining the stiffness of said test piece.

4,213,350

EDGE-ACTIVE BELT

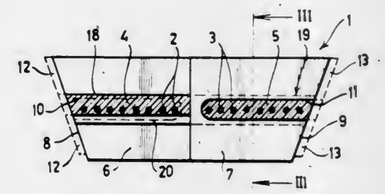
Alexandre Horowitz, and Martinus H. Cuypers, both of Eindhoven, Netherlands, assignors to Varitrac AG, Zug, Switzerland

Filed May 15, 1978, Ser. No. 906,346

Claims priority, application Netherlands, May 18, 1977, 7705534

Int. Cl.[2] F16G *5/10*

U.S. Cl. 474—264 **8 Claims**



1. A belt comprising a longitudinal pull strand of high tensile strength and a series of transversely extending longitudinally spaced stiffener elements having oppositely facing end-surfaces angularly disposed with respect to a cross-sectional plane of said belt, said pull strand being enclosed in a continuous flexible molded body of rubber type material extending longitudinally through identical cavities provided in said transverse element and in which each transverse element is connected to the said body, said flexible continuous body being molded integrally with and adhering to said pull strand as well as being integral with and adhering to said transverse elements as the sole interconnecting means between the said elements sidewardly at least onto their said oppositely-facing end surfaces and further adhering to at least a portion of the side walls of the said elements along and beyond the edges of said cavities in each space between said elements.

4,213,351

STEERING SHAFT AND FLANGE AND METHOD OF MAKING SAME

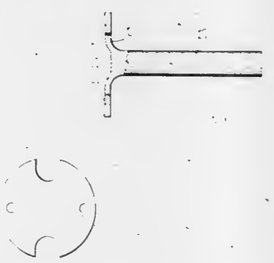
James S. Rowlinson, 346 Southcote Rd., Ancaster, Ontario, Canada (L9G 2W2)

Filed Jun. 2, 1977, Ser. No. 802,928

Claims priority, application Canada, Mar. 21, 1977, 274330

Int. Cl.[2] B62D *1/16*

U.S. Cl. 74—492 **1 Claim**



1. A one piece, integrated steering shaft and flange for vehicles, said flange being located on the lower end of the steering shaft for connection to the steering mechanism of said vehicle, said flange being integrally formed on the end of said shaft by an upset forging process which includes the following steps:

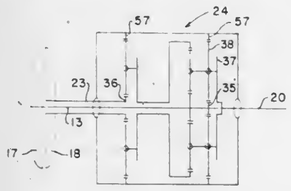
(a) placing a ring which has a profiled face on a steel shaft;

(b) heating a portion of said shaft to a point where it is upsettable;

(c) placing the shaft and ring in the cavity of a die provided

with a profiled face which matches the profiled face of the ring, said ring being positioned with its profiled face lying in juxtaposition to said profiled face of the die cavity;
(d) closing said die;
(e) applying axially compressive force on the heated end of said shaft to deform and flow it along a pilot section of the die and into the die cavity until the same is filled;
(f) removing the compressive force from the shaft; and
(g) removing the formed component from the die and removing the ring from the shaft.

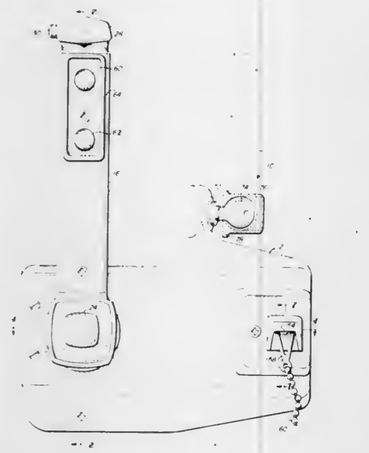
4,213,352
DIFFERENTIAL TRANSMISSION ASSEMBLY
Herbert M. Crawford, 1116 N. 8th St., Longview, Tex. 75601
Filed Mar. 14, 1978, Ser. No. 886,603
Int. Cl.[2] F16H *47/04*
U.S. Cl. 74—677 **10 Claims**



1. A nonshifting transmission comprising
a first input shaft,
a second input shaft surrounding and concentric with said first input shaft,
an output shaft coaxial with said first input shaft, and
planetary gear means connected solely to said first and second input shafts and said output shaft so that no interconnection with any component stationary with respect to said input shafts and said output shaft is provided, said planetary gear means comprising a first sun gear affixed to said first input shaft; a first planetary carrier operatively attached to said output shaft; first planetary gears operatively connected to said first planetary carrier and said first sun gear; a second sun gear, affixed to said second input shaft; gearing means interconnecting said second sun gear and said first planetary gears; a combination ring gear and planetary carrier; second planetary gears operatively connected to said second sun gear, the planetary carrier of said combination ring gear and planetary carrier carrying said second planetary gears, and said ring gear of said combination planetary carrier and ring gear in engagement with said first planetary gears; a third sun gear, affixed to said first input shaft; third planetary gears operatively connected to said third sun gear; a double ring gear, said double ring gear in engagement with both said second and third planetary gears; and a planetary carrier common to said first and third planetary gears and operatively connected to said first planetary carrier.

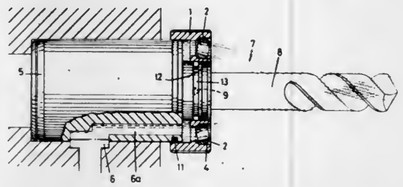
4,213,353
CONTROL UNIT FOR MARINE ENGINES EMPLOYING THROTTLE ONLY CONTROL
Larry A. Floeter, Campbellsport, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Mar. 6, 1979, Ser. No. 18,045
Int. Cl.[3] B60K *41/04*
U.S. Cl. 74—878 **11 Claims**

1. A control unit for an engine of the type having a shift means for shifting between forward, neutral, and reverse and throttle means for controlling engine speed between idle and high speed, said control unit comprising:
(a) a housing;
(b) a control handle rotatably supported by said housing;
(c) a shift-throttle linkage means within said housing connected to each of said shift and throttle means and responsive to rotation of said handle for control of each of said shift and throttle means during portions of the arc of rotation of said handle;
(d) a throttle only shaft extending from said housing; and



(e) latch means operated by axial movement of said throttle only shaft to engage and disengage said shift means with said handle while permitting said handle to control said throttle means, said latch means including a latch pin biased toward a postion engaging said shift means with said handle.

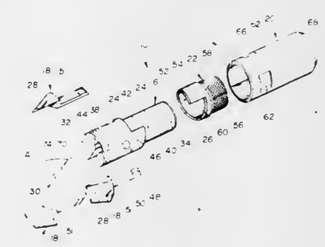
4,213,354
METHOD AND MEANS FOR COOLING DOWN A STATIONARY TWIST DRILL BY A COOLANT
Walter Dahinden, Port, Switzerland, assignor to Dornag, Berne, Switzerland
Filed Sep. 6, 1978, Ser. No. 940,298
Claims priority, application Switzerland, Sep. 15, 1977, 11319/77
Int. Cl.[2] B23B *1/00, 27/10*
U.S. Cl. 82—1 C **5 Claims**



1. A method for cooling down a twist drill having a plurality of grooves formed therein on a toolholder, which drill remains stationary during the working process, coolant being supplied onto said drill through a conduit bored in said toolholder and through a plurality of jets, mounted on a rotatable ring disposed on said toolholder, which comprises:
adjusting said rotatable ring so as to align said plurality of jets so as to correspond to said plurality of grooves;
supplying the coolant under pressure through said plurality of jets in a plurality of simultaneous concentrated streams separate from each other onto the plurality of grooves of said twist drill;
directing each of said streams of coolant at respective beginning portions of said plurality of grooves; and

initially limiting application of said streams of coolant to said respective beginning portions of said plurality of grooves.
2. A machine tool cooling assembly comprising:
a toolholder for holding a twist drill having a plurality of grooves formed therein;
a ring member rotatably mounted on said toolholder adjacent said twist drill;
a plurality of jets swivelably mounted on said rotatable ring member;
coolant supply means communicating with said plurality of jets such that coolant is directed by said jets at respective beginning portions of said plurality of grooves and
means mounted on said ring member for securing said plurality of jets in a predetermined position, said ring member including a countersunk portion and said means for securing said plurality of jets comprising a second ring member abutting each of said plurality of jets and securing members engaging said second ring member, said second ring member and said securing members being positioned within said countersunk portion of said ring member.

4,213,355
ADJUSTABLE SOCKET
David S. Colvin, 31324 Burbank, Farmington Hills, Mich. 48081
Filed Mar. 1, 1979, Ser. No. 17,981
Int. Cl.[2] B25B *13/12*
U.S. Cl. 81—128 **14 Claims**

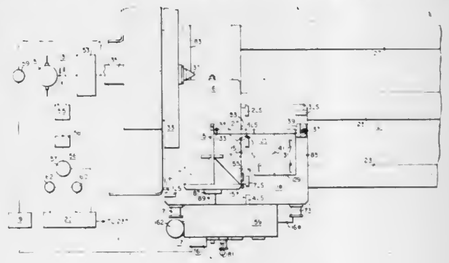


1. An adjustable socket comprising: a driver adapted to be rotatively driven about an axis of rotation thereof; a plurality of jaws mounted on the driver for radial movement with respect to the axis of rotation thereof; each of said jaws including a camming surface that is inclined in a radial direction along the axis of driver rotation; a jaw positioner movable axially on the driver to slidably engage the camming surfaces on the jaws in order to control the radial positions of the jaws and the size of a nut or bolt capable of being received and driven by the jaws under the impetus of driver rotation; a rotatable adjuster for moving the jaw positioner axially in order to move the jaws between fully opened and fully closed positions upon rotation of the adjuster no more than 360° about the axis of driver rotation; and a helical locking surface that extends about the driver axis an angular amount equal to the extent of adjuster rotation so as to provide locking of the adjuster in any adjusted position.

4,213,356
WORK CUTTING
Harry J. Armitage, 1546 Cavitt Rd., Monroeville, Pa. 15146
Continuation of Ser. No. 527,491, Nov. 26, 1974, abandoned. This application Dec. 29, 1978, Ser. No. 974,348
Int. Cl.[2] B23B *3/06, 3/36*
U.S. Cl. 82—2 B **17 Claims**

1. Apparatus for cutting work including cutting-tool means including a work-cutting tool, a first drive including a variable-speed motor for rotating said work, a second drive including a variable-speed motor, connected to said cutting-tool means, for driving said tool into cutting engagement with said work as said work is rotated, means, connected to said first drive, for controlling the speed at which said work is rotated, means, including said controlling means, interconnecting said first drive and said second drive, for coordinating the speed at which said work is rotated and the speed at which said second drive drives said tool into cutting engagement with said work to set said speeds at magnitudes such that the rate at which said tool passes over said work in cutting relationship is maintained at a predetermined magnitude, said interconnecting means including means for generating a potential dependent on the speed of rotation of said work for controlling the speed of said second drive, and control means, positionally responsive to the penetration of the said tool in said work, and connected to said speed controlling means for said first drive for varying the speed of rotation of said work with the depth of penetration into said work of said tool.

8. In an apparatus for cutting in work of a groove of substantial depth and width the combination including a lathe having way means and having means for rotatably supporting said work, a carriage moveable along said way means towards and away from said work, work-cutting tool means moveable on said carriage towards and away from cutting engagement with said work, said work-cutting-tool means including a vertical



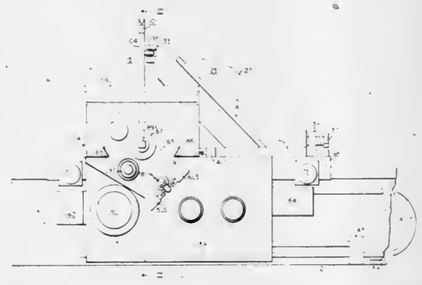


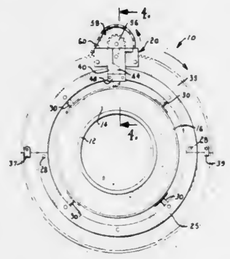
plate of smaller thickness than said width and of length greater than said depth, said plate tapering along the upper side thereof to a tip, said plate having at said tip a seat, and means for securing a cutting tool in said seat, the taper being along the side of the plate over which the chips flow as the tool engages and cuts said work, the taper being such as to facilitate the flow of chips out of said groove.

13. Apparatus for cutting work including cutting-tool means including a tool support and a work-cutting tool supported by said support and drive means, connected to said support for driving said tool into cutting engagement with said work, said work-cutting tool means also including means applying a thrust force to said support, generally perpendicular to the direction of the force applied to said work by said tool, to prestress said support generally perpendicular to said direction.

17. In an apparatus for cutting in work of a groove of substantial depth and width, the combination including a lathe having way means and having means for rotatably supporting said work, a carriage moveable along said way means towards and away from said work, work-cutting tool means moveable

on said carriage towards and away from said work, said work-cutting tool means including a vertical plate of smaller thickness than said width and of length greater than said depth, a cutting tool extending from said plate to a position where said tool is engageable with said work for cutting said work, said plate extending from said tool laterally towards the position of said work so as to be under said work and being formed so as to clear the work, the extension of said plate adding support for the tool and thus adding a greater bearing surface for loads applied through said tool.

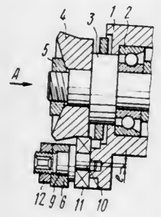
4,213,357
CUTTING DEVICE FOR PIPE JACKETS
Steven A. Lively, Dewey, and Richard B. Gwin, Bartlesville, both of Okla., assignors to H. C. Price Co., Bartlesville, Okla.
Filed Sep. 18, 1978, Ser. No. 943,103
Int. Cl.² B23B *3/22, 3/04*
U.S. Cl. 82—4 C **1 Claim**



1. A device for cutting away a portion of a jacket surrounding a layer of foam insulation on a pipe, said device comprising:
means disposed on said jacket to present an arcuate track;
means for traveling around said track;
pivotally mounted cutting means comprising a cutting edge and a support therefore, said cutting menas disposed on said means for traveling around said track,
said cutting means being free to pivot from a first position wherein said cutting edge is disposed at an acute angle relative to a plane passing through the pivot axis and is in contact with said jacket to a second position wherein said cutting means penetrates said jacket;
stop means disposed on said means for traveling around said track and engageable by said cutting means when the latter assumes its second position; and
means for moving said means for traveling around said track.

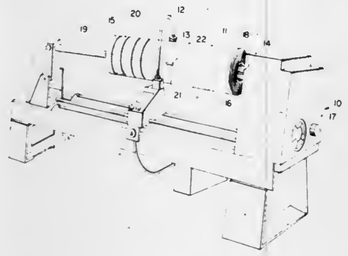
4,213,358
ROTARY CUTTING TOOL
Petr I. Yascheritsyn, Leninsky prospekt, 18, kv. 102; Valery A. Sidorenko, Leninsky prospekt, 14, kv. 3; Evgeny I. Morgunsky, ulitsa Malaya, 15, kv. 1; Nikolai V. Vishnev, ulitsa Karastoyanovoi, 23, kv. 82, all of Minsk; Mindaugas N. Bureika, ulitsa Veterinarious, 12, kv. 74, Litovskaya SSR, Ukmerge; Vladimir A. Plotnikov, ulitsa Gikalo, 28, kv. 17, Minsk, and Anatoly T. Volkov, ulitsa Krasnaya, 25, kv. 15, Minsk, all of U.S.S.R.
Filed Sep. 19, 1978, Ser. No. 943,649
Int. Cl.² B23B *29/00;* **B26D** *1/12*
U.S. Cl. 82—36 R **4 Claims**

1. A cutting tool with a freely rotating cutting edge comprising:
(1) a body having a leading end portion and a trailing end portion;
(2) bearing supports located in said leading end portion;
(3) rotatable spindle means having an axis of rotation and having bearing means rotatably mounted in said bearing supports;
(4) a cutting element having a continuous cutting edge mounted on said spindle for rotation therewith about said axis,
(5) said cutting edge having a portion thereof at said leading end and on one side of said axis,
(6) said portion of said cutting edge defining a cutting zone, and



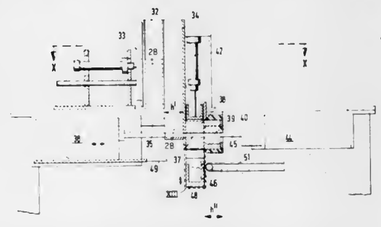
(7) a spindle support means connected to said body on another side of said axis toward said trailing end and having pressure-applying means directed toward said leading end in order to counter pressure cutting forces on said spindle during machining operations to thereby subdue vibratory influences on said spindle and said cutting element.

4,213,359
FLUID JET CUTTER WITH CONFINED PASSAGEWAY FOR FLUID DISPOSAL
Clayton Bogert, Glen Rock; John D. Alexander, Hawthorne, and Leonard Krautheim, Haledon, all of N.J., assignors to Lever Manufacturing Co., Paterson, N.J.
Filed Feb. 27, 1978, Ser. No. 881,278
Int. Cl.² B23B *1/00, 5/14*
U.S. Cl. 82—47 **9 Claims**



7. Fluid jet cutter structure for cutting a roll of material in situ comprising
fluid jet cutter means including a fluid jet nozzle,
support means for operatively relatively rotationally supporting removably a roll of material to be cut in situ in a position along an axis in radially inwardly disposed relation to the nozzle for relative rotational movement between the roll of material and the nozzle about the axis, and
fluid receiving means operatively disposed radially inwardly of the position of the roll of material for collecting spent fluid comprising
a shaped block for receiving the steady flow of a substantially continuous stream of fluid from the nozzle of the high pressure fluid jet after the fluid has passed through material to be cut or slit, and including an entry port, an exit port and a flow diverting passage therebetween for directing the flow of the fluid after entering the entry port out of its normal incoming flow path to prevent the return of the fluid through the entry port back to the material which has been cut or slit,
the nozzle being selectively disposed in operatively flow aligned relation to the receiving means at a point along the axis for causing a fluid jet exiting from the nozzle to cut circumferentially into and through the roll of material in situ at such point and be collected by the receiving means during relative rotational movement between the nozzle and the roll of material,
said flow diverting passage including a curvo-linear conduit portion between the entry port and exit port and lying in a common plane with such entry port and exit port and having a curved impingement portion in alignment with the entry port for receiving the spent fluid and for directing such fluid substantially linearly continuously farther along such conduit portion to the exit port.

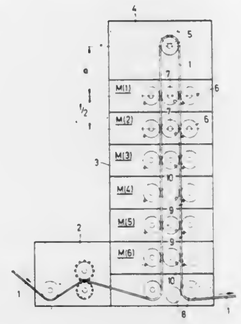
4,213,360
PROCESS FOR PRODUCTION OF INDIVIDUAL PORTIONS FROM BLOCKS OF DEEP-FROZEN FOODSTUFFS
Karl Hartmann, D 285 Bremerhaven 3, Brinkmannstrasse 6, Fed. Rep. of Germany
Filed Mar. 28, 1978, Ser. No. 890,952
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715535
Int. Cl.² A22C *125/18;* **B26D** *3/24*
U.S. Cl. 83—15 **7 Claims**



1. A method for the division of a block of deep-frozen foodstuffs, especially a frozen block of fish filets, into portions of predetermined size, the method utilizing a processing device operating at temperatures between −6° C. and −30° C. and at a pressure of at least 100 at. and comprising:
squeezing the block in a first direction perpendicular to its largest surface through a first blade lattice formed of parallel knives positioned in such manner as to define openings narrowed in the direction of movement thereby carving the block into a row of plates of uniform thickness by first cuts perpendicular to a given surface of the block;
simultaneously squeezing the block in a direction perpendicular to said first direction so that the height of the plates is greater than the height of the block; and
carving the plates formed by squeezing the block through the first blade lattice into portions of predetermined size by performing second cuts perpendicular to said first cuts, the second cuts also being perpendicular to the largest surface of the frozen block of fish fillets.

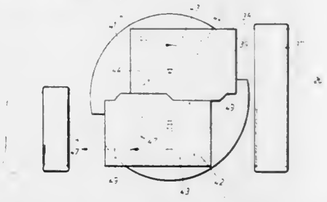
4,213,361
PERFORATION METHOD
Seppo Kanervo, Espoo, Finland, assignor to Oy Wartsila AB, Helsinki, Finland
Filed Mar. 15, 1978, Ser. No. 886,570
Claims priority, application Finland, Mar. 18, 1977, 770856
Int. Cl.² B26F *1/24, 1/20*
U.S. Cl. 83—30 **9 Claims**

1. A method for providing a running web with a perforation pattern fitting into printed image units successively printed on the web, the method including the steps of:
longitudinally perforating the web in a separate longitudinal perforator as the web is moved therethrough; and,
transversely perforating the web in a transverse perforator to provide a plurality of transverse perforation rows comprising:
passing the web through a plurality of separate perforation units, one for each of the transverse perforation rows, and



controlling the pitch of the transverse perforation rows in the longitudinal direction of the web by changing the relative position of the units with respect to each other in accordance with the desired perforation pattern.

4,213,362
CUTTING APPARATUS FOR SEPARATING CIGARETTE WRAPPER BLANKS FROM WEB
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Pfuhl, Verden, Fed. Rep. of Germany
Continuation of Ser. No. 827,634, Aug. 25, 1977, abandoned. This application Jul. 7, 1978, Ser. No. 922,697
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1976, 2639216
Int. Cl.² B31B *1/16, 1/20, 41/14*
U.S. Cl. 83—100 **6 Claims**



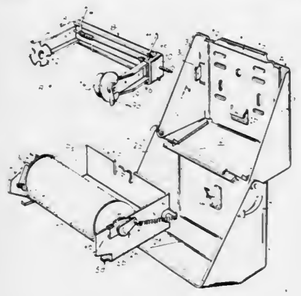
1. Apparatus for successively separating blanks for wrappers, particularly cigarette packs, from a continuous web of packaging material including a plurality of blank pairs arranged laterally to the direction of conveyance of said web, the blanks in each pair being rotated 180° opposite each other and laterally displaced relative to each other, said apparatus comprising:
(a) a punch having first and second cutting edges,
(b) a first counter edge fixed beneath said punch, aligned and cooperating with said first cutting edge of said punch,
(c) means moving said punch downward relative to said first counter edge to separate a pair of blanks from the web,
(d) a turntable arranged beneath said punch,
(e) a second counter edge on the turntable oriented in the direction of conveyance of said web and cooperating with said second cutting edge on said punch wherein additional downward movement of said punch separates the respective blanks in each blank pair, and
(f) means for rotating said turntable and said blanks 180°.

4,213,363

APPARATUS FOR THE CUTTING AND SIMULTANEOUS DISPENSING OF A WEB OF ROLL MATERIAL

Maurice Granger, 28 rue Charles de Gaulle, 4200 Saint-Etienne, Loire, France

Continuation of Ser. No. 814,931, Jul. 12, 1977, Pat. No. 4,122,738, which is a division of Ser. No. 671,818, Mar. 30, 1976, abandoned. This application Oct. 11, 1978, Ser. No. 950,293
Claims priority, application France, Nov. 19, 1975, 75 36254
Int. Cl.[2] B26D *1/56*
U.S. Cl. 83—298 **23 Claims**



1. An apparatus for successively cutting and simultaneously distributing sections from a web of roll material, the apparatus having a casing, a carrier for a roll of material mounted in the casing, a rotatable drum in said casing, said carrier being urged towards said drum such that the roll of material is frictionally engaged with the drum to cause the drum to be driven in rotation by manual traction applied to a free end of the material extending from the casing, means operatively associated with said drum for braking the rotation of said drum and halting the drum after one revolution thereof, energy storage means operatively associated with said drum for resisting rotation of the drum during an initial period of rotation thereof while storing energy and then driving the drum in rotation by the stored energy, and cutting means for cutting the material on said drum, an improvement wherein said drum is hollow, said cutting means comprising a cutting member pivotably mounted in said drum for movement between operative and inoperative positions, cam means for pivotably moving the cutting member to its operative position by the drive of the drum, said drum having a slot therein, said cutting member being retracted in said drum in said inoperative position and projecting from said slot in said operative position, said cutting member being displaced by said cam means under the drive of the drum along a trajectory in the same direction of rotation of the drum to reach said operative position and cut the material to free a section thereof for release under the manual traction in the course of rotation of the drum.

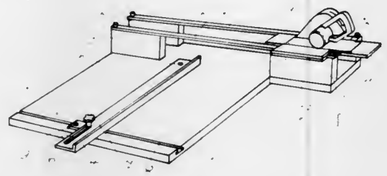
4,213,364

DEVICE FOR A PORTABLE POWER SAW

Hans O. Sahlin, Langsjovagen 21, Tyreso, Sweden (S-135 00)

Filed Aug. 31, 1978, Ser. No. 938,451
Claims priority, application Sweden, Sep. 5, 1977, 7709957
Int. Cl.[2] B27B *5/20*
U.S. Cl. 83—471.3 **3 Claims**

1. In a device for use with a portable power saw wherein the saw is supported for linear movement on parallel guide bars above a base plate whereby the saw blade extends below the guide bars to cut the workpiece which is supported beneath it, the improvement comprising a guide plate to which the saw is attachable adapted for sliding movement on said guide bars, said guide bars being basically rectangular in cross-section, guide blocks depending from the bottom of said guide plate in abutting sliding relation with both sides of at least one of said guide bars, support blocks attached at their lower ends to the base plate and at their upper ends to the ends of said guide bars to support the guide bars in spaced relationship to the base plate, a work piece guide comprising an elongated bar shaped member pivotally connected at one end in proximity to the guide bars and having an elongated slot in the other end extending substantially parallel to the longitudinal axis of the work piece guide, an inverted T slot in the top face of the base plate under the slot in the work piece guide and substantially



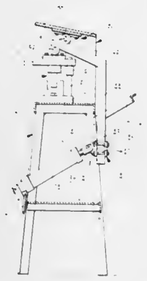
parallel to the guide bars, a threaded knob extending through said slots and engaging a threaded member within said T slot adapted to clamp the work piece guide in any desired angular position with respect to the guide bars, the height of the guide bars above the base plate being adjustable by providing a plurality of hollow support blocks having means to attach them to each other.

4,213,365

PRESS

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Continuation of Ser. No. 736,823, Oct. 29, 1976, Pat. No. 4,080,860, which is a continuation-in-part of Ser. No. 650,926, Jan. 21, 1976, Pat. No. 4,004,480. This application Mar. 16, 1978, Ser. No. 887,258
The portion of the term of this patent subsequent to Mar. 28, 1995, has been disclaimed.
Int. Cl.[2] B26D *5/12*
U.S. Cl. 83—530 **15 Claims**



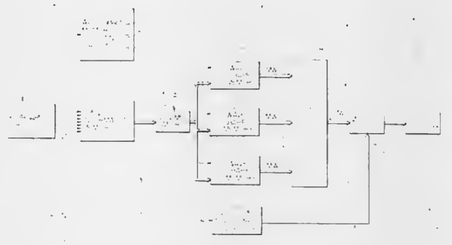
1. A press comprising:
(a) a frame;
(b) at least one die member fixedly mounted on said frame;
(c) at least one lever and punch means adjacent said die member for moving toward and away from said die member; and
(d) at least one actuating means operatively connected to said lever and punch means for exerting forces against and causing movement of said lever and punch means.

4,213,366

ELECTRONIC MUSICAL INSTRUMENT OF WAVE MEMORY READING TYPE

Koji Niimi; Mitsumi Katoh, and Masatada Wachi, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Nov. 1, 1978, Ser. No. 956,876
Claims priority, application Japan, Nov. 8, 1977, 52-133119
Int. Cl.[2] G10H *1/00, 5/00*
U.S. Cl. 84—1.01 **13 Claims**



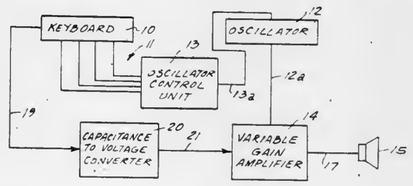
1. An electronic musical instrument, comprising:
(A) a keyboard including n sets of keys, n being an integer greater than 1, each of said n sets of keys including a plurality of keys and defining a unique tone range;
(B) keyboard circuit means for generating, responsive to the operation of any one of said keys:
(1) a tone range information signal indicating that particular set of keys in which said key being operated is located; and
(2) a note information signal indicating which specific key in said particular set of keys is being operated;
(C) address signal generator means responsive to said note information signal for generating a series of address signals corresponding to said key being operated;
(D) a plurality of wave shape memories each responsive to said address signals and each generating a musical tone wave shape unique thereto upon receipt of both said series of address signals and an enabling signal applied thereto;
(E) wave shape memory selecting circuit means for applying enabling signals to selected ones of said wave shape memory means as determined by said tone range information signal; and
(F) sound system means responsive to the musical tone wave shapes generated by said wave shape memories for generating an audio signal determined thereby.

4,213,367

MONOPHONIC TOUCH SENSITIVE KEYBOARD

Robert A. Moog, Williamsville, N.Y., assignor to Norlin Music, Inc., Lincolnwood, Ill.

Continuation of Ser. No. 591,853, Jun. 30, 1975, abandoned. This application Feb. 28, 1978, Ser. No. 882,262
Int. Cl.[2] G10H *1/02, 5/00*
U.S. Cl. 84—1.22 **13 Claims**



1. In an electronic musical instrument having a keyboard with a plurality of keys, a tone signal generator for producing a tone signal, means for controlling said tone signal generator is response to operation of said keys and an output system for receiving said tone signal and converting the same into sound waves, the combination comprising:
(a) sensing means underlying all of the keys of said keyboard and responsive to a plurality of said keys for sensing the force with which said keys are operated and for producing a signal having a level corresponding to the sum of said forces, and
(b) amplifier means connected to said sensing means and to said output system for controlling the amplitude of said sound waves in response to said signal, in accordance with the sum of the forces of the operated keys.

4,213,368

SOUNDING BANJO AND HEAD THEREFOR

Mark S. Cox, Rte. 1 Box 61A, Hiwassee, Va. 24347

Filed Dec. 20, 1978, Ser. No. 971,316
Int. Cl.[2] G10D *1/10, 3/02*
U.S. Cl. 84—269 **4 Claims**



1. An improved sounding banjo which comprises a drum, a tailpiece mounted on the side of said drum, a bridge and several strings having two ends, said drum comprising a thin, flexible membrane stretched over an annular band and retained in place by a metal rings, said membrane having a single hole therein and located on its periphery, said band having a neckpiece aligned with and located opposite said tailpiece, said strings attached to said neckpiece at one end and to said tailpiece at the other end, said strings forming a center line path across said head, said bridge placed between said strings and said membrance wherein the improvement comprises positioning said membrane such that said hole is at an approximately 60° angle from said center line path as measured substantially from the center of said head and near said neckpiece.

4,213,369

APPALACHIAN DULCIMER LAPBOARD

Robert L. Swartwout, 7409 Baltimore Ave., Takoma Park, Md. 20012

Filed Jun. 27, 1978, Ser. No. 919,669
Int. Cl.[3] G10G *5/00*
U.S. Cl. 84—284 **13 Claims**

1. Apparatus for supporting a dulcimer on a person's lap, said apparatus comprising:
first means for supporting and gripping said dulcimer;
means attached to said first means for grasping the person's legs, whereby said apparatus and said dulcimer are held in substantially fixed position on the person's lap;
said first means including a substantially planar base member and support means in operative relationship with said base member for receiving said dulcimer and for positioning

said dulcimer in spaced apart relationship with respect to said base member; and

said support means including first support members fixedly attached to and adjacent a first end of said base member



and extending above the substantially planar surface of said base member, and second support members movably attached to and adjacent to a second end of said base member and extending above the substantially planar surface of said base member.

4,213,370

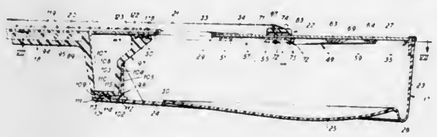
MOLDED PLASTIC GUITARS

Charles E. Jones, Evanston, Ill., assignor to WMI Corporation, Chicago, Ill.

Filed Jun. 22, 1978, Ser. No. 918,059

Int. Cl.² G10D *3/00, 3/04, 3/14*

U.S. Cl. 84—291 **44 Claims**



1. A musical instrument of the guitar type, having a soundbox body to which is attached a neck having a tuning machine head, a top panel on said body carrying a bridge and saddle, strings attached at one of their ends to said bridge and extending across said saddle and connected at opposite ends to tuning gear of the machine head, said top panel having a sound hole under said strings, the improvement comprising:

said body being of plastic and formed in one piece and having a substantially rigid wall defining the perimeter of the body and extending upwardly from juncture with a shaped bottom;

said bottom having a concave-convex parabolic sound reflector area;

said sound reflector area having its perimeter upwardly inset relative to the lower edge of said wall;

and a bracing rib of substantially open generally S-shaped cross-section considered across the bracing rib, and joining said sound reflector area to the lower end of said wall on respective angular open junctures and without interfering with resonance vibrational qualities of the sound reflector area.

4,213,371

AXIAL FLOW VALVE

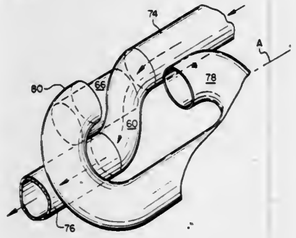
Orla E. Thayer, P.O. Box 473, Waldport, Oreg. 97394

Continuation of Ser. No. 764,028, Jan. 31, 1977, Pat. No. 4,112,806. This application Jul. 24, 1978, Ser. No. 927,565

The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.

Int. Cl.² G10D *9/04*

U.S. Cl. 84—390 **11 Claims**



1. In a musical wind instrument having a slide loop, an instrument pipe with a mouthpiece at one end and an instrument pipe terminating in an instrument bell, the improvement comprising a rotary valve which includes:

a casing having a first end plate which defines primary and secondary body inlet apertures and having an opposed, second end plate defining primary and secondary body outlet apertures; and

a rotor rotatable in said casing having a primary rotor passage which connects said primary body inlet aperture to said primary body outlet aperture when said rotor is in a first position and which connects said secondary body inlet aperture with said primary body outlet aperture when said rotor is rotated to a second position, said rotor also having a secondary rotor passage which connects said primary body inlet aperture to said secondary body outlet aperture when said rotor is in said second position;

one of said instrument pipes connecting to said primary body inlet aperture;

the other of said instrument pipes connecting to said primary body outlet aperture;

one end of said loop connecting to said secondary body inlet aperture;

the other end of said loop connecting to said secondary body outlet aperture.

4,213,372

ELECTRONIC TYPE MUSIC LEARNING AIDS

Takehiko Sasaki, Yamatokoriyama, and Yuji Yashiro, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1978, Ser. No. 908,958

Claims priority, application Japan, May 27, 1977, 52-62307; Jun. 7, 1977, 52-67457; Jun. 7, 1977, 52-74383

Int. Cl.² G09B *15/04*

U.S. Cl. 84—470 R **7 Claims**

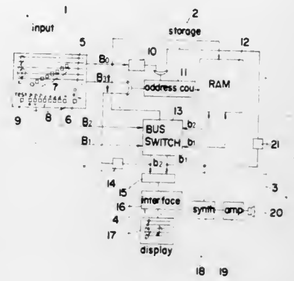
6. A musical keyboard input display for use in a music information storage system comprising:

a frame;

a musical staff disposed on said frame;

a plurality of pitch switch means for inputting the pitch of a musical note into said music information storage system, each of said pitch switch means corresponding to an individual musical note and respectively located on said musical staff means to indicate that individual note;

a plurality of meter switch means disposed on said frame for inputting the duration of a musical note into said music information storage system, each of said meter switch means corresponding to a particular musical note duration; and



wherein one of said pitch switch means and one of said meter switch means must be actuated to store the pitch and duration of a single musical note.

4,213,373

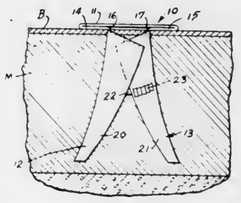
SHEET METAL NAIL WITH LOCKABLE LEGS

Robert L. Hallock, 7136 NE. 8th Dr., Boca Raton, Fla. 33431

Filed Dec. 12, 1978, Ser. No. 968,878

Int. Cl.² E01B *9/12;* **F16B** *15/04*

U.S. Cl. 85—11 **2 Claims**



1. A sheet metal nail for attaching covering material to a lightweight insulating base material comprising, an enlarged head, a shank connected at one end to said head, said shank including a pair of generally U-shaped legs each of which includes a pair of generally parallel sides connected by a bight portion, the sides of one of said legs being received within the other leg and defining a hollow enclosure before being driven, the other end of said shank being of substantially the same dimension as said one end and defining a penetrating portion, the bight portion of at least one of said legs being curved toward the other leg intermediate the ends for causing said leg to be deflected outwardly when the nail is driven into the base material, said curved bight portion causing said legs to spread apart to an included angle of approximately 25°, at least one of said legs having an outwardly extending projection which is bent toward the other leg to retain said legs in interfitting relationship with each other, and said projection forming a mechanical lock to hold said legs in spread apart condition, whereby withdrawal of said nail is substantially prevented when said legs are locked in spread apart condition.

4,213,374

FASTENER

Balthasar Hüsler, Goldau, Switzerland, assignor to HNT AG, Switzerland

Filed Dec. 20, 1977, Ser. No. 862,648

Claims priority, application Switzerland, Dec. 29, 1976, 16439/76

Int. Cl.² F16B *15/00*

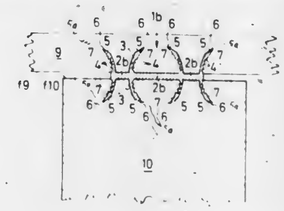
U.S. Cl. 85—13 **15 Claims**

1. A fastener, comprising:

a base portion,

at least two anchor legs projecting from said base portion in the same general direction, said two anchor legs having a pair of remote surfaces on the respective outer sides of said legs and a pair of proximate surfaces on the respective inner sides of said legs,

at least one barb-like projection disposed on at least two of the surfaces of the group of surfaces comprising the two remote surfaces on the outer sides of said legs and the two proximate surfaces on the inner sides of said legs,



a small bevel located on each of said legs on the same side as said barb-like projection and slanting towards the other, opposite surface of each of said legs towards the free ends of each of said legs,

a large bevel located on each of said legs, each of said large bevels being on the side of each leg opposite said small bevel and slanted towards the free ends of said legs, so that said large bevels form wedge-like cutting edges with said small bevels at the free ends of said anchor legs.

4,213,375

FIREARM SAFETY DEVICE

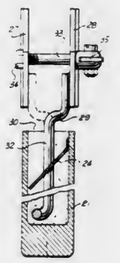
Keith Pedler, Lot 1, Upper Gilston Rd., Gilston, Queensland 4211, Australia

Continuation-in-part of Ser. No. 791,111, Apr. 26, 1977, abandoned. This application Apr. 14, 1978, Ser. No. 896,537

Claims priority, application Australia, Jun. 24, 1977, PD0553

Int. Cl.² F41C *21/14*

U.S. Cl. 89—31 **31 Claims**



1. A safety device for firearms comprising:

securing means for removably attaching said device in an operative position on a firearm;

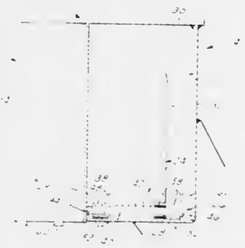
a cup having a floored end and an unfloored end;

a resilient plastic projectile absorbing medium in said cup;

a substantially U-shaped rod having its crotch position embedded within said projectile absorbing medium and its free ends attached to said securing means to connect said projectile absorbing medium and said cup to said securing means so that when said device is located in the operative position on a firearm the unfloored end of the cup and the open end of the firearm barrel are in mutual confrontation with said cup and projectile absorbing medium held in front of the firearm barrel in the path of a projectile discharged from the firearm barrel to safely contain such projectile and arrest the motion thereof, while permitting

limited relative movement between said cup and projectile absorbing medium and said securing means on impact of a discharged projectile on said projectile absorbing medium.

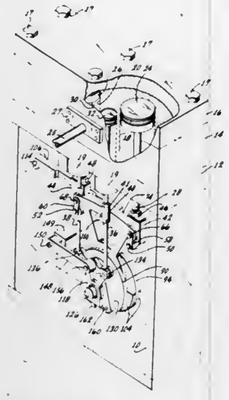
4,213,376
STORAGE AND FEEDING APPARATUS FOR AMMUNITION BELTS
Theodore A. Jackson, Utica, Mich., assignor to Cadillac Gage Company, Warren, Mich.
Filed Jul. 26, 1978, Ser. No. 928,202
Int. Cl.[2] F41D *9/02*
U.S. Cl. 89—34 **14 Claims**



1. Apparatus for storing and feeding an ammunition belt comprising: a storage compartment for an ammunition belt that is adapted to feed an automatic gun upon movement of the belt through the compartment in a feed direction; a plurality of dividers spaced along the feed direction within the compartment; means mounting the dividers within the compartment for movement between first and second positions; the dividers extending across the feed direction in the first positions thereof so as to provide storage of the ammunition belt in a serpentine configuration within the compartment; the dividers being movable to the second positions thereof extending along the feed direction so as to allow the ammunition belt to pass thereby upon movement to the gun; each divider including a detent for initially providing positioning thereof in the first position during loading of the ammunition belt within the compartment; and a closure for the compartment movable to a closed position to undetent the detent and thereby permit movement of dividers to the second positions thereof as the stored ammunition belt moves to the gun.

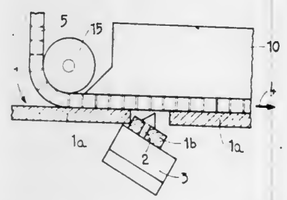
4,213,377
RECIPROCATING ENGINE WITH IMPROVED POWER OUTPUT MEANS
John H. Hedger, P.O. Box 357, Lakeside, Calif. 92040
Filed Dec. 18, 1978, Ser. No. 970,862
Int. Cl.[2] F01L *31/08;* **F01B** *1/00*
U.S. Cl. 91—187 **3 Claims**

1. In a fluid driven reciprocating engine which comprises an engine block containing at least two parallel cylinders, a piston located in each of said cylinders for parallel reciprocating movement therein, piston rods rigidly connected to each of said pistons extending out of said cylinders along the cylinder centerlines into a housing containing connecting means operatively connecting one end of each of said piston rods to a single crank pin on a rotary output shaft, and valve means within said block for selectively supplying fluid to and exhausting fluid from said cylinders above and below said pistons, the improvement wherein said crank pin is offset from the center of a disk shaped output plate having a central opening surrounding and secured to said rotary output means, a disk shaped timing plate fastened to said crank pin in an offset relationship so that said output plate and timing plate rotate together, and timing means fastened to said timing plate along the centerline of said crank pin, said timing plate connected to said valve means, whereby



the position of said timing means may be varied to vary the positions of said valves relative to piston position.

4,213,378
METHOD AND APPARATUS FOR REMOVING WASTE PIECES FROM A PRE-CUT SHEET
Jean-Claude Rossollin, Chamonix-Mont-Blanc, France, assignor to United Patents Trust Reg.-U.P.T., Vaduz, Liechtenstein
Filed Jun. 2, 1978, Ser. No. 912,011
Int. Cl.[3] B31B *1/74*
U.S. Cl. 93—36 A **8 Claims**



1. In a method of removing waste pieces from a pre-cut sheet having cut portions and waste pieces therein, which method includes the steps of impaling the waste pieces on stripping needles and separating the waste pieces from the cut portions by moving the needles rotatively relative to the cut portions, the improvement which comprises carrying out said impaling step while conveying said sheet and said needles along respective substantially parallel rectilinear paths and at the same rate of travel, and thereafter carrying out said separating step while applying suction to said cut portions, said application of suction causing a force to be exerted on said cut portions in opposition to the force exerted on said waste pieces by said needles during the separating step.

4,213,379
EMERGENCY VENTILATION SYSTEM FOR ENCLOSED LIVESTOCK CONFINEMENT STRUCTURES
Harold D. Cromley, Marshall, Mo., assignor to Marshall Equipment Co. Inc., Marshall, Mo.
Filed Mar. 13, 1978, Ser. No. 886,035
Int. Cl.[2] F24F *13/00;* **A01K** *31/00;* **E05F** *15/20*
U.S. Cl. 98—33 R **9 Claims**

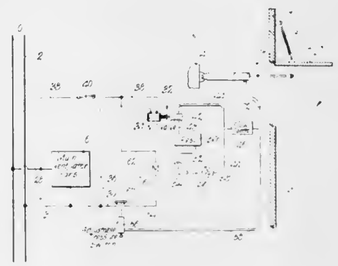
1. For use with an enclosed building having vented upper regions placing the interior of said building in airflow communication with the outside atmosphere and having normally closed access door means in the lower regions thereof, and of the type including normally energized, electrically driven fan means connected to an electrical power supply and coupled between said lower regions of said building and said outside atmosphere for normally drawing outside air into said building through said vented upper regions and down through the interior of said building for exhaust from the latter out through said lower regions, apparatus for automatically providing emergency ventilation of said building when electrical power service to said fan means is interrupted, including:

means for selectively operating said door means to allow cooler outside air to enter said building through said lower regions thereof whereby to create a warm air draft for forcing warm air within said lower regions upwardly for outside exhaust through said vented upper regions, said door operating means comprising—

biasing means operably connected to said door means for urging the latter to shift from said closed position thereof toward an open position;

control means operably connected to said door means and to said electrical power supply for selectively opening and closing said door means, said control means normally releasably retaining said door means in said closed position thereof,

said control means being actuated in response to interruption of electrical power service to said fan means to release said door means from its said closed position whereby to permit said biasing means to shift said door means to its said open position,



said control means comprising a bistate, power-driven motor member having a shiftable output element coupled with said door means, and being actuatable to a first operating state for releasing said door means from its said closed position to allow shifting of said door means to its said open position under the influence of said biasing means, and being further actuatable to a second operating state for shifting said door means against the influence of said biasing means from its said open position to its said closed position,

said motor member comprising a reciprocable piston device having a power input thereto adapted to receive a force transmitting flowable medium for driving said device,

means operably coupled with said motor member for actuating the latter between said first and second operating states thereof,

means operably coupled with said actuating means and said electrical power supply for detecting the flow of electrical power to said fan means,

said actuating means being responsive to said detecting means to actuate said motor member between said first and second operating states thereof in accordance with said flow of electrical power detected by said detecting means,

said actuating means including—

pumping means thereof operably coupled with said piston device input and having an input thereof adapted to be coupled with a source of said flowable medium,

said pumping means being operable for delivering a quantity of said flowable medium under pressure to said piston device whereby to drivingly energize the latter,

electrical motor means adapted to be coupled with said electrical power supply and coupled with said pumping means for energizing the latter to deliver said medium to said piston device,

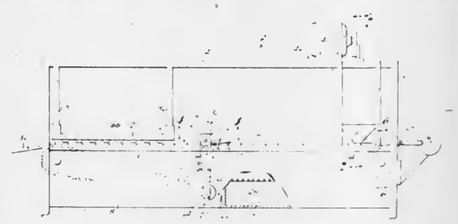
means for sensing the pressure of said medium delivered by said pumping means to said piston device,

said sensing means including switchable circuit means and being operably coupled with said piston device input and between said electrical motor means and said electrical power supply,

said sensing means being operative to uncouple said electrical power supply from said electrical motor means whereby to de-energize said pumping means when a preselected level of pressure has been sensed, and

actuatable valve means operably coupled with said piston device input and with said detecting means, and actuatable by the latter for selectively relieving medium pressure to said piston device input whereby to de-energize the latter.

4,213,380
COOKING MACHINE
Arthur R. Kahn, 1218 Drexel Ave., Apt. 39, Miami Beach, Fla. 33139
Filed Jun. 18, 1979, Ser. No. 49,145
Int. Cl.[3] A47J *37/00*
U.S. Cl. 99—349 **3 Claims**



1. A mass cooking device for cooking meat patties and the like comprising:

a power driven conveyor belt means having a first dispensing end and a second exiting end and a middle zone defining a patty turnover zone, the conveyor means includes a conveyor belt endlessly rotating between the ends and defining a continuous loop, the belt includes elongated members spaced apart forming a grill thereby when the belt rotates it comprises a moving grill,

a pair of aligned ovens being a first and second oven, the first oven adjacent the dispenser end of the conveyor means, the second oven adjacent the exiting end of the conveyor means, both ovens adjacent the middle zone, means for dispensing meat patties on the belt at the dispensing end of conveyor means, a turnover means spaced between the ovens at the middle zone of the conveyor means comprising:

a V-shaped spatula having a pair of diverging legs, an upper and a lower leg, each leg comprising finger-like structures, the finger-like structures mating compatibly with the moving grill conveyor belt, the lower leg being normally below the belt, gear means coordinated with the conveyor means and the dispensing means for rotating the patty 180° after being captured by the spatula,

thereby the patties having been cooked on one side are reversed onto the other side for cooking by the second oven,

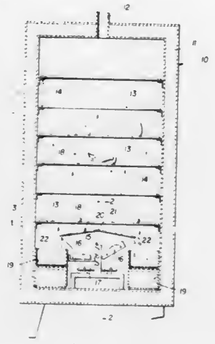
compressor means fixedly connected to the conveyor means above and aligned with the second oven for squeezing the meat patties tight against the belt, thereby the patties are compressed to attractive and easy to serve packages.

4,213,381

SLOW COOKING APPARATUS

Clarence E. Ellis, 724 Monument Rd., Ponca City, Okla. 74601

Filed Dec. 18, 1978, Ser. No. 970,107
Int. Cl.[2] A47J *37/06;* **A23B** *4/04*
U.S. Cl. 99—446 **1 Claim**



1. In a slow cooking apparatus of the class having an upright top vented slow cooking enclosure, plural superposed vertically spaced food supports within said enclosure, a heating element and a seesaw support for smoldering fuel above the heating element, the heating element and seesaw support being disposed at the bottom of said enclosure and centered transversely of the enclosure and being substantially below the lowermost food support, the improvement comprising a pair of equal size open top food drippings collector tanks resting on the bottom of said enclosure and abutting the side walls of the enclosure and being elongated in the front-to-back direction and extending substantially for the full front-to-back depth of the enclosure, said tanks being disposed on opposite sides of said heating element and seesaw support, and a unitary peaked drippings deflector fixed within said enclosure between the lowermost food support and the top of said seesaw support and having an apex at the transverse center of the enclosure which is symmetrical in relation to the seesaw support and said tanks, said deflector having sloping panels on opposite sides of said apex which extend laterally outwardly of the seesaw support and somewhat outwardly of the interior longitudinal edges of said tanks to direct food drippings into the tanks, the longitudinal edges of said deflector being equidistantly widely spaced from the vertical sides of the enclosure so as to provide wide unobstructed heat riser passages between the edges of the deflector and the enclosure sides, and the deflector extending for the entire front-to-back depth of the enclosure so that no food drippings can fall onto the heating element and seesaw support.

4,213,382

SELECTIVE PITTER FOR FRUITS OF THE DRUPE TYPE

Konrad E. Meissner, Lafayette, Calif., assignor to California Processing Machinery, San Ramon, Calif.

Filed Feb. 22, 1978, Ser. No. 880,229
Int. Cl.[3] A23N *4/04, 4/22*
U.S. Cl. 99—486 **8 Claims**

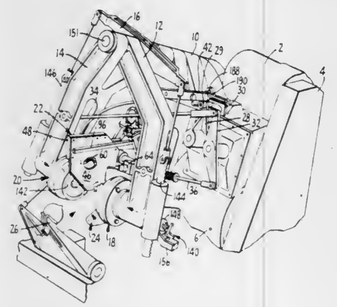
1. Apparatus for bisecting and pitting fruit of the drupe type, comprising

a pair of generally coplanar body-bisecting blades having opposed cutting edges;

means for supporting said blades to receive such a fruit and, upon said fruit being positioned between said blades with its suture generally in said plane, for moving one blade toward the other in said plane to engage said pit in either a first position in which said blades are in gripping relation to a sound pit or past said first position to a second position with at least one said blade within a split pit;

fruit gripping means disposed adjacent opposite sides of said plane and supported for movement into coaxial gripping relation with the halves of a fruit, the body of which is bisected by said blades and the pit of which is engaged by said blades, and means for so moving said gripping cups and for rotating them about their mutual axis upon the gripping engagement of a sound pit by said blades for shearing said fruit halves from said sound pit;

a generally U-shaped coring spoon mounted to one of said blades for rotation about an axis extending transverse to the legs of the U, said coring spoon being dimensioned such that rotation about said transversely extending axis will describe a body of revolution at least as large as said pit;



means responsive to the movement of said one blade to said second position for shifting said blades and said coring spoon from said second position, in which said coring spoon is remote from said pit, to a third position in which said blade cutting edges are remote from said pit and in which said coring spoon is adjacent said gripped fruit halves and extending adjacent a portion of said pit; and

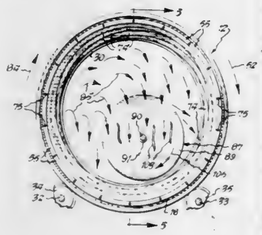
coring spoon actuating means operatively connected to said coring spoon for rotating said coring spoon about said spoon axis of rotation when said blades and said coring spoon are shifted to said third position, whereby rotation of the coring spoon will cut the split pit from the fruit halves.

4,213,383

BEAN SNIPPER

Charles G. Burton, Lewiston, N.Y., assignor to Chisholm-Ryder Company, Inc., Niagara Falls, N.Y.

Filed Nov. 9, 1978, Ser. No. 959,250
Int. Cl.[2] A23N *15/04*
U.S. Cl. 99—636 **18 Claims**



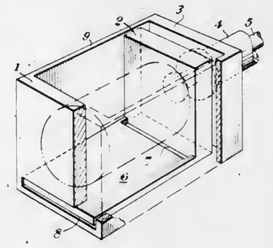
1. A bean snipper comprising a generally horizontal annular drum having an inner and outer surface and a longitudinal axis, openings in said drum of a size to permit only the ends of the beans to protrude outwardly from said outer surface, knife means for snipping said protruding ends of said beans, means for mounting said knife means in contiguous relationship to said outer surface, orienter means in said drum for orienting beans falling toward said openings with their longitudinal axes in a relatively transverse orientation with respect to said longitudinal axis of said drum to thereby tend to cause said ends of said beans to be more likely to be directed toward said openings, said orienter means comprising a plurality of discs located within said drum and oriented transversely to the longitudinal axis of said drum, an elongated shaft, mounting means for mounting said elongated shaft with its axis substantially parallel to and offset from said longitudinal axis of said drum, means mounting said discs in substantially parallel relationship on said shaft, first means for rotating said drum, and second means for rotating said shaft in the same direction as said drum, said discs being located proximate the downwardly moving part of said drum such that the beans are moved upwardly by said drum to be dropped through said discs.

4,213,384

COMPACTING APPARATUS

Edward F. Telling, Worthing, England, assignor to Trewhella Bros. (UK) Ltd., United Kingdom

Filed Jul. 24, 1978, Ser. No. 927,531
Claims priority, application United Kingdom, Jul. 26, 1977, 31402/77; Oct. 14, 1977, 42925/77; Feb. 3, 1978, 4530/78; Feb. 14, 1978, 5764/78; Apr. 6, 1978, 13597/78; Apr. 18, 1978, 15102/78
Int. Cl.[2] B30B *15/08, 15/30, 9/32*
U.S. Cl. 100—74 **14 Claims**



1. A compacting apparatus comprising

a first compacting plate;

a second compacting plate;

means for mounting said second compacting plate for reciprocating movement relative to said first compacting plate;

movement means for providing said relative movement;

means defining a free-fall aperture between said first and second plates and adjacent one of said plates; and

means for supporting material to be compacted, at least during the initial stage of a compacting operation,

said support means for supporting including a floor means extending from one of said plates and being arranged for movement beyond the other of said plates, said floor means having arranged therein said free-fall aperture such that in the full compacting position of said plate said aperture lies beneath the compacted material.

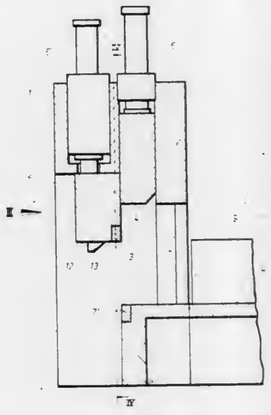
4,213,385

SCRAP SHEARING MACHINE

Peter Dahlem, Hilden, Fed. Rep. of Germany, assignor to Lindemann Maschinenfabrik GmbH, Düseldorf, Fed. Rep. of Germany

Filed May 15, 1978, Ser. No. 905,982
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739825
Int. Cl.[2] B30B *9/32*
U.S. Cl. 100—95 **5 Claims**

1. A scrap shearing machine comprising a frame, an upper knife support, means mounting said upper knife support for upward and downward movement in said frame, an upper knife fixed to said upper knife support, a stationary lower knife and means fixedly mounting said stationary lower knife in said frame for coaction with said upper knife in a shearing plane, a bending plunger, means mounting said bending plunger in said frame for upward and downward movement on the side of said upper knife remote from said lower knife, and means for moving said bending plunger, said upper knife support and said upper knife upwards and downwards in said frame to act on



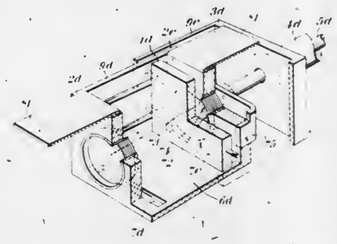
scrap fed to said machine and protruding between said upper knife and said lower knife, said means for moving said bending plunger being operative to move said bending plunger downwards in advance of downward movement of said upper knife whereby said bending plunger comes into contact with said scrap before said upper knife comes into contact with said scrap.

4,213,386

COMPACTING APPARATUS

Vera I. Telling, Worthing, England, assignor to Trewhella Bros. (UK) Ltd., Great Britain

Filed Jul. 24, 1978, Ser. No. 927,530
Claims priority, application United Kingdom, Aug. 10, 1977, 33436/77; Aug. 10, 1977, 33437/77
Int. Cl.[2] B30B *9/32*
U.S. Cl. 100—98 R **5 Claims**



1. A compacting apparatus in which the material to be compacted is a can or drum comprising

a first compacting plate;

a second compacting plate;

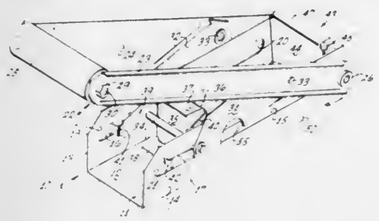
means for mounting said second compacting plate for reciprocating movement relative to said first compacting plate;

drive means coupled to at least one of said plates for providing said relative movement;

means defining a free-fall aperture between said first and second plates and adjacent one of said plates; and

means for removing an end cover of the can or drum during a compacting operation.

4,213,387
CAN CRUSHER
Carlos P. McCaney, 20119 S. Hillford, Carson, Calif. 90746, and Ronald W. Bocksruker, 11408 Albata St., Los Angeles, Calif. 90049
Filed May 24, 1979, Ser. No. 42,588
Int. Cl.[2] B30B *1/04, 7/00*
U.S. Cl. 100—245 **10 Claims**



1. A can crusher comprising:
a frame having a bottom wall including a front edge, a rear edge and a pair of side edges, said side edges being parallel to the principal axis of said bottom wall, said frame also having an upstanding sidewall affixed to each of said side edges, an open front and an open rear, each of said sidewalls being provided with an elongated slot extending from a point adjacent said open front, said bottom wall being provided with a can discharge opening adjacent said open front;
a first platen affixed to said frame at said open front and in front of said can discharge opening;
a second platen reciprocably mounted in said slots for movement from a point adjacent said open rear to a point adjacent said first platen;
an operating handle including a pair of operating levers each having first and second ends;
a pivot pin swingably connecting one end of each of said levers to said frame adjacent said first platen;
a hand grip affixed to the other end of each of said levers; and
a pair of links, each of said links having one end swingably connected to an associated one of said operating levers intermediate its ends and another end swingably connected to said second platen for reciprocating said second platen.

4,213,388
GEARING FOR DRIVING A PLATE CYLINDER OF A PRINTING PRESS AT A NON-UNIFORM SPEED
Helmut Geretzki, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany
Filed Sep. 18, 1978, Ser. No. 943,189
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 7729287[U]
Int. Cl.[2] B41F *5/00;* **F16H** *35/02*
U.S. Cl. 101—216 **6 Claims**

1. Gearing for driving a plate cylinder of a printing press at a non-uniform speed, characterised in that the plate cylinder (**5**) is concentrically connected to a gear in mesh with an intermediate gear (**8**) engaging a gear (**9.1**) on the output shaft of differential gearing (**9**), that the input shaft of the differential gearing carries a gear (**9.2**) in mesh with a drive gear (**12**) on the shaft of which there is secured a cam plate (**13**), that a gear (**11**) meshing with a longitudinally guided rack (**15**) engages the gear (**10.1**) forming the second input of the differential



gearing (**9**), and that the rack (**15**) carries at one end a cam roller (**14**) which rolls on the cam plate (**13**).

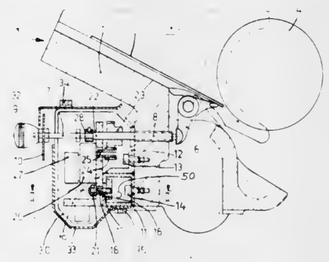
4,213,389
INK SUPPLY DEVICE FOR HAND LABELER
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan
Filed Sep. 6, 1977, Ser. No. 830,806
Claims priority, application Japan, Sep. 6, 1976, 51-105836; Dec. 11, 1976, 51-148314
Int. Cl.[2] B41K *1/42, 5/00;* **B41F** *1/40*
U.S. Cl. 101—295 **12 Claims**



1. An ink supply device for a hand labeler:
said labeler comprising: a labeler frame; an operating lever, which is movable with respect to said frame between two positions; a printing head, including type surfaces adapted to be inked and opposable to a platen; a platen opposable to said type surfaces; moving means for moving said printing head and said platen together and apart;
said ink supply device comprising: a support holder connected with said operating lever for being moved with respect to said frame past said type surfaces as said operating lever moves between its said positions;
an ink roller support frame; two ink rollers, arrayed generally parallel to each other and parallel to said type surfaces; a respective cartridge frame for each said ink roller; each said ink roller being rotatably supported on its respective said cartridge frame; said cartridge frames being, in turn, attached to said ink roller support frame;
retaining means connected to said ink roller support frame and extending to said support holder for retaining said ink roller support frame to said support holder; biasing means for normally urging said retaining means to extend to said support holder; said retaining means being movable in opposition to the urging by said biasing means, thereby to separate said retaining means from said support holder;
guide means comprising first guiding elements in said labeler frame and cooperating second guiding elements connected to said support holder near one of said ink rollers and being in engagement with said first guiding elements;

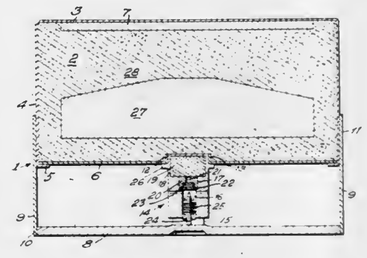
said first guiding elements extending along said labeler frame on a first pathway past said type surfaces and on a path for guiding said one ink roller on a first path over and in engagement with and past a said type surface;
said guide means further comprising third guiding elements in said labeler frame, separate from said first guiding elements, and cooperating fourth guiding elements connected to said support holder near the second of said ink rollers, said third guiding elements extending along said labeler frame on a different second pathway past said type surfaces than said first pathway, and on a path for guiding said second ink roller on a second path over and in engagement with and past a said type surface;
one said cartridge frame being pivotally attached to said ink roller support frame, thereby to be moved between a position at which said ink rollers are generally in a plane generally parallel to said type surfaces and a position where the said ink roller on said one pivotable cartridge frame is upraised and said ink rollers are thereby no longer in a plane generally parallel to said type surfaces, thereby giving access to said one ink roller cartridge frame for removal of said ink roller from its said cartridge frame.

4,213,390
REMOTE-CONTROL ADJUSTMENT RETROFIT SYSTEM FOR AN INK SUPPLY IN A PRINTING MACHINE
Oskar Liebert, and Michael Wörner, both of Neusäss, Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N), Augsburg, Fed. Rep. of Germany
Filed Sep. 21, 1978, Ser. No. 944,586
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 7730668[U]
Int. Cl.[3] B41F *31/02*
U.S. Cl. 101—365 **9 Claims**



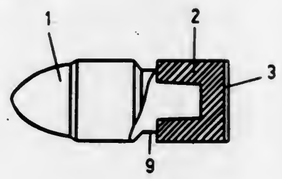
1. Remote control retrofit adjustment system for an ink supply in a printing machine, to control the relative position of a doctor blade (**5**) and an ink roller (**4**), and in which the frame (**2**) of the printing machine supports a plurality of adjustment screws (**7**) threaded in the frame and effective against the doctor blade to adjust its position with respect to the roller, comprising, in accordance with the invention,
a plurality of supports (**19**), each having bearing means journalling a cylindrical portion (**22**) of one of the adjustment screws (**7**);
gear means (**23**) operatively connected to each adjustment screw;
an electric motor (**27**) secured to a respective support;
a gear train (**26, 25, 24**) in driving connection with the motor (**27**) and engageable with a respective gear means (**23**) of the associated adjustment screw (**7**);
and individually adjustable attachment means (**15, 16, 17, 18, 20, 21**) attaching each support (**19**), individually adjusted, to the frame (**2**).

4,213,391
ANTI-TANK MINE WITH PERIPHERAL CHARGE INITIATION
Bernard E. Drimmer, Brentwood, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 7, 1953, Ser. No. 353,696
Int. Cl.[2] F42B *23/04*
U.S. Cl. 102—8 **10 Claims**



1. In a demolition unit, a closed container having a shallow depth relative to its transverse cross section, and having a high explosive charge contained therein, a completely embedded non-explosive shock absorbing mass centrally located within said explosive and extending laterally to within a short distance of the side walls of said container, a facing plate projectile of substantial density secured to and substantially coextensive with the top wall of said container and in contact with said explosive, and means below said non-explosive mass for initiating said explosive charge, the detonation wave of said explosive charge striking said face plate as a flat wave to propel said plate intact toward a target.

4,213,392
ELECTRICALLY IGNITABLE CARTRIDGE-LESS BULLET
Hubert Usel, A-6401, Inzing, Tirol, Austria
Continuation of Ser. No. 785,098, Apr. 6, 1977, abandoned, which is a continuation of Ser. No. 527,289, Nov. 26, 1974, abandoned, which is a continuation of Ser. No. 327,217, Jan. 26, 1973, abandoned. This application Jul. 18, 1977, Ser. No. 817,120
Claims priority, application Austria, Jan. 28, 1972, 679/72.
Int. Cl.[2] F42B *9/00*
U.S. Cl. 102—38 R **16 Claims**



1. An electrically ignitable cartridge-less bullet comprising a projectile having a rearwardly extending pin-shaped projection, said projection having a rear surface and a circumferential surface; a propellant charge connected to said projectile and having an internal surface and an external surface, said internal surface engaging said rear and said circumferential surfaces of said projection of the projectile; and a multi-layer firing cap provided on said external surface of the propellant charge and including at least one ignition layer adjacent said external surface of the propellant charge, and one semiconductive layer having one surface in contact with said ignition layer, said semiconductive layer being subjected to an electrical voltage differential when the bullet is to be fired so that discrete cur-

rent paths in said semiconductive layer are rapidly heated during the passage of electric current, said multi-layer firing cap further including a second semiconductive layer having a surface in contact with a surface of said first-mentioned semiconductive layer opposite said one surface of the latter and being incapable of electrically conducting in parallelism with the plane of said second semiconductive layer so that a heating zone of very localized dimension will result during the passage of electrical current to thereby decrease the amount of electrical current for obtaining ignition.

4,213,393

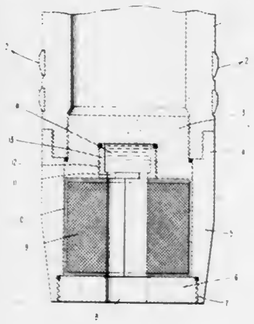
GUN PROJECTILE ARRANGED WITH A BASE DRAG REDUCING SYSTEM

Nils-Erik Gunners, Furudalsvägen 10, 13700 Västerhaninge; Rune V. Hellgren, Södermannagatan 18, 11623 Stockholm, and Torsten Liljergren, Sandavägen 28, 14032 Grodinge, all of Sweden

Continuation-in-part of Ser. No. 755,634, Dec. 30, 1976, abandoned, which is a continuation of Ser. No. 624,236, Oct. 20, 1975, abandoned. This application Jul. 15, 1977, Ser. No. 816,184

Int. Cl.[2] F42B *13/20*

U.S. Cl. 102—49.3 **3 Claims**



1. A projectile for gun launching through a muzzle and having decreased base drag characteristics comprising:

a projectile body presenting a base including restricted gas outlet nozzle means;

wall means interiorly of said projectile body defining combustion chamber means communicating with said gas outlet nozzle means;

base drag reduction means for ejecting controlled low mass flow of gas into and librating heat in the near wake zone of said body to increase the base pressure in said wake zone and decrease the base drag of the gun projectile without rocket assist propulsion;

said base drag reduction means including said combustion chamber means, said nozzle means and propellant grain means of a fuel rich composition located in said combustion chamber means and presenting a burning area operable to be ignited upon muzzle exit;

the exit area of said restricted outlet nozzle means, the burning area and mass of said propellant grain means in said combustion chamber means and the static burning rate of said propellant grain means being so related that said low mass flow of gas is operable to continue from the time of muzzle exit for a considerable portion of projectile flight, and that in flight the pressure in said combustion chamber only slightly exceeds the pressure at said base in an amount of 0.01 to 0.5 bar;

the total area of the said base (A_b), the area of the restricted gas outlet nozzle means (A_h) and the dimensionless mass flow rate of the ejected gas (I) being in the ratio

$$\frac{A_h/A_b}{I}$$

and being at least 10 at the muzzle of the gun barrel.

4,213,394

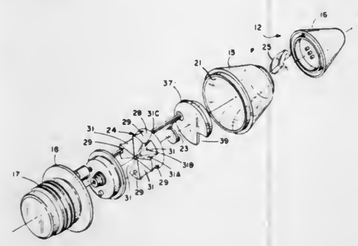
SPIN PROCESSING ACTIVE OPTICAL FUZE

Charles H. Brenner, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 13, 1972, Ser. No. 314,642

Int. Cl.[2] F45C *13/02*

U.S. Cl. 102—213 **7 Claims**



1. An optical target detecting device adapted to be carried by a projectile and to rotate therewith about the projectile spin axis comprising,

a projectile nose cone,

a source of optical radiation in said nose cone,

first lens means on said nose cone for directing a beam of said radiation at an angle to said spin axis and toward a target,

a plurality of second lens means on said nose cone disposed axially rearwardly of said first lens means and disposed circumferentially with respect to each other for receiving reflections of said optical radiation from said target in one of said second lens means and for receiving optical radiations from extraneous sources through all of said second lens means,

one of said second lens means being coplanar with said first lens means and said spin axis,

means responsive to the optical radiation received said first and said second lens means for developing electrical firing signals, and

means for eliminating from said electrical signals the components corresponding to the optical radiations from said extraneous sources to develop a final electrical firing pulse.

4,213,395

BALL ROTOR SAFETY AND ARMING DELAY DEVICE

David S. Breed, Hillcrest Rd., Boonton Township, Morris County, N.J. 07005

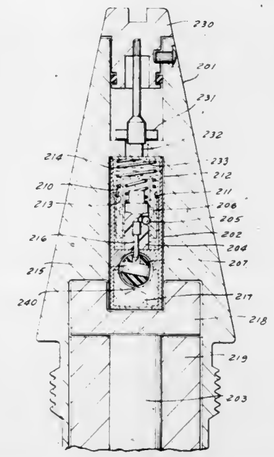
Continuation-in-part of Ser. No. 698,806, Jun. 23, 1976, Pat. No. 4,098,192, which is a continuation-in-part of Ser. No. 470,152, May 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 288,026, Sep. 11, 1972, abandoned. This application Mar. 3, 1978, Ser. No. 883,307

The portion of the term of this patent subsequent to Jul. 4, 1992, has been disclaimed.

Int. Cl.[2] F42C *15/22*

U.S. Cl. 102—236 **15 Claims**

1. A safety and arming delay fuze for spinning munitions comprising a housing, a cavity in said housing, a ball rotor in said cavity having a polar moment of inertia larger than either transverse moment of inertia, an explosive material within said ball rotor, firing means in said housing to ignite the explosive material, means to hold said ball rotor in a first safe position with said explosive material out of alignment with said firing means and to release said ball rotor when the munition is launched, means for increasing minimum arming distance by reducing substantially all friction forces between the walls of said cavity and the ball rotor so as to minimize the effects of forces resulting from static and dynamic unbalance of the munition and consequently the variation in the total friction forces acting on the ball rotor that would otherwise result in a



wide dispersion of arming delays, such that as the munition rotates after launch, the explosive material revolves relative to the munition about the axis of the munition for many revolutions and eventually spirals into alignment with the firing means thereby providing longer minimum arming delays for the fuze with the revolving motion of the explosive material being controlled primarily by the friction forces at the point of contact of the cavity by the ball rotor.

4,213,396

TRAFFIC SYSTEM WITH DRIVE CHANNEL AND ROAD VEHICLES MECHANICALLY CROSS GUIDED-THEREIN

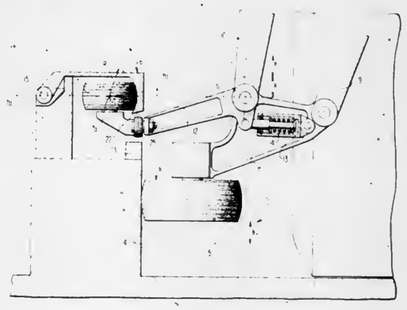
Herbert Mehren, Ludwigsburg, and Helmut Wulf, Ostfildern, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 806,592, Jun. 14, 1977. This application Apr. 26, 1979, Ser. No. 33,807

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627523

Int. Cl.[2] E01B *26/00*

U.S. Cl. 104—130 **32 Claims**



1. A traffic system which includes vehicles adapted to be driven on one of roads without tracks or in tracks, the traffic system including drive channel means for forming tracks for a track-tied operation of the vehicles, means for mechanically transversely guiding the vehicles in said drive channel means, switch guide surface means extending at least approximately vertically and pointing away from the drive channel means, the switch guide surface means is arranged substantially parallel to a respective outer side of the drive channel means within an area of one of bifurcations or mergers provided in the drive channel means, switch guide roller means arranged on both sides of the vehicles, said switch guide rollers means having an at least approximately vertical axis of rotation in an operating position and being adapted to cooperate with the switch guide surface means, and switch guide lever means for supporting the switch guide roller means at the vehicles, and means for mounting said switch guide lever means so as to be pivotal about a pivot axis disposed at least approximately parallel to a driving direction of the vehicle, characterized in that the mounting means are so arranged that the pivot axes of the switch guide lever means are at least approximately at the same height as a center of the switch guide roller means, the switch guide roller means include a roll surface cooperable with a surface of the switch guide surface means when the switch guide roller means are in an operative position, the roll surface of the switch guide roller means, as viewed in a vertical cross-section, and the surface of the guide surface means, as viewed in cross-section each have a complementary profile relative to one another so that the switch guide roller means are stabilized in a center roll-off height position during a rolling on the switch guide surface means by the complementary profiles thereof, and in that means are provided for mounting said switch guide lever means at the transversely mechanically guiding means so as to enable the switch guide roller means to execute pivotal motion relative to the transversely mechanically guiding means in a vertical plane when the guiding means is in the operating position.

4,213,397

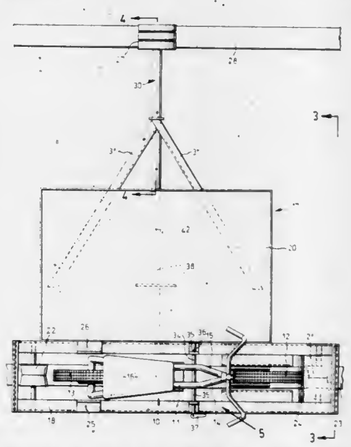
MOTORCYCLE RAILWAY ATTACHMENT

Roger A. Matte, Zephyr, Ontario, Canada (L0E1T0)

Filed Sep. 15, 1978, Ser. No. 942,543

Int. Cl.[2] B61D *15/00, 15/12;* **B62H** *1/12;* **B62K** *13/00*

U.S. Cl. 105—95 **9 Claims**



1. In combination with a bicycle having a frame with a pair of road wheels including one driven wheel and a rider's seat, a portable railroad attachment therefor comprising:

a trolley unit,

means for detachably securing the trolley unit to the bicycle frame,

a pair of longitudinally aligned track wheels on the trolley unit engageable with a first rail of a railroad track,

a third track wheel on the trolley unit supported in laterally spaced relation to said pair of track wheels for engagement with the other rail,

guide means on the trolley unit for locating said driven wheel in longitudinal alignment with said pair of track wheels,

support means on the trolley unit for supporting the other road wheel of the bicycle out of engagement with said first track rail, and

pivotal support means on said trolley unit engageable with the bicycle frame at an intermediate position between said road wheels, forwardly of said rider's seat, and at an elevation to hold both said road wheels out of tractive engagement with said first rail, said pivotal support means defining a fulcrum about which the bicycle is pivoted relative to said trolley unit under the weight of a rider on said seat to bring said driven road wheel into tractional engagement with said first track rail.

4,213,398

DAMPENED SUSPENDED CARRIER SUSPENSION

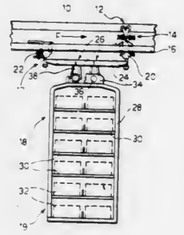
Gaetano Di Rosa, Pino Torinese, Italy, assignor to F.A.T.A.-Fabrica Apparecchi Di Sollevamento E Trasporto Ed Affini S.p.A., Turin, Italy

Filed May 30, 1978, Ser. No. 910,939

Claims priority, application Italy, Jul. 14, 1977, 68637 A/77

Int. Cl.[2] B61B *5/00*; B61D *15/00*; B61F *5/00*

U.S. Cl. 105—150 **4 Claims**



1. A load-carrying device for an overhead-rail conveyor, comprising:

a carriage movable along the rail,

a load-bearing container, and

means suspending said load bearing container from said carriage, said means comprising:

pivot pins carried by said carriage and said load bearing container,

a pair of elongate connecting elements, each of said connecting elements having an upper end pivotally connected to one of said pivot pins which is carried by said carriage, and a lower end pivotally connected to one of said pivot pins which is carried by said load-bearing container, so as to form a pivoted parallelogram linkage, and

at least one friction bush of material having a high coefficient of friction interposed between at least one end of one of said connecting elements and the pivot pin which is pivotally connected to said at least one end so as to brake turning movements of this connecting element about its pivot.

4,213,399

RESILIENT UNIVERSAL LOCOMOTIVE SUSPENSION

Eric DeBrick, Bluefield, W. Va., assignor to New River Manufacturing Company, Inc., Glen Lyn, Va.

Filed Oct. 10, 1978, Ser. No. 949,658

Int. Cl.[2] B61F *3/00, 5/16, 5/30, 5/50*

U.S. Cl. 105—157 R **1 Claim**

1. In a vehicle, a frame, a universal wheelset mounting, an axle assembly including an axle housing with a wheel-supporting axle rotatably journaled therein, and wheels on the axle, improved ride suspension means comprising:

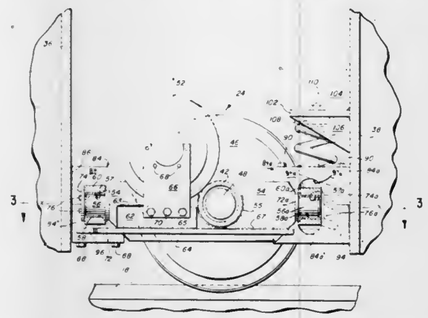
a pair of swivel blocks connected by trunnion means to fore and aft ends of the axle assembly, the trunnion means enabling rocking movement of the axle assembly about a longitudinal axis extending generally longitudinally of the direction of movement of the vehicle;

one of the fore and aft ends of the axle assembly being a hinged end and the other being a tiltable end;

one of the swivel blocks, at the hinged end of the axle assembly, being journaled on the frame for pivotal movement about a fixed horizontal axis transverse to the longitudinal axis enabling the axle assembly to tilt up and down about the fixed horizontal axis while concurrently rocking about the longitudinal axis;

the other of the swivel blocks, at the tiltable end of the axle assembly, being movable up and down with the axle assembly between parallel mounting blocks fastened to the frame adjacent opposite sides of said other swivel block;

guide track means comprising a pair of generally vertical slots formed respectively in said mounting blocks, each slot being characterized by opposed upright marginal



guide walls spaced apart in a direction parallel to said longitudinal axis;

a pair of aligned rollers extending transversely from opposite sides of said other swivel block into said slots for rolling engagement with said marginal guide walls to limit fore and aft movement of the axle assembly while enabling up and down tilting movement about said horizontal axis, and enabling rocking movement about the longitudinal axis; and

spring means acting between the frame and the tiltable end of the axle assembly on each side of the longitudinal axis urging the axle assembly downwardly;

whereby the spring means and said one swivel block at the hinged end of the axle assembly provide a stable, cushioned, three-point support between the frame and the axle assembly;

and whereby further, shocks applied to the axle assembly through the wheels are absorbed by rocking of the axle assembly about the longitudinal axis and by up and down tilting movement of the axle assembly about the fixed horizontal axis, throughout a range permitted by deflection of the spring means.

4,213,400

RESILIENT RAILWAY BODY CENTER PLATE

Richard C. Synder, Michigan City; Roger D. Sims, and George L. Rousseau, both of Munster, all of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Apr. 28, 1978, Ser. No. 900,700

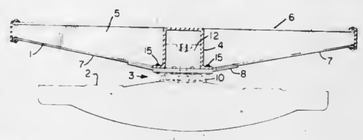
Int. Cl.[2] B61F *5/20*; F16C *17/04, 27/08*; F16F *1/44*

U.S. Cl. 105—199 C **10 Claims**

1. In a railway freight car having a truck bolster with a center bearing bowl including an upwardly generally horizontal bearing portion for supporting the car body center plate of the car body bolster and an upwardly extending peripheral flange portion, an improved car body center plate structure adapted to support a body bolster comprising:

a car body base member supporting the body bolster, said base member having a laterally outward portion having a depending undersurface and a central annular flange portion extending below the outward portion toward the area of the truck bowl,

an annular wear member vertically aligned beneath said base member, said annular wear member having a top surface and a bottom truck bowl bearing surface which mates with the horizontal bearing portion and peripheral flange portion of the truck bowl to permit relative pivotal move-



ment between said wear plate and said truck bowl while preventing lateral movement of said truck bowl relative to said wear plate; and

an annular elastomeric cushion disc vertically aligned between said base and wear member and having an upper surface bonded to said undersurface of the base member and a bottom surface bonded to the top surface of the wear member and being disposed about the periphery of said annular flange portion; whereby,

vertically directed forces through the truck bowl and improved body center plate structure during rail operations are substantially dissipated by vertical reactive compression of said elastomeric disc between said vertically spaced base and wear members and swiveling movement of the truck caused by truck hunting is minimized.

4,213,401

SUPPORT ARRANGEMENT FOR A WORKPIECE TABLE OF A GEAR TESTING MACHINE

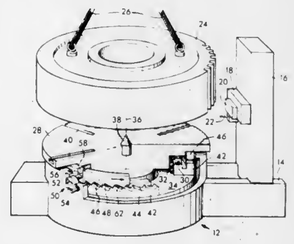
Oskar Maag, Zürich, Switzerland, assignor to Maag Zahnräder & Maschinen Aktiengesellschaft, Zürich, Switzerland

Filed Nov. 6, 1978, Ser. No. 958,095

Claims priority, application Switzerland, Nov. 16, 1977, 13985/77

Int. Cl.[2] A47B *45/00*

U.S. Cl. 108—20 **12 Claims**



1. A support arrangement for a workpiece table of a gear testing machine, comprising:

a machine frame;

a workpiece table;

antifriction bearing means for rotatably mounting the workpiece table at the machine frame for rotation about an essentially vertical axis;

two support rings rotatable towards one another;

said two support rings being arranged coaxially with respect to the antifriction bearing means and between the machine frame and the workpiece table;

said two support rings being provided with a number of pairs of complementary inclined surfaces which ascend opposite to the direction of rotation of the support rings towards one another and engaging said support rings with one another;

said support rings being movable, by relative rotation with respect to one another, out of a rest position where the workpiece table bears on the antifriction bearing means, into a support position where the antifriction bearing means is relieved of the load of the workpiece table.

4,213,402

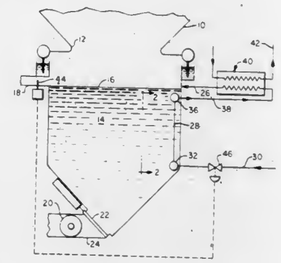
COOLING MEANS FOR A WATER-FILLED ASH HOPPER

Edward L. Kochey, Colebrook, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 8, 1978, Ser. No. 967,744

Int. Cl.[2] F23J *1/02*

U.S. Cl. 110—171 **3 Claims**



1. In combination, a furnace in which coal is burned, outlet means in the bottom of the furnace through which ash is discharged, an ash hopper located beneath the outlet means, water inlet means for introducing water into the ash hopper, an overflow pipe connected to the ash hopper a predetermined height above the bottom of the ash hopper through which water is discharged therefrom, so as to maintain a predetermined level of water therein, temperature sensing means for detecting the temperature of the water in the ash hopper, control means in the water inlet means responsive to the temperature sensing means such that a predetermined temperature of the water in the ash hopper is maintained, first heat exchange means positioned in the ash hopper, second heat exchange means located outside of the ash hopper, the water inlet means being connected to the two heat exchange means such that the water first passes through the first heat exchange means to absorb heat from the ash hopper, and then gives up heat in passing through the second heat exchange means, prior to its discharge into the ash hopper.

4,213,403

INCINERATION PLANT

Janos Gömöri, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Uinterthur, Switzerland

Filed May 22, 1978, Ser. No. 908,110

Claims priority, application Switzerland, Mar. 7, 1978, 2441/78

Int. Cl.[2] F23G *7/00*

U.S. Cl. 110—216 **8 Claims**

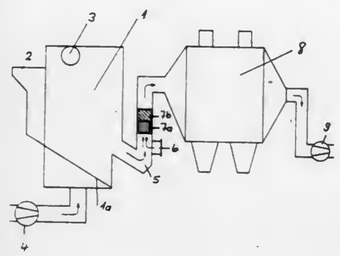
1. An incineration plant comprising

a furnace for burning a fuel while generating a flow of dust-containing combustion gases;

a combustion gas duct communicating with said furnace to exhaust the dust-containing combustion gases from said furnace;

at least one static mixer disposed in said duct to mix a flow of combustion gas passing therethrough to effect a homo-

geneous temperature distribution in the gas and a homogeneous concentration distribution of the dust in the gas, said static mixer including a plurality of guide means for dividing the gas flow into a plurality of sub-flows and for



passing the sub-flows through said mixer in criss-crossing relation to each other; and

a gas purifier communicating with said duct down-stream of said static mixer for removing the dust from the flow of combustion gas.

4,213,404

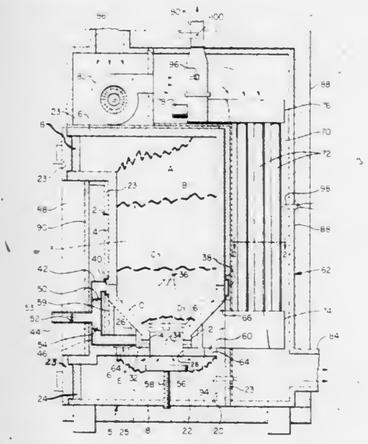
SOLID REFUSE FURNACE

David B. Spaulding, Winchester, Mass., assignor to Energy Alternatives, Inc., Tualatin, Oreg.

Continuation-in-part of Ser. No. 781,540, Mar. 28, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,352

Int. Cl.[2] F23G *5/00*

U.S. Cl. 110—229 **21 Claims**



1. A plural-chamber fire box comprising:

first refractory means having surfaces defining an upper chamber in which solid fuel may be stored, dried, gasified and partially combusted, at least a portion of said upper chamber converging in a funnel-like fashion to an opening at the bottom of said upper chamber;

second refractory means having surfaces defining a lower chamber which communicates with the upper chamber through said opening,

additional refractory means forming a structure which surrounds and contains a lower portion of the upper chamber and said opening;

means for introducing primary combustion air into the converging region of the upper chamber such that, in the presence of heat, various degrees of partial combustion may take place in said upper chamber;

means for introducing secondary combustion air at the periphery of the opening so that complete combustion of gases may take place in said opening and the lower chamber;

means located in the lower chamber below said opening for supporting (a) hot char at the bottom of the upper chamber so that the hot char serves as a gas igniter and (b) regulating the velocity and volume of total flow of air and combustion products through the firebox;

means comprising at least part of said additional refractory means defining a passageway for exiting unreacted air and hot gaseous combustion products from the lower chamber so that the heat of said unreacted air and gaseous combustion products assists in maintaining the temperature above that required for complete combustion of smoke, creosote, and other noxious emissions; and

insulation disposed about said first, second and additional refractory means for thermally isolating the outside surfaces of the upper and lower chambers from surrounding structures in a manner which does not restrict thermal communication between said upper and lower chambers.

4,213,405

WATER-COOLED GRATE

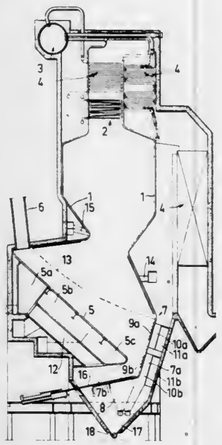
Per-Arne Lis, and Karl A. Olausson, both of Järfälla, Sweden, assignors to Gotaverken Anteknik AB, Goteborg, Sweden

Filed Aug. 28, 1978, Ser. No. 937,176

Claims priority, application Sweden, Sep. 5, 1977, 7709940

Int. Cl.[2] F23G *5/00*

U.S. Cl. 110—234 **6 Claims**



1. A furnace for the combustion of solid fuel comprising:

a first, inclined grate portion having an upper end and a lower end, the upper end adjacent to a side wall defining the furnace, said first grate portion extending outwardly below a combustion space;

means for supplying fuel to the upper end of said inclined, first grate portion;

an angular, second grate portion spaced apart from the lower end of said first grate portion and comprising a first, mainly upright part facing said first grate portion, and a second, mainly horizontal part extending backwards, below said first grate portion to receive fuel residues therefrom;

means for supplying combustion air to said first and said second grate portions; and

a passageway for conducting combustion gases from said second part of said second portion to the upper end of said first grate portion.

4,213,406

DRAFT INTERRUPTER OF A GAS-FIRED BOILER INSTALLATION

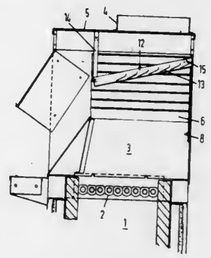
Louis H. Widdershoven, Kerkrade-West, Netherlands, assignor to Raypak Produkten B.V., Kerkrade, Netherlands

Filed Sep. 26, 1978, Ser. No. 945,908

Claims priority, application Netherlands, Oct. 5, 1977, 7710927

Int. Cl.[2] F23B *5/00*

U.S. Cl. 110—326 **9 Claims**



1. A gas-fired boiler installation with control of the supply of combustion components, provided with a combustion space that upwardly is in communication with a flue and which is confined at the bottom side by a burner bed having atmospheric burners with interposed venturi tubes and passages for secundary air arranged between the elements of the burner bed, whereby between the combustion space and the flue there is disposed a draft interrupter, to which at the top side in the central zone thereof is connected the flue, characterised by two baffle grates, each grate extending obliquely upwardly towards and to adjacent the top end of one of two oppositely disposed sides of the draft interrupter, and the grate bars of which extend substantially parallel to said sides and, seen in cross section, extend upwardly towards the central zone of the draft interrupter.

4,213,407

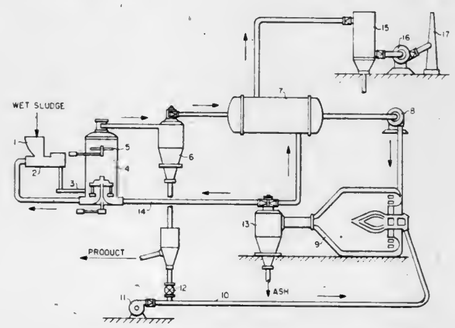
FLASH DRYING SLUDGE DERIVED FUEL PROCESS

Kenneth N. Headley, Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Dec. 27, 1978, Ser. No. 973,770

Int. Cl.[2] F23G *5/04*

U.S. Cl. 110—346 **10 Claims**



1. A process for disposing of sewage sludge comprising the steps of:

(a) introducing the sludge into a direct fired roller mill for drying, pulverizing, and classification, thereby producing a dried product and a water vapor containing exhaust gas,

(b) conveying said product from the mill by the vapor exhaust gas stream of the mill to a product collector wherein a portion of said product is removed and supplied to a furnace as fuel,

(c) superheating said vapor exhaust gas stream leaving the product collector prior to injection into said furnace by heat exchange in a vapor preheater with the furnace exhaust gases, and

(d) conducting a portion of said furnace exhaust gases to said mill for heating and drying said sludge.

4,213,408

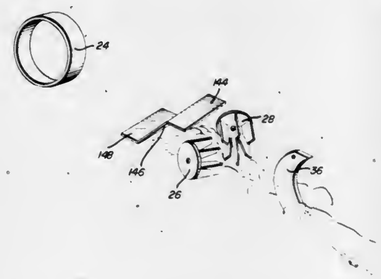
COMBINATION RIPPER, MIXER AND PLANTER

Wilbur C. West, and James E. Atkinson, both of Pine Bluff, Ark., assignors to W. & A. Manufacturing Co., Inc., Pine Bluff, Ark.

Filed Jul. 7, 1978, Ser. No. 923,257

Int. Cl.[3] A01C *5/06;* **A01B** *13/02*

U.S. Cl. 111—85 **6 Claims**



1. In an agricultural implement for working and planting soil, said implement having a cross bar adapted for pulling by a prime mover, the improvement comprising, in combination, a parabolic shank trippably pivotably attached to said cross bar, a pair of mixer wheel assemblies behind and on opposite sides of the shank and adjustably and symmetrically attached to said cross bar, a press pan behind the mixer wheels and flexibly attached to said cross bar, and a parallel linkage assembly attached to said cross bar to pull in parallel spaced relationship thereto a planter bar to which planting means is attached, wherein each of said mixer wheel assemblies comprises an open center mixer wheel and adjustable mounting means, said mixer wheel comprising a circular disk and a plurality of generally axially extending planar blades welded to a face of the disk and which do not extend beyond the circumference of the disk, the disk being held at the center of the opposite face by said mounting means with the plane of said disk forming an acute angle with respect to said cross bar to aggressively mix said soil, and said blades generally paralleling and being slightly laterally offset from adjacent radial planes of said disk to facilitate the blades entering said soil and said adjustable mounting means including spring means yieldingly biasing said disks downwardly with sufficient force to enable the lower peripheral portions thereof to penetrate the soil ripped by said shank, whereby said mixer wheels pulverize and aggressively mix the ripped soil and form a small raised seed bed each blade being notched so that the outer end portions of the inner blade edges fall substantially upon the frustum of an imaginary cone opening outwardly from and centered about a line perpendicular to the center of the disk.

4,213,409

NEEDLE BAR SUPPORT

Roger J. Ross, Mont St-Gregoire, Canada, assignor to The Singer Company, Stamford, Conn.

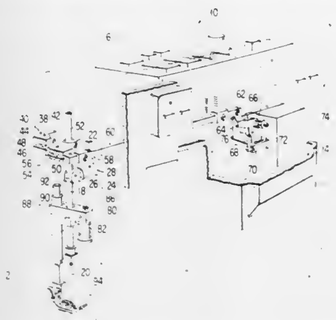
Filed Oct. 5, 1978, Ser. No. 948,851

Int. Cl.[2] D05B *3/02*

U.S. Cl. 112—158 R **3 Claims**

1. In a sewing machine, the combination comprising a needle bar, a needle affixed to the lower end of the needle bar, upper

and lower bearings each of which has an outer spherical surface and in which the needle bar is supported for endwise reciprocation, a fixed support including bifurcated portions on the frame of the machine, a gate having one end pivotally mounted between the bifurcated portions of the fixed support and including a spherical seat which supports the upper bear-



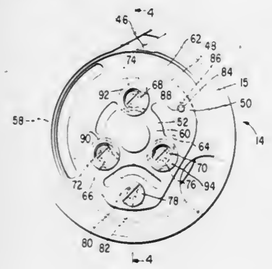
ing, a bracket supported at opposite ends in the machine and including a spherical seat which supports the lower bearing, a link pivotally mounted on the gate, and driving means operably connected to the link and effective through said link to impart pivotal reciprocating movements to the gate resulting in zig-zag motion of the lower end of the needle bar and needle affixed thereto.

4,213,410

ADJUSTABLE HOOK FOR A SEWING MACHINE

Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 9, 1979, Ser. No. 19,068
Int. Cl.[2] D05B *57/14*
U.S. Cl. 112—228 **2 Claims**



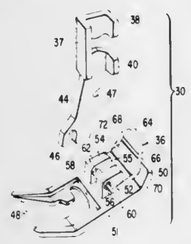
1. In combination, a sewing machine hook including an adjustable hook body with a beak for seizing a loop of needle thread and a bottom flange with a central opening therein, a shaft which extends through the opening, a pair of clamping plates axially and radially restrained on the shaft, the plates being disposed in sliding contact with opposite sides of the hook body flange bottom to permit radial and circumferential adjustments of the hook body relative to the shaft axis when unclamped, and means for tightly clamping the plates to the hook body flange and shaft for affixing the hook body and beak in an adjusted position with respect to the shaft axis, the means for clamping the plates to the hook body flange including a fastener to secure the hook body and hook beak in a radially adjusted position, and other fasteners to establish a positive driving connection between the hook body and shaft, one of the plates having a pin thereon, and the hook body flange including parallel elongated slots which receive the pin and said first mentioned fastener to guide radial adjusting movements of the hook body.

4,213,411

READILY ATTACHABLE AND DETACHABLE SOLE PLATE FOR A SEWING MACHINE

Warren D. Knowles, Clark, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jul. 30, 1979, Ser. No. 62,213
Int. Cl.[3] D05B *29/12*
U.S. Cl. 112—240 **6 Claims**



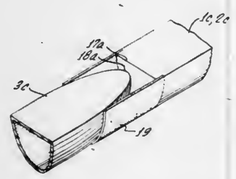
1. A presser device for a sewing machine having a presser bar thereon, said presser device comprising a shank which detachably connects with the presser bar and has both a notch in the rear edge thereof and a slot at the bottom end; a sole plate including a toe end portion, a heel end portion, a work engaging portion therebetween, and a hinge pin mounted on the work engaging portion; a latching spring of resilient wire for attaching the sole plate to said shank, the spring including spaced apart side portions, a cross piece at one end interconnecting the spaced apart side portions, and aligned fingers at the opposite end substantially parallel to the cross piece, the fingers being pivotally connected to the sole plate, said side portions of the spring including a bend which forms knees engageably by the rear end portion of the sole plate for causing the cross piece to be snapped into said notch at the rear edge of the shank while the hinge pin on the sole plate is held up in the slot in the bottom of the shank, and the sole plate to be thereby attached to the shank, the hinge pin being movable out of said slot by pivotal movement of the sole plate on the knees whereupon the cross piece of the spring may be removed from the notch in the shank and the sole plate detached therefrom.

4,213,412

METHOD AND APPARATUS FOR MINIMIZING DRAG OF PLURAL-HULL CRAFT

Robert S. Jamieson, 147 N. Catalina St., Los Angeles, Calif. 90004

Continuation of Ser. No. 612,630, Sep. 12, 1975, abandoned, which is a division of Ser. No. 456,846, Apr. 1, 1974, Pat. No. 3,933,110. This application Aug. 17, 1977, Ser. No. 825,441
The portion of the term of this patent subsequent to Jan. 20, 1993, has been disclaimed.
Int. Cl.[2] B63B *35/00*
U.S. Cl. 114—61 **15 Claims**



1. A method of minimizing water drag of longitudinally

aligned buoyant hulls without the use of flaps, filler elements or extra fairings, comprising the following steps:

(a) making the stern of a forward hull and the bow of an after hull of generally complementary conjugate shape, whereby there may be a close fit between said stern and bow even when there is some relative vertical and horizontal motion between the aligned hulls, thereby streamlining the flow of water in the region of adjacency of said hulls, and

(b) rotating said forward and after hulls in parallel unison, such that the longitudinal axes of said hulls are maintained mutually parallel during rotation, through substantially equal angles in the horizontal and in the same direction of rotation until said hulls are brought into substantial longitudinal alignment with said bow of said after hull in close proximity astern of said forward hull, whereby said alignment in close proximity is effected without relative longitudinal motion between said hulls.

4. A substantially hydrodynamically continuous buoyant structure comprising:

(a) at least one forward and one after hull, said hulls being fitted with strong hull attachment means,

(b) propulsion means,

(c) interconnecting means connected to said hull attachment means and to said propulsion means, whereby said hulls may be caused to be simultaneously rotated into substantial longitudinal alignment in close proximity wherein said interconnecting means cause the longitudinal axes of said hulls to be mutually parallel during rotation, and also whereby said hulls may be caused to be propelled in unison, and

(d) means for streamlining the contours of said forward hull into said after hull,

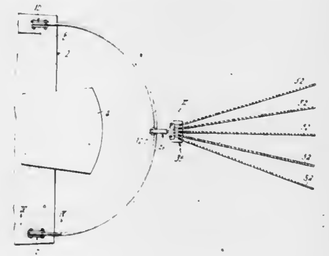
said streamlining means being capable of allowing substantial relative lateral motion between said hulls when said hulls are in close proximity.

4,213,413

WATER SKI TOW ASSEMBLY

Albert L. Courtney, Rte. #2, Lamar, Mo. 64759

Filed May 17, 1978, Ser. No. 907,025
Int. Cl.[2] B63B *21/56*
U.S. Cl. 114—253 **2 Claims**



1. A water ski tow assembly comprising:

a. a generally semi-circular rail,

b. means for attaching the ends of said rail to the rearward portion of a tow boat to project rearwardly from the stern of said boat,

c. a carriage mounted on said rail for rolling movement therealong,

d. a rope hitch member mounted on said carriage and to which one end of a tow rope may be connected, said tow rope having an enlargement affixed to the end thereof to be attached to said hitch member, and said hitch member comprising a flat plate having an aperture formed therethrough, said aperture being elongated in a direction generally radial to said rail, the end portion of said aperture closest to said rail being sufficiently wide to pass said rope and said rope enlargement therethrough, and the end portion thereof remote from said rail being sufficiently narrow to admit said rope but not said enlargement, and

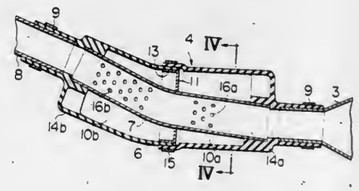
e. a locking device consisting of a lock plate having at least one elongated slot, and a fastener engaged in said slot and said hitch plate for movably mounting said locking device on said hitch plate, said locking device being manually movable between positions in which it respectively does and does not overlie the wider end portion of said hitch plate aperture.

4,213,414

ENGINE EXHAUST MEANS FOR MOTOR PROPELLED BOATS

Masato Sato, Akashi, and Takemi Inoue, Kakogawa, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jan. 4, 1978, Ser. No. 866,910
Claims priority, application Japan, Jan. 13, 1977, 52-3602[U]
Int. Cl.[2] F01N *1/00*
U.S. Cl. 115—73 **1 Claim**



1. Motor-propelled boat comprising a boat hull, internal combustion engine means mounted on said boat hull through resilient mounting means and adapted to drive propulsion means, said engine means including body means and exhaust means connected with said body means, said exhaust means including exhaust pipe means rigidly connected at one end with the engine body means and at the other end with an expansion chamber means, noise attenuating means which includes a housing means having one end connected to the expansion chamber means and perforated pipe means disposed in said housing means and being supported by the housing means, said perforated pipe means being in communication with said expansion chamber means and having perforations so that resonance chamber means is formed between the housing means and the pipe means, said noise attenuating housing means including a first and second housing means, said first housing means being constructed entirely of resilient rubber material and connected at one end with said expansion chamber means such that engine vibrations transmitted through the exhaust pipe means are absorbed thereby and at the other end with said second housing means, the other end of said second housing means being connected with outlet pipe means, said noise attenuating means further including partition wall means located at a position where the first and second housing means are connected together, said partition wall means extending radially between the housing means and the perforated pipe means to define a plurality of resonance chamber means.

4,213,415

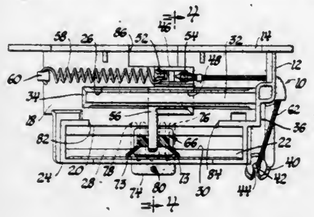
ANTIRATTLE STRUCTURE FOR A TRANSMISSION RATIO INDICATOR ASSEMBLY

Thomas F. Coha, Flint, and Marvin L. Owen, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1979, Ser. No. 34,598
Int. Cl.[2] G01D *11/10*; G09F *9/40*
U.S. Cl. 116—28.1 **1 Claim**

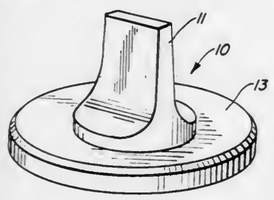
1. An improvement in transmission ratio indicators having a slide member guided in a housing for linear movement by the

operator and a follower member driven by the slide member and being constrained in a slot in the housing for selective movement within a constant radius recess, wherein the improvement comprises; a pair of outwardly extending spring



arms formed integrally with said follower and slidably contacting the housing in the constant radius recess external to the slot to preload the follower to one side of the slot and to prevent the follower from vibrating in the slot.

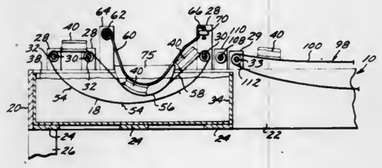
4,213,416
MANIPULATING ROTARY CONTROL DEVICE
Michael R. Klingler, 1238 S. Courtland, Park Ridge, Ill. 60068
Filed Feb. 12, 1979, Ser. No. 11,202
Int. Cl.[2] G12B *11/02*
U.S. Cl. 116—309 **21 Claims**



1. A manipulating rotary control device comprising:
a dial having a peripheral portion;
a hub located inwardly of said dial peripheral portion and defining a socket arranged for selective removable coaxial mounting thereof onto a control shaft end, said dial and hub being arranged to provide access to said socket from one facial side of said dial;
a hollow manipulating knob formed of a thermal insulation, light transmitting material and having a connecting portion connected to said dial for effecting rotation of said dial as a result of manual rotation of said knob about the axis of rotation of said socket, the inner surface of the knob being provided with a reflective coating; and
means for interconnecting said knob and said hub for rotating about said socket about the axis thereof as an incident of said manual rotation of said knob, said knob including a portion covering said hub at the opposite facial side of the dial.

4,213,417
APPARATUS FOR APPLYING LIQUID COATING TO FOOD PRODUCTS
James R. Ellis, Cypress, Calif., assignor to LeRoy Enterprises, Inc., Los Alamitos, Calif.
Filed Sep. 19, 1978, Ser. No. 943,675
Int. Cl.[2] B05C *3/10*
U.S. Cl. 118—30 **3 Claims**

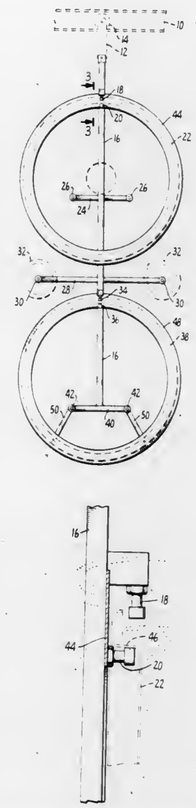
1. Apparatus for applying a liquid coating to food products, said apparatus comprising:
a transversely extending container for liquid material;
a continuous dipper chain extending across the width of said container, operative to travel in a generally longitudinal direction, and characterized by a multiplicity of interstices, said dipper chain dipping down into said container to define a submerged run and rising out of said container to define a drip run, said chain further including carrier means for engaging and carrying products placed upon said dipper chain through said submerged run and said drip run;
restraining means including a continuous sheet of material extending across the width of said container, fixed in



position during normal operation and located above said submerged run of said dipper chain, said sheet of material constituting a squeegee and pressure plate operative upon the tops of products placed upon said dipper chain and moving through said submerged run to control the thickness of said liquid material upon said products and to prevent rising of products buoyant in said liquid material; and
drive means for operating said dipper chain.

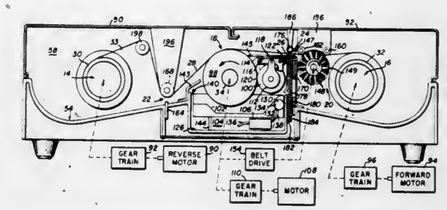
4,213,418
ENLONGATED BAR SUPPORT MEANS FOR THE SPRAY COATING AND CONVEYING OF DRUM PARTS
Donald E. Oswald, Foster City, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.
Filed Mar. 13, 1978, Ser. No. 885,773
Int. Cl.[2] B05B *5/02*
U.S. Cl. 118—635 **2 Claims**

1. Support means to stably position a drum end, having a peripheral axial shoulder and radial flange, vertically for the application thereto of a coating material comprising an elongated bar and means to dispose the bar in a vertical position, hanger means carried by the bar to receive and retain the peripheral edge of the drum end, a cross-member carried by the bar below said hanger means, magnet means carried by the cross-member to engage the drum end and in conjunction with said hanger means stationarily position the drum end in a generally vertical plane for the application thereto of coating material, an annular back-up member for said drum end secured to said bar, said member being positioned substantially concentrically with respect to a drum end positioned on such support means and having an outer diameter greater than the diameter of the drum end and an inner diameter less than the peripheral shoulder of the drum end, all of said parts being formed of electrical conductor material and being connected to ground, whereby said back-up member functions as an over-spray shield to prevent the deposition of electrostatically



charged coating material onto the shoulder and flange area of the drum end adjacently disposed to the back-up member.

4,213,419
APPARATUS FOR CLEANING AND RE-INKING PRINTER RIBBONS
Albert N. Nicholson, San Jose, Calif., assignor to Computer Ribbon Systems, Inc., San Jose, Calif.
Division of Ser. No. 676,504, Apr. 13, 1976, Pat. No. 4,088,800, which is a continuation-in-part of Ser. No. 648,182, Jan. 12, 1976, abandoned. This application May 8, 1978, Ser. No. 904,020
Int. Cl.[2] B05C *1/08*
U.S. Cl. 118—670 **12 Claims**



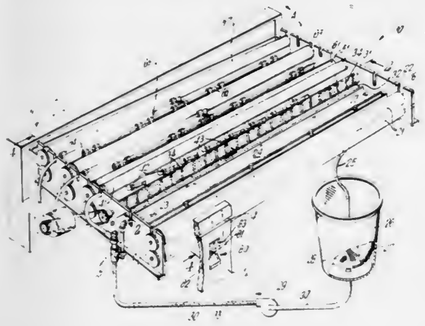
1. An apparatus for cleaning and re-inking a printer ribbon carried on first and second reels and having foreign matter thereon comprising:
a frame;
a first pair of rotatable spindles mounted in said frame so as to define a first axis and capable of holding the first reel;
a second pair of rotatable spindles mounted in said frame so as to define a second axis parallel to said first axis, said second pair of spindles being capable of holding the second reel;
first means for rotatably driving said first and second pairs of spindles in a preselected angular direction to cause the printer ribbon to unwind from one of said reels and wind onto the other of said reels;
an elongated inking roller rotatably mounted in said frame between and parallel to said first and second axes for contacting and applying ink to the printer ribbon;
a metering roller rotatably mounted in said frame parallel to said inking roller for metering ink onto said inking roller;
a trough disposed beneath said inking roller for containing ink and providing such ink to said inking roller;
second means for supplying ink to said trough;
third means rotatably mounted in said frame intermediate said second pair of rotatable spindles and said metering roller for contacting, forcibly removing the foreign matter from and opening the fibers of the ribbon;
fourth means for rotating said inking roller and for rotating said third means in an angular direction opposite to the direction of rotation of said inking roller and of said second pair of spindles when the ribbon is being accumulated on said first reel, whereby when the first and second reels are held by said first and second pairs of spindles, respectively, and said first means drives said spindles in a direction such that the ribbon is accumulated on said first reel, said third means forcibly removes foreign matter from the ribbon and serves to clean and to open the fibers of the ribbon, and whereby continued rotation causes said inking roller to contact and apply ink to the cleaned ribbon, the ink serving to penetrate into the opened fibers of the ribbon;
sensing means for sensing holes in the ribbon as it moves from one reel to the other and including
a source of light positioned adjacent the path of one surface of the moving ribbon such that a beam of light from the source is directed against said one surface, and
light detector means positioned adjacent the opposite surface of the moving ribbon so that any holes in the ribbon allow light from the source to reach said detector; and
fifth means for stopping the rotation of said spindles when the light detector senses light passing through a hole in the ribbon.

4,213,420
APPARATUS FOR PROCESSING A PARTICULATING PRINTING PLATE
Peter V. Martino, 9960 65th Rd., Rego Park, N.Y. 11374
Filed Aug. 9, 1978, Ser. No. 932,370
Int. Cl.[2] G03D *5/04;* **B05C** *5/00*
U.S. Cl. 118—713 **24 Claims**

1. An apparatus for processing a particulating printing plate having an image carrying coating on one face thereof in a horizontal, continuous, through-put manner comprising:
an outer casing having an entrance end and an exit end, and a pair of opposed side portions, one of said side portions being disposed at an upward tilt relative to the other side portion;
a pair of rotatable entry rollers disposed one above the other in nip contact adjacent the entrance end of the outer casing for receiving the plate and conveying it in a horizontal direction;
first spray means disposed adjacent the downstream end of said entry rollers for laterally spraying developer solution onto the image carrying surface of the plate as the plate leaves said entry rollers;
first and second rotatable brush rollers for removing unwanted coating on said plate, said brush rollers being

disposed in nip contact with one another adjacent said first spray means, said first brush roller being in contact with the particulating image carrying coating on said one face of the particulating printing plate, said first brush roller including a spiral squeege member disposed below the outer surface of the pile of said first brush roller, which squeege member functions to provide a screwing effect for removing said developer solution and the particulate off the plate in the direction of said lateral flow of developer solution;

second spray means disposed adjacent the downstream end of said brush rollers for spraying developer solution onto the image carrying surface of the plate after the plate leaves the nip of said first and second brush rollers;



a first pair of squeege rollers disposed adjacent said second spray means, one above the other to form a nip for receiving the plate, removing excess solution from the plate and transporting the plate in a horizontal direction towards the exit end of the outer casing;

means for rotating said entry rollers and said squeege rollers at substantially the same speed in the direction of travel of the plate;

means for individually rotating said first brush roller in a direction opposite to that of the travel of the plate, and at a speed greater than that of said entry rollers; and

means for rotating said second brush roller in a direction opposite to that of said first brush roller and at a slower speed than that of said first brush roller.

4,213,421

METHOD OF AN INSTALLATION FOR BREEDING SEA-WATER CREATURES IN TANKS

K. H. Droese, Weisenhü ttenstr. 17, 6000 Frankfurt am Main and Jürgen Flüehter, Am Gasteig 3, 8121 Pähl, both of Fed. Rep. of Germany

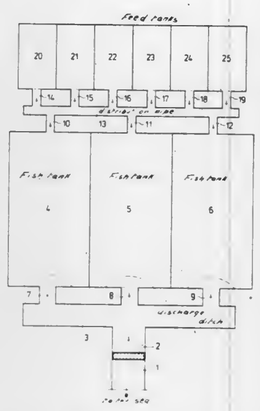
Filed Sep. 28, 1977, Ser. No. 837,109

Claims priority, application South Africa, Oct. 4, 1976, 76/5924

Int. Cl.[2] A01K *61/00*

U.S. Cl. 119—3 **14 Claims**

6. An installation for breeding sea-water creatures in tanks, which includes in combination: feed tanks for receiving and growing algae and planktons, first conduit means establishing fluid communication between said feed tanks and a source of sea-water for conveying sea water to said feed tanks, seaside fish tanks, second conduit means for selectively conveying planktons from said feed tanks into said fish tanks, said feed tanks being located inland at a higher level than said fish tanks, and a hatchery including container means for receiving and



accommodating breeding stock of the sea-water creatures to be bred and to be introduced into said fish tanks therewith.

4,213,422

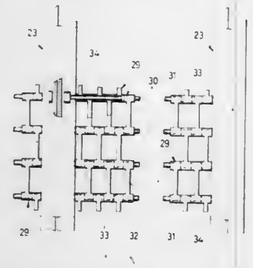
GRATED FLOOR CONVEYOR FOR POULTRY ENCLOSURE

Hans J. Nagel, Contrescarpe 72, D-2800 Bremen, Fed. Rep. of Germany, and Egon Schumacher, Barnstorf, Fed. Rep. of Germany, assignors to Hans J. Nagel, Bremen, Fed. Rep. of Germany

Filed Jul. 27, 1978, Ser. No. 928,497

Int. Cl.[2] A01K *31/04*

U.S. Cl. 119—21 **9 Claims**



1. In a housing enclosure for the breeding and fattening of poultry or the like and including means for feeding and watering the poultry and an upper floor for the poultry spaced above an underlying floor bed, the improvement comprising:

(a) an upper floor formed as a series of endless, rotatable conveyor belts whose upper run serves as a floor for the animals, said upper floor being in the form of a grate and comprising a plurality of synchronously movable adjacent grate-like bands located substantially in a plane parallel to the floor bed, said grate-like bands comprising a plurality of pivotably mounted individual elements such that said bands are articulated;

(b) support means comprising stationary guide rails extending between adjacent bands, said guide rails having an upper covering; and

(c) a catching grate provided on the upper floor which is movable together with said upper floor for preventing the poultry from leaving the floor.

4,213,423

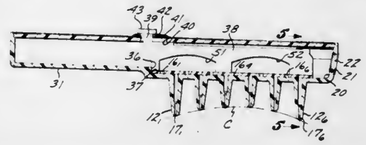
POWDER DISPENSER

Henry A. Bryan, 8142 Ridgefield Dr., Huntington Beach, Calif. 92646; Walter H. Martin, 9902 Cleverdale Ave., Westminster, Calif. 92683, and Richard L. Konves, 1193 Dorset La., Costa Mesa, Calif. 92626

Filed May 1, 1978, Ser. No. 901,463

Int. Cl.[3] A01K *13/00;* **A45D** *24/22*

U.S. Cl. 119—86 **3 Claims**



1. A powder dispenser for use in applying powder by gravity onto the skin of a furry animal as the dispenser is transversely disposed to the animal and moved longitudinally relative to the animal, said powder dispenser comprising:

a. an elongate hollow body that includes a top and a bottom, said body including a powder dispensing segment and a handle segment that are coaxially aligned;

b. a plurality of longitudinally spaced conical nozzles of varying lengths that project downwardly from said bottom of said dispensing segment, said nozzles having bores extending therethrough that communicate with the interior of said dispensing segment, said nozzles of such length that the free ends thereof are aligned in an arcuate configuration that conforms generally to the transverse convex configuration of said animal's back, both said dispensing segment and handle capable of having said powder stored therein;

c. an elongate plate situated in said dispensing segment and slidably supported on said bottom thereof, said plate having a plurality of longitudinally spaced openings therein that are axially aligned with said bores in said nozzles when said plate is moved from a first to a second position in said dispensing section, with powder in said dispensing section falling by gravity through said openings and bores to be dispensed onto the fur of said animal when said plate is in said second position and said body is moved longitudinally relative to the body of said animal;

d. articulating means connected to said plate and extending to the exterior of said body for moving said plate to either said first or second position, said openings and bores being out of communication when said plate is in said first position, and said powder being maintained within said body, said articulating means including:

1. an elongate spline secured to said plate and extending upwardly therefrom;

2. a tab secured to said spline, said tab extending upwardly through an elongate slot in said top; and

3. sealing means operatively associated with said tab and slot to prevent powder being discharged from the interior of said body through said slot;

e. a cover removably secured to said dispensing section of said body, said cover when mounted on said dispensing section forming a part of said top, and said cover when removed allowing the interior of said hollow body to be filled with said powder.

4,213,424

SMALL ANIMAL HOLDER

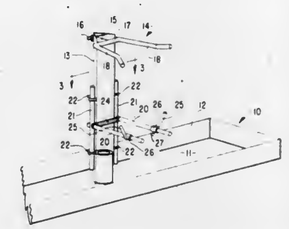
Carl A. Hosch, and Michael L. Hosch, both of R.R. 2, Parkersburg, Iowa 50665

Filed Sep. 11, 1978, Ser. No. 941,124

Int. Cl.[2] A01K *29/00*

U.S. Cl. 119—98 **8 Claims**

1. A holder for a small animal comprising a base, support means mounted on said base and extending upwardly therefrom, yoke means adapted to receive the neck of said animal mounted on said support means and vertically spaced from said base whereby said animal can be suspended in said yoke means, arm means pivotally mounted on said support means between said yoke means and said base, said arm means being thereby



adapted to engage the sides of said animal to hold the animal steady in said yoke with said arm means being swingable so that the space between them is variable to provide for varying sizes of animals, and with said arms being biased toward each other.

4,213,425

INTERNAL COMBUSTION ENGINE FUEL INJECTION CONTROL

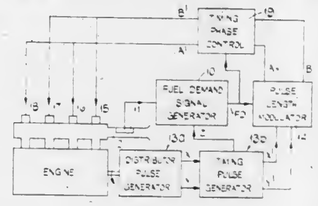
Martin A. Read, Redditch, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 7, 1977, Ser. No. 831,311

Claims priority, application United Kingdom, Sep. 21, 1976, 39026/76

Int. Cl.[2] F02M *51/00;* **F02B** *3/00*

U.S. Cl. 123—478 **5 Claims**



1. An internal combustion engine fuel injection control comprising means for generating an electrical fuel demand signal varying in accordance with at least one engine parameter, at least one injector for injecting fuel into the engine, means for generating electrical pulses for operating said injector, pulse length modulation means for modulating the duration of said pulses and having a modulating input connected to receive said fuel demand signal, whereby the quantity of fuel injected at each operation of the injector is determined by said fuel demand signal, and means synchronising the injector operation with the engine operating cycle and including phase varying means sensitive to the fuel demand signal for varying the timing of commencement of injection in accordance with the fuel demand signal.

4,213,426

SHROUDING FOR ENGINE MOUNTED COOLING FAN

Richard E. Longhouse, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

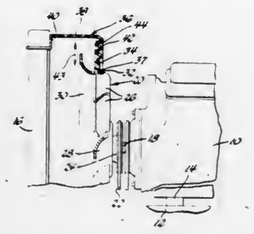
Filed Nov. 9, 1978, Ser. No. 959,432

Int. Cl.[2] F01P *7/10;* **F04D** *29/40*

U.S. Cl. 123—41.49 **2 Claims**

1. For use with a vehicular engine and radiator, an engine cooling system comprising a fan including a plurality of blades and rotatably mounted on said engine intermediate said engine and said radiator, a rotating shroud secured to the outer tips of

said blades and defining an outer periphery, a stationary shroud assembly including a mounting portion attached to said radiator, and a flexible shroud portion extending from said mounting portion into close proximity to a predetermined annular



portion of said outer periphery of said rotating shroud, the distal end of said flexible shroud portion being adapted to being intermittently contacted by the adjacent rotating surface of said rotating shroud for temporary deflection of said flexible shroud portion upon dynamic movement of said fan.

4,213,427

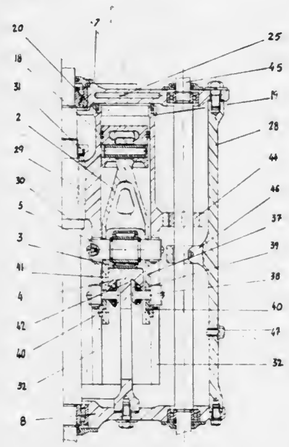
ROTARY ENGINE

Alfonso Di Stefano, 1413 Wayburn, Grosse Pointe Park, Mich. 48236

Continuation of Ser. No. 757,826, Jan. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 617,696, Sep. 29, 1975, abandoned. This application Jun. 16, 1978, Ser. No. 915,982

Int. Cl.[2] F02B *57/00*

U.S. Cl. 123—43 AA **17 Claims**



1. In a rotary internal combustion engine having an output shaft, a cylinder block including at least one cylinder, a housing in which the output shaft and the cylinder block are rotatably mounted with the axis of the cylinder extending parallel to and spaced radially from the axis of rotation of the cylinder block, means for drivingly connecting the cylinder block to the output shaft, a piston reciprocably mounted in the cylinder, a rod connected to the piston, cam means engageable by the rod for defining reciprocating movements of the piston and converting said movements into rotary motion of the cylinder block, said cam means comprising an annular cam member carried by the housing in concentric relation to the axis of rotation of the cylinder block and having axially opposed cam surfaces formed on a T-shaped free end in symmetrical relation with respect to the circular plane defined by rotation of the cylinder axis about the axis of rotation of the cylinder block, and guide means on the cylinder block for defining movement of the piston rod relative to the cam means, the improvement wherein:

the piston rod is provided with radially inner and outer separate portions straddling said free end of the cam member;

the cylinder block includes radially inner and outer skirts respectively positioned adjacent to said inner and outer portions of the piston rod, said guide means comprising radially inner and outer guide tracks formed in said inner and outer skirts, respectively, said guide tracks each having a pair of surfaces spaced circumferentially of the cylinder axis and adapted to define a path of movement parallel to the cylinder axis for the inner and outer portions of the piston rod, said outer guide track including a guide surface facing the cylinder axis and extending parallel thereto;

anti-friction roller means are carried by said inner and outer portions of the piston rod for engaging said guide track surfaces and maintaining said piston rod portions in axially and radially defined relation to said cam means;

a drive roller is mounted on an axle carried by said inner and outer piston rod portions and engageable with a drive cam surface on said cam means and facing the cylinder; and

radially inner and outer retaining rollers are carried by axles on said inner and outer rod portions, respectively, each of said retaining rollers being engageable with one of a pair of retaining cam surfaces on said cam means and facing oppositely from the cylinder.

4,213,428

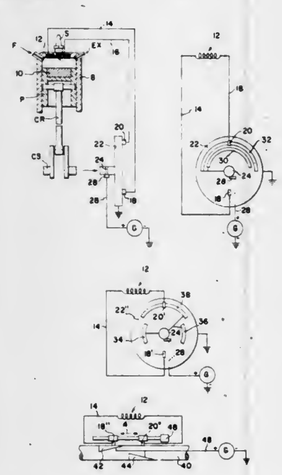
ELECTROMAGNETIC AUGMENTATION OF INTERNAL COMBUSTION ENGINES

Phecell Bradley, 214 E. Genesee, Flint, Mich. 48505

Filed Feb. 22, 1977, Ser. No. 770,751

Int. Cl.[2] F02B *71/00*

U.S. Cl. 123—46 E **5 Claims**



1. In an internal combustion engine having a paramagnetic engine block, including a paramagnetic engine head, and a paramagnetic piston slidably mounted within a cylinder of said paramagnetic engine block for movement within said cylinder in response to cyclic combustion of fuel within said engine;

said engine being operably connected to a generating system;

said generating system comprising generating means operably connected to said engine and to battery storage means;

wherein the improvement comprises:

a permanent magnet fixedly mounted within said paramagnetic piston, with the axis of magnetic polarity of said permanent magnet being disposed parallel to the direction of movement of said paramagnetic piston;

electromagnetic coil means fixedly mounted in said paramagnetic engine head for selectively generating a magnetic field for interacting with the magnetic field of said permanent magnet;

first means connecting said electromagnetic coil means to said generating system, said first means being synchronized with the movement of said paramagnetic piston, so that said electromagnetic coil means exerts an attracting force, at least intermittently, upon said permanent magnet when said permanent magnet is approaching said electromagnetic coil means, and said electromagnetic coil means exerts a repelling force, at least intermittently, upon said permanent magnet when said permanent magnet is moving away from said electromagnetic coil means;

said paramagnetic piston has a plural stroke cycle, wherein at least a portion of a first stroke is a compression stroke, and at least a portion of a second stroke is a power stroke; and

said first means connects said electromagnetic coil means to said generating system so that said electromagnetic coil means exerts an attracting force upon said permanent magnet only during a predetermined portion of said compression stroke, and exerts a repelling force upon said permanent magnet only during a predetermined portion of said power stroke.

4,213,429

METHOD AND DEVICE FOR AUTOMATICALLY ADJUSTING THE SPARK ADVANCE OF A CONTROLLED IGNITION ENGINE

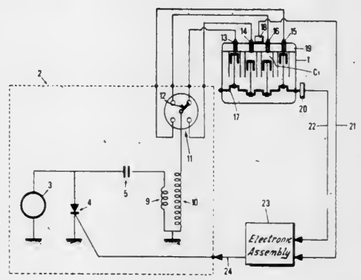
Andre Douaud, Puteaux, and Joseph Rialan, Meudon, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 25, 1978, Ser. No. 945,711

Claims priority, application France, Sep. 26, 1977, 7729105

Int. Cl.[2] F02P *5/04*

U.S. Cl. 123—414 **6 Claims**



1. A method for automatically adjusting the ignition timing of a controlled ignition engine to the optimum value of this timing corresponding to the maximum output and efficiency of the engine, wherein the ignition timing is so adjusted that the pressure peak in at least one cylinder occurs at a predetermined angular position of the drive shaft of the engine, this method comprising:

determining the angular position of the drive shaft,

detecting the accelerations at a location on the cylinder head of the engine and providing, during at least a selected fraction of the rotation of the drive shaft and in a low frequency band, a first signal corresponding to these accelerations,

integrating said first signal to obtain a second signal,

integrating the second signal to obtain a third signal from which may be determined the maximum value thereof with respect to the angular position of the drive shaft, and

adjusting the ignition timing as a function of the angular position of the drive shaft corresponding to the maximum value of said third signal.

5. A device for automatically adjusting the ignition timing of an engine, comprising ignition control means, and a detector of the angular rotation of the engine drive shaft, wherein the device comprises an accelerometer secured to the cylinder head of the engine and generating a first signal representing the accelerations to which the cylinder head is subjected at the point of location of the accelerometer, a low pass filter connected to said accelerometer and generating a first signal, a first integrator connected to said filter and delivering a second signal, a second integrator connected to said first integrator and delivering a third signal, means connected to said second integrator for detecting a maximum value of said third signal during at least a portion of the rotation of the engine drive shaft, means, connected to said last-mentioned means and to said detector, for detecting the angular position of the drive shaft corresponding to said maxmimum value, comparing means connected to said detecting means for measuring the difference between said measured angular position and a reference angular position, and adjusting means, connected to said comparing means, for adjusting said control means as a function of said difference.

4,213,430

SPARK-IGNITION INTERNAL COMBUSTION ENGINE CAPABLE OF REDUCING NOXIOUS CONSTITUENTS IN EXHAUST GASES

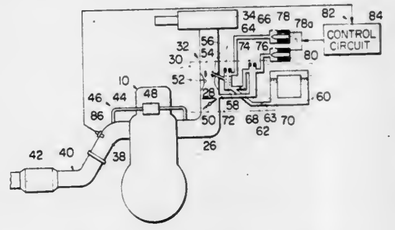
Hidehiro Minami, Yokohama, and Teruo Aoki, Hachiohji, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 672,405, Mar. 31, 1976, abandoned. This application Aug. 8, 1978, Ser. No. 931,984

Claims priority, application Japan, Apr. 1, 1975, 50/40143

Int. Cl.[2] F02M *25/06*

U.S. Cl. 123—440 **18 Claims**



1. A spark-ignition internal combustion engine having a cylinder in which a combustion chamber is defined by a cylinder head and a piston crown, comprising:

air-fuel mixture supply means for supplying an air-fuel mixture induced into the combustion chamber, said air-fuel mixture supply means being communicated through an intake passage with the combustion chamber and having a throttle valve;

exhaust gas recirculating means for recirculating a portion of exhaust gases with the induced air-fuel mixture into the combustion chamber, said exhaust gas recirculating means including conduit means which connects an exhaust passage of the engine with the intake passage downstream of the throttle valve

a plurality of spark plugs disposed within the combustion chamber for reliably igniting the air-fuel mixture containing the recirculated exhaust gases;

a three-way catalytic converter communicable through the exhaust passage with the combustion chamber to purify the noxious constituents in the exhaust gases discharged from the combustion chamber, said three-way catalytic converter being designed to reduce nitrogen oxides and

oxidize carbon monoxide and hydrocarbons in the exhaust gases; and

air-fuel ratio control means for controlling air-fuel ratio of the air-fuel mixture supplied into the combustion chamber at stoichiometric value so as to accomplish effective purification of noxious constituents in said three-way catalytic converter,

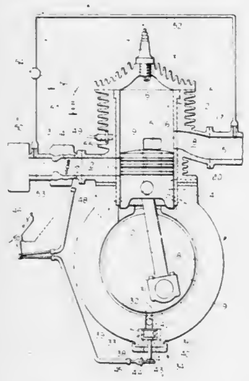
whereby the emission levels of nitrogen oxides, carbon monoxide and hydrocarbons in the exhaust gases are considerably decreased improving fuel consumption.

4,213,431

2-CYCLE ENGINE OF AN ACTIVE THERMOATMOSPHERE COMBUSTION TYPE

Sigeru Onishi, Kanazawa, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 26, 1979, Ser. No. 6,897
Claims priority, application Japan, Feb. 9, 1978, 53-12942
Int. Cl.[2] F02M *75/06*
U.S. Cl. 123—73 R **22 Claims**



1. A 2-cycle engine comprising:

an engine body having therein a cylinder bore and a crank room which has a bottom wall;

a piston reciprocally movable in said cylinder bore, said piston and said cylinder bore defining a combustion chamber;

an intake passage having mixture forming means therein for introducing a fresh combustible mixture into said crank room;

an exhaust passage having an exhaust port opening into said combustion chamber for discharging exhaust gas into the atmosphere;

transfer passage means communicating said crank room with an inlet port opening into said combustion chamber for leading the fresh combustible mixture into said combustion chamber from said crank room;

restricting means arranged in said transfer passage means at a position near said combustion chamber for restricting the cross-section of said transfer passage means; and

means for recirculating the exhaust gas into said intake passage from said exhaust passage.

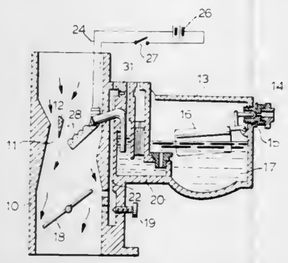
4,213,432

DEVICE FOR VAPORIZING LIQUID HYDROCARBON FUEL

Dudley D. Levy, 590 Laconia Ave., Lake Worth, Fla. 33463

Filed Apr. 2, 1979, Ser. No. 26,226
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—549 **4 Claims**

1. A device for vaporizing liquid hydrocarbon fuel as it enters a downwardly flowing stream of flowing oxygen-containing gas, comprising a reservoir for a vaporization liquid hydrocarbon fuel, a fuel feed tube extending upwardly out of said reservoir and then laterally, means for conducting a stream of oxygen-containing gas downwardly past the end of said feed tube for drawing fuel through said fuel feed tube, a corrugated heater plate mounted on the end of said feed tube and projecting from the end of the feed tube into the stream of gas and an electric resistance heater in said plate and having a heating capacity for heating the amount of fuel flowing



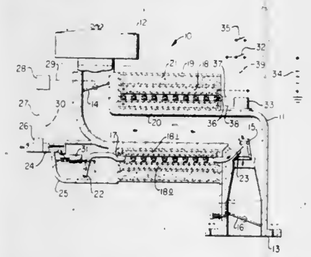
through said fuel feed tube to supply the latent heat of vaporization thereto and heat the fuel to a temperature between a temperature about halfway between the temperature of vaporization and the temperature at which the vaporized fuel becomes explosive in the oxygen-containing gas, whereby the fuel is instantaneously and completely vaporized upon coming in contact with said corrugated plate.

4,213,433

LIQUID FUEL TO GAS CONVERTER FOR ENGINES

John C. Day, 2316 Stafford La., Mesquite, Tex. 75150

Filed Oct. 31, 1977, Ser. No. 846,774
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—549 **12 Claims**



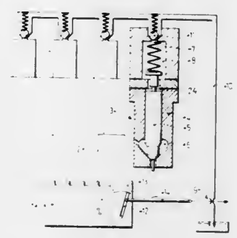
1. In a liquid fuel to gas converter for internal combustion engines: housing means; elongate fuel conveying means made of high heat conductive material mounted within said housing means; said elongate fuel conveying means having a fuel inlet end constructed for liquid fuel input from liquid supply means, and an outlet end positioned for delivery of molecular gaseous state fuel to engine fuel intake means; a heating system with heating element means mounted within said housing means to heat said elongate fuel conveying means sufficiently to ensure substantially complete transformation of fuel from the liquid state to the molecular gasified state as fuel is passed through said elongate fuel conveying means after initial warmup; wherein said elongate fuel conveying means is tubular element means formed primarily as coil means contained in foreshortened form within said housing in an efficiently packaged structure; with said heating system means in close contiguous relation to said coil means for optmized heat transfer to and through said coil means to the fuel being passed through the tubular element means formed into said coil means; wherein said heating system means is in concentric relation with said coil means; said heating system means includes an electric resistance element means formed into a cylindrical structure in close contiguous relation to said coil means; and wherein an air intake passage structure is provided with an air passage for feeding intake air to an internal combustion engine; and wherein a portion of said air passage is through, and surrounded by said heating system means and said coil means for heat transfer to intake air prior to admission of fuel in the heated molecular gasified state.

4,213,434

FUEL INJECTION SYSTEM

Hans-Jörg Vogtmann, Markgröningen, and Gerhard Stumpp, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 18, 1978, Ser. No. 952,353
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2801976
Int. Cl.[2] F02M *9/00;* **B05B** *1/30*
U.S. Cl. 123—462 **4 Claims**



1. A fuel injection system comprising:

a fuel pump which generates an injection pressure;

at least two fuel injection nozzles connected to the fuel pump, each of said fuel injection nozzles including: a spring chamber; a pressure chamber to which fuel is delivered under injection pressure by the fuel pump; a connecting chamber extending between and communicating with the pressure chamber and the spring chamber; a valve needle mounted within the pressure chamber and connecting chamber; and a closing spring mounted within the spring chamber for biasing the valve needle into the pressure chamber, wherein fuel flows from said pressure chamber through said connecting chamber around said valve needle and into said spring chamber;

a leakage line connected to the spring chamber;

a check valve connected to the spring chamber and the leakage line for controlling the flow of fuel from the spring chamber into the leakage line; and

a common throttle means connected to the leakage lines downstream of the check valves for controlling the pressure in and flow through said leakage lines as a function of engine operating parameters.

4,213,435

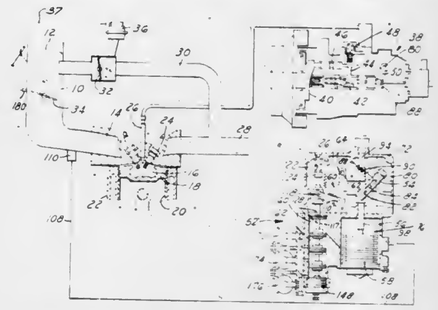
AIR/FUEL RATIO REGULATOR

Aladar O. Simko, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 29, 1978, Ser. No. 937,695
Int. Cl.[3] F02D *1/06;* **F02M** *7/00*
U.S. Cl. 123—446 **7 Claims**

1. An air/fuel ratio regulator for use with the fuel injection control system of an internal combustion engine of the spark ignition type having an air and exhaust gas (gas) induction passage open at one end to air at ambient pressure level and connected at its other end to the engine combustion chamber to be subject to manifold vacuum changes therein, a throttle valve rotatably mounted for movement across the passage to control the gas flow therethrough, exhaust gas recirculation (EGR) passage means connecting engine exhaust gases to the induction passage above the closed position of the throttle valve, an EGR flow control valve mounted in the EGR passage means for movement between open and closed positions to control the volume of EGR gas flow, an engine speed responsive positive displacement type fuel injection pump having a fuel flow output to the engine that varies in direct proportion to changes in engine speed to match fuel flow and mass air flow through the induction system of the engine over the entire speed and load range of the engine to maintain the intake mixture ratio of air to fuel constant, the pump having a fuel flow control lever movable to vary the fuel rate of flow, the regulator being characterized by

engine manifold vacuum responsive first servo means operably connected to the fuel control lever for maintaining a constant air/fuel (A/F) ratio by changing fuel flow output as a function of changing manifold vacuum and air flow upon opening of the throttle valve, a fuel enrichment control lever operably connected to the pump control lever and movable to modify the position of the pump



lever dictated by the first servo means to change the A/F ratio, and further means responsive to engine operating conditions for moving the fuel enrichment control lever to provide the changed A/F ratio, the further means including a second manifold vacuum responsive servo means for moving the enrichment lever in a fuel flow decreasing direction, spring means biasing the enrichment lever in a fuel flow increasing direction for maximum enrichment and richest A/F ratio upon decay of manifold vacuum during maximum engine acceleration, and variably adjustable stop means in the path of movement of the enrichment lever in a fuel flow decreasing, leaning A/F ratio direction to vary the A/F ratio upon adjustment of the stop means, the variable stop means including a plurality of inline interconnected fluid actuated pistons relatively movable with respect to each other for varying the linear distance between pistons.

4,213,436

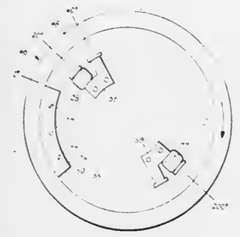
CAPACITOR DISCHARGE IGNITION AND ALTERNATOR AUXILIARY POWER SYSTEM

Bob O. Burson, East Longmeadow, Mass., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Continuation of Ser. No. 771,019, Feb. 22, 1977, abandoned.
This application Sep. 13, 1978, Ser. No. 941,985
Int. Cl.[2] F02P *1/00;* **H02K** *21/22*
U.S. Cl. 123—599 **8 Claims**

1. In a capacitor discharge ignition and alternator auxiliary power system having a capacitor, a triggered electronic switch element responsive to trigger voltage pulses for discharging said capacitor, and a spark plug which fires in response to discharging of said capacitor, a generator for producing charge voltage pulses for charging said capacitor, for producing trigger voltage pulses for triggering said switch element, and for producing auxiliary power voltage pulses for an auxiliary power output, said generator including a stator means carrying a charge coil connected in charging relationship with said capacitor, a trigger coil connected in triggering relation-

ship with said switch element, and at least one auxiliary power coil, a rotor providing an array of at least three magnetic pole faces in regularly spaced relation to one another along a circular path along which they move as said rotor rotates, said magnetic pole faces being of alternating magnetic polarity along said path, said charge coil being located adjacent said circular path so that each time said magnetic pole face array passes it, it has induced in it a series of repetitive charge pulses, said trigger coil being located adjacent said circular path so that each time said magnetic pole face array passes it, it has induced in it a series of repetitive trigger pulses which repetitively trigger said electronic switch, and said auxiliary power coil being located adjacent said circular path so that each time said magnetic pole face array passes it, it has induced in it a series of repetitive auxiliary power pulses, said array of mag-



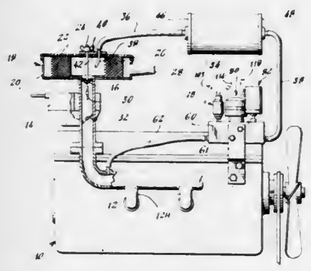
netic pole faces extending less than the full circular extent of said path so as to provide a space along said path in which space no magnetic pole face appears, said charge coil and trigger coil being so arranged relative to one another that as said space during rotation of said rotor passes said trigger coil (thereby establishing a period during which no trigger pulses are induced in said trigger coil) at least a portion of said array passes said charge coil and produces at least one charge pulse which charges said capacitor whereby the charge so stored in said capacitor is subsequently discharged to fire said spark plug by the first trigger pulse of the series of repetitive trigger pulses produced when said array next passes said trigger coil and whereby further trigger pulses of said next series of repetitive trigger pulses occur while said capacitor is in a discharged state and do not cause firing of said spark plug.

4,213,437

AIR-FILTER PURGER FOR INTERNAL COMBUSTION ENGINES

Carmen Onofrio, 300 Hemlock Dr., Orange, Conn. 06477

Filed Nov. 20, 1978, Ser. No. 961,860
Int. Cl.² B01D *46/04*; F02B *77/00*
U.S. Cl. 123—179 A **7 Claims**



1. For use with an internal combustion engine having an air filter for the air-intake system of said engine and a starting system therefor, a device for facilitating restarting said engine, comprising

blower means connected to said air filter for purging said air filter, and

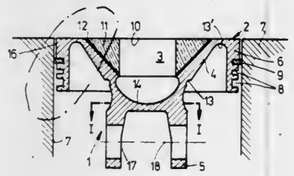
control means for activating said blower means when said starting system is actuated in order to restart said engine, and for de-activating said blower means after said engine has started.

4,213,438

PISTON FOR INTERNAL COMBUSTION ENGINES, ESPECIALLY DIESEL ENGINES

Ludwig Elsbett, and Günter Elsbett, both of Industriestrasse 14, D8543 Hilpoltstein, Fed. Rep. of Germany

Continuation of Ser. No. 731,533, Oct. 12, 1976, abandoned. This application Jun. 28, 1978, Ser. No. 920,055
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1975, 2545588
Int. Cl.² F02F *3/02*
U.S. Cl. 123—668 **6 Claims**



1. A piston for an internal combustion engine comprising in combination a piston head with a combustion chamber having a bottom wall and an opening in the top opposite said bottom wall, said piston head having an annular section spaced radially outwardly of said combustion chamber with peripheral grooves for receiving piston rings, said piston also including a foot portion integral with said bottom wall of said combustion chamber, a mantle surrounding said combustion chamber and integral with and interconnecting said annular section and said bottom wall of said combustion chamber and extending from said opening to said bottom wall of said combustion chamber, thermal insulation additionally provided as an annular insert between said mantle and said combustion chamber and extending from said opening to said bottom wall of said combustion chamber and forming the wall of said combustion chamber between said bottom wall and the opening in the top of said piston head and insulating said mantle from the heat of combustion in said chamber, a radial, integral portion connecting said mantle to said annular section of less thickness than said mantle to restrict the transfer of heat from said mantle to said annular section, and an integral portion connecting said bottom wall to said mantle of less thickness than said mantle to restrict the transfer of heat from said bottom wall to said mantle, so that said mantle is shielded from the heat of combustion to limit transfer of heat of combustion to said annular section, said annular section decreasing in diameter from said piston ring to the plane of said opening and when heated said annular section substantially approaching the diameter of the cylinder in a region between said piston ring and the top end of said piston.

4,213,439

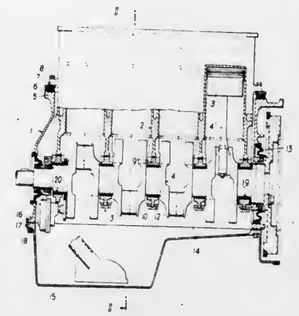
INTERNAL COMBUSTION ENGINE

Gerhard Feichtinger; Othmar Skatsche, both of Graz, Austria, and Hans List, 126,Heinrichstrasse, Graz, Austria, assignors to Hans List, Graz, Austria

Filed Nov. 16, 1978, Ser. No. 961,412
Claims priority, application Austria, Nov. 22, 1977, 8367/77
Int. Cl.² F16M *1/02*
U.S. Cl. 123—195 S **5 Claims**

1. An internal combustion engine comprising an engine unit support which contains the engine parts directly affected by body resonance and sound vibration, namely cylinderhead,

cylinder, piston, connecting rod, crankshaft main bearings, and crankshaft, and a crankcase cast integral with the flywheel housing and connected to the engine unit support on flanges located above the crankshaft, the crankshaft main bearings each consisting of a bearing block and a bearing cap forming a



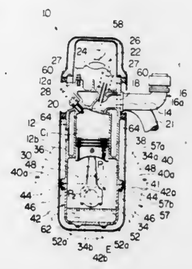
main bearing unit detachably secured to the engine unit support wherein the bearing blocks and bearing caps are connectable to form said main bearing units independently from the main bearing bolts, and wherein the crankcase is provided with an aperture below the crankshaft closed by at least one detachable cover part providing access to the main bearing bolts.

4,213,440

LOW-NOISE-LEVEL RECIPROCATING PISTON ENGINE

Fumiyuki Abe; Yoshimasa Hayashi, both of Yokohama, and Akira Kimura, Kawasaki, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 22, 1978, Ser. No. 962,920
Claims priority, application Japan, Nov. 26, 1977, 52/142432
Int. Cl.² F02F *7/00*
U.S. Cl. 123—195 C **19 Claims**



1. A reciprocating piston internal combustion engine comprising:

an engine block including a cylinder block portion in which engine cylinders are formed, and a cylinder head portion to close one ends of the cylinder to define combustion chambers between it and the crowns of pistons reciprocally disposed in the cylinders, respectively, said engine block being formed with first bearing carrying portions which carry a group of upper generally semi-cylindrical parts of main bearings for supporting the journal of a crankshaft mechanically connected to the pistons; and

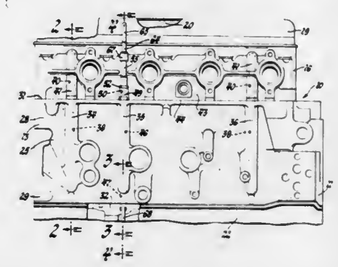
a bearing support block sealingly secured to said engine block and formed with a cavity to be filled with an engine lubricating oil for operating the engine so that said bearing support block serves as an oil pan, said bearing support block being formed with second bearing carrying portions which carry a group of lower generally semi-cylindrical parts of the main bearings, each lower generally semi-cylindrical part constituting a generally cylindrical main bearing in cooperation with each upper generally semi-cylindrical part.

4,213,441

ENGINE WITH WALL RIB OIL GAUGE MOUNTING AND DRAIN MEANS

Nshan Hamparian, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1978, Ser. No. 951,499
Int. Cl.² F01M *1/00*
U.S. Cl. 123—196 R **8 Claims**



1. In an internal combustion engine, the combination comprising

a cylinder block having a side wall extending longitudinally to front and rear ends and including an upper cylinder head mounting surface and a lower surface on which an oil pan is mounted, defining with said block an enclosed lower chamber

an upstanding rib-like boss on said wall disposed longitudinally intermediate said ends and extending at least part way between said upper and lower surfaces, and

an internal passage within said boss and said wall, extending through said upper surface and opening from the wall into said lower chamber,

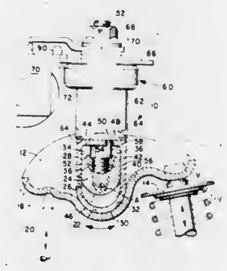
said boss and passage defining a lightened stiffening rib for reducing vibration of and resulting noise transmission from said wall as well as means for access to said lower chamber through said side wall.

4,213,442

VALVE SELECTOR FOR SHAFT-MOUNTED ROCKERS

William T. Mihalic, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 29, 1977, Ser. No. 811,420
Int. Cl.² F02D *13/06*
U.S. Cl. 123—198 F **11 Claims**



1. A device for selectively disabling and enabling, while running, the combustion chamber valves of an internal combustion engine of the type having valve gear operative to cyclically apply forces to the valves for effecting opening

thereof and means for biasing the valve closed upon cyclic relaxation of said forces, said device comprising:

(a) shaft means adapted for attachment to the engine;

(b) rocker means associated with each of said valves, said rocker means being pivotally received on said shaft means, with each of said rocker means defining a rocker pivot surface and a driven surface adapted to receive said valve opening forces thereagainst and a driving surface adapted for contacting associated components of said valve gear for transmitting said valve opening forces thereto;

(c) fulcrum means associated with each of said rocker means, said fulcrum means being movable with respect to said shaft means, said fulcrum means including means defining a fulcrum pivot surface having said rocker pivot surface in pivotal contact therewith;

(d) means retaining each of said fulcrum means to said shaft means, said retaining means including latchable means operable in a first position to hold said fulcrum means in a first position wherein said pivotal movement of said rocker means transmits said valve opening forces to effect normal opening of said valve means, said latchable means being operable in a second position to permit lost motion movement of said fulcrum means and said rocker arm with respect to said shaft means upon said cyclic application of said valve opening forces such that said valve opening forces are not transmitted for opening said valve means; said latchable means being operable to move between said first and second positions only upon relaxation of said valve opening forces;

(e) means for mounting said shaft means on said engine; and,

(f) means selectively operable to apply and hold an actuating force on said latchable means for effecting movement between said first and second positions upon relaxation of said valve gear forces.

4,213,443

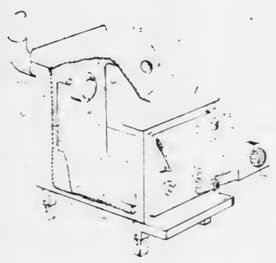
STOVE CONSTRUCTION

James A. Morande, Jr., Glastonbury, Conn., assignor to All Nighter Stove Works, Inc., Glastonbury, Conn.

Continuation-in-part of Ser. No. 798,263, May 18, 1977, abandoned. This application Mar. 13, 1978, Ser. No. 886,283

Int. Cl.² F24C *1/14, 15/08, 13/00*

U.S. Cl. 126—72 **29 Claims**



1. A stove for household heating, comprising:

(a) a stove structure having a floor and side walls including front and rear walls, said rear wall being higher than said front wall, and a top with a front portion at the height of said front wall and a rear portion at the height of said rear wall, and an intermediate top portion which is sloped and which faces generally forwardly, said top portions integrally formed from one piece of sheet steel,

(b) an access door for closing an opening in said front wall,

(c) air inlet valve means mounted in said door for admitting combustion air to the interior of said stove structure,

(d) at least one conduit inside said stove structure including an open end lower portion for receiving room air outside of said stove structure and an upper portion having a forward end communicating with an opening in said sloped top portion,

(e) means for introducing room air into the open end of said lower portion so that this air is heated in the stove structure and returned to the room through said opening in said sloped portion of said top,

(f) adjustable means in said top opening for controlling the direction of the heated air returned to the room through said top opening,

(g) a shroud provided in an opening of said stove rear wall, said shroud having one end portion projecting inside the rear wall of the stove and defining a radially inwardly projecting flange, which flange defines a flue opening, an opposite end of said shroud projecting outside the rear wall of the stove structure, and

(h) a flue duct segment mounted in said flue opening and cooperating with said shroud to define a heat exchange cavity for receiving a fluid heat exchange device.

4,213,444

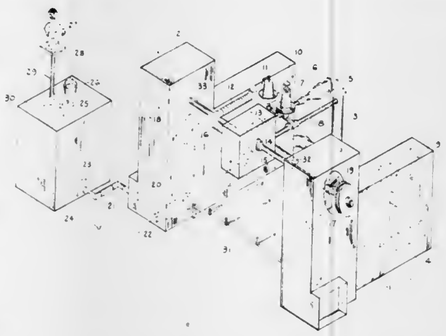
FIREPLACE HEATER UNIT

James J. Gardner, 210 Sherman Ave., Lancaster, Ohio 43130

Filed Apr. 10, 1978, Ser. No. 895,233

Int. Cl.² F24B *13/02*

U.S. Cl. 126—130 **4 Claims**



1. A "Fireplace Heater Unit" consisting of the combination of water conducting pipes located at the right and left hand side of the said heater unit, said pipes consisting of a lower horizontal run and an upper horizontal run said lower and upper horizontal runs being connected with a plurality of vertical pipes providing flow communication therebetween, said horizontal and vertical pipes being cross-connected at the lower rear of the said unit by a horizontal pipe run providing water flow communication between the said left and right hand side of said unit, a vertical pipe in communication with said horizontal cross-connect pipe at the rear of said unit whereby steam generation may be transferred to a pressure regulator, an upper horizontal cross-connect pipe run providing steam flow communication between said right and left hand side of said unit, a horizontal cross-connect pipe run with a safety valve disposed therein providing steam flow communication between said upper horizontal steam cross-connect pipe and said vertical steam generation pipe whereby said safety valve is in communication with all pressure points of said unit, shrouds or heater boxes enclosing said vertical and horizontal pipe runs located at the right and left hand side of the said unit, said shrouds or heater boxes having an opening at the lower portion thereof for cold air entry and an opening near the upper portion thereof for hot air discharge, said heater boxes having a closure whereby cold air must circulate there through and a removable grate providing means on which suitable fireplace fuel may be burned.

4,213,445

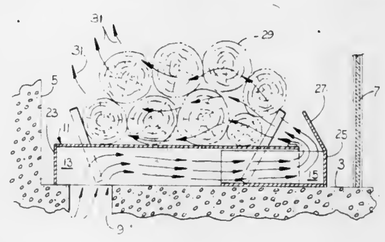
FIREPLACE COMBUSTION AIR DUCT APPARATUS

Carlos Mayo, Springdale, Ark., assignor to C. Mayo, Inc., Springdale, Ark.

Filed Aug. 14, 1978, Ser. No. 933,662

Int. Cl.² F24B *13/02*

U.S. Cl. 126—143 **12 Claims**



1. Fireplace combustion air duct apparatus having front, rear top, bottom and side portions comprising

a pair of ducts formed of rigid material, one of said ducts telescoping within the other,

a first of said pair of ducts being closed on the top, two sides and the rear and having an opening in the bottom adapted to be placed over a fireplace ash clean-out and receive outside air therethrough,

the second one of said ducts being closed on two sides and the front having an opening at the frontward top portion, and

said second duct having an air deflector adjacent said opening for causing air to be deflected rearwardly from said opening.

4,213,446

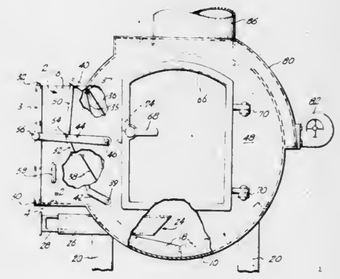
STOVE DOOR OPERATOR

Gary K. Stookey, 5000 Foots Creek Rd., Gold Hill, Oreg. 97526, and James F. Jackson, 9711 W. Evans Creek Rd., Rouge River, Oreg. 97537

Filed Nov. 24, 1978, Ser. No. 963,400

Int. Cl.² F23M *7/00*

U.S. Cl. 126—192 **1 Claim**



1. A stove, comprising

metallic wall means forming a fire box, said wall means having outlet means for the products of combustion from said fire box;

means forming a non-conductive liner for at least the bottom portion of said fire box

said fire box having an elongated front opening defined by a horizontally disposed hearth means, an overhanging lip parallel thereto, and upright end walls, all projecting forwardly of said fire box;

an upper and a lower closable door pivot-mounted at said front opening to pivot about parallel horizontal axes between open and closed positions;

common ends of said upper and lower pivot-mounts outwardly extending through a common end wall of said fire box;

a crank arm secured external of said fire box to said outwardly extending pivot mounts;

a manually operable actuator lever pivotally mounted on said fire box end wall between said crank arms; and

a pair of links mutually connected at common ends to said lever and at each opposite end to a crank arm whereby operation of said lever either disposes said doors in a parallel open position or swings said doors to substantial alignment to close said front opening.

4,213,447

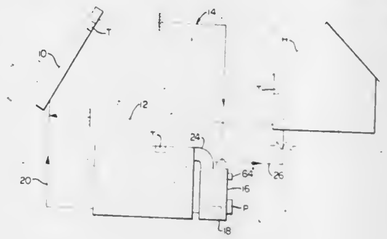
AIR DISTRIBUTION CONTROL SYSTEM

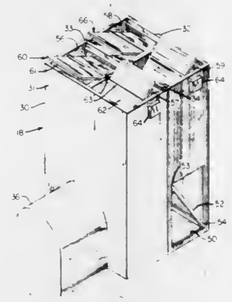
Donald P. Erickson, 6443 Reed Ct., Denver, Colo. 80003

Filed Jun. 2, 1978, Ser. No. 911,798

Int. Cl.² F24J *3/02*

U.S. Cl. 126—429 **14 Claims**





1. An air distribution control system adaptable for use in a solar heating installation and the like, wherein there is provided a source of hot air, a heat storage area and a space to be heated, the improvement comprising:

a plenum partitioned into a plurality of chambers,

common air circulating means for said system mounted in said plenum having a positive side communicating with at least one of said chambers and a negative side communicating with at least one of the other of said chambers,

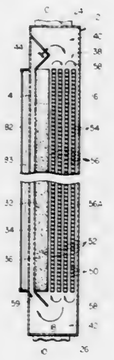
first and second ducts extending between said hot air source and said heat storage area, respectively, and the negative side of said chamber in said plenum, and a third duct extending between the positive side of said chamber in said plenum and the space to be heated,

temperature sensing means for sensing the temperature of said heat storage area, hot air source and the space to be heated; and

damper control means associated with said plenum to control the circulation of air between said heat storage area, hot air source and space to be heated in accordance with

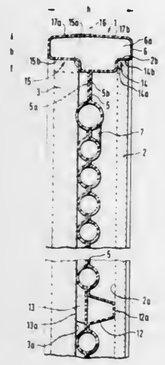
the relative temperature levels sensed by said temperature sensing means.

4,213,448
THERMOSIPHON SOLAR SPACE HEATING SYSTEM WITH PHASE CHANGE MATERIALS
Raymond T. Hebert, P.O. Box 134, Saratoga, Calif. 95070
Filed Aug. 24, 1978, Ser. No. 936,375
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—434 **21 Claims**



1. In a unitary heating system for heating an adjacent area, a heat transfer liquid, a container for holding the liquid and having a front wall forming a solar heat collection surface and a rear wall forming a heat dispensing surface, said walls being in substantially spaced relation to each other to define an interior volume within said container, guide means is disposed in the container adjacent the heat collection surface to form therewith a heating channel between said surface and said means through which channel the liquid to be heated flows by thermosiphonic action, insulation means disposed adjacent said guide means and spaced from the rear wall of said container to define and form a heat storage region on the other side thereof, means forming flow pathways in communication with the upper and lower portions of said heating channel to connect the same with said storage region so that heated liquid can circulate from the channel to the storage means and return in a closed system, said heat storage region being in contact with the rear wall of said container through which heat is to be dispensed to the adjacent area outside of said container and in thermal contact therewith, means for predominantly vertically orienting said heating channel and heat storage region with the upper, outlet end of the heating channel disposed above the lower, inlet end of the heating channel to cause thermosiphonic flow between the same whenever the heating channel is at a higher temperature, at least one panel containing phase change materials located in the storage region and constructed with a plurality of fully enclosed horizontal channels therethrough in spaced relation to each other, a phase change material disposed in each of said channels, said phase change material selected to change from a solid to a liquid at a predetermined threshold temperature rise, said panel defining the enclosure means for the phase change material being so constructed and arranged as to exclude physical contact between said heat transfer liquid and said phase change material but to permit thermal exchange therebetween, and control means disposed in the flow path of the collection channel for preventing reverse thermosiphoning when the collection channel temperature is cooler than a predetermined temperature equal to or greater than phase change temperature.

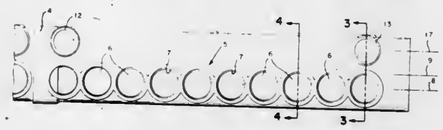
4,213,449
SOLAR COLLECTOR
Manfred Roth, Dautphetal-Mornshausen, and Juergen Dreier, Dautphetal, both of Fed. Rep. of Germany, assignors to Roth Werke GmbH, Dautphetal, Fed. Rep. of Germany
Filed Mar. 22, 1978, Ser. No. 889,032
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712387
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—447 **10 Claims**

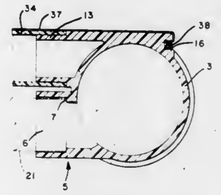


1. In a solar collector for collecting the radiant heat energy of the sun and for transmitting this heat to a liquid heat carrier, comprising a pipeline system which has at least one supply port and one discharge port for conducting the heat carrier and a glazing which permits heat radiation to pass therethrough, which pipeline system is part of a platelike blow-molded absorber plate of plastic, in which adjacent pipes are formed by and separated from one another by thermoplastically welded mash seams of abutting plastic sheets, the improvement comprising a hollow frame which is made in one piece with the blow-molded absorber plate and forms the edge of the blow-molded absorber plate, said frame having a closed cross section, said hollow frame having on its upper side a fluted mortise for receiving the edge of said glazing.

4,213,450
MODULAR SOLAR COLLECTOR PANEL AND MANIFOLD THEREFOR
Gilbert H. Perez, 3517 Chablis Cir., San Jose, Calif. 95132
Filed Feb. 17, 1978, Ser. No. 878,821
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—448 **4 Claims**

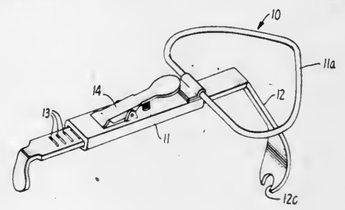
1. A monolithic manifold unit for use in the formation of a solar energy collector panel, comprising:
(a) an elongated tubular body having a longitudinal axis and being substantially uniform in its transverse dimension over a major portion of its length, said tubular body having upper and lower portions and including an integral enlarged-diameter bell housing at one end thereof, the inner diameter of said bell housing being substantially equal to the outer diameter of the remainder of said tubular body;
(b) a first elongated, transverse projection integrally formed on and extending in a first direction from the outer periphery of the lower portion of said tubular body and extending longitudinally therealong;
(c) a plurality of closely-spaced apertures formed in said first projection and extending therethrough to communicate with the interior of said tubular body, said apertures being arranged in an aligned series and having their axes lying in a first plane which is parallel to, and spaced to one side of, said longitudinal axis of said tubular body, the axes of said apertures being parallel to each other and extending transverse to said longitudinal axis;
(d) shoulder means formed on the interior surface of each of said apertures, each aperture forming a socket which is separate and spaced from adjacent apertures and adapted to receive one end of an elongated heat collector tube;
(e) first and second support socket members adapted to receive support frame elements for the collector panel, said support socket members being integrally formed on the outer periphery of the upper portion of said tubular body adjacent opposite ends thereof, said socket members extending from the periphery of said tubular body in said first direction and being located directly above the end-





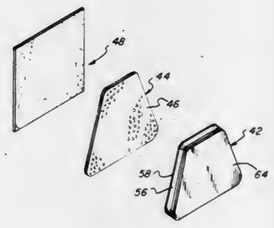
most apertures in said first projection, the axes of said socket members being parallel to the axes of said apertures and lying in a second plane which is parallel to said first plane, said first and second planes being located on opposite sides of the longitudinal axis of said tubular body;
(f) a second elongated transverse projection integrally formed on, and extending from, the periphery of the upper portion of said tubular body, and also extending most of the length of said manifold unit; and
(g) an elongated channel formed in said second projection, said elongated channel being parallel to said longitudinal axis and facing in a second direction opposite said first direction and being adapted to receive and secure enclosure means for the collector panel.

4,213,451
TONGUE BLADE FOR MOUTH GAG FOR ADULTS
Rudolph E. Swenson, 2748 Ptarmigan Dr. #5, Walnut Creek, Calif. 94595
Filed Aug. 21, 1978, Ser. No. 935,514
The portion of the term of this patent subsequent to Dec. 27, 1994, has been disclaimed.
Int. Cl.[2] A61B *1/00*
U.S. Cl. 128—12 **6 Claims**



1. A series of tongue blades in combination with a frame, said tongue blades being formed in various sizes, each blade having a substantially straight handle portion adapted to be connected to said frame in order to form a mouth gag and a substantially straight elongated tongue-engaging portion connected at a first end to said handle portion and having an opposite distal end, said tongue engaging portion extending from said handle portion at an obtuse angle between 100° and 120°, said tongue-engaging portion having a curved tip that is formed with a radius of curvature less than one and one-half inches a distance greater than two inches from said handle portion whereby the handle portion and tongue-engaging portion of each tongue blade defines an unobstructed obtuse angular void therebetween extending from the handle portion a distance of at least two inches and a semi-circular opening at the distal end of said curved tip for guiding an endotracheal tube for anesthesia.

4,213,452
COMPOUND SPLINT AND KIT
Ronald D. Shippert, Englewood, Colo., assignor to The Denver Splint Company, Littleton, Colo.
Continuation-in-part of Ser. No. 813,800, Jul. 8, 1977, Pat. No. 4,153,051. This application May 3, 1979, Ser. No. 35,917
Int. Cl.[2] A61F *5/04*
U.S. Cl. 128—89 R **8 Claims**

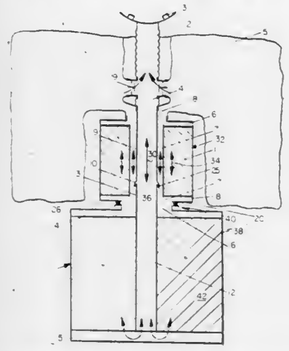


1. A compound splint for application to a traumatized portion of a human body, including bones to be knitted together, a base layer of thin, flexible material coated with adhesive on at least one side and adaptable to be adhesively secured to the traumatized portion, said splint comprising:
a secondary component having a first face adapted to be secured to the base layer and an intertwining surface formed at a second face of said secondary component; and
a primary restraining component of malleable metallic material having an interlacing surface to anchoringly engage said intertwining surface of said secondary component, said primary restraining component being manually formable in situ to correspond to the shape of the traumatized portion and securable in place by the connection of the intertwining and interlacing formations to prevent change in the size and shape of the traumatized portion during recovery.

4,213,453
BREATHING DEVICE HAVING OXYGEN DONOR CHEMICAL CARTRIDGE
Ernst Warncke, Lübeck, and Adalbert Pasternack, Bad Schwartau, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany
Filed Jan. 12, 1978, Ser. No. 868,740
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1977, 2702192
Int. Cl.[2] A62B *7/08*
U.S. Cl. 128—202.26 **7 Claims**

1. A breathing device to facilitate a person's respiratory breathing of air with sufficient oxygen, comprising a breathing conduit adapted to be connected to a person, a breathing bag adjacent said breathing conduit, check valve means connecting said breathing bag to a first portion of said conduit for outflow of breathing air from said bag to said first portion of said conduit, a first chemical cartridge having a housing with an open-

ing therethrough through which a second portion of said conduit extends, said first chemical cartridge having an oxygen-liberating chemical therein surrounding and spaced radially outwardly of said second portion of said conduit extending through said opening and defining an annular passage, said conduit having an end terminating adjacent the bottom of said first chemical cartridge, a second chemical cartridge having a cylindrical housing with a top access opening a tubular central portion extending through said access opening into said second



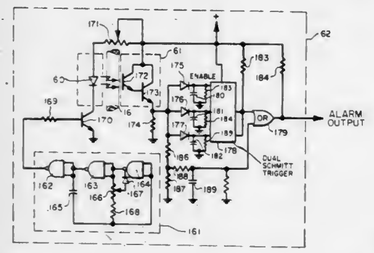
chemical cartridge housing, a second oxygen-liberating chemical in said second chemical cartridge housing surrounding said tubular conduit portion, said tubular conduit portion and said second oxygen-liberating chemical being spaced from the bottom of said second chemical cartridge housing, and coupling means coupling said tubular conduit portion to said breathing conduit and said access opening of said second chemical cartridge housing to said through-opening of said first chemical cartridge housing.

4,213,454

CONTROL SYSTEM FOR METERING APPARATUS FOR A FLUID INFUSION SYSTEM

Norm Shim, Glenview, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 2, 1977, Ser. No. 857,018
Int. Cl.[2] A61M 5/14
U.S. Cl. 128—214 E **6 Claims**



1. In a flow metering apparatus for controlling the flow of fluid through a tubing segment of an administration set, a bubble detector comprising:

an alternating light source arranged at one side of the tubing segment;

detector means including a light detector generally arranged at the opposite side of the tubing segment for generating an output signal having direct and alternating current components, said alternating current component being dependent on the intensity of light from said light source transmitted through said tubing segment, the intensity of said transmitted light being dependent on the presence of fluid within the lumen of said tubing segment;

said detector means including circuit means for applying operating bias to said light detector, said direct current component being dependent on the level of said operating bias;

a power source for driving said light source;

a first control channel including a threshold trigger device responsive to said alternating component of said light detector output signal for generating a first control signal when the light transmitted through said tubing segment falls below a predetermined minimum level;

a second control channel responsive to said direct current component of said light detector output signal for generating a second control signal dependent on said operating bias applied to said light detector; and

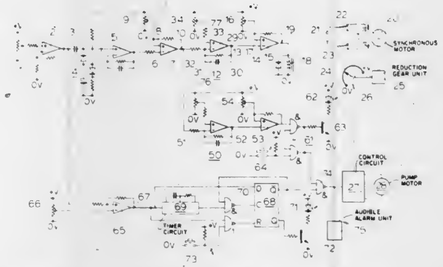
output circuit means including a logic OR gate having inputs connected to and responsive to said first and second control signals for generating an alarm signal upon generation of said first control signal, or upon the failure of said circuit means to apply operating bias to said light delector.

4,213,455

APPARATUS FOR THE INFUSION OF A LABOR-INDUCING DRUG INTO THE BLOODSTREAM OF A PATIENT

Allan H. Ellson, Harpenden, England, assignor to Pye (Electronic Products) Ltd., Cambridge, England

Filed Jul. 3, 1978, Ser. No. 921,727
Claims priority, application United Kingdom, Jul. 5, 1977, 28058/77; Dec. 2, 1977, 28058/77
Int. Cl.[2] A61M 5/16
U.S. Cl. 128—214 E **23 Claims**



1. A control system for controlling the infusion rate of a labor-inducing drug into the bloodstream of a patient comprising, means responsive to a control signal determined by the intra-uterine pressure of the patient for producing a train of pulses wherein each successive pulse corresponds to a contraction of the patient's uterus and wherein the duration of each pulse is representative of the duration of the corresponding contraction, means responsive to the train of pulses for generating a first signal representative of the average value of the mark-space ratio of the pulse train, and means responsive to said first signal for deriving a second signal for increasing the infusion rate when the said average value is less than a first predetermined value and for reducing the infusion rate when the average value exceeds the said first predetermined value.

4,213,456

MEDICAL MULTI-PURPOSE INSTRUMENT

Paul E. K. Böttger, Bahnhofstrasse 35, 6050 Offenbach, Fed. Rep. of Germany

Filed Jan. 30, 1978, Ser. No. 853,381
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800659
Int. Cl.[2] A61M 5/315
U.S. Cl. 128—218 P **14 Claims**



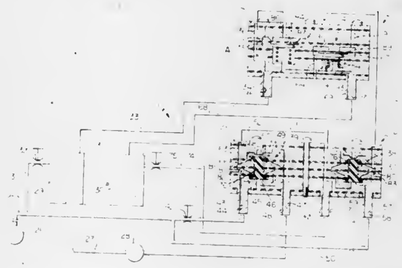
1. A multipurpose medical instrument, comprising first hollow cylinder means having a given inner diameter, a needle socket and first cap holding means surrounding said needle socket at one end of said first hollow cylinder means and an open end opposite said needle socket of said first hollow cylinder means, second hollow cylinder means operable as a plunger inside said first hollow cylinder means and having further cap holding means at each end of said second hollow cylinder means, said further cap holding means and said first mentioned cap holding means being of substantially identical construction, and a plurality of cap means all of which are also of substantially identical construction for cooperation with any of said cap holding means, said cap means having an outer diameter substantially corresponding to said given inner diameter of said first hollow cylinder means whereby one of said cap means at one end of said second hollow cylinder means may function as a piston inside said first hollow cylinder means while other cap means function as closure means.

4,213,457

INTERMITTENT PATIENT SUCTION SYSTEM AND CONTROL MEANS THEREFOR

Jay L. Lewis, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 15, 1977, Ser. No. 860,995
Int. Cl.[2] A61M 1/00
U.S. Cl. 128—276 **10 Claims**



1. In a control means for an intermittent suction system and having output means for alternately applying a vacuum and atmospheric pressure to a patient for removing fluids from said patient and wherein said system includes a vacuum source and first and second container means adapted to be interconnected to operating means of said control means and to said source and said atmospheric pressure by said operating means of said control means that is adapted to apply said vacuum through said output means to said patient in response to a vacuum condition of said first container means and to apply said atmospheric pressure through said output means to said patient in response to a vacuum condition in said second container means, the improvement comprising means in said operating means of said control means for always being adapted to interconnect said vacuum through said output means to said patient when said vacuum condition in said first container means is a certain percentage of the vacuum condition of said source regardless of the vacuum value of said source, so as to prevent any adverse interruption in said system during the use thereof for said patient should the vacuum level of said source fall to an undesirable level.

4,213,458

SEALING AND ATTACHMENT ASSEMBLY FOR MEDICAL DRAINAGE POUCH

John L. Nolan, Glenview, and Harvey M. Nordby, Buffalo Grove, both of Ill., assignors to Hollister Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 783,340, Mar. 31, 1977, abandoned. This application May 17, 1978, Ser. No. 906,401
Int. Cl.[2] A61F 5/44
U.S. Cl. 128—283 **25 Claims**



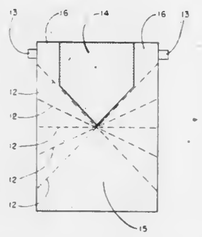
1. A sealing and attachment assembly for a drainage pouch having a moisture-impermeable bag formed of plastic sheet material with a drainage opening in one side thereof, the sealing and attachment assembly including an adhesive patch formed of microporous sheet material with an opening therein which is generally concentric with said opening in the bag, the patch having inner and outer sides and the outer side of the patch being coated with a pressure-sensitive adhesive for attachment to the body of a wearer, wherein the improvement comprises an annular attachment ring formed of flexible sheet material, said attaching ring having inner and outer sides and an opening which is generally concentric with the openings in the bag and in the patch, the inner side of the attaching ring being attached to the bag in a first area of attachment and the outer side of the attaching ring being attached to the inner side of the patch in a second area of attachment, the second area of attachment extending radially outwardly beyond the first area of attachment to provide an annular outer portion of the attaching ring which is unconnected to the bag and which is flexible and conformable by forces which are applied to the attaching ring and to the adhesive patch and which tend to remove the adhesive patch from the body so that said annular outer portion of the attaching ring and the portion of the adhesive patch attached thereto extends substantially linearly and the tendency of the adhesive patch to tear as a result of said forces is minimized, the outer periphery of the attaching ring being spaced inwardly of the outer periphery of the adhesive

patch to provide a breathable outer portion of the adhesive patch which is uncovered by the attaching ring.

4,213,459
DISPOSABLE DIAPER WITH LOCALIZED AREA OF INCREASED DENSITY

Wayne C. Sigl, Black Creek, and Philip A. LaBorde, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 736,944, Oct. 29, 1976, abandoned. This application May 12, 1978, Ser. No. 905,384
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—287 **3 Claims**



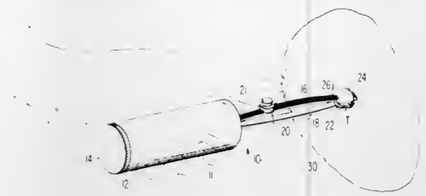
1. In a disposable diaper of the type having a fluff batt as its main absorbent element and in which said diaper and said batt are defined by front and back waist-encircling ends, a pair of leg-encircling sides, a front panel section and a back panel section, the improvement wherein only a the improvement wherein only a localized contiguous area of the fluff batt in only the back panel section is comprised of a substantially uniformly deposited contiguous layer, said fluff layer of said localized area being comprised of a fluff having a substantially higher density than the density of the remainder of said back panel section and substantially higher than the density of the total whole of said front panel section, said localized area having a shape which consists of a transversely centered symetrical polygon, the number of sides in said polygon ranging from four to five, said localized area of higher density fluff comprising only the major central portion of said back panel section of the batt extending from the back waist end of the batt to the transverse mid-point of the batt, the remaining portions of the batt being undensified fluff which is in capillary association with said higher density fluff to permit unimpaired flow of fluids between said undensified fluff and said higher density fluff, said remaining portions of undensified fluff specifically including (a) the entire front panel section of the batt and (b) the two side areas of the back panel section of the batt; each of said side areas being of substantial width and extending alongside said area of higher density fluff from the front panel section of the batt to the back waist end of the batt.

4,213,460
TICK REMOVING FORCEPS

Israel H. Weiner, 3406 Keyser Rd., Baltimore, Md. 21208

Continuation-in-part of Ser. No. 753,813, Dec. 23, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,483
Int. Cl.[2] A61B *17/50*
U.S. Cl. 128—303 R **21 Claims**

1. Apparatus for removing a parasitic organism attached to the skin of a host animal comprising, in combination:
- a forceps;
- mutually opposed gripping means affixed to said forceps so as to be brought together on actuation of said forceps, said gripping means being shaped to at least partially enclose the protruding portion of said parasitic organism and at least a portion of said gripping means being constructed of a thermally insulative material;
- heating means mounted on said gripping means in a position to apply heat to the enclosed portion of said organism; and
- control means for activating said heating means when said gripping means are engaged with said parasitic organism,

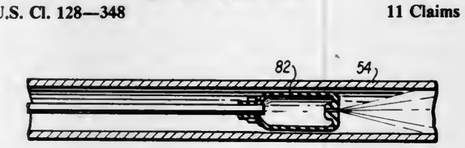


whereby said organism is induced through application of heat to release its grip on the skin of said host animal, enabling the removal of said organism with said forceps, said thermally insulative material protecting the skin of said host animal from excessive heating.

4,213,461
MINIATURE BALLOON CATHETER

Paul H. Pevsner, 4121 King Crest Pkwy., Richmond, Va. 23221

Continuation-in-part of Ser. No. 681,676, Apr. 29, 1976, Pat. No. 4,055,757. This application Sep. 15, 1977, Ser. No. 833,615
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—348 **11 Claims**

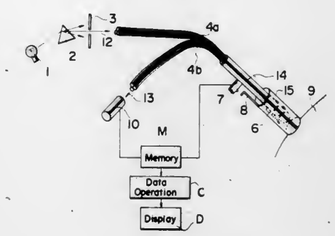


1. A miniaturized balloon catheter assembly for use in small vessels comprising:
- an elongated tubular cannula including an attaching means at one end thereof for attaching to a source of pressurized fluid and having a small outer diameter for insertion into small vessels;
- an inflatable balloon having resilient, expandable wall means mounted on the opposite end of the cannula and in fluid communication therewith, the cannula and balloon adapted to be carried by the fluid in a vessel to desired locations therein, whereupon attachment of the cannula fluid source of pressurized fluid and introduction of amounts of pressurized fluid flow inflate the balloon;
- said balloon including an activation means responsive to further amounts of pressures to initiate a desired procedure within the small vessels, said activation means comprising a wall portion of said balloon wall means having a passageway therethrough, said passageway normally being so small that it effectively does not allow the passage of fluid from said balloon through said passageway, but said portion allowing the opening of said passageway in response to a predetermined amount of pressure within said balloon to allow passage of said fluid from said balloon into said vessels.

4,213,462
OPTICAL ASSEMBLY FOR DETECTING AN ABNORMALITY OF AN ORGAN OR TISSUE AND METHOD

Nobuhiro Sato, 5-11, 1-Chome, Tachibana-Cho, Toyoraka-shi, Osaka-fu, Japan

Filed Aug. 18, 1978, Ser. No. 934,681
Claims priority, application Japan, Aug. 25, 1977, 52-102280
Int. Cl.[2] A61B *5/00*
U.S. Cl. 128—634 **21 Claims**

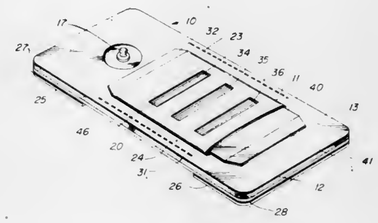


1. An optical device for detecting an abnormality in an organ or tissue in its early stages of growth comprising:
- a light source assembly;
- contact means including a portion for contacting a surface of an organ or tissue and capable of exerting a predetermined pressure thereon;
- first means for transmitting light from the light source assembly to the tissue or organ that will be effected by the predetermined pressure;
- means for measuring the light intensity reflected from the organ or tissue;
- second means for transmitting reflected light from the tissue or organ that will be effected by the predetermined pressure to the means for measuring the light intensity;
- means for determining a first measurement of light reflected from the organ or tissue with approximately no pressure applied and for determining a second measurement at a predetermined pressure, and
- means for comparing the first and second measurements to detect whether an abnormality exists in the organ or tissue as a function of the difference in measured reflected light.

4,213,463
BODY ELECTRODE WITH INDICATOR TO ENSURE OPTIMAL SECUREMENT

Paul D. Osenkarski, Orchard Park, N.Y., assignor to Graphic Controls Corporation, Buffalo, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,127
Int. Cl.[2] A61B *5/04*
U.S. Cl. 128—639 **11 Claims**

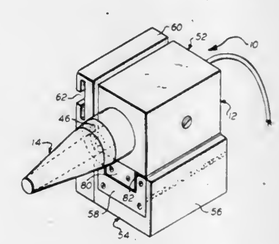


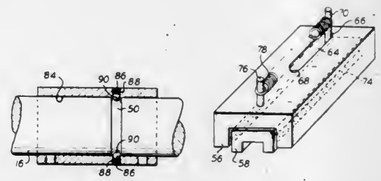
1. A body electrode for use with an electromedical instrument and removably attachable to a person's body, said electrode comprising
- a manually stretchable, electrically insulating cover sheet having an outer surface adapted to face away from the body, and an inner surface adapted to face toward the body;
- electric circuit means for maintaining the body in electrically conducting relation to an electromedical instrument, said electric circuit means comprising an electrically conductive inner portion adjacent said inner surface, and terminal means connected in an electrically conducting relation to said inner portion; and
- indicator means to ensure proper manual adjustment of tension on said cover sheet to optimize electrical current distribution between said inner portion and the body, said indicator means comprising
- an exterior sheet attached to said outer surface of said cover sheet and defining a viewing zone; and
- a flap having a fixed portion attached to said outer surface of the cover sheet and a principal portion longitudinally shiftable and freely slidable between said exterior sheet and said cover sheet upon longitudinal stretching of said cover sheet, said flap including an outer surface imprinted with indicia contrasting visibly with surrounding portions of said outer surface of said flap, said indicia being visibly aligned with said viewing zone upon longitudinally stretching said cover sheet to apply a predetermined optimal degree of tension, and wherein misalignment between said viewing zone and said indicia reveals excessive and insufficient stretch tension applied to said cover sheet.

4,213,464
TRANSDUCER ASSEMBLY

Louis Katz, Flushing, and Kurt W. Weil, New York, both of N.Y., assignors to Sonometrics Systems, Inc., New York, N.Y.

Filed Jan. 9, 1978, Ser. No. 867,675
Int. Cl.[2] A61B *3/16*
U.S. Cl. 128—645 **13 Claims**

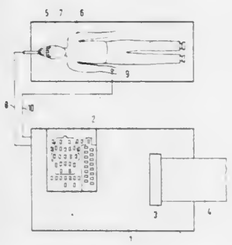




10. A carriage for movably supporting a device adapted to be moved into operative engagement with the human eye, comprising:
- a holder for supporting the device;
- releasable retaining means on said holder engagable with complementary formed means on the device for normally retaining the device in position and being responsive to a preselected value of force within the normal operating range of said release means for releasing the device to permit relative movement between the device and said holder;
- a slide for supporting said holder for rearward movement from a home position; and

biasing means for biasing said slide toward said home position.

4,213,465
ELECTROENCEPHALOGRAPH
Gunnar Renheim, Vällingby, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 16, 1978, Ser. No. 916,059
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 2727583
Int. Cl.[2] A61B *5/04*
U.S. Cl. 128—731 **18 Claims**



1. An electroencephalograph comprising a number of measuring electrodes for emplacement on the head of the patient, signal amplifiers whose input channels are connectable to the measuring electrodes, selector means for connecting the measuring electrodes to the input channels in accordance with a pattern selection program, and recorders connected with the respective signal amplifiers and controlled by the output signals of the signal amplifiers, characterized in the selector means (**2**) having a head-image area (**84**), and having one manually operable electrode switch (e.g. **95–100**, FIG. **5**) for each measuring electrode (e.g. **95***a*–**100***a*, FIG. **5**), said selector means having selection circuit means (e.g. **152**, **154**) connected with said manually operable electrode switches (e.g. **95–100**) and with said measuring electrodes (e.g. **95***a*–**100***a*) and operable for selectively connecting said measuring electrodes with respective ones of said input channels in accordance with the pattern of actuation of said manually operable electrode switches, such that the respective measuring electrode (e.g. **95***a*–**100***a*, FIG. **5**) corresponding to each actuated electrode switch is connected to a respective input channel, and said electrode switches being arranged in positions relative to the head-image area (**84**) corresponding to the application locations of the respective measuring electrodes (e.g. **95***a*–**100***a*, FIG. **5**).

4,213,466
MONITORING MYOELECTRIC SIGNALS
Foster B. Stulen, Somerville, Mass., assignor to Harvard College, President and Fellows, Cambridge, Mass.
Filed Aug. 11, 1978, Ser. No. 933,071
Int. Cl.[2] A61B *5/05*
U.S. Cl. 128—733 **1 Claim**

1. In a neurological monitor for measuring the spectral variation in a myoelectric signal, said monitor being of the type including
an electrode suitable for contacting a living being and detecting said myoelectric signal,
circuitry for processing said myoelectrical signal to provide a display signal representative of said spectral variation, said circuitry comprising
means for amplifying said myoelectric signal to provide an amplified signal,
filter means for providing a filtered signal corresponding to a portion of said amplified signal having frequency components on one side of a variable cutoff frequency,
means for comparing said filtered signal to a reference signal and providing a control signal that is dependent on the difference in magnitude between said filtered and reference signals,
means for automatically varying said cutoff frequency in accordance with the value of said control signal,
means for providing a display signal representitive of said spectral variation in said myoelectric signal, and
a display driven by said display signal, for observing said spectral variation in said myoelectric signal,



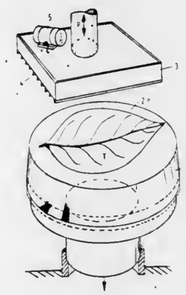
the improvement comprising an attenuator for receiving said amplified signal and producing said reference signal, the attenuation being selected to make the magnitudes of said reference and filtered signals equal when said cutoff frequency is set at a median frequency of said myoelectric signal,
whereby said circuitry will tend to adjust said cutoff frequency to said median frequency.

4,213,467
MONITORING MYOELECTRIC SIGNALS
Foster B. Stulen, Somerville, and Carlo De Luca, Wellesley, both of Mass., assignors to Harvard College, President and Fellows, Cambridge, Mass.
Filed Aug. 11, 1978, Ser. No. 933,072
Int. Cl.[2] A61B *5/05*
U.S. Cl. 128—733 **18 Claims**



1. A neurological monitor for measuring the spectral variation in a myoelectric signal, comprising
an electrode suitable for contacting a living being and detecting said myoelectric signal,
circuitry for processing said myoelectric signal to provide a display signal representative of said spectral variation, said circuitry comprising
means for amplifying said myoelectric signal to provide an amplified signal,
filter means for providing a filtered signal corresponding to a portion of said amplified signal having frequency components on one side of a variable cutoff frequency,
means for comparing said filtered signal to a reference signal and providing a control signal that is dependent on the difference in magnitude between said filtered and reference signals,
means for automatically varying said cutoff frequency in accordance with the value of said control signal,
means for providing a display signal representative of said spectral variation in said myoelectric signal, and
a display driven by said display signal, for observing said spectral variation in said myoelectric signal.

4,213,468
METHOD AND DEVICE FOR DIVIDING TOBACCO LEAVES OR THE LIKE INTO PIECES
Wilhelmus P. L. Boogers, Eindhoven, Netherlands, assignor to B.V. Arenco P.M.B., Best, Netherlands
Filed Feb. 16, 1978, Ser. No. 878,398
Claims priority, application Netherlands, Mar. 31, 1977, 7703538
Int. Cl.[2] A24B *5/16*
U.S. Cl. 131—145 **10 Claims**



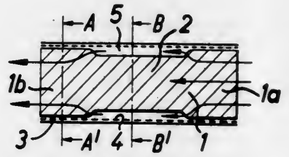
1. A method of dividing tobacco leaves or the like into pieces, which comprises the steps of:
(a) engaging one side of a leaf with a cutting edge while engaging the opposite side of the leaf with an elastically yielding member, to exert pressure on the leaf;
(b) maintaining the leaf, during step (a), in spread condition; and
(c) relatively vibrating the cutting edge and elastically yielding member during step (a), to force the cutting edge through the leaf without affecting said elastically yielding member.

4,213,469
SMOKER'S PIPE HAVING A HOLLOW PIPE BODY FORMED FROM METALLIC HALF SECTIONS
George S. Ramsay, 1009 Aragon Ave., Saint Augustine Shores, Fla. 32084
Filed Mar. 8, 1979, Ser. No. 18,769
Int. Cl.[3] A24F *5/01*
U.S. Cl. 131—199 **11 Claims**

1. A dry, cool smoking and lightweight smoker's pipe which includes a pipe body formed of two attached metallic body half sections which are configured to define a hollow bowl seat portion and a hollow stem portion connected thereto; a thin metal support bowl means positioned within said hollow bowl seat portion of said pipe body, said thin metal support bowl means having a hole in the side thereof facing said hollow stem portion of said pipe body, a clay bowl means positioned within said thin metal support bowl means, said clay bowl means having a threaded hole in the side thereof aligned with the hole in the side of the thin metal support bowl means; a protecting ring means positioned over the tip of said clay bowl and attached to said hollow bowl seat portion of said pipe body; a hollow funnel means extending through the hole in said thin metal bowl means and threadably connected with the threaded hole in said clay bowl means, an enlarged head portion thereof facing said hollow stem portion of said pipe body; and a mouthpiece attached to the end of said hollow stem portion of said pipe body opposite the end connected to said hollow bowl seat portion.

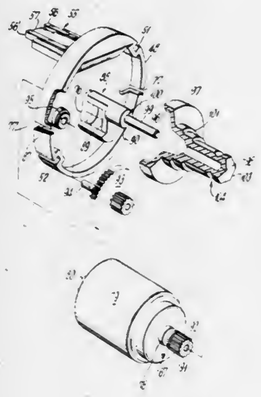


4,213,470
TOBACCO-SMOKE FILTERS
Henry G. Horsewell, Totton; John D. Green; John A. Luke, both of Romsey, and Raymond J. Harrison, North Baddesley, all of England, assignors to British-American Tobacco Company Limited, London, England
Filed Nov. 10, 1977, Ser. No. 850,071
Claims priority, application United Kingdom, Nov. 19, 1976, 48404/76
Int. Cl.[2] A24B *15/02*
U.S. Cl. 131—261 B **7 Claims**



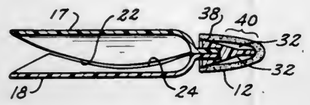
1. A tobacco-smoke filter having an axial flow filter body comprising at least one intermediate section which is located between end sections, has a cross section less than that of the end sections and lies wholly within the outline of the latter sections as viewed axially of the body, and a porous wrap of sheet material which has a porosity of at least 3,000 W.T. units and is pervious to volatile constituents of tobacco smoke and which forms, with said body, a smoke passage bounded by said porous sheet material around substantially the whole periphery of the body, from which passage said constituents can be removed from the smoke by diffusion through the said sheet material, each of the said sections being made of filter material.

4,213,471
MANICURING UNIT
Paul D. Burian, Elmsford, and Arthur T. Sempliner, New York, both of N.Y., assignors to Clairol, Inc, New York, N.Y.
Division of Ser. No. 683,854, May 6, 1976, Pat. No. 4,103,694.
This application May 15, 1978, Ser. No. 905,770
Int. Cl.[2] A45D *29/05;* **B24D** *17/00*
U.S. Cl. 132—73.6 **6 Claims**



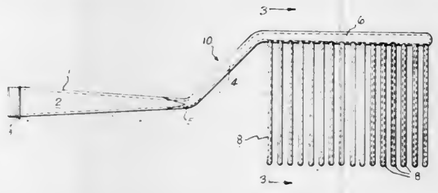
1. A sub-assembly for portable manicure units comprising
(a) a bulkhead adapted to be mounted transversely of the manicure unit,
(b) said bulkhead having a generally flat face having
(c) an aperture therein,
(d) a protruding pin positioned to engage
(e) a motor having a casing portion positioned within said aperture,
(f) said bulkhead having a second face including
(g) a pair of recesses positioned on opposite sides of said aperture,
(h) a pair of slots in said bulkhead and extended inwardly from opposite edges thereof toward said pair of recesses,
(i) a yoke having
(j) a motor-engaging portion and
(k) a pair of legs positionable along said motor and through said slots to protrude adjacent said second face, said legs each having a terminal portion adapted to bear against said second face and engageable in one of said pair of recesses,
(l) said second face having a protrusion including
(m) an axle recess positioned on the center line of the bulkhead and
(n) a lateral gear aperture,
(o) a pinion gear on said motor and positioned adjacent said lateral gear aperture,
(p) a cluster gear rotatably mounted on said second face and having
(q) a major gear in meshing relationship with said pinion gear through said lateral gear aperture and
(r) a minor gear, and
(s) an output gear mounted on
(t) an axle positioned on the center line of the bulkhead in said axle recess and having
(u) internal teeth in meshing engagement with said minor gear of said cluster gear.

4,213,472
FINGER MOUNTABLE MAKEUP APPLICATOR
Jean-Louis H. Gueret, Paris, France, and Nancy Adams, Westport, Conn., assignors to L'Oreal, Paris, France
Filed Aug. 3, 1978, Ser. No. 930,856
Int. Cl.[2] A45D *40/26*
U.S. Cl. 132—88.7 **10 Claims**



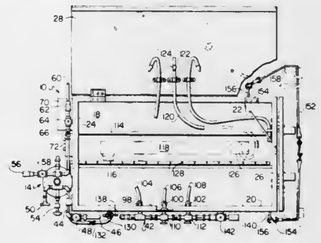
1. A makeup applicator for mounting on a finger of the user comprising, a holder assembly formed from a semi-rigid material and comprising first and second elongate shell portions in opposed relation to each other, said shells presenting a substantially closed end, each of said shells opening in a direction away from said tip to receive between and within the shells a finger of the user, each shell having an integral tab substantially narrower than its shell and projecting longitudinally beyond the closed end thereof to provide a projection, mounting means adjacent the end of the shells for mounting an applicator element on said holder assembly and being received on the projection of said tabs, said tabs having resilient characteristics to provide an elastic hinge means that urges the shells together so that the inside of the shells frictionally grip the finger of the user, and an applicator element fitted to said mounting means, said shell portions being dimensioned to receive the finger of the user longitudinally therein so that the tip of the finger is substantially spaced longitudinally from said end, said hinge means frictionally retaining the holder on the user's finger to permit maintaining the applicator on the finger of the user with said applicator element spaced at a convenient distance from the user's fingertip to enable easily applying a cosmetic product.

4,213,473
AFRO OIL COMB
Oscar E. Dawson, 2224 16th Ave., Sacramento, Calif. 95822
Filed Aug. 10, 1977, Ser. No. 823,270
Int. Cl.[2] A45D *24/22*
U.S. Cl. 132—113 **1 Claim**



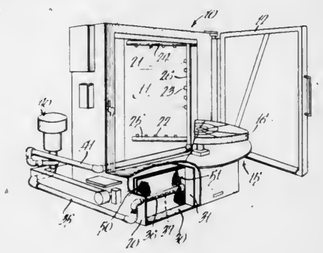
1. A comb for dispensing a controllable amount of oil to the hair of the user comprising in combination: a conically tapering hollow handle having a threaded end cap at a larger extremity of said handle and a valve closure at a narrower extremity within the hollowing of said handle, said handle is fashioned from deformable, resilant material having a memory to return to an original non-stressed condition, whereby when said handle is squeezed, said valve is opened and when said handle is not squeezed, said valve is closed, a first hollow passageway communicating with said valve, downstream thereof and upwardly angulated relative to an axial extent of said handle, a second tubular passageway connected to said first passageway at the extremity remote from said valve, said second passageway disposed parallel to, but away from said handle, a plurality of hollow teeth extending downwardly from said second passageway crossing substantially medially over an extended axial line generated from said handle, said teeth provided with openings at their extremities remote from said second passageway so that a further line extending to said teeth extremities from the terminal portion of said handle at its juncture with said first hollow passageway defines an isosceles triangle with the equal sides being said further line and said first hollow passageway and the base being the tooth nearest the handle whereby a liquid disposed on said handle can be dispensed through said teeth and the upward angulation of said first passageway and the medial disposition of said teeth relative to the extended axial line provide a balanced comb.

4,213,474
VEHICLE RADIATOR CLEANING AND TESTING SYSTEM
Frank Harrison, P. O. Box 1824, Kansas City, Mo. 64141
Filed Aug. 3, 1979, Ser. No. 63,428
Int. Cl.[3] B08B *9/00, 3/00*
U.S. Cl. 134—102 **12 Claims**



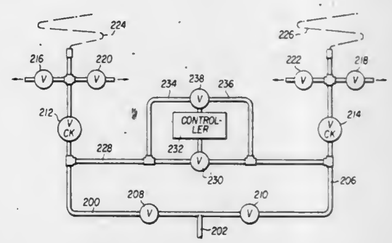
1. A unitary system for cleaning vehicle radiators comprising:
a tank for receiving the radiator to be cleaned;
a steam generator associated with said tank;
means placing the steam generator into communication with the interior of the radiator to be cleaned whereby to direct steam through the interior of the radiator; and
means for directing the steam which has passed through the interior of the radiator upon the exterior of the radiator in the tank.

4,213,475
POWER PARTS WASHER
Gary E. Minkin, 12528 Post Grove, St. Louis, Mo. 63141
Filed Feb. 5, 1979, Ser. No. 9,168
Int. Cl.[2] B08B *3/02*
U.S. Cl. 134—111 **4 Claims**



3. A power parts washer for automotive parts and the like having a cabinet with a washing chamber and a sump therebeneath, spray means in said washing chamber including a plurality of spray nozzles for directing a liquid including a chemical such as a detergent against parts in said chamber with the liquid thereafter flowing to said sump and including grit in the form of large particles removed from the parts being washed, a first conduit having an inlet positioned in an intake section of said sump, a pump connected to said first conduit, a second conduit extended between said pump and said spray means, filter means consisting of one or more coarse filters positioned in said sump to filter liquid flowing to said intake section and having relatively large pores of a size of up to approximately ¼" diameter to permit flow of grit therethrough, and said spray nozzles each having an approximately round opening of a diameter greater than that of the grit which passes through the filter to permit flow of liquid and grit out of the nozzles.

4,213,476
METHOD AND SYSTEM FOR PRODUCING AND TRANSPORTING NATURAL GAS
Don A. Bresie; Donald W. Fowler, and Jack M. Burns, all of Austin, Tex., assignors to Texas Gas Transport Company, Austin, Tex.
Filed Feb. 12, 1979, Ser. No. 11,683
Int. Cl.[2] F17C *5/02*
U.S. Cl. 137—2 **16 Claims**



1. The method for producing and transporting natural gas from a gas well(s) location, wherein said gas well(s) is connected with a gathering manifold system and said gathering manifold system is connected with a loading manifold system, said method including the steps of:
connecting a first, movable separate pressure vessel means to said loading manifold system;
filling said first, movable separate pressure vessel means with natural gas transmitted thereto through said gathering manifold system and said loading manifold system, said natural gas being compressed by compressor means provided in said gathering manifold system to a pressure in excess of at least about 800 psia if it is not already at that pressure when entering said gathering manifold system from said gas well(s), said filling of said first, movable separate pressure vessel means being terminated after said pressure vessel means contains a selected discrete batch volume of natural gas in a relatively static confined state compressed to a pressure in excess of at least about 800 psia, and said filling proceeding substantially continuously at a generally constant, preselected rate of flow chosen to maintain a preselected, generally constant preferred rate of withdrawal from said gas well(s);
connecting a second separate pressure vessel means to said loading manifold system, at a time prior to when filling of said first, movable separate pressure vessel means is complete;
switching from said first, movable separate pressure vessel means to said second pressure vessel means when said first, movable separate pressure vessel means becomes filled, without any substantial interruption in flow whereby to maintain a substantially constant natural gas flow;
filling said second separate pressure vessel means in the same manner as said first separate pressure vessel means, while said first, movable separate pressure vessel means is removed and replaced;
replacing said filled, first movable separate pressure vessel

means with an empty, movable separate pressure vessel means, while said second pressure vessel means is being filled, and before completion of filling thereof; and

transporting said filled, first movable separate pressure vessel to an off-loading terminal, where it is emptied and then returned to said gas well(s) location.

4,213,477

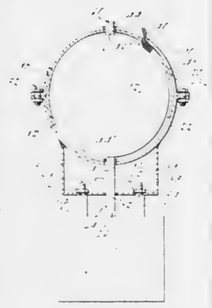
AUTOMATIC DAMPER FOR FURNACE VENT PIPE

Robert L. Velasquez, 11422 Minden, Detroit, Mich. 48205

Filed Feb. 12, 1979, Ser. No. 11,374

Int. Cl.[2] F16K *13/00*

U.S. Cl. 137—15 **12 Claims**



1. An automatic damper mechanism for a vent pipe comprising

a damper positioned in said vent pipe and having a shaft attached thereto rotably positioned in shaft openings in said vent pipe,

a motor connected to said shaft and adapted to operate said damper, and

a collar mounting bracket comprised of a first section and a second section which are positioned around said vent pipe forming a ring,

said first section having an elongated slot therein which is utilized as a template for making a corresponding slot in said vent pipe in order to position said damper therein,

said section section positioned on said vent pipe covering said slot therein which was used to insert the damper, and

mounting means on said second section for mounting said motor thereon.

4,213,478

TRANSDUCER ASSEMBLY PROVIDING PNEUMATIC OUTPUT PROPORTIONAL TO ELECTRICAL INPUT SIGNAL

Everett O. Olsen, Wrentham; Robert F. Estes, Foxboro; Paul W. Rezendes, New Bedford, all of Mass., and George F. Williams, Rumford, R.I., assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 776,575, Mar. 11, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 972,096

Int. Cl.[2] F15B *5/00;* **G05D** *16/20*

U.S. Cl. 137—85 **14 Claims**

1. A current to pneumatic output pressure transducer comprising:

a housing;

a casing of magnetically soft ferrous material mounted within said housing;

a permanent magnet having opposed north and south poles, said magnet being rigidly mounted within said casing and spaced therefrom;

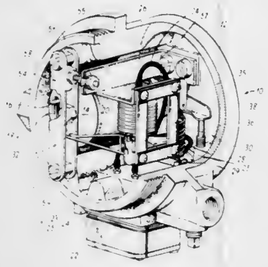
a coil pivotally suspended within said casing within the field of said magnet and rotatable thereabout in the space between said magnet and said casing;

a flapper mounted on said coil at a point radially offset from the rotational axis thereof to produce arcuate movement of said flapper with rotary motion of said coil;

means for applying an electrical input current to said coil thereby inducing an angular rotation of said coil and said flapper, the angular position thereof being proportional to the magnitude of said applied current;

a shiftable support pivotally mounted on said housing adjacent said casing;

a pneumatic nozzle mounted on said support and located in close proximity to said flapper so that said nozzle may be covered by said flapper so as to generate a back pressure;



a pneumatic relay receiving the back pressure of said nozzle to produce a corresponding amplified output pressure signal;

a bellows receiving said output pressure signal for applying a pneumatic feedback force to said shiftable support;

spring means coupled to said shiftable support, the restraining forces of said spring means producing a change in position of said nozzle that corresponds essentially linearly with the movement of said flapper, whereby said output pressure signal is proportional to said applied input current.

4,213,479

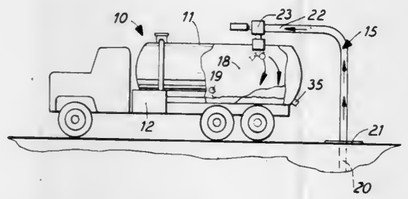
EDUCTION UNIT

Leland E. Pearson, Galva, Ill., assignor to Industrial & Municipal Engineering, Inc., Galva, Ill.

Filed Nov. 7, 1978, Ser. No. 958,332

Int. Cl.[2] B08B *9/08, 13/00*

U.S. Cl. 137—493 **9 Claims**



1. An eduction unit comprising:

(a) a portable tank arranged to be selectively evacuated or pressurized to internal pressures respectively below and above atmosphere pressure;

(b) a single first hose adapted at one end to be inserted into a mixture of solids and liquids external to said tank, said first hose being supported at its other end at the top of said tank;

(c) a normally closed first check valve communicating said other end of said first hose with the interior of said tank, and openable in response to said tank's being partially evacuated;

(d) a second hose adapted at one end to be inserted into any liquid contents within said tank, said second hose being supported at its other end near the top of said tank; and

(e) a normally closed second check valve communicating said other end of said first hose with said other end of said second hose, and openable in response to said tank's being pressurized above atmospheric pressure.

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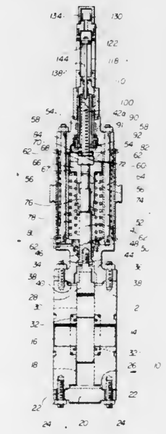
MANUAL OVERRIDE FOR HYDRAULIC GATE VALVE ACTUATORS

Paul R. Orum, Stafford, and Larry A. Vyvial, Rosenberg, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,517

Int. Cl.[3] F16K *37/00, 31/00, 31/44*

U.S. Cl. 137—556 **14 Claims**



1. An actuator device for a subsea gate valve having a gate movable between open and closed positions, said actuator device comprising:

an externally threaded valve stem fixed to said gate for movement with the gate between open and closed positions thereof;

a piston connected to said valve stem;

a cylinder closely receiving said piston and adapted to receive pressurized fluid to force the piston and stem in a first direction axially of the stem;

a spring biasing said piston in a second direction opposite said first direction to move said piston and stem in the second direction in the absence of fluid pressure in said cylinder above a predetermined level;

an internally threaded nut member threaded onto said valve stem for longitudinal movement therewith;

means limiting movement of said nut member axially on said stem in both directions so that sufficient rotation of said nut member in opposite directions effects axial movement of said stem in both directions to open and close the gate;

a sleeve telescoped on said nut member, and spline means connecting the sleeve and nut member so that rotation of said sleeve is translated into rotation of said nut member but said nut member is movable within and relative to such sleeve axially of the valve stem for the entire travel of the gate between open and closed positions, said sleeve being adapted to be rotated manually to effect movement of the gate between its open and closed positions.

4,213,481

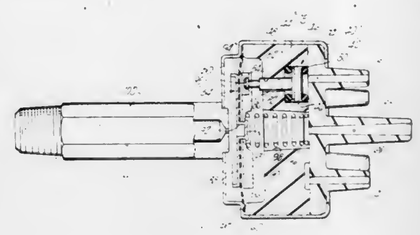
VALVE CONTROL MECHANISM

Benjamin C. Benjamin, Flint, Mich., assignor to Schmelzer Corporation, Durand, Mich.

Continuation of Ser. No. 829,225, Aug. 31, 1977, abandoned. This application Mar. 29, 1979, Ser. No. 24,968

Int. Cl.[2] F16K *11/04*

U.S. Cl. 137—596.18 **4 Claims**



1. A control mechanism for turbo charged internal combustion engines having a control device responsive to intake manifold vacuum pressure, the combination comprising; a housing including a first member forming a valve cavity, said housing including a second member forming inlet, outlet and exhaust ports, said inlet port communicating with a variable source of vacuum, said outlet port communicating with said control device and said exhaust port communicating with the exterior of said housing, valve means including a valve element disposed in said valve cavity and being movable between a normal open position in which said inlet and outlet ports communicate with each other to an operative position in which said inlet port is closed and said outlet port communicates through passage means in said second member with said exhaust port and said control device, a movable wall a third member holding said movable wall relative to said second member and forming a control chamber at one side of said movable wall, the other side of said movable wall being connected to said valve element, a control port connected to said control chamber and being connected to said engine manifold, spring means biasing said movable wall to a first position to maintain said valve element in said normal open position in the presence of a pressure in said control chamber no greater than atmospheric pressure, said movable wall being movable to a second position in the presence of a positive pressure greater than atmospheric pressure to move said valve element to said operative position to isolate said control device.

4,213,482

HYDRAULIC COUPLER

John T. Gondek, P.O. Box 21013, Minneapolis, Minn. 55421

Continuation of Ser. No. 290,562, Sep. 18, 1972, abandoned, which is a continuation of Ser. No. 101,076, Dec. 23, 1970, abandoned. This application Oct. 25, 1978, Ser. No. 954,616

Int. Cl.[3] F16L *37/22*

U.S. Cl. 137—614.01 **5 Claims**

1. A detachable hydraulic coupler including:

a male portion and a cooperable female portion, said male portion being engaged with a free end extremity of said female portion when said coupler is in a coupled position,

a valve in each of said portions,

means normally urging said valves toward closed position, a plurality of angularly spaced apertures in said female portion encircling said male portion,

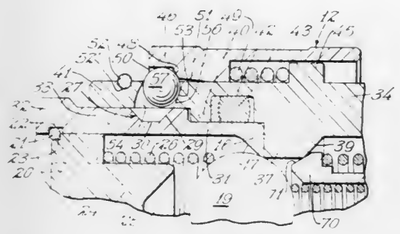
a locking ball in each of said apertures,

said male portion having a groove in its outer surface into which said locking balls may extend to hold said male and female portions engaged,

a collar encircling said female portion and slidably suported thereby for movement between two extreme positions,

said collar in one extreme position holding said locking balls engaged in said groove in said male portion,

said apertures having their axes extending at an acute angle with respect to the axis of said coupler, said angle in each instance inclining outwardly and away from said end extremity of said female portion,



said groove having a wall extending at substantially fifteen degrees with respect to the axes of said apertures and said apertures each having a side extending at said acute angle and said balls being disposed between said groove wall and said sides of said apertures when said coupler is in said couple position.

4,213,483

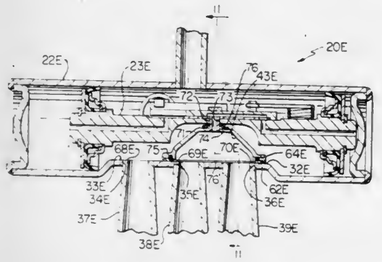
REVERSING VALVE CONSTRUCTION AND PARTS THEREFOR AND METHODS OF MAKING THE SAME

Werner R. Bauer, Radnor, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 825,956, Aug. 19, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,483

Int. Cl.[2] F16K *27/04*

U.S. Cl. 137—625.29 **22 Claims**



1. In a tubular housing means for a reversing valve construction having a movable piston-like valve member that controls port means of a valve seat means of said housing means through the relative position of passage means of said valve member relative to said port means, the improvement wherein said valve seat means is an integral homogeneous part of said tubular housing means and has a substantially flat valve seat surface.

4,213,484

SINGLE HANDLE CONTROL APPARATUS

Cyril W. Habiger, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

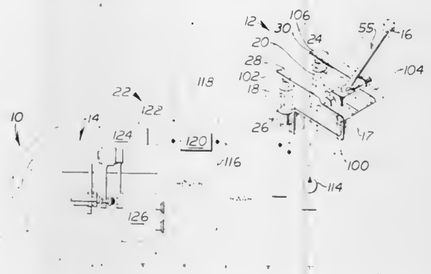
Filed May 30, 1978, Ser. No. 910,250

Int. Cl.[2] F16K *11/18*

U.S. Cl. 137—636.1 **15 Claims**

1. In a control apparatus having a frame, a control handle, first and second work elements, first and second ramps each being independently, pivotally movable relative to the frame and being in contact with a respective work element, each of said work elements being movable between a plurality of positions in response to pivotally moving said respective ramps between a plurality of positions, the improvement comprising:

first means for selectively, progressively pivoting only one of the first and second ramps in a preselected direction in response to moving the control handle in a first plane to a first position located in said first plane and in a different



second plane from a first toward a second position located in said second plane and for selectively, progressively pivoting only the other of said first and second ramps in said preselected direction in response to moving the control handle in the first plane to a second position located in said first plane and in a different third plane from a first toward a second position located in said third plane.

4,213,485

HOSE

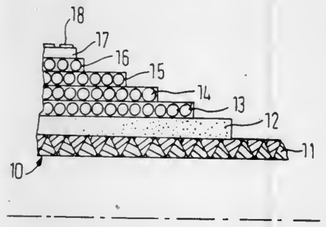
Roger J. Ottewell, Birmingham, and Jack M. Lowe, Sutton Coldfield, both of England, assignors to Dunlop Limited, London, England

Filed Jul. 26, 1978, Ser. No. 928,146

Claims priority, application United Kingdom, Jul. 28, 1977, 31730/77

Int. Cl.[2] F16L *11/08*

U.S. Cl. 138—130 **27 Claims**



1. A flexible hose comprising a lining layer of substantially impermeable material, a reinforcement structure comprising at least one balanced pair of helically extending reinforcement members, embedded in elastomeric material, to withstand internal pressure and axial tensile loadings, and radially inwards of at least the reinfocement structure an armouring layer to resist radial crushing loads, said armouring layer comprising one pair of helical reinforcing elements nested together and shaped such that contacting surfaces of the elements between the successive turns of the helices are of a substantially frusto-conical shape.

4,213,486

COATED PIPE AND PROCESS FOR MAKING SAME

Carlos M. Samour, Wellesley; Earl G. Jackson, Bedford; Samuel J. Thomas, Hamilton, all of Mass., and Louie E. Davidson, Londonderry, N.H., assignors to The Kendall Company, Boston, Mass.

Filed Nov. 6, 1978, Ser. No. 958,310

Int. Cl.[2] F16L *9/14;* **B65H** *81/00*

U.S. Cl. 138—143 **16 Claims**

1. A coated article comprising a metallic pipe having a protection layer thereon, said layer comprising a first layer bonded to the pipe of an epoxy coating derived from a bis-phenol A polymer of 2 to 10 mils and an adhesive faced thermoplastic polymer tape wrapping adhesively bonded to said epoxy coating, said protection layer being from 6 to about 50 mils in thickness.

11. A process for externally protecting metal pipe which comprises providing heated pipe, electrostatically applying fusible Epoxy resin powder derived from a bis-phenol A polymer to the exterior surface of the metal to form a continuous coating of from 2 to 10 mils in thickness and thereafter spirally wrapping an adhesive-faced flexible thermoplastic polymer substrate so that the thickness of the epoxy coating and tape wrapping is from 6 to 50 mils.

4,213,487

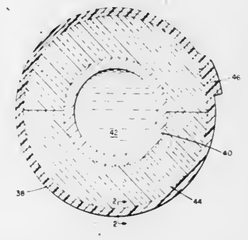
LAMINATE OF METAL WITH THERMOPLASTIC MATERIAL

Smith A. Funk, Tampa; Charles J. Klasen, Seminole, and Ilmars Vilmanis, St. Petersburg, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Jan. 26, 1978, Ser. No. 872,497

Int. Cl.[2] F16L *9/14*

U.S. Cl. 138—149 **1 Claim**



1. A conduit for transporting fluids through atmospheric air comprising:

A. a pipe;

B. thermal insulation surrounding the pipe;

C. a moisture vapor barrier completely surrounding the thermal insulation said moisture vapor barrier constituting a laminate comprising:

I. an aluminum sheet:

(a) having a thickness of 0.001 to 0.1 inch;

(b) having on its surfaces an adhesion-promoting amount of a copolymer of vinyl chloride and vinyl acetate; and

II. an upper sheet of thermoplastic material adhering to the top of the aluminum sheet; and

III. a lower sheet of thermoplastic material adhering to the bottom of the aluminum sheet;

wherein the thermoplastic material consists essentially of:

(a) chlorinated polyethylene:

(1) having a melt viscosity of 8,000 to 25,000 poises;

(2) comprising from 25 to 50 percent by weight chlorine;

(3) having a crystallinity of less than 3%;

(4) having a glass transistion temperature of less than 20° C.; and

(b) calcium carbonate having a particle size such that it passes through a U.S. standard screen of 100 mesh/inch;

wherein the weight ratio of a:b is 1:5 to 5:1;

(c) a pigment comprising from 1 to 35 percent by weight of the thermoplastic material; and

(d) a stabilizer.

4,213,488

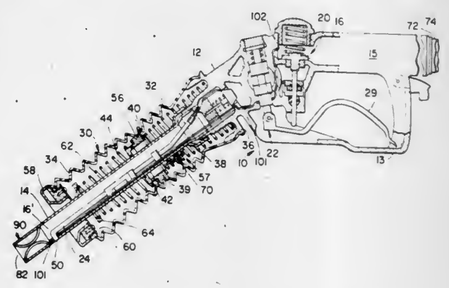
VALVE MEANS RESPONSIVE TO THE OPERATION OF A VAPOR-SEAL VALVE FOR PREVENTING FUEL SPILLAGE FROM THE DISCHARGE SPOUT OF A VAPOR-RECOVERY FUEL DISPENSING NOZZLE

Walter R. Pyle, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 4, 1978, Ser. No. 965,967

Int. Cl.[3] B65B *3/18*

U.S. Cl. 141—1 **8 Claims**



1. A vapor-recovery fuel dispensing nozzle, comprising:

a nozzle main body portion;

a discharge spout projecting from the main body portion, said discharge spout having an outlet end proportioned for ease of insertion into a fill pipe of a fuel tank;

a flow passage extending through said discharge spout and the nozzle main body portion for the flow of fuel therethrough;

a flow control valve in the nozzle main body portion operable to regulate the flow of fuel through said flow passage;

a vapor recovery passage means formed in the main body portion;

a vapor recovery shroud disposed radially outwardly from said discharge spout and having an inner end and an outer end, the inner end of said shroud connected to the nozzle main body portion in communication with said vapor recovery passage means;

a sealing collar at the outer end of said shroud for engagement with the fill pipe opening when said discharge spout is inserted therein in use of said nozzle to direct vapor expelled from the fuel tank during refueling to said vapor recovery passage means by way of said shroud;

a vapor-seal valve for said nozzle operable to be in a closed position to prevent the escape of vapors through the outer end of said shroud when said nozzle is not in use and to be in an open position when said discharge spout is inserted into the fill pipe in use of said nozzle so that vapor expelled from the fuel tank during refueling may be directed by way of said shroud to said vapor recovery passage means;

valve means responsive to the operation of said vapor-seal valve located in said discharge spout at the outlet end thereof for sealing the outlet end of said discharge spout to prevent the flow of fuel therethrough when said vapor-seal valve is in a closed position and for opening the outlet end of said discharge spout to permit the flow of fuel therethrough when said vapor-seal valve is in an open position; and

means in communication with said vapor-seal valve and said valve means for closing said valve means to prevent the

flow of fuel through the outlet end of said discharge spout when said vapor-seal valve is in a closed position and for opening said valve means to permit the flow of fuel through the outlet end of said discharge spout when said vapor-seal is in an open position.

4,213,489

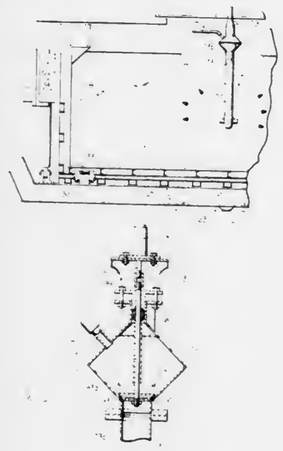
ONE-SPOT COKE QUENCH CAR COKE DISTRIBUTION SYSTEM

George R. Cain, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 834,125, Sep. 19, 1977, abandoned. This application Jan. 10, 1979, Ser. No. 2,321

Int. Cl.³ C10B *39/14*

U.S. Cl. 141—70 **4 Claims**



1. A one-spot coke quench car comprising:
(a) a wheel-mounted frame;
(b) a receptacle mounted to said frame into which incandescent coke is pushed from a coke oven;
(c) at least one water metering storage chamber means, for containing a predetermined volume of water under pressure, juxtaposed to said receptacle, comprising:
(1) an upper frusto-conical portion open at both ends,
(2) a lower frusto-conical portion open at both ends, fixed to said upper frusto-conical portion such that the larger diameters of said upper frusto-conical end portion and said lower frusto-conical end portion abut at the point of fixation to form a chamber having a central axis passing through the open smaller diameters of said upper frusto-conical portion and said lower frusto-conical portion;
(3) a valve disc positioned perpendicular to said central axis and disposed to seal the open smaller diameter of said lower frusto-conical portion;
(4) a valve stem, fixed to said valve disc, projecting through the open smaller diameter of said upper frusto-conical portion coaxial to said central axis;
(5) a packing gland sealing said smaller diameter of said upper frusto-conical portion around said stem such that said valve stem protrudes through said packing gland; and
(6) inlet means through which water can enter said water metering storage chamber.
(d) pressurization means by which said predetermined volume is conveyed into said water metering storage chamber means and pressurized therein;
(e) discharge means by which said predetermined volume is released from said water meter storage chamber means;
(f) conduit means by which said predetermined volume is conveyed, after release, into the center core of said incandescent coke within said receptacle; and
(g) dispersement means by which said predetermined volume is brought from said conduit means into direct contact with said center core of said incandescent coke within said receptacle, whereat said predetermined volume is rapidly and explosively converted into steam to disrupt and redistribute said incandescent coke within said receptacle prior to quenching.

4,213,490

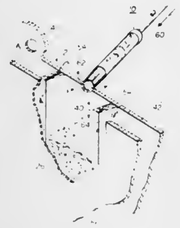
INSULATION GUN

Harry A. Knock, 388 Marvin Pl., Wheeling, Ill. 60090

Filed Nov. 27, 1978, Ser. No. 963,823

Int. Cl.² B65B *1/04*

U.S. Cl. 141—311 R **2 Claims**



1. In combination:
(a) a confined building wall space defined by parallel wall portions and interconnecting stud means, one of said wall portions having a cutout fill opening therein;
(b) insulation gun apparatus operatively interconnected with said cutout fill opening for injecting particulated insulation material through said cutout fill opening into said confined building wall space; and
(c) particulated insulation material disposed within said insulation gun apparatus;
(d) said insulation gun apparatus comprising
(i) a tubular housing defining a loading chamber having a discharge opening at the forward end threreof, said particulated insulation material being disposed within said loading chamber,
(ii) a piston assembly for ejecting said particulated insulation material from said loading chamber through said discharge opening, said piston assembly comprising a piston disposed for reciprocal movement within, and in the axial direction of, said loading chamber and a piston rod, including a handle portion, connected with said piston and projecting in the axial direction of said tubular housing for reciprocating said piston in response to movement of said handle portion by an operator, and
(iii) a fill nozzle removably connected with said tubular housing at said discharge opening and engaging said one wall portion, said fill nozzle comprising a tapered housing defining a discharge port in communication with said loading chamber and having an annular, axially projecting lip circumscribing said discharge port and extending through said cutout fill opening,
(iv) wherein said insulation gun apparatus further includes a plunger for breaking up compacted accumulations of said particulated insulation material within said loading chamber, said plunger being separate from, an parallel to, the said piston rod and slidably and transversely extending through said piston into said loading chamber for reciprocating movement in said loading chamber by an operator.

4,213,491

PNEUMATIC TIRE CONTAINING WATER-DISPERSIBLE PUNCTURE SEALANT

George A. Pope, and Alan J. Bourne, both of Sutton Coldfield, England, assignors to Dunlop Limited, London, England

Filed Aug. 8, 1978, Ser. No. 931,932

Claims priority, application United Kingdom, Aug. 11, 1977, 33692/77

Int. Cl.² B60C *17/00*

U.S. Cl. 152—330 L **16 Claims**

1. A pneumatic tire having on its interior surface a puncture sealant comprising: (a) a polybutene lubricant to facilitate relative movement between contacting portions of said interior surface when the tire is driven in a deflated condition, (b) a non-ionic surfactant and (c) a particulate solid filler.

4,213,492

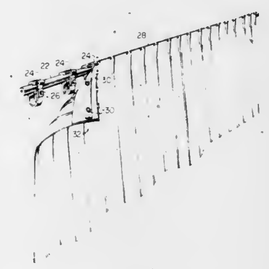
DRAPERY ROD CLIP

Gerald E. Guebert, 3039 Eric La., Farmers Branch, Tex. 75234, and Raymond R. Belknap, 125 Star, Austin, Tex. 78734

Filed Oct. 4, 1978, Ser. No. 948,433

Int. Cl.² A47H *1/00*

U.S. Cl. 160—124 **7 Claims**



1. A connector clip for attachment of drapery to a cylindrical support member comprising:
a face portion having front and back surfaces;
fastener means disposed on the front surface of said face portion for detachably coupling with respective fastener means affixed to said drapery;
an upper leg having a first end connected to said face portion, said upper leg extending transversely away from the back of said face portion;
a first curved jaw carried by a second end of said upper leg for engaging said cylindrical support;
a lower leg having a first end connected to said face portion, said lower leg including a curvilinear portion extending tangentially from said face portion to a point spaced from the back surface of said face portion; and
a second curved jaw carried by a second end of said lower leg for engaging said cylindrical support in opposition to said first curved jaw.

4,213,493

FABRIC RETAINER FOR PANEL

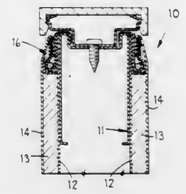
Richard G. Haworth, Holland, Mich., assignor to Haworth Mfg., Inc., Holland, Mich.

Filed Jan. 24, 1979, Ser. No. 5,955

Int. Cl.² A47G *5/00*

U.S. Cl. 160—351 **5 Claims**

1. In a substantially rectangular space divider panel having a frame member extending longitudinally along each edge thereof, a channel-like fabric retainer fixedly positioned adjacent each exterior side of each said frame member and extending longitudinally thereof, and a thin sheet of flexible fabric extending tautly across each of the exterior side surfaces of said panel, said fabric sheets having the edge portions thereof fixedly secured within the respective retainers, comprising the improvement wherein said retainer includes a channel portion positioned adjacent said frame member and opening outwardly toward the edge of said panel, said channel portion including inner and outer substantially parallel walls joined together by a bottom wall and defining an outwardly opening channel, said outer wall at its free end terminating in a rounded wall which projects inwardly and which terminates in an inner flange projecting inwardly into the channel, said inner flange being disposed between said inner and outer walls and extending at a slight incline relative to said inner and outer walls so that the



free edge of said flange is disposed closely adjacent said inner wall, the free edge of said flange being spaced a substantial distance from said bottom wall, said fabric sheet extending across said outer wall and wrapping around said rounded wall, said fabric sheet having an edge portion positionedwithin said channel, the edge portion of said fabric sheet including overlying layers which define a fold positioned within said channel in the vicinity of said bottom wall, said overlying layers causing said flange to be resiliently deflected so that said overlying layers are resiliently held between the free edge of said flange and the opposed inner wall.

4,213,494

PROCESS AND APPARATUS FOR LOW PRESSURE CASTING

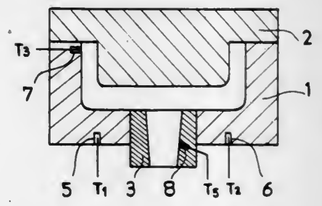
Henri Carbonnel, Antony, France, assignor to Novatome, Le Plessis Robinson, France

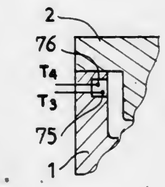
Filed Jun. 13, 1978, Ser. No. 915,209

Claims priority, application France, Jun. 15, 1977, 77 18395

Int. Cl.³ B22D *18/04, 18/08*

U.S. Cl. 164—4 **8 Claims**





1. In a process of low-pressure casting a metal in a mould which is fed with metal from below by means of an electromagnetic pump, the process comprising the following stages,

starting from an initial position in which the metal to be moulded is at a height which is slightly lower than that of the inlet of said mould:

(a) filling said mould with metal, at a predetermined acceleration, by applying an increasing voltage to said pump until a voltage is reached which corresponds to a delivery height which is slightly greater than that of the top of said mould;

(b) holding said voltage until a skin forms on the inner walls of said mould;

(c) applying an increased pressure to the metal in said mould until the solidification front reaches the inlet of said mould; and

(d) at the end of the solidification, reducing the pressure to said initial pressure and opening said mould; the improvement comprising measuring the temperature of said mould and the temperature of the metal in the melting furnace, and filling said mold at an acceleration greater than said predetermined acceleration

when the respective temperatures are lower than a predetermined value, and filling said mold at an acceleration smaller than said predetermined acceleration when the respective temperatures are higher than said predetermined value.

4. A device for controlling the low-pressure casting of a metal in a mould which is fed with metal from below by means of an electromagnetic pump, said device comprising:

means for generating a plurality of supply voltages for an electromagnetic pump;

first, second, third and fourth clock counters with preselection, which are a connected in series sequence to determine the duration of respective casting operations including: mould filling; skin formation on mould wall interior; formation of solidification in mould inlet; opening of said mould; respectively;

an analog switch associated with means for controlling the supply voltage of said pump, and connected to be controlled by output signals from said first, second and third clock counters for selectively applying the corresponding voltages to said pump;

means for controlling the opening of the mould and which is controlled by said fourth clock counter; at least one temperature sensor for said mould and one temperature sensor for the metal in the melting furnace; a variable time base means for said first and second clock counters; and

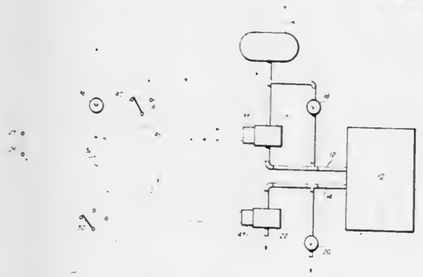
a reversing amplifier associated with each said temperature sensor and connected to said variable time base means.

4,213,495

INVESTMENT CASTING METHOD

Stanley E. Rose, Phoenix, Ariz., assignor to Ceram-Dent, Inc., Phoenix, Ariz.

Filed Aug. 31, 1978, Ser. No. 938,460
Int. Cl.³ B22C 9/04
U.S. Cl. 164—34 **10 Claims**



1. A method for burn out of a green investment having an ideal burn out temperature and including a disposable pattern therein, said method comprising the steps of:

(a) heating an oven for receiving the green investment to the ideal burn out temperature;

(b) inserting the green investment within the oven at an ambient pressure;

(c) pressurizing the oven to a first predetermined pressure while maintaining the temperature of the oven at the ideal burn out temperature;

(d) maintaining the oven at the first predetermined pressure and at the ideal burn out temperature for a first predetermined time;

(e) cycling the pressure in the oven between the first predetermined pressure and a second predetermined pressure, which second predetermined pressure is less than the first predetermined pressure by an amount of at least 20 psig, and while maintaining the oven at the ideal burn out temperature for a second predetermined time; and

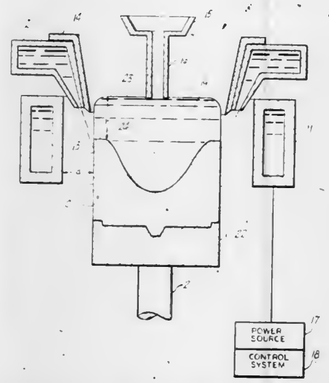
(f) bringing the pressure within the oven to ambient pressure and removing the investment from the oven.

4,213,496

ELECTROMAGNETIC CASTING APPARATUS

John C. Yarwood, Madison; Ik Y. Yun, Orange; Derek E. Tyler, Cheshire, and Peter J. Kindlmann, Northford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 905,889, May 15, 1978, Pat. No. 4,161,206.
This application Dec. 26, 1978, Ser. No. 973,476
Int. Cl.² B22D 11/01, 27/02
U.S. Cl. 164—147 **29 Claims**



1. In an apparatus for casting metals comprising:

means for electromagnetically containing molten metal and for forming said molten metal into a desired shape, said electromagnetic containing and forming means including: an inductor for applying a magnetic field to said molten metal, said inductor in operation being spaced from said molten metal by a gap extending from the surface of said molten metal to the opposing surface of said inductor;

means for applying an alternating current to said inductor to generate said magnetic field; and

means for minimizing variations in said gap during operation of said casting apparatus, said gap variation minimizing means comprising control circuit means connected to said alternating current application means, said control circuit means including circuit means for sensing variations in said gap and means responsive to said gap variations sensing circuit means for controlling the magnitude of said current applied to said inductor so as to minimize said gap variation; the improvement wherein:

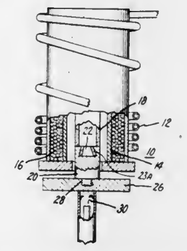
said circuit means for sensing variations in said gap includes means for sensing the current and the voltage in said inductor and for providing signals corresponding thereto and means receiving said sensed current and voltage signals for determining an electrical parameter corresponding about to the inductance of said inductor, which varies with the magnitude of said gap.

4,213,497

METHOD FOR CASTING DIRECTIONALLY SOLIDIFIED ARTICLES

Thomas F. Sawyer, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,588
Int. Cl.² B22D 25/06
U.S. Cl. 164—60 **4 Claims**



1. a method for producing a directionally solidified cast alloy article in a shell mold, said method comprising:

(a) providing a ceramic mold having a cavity divided into an upper portion and a lower portion,

(b) providing a metallic retractor having a reentrant recess in its upper position,

(c) forming a liner of relatively frangible and heat-resistant thermally-conductive ceramic material in said recess,

(d) assembling the mold and retractor together with the mold cavity and retractor recess in register,

(e) filling said mold with molten alloy metal in a heating zone at a temperature above the melting point of said metal whereby molten metal is caused to flow into and fill the retractor recess within the liner,

(f) moving the assembly downwardly relative to the heating zone to cause cooling and to establish directional solidification of the alloy in said cavity, and

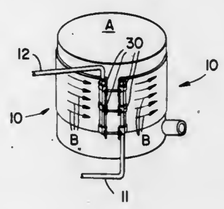
(g) breaking the liner and removing the resulting cast article from the retractor.

4,213,498

LOW-COST FLEXIBLE PLASTIC HEAT EXCHANGER

Benjamin E. Vandenbossche, Hillsborough, Calif., assignor to American HCP, South San Francisco, Calif.

Filed Nov. 15, 1978, Ser. No. 960,829
Int. Cl.² F28D 1/06
U.S. Cl. 165—136 **4 Claims**



1. A heat exchange tank system comprising:

a cylindrical tank having a smooth exterior surface;

at least one modular plastic heat exchanger circumferentially disposed around the outer circumference of said tank, said modular plastic heat exchanger including at least one thermal exchange means composed of parallel inner and outer plastic sheet means separated by a plurality of parallel flat ribs oriented normal to said sheet means and fused to said sheet means to form a plurality of parallel channels; a first manifold means having a central large flow tube and a distributor means operably connected to said thermal exchange means at one edge so said flow tube is normal to the longitudinal axes of said channels and to fluidly communicate said channels with said flow tube; and a second manifold means having a large central flow tube and a distributor means operably connected to the edge of said thermal exchange means opposite said first manifold means so said flow tube is normal to the axes of said channels and to fluidly communicate said channels with its flow tube, whereby fluids can enter one flow tube and simultaneously pass through said channels of said thermal exchange means to the other flow tube;

clamping means operably connected between said first and second manifold means to tension said thermal exchange means so its inner sheet means is forced tightly against said smooth surface of said tank; and

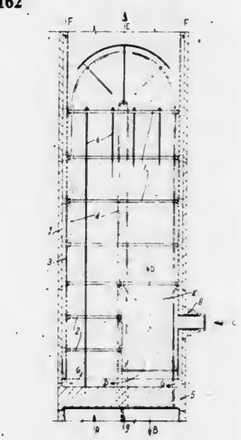
fitting means connected to said flow tube means to operably communicate them with fluid ingress and egress lines for heating or cooling said tank by pumping the appropriate fluids therethrough.

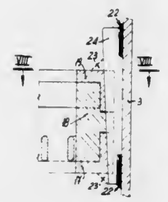
4,213,499

SUPPORTING GRATE FOR TUBE PLATES AND RELATIVE ASSEMBLING IN A STEAM GENERATOR OR THE LIKE

Franco Straffi, Dresano, Italy, assignor to Breda Termomeccanica S.p.A., Milan, Italy

Filed Dec. 19, 1977, Ser. No. 862,184
Claims priority, application Italy, Dec. 21, 1976, 30702 A/76
Int. Cl.² F28F 9/18
U.S. Cl. 165—162 **12 Claims**





1. A grate assembly for supporting tubes within a shell of a heat exchanger or steam generator, the assembly comprising:

at least two plates comprising gratings; and

a frame formed of an upper ring, an intermediate ring and a

lower ring fastened together to form a single continuous structure, said rings being arranged at least partially superimposed one on another, said intermediate ring having grooves formed therein for receiving the ends of the gratings, said upper and lower rings being secured to said intermediate ring for enclosing therebetween the ends of the gratings which are arranged in their respective grooves formed in said intermediate ring, said grooves being formed such that at least one of said at least two plates is accommodated therein without any longitudinal clearance in said frame, said at least one of said at least two plates having an end surface, said frame having an inner surface which includes a bearing surface, each respective end surface of said at least one of said at least two plates being shaped so as to coincide with and perfectly adhere to said bearing surface of said inner surface of said frame, whereby said at least one of said at least two plates always acts as a strut.

4,213,500

OIL RECOVERY PROCESS: INJECTION OF FATTY ALCOHOL FOLLOWED BY SOAP

Ricardo L. Cardenas, and Joseph T. Carlin, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 26, 1978, Ser. No. 918,756
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—273 **4 Claims**

1. A method of recovering crude oil from a subterranean reservoir having one or more injection means in fluid communication with one or more producing means which comprises injecting into said reservoir through said injection means an effective quantity of a solution of a fatty alcohol wherein the alcohol is selected from the group consisting of n-dodecyl, n-octyl and oleyl alcohols and mixtures thereof ranging in concentration from about 0.1 to about 10.0 weight percent of the injected solution and either a crude oil or a refined fraction of crude oil followed by an effective quantity of a solution comprising a soap and water wherein said soap is a sodium dodecyl sulfate ranging in concentration from about 0.05 to about 5.0 weight percent of the injected solution, said solutions combining with the crude oil present in the reservoir to form an oil-in-water emulsion, driving said solutions and emulsion through the reservoir by injection of a driving fluid and recovering the crude oil through said production means.

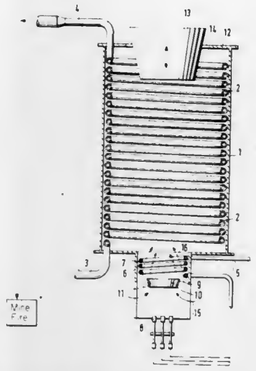
4,213,501

PROCESS AND DEVICE FOR EVAPORATING LARGE QUANTITIES OF LOW BOILING LIQUEFIED GASES

Ferdinand Pfeiffer, and Leo Rottwinkel, both of Düsseldorf, Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,596
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651849
Int. Cl.[2] A62C *1/00*
U.S. Cl. 169—46 **10 Claims**

1. In a process for continuously evaporating large amounts of low boiling liquefied gases by the transfer of heat produced by the combustion of a combustible gas, the improvement being effecting the heat transfer in a heater which consists essentially of a cylindrical combustion chamber having a radiation component and being free of a convection component, disposing a passage around the cylindrical combustion, conduction the gas to be evaporated through the passage, exposing the liquefied gas to a burner flame with radiation maximum upon entry into the passage, producing the burner flame with maximum radiation by at least one gas burner operated as a premix burner, utilizing the gas coming out of the nozzle to take up part of the air required for combustion from the room and directing the so-formed primary flame to strike a deflective plate mounted near the entrance to the combustion chamber and sucking the secondary air in behind the deflector plate to produce a flame with maximum radiation.

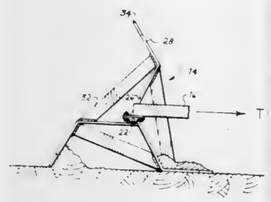


4,213,502

SELF TRIPPING DAMMER

John D. Gibson, Rte. B, Lamesa, Tex. 79331

Filed Jun. 25, 1979, Ser. No. 51,705
Int. Cl.[3] A01B *35/18*
U.S. Cl. 172—1 **9 Claims**



1. A self tripping dammer comprising:
a. a hub through the dammer,
b. a yoke extending on each side of the hub forming
c. draft means for pulling the dammer through a cultivated field,
d. an axle through the hub and the yoke,
e. at least three legs radiating from said hub, and
f. a foot on the distal end of each leg,
g. each foot angled to its leg,
h. the distal end of each foot called a toe,
j. each foot lying in a plane extending through the toe of the trailing foot.

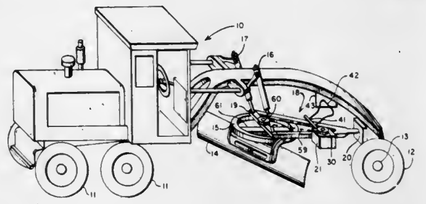
9. The method of damming a cultivated agricultural field comprising:
a. towing a three-legged dammer behind a draft vehicle,
b. preventing the dammer from rotating about a central hub by
c. skidding a foot on one of the down legs flat along the earth, and
d. rotating the dammer ⅓ revolution responsive to soil build-up on the feet thereby
e. dropping a dam at each ⅓ revolution.

4,213,503

SLOPE CONTROL SYSTEM

Dwayne R. Elmberg, Golden Valley, and Royal R. Hawkins, Bloomington, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 548,500, Feb. 10, 1975, abandoned.
This application Jan. 17, 1977, Ser. No. 760,200
Int. Cl.[2] E02F *3/76*
U.S. Cl. 172—4.5 **20 Claims**



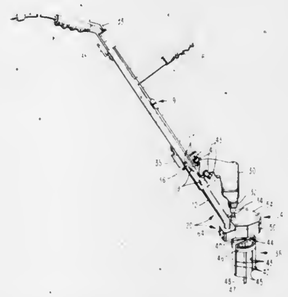
1. A control apparatus for controlling the slope of an earth working tool of an earth working machine, said machine having means for adjusting the grade and slope of said tool, the tool having frame means for supporting said tool by said machine and for allowing rotation of said tool with respect to said frame means, said apparatus comprising:
housing means adapted to be fixedly secured to said frame means;
slope sensor means within said housing means for sensing the slope of said tool;
first means adapted to be responsive to rotation of said tool, about an axis substantially perpendicular to said frame means, and connected to said slope sensor means for providing a correction factor to said slope sensor means dependent upon the rotation of said tool; and,
second means adapted to be responsive to deviations of said tool from an axis parallel to the line of flight of said machine and connected to said slope sensor means for maintaining said slope sensor means substantially parallel to the line of flight of said machine,
whereby said apparatus is arranged to allow for substantially 90° rotation of said tool about the longitudinal axis of the machine without damage to said apparatus.

4,213,504

ROTARY, HAND-HELD APPARATUS FOR PERFORMING VARIOUS SOIL WORKING OPERATIONS

Fred A. Schneider, 841 Mohican Way, Redwood City, Calif. 94062

Filed Nov. 7, 1977, Ser. No. 849,088
Int. Cl.[2] A01B *1/00, 33/06*
U.S. Cl. 172—25 **16 Claims**



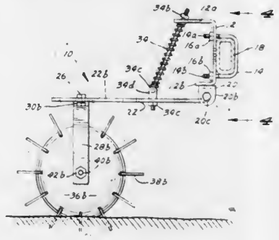
7. A soil working assembly and a torque producing output shaft adapted for rotating said assembly by a power means, said assembly comprising;
a guide rod demountably secured coaxially to the output shaft for rotation therewith about an axis substantially normal to the soil surface, said guide rod having an internally threaded hub means integral with the mounting end thereof, with the depending end being formed at a selected angle to define a soil boring tip;
a soil engaging member formed of a flat length of metal to define a support base from which depends at least a pair of tines, each having a tip at the ends thereof, with the guide rod extending axially therebetween beyond the tine tips and rotatable about the same axis;
wherein the flat tines are disposed with a sharpened leading edge and a trailing edge, the tips of the tines being formed at an angle to their direction of motion with the leading edges being longer than the trailing edges thereof;
a reinforcing member secured to the pair of tines immediately below the support base to strengthen the assembly against torsional forces produced by contact of the tines with the soil; and
the assembly further including, said support base having a square hole formed therein, a square shank formed along an end portion of the output shaft, a shoulder formed in the output shaft and terminating the square shank, threads formed along the end of the output shaft, wherein the square hole of the support base fits over the square shank, and the soil engaging member is demountably secured to the output shaft for positive rotation therewith by threading the hub means onto the threaded end of the output shaft to confine the soil engaging member therebetween.

4,213,505

TRACTOR IMPLEMENT CARRYING APPARATUS

Glenn L. Jolley, Route 2, Box 121, Hutchinson, Minn. 55350

Filed Aug. 14, 1978, Ser. No. 933,154
Int. Cl.[2] A01B *39/26, 39/28*
U.S. Cl. 172—510 **1 Claim**



1. A tractor implement carrying apparatus for attachment to a tractor tool bar comprising:
(a) a first U-shaped mounting member having means for clamping the base of said member to said tractor tool bar and having the legs of said member angled rearwardly in substantial vertical alignment;
(b) bushing support member attached transversely to said U-shaped mounting member lower leg, said support member having downwardly projecting end tabs with holes therethrough and having an elongated pin of predetermined diameter extending between said end tabs and through said holes;
(c) drawbar having a first curled end pivotally attached to said pin between said end tabs and having a second slotted end extending rearwardly thereof;
(d) at least one bushing mounting on said pin adjacent said drawbar and between said end tabs;
(e) a threaded rod having one end protruding through the upper leg of said U-shaped mounting member and having the other end pivotally attached to said drawbar, and a

compression spring mounted about said rod between said upper leg and said pivotal attachment;

(f) an implement attaching bracket transversely bolted to said drawbar through said slotted end, said bracket having extensible and retractable horizontal arms with downwardly extending ends, each of said ends having an implement attachment hole therein; and

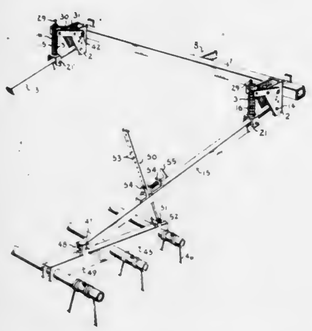
(g) concave rolling shields rotatably attached to said implement attaching bracket through said implement attaching hole, said shields mounted with the concave portions in facing relationship.

4,213,506

DRAG HARROW PRESSURE ADJUSTING DEVICE

Kenneth A. Hake, Tipton, Kans., assignor to Kent Manufacturing Co., Inc., Tipton, Kans.

Filed Nov. 17, 1978, Ser. No. 961,622
Int. Cl.[2] A01B *19/08*
U.S. Cl. 172—624 **3 Claims**



1. For use with a farm implement frame having a transverse beam, a plurality of rearwardly extending arms supporting soil finishing tools, mounting structure for attaching the forward end of said arms to said beam, said mounting structure comprising:

(a) a pressure bracket adapted for securing to said beam, hinge means pivotally supporting said arm forward end to said bracket for frame arm vertical arcuate movement,

(b) spring structure associated with said bracket and including a compression spring having a lower end operably bearing against said arm rearwardly of said hinge means,

(c) link means mounted on said bracket, said compression spring having an upper end bearing against said link means,

(d) adjusting means associated with said link means and said bracket, said adjusting means selectively retaining said link means in predetermined alternate positions whereby the bearing pressure of said spring against said arm is selectively altered,

(e) said link means being pivotally mounted on said bracket intermediate the ends of said link means,

(f) one of said link means ends receiving the force of said spring, and

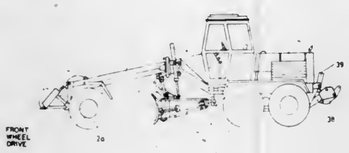
(g) a locking member associated with said bracket, the other of said link means ends receiving said locking member, said link means other end and said locking member comprising said adjusting means.

4,213,507

GRADING VEHICLE

Erwin Horrer, Michael Steinherrstrasse 27, and Gustav Leidinger, Michael Steinherrstrasse 16, both of Friedberg, Fed. Rep. of Germany (8904)

Filed Oct. 25, 1977, Ser. No. 844,593
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 7633233[U]; Feb. 18, 1977, 2707006
Int. Cl.[2] E02F *3/76*
U.S. Cl. 172—784 **7 Claims**



1. An improved grading vehicle comprising:

a rear vehicle section which has a rear axle and an engine;

a front bridging vehicle chassis, one end of which is connected to the rear vehicle section, said chassis being of substantially smaller cross-section than the rear vehicle section where joined;

front wheels mounted on the other end of said chassis;

control equipment mounted on said chassis;

a grading device suspended from said equipment so as to be mounted between the front wheels and the rear section of the vehicle,

said equipment acting to adjust said grading device in all directions,

said wheels being driven; and

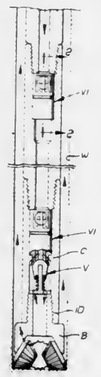
a universal joint for supporting the grading device which is mounted directly to the rear section at a location on said rear section spaced below where the chassis is connected to said rear section to trasmit thrust between said grading device and said rear section without tending substantially to raise the bridging chassis without simultaneous raising of the engine.

4,213,508

DOWNHOLE FIRE CONTROL

John E. Tschirky, Long Beach, Calif., and Wayne M. Sullivan, Houston, Tex., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Oct. 3, 1977, Ser. No. 838,890
Int. Cl.[2] E21B *25/00*
U.S. Cl. 175—235 **4 Claims**



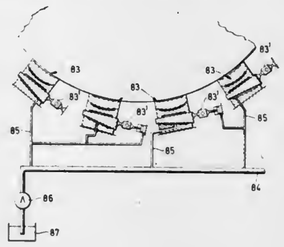
1. Downhole fire control apparatus for drilling wells in earth formation using air as the drilling fluid, comprising: a tubular pipe string having a bit at its lower end rotatable to drill through the earth during circulation of drilling fluid through the bore of the pipe string and the bit and upwardly in the annulus outside the pipe string; first normally open valve means in the pipe string adjacent the bit for normally allowing circulation of drilling fluid down the pipe string into the annular space outside of the pipe string and preventing reverse flow and flow into the annular space when closed; and additional normally open valve means spaced upwardly in the pipe string from the first valve means; said additional valve means having a flow passage substantially as large as the bore of said pipe and allowing circulation of drilling fluid down the pipe string into the annular space outside of the pipe string and preventing flow into the annular space when closed; said first valve means and said additional valve means having means responsive to a fire in the well to automatically close and prevent further circulation.

4,213,509

HYDROSTATIC SETTING APPARATUS FOR SUPPORT OF LOADS

Hans W. Häfner, Köhlenthal, Fed. Rep. of Germany, assignor to Pfister GmbH, Augsburg, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,542
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758340
Int. Cl.[2] G01G *21/02;* **F15B** *15/02*
U.S. Cl. 177—199 **4 Claims**



1. A fluid load measuring apparatus which is suited in particular for measuring the load on a body using fluid bearings supporting the body whose load is to be measured, comprising, several individual fluid bearing elements in contact with said body, and each bearing element including a wedge key and upper and lower mating elements which are movably mounted on a fluid film which is supplied under pressure between the sliding surfaces of said key and said mating surfaces, fluid supply means connected to all of said fluid bearing elements to apply fluid at a common pressure to all of said bearing elements, and a plurality of load measuring means respectively connected to said plurality of fluid bearing elements such that the sum of the loads measured by said load measuring means is equal to the load of said body.

4,213,510

ARTICLE RETENTION DEVICE

John E. Wible, Painesville, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

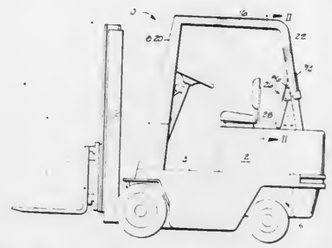
Filed May 11, 1978, Ser. No. 904,844
Int. Cl.[2] B60R *18/02*
U.S. Cl. 180—68.5 **14 Claims**

1. An article retention device adapted to restrain the movement of an article relative to a platform, which platform includes a base and a frame means upstanding therefrom, and wherein the article is positioned on the base and the frame means extends above the article; the article retention device comprising:

restraining means for restraining the movement of the article, said restraining means selectively positionable to a first position to restrain the article and to a second position to release the article; and

mounting means adapted for mounting the restraining means to the platform frame means at a position on the frame means generally above the article, the restraining means dependent downwardly from said mounting means; and

wherein the restraining means includes a lower portion; and



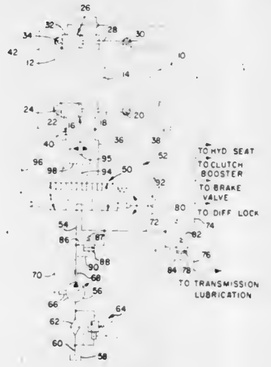
wherein said mounting means includes aperture means for facilitating both pivotal and translational motion of at least the lower portion of the restraining means between the first and second positions, such that at least the lower portion of the restraining means is retractably movable upwardly as the restraining means is moved to the second position to release the article.

4,213,511

CONSTANT FLOW HYDRAULIC SYSTEM

Raymond D. Rubenstein, La Grange Park, and Charles L. Rescorla, Westmont, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1979, Ser. No. 5,402
Int. Cl.[3] B62D *5/06*
U.S. Cl. 180—139 **2 Claims**



1. A constant flow hydraulic system for a tractor having an engine, said hydraulic system comprising:

a variable displacement pump driven by the engine and having a compensator for adjusting pump displacement to provide a relatively constant predetermined flow as engine speed varies;

an open-center hydrostatic steering system connected to receive said flow;

hydraulically-actuated apparatus connected in series with and downstream of said steering system;

a relief valve connected to bypass said steering system so that said apparatus will receive pump flow under conditions in which said steering system would normally substantially reduce the flow thereto;

said hydraulic apparatus being arranged in a preferred branch and a secondary branch; and

a flow divider valve upstream of said branches and downstream of said steering circuit and said relief valve for assuring adequate flow to said preferred branch.

4,213,512

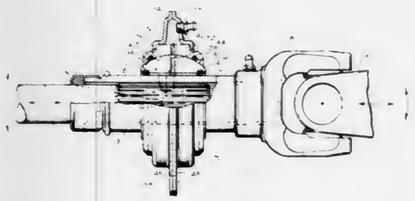
POWER SHAFT SUPPORT BEARING

Philip J. Mazziotti, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed May 8, 1978, Ser. No. 903,683

Int. Cl.[2] B60K *17/34, 23/04;* **F16C** *23/04*

U.S. Cl. 180—233 **1 Claim**



1. A drive system for a vehicle having front and rear drive wheels, including:

a rear differential for transmitting torque to the rear drive wheels;

shaft means for introducing torque to said rear differential including universal coupling means interconnecting one end of said shaft means to the output of a power source and the other end of said shaft means to said rear differential;

a front differential for transmitting torque to the front drive wheels;

articulated shaft means for interconnecting said front and rear differentials for transmitting torque therebetween, including universal coupling means interconnecting one end of said articulated shaft means to said rear differential and the other end of said articulated shaft means to said front differential, and at least one other universal coupling means interposed between the ends of said articulated shaft means including a splined shaft interconnecting said articulated shaft means for transmitting rotary motion therebetween and simultaneously permitting relative axial movement;

first annular bearing means for supporting the splined shaft of said other universal coupling means to provide for relative rotational and axial movement therebetween, said bearing means having a hollow internal bearing surface, a curved outer bearing surface, lubricant conducting passageway providing communication between the internal bearing surface and the outer bearing surface thereof;

second annular bearing means surrounding said first bearing means and enabling relative pivotal movement therebetween, said bearing means having an internal bearing surface contoured to conform with the curved outer surface, and lubricant conducting passageway providing communication between the internal bearing surface and the outer surface thereof communicating with the lubricant passageway of said first bearing means;

seal means for retaining a lubricant between the curved outer bearing surface of said first bearing means and the curved inner surface of said second bearing means; and

a mounting bracket circumscribing the outer surface of said second annular bearing means, said mounting bracket having an internal lubricant reservoir communicating with the lubricant passageways of said first and second bearing means.

4,213,513

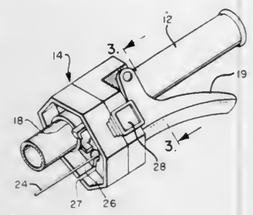
IGNITION CONTROL SYSTEM WITH SAFETY SWITCHES

Frederick R. Beck, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Filed Jun. 26, 1978, Ser. No. 918,941

Int. Cl.[2] B60K *28/00*

U.S. Cl. 180—272 **19 Claims**



1. A control system for an internal combustion engine having a carburetor and an ignition circuit for normal control by an operator of said engine through a closed ignition circuit and said carburetor and for also stopping said engine by opening said ignition circuit in an emergency when said operator loses control of the operation of said control system and hence the engine, including the combination of

(a) first and second interrelated operating switches for connection to said ignition circuit to control the same through a normal engine operating cycle from starting through full running and through stopping said engine, and a third switch for connection to said ignition circuit solely for actuation by said operator to open said ignition circuit and stop such engine in an emergency independently of the control position of said interrelated switches;

(b) an insulating board having a printed circuit thereon for electrical connection to said ignition circuit and which is electrically connected to all three switches;

(c) circuit switching means for each of said three switches mounted with said insulating board and electrically connecting and disconnecting each switching means relative to said printed circuit;

(d) a housing member mounting said insulating board therein with said three switches supported on said insulating board;

(e) button means on the outside of said housing having connecting means to said third switch within said housing, for operating said third switch;

(f) a throttle lever member having a spring tension exerted thereon operatively connected to said carburetor and to said first and said second switches;

(g) means for mounting said throttle lever member on the outside of said housing member including a slot in one of said members and a pin in the other member for relative pivotal and transverse movement between said pin and said slot and corresponding pivotal and transverse movement of said throttle lever member at one end portion thereof in the course of a said engine operating cycle, and said throttle lever member having a hand grip portion at the opposite end portion thereof with the latter portion being movable away from and toward an outside surface of said housing member;

(h) said throttle lever member having a bump at said opposite end portion thereof engaging said housing member outside surface as a pivot point for said throttle lever member in an initial movement thereof and thereby causing relative transverse and pivotal movement of said pin and slot to correspondingly move said one end portion of said throttle lever member, and said latter member having a projection thereon extending into said housing member for operative connection with said second switch to close the same, said throttle lever member also acting to close said first switch sequentially relative to said first switch

during said pivotal movement of said one end portion and a corresponding transverse movement thereof;

(i) means in said second switch to open the same after said first switch is closed; and

(j) said throttle lever member and said button means both being positioned so as to be available to the hand and the fingers of an operator of the engine to permit ready and selective operation of said three switches.

4,213,514

HYDRAULIC WHEEL DRIVE WITH CLUTCH

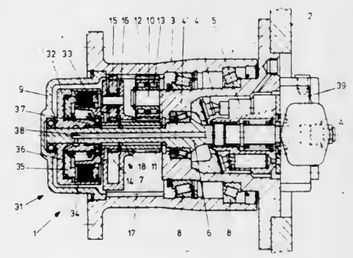
Friedrich Ehrlinger; Egon Mann; Manfred Fischer, all of Friedrichshafen, and Rudolf Jocham, Langenargen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Oct. 3, 1978, Ser. No. 948,234

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744977

Int. Cl.[2] B60K *17/14*

U.S. Cl. 180—308 **9 Claims**



1. A wheel drive comprising:

a generally nonrotatable wheel support;

a hydraulic motor mounting on said support and having an output shaft having an outer end and extending outwardly away from said support;

a wheel hub surrounding said shaft, rotatable on said support about a wheel axis, and having an open side turned outwardly away from said wheel support;

a clutch mounted in said wheel hub and having a first clutch member connected to said outer end of said output shaft and a second clutch member lying between said first member and said nonrotatable wheel support;

a cover plate covering said open side of said wheel hub and removable to give access to said clutch; and

a planetary-gear transmission between said clutch and said motor and having an input gear connected to said second clutch member and an output gear rotationally fixed on said hub.

4,213,515

SPEAKER SYSTEM

Robert R. Laupman, Wijchen, Netherlands, assignor to Novanex Automation N.V., Wijchen, Netherlands

Filed Sep. 12, 1978, Ser. No. 941,743

Claims priority, application Netherlands, Sep. 15, 1977, 7710136

Int. Cl.[2] H05K *5/00*

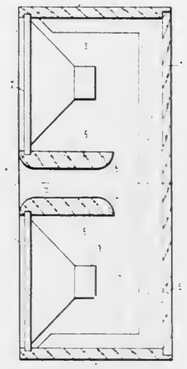
U.S. Cl. 181—145 **2 Claims**

1. A bass reflex speaker system comprising:

a housing having a front wall, a rear wall and spaced apart side walls;

a pair of spaced apart speakers mounted on said housing front wall; and

a duct defining means mounted on said housing front wall to be positioned between said speakers, said duct defining means including a top wall and a bottom wall, said walls being essentially parallel and spaced apart, said walls each having a front end mounted in said housing front wall and a rear end spaced from said housing rear wall, said duct walls extending essentially the entire distance between said housing side walls, said duct top wall having front and rear end edges which are each curved upwardly and said bottom wall having front and rear edges which are each curved downwardly so that a duct formed by said



duct defining means has a cross-sectional dimension at the ends thereof which exceeds the cross-sectional dimension at the central portion of said duct and said cross-sectional dimension varies symmetrically from one end of said duct to the other end of said duct, whereby spurious side effects are minimized.

4,213,516

ACOUSTICAL WALL PANEL

James E. Sulewsky, Mendham, N.J., assignor to American Seating Company, Grand Rapids, Mich.

Filed Nov. 29, 1978, Ser. No. 964,675

Int. Cl.[2] E04B *1/82*

U.S. Cl. 181—286 **7 Claims**



1. An acoustical panel comprising: a core material formed of a plurality of stratified layers of glass fiber pressed together under heat and pressure to form a board having a front surface and a rear surface, the average density of each layer increasing from said front surface to said rear surface and being in the range of approximately two-six pounds per cubic foot respectively, said front surface defining a plurality of cavities extending partially inwardly of said front surface and having outwardly flared side walls, the center-to-center spacing of said cavities being selected to correspond to the quarter wave length of sound in the intelligibility range of human speech and being spaced substantially entirely throughout said front surface, said cavities being individually sized to absorb sound at the intelligibility range of speech, the front stratified layer extending into and lining the side walls of said cavities to enhance absorption of sound at higher frequencies in the intelligibility range and being rounded to increase surface area and

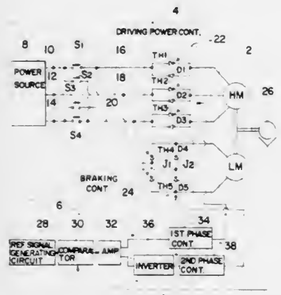
to increase sound absorption at flanking angles of incidence; a septum covering the rear surface of said core; and a permeable membrane covering the front surface of said core and extending over said cavities to permit sound pressure waves to enter and be trapped in said cavities; said panel characterized in having its minimum sound absorption at frequencies less than about 400 cycles per second to absorb sound at such low frequencies in a controlled, reduced manner.

4,213,517

ELEVATOR CONTROL SYSTEM

Koji Ando, Itami, Japan, assignor to Fujitec Co., Ltd., Osaka, Japan

Filed Jul. 6, 1978, Ser. No. 922,430
Int. Cl.[2] B66B *1/30*
U.S. Cl. 187—29 R 13 Claims



1. An elevator control system for controlling the speed of an elevator car comprising:

a power supply means for supplying AC power;

a first gate means connected to said power supply means having power controlling elements and a first control input for supplying controlled AC power according to the phase of the signal applied to said first control input;

a driving means connected to said first gate means for driving the elevator car according to the AC power supplied by said first gate means;

a second gate means connected to said power supply means having power controlling elements and a second control input for supplying controlled DC power according to the phase of the signal applied to said second control input;

a braking means connected to said second gate means for dynamically braking the elevator car according to the DC power supplied by said second gate means;

a speed detecting means for detecting the instantaneous speed of the elevator car and for generating an actual speed signal indicative of the detected instantaneous speed;

a reference signal generating means for generating a reference signal indicative of the ideal speed of the elevator car;

a comparator means connected to said speed detecting means and said reference signal generating means for comparing said actual speed signal with said reference signal, for generating a positive signal having a voltage indicative of the difference between said reference signal and said actual speed signal when said reference signal is greater than said actual speed signal, and for generating a negative signal having a voltage indicative of the difference between said actual speed signal and said reference signal when said actual speed signal is greater than said reference signal;

an amplifier means connected to said comparator means for amplifying said positive signal and said negative signal generated by said comparator means;

a first phase controller means connected to said first gate means and said amplifier means for applying a first pulsating signal to said first control input of said first gate means having a frequency equal to the frequency of the AC power supplied by said power supplying means and a phase according to the voltage of said positive signal;

an inverter means connected to said amplifier means for inverting and amplifying said negative signal for generating an inverted positive signal; and

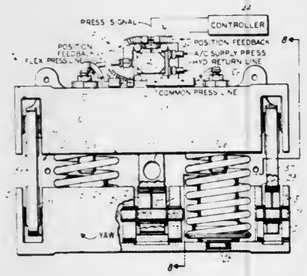
a second phase controller means connected to said second gate means and said inverter means for applying a second pulsating signal to said second control input of said second gate means having a frequency equal to the frequency of the AC power supplied by said power supplying means and a phase according to the voltage of said inverted positive signal.

4,213,518

FIXED POSITION PENDULAR-TYPE VIBRATION ABSORBER WITH LINEARIZATION AT FIXED OR VARIABLE FREQUENCIES

Paul W. von Hardenberg, Southbury; Kenneth C. Mard, Stratford, and Edward Lavoie, Milford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 4, 1978, Ser. No. 931,083
Int. Cl.[2] F16D *63/00*
U.S. Cl. 188—1 B 12 Claims



1. A vibration absorber adapted to be fixedly attached to a fixed vibration prone system to cooperate with the principal vibration excitation source to control system vibrations and comprising:

(1) a one-piece base member having a flat platform extending longitudinally thereof and adapted to be fixedly attached to the vibration prone system, and further having three parallel plate members extending laterally thereof and perpendicularly from said platform, with the plate members extending laterally in the direction of desired vibration absorber motion, and wherein the centrally positioned plate member is of substantially different height than the two end plate members which are of equal height, each of said plate members having two equally laterally spaced, equal diameter apertures extending therethrough so that the aperture axes are perpendicular to the plate members and with the apertures in the end plate members being of identical height above the platform and with the apertures in the middle plate member being of considerably different height to the platform but of equal height thereabove so that the apertures form two laterally spaced, parallel sets of three apertures, with the apertures in each set having parallel axes which are also parallel to but equidistant laterally spaced from the parallel axes in the other set of apertures, and so that the apertures in each set define the corners of a triangle so as to be offset in two perpendicular coplanar directions, and so that the apertures in each plate member are positioned in an I-shaped portion of the plate member including two parallel beams passing above and below the apertures and a connecting structural web connecting said parallel beams between the apertures,

(2) two identical mass members of equal mass, and extending longitudinally along and positioned on opposite lateral sides of said base member and shaped to define plate members extending parallel to and positioned with selective longitudinal spacing on opposite sides of each of said base member plate members so that each mass member defines three longitudinally spaced sets of longitudinally spaced plate members and with each mass member set of plate members positioned on opposite sides of a base member plate member and with selected longitudinal spacing therebetween, each mass member plate member including an aperture of selected diameter equal to the platform plate member apertures diameter and overlapping and having an axis parallel to the axis of the base member plate member aperture which it overlaps, and with the apertures of said mass member plate member sets being coaxial,

(3) a pin member of circular cross section extending through each of the six sets of overlapping apertures defined by said platform plate members apertures and said mass means plate member apertures so as to define a trifiliar, pendular connection between each of said mass members and said base member so as to support each mass member in suspension from said base member for pendular motion in an arc parallel to said plate members due to the trifiliar pendular connection between said pin members and said overlapping aperture sets,

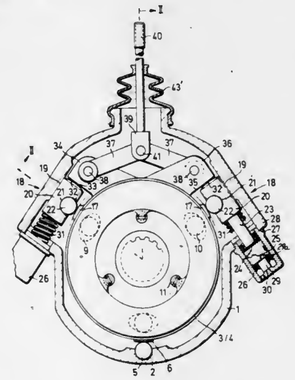
(4) at least one spring member operatively connected between said two mass members to impose an internal force on said mass members to establish the natural frequency of the vibration absorber, said spring member being of selected spring rate to compensate for the spring rate reduction caused by the pendular motion of the mass members with respect to the base member and thereby provide an essentially linear spring rate reacted on the two mass members for angles of pendular motion of at least ±45°, so that the natural frequency of the vibration absorber is substantially constant throughout this range of operation.

4,213,519

DISC BRAKE, ESPECIALLY FOR MOTOR VEHICLES

Gottfried Moser, and Wilhelm Jansen, both of Bergisch Gladbach, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jan. 9, 1978, Ser. No. 867,766
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1977, 2700669
Int. Cl.[2] F16D *55/04*
U.S. Cl. 188—71.4 12 Claims



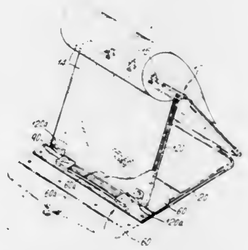
1. A disc brake, especially for motor vehicles, which includes: a brake housing, a pair of pressure disc means arranged in said braking housing, actuating means associated with said pressure disc means for turning said pressure disc means angularly in opposite directions with regard to each other for pressing a rotatable brake disc on each side of said pressure disc means against associated braking surfaces, each pressure disc means having at least three projections distributed over the circumference of said pressure disc means for guiding said pressure disc means, guiding means respectively associated with at least some of said projections and including a guiding member adjustable tangentially with regard to the pertaining pressure disc means, an abutment means respectively associated with said pressure disc means for limiting turning movement thereof, each of said tangentially adjustable guiding members includes a guiding bolt with a bearing surface, and a bearing member nested in said bearing surface and engaging the pertaining projection, said bearing member being a roller body, and said bearing surface being shaped in conformity with the contour of the outer surface of said roller body and only partially surrounding said roller body so that a portion of the latter protrudes from said guiding bolt and engages the pertaining projection.

4,213,520

ARTISTS' PORTFOLIO

Abraham Sarna, 15, Bushey Ave., Woodford, Essex, and David Sarna, 27, The Risings, London E. 17, both of England

Filed Feb. 26, 1979, Ser. No. 15,342
Claims priority, application United Kingdom, Mar. 3, 1978, 8561/78
Int. Cl.[2] A45C *11/00*
U.S. Cl. 190—16 9 Claims



1. An improved artists' portfolio comprising two outer covers joined so as to open and close book-fashion to form a case, co-operating closure means on adjacent free sides of each cover characterised in that the side of one cover opposite to the side thereof joined to the other cover includes a spine with securing means for sheet material and a flat rigid support connected to said spine which may be swung from a position lying between the covers when the case is closed to a position in which a free side of the support bears on or near the side of the other cover opposite to the side thereof joined to the one cover, whereby a triangular structure is formed with the sheet material to lie against either said support or the one cover, a closure means for securing together the sides of the covers opposite to the joined sides said closure means comprising a flap on the other cover with a fastening means engageable with means provided on the one cover.

4,213,521

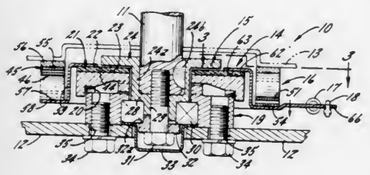
CLUTCH-BRAKE ASSEMBLY FOR ROTARY IMPLEMENTS

Charles W. Modersohn, Beloit, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Continuation-in-part of Ser. No. 655,753, Feb. 6, 1976, abandoned. This application Dec. 22, 1976, Ser. No. 753,417

Int. Cl.² F16D *67/02;* **A01D** *69/08*

U.S. Cl. 192—18 R **14 Claims**



1. In an assembly for driving a rotary implement carried and driven by a power rotated shaft, the combination of, an annular friction element adapted to be fixed to said shaft to rotate therewith, a first annular cam member coaxial with and rotatable relative to said shaft, said cam member having a friction surface opposing said friction element and axially movable to bring the friction surface into engagement with the friction element whereby said cam member rotates with said shaft; a second cam member mounted to rotate relative to said shaft and adapted to carry a rotary implement, means holding said second cam member against axial movement relative to said shaft, opposed inclined cam surfaces formed on said first and second cam members and normally engaging each other when said first cam member is rotating whereby the two cam members rotate together, resilient means acting on said first cam member and urging the latter axially in a direction to engage said friction element, an actuator having a part acting on said first cam member, said part being movable between a first position in which it engages said friction surface and is operable to move said friction surface out of engagement with said friction element and a second position in which said surface and said element are permitted to engage, a spring urging said part toward said first position and into engagement with said friction surface while said first cam member turns relative to said part, means responsive to the relative turning between said part and said first cam member to progressively increase the engagement between said part and said friction surface and move said part to said first position thereby to disengage said friction surface and said friction element and brake said first cam member, and a manual member selectively operable to move said part toward said second position against the action of said spring thereby to couple said implement and said shaft.

4,213,522

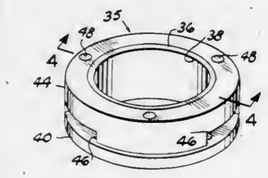
CLUTCH THROW-OUT BEARING PLATE

Tommey J. Blaylock, 2448 NW. 3, Oklahoma City, Okla. 73107

Continuation-in-part of Ser. No. 799,448, May 23, 1977, Pat. No. 4,114,744. This application Jan. 17, 1978, Ser. No. 870,158

Int. Cl.² F16D *23/14*

U.S. Cl. 192—98 **1 Claim**



1. In a vehicle clutch assembly having a flywheel and a clutch pressure plate movable toward and away from the flywheel by a plurality of radially inwardly projecting clutch release fingers, a transmission input shaft connecting the clutch pressure plate with a transmission and having a clutch throw-out bearing coaxially mounted on the shaft and movable toward and away from the inwardly directed end portions of said clutch release fingers, the improvement comprising:

a generally cylindrical centrally bored bearing plate supported by said clutch release fingers and comprising a sleeve having an outstanding flange at one end diametrically substantially equal with the diameter of said throw-out bearing and having external threads adjacent its other end loosely

surrounding said transmission input shaft and interposed between said throw-out bearing and said clutch pressure plate with the flange contacting the end portion surface of said clutch release fingers opposite said throw-out bearing;

a ring diametrically equal with said flange threadedly engaged with said sleeve, said ring having a plurality of equally spaced radially disposed recesses formed in its surface facing said flange forming, in combination with said sleeve and said flange, a like plurality of radially open sockets nesting the adjacent end portion of the respective said clutch release finger; and,

at lease one bolt extending through said ring and said flange for preventing angular rotation of said ring relative to said sleeve.

4,213,523

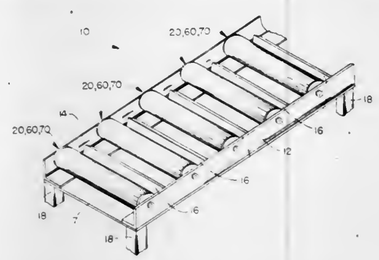
CONVEYOR ROLLER ASSEMBLY

Charles C. Frost, Ada, and Siegfried K. Weis, Byron Center, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Sep. 11, 1978, Ser. No. 941,176

Int. Cl.² B65G *39/09*

U.S. Cl. 193—37 **24 Claims**



1. A roller assembly for roller conveyors comprising:

a roller having a central axis and opposite ends, each end having a central opening coaxial with said roller;

a bearing insert received in each of said central openings, each insert including a circular opening coaxial with said roller for receiving and being rotatably supported by a cylindrical support shaft and retaining means on the outer periphery of said insert for preventing axial and rotational movement of said bearing insert in said central opening, said circular bearing insert opening having an annular, radially inwardly convex, curved surface defining a minimum diameter and larger diameters on either side of said minimum diameter and providing a bell-mouth shape facing outwardly of said roller end, said circular bearing insert opening adapted to receive and cooperate with a cylindrical support shaft to enable low friction, low drag rotational support of said roller assembly even when deflected under load in operation;

a bottom wall in at least one of said roller central opening and said bearing insert opening at each end of said roller for closing the roller assembly and providing a thrust resisting surface.

4,213,524

AUTOMATIC VENDING MACHINE WITH LOTTERY BONUS

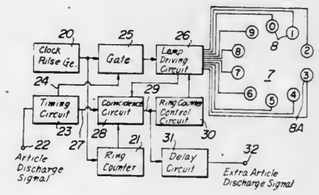
Toshio Miyashita, Tokyo; Yoshizo Fujii, Nishinomiya, and Takeshi Sawabe, Urawa, all of Japan, assignors to Shinko Automatic Device Co., Ltd., Yashio, Japan

Filed Jul. 21, 1978, Ser. No. 926,603

Claims priority, application Japan, Jul. 23, 1977, 52-98653; Nov. 24, 1977, 52-157690; Dec. 16, 1977, 52-170258; Jun. 6, 1978, 53-67244

Int. Cl.² G07F *11/00*

U.S. Cl. 194—2 **15 Claims**



1. An automatic vending machine comprising:

a housing including a front panel;

means provided in the front panel for displaying at least one article available for users;

means provided in the front panel for receiving coins and/or bills;

stocker means provided in the housing for storing the articles available for users;

means for discharging at least one article stored in the stocker means in response to an article discharge signal through a discharge opening provided in the front panel;

a plurality of lamps arranged geometrically on the front panel and provided with covers having numbers applied thereto; and

a lamp control circuit for lighting on and off said lamps successively and repeatedly in response to a signal which is generated each time the vending operation is effected, a repetition period of the lighting on and off being such that a light spot appears to move along said geometrical lamp arrangement, wherein said lamp control circuit further comprises a lottery circuit for producing a winning signal in response to a signal generated by the vending operation of the machine to stop the light spot at a predetermined lamp having a lucky number applied thereto and the machine further comprises means to drive said article discharging means additionally to discharge at least one extra article as a free addition in response to the winning signal.

4,213,525

FEED DELIVERY APPARATUS

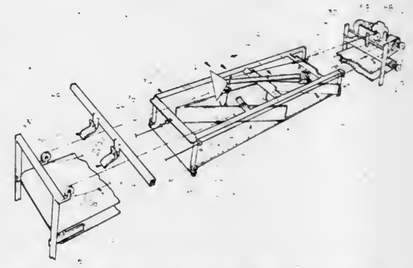
Lyle W. Scheppele, Dubuque, Iowa, assignor to Toledo Stamping & Manufacturing Company, Toledo, Ohio

Filed Mar. 6, 1978, Ser. No. 883,498

Int. Cl.² B65G *47/34*

U.S. Cl. 198—364 **2 Claims**

2. Feed delivery apparatus comprising a belt for carrying animal feed, a carriage positioned relative to said belt to contact feed carried therealong and effective to discharge the feed transversely thereof, said carriage comprising a plate having a width approximately equal to the width of said belt and being located under said belt, said carriage also having a frame supported by said plate and extending above said belt, a front diverter having an intermediate point pivotally carried by said frame above said plate and movable between two positions, in one of which said diverter extends obliquely across the width of said belt in one direction to discharge feed off one side of said belt and in the other of which said diverter extends obliquely across the width of said belt in another direction to discharge feed off the other side of said belt, a deflector having an intermediate point pivotally carried by said frame above said plate behind said diverter and movable between two positions, in one of which said deflector extends obliquely across the width of said belt in one direction to discharge the feed off one side of said belt and in the other of which said deflector extends obliquely across the width of said belt in another direction to carry feed off the other side of said



belt, means for moving said carriage back and forth over a substantial portion of the length of said belt, and mechanical means having a middle point pivotally carried by said carriage, having one end portion pivotally connected to said diverter at a portion spaced in front of its intermediate pivot point, and having a second end portion pivotally connected through a tang to said deflector to substantially simultaneously move said diverter and said deflector in opposite pivotal directions from the oblique positions in which feed is discharged off said one side of said belt to the oblique positions in which feed is discharged off said other side of said belt.

4,213,526

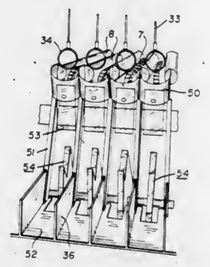
APPARATUS FOR UNSCRAMBLING AND ERECTING A PLURALITY OF NON-VERTICAL BOTTLES

Robert H. Graham, Spokane, and Barry D. Campbell, Nine Mile Falls, both of Wash., assignors to The Molson Companies Limited, Rexdale, Canada

Filed Jun. 22, 1978, Ser. No. 918,086

Int. Cl.² B65G *47/24*

U.S. Cl. 198—400 **2 Claims**



1. In apparatus for unscrambling and erecting a plurality of non-vertical bottles including a conveying table, a bottle erecting station located adjacent the terminal end of the conveying table, a plurality of bottle stalls at a lower level than said terminal end, pivotal bottle support means located at said station and struck by the bottoms of non-vertical bottles presented bottom-first to said terminal end and which support means are thereby pivoted out of the path of travel of such bottles to enable the latter to fall bottoms-first from said end, said pivotal means also serving to support the necks of non-vertical bottles presented neck first to said terminal end until

said last-mentioned bottles fall bottoms-first from said terminal end, and guide means at said station struck by said falling bottles which thereby guide the latter in an erect condition into said stalls, the improvement wherein said guide means include a plurality of arcuate drop-tube elbows of double curvature including an enlarged mouth portion, said elbows being disposed at the terminal end of the conveying table for directing the bottles from the latter into stalls, each stall including a slotted plate onto which the bottles are deposited, and a rotatable toothed cam wheel disposed in the slot of the slotted plate located at each said stall and onto which the bottles drop in a vertical position as well as in an untimed sequence from said table, alternate teeth of each said wheel being longer than intermediate teeth and serving simultaneously and directly to urge the bottles from the stalls.

4,213,527

CHAIN LINK CONVEYORS

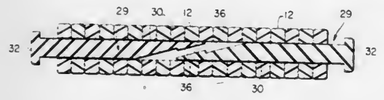
James M. Lapeyre, and Fernand S. Lapeyre, both of New Orleans, La., assignors to The Laitram Corporation, New Orleans, La.

Continuation-in-part of Ser. No. 477,692, Jun. 10, 1974, abandoned, which is a division of Ser. No. 187,746, Oct. 8, 1971, Pat. No. 3,870,141, which is a continuation-in-part of Ser. No. 63,523, Aug. 13, 1970, abandoned. This application Jan. 17, 1977, Ser. No. 759,721

The portion of the term of this patent subsequent to Mar. 11, 1992, has been disclaimed.

Int. Cl.[2] B29F *3/01*

U.S. Cl. 198—853 **28 Claims**



1. A method of forming a link module for constructing linked conveyor structures comprising:

extruding a synthetic polymeric material through a die to form a continuous slab having first and second opposite edges formed as respective cylinders, the cylindrical axes of which are substantially parallel to one another, and a relatively high strength, rigid intermediate section integrally formed with and joining said opposite edges so as to preserve the parallel relationship of said axes and so as to resist bending stresses applied to said slab, said die having the shape of the cross-section of said slab taken perpendicular to the axes of said cylindrical apertures;

forming in each of said cylinders a coaxial cylindrical aperture circumscribed by said each cylinder;

removing portions of said slab including portions of said first and second opposite edges so as to form, respectively, first and second pluralities of spaced-apart link ends each circumscribing one of said cylindrical aperture, said link ends being dimensioned and spaced apart so that said module is end-to-end reversible and engageable with another one of said modules so that a cylindrical aperture of said module is coaxial with a cylindrical aperture in said another one of said modules.

11. In an integrally-formed plastic module for constructing linked structures for use in a conveyor system, said module, comprising in combination: a first plurality of link ends of substantially identical width, each link end being formed to circumscribe a pivotal hole, said holes of said first plurality being arranged coaxially; a second like plurality of link ends of substantially identical width, each link end of said second plurality being formed to circumscribe a pivotal hole, said holes of said second plurality being arranged coaxially, the axes of respective holes of both pluralities of link ends being substantially parallel; and an intermediate portion having opposing sides and being integrally formed with and joining said first and second pluralities of link ends so as to preserve the parallel relationship of said axes and so as to resist bending stresses applied to said module, said link ends of each of said plurality being dimensioned and spaced apart by a distance slightly greater than the width of each link end so that said module is end-to-end reversible and so that a plurality of said modules may be engaged with each other at said ends, the improvement comprising:

said module being extruded through a die member having a cross-sectional shape identical to the cross-section shape of said module taken through a plane perpendicular to the axes of said pivotal holes and cut to form said link ends; and

said module including a rib disposed on at least one of said sides of said intermediate portion for engaging drive means of said conveyor system, said rib including a flat surface and cylindrical side surfaces disposed along opposite edges of said flat surface, said cylindrical side surfaces having the same axis of revolution, said axis of revolution extending substantially parallel to said axes of said pivotal holes.

27. A linked belt for use in a conveyor system comprising in combination:

a plurality of like extruded plastic modules, each of said modules including a first plurality of link ends of like width, a second plurality of link ends each of said like width, and an intermediate portion having opposing sides and integrally formed with and joining said first and second pluralities of link ends, said intermediate portion including a rib formed on one of said sides for engaging drive means of a conveyor system, said rib including a substantially flat surface and cylindrical side surfaces disposed along opposite edges of said flat surface;

said link ends of each of said modules being releasably engaged between and substantially in contact with the link ends of an adjacent module except for individual link ends disposed at the extreme sides of said belt; and

means for pivotally connecting said modules at engaged link ends so that each said rib of each module extends across said belt.

4,213,528

PACKAGE FOR ACID CONTAINER

George D. Kreutz, Dallas; L. J. Scott, Lewisville, and James P. Kelly, Arlington, all of Tex., assignors to Becton Dickinson & Company, Paramus, N.J.

Filed Sep. 13, 1978, Ser. No. 942,049

Int. Cl.[2] B65D *81/26, 85/84*

U.S. Cl. 206—205 **15 Claims**



1. A package for an acid container, comprising:

an acid resistant envelope and test container for an acid container whereby acid can be released from an acid container into the envelope for use in a procedure in the envelope and a separate removable absorbent shield within the envelope for enclosing an acid container, said absorbent shield including a material to neutralize acid whereby any acid released from an acid container in the envelope is absorbed and wholly or partially neutralized by said absorbent shield.

4,213,529

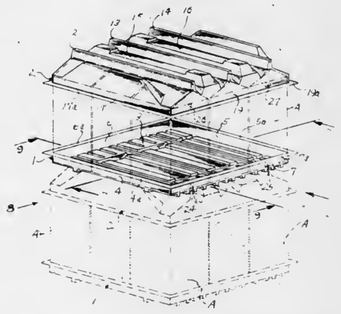
MEANS FOR STACKING AND SHIPPING CONTAINERS IN MULTIPLES

James L. Whitaker, Ft. Lauderdale, Fla., assignor to Frank B. Robb, Willoughby, Ohio, a part interest

Filed Apr. 20, 1979, Ser. No. 31,934

Int. Cl.[2] B65D *85/62, 19/00*

U.S. Cl. 206—427 **10 Claims**



1. A stackable shipping package comprising a pair of tray-like members of relatively thin material which is stiffened by the formation in manufacture, between and by which members, a series of articles is supported, each member having a body conforming at least in part to the portion of such article adjacent thereto, and each member having a peripheral lip thereon and within which such articles are confined in juxtaposition, each of said members further having engaging means to interengage corresponding means of like packages respectively above and below such package, all such packages being thereby positioned in vertically arranged relationship.

4,213,530

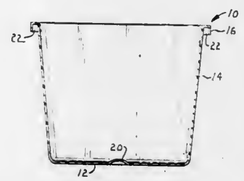
CONTAINERIZED PIPE COATING MATERIAL

Robert J. Harris, Marrero, and Gail T. Sikes, Harvey, both of La., assignors to H. C. Price Co., Bartlesville, Okla.

Division of Ser. No. 816,652, Jul. 18, 1977, abandoned, which is a continuation of Ser. No. 708,196, Jul. 23, 1976, Pat. No. 4,073,760. This application Feb. 12, 1979, Ser. No. 11,082

Int. Cl.[2] B65D *81/00, 85/00*

U.S. Cl. 206—447 **6 Claims**



1. An improved containerized pipe coating including an asphalt base coating material comprising about 10% to 25% by weight asphalt and about 75% to 90% by weight aggregate, and a container capable of being melted and mixed with said material to enhance the physical properties thereof, said container comprising no more than about 5% by weight of the coating material contained thereby and said container being constructed primarily from a material containing at least one of the members of the group consisting of polyethylene, polypropylene, and polyethylene-polypropylene copolymer.

4,213,531

CARD WITH REMOVABLE THREE DIMENSIONAL FIGURINE

Donald A. Rae, P.O. Box 51, Jenkintown, Pa. 19046

Continuation-in-part of Ser. No. 852,801, Nov. 18, 1977. This application Mar. 10, 1978, Ser. No. 885,394

Int. Cl.[2] B65D *73/00, 85/00*

U.S. Cl. 206—463 **7 Claims**



1. A card suitable for removably retaining an object comprising

a unitary planar card body having a front face and a rear face;

the card body being provided with a cut away area extending from the front face to the rear face, the cut away area being of configuration to frictionally engage and retain a peripherally configured, three dimensional object therein;

a peripherally configured, three dimensional object removably associated with the card body, the object being configured and adapted to be held within the cut away area of the card body by frictional engagement between at least a portion of the periphery of the object and at least a portion of the edge of the cut away area, a front portion of the object extending forwardly of the front face and a rear portion of the object extending rearwardly of the rear face;

a flexible wrapping enclosing completely the three dimensional object and at least a portion of the card body, the wrapping being in direct contact with the card body front face and rear face, the wrapping also being in direct contact with the front portion of the object and with the rear portion of the object, and

a novelty item enclosed with the card body and the object by the wrapping, the said wrapping contacting directly the object;

whereby the object is removably retained within the card and is adapted for subsequent removal and reinsertion and whereby the novelty item is retained in association with the card in a protected manner to prevent contamination.

4,213,532

ELECTRICAL HOUSING WITH STACKING BUMPERS

Hans-Joachim Eggert, Karlsfeld; Heinrich Zenkert; Rudi Kuehne, both of Munich, and Otto Oberberger, Gilching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 26, 1976, Ser. No. 708,899

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1975, 2538340

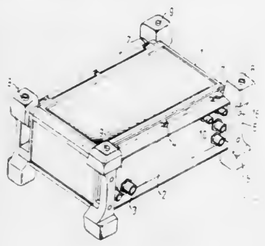
Int. Cl.[2] B65D *21/02, 25/26*

U.S. Cl. 206—504 **10 Claims**

1. A protective bumper element attachable to a housing of an-

electric device, the housing having vertical side walls and vertical and horizontal edges formed in a rectangle, and said element being attachable to the housing adjacent one of said vertical edges to protect the housing from shocks and to facilitate stacking of housings provided with similar bumper elements on four corners thereof, each said bumper element comprising:

a flexible, central, elongated handle portion spaced from an adjacent one of said vertical edges and from adjacent vertical walls sufficiently for grasping said handle portion by hand thereabout;



a thickened portion on either end of said handle portion;

a pair of metal inserts integrally affixed to said bumper in said thickened portions thereof, said inserts being longitudinally aligned with one another and having surface means engaging respective corners of said housing; and

means for affixing said bumper element securely to said housing whereby each said thickened portion extends beyond three sides of said housing at each respective corner.

4,213,533

AUTOMATIC MACHINE FOR IN PARTICULAR CALIBRATING FRUIT AND VEGETABLES

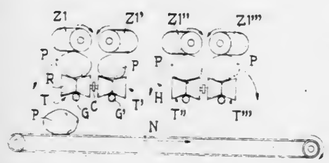
Alberto Sardo, Le Chesnay, France, assignor to Xeda International S.A., LaChesnay, France

Filed May 3, 1978, Ser. No. 902,276

Claims priority, application Italy, May 18, 1977, 12609 A/77

Int. Cl.[2] B07C *5/12*

U.S. Cl. 209—654 **6 Claims**



1. An automatic machine for calibrating in a continuous cycle substantially round, oblong or spherical objects with or without flattened poles and in particular fruits and vegetables, comprising: means for conveying said objects in Indian file, in at least one row; means for constraining said objects to rotate in a suitable manner on said conveying means and place their equatorial plane vertically; rotary calibrating means placed in an adjustable position above said conveying means at a distance which decreases in a direction in which said rotating objects are conveyed by the conveying means, the disposition relative to said conveying means and the direction of rotation of said calibrating means being such that in coming in contact with the equatorial part of said rotating objects the calibrating means delicately constrain said objects to laterally leave said conveying means; discharge means positioned for receiving said objects immediately and at an output end of said rotary calibrating means and conveying said objects in a plurality of separate rows, each of which rows corresponds to a different calibre of said objects, to receiving stations.

4,213,534

CHILD-RESISTANT CLOSURE

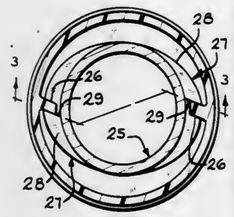
Gary V. Montgomery, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Continuation-in-part of Ser. No. 966,946, Dec. 6, 1978, Pat. No. 4,172,533. This application Jun. 28, 1979, Ser. No. 52,864

The portion of the term of this patent subsequent to Oct. 30, 1996, has been disclaimed.

Int. Cl.[2] B65D *55/02, 85/56;* **A61J** *1/00*

U.S. Cl. 215—216 **4 Claims**



1. Child-resistant locking means for a container and a cap therefor in which said container has a body and a tubular neck and said cap is cup-shaped and has a disc-like top and an annular skirt that depends from said top and that is adapted to telescope over said neck, said neck and said cap having cooperating twist action retaining means, said locking means comprising,

(a) at least one stop on the outer side of said container, said stop having an approach face and an abutment face on the clockwise side of said stop which extends abruptly inwardly from the clockwise end of said approach face toward the axis of said neck and which lies in a plane which is (1) parallel to the axis of said neck and (2) is inclined backwardly from the end of said approach face and intersects the exterior of said neck at an angle of less than 90° to a tangent to said neck at the line of intersection,

(b) a second, resiliently deformable, portion on said cap which is concentric with said annular skirt, and

(c) a lug on said second portion that is engageable with said approach face of said stop when said cap approaches closed position on said neck and normally is engageable with said abutment face when said cap is rotated from closed position in a retrograde direction.

4,213,535

FLUID RESERVOIRS FOR MASTER CYLINDERS

Masashi Ban; Tomio Tachino, both of Kariya, and Jiro Kizaki, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

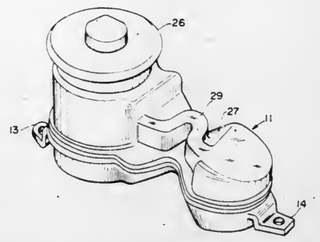
Filed Jul. 28, 1978, Ser. No. 929,177

Claims priority, application Japan, Jul. 30, 1977, 52-102775[U]

Int. Cl.[3] B65D *85/00, 1/24*

U.S. Cl. 220—20.5 **2 Claims**

1. In a fluid reservoir formed of resin material for attachment to a metal master cylinder, the improvement comprising a pair of flanges integral with said reservoir for securing said reservoir to said master cylinder, one of said flanges being formed at each opposed end of said reservoir substantially parallel to its longitudinal axis, each said flange having a first portion longitudinally extending from the peripheral wall of said reservoir, a second portion downwardly extending from said first portion and being spaced from the peripheral wall of said reservoir, and a third portion horizontally extending from said second portion and defining means for securing said reservoir to said master cylinder, each said flange being bendable for



compensating for stresses imposed by differences in thermal expansion of said reservoir and said master cylinder.

4,213,536

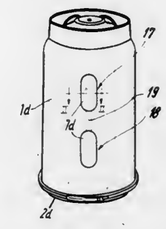
CONTAINER FOR CONVOLUTED WIRE OR THE LIKE

Manfred Häfner, Leopoldshöhe, Fed. Rep. of Germany, assignor to Häfner & Krullmann GmbH, Leopoldshöhe, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,735

Int. Cl.[2] B65D *25/54*

U.S. Cl. 220—82 R **7 Claims**



1. A container, particularly for storage and/or shipment of thin wire therein which is convoluted on a plastic reel or the like, comprising an end wall; a tubular section of synthetic plastic material including an end portion connected with said end wall, said section comprising a solid unitary wall and having an inner surface and an outer surface unitarily connected, at least two window openings extending between said surfaces and a peripheral edge face bounding each one of said window openings; and a viewing element including at least two transparent or translucent panes each installed in one of said window openings and each having an inner pane surface, an outer pane surface and a circumferentially extending edge face between the inner and outer surfaces, said pane surfaces of each of said panes being flush with the respective surface of said tubular section and the edge faces of said window openings and said panes having complementary male and female portions received within each other and connecting said panes to said tubular section, and a web integral with and interconnecting said panes and embedded within said tubular section and being of a smaller width than said panes.

4,213,537

CONTAINER LID ASSEMBLY

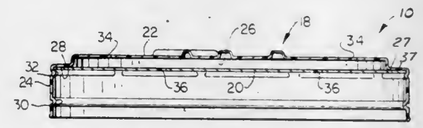
Patrick W. Caccavale, Kensington, Conn., assignor to Sherri Cup, Inc., Kensington, Conn.

Filed Sep. 20, 1978, Ser. No. 943,987

Int. Cl.[2] B65D *51/16, 41/18, 41/62*

U.S. Cl. 220—215 **1 Claim**

1. An insulated cover assembly for a paper receptacle having an upwardly facing annular seating surface at its open upper end, said cover assembly comprising a lid made from plastic material of substantially uniform thickness having a circular top wall including a generally cylindrical downwardly opening recess having a diameter substantially equal to the diameter of the open upper end of the receptacle and partially defining an empty chamber, said top wall having a raised design thereon further defining said chamber, said top wall having at least one vent opening therethrough and including a radially disposed annular outer marginal portion defining the open end of said recess and the outer peripheral edge of said top wall, said outer marginal portion having a radially disposed downwardly facing annular bearing surface, said lid having a generally cylindrical side wall integrally connected at its upper end to said outer peripheral edge and extending downwardly therefrom, said side wall having beads spaced downwardly from said



outer marginal portion and projecting radially inwardly beyond the cylindrical inner surface of said side wall, a substantially flat circular insert received within said lid and having an annular marginal portion disposed in bearing engagement with said bearing surface, said insert cooperating with said lid to further define said chamber and having another vent opening therethrough out of registry with said one vent opening, one of said beads retaining said insert in snap-in assembly with said lid with said annular marginal portion in bearing engagement with said bearing surface, said annular marginal portion engaging the upwardly facing seating surface when said cover assembly is positioned on the receptacle, another of said beads releasably retaining said cover assembly in snap-on assembled relation to the receptacle.

4,213,538

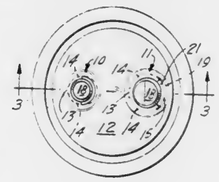
CAN END CLOSURE

Alfred H. Boardman, Hamilton, Canada, assignor to American Can Company, Greenwich, Conn.

Filed Jul. 9, 1979, Ser. No. 55,897

Int. Cl.[2] B65D *41/32*

U.S. Cl. 220—268 **10 Claims**



1. An end cover for a container comprising:

a central panel having a pour opening and a closure tab therefore dimensioned and configured to close said pour opening,

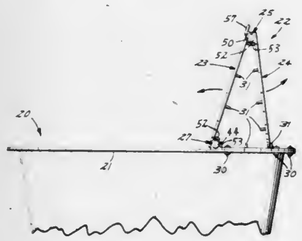
a hinge for connecting said closure tab to said central panel for mounting said closure tab for controlled displacement relative to said central panel about the axis of said hinge,

scored lines defining at least a part of said tab configuration and extending from the ends of said hinge axis along the periphery of said closure tab for a predetermined distance to act as a restraint up to a preset force against inward movement of said closure tab,

a severed line defining the remaining periphery of said tab and extending from said scored lines and interconnecting same and having a marginal portion formed to extend and engage said central panel to resist movement outwardly of

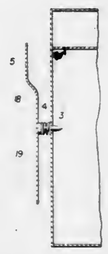
said central panel when subjected to internal container pressure.

4,213,539
CONTAINER COVER HINGE MEANS
Edward J. Reuter, Excelsior, Minn., assignor to Reuter, Inc., Hopkins, Minn.
Filed Mar. 12, 1979, Ser. No. 19,771
Int. Cl.[2] B65D *43/14, 57/04*
U.S. Cl. 220—333 **4 Claims**



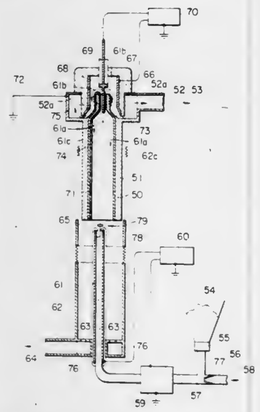
1. A container top comprising first and second sections hinged together along apposed edges, and dams on said top in addition to the hinge extending along said opposed edges to prevent water collecting on said top from running into the container at the hinge.

4,213,540
BREAD BOX DISPENSER
Louise A. Stanford, 2009 Brighton Rd., Avondale, Md. 20018
Filed Jul. 31, 1978, Ser. No. 929,238
Int. Cl.[2] B65H *3/22*
U.S. Cl. 221—150 R **1 Claim**



1. A bread box for dispensing bread by the slice comprising a container, refrigeration means disposed within said container, first biasing means for translating the bread in a substantially horizontal direction to an outlet on the dispenser box, and latch means disposed on said outlet of the dispenser whereby one slice of bread can be dispensed at a time while the next slice of bread in line is retained by means to prevent its removal in which means to prevent the next slice of bread from being removed includes at least one pin element adapted to engage said slice of bread and second biasing means to allow said pin to be removed said means to prevent removal further includes a door having a outwardly rectangularly flanged area, a lip extending beyond two sides of said flanged area having a narrow outwardly extending portion, and a vertically upstanding wider portion whereby when said door is pulled vertically upward, the pin and second biasing means ride into the narrower portion of said lip and constrain the second slice of bread by pressing said pin element into the bread.

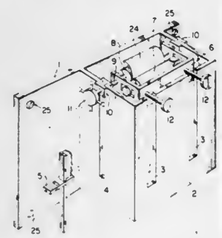
4,213,541
METALLIC SQUEEZE-OUT TUBE WITH RESINOUS LAYER ON ITS SURFACE
Tsutomu Itob, Tokyo; Nobuo Furuya, and Kenji Ohuchi, both of Chiba, all of Japan, assignors to Onoda Cement Co., Ltd., Onoda, Japan
Continuation of Ser. No. 762,504, Jan. 26, 1977, Pat. No. 4,112,869. This application Aug. 26, 1977, Ser. No. 827,890
Claims priority, application Japan, Feb. 3, 1976, 51-010005; Mar. 8, 1976, 51-024867
Int. Cl.[2] B65D *35/16*
U.S. Cl. 222—92 **8 Claims**



1. A metallic squeeze-out tube including inner and outer surfaces, a neck portion having inner and outer surfaces, and a shoulder portion having inner and outer surfaces and having a continuous resin coating film formed over and tightly adhered to the inner surface of both said tube and neck, the outer surface of the neck portion and the outer surface of the shoulder portion of the metallic squeeze-out tube, said resin coating formed of powder paint particles electrostatically adhered to said surfaces and fused together to provide a solidified film layer tightly adhered to said surfaces

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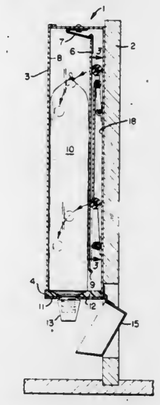
4,213,542
TOOTH PASTE DISPENSER
Bobby R. Wilson, 468 Iroquois Ave., Akron, Ohio 44305
Filed Mar. 7, 1979, Ser. No. 18,591
Int. Cl.[3] B65D *35/28*
U.S. Cl. 222—102 **1 Claim**



1. A dispensing device for dispensing the contents of a collapsible tube comprising:
(A) A plaque for mounting on the wall, having thereto affixed at least one toothbrush holder and a collapsible tube container;
(B) Said container having front, side and bottom walls with said plaque forming the back wall;
(C) Said front and side walls having elongated slots running vertically and aperture means in the bottom wall of the container;

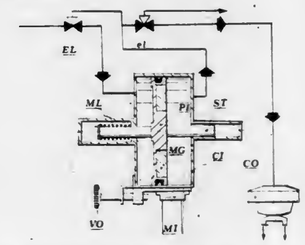
(D) Said container having therein a vertically movable dispensing means, said dispensing means having front and side walls forming a carriage, said side walls having elongated slots and said front wall having a threaded opening; and
(E) Said carriage including two rollers engaging a vertically disposable tube having one roller bearing means adjustable in a horizontal plane within said slots in said carriage by a threaded screw means passing through said slots in said container and being threadly received by said threaded opening in said carriage to provide adjustment movement to said one roller bearing means, a second roller affixed to an axle that is rotationally secured within said carriage, said axle continuing through the carriage and supported by "I" joints that move in a vertical plane in said slots in said side walls, said axle having thereto affixed a knob to drive said carriage in a vertical plane by friction contact with said vertical disposable tube.

4,213,543
DISPENSER FOR DISPENSING THE CONTENTS OF COLLAPSIBLE PACKAGES
James E. Thiem, Route 2, P.O. Box 580, Brevard, N.C. 28712
Filed May 8, 1978, Ser. No. 903,608
Int. Cl.[2] B65D *35/28*
U.S. Cl. 222—103 **10 Claims**



1. A dispensing apparatus for dispensing the contents of collapsible packages comprising:
(a) a housing mountable to a supporting surface, said housing having an outlet at one end through which a collapsible package discharge outlet is extendable;
(b) a pressure plate extending longitudinally within said housing and defining one side of a collapsible package receiving chamber, and cooperating with a first opposing wall of said housing to dispense the contents of said package, said pressure plate extending from adjacent said one end to adjacent another innermost end of the housing opposite said one end and mounted for movement in an arc toward said opposing wall in such a manner that the entire pressure plate moves axially toward said outlet; and
(c) actuating means for shifting said pressure plate toward said first wall of said housing to collapse said package and dispense the contents thereof, said actuating means including a pair of pressure arms, each pressure arm being pivotally connected at a first end to a second wall of the housing and engageable at a second end with spaced portions of said pressure plate, link means interconnecting said pressure arms for joint movement between a first position with the section end of one pressure arm adjacent said innermost end of said housing and the second end of the other pressure arm in a central zone of said housing located intermediate said one end and said innermost end, and a second position with said one pressure arm displaced to said central zone and said other pressure arm displaced away from said central zone toward said outlet end of the housing, and operating means for pivotally swinging said pressure arms along said pressure plate for causing displacement of said pressure plate toward said first wall, whereby said package is collapsed between said first wall and said pressure plate and the contents thereof is dispensed.

4,213,544
WATER PROPORTIONING AND DELIVERING DEVICE PARTICULARLY FOR COFFEE MACHINES
Alberto S. Pandolfi, c/o Ing. Misitano A.G. Via Padova, 217, 20127 Milano, Italy
Filed Dec. 26, 1978, Ser. No. 972,889
Int. Cl.[2] G01F *11/06*
U.S. Cl. 222—250 **1 Claim**



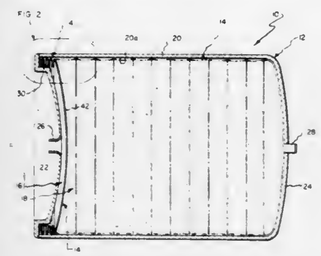
1. A water proportioning and delivering device particularly for coffee machines comprising a cylinder for receiving the liquid, a double acting piston slidable in the said cylinder to control the volume of liquid supplied thereto and to dispense liquid therefrom, the said double acting piston comprising a first and a second piston rod, the said cylinder extending with a first and a second hollow portion sized to receive the said first piston rod and said second piston rod and external switch means responsive to the length of stroke of the piston to control the stroke of the piston in the cylinder, switch operating means comprising a magnetic mass disposed concentrically about the axis of displacement of the piston and the switch means comprising a magnetically responsive microswitch disposed externally of the cylinder at a location in the path of travel of the magnetic field associated with the magnetic mass, a return spring mounted around the first piston rod and housed within the said first hollow portion and operable to return the piston to an initial position, the second hollow portion of the cylinder operating as a guide for the said second piston rod, adjusting manually actuated means for the said switch means able to adjust the location of the latter along a generatrix of the said cylinder.

4,213,545
EXPANDING BELLOWS FOR EXPULSION TANK
Leo M. Thompson, Niagara Falls; John Z. Colt, Williamsville, and Robert J. Szpakowski, Kenmore, all of N.Y., assignors to Textron, Inc., Providence, R.I.
Filed Sep. 20, 1978, Ser. No. 943,948
Int. Cl.[2] B67D *5/54*
U.S. Cl. 222—386.5 **7 Claims**

1. In a positive expulsion tank having a tank shell defined by first and second end walls and a side wall connecting said end walls; a bellows arranged within said tank shell and cooperating therewith to define product storage and expulsion fluid chambers, said bellows having one end fixed to said tank shell and an opposite end closed by a piston head extending transversely of said side wall, said bellows having convolutions consisting of crest portions, joining side wall portions, and root portions for connecting side wall portions of adjacent convolutions, said bellows being axially extendible under control of expulsion fluid within said expulsion fluid chamber to position said piston head adjacent alternate ones of said end walls of said tank shell to define product chamber full and empty condi-

tions of said tank, said bellows having limiting modes of extreme compression and extreme extension bounding a normal operating mode in which said convolutions may undergo resilient deformation and beyond which plastic deformation of said convolutions occurs; and product and expulsion fluid flow control means mounted by said tank shell for flow communication with said product storage and expulsion fluid chambers, respectively, the improvement comprising in combination:

a plurality of reinforcing rings fixed one within each of said crests and operable to limit radially inwardly directed plastic deformation thereof away from said side wall of said tank shell incident to axial extension of said bellows beyond said limiting mode of extreme extension, said



bellows being fixed within said tank shell to perform in said normal operating mode incident to said product chamber full condition of said tank to accommodate for temperature induced expansions/contractions of said stored product, said bellows being sized to undergo plastic deformation without puncture failure of said convolutions incident to axial extension thereof beyond said limiting mode of extreme extension into said product chamber empty condition, and said root portions being displaced radially outwardly towards said side wall of said tank shell incident to said axial extension of said bellows to lie in essential alignment with adjacent ones of said crest portions when said bellows is disposed in said product chamber empty condition.

4,213,546

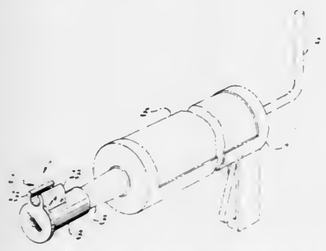
CAP FOR THE NOZZLE OF A CAULKING CARTRIDGE

Richard C. Massey, 12301 Ballas La., St. Louis, Mo. 63131

Filed Sep. 20, 1978, Ser. No. 944,184

Int. Cl.[2] B65D *47/04*

U.S. Cl. 222—546 **6 Claims**



1. For placement on the end of a nozzle, such as the nozzle of a cartridge adapted to be loaded into a dispensing tool for dispensing caulking or other hardenable and extrudable material from the cartridge, a cap for sealing the nozzle and preventing discharge therefrom, said cap comprising an elongate hollow body closed at one end constituting its front end and open at its back end for placement of the cap on the nozzle with the nozzle received inside said body, an elongate plug formed integrally with the body and extending rearwardly within the body from the front end thereof, said plug being adapted to enter the nozzle and plug it on placement of the cap on the nozzle for sealing the nozzle and preventing said discharge, and a spring clip formed integrally with the body on the outside of the body for detachably mounting the cap on a generally rod-shaped handle of the dispensing tool with the longitudinal axis of the cap generally parallel with the handle when the extrudable material is being dispensed from the cartridge via the tool, said clip comprising a pair of relatively wide arms extending one alongside the other on the outside of the body axially of the body and defining an elongate passage therebetween decreasing in size from one end to the other for receiving said handle, said arms being of resilient material and adapted to flex apart and grip the handle when the handle is received in said passage thereby to mount the cap on the handle.

4,213,547

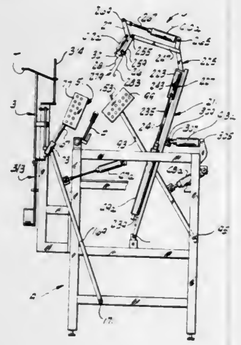
METHOD OF AND APPARATUS FOR PROCESSING PARTS OF GARMENTS, SUCH AS COLLARS

William R. Conner, Jr., Shelbyville, Tenn., assignor to Stahl-Urban Company, Shelbyville, Tenn.

Filed Oct. 4, 1978, Ser. No. 948,558

Int. Cl.[2] A41H *43/00, 33/00*

U.S. Cl. 223—2 **31 Claims**



1. Apparatus for processing workpieces such as parts of garments each of which comprises two or more superimposed plies of material which have been seamed adjacent an edge thereof and which are unseamed at an edge opposite the seamed edge, said apparatus comprising:

means for holding a workpiece in a turned condition with the seam inturned, the plies of the workpiece thereby having inturned margins at said edge joined by the seam, said holding means being adapted to extend between plies of the workpiece from the unseamed edge thereof and having an edge which is receivable in the infolded margin of a ply and which is engageable with the workpiece at its seamed edge;

a press for pressing a workpiece on the holding means, said press comprising a pair of platens for pressing engagement with opposite faces of the workpiece on the holding means, said platens being relatively movable away from one another to a retracted position wherein they are spaced apart and thereby open for entry therebetween of the holding means carrying a workpiece between the platens with one face of the workpiece facing toward the first platen and its other face facing toward the second platen;

the holding means being movable from a loading station spaced from the press, where a workpiece may be applied to the holding means in the stated turned condition, to a pressing position between the opened platens, and the apparatus having means for moving the holding means between said loading station and said pressing position, and means for effecting relative movement of the platens

for closure thereof to press the opposite faces of the workpiece on the holding means and concomitantly effecting a relative movement of at least one of the platens and the holding means in a direction to effect a wiping action on the workpiece drawing it in the direction away from the seamed edge of the workpiece held at said edge of the holding means toward the unseamed edge of the workpiece.

4,213,548

INSULATIVE WIDE STYLE WATCHBAND

Bruce G. Wood, 6867 Mission Gorge Rd., San Diego, Calif. 92120

Filed Jul. 10, 1978, Ser. No. 923,180

Int. Cl.[2] G04B *37/14;* A44C *5/00*

U.S. Cl. 224—168 **2 Claims**



1. An insulative wide style watchband, comprising:

(a) an elongated band of electrically insulative material with one end portion having a first type of fastener means and the other end portion having a second type of mating fastener means so that said end portions are capable of releasible interlocking engagement to form a bracelet;

(b) said band having a pair of transverse opposed openings intermediate said end portions and spaced apart longitudinally of the band;

(c) strap structure of a width less than the width of said band, secured to said band and having portions thereof extending through said openings in the form of spaced opposed loops capable of receiving the lateral retaining pins of a wrist watch; and

(d) said strap having permanent securing means at one end thereof and easily releasible securing means at the other end of the strap, so that lateral retaining pins of a wrist watch need not be removed from the watch in mounting and/or removal of a wrist watch on or from the watchband.

4,213,549

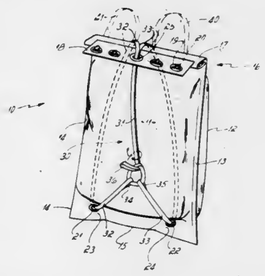
WATERPROOF STORAGE BAG AND BACKPACK

Linda A. Hibbard, Boulder, Colo., assignor to Phoenix Products, Inc., Tyner, Ky.

Filed Jun. 18, 1979, Ser. No. 49,941

Int. Cl.[3] A45F *3/04;* B65D *30/10*

U.S. Cl. 224—209 **11 Claims**



1. A portable storage bag having enclosed sides and bottom and a top closure having a closure flap, said bag further including:

two spaced apertures in a bottom portion of the bag, said apertures being spaced from an interior of said bag,

at least one aperture in said closure flap, and

encircling strap means extending through said one aperture and across a front side of said bag and through said two spaced apertures, said strap means extending from said two apertures across a rearward side of said bag and over the top of said bag to said one aperture.

4,213,550

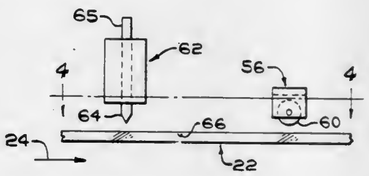
METHOD OF AND APPARATUS FOR INITIATING A DAMAGE-FREE SCORE IN A REFRACTORY MATERIAL

Robert M. Bonaddio, Fresno, Calif., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 6, 1978, Ser. No. 949,347

Int. Cl.[2] C03B *33/02;* B26D *3/08;* B26F *3/00*

U.S. Cl. 225—2 **17 Claims**



1. A method of initiating a damage-free score in a piece of refractory material selected from the group consisting of glasses, ceramics and glass-ceramics, comprising the steps of:

imposing a zone of damage in the piece;

engaging the piece at a position on the surface of the piece is spaced relation to the zone of damage with scoring means capable of imposing a damage-free score in the piece;

moving the scoring means and zone of damage in a continuous motion relative to one another to move the scoring means through the zone of damage to initiate a damage-free score; and

moving the piece and scoring means relative to one another to impose a damage-free score in the piece.

4,213,551

RECORDING CARRIER TRANSPORT ASSEMBLY FOR USE WITH SIDE MARGIN PUNCHED RECORDING CARRIER WEBS

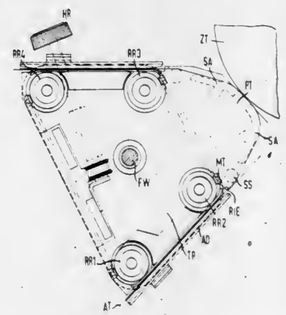
Josef Windele, Puchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,283

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717315

Int. Cl.[2] B65H *17/38*

U.S. Cl. 226—74 **8 Claims**



6. A combined transport and feed unit for moving a side margin punched recording carrier past an intermediate carrier in a nonmechanical printing device comprising: parallel spaced

apart housing members supporting at least three axially aligned rotatable wheel pairs, a belt trained around the wheels of each of the housing members, the belt having a plurality of spaced apart projecting recording carrier hole engaging pins thereon, at least one pair of wheels interconnected by a driven shaft, the housing members being pivotable about the driven shaft, a feed assembly carried by said housing members, the belts effective to engage a recording carrier at an upstream end of the unit and to transport the recording carrier by engagement of the pins with the recording carrier holes to an upstream end of the feed assembly, to thereafter disengage from the recording carrier and to re-engage the recording carrier at a downstream end of the feed assembly and to transport the recording carrier to a downstream end of the unit, each of the wheel pairs having axes, the axes of the at least three axially aligned rotatable wheel pairs being spaced from one another such that they form apexes of a triangle.

4,213,552

CONVEYOR BELT FOR FILMSTRIP POSITIONING

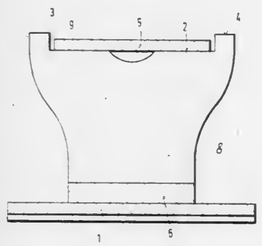
Karl Ries, Mülheim; Kurt Hannoschöck, Sonsbeck; Krsto-Marijan Rozic, Düsseldorf, and Günter Basler, Ahrensburg, all of Fed. Rep. of Germany, assignors to Mannesmannufer Aktiengesellschaft, Düsseldorf and Richard Seifert & Co. GmbH & Co. KG, Ahrensburg, both of, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 904,743

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 7715354

Int. Cl.[2] B65H *17/34*

U.S. Cl. 226—170 **5 Claims**



1. Conveyor belt for moving film strips into particular positions relative to a test object for exposure to X-rays examining the test object, comprising:

a toothed belt and a cover on a surface of the belt facing away from the teeth of the belt, the cover being made of a material different from the material of which the belt is made, the cover having a considerably higher resiliency than the belt, said cover being constructed in respect to its surface contour as a shallow flat trough for holding such film.

4,213,553

WEB GUIDING DEVICE

Ferdinand Leifeld, Kempen, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

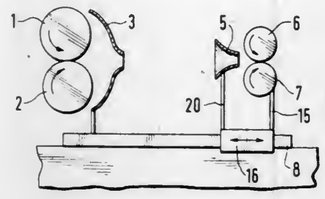
Filed Aug. 30, 1978, Ser. No. 938,330

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741095

Int. Cl.[2] B65H *23/04*; **G03B** *1/48*

U.S. Cl. 226—196 **10 Claims**

1. In a device for withdrawing and gathering a fiber web discharged by a web delivering assembly; the device including a guide element arranged downstream of the web delivering assembly as viewed in the direction of web advance and having an outlet opening through which the web leaves the guide element; a trumpet arranged downstream of the guide element; and a calender roller pair arranged downstream of the trumpet and forming a calender assembly with said trumpet; the improvement comprising means for displaceably supporting said



trumpet, said roller pair and said guide element for movement as a unitary structure with respect to said web delivering assembly.

4,213,554

FRICTION WELDING MACHINE

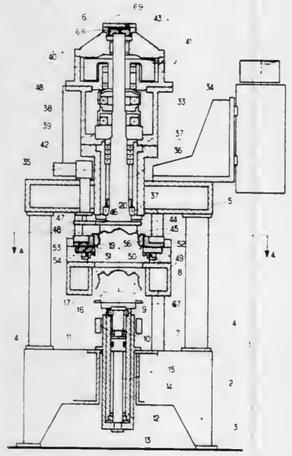
Mario M. Sciaky, Paris, France, assignor to Sciaky Intertechnique, S.A., Fribourg, Switzerland

Filed Dec. 22, 1978, Ser. No. 972,447

Claims priority, application France, Jan. 5, 1978, 78 00260

Int. Cl.[3] B23K *20/12, 37/02*

U.S. Cl. 228—2 **9 Claims**



1. A machine for friction welding two parts, comprising a first non-rotatable means for clamping the first of the said parts and a second rotatable means for clamping the second part, characterized in that the first non-rotatable clamping means is movable along the axis of rotation of said second rotatable means and that the said rotatable clamping means is composed of a driven mandril and a headstock for clamping between them the second workpiece, this headstock being movable along the said axis of rotation and being provided with means for supporting the two pieces co-axially.

4,213,555

METHOD AND APPARATUS FOR AUTOMATIC WELDING OF BEVELLED TUBES

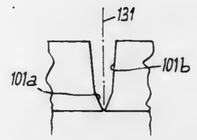
Andre E. Minkiewicz, Fontenay aux Roses, and Norbert Poirier, Paris, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Mar. 31, 1978, Ser. No. 892,355

Claims priority, application France, Mar. 31, 1977, 77 09824

Int. Cl.[2] B23K *9/02*

U.S. Cl. 228—29 **11 Claims**



1. A method of welding the bevelled ends of two tubes using an automatic welding device, said tube bevels having no root-faces, comprising (a) arranging said tubes into contact with a local gap varying between 0 and 2 mm; (b) automatically positioning said entire welding device in a predefined relationship with the plane defined by the meeting plane of said tubes; and (c) making a plurality of welding runs, all said runs being made on the outside of said tubes.

4,213,556

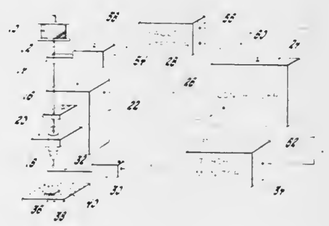
METHOD AND APPARATUS TO DETECT AUTOMATIC WIRE BONDER FAILURE

Frederick M. Persson, and David C. Frankel, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1978, Ser. No. 947,493

Int. Cl.[2] H01L *21/90*

U.S. Cl. 228—104 **2 Claims**



1. A method of bonding a wire to interconnect first and second conductors and detecting a bond failure comprising the steps of

supplying wire from a source through a hollow bonding tip,

applying the bonding tip to the first conductor to bond the wire thereto at a first bond site,

moving the bonding tip to a second bond site at the second conductor to form a wire bridge from the first conductor to the second conductor,

sensing the feeding of wire from the source to the bonding tip by a wire feed sensor,

monitoring the wire feed sensor while the bonding tip is moving from the first conductor to the second conductor whereby an absence of wire feeding during said bonding tip movement is indicative of a bond failure at the first conductor,

applying the bonding tip to the second bond site to bond the wire thereto,

moving the bonding tip away from the second bond site to a preset location, clamping the wire at a preset time during the movement so that a short pigtail will be pulled from the tip and the wire will break from the second bond site at the preset time if a sound bond is made there and will break at a second later time if the bond pulls loose from the second bond site,

momentarily releasing the clamp at a time between the preset time and the second time to pull an additional pigtail length from the tip if due to bond failure the wire did not break at the second bond site,

passing an electronic flame off electrode under the bonding tip when reposed at its preset location to form a ball on the end of the pigtail whereby the electrode will touch the pigtail if the said additional length extends from the tip, and

monitoring the electronic flame off electrode to sense whether it touches the pigtail thereby providing a signal if the bond pulled loose from the second bond site.

4,213,557

METHOD FOR PRODUCING A MASS FILTER ANALYZER SYSTEM AND ANALYZER SYSTEM PRODUCED ACCORDING TO THE METHOD

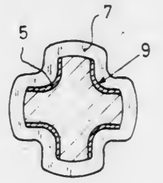
Jochen Franzen, Wildesbausen, and Gerhard Weiss, Varrel, both of Fed. Rep. of Germany, assignors to Dr. Franzen Analysentechnik GmbH & Co. Kommanditgesellschaft, Bremen, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,132

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2737903; Nov. 24, 1977, 2752674

Int. Cl.[2] B23K *1/02*; **C03B** *23/04*

U.S. Cl. 228—122 **7 Claims**



1. A method for producing a highly precise and inherently stable analyzer system for a multipole mass filter comprising the steps of:

providing a core of precise size with parallel grooves therein;

providing a tube made of electrically poorly conductive and thermally softenable material;

placing electrically highly conductive metal foils, particularly of a metal which easily joins to the softenable tube material, into said grooves of said core;

disposing said tube over said core having said metal foils in said grooves, said core having a higher expansion coefficient than said tube;

heating the tube material and core so that said metal foils are joined to said softened tube material when said tube is softened and conforms to the configuration of said core;

cooling said heated tube and core until said tube material solidifies; and

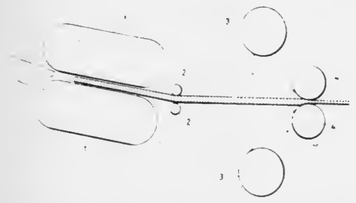
removing said tube from said core, said metallic foils connected to impressed indentations of said tube formed by said core being removed at the same time together with said tube.

4,213,558

CONTINUOUS CASTING AND CLADDING PROCESS AND APPARATUS FOR PRODUCING METAL CLAD

Koei Hirobe, Nishinomiya; Kiyomi Yanagida, Suita; Tadashi Hirokane, and Akihiko Takahashi, both of Nagoya, all of Japan, assignors to Sumitomo Aluminum Smelting Company, Ltd., Osaka and Nihon Atsuen Kogyo K.K., Itami, both of, Japan

Filed Dec. 26, 1978, Ser. No. 973,171
Claims priority, application Japan, Dec. 26, 1977, 52-160651
Int. Cl.[2] B23P *3/06*
U.S. Cl. 228—176 **15 Claims**



1. A continuous casting and cladding apparatus for the production of metal clads comprising:
means having a continuous mold system and cooling means for continuously casting a molten metal, the mold system including a pair of opposed continuous revolving mold surfaces,
at least one uncoiler having rotation restraining means for feeding a sheet or strip of cladding material,
means for adjusting the feed of the cladding material onto at least one surface of a hot solidified cast sheet or strip withdrawn from the casting means, the feed adjusting means including a group of guide rolls and a guide plate and being operable at a variable speed in synchronism with a proper line speed,
an overlaying unit for fitting the cladding material to the hot cast sheet or strip without permitting projection of the cladding material from the edges of the cast sheet or strip,
pinch rolls for feeding the resulting assembly of the cast sheet or strip and the cladding material to a subsequent hot-rolling process, and hot rolls.

11. A method of continuously producing clad aluminum or aluminum alloy comprising the steps of:
continuously feeding molten aluminum or aluminum alloy to one end of a mold space defined by a pair of rolls, a pair of belts, or the combination of a belt and a wheel or of caterpillar type tracks,
withdrawing from the other end of the mold space a cast sheet or strip solidified by cooling and having a temperature of about 300° to about 580° C.,
feeding a degreased cladding material to at least one surface of the cast sheet or strip in synchronism with a proper line speed,
fitting the cladding material to the cast sheet or strip without permitting projection of the cladding material from the edges of the sheet or strip,
preheating the cladding material as properly fitted to the cast sheet or strip in contact therewith, and
hot-rolling the resulting assembly for cladding.

4,213,559

DIVIDED DISPLAY CARTON

George L. Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Apr. 5, 1978, Ser. No. 893,787
Int. Cl.[2] B65D *5/48*
U.S. Cl. 229—16 D **9 Claims**

1. An open-topped divided display carton comprising:
a. a generally rectangular back panel having a pair of hole cutouts formed therein;
b. a reinforcing back panel having a pair of hole cutouts formed therein and adhered to the back panel so that the respective hole cutouts are aligned so that the carton may be suspended therefrom;
c. a pair of side panels each extending forwardly in parallel from the opposite side edges of the back panel, a one of the side panels attached to the back panel and the other of the side panels attached to the reinforcing back panel;
d. a front panel extending between the side panels;
e. a side bottom flap depending from each of the side panels, both side bottom flaps being inwardly folded to be generally perpendicular to the side panels;



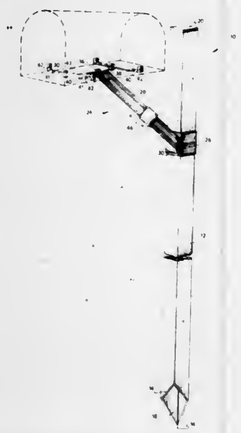
f. a bottom panel depending from the front panel and inwardly folded to be generally perpendicular to the front panel, the bottom panel being securely fixed to both of the side bottom flaps;
g. a partition panel extending between the back panel and the front panel, the partition panel being a cutout portion of the reinforcing back panel; and
h. a partition bottom flap depending from the partition panel and extending between the bottom panel and one of the side bottom flaps, the partition bottom flap being glued securely to both the bottom panel and the side bottom flap to make the carton rigid and to fix the partition rigidly in position.

4,213,560

ADJUSTABLE MAILBOX STANDARD

Robert E. Hall, 4187 Mogadore Rd., Kent, Ohio 44240

Filed Jul. 17, 1978, Ser. No. 924,944
Int. Cl.[2] A47G *29/12*
U.S. Cl. 232—39 **5 Claims**



1. A mailbox support assembly, comprising:
a hollow post cut at a bias to form a point at a bottom end thereof for insertion into the ground;
a first collar adjustably mounted upon said post;

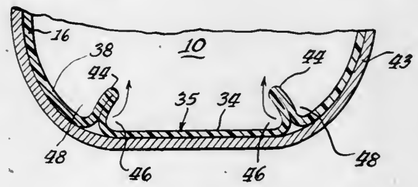
a truss obliquely connected to and extending from said collar; and
a support bracket connected to said truss and selectively positionable at an end thereof for receiving and maintaining a mailbox at an end of said truss, said support bracket including a base member connected to said truss and adjustable fingers at opposite ends of said base member for making secure engagement with various sizes of mailboxes.

4,213,561

FLEXIBLE, COLLAPSIBLE CONTAINER FOR BLOOD AND THE LIKE WHICH IS FREE OF LIQUID-TRAPPING FOLDS

Edward L. Bayham, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 25, 1978, Ser. No. 937,008
Int. Cl.[2] B04B *7/00;* **B65D** *29/00*
U.S. Cl. 233—14 R **9 Claims**



1. In a blood centrifuge system including a centrifuge cup and an elongated, liquid-filled, flat-sealed, flexible, collapsible container positioned within said cup for centrifugation of the liquid in said container, said liquid-filled container within said cup being of essentially the same transverse dimension as said container, said container defining access port means at the end of the container facing outwardly from said centrifuge cup, the improvement comprising, in combination: the inward end opposite to said outwardly-facing end of the container, positioned within said centrifuge cup, defining a first, central end section extending generally perpendicularly to the longitudinal axis of said container, and a pair of second, generally straight end sections, extending from adjacent each end of the first end section and defining obtuse angles to it, said container further defining within said centrifuge cup a pair of inwardly-extending creases located adjacent the ends of said first end section which creases do not trap portions of the contents of said container, said inward end being free of apertures leading to the exterior.

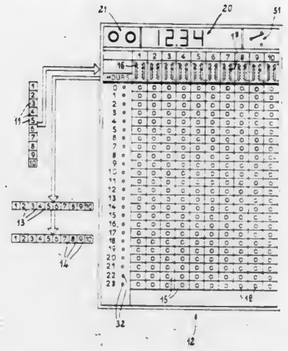
4,213,562

PROGRAMMER

Roger Garrett, 23 rue Lissagaray, and André Liversain, 59 rue Horace Vernet, both of Saint-Etienne, France

Filed May 1, 1978, Ser. No. 902,093
Claims priority, application France, Apr. 29, 1977, 77 13633
Int. Cl.[2] F23N *5/20;* **H05B** *1/02;* **G08B** *1/00*
U.S. Cl. 236—46 R **22 Claims**

1. A programmer comprising a clock, at least one counter which receives periodically pulses originating in said clock, and a programming matrix including a double-sided printed circuit, on one side of which a first series of parallel conducting strips are provided, each of which is connected to a respective output of said counter and on the other side of which a second series of parallel conducting strips are provided, said second series of strips are non-conductively intersecting said first series being connected to a control circuit for at least one device, a respective aperture in said programming matrix at each nonconductive intersection of a conducting strip of the first series and a conducting strip of the second series for receiving a removable conductive pin which provides an electrical connection between said two sides of the printed circuit, and including a respective conducting area provided on said double-sided printed circuit at each intersection of a conducting strip of said first series and a conducting strip of said second series, at least one of said conducting areas being connected to one of said conducting strips of one of said series by an isolating diode, a respective said aperture being provided at least one of said intersections associated with said diode simultaneously transversing a conducting strip of the other of said series and said conducting area.

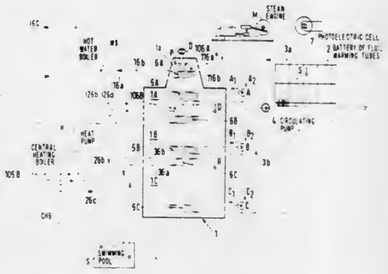


4,213,563

HEAT STORAGE AND TRANSMISSION APPARATUS FOR HEAT FROM A FLUID HEATED BY THE SUN

Josephus P. M. van Kuijk, Blonay, Switzerland, assignor to Patlico Rights N.V., Willemstad, Netherlands Antilles

Filed Jul. 10, 1978, Ser. No. 923,315
Claims priority, application Netherlands, Jul. 15, 1977, 7707915
Int. Cl.[2] G05D *23/00*
U.S. Cl. 237—2 B **5 Claims**



1. An installation for storage and transmission of heat of a fluid heated by solar radiation comprising
a closed fluid tank,
at least two primary heat exchange means in said fluid tank, each of said primary heat exchange means being located at ascending levels in said tank to define ascending temperature zones therein,
a pipe system operatively connected to said primary heat exchange means,
a circulation pump in said pipe system for circulating solar heated fluid to and from said primary heat exchange means,
transmission heat exchange means spaced above each primary heat exchange means in each zone in said tank,
said transmission heat exchange means being adapted to transmit heat from the closed fluid tank for utilization purposes,
thermometers in each of said temperature zones, and

a valve control system operatively connected to said thermometers for controlling the throughflow of the primary heat exchange means in accordance with temperature variations in the closed fluid tank.

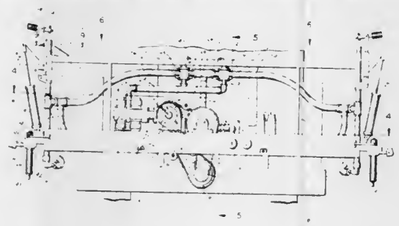
4,213,564
FUEL INJECTOR
Kenneth L. Hulsing, 12619 Beacon Hill Ct., Plymouth, Mich. 48170
Filed Jul. 17, 1978, Ser. No. 925,070
Int. Cl.² F02M *47/02*
U.S. Cl. 239—88 **7 Claims**



1. A plunger valve nozzle for injecting fuel into an engine cylinder, said nozzle comprising an elongated annular housing having a central passage extending therethrough, means for introducing fuel under pressure to said passage, a nozzle body secured to the lower end of said housing and defining an upwardly facing shoulder within said housing passage, a counterbore in the upper end of said housing and open to said housing passage, a coil compression spring having one end seated in said counterbore, said nozzle body having a constant diameter bore extending therethrough from said shoulder, a plunger valve having a piston portion slidably fitting said bore and an enlargement extending into said housing passage above said shoulder, a plunger retracting rod spacedly disposed within and extending longitudinally of said housing passage, said rod having its upper end connected to the opposite end of said spring and its lower end connected to said plunger valve enlargement, said plunger valve having a portion of reduced cross section extending into said bore from said enlargement for exposing said piston portion to the fuel pressure within said housing passage, said piston portion having an internal passage extending longitudinally thereof and open at its upper end to said housing passage, the opposite end of said internal passage having a connecting orifice extending transversely to the periphery of the piston portion, said orifice being normally closed by said bore but said spring being yieldable in response to a predetermined fuel pressure within said housing passage to accommodate downward displacement of the plunger valve to a position in which at least a portion of said orifice is uncovered by the lower end of said bore.

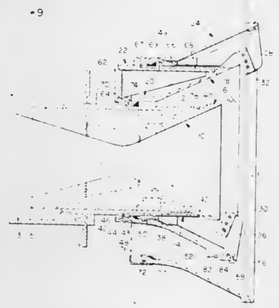
4,213,565
SPRAYING SYSTEM
Clarence L. Jackson, 819 Caseyville Rd., Caseyville, Ill. 62232
Continuation of Ser. No. 776,948, Mar. 14, 1977, abandoned.
This application Oct. 12, 1978, Ser. No. 950,789
Int. Cl.² B05B *1/20*
U.S. Cl. 239—170 **13 Claims**

1. For use with a vehicle having a source of supply of treatment liquid to be dispensed and a transfer case, a spraying system comprising a single pump for pumping said liquid, said pump being mounted upon said vehicle and being of a variable stroke, positive displacement character and having first and second pistons and associated first and second compartments, said pump having a suction side connected to said source of supply liquid for supplying fluid for pumping by said pistons, means operatively engaging said pump to said transfer case for operation of said pump correspondingly to ground travel of said vehicle, said pump having a discharge side comprising a first outlet port associated with said first compartment and a second outlet port associated with said second compartment, first and second diverter valves, first means connecting said first diverter valve with said first pump outlet port, second means connecting said second diverter valve with said second



pump outlet port, a boom assembly mounted upon said vehicle laterally outwardly of each of said first and second diverter valves, said boom assembly comprising a spray boom and a manifold for discharging the liquid onto the area to be treated, said manifold being supported by said spray boom, conduit-forming means connecting said first and second diverter valves with the proximate manifold, each of said first and second conduit-forming means including a conduit connected at one end to the associated diverter valve, a vertically disposed pipe mounted on said vehicle, means connecting the other end of each conduit to the related pipe substantially intermediate its length, means connecting each of said pipes at their lower ends to the adjacent manifold, each of said pipes in their portions above the connection to the associated conduit being closed to provide a surge eliminating chamber.

4,213,566
NESTED CONE EXTENDIBLE NOZZLE SYSTEM FOR A ROCKET MOTOR
Louis E. Miltenberger, Ridgeley, W. Va., assignor to Hercules Incorporated, Wilmington, Del.
Filed Aug. 25, 1978, Ser. No. 936,995
Int. Cl.² B64C *15/06*
U.S. Cl. 239—265.43 **4 Claims**



1. In a rocket motor having a fixed nozzle of the converging-diverging type, the improvement comprising an extendible nozzle cone system comprising:

(a) at least one movable nozzle cone segment having a cylindrical section and a conic section, each movable nozzle cone segment being positioned in slidable, concentric and side-by-side (stowed) relationship about the exterior surface of the fixed nozzle, said conic section having the same expansion angle as that of the fixed nozzle, said cylindrical section of said movable nozzle segment having at least two slots spaced equidistantly from each other in the interior surface of the cylindrical section,

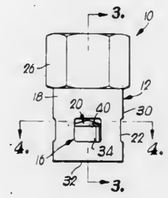
(b) at least two rail supports attached to the exterior surface of the rocket motor adjacent the exterior surface of said fixed nozzle, the rail supports being spaced equidistantly from each other and in a parallel relationship with the longitudinal axis of the rocket motor,

(c) drag panels each having a drag surface, a means for attachment to the movable nozzle cone segment, and being designed for sliding engagement with the rail supports, said drag panels corresponding in number to the number of rail supports and being connected to the movable nozzle cone segment, said drag surface extending into the theoretical exhaust path of said fixed nozzle when said movable nozzle cone segment is in stowed relationship with the fixed nozzle,

(d) lock means associated with the movable nozzle cone segment for retaining said movable nozzle cone segment in the stowed position and for releasing said movable nozzle cone segment, permitting movement of said movable nozzle cone segment in response to gas flow from said rocket motor impinging on the drag surfaces of said drag panels along the rail supports in the aft direction until the divergent surface of said fixed nozzle is extended as a substantially continuous surface by the conic section of the movable nozzle cone segment (the deployed position), and

(e) means for retaining the movable nozzle segment in the deployed position.

4,213,567
DISCHARGE NOZZLE FOR FLUORINATED HYDROCARBON FIRE SUPPRESSION SYSTEM
Ronald A. McIntire, Blue Springs, Mo., assignor to Fike Metal Products Corporation, Blue Springs, Mo.
Filed Dec. 11, 1978, Ser. No. 968,036
Int. Cl.² A62C *31/02*
U.S. Cl. 239—396 **8 Claims**



1. A fluid discharge nozzle comprising:

an elongated, tubular body having structure presenting a fluid inlet and a plurality of circumferentially spaced outlet openings through the sidewall of the body at a point spaced from said inlet;

a fluid flow-directing slug disposed within said body and having a surface means thereon located in simultaneous partial covering relationship to corresponding outlet openings for cooperatively defining, along with said outlet-presenting structure, a plurality of fluid outlet ports of predetermined effective dimensions; and

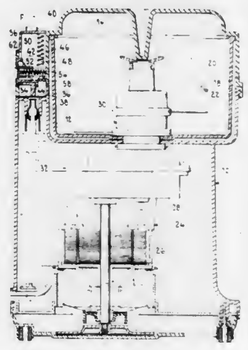
means for removably supporting said slug in said disposition whereby said slug can be removed and be replaced by a different slug of different configuration so as to alter the effective dimensions of respective outlet ports.

4,213,568
FUEL INJECTION NOZZLE
Karl Hofmann, Neckarrems, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Feb. 28, 1978, Ser. No. 881,989
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2709917
Int. Cl.² F02M *61/06*
U.S. Cl. 239—533.4 **2 Claims**



1. A fuel injection nozzle for internal combustion engines comprising a bored nozzle body having plural merging interior walls of varying inclination including a valve seat and a central injection port, a reciprocable valve needle arranged to be received within said bored nozzle body, said valve needle arranged to open in opposition to fuel flow and against a closing force, said valve seat having a conical shape and adapted to merge into said injection port, said valve needle including a sealing cone adapted to rest on said valve seat in sealing engagement therewith when said nozzle is closed and further including a throttle pin arranged below of said sealing cone for accommodation within said injection port and wherein said throttle pin comprises a plurality of integrated truncated cones tapering inwardly downward with differing tapers from said sealing cone and merging into one another without transition for projection into said injection port when the fuel injection nozzle is closed, the uppermost of said truncated cones extending directly from said sealing cone.

4,213,569
DOMESTIC ELECTRICAL APPLIANCE
Jacques H. J. Amiot, Alencon, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France
Filed Mar. 29, 1979, Ser. No. 25,452
Claims priority, application France, Apr. 14, 1978, 78-11055
Int. Cl.² B02C *18/12, 18/24*
U.S. Cl. 241—37.5 **8 Claims**



1. A domestic electrical appliance comprising a base, a work bowl carried by the base, a cover for closing the bowl, cooperable means on the base and the cover for removably fixing the cover to the base, said cooperable means being brought into

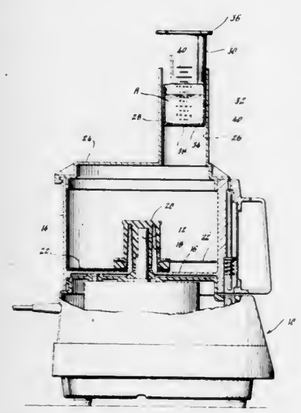
and out of cooperation upon housed within the base and having an output shaft, a working tool mounted in said bowl and connected to said operable shaft, switch means for operating said motor unit having a movable operating contact, a housing formed in said base, the movable contact of said switch means being received in said housing, and a push button for actuating said movable contact mounted on said cover, said push button being movable so as to occupy first, second and third positions, wherein, in its first, retracted position, the push button is out of engagement with the housing of the movable contact, in its second, cocked position, the push button is engaged in the entrance to the housing so as to prevent rotation of the cover relative to the base without actuating the switch means to operate the motor unit, and in its third, extended position, the push button extends further into said housing so as to actuate the switch means to operate the motor unit, and further comprising a safety lock mounted for movement relative to the push button, the safety lock being movable between a locked position in which it prevents the push button being moved to its first retracted position and an unlocked position in which it allows the push button to be moved to its first position, and elastic means for biassing said safety lock towards its locked position, wherein said safety lock is arranged such that movement of said push button from said first to said second position automatically causes said safety lock to be moved to its locked position by said elastic means.

4,213,570

FOOD PROCESSOR WITH METERING DISPENSER

Barbara A. Jones, Saratoga, Calif., assignor to Cuisinarts, Inc., Greenwich, Conn.

Filed Oct. 26, 1978, Ser. No. 955,133
Int. Cl.[2] B02C *18/22*
U.S. Cl. 241—38 **5 Claims**



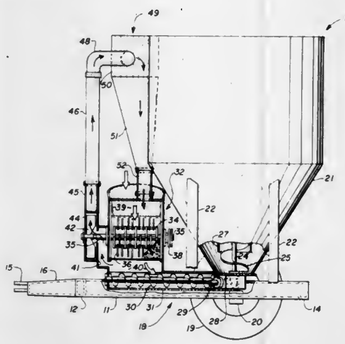
1. In a food processor of the type including a base housing, a tool drive shaft extending vertically upward and being drivable from said housing, a working bowl positionable on said housing and adapted to have said drive shaft extending upwardly therein, a plurality of rotary food processing tools mountable on said drive shaft for rotating within said bowl, and a cover for said bowl having a food-receiving hopper opening downwardly through the cover, the improvement which comprises: a combination metering dispenser and food pusher in the form of an ingredient-containable receptacle having at least a sidewall slidably engageable within said hopper and a bottom wall, said bottom wall defining a dispensing opening therethrough for metering an ingredient from said receptacle into said bowl.

4,213,571

DUST SYSTEM FOR A GRINDER-MIXER

Duane R. Deardorff, Ephrata, and William W. Mann, Leola, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 2, 1979, Ser. No. 26,261
Int. Cl.[3] B02C *13/288*
U.S. Cl. 241—48 **13 Claims**



1. In a grinding and mixing apparatus having a mixing container and mixing means mounted therein, grinding means having a top, a first side and an opposing second side, and a dust collector, the improvement comprising:

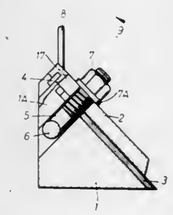
improved dust collection means having a fan mounted to the first side of the grinding means for generating an air flow and therewith removing finely ground material from the area of the grinding means and transferring it to the dust collector where the material is separated out and fed back into the top of the grinding means in a generally downward vertical path for grinding prior to being delivered to the mixing container.

4,213,572

BLADE HOLDER

Wilhelm Pallmann, Zweibrücken, Fed. Rep. of Germany, assignor to Pallmann KG Maschinenfabrik, Zweibrücken, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,990
Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722522
Int. Cl.[2] B02C *18/18*
U.S. Cl. 241—292.1 **2 Claims**



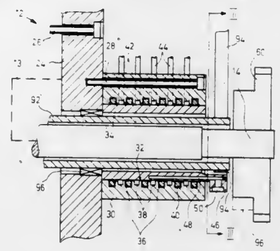
1. A blade holder for machine blades, especially for blades arranged in an annular fashion along the periphery of cutting tools, which blade holder comprises in combination: a blade carrier with recess means; a blade supported on said blade carrier; blade holding means detachably mounted on said blade carrier, for holding said blade in position on said blade carrier, said blade holding means at least partially covering said blade while leaving the cutting edge of said blade exposed; and at least one bolt provided with a transverse pin which is rotatably mounted in said blade carrier and having a nut threaded thereon for detachably mounting said blade holding means on said blade carrier, said blade carrier and blade holding means being provided with recesses for accommodating pivotal movement of said bolt, said blade holding means also having a recess forming a nut passage to allow movement of said nut through said blade holding means without removing said nut from said bolt.

4,213,573

AIR COUPLING

Kurt Schefer, and Jakob Fluck, both of Winterthur, Switzerland, assignors to Reiter Machine Works, Ltd., Winterthur, Switzerland

Filed Mar. 7, 1979, Ser. No. 18,103
Int. Cl.[3] B65H *54/02, 54/40, 67/04*
U.S. Cl. 242—18 A **12 Claims**



1. A textile machine comprising a member rotatable about a predetermined axis, and a pressure-fluid coupling for transmitting pressure fluid to and/or from the member, said pressure-fluid coupling comprising, a first part fixed to said member for rotation therewith and a second part co-pending with said first part to define at least one circumferential channel therebetween, said first and second parts being capable of relative rotation,

a pressure-fluid passage in said first part and a pressure-fluid passage in said second part, each passage communicating with said channel to permit transfer of pressure fluid from one passage to the other via said channel,

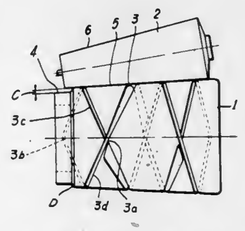
said first and second parts being arranged for rotation together in at least one direction through a limited angular rotation of said second part, said first part being rotatable through a larger angle in said direction.

4,213,574

GROOVED TRAVERSE DRUM USED IN DRUM WINDER

Masao Mino, and Takeshi Ohno, both of Yao, Japan, assignors to Kabushiki Kaisha Mino Seisakusho, Osaka, Japan

Filed Apr. 25, 1978, Ser. No. 899,721
Int. Cl.[2] B65H *54/48*
U.S. Cl. 242—43.2 **2 Claims**



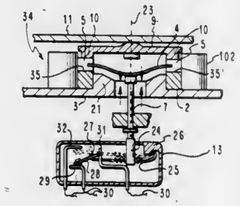
1. A grooved traverse drum for use in the winding of yarn into a cone cheese having a large axially extending cone angle thereby forming a large end portion and a small end portion at the opposite ends thereof, said drum including a main, axially extending drum portion having a drum surface which will function as the support for the cone cheese, said main drum portion extending axially substantially the full length of a cone cheese supported thereby, a drum end portion integrally formed with said main drum portion at the end thereof that will be in engagement with the small end portion of the cone cheese, a major portion of the circumferential surface of said drum end portion having a diameter less than the diameter of the main drum portion thereby forming a gap for a major circumferential distance between the surface of the drum end portion and the surface of the small end portion of the cone cheese, and at least two reversely directed, spirally arranged, intersecting traversing grooves in the surface of the main body portion of said drum, with a reversing portion of said traversing groove formed in the non-gap surface of the drum end portion of said drum, which non-gap surface of said end portion of said drum is continuous and even with the surface of said main drum portion, the circumferential surface of said main drum portion being continuous throughout the length thereof except for said grooves therein so as to provide continuous support along substantially the entire length of said cone cheese.

4,213,575

PRINTER RIBBON SUPPLY MECHANISM WITH END OF RIBBON DETECT EXPEDIENT WHICH REDUCES RIBBON DRAG

Rowland V. D. Firth, III, and Willie Goff, Jr., both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,212
Int. Cl.[3] B41J *35/36;* **B65H** *25/30*
U.S. Cl. 242—57 **4 Claims**



1. In a ribbon supply spool structure comprising a supply of ribbon wound on a hub rotatable about and axially movable with respect to a hub receiving member coaxial with said hub, the combination of:

deflectable spring means within said spool hub exerting a force when deflected having a first component of force acting against and restrained by said wound ribbon and a second component acting along said hub axis, and

a spring tensioned member exerting a force along said hub axis in opposition to said deflectable spring means,

whereby said deflectable spring means and said spring tensioned member are maintained in static equilibrium at a point along said axis so long as said deflectable spring means is restrained by a predetermined minimum of ribbon remaining wound on said hub, and

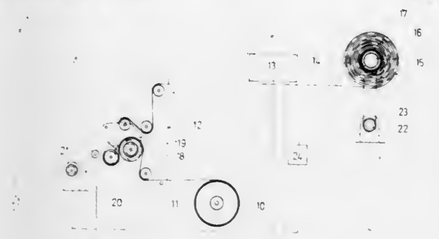
the axial position of said hub with respect to said hub receiving member at said equilibrium point is such that friction between said hub and said hub receiving member is minimized.

4,213,576

SPOOL MAKING MACHINE

Lars Magnuson, Gräfsnäs Säteri, 46030 Sollebrunn, Sweden

Filed Jun. 4, 1979, Ser. No. 45,135
Claims priority, application Sweden, Jun. 5, 1978, 7806545
Int. Cl.[2] B65H *17/02*
U.S. Cl. 242—67.3 R **9 Claims**



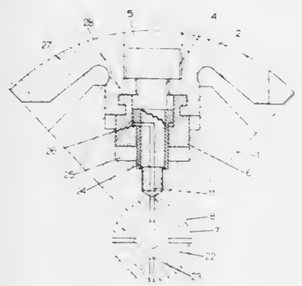
1. A machine for making spools of plastics strip carrying slices of foodstuff and comprising
a first station having means to support
a storage reel for said strip as well as a dispensing device, the latter including
a feed roller and a cooperating pinch roller, said feed roller being mounted in means ensuring a contact pressure between said feed roller and said pinch roller, and
a first power source for driving said feed roller at a constant speed,
a second station, spaced apart from said first station and including
a rotatable shaft having means for removably receiving at least one tubular spool receiving core,
a second power source for driving said shaft at a nominally higher speed than that of said feed roller, and
a slipping clutch transmission between said second power source and said shaft for adjusting the actual speed of said shaft in response to the length of strip feed out by said feeding device, and
a machine located between said first and said second station, to distribute slices of foodstuff upon said strip while being passed from said first to said second station.

4,213,577

EXPANDABLE COILER MANDREL

Hendrik Majoor, Beverwijk, Netherlands, assignor to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Filed Feb. 5, 1979, Ser. No. 9,306
Claims priority, application Netherlands, Feb. 6, 1978, 7801309
Int. Cl.[2] B65H *75/24*
U.S. Cl. 242—72 R **7 Claims**



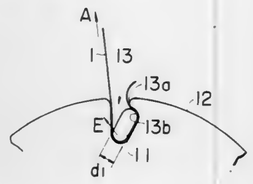
1. In an expandable coiler mandrel, having a core, a plurality of radially expandable segments mounted around the core and, for each segment, a plurality of hydraulic units within the core, each comprising a piston and a cylinder by which the segments are movable radially, these being connected to the hydraulic units with the improvement that the segments are secured to the pistons of said hydraulic units, which pistons are annular and are mounted around pins which are themselves fixed to the core and have heads limiting the radially outward movement of the segments, there being first and second chambers for hydraulic fluid respectively at the radially inner and outer sides of the piston whereby the hydraulic units are operable to cause retraction as well as expansion of the segments, the said first chambers of the hydraulic units, for causing expansion of the segments, being connected to a plurality of pressure cylinders the pistons of which are arranged to be moved in common, and the connections being such that the said first chambers associated with a single segment are respectively connected to at least two different pressure cylinders.

4,213,578

CASSETTE TAPE REEL

Tetsuo Katata, Kawaguchi, Japan, assignor to Dai-Ichi Seiko Co., Ltd., Kawaguchi, Japan

Filed Dec. 29, 1978, Ser. No. 974,500
Claims priority, application Japan, Feb. 24, 1978, 53-20500
Int. Cl.[2] B65H *75/28*
U.S. Cl. 242—74 **9 Claims**



1. A cassette tape reel comprising:
a hub having a cut portion for fastening a tape, and
an elongated, smooth tape locking piece having continuously rounded ends for fastening said tape in said cut portion,
said cut portion being narrow at its entrance portion and wide at its inner portion,
said inner portion having a maximum width which is shorter than the cross sectional length between said rounded ends of each locking piece for wedging said tape against said inner portion by said locking piece,
said inner portion further having along a non-radial direction a maximum dimension longer than said length for inserting said locking piece into said inner portion,
said cassette tape reel being arranged for inserting said tape locking piece into said inner portion so that its length lies along said maximum dimension and then for turning said tape locking piece in order to fasten the tape by wedging it against said inner portion by the said rounded ends of said tape locking piece, tension thereafter applied to said tape being operative to wedge the tape more firmly.

4,213,579

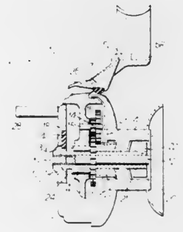
FISHING REEL

Kenneth H. S. Fox, 6 Wardour Lodge, Sunningdale, Berkshire, England

Filed Feb. 7, 1979, Ser. No. 10,023
Claims priority, application United Kingdom, May 24, 1978, 21933/78
Int. Cl.[3] A01K *89/01, 89/02*
U.S. Cl. 242—84.2 B **5 Claims**

1. A two-speed reel for a fishing rod, comprising:
a housing;
means for mounting the housing on the rod;
a shaft rotatably supported by the housing;

means for rotating the shaft;
a driver mounted on the shaft for rotation therewith, the driver having radial teeth formed on one side thereof;
a gear rotatably mounted on the shaft and having radial teeth formed on one side thereof facing the radial teeth of the driver and spaced a distance therefrom;
gear means coupling the gear to the shaft for rotating the gear at a rate differing from the rotation rate of the shaft in response to a rotation of the shaft;



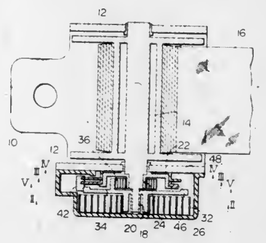
a spool slidably mounted on the shaft and extending about the radial teeth formed on the driver and the radial teeth formed on the gear, the spool having a portion disposed between the driver and the gear and said portion having radial teeth on one side thereof for engaging the radial teeth of the driver in one axial position of the spool and having radial teeth on an opposite side thereof for engaging the radial teeth of the gear in another axial position thereof; and
means for axially positioning the spool in the shaft.

4,213,580

SEATBELT RETRACTOR

Takashi Kawaharazaki, Toyoake; Fuminori Teraoka, Toyota; Tatsushi Kubota, Okazaki, and Kenji Matsui, Higashikamo, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Oct. 20, 1978, Ser. No. 952,828
Claims priority, application Japan, Oct. 24, 1977, 52-143105[U]
Int. Cl.[2] A62B *35/00;* **B65H** *75/48*
U.S. Cl. 242—107 **9 Claims**



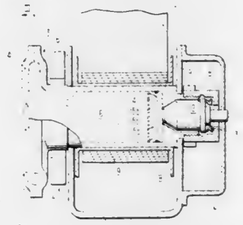
1. A seatbelt retractor characterized in that: said retractor comprising: spring means comprising a first spring and a second spring weaker in biasing force than the first spring connected in series by a connecting portion to each other and further connected to a seatbelt take-up shaft so as to render the force for winding up the seatbelt; ratchet means comprising a pawl and at least one latch gear provided at the connecting portion between the first and second springs, said pawl for engaging with said latch gear so as to prevent the biasing force of the first spring from acting on the take-up shaft; a friction plate comprising a frictionally contacting means whereby the turning force of said take-up shaft is imparted thereto by said frictionally contacting means so as to engage said latch gear with the pawl; a one way clutch coupled to said take-up shaft; and cam plate means coupled to saod oneway clutch for releasing the engagement of said latch gear with the pawl by the turning force of the take-up shaft at a predetermined position; said frictionally contacting means comprising a pair of projecting resilient members oscillatingly movable relative to the friction plate and capable of rendering the same frictional force to the frictional plate even in the case the rotational direction of the take-up shaft is altered.

4,213,581

WIND-UP MECHANISM FOR THE ELIMINATION OF BELT LOOSENESS IN A SAFETY BELT SYSTEM

Rudolf Andres; Helmut Grantz; Günter Abersfelder, all of Sindelfingen, and Gerhard Busch, Gechingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,571
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1978, 2805381
Int. Cl.[2] A62B *35/00;* **B65H** *75/48*
U.S. Cl. 242—107.4 R **35 Claims**



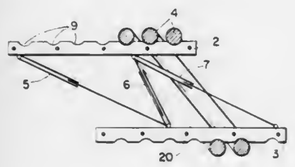
1. A wind-up mechanism for eliminating belt looseness of a safety belt system upon exceeding a predetermined vehicle deceleration, the wind-up mechanism comprising a wind-up roller means, a hollow shaft means, a rotor means coupled with the wind-up roller means, a retraction means coupled with said hollow shaft means for normally urging the wind-up roller means in a belt retraction direction, said wind-up roller means being mounted on said shaft means, and an ignitable propellant charge means arranged in the hollow shaft means for triggering a retraction movement of the wind-up roller means, a fluid medium disposed in front of the propellant charge means which, after the ignition of the propellant charge means, drives the rotor means so as to eliminate a looseness of the belt, characterized in that a cap means is mounted at one end of the hollow shaft means, a toothed rim is connected with the cap means, blocking means are provided for preventing a further belt pull-out by an engagement between the toothed rim and said blocking means, at least part of the roller means is formed-on the hollow shaft means at an end opposite the cap means, the cap means includes an inwardly disposed cup-shaped recess means for accommodating the propellant charge means, a piston means for closing off said recess means and for displacing the fluid medium upon an ignition of the propellant charge means, said cap means and said propellant charge means rotate along during a rotary movement of the hollow shaft means, and in that said propellant charge means is ignitable by an external coil arrangement.

4,213,582

WINDING DEVICE

Peter Rohner, Eschenkamp, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke Gutehoffnungshuette AG, Fed. Rep. of Germany

Filed Nov. 16, 1978, Ser. No. 961,364
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2751989
Int. Cl.² B65H *75/22, 75/26*
U.S. Cl. 242—110 **1 Claim**



1. A device for winding thereabout flexible elongated material, comprising:

first and second elongated support bodies spacially positioned parallel with respect to each other;

a plurality of supporting struts each interconnected between said first and second supporting bodies along their respective longitudinal lengths and forming, in conjunction with said support bodies, a generally cylindrical winding core, each of said struts having an arcuate shape and being sufficiently longitudinally spaced with respect to each other to permit longitudinal displacement of said first and second support bodies in opposite directions; and

a plurality of telescoping means each connected between said first and second support bodies, each of said telescoping means being capable of expansion and contraction to provide a first radial distance between said first and second support bodies when they are in substantial longitudinal alignment with respect to each other, and a second radial distance less than said first radial distance when said support bodies are longitudinally displaced from said alignment;

said first support body comprising a plurality of first discrete engaging means spaced longitudinally along its outer surface; said second support body comprising a plurality of second discrete engaging means spaced longitudinally along its outer surface; each of said first and second engaging means being adapted to receive, respectively, first and second surface portions of each of the individual turns of a flexible elongated material helically wound in a single layer about said cylindrical winding core;

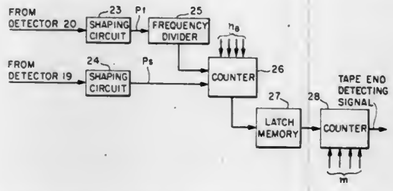
whereby each of said first engaging means longitudinally displaces, and reduces the radial distance to the longitudinal axis of said winding core, of that portion of the individual turn it engages as said first support body is longitudinally displaced from substantial longitudinal alignment with respect to said second support body; and each of said second engaging means longitudinally displaces, and reduces the radial distance to the longitudinal axis of said winding core, of that portion of the individual turn it engages as said second support body is longitudinally displaced from substantial longitudinal alignment with respect to said first support body, thus causing each of said individual turns to be tilted toward the longitudinal direction of the winding core so that the overall shape of each of such individual turns is substantially retained, while the helically wound single layer formed of said plurality of tilted individual turns has an increased overall longitudinal length, and a cross-section with a radial axis of reduced length.

4,213,583

REEL DRIVE MOTOR CONTROL SYSTEM FOR CASSETTE/CARTRIDGE TAPE RECORDERS

Akira Mitani, and Isao Sanguu, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1978, Ser. No. 928,777
Claims priority, application Japan, Jul. 29, 1977, 52-91735
Int. Cl.² G11B *15/54, 15/30*
U.S. Cl. 242—186 **4 Claims**



1. A tape transport control system for tape apparatus including a supply reel with a predetermined amount of tape wound thereon; a take-up reel arranged to wind up said tape as passed thereto from said supply reel, a transducer provided on a tape path between said supply and take-up reels, and means for transporting said tape, said control system comprising:

(a) means coupled with said supply reel and said take-up reel for producing first and second detection signals respectively corresponding to the speed of rotation of said reels, said detection signals being in the form of pulses varying in frequency with the speed of rotation of said reels;

(b) frequency divider means, said frequency divider means having an input and an output, said pulses from said second detection signal being input to said frequency divider means, said frequency divider means dividing said pulses by a predetermined amount η_A to produce divided pulses;

(c) counter means responsive to said divided pulses and a predetermined amount η_B for counting said pulses from said first detection signal and for producing first control pulses each time the number of said pulses from said first detection signal during one repetition period of said divided pulses exceeds said amount η_B; and

(d) control means responsive to said first control pulses for controlling said transporting means.

4,213,584

HELICOPTER HOVER STABILITY AND CRUISE GUST EFFECT ALLEVIATION

Franklin A. Tefft, Killingworth; Ricardo L. Perez, Plantsville, and Ronald E. Barnum, Trumbull, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 4, 1978, Ser. No. 948,603
Int. Cl.² B64C *11/44*
U.S. Cl. 244—17.13 **3 Claims**

1. A helicopter flight control system having a longitudinal cyclic pitch inner loop summing amplifier for summing short-term pitch stability inputs and a lateral cyclic pitch inner loop summing amplifier for summing short-term roll stability inputs, said amplifiers providing corresponding commands to the helicopter control surfaces thereby to stabilize the helicopter in flight, in which the improvement to provide additional positional stability comprises:

a vertical gyro having a pitch axis output and a roll axis output;

a longitudinal accelerometer;

a lateral accelerometer;

means responsive to said longitudinal accelerometer and to the pitch axis output of said vertical gyro for providing a true longitudinal acceleration signal indicative of the horizontal acceleration of the helicopter along its longitudinal axis;

means responsive to said lateral accelerometer and to the roll axis output of said vertical gyro for providing a true lateral acceleration signal indicative of the horizontal acceleration of the helicopter along its lateral axis;

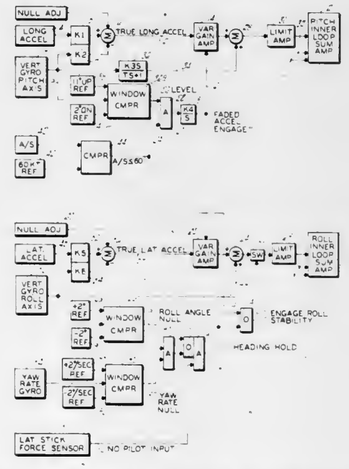
means including an airspeed sensor for providing a signal indicative of the airspeed of the helicopter being below a cruise speed;

means responsive to the pitch axis of said vertical gyro for providing a signal indicative of low helicopter pitch angle;

means concurrently responsive to said below cruise speed signal and said low pitch angle signal for generating a faded acceleration engage signal;

pitch means responsive to said faded acceleration engage signal and to said true longitudinal acceleration signal for providing a signal input to said longitudinal cyclic pitch inner loop summing amplifier to cause the commanded longitudinal cyclic pitch of the helicopter to be in a direction to countermand the true longitudinal acceleration sensed; and

roll means responsive to said faded acceleration engage signal and to said true lateral acceleration signal for providing a signal input to said lateral cyclic pitch inner loop summing amplifier to cause the commanded lateral cyclic pitch of the helicopter to countermand the true lateral acceleration sensed.



4,213,585

MOUNTING SYSTEM FOR A WING MOUNTED AIRCRAFT ENGINE

Patrick Murphy, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 22, 1978, Ser. No. 908,074
Int. Cl.² B64D *27/18*
U.S. Cl. 244—54 **18 Claims**

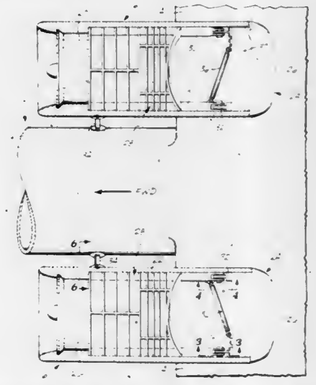
1. In an aircraft having a fuselage, a wing, and at least one engine located adjacent said fuselage, with said at least one engine having a rear portion adjacent said wing and a forward portion extending forwardly from said wing,

an apparatus to mount said at least one engine to said aircraft, said apparatus comprising:

a. a main engine support structure extending along a substantial length of said at least one engine and having a rear portion proximate a leading edge structure of said wing and a forward portion located forward of the wing adjacent the forward portion of the at least one engine,

b. said engine support structure having at its rear portion two laterally spaced mounting members hinge mounted at first and second locations to two laterally spaced hinge mounts on said wing for limited rotation about a horizontally and laterally extending axis of rotation, said engine support structure having no load carrying connection to said wing at any fixed location spaced from said axis of rotation so that said mounting members permit limited up and down swing motion of said support structure relative to said wing,

c. a generally vertically aligned support link having a first end pivotally connected to the forward portion of the engine main support structure at a third support location and a second end pivotally connected to said fuselage, with said support link providing vertical support for said at least one engine at said third location,



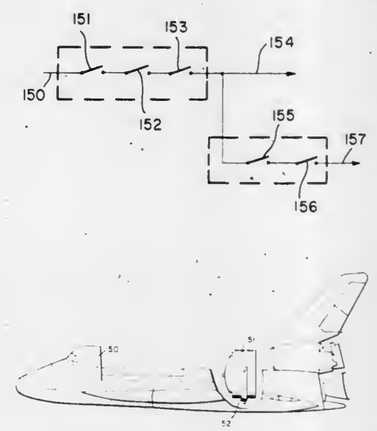
whereby said at least one engine is supported from said first, second and third locations, with said wing being able to flex vertically to cause relative rotation between the wing and the engine support structure about said first and second locations, with said support link providing vertical support by transmitting substantially only axial loading into said fuselage.

4,213,586

SPIN ACTIVATED SAFETY CIRCUIT FOR SPACECRAFT

Paul J. Sengstock, Jr., Torrance, and Gerald L. Dutcher, Manhattan Beach, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 30, 1978, Ser. No. 910,391
Int. Cl.² B64G *1/00, 1/10*
U.S. Cl. 244—158 **2 Claims**



1. A safety circuit for a spacecraft which is adapted for being launched from a shuttle by means which impart rotational motion about a spin axis as well as translational motion to the

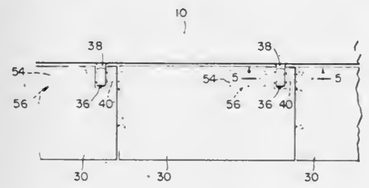
spacecraft, said safety circuit being operative for interlocking electrical power to rocket motor arm and fire circuits and includes at least one separation switch series coupled to the path of electrical power to said arm and fire circuits, said separation switch being mounted on said spacecraft such that the electrical path through said separation switch is completed upon disengagement between the spacecraft and the shuttle and wherein the improvement comprises at least two rotational acceleration switches mounted on respective opposite sides of said spacecraft and having their respective acceleration sensing axis oriented such that rotation about said spin axis at greater than a preselected rate closes both rotational acceleration switches but linear acceleration can only close one of said rotational acceleration switches at a time, and wherein said rotational acceleration switches are series coupled in the path of the electrical power to said arm and fire circuits.

4,213,587

HINGE ARRANGEMENT FOR CONTROL SURFACES

William G. Roeseler, Bellevue; Gary J. Warner, Issaquah, and Richard B. Odell, Kirkland, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 4, 1978, Ser. No. 966,529
Int. Cl.² B64C 9/02
U.S. Cl. 244—213 **7 Claims**



1. A hinging arrangement for pivotally joining a first structural member to a plurality of sections positioned adjacent to one another and forming a second structural member disposed next to said first member, for relative movement between said first member and said second member about one elongated axis and for allowing relative restrained flexibility between each said adjacent sections of said second member, comprising in combination;

(A) a number of hinge assemblies, being one more in total than said plurality of sections, mounted between said first member and said second member so that at least two hinge assemblies are carried by a particular section of said plurality of sections,

(B) said number of hinge assemblies having one first general hinge assembly mounted between said first member and a first section of said plurality of sections and one second general hinge assembly mounted between said first member and a last section of said plurality of sections for pivotal movement between said first member and said second member about said elongated axis,

(C) said number of hinge assemblies including at least one coupling restraining hinge assembly mounted between said first member and one section and interconnected between said one section and an adjacent section of said plurality of sections,

(D) said coupling restraining hinge assembly including;

(1) a hinge lug portion projecting from said first member towards said one section,

(2) said one section provided with a receiving portion for receiving said lug portion,

(3) said adjacent section provided with a slot facing said one section and disposed substantially perpendicular to said elongated axis,

(4) a shear key projecting from said one section at a predetermined spacing from said elongated axis, at a location opposite of said slot, and protruding into said slot, and

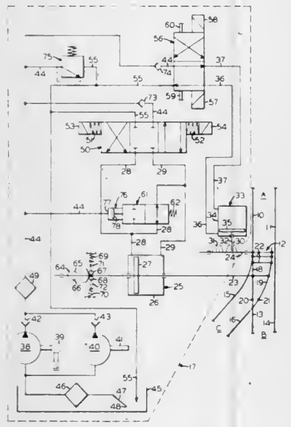
(5) a pin disposed in said receiving portion and positioned substantially coaxially with said elongated axis and extending into said slot, for pivotally connecting said first member to said one section and pivotally coupling said adjacent section to said one section while simultaneously restraining said one section to said adjacent section by said shear key inside of said slot.

4,213,588

FLUIDICALLY OPERATED RAILWAY SWITCH MACHINE

Colin M. Bowles, Wootten Bassett, England, assignor to Westinghouse Brake and Signal Co. Ltd., Wiltshire, England

Filed Feb. 1, 1978, Ser. No. 874,298
Claims priority, application United Kingdom, Feb. 3, 1977, 4375/77; Jul. 15, 1977, 29769/77
Int. Cl.² B61L 11/06
U.S. Cl. 246—259 **16 Claims**



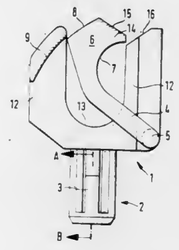
1. A railway switch machine comprising, fluidically actuating means for switching movable points of rails between two extreme positions, valve means coupled to said fluidically operated actuating means for selectively controlling fluid flow in a pair of passageways each of which is coupled to opposite sides of a pressure differential responsive movable member of said fluidically operated actuating means whereby when said valve means connects a source of fluid pressure to said passageways between said opposite sides of said fluidically operated actuating means so that a fluid pressure differential is established across said pressure differential responsive movable member to operate said fluidically operated actuating means to thereby switch the movable points of the rails from one extreme position to the other extreme position and when said valve means interconnects said passageways between said opposite sides of said fluidically operated actuating means fluid is directly exchanged between either side of said movable member such as to permit the movable points of the rails to be moved from one extreme position to the other extreme position by the passage of a railway vehicle trailing the movable points, said valve means includes an integrally formed bypass and directional valve means having a movable valve member which is adapted to assume a first position of the movable valve member to establish a fluid passage between opposite sides of said pressure differential responsive movable member whereby to permit said exchange of fluid between opposite sides of said pressure differential responsive movable member and which is adapted to assume another position of the movable valve member to prevent direct fluid connection between opposite sides of said pressure differential responsive movable member, and resiliently-loaded latching means cooperatively associated with said fluidically operated actuating means for latching the movable points of the rails in either of the two extreme positions so that the springiness of the movable points or vibration caused by passing railway vehicle is incapable of causing the movable points of the rails to assume an intermediate position between the two extreme positions.

4,213,589

CLAMP FOR SECURING ROUND ARTICLES

Claude Pierron, St. Ismier, France, and Johannes Kirchgaesser, Steinen, Fed. Rep. of Germany, assignors to A. Raymond, Loerrach, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,622
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740376
Int. Cl.² F16L 3/08; A44B 21/00
U.S. Cl. 248—74 R **12 Claims**



1. A clamp for securing a generally round article to a support comprising:

a generally channel-shaped body having a base and a pair of legs spaced one from the other and defining an opening therebetween,

a clip having a clamping head including a first surface for engaging the article to retain the article in said clamp, and

a resilient, twistable pin integral with said clip for pivotally mounting said clip to said body for movement through at least part of said opening and between a position for retaining the article in the clamp and a position for opening the clamp to receive the article in or remove the article from the clamp, the resiliency of the pin biasing the clip toward the article-retaining position,

one of said legs having a surface portion in opposition to said head when said head retains an article in said clamp, said head having a second surface engageable with the surface portion of said one leg in response to a force on the article engaged by said clamping head surface in a direction away from said base and outwardly of said opening, thereby tending to flex the resilient pin, to retain the clip substantially in its article-retaining position.

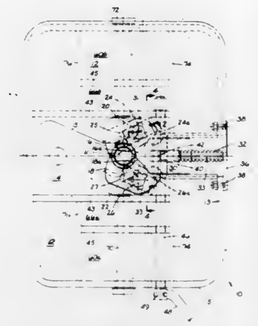
4,213,590

HITCH HEAD HAVING MANUAL JAW UNLOCK

Ronald D. VanDyke, Florissant, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,560
Int. Cl.² B60P 7/00
U.S. Cl. 410—64 **9 Claims**

1. A hitch head comprising a pair of pivotable jaws which hold in place a kingpin of a highway trailer; a horizontally movable lock block biased by a resilient means to closed position, engaging the jaws and holding them in closed position, and adapted to maintain a kingpin of a highway trailer in place; said lock block being movable to an open position by a finger extending through an opening in said lock block; said finger rigidly attached to a horizontally extending operating shaft which is rotatably mounted and adapted to move said finger to an overcenter position holding the locking block in open position; said finger including a transversely extending protrusion which is engaged by said jaws as the kingpin exits to pivot said finger from said overcenter position, and allows said lock block to move to an intermediate position engaging the rear



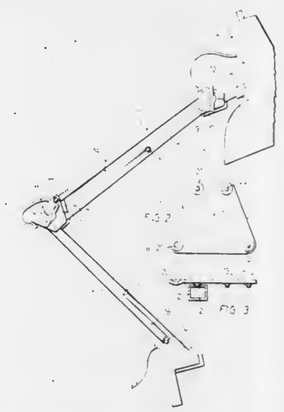
portion of the jaws, holding the jaws in open position until another kingpin enters the jaws and pivots the jaws to said closed position.

4,213,591

JOINT MEANS FOR LIGHT FITTINGS, SUCH AS OFFICE LAMPS

Aarno Jaakkola, Porvoo, Finland, assignor to Oy Lival AB, Nickby, Finland

Filed Feb. 1, 1978, Ser. No. 874,091
Claims priority, application Finland, Jul. 12, 1977, 772171
Int. Cl.² F16M 13/00
U.S. Cl. 248—281.1 **9 Claims**



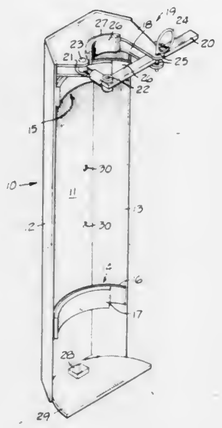
1. A support device for a light fitting, comprising a pair of first and second bars disposed side-by-side and substantially parallel to each other with an end of the first bar adjacent an end of the second bar, a pair of third and fourth bars disposed side-by-side and substantially parallel to each other with an end of the third bar adjacent an end of the fourth bar, and joint means connecting said ends of the first and second bars to said ends of the third and fourth bars and comprising a pair of joint plates which are disposed substantially parallel to each other with said ends of the bars therebetween, fixing members extending from each joint plate and entering respective holes in the side surfaces of the bars, and clamping means extending through the joint plates to adjust the rigidity of the connection established by the joint means, at least one of said fixing members consisting of a protuberance on the surface of a joint plate.

4,213,592

BRACKET ASSEMBLY FOR MOUNTING FIRE EXTINGUISHERS THEREON

Daniel J. Lingenfelser, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 23, 1978, Ser. No. 918,232
Int. Cl.² A47K *1/08*
U.S. Cl. 248—313 **5 Claims**



1. A bracket assembly adapted to mount a tubular article thereon comprising

a bracket (**10**) comprising a back plate (**11**) having a bottom plate (**29**) secured thereto and defining a mounting recess adapted to have an article (F) at least partially disposed therein;

latch means (**19**), comprising a lever (**20**) pivotally mounted on an upper end of said bracket (**10**), for releasably retaining an article thereon,

kick-out means, comprising an elastomeric pad (**26**) having a circumferential length substantially less than 180°, mounted on said bracket (**10**) for automatically ejecting an article disposed on said bracket outwardly from said bracket upon release of said latch means, said lever (**20** extending fully across said kick-out means (**26**), and

retaining means (**28**) secured on a lower end of said bracket (**10**) for retaining a lower end of an article on said bracket (**10**) and for releasing the article upon ejection of the article from said bracket (**10**) by said kick-out means (**26**), said retaining means (**28**) comprising a lug (**28**) secured on said bottom plate (**29**) and separated from said back plate (**11**) to provide a space for the reception of a rim of an article therein.

4,213,593

AIRCRAFT SEAT WITH CONCEALED LOCKING AND RELEASING MECHANISM

Kirby B. Weik, Litchfield, Conn., assignor to Koehler-Dayton, Inc., New Britain, Conn.

Filed May 25, 1979, Ser. No. 42,981
Int. Cl.² B65I *1/22*; A62B *35/00*
U.S. Cl. 248—501 **1 Claim**

1. In combination,

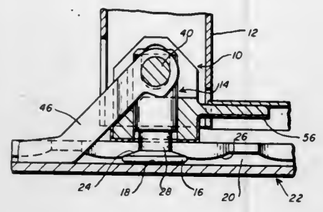
a track member secured to the floor of a vehicle such as an airplane, said track member having a longitudinally extending slot communicating with an interior channel,

a cover member including a top portion and a pair of downwardly projecting ribs having means at the bottom thereof for latchingly engaging the bottom edge of said slot, and

a vehicular seat which is to be releasably secured to said track member comprising

a leg, and

a locking assembly secured thereto including a pivotally mounted control lever selectively displaceable from an elevated release portion to a lowered locking position, said lever, when at said locking position having a portion projecting upwardly above the track member, said upwardly projecting portion having a width and height



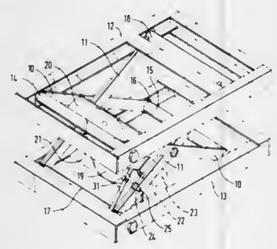
of elevation selected so that said upwardly projecting portion when in the lower position will fit within the volume defined by said top and downwardly projecting ribs of said cover member, said cover member comprising means for containing and concealing from view said upwardly projecting lever portion.

4,213,594

VEHICLE SEAT

Helge Pietsch, An der Wasserbrede 21, 4930 Detmold-Lossbruch, and Gerd Lange, Hünnefeldstrasse 10, 4950 Minden, both of Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,122
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753105
Int. Cl.² A01K *97/10*
U.S. Cl. 248—550 **10 Claims**



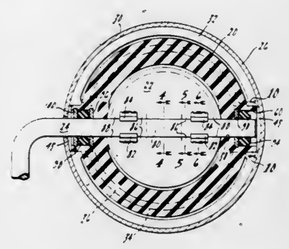
1. A spring loaded vehicle seat including a seat frame for supporting a seat cushion, an underframe, levers arranged on the seat frame, a pneumatic spring, the seat frame being supported on the underframe by the levers and the pneumatic spring, a selected static height of the seat being automatically maintained constant independent of the weight of the occupant of the seat at any one time, a compressed air blow-off valve for decreasing the internal working pressure of the pneumatic spring in positions of the seat above the static height during vibrations, a compressed air supply valve for increasing the internal working pressure of the springs in positions of the seat below the static height, a switch mechanism for opening and closing the valves, and a coupling device coupled to transmit vibrational movement of the seat to the switch mechanism, wherein the switch mechanism is fixed in its respective end position after the opening of a valve and the coupling device includes a lagging segment x so that movement of the switch mechanism after the opening of a valve lags behind the vibrational movement by the extent of the lagging segment x.

4,213,595

BUTTERFLY VALVE

William L. Sheppard, Romulus, Mich., assignor to AVM Corporation, Jamestown, N.Y.

Continuation of Ser. No. 779,269, Mar. 18, 1977, abandoned, which is a division of Ser. No. 661,132, Feb. 25, 1976, Pat. No. 4,111,395, which is a continuation of Ser. No. 490,232, Jul. 22, 1974, abandoned. This application May 4, 1978, Ser. No. 902,829
Int. Cl.² F16K *1/22*
U.S. Cl. 251—308 **6 Claims**



1. In a butterfly-type valve:

a generally flat valve plate having generally parallel faces;

an actuating shaft of circular cross-section for said valve plate, the center axis of said shaft lying between the planes of said faces;

a projection formed integrally from said valve plate and extending from one of said faces at least partially around said shaft to assist in mechanically locating and retaining said shaft with respect to said valve plate,

said projection being less in width, taken along said axis, than the width of said valve plate along the same axis, the edges of said projection defining said width lying in planes extending generally transversely to said axis;

locating and sealing portions integral with said valve plate and disposed between the planes of said faces for minimizing gaps between said shaft, projection and valve plate, each said portion including a surface which is generally perpendicular to said planes and engages said shaft immediately adjacent to one of said edges of said projection; and

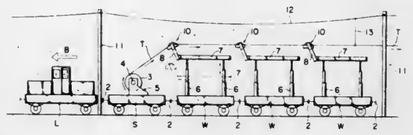
brazing metal disposed within all the interstices between said valve element, projection and shaft for interconnecting same in a leakproof manner.

4,213,596

WHEELED, OVERHEAD WIRE INSTALLING APPARATUS

Motozo Inoue; Mitsuzo Kumeta; Hideo Ueno; Yoshinao Okamura, and Tadashi Suzuki, all of Utsunomiya, Japan, assignors to Fuji Jokogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 17,016
Claims priority, application Japan, Oct. 30, 1978, 53-132648
Int. Cl.² B65H *59/00*
U.S. Cl. 254—134.3 R **5 Claims**



1. A wheeled, overhead wire installing apparatus comprising a wire stretching car rotatably supporting a drum around which an overhead wire is wound, at least one work car coupled to the rear of the wire stretching car, and locomotive means for driving the above mentioned cars, each work car having a raisable and lowerable work platform which is provided at the front end thereof and substantially on the longitudinal centerline of the work car with an overhead wire guide roller device adapted to guide the overhead wire drawn out of the drum, said wire guide roller device comprising:

a cradle;

a plurality of transverse horizontal guide rollers rotatably supported on the cradle in positions to form in the cradle a curved horizontal guide surface of a large radius of curvature in a vertical plane passing through said centerline such that a bending set will not be imparted to the overhead wire, the horizontal guide surface bearing the wire in rolling contact;

a plurality of vertical guide rollers rotatably supported on the crade in positions to form two opposed vertical guide surfaces having a large radius of curvature in a horizontal plane such that a bending set will not be imparted to the wire and disposed on opposite lateral sides of the wire thus borne on the horizontal guide rollers; and

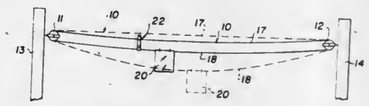
support means swingably supporting the cradle on the work platform by means of pivot pins having a common transverse horizontal axis and passing through the cradle at a part thereof higher than the horizontal guide rollers, whereby the cradle is stably supported and automatically adapts to an optimal attitude relative to the wire thereby to prevent bending sets therein.

4,213,597

CLOTHES LINE SEPARATOR

Ross H. Rayner, Box 687, Sicamous, British Columbia, Canada (V0E 2V0)

Filed Jun. 19, 1978, Ser. No. 916,875
Int. Cl.² B66D *1/36*
U.S. Cl. 254—388 **11 Claims**



1. A retainer for endless clothes lines extending around spaced pulleys and having generally parallel upper and lower runs, said retainer comprising an elongate frame, an upper channel on an upper end of the frame, a pulley in the channel, and positioned to ride on the upper run of a clothes line extending across the frame and through the channel, said channel having an entrance facing downwardly relative to the frame, and a releasable clamp adjacent a lower end of the frame, said clamp being movable from a first position, where it can grip the lower run of said clothes line extending across the frame, to a second position, where the lower line is released, whereby longitudinal movement of the clothes line lower run, when it is gripped by said clamp, shifts the pulley riding on the line upper run and consequently the frame along said upper run, and said clamp comprises a gate extending from an end of said downwardly facing entrance of said upper channel and substantially along the length of said elongate frame so that when said clamp is in said first position said clamp retains said upper run in said upper channel, and when said clamp is in said second position said clamp permits the release of said upper run from said upper channel.

4,213,598

COMPACT SANITARY KIT PACKAGE

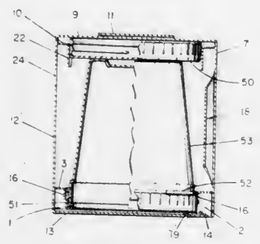
Peter R. Halasz, Los Angeles, Calif., assignor to Bergen-Brunswig Corporation, Los Angeles, Calif.

Filed Dec. 13, 1978, Ser. No. 968,748
Int. Cl.² B65D *5/10, 5/06*
U.S. Cl. 206—45.14 **13 Claims**

1. A specimen container package comprising,

top panel means,

first component retaining panel means joined to one edge of said top panel means and including first locking means for locking said top panel means and said first component retaining panel means in parallel overlapping relationship,
first and second side panel means joined to opposite edges of said top panel means to form sides of said package,
one of said first and second panels having an aperture therein,
bottom panel means joined to one of said first and second side panel means,



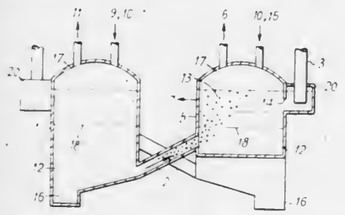
first tab panel means connected to an edge of said one of said first and second side panel means for insertion into said aperture in said one side panel means, and
second component retaining panel means joined to said bottom panel means and including second locking means for locking said bottom panel means and said second component retaining panel means together in parallel relationship.

4,213,599

APPARATUS FOR THE PRODUCTION OF ALUMINIUM

Ernest W. Dewing, Arvida; Jean-Paul R. Huni, Kingston; Raman R. Sood, Arvida, and Frederick W. Southam, Kingston, all of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Division of Ser. No. 799,762, May 23, 1977, Pat. No. 4,099,959. This application May 26, 1978, Ser. No. 909,987
Claims priority, application United Kingdom, May 28, 1976, 22474/76
Int. Cl.² F27B *3/08*
U.S. Cl. 266—166 **18 Claims**



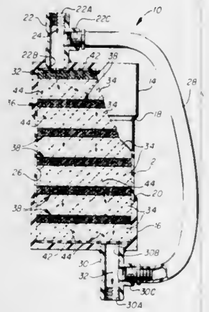
1. Apparatus for the production of aluminium metal by the direct reduction of alumina by carbon comprising four sequentially arranged chambers adapted to receive and contain a body of molten slag composed of alumina and combined carbon in the form of at least one of aluminium carbide and aluminium oxycarbide, means for supplying carbon feed material to the first and third chambers, flow conduits for said slag from said first and third chambers to said second and fourth chambers respectively, each of said flow conduits having an upwardly directed outlet end portion, return conduits for said slag respectively leading from a lower region in each of said second and fourth chambers to said third chamber and said first chamber respectively, said return conduits, when filled with molten slag, constituting relatively lower electrical resistance paths than said flow conduits, means for supplying alumina feed to at least one of said chambers, spaced electrode means arranged to contact said slag for passage of electric current through said slag, means for discharging gas from each of said four chambers and means for collecting and discharging Al metal from said second and fourth chambers, said electrode means being arranged so that the electric current flows in each flow conduit in series with a return conduit.

4,213,600

SILVER RECLAMATION APPARATUS

Roy R. Thompson, Jr., 6520 N. Haven Rd., Dallas, Tex. 75230

Filed Aug. 7, 1978, Ser. No. 931,317
Int. Cl.² C22B *11/12*
U.S. Cl. 266—170 **4 Claims**



1. Apparatus for recovering silver from a liquid solution containing dissolved silver compounds comprising, in combination:
a vessel having an inlet port for receiving said liquid solution, a discharge port for removing effluent solution from said vessel, and an enclosure portion defining a flow path from said inlet port to said discharge port;
means partitioning said flow path into adjoining flow path regions;
a fluid permeable layer of metal and a fluid permeable layer of filter material disposed in alternate ones of said flow path regions, respectively, each metal layer consisting of a metal which is more electropositive than silver in the electromotive series, and each filter layer consisting of a chemically inert fibrous material which is substantially non-reactive to said liquid solution;
said partitioning means defining first, second and third adjoining flow path regions, said fluid permeable layer of metal being disposed in each of said first and third flow path regions, and said fluid permeable layer of filter material being disposed in said second flow path region, the metal layers in said first and third regions consisting of first and second metals, respectively, each of said metals being electropositive with respect to silver, and each occupying relatively different positions in the electromotive series, respectively.

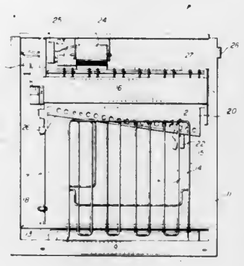
4,213,601

PRINTER ELEVATOR CONTROL MECHANISM

Joseph F. Cattorini, Palm Bay; Thomas R. Park, and John K. Martin, both of West Melbourne, all of Fla., assignors to Documation Incorporated, Melbourne, Fla.

Filed Nov. 6, 1978, Ser. No. 958,014
Int. Cl.² B65H *45/00*
U.S. Cl. 270—61 F **9 Claims**

1. A printer elevator control in a web refolding mechanism comprising in combination:
an elevator frame movable in response to the operation of a printer toward and away from a stack of refolded paper in a stacking bin;
a printer guide chute for feeding paper into said stack, said paper guide chute being attached to said elevator frame for feeding paper therethrough into said stacking bin;
a pair of paper control flappers each movably mounted to said elevator frame adjacent said paper guide chute for directing paper into alternate folds in the stacking bin;
switch means mounted adjacent one of said paper control flappers and actuated by said paper control flapper being



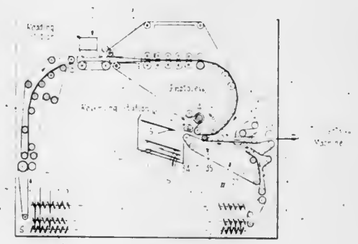
hit by stacking paper for sensing the movement of folds in said web past said guide chute, said switch means generating signals responsive to movement of said one paper control flapper; and
means to move said elevator frame responsive to signals from said switch means, whereby a printer elevator can be raised in accordance with the height of stacked paper.

4,213,602

SWITCHING DEVICE FOR LETTERS AND THE LIKE

Cornelis Kuijt, Katwijkaan Zee, Netherlands, assignor to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

Continuation of Ser. No. 748,477, Dec. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 590,625, Jun. 26, 1975, abandoned. This application Jun. 9, 1978, Ser. No. 914,068
Claims priority, application Netherlands, Jul. 16, 1974, 09617
Int. Cl.² B65H *29/60*
U.S. Cl. 271—279 **2 Claims**



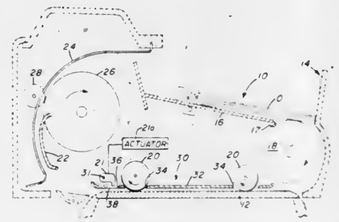
1. A system for conveying and selectively delivering letter-type objects to at least two separate locations, comprising:
(A) a driven stem belt conveyor for conveying said letter-type objects along a first path to a location having a receptacle for accumulating said letter-type objects,
(B) a driven branch belt conveyor below said driven stem belt conveyor for conveying said letter-type objects along a second path to another location, which second path extends in an opposite direction to said first path,
(C) a switching device located along said first path to said receptacle and immediately adjacent thereto and operable to switch selectively said letter-type objects from said first path to said second path, said switching device comprising a one-rotation means adjacent said branch belt conveyor, said one rotation means having an incomplete cylindrical surface of which the non-cylindrical part is normally out of said first path of said letter-type objects moved by said stem belt conveyor, and of which the cylindrical surface part serves for engaging said letter-type objects to pinch them downward into contact with said opposite moving branch belt conveyor for conveying said objects to said other location,
(D) photoelectric means for sensing the trailing edges of said letter-type objects as they move along said stem belt conveyor toward said switching device, and
(E) a one-rotation coupling means driving said one-rotation means under control of said sensing means for rotation of said one-rotation means in said opposite direction to move said letter-type objects in the same direction as said branch belt conveyor, whereby whenever the space between two successive letter-type objects is small or the letter-type objects overlap one another said switching device is not rotated so that the non-cylindrical part allows free passage of said letter-type objects to said receptacle.

4,213,603

METHOD AND APPARATUS FOR LOCATING A MOVING SHEET AT A REGISTRATION POSITION

Robert M. Peffer, Penfield, and Charles H. Braun, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1978, Ser. No. 915,646
Int. Cl.² B65H *9/14*
U.S. Cl. 271—229 **12 Claims**



1. Apparatus for locating a sheet, moving along a travel path defined by a guide and a parallel support, at a registration position in said path, one surface of such sheet being disposed substantially parallel to said support during sheet movement, said apparatus comprising:
resilient means selectively movable into said path upstream of said registration position for applying a deceleration force to such surface, urging such sheet against said support, to retard such sheet approaching said registration position; and
means for moving said resilient means into and out of said path so that said resilient means engages such sheet when said resilient means is in said path to locate such sheet at said registration position, and disengages such sheet when said resilient means is out of said path whereby further movement of such sheet along said path is unimpeded.

4,213,604

AUTOMATIC ORIGINAL HANDLING DEVICE

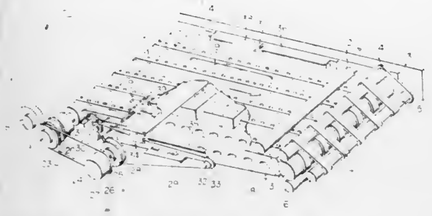
Tadashi Sato, Kokubunji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1978, Ser. No. 922,294
Claims priority, application Japan, Jul. 19, 1977, 52-86203; Jul. 19, 1977, 52-86204
Int. Cl.² B65H *9/10*
U.S. Cl. 271—233 **13 Claims**

1. An automatic original handling device for automatically

conveying sheet originals to the original carriage surface of a copying apparatus, comprising:

belt conveyor means including intermittently movable belt means trained around at least two rollers;



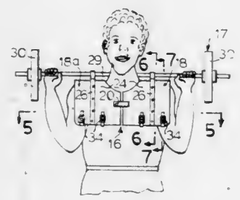
registration means, movable along said belt means when said belt means is not moving, for registering an original on said belt conveyor means so that the original is conveyed accurately to a predetermined position on the original carriage surface; and means for adusting the position of said registration means.

4,213,605

NECKBONE AND SHOULDER PROTECTIVE APPAREL FOR BARBELL LIFTERS

Walter G. McPeak, 3505 Kilkenny West, Tallahassee, Fla. 32303

Filed Feb. 8, 1978, Ser. No. 876,122
Int. Cl.[2] A63B *21/12*
U.S. Cl. 272—119 **3 Claims**



1. A neck and shoulder protective apparel (**16**) for lifters of a barbell assembly (**17**) during squat exercises, said assembly including a shaft (**29**) having at least one weight member (**30**) mounted on each of its opposite end portions, said apparel comprising:

(a) a cushioned layer (**23**) adapted to fit over each of the lifter's shoulders, the opposite end portions of each layer extending downwardly over the front and back trapezius and deltoid muscle areas (**14, 15**) of its associated shoulder;

(b) a pair of inverted U-shaped rigid shields (**18, 18***a*) covering said layers respectively;

(c) means (**26, 26**) carried by said shields for jointly supporting the intermediate portion of said shaft (**29**) with said weight members (**30**) thereon adjacently behind the lifter's neck, above his neckbone (**12**), and substantially parallel to and above the crests of his shoulders, the opposite end portions of said shaft axially projecting sidewise beyond the shoulders and within gripping range of the lifter's hands;

(d) means (**35, 36**) for fixedly securing each of said downwardly extending back end portions of said layers (**23, 23**) to the proximate face of the associated shield, and

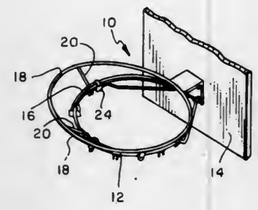
(e) means (**33, 34**) for slidably adjusting a detached, downwardly extending front end portion of each of said layers relative to the proximate face of its associated shield, said adjusting means including a flexible member being attached at one end to one layer and the opposite end being attached to the associated shield.

4,213,606

DEVICE TO IMPROVE SHOOTING A BASKETBALL

Robert E. Wilson, 636 E. Main, Mulvane, Kans. 67110

Filed Apr. 2, 1979, Ser. No. 26,035
Int. Cl.[2] A63B *63/00, 69/00*
U.S. Cl. 273—1.5 A **5 Claims**



1. A method of improving the shooting accuracy of a basketball player by eliminating the tendency to bury the ball between the backboard and the hoop at the underside thereof comprising the step of:

(a) positioning a secondary hoop of larger diameter relative to the conventional hoop so that the secondary hoop is tangential and co-planar with the conventional hoop and a support hoop at the point on the conventional hoop and support hoop adjacent to the backboard and so that the portion of the secondary hoop opposite the backboard projects upward and outwardly relative to the corresponding portion of the conventional hoop and the support hoop whereby the shooter is encouraged to bank the basketball from an optimum position on the backboard.

2. A basketball training device for a conventional basketball hoop and backboard assembly wherein said conventional hoop is normally positioned in a horizontal plane comprising:

(a) a support hoop of essentially the same diameter of the conventional hoop to circumferentially mate with same;

(b) a secondary hoop of larger diameter relative to the conventional hoop;

(c) interconnecting means for attaching said support hoop to said secondary hoop;

(d) means for removably connecting said support hoop to said conventional hoop;

said secondary hoop being tangential and co-planar with the conventional hoop and the support hoop at the point on the conventional hoop adjacent to the backboard, and a portion of said secondary hoop opposite the backboard projects upward and outwardly relative to the corresponding portions of the conventional hoop and support hoop.

4,213,607

METHOD AND STRUCTURE FOR PREVENTING REMOVAL OF GRIP COVERS FROM METALLIC BATS

Hirokazu Fujii, No. 19-9, 2-chome, Obiraki, Fukushima-ku, Osaka, Japan

Continuation-in-part of Ser. No. 620,215, Oct. 6, 1975, Pat. No. 4,090,709. This application May 10, 1978, Ser. No. 905,280
Claims priority, application Japan, Jan. 11, 1978, 53-2201
Int. Cl.[2] A63B *59/06;* **B21D** *39/00;* **B23P** *11/00*
U.S. Cl. 273—72 A **3 Claims**

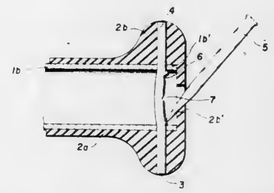
1. In a hollow tubular metallic bat having a grip cover made of hard rubber or the like covering the grip of the bat, said grip cover having an enlarged grip end, the improvement whereby the grip of the bat is prevented from flying out of the grip cover upon swinging of the bat, comprising:

at least one pin or cotter penetrating through said grip end of said grip cover and said grip, said pin being physically deformed at the center thereof between the inside wall portions of said grip, the portion of the pin between the inside wall portions of said grip thus being bent to prevent removal of the pin, and said pin being further deformed, to further prevent removal of the pin, by calking to the inside wall of said grip.

3. A process for producing a metallic bat in accordance with claim **1**, comprising:

covering the grip of the bat with a grip cover made of hard rubber or the like and having an enlarged grip end;

drilling a hole through the grip end of the grip cover and the metallic grip of the bat therebeneath;



placing a pin or cotter in said hole thus penetrating the grip end and the grip; and

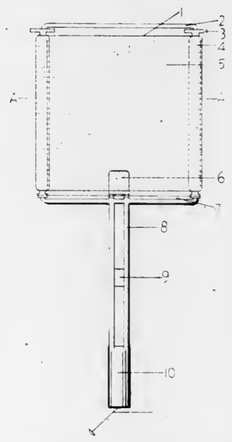
physically deforming the pin or the cotter by deforming the pin at the center thereof between the inside wall portions of the grip, the portion of the pin between the inside wall portions of the grip thus being bent to prevent removal of the pin through said hole, and further deforming the pin, to further prevent removal thereof, by calking the pin to the inside wall of the grip.

4,213,608

GAME RACQUETS

Mithra S. Krishnan, 1041 Township Line Rd., Jenkintown, Pa. 19046

Filed Sep. 15, 1978, Ser. No. 942,949
Int. Cl.[3] A63B *19/02*
U.S. Cl. 273—73 C **7 Claims**



1. A game racquet-containing in combination:

a substantially rigid frame in the form of a handle and a head;

two rotatable spools mounted on members by means of bearings on opposite sides of said head, said spools having approximately parallel axes of rotation;

a ball-contacting facing containing closed loops of strings held in tension around the aforementioned spools;

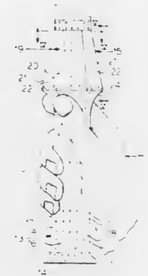
wherein forces applied to said facing between said spools in a non-perpendicular direction with respect to said facing, or torques applied directly to said spools to cause them to rotate will provide movement of said facing around said members thus imparting a spin to a ball that contacts said facing during said rotation.

4,213,609

GRIP BUMPER

Arthur P. Swanson, 1454 Estate La., Glenview, Ill. 60025

Filed Apr. 18, 1979, Ser. No. 31,189
Int. Cl.[2] A63B *5/20*
U.S. Cl. 273—75 **7 Claims**



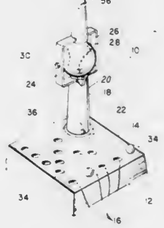
1. A grip bumper for the handles of striking devices which comprises a grip sized for fitting around the handle of such a device having a continuous outturned peripheral rib converging continuously without any protuberance to the grip for receiving thereagainst portions of the hand of the user without restraining against rotation of the device in the hand to deliver additional striking thrust from the hand to the device.

4,213,610

TOY BASEBALL GAME

Jacinto Velazquez, 1257 Loring Ave., Brooklyn, N.Y. 11208

Filed Apr. 20, 1978, Ser. No. 898,039
Int. Cl.[2] A63F *7/02, 7/06*
U.S. Cl. 273—93 R **1 Claim**



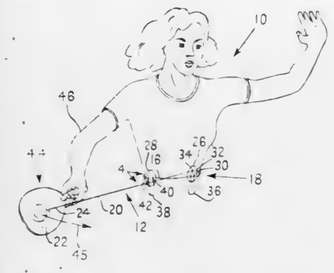
1. In a toy baseball game, an open base including a plurality of pockets recessed from the upper surface of the base, a batting device comprising an upright hollow post fixed on said base to extend above said base and having an opening in the lower part thereof; said post having an aperture adjacent its upper end; a ball ejecting mechanism communicating with said aperture mounted to said post, a bracket secured to said upper end; a simulated hollow baseball rotatably mounted on said bracket and containing a plurality of smaller, simulated baseballs bearing indicia referring to baseball game occurrences; said hollow baseball having an opening of a size sufficient to allow successive passage of said smaller baseballs therethrough; said opening being rotatable to a first position above said ball ejecting mechanism for delivering, by gravity, one ball at a time to said base for reception in one of said pockets, and said baseball being rotatable to a second position in which said opening is above the interior of the baseball and free from the ball ejecting mechanism so that individual smaller baseballs may be freely inserted into said interior.

4,213,611

BODY TETHERED BALL GAME

D. Michelle Hicks, 1581 Sunnydale Ave., San Francisco, Calif. 94134

Filed May 2, 1978, Ser. No. 902,241
Int. Cl.[2] A63B 67/00
U.S. Cl. 273—414 3 Claims



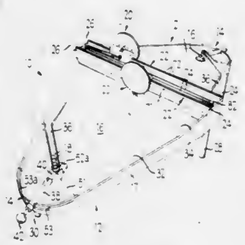
1. A ball game, which comprises:
a resilient ball, and
an adjustable support be worn about a human torso, said adjustable support comprising a cord and a member having three apertures extending therethrough dimensioned to receive the cord in a friction fit, the cord passing through a first one of said apertures in a first direction, forming a loop and passing through a second one of the apertures in the opposite direction, forming a second loop to fit around the torso of a wearer, then passing through the third aperture in the first direction, the remainder of the cord after passing through the third aperture constituting a flexible tether attached at its end remote from said apertured member to said resilient ball, the length of said flexible tether being adjustable to a suitable length for allowing said resilient ball to be hit in a forward stroke by a person wearing said adjustable support, pass partially around the torso of the person, and be hit in a reverse stroke.

4,213,612

SHIFTABLE GAME TARGET AND PROJECTILE LAUNCHING DEVICE FOR ACTUATING SAME

John R. Wildman, North Riverside, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Mar. 31, 1978, Ser. No. 892,169
Int. Cl.[3] A63F 9/14; A63B 63/00, 65/12
U.S. Cl. 273—355 16 Claims



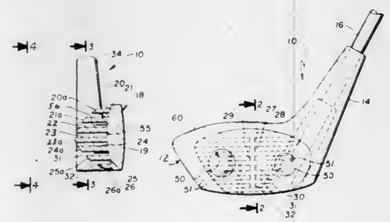
1. A target game apparatus comprising:
a playing surface including at least one player station defined thereon;
at least one projectile;
at least one target device;
means defined at said player station for launching a projectile and means for returning said projectile to said launching means;
support means for mounting said target device for movement transversely with respect to the player station; and
target drive means including a rack on the playing surface and a gear rotatably mounted on the support means and engaging said rack for movement of the target a predetermined distance along said playing surface upon actuation thereof by control of a projectile.

4,213,613

GOLF CLUB HEAD WITH CENTER OF GRAVITY NEAR ITS STRIKING FACE

Gordon W. Nygren, 321 Spring Valley Dr., Bloomington, Minn. 55420

Filed Dec. 29, 1977, Ser. No. 865,702
Int. Cl.[2] A63B 53/04
U.S. Cl. 273—169 12 Claims



1. A golf club comprising a shaft, a metal face plate, the center line of said shaft residing in a first vertical plane disposed rearwardly from said face plate and generally parallel to said face plate, metal means extending rearwardly from the back side of said face plate and terminating at a location adjacent said vertical plane, the mass of said rearwardly extending metal means decreasing in opposite lateral directions from a centrally disposed vertical plane passing through said first plane and said face plate and also decreasing toward said face plate so that the center of gravity of said metal means resides between said first vertical plane and said face plate, the mass of said rearwardly extending metal means also decreasing in a vertical direction above and below a centrally disposed horizontal plane passing through said face plate so that the center of gravity of said metal means also resides generally in said horizontal plane, and relatively low density foamed plastic material encasing said rearwardly extending metal means to form an aerodynamically curved outer surface, said foamed plastic material having a center of gravity so that the overall center of gravity of said head resides substantially in said first vertical plane.

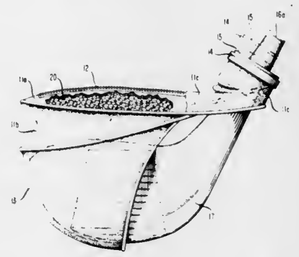
4,213,614

PRACTICE WEIGHT ATTACHMENT FOR GOLF CLUBS AND METHOD OF WEIGHTING SAME

George J. Philippi, 1209 Stillman Ave., Plainfield, N.J. 07060

Filed Mar. 8, 1979, Ser. No. 18,857
Int. Cl.[2] A63B 69/36
U.S. Cl. 273—194 B 14 Claims

1. A practice weight attachment for golf clubs having a wooden driving head supported on a shaft affixed to said head by a neck tapered from a thinner section adjacent the upper portion of said shaft to a thicker section adjacent said head, said attachment comprising in combination:
a collar having a tapered central axial bore substantially the same dimension as the thicker section of said tapered neck adjacent said wooden head, said central bore having a tapered longitudinal slot having substantially the same taper but slightly smaller in width than said central axial bore, whereby said collar is constructed to be slipped onto said thinner section of said tapered neck and to slip down to engage substantially more than half of the circumference of said neck in the thicker section thereof, whereby said collar is held in positive engagement with said neck until removed by sliding said collar up the tapered neck adjacent said head to a point where said neck is smaller than the width of said tapered slot where it can be readily removed;
a cover of flexible fabric for said wooden driving head;
means for holding said cover fixed to and depending at one of its ends from said collar;



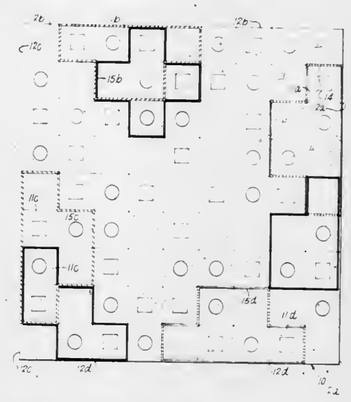
said cover horizontally compartmented by a partition substantially parallel to its major plane forming an upper pocket for accommodating weighted material, including means for opening said upper pocket to receive said weighted material and means for completely closing said upper pocket to enclose said weighted material; and
a lower pocket secured to the underside of said upper pocket, said lower pocket having a rearwardly directed opening constructed and arranged to accommodate a wooden golf club head.

4,213,615

BOARD GAME WITH MOVABLE PLAYING PIECES

Howard C. Price, 7 Crump St., Huntington, W. Va. 25705

Filed Jul. 24, 1978, Ser. No. 927,608
Int. Cl.[2] A63F 3/02
U.S. Cl. 273—260 5 Claims



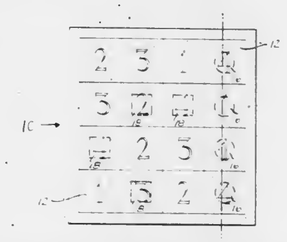
1. A game apparatus comprising:
a playing surface divided into a plurality of spaces;
a plurality of types of symbols marking said spaces wherein each said space has a symbol of one type associated therewith; and
a plurality of playing pieces for each player for movement on the playing surface from one space to another wherein each playing piece has at least three sides, each side being marked with one type of symbol to match with the same type of symbol in the spaces on the board, such that each piece has at least three types of said symbols thereon whereby the playing pieces may be twisted and rotated about vertical and horizontal axis in order to effect playing of the game.

4,213,616

FOUR-IN-A-ROW BOARD GAME

Thomas E. Dickey, Stanardsville, Va. 22973

Filed Jul. 2, 1979, Ser. No. 53,806
Int. Cl.[3] A63F 3/00
U.S. Cl. 273—271 10 Claims



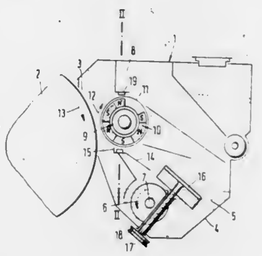
1. A board game comprising (1) a gameboard, said board being divided into sixteen units only to provide four vertical and four transverse rows, each of said sixteen units having indicia thereon, the indicia on said sixteen units comprising four individual sets of indicia and the units in at least each of said vertical or each of said transverse rows including each of said four sets of indicia of four each; (2) sixteen cards having indicia thereon in toto corresponding to the indicia on said sixteen units of said gameboard; and (3) sixteen markers in at least two sets for placing on and distinguishing selected units of said sixteen units of said gameboard.

4,213,617

ASSEMBLY FOR SEALING LEAD-IN AREAS IN A DEVELOPER STATION

Werner Salger, Hamburg, Fed. Rep. of Germany, assignor to Lumoprint Zindler KG (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Apr. 6, 1979, Ser. No. 27,775
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816621
Int. Cl.[2] F16J 15/40, 15/54
U.S. Cl. 277—12 10 Claims



1. A sealing assembly for sealing lead-in areas into a developer station of a copying machine in which a latent image that has been established in a conductive material by an at least partly magnetizable mixture of a developed powder is developed whereby the developer station comprises: a developer housing enclosing the developer station and including a pair of laterally spaced side walls (**22,23**), a magnet drum (**9**) extending between and journalled in side walls (**22,23**); drive means (**26**) for the magnet drum; a magnet system (**10**) provided in and

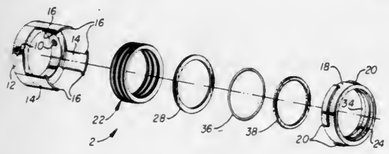
extending in the axial direction of said magnet drum; a supply space (5) within said developer housing and spaced from said magnet drum for holding a mixture of developer powder; means (16) located within said supply space for feeding the mixture of developer powder from the supply space to along the length of the magnet drum; wherein the improvement comprising that support means (15, 19) are located within said developer housing exteriorly of and at the opposite ends of said magnet drum, outer magnet assemblies (28–31, 36, 37 50) mounted on said support means and positioned adjacent to the opposite ends of said magnet drum, said outer magnet assemblies comprising magnet pieces (28–31, 36, 37) located on opposite sides of said magnet drum and each magnet piece including an inclined edge (32, 33) extending obliquely relative to the axis of the magnet drum, the edge being located at the outside with respect to the direction of rotation of the magnet drum (9),.

4,213,618

SELF-CONTAINED ROTARY MECHANICAL SEALS

Mickey D. Thurber, Odessa, Tex., assignor to Mechanical Seal & Service, Inc., Odessa, Tex.

Filed May 24, 1978, Ser. No. 909,014
Int. Cl.[2] F16J *15/34*
U.S. Cl. 277—93 R **10 Claims**



1. In a rotary mechanical seal of the type having an annular base adapted for mounting on a rotating shaft, a seal washer, and a spring means located between the base and the seal washer for urging said seal washer against a housing through which the shaft extends to form a seal, the improvement comprising:
   a plurality of longitudinal lugs extending from said annular base in circumferentially and radially spaced-apart relationship with said shaft such that said spring means and seal washer can be received between said lugs and shaft;
   circumferential projections extending away from said lugs on the ends of said lugs opposite said base; and
   a plurality of circumferential projections extending radially outward from said seal washer in circumferential spaced-apart relationship sufficient for receiving said lugs therebetween so that said seal washer and base can be engaged for rotation and secured against longitudinal separation under the action of the spring means by inserting said seal washer under said lugs and twisting said seal washer until the seal washer projections are locked behind the lug projections.

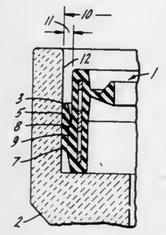
4,213,619

SEALING INSERT FOR THE TIGHT CONNECTION OF TWO PIPES

Christian Arlt, Weinstrasse 14, Dinkelackerring 38, 6730 Neustadt, and Gerhard Arlt, 6836 Oftersheim, Neustadt, both of Fed. Rep. of Germany

Filed Jun. 14, 1978, Ser. No. 915,402
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1977, 2726959
Int. Cl.[2] F16J *15/02*
U.S. Cl. 277—207 A **2 Claims**

1. A sealing insert for pipes having a contact support (9) provided at its exterior side with at least one elastic sealing ring having a section (5) of pedetermined cross-sectional thickness, said section of said ring being connected via a bridge (7) thinner in cross section to the contact support, and in its mounted position the ring being supported by said contact support of the sealing insert, characterized by the fact that the section (5) of the radially exterior sealing ring (3) is spaced in the premounting position axially from a radial reduction of the outer diameter (8) of the radially and inwardly located contact support (9) or from the outer axial end of said contact support, and the



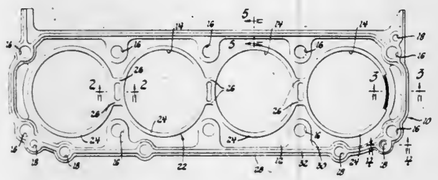
dimensions being such that the section (5) of the radially external sealing ring (3) is urged during the mounting of the sealing insert (1) either with radially narrow (FIG. 2) or most narrow (FIG. 3) sealing surface distances under axial expansion of the bridge (7) into said radial reduction of the outer diameter (8) or beyond the axially outer end of said contact support (9).

4,213,620

CYLINDER HEAD GASKET

Lawrence C. Kennedy, Birmingham, and Joseph Kowalis, Plymouth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1978, Ser. No. 971,361
Int. Cl.[2] F16J *15/06, 15/12*
U.S. Cl. 277—235 B **5 Claims**



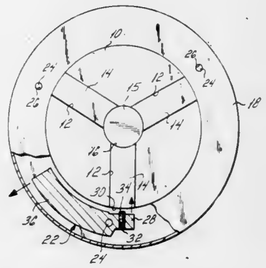
1. A close tolerance conformable cylinder head gasket for use between the cylinder head and block of an internal combustion engine, said gasket comprising
   a single sheet metal carrier plate of essentially uniform thickness and having a plurality of spaced cylinder openings,
   a partly sheared annular embossment surrounding each of said cylinder openings closely adjacent the edges thereof, said embossments comprising annular portions of the carrier plate material partly displaced by shearing from the plane of the adjacent body of the plate,
   said cylinder openings having a metallic cover wrap enclosing their edges and both faces of the adjacent embossments, said wrap comprising interconnected rings formed from a single metal sheet of essentially uniform thickness,
   said wrap cooperating with said opening-defining plate edges and their adjacent embossments to provide close tolerance conformable metallic sealing means for each of the cylinder openings.

4,213,621

CENTRIFUGALLY-ACTUATED CHUCK ATTACHMENT

Anton Fink, and Nicholas A. Fink, both of 149 Crescent Dr., Albertson, N.Y. 11507

Filed Aug. 23, 1978, Ser. No. 935,924
Int. Cl.[3] B23B *31/14*
U.S. Cl. 279—1 C **4 Claims**



1. A centrifugally-actuated chuck attachment for a chuck having a rotatable chuck body and a plurality of jaws supported in said chuck body and radially movable therein relative to the longitudinal axis of the chuck body between a retracted and clamping position, comprising:
   a hollow annular shaped housing mountable about the chuck body, defining an annular U-shaped channel, the opening of which faces the chuck body and the jaws thereof; and
   a lever associated with each of the jaws pivotably mounted on a pin in said channel in said housing for pivotal movement about a pivot axis parallel to the longitudinal axis of the chuck body, said lever having a first and second pivot arm disposed on opposing sides of said pivot axis thereof, said first arm being disposed for operative engagement with its associated jaw and said second arm having an effective length and weight such that it moves outwardly from the longitudinal axis of the chuck body as a result of the centrifugal force developed upon rotational movement of the chuck body and, in turn, urges said first arm into engagement with said jaw associated therewith to thereby counterbalance the centrifugal force acting on said jaw and enhance the clamping force thereof; wherein said lever has a generally arcuate configuration, wherein said first pivot arm has an internally-threaded bore formed therethrough having an axis which is disposed normally relative to the longitudinal axis of the chuck body and wherein an externally-threaded set screw is threadably received in said bore for engagement with said jaw associated with said lever.

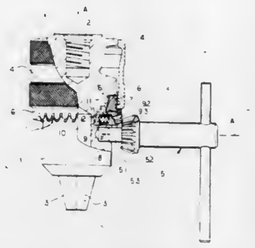
4,213,622

LOCKABLE CHUCK FOR HAMMER DRILL

Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Fed. Rep. of Germany

Filed Feb. 13, 1979, Ser. No. 11,773
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 2806796
Int. Cl.[2] B23B *5/22*
U.S. Cl. 279—1 K **8 Claims**

1. A chuck assembly comprising:
   a chuck body lying on a chuck axis and formed with a radially extending guide;
   a plurality of jaws on said body radially displaceable;
   a sleeve rotatable on said chuck body about said axis and having a toothed rim adjacent said guide;
   means in said body for radially displacing said jaws on rotation of said sleeve about said axis;
   a bolt slidable radially of said chuck axis in said guide and having a portion displaceable between a locking position engaged between the teeth of said rim and preventing said sleeve from rotating relative to said body about said chuck axis and a retracted position spaced inwardly of said teeth and allowing such rotation;
   biasing means for urging said bolt into said locking position; and



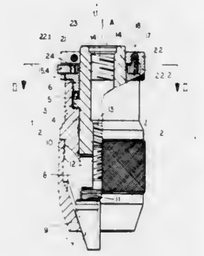
   a key having a pinion radially engageable between said teeth and with said bolt and rotatable about a key axis generally radial of said chuck axis to rotate said sleeve about said chuck axis, said key forcing said bolt into said retracted position when engaged with said teeth.

4,213,623

NONLOOSENING DRILL CHUCK

Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Fed. Rep. of Germany

Filed Feb. 13, 1979, Ser. No. 11,774
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 7804747[U]
Int. Cl.[2] B23B *31/14*
U.S. Cl. 279—1 C **10 Claims**



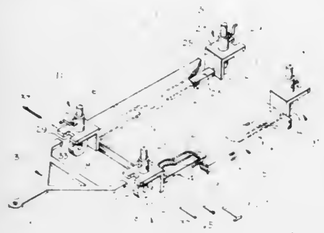
1. A chuck comprising:
   a chuck body defining a chuck axis;
   a plurality of generally angularly equispaced and radially displaceable jaws on said body;
   a tightening body rotatable on said chuck body about said axis;
   means including formations on said jaws on on said bodies for displacing said jaws radially inwardly on rotation of said tightening body on said chuck body in one rotational sense and for permitting radial outward displacement of said jaws on rotation in the other opposite sense;
   an axially centered array of ratchet teeth on one of said bodies;
   a ratchet on the other of said bodies radially engageable with said ratchet teeth, said ratchet teeth and ratchet being so constructed as to permit rotation of said tightening body on said chuck body in said one sense when engaged and to prevent rotation in the opposite sense when engaged; and
   means including a radially displaceable counterweight connected to said ratchet for urging same into engagement with said ratchet teeth on rotation of said bodies about said axis.

4,213,624

PALLET TRANSPORT SYSTEM

Ralph K. Sanders, Placentia, Calif., assignor to General Dynamics Corporation Pomona Division, Pomona, Calif.

Filed Sep. 5, 1978, Ser. No. 939,626
Int. Cl.² B62D *21/18*
U.S. Cl. 280—43.12 **14 Claims**



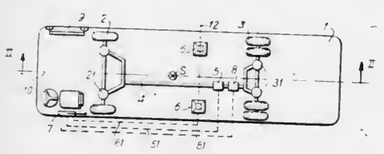
1. An adaptable wheel dolly attachable with a plurality of like wheel dollies to a shipping skid for lifting and transporting said skid comprising:
- a frame;
- a wheel and axle;
- a strut member coupled to the axle and pivotably mounting the wheel to a first portion of the frame positioned over the wheel;
- means coupled to the strut member and the frame for elevating the frame relative to the strut member and wheel between a lowered position suitable for engaging a shipping skid and a selected elevated position for lifting said skid;
- a second portion of the frame angled downwardly from the first portion and extending to a level adjacent the bottom
- an elongated cantilevered support member shaped to fit within a fork lift envelope of a standard shipping skid, the support member being rigidly attached at its proximal end to the second portion of the frame adjacent its lower end and means for locking the support member to the shipping skid comprising at least one pin for engaging matching holes in the support member and in the fork lift envelope of the shipping skid.

4,213,625

PNEUMATICALLY SUSPENDED BUS

Hans Hagen, Munich, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 5, 1978, Ser. No. 939,183
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739637
Int. Cl.² B62D *21/18*
U.S. Cl. 280—43.23 **6 Claims**



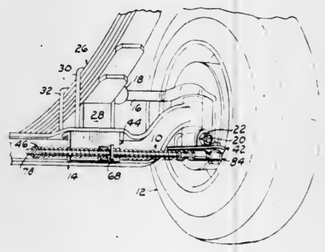
1. A pneumatically suspended bus, the body of which is supported on front and rear axles by means of air bellows, wherein: an entrance means is arranged in the front portion of the bus; support strut means for said body are provided on the body behind and next to its center of gravity for lifting said bus body relative to a roadway being transversed by said bus, said air bellows are associated with the respective front and rear axles to support said body and are connected to one another by means of a connecting line for establishing communication therebetween when said support strut means are extended to lift said bus body.

4,213,626

STEERING STABILIZER APPARATUS

George B. Moore, 16651 Island Cir., Huntington Beach, Calif. 92649

Filed Sep. 22, 1978, Ser. No. 944,832
Int. Cl.² B62D *7/06*
U.S. Cl. 280—94 **3 Claims**



1. In a vehicle having a single piece front axle journalling a steerable wheel assembly for horizontal turning movement about a generally vertical axis by a steering control arm connected with the wheel assembly including a pitman arm horizontally intersecting the turning axis and movable about the turning axis in unison with turning movement of the steerable wheel assembly and having a leaf spring assembly overlying the axle and secured thereto by a spring clamp bolt, the improvement comprising:
- pitman bracket means rigidly secured to said pitman arm and having an apertured end portion projecting forwardly of said turning axis,
- said pitman bracket means comprising an elongated plate longitudinally underlying said pitman arm,
- an apertured ear transversely secured to said plate intermediate its ends in upstanding relation for surrounding one end portion of said pitman arm, and,
- a clamp connecting the other end portion of said pitman arm to said plate;
- fixed bracket means including an apertured prong supported by said spring clamp bolt forwardly of said axle;
- spring assembly means including a shaft supported intermediate its ends by said apertured prong for longitudinal reciprocating movement relative thereto,
- said spring assembly means including a pair of compression springs respectively surrounding opposing end portions of said shaft on opposing sides of said apertured prong, and,
- spring retaining means on the respective end portion of said shaft for adjusting the compression of said springs; and,
- universal joint means connecting one end portion of said shaft with the apertured end portion of said pitman arm bracket means.

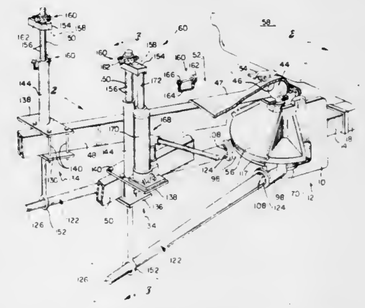
4,213,627

TRAILER HITCH

Woodrow F. Thompson, 440 Pine Villa Dr., City of Atlantis, Lantana, Fla. 33462

Filed Nov. 6, 1978, Ser. No. 957,902
Int. Cl.² B62D *53/00*
U.S. Cl. 280—406 A **6 Claims**

1. A trailer hitch assembly comprising towing means secured to a towing vehicle, connecting means secured to said towing means and adapted for detachably engaging the tongue of a trailer, the trailer tongue including forwardly converging side rails, said connecting means including vertical post means, load-levelling bar means, means for pivotally mounting said load-levelling bar means on said connecting means for swinging movement in a generally horizontal plane about said post means, support means mounted on said trailer tongue, the support means including first means longitudinally movably engaging the side rails of the trailer tongue, second means movably engaging the ends of the bars remote from the housing members and third means for vertically selectively adjusting the second means relative to the first, and fourth means cooperating with the second means for locking the second means in a vertically adjusted position relative to the first, to vary selectively the anti-sway and load-levelling characteris-



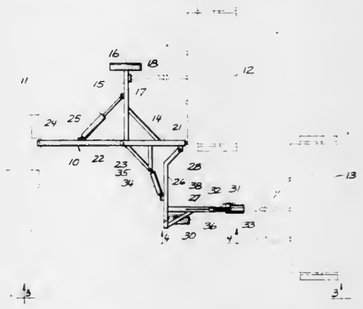
tics of the coupling between the trailer and the towing vehicle, and cam means disposed between said load-levelling bar means and connecting means for varying the forces transmitted through said load-levelling bar means upon said swinging movement of said load-levelling bar means about said post means, said load-levelling bar means comprising two housing members disposed adjacent each other and extending rearwardly from said post means, each of said housing members including a rearwardly opening socket, said load-levelling bar means comprising a pair of generally circular cross-section bars and each said socket having a generally circular cross-section to permit rotation of said bars in said sockets.

4,213,628

PULLING HITCH FOR AGRICULTURAL IMPLEMENTS

Robert D. Hardesty, Spangle, Wash., assignor to Tom Pottratz; Ronald Pottratz, Jr. and Advanced Design and Construction, all of Latah, Wash.

Continuation of Ser. No. 853,486, Nov. 21, 1977, abandoned. This application Sep. 14, 1978, Ser. No. 942,429
Int. Cl.² B60D *1/18*
U.S. Cl. 280—412 **12 Claims**



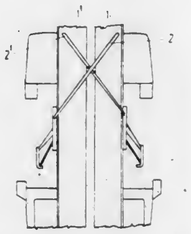
1. A pulling hitch for connecting a plurality of transverse agricultural implements to a single towing vehicle, comprising:
- a first rigid horizontal frame comprising a longitudinal member having spaced front and rear ends, and a transverse member fixed to the front end of said longitudinal member and extending to one side thereof;
- first hitch means mounted to the transverse member for attachment to the pulling tongue of a first transverse agricultural implement located behind the first frame;
- bracket means mounted at the rear end of said longitudinal member for direct attachment to an adjacent side of said first implement;
- a tongue mounted to the first rigid horizontal frame and extending forwardly therefrom, said tongue having a front end with means thereon for towing attachment to a powered vehicle;
- a second rigid horizontal frame comprising first and second members joined at substantially right angles to one another, said first member having an outer end pivotally connected to the rear end of the longitudinal member of said first frame about an upright axis;
- second hitch means mounted to the second member for attachment to the pulling tongue of a second transverse agricultural implement located behind the second frame;
- and means operably connected between said first and second frames for alternately locating the second frame about said second upright axis relative to said first frame between a first angular position in which the second member is laterally offset and substantially parallel to the longitudinal member of said first frame, and a second angular position in which said second hitch means is spaced rearward from said first hitch means and in longitudinal alignment therewith.

4,213,629

BRAKE FOR SKIS

Erwin Krob, Vienna, and Josef Svoboda, Schwechat, both of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Mar. 27, 1978, Ser. No. 890,790
Claims priority, application Austria, Apr. 4, 1977, 2320/77
Int. Cl.² A63C *11/02*
U.S. Cl. 280—605 **8 Claims**



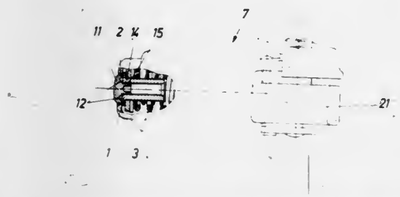
1. A device for securing the skis of a pair together, each of said skis having a pair of longitudinal edges, comprising:
- a ski brake mounted on the upper surface of each of said skis, each of said ski brakes having a braking arm projecting in the braking position thereof beneath the bottom surface of said ski and along a longitudinal edge of said ski and at an acute angle to a plane defined by the upper surface of said ski; and
- elastically deformable means on said braking arm projecting from a first surface thereof, said first surface on a first braking arm associated with a first ski engaging a second surface on a second braking arm associated with a second ski when said first and second skis are positioned bottom-to-bottom, said first and second braking arms thereby defining a cross, said elastically deformable means on said first braking arm being in an undeformed condition thereof on a side of said second braking arm remote from said first ski to thereby hold said skis together in said bottom-to-bottom position.

4,213,630

SPRING LOCKING DEVICE

Josef Svoboda, Schwechat; Herbert Wuerthner, Hainburg, and Karl Stritzl, Vienna, all of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Apr. 26, 1978, Ser. No. 900,302
Claims priority, application Austria, Apr. 27, 1977, 2929/77
Int. Cl.² A63C *9/08*
U.S. Cl. 280—634 **2 Claims**



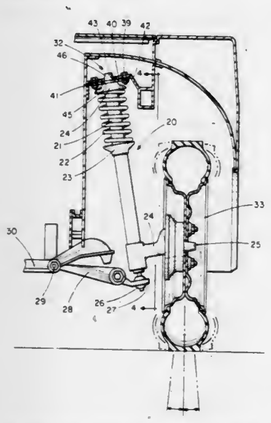
1. The combination of a release ski binding having a housing and an adjustable spring abutment thereon for changing the effective force of a spring in said ski binding housing, said adjustable spring abutment being initially exposed through an opening in said ski binding housing, and a seal member of brittle material for indicating that an adjustment of said adjustable spring abutment has taken place subsequent to an authorized adjustment thereof, said seal member being received in said opening in said ski binding housing directly in the pathway to said adjustable spring abutment, first means defining a slot on said adjustable spring abutment, second means defining a forced fit connection of said seal member in said slot for securely holding said seal member in said pathway to prevent ready access to said adjustable spring abutment, said seal member having at least two extensions thereon and at least one outwardly facing readily visible preset breaking point located adjacent said forced fit connection and said extension means, said forced fit connection of said seal member in said slot being of sufficient strength such that said seal member cannot be removed without destruction occurring at said readily visible preset breaking point.

4,213,631

VEHICLE WHEEL ALIGNMENT ADJUSTMENT DEVICE

Edward D. Wilkerson, P.O. Box 755 South Court, Normandy Beach, N.J. 08739

Filed Jun. 22, 1978, Ser. No. 918,199
Int. Cl.² B62D *17/00*
U.S. Cl. 280—661 **8 Claims**



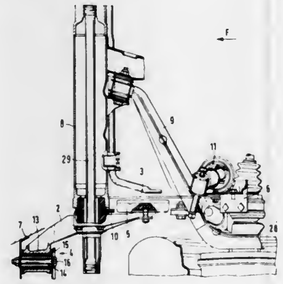
1. An adjustment assembly for varying the attitude of a wheel spindle about the steering axis of a vehicle wherein the spindle is supported on a lower control member with a compressible strut of the MacPherson type between the lower control member and the upper control member, comprising; an opening in the upper control member of sufficient size to permit lateral adjustment of the strut, a plurality of removable fastener means carried by the upper control member, and plate means secured by said fastener means to said upper control member engaging said strut to determine the angular position of the strut and the attitude of the wheel spindle, said plate means being flat and having a circular opening for engaging and laterally supporting the upper end of the MacPherson strut.

4,213,632

REAR AXLE SUSPENSION

Erich Stotz, Rommelshausen, and Rolf Sivers, Warmbronn, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 16, 1978, Ser. No. 933,982
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736826
Int. Cl.² B60G *11/44*
U.S. Cl. 280—697 **15 Claims**



1. In a rear axle suspension for vehicles, especially automotive vehicles, with independently spring-suspended wheels that are braced against a bolster by torsion spring elements, whereby the bolster is elastically connected with the vehicle frame or body, the improvement wherein the bolster comprises forward and rear supports which run in the longitudinal direction of the vehicle, whereof the forward support, as seen in the direction of travel, is made as a rigid part, elastic bearings being provided by which the resilient member is braced on the vehicle body and insulated from vibration, and the rear support is formed by a resilient member that is elastic crosswise to the direction of vehicle travel, a further elastic bearing being provided by which the resilient member is connected to the vehicle body to take up vibration and torque.

4,213,633

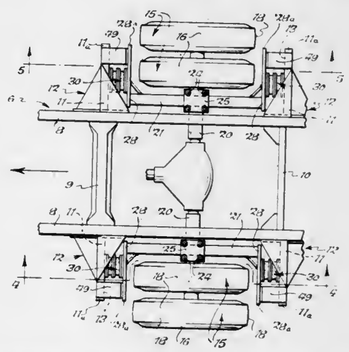
TWO-STAGE VEHICLE SPRING SUSPENSION

Robert G. Moore, Wilroy Acres, R.D. #4, Elkhart, Ind. 46514

Continuation of Ser. No. 745,706, Nov. 29, 1976, abandoned.
This application Jun. 29, 1978, Ser. No. 920,494
Int. Cl.² B60G *11/22*
U.S. Cl. 280—716 **3 Claims**

1. A two stage vehicle spring suspension adapted to be interposed between a vehicle frame having a longitudinal centerline, and a single axle supported by rubber tired wheels at its opposite ends, and comprising a torsionally rigid axle beam generally parallel with said centerline and fixed at its center to each axle end along the side of its tire toward said centerline and its ends being arranged adjacent the tread of its tire, a frame bracket secured to said frame to project outwardly to be in alinement with each end of each beam and the tread of each tire, and an axle bracket fixed to each beam end and

interposed between the companion tire tread and each frame bracket; wherein the invention comprises a vertically acting rectilinear movement first stage shear rubber spring interposed between and fixed to each pair of said frame and axle brackets a first distance from said centerline, a vertically acting second stage compression spring of predetermined effective height alongside each shear rubber spring and fixed to one of each pair of said brackets, said predetermined effective height being such as to cause said compression springs to come into operative relation with the other of each pair of said brackets when



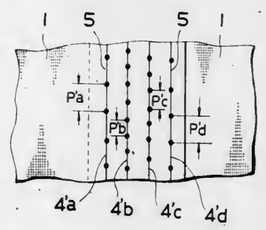
a predetermined load is imposed on said frame, and said compression springs being arranged a second distance from said centerline, said second distance being greater than said first distance and all of said springs being arranged generally in the same horizontal plane whereby said compression springs are outboard from said shear springs to provide wider effective spring centers for said frame under heavy load conditions and thereby reduce sidesway and the danger of roll over of the frame when loaded but to be substantially ineffective when the frame is empty and thereby provide a soften empty body ride.

4,213,634

CONSTRUCTION OF STITCHING PORTIONS OF GAS BAGS

Tadayoshi Hoshino, Okazakishi, and Yoichi Sudo, Toyotashi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Feb. 5, 1979, Ser. No. 9,680
Claims priority, application Japan, Feb. 6, 1978, 53/012644
Int. Cl.² B60R *21/08*
U.S. Cl. 280—728 **8 Claims**



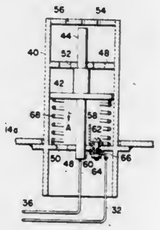
1. In an inflatable gas safety bag system for use in the protection of passengers in motor vehicles in the event of collision, including a gas bag and means for rapidly inflating said bag with a gas upon collision, the improvement comprising the gas bag being formed of overlapping fabric pieces sewn together along stitch margins with a plurality of laterally spaced rows of stitches, the improvement comprising means to substantially uniformly distribute tensile load, on inflation of said bag, among said spaced rows of stitches, said means comprising at least three said rows of stitches wherein the middle of said rows of stitches has a relatively fine stitch pitch and the outer of said rows of stitches have relatively coarse stitch pitches.

4,213,635

TWO-STAGE AIR BAG SYSTEM

Nobuyuki Inokuchi, Toyota, and Kouzo Hamada, Okazaki, both of Japan, assignors to Toyota Kodosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 807,328, Jun. 16, 1977, abandoned.
This application Nov. 13, 1978, Ser. No. 960,005
Int. Cl.² B60R *21/08*
U.S. Cl. 280—737 **2 Claims**



1. A two-stage air bag system for a vehicle comprising:
- a housing having one open end, said housing further being divided into two chambers which are adjacent to each other;
- a first pressure device comprising a solid gas producing material provided in one of the two chambers;
- a second pressure device comprising a solid gas producing material provided in another one of the two chambers;
- a first ignition means for igniting said solid material at the first pressure device, said means causing ignition when an emergency condition occurs;
- a filter means provided on said housing enclosing said open ends;
- an air bag coupled to said housing about said open ends;
- a delayed ignition signal generator being provided in said solid gas producing material of said first pressure device in one of said chambers, said delay ignition signal generator comprising a switch means that turns on when a pressure generated by said gas producing material of said first pressure device applied to said switch means exceeds a predetermined value, said switch means comprising:
  - a case,
  - a movable contact slidably disposed in said case,
  - a fixed contact provided in said case, and
  - a spring means for biasing said movable contact away from said fixed contact; and
- a second ignition means responsive to said delayed ignition signal generator for igniting said solid material of said second pressure device.

4,213,636

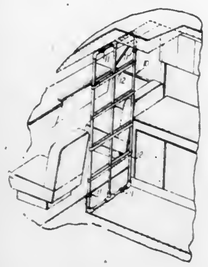
SAFETY BARRIER FOR A VEHICLE

William B. King, 5024 Buchanan St., Hollywood, Fla. 33021

Filed Sep. 18, 1978, Ser. No. 943,459
Int. Cl.² B60R *21/10*
U.S. Cl. 280—749 **5 Claims**

1. A safety barrier for preventing passengers from being projected to a forward compartment in vehicle from an aisle thereof, said barrier comprising a frame element of appropriate shape and dimension to extend from the ceiling to the floor and across the width of the aisle in the vehicle and a plurality of

horizontally extending endless elastic bands extending across the frame and being spaced vertically apart to prevent a stand-



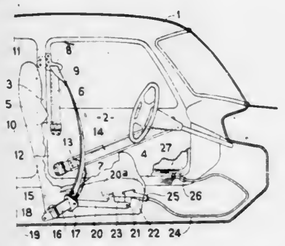
ing passenger from being projected into the forward compartment but to allow the passenger to climb therethrough.

4,213,637

PASSIVE SAFETY BELT FOR AN AUTOMOBILE VEHICLE

Gerard Maûron,. Versailles, France, assignor to Automobiles Peugeot and Societe Anonyme Automobiles Citroen, both of Paris, France

Filed Dec. 5, 1978, Ser. No. 966,569
Claims priority, application France, Dec. 15, 1977, 77 37892
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **11 Claims**



1. A safety device in combination with a seat and a vehicle body having a pivotal door for retaining an occupant of the vehicle on the seat, the device comprising a belt, a support rigid with the vehicle body, an arm, a pivotal connection connecting the arm to the support,

the pivotal connection being located on a side of the seat opposed to the door of the vehicle and adjacent a front end of the seat, a belt holding member carried by the arm adjacent a free end of the arm and carrying a portion of said belt, a transmission connecting the arm to the door and comprising a lever pivotally mounted on a lateral part of the vehicle body adjacent the door, means operatively connecting the lever to the door to pivot the lever as the door is opened, and a cable connecting the arm to the lever, the arm being pivotal between an upper position

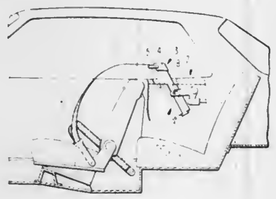
in which a line through the pivotal connection and the belt holding member is substantially vertical and a lower position in which the belt holding member is lowermost for retaining the occupant of the seat, the lower position corresponding to the closed position of the door, the transmission being arranged to ensure that the angular velocity of displacement of the arm for a given velocity of the pivotal movement of the door is higher in a first half of its movement than in a last half of its movement from said lower position to said upper position.

4,213,638

INSTALLATION FOR CHANGING THE POSITION OF AN UPPER FASTENING OR DEFLECTION POINT OF A SAFETY BELT

Bruno Sacco; Walter Dalheimer, both of Sindelfingen, and Friedrich Schwarz, Deckenpfronn, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 22, 1978, Ser. No. 935,961
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738140
Int. Cl.² B60R *21/10*
U.S. Cl. 280—808 **19 Claims**



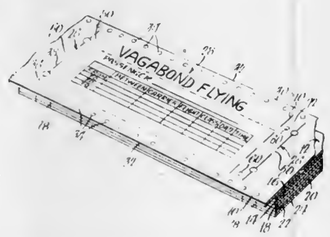
1. An installation for changing the position of the upper fastening or deflection point of a safety belt, including a deflection fitting means and means for bearing said deflection fitting means and for changing the position of said deflection fitting means from a lower rest position to a raised use position at least during the period while the safety belt is being used, said deflection fitting means being provided at the upper end of the bearing and position-changing means, and, the bearing and position-changing means being covered off by an inner side wall covering means while in said lower rest position and projecting beyond the side wall covering means while in said raised use position at least during the period while the safety belt is being used.

4,213,639

CONTINUOUS BUSINESS FORM ASSEMBLY

Howard Absler, Skokie; Joseph Juszak, and Thomas Gore, both of Crystal Lake, all of Ill., assignors to Uarco Incorporated, Barrington, Ill.

Filed Sep. 11, 1978, Ser. No. 941,006
Int. Cl.² B41L *1/26*
U.S. Cl. 282—11.5 A **1 Claim**



1. A continuous business forms assembly comprising:

a plurality of superimposed plies of paper each having a face and a back, the face of each ply being uppermost, there being an uppermost ply, a lowermost ply and a plurality of intermediate plies;

the uppermost ply in said assembly being wider than the remainder of said plies and having punched margins displaced from the corresponding margins of the remainder of said plies to provide feeding means for feeding the assembly thru a printing device;

a plurality of first lines of weakening extending across said plies at regular intervals to define a plurality of individual form lengths of said assembly, each said first line of weakening being defined by a plurality of aligned, but separate, slits extending across all of said plies and through the same between the margins of said remainder of said plies but not in the margins of said uppermost ply, and holes in the intermediate plies of said assembly interconnecting the ends of adjacent ones of said slits;

a plurality of second lines of weakening in all of said plies on one side of corresponding first lines of weakening and closely adjacent thereto to define first stubs on each form length at one end thereof;

means between each said first and second line of weakening for securing the plies in assembled relation;

a plurality of third lines of lines of weakening in said remainder of said plies on the sides of corresponding ones of said first lines of weakening opposite said second lines of weakening, said third lines of weakening being closely adjacent corresponding first lines of weakening to define second stubs on each form length at the end thereof opposite said first stubs, said second stubs being only in said remainder of said plies;

means between said first and third lines of weakening securing said remainder of said plies in assembled relation and to said uppermost ply;

additional feeding means extending thru the plies of said assembly in one of said first and second stubs;

indicia on the faces of at least some of said plies in each form length for receiving variable information at designated locations; and

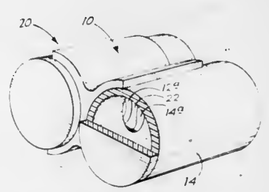
an image transfer medium at the interfaces of said plies for transfering variable information mechanically applied to the face of said uppermost ply to at least some of the underlying plies in each of said form lengths.

4,213,640

COUPLING FOR INTERCONNECTING CONDUITS

Alfred Miles, 4070 Westcliff Dr., Hood River, Oreg. 97031

Filed May 4, 1978, Ser. No. 902,985
Int. Cl.² F16L *39/00*
U.S. Cl. 285—137 R **7 Claims**



1. An assembly of interconnected conduits comprising:

a first cylindrical conduit having an aperture extending through its wall thickness;

a second cylindrical conduit disposed adjacent said first cylindrical conduit having an aperture extending through its wall thickness; and

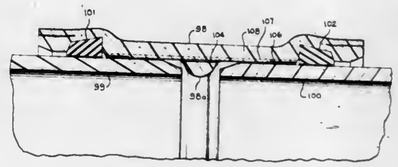
coupling means interconnecting said apertures formed as a unitary member having a first wall surface contoured as a cylindrical portion for mating with said first cylindrical conduit and a second, opposed wall surface also contoured as a cylindrical portion for mating with said second cylindrical conduit, said wall surfaces being separated by a thickness through which a substantially unobstructed passage extends, said passage being aligned with said apertures, said first and second conduits being separated by said wall thickness, means for sealing and securing said unitary member to said conduits and for permitting fluid flow through said passage between said first and second cylindrical conduits.

4,213,641

FILAMENT WOUND PIPE COUPLING

Joe B. Bennett, Conroe, Tex., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 29, 1977, Ser. No. 865,561
Int. Cl.² F16L *21/02, 47/00*
U.S. Cl. 285—369 **5 Claims**



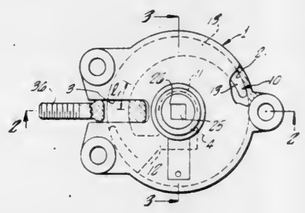
1. A pipe coupling comprising a generally cylindrical, hollow, glass fiber reinforced thermosetting resin body and a glass fiber reinforced thermosetting resin pipe registering means projecting radially inwardly from the body substantially midway between opposite end faces thereof, the body and the pipe registering means each containing glass filament windings, the body having a pair of inner annular grooves respectively adjacent the opposite end faces for the reception of sealing rings, the body having been formed around the pipe registering means immediately after the forming of the pipe registering means and cured simultaneously therewith, and the pipe registering means being separate from but substantially contiguous with the body.

4,213,642

ROTARY LATCH AND METHOD OF OPERATION

L. Richard Poe, Long Beach, and William R. Bourne, Redondo Beach, both of Calif., assignors to Hartwell Corporation, Placentia, Calif.

Filed Feb. 12, 1979, Ser. No. 11,193
Int. Cl.² E05C *3/04*
U.S. Cl. 292—241 **9 Claims**



1. A rotary latch for engaging a panel comprising:

rotatable means for latching and unlatching a keeper carried by said panel;

control sleeve means for axially sliding between a first retracted position, in which the outer surface of said control sleeve means is flush with said panel, and a second protruding position, in which said outer surface of said control sleeve means protrudes from said panel;

means for operatively connecting said rotatable means for latching and said control sleeve means;

means for restraining said control sleeve means in said first retracted position and restraining said rotatable means in a latching position;

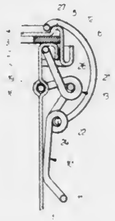
means for restraining said control sleeve means in said second protruding position and for restraining said rotatable means in an unlatching position upon rotation of said control sleeve means; and

means for secondarily restraining said control sleeve means and restraining said rotatable means in said latching position.

4,213,643
KNEE LEVER LOCK FOR AIR FILTER COVERS AND THE LIKE

Karl Blind, Erdmannhausen, and Arthur Klotz, Neckargröningen, both of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,220
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802006
Int. Cl.[2] E05B *5/04*
U.S. Cl. 292—247 **6 Claims**



1. A knee lever lock for the creation of a quickly releasable clamping connection between two machine elements, as, for example, between the housing and the housing cover of the air intake filter of an automobile engine, the lock comprising in combination:

an elongated hook member having an attached extremity and a free extremity, the attached extremity being a pivot formation and the free extremity being a hook formation adapted to engage one of the two machine elements in the sense of pulling it in the direction of a force line which runs from the hook formation engagement point to the pivot formation of the attached extremity of the hook member;

an elongated knee lever having likewise an attached extremity and a free extremity, as well as an intermediate pivot formation engaged by the pivot formation of the attached extremity of the hook member, thereby forming a hook member pivot axis which is oriented transversely to said force line, the attached extremity of the knee lever being a pivot formation for a knee lever pivot axis which is parallel to the hook member pivot axis, and its free extremity being manually engageable for lock opening and closing displacements of the knee lever about its pivot axis;

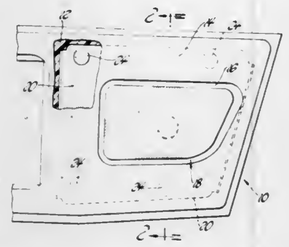
a knee lever stop determining the position of the knee lever in the closed position of the lock; and

a pivot anchor having a generally U-shaped outline comprising a yoke portion and two spaced leg portions, the leg portions having angled-off anchoring extremities which are adapted to be snapped into and retained by matching transverse apertures in an outside wall of the other one of the two machine elements, the pivot anchor further including aligned pivot formations in its leg portions, intermediate of their anchoring extremities and the yoke portion, said aligned pivot formations being engaged by the pivot formation of the attached knee lever extremity, thereby determining the location of the knee lever pivot axis, said location being longitudinally between the hook member pivot axis and the hook formation engagement point and at such a distance from the transverse wall apertures of said other machine element that, when the knee lever rests against the knee lever stop, in the closed position of the lock, said force line of the hook member extends between the hook member pivot axis and the transverse wall apertures.

4,213,644
ENERGY-ABSORBING BUMPER ASSEMBLY

Jerry V. Scrivo, Durham, and John V. Maloney, Dover, both of N.H., assignors to McCord Corporation, Detroit, Mich.

Filed Aug. 17, 1978, Ser. No. 934,359
Int. Cl.[2] B60R *19/08*
U.S. Cl. 293—117 **13 Claims**



1. An automotive body assembly comprising; support structure, bumper means of elastomeric material for compressing to absorb energy in response to an impact, said elastomeric bumper means supported by said support structure forwardly thereof for compression against said support structure, said bumper means having a front face and a recess extending thereinto, light means disposed in said recess and recessed from said front face, and support means connected to said light means and supported by said elastomeric material of said bumper means for moving solely in response to the compression of said elastomeric material of said bumper means to move said light means and to thereafter return said light means to the initial position as said elastomeric material returns to the initial position.

4,213,645
ONE-PIECE HINGED GUARD

Edward A. Ruhl, Southfield, Mich., assignor to USM Corporation, Farmington, Conn.

Filed Jun. 13, 1978, Ser. No. 915,134
Int. Cl.[2] B60R *19/02*
U.S. Cl. 293—145 **6 Claims**

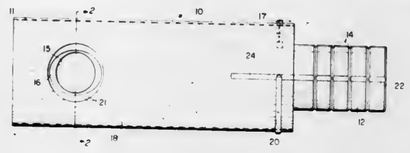


1. A one-piece molded plastic guard comprising a pair of generally U-shaped sections one of which is foamed and the other of which is non-foamed, the sections being interconnected by a non-foamed hinge portion along a common edge, the foamed section being adapted to be secured to mounting structure and comprised of spaced, compartment-forming ribs defining air pockets, having energy dissipating properties, and the non-foamed section being closeable on the foamed section and said ribs to provide resistance to impact and protection for said structure.

4,213,646
RADIOACTIVE SOURCE MANIPULATOR AND STOWAGE DEVICE

Charles A. Burton, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1979, Ser. No. 42,836
Int. Cl.[3] B25B *11/00*
U.S. Cl. 294—86 A **6 Claims**



1. A radioactive source manipulator and stowage device comprising:

a cylindrical body;

a transversely disposed socket formed near one end of said cylindrical body for receiving a radioactive source;

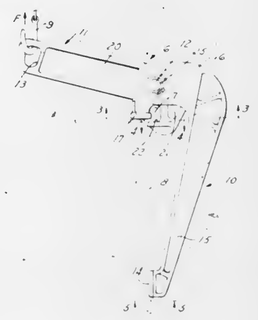
a cylindrical sleeve rotatably mounted on said cylindrical body; and

an aperture formed in the wall of said sleeve whereby rotation of said sleeve to axially align said aperture with said socket will permit a radioactive source to be inserted into and removed from said socket and rotation of said sleeve to move said aperture out of alignment with said socket when the socket contains a radioactive source readies the device for manipulation and stowage.

4,213,647
DRUM LIFTER

Elmer T. Thurmond, Jr., Miami, Fla., assignor to Equipment Company of America, Hialeah, Fla.

Filed Apr. 19, 1978, Ser. No. 897,577
Int. Cl.[2] B66C *1/66*
U.S. Cl. 294—90 **1 Claim**

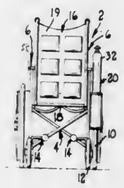


1. For a drum having a shell, top and bottom ends, and a drum chime extending outwardly from each end, a drum lifter for suspending said drum, said drum lifter comprising a lifting arm pivotally connected to a stabilizing arm by a pivot pin, said pivot pin having a pivot axis, said lifting arm being generally L-shaped and having a long arm portion and a short arm portion, the longitudinal axis of said long arm portion being generally transverse to the longitudinal axis of said short arm portion, said lifting arm having a gripping surface on one end and an opening on its other end, said stabilizing arm being generally L-shaped and having an elongated arm portion and a short wide arm portion, the longitudinal axis of said elongated arm portion being generally transverse to the longitudinal axis of said short wide are portion, said short wide are portion being bifurcated into support sections, a flat gripping pad being mounted to the ends of said support sections, a stabilizing pad being mounted to one end of said stabilizing arm, said pivot pin passing through said lifting arm and being pivotally mounted to each of said support sections of said short wide arm portion of said stabilizing arm, said pivot pin axis being located directly above one of said drum chimes when said drum lifter is positioned for lifting of said drum and a lifting force being applied to said opening in said long arm portion, and a plane through the pivot axis of said pivot pin being parallel to the longitudinal axis of said drum and substantially bisecting said one drum chime, said flat gripping pad of said stabilizing arm applying substantially only a vertical bearing force against the end of said drum near said one drum chime, and said gripping surface of said lifting arm applying only a vertical force against the underside of said one drum chime, said vertical force against the end of said drum and said vertical force against the underside of said one drum chime substantially eliminating any horizontal force components against said one drum chime.

4,213,648
OXYGEN TANK HOLDING DEVICE FOR WHEELCHAIRS

Clemons P. Steichen, 1349 Prosperity Ave., Saint Paul, Minn. 55106

Filed Aug. 17, 1978, Ser. No. 934,399
Int. Cl.[2] A47C *7/62*
U.S. Cl. 297—188 **11 Claims**



1. An improved wheelchair of the type having a frame including two oppositely disposed sides; each side including a support member having means for detachably mounting a foot rest thereon; a plurality of wheels attached to the frame to allow movement of the wheelchair; and patient support means attached to the frame for supporting a patient therein; and wherein the improvement comprises:

at least one oxygen tank holding device configured to releasably support an oxygen tank therein, and wherein the holding device has means for detachably connecting the holding device to the foot rest mounting means on at least one of the support members.

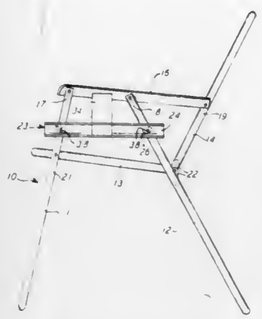
4,213,649
DRINK CONTAINER HOLDER

Sanford S. Sell, 1632 Holmes Ave., Racine, Wis. 53405

Filed Nov. 17, 1978, Ser. No. 961,616
Int. Cl.[2] A47C *7/62*
U.S. Cl. 297—189 **7 Claims**

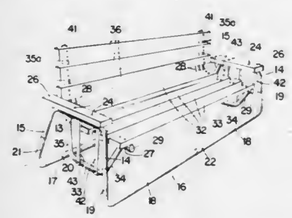
1. An item supporter for a chair having two spaced-apart legs on a side thereof, comprising an item support member including a horizontal portion for supporting items thereon and including an upright portion, two fasteners spaced apart on said upright portion and being pivotally connected thereto by a rivet for pivotal movement of each of said fasteners about the axis of its said rivet, said fasteners including clamp means for attaching to each of said chair legs and have said item support

member extend away from said chair legs with said horizontal portion horizontally disposed, said item support member being C-shaped in end view to present an additional horizontal portion disposed above the first-mentioned said horizontal portion



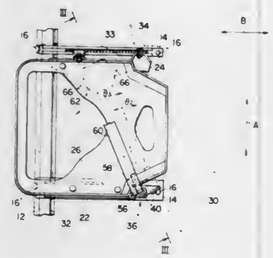
and with said upright portion extending between said horizontal portions, and said additional horizontal portion having openings therein for receiving said items extending therethrough and being supported on the first-mentioned said horizontal portion.

4,213,650
GLIDER
Joseph W. Sroub, Parma, Ohio, assignor to Production Experts, Inc., Cleveland, Ohio
Filed Jan. 5, 1979, Ser. No. 1,182
Int. Cl.[2] A47D *13/10*; A47C *7/00*
U.S. Cl. 297—281 **5 Claims**



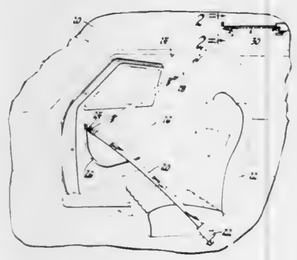
1. In a glider of the character described, a glider seat and back having spaced, longitudinally extending slats, longitudinally-spaced tubular members supporting said slats, and a support frame for said glider seat and back, said frame comprising transversely-spaced tubular U-shaped members disposed in planes which converge toward each other in an upward direction, each of said U-shaped members having a longitudinally-extending floor engaging portion parallel with said slats, and longitudinally-spaced tubular inverted U-shaped members having downwardly-extending divergent arms in alignment with the arms of said transversely-spaced U-shaped members and connected thereto.

4,213,651
SEATBELT SYSTEM
Noritada Yoshitsugu; Masanao Motonami, and Mitsuaki Katsuno, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan
Filed Jan. 4, 1979, Ser. No. 875
Claims priority, application Japan, Mar. 24, 1978, 53-38185
Int. Cl.[2] A62B *35/00*
U.S. Cl. 297—475 **8 Claims**



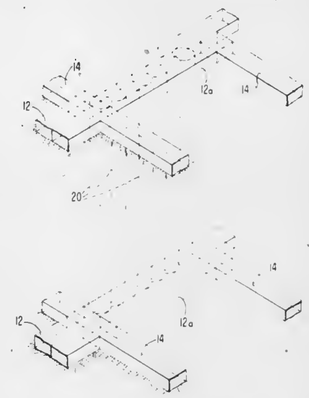
1. A seatbelt system for a vehicle comprising:
a passenger seat;
a passenger-restraining seatbelt;
a belt-turning member which is installed on the rear portion of one side of said passenger seat and around which an intermediate portion of said seatbelt is turned so that said seatbelt is extended underneath said passenger seat; and
a retracting mechanism which is fastened to a bottom of said pasenger seat near the opposite side of said seat from said belt-turning member and retracts an end of said seatbelt extended underneath said seat, so that the axis of the portion of said seatbelt extending from said belt-turning member to said retracting mechanism is obliquely oriented with respect to the transverse axis of said vehicle.

4,213,652
LINEAR LOCKING SEAT BELT RETRACTOR
Clarence C. Irwin, Sterling Heights; David F. Manz, Bloomfield Hills, and John T. Auman, Washington, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 12, 1978, Ser. No. 914,621
Int. Cl.[2] A62B *35/00*; B60R *21/10*
U.S. Cl. 297—478 **3 Claims**



1. Mechanism for retracting a seat belt and locking the belt against extension comprising:
a track;
a belt carriage having the belt attached thereto and being mounted on the track for movement therealong in the belt extending direction and the belt retracting direction;
locking means mounted on the belt carriage and adapted for actuation to a locked position engaging the track to lock the belt carriage against belt extending movement along the track;
a reel;
a flexible element having one end wound on the reel and the other end attached to the locking means;
a winding spring rotating the reel in the direction to wind the flexible element and urge movement of the carriage along the track in the belt retracting direction;
and reel locking means associated with the reel to lock the reel against rotation in the flexible element unwinding direction whereby the flexible element actuates the locking means to the locked position to lock the carriage against belt extending movement along the track.

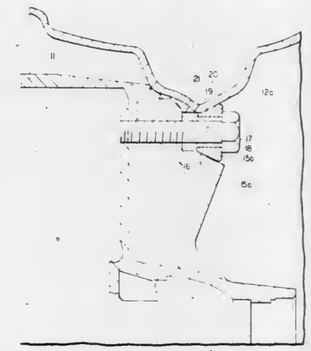
4,213,653
METHOD OF MINING OF THICK SEAM MATERIALS
James D. Grenia, Concord, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.
Filed Apr. 17, 1978, Ser. No. 896,824
Int. Cl.[2] E21C *41/00*
U.S. Cl. 299—11 **11 Claims**



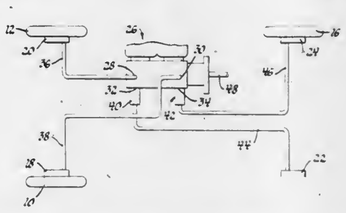
1. A method of mining a thick seam resource material below an overburden comprising: forming a first pair of vertically spaced, generally vertically aligned drifts in the seam; forming a series of overlapping holes in the material of the seam with the holes extending between the drifts; removing the material extracted by the forming of the holes; filling the holes and the first pair of drifts with a load-bearing material to form a bearing wall for use in supporting the overburden; forming, successively, additional pairs of vertically spaced, generally vertically aligned drifts adjacent to respective walls in previously formed drift pairs; and repeating, for each additional pair of drifts, respectively, the hole forming, removing and filling steps to mine a respective part of the seam and to form a respective bearing wall adjacent to a previously formed bearing wall.

4,213,654
WHEEL RIM WITH NON-SLIP INTERLOCKING DEVICE
Mitchell J. Furrow, 130 S. Philadelphia St., Anaheim, Calif. 92805
Continuation-in-part of Ser. No. 714,842, Aug. 16, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,872
Int. Cl.[2] B60B *23/00*
U.S. Cl. 301—20 **3 Claims**

1. A wheel and rim assembly for a mobile home trailer comprising a wheel hub having a plurality of circumferentially spaced axially extending raised portions on a front face of the wheel hub adjacent the outer periphery of the wheel hub and each raised portion has a threaded bore, said wheel rim comprising an annular member having a substantially channeled section including a web portion defining an inner periphery of said annular member, said inner periphery having a radially directed surface which is mountable upon said wheel hub, means on said inner periphery radially directed surface comprising a plurality of recesses corresponding in number and peripheral spacing to the plurality of raised portions and surfaces of said recesses engageable with the raised portions for interlocking with a wheel hub to prevent relative rotary movement therebetween, portions of said wheel hub radially inwardly of said raised portions protruding axially outwardly of said hub raised portions, a clamp bolt received within said threaded bore, and a clamp having an opening to receive said clamp bolt therethrough and tapering portions of said clamp opposed from each other across said opening engaging radially spaced diverging outwardly areas on said rim and said axial protruding portions of said hub when said clamp bolt is tightened and wedged between said diverging areas to lock the rim upon the wheel hub.



4,213,655
MASTER CYLINDER ASSEMBLY AND BRAKE SYSTEM INCORPORATING SAME
David L. Brademeyer, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 16, 1978, Ser. No. 951,586
Int. Cl.[2] B60T *13/00*
U.S. Cl. 303—6 C **5 Claims**

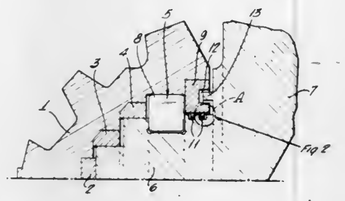


1. A universal master cylinder assembly adapted for installation in a location easily accessible for servicing thereof, and having
a housing having an axially extending body with an axially extending bore formed therein,
a plurality of hydraulic fluid pressurizing pistons in said bore and defining in conjunction with said bore a plurality of hydraulic fluid pressurizing chambers,
a plurality of bosses integrally formed as part of said housing and extending outwardly therefrom generally perpendicular to said housing body,
a hydraulic fluid reservoir,
inlet means in at least one of said bosses connecting said reservoir to said bore to provide hydraulic fluid to said

pressurizing chambers and to receive hydraulic fluid from said pressurizing chambers under certain conditions,
and outlet passage means extending through at least another one of said bosses and formed in said housing and including at least one outlet passage for each of said pressurizing chambers, each of said at least one outlet passages having one end opening into and communicating continuously with one of said pressurizing chambers and another end opening exteriorly of said housing boss through which said outlet passage extends, said another end circumferentially and radially oriented in said housing boss for easy access thereto when said housing is installed in said location, said another end being internally threaded to receive universally any one of a plurality of proportioner assembly means interchangeable in said housing to form said assembly irrespective of installation of said housing in said location;
at least one proportioner assembly means including
an axially extending housing having a bore extending axially therethrough providing an inlet and an outlet at opposite bore ends, said housing having a plurality of circumferentially arranged and axially extending flat outer surfaces for receiving a tool such as a wrench, and also having one end with said inlet extended therethrough formed with external threads,
said threaded one end of said proportioner assembly means housing extending and threaded into one of said outlet passages through said threaded another end thereof and being removably secured to said master cylinder assembly housing, said flat outer surfaces providing a purchase for a tool used in installation and removal of said proportioner assembly means,
and pressure proportioning valve means in said proportioner housing bore intermediate said inlet and said outlet for porportioning pressure therethrough within a predetermined pressure range,
at least the one of said outlet passages having the one of said proportioner assembly means secured thereto directly at said outlet passage another end providing continuous hydraulic fluid communication for delivery of hydraulic fluid pressure from at least one of said pressurizing chambers through said at least one outlet passage and through said one proportioner assembly means and thus providing only one additional possible connection leak point in the circuitry served by one of said pressurizing chambers as compared to similar circuitry having no proportioner assembly
therein,
said one proportioner assembly means being removable and replaceable by use of a tool used on said outer surfaces for service when said housing is installed in said location as well as for interchangeability of a proportioner assembly means having different proportioning characteristics irrespective of installation of said housing in said location.

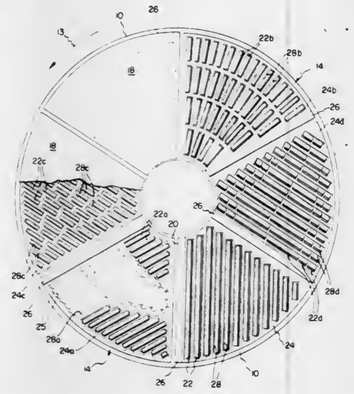
4,213,656
DRILLING BIT
Armin Olschewski, and Wolfgang Hüber, both of Schweinfurt, Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Sep. 22, 1978, Ser. No. 944,968
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743825
Int. Cl.[2] F16C *33/80*
U.S. Cl. 308—8.2 **6 Claims**

1. A rotary drilling bit having at least one cutter rotatably supported in a rolling bearing on a trunnion of a drilling bit body, an edge ring provided with a seal fixed in the bored hole of the rotary cutter between rollers of the rolling bearing and the drilling bit body and axially retains the rollers in one direction, characterized in that the edge ring has a machined surface which faces the outside surface of the trunnion defining therebetween a narrow annular gap and in that the seal consists of at least one radially held seal ring arranged in said annular gap; and wherein the side surfaces of the seal ring are provided with spiral grooves which pump outwardly; and wherein the front surface of the edge ring which faces the drilling bit body has an



annular recess defined by two longitudinally extending flanges into which a corresponding axial projection of the drilling bit body engages to form a labyrinth seal.

4,213,657
COMPLIANT HYDRODYNAMIC BEARING WITH TUBULAR SUPPORT ELEMENT
Stanley Gray, Skaneateles, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.
Filed Dec. 29, 1978, Ser. No. 974,257
Int. Cl.[3] F16C *32/06, 39/04*
U.S. Cl. 308—9 **11 Claims**

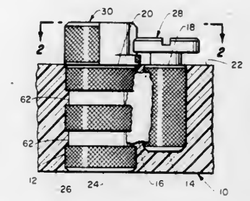


1. A compliant, hydrodynamic, fluid film bearing, comprising:
a stationary member and a relatively rotating rotor having a bearing surface, said stationary member and said bearing surface defining therebetween a gap for receiving a composite bearing assembly
a composite bearing assembly received within said gap including a plurality of tubular resilient support elements, a cage member for holding said tubular elements in position, and a bearing sheet overlying and resiliently supported by said tubular support elements.

4,213,658
TOOL GUIDE BUSHING MOUNTING ASSEMBLY
Nathan O. Shaw, Glendale, Calif., assignor to All American Products Company, Inc., Glendale, Calif.
Filed Jun. 11, 1979, Ser. No. 47,547
Int. Cl.[3] F16C *35/02*
U.S. Cl. 308—15 **1 Claim**

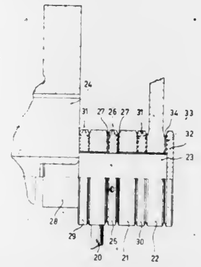
1. A bushing mounting assembly for molding in place in a jig comprising:
a cylindrical liner having a bore therethrough;
a threaded cylindrical sleeve positioned adjacent to said liner with the end of said sleeve in planar alignment with the end of said cylindrical liner;

adhesive means securing said sleeve permanently to said liner;
a locking screw in said threaded sleeve whereby said bush-



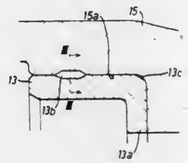
ing assembly may be molded in place in a jig with the ends of the liner being flush with the top and bottom surfaces of said jig, said bushing liner assembly adapted to receive slip or fixed renewable bushings or combinations thereof.

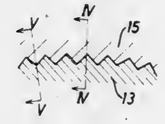
4,213,659
CONNECTING ROD BEARING ARRANGEMENT
Leonardus P. M. Tielemans, and Johannes A. G. de Deugd, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 22, 1978, Ser. No. 880,097
Claims priority, application Netherlands, Feb. 22, 1977, 7701855
Int. Cl.[2] F16C *3/14*
U.S. Cl. 308—167 **1 Claim**



1. A bearing arrangement for a connecting rod journalled on a crankshaft pin comprising:
a crankshaft having a crank pin and an elongated cylindrical journal disposed on said pin, a generally planar crankshaft surface substantially perpendicular to and adjoining an axial extremity of said journal,
a plurality of connecting rods each having a big end and an elongated plain cylindrical bearing seated in said big end which cooperates with said cylindrical journal with said plain cylindrical bearings disposed in coaxial relationship; each of said big ends having a generally planar connecting rod surface substantially perpendicular to said cylindrical bearing at each axial extremity thereof, said crankshaft further including a plurality of lubricant supply members rigidly fastened to said crank pin each lubricant supply member of said plurality of lubricant supply members being located intermediate two of said connecting rods, each supply member having first and second axial extremities, each axial extremity of said member including a generally planar surface having shallow lubricant pumping grooves cooperating with one of said generally planar surfaces of said connecting rods which are disposed on each side of each of said lubricant supply members; both sides of said lubricant supply member being beveled around the outer circumference thereof to form a tapered circumferential groove for retaining lubricant.

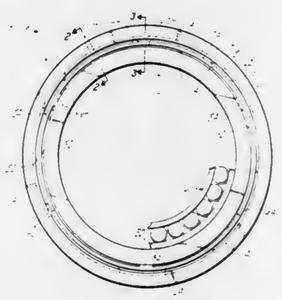
4,213,660
BEARING ASSEMBLY CONSTRUCTION
Yasuyosi Yasui, Toyota; Mitugu Izuta, Okazaki, and Sigeki Okaguchi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Feb. 12, 1979, Ser. No. 11,649
Claims priority, application Japan, Feb. 15, 1978, 53-16267
Int. Cl.[2] F16C *19/24*
U.S. Cl. 308—177 **3 Claims**





1. In an axle box structure of soft metal including a bearing bore, a sleeve member of hard metal engaged within said bearing bore, and a rolling bearing assembled within said sleeve member to support an axle shaft thereon,
the improvement wherein said sleeve member has on a portion of its outer periphery an axial knurl or serration means for embedding in said axle box structure, said knurl or serration means being annularly formed in a predetermined axial length substantially at the central portion of said sleeve member wherein the crest diameter of said knurl or serration means is larger than the outer diameter of said sleeve member and the root diameter of said knurl or serration means is smaller than the outer diameter of said sleeve member.

4,213,661
BEARING SUPPORT STRUCTURE COMBINING FLUID DAMPING AND SPRING DAMPING APPARATUS
Ronald A. Marmol, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed May 8, 1978, Ser. No. 904,089
Int. Cl.[2] F16C *27/00*
U.S. Cl. 308—184 R **5 Claims**



1. In a bearing support structure of the fluid damping type, the improvement comprising:

an inner housing which is adapted to receive a bearing to be supported;

a plurality of arcuate segments extending circumferentially in abutting end to end relationship about said inner housing, wherein each end of each segment has an outwardly extending pedestal and wherein each of said segments has an inwardly extending pedestal spacing said segment apart from the inner housing;

an outer housing which has an inwardly facing surface abutting the outwardly extending pedestals of each arcuate segment to form a chamber for fluid damping medium between the pedestals, and which has at least one inlet conduit for supplying fluid damping medium to the chambers and at least one outlet conduit at each chamber for allowing the discharge of fluid damping medium from that chamber, wherein the sum of the cross sectional areas of the outlet conduits is less than the total inlet conduit, cross sectional area;

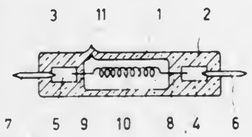
and a pair of axially spaced end seals extending between said outer housing and said arcuate segments to inhibit the leakage of damping medium axially from the chambers.

4,213,662

TUNGSTEN/BROMINE CYCLE LAMP

Henricus F. J. I. Giller, and Germain R. T'Jampens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 788,424, Apr. 18, 1978, Pat. No. 4,128,783.
This application Aug. 15, 1978, Ser. No. 933,868
Claims priority, application Netherlands, May 10, 1976, 7604953
Int. Cl.[2] H01J *9/38*
U.S. Cl. 316—24 **4 Claims**



1. A method of manufacturing a tungsten/bromine cycle lamp which comprises: providing a transparent lamp vessel, providing a tungsten filament in said vessel, introducing a dispersion of a compound of the formula $MeH_xBr_yC_z$ into said vessel, in which formula z has the value 0, Me is vanadium, niobium or tantalum, x=1, 2 or 3 and y=x+1, evaporating and expelling the solvent of said dispersion from said vessel, filling said lamp vessel with an inert gas and sealing said lamp vessel.

4,213,663

WET CARBON-DIOXIDE TREATMENT OF PARTIALLY-COMPLETED CRT

Jawdat I. Nubani, Clarks Summit, and Frank S. Sawicki, Scranton, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,454
Int. Cl.[2] H01J *9/395*
U.S. Cl. 316—24 **8 Claims**

1. In the method of making a cathode-ray tube including the steps of

(i) producing a luminescent viewing-screen structure upon the inner surface of a faceplate panel,

(ii) heat sealing said panel to the large opening of a funnel to form a virgin bulb,

(iii) flushing said virgin bulb with a dry noncontaminating gas,

(iv) and then heat sealing a mount assembly to the small opening of said funnel,



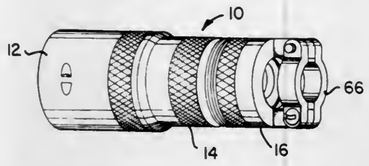
the step subsequent to step (ii) and prior to step (iii) of flushing the inside of said virgin bulb with wet carbon-dioxide gas.

4,213,664

VISUALLY INSPECTABLE GROUNDING CONNECTOR FOR ELECTRICAL CABLE

Warren G. McClenan, 7009 Coldwater Canyon, #4, North Hollywood, Calif. 91605

Filed Oct. 11, 1978, Ser. No. 950,322
Int. Cl.[2] H01R *3/06*
U.S. Cl. 339—14 R **6 Claims**



1. A visually inspectable grounding connector for electrical cable comprising:

a coaxially connectable pair of cylindrical members of electrically conductive material internally supporting an annular electrically conductive grounding means of radially contractable structure;

said pair of members internally containing means to radially contract said grounding means as a function of telescoping connecting movement of said pair of members;

said pair of cylindrical members and said means to radially contract said grounding means together defining a least diameter affording an unobstructed line of sight from one end of one of said pair of members to the radially inner portion of said grounding means after said pair of members have been telescopically connected to fully radially contract said grounding means onto an electrical cable.

4,213,665

ELECTRICAL CONNECTOR

Ronald A. Murray, Methuen, and Gary P. Piccirillo, Worcester, both of Mass., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 9, 1979, Ser. No. 28,465
Int. Cl.[2] H05K *1/18;* **G09F** *9/00*
U.S. Cl. 339—17 D **23 Claims**

1. An electrical connector comprising:

A. a housing, said housing including:

(1) a first section defining a pair of spaced-apart flexible, resilient walls with a slot between them;

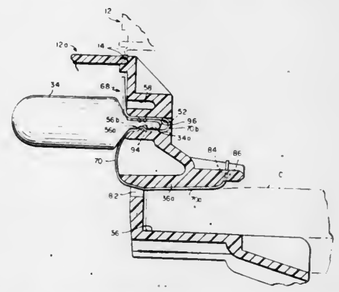
(2) a second section defining a row of compartments extending parallel to the slot;

(3) a hinge between said housing sections allowing the two sections to be superimposed so that the compartments overlie the slot at spaced-apart locations therealong;

(4) means for retaining the two sections in their superimposed condition; and

B. a flexible printed circuit, said circuit including:

(1) a flexible electrically insulating substrate, one dimension of the substrate being not appreciably greater than the length of the slot in the housing and another dimension of the substrate being greater than the depth of said slot so that the substrate can be folded into the housing



slot so that at least one end portion of the substrate projects from the slot;

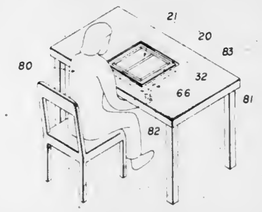
(2) at least one pair of electrically isolated conductive paths secured to the substrate, corresponding first lengths of said paths being positioned at spaced-apart locations along the housing slot and corresponding second lengths of said paths being positioned on the substrate portion projecting from the slot.

4,213,666

MECHANISM FOR POSITIONING A TEST ADAPTER IN OPERATIVE RELATIONSHIP WITH A RECEIVER

Paul A. Braginetz, Staunton, and Paul D. Floyd, Lyndhurst, both of Va., assignors to Virginia Panel Corporation, Waynesboro, Va.

Filed Jan. 26, 1979, Ser. No. 6,572
Int. Cl.[3] G05G *9/00;* **H01R** *13/62*
U.S. Cl. 339—75 M **6 Claims**



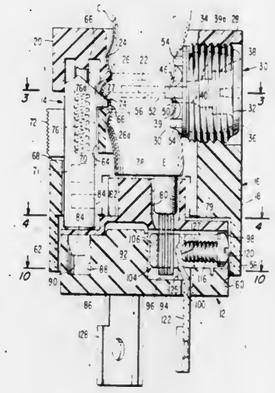
1. In an arrangement for positioning an individual test adapter in full operative engagement with a receiver for said test adapter and wherein the test adapter and receiver each has multiple contacts resisting such full operative engagement, and wherein the receiver has an eccentric cam means engaging with a surface formed in the individual test adapter to cause movement of the test adapter toward said full operative engagement responsive to rotation of the eccentric cam means in one direction, the combination with said eccentric cam means of a short stroke low effort force multiplying and motion amplifying mechanism on said receiver and coupled with said eccentric cam means and including a manual operating lever, said receiver having a side rail provided with a recess for said mechanism, said mechanism comprising plural connected elements including said lever disposed within the confines of said recess and being movable therein between locking and release positions of said mechanism, said recess having an end abutment surface which is engaged by said lever to limit movement of the lever in one direction and is engaged by another element of said mechanism to limit movement of the lever in the opposite direction, and said mechanism further comprising a fulcrum arm pivoted to said side rail in said recess and having a pivotal sliding connection with said lever, said lever being pivoted to said side rail within said recess, a floating connecting link within said recess and having a pivotal connection with said fulcrum arm, and a cam arm within said recess having a pivotal connection with said connecting link and being driven thereby and being directly secured to said eccentric cam means.

4,213,667

DEAD FRONT CONNECTOR

James M. Wittes, Linden, N.J., assignor to GTE Sylvania Wiring Devices Incorporated, Trenton, N.J.

Filed May 30, 1978, Ser. No. 910,569
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—103 R **38 Claims**



1. An electrical connector of the type attachable to an end portion of a power cable, comprising:

(a) a support for a contact housing including a body having a bore for receiving the end portion of a cable, and means mounted on the body for movement across the bore into clamping engagement with said power cable end portion;

(b) a contact housing separably assembled with said body and including contacts connectable to the end portion of the cable; and

(c) lock means mounted between the body and the contact housing for travel along a path between a locking position preventing relative separation of the contact housing and body and an unlocking position permitting such separation, said first named means being adapted to bias the cable portion to a location effective to dispose in said path an abutment blocking travel of the lock means from its locking position.

4,213,668

ELECTRICAL CONTACT

David S. Goodman, Mission Viejo, and George I. Stanfield, Tustin, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

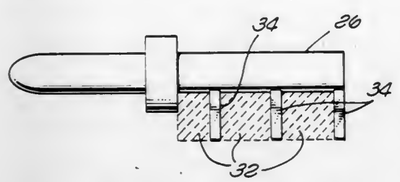
Filed Oct. 10, 1978, Ser. No. 949,496
Int. Cl.[3] H01R *9/02*
U.S. Cl. 339—217 R **3 Claims**

1. A one-piece unitary right-angle electrical contact comprising:

an elongated, solid body having a cylindrical forward mating end and a rear termination end;

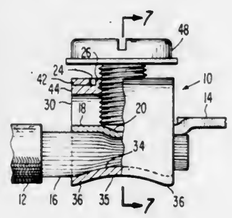
said rear-termination end including a cylindrical portion

coaxial with said cylindrical forward mating end and a plurality of terminal posts each of rectangular cross-section integral with said cylindrical portion; and



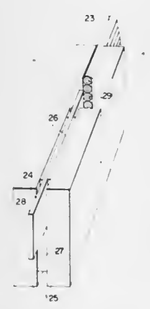
said terminal posts extending transversely in the same direction from said cylindrical portion and lying in a common plane passing through the center axis of said cylindrical portion.

4,213,669
TERMINAL COLLAR
James M. Wittes, Linden, N.J., and Julius F. Tibolla, Yardley, Pa., assignors to GTE Sylvania Wiring Devices Incorporated, Trenton, N.J.
Filed Sep. 11, 1978, Ser. No. 941,534
Int. Cl.[3] H01R *11/10*
U.S. Cl. 339—272 UC **1 Claim**



1. In a terminal collar of the type including a yoke, a screw threadedly engaged therein, and a pressure plate adapted to be advanced by the screw into clamping engagement with a conductor inserted in the yoke, the improvement comprising: an elongated strip of metal the end portions of which are brought into an overlapped relationship to shape said strip as a closed loop, one of the end portions having a threaded opening through which the screw may be advanced within the yoke and the other end portion having a smooth-walled clearance aperture in registration with the threaded opening and through which the screw extends into engagement with the threads of the opening, said yoke including a rigidly constituted seat for said conductor facing said screw and opposed resiliently extensible side walls at opposite sides of the seat, said side walls being stressed and placed under tension responsive to clamping of a conductor within a yoke, whereby to accommodate the yoke without loss of clamping force to contraction and expansion of the conductor while clamped within the yoke; and inter-engaging means on the overlapping end portions limiting the same, upon stressing of the side walls, against relative movement in directions tending to open said loop, said side walls when stressed remaining within their elastic limits in both the contracted and expanded states of the conductor, the side walls of the yoke being pre-formed, substantially midway between the seat and the overlapping end portions, with shallow reentrant angles which open in the stressed condition of the side walls and exert a contractile force on the side walls effective to maintain a tight clamping pressure on the conductor in both the contracted and expanded conditions thereof, said side walls having parallel, straight first portions adjacent the seat spaced apart a distance to snugly, slidably receive and guide said pressure plate toward the seat when the pressure plate is advanced by the screw, the side walls respectively having second portions into which the first portions merge and which extend in diverging paths in a direction away from the seat to cooperate with the first portions of the side walls in defining the respective reentrant angles, the second portions being continued along said diverging paths fully to the respective, overlapping end portions and merging directly into the overlapping end portions along curved bend lines located at the point of greatest divergence of the second portions of the side walls and generally coplanar with the respective overlapping end portions, said loop having a first end comprised of an intermediate portion of the strip and a second end that is formed by said overlapping end portions of the strip, the first end of the loop comprising said seat for the clamped conductor toward which the screw may be advanced for clamping the conductor against the seat, said side walls in their stressed condition being contracted to dispose the first and second ends of the loop at a predetermined minimum distance from each other, the side walls being stretched longitudinally in response to clamping of the conductor in the seat so as to increase the distance between the first and second ends of the loop, said distance being greater than the distance when the side walls are unstressed, both in the contracted and the expanded state of the conductor, said side walls when stretched remaining within their elastic limits both during contraction and expansion of the conductor, said seat being shaped to present an inward convexity to the conductor defining flared entrance and exit ways for the conductor and a relatively inflexible anvil therebetween against which the conductor is clamped.

4,213,670
PLANAR FIBER OPTIC STAR AND ACCESS COUPLER
A. Fenner Milton, Washington, D.C., and Thomas G. Giallorenzi, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 6, 1977, Ser. No. 841,859
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.16 **9 Claims**

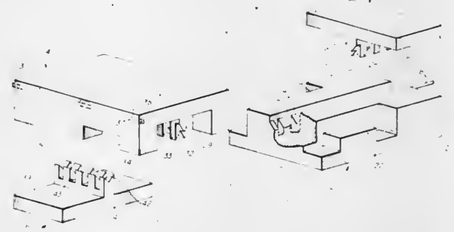


1. A planar fiber optic star and access coupler element for use with minibundles of multimode fibers or single fibers as the transmission line which comprises:

a short length of high-aspect-angle, clad ribbon fiber which is rectangular in cross section along both width and length dimensions, and is in end-to-end abutting relationship with said transmission line,

said clad ribbon fiber aligning with said transmission line such that all radiation is transmitted from said transmission line into the adjacent end of said clad ribbon fiber or from said ribbon fiber to the adjacent end of said transmission line except for packing fraction losses.

4,213,671
FIBER OPTIC CONNECTORS AND METHODS OF AFFIXING OPTICAL FIBERS THERETO
Gary M. Lambert, Berlin, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Filed Mar. 12, 1979, Ser. No. 19,961
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.21 **4 Claims**



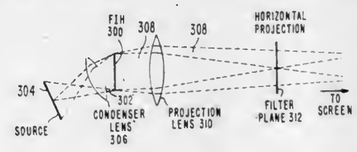
1. A fiber optic connector comprising:

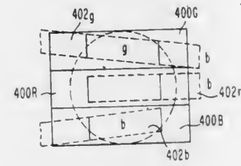
(a) a first connector body having a fiber engaging face and
 (i) a longitudinal groove along said face of said first connector body;
 (ii) A plurality of transverse slots spaced along said groove;
 (iii) body engaging means; and
 (iv) reference means associated with said groove for indicating where a face of a first fiber to be coupled should be aligned;
(b) a first end cap means having a face for engaging a portion of said first connector body; and
 (i) a longitudinal protuberance along said engaging face of said first end cap means, said protuberance corresponding in size and shape to said groove; and
 (ii) a plurality of transverse inverted fingers spaced along said protuberance;
(c) a second connector body having a fiber engaging face and
 (i) a longitudinal protuberance along said face of said second connector body;
 (ii) a plurality of transverse inverted fingers spaced along said second connector body protuberance
 (iii) body engaging means;
 (iv) reference means associated with said second body protuberance for indicating where a face of a second fiber to be coupled should be aligned; and
(d) a second end cap means having a face for engaging a portion of said second connector body and
 (i) a raised longitudinal extension having a groove therein along said face of said second end cap; and
 (ii) a plurality of transverse slots spaced along said second end cap means groove; and wherein
 upon proper mating of said first connector body with said second connector body, said body engaging means of said first connector body engages with said second connector body, and said body engaging means of said second connector body engages with said first connector body.

4,213,672
LIGHT WAVEGUIDE WITH A HIGH TENSILE STRENGTH
Hubert Aulich; Nikolaos Douklias, both of Munich; Heinz Hacker, Nurenberg, and Guenter Zeidler, Unterpfaffenhofen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 22, 1978, Ser. No. 917,782
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729648
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.23 **3 Claims**

1. In a light waveguide having a good tensile strength including a light conducting fiber being coated with a plastic coating to improve the tensile strength, the improvement comprising said plastic coating having a thickness of at least 2 μm and being uniformly concentrically applied directly onto the surface over the entire length of the light conducting fiber without any surface defects, said plastic coating being a high temperature stable material having a softening temperature of at least 150° C. and being a polyesterimide, and a slide layer being disposed on said coating, said slide layer being of polytetrafluoroethylene-perfluoropropylene.

4,213,673
PROJECTOR FOR READING OUT COLOR-ENCODED FOCUSED IMAGE HOLOGRAMS EMPLOYING AN OPTIMUM ENCODING SCHEME
Michael T. Gale, Wettswil, Switzerland, assignor to RCA Corporation, New York, N.Y.
Filed May 8, 1978, Ser. No. 903,687
Int. Cl.[2] G02B *27/18, 27/38;* G03H *1/24, 1/28*
U.S. Cl. 350—162 SF **11 Claims**





1. In a projector for displaying a color picture derived from a focused image hologram situated in a given plane, said hologram being of the type comprising a plurality of plane-parallel diffraction gratings each of said gratings having a different specified angular orientation in said given plane and a different specified constant spatial frequency and being modulated in accordance with a different color component of said color picture to form a spatial carrier for that color component; said projector including first means for illuminating said hologram with an incident non-coherent light beam inclined at a predetermined angle with respect to the normal to said given plane, said non-coherent light beam having a given spectrum which includes a spectral wavelength portion corresponding to each respective one of said color components, and second means responsive only to first diffraction-order output light derived from said respective gratings for projecting said color picture on a viewing screen; the improvement therein:

(a) wherein said first diffraction-order output light derived

from each respective one of said gratings is individually dispersed into a separate spectrum of light corresponding to said given spectrum that has an individual spatial location determined by the specified angular orientation and specified spatial frequency of that one grating;

(b) wherein said second means includes a plurality of spatially separated color filters having predetermined spatial locations, at least one of said color filters corresponding in color to each different one of said color components, and

(c) said specified angular orientations and specified spatial frequencies of said respective gratings being such that the spatial location of the wavelength spectral position corresponding to any and every certain one of said color components of each of said spectra of light intersects the spatial location of a color filter corresponding in color to said certain one of said color components solely for the spectrum of light which is derived from that one of said gratings which is modulated in accordance with said certain one of said color components.

4,213,674

TESSAR FORM PHOTOGRAPHIC LENS

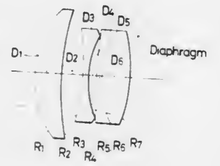
Kikuo Momiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1978, Ser. No. 952,401

Claims priority, application Japan, Oct. 20, 1977, 52-126332

Int. Cl.[2] G02B *9/20*

U.S. Cl. 350—227 **6 Claims**



1. A Tessar form of photographic lens comprising, from the object end, a first component having a positive meniscus lens having a convex surface facing the object end, a second component having a bi-concave lens, a third component having a doublet lens consisting, in sequence, of a negative lens and a bi-convex lens cemented to each other and a diaphragm arranged at the back of the image facing surface of the third component, wherein the relations

(1) $1.1f<TL<1.25f$
(2) $0.35f<TD<0.40f$
(3) $0<Da-Db<0.07f$
(4) $0.06f<D_2<0.1f$
(5) $0.025f<D_4<0.04f$
(6) $0.36f<R_1<0.4f$
(7) $0.33f<R_4<0.38f$
(8) $0.34f<R_6<0.4f$

are satisfied, and wherein

TL is the distance between the first lens surface of the lens (set at the infinite distance) and the image plane along the optical axis

TD is the total lens thickness along the optical axis

Da is the distance between the first and the third lens surface

Db is the distance between the fourth and the seventh lens surface

D_2 is the distance between the first and the second lens surface

D_4 is the distance between the fourth and the fifth lens surface, and

R_1, R_4, R_6 are the respective radii of curvature of the first, the fourth and the sixth lens surface.

4,213,675

INTERIORLY ADJUSTABLE OUTSIDE REAR VIEW MIRROR FOR VEHICLES

Stig T. L. Pilhall, Trollhättan, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Apr. 4, 1979, Ser. No. 27,090

Claims priority, application Sweden, Apr. 19, 1978, 7804455

Int. Cl.[2] G02B *5/08*

U.S. Cl. 350—307 **7 Claims**



1. An adjustment device, with the aid of which a mirror housing for a vehicle rear view mirror carried on the outer side of the vehicle at one end of the device is manually adjustable within the interior of the vehicle, said device comprising a holder body rotatably mounted in an extending through a through-hole in a wall portion associated with the vehicle body, e.g. a front door, characterized in that the holder body is axially fixed in the through-hole by means of stop means abutting against at least two surfaces associated with the body wall portion and facing in opposite directions, at least one of the stop means being arranged on the holder body, and that in the holder body there is provided a cavity wherein there is pivotally disposed an arm having an outer portion situated outside the body wall portion, said outer portion being torque transmitting interconnected with the mirror housing for pivoting movement thereof in relation to the holder body, and an inner portion protruding from the end of the holder body on the inner side of the body wall portion, there to carry a grip portion which, by means of an adjusting means attached to the arm, is biased against a stop portion disposed at the end of the holder body, one of the stop means being rigidly attached to said stop portion.

4,213,676

LIQUID CRYSTAL DISPLAY FOR REFLECTION OPERATION WITH A GUEST-HOST LIQUID CRYSTAL LAYER AND METHOD OF MAKING

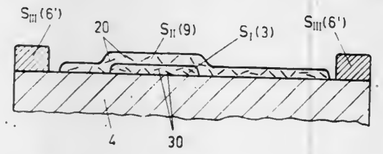
Meinolph Kaufmann, Fislisbach, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jul. 19, 1977, Ser. No. 817,009

Claims priority, application Switzerland, Aug. 10, 1976, 10164/76

Int. Cl.[2] G02F *1/13*

U.S. Cl. 350—336 **8 Claims**



1. A liquid crystal display for reflection operation, including a guest-host liquid crystal layer disposed between front and rear cell plates and respective front and back electrodes, and a diffuse reflector integrated in the interior of the cell, at least said front cell plate and said front electrode being transparent, wherein:

said back electrode and its supply line comprise a screen printed layer of ink comprising metal particles and a binder sintered in a heating process to form an electrically conductive sintered layer having a thickness of 1-3 μm; and

said reflector comprises insulated metal particles applied to said back electrode and the inner surface of said rear cell plate.

4,213,677

LIGHT COUPLING AND BRANCHING DEVICE USING LIGHT FOCUSING TRANSMISSION BODY

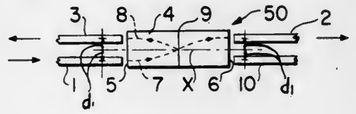
Shigetoki Sugimoto; Ro Ishikawa, and Shigeo Matsushita, all of Tokyo, Japan, assignors to Nippon Selfoc Company, Limited, Tokyo, Japan

Filed Oct. 12, 1977, Ser. No. 841,290

Claims priority, application Japan, Oct. 13, 1976, 51-122653; Nov. 30, 1976, 51-144279; Dec. 6, 1976, 51-163728

Int. Cl.[2] G02B *5/14*

U.S. Cl. 350—96.18 **15 Claims**



1. A light branching and coupling device comprising a light focusing transmission body having a refractive index distribution, in which the refractive index gradually decreases from the center towards the periphery of said body in a cross section thereof perpendicular to the center axis of said body whereby light incident on one of two end faces perpendicular to said center axis of said body propagates undulatingly to the other end face at a predetermined pitch, said light focusing transmission body having a length equal to a positive integral multiple of substantially ¼ pitch; and

reflecting means positioned at a predetermined distance from said one end face of said light focusing transmission body along said center axis, said predetermined distance being an odd number multiple of substantially ¼ pitch.

4,213,678

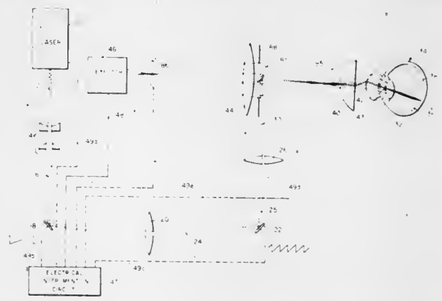
SCANNING OPHTHALMOSCOPE FOR EXAMINING THE FUNDUS OF THE EYE

Oleg Pomerantzeff, Brookline, and Robert H. Webb, Charlestown, both of Mass., assignors to Retina Foundation, Boston, Mass.

Filed Sep. 29, 1977, Ser. No. 837,870

Int. Cl.[2] A61B *3/10, 3/14*

U.S. Cl. 351—7 **14 Claims**



1. A scanning ophthalmoscope for providing a visual representation of an eye fundus under scanned illumination, said ophthalmoscope having the improvement comprising

A. scanning laser source means for projecting a fundus-illuminating laser beam which scans according to a selected scanning sequence,

B. optical means

for directing said scanning laser beam through a pivot point in a plane having a location selected relative to the laser beam for receiving the pupil of the eye being examined for introducing the scanning laser beam into an eye so located through a small portion only of the eye pupil, and

for directing said scanning beam to travel from said pivot point onto a wide-angle region of the fundus of the eye located with the eye pupil at said selected plane,

C. optical detecting means for receiving light reflected from the eye fundus in response to illumination with said scanning beam, said detecting means being arranged for receiving light which traverses from within the eye through at least a major portion of the eye pupil, and for producing an electrical signal in response to the received light and with correspondence to said scanning sequence, and

D. output means for providing a fundus-imaging output representation in response to said electrical signal.

4,213,679

PROJECTOR

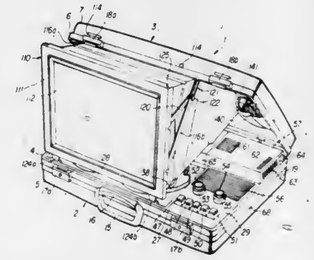
Kiyoshi Sakamoto, Hyogo; Yukio Tsukakoshi, and Naoyuki Oie, both of Kasai, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 2, 1978, Ser. No. 882,748

Claims priority, application Japan, Mar. 18, 1977, 52-34620[U]

Int. Cl.[2] G03B *21/30*

U.S. Cl. 353—72 **3 Claims**



1. A film projector comprising:

a case body;

a case cover;

separable hinge means removably connecting said cover to one side of said case body;

projector means located in said case body;

a projection window through which the image projected by the projector means is transmitted disposed in said case body facing the inner surface of said case cover;

collapsible rear projection screen assembly means mounted in the inside of said case cover and including means adapted to engage said case body to support the screen assembly means and the case cover at a predetermined angle relative to said case cover when the cover is unfolded;

a mirror disposed at the inside of said case cover for reflecting and rear projecting the image from said projection window onto said screen assembly means; and

retractable support means mounted on a side of said case body, said retractable support means adapted to change its span from a housed position where its supporting width does not exceed the thickness of said side of said case body to an extended position where its supporting width exceeds the thickness of said side of said case body, said support means when in said extended position being capable of supporting thereon said case body with said case

cover removed therefrom so that the image can be front projected.

4,213,680

SETTING APPARATUS

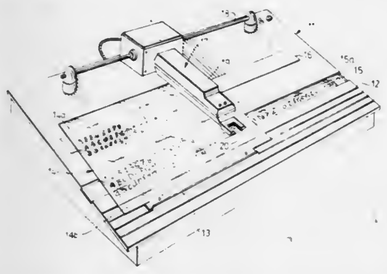
Gary W. Gillot, 2, Sedgmoor Rd., Flackwell Heath, and David H. Wright, 4, Horton Gardens, Horton, both of England

Filed Nov. 13, 1978, Ser. No. 960,279

Claims priority, application United Kingdom, Nov. 16, 1977, 47613/77

Int. Cl.[2] B41B *17/02*

U.S. Cl. 354—12 **5 Claims**



1. An apparatus for visually setting type in which characters are recorded sequentially on film by a photographic device arranged thereabove, comprising a carriage, a film-strip mounted on said carriage, at least two parallel tracks arranged on said carriage, a displaceable font carriage provided with means for co-operating with one said track, said font carriage carrying a master font on which are printed a series of negative characters and an identically arranged parallel series of positive characters, a movable character bearing font, displaceable relative to said carriage and to said master font, being movable on a second said track and an exposure unit arranged above said carriage to photograph a selected character from said negative font on to said film-strip arranged therebelow.

4,213,681

FLASH CAMERA

Toshinori Hayata, Osaka; Kunio Tsuji, Nagaokakyo, and Hajime Mitsui, Osaka, all of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Apr. 12, 1978, Ser. No. 895,761

Claims priority, application Japan, Apr. 19, 1977, 52-45329; Apr. 19, 1977, 52-45330; Apr. 19, 1977, 52-45331

Int. Cl.[2] G03B *3/00, 7/00, 9/04, 15/05*

U.S. Cl. 354—21 **5 Claims**



1. A flash camera comprising in combination a camera and an electronic flash, said electronic flash including:

(a) a DC-DC converter for stepping up a low DC voltage supplied from a DC power source to a high DC voltage which in turn is stored in a main flash capacitor,

(b) a flash lamp for converting the energy stored in said main flash capacitor into a flash of light, and

(c) a power on-off switch for selectively connecting said power source to said DC-DC converter or disconnecting said power source from said DC-DC converter; and

said camera including:

(d) a first aperture switching mechanism responsive to a speed of a film loaded into said camera for selecting an iris opening of corresponding diameter, the axis of said iris opening being coaxial with the optical axis of a lens system,

(e) a focusing mechanism for focusing said lens system on a subject, and

(f) a second aperture switching mechanism responsive to the operation of said on-off switch for selecting said iris opening in cooperation with said first aperture switching mechanism and said focusing means, said second aperture switching mechanism comprising:

a first control means upon which is mounted a knob for turning on or off said on-off switch, and

a second control means responsive to the operations of said first aperture switching mechanism and said focusing mechanism for controlling said first control means,

whereby when (i) a film having a high speed is loaded in said camera, said camera is not set for flash operation with focusing on a subject at a long distance therefrom, said first aperture switching mechanism may select said small-diameter iris opening, when (ii) said high-speed film is loaded in said camera, the power on-off switch is in the on position and said focusing mechanism is focused at a subject at a long distance from said camera said first control means causes said first aperture switching mechanism to select said large diameter opening, and when (iii) a film having a low speed is loaded in said camera, said first aperture switching mechanism may select said large-diameter opening and said second control means may prevent the switching operation of said first aperture switching mechanism caused by said first control means.

4,213,682

PROGRAMMED EXPOSURE CONTROL SYSTEM FOR A CAMERA

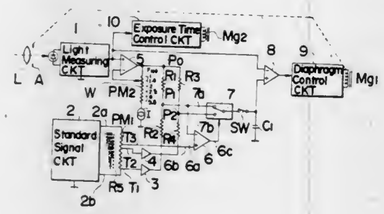
Seiji Yamada, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 12, 1978, Ser. No. 968,755

Claims priority, application Japan, Dec. 27, 1977, 52/159598

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—23 D **13 Claims**



1. A photographic camera capable of programmed automatic exposure control comprising:

means for measuring light to produce a light measuring output;

means for producing an exposure control signal in response to the light measuring output;

means for automatically varying both the time value signal and aperture value signal as a first function of the magnitude of the exposure control signal when said magnitude is in a first range of exposure control signal magnitudes, and as a second function of the magnitude of the exposure control signal when said magnitude is in a second range of exposure control signal magnitudes;

means for determining the aperture size in response to the aperture value signal; and

means for determining the exposure time in response to said time value signal.

4,213,683

ELECTRONIC SHUTTER DRIVING DEVICE FOR CAMERA

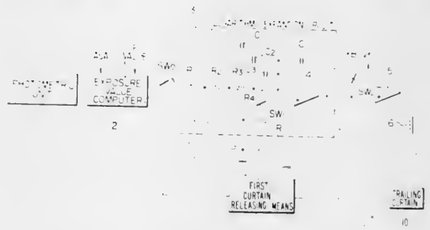
Masamichi Furukawa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 12, 1978, Ser. No. 923,903

Claims priority, application Japan, Jul. 18, 1977, 52/85752; Aug. 24, 1977, 52/101427

Int. Cl.[2] G03B *7/08;* **G06G** *7/24*

U.S. Cl. 354—24 **4 Claims**



1. An electronic shutter driving device comprising a photometric unit for measuring brightness of a subject and generating an output signal which is a logarithmic compression of said brightness, an exposure value computer responsive to the output signal from said photometric unit, a logarithmic expansion circuit having an input terminal coupled to the output of said exposure value computer, a comparator having positive and negative input terminals for comparing the output from said logarithmic expansion circuit with a reference voltage, a first curtain releasing means, and an electromagnet coupled to the output of said comparator which is energized to hold a second curtain and de-energized to release said second curtain a predetermined time interval after said first curtain was released, characterized in that

(a) said logarithmic expansion circuit (3) comprises

an operation amplifier (4),

a series of resistors (R_1, R_2, R_3 and R_4) interconnected between an output terminal of said exposure value computer and an inverting input terminal (−) of said operational amplifier (4) through an input terminal of said logarithmic expansion circuit,

a plurality of capacitors (C_1, C_2 and C_3) interconnected between said inverting input terminal of said operational amplifier (4) and the junctions, respectively, between said series of resistors, an integrating capacitor (C) interconnected between the output terminal of said operational amplifier (4) and said inverting input terminal (−) thereof, a first switch interconnected between said inverting input terminal (−) of said operational amplifier (4) and a source of reference potential, and

a resistor (R) interconnected between a noninverting input terminal (+) of said operational amplifier (4) and said reference potential;

(b) a shutter actuation switching means (SW_0) interconnected in series with said series of resistors between said input terminal of said logarithmic expansion circuit (3) and said output terminal of said exposure value computer;

(c) a second switch (SW_2) interconnected between a voltage source (+B) and the noninverting input terminal of said comparator (5);

(d) the output terminal of said logarithmic expansion circuit (3) being connected to the noninverting input terminal of said comparator (5), means for applying a reference voltage to the inverting input terminal of said comparator (5);

(e) such that prior to the actuation of a shutter release, said shutter actuation switch (SW_0) remains opened while said first and second switches (SW_1 and SW_2) remain closed, but when said shutter release is actuated, said shutter actuation shutter (SW'_0) is closed while said first and second switches (SW_1 and SW_2) are opened so that said logarithmic expansion circuit (3) starts integration so as to determine an optimum shutter speed, said electromagnet being de-energized to release the second curtain when the output voltage from said logarithmic expansion circuit (3) traverses the level of said reference voltage (V_r).

4,213,684

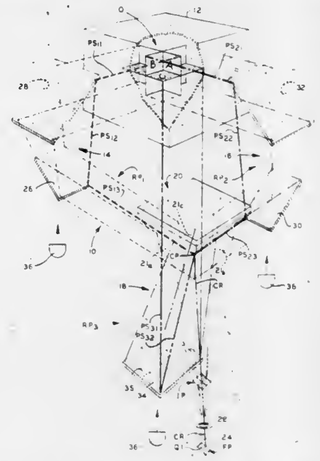
SYSTEM FOR FORMING A QUADRIFID IMAGE COMPRISING ANGULARLY RELATED FIELDS OF VIEW OF A THREE DIMENSIONAL OBJECT

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Frederick R. Chamberlain, Sun Valley, Calif.

Filed Mar. 20, 1978, Ser. No. 888,432

Int. Cl.[2] G02B *5/08;* **G03B** *15/02, 41/00*

U.S. Cl. 354—118 **2 Claims**



1. In a system for simultaneously forming a quadrifid image at the film plane of a camera consisting of three equally well focused separate images of a plurality of angularly related fields of view of a common three dimensional object, the improvement comprising:

A. a first reflective means adjacently related to a three dimensional object including surfaces for reflecting an image of a field of view of a first object plane of said object along a first folded path of a given length extended between the first object plane and a film plane of a camera;

B. second reflective means adjacently related to the three dimensional object including a plurality of surfaces for reflecting an image of a field of view of a second object plane of said object angularly related to said first object plane along a second folded path having a length equal to the length of the first folded path and extended between the second object plane and the film plane;

C. third reflective means adjacently related to the three dimensional object including a third plurality of surfaces for reflecting an image of a field of view of a third object plane of said object angularly related to said first object plane along a third folded path having a length equal to the lengths of the first and second paths and extended between the third object plane and the film plane; and

D. means for illuminating each of the object planes including

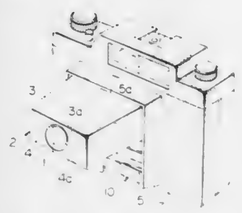
a beam splitter disposed in each of said folded paths and a source of light optically coupled with each of the beam splitters for propagating beams of light along axes extended toward said object.

4,213,685

FOLDING TYPE PHOTOGRAPHIC CAMERA

Takao Koda, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Feb. 14, 1979, Ser. No. 12,230
Claims priority, application Japan, Feb. 18, 1978, 53-17915
Int. Cl.[2] G03B *17/04*
U.S. Cl. 354—193 **3 Claims**



1. A folding photographic camera comprising a camera body having a housing in the front face thereof; a lens supporting member including a first plate portion supported at one end thereof on the camera body for swinging movement about an axis adjacent to a first edge of the housing and a second plate portion connected at one edge thereof to the other end of the first plate portion; and a taking lens supported in an opening provided in the second plate portion, said lens supporting member being swingable about said axis between a folded position in which said first plate portion extends substantially in parallel to the front face of the camera body to close the housing with the other end spaced from a second edge of the housing remote from said first edge thereof and the second plate portion together with the taking lens is housed in the housing, and an expanded position in which said first plate portion projects forward from the front face of the camera body and the second plate portion extends in parallel to the front face of the camera body with the taking lens supported in its photographing position, wherein the improvement comprises an auxiliary closure member which closes the space formed between the other end of the first plate portion and the second edge of the housing when the lens supporting member is in the folded position, said auxiliary closure member being swingable about an axis adjacent to the second edge of the housing and being normally resiliently held in a closing position in which it closes said space so that it is swung inwardly into the housing or outwardly away therefrom pushed by the other edge of the second plate portion when the lens supporting member is moved back and forth between the expanded positon and the folded position and returns to the closing position when the other edge of the second plate portion clears the free edge thereof.

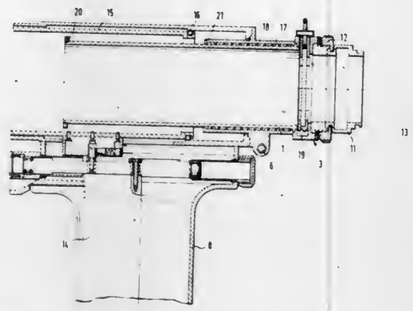
4,213,686

CLOSEUP FOCUSING MECHANISM FOR AN OBJECTIVE OF LONG FOCAL LENGTH

Ferdinand Kellner, Spittelmüllerstr. 6, 8940 Memmingen, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 57,077
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1978, 2832522
Int. Cl.[2] G03B *17/00, 13/02*
U.S. Cl. 354—195 **4 Claims**

1. A closeup focusing mechanism for a long-focal-length objective comprising an objective housing, means for mounting the objective to a camera, a tube between the objective housing and the camera mounting means, the tube being slidable into and out of the objective housing, a guide rod attached to the camera mounting means and extending towards the



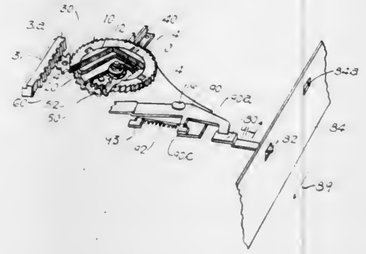
objective housing externally of the tube, and a guide for said rod on the objective housing.

4,213,687

FILM ADVANCING MECHANISM

Russell E. Hattis, Highland Park, Ill., and Chan K. Yan, Hong Kong, Hong Kong, assignors to W. Haking Enterprises Limited, Hong Kong

Filed Jul. 10, 1978, Ser. No. 923,373
Int. Cl.[2] G03B *1/00*
U.S. Cl. 354—213 **8 Claims**



1. In a camera which includes means for receiving film with metering perforations therein spaced one frame distance apart, and rotatable film winding means for imparting movement to said film and rotatable in a film winding direction unless locked against rotation in such direction, said camera further including a film perforation sensing member movably urged toward the path of movement of the film metering perforations of said film, a manually operable means mounted on the camera for movement in a film winding direction and locking means responsive to the entry of said sensing member into a film perforation for locking said film winding means for movement in said film winding direction, the improvement comprising: film advancing and slip clutch mechanism on said camera and coupled between said manually operable means and said film winding means, said film advancing and slip clutch mechanism comprising first rotatable means rotated respectively in at least a first direction when said manually operable means is operated in one direction, said film winding means being an annular gear means rotatable in a film winding direction and having internal teeth and a portion thereof to be coupled to said film, eccentrically mounted gear means pivoted upon and carried by said first rotatable means at a point spaced from the axis of rotation of said annular gear means and engaging said internal teeth of said annular gear means, sun gear means meshing with said eccentrically mounted gear means, said eccentrically mounted gear means when said first rotatable gear means is driven being rotated in non-driving relationship to the internal teeth of said film winding gear means when said sun gear means rotates and

being rotated in driving relationship therewith to effect a film winding operation when said sun gear means is held against rotation, and slip clutch-forming means including rotatable means secured to said sun gear means and rotation inhibiting means engaging the latter rotatable means, said inhibiting means being responsive to the unhindered rotation of said film winding means by holding said latter rotatable means and the sun gear means connected thereto stationary and responsive to the positive locking of said film winding means by either said locking means or the inability of the film to be advanced any further by permitting said latter rotatable means to slip by said rotation inhibiting means.

4,213,688

AUTOMATIC EXPOSURE TIME CONTROL APPARATUS FOR CAMERA

Kazukichi Mikajiri, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1979, Ser. No. 19,110
Claims priority, application Japan, Mar. 16, 1978, 53-30144
Int. Cl.[2] G03B *7/00;* H03K *21/36*
U.S. Cl. 354—23 D **16 Claims**



1. An automatic exposure time control apparatus for a camera, wherein the exposure time has an integral part and a decimal part, comprising:
(a) first pulse generating means for producing a first train of pulses having a certain determined frequency;
(b) second pulse generating means for producing a second train of pulses having a certain determined frequency relative to the content of the decimal part of the exposure time;
(c) pulse counting means for counting pulses;
(d) means for supplying the first pulse train to the pulse counting means and the second pulse train to the pulse counting means at a subsequent time interval;
(e) means for initiating counting of pulses from the first pulse train by the pulse counting means when the exposure is initiated; and
(f) control means for terminating the exposure when the pulse counting means has counted 2^n pulses relative to the content of the integral part of the exposure time coming from the first pulse generating means and $2^n \cdot b$ pulses relative to the content of the decimal part of the exposure time coming from the second pulse generating means at the subsequent time interval.

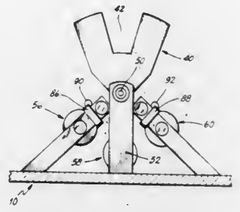
4,213,689

ELECTROMAGNETICALLY ACTUATED SHUTTER MECHANISM FOR CAMERAS

Roy A. Clapp, 10522 Foley Blvd., Minneapolis, Minn. 55433

Filed Mar. 22, 1979, Ser. No. 22,693
Int. Cl.[2] G03B *9/10*
U.S. Cl. 354—234 **9 Claims**

1. In a camera having an optical axis and film, a shutter blade, means mounting said blade for pivotal movement intermediate the ends of said blade, said blade having an opening nearer one end thereof, permanent magnet means carried by said blade nearer the other end thereof, first, second and third electromagnet means cooperable with said permanent magnet means, and means for energizing said several electromagnet



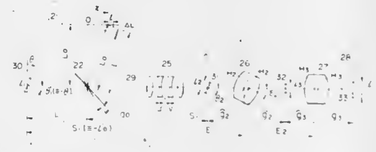
means to pivot said blade in and out of alignment with said optical axis.

4,213,690

COPYING APPARATUS HAVING A HIGH-SPEED COPYING OPTICAL SYSTEM

Muneharu Sugiura, Tokyo; Setsuo Minami, Kawasaki, and Koichi Miyamoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1979, Ser. No. 32,642
Claims priority, application Japan, Apr. 28, 1978, 53-51855
Int. Cl.[2] G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—8 **12 Claims**



1. A copying apparatus having a high-speed copying optical system, comprising:
fixed supporting means for supporting thereon an original to be copied;
rotatable deflecting means for scanning said original;
a photosensitive medium for receiving a light flux deflected by said rotatable deflecting means; and
an image forming optical system disposed between said rotatable deflecting means and said photosensitive medium for imaging the light flux from said original on said photosensitive medium, said system having a first optical element having means for correcting the state of the surface of said original being inclined with respect to the optic axis of said image forming optical system as the result of operation of said rotatable deflecting means, and a second optical element having means for correcting, while maintaining a predetermined image forming magnification, the variation in length of the light path between said original surface and said photosensitive medium resulting from the operation of said rotatable deflecting means.

4,213,691

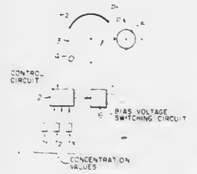
Patent Not Issued For This Number

4,213,692

BIAS VOLTAGE SWITCHING CIRCUIT FOR CONTROLLING CONCENTRATION OF IMAGE IN COPYING APPARATUS

Mistuo Akiyama, and Shunichi Abe, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1979, Ser. No. 1,055
Claims priority, application Japan, Jan. 17, 1978, 53-2759
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—14 D **1 Claim**



1. In an electrophotographic copying apparatus for providing a produced image and which includes a photosensitive medium on which an electrostatic latent image of an original is produced and a developing electrode for developing the latent image in the form of a toner image, and in which a bias voltage applied between the photosensitive medium and the developing electrode is varied in response to a control circuit switching signal representing a preselected concentration value to be obtained in the reproduced image, the improvement comprising a bias voltage switching circuit for controlling the concentration of the reproduced image comprising:

a series connection of resistors corresponding in number to a predetermined number of switching steps of the bias voltage;

a constant bias voltage source in parallel connection with said series connection of resistors; and

a plurality of switching transistors each connected between a different junction of the series connected resistors and a common reference potential to which said constant voltage bias source and one end of said series connection of resistors are connected,

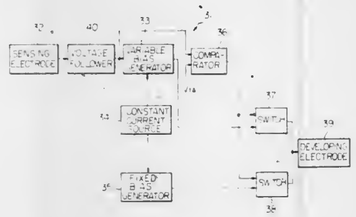
said plural switching transistors being turned on selectively in reponse to the control circuit switching signal so as to selectively vary the voltage output of said bias voltage switching circuit and thereby control the concentration of the reproduced image.

4,213,693

ELECTROSTATOGRAPHIC APPARATUS COMPRISING IMPROVED DEVELOPING BIAS CONTROL

Chikara Imai; Susumu Tatsumi, and Tadahiro Eda, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 23, 1979, Ser. No. 5,714
Claims priority, application Japan, Jan. 25, 1978, 53-6801
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—14 D **9 Claims**



1. An electrostatographic apparatus including a photoconductive member, charging means for forming an electrostatic charge on the photoconductive member, imaging means for radiating a light image onto the photoconductive member to form an electrostatic image thereon and developing means for applying toner to the photoconductive member to develop the electrostatic image into a toner image, characterized by comprising:

sensing means for sensing an electrostatic potential of the electrostatic image on the photoconductive member;

bias voltage generating means for generating and applying a developing bias voltage to the developing means; and

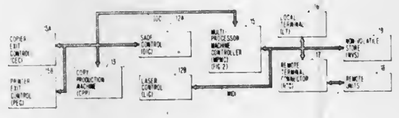
control means responsive to the sensing means for controlling the generating means in such a manner as to increase the bias voltage in accordance with the electrostatic potential until the electrostatic potential reaches a predetermined value and to decrease the bias voltage when the electrostatic potential exceeds said predetermined value.

4,213,694

COPY PRODUCTION MACHINES

Roger E. Kuseski, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 768,651, Feb. 14, 1977, which is a continuation-in-part of Ser. No. 729,534, Oct. 4, 1976, abandoned. This application May 31, 1977, Ser. No. 802,095
Int. Cl.[2] G03B *27/32;* **G03G** *15/00*
U.S. Cl. 355—26 **21 Claims**



1. The method of operating a copy production machine adapted to produce copies in response to received image sets of image-indicating signals for producing a predetermined number of copy sets on a plurality of copy sheets;

the steps of:

(1) receiving and storing in a memory one image set of image-indicating signals;

(2) producing one image on a first side of a copy sheet based on said one image set of image-indicating signals;

(3) receiving and storing in a memory a second image set of image-indicating signals;

(4) producing one image on a second side of a copy sheet based upon said second set of image-indicating signals;

(5) supplying said imaged copy sheet to an output receptacle as a completed copy sheet;

(6) repeating steps (1–5) until all image sets of image-indicating signals have been received and stored and one collated copy set of completed copies has been supplied to said output receptacle; and

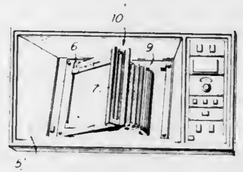
(7) fetching said stored image sets of image-indicating signals from said memory for printing all remaining collated copy sets to be printed up to said predetermined number of collated copy sets.

4,213,695

INSTANT FILM COLOR BACK ADAPTOR FOR A CAMERA-PROCESSOR

Richard R. Ely, Fairport, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 11, 1979, Ser. No. 29,228
Int. Cl.[3] G03B *13/28, 17/44, 17/04, 17/26*
U.S. Cl. 355—45 **6 Claims**



1. In a camera-processor having a copyboard (1), the image of which is focused upon a first and second imaging plane, the first imaging plane (4) having means for exposing non-instant film, the second imaging plane (5) positioned to facilitate viewing of the image of an object upon said copyboard, and including light shield means (5[1]) positioned about said second imaging plane, the improvement comprising:

a. a camera back means (10);

b. a film holder (8) for containing instant film;

c. means (11-13) for receiving and positioning said film holder within said camera back means;

d. means (17) for pivotably mounting said camera back along one side of said second imaging plane; and

e. a light tight bellows (9) having one terminal portion thereof coupled to said camera-processor about said second imaging plane and having a second terminal portion coupled to said camera back means so that said camera back means may be pivotably displaced from said second imaging plane for loading and unloading film therein in daylight.

4,213,696

SCAN MECHANISM FOR A MICROFILM READER/PRINTER

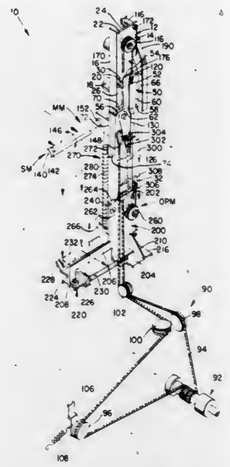
David S. Wise, Solon, Ohio, assignor to Western Reserve Electronics, Inc., Twinsburg, Ohio

Filed May 4, 1979, Ser. No. 35,531
Int. Cl.[2] G03G *15/30;* **G03B** *27/32, 27/70*
U.S. Cl. 355—45 **9 Claims**

1. A mechanism for coupling a stationary image of a microfilm reader to a rotating drum of a printer comprising:

a scanning mirror located to intercept an image formed by a projection lens of a microfilm reader and having means for moving said scanning mirror across such image, said scanning mirror reflecting an image onto a rotating drum for printing such image; and

mirror rotating means connected to said scanning mirror rotating said scanning mirror as said mirror moves across



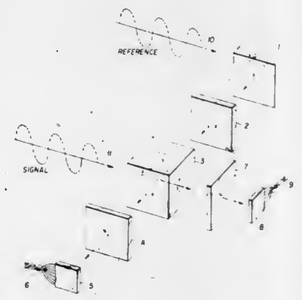
an image formed by a projection lens, said mirror rotating means maintaining said mirror oriented in an intercepted image to that an image reflected by said scanning mirror is always at right angles to the intercepted image.

4,213,697

PHASE MEASURING DEVICE

James S. Shreve, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 6, 1978, Ser. No. 957,779
Int. Cl.[2] G01B *9/02*
U.S. Cl. 356—351 **9 Claims**



1. A method of simultaneously providing the combination of a signal beam and a reference beam on a pair of photodetector arrays, the reference beam on one array being $\pi/2$ radians out of phase with the reference beam on the other array, from which the amplitude and phase of the signal beam at various points on the array can be determined, comprising the steps of:

providing a plane polarized signal beam,

providing a plane polarized reference beam which is coherent with said signal beam,

providing a pair of photodetector arrays,

directing a portion of said plane polarized signal beam onto each of said photodetector arrays,

converting said plane polarized reference beam to a pair of

circularly polarized beams which are circularly polarized in opposite directions,

deriving a first plane polarized reference beam from one of said circularly polarized beams and a second plane polarized reference beam $\pi/2$ radians out of phase with said first reference beam from said other circularly polarized beam, and redirecting said first reference beam onto one of said arrays and said second reference beam onto the other of said arrays whereby said combination of signal and reference beams is provided on said arrays.

4,213,698

APPARATUS AND METHOD FOR HOLDING AND PLANARIZING THIN WORKPIECES

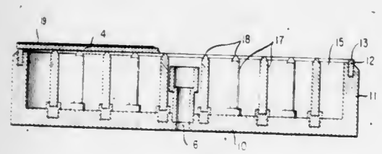
Victor A. Firtion, Secaucus; Donald R. Herriott, Morris Township, Morris County; Martin E. Poulsen, New Providence; Leif Rongved, Summit, and Thomas E. Saunders, Basking Ridge, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 871,477, Jan. 23, 1978, abandoned. This application Dec. 1, 1978, Ser. No. 965,304

Int. Cl.² G03B *29/00*

U.S. Cl. 355—77 **6 Claims**





1. A vacuum apparatus for holding and planarizing a thin workpiece on a holding face which minimizes the interposition of dirt particles between said workpiece and said holding face, said apparatus comprising:

(a) a baseplate having a rigid raised rim which includes a smooth planar edge surface adapted to support a workpiece having front and back surfaces, said edge surface being adapted to contact the periphery of said back surface to make a substantially airtight seal thereto, thus forming an evacuable chamber enclosed by said baseplate, said rim, and said back surface;

(b) a plurality of regularly spaced-apart rigid support members disposed within said chamber, each providing a localized pinpoint abutment with said back surface, said abutments together with said edge surface forming a holding face which is substantially planar, each of said abutments having an area sufficiently small to reduce the probability of dirt particles collecting thereon, evacuation of said chamber producing a pressure difference between said front and back workpiece surfaces forcing said back surface to conform to said holding face, the spacing between adjacent ones of said abutments and the spacing between said abutments nearest said rim and said edge surface being sufficiently small to prevent significant distortion of the unsupported regions of said workpiece.

4,213,699

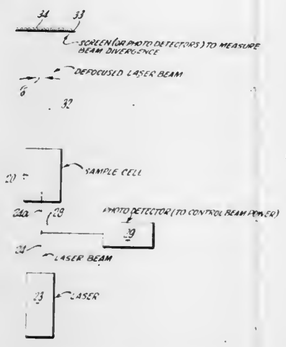
METHOD OF MEASURING LOW CONCENTRATIONS OF A LIGHT ABSORBING COMPONENT

Malcolm Moore, St-Denijs Westrem, Belgium, assignor to s.a. Texaco Belgium n.v., Brussels, Belgium

Filed Feb. 27, 1976, Ser. No. 661,917

Int. Cl.² G01N *33/28, 21/00*

U.S. Cl. 356—70 **10 Claims**



1. Method of measuring low concentrations of oil in a transparent medium, comprising

transmitting a laser beam through said medium,

said beam having a wavelength of about 448.0 millimicrons which is absorbed by said oil, and

determining the amount of divergence of said beam created by passage through said medium.

4,213,700

FIRE CONTROL DEVICE

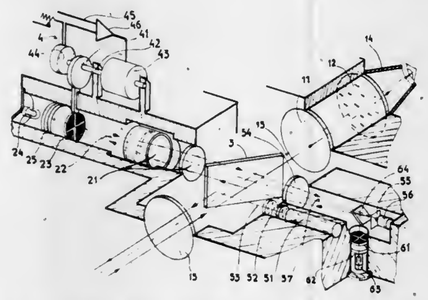
Michèle Leblanc, Orsay, France, assignor to Societe d'Optique Precision Electronique et Mecanique Sopelem, Paris, France

Filed Dec. 19, 1978, Ser. No. 971,903

Claims priority, application France, Jan. 6, 1978, 78 00275

Int. Cl.² G02B *23/10*

U.S. Cl. 356—73 **6 Claims**



1. A fire control device for sighting a gun by introducing, between the axis of the gun and the direction of the target, an angular shift based on the trajecotry of the ammunition, said device comprising:

fire crosswires;

a sighting telescope for providing an image of said fire crosswires defining a line of collimation;

a range finder of the laser type comprising means for emitting a laser beam, means for receiving said beam after scattering, and means for producing a signal indicating the range;

means for moving said fire crosswires in dependance on said signal from said rangfinder;

a first collimator forming part of said rangefinder and comprising an objective, sighting crosswires for sighting said rangefinder, and means for producing an image of said sighting crosswires visible through said telescope for locating the direction of measurement of the range;

a second collimator for shifting said line of collimation comprising an objective and said fire crosswires which are placed at the focal point of said objective;

an optical reflecting element associated with said second collimator for reflecting the image of said fire crosswires into said telescope; and

said first collimator and said second collimator being arranged so that the image of said sighting crosswires passes through said optical reflecting element and is reflected by said fire crosswires towards said optical reflecting element, said fire crosswires being provided with a reflecting face for reflecting said image of said sighted crosswires.

4,213,701

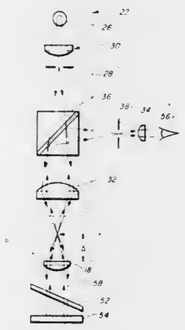
LENS TESTING APPARATUS AND METHOD

J. J. Lanzilloti, 1730 La Granada Dr., Thousand Oaks, Calif. 91360

Filed Oct. 30, 1978, Ser. No. 956,465

Int. Cl.² G01B *9/00*

U.S. Cl. 356—124 **25 Claims**



1. A system for testing lenses comprising:

means for forming a first image of a reticle at an image plane location;

means for positioning a reference surface of a test lens at said image plane location;

a mirror located on the side of said test lens opposite said image plane location;

means for adjusting the distance between said image plane location and said reference surface so that a second image of the reticle is formed by light which passes through said test lens, is reflected by said mirror, and which passes back through said test lens;

means for viewing said first and second images;

means for rendering the spectral characteristic of said second image distinguishable from that of said first image;

means for measuring the distance between said image plane location and said reference surface when said second image of the reticle is formed, whereby characteristics of said lens to be tested may be determined.

4,213,702

GLASS INSPECTION METHOD AND APPARATUS

Nelson Bryant, Ithaca, and Rudy Hoppe, Valois, both of N.Y., assignors to Powers Manufacturing, Inc, Elmira, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,180

Int. Cl.² G01N *21/32*

U.S. Cl. 356—239 **5 Claims**

1. Apparatus for detecting a flaw in a glass bottle, comprising:

means for directing a light beam at a region of said bottle;

means for rotating said bottle with respect to said beam to cause said beam to scan said region of said bottle;

at least two spaced apart sensors disposed to sequentially detect a fluctuation in said light beam as the light beam emerges from said region of said bottle;

a difference amplifier connected to said sensors for generating a difference signal based on the sequential detection of said fluctuation in intensity of said light beam;

means for inverting said difference signal;

means for rectifying said difference signal and the inverted difference signal;

means for combining the rectified signals; and



a comparator for detecting whether the combined signal exceeds a predetermined threshold value;

whereby the passage of a flaw through said beam within a predetermined time interval causes the combining means to generate a combined signal which exceeds said predetermined threshold value, said predetermined time interval being substantially equal to the time taken for the leading edge of a shadow cast by said flaw as said flaw passes through said beam to intercept one of said sensors after having intercepted the other of said sensors.

4,213,703

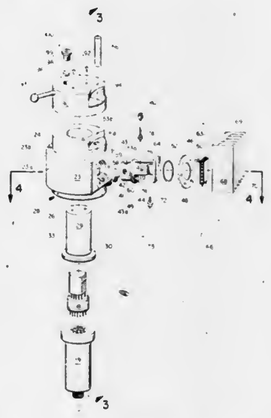
PHOTOMETER WITH STATIONARY SAMPLE HOLDER AND ROTATABLE SHUTTER

Otto Haunold, Carlsbad, and Malbone W. Greene, Vista, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 30, 1978, Ser. No. 910,819

Int. Cl.² G01N *21/01*

U.S. Cl. 356—244 **10 Claims**



1. A sample holder and shutter assembly for use in instru-

ments mounting a photosensitive device for the determination of light, said assembly comprising:

a stationary body having a sample chamber, and a light path opening from said sample chamber to the photosensitive device;

means for mounting said stationary body in relation to the photosensitive device for the detection of light transmitted from said sample chamber;

shutter means comprising an opaque housing containing the photosensitive device and shielding the photosensitive device from light transmitted from said sample chamber when in the closed position, said housing having an aperture for communication between said photosensitive device and said light path from said sample chamber when said shutter means is in an open position to expose the photosensitive device to light transmitted therefrom;

heat exchange means for controlling the temperature in said sample chamber; and

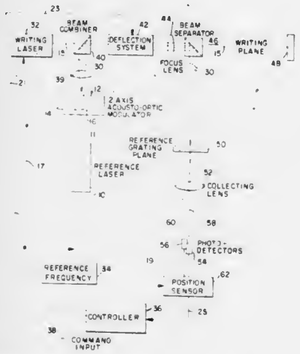
means for closing said sample chamber to external stray light when said shutter means is in the open position.

4,213,704

METHOD AND APPARATUS FOR SENSING THE POSITION OF A WRITING LASER BEAM

Richard H. Burns, Glendale, and Kenneth Crabtree, Saugus, both of Calif., assignors to The Singer Company, Stamford, Conn.

Filed Dec. 19, 1977, Ser. No. 862,247
Int. Cl.[2] G01B *9/02*
U.S. Cl. 356—349 **13 Claims**



1. The method of sensing the positon of a deflected laser beam comprising:

providing a first laser beam the position of which is to be sensed,

diffracting a second laser beam into at least two beams of unlike frequency by means of a single input frequency,

combining said first laser beam and said laser beams of unlike frequency,

simultaneously passing said combined laser beams through a deflection system to deflect said combined laser beams,

separating said deflected laser beams of unlike frequency from said deflected first laser beam,

focusing said separated laser beams of unlike frequency onto a diffraction grating to produce a traveling interference pattern thereon whereby a plurality of diffracted beams emanate from said grating, and

sensing the frequency of at least one of said diffracted beams emanating from said grating to enable the movement of said first laser beam in a first direction to be determined, and

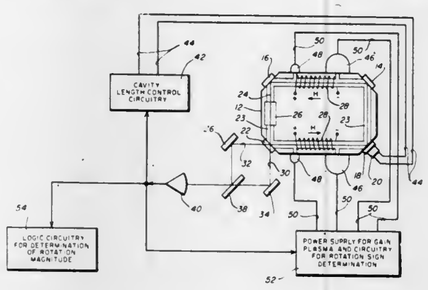
sensing the frequency of another one of said diffracted beams emanating from said grating to enable the movement of said first laser beam in a second direction perpendicular to said first direction to be determined.

4,213,705

FOUR MODE ZEEMAN LASER GYROSCOPE WITH MINIMUM HOLE BURNING COMPETITION

Virgil E. Sanders, Newberry Park, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 798,240, May 18, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,237
Int. Cl.[2] G01B *9/02*; **G01P** *9/00*
U.S. Cl. 356—350 **15 Claims**



1. A four mode ring laser gyro comprising:

reflective means for at least partly confining a pair of right-circularly-polarized clockwise and counter-clockwise propagating radiant energy waves and a pair of left-circularly-polarized clockwise- and counter-clockwise- propagating radiant energy waves in a closed loop path;

an enclosure enclosing said closed loop path;

at least two gas isotopes comprising a gain medium within said enclosure;

means for optically pumping said gain medium in at least one gain section of said path;

reciprocally anisotropic dispersion means in said path for separating the frequency of right-circularly-polarized radiant energy waves from the frequency of left-circularly-polarized radiant energy waves by a chosen predetermined value;

means for applying as a function of said predetermined frequency separation a substantially uniform magnetic field in the direction of said path to all of said gain sections, the intensity of said magnetic field in each gain section being at a value to separate the gain curves of each said isotope into two gain curves separated by an amount to minimize hole burning competition for said predetermined frequency separation.

4,213,706

BACKGROUND COMPENSATING INTERFEROMETER

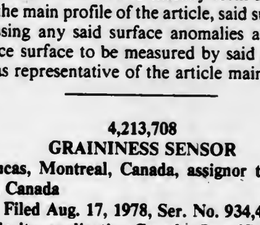
Henry A. Hill, Tucson, Ariz.; John W. Figoski, New Town, Conn., and Paul T. Ballard, Tucson, Ariz., assignors to The University of Arizona Foundation, Tucson, Ariz.

Filed Aug. 19, 1977, Ser. No. 826,024
Int. Cl.[2] G01N *21/46*
U.S. Cl. 356—353 **18 Claims**

18. A device for reducing the effects of undesired background radiation, comprising:

means for receiving an incident beam containing radiation radiated from a desired object and background radiation and for splitting said incident beam into first and second beams; and

means for introducing a relative shear between said first and second beams to provide an interference fringe pattern of the background radiation with the radiation from the desired object being disposed on a dark fringe of the interference pattern.

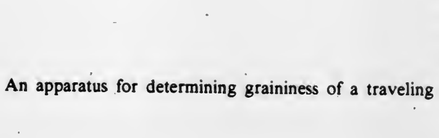


4,213,707

DEVICE FOR IMPROVING THE ACCURACY OF OPTICAL MEASURING APPARATUS AND THE LIKE

John D. Evans, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,074
Int. Cl.[2] G01B *11/02, 11/08*
U.S. Cl. 356—387 **7 Claims**



1. Device for use with and for enabling gauging instruments, which measure the thickness, diameter, circumference or other dimensional parameter of articles by means impinging or scanning the surface of the article, to make more accurate measurements of transparent articles or of the main profile of an article having surface anomalies projecting from the main profile, said device comprising:

a support means; and

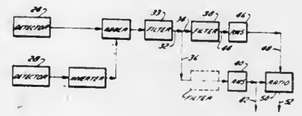
flexible means connected to said support means for bearing against and conforming to a portion of the surface of the article to be measured and thereby form a substitute profile on the main profile of the article, said substitute profile suppressing any said surface anomalies and providing a reference surface to be measured by said gauging instruments as representative of the article main profile.

4,213,708

GRAININESS SENSOR

John M. Lucas, Montreal, Canada, assignor to Domtar Inc., Montreal, Canada

Filed Aug. 17, 1978, Ser. No. 934,406
Claims priority, application Canada, Jun. 27, 1978, 306279
Int. Cl.[2] G01N *21/30*
U.S. Cl. 356—429 **12 Claims**



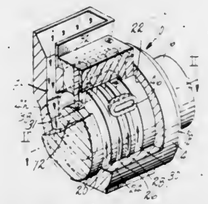
1. An apparatus for determining graininess of a traveling paper web comprising means for moving a paper web relative to a sensing means; said sensing means including means for illuminating an area of less than 1 mm in diameter on said web thereby to instantaneously illuminate a succession of spots on the surface of the moving web as they pass said sensing means and detector means positioned to receive scattered light from said illuminated spots thereby to generate a topographic signal; filter means for filtering said topographic signal to separate a pass frequency range from a blocked frequency range, one of said pass frequency range and said blocked frequency range containing only a selected range of frequencies of said topographic signal; said selected range of frequency representing topographic features of said web of selected lengths in the direction of travel of said web of at least 1.5 mm and that contribute significantly to graininess thereby to provide a first signal having a significant portion of its power determined by surface features that contribute significantly to the graininess of said web; means for averaging said first signal; means for averaging a second signal derived from said topographic signal said second signal including at least a major portion of said blocked frequency range; and means for determining the ratio of said averages thereby to obtain a quantitative indication of the graininess of said web.

4,213,709

ROTARY PROCESSOR

Lefteris N. Valsamis, West Haven, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Dec. 1, 1978, Ser. No. 965,387
Int. Cl.[2] B01F *7/02*; **B29B** *1/06, 3/02*
U.S. Cl. 366—76 **11 Claims**



1. Apparatus for processing materials which are or in the course of processing become liquid and which comprises a rotatable element carrying at least one primary processing channel and at least one further processing channel with the geometry of the primary channel providing a processing capacity relative to the geometry of the further channel sufficient to transfer material from the primary channel to the further channel at a volume rate at least equal to the rate at which the further channel processes and discharges material and, a stationary element providing a coaxial surface cooperative with the processing channels to provide an enclosed primary processing passage and an enclosed further processing passage; stationary solid members extending into each channel and providing a material collecting end wall for each channel, an inlet through the stationary element for introducing the material into at least the primary processing channel, means adjacent the inlet providing only the primary processing channel with an intake capacity which exceeds the through-put capacity of the primary processing channel, means to transfer material processed in the primary processing channel to the further processing channel at said volume rate and an outlet for discharge of material from the further processing passage; said apparatus also including means to introduce the material to the primary processing channel at a volume rate at least equal to the rate needed to fill the uptake capacity of the primary processing channel, the rotatable element being rotatable in a direction from the inlet toward the outlet to provide a coaction between the rotating side walls of the channels and the material collecting end wall of the channels so that material in contact

with the side walls is dragged forward to the material collecting end wall so that material collected at the end wall of the primary processing passage is transfered to the further processing passage and material collected at the end wall surface of the further processing passage can be discharged from the apparatus.

4,213,710

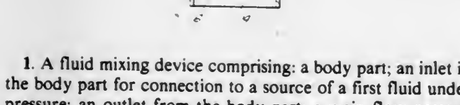
ADJUSTABLE HOMOGENIZATION EXTRUDER

Peter Hold, Milford, Conn.; Zehev Tadmor, Teaneck, N.J., and Hans R. Scharer, Woodbridge, Conn., assignors to USM Corporation, Farmington, Conn.

Filed Sep. 26, 1978, Ser. No. 946,093

Int. Cl.[2] B29F *3/02*

U.S. Cl. 366—81 **8 Claims**



1. An extruder machine for the processing of thermoplastic material comprising:

a body having a bore extending longitudinally therethrough;

a rotor having at least one helically arranged flight disposed therearound, said rotor being rotatively journalled about an axis in said bore;

a feed opening in one end of said body to permit material to be worked to be deposited therein, said feed opening being in communication with said bore;

a discharge opening in the other end of said body to permit material worked therein to be extruded therethrough; and

an adjustable dam arranged on said rotor and movable in the radial direction with respect to the axis of said rotor and rotatable about its own radially directed axis to permit the regulation of flow of said thermoplastic material therewith.

4,213,711

FLUID MIXING DEVICES

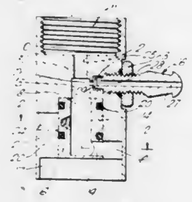
Thomas G. Bailey, 91, Salisbury Ave., Warden Hill, Cheltenham, England

Filed Mar. 30, 1979, Ser. No. 25,602

Claims priority, application United Kingdom, Mar. 30, 1978, 12376/78

Int. Cl.[2] B01F *15/02*

U.S. Cl. 366—150 **9 Claims**



1. A fluid mixing device comprising: a body part; an inlet in the body part for connection to a source of a first fluid under pressure; an outlet from the body part; a main flow passage leading from said inlet to said outlet; means within the main flow passage for creating a low pressure zone in that passage during flow of the first fluid therethrough; an auxiliary passage leading to said low pressure zone; means for connecting the auxiliary passage to a source of a second fluid; and adjustable means for selectively reducing the cross-sectional area of said main flow passage, downstream of said low pressure zone, to an extent whereby, in use of the device, the low pressure zone is ineffective in drawing the second fluid into the main flow passage.

4,213,712

METHOD AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF A SLURRY EXPLOSIVE CONTAINING AN EMULSIFIED LIQUID COMPONENT

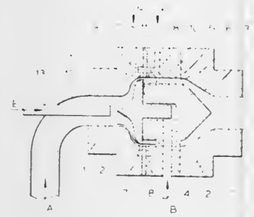
Bent Aanonsen; Paul-Johny Odberg, both of Saetre, and Eirik Samuelsen, Lierbyen, all of Norway, assignors to Dyno Industries A.S., Oslo, Norway

Filed Apr. 4, 1978, Ser. No. 893,309

Claims priority, application Norway, Apr. 4, 1977, 771201; Mar. 13, 1978, 780885

Int. Cl.[2] B01F *7/08*

U.S. Cl. 366—178 **18 Claims**



1. A system for continuously producing an explosive in the form of an emulsion of at least two liquid components which are insoluble in each other by intermixing streams of said components, one of said components comprising an aqueous oxidizing salt solution, and another of said components comprising a combustible liquid, said system comprising:

a housing having an upstream end and a downstream end;

a mixing rotor freely rotatably supported within said housing, said rotor having an outer periphery facing an inner periphery of said housing and defining therewith an annular space;

said rotor including vanes facing said upstream end of said housing;

first inlet feed means extending into said upstream end of said housing for supplying therein a first stream of a first of said liquid components, and for directing said first stream against said vanes and past and around said rotor through said annular space toward said downstream end of said housing, thereby rotating said rotor;

second inlet feed means, extending into said housing between said upstream and downstream ends thereof, for supplying a second stream of a second of said liquid components into said annular space at a position to thereat join with said first stream;

said rotor having on said outer periphery thereof, downstream of said position, groove means for creating turbulence within said first and second streams and for thereby causing said first and second streams to form an emulsion; and

outlet delivery means, extending from said housing at said downstream end thereof, for removing therefrom said emulsion.

4,213,713

ONE PIECE AGITATOR FOR CLOSED VESSEL

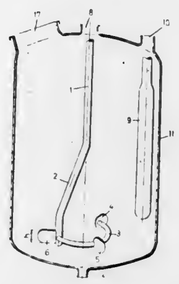
Hugo Kaessner, Schwetzingen, and Wilhelm Loehr, Oftersheim, both of Fed. Rep. of Germany, assignors to Pfaudler Werke A.G., Schwetzingen, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,110

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751770; Nov. 19, 1977, 7735483[U]

Int. Cl.[2] B01F *7/16*

U.S. Cl. 366—279 **18 Claims**



3. In a closed vessel having a manhole opening therein, an agitator opening and an agitator mounted in said agitator opening, said agitator comprising an agitator shaft and an impeller having a diameter larger than the largest opening in said vessel, the improvement wherein said impeller comprises a segment of a ring and a plurality of agitator blades mounted on and extending outwardly from said ring segment.

4,213,714

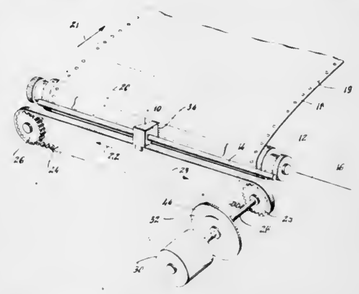
PRINTER HAVING VARIABLE CHARACTER DENSITY

Clifford M. Jones, and William A. Surber, both of Waynesboro, Va., assignors to General Electric Company, Waynesboro, Va.

Filed Nov. 1, 1977, Ser. No. 847,585

Int. Cl.[2] B41J *3/12, 19/32*

U.S. Cl. 400—124 **12 Claims**



1. In a matrix printer for reproducing characters of selectively different character widths, said printer comprising head means which is transported in a lateral direction parallel to a platen, said head means adapted to form a matrix column of component character marks for forming a character on a record medium, a desired width of a character being determined by the spacing between adjacent matrix columns in a character matrix, the improvement comprising:

first means for generating a single set of electrical, incremental position signals representative of predetermined possible print positions which are all spaced apart an equal distance along said platen and for locating matrix columns at selected ones of said predetermined possible print positions,

second means coupled to said first means for electronically changing the predetermined print positions at which matrix columns are located, and

means for causing the distance between such selected adjacent print positions to always be a predetermined integral submultiple of the character width.

4,213,715

INK RIBBON CARTRIDGE HAVING A REPLACEABLE RIBBON MAGAZINE

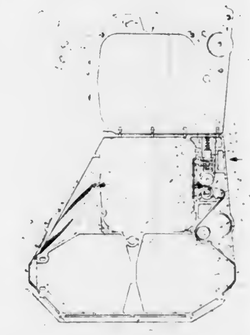
Johannes Haftmann, Borchen-Doerenhagen, and Rudolf Schmeykal, Neuenbeken, both of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Apr. 7, 1978, Ser. No. 894,591

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1977, 2717076

Int. Cl.[3] B41J *33/10*

U.S. Cl. 400—196.1 **16 Claims**



1. An ink ribbon storage and guide device constructed for use in combination with but selectively independently removable from a printer and comprising:

a body defining a contoured interior storage compartment and an elongated ink ribbon guide path around at least a portion of the perimeter of said body,

inlet and outlet means in said body and disposed at respective spaced points adjacent said storage compartment,

said ribbon guide path being substantially completely internal of said body but exiting from said body in at least one perimeter location for association with a printer head,

said body further defining an open interior volume adjacent said location for occupation by a printer head when said body is operatively installed in a printer,

drive roller means mounted on the body adjacent said inlet means for causing an ink ribbon to be driven from said outlet means to said inlet means by way of the guide path; and

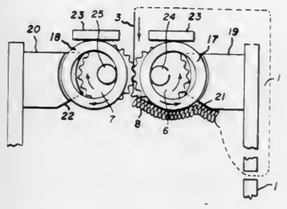
an ink ribbon magazine having substantially the same dimensions and contours of said contoured storage compartment and being independently removably disposable within said storage compartment, said magazine having an outlet opening which is adjacent said outlet means and an inlet opening adjacent said inlet means when said magazine is disposed within said storage compartment, said ink ribbon magazine comprising a closed plastic container having permanently disposed therein an endless ink ribbon loop an interchangeable portion of which is extensible from said magazine for location with said guide path when said magazine is located in said storage compartment for use in printing operations and being wholly removable from said body and said drive roller means independent of the removal of said body from said printer.

4,213,716

RIBBON STRIPPING MECHANISM

Andrew B. Carson, Jr., Waynesboro, Va., assignor to General Electric Company, Waynesboro, Va.

Filed May 15, 1978, Ser. No. 906,112
Int. Cl.[2] B41J *33/10*
U.S. Cl. 400—196.1 **8 Claims**



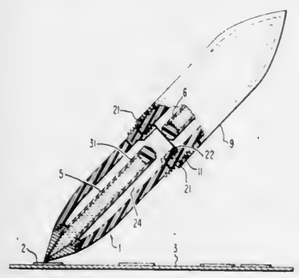
1. Means for withdrawing ribbon from an outlet end of a housing and stuffing said ribbon into said housing at an inlet end comprising at least one pair of friction rollers mounted for rotation about respective shafts such that ribbon passing between said rollers is withdrawn from said outlet end and fed into said inlet end by friction of the rollers against the ribbon, means for stripping said ribbon upon passage through said rollers to said outlet end comprising at least one pair of rotatable stripping rings each associated with an associated one of said friction rollers, means for minimizing scuffing and rubbing forces between said friction rollers and said stuffed ribbon comprising the outer diameter of each of said stripping rings being dimensioned to be greater than the outer diameter of its associated friction roller, said stripping rings supported to rotate eccentrically about the axes of the shafts of their associated rollers in the direction of ribbon motion through the friction rollers without touching the ribbon where said ribbon passes between the friction rollers but frictionally engaging said ribbon after said ribbon leaves said rollers.

4,213,717

BALL POINT PEN, INK AND ITS ERADICATOR SYSTEM

An-Chung R. Lin, Fairport, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 784,653, Apr. 4, 1977, Pat. No. 4,156,657. This application Nov. 13, 1978, Ser. No. 960,256
Int. Cl.[3] B43K *27/12, 7/00*
U.S. Cl. 401—18 **7 Claims**



1. A pen for an ink-eradicator system having an ink and its eradicator, wherein said colored ink of said system, which can be eradicated after application, comprises:

a dye which remains colored in acid solution,

a vehicle solution in which the dye will dissolve, and

an acid with a PKa value smaller than 7, and wherein said eradicator for said ink comprises

an amount of a base effective to neutralize the acid of said ink,

an amount of an amine effective to act as a decolorizing agent for the dye to form a colorless product, and

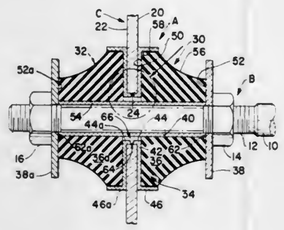
a hydroxy solvent, said pen containing at least one of said ink or its eradicator in solution.

4,213,718

STRUT ROD MOUNTING ASSEMBLY

Dale Lumby, Hudson, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Jun. 22, 1979, Ser. No. 51,279
Int. Cl.[2] F16B *9/02*
U.S. Cl. 403—197 **9 Claims**



1. A mounting assembly for connecting a terminal end portion of an elongated strut rod to a vehicle frame member at a predetermined mounting opening passing therethrough, said mounting assembly comprising:

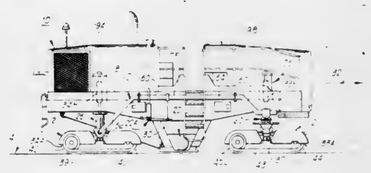
a pair of resilient bushings each having spaced apart inner and outer end faces with a strut rod receiving passage extending between said end faces, said bushings adapted to be positioned on opposite sides of said frame member with said frame member opening and bushing passages in substantial axial alignment with each other to receive said strut rod terminal end portion therethrough and with said bushing inner end faces disposed adjacent said frame member; an alignment cup having a generally flat base interposed between the inner end face of each bushing and said frame member, each said cup further including an inner lip extending generally normal to said base adapted to be axially received in said frame member opening and an outer lip adapted to be received over at least a portion of the outer periphery of the associated bushing inner end face, said outer lip being spaced along said base from said inner lip and extending outwardly therefrom in a direction generally opposite to said inner lip; spacer means adapted to prevent the side walls of said bushing passages from contacting said strut rod along said terminal end portion thereof; and, a thrust member disposed at each bushing outer end face wherein said thrust members are adapted to be brought into bearing engagement against said bushing body outer end faces by selectively adjustable force means received at spaced apart locations along said strut rod terminal end portion, whereby said inner lips are adapted to center and pilot said alignment cups in said frame member opening and said outer lips are adapted to pilot said bushings at least in response to any rocking movement of said strut rod caused during vehicle operation.

4,213,719

GRADE AVERAGING APPARATUS

George W. Swisher, Jr., and Thomas L. Steele, both of Oklahoma City, Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 887,004, Mar. 16, 1978, Pat. No. 4,140,420. This application Sep. 28, 1978, Ser. No. 946,606
Int. Cl.[2] E01C *19/00*
U.S. Cl. 404—84 **12 Claims**



12. In combination with a road working machine having a frame supporting a work piece for working contact with a roadway surface, the frame supported by a drive assembly having at least one rear drive track connected to the frame and pivotable about a rear control axis, and the drive assembly having at least one forward steering drive track connected to the frame and pivotable about a forward control axis, the forward steering drive track supported to accommodate swivel rotation to steer the road working machine, and the elevation of the work piece determined by an elevation control device sensing an external elevation control reference, the improvement comprising:

a bar member having a forward end and a rear end, the rear end of the bar member pivotally connected to the rear drive track at a selected attachment point defining a rear elevation reference being constantly fixed relative to the rear control axis, the elevation of the rear elevation reference being indicative of the average grade of the roadway surface supporting the rear drive track; and

bar connecting means supporting the forward end of the bar member and connected to the forward steering drive track for providing a pivot point between the forward end of the bar member and the forward steering drive track such that the pivot point defines a forward elevation reference the position of which is constantly fixed relative to the forward control axis throughout the range of swivel of the forward steering drive track, the elevation of the forward elevation reference being determined by the average grade of the roadway surface supporting the forward steering drive track, and the bar member providing the elevation control reference indicative of the average of the forward elevation reference and the rear elevation reference, the bar connecting means comprising:

a swivel plate assembly supported by the forward steering drive track and having a bearing surface; and

bearing means attached to the forward end of the bar member for engaging the bearing surface of the swivel plate.

4,213,720

TENSIONING OF MEMBERS

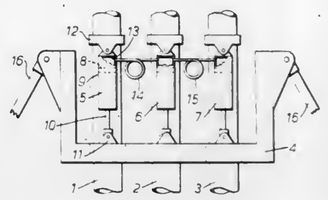
Michael L. Portass, Barrow-in-Furness, England, assignor to Vickers Limited, London, England

Filed Sep. 5, 1978, Ser. No. 939,217
Claims priority, application United Kingdom, Sep. 5, 1977, 37050/77
Int. Cl.[2] E21B *43/01*
U.S. Cl. 405—195 **6 Claims**

1. In combination, two or more members capable of relative axial movement with respect to one another and an arrangment for applying tension to each of said members, which arrangement comprises:

(i) a frame to which tension is to be applied, and

(ii) a plurality of hydraulic cylinders linking the members to the frame, each member being linked to the frame by a separate cylinder and the cylinders being interconnected hydraulically such that the hydraulic fluid pressures in the



cylinders are in a fixed proportion relative to one another and the members are thereby capable of relative axial movement with respect to one another without change in the proportion of the tension carried by the members.

4,213,721

ALIGN BORING MACHINE

R. Warren Aldridge, Jr., 10022 Nadina Dr., Hunstville, Ala. 35803

Continuation-in-part of Ser. No. 875,985, Feb. 8, 1978, Pat. No. 4,132,494. This application Dec. 26, 1978, Ser. No. 972,975
The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.
Int. Cl.[2] B23B *41/12*
U.S. Cl. 408—54 **8 Claims**



1. A boring machine for alignment boring of a plurality of bearing housings of an automotive engine block comprising:

a horizontally elongated base having vertical and horizontal longitudinally extending machine ways;

a first vertically adjustable-in-height support positioned on one end region of said elongated base and engageable and alignable with said machine ways, and a second vertically adjustable-in-height support positioned on an opposite end region of said elongated base and engageable and alignable with said machine ways;

an elongated horizontal track on said base between said supports, which track defines a longitudinal axis and horizontal reference plane in alignment with said vertical and horizontal machine ways;

a table adapted to be supported by and be longitudinally movable along said track,

feed means for selectively moving said table along said track;

a boring bar;

bearing support means for horizontally and rotably supporting ends of said boring bar on and between said first and second supports and along a line in a first plane parallel with the plane of said vertical machine ways and coinci-

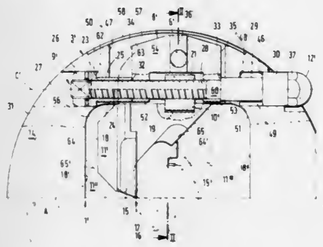
dent in a second plane parallel with the plane of said horizontal machine ways;
drive means coupled to one end of said boring bar for rotating said boring bar;
engine block support means for rigidly supporting an engine block on said table with said boring bar through bearing housings with said bar concentrically positioned with respect to the center of a desired bore through said bearing housings; and
at least one cutting tool mounted on said boring bar, whereby bearing housings of an engine block may be bored by moving said table longitudinally by operation of said feed means.

4,213,722

TRANSPORTABLE EXTERNAL THREAD CUTTING MACHINE

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to Rems-Werk Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 972,781
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758284; Nov. 3, 1978, 2847784
Int. Cl.[2] B23B *39/00*
U.S. Cl. 408—73 **14 Claims**



1. A transportable external thread cutting machine for threading a workpiece, which machine includes:
a cutting head;
cutting blades displaceably mounted in said cutting head;
a control device operatively connected with said cutting head and said cutting blades and comprising a one-piece unit which forms a slide and a scanner;
control means, including a control surface selected in conformity with a desired thread, operatively associated with said one-piece unit for moving same relative to said workpiece in response to contact between said scanner and said control means.

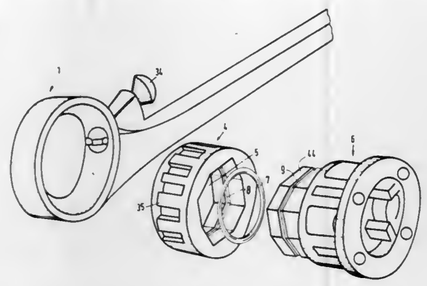
4,213,723

THREAD CUTTING DIE STOCK

Rudolf Wagner, Waiblingen, Fed. Rep. of Germany, assignor to Rems-Werk Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed Jan. 9, 1978, Ser. No. 867,765
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1977, 2700465
Int. Cl.[2] B23B *45/12*; B23G *1/30*
U.S. Cl. 408—239 A **4 Claims**

1. A thread cutting die stock which includes in combination: a die stock head structure having an axis, an abutment surface, and a bore with a first inner guiding surface for detachably receiving one of a first cutting head or an adaptor which has a second bore with an annular groove about the inner wall thereof, and a resilient fastener means in said groove, a securing means engaging one of said first cutting head or said adaptor and said abutment for securing same to said head, a second cutting head for mounting in said second bore and having securing means for engagement with said resilient fastener means in said annular groove, whereby either said first cutting head is secured in said die stock head or said second cutting



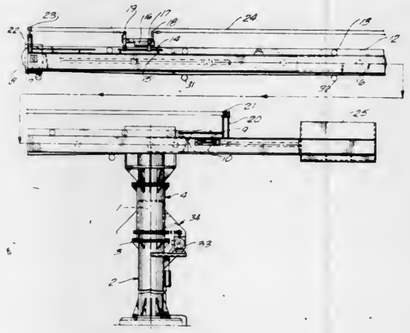
head is secured in said die stock head by mounting said second cutting head in said adaptor secured in said die stock head.

4,213,724

CONVEYOR APPARATUS FOR STACKING AND DISTRIBUTING COMMINUTED MATERIAL

Eugene R. Holderness, Claremont, Calif., assignor to Occidental Research Corporation, La Verne, Calif.

Filed Dec. 30, 1977, Ser. No. 866,047
Int. Cl.[2] B65G *65/28*
U.S. Cl. 414—133 **12 Claims**



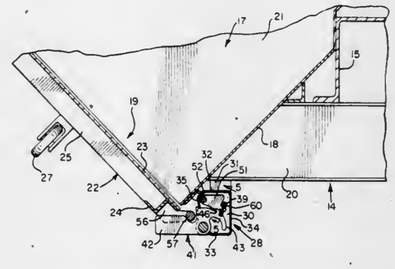
1. A conveyor apparatus for stacking and distributing comminuted material comprising:
(a) a fixed first support;
(b) a second support supported by the first support and capable of rotation about a vertically extending rotational axis through such second support;
(c) an arm secured intermediate its length to the second support, said arm concomitantly rotatable with said second support about the vertically extending rotational axis intersecting the arm;
(d) a means for rotating the second support and concomitantly therewith the arm about the vertically extending rotational axis;
(e) a first pulley secured to one end of the arm;
(f) a second pulley secured to the arm between the second support and the end of the arm opposite the first pulley;
(g) an endless conveyor belt extending around the first and second pulleys to form a closed loop having an axial path of travel along the arm around such a closed loop;
(h) means positioned along the arm between the first and second pulleys for supporting the conveyor belt;
(i) a means for driving the conveyor belt around the first and second pulleys;
(j) a plow capable of traversing a length of the arm between the first and second pulleys and having a plow blade positioned above and in close proximity to the surface of the conveyor belt;
(k) a reversible winch secured to the arm in proximity to the second pulley;
(l) a third pulley secured to the arm in proximity to the first pulley;
(m) a cable with one end attached to the plow, extending through and around the third pulley and around the winch with the remaining end of the cable attached also to the plow; and
(n) means for driving the winch.

4,213,725

DOUBLE LOCKING DOOR LATCH MECHANISM FOR RAILWAY HOPPER CARS

Willis H. Knippel, Palos Park, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Oct. 25, 1978, Ser. No. 954,791
Int. Cl.[2] B61D *7/30*; B65G *67/24*
U.S. Cl. 414—387 **10 Claims**



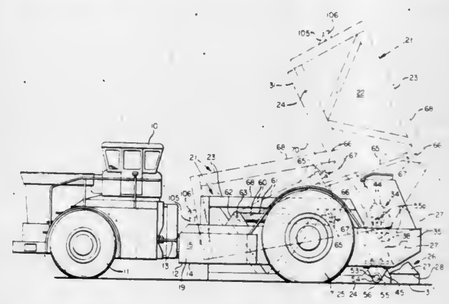
1. A railway hopper car comprising a car body including an underframe,
a hopper structure supported on said underframe including downwardly and outwardly extending slope sheets and a discharge opening,
a door hingedly connected to said car body for movement between open and closed positions relative to said opening,
the improvement of a door lock arrangement comprising;
a lock support bracket connected to said hopper structure adjacent to said discharge opening,
a latch member movably supported on said bracket between open and closed positions,
said latch member having a latch positioning portion and a keeper receiving portion,
a keeper element on said door adapted to engage said keeper receiving portion in the locked position of said door,
first and second stop elements on said latch positioning portion,
a locking element movably connected to said bracket adjacent to said latch positioning portion,
said locking element in a closed position of said latch member having a third stop engaging said first stop element to maintain said latch member closed,
a cam follower element on said locking element,
a reciprocating actuating member supported on said bracket and including a cam engaging said cam follower,
said reciprocating actuating member having a fourth stop in the closed position of said latch member engaging said second stop to maintain said latch member closed, and
means for reciprocating said actuating member whereby said cam follower moves said locking element and first and third stops out of engagement,
and said fourth stop is disengaged from said second stop, whereupon said latch member is moved to an open position releasing said keeper element.

4,213,726

CONTAINER CARRIER VEHICLE

James J. Robnett, Happy Valley, Oreg., and Dennis R. Thomas, Mount Hope, Canada, assignors to Raygo Wagner, Inc., Portland, Oreg.

Filed Jul. 24, 1978, Ser. No. 927,623
Int. Cl.[2] B60P *1/04*
U.S. Cl. 414—420 **13 Claims**



1. Apparatus for simultaneously raising and tipping a structure from a first lower position at which the bottom of said structure is substantially horizontal to a second upper position at which one end thereof is more highly elevated than the other end thereof, said structure having a first pivot support point positioned adjacent the bottom of said one end thereof and a second pivot support point disposed forwardly of and vertically above said first pivot support point, comprising:
carriage means engageable with said structure at said first pivot support point and constrained to raise said first pivot support point substantially vertically; and
a support arm pivotally attached at one end to said structure at said second pivot support point, said support arm being pivotally attached at its other end to a fixed point of support, said support arm pivoting and said second pivot support point on said structure rotating upwardly along an arcuate locus about said fixed point of support as said carriage means raises said first pivot support point on said structure, said second pivot support point being raised a distance less than said first pivot support point,
said structure thereby being simultaneously vertically raised and rotated, whereby said one end thereof is more highly elevated than said other end thereof at said second upper position.

4,213,727

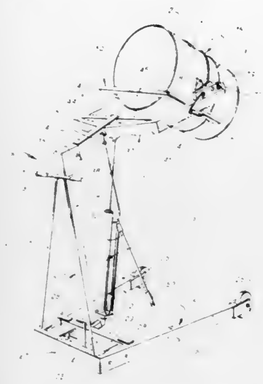
DRUM HANDLING APPARATUS

Charles H. Lighthipe, Jr., Pompey, N.Y., assignor to Morse Manufacturing Company, Inc., East Syracuse, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,207
Int. Cl.[2] B65G *65/24*
U.S. Cl. 414—420 **11 Claims**

1. Apparatus for use in a drum lifting and handling mechanism including
a bifurcated frame,
a saddle having two parallel side rails cojoined by a rear rail, the distance between the two side rails being less than the diameter of a drum to be handled whereby the side rails may be passed axially beneath a horizontally resting drum to arrest the back rail against one end wall of the drum and cradle the cylindrical wall of the drum between the two side rails,
a pair of opposed posts depending upwardly from each side rail,
an adjustable sling affixed to each of the posts for encompassing the upper portion of a drum seated in said saddle, said sling having a locking means associated therewith for tightening the sling against the drum to secure said drum within said saddle,

a pair of axially aligned trunnions depending outwardly from the posts that are rotatably supported in the arms of



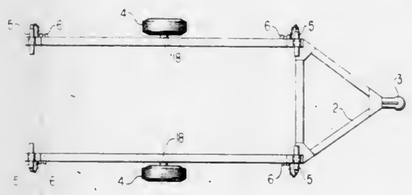
the bifurcated frame whereby the saddle can be rotated within said frame.

4,213,728

CONTAINER LIFTER

Geoffrey F. McKenzie, Box No. 271, P.O., Rabaul, Papua New Guinea

Continuation-in-part of Ser. No. 626,925, Oct. 29, 1975, abandoned. This application May 4, 1978, Ser. No. 902,856
Claims priority, application Australia, Oct. 31, 1974, PB9447
Int. Cl.³ B62B *1/06*
U.S. Cl. 414—446 3 Claims



3. A container lifter for use with bulk handling freight containers of generally rectangular form, said lifter comprising a pair of parallel horizontally disposed frame arms joined by a cross-member to form a U-shaped frame chassis adapted to be arranged around three sides of a container to be lifted; a towing hitch on said cross-member adapted to be secured to a fork-lift truck, a wheel on each of said frame arms centrally disposed along the length thereof, thereby defining a central transverse axis about which the lifter can perform a see-sawing motion; a pair of sliding buffers on each of said frame arms disposed one at each end thereof, first ends of said buffers being engageable with side portions of the container; lengths of chains having first ends connected to the other ends of said buffers, and means connected to the other ends of said chains for engaging the container at a respective one of the four courners of the base thereof.

4,213,729

VEHICLE ATTACHED CARRIER PIVOTABLE ABOUT PLURAL AXES

Clarence W. Cowles, Placentia, Calif.; James C. Breashears, Amarillo, Tex., and Edwin M. Mungons, Toledo, Ohio, assignors to Eugene Wilmoth, Westland, Mich.

Filed Jan. 27, 1978, Ser. No. 873,054
Int. Cl.² B60R *9/00*
U.S. Cl. 414—462 3 Claims



1. A carrier for external attachment to a land vehicle to carry objects with wheels externally to said vehicle and wherein said land vehicle has a central longitudinal axis extending from the front to back of said vehicle comprising:

a. a fixed support member attached externally to said land vehicle said fixed support member protruding rearwardly from said land vehicle;

b. a first pivot member of rigid construction, said first pivot member being pivotally mounted to said fixed support member and rotatable clockwise and counterclockwise in a ninety degree arc about a first axis extending through said first pivot member, said rotation being between a vertical storage position and a horizontal carrying position and wherein said first axis is perpendicular to the central longitudinal axis of said land vehicle;

c. a second pivot member of rigid construction, said second pivot member being pivotally mounted to the first pivot member for rotational movement about a second axis through said first pivot member, said second axis being parallel to the central longitudinal axis of said land vehicle;

d. means affixed on said second pivot member for carrying objects, said means comprising metallic bar members formed into a polygonal perimeter configuration, said metallic bar members being open in the center to receive the bottom of one or more wheels of the object to be carried;

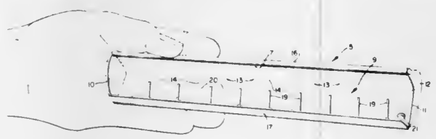
e. means on said second pivot member to lock same in a horizontal position relative to said first pivot member and said fixed support member.

4,213,730

DEVICE FOR USE IN COUNTING SMALL ITEMS

Nicholas A. Di Gaetano, 450 Merrimac Blvd., Port Orange, Fla. 32019

Filed Mar. 7, 1979, Ser. No. 18,231
Int. Cl.³ B65B *67/02*; G07D *9/06*
U.S. Cl. 414—675 6 Claims



1. A device to facilitate the counting of small items compris-

ing an elongated trough shaped holder having a closed end and an open discharge end, said holder including a transversely rounded bottom adapted to receive a number of small items to be counted and upwardly diverging side walls, the upper surface of said bottom having means for separating the items into small groups, and one of said side walls having inwardly opening pockets to receive the separated items when the holder is oscillated about its longitudinal axis in a direction to cause the side wall having said pockets to assume a bottommost position, whereby the small number of items contained in each pocket may be readily counted and the contents of all the pockets quickly totaled prior to oscillating the holder in the other direction for returning the items to said bottom and so that the items may be discharged through the open end of the holder when the holder is tilted endwise to cause said open end to assume a lowermost position.

4,213,731

EXCAVATORS

Antonius P. Verachtert, Julianastraat 14, Kerkdriel, Netherlands

Continuation of Ser. No. 656,376, Feb. 9, 1976, which is a continuation of Ser. No. 309,488, Nov. 24, 1972, abandoned. This application Jan. 15, 1979, Ser. No. 3,531
Claims priority, application Netherlands, Dec. 1, 1971, 7116489; Apr. 19, 1972, 7205286; Oct. 13, 1972, 7213935
Int. Cl.² E02F *3/81*
U.S. Cl. 414—723 19 Claims



11. In an excavator apparatus, connecting means for connecting an excavating attachment to an intermediate piece connected to a movable boom of the excavator apparatus, said connecting means comprising:

a cylindrical support on the intermediate piece and provided with means defining a reaction surface;

wall means defining a first recess on the attachment opening away from said reaction surface and a second, arcuate recess on the attachment adjacent said first recess;

a locking element on the intermediate piece slidably engaging said wall means in said first recess;

a reaction fulcrum pivot carried by said attachment and bearing against said reaction surface;

means on said intermediate piece defining a rotation axis rotatably received in said second recess; and

adjustable fastening means carried by said intermediate piece and acting against a portion of the attachment to prestress said fulcrum pivot against said reaction surface and said means defining said rotation axis against said wall means defining said second recess about said rotation axis.

4,213,732

APPARATUS FOR REMOTELY REPAIRING TUBES IN A STEAM GENERATOR

Frank W. Cooper, Jr., Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 13, 1978, Ser. No. 895,831
Int. Cl.² B65G *47/90*
U.S. Cl. 414—728 10 Claims



1. Apparatus for remotely repairing a tubesheet and tubes accessible from a head of a steam generator which has a centrally disposed partition dividing the head into an inlet and an outlet portion and a manway disposed in each of said portions, said apparatus comprising:

a column rotatably disposed in a portion of said head generally perpendicular to said tubesheet, said column having one end terminating a predetermined distance from said tubesheet;

a boom pivotally mounted adjacent the terminal end of said column;

means for rotating said column and said boom therewith;

means for locking said column and said boom in any rotated position;

means for pivoting said boom from a position generally parallel to said tubesheet to positions generally aligned with each of said manways;

a carriage disposed to ride lengthwise along said boom;

means for moving said carriage lengthwise along said boom and for fixing the position of said carriage on said boom;

said carriage including a base which is generally parallel to the tubesheet when the longitudinal axis of the boom is generally parallel to the tubesheet, a platform generally parallel to the base, a first gear train at least partially supported by the base and connected to the platform for moving said platform relative to said base, means for maintaining a parallel relation between the platform and base, a positioning motor for transmitting power to said first gear train, a tool holder supported by and being selectively cantilevered over said platform, said tool holder including a chuck for grasping tools and a drive motor for driving said chuck, said drive motor being associated with said first gear train and being movable with said platform wherein a plurality of tools operable on the tubes and the tubesheet are graspable by the chuck.

4,213,733

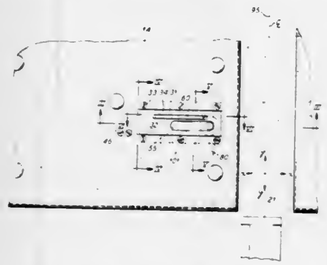
AUTOMATIC SIDE GAUGE FOR MACHINE TOOL WORKPIECE CONTROL AND METHOD

Robert P. De George, Kenmore; Paul R. Brown, Akron, and Victor T. Carbone, West Seneca, all of N.Y., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Sep. 7, 1976, Ser. No. 720,803
Int. Cl.² B25J *13/00*
U.S. Cl. 414—751 3 Claims

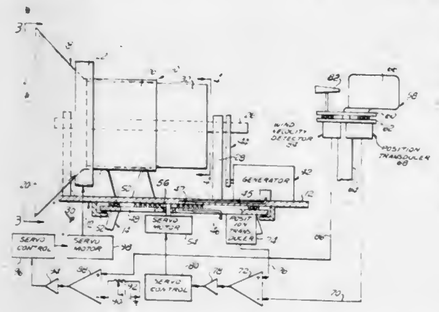
1. The method of setting a workpiece position control for

machine tools which comprises the steps of providing an automatically controlled movable workpiece gripping mechanism, providing a movable stop member movable between a rest position and an end of travel position spaced from the rest position, loading a workpiece onto the workpiece gripping mechanism, projecting a portion of the movable stop member into a path of movement of the workpiece carried by the workpiece gripper mechanism, causing movement of the workpiece gripper mechanism and workpiece in the path towards the movable stop member, contacting the movable stop member at the first position by a leading edge of the workpiece, continuing movement of the workpiece and causing movement of the movable stop member away from the rest



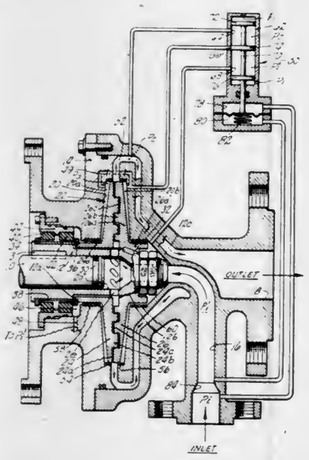
position to a first position spaced from the rest position in the direction of movement of the workpiece, sensing the presence of the movable stop at the first position and setting a base line reference within an automatic control for the workpiece gripping mechanism in dependent response to the sensing of the presence of the movable stop member at the first position, including the additional steps of providing a first carriage stop movement signal to the automatic control upon sensing the presence of the stop at the first position, sensing failure of the carriage to stop at the first position as a result of the first stop signal by sensing the presence of the stop at a second position closely spaced from the first position, providing a second carriage stop movement signal to the automatic control upon sensing the presence of the stop at the second position.

4,213,734
TURBINE POWER GENERATOR
Jerry W. Lagg, 15246 Collingham, Detroit, Mich. 48205
Filed Jul. 20, 1978, Ser. No. 926,254
Int. Cl.[2] F03D *7/04, 1/04*
U.S. Cl. 415—4 **12 Claims**



1. A reaction-type turbine rotatable by fluid flow longitudinally therethrough, said turbine comprising a rotatable output shaft, a rotatable tubular shroud disposed concentric to said output shaft, means rigidly interconnecting said output shaft and said tubular shroud for rotation in unison, and a plurality of flexible impeller blades disposed radially between said output shaft and the interior surface of said tubular shroud, said flexible impeller blades having a leading edge, a trailing edge and a pair of opposed lateral edges, one of said lateral edges being fixedly attached to said output shaft and a portion of the other of said lateral edges proximate said leading edge being fixedly attached to the interior surface of said tubular shroud, and means for controllably uniformly varying the pitch of said impeller blades by displacing the peripheral corner of the trailing edge of said blades such as to place said trailing edge at an angle to the leading edge of said blade.

4,213,735
CONSTANT FLOW CENTRIFUGAL PUMP
Charles W. Grennan, Newington, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Feb. 1, 1979, Ser. No. 8,236
Int. Cl.[3] F04D *15/00;* **F01D** *5/02;* **F03B** *15/02*
U.S. Cl. 415—21 **4 Claims**



1. In an improved variable geometry impeller pump adapted to provide a constant output flow under varying back pressure of the type comprising: a pump housing having an inlet conduit, an outlet conduit, a pumping cavity and a collector, the inlet conduit being in fluid communication with the pumping cavity and the collector being in fluid communication with the pumping cavity and the outlet conduit, an impeller section mounted for rotation in the housing for impelling fluid into the collector, the impeller section having a hub and a plurality of vanes with first slots defined therebetween, a structure mounted for rotation in the housing, the structure having a hub and a plurality of second slots in which the vanes of the impeller section are received, the improvement comprising:

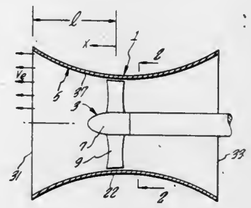
a shroud connected to the hub of the impeller section and carrying the vanes, the shroud being of such a thickness as to be flexible in the manner of a Belleville spring and forming a chamber with the wall of the pumping cavity adjacent thereto;

means for mounting the hubs of the impeller section and the structure in fixed axial relationship with respect to each other, whereby flexing of the shroud functions to vary the exposed area of the vanes;

supply orifice means to privide a fluid resistance to communication between the collector and the chamber; and

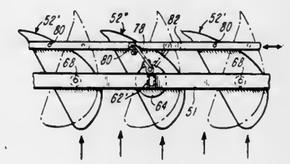
drain orifice means to provide a fluid resistance to communication between the chamber and the inlet conduit.

4,213,736
TURBOMACHINERY AND METHOD OF OPERATION
Calvin A. Gongwer, Glendora, Calif., assignor to Innerspace Corporation, Glendora, Calif.
Division of Ser. No. 737,065, Nov. 1, 1976, Pat. No. 4,137,709, which is a division of Ser. No. 654,925, Feb. 3, 1976, Pat. No. 4,055,947. This application Jun. 5, 1978, Ser. No. 912,430
The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.
Int. Cl.[3] F04D *3/00;* **B63H** *11/08*
U.S. Cl. 415—182 **26 Claims**



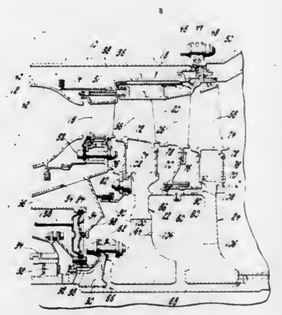
1. Turbomachinery comprising an impeller positioned with a diffuser throat, said impeller having at least one blade mounted about a central rotatable hub wherein the chord of said blade root and tip sections is greater than the chord of said blade midsection, and said impeller blade is further defined as having a greater pitch at said tip section than at said blade midsection.

4,213,737
WIND ENGINE
Kyle D. Gerhardt, 4111 S. Yellow Springs Rd., Springfield, Ohio 45506
Filed Jan. 17, 1978, Ser. No. 870,229
Int. Cl.[2] F03D *7/04*
U.S. Cl. 416—41 **22 Claims**



1. Windmill apparatus for use in capturing the energy of the wind and converting it to power comprising a plurality of relatively narrow ring-like bands joined together in a generally concentric radially spaced relation to form a wheel adapted to rotate about means defining therefor a central axis, said wheel in use normally orienting generally perpendicular to a ground surface, a plurality of air foils positioned between successively adjacent bands, in a circularly spaced relation, each said air foil having means pivotally mounting it for adjustment about an axis which is radial to the wheel axis, the surfaces of said foils at their radial extremities being substantially flat, each said foil between its radial extremities being provided with an outer peripheral surface a substantial portion of which is flatted to define its operating face which in use of the foil is generally faced into the prevailing wind, the balance of the said peripheral surface being generally arcuate and departing sharply from said flatted portion to give the foil a generally bulbous configuration at its side opposite that defined by said flatted portion the peak of which has a substantial departure from said flatted portion and there being a relatively low ratio of the length of said flatted portion to the depth of said foil at the location of said peak in a sense transverse to the pivot axis of the foil.

4,213,738
COOLING AIR CONTROL VALVE
James R. Williams, Martinsville, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 21, 1978, Ser. No. 879,782
Int. Cl.[2] F01D *5/08, 5/18*
U.S. Cl. 416—95 **2 Claims**

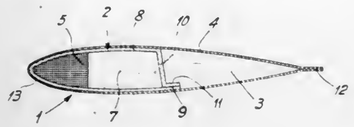


1. A turbine cooling system for use in gas turbine engines having a coolant fluid supply source therein comprising: a turbine component mounted within the engine, means for forming a space internally of said engine having pressurized coolant fluid therein, flow regulator means for conducting coolant fluid from said space to said turbine component including a fixed valve seat, means including a spring biased valve element for defining a pressurizable internal cavity within said flow regulator means, said spring biased valve element being exposed to said space internally of said engine and having the pressurized coolant fluid therein acting thereon, means for continuously directing pressurized coolant fluid from said space into said pressurizable internal cavity to produce a balanced fluid pressure across said valve element wherein only the spring bias thereof is utilized to maintain the valve element in a closed position against the fixed valve seat during engine cruise operation, and sensor means directly sensing the temperature of said turbine component and operable to bleed the continuously applied pressurized coolant fluid from said internal cavity directly in response to the temperature of said turbine component whereby pressure of the coolant fluid in said engine space acts against the spring bias of said valve element to open it to direct increased coolant flow from said space to said turbine component under engine cruise conditions, said sensor means being operative upon cooling of the turbine component to prevent bleed of the continuously applied pressurized coolant fluid from said internal cavity to cause the balanced pressures across said valve element to cause its spring bias to return it to its closed position to reduce the amount of coolant flow from said space within said engine.

4,213,739
HELICOPTER ROTOR BLADE
August H. L. Euler, Aix-en-Provence, and Gilbert F. A. Beziac, Salon de Provence, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed Feb. 22, 1978, Ser. No. 879,915
Claims priority, application France, Feb. 28, 1977, 77 05767
Int. Cl.[3] B64C *27/46*
U.S. Cl. 416—226 **4 Claims**

1. A rotor blade, specially for a helicopter rotor, comprising a substantially D-shaped solid one-part leading edge spar essentially consisting of strands of glass fibre filaments which extend lengthwise over the whole length of the blade; a solid core made of a lightweight cellular substance and juxtaposed to the whole rear face of said D-shaped spar; a sheet-like member extending around said spar and said core and comprising at least one layer of a fabric formed by parallel glass fibres dis-

posed askew of the blade longitudinal axis; a rear filling member, and a covering extending around said sheet-like member and said rear filling member, said sheet-like member being very thick, and specially much thicker than said covering so as to



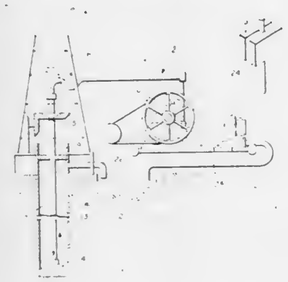
form a torque-tube, encasing said juxtaposed spar and core, so that the airfoil portion of the blade is centered substantially at the front quarter of the chord of the blade cross-section, and has a very high torsional stiffness.

4,213,740

OILFIELD PUMP STROKE MONITOR

Loring C. Chien, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 14, 1978, Ser. No. 924,526
Int. Cl.² F04B *21/00*
U.S. Cl. 417—63 **3 Claims**



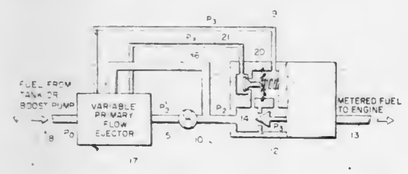
1. An apparatus for determining the pump strokes of a pump having a moving element that moves cyclically, comprising:
a force sensor mounted on said moving element for sensing said cyclic movement and generating a signal;
an R.F. transmitter mounted on said moving element connected to receive said signal from said force sensor and transmit an R.F. signal; and
an R.F. receiver spaced from said moving element for receiving said R.F. signal from said R.F. transmitter and indicating said pump strokes.

4,213,741

VARIABLE FLOW EJECTOR

Francis R. Rogers, and James M. Eastman, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 13, 1978, Ser. No. 950,954
Int. Cl.² F04B *23/04*
U.S. Cl. 417—79 **11 Claims**



1. A variable area flow ejector for use in a fluid delivery system, said system including a pump, a bypass conduit for returning a portion of the pump outlet flow to the inlet thereof and a metering orifice, comprising,
a hollow ejector body;
a tubular member movably mounted within said ejector body and having a terminating lip within the cavity of said ejector body;
a convergent body movably mounted within the cavity of said ejector body, said convergent body being generally cylindrical in form with a convergent inner wall and being positioned with the larger diameter end thereof surrounding the exterior of said tubular member and the inner wall thereof converging toward said lip;
means for admitting lower pressure fluid from a source to said tubular member to flow through said tubular member and be discharged from the lip end thereof;
means connected to said bypass conduit for admitting higher pressure fluid from said pump outlet to flow into the larger diameter end of said convergent body and through the space separating said convergent wall from the exterior of said tubular member and be discharged into and merged with the flow from said tubular member;
means for collecting the merged flow of said lower pressure fluid and said higher pressure fluid and for returning the same to said pump inlet;
means for adjusting the position of said tubular member relative to said ejector body proportionately to a pressure drop existing across said metering orifice; and
means for adjusting the position of said convergent body relative to said tubular member as a function of the time integral of the difference between the actual pressure drop across said orifice and a desired value of the pressure drop across said orifice.

4,213,742

MODIFIED VOLUTE PUMP CASING

Terry L. Henshaw, Battle Creek, Mich., assignor to Union Pump Company, Battle Creek, Mich.

Filed Oct. 17, 1977, Ser. No. 842,725
Int. Cl.² F03B *3/00*
U.S. Cl. 417—206 **19 Claims**



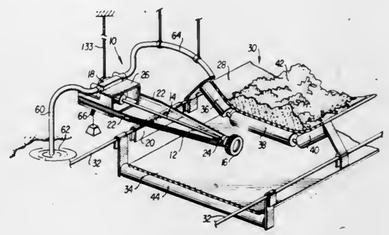
1. A centrifugal pump having a casing, inlet, impeller, throat and cutwater, the improvement comprising: said casing being of a modified volute configuration having in the upstream portion thereof, from the cutwater towards a point generally 180° from the cutwater, a flow area which is greater than would be the flow area of a true volute casing in the same upstream casing portion; the flow area of said casing in the downstream portion thereof, from the throat back upstream towards a point generally 180° from the cutwater, also being greater than would be the flow area of a true volute casing in the same downstream casing portion; and the flow area of the casing in the juncture portion of the pump extending from the upstream portion through a point 180° from the cutwater and to the downstream portion being significantly less than would be the flow area of a true volute casing at said juncture portion.

4,213,743

PUMP ASSEMBLY DRIVEN BY ENDLESS CONVEYOR

Frank K. Hurt, Bluefield, Va., and Edwin L. Wellons, North Tazewell, Va., assignors to Mefcor, Inc., Bluefield, Va.

Filed Apr. 20, 1978, Ser. No. 898,062
Int. Cl.² F04B *9/02, 17/00;* F16H *13/10;* B65G *21/00*
U.S. Cl. 417—229 **8 Claims**



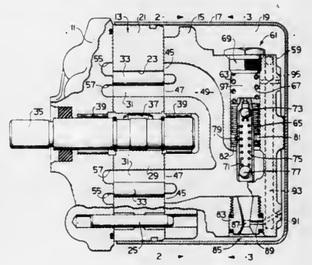
1. A liquid evacuation system comprising:
an endless conveyer for conveying bulk material;
a pump mounted adjacent to said endless conveyer and including a drive wheel for engaging said endless conveyer to drive said pump and including an inlet hose for extending into liquid to be evacuated and an outlet hose for depositing said liquid onto said endless conveyer;
said drive wheel being positioned below a conveying portion of said endless conveyer and being spaced therefrom when said endless conveyer is empty, but said conveying portion sinking to come into contact with said drive wheel when said endless conveyer is loaded.

4,213,744

HYDRAULIC PUMP AND IMPROVED BY-PASS FLOW MEANS THEREFOR

Michael D. Davis, Coldwater, and Harold L. Gustner, Southfield, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 3, 1978, Ser. No. 883,062
Int. Cl.² F04B *49/08*
U.S. Cl. 417—310 **12 Claims**



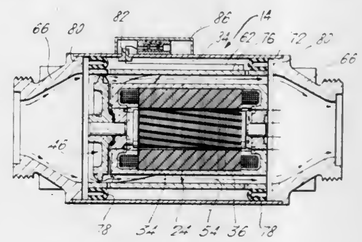
1. In a rotary pump of the type including housing means defining a pumping chamber, a pumping element rotatably disposed in the pumping chamber and defining an axis of rotation, expanding fluid pockets and contracting fluid pockets, the housing means defining a fluid inlet port in communication with the expanding pockets, a fluid outlet port in communication with the contracting pockets, a discharge port for connection to fluid operated apparatus, and a discharge fluid path communicating between the outlet port and the discharge port, means defining a fluid reservoir in open communication with the inlet port and disposed axially adjacent thereto, valve means operable to bypass excess fluid from the discharge fluid path through a bypass port, the improvement comprising: means defining a bypass flow path of generally constant cross-sectional flow area communicating said excess fluid from said bypass port, said bypass flow path including a terminal portion disposed adjacent said inlet port, the cross-sectional area of said terminal portion overlapping the cross-sectional area of said inlet port when the area of said terminal portion is projected in a normal direction to permit at least a portion of said excess fluid to flow directly into said inlet port, said means defining said bypass flow path being disposed within said fluid reservoir and substantially surrounded thereby.

4,213,745

PUMP FOR CENTRAL HEATING SYSTEM

Samuel A. Roberts, Courtways, Holwood Park Ave., Keston Park, Farnborough, Kent, England

Continuation of Ser. No. 681,451, Apr. 29, 1976, abandoned.
This application Sep. 11, 1978, Ser. No. 941,058
Int. Cl.² F04B *17/00, 35/00*
U.S. Cl. 417—363 **8 Claims**



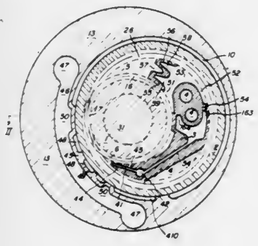
1. In a central heating system including a boiler for heating liquid, heat transfer means for transferring heat from said liquid to the environment, and circulation means including pipe and a pump for circulating liquid through said pipe between said boiler and said heat transfer means, the improvement in said circulation means comprising:
a pump including:
(a) a housing adapted to be connected in series with said pipe,
(b) an induction motor having unencapsulated motor windings and coaxially mounted within said housing, said induction motor having a casing which is unsealed to ensure that liquid enters said casing, said liquid contacting the motor windings for cooling said induction motor, said induction motor for rotating an impeller within said housing to cause said liquid to flow an annular passage between said housing and said casing, and
(c) a motor power supply associated with said induction motor for converting an available alternating current voltage having a given frequency into a modified multiphase alternating current voltage having a higher frequency to energize said induction motor so as to produce a given flow requirement of said central heating system, said modified voltage having an amplitude not exceeding 25 volts and having a frequency greater than 70 Hertz,
whereby said induction motor cannot be energized directly by said available voltage at said given frequency to produce said required flow and must be energized by said modified voltage at said higher frequency to produce said required flow.

4,213,746

INTERNAL GEAR HYDRAULIC DEVICE WITH BALANCING RECESSES IN THE HOUSING AND CRESCENT SHAPED SEPARATION MEMBER

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Filed Dec. 8, 1977, Ser. No. 859,789
Int. Cl.[2] F03C *3/00*; F04C *1/06, 5/00, 15/00*
U.S. Cl. 418—71 **4 Claims**



1. An internal gear hydraulic device, comprising: an externally-toothed pinion; means for driving said pinion; an internally-toothed ring gear meshing with said pinion; a cresent shaped separation member disposed between said pinion and said ring gear; a housing sorrounding said ring gear; covers attached to said housing, one cover on each end of said housing; said covers including bearing means for the bearing of said means for driving said pinion; said housing and said covers forming on outside of said device; a high-pressure chamber and a low pressure chamber formed in said device; an inlet passage extending from said outside to one of said chambers and an outlet passage extending from the other of said chambers to said outside; one of said chambers being formed by one end of said member, portions of said covers, housing, gear and pinion and the other of said chambers formed on the other end of said member and between other portions of said housing, covers, gear and pinion; substantially as known from the former art and as common in internal gear devices;

wherein a novel arrangement is provided;

wherein said novel arrangement includes a deflectable housing lip on a portion of said housing,

wherein said lip forms the inner wall of a slot,

wherein said slot extends axially from one end of said portion through said portion to the other end of said portion of said housing,

wherein said slot and said lip are located radially of one of said chambers,

wherein said slot includes at least two radial enlargements,

wherein said enlargements are located on the ends of said slot,

wherein said enlargements extend radially inwardly;

wherein said enlargements form narrowed portions on said lip,

wherein said lip between said narrowed portions is radially deflectible,

wherein a passage is provided from said one of said chambers to said slot;

wherein fluid communicates through said passage with said one chamber and said slot to equalize the pressure in fluid in said one chamber and in said slot,

wherein said slot is slightly longer in the peripheral direction than said one chamber,

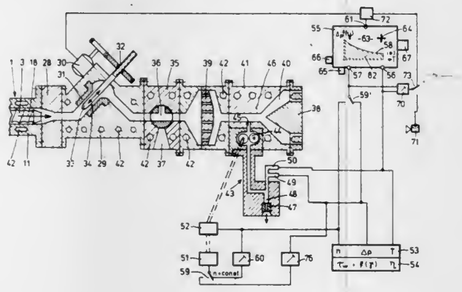
and wherein said lip is pressed by pressure in fluid in said slot against the outer face of said ring gear, when pressure is present in said fluid in said one chamber and in said slot.

4,213,747

METHOD OF AND APPARATUS FOR CONTROLLING THE VISCOSITY OF MOLTEN PLASTICS MATERIAL WHICH IS TO BE MOULDED

Reinhard Friedrich, Dachtel, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Nov. 16, 1978, Ser. No. 961,198
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751225
Int. Cl.[2] B29F *3/06*
U.S. Cl. 425—144 **9 Claims**



1. A control arrangement for a plastics extruder having a casing, which includes a screw extruder, a screen downstream of the screw extruder, a throttle having a cross section located between the screw extruder and the screen wherein said throttle is constructed as an axial annular gap throttle comprising a hollow cylinder and a pin piston axially displaceable therein by a servomotor means, a moulding tool downstream of the screen, and a melt index measuring device disposed in close thermal contact on a casing of the extruder, between said screen and said moulding tool; said melt index measuring device comprising a metering pump whose rotational speed is controllable and which is provided with a rotational speed indicator, a sample flow channel, a measuring nozzle disposed in the sample flow channel, and pressure and temperature sensors connected to the sample flow channel directly upstream of the inlet of the measuring nozzle, the sample flow channel being located downstream of the screen and upstream of the moulding tool, wherein the control arrangement comprises said servometer means for varying said cross section of said throttle to regulate the viscosity of a plastics material melted in said screw extruder, said servomotor means being connected to the output of a programmable two-coordinate controller whose characteristic provides a desired value output and can be determined as a temperature-pressure characteristic when the metering pump is operated with constant delivery, or as a temperature-delivery characteristic when the metering pump is operated with a constant pressure drop via said measuring nozzle, and a temperature sensor connected to one of two actual value inputs of said two-coordinate controller, and wherein at least one of said pressure sensor and said rotational speed indicator is connected to actual value input.

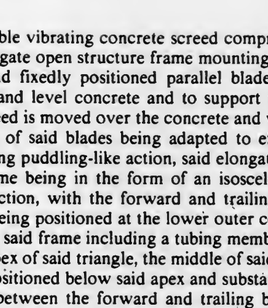
4,213,748

PRESS FOR COMPACTING MATERIAL TO FORM A TRAVELING WEB

Karl-Heinz Ahrweiler, Krefeld, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed May 2, 1979, Ser. No. 35,344
Claims priority, application Fed. Rep. of Germany, May 6, 1978, 2819943
Int. Cl.[2] B30B *5/06*; B29J *5/00*; B29D *7/14*
U.S. Cl. 425—371 **3 Claims**

1. A press for forming a traveling compacted web from initially uncompacted material and comprising upper and lower continuously traveling metal belt spans which are vertically interspaced so said material can be carried therebetween, at least one of said belt spans at ambient temperature having side edges portions which are longer than the belt span area between the side edges portions and means respectively above and below said spans for directly heating and pressing the



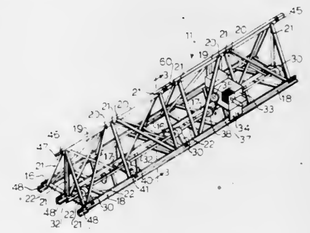
spans towards each other while said material is carried therebetween, said at least one of said belt spans having its said side edge portions overhanging said means and free from direct heating thereby, and its said area between said side edge portions directly heated by said means so that said area expands longitudinally, said side edge portions lengthening without being excessively stressed by tension.

4,213,749

PORTABLE VIBRATING CONCRETE SCREED

Donald R. Morrison, 2109 Camp Green St., Charlotte, N.C. 28208

Filed Mar. 6, 1978, Ser. No. 883,955
Int. Cl.[2] B28B *1/08*
U.S. Cl. 425—456 **1 Claim**



1. A portable vibrating concrete screed comprising:

(a) an elongate open structure frame mounting three spaced apart and fixedly positioned parallel blades adapted to engage and level concrete and to support the screed as said screed is moved over the concrete and with the most forward of said blades being adapted to effect a rough smoothing puddling-like action, said elongate open structure frame being in the form of an isosceles triangle in cross section, with the forward and trailing said screed blades being positioned at the lower outer corners of said triangle, said frame including a tubing member positioned at the apex of said triangle, the middle of said three blades being positioned below said apex and substantially evenly spaced between the forward and trailing blades and including cross braces fixed to and extending between said screed blades and said tubing member;

(b) bearings mounted on said frame between the trailing pair of said blades and spaced inwardly from each end of said frame;

(c) a vibrating element including a shaft supported for rotation in said bearing above said trailing pair of blades and extending throughout the length of said frame and beyond said bearings spaced inwardly from each end of said frame and structural means associated with said shaft designed upon rotation of said shaft to allow said shaft to vibrate said frame; and

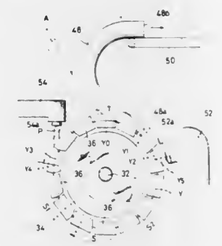
(d) a drive source carried by said frame for rotating said shaft at a sufficient speed to cause said shaft to impart uniform vibrations throughout the length of the trailing pair of said blades, said drive source comprising a gasoline engine fixed on said frame above the trailing pair of said blades, and belt and pulley means drivingly connecting said engine to said shaft, said engine being mounted in such manner on said frame to cause said screed to creep forwardly during operation thereof.

4,213,750

ROTARY BLOW MOLDING MACHINE

Kikuo Kubota; Yoshiaki Yamagishi, both of Kawasaki, and Masaru Yamaguchi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,418
Int. Cl.[3] B29C *17/07*
U.S. Cl. 425—531 **16 Claims**

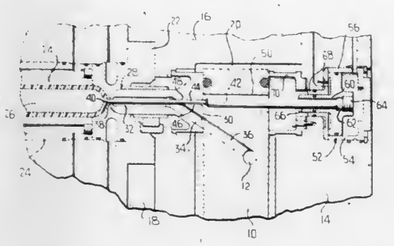


1. A rotary blow molding machine comprising a rotor mounted on a horizontal driving shaft; mold stations mounted on the outer periphery of said rotor so as to be radially disposed and circumferentially equally spaced, said mold stations each carrying thereon a split mold unit capable of opening and closing in the direction of the width of the outer periphery surface of said rotor; flash blow-pipes rotatable with said mold stations, a tip end of each of said flash blow-pipes facing between said mold stations, said mold stations moving on a circular rotation track described by the center of each of said split mold units, said flash blow-pipes being adapted to guide and hold a parison extruded from a die head disposed adjacent to said track, said flash blow-pipes also being adapted to blow off a portion of the scrap parison, which is produced when closing and clamping said split mold units, to a position outside said circular rotation track; ejector means mounted in a wedged form between said split mold units within an area on said circular rotation track within which said split mold units are kept open; mold-release means on said split mold units for releasing a molded article from said split mold units and operable adjacent to said ejector means when said split mold units are open, said ejector means receiving a molded article released by said mold-release means from one mold half of said split mold unit in open state and discharging it to a position outside said circular rotation track.

4,213,751
VALVE GATE MECHANISM FOR INJECTION MOLDING

Luis Fernández, Jona, Switzerland, assignor to The Continental Group, Inc., New York, N.Y.

Filed Jun. 6, 1978, Ser. No. 913,136
Int. Cl.[2] B29F 1/03
U.S. Cl. 425—566 **7 Claims**



1. In an injection mold assembly of the type including a batten plate, a manifold standoff plate and a mold end cap coupled together as a structural unit and a separate manifold runner mounted for relative movement within a recess in said manifold standoff plate, a gate valve, said gate valve comprising a nozzle mounted in said end cap and said manifold standoff plate and having a sliding interface with said manifold runner, said nozzle having a discharge orifice, a passage formed in said nozzle and extending from said sliding interface for delivering moldable material to said orifice, a valve member for closing said orifice, said valve member including a valve stem, guide means mounting said valve stem for longitudinal reciprocatory movement relative to said nozzle and in sealed relation relative to said passage, an actuator for positioning said valve member, said actuator being carried by said batten plate, a valve stem passage through said manifold runner, and said valve stem freely extending through said valve stem passage to said actuator.

4,213,752
COAL DRYING PROCESS

Walter H. Seitzer, West Chester, Pa., assignor to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 6, 1978, Ser. No. 958,308
Int. Cl.[2] F27B 15/00
U.S. Cl. 432—14 **9 Claims**

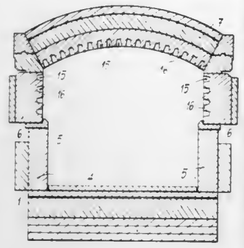
1. A single step process for removing moisture from low rank coal using in-situ generated thermal energy by (a) feeding the wet low rank coal at room temperature into a moving bed of hot coal at a temperature in the range of from about 200° C. to about 300° C. at a rate to maintain partial combustion of the coal at atmospheric pressure, (b) maintaining said coal bed in the presence of a gas at atmospheric pressure containing from about 5% to about 20% by volume of oxygen, whereby the in-situ heat generated by the combustion is absorbed by the wet coal being fed to the system and is effective for drying the coal to the desired level, and (c) separating the dried coal from the combustion zone, whereby the dry coal obtained is highly resistant to spontaneous combustion.

4,213,753
HONEYCOMB MUFFLE IN TANK FURNACES FOR GLASS MELTING

Eugenio Negroni, and Roberto Negroni, both of Via De Rolandi 7, 20156 Milan, Italy

Filed Mar. 31, 1978, Ser. No. 892,876
Claims priority, application Italy, Apr. 7, 1977, 22264 A/77
Int. Cl.[2] F27D 1/00
U.S. Cl. 432—247 **5 Claims**

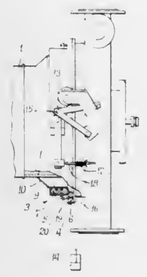
5. Blocks of refractory material for the construction of tank muffle furnace muffles for glass melting wherein one surface of said blocks is shaped with at least one recess defined by inwardly narrowing projecting ribs, resulting in said recess having a square shape in cross-section with regard to the face of said surface, and trapezoidal in cross-section with regard to the width of said surface.



4,213,754
SYSTEM FOR SEALING THE ROTARY TUBE OF A ROTARY TUBULAR KILN

Johannes C. Wens, Nijmegen, Netherlands, assignor to Smit Ovens Nijmegen B.V., Nijmegen, Netherlands

Filed Sep. 13, 1978, Ser. No. 941,982
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741738
Int. Cl.[2] F27B 7/24
U.S. Cl. 432—115 **5 Claims**



1. In a rotary kiln having a rotatable cylinder, a sealing system, comprising:

sealing ring means being arranged in concentric relation to said cylinder,

said sealing rings means comprising a radially extending sealing ring, first packings of heat resistant and slideable material carried by said radially extending sealing ring, for abutting radially extending surfaces,

said radially extending sealing ring pressurizing said first packings in an axial direction against the radially extending surfaces,

an axially extending sealing ring,

second packing of heat resistant and slideable material carried by said axially extending sealing ring for abutting axially extending surfaces, said axially extending ring pressing said second packings against the axially extending surfaces,

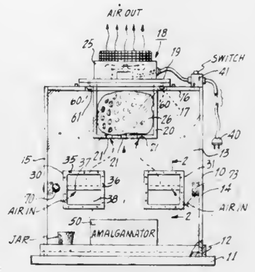
mounting means taking up the weight of said radially and axially extending rings and said first and second packings, means extending between said sealing rings and joining the same but allowing selective movement therebetween, and

said packings forming a seal between said first and second sealing rings.

4,213,755
MERCURY-VAPOR PURIFIER ENCLOSURE

Leon L. Zweben, 1015 Forest Ave., Lakewood, N.J. 08701

Filed Dec. 22, 1978, Ser. No. 972,244
Int. Cl.[3] A61C 19/00
U.S. Cl. 433—49 **10 Claims**



1. An environmental enclosure apparatus for use in handling deleterious materials, comprising:

(a) a base platform member having a central work area,

(b) a hollow housing having an opened bottom end relatively congruent with said work area of said platform for positioning said housing on said platform with said bottom end positioned over said central area, said housing having a top wall including an aperture located therein and at least one additional aperture in one of said sidewalls,

(c) a filter assembly removably positioned in said aperture in said top wall, said assembly including a selectively operated fan coupled to a filter housing for drawing air from the hollow of said housing via said filter housing when said fan is operative,

(d) elastic band means coupled to said additional aperture in said sidewall to allow insertion therethrough of a user's hand whereby access to said hollow of said housing can be achieved to mainly cause air on the outside of said housing to be drawn into said housing via said band coupled aperture wherein said elastic band means comprises a first band of elastic material positioned across a top portion of said aperture, a second band of elastic material positioned across a bottom portion of said aperture, with said first and second bands overlapping at a relatively central portion of said aperture to permit insertion of a user's hand therein.

4,213,756
DENTAL-INSTRUMENT HANDLE

Heinrich Reich, Hochdorf, and Eugen Eibofner, Biberach, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,841
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741148
Int. Cl.[2] A61C 1/08, 1/12
U.S. Cl. 433—126 **5 Claims**



1. Dental handpiece comprising an elongated handle sleeve transversely divided by formation of an anterior sleeve showing a receptable for a drivable dental treatment instrument and a connected grip sleeve detachable by means of a rotatable tightening ring; said handle sleeve having a coolant line running at least in the area of the transverse space within the inside of the sleeve outside the longitudinal axis of the handle sleeve, said coolant line also being transversely divided and leading to the area of the dental-treatment instrument; and anterior sleeve and the grip sleeve having both two front sides facing each other, one front side being provided with a projecting connecting piece for the cooling line and the other front side being provided with a connecting socket for an insertable connecting piece; the front side of the grip sleeve being provided with guide pins projecting from it and forming catch means opposing pin sockets of elastic material and serving as opposing catch means to accept the guide pins and being admitted into the front end of the anterior sleeve, a connecting socket for the connecting piece of each coolant line also being comprised of elastic material, said guide pins as well as the connecting pieces of each coolant line being mounted at equal intervals along a circular path on the front side of the grip sleeve, said pin sockets and the connecting socket of each coolant line being mounted at equal intervals along a circular path with the same diameter as the previously mentioned circular path on the front side of the anterior sleeve, the connecting pieces of each coolant line being connected with a belt canal from which the cooling line portion of the anterior sleeve leads to the area of the dental-treatment instrument.

4,213,757

AQUEOUS DYE FORMULATIONS FOR CELLULOSE OR CELLULOSE-CONTAINING FIBERS

Manfred Ruske, Ludwigshafen, and Wolfgang Elser, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

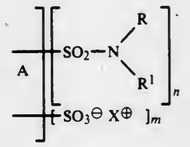
Filed Aug. 1, 1977, Ser. No. 820,717

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1976, 2636427

Int. Cl.[2] D06P *1/40*

U.S. Cl. 8—518 **14 Claims**

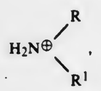
1. An aqueous dye formulation for dyeing cellulose or cellulose-containing fibers, which contains a mixture of sparingly water-soluble, or water-insoluble, phthalocyaninesulfonamides of the formula



where A is a (m+n)-valent radical of copper phthalocyanine, cobalt phthalocyanine or nickel phthalocyanine which may be substituted by up to 4 chlorine or bromine atoms, R is hydrogen, alkyl of 1 to 5 carbon atoms or alkoxyalkyl of a total of 3 to 7 carbon atoms, R^1 is alkoxyethyl or alkoxypropyl, the alkoxy being of 1 to 8 carbon atoms, or



is a saturated 5-membered or 6-membered heterocyclic ring, $X^{\oplus}$ is a hydrogen ion, an alkali metal ion, $(NH_4)^{\oplus}$ or an ammonium ion of the formula



where R and R^1 have the above meanings, n is 2, 3 or 4 and m is 0 or 1, A on average containing 0.5 or fewer sulfonic acid groups, together with one or more dispersing agents and humectants.

4,213,758

OXIDATION HAIR DYES BASED UPON TETRAAMINOPYRIMIDINE DEVELOPERS AND COUPLERS THEREFOR

David Rose, Hilden; Erwin Weinrich, Haan, and Edgar Lieske, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Jan. 10, 1978, Ser. No. 868,304

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1977, 2702118

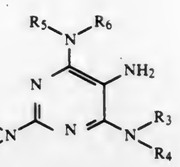
Int. Cl.[2] A61K *7/13*

U.S. Cl. 8—409 **9 Claims**

1. A composition of the developer-coupler type for the dyeing of hair, consisting essentially of,

I. as developer, at least one tetraaminopyrimidine selected from the group consisting of

(A) at least one tetraaminopyrimidine of the formula



in which R_1, R_2, R_3, R_4, R_5 and R_6 are each selected from the group consisting of hydrogen, phenyl, alkyl having 1 to 4 carbon atoms, phenylalkyl having 7 to 10 carbon atoms, phenylalkenyl having 7 to 10 carbon atoms,

$X(CH_2)n-$

wherein n is an integer from 1 to 4, and X is selected from the group consisting of hydroxyl, halogen and NR_7R_8—in which R_7 and R_8 are each hydrogen or alkyl having 1 to 4 carbon atoms, and together with the nitrogen atom R_7 and R_8 form a member selected from the group consisting of a 5 to 6 membered heterocyclic ring optionally containing an additional nitrogen atom or oxygen atom, and wherein R_1 and R_2, or R_2 and R_4, or R_5 and R_6, together with the nitrogen atom form a five to six membered heterocyclic ring optionally containing another nitrogen or oxygen atom in the ring, and,

(B) at least one water-soluble acid addition salt of (A), and,

II. as coupler, 2,4-diaminophenol, said developer and said coupler being present in the molar range of about 2:1 to 1:2.

4,213,759

COLORATION PROCESS: MIXED DYES FOR DIFFERENTIAL-DYEING NYLON MIXTURES

Denis R. A. Ridyard, and Charles W. Taylor, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 889,925, Mar. 24, 1978, abandoned. This application Nov. 20, 1978, Ser. No. 962,787

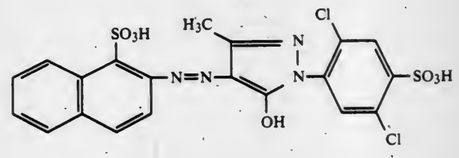
Claims priority, application United Kingdom, Apr. 5, 1977, 14314/77

Int. Cl.[2] C09B *27/00, 45/43*

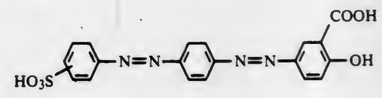
U.S. Cl. 8—643 **2 Claims**

1. A process for dyeing a mixture of differential dyeing nylon fibres which comprises treating said mixture in an aqueous dyebath having a pH of 5–8 and consisting essentially of dyes selected from at least two of the following classes, the dyes being shown in the form of the free acids:

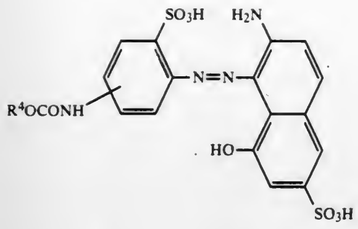
(i) a yellow dye of the formula:



(ii) orange dyes of the formula:

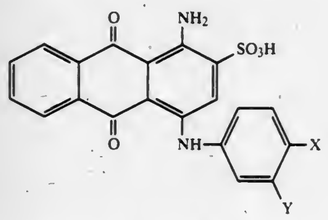


(iv) red dyes of the formula:



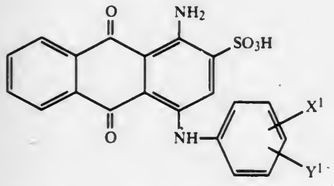
wherein the R^4OCONH— group is in the 4— or 5-position relative to the azo group and R^4 represents an alkyl, cycloalkyl, or aralkyl radical containing from 4 to 8 carbon atoms;

(v) blue dyes of the formula:



wherein one of X and Y represents $—SO_3H$ and the other represents $—NHCOOR^5$ wherein R^5 represents an alkyl, cycloalkyl or aralkyl radical containing up to 8 carbon atoms; and

(vi) blue dyes of the formula:



wherein one of X^1 and Y^1 represents $—SO_3H$ and the other represents a chlorine atom.

4,213,760

DELIMING OF HIDES

Erwin Hahn, Heidelberg; Bernhard Magerkurth, Ludwigshafen; Dietrich Lach, Friedelsheim, and Lothar Wuertele, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 11, 1979, Ser. No. 38,252

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825081

Int. Cl.[2] C08C *1/00, 1/08*

U.S. Cl. 8—94.17 **3 Claims**

1. A process for deliming conventionally limed hides, wherein these hides are treated for from 1 to 6 hours at from 5° to 35° C., using a length of liquor of from 0 to 300%, with from 0.8 to 4%, based on the weight of the wet hides, of an ester of equivalent weight less than 300, which, in 10 percent strength by weight aqueous solution or emulsion at 25° C. and pH 9, hydrolyzes to the extent of at least 90% in the course of two hours.

4,213,761

PROCESS FOR TREATING CELLULOSIC MATERIALS WITH LIQUID AMMONIA

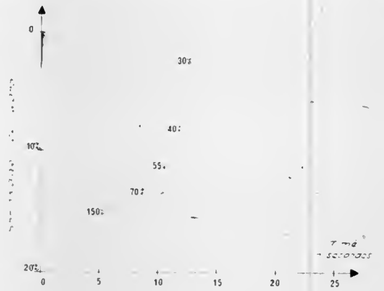
Jean-Paul Dalle, 4917 Big Bend, Wichita Falls, Tex. 76310

Continuation of Ser. No. 580,705, May 27, 1975, abandoned. This application Mar. 3, 1978, Ser. No. 883,193

Claims priority, application France, May 28, 1974, 74 18331

Int. Cl.[2] D06B *7/04, 7/08*

U.S. Cl. 8—125 **4 Claims**



1. In a process for treating a textile material such as yarn, fabric or the like, for the purpose of improving the dye affinity, dimensional stability and tensile strength of the textile material, said material being comprised in part or entirely of natural or regenerated cellulosic fibers, wherein said textile material is impregnated with liquid ammonia in am amount of more than 75% by weight and stresses are applied to said material while it is in a plastic state due to impregnation with ammonia and wherein said stresses are reduced while ammonia is being removed from said textile material, the improvement comprising the steps of:

impregnating said textile material with ammonia and applying stresses to said impregnated material of about 25% to 30% of the breaking load of said material for ten or more seconds;

removing a first portion of said ammonia such that the degree of impregnation is less than 75% by weight after less than 3 seconds while stresses are reduced to about 15% of the breaking load;

removing a second portion of said ammonia such that the degree of impregnation is less than 30% by weight after less than 60 seconds while stresses remain approximately the same as those which were applied during the preceding step;

and removing the balance of the impregnated ammonia while maintaining the stresses below 5% of the breaking load of the said textile material, said ammonia being removed at such rate that the degree of impregnation is less than 15% by weight after less than 300 seconds, wherein all time intervals for ammonia removal are measured from the start of ammonia removal.

4,213,762

DETERMINATION OF CHROMATE ION IN DRILLING MUD FILTRATES

Donald L. Whitfill, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Dec. 14, 1978, Ser. No. 969,606

Int. Cl.[2] G01N *33/24*

U.S. Cl. 23—230 R **3 Claims**

1. A method of determining the amount of chromate ion in an aqueous drilling mud filtrate containing organic color bodies such as lignosulfonate wherein the method comprises:

(a) treating the aqueous filtrate with an effective amount of hydrogen peroxide to destroy said color bodies, and

(b) measuring the amount of chromate ion in the filtrate by means of a spectrophotometer.

4,213,763

METHOD AND DEVICE FOR ANALYZING GEOLOGICAL SEDIMENTS AND FOR DETERMINING THEIR ORGANIC SULFUR CONTENT

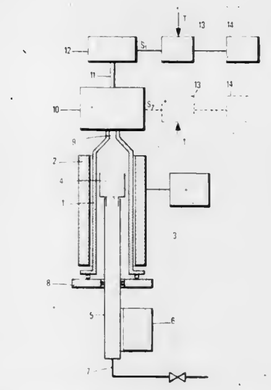
Marcel Madec, Suresnes; Jean Espitalie, Le Vesinet; Jean-Loup Laporte, Rulil-Malmaison, and Imre Barsony, Clamart, all of France, assignors to Institut Francais du Petrole, France

Filed Dec. 30, 1977, Ser. No. 866,065

Claims priority, application France, Dec. 30, 1976, 76 39539

Int. Cl.[2] G01N *31/12, 33/24*

U.S. Cl. 23—230 EP **13 Claims**



1. A method for determining the degree of evolution of organic material in a plurality of samples of a sedimentary series, comprising, for each sample:

placing the sample in a non-oxidizing atmosphere,

heating the sample to a determined temperature at which the organic material of the sample is pyrolyzed, forming pyrolysis products,

oxidizing or burning the resulting pyrolysis products, forming oxidation products,

detecting the sulfur compounds contained in the oxidation products,

generating a signal representing the overall sulfur content of the oxidation products, for each sample, and

determining from the value of said signal, in combination with a parameter characterizing the sample, the degree of evolution of the organic material in the sample.

4,213,764

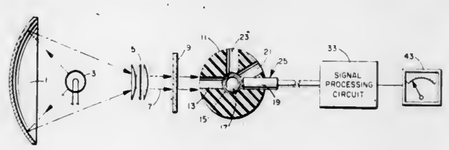
METHOD FOR DETERMINING IMMUNOCHEMICAL SUBSTANCES

John J. O'Connor, Rowland Heights, Calif., assignor to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 909,862, May 26, 1978, abandoned. This application Aug. 9, 1978, Ser. No. 932,594

Int. Cl.[2] G01N *33/16, 21/24*

U.S. Cl. 23—230 B **53 Claims**



1. A method for detecting and measuring a predetermined specifically-bindable immunochemical substance in a liquid sample in a cuvette, comprising the steps of:

(a) providing, in an immunoassay technique for the liquid sample in said cuvette, a component comprising a suspension of particles which may be agglutinated or insolubilized in relationship to the presence and concentration of the immunochemical substance in the sample; and

(b) determining the presence and concentration of the immunochemical substance by measuring the electromagnetic radiation transmission properties of the sample using a calibrated radiation-measuring apparatus, said apparatus comprising:

(1) a suitable electromagnetic radiation source capable of providing radiation at wavelengths equal to or less than the mean diameter of said particles;

(2) means for concentrating and collimating radiation from the electromagnetic radiation source to form a beam;

(3) means for filtering the beam to (i) eliminate radiation having wavelengths greater than the means diameter of the particles and (ii) transmit radiation, which radiation has a range, whereby the upper wavelength is equal to or below the mean diameter of the particles, and the range is of at least about 100 nm;

(4) means for (i) positioning a sample-containing cuvette and for (ii) allowing the filtered beam incident on the cuvette to be transmitted through the cuvette and sample, and for (iii) receiving a portion of the filtered beam transmitted through the sample at two or more predetermined angles with respect to the beam; and

(5) means for detecting and measuring the portion of the beam transmitted at a predetermined angle.

4,213,765

OXIDATIVE COAL DESULFURIZATION USING LIME TO REGENERATE ALKALI METAL HYDROXIDE FROM REACTION PRODUCT

Stephen T. Wilson, Shrub Oak, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 2, 1979, Ser. No. 119

Int. Cl.[2] C10L *9/10;* **C10B** *57/00*

U.S. Cl. 44—15 R **3 Claims**

1. A process for the removal of pyrite from coal which comprises (a) preparing an aqueous slurry containing finely-divided coal particles; (b) adding to the slurry an alkali metal hydroxide selected from the group consisting of sodium hydroxide, potassium hydroxide and lithium hydroxide, as well as mixtures thereof, in amounts sufficient to continuously maintain the pH of the slurry at a value of below about 8; (c) agitating the slurry while treating the slurry with oxygen or an oxygen-containing gas at substantially atmospheric pressure and at a slightly elevated temperature of at least about 70° C. to convert the pyrite in the coal to a soluble alkali metal sulfate; (d) reacting lime with the so-formed alkali metal sulfate to regenerate the alkali metal hydroxide, and (e) recycling the hydroxide for further use in the process, whereby pyrite is effectively removed and the hydroxide conveniently regenerated with the inhibiting effect of calcium ions therein upon the oxygen leaching of said pyritic sulfur from coal being overcome at said pH, the reaction rate being enhanced by the use of said elevated temperature.

4,213,766

METHOD AND MEANS FOR DISTRIBUTING GAS ALONG AN EXTENDED INLET PORTION OF GAS TREATMENT MEANS

John G. Wyatt, Birmingham, England, assignor to Lodge-Cottrell, Ltd., Birmingham, England

Filed Aug. 10, 1978, Ser. No. 932,723

Claims priority, application United Kingdom, May 5, 1978, 37108/77

Int. Cl.[2] B03C *3/36*

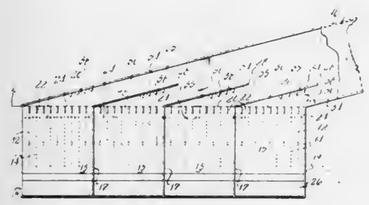
U.S. Cl. 55—2 **47 Claims**

1. In a method of distributing gas flow along an extended inlet portion of gas treatment means, which inlet portion extends transversely to a longitudinal axis of the gas treatment means and to which inlet portion gas for the treatment is con-

ducted in turbulent flow by a conduit which is at an angle to the longitudinal axis of the gas treatment means, wherein a first conduit wall portion extends to an upstream region of the inlet portion and a second conduit wall portion extends at an acute angle to said longitudinal axis to a downstream region of the inlet portion; the improvement wherein the thickness of the turbulent zone of the gas boundary layer on the second wall portion is increased so as to urge the gas towards the upstream region of the inlet by aerodynamic spoiler means comprising a plurality of projections provided on the second wall portion adjacent to the inlet portion.

22. Gas treatment plant comprising:

(a) gas treatment means having an extended inlet portion transverse to a longitudinal axis of the gas treatment means;



(b) conduit means for conducting gas to the inlet portion and being at an angle to the longitudinal axis of the gas treatment means, the conduit means having a first conduit wall portion extending to an upstream region of the inlet portion and a second conduit wall portion extending at an acute angle to said longitudinal axis and extending to a downstream region of the inlet portion; and

(c) aerodynamic spoiler means on the second wall portion adjacent to the inlet portion for enhancing even distribution of the gas flow across the inlet portion, said spoiler means comprising a plurality of projections each having a substantial linear dimension transversely of said longitudinal axis.

4,213,767

ELECTROSTATIC PRECIPITATION

Vincent M. Albanese, Lockport, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed May 14, 1979, Ser. No. 38,597
Int. Cl.[2] B03C *1/00*
U.S. Cl. 55—5 **2 Claims**

1. A method of improving the conductivity of particles entrained in a stream of particle-laden gas formed by the burning of coal, which particles are collected by an electrostatic precipitator which comprises treating said gas containing particles prior to contact with the electrostatic precipitator at a temperature not greater than about 800° F. with a resistivity-decreasing amount of hexamethylene tetramine or its water-soluble salts and thereafter passing the gas to the electrostatic precipitator.

4,213,768

NONDESTRUCTIVE TESTING OF HEPA FILTERS

Albert J. Bauman, 524 Oakdale Dr., Sierra Madre, and Frank A. Morelli, 1320 Carthage Ct., Claremont, both of Calif. 91024

Filed Nov. 27, 1978, Ser. No. 963,803
Int. Cl.[2] B01D *46/10, 46/52, 46/54*
U.S. Cl. 55—97 **9 Claims**

1. Method of non-destructively testing the integrity of a high efficiency particulate air filter having a frame and a filter pack sealed in the frame, said filter pack comprising a tightly packed axially extended alternating series of separators and parallel reverse turns of glass cloth along which a liquid tends to wick; said method including generating an aerosol in a gas stream of solid particles free of said liquid and having a hydrophobic surface and a mean average diameter of not more than 0.2 micron, exposing the filter to be tested to said aerosol under predetermined test conditions including a temperature at which said particles remain solid, and a pressure differential across the filter urging said gas stream aerosol through the filter.

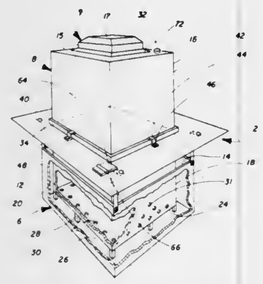
9. Method of generating an aerosol for non-destructive testing of a HEPA filter including coating silica particles having a mean average diameter of not more than 0.2 microns with an organosilane of more than 4 carbon atoms, and thereafter dispersing said silica particles in an inert gas stream.

4,213,769

ENERGY TRANSFER AND AIR PURIFYING DEVICES

Edward B. Nagelmeyer, 20 Summit Dr., Wayne, N.J. 07470

Filed Jun. 19, 1978, Ser. No. 916,444
Int. Cl.[2] B01D *47/02*
U.S. Cl. 55—216 **28 Claims**



1. An energy transfer and air purifying device, comprising:

containing means comprising a container for holding a quantity of liquid, said container having at least one opening therein;

a quantity of liquid located within said container to receive incoming air; guide means surrounding said container and connected thereto for guiding said incoming air to said liquid; exhaust means comprising an exhaust chamber disposed within said guide means and having a lower end disposed in spaced-apart relationship within said container and in contact with said liquid, and an outlet means extending through said guide means and located at the opposite end thereof;

a bottom end plate located at the lower end of said exhaust chamber, said bottom end plate defining a plurality of openings to permit the ingress and egress of said liquid, said openings being dimensioned and positioned adjacent the perimeter of said end plate in such a manner as to cause said liquid to rotate turbulently within said exhaust chamber so as to provide maximum scrubbing of said air by said liquid; and

vacuum means adapted for fluid-tight communication with said container and said liquid to exert a fluid pressure sufficient to force said incoming air through said liquid and out of said exhaust chamber, and to cause the quantity of said liquid residing within said exhaust chamber to increase during its operation.

22. An energy transfer and air purifying device comprising:

containing means comprising a container for holding a quantity of liquid, said container having at least one opening therein;

a quantity of liquid located within said container to receive incoming air;

exhaust means comprising an exhaust chamber having a lower end disposed in spaced-apart relationship within said container and in contact with said liquid, and an outlet means located at the opposite end thereof, said exhaust means also including an outer peripheral ledge;

a bottom end plate located at the lower end of said exhaust chamber, said bottom end plate defining a plurality of openings to permit the ingress and egress of said liquid, said openings being dimensioned and positioned adjacent the perimeter of said end plate in such a manner as to cause said liquid to rotate turbulently within said exhaust chamber so as to provide maximum scrubbing of said air by said liquid;

guide means surrounding said container and connected thereto for guiding said incoming air to said liquid, said guide means including an outer wall surrounding said containing means, a fluid space defined between said outer wall and said containing means, and an upper limiting member attached to said containing means, said upper limiting member being of a substantially planar configuration having an aperture therein of substantially identical dimension to the outer periphery of said exhaust means, wherein said exhaust means is disposed through said aperture of said upper limiting member and restrained therein by said outer peripheral ledge of said exhaust means; and

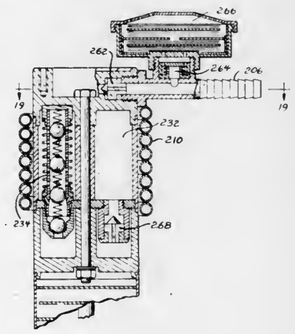
vacuum means adapted for fluid-tight communication with said container and said liquid to exert a fluid pressure sufficient to force said incoming air through said liquid and out of said exhaust chamber, and to cause the quantity of said liquid within said exhaust chamber to increase during its operation.

4,213,770

ENGINE EMISSION POLLUTANT SEPARATOR

John W. Schaefer, 640 Murray La., Des Plaines, Ill. 60016

Continuation-in-part of Ser. No. 764,707, Feb. 1, 1977, abandoned, which is a continuation of Ser. No. 566,608, Apr. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 415,649, Nov. 14, 1973, abandoned, which is a continuation-in-part of Ser. No. 308,496, Nov. 21, 1972, abandoned. This application Apr. 2, 1979, Ser. No. 25,860
Int. Cl.[2] B01D *51/00;* **F02B** *33/00*
U.S. Cl. 55—269 **9 Claims**



1. A pollutant separator for reducing contaminants in a flow from a source of emission to a utilization point comprising:

a cooling coil having an inlet and an outlet, said cooling coil inlet being coupled to the source of emissions;

filter means having an inlet and an outlet, said filter means inlet coupled to the outlet of the cooling coil;

a scrubber unit having an inlet and an outlet, the scrubber unit inlet coupled to the filter means outlet and the scrubber unit outlet coupled to the utilization point, the scrubber unit including;

a closed chamber;

a primary scrubber tube having a first and a second end and having a plurality of holes in the wall thereof communicating with the closed chamber, the first end of the primary scrubber tube being coupled to the filter means outlet and the second end of the primary scrubber tube being coupled to the utilization device, the scrubber tube having an external shoulder;

a plurality of scrubber balls movably positioned within the bore of said tube;

a plurality of springs each respectively arranged between two of the scrubber balls to provide resilient biasing of said balls;

a ring valve movably covering a portion of the outer surface of the primary scrubber tube, the ring valve having a shoulder portion extending outwardly;

a ring valve spring for biasing the ring valve shoulder and the scrubber tube into context;

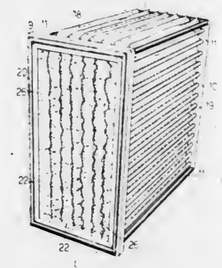
a fluid passage connecting the interior of the primary scrubber tube to the surface of the scrubber tube shoulder such that fluid pressure is exerted therethrough to the shoulder of the ring valve to provide fluctuating pressure within the scrubber means to enhance motion of the scrubber balls therein.

4,213,771

FILTER AND METHOD OF MAKING

Jean-Pierre Guibet, Vernon, France, assignor to Air Industrie, Cedex, France

Filed Jul. 3, 1978, Ser. No. 921,813
Claims priority, application France, Jul. 5, 1977, 77 20690
Int. Cl.[2] B01D *46/52*
U.S. Cl. 55—483 **9 Claims**



1. An improved filter having an assembly of a material from which there are formed first channels with filtering walls, disposed in first parallel rows open at one end of said filter so as to be in communication with an inlet for gas from which dust is to be removed, and an assembly of second channels with filtering walls, disposed in second rows parallel to each other, adjacent, interleaved and also parallel to said first rows, said second channels being open at the opposite end of said filter so as to be in communication with an outlet for said gas from which the dust has been removed, said first and second channels having a polygonal cross-section, said first and second rows, overlying one another, the walls of said first channels being adjacent the walls of said second channels, the improvement comprising adjacent channels of said first rows extending in a first direction of said filter connected in pairs substantially over the whole of their length along fixed lines extending along their common edges and aligned in said first direction, the adjacent channels of said first rows extending in a second direction perpendicular to the first and being likewise connected in pairs substantially over the whole of their length along fixed lines extending along their common edges and aligned in said second direction, said arrangement resulting in the formation of the channels of said second rows, and means for tensioning the assemblies of said first and second channels in said first and second directions perpendicular to each other and perpendicular to the center line of said channels so as to maintain the polygonal shape of said cross-section of said channels, said tensioning means being disposed external to said channels and out of the path of gas flowing through said inlet and said outlet.

9. A process for manufacturing a filter comprising the steps of,

forming strips in pieces of filtering fabric by executing regular spaced stitching lines in the direction of said strips of filtering fabric,

passing said strips behind one set of corresponding tensioners to form sleeves of loops of fabric for receiving said one set of tensioners disposed along one of the sides of said filter,

fixing the ends of said strips by stitching lines thereby forming sleeves for receiving a second set of tensioners disposed along the adjacent side of said filter, and further executing, row by row, along said direction rows of further stitching lines for fixing the strips in pairs at regular intervals.

4,213,772

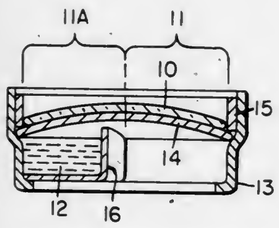
PROCESS FOR PRODUCING A GRADIENT PHOTOCHROMIC OPHTHALMIC LENS

Richard S. Lemker, and Clyde H. Storey, both of Harrodsburg, Ky., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 8, 1976, Ser. No. 674,897

Int. Cl.² C03B *32/00*; C03C *23/00*

U.S. Cl. 65—30 R **5 Claims**



5. In a method of making ophthalmic lenses with gradient photochromic behavior in a heat treatment furnace from a lens blank composed of a potentially phototropic or photochromic glass containing all the necessary ingredients including uniformly dispersed silver halide therein to develop photochromic behavior during heat treatment which comprises the steps of

(a) mounting of the lens blanks in a carrier for furnace heat treatment and heating said mounted lens blanks in a heat treatment furnace at a temperature sufficient to develop photochromic behavior in the potentially photochromic glass while

(b) maintaining selected portions of the said lens blanks at a temperature to substantially inhibit development of the photochromic behavior by placing a porous refractory with an evaporable liquid therein in proximity of the selected portions to maintain a progressive heat gradation in the lens blanks so that gradient photochromic behavior is produced therein.

4,213,773

HERBICIDAL SUBSTITUTED BICYCLIC TRIAZOLES

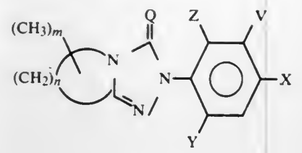
Anthony D. Wolf, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 758,996, Jan. 13, 1977, abandoned. This application Nov. 17, 1977, Ser. No. 851,731

Int. Cl.² A01N *9/22*; C07D *471/04, 487/04*

U.S. Cl. 71—92 **64 Claims**

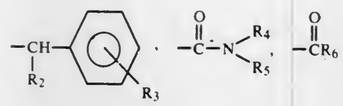
1. A compound having the formula



wherein:

V is hydrogen, fluorine, chlorine, bromine, hydroxy, alkyl of 1–4 carbon atoms or —OR_1 wherein:

R_1 is alkyl of 1–6 carbon atoms optionally substituted with 1–3 fluorines, chlorines or bromines, cycloalkyl of 4–6 carbon atoms, cycloalkylalkyl of 4–7 carbon atoms, alkenyl of 3–6 carbon atoms optionally substituted with 1–3 fluorines, chlorines or bromines, alkynyl of 3–6 carbon atoms, CHR_7R_8 or



wherein:

R_2 is hydrogen or methyl;

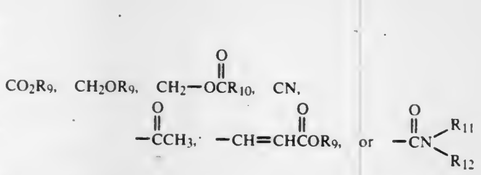
R_3 is hydrogen, chlorine, bromine, methyl or methoxy;

R_4 is alkyl of 1–4 carbon atoms;

R_5 is hydrogen, methyl or methoxy;

R_6 is alkyl of 1–4 carbon atoms or alkoxy of 1–4 carbon atoms;

R_7 is hydrogen or alkyl of 1–4 carbon atoms; R_8 is



R_9 is hydrogen or alkyl of 1–4 carbon atoms;

R_{10} is alkyl of 1–3 carbon atoms;

R_{11} is hydrogen, alkyl of 1–4 carbon atoms, alkenyl of 3–4 carbon atoms or alkoxy of 1–2 carbon atoms; and

R_{12} is hydrogen or alkyl of 1–2 carbon atoms

X is fluorine, chlorine, bromine, cyano, methyl methoxy or nitro;

Y is hydrogen, fluorine, chlorine, bromine or methyl;

Z is hydrogen, fluorine, chlorine or bromine;

n is 3, 4 or 5;

m is 0, 1 or 2; and

Q is oxygen or sulfur;

provided that

(1) When V is other than hydrogen, Y must be other than hydrogen;

(2) When m is 1, n is 4 and Y must be other than hydrogen;

(3) When m is 2, n is 4, X and Y are chlorine and V is —OR_1 wherein R_1 is alkyl of 1–4 carbon atoms;

(4) When Q is sulfur, m is O;

or an agriculturally suitable salt thereof.

33. A method for the control of undesirable vegetation comprising applying to the locus of such undesirable vegetation a herbicidally effective amount of a compound of claim 1.

4,213,774

PYRIDYLOXY-PHENOXY-α-PROPIONIC ACID AMINOALKYL ESTERS

Rolf Schurter; Hermann Rempfler, and Beat Böhner, all of Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

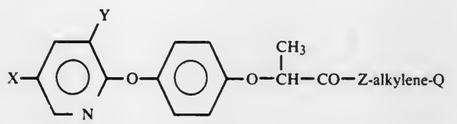
Filed Jan. 22, 1979, Ser. No. 5,538

Claims priority, application Switzerland, Jan. 27, 1978, 928/78

Int. Cl.² C07D *213/64*; A01N *9/22*

U.S. Cl. 71—94 **10 Claims**

1. A pyridyloxy-phenoxy-α-propionic acid-aminoalkyl ester of the formula I



(I)

in which

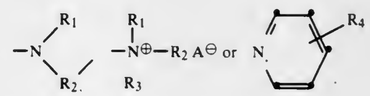
X is a halogen atom or the trifluoromethyl group,

Y is hydrogen, a halogen atom or the trifluoromethyl group,

Z is oxygen or sulfur,

"alkylene" is a straight-chain or branched-chain C_2–C_6 alkyl group which can be interrupted by oxygen,

Q is an amino or ammonio group



R_1 is hydrogen, C_1–C_6 alkyl unsubstituted or substituted by hydroxyl, halogen, cyano, CC_1–C_4 alkoxy, carboxyl or C_1–C_4 alkoxycarbonyl, or it is C_3–C_6 alkenyl unsubstituted or substituted by halogen, or it is C_3–C_6 alkynyl,

R_2 is the same as R_1 or it is phenyl unsubstituted or substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, cyano, nitro or trifluoromethyl,

R_1 and R_2 together with the nitrogen atom to which they are bound are also a 5-6-membered heterocycle which can contain as second hetero atom oxygen, sulfur or nitrogen, and can be substituted by C_1–C_4 alkyl or phenyl,

R_3 is the same as R_1,

R_4 is hydrogen, methyl, ethyl or halogen, and

$A^{\ominus}$ is the anion of an organic or inorganic acid.

7. A herbicidal composition containing a pyridyloxy-phenoxy-propionic acid-aminoalkyl ester of the formula I, claim 1, as active ingredient.

4,213,775

DIPHENYL ETHER DERIVATIVES AND HERBICIDAL COMPOSITIONS CONTAINING THE SAME

Shigeki Nagai; Hakobu Sekioka; Mitsuaki Takenaka; Masazumi Sakata; Yosio Kawaguchi; Seiji Takamura, and Minoru Nishimura, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

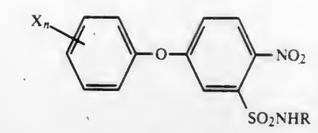
Continuation-in-part of Ser. No. 926,022, Jul. 19, 1978, abandoned. This application Jan. 26, 1979, Ser. No. 6,919

Claims priority, application Japan, Jul. 28, 1977, 52-89729; Nov. 10, 1978, 53-137921

Int. Cl.² C07C *143/833, 143/83, 143/78*; A01N *9/30*

U.S. Cl. 71—103 **10 Claims**

5. A herbicidal composition which comprises (i) as an active ingredient a herbicidally effective amount of a compound having the formula



wherein X is a halogen atom or a trifluoromethyl group, n is an integer of 1 to 3 inclusive, and R is a hydrogen atom, a lower alkoxycarbonyl group, an acetyl group, a chloroacetyl group, an N,N-dimethylcarbamoyl group, a lower-alkyl group, a lower-alkenyl group or a benzoyl group; and an alkali metal salt thereof; and (ii) an agriculturally acceptable carrier.

4,213,776

HERBICIDAL CONCENTRATE CONTAINING KETONE AND AMIDE SOLVENTS

Lawrence J. Giilck, and John S. Lojek, both of Elmira, Canada, assignors to Uniroyal Ltd., Ontario, Canada

Filed Dec. 18, 1978, Ser. No. 970,011

Claims priority, application Canada, Dec. 13, 1978, 317847

Int. Cl.² A01N *17/00*

U.S. Cl. 71—117 **3 Claims**

1. A concentrated herbicidal solution comprising, in admixture:

(a) a herbicidal ester of at least one chlorinated phenoxy alkanoic acid selected from the group consisting of 2,4-dichlorophenoxy acetic acid, 2,4-dichloro-phenoxy propionic acid, 2,4-dichlorophenoxy butyric acid, 2-methyl-4-chlorophenoxy acetic acid, 2-methyl-4-chlorophenoxy propionic acid, 2-methyl-4-chlorophenoxy butyric acid and 2,4,5-trichlorophenoxy acetic acid;

(b) at least one urea-type herbicide selected from the group consisting of 3-(3,4-dichlorophenyl)-1-methoxy-1-methyl urea, 3-(p-chlorophenyl)-1-methoxy-1-methyl urea, 3-(3,4-dichlorophenyl)-1,1-dimethyl urea, and 3-(4-bromo-3-chlorophenyl)-1-methoxy-1-methyl urea;

(c) a solvent selected from the group consisting of methyl isobutyl ketone, cyclohexanone and isophorone; and

(d) a solvent selected from the group consisting of dimethyl formamide, dimethyl acetamide and N-methyl pyrrolidone,

the concentration of (a) being at least 40% by weight based on the total weight of (a), (b), (c) and (d), the concentration of (b) being at least 10% based on the total weight of (a), (b), (c) and (d), the amount of (c) plus (d) being sufficient to dissolve (a) and (b), and the ratio of (c) to (d) being within the range of from 1:1 to 10:1 by weight, the said solution being stable on storage at low temperature.

4,213,777

MAKING IRON POWDER HAVING FIBER-LIKE PARTICLES

Klaus Grebe, Kettwig, and Hans De Haas, Meerbusch, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 783,004, Mar. 30, 1977, abandoned. This application Aug. 8, 1978, Ser. No. 931,886

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2614342

Int. Cl.² B22F *1/04*; C21B *13/00*

U.S. Cl. 75—0.5 BA **12 Claims**

1. Method of making iron powder, in which the particles have fiber-like configuration, comprising the steps of using regular iron oxide as raw material which has not been produced by a spray calcination,

reducing said iron oxide in an atmosphere of carbon oxide and nitrogen at a temperature within the range of 750° to 1200° C.;

limiting a hydrogen content in the reducing atmosphere during the last phase of reducing, but beginning not later

than the commencing of precipitation of metallic iron, to not more than 15% by volume of the CO content in the atmosphere;
providing the reducing atmosphere with at least one gaseous sulphur compound of at least 0.0005%, but not more than 0.1% by volume in relation to the CO content;
causing the reduction product to cool in a reducing or inert atmosphere; and
grinding the cooled product to powder.

4,213,778

PROCESS FOR TREATING A MUD PRODUCED DURING GAS SCRUBBING IN A BLAST FURNACE OR A STEELWORKS

Claus Sitz, Lübeck, Fed. Rep. of Germany, assignor to Metallhüttenwerke Lubeck GmbH, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,419
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758118
Int. Cl.² C21B *3/04*
U.S. Cl. 75—25 **20 Claims**



1. Process for treating muds produced during gas scrubbing in blast-furnace and steelworks, more particularly arising out of blast-furnace throat-gas cleaning, and subjected to concentration after the cleaning process, characterised in that, the mud is subjected to a decantation procedure, and is then mixed with a granular reducible carbon addition while still in the free-flowing condition, the mixture being fed in a condition containing 35 to 55% by weight of H_2O directly to a rotary tube furnace then being dried in said furnace with a countercurrent gas flow and the said mixture being treated extensively in the furnace zone at a temperature of 900° to 1300° C. under conditions ensuring agglomeration, volatilisation of zinc and lead and at least partial reduction of the iron oxides, then added to the charge material for the iron-making after discharge and cooling.

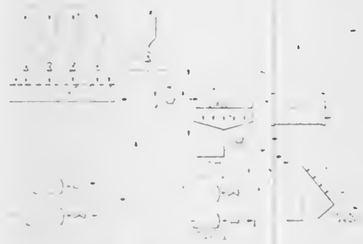
4,213,779

TREATMENT OF STEEL MILL WASTE MATERIALS

Bruce F. Caswell, Whitmore Lake, Mich., assignor to Arcanum Corporation, Ann Arbor, Mich.

Filed Sep. 19, 1977, Ser. No. 834,304
Int. Cl.² C22B *1/16, 1/243, 1/244;* C21B *13/00*
U.S. Cl. 75—34 **10 Claims**

1. A process for forming agglomerates from particles of iron-containing steel mill waste, which comprises the steps of:
a. forming a suspension of said steel mill waste particles in water,
b. adding to said suspension (i) a first hydrophobic organic liquid which is immiscible with water and (ii) a liquid conditioning agent effective to render the surfaces of said particles hydrophobic, whereby to form a two-phase liquid system containing said particles in suspension,
c. agitating the two-phase liquid system to effect repeated collisions of said particles and thereby forming in said system a dispersion of first, relatively small size agglomerates in said first hydrophobic organic liquid, said first agglomerates consisting essentially of agglomerates of said steel mill waste particles,
d. discontinuing said agitation and separating said first agglomerates from water, said first hydrophobic organic liquid and said conditioning agent,
e. then forming a second suspension of said first agglomerates in a second hydrophobic organic liquid which is immiscible with water,
f. adding to said second suspension an aqueous solution of a chemical reactive with iron to form a solid reaction product capable of binding together said first agglomerates, whereby to form a second two-phase liquid system containing said first agglomerates in suspension,
g. agitating said second two-phase liquid system to effect repeated collisions of said first agglomerates and thereby forming in said system a dispersion of second, relatively large size agglomerates, said second agglomerates consisting essentially of agglomerates of said first, relatively small size agglomerates, and simultaneously effecting a chemical reaction between said chemical and iron present in said particles whereby to form said solid reaction product which binds together said first agglomerates to form said second agglomerates,



h. discontinuing the agitation and recovering said second agglomerates substantially free of water and said second hydrophobic organic liquid.

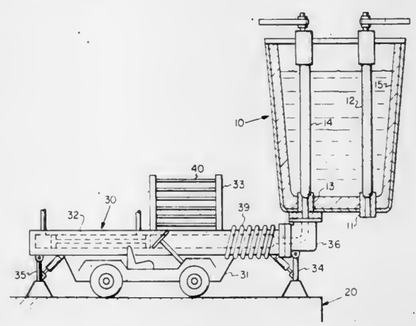
10. A process for forming agglomerates from particles of iron-containing steel mill waste having a particle size of less than 10 mesh size, which comprises the steps of:
a. forming a pumpable slurry containing up to 25 wt. % of said steel mill waste particles suspended in water,
b. adding to said slurry (i) from 3 to 15 wt. %, based on the weight of said slurry, of a first hydrophobic organic liquid which is immiscible with water and (ii) from 0.1 to 5 wt. %, based on the weight of said slurry, of a liquid conditioning agent effective to render the surfaces of said particles hydrophobic, whereby to form a two-phase liquid system containing said particles in suspension,
c. agitating the two-phase liquid system to displace the water from the surfaces of said particles and to effect repeated collisions of said particles and thereby forming in said system a dispersion of first, relatively small size agglomerates in said first hydrophobic organic liquid, said first agglomerates having a particle size of from about 1/64 to ⅛ inch and consisting essentially of agglomerates of said steel mill waste particles in which said particles are connected together by liquid bridges of said hydrophobic organic liquid,
d. discontinuing said agitation, removing freely drainable water from said first agglomerates and then drying said agglomerates to remove residual water, said first hydrophobic organic liquid and said conditioning agent whereby to obtain said first agglomerates in substantially dry condition,
e. then feeding said substantially dry first agglomerates and a second hydrophobic organic liquid which is immiscible with water into an agglomerator and mixing same therein to form a second suspension of said first agglomerates in said second hydrophobic organic liquid,
f. adding to said second suspension from 5 to 15 wt. %, based on the weight of said first agglomerates, of steel mill scale particles having a particle size of greater than about ⅛ inch, as a nucleating agent, and also adding to said second suspension an aqueous solution of a chemical reactive with iron to form a solid reaction product capable of binding together said first agglomerates, whereby to form a second two-phase liquid system containing said first agglomerates in suspension,
g. agitating said second two-phase liquid system to effect repeated collisions of said first agglomerates and thereby forming in said system a dispersion of second, relatively large size agglomerates, said second agglomerates consisting essentially of agglomerates of said first, relatively small size agglomerates, and simultaneously effecting a chemical reaction between said chemical and iron present in said particles whereby to form said solid reaction product which binds together said first agglomerates to form said second agglomerates,
h. discontinuing the agitation, removing freely drainable liquid from said second agglomerates and then drying said second agglomerates and thereby recovering said second agglomerates substantially free of water and said second hydrophobic organic liquid.

4,213,780

METHOD OF INTRODUCING CALCIUM AND CALCIUM ALLOYS INTO A VESSEL OF MOLTEN METAL

Eldon D. Miller, Zelienople, Pa., assignor to Lava Crucible Refractories Co., Pittsburgh, Pa.

Filed Jul. 12, 1978, Ser. No. 924,080
The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.
Int. Cl.² C21C *7/02*
U.S. Cl. 75—58 **7 Claims**



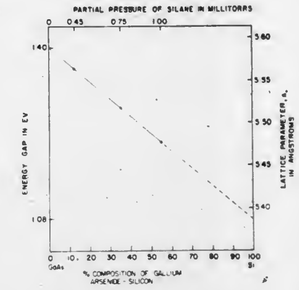
1. A method of treating molten metals comprising steps for: heating and extruding into a lower portion of a vessel containing molten metal, a composition comprising calcium metal and sodium metal, said composition being heated prior to entering the vessel to a temperature above the melting point of sodium and below the melting point of calcium, said sodium being present from about one-half percent by weight to about fourteen percent by weight of the composition in amounts and with volume distribution such that upon entering the molten metal, the immediately melted and vaporized sodium aids the dispersion of the calcium within the molten metal.

4,213,781

DEPOSITION OF SOLID SEMICONDUCTOR COMPOSITIONS AND NOVEL SEMICONDUCTOR MATERIALS

Alexander J. Noreika, and Maurice H. Francombe, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 602,493, Aug. 6, 1975, abandoned, which is a division of Ser. No. 381,653, Jul. 23, 1973, Pat. No. 3,979,271. This application Nov. 20, 1978, Ser. No. 962,344
Int. Cl.² C01C *15/00;* B44D *1/02;* H01L *7/36*
U.S. Cl. 75—134 P **19 Claims**



1. A binary semiconductor composition having the formula $(A)_{1-x}(B)_x$ where A is Group IIIa–Va conductor compound selected from the group consisting of BN, AlN, GaN, InN, BP, AlP, GaP, InP, AlAs, InAs and AlSb, B is a group IVa element selected from the group consisting of Si, Ge and Sn, and x is a number greater than about 0.01 such that $x+(1-x)=1$.

4,213,782

PROCESS FOR REMOVAL OF SILVER FROM PHOTOGRAPHIC FILM

Richard E. Kremp, 4220 Swanson La., Reno, Nev. 89502, and Fred N. Vandeman, 1617 Oakhurst Ave., Reno, Nev. 89507

Filed Feb. 3, 1977, Ser. No. 765,215
Int. Cl.² G03C *5/26*
U.S. Cl. 430—432 **4 Claims**

1. A process for reducing the density of overexposed radiographic film having two emulsion sides, by removing silver from one side of said film, comprising:
placing a suitable barrier on one emulsion side of said radiographic film;
transporting the film into a reagent tank containing hypochlorite solution;
maintaining the film in said hypochlorite solution for a predetermined length of time;
collecting the precipitated silver chloride; washing the treated film, and drying the treated film; and removing said barrier.

4,213,783

PHOTOGRAPHIC FILM SUBBING LAYER COMPRISING VINYLIDENE CHLORIDE AND ITACONIC ACID OR ESTER COPOLYMER

Alan H. Cook, Manningtree, England, assignor to Bexford Limited, London, England

Filed Oct. 4, 1976, Ser. No. 728,918
Claims priority, application United Kingdom, Oct. 13, 1975, 41838/75
Int. Cl.² G03C *1/80*
U.S. Cl. 430—533 **15 Claims**

1. A photographic film which comprises a self-supporting plastics film support, a subbing layer of a copolymer of vinylidene chloride applied to one or both surfaces of the film and a light-sensitive photographic emulsion layer applied over the

subbing layer(s), wherein the subbing layer(s) comprise a copolymer prepared from:

75 to 90 mole % of vinylidene chloride,
2 to 16 mole % of a copolymerisable ester of a carboxylic acid, or acrylonitrile or methacrylonitrile,
0.5 to 5 mole % of itaconic acid or a monoalkyl ester of itaconic acid wherein the alkyl group contains 1 to 4 carbon atoms, and
3 to 8 mole % of acrylamide, methacrylamide or N-methylolacrylamide,
(mole percentages being based on the total comonomeric composition).

13. A process for the production of a photographic film which comprises applying a subbing layer to one or both surfaces of a self-supporting plastics film support, said subbing layer comprising a copolymer prepared from:

75 to 90 mole % of vinylidene chloride,
2 to 16 mole % of a copolymerisable ester of a carboxylic acid, or acrylonitrile or methacrylonitrile,
0.5 to 5 mole % of itaconic acid or a monoalkyl ester of itaconic acid wherein the alkyl group contains 1 to 4 carbon atoms, and
3 to8 mole % of acrylamide, methacrylamide or N-methylolacrylamide,
(mole percentages being based on the total comonomeric composition),

and applying a light-sensitive photographic emulsion over the subbing layer(s).

4,213,784

PROCESS FOR PRODUCING HEAT DEVELOPABLE LIGHT-SENSITIVE COMPOSITIONS AND ELEMENTS

Shinpei Ikenoue, and Takao Masuda, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Continuation of Ser. No. 625,622, Oct. 24, 1975, abandoned.
This application Jul. 3, 1978, Ser. No. 921,541
Claims priority, application Japan, Apr. 15, 1971, 46-45656; Oct. 24, 1974, 49-122902; Dec. 13, 1974, 49-143178; Jan. 31, 1975, 50-23074; Jul. 1, 1975, 50-81181
Int. Cl.[2] **G03C** *1/02*; **C07F** *1/10* C 11C 1/100
U.S. Cl. 430—616 **66 Claims**

1. In a process for producing an unexposed, coatable thermally developable light-sensitive composition of improved sensitivity which process comprises heating a composition containing an organic silver salt and a light-sensitive silver halide and after the completion of said heating adding a reducing agent, the improvement wherein a sulfur-containing compound is added to the organic silver salt and the light-sensitive silver halide and the sulfur-containing compound, organic silver salt and light-sensitive silver halide are heated at about 30° C. to about 70° C. for about 5 minutes to about 300 minutes, at which temperature said improved sensitivity is obtained, which sulfur-containing compound comprises at least one labile sulfur atom and forms silver sulfide upon reaction with the organic silver salt or the silver halide, wherein said sulfur-containing compound is represented by one of the following general formulae:

$M^{I}S_2O_3$

or

$M^{II}S_2O_3$

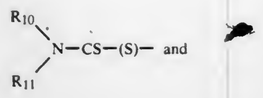
wherein MI^{I} represents a monovalent cation and M^{II} represents a divalent cation;

$R_2—CS—NR_1R_3$

wherein R_1 represents a hydrogen atom, an alkyl group, a carboxy- or aryl-substituted alkyl group, an alkenyl group, an aryl group, an alkyl-, carboxy- or carboxyalkyl substituted aryl group or an acyl group wherein said group or R_1 contains 12 or less carbon atoms; R_2 is a group selected from the class consisting of those represented by the following general formulae:

$R_4R_5N—$,

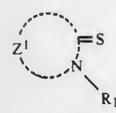
$R_6R_7N—CS—NR_8—NR_9—$,



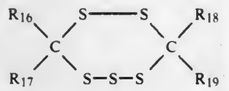
and

$R_{12}R_{13}C=N_{14}—$

wherein R_4 to R_{14} are the same as defined for R_1 and n represents an integer of 1 to 3; and R_3 is the same as defined for R_1;



wherein Z^1 represents the atoms necessary to form a 5- or 6-membered heterocyclic ring, which heterocyclic ring may fuse with an aromatic ring, and which heterocyclic ring can be substituted with a substituent having 24 or less carbon atoms selected from the group consisting of an alkyl group, an aryl-substituted alkyl group, a carboxy-substituted alkyl group, an alkylidene group, an alkyl-substituted alkylidene group, a carboxy-substituted alkylidene group, a carboxyalkyl-substituted alkylidene group, an aryl group, an alkyl-substituted aryl group, a carboxy-substituted aryl group, a carboxyalkyl-substituted aryl group, an arylidene group, an alkyl-substituted arylidene group, a carboxy-substituted arylidene group and a carboxyalkyl-substituted arylidene group, and R_{15} represents a hydrogen atom, an alkyl group, a carboxy- or aryl-substituted alkyl group, an alkenyl group, an aryl group or an alkyl-, carboxy- or carboxyalkyl-substituted aryl group wherein said group for R_{15} contains 12 or less carbon atoms; and



wherein R_{16}, R_{17}, R_{18} and R_{19} each represents a member selected from the group consisting of a hydrogen atom, an alkyl group having 12 or less carbon atoms or an aryl- or carboxy-substituted alkyl group having 12 or less carbon atoms.

4,213,785

HARDENING CATALYSTS AND ALKALI METAL SILICATE COMPOSITIONS CONTAINING SAME

Jean-Pierre Blanc, Antony, and Francois Meiller, Palaiseau, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 28, 1978, Ser. No. 901,098
Claims priority, application France, May 2, 1977, 77 13177
Int. Cl.[2] **B28B** *7/34*
U.S. Cl. 106—38.35 **15 Claims**

1. A composition of matter for hardening aqueous alkali metal silicate solutions consisting essentially of a mixture of an alkylene carbonate having 2 to 10 carbon atoms in the alkylene radical and a methyl ester of an organic acid which is selected from the group consisting of a methylester of a monocarboxylic acid containing 1 to 6 carbon atoms and a dimethylester of a dicarboxylic acid containing 3 to 10 carbon atoms, in a weight ratio of 4 to 30 parts by weight of ester to 70 to 96 parts by weight of carbonate.

10. In a method for producing foundry molds and foundry cores, comprising mixing sand, an aqueous solution of an alkali metal silicate, and a hardening catalyst, the improvement comprising including in the mixture, as said hardening catalyst, a sufficient quantity of a mixture of an alkylene carbonate having 2 to 10 carbon atoms in the alkylene radical and a methyl ester of an organic acid which is selected from the group consisting of a methylester of a monocarboxylic acid containing 1 to 6 carbon atoms and a dimethylester of a dicarboxylic acid containing 3 to 10 carbon atoms, in a weight ratio of 4 to 30 parts by weight of ester to 70 to 96 parts by weight of carbonate, and then shaping the mix and allowing the shaped mix to set.

4,213,786

LIGHTWEIGHT, HIGH REFRACTIVE INDEX GLASSES FOR SPECTACLE LENSES

Marga Faulstich, Mainz; Volkmar Geiler, Mainz-Mombach, and Georg Gliemeroth, Mainz-Finthen, all of Fed. Rep. of Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,612
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824891
Int. Cl.[2] **C03C** *3/08, 3/10*
U.S. Cl. 106—47 Q **4 Claims**

1. A glass for spectacle lenses having a refractive index nd of 1.77–1.81, a dispersion nd of 30.4–34.4 a specific gravity s of 3.4–3.8 and a thermal expansion coefficient $\alpha \times 10^7$ at 20°–200° C. of ≦100, said glass consisting essentially of:

(a) more than 80 mol percent of mono and polyvalent cationic oxides having a molecular weight ≦100, namely

SiO_2	22–30 mol percent
B_2O_3	17–23 mol percent
$SiO_2 + B_2O_3$	40–49 mol percent
Alkali metal oxides	0–8 mol percent
CaO	12–20 mol percent
MgO + CaO	12–22 mol percent
TiO_2	17–24 mol percent; and correspondingly

(b) less than 20 mol percent of cationic oxides having a molecular weight of >100, namely

La_2O_3	4–8 mol percent	
P_2O_5	0–1 mol percent	
BaO	0–5 mol percent	
SrO	3–10 mol percent	
BaO + SrO	5–10 mol percent	
PbO	0–2 mol percent	
Al_2O_3	0–1 mol percent	
ZrO_2	0–2 mol percent	
Nb_2O_5	0–1.5 mol percent	0–2
Ta_2O_5	0–1.5 mol percent	
WO_3	0–0.5 mol percent	

said glass further having no pronounced tendency toward crystallization in a viscosity range of >200 poises as determined by the magnitude of the crystal growth speed and the crystallization temperature range in relation to the viscosity.

4,213,787

HIGH REFRACTIVE INDEX GLASSES OF LIMITED SPECIFIC GRAVITY FOR DISTANCE AND NEAR VISION SPECTACLE LENSES

Marga Faulstich, Mainz; Volkmar Geiler, Mainz-Mombach, and Georg Gliemeroth, Mainz-Finthen, all of Fed. Rep. of Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,613
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824982
Int. Cl.[2] **C03C** *3/04, 3/08, 3/10*
U.S. Cl. 106—47 Q **2 Claims**

1. Optical glasses suitable for use as spectacle lenses having a refractive index nd = 1.79–1.81, a dispersion vd = 31–29 and a specific gravity s = 3.4–3.7, consisting essentially of the following composition:

Oxides	Weight Percent	
SiO_2	25–35	
TiO_2	10–15	28–35
Nb_2O_5	18–24	
ZrO_2	3–9	
SrO	0–7	12–20
BaO	7–20	
B_2O_3	0–7	
Li_{20}	5–8	5–9
Na_2O	0–3	
K_2O	0–2	
MgO	0–2	0–5
CaO	0–5	
ZnO	0–4	
PbO	0–3	
Al_2O_3	0–2	
La_2O_3	0–5	
Ta_2O_5	0–4	
Gd_2O_3, Y_2O_3, Bi_2O_3, WO_3 refining agent	0–3; and 0.2–1.	

said glasses having high crystallization stability as determined by the magnitude of crystal growth speed and the crystallization temperature range in relation to the viscosity in order to permit continuous production of said lenses.

4,213,788

FLUORIDE AND PHOSPHATE CONTAINING OPTICAL GLASS

Kouzi Kamiyama, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 12, 1979, Ser. No. 19,800
Claims priority, application Japan, Mar. 30, 1978, 53-37211
Int. Cl.[2] **C03C** *3/16, 3/18*
U.S. Cl. 106—47 Q **6 Claims**

1. An optical glass having a refractive index (ηd) of 1.47 to 1.53 and an Abbe's number νd of 77 and 85 and consisting essentially of the following composition:

Component	Mole %
$Al(PO_3)_3$	8–11
MPO_3	0.5–5
BaF_2	5–25
SrF_2	10–35
CaF_2	5–30
MgF_2	5–20
AlF_3	13–30
$LaF_3 + YF_3$	0–10

wherein the mole ratio of fluorine to phosphorus (F/P) is 6.5 or less, and M represents at least one of Li, Na or K.

4,213,789

GLASS FORMING COMPOUND AND BRICK MADE THEREWITH

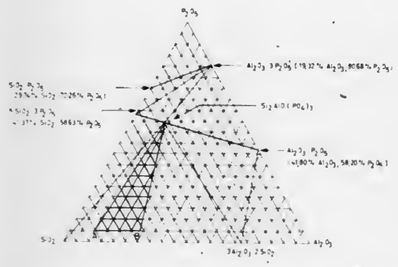
Peter Bartha, Bovenden, and Alexander Tutsek, Göttingen, both of Fed. Rep. of Germany, assignors to Refratechnik GmbH, Göttingen, Fed. Rep. of Germany

Filed May 30, 1978, Ser. No. 910,751

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1977, 2754190

Int. Cl.² C03C *3/04*

U.S. Cl. 106—52 **4 Claims**



1. A phosphate glass in the Al_2O_3—SiO_2—P_2O_5 system characterized by having the following composition on a 100 weight percent total glass weight basis:

14.00 weight percent Al_2O_3

32.93 weight percent SiO_2

53.02 weight percent P_2O_5,

by having a formula in its melted glass phase of $Si_2AlO(PO_4)_3$ or of $4SiO_2.Al_2O_3.3P_2O_5$ and by being compatible with SiO_2-phases selected from the group consisting of cristobalite, tridymite, and mullite.

4,213,790

PROCESS FOR THE PRODUCTION OF CEMENT IN A FLUIDIZED BED

Klaus Bauer, Oelde; Wolf Goldmann, Beckum; Horst Kretzer, Beckum; Heinrich Weber, Beckum; Rüdiger Beyer, Bad Waldliesborn; Wilfried Kreft, Ennigerloh; Frank Schaberg; Rudolf Weber, both of Oelde; Herbert Schmelter, Ennigerloh; Horst Ritzmann, Enniger; Erich Schnieder, Ahlen, and Georg Schepers, Ennigerloh, all of Fed. Rep. of Germany, assignors to Polysius AG, Beckum, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,366

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1977, 2735084; Aug. 4, 1977, 2735140; May 23, 1978, 2822377; May 23, 1978, 2822395; May 23, 1978, 2822419

Int. Cl.² C04B *7/44*

U.S. Cl. 106—100 **17 Claims**

1. In a process of producing cement by calcining preheated powder-form raw material in a fluidised bed into which fuel, preheated air, and a recycled fraction of previously calcined raw material are introduced, and cooling material discharged from such bed by a stream of cooling air in a cooling zone, the improvement comprising:

(a) precalcining said raw material prior to its introduction to said fluidised bed to a deacidification level of at least 40%;

(b) passing calcined material downwards from the fluidised bed into a packed bed of material forming the cooling zone; and

(c) introducing part of the cooling air stream into the fluidised bed from below and another part from the side in such proportions as to maintain a substantially constant intersticial ratio between the upper and lower regions of said fluidised bed.

4,213,791

PROCESS FOR PRODUCING PORTLAND AND OTHER HYDRAULIC CEMENTS

Eddie K. Wilson, Sr., 5877 Essex Ct. - Apartment 2, Memphis, Tenn. 38138

Continuation-in-part of Ser. No. 690,510, May 27, 1976, abandoned. This application Oct. 2, 1978, Ser. No. 947,599

Int. Cl.² C04B *7/46*

U.S. Cl. 106—100 **15 Claims**

1. A process for producing portland cement or other hydraulic cements, said process comprising: maintaining in an electric furnace a melt which has the chemical constituency of the desired hydraulic cement; introducing a molten material into the melt; introducing a solid material into the melt with the solid material being in a nonpulverulent condition; mixing the solid and molten materials within the melt by currents generated within the melt by the furnace; allowing the molten material to chemically combine with the solid material within the melt such as to maintain the chemical constituency of the melt at that for the desired hydraulic cement; withdrawing the melt from the furnace; and cooling the withdrawn melt to a solid that has the properties and chemistry of the desired cement.

4,213,792

COATING SOLUTION FOR APPLYING TENSIONING COATINGS TO ELECTRICAL STEEL STRIP

Edmondo Marianeschi, Terni, and Paolo Marini, Rome, both of Italy, assignors to Centro Sperimentale Metallurgico S.p.A. and Terni-Societe per l'Industria e l'Elettricita S.p.A., both of Rome, Italy

Filed Feb. 24, 1978, Ser. No. 880,983

Claims priority, application Italy, Mar. 9, 1977, 48382 A/77

Int. Cl.² C09K *3/00*; C23F *7/08*

U.S. Cl. 106—286.6 **1 Claim**

1. Coating solution for forming on electrical steel strips an electrical insulation coating having a low coefficient of thermal expansion, containing on a dry weight basis for every 100 parts by weight of phosphoric acid, calculated at P_2O_5, from 10 to 35 parts by weight of Ca^{2+} ions, calculated as CaO, up to 30 parts by weight of Cr^{6+} ions, calculated as CrO_3, an effective amount up to 20 parts by weight of Mg^{2+} ions, calculated as MgO, said amount being effective to improve the quality and evenness of the coating as compared to a coating lacking said amount, from 70 to 200 parts by dry weight of colloidal SiO_2, the value of the molar ratio

$$R=(CaO+MgO)/(P_2O_5+CrO_3)$$

being from 0.7 to 0.9, and from 40 to 200 parts by weight of water for every 100 parts of P_2O_5.

4,213,793

PROCESS FOR DESULFURIZATION OF COAL AND ORES

Arthur E. Starbuck, P.O. Box 132, Clio, Calif. 96106

Filed Mar. 2, 1978, Ser. No. 882,866

Int. Cl.² C09K *3/00*; C01B *17/08*

U.S. Cl. 106—286.8 **26 Claims**

1. A process for desulfurizing ores containing sulfur comprising the steps of:

a. crushing ore containing sulfur to a particle consistency;

b. feeding the crushed ore to a heated continuous-flow processor;

c. introducing pre-heated sulfur dissolving solvent into said processor with the crushed ore;

d. concurrently mixing and force conveying the crushed ore and solvent by augering in the continuous flow processor at an elevated temperature in which sulfur is dissolvable and is dissolved in a heated sulfur-solvent solution with suspended particles and a remaining ore, the processor being oriented for about horizontal augering;

e. separating the sulfur-solvent solution with suspended particles from the remaining ore at an elevated temperature;

f. drying the separated, remaining ore by evaporating remaining solvent from the ore;

g. recovering solvent from the ore drying step by condensing the evaporated solvent;

h. concurrently crystalizing sulfur dissolved in the sulfur-solvent solution and force conveying the sulfur-solvent solution and crystalizing sulfur by augering in a continuous flow chilled processor wherein the sulfur-solvent solution and crystalizing sulfur are conveyed together in a



concurrent manner as a mixture in a continuous forward direction at controlled reduced temperatures as substantially the entire mixture progresses to a separate separating step, said crystalizing sulfur existing in part as a suspension and in part as a precipitate;

i. separating both crystalized suspension sulfur and crystalized precipitate sulfur from the solvent solution;

j. drying the separated crystalized sulfur by evaporating the solvent from the crystalized sulfur, wherein a fine crystal sulfur product is obtained;

k. recovering solvent from the crystalized sulfur drying step by condensing the evaporated solvent.

4,213,794

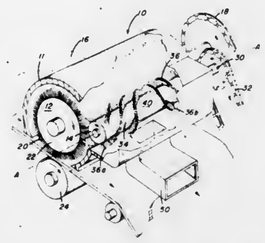
CLEANING STATION

David L. Wooding, and Robert W. Pletcher, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 892,719, Apr. 3, 1978, Pat. No. 4,172,303. This application Mar. 12, 1979, Ser. No. 19,985

Int. Cl.² B08B *7/00*

U.S. Cl. 134—6 **1 Claim**



1. A method of cleaning toner from the cleaning nap of a rotatable brush by a rotatable comb having bristles arranged to form at least one helical screw-type segment, which engage said cleaning brush nap comprising;

(a) rotating said comb and said cleaning brush in opposite directions; and

(b) selecting the angular velocity of said comb to be about twenty-five to fifty percent greater than the angular velocity of said cleaning brush.

4,213,795

METHOD AND AN ARRANGEMENT FOR THE CLEANING AND STERILIZING OF A FILLER PIPE ON A PACKING MACHINE

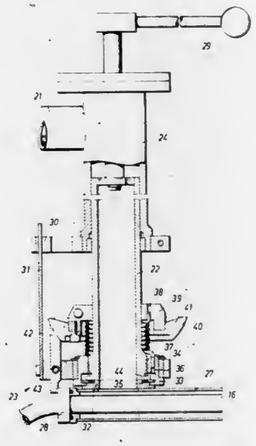
Ernst G. Ernstsson, Staffanstorp, and Hans O. I. Nantin, Trelleborg, both of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Feb. 8, 1978, Ser. No. 876,105

Claims priority, application Sweden, Feb. 18, 1977, 7701818

Int. Cl.² B08B *5/00*

U.S. Cl. 134—22 C **4 Claims**



1. A method of cleaning and sterilizing a filler pipe on a packing machine of the type wherein a series of packing containers are filled through an orifice end of said filler pipe and said filler pipe includes a flange extending therefrom comprising:

providing a cleaning sleeve having a closed end, an open end, and a port which allows communication with the interior of said cleaning sleeve;

placing said cleaning sleeve in spaced concentric relationship to said filler pipe such that said closed end is in spaced relation to said orifice end of said filler pipe and said open end abuts said flange and is in sealing relationship therewith;

coupling a discharge tube to said cleaning sleeve in overlying sealing relationship to said port, said discharge tube including an annular ring having a frustoconical surface and a lever which is pivotably mounted to said discharge tube, one end of which cooperates with said frustoconical surface as said discharge tube is coupled to said sleeve to pivot said lever and cause a second end of said lever to engage said flange and secure the sleeve thereto; and thereafter

causing a cleaning fluid to flow sequentially through said filler pipe, into the space between said cleaning sleeve and said filler pipe, and into said discharge tube for a time sufficient to cleanse said filler pipe.

4,213,796

MOBILE CLEANING UNIT

Detmer B. Shaffer, Garrettsville, Ohio, assignor to Sparkle Wash, Inc., Chagrin Falls, Ohio

Filed Mar. 1, 1978, Ser. No. 882,167

Int. Cl.² B08B *3/02*

U.S. Cl. 134—26 **5 Claims**

1. In a mobile washing and treating unit that includes a self propelled vehicle carrying a supply tank of liquid, an electric motor and pump unit for pumping liquid from the tank, a motor-generator unit for supplying electrical power to said electric motor, a plurality of containers for liquid additives to

be mixed with liquid pumped from said tank, a venturi injector in a first conduit between said tank and said motor and pump unit, solenoid operated control valves, one associated with an outlet from each of said containers, a second conduit common to said control valves and connected to said venturi injector, and an applicator connected through a flexible hose to the supply tank downstream from the venturi injector for applying liquid from the tank and from said containers to an object being



cleaned or treated, the improvement wherein said control valves each include means adjustable for regulating the flow through each valve, means interconnecting each valve to form a common conduit to the venturi injector, a flow-operated switch responsive to initiation of flow from said tank, and control means operated by said flow-operated switch to sequentially operate said control valves, in response to successive operation of said flow-operated switch to introduce fluid from the containers to the flow of fluid in said first conduit.

4,213,797

RADIANT ENERGY TO ELECTRIC ENERGY CONVERTER

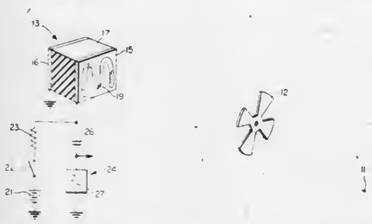
Arden Sher, 108 Charles River Landing Rd., Williamsburg, Va. 23185

Continuation-in-part of Ser. No. 631,689, Nov. 13, 1975, Pat. No. 4,084,101. This application Mar. 23, 1978, Ser. No. 889,514

The portion of the term of this patent subsequent to Apr. 11, 1995, has been disclaimed.

Int. Cl.² H01L *31/04*

U.S. Cl. 136—89 SP **59 Claims**



1. Apparatus for converting radiant energy into electric energy comprising a capacitor including an ionic dielectric and a pair of electrodes, means for causing said dielectric to be cyclically irradiated by said radiant energy, the properties of said dielectric being dominated by a dipole layer only on or near its surface, the capacitance of the capacitor being modulated in response to the cyclic irradiation, and means for connecting a load to the electrodes so the load is responsive to current derived from the capacitor in response to the capacitance modulation.

4,213,798

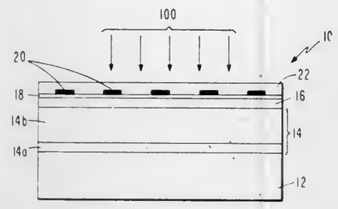
TELLURIUM SCHOTTKY BARRIER CONTACT FOR AMORPHOUS SILICON SOLAR CELLS

Richard Williams, Princeton, and Yehuda Arie, Cranbury, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,967

Int. Cl.² H01L *31/06*

U.S. Cl. 136—89 SJ **13 Claims**



1. In a Schottky barrier solar cell which comprises an electrically conductive substrate, a body of hydrogenated amorphous silicon having regions of differing conductivity, said body having opposed major surfaces wherein one of said major surfaces ohmically contacts said substrate, and a layer of material forming a Schottky barrier with said body contiguous to a major surface of said body opposite to said substrate, the improvement wherein the material which forms the Schottky barrier is a layer of tellurium.

4,213,799

IMPROVING THE ELECTRICAL CONDUCTIVITY OF ALUMINUM ALLOYS THROUGH THE ADDITION OF MISCHMETAL

Mathur Raghavan, Norwalk; Stanley Shapiro, New Haven, both of Conn.; Ronald G. Hardy, and Duncan G. Block, both of Hixson, Tenn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jun. 5, 1978, Ser. No. 912,205

Int. Cl.² C22F *1/04;* **C22C** *21/00*

U.S. Cl. 148—2 **10 Claims**

2. A process of forming an aluminum base conductor wire having an electrical conductivity equivalent to commercial grade aluminum conductor wire, said process comprising the steps of:

(a) casting an aluminum base alloy consisting essentially of 0.04 to 1.0% by weight iron, 0.02 to 0.2% by weight silicon, 0.1 to 1.0% by weight copper, 0.001 to 0.2% by weight boron, 0.001 to 1.0% by weight mischmetal, balance essentially aluminum;

(b) hot working said alloy at a temperature above 400° F. up to approximately 950° F.; and

(c) cold working said alloy to a size range of 0.002 to 0.375".

4,213,800

ELECTRICAL CONDUCTIVITY OF ALUMINUM ALLOYS THROUGH THE ADDITION OF YTTRIUM

William E. Mayo, Bartlesville, Okla.; Mathur Raghavan, Norwalk; Stanley Shapiro, New Haven, both of Conn.; Ronald G. Hardy, and Duncan G. Block, both of Hixson, Tenn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jun. 12, 1978, Ser. No. 914,576

Int. Cl.² C22F *1/04;* **C22C** *21/00*

U.S. Cl. 148—2 **10 Claims**

2. A process of forming an aluminum base conductor wire having an electrical conductivity equivalent to commercial grade aluminum conductor wire, said process comprising the steps of:

(a) casting an aluminum base alloy consisting essentially of 0.04 to 1.0% by weight iron, 0.02 to 0.2% by weight silicon, 0.1 to 1.0% by weight copper, 0.001 to 0.2% by

weight boron, 0.001 to 0.5% by weight yttrium, balance essentially aluminum;

(b) hot working said alloy at a temperature above 400° F. up to approximately 950° F.; and

(c) cold working said alloy to a size range of 0.002 to 0.375".

4,213,801

OHMIC CONTACT OF N-GaAs TO ELECTRICAL CONDUCTIVE SUBSTRATES BY CONTROLLED GROWTH OF N-GAAS POLYCRYSTALLINE LAYERS

Wilbur D. Johnston, Jr., Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 840,161, Oct. 7, 1977, abandoned. This application Mar. 26, 1979, Ser. No. 23,697

Int. Cl.² H01L *23/48, 29/46*

U.S. Cl. 148—33.3 **17 Claims**



1. A supported semiconductor layer comprising an n-type layer of GaAs deposited on and forming an interface with an electrically conductive body characterized in that said layer of GaAs is a polycrystalline layer and said electrically conductive body comprises an electrically conductive substrate having deposited thereon an elemental layer of nominal thickness in the range of 1000 to 250 Å, wherein said elemental layer is substantially only one element of the group consisting essentially of Ge, Sn, and Si and wherein the resistance of said interface is less than 2 ohm-cm², the blocking voltage is less than 0.05 V and said n-type layer of GaAs covers at least 90% of said electrically conductive body.

4,213,802

METHOD OF TREATING A PERMANENT MAGNET ALLOY

Frederick Rothwarf, Toms River; Robert L. Bergner, Randolph; Herbert A. Leupold, Eatontown, and Arthur Tauber, Elberon, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 27, 1979, Ser. No. 33,940

Int. Cl.² H01F *1/02*

U.S. Cl. 148—101 **4 Claims**

1. Method of lowering the reversible temperature coefficient of magnetization of a permanent magnet alloy said method consisting of heat treating the alloy in a noble gas atmosphere by the steps of

(a) heating the alloy at about 1200 degrees C. for 2 hours, (b) quenching the alloy in ice water, (c) heating the alloy at about 850 degrees C. for 2 hours, (d) lowering the temperature to about 700 degrees C. and heating for one hour (f) lowering the temperature to about 500 degrees C. and heating for one hour, (g) lowering the temperature to about 400 degrees C. and heating for four hours, and (h) lowering the temperature to about 280 degrees C. and heating for 12 hours.

4,213,803

R_2Co_{17} RARE TYPE-EARTH-COBALT, PERMANENT MAGNET MATERIAL AND PROCESS FOR PRODUCING THE SAME

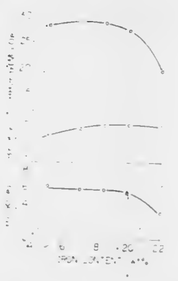
Tetsuhito Yoneyama; Shiro Tomizawa, both of Ichikawa; Tetsuo Hori, Tokyo, and Teruhiko Ojima, Nagareyama, all of Japan, assignors to TDK Electronics Company Limited, Tokyo, Japan

Filed Feb. 8, 1977, Ser. No. 766,671

Claims priority, application Japan, Aug. 31, 1976, 51-103919; Dec. 28, 1976, 51-159465

Int. Cl.² H01F *1/08*

U.S. Cl. 148—102 **36 Claims**



1. A permanent magnet of R_2Co_{17} type crystal structure consisting essentially of at least one rare earth metal in an amount of from 24 to 28% by weight, copper in an amount of from 5 to 12% by weight, a total combined amount of cobalt and iron from 55 to 70.8% by weight, said iron being present in an amount of up to 23% by weight, and at least two elements selected from the group consisting of niobium, vanadium, tantalum and zirconium in an amount of from 0.2 to 5% by weight, the amount of each of said elements being sufficient to create a substantial increase in the coercive force of said magnet compared to the coercive force of a magnet obtained by the inclusion of only one of said elements, said coercive force being increased about 0.5 KOe to 1.7 KOe, all percentages being based on the total weight of said magnet.

4. A permanent magnet of R_2Co_{17} type crystal structure consisting essentially of at least one rare earth metal in an amount of from 24 to 28% by weight, copper in an amount of from 5 to 12% by weight, a total combined amount of cobalt and iron being from 55 to 70.8% by weight, said iron being present in an amount of up to 23% by weight and at least two elements selected from the group consisting of niobium, vanadium, tantalum and zirconium in an amount of from 0.2 to 5% by weight, the amount of each of said elements being sufficient to maintain the coercive force of said magnet at about the same level throughout said percentage range of said iron, said coercive force being about 7 KOe, all percentages being based on the total weight of said magnet.

7. A permanent magnet of R_2Co_{17} type crystal structure consisting essentially of rare earth metal in an amount of from 24 to 28% by weight, copper in an amount of from 5 to 12% by weight, iron in an amount of from 15 to 20% by weight, a total combined amount of cobalt and iron being from 55 to 70.8% by weight, and a combination of zirconium and niobium in an amount of from 0.2 to 5% by weight, all percentages being based on the total weight of said magnet said magnet having an energy product of between about 20.6 and 28 MG·Oe.

4,213,804

PROCESSING FOR CUBE-ON-EDGE ORIENTED SILICON STEEL

Amitava Datta, Gibsonia, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Mar. 19, 1979, Ser. No. 21,513
Int. Cl.[2] H01F *1/04*
U.S. Cl. 148—111 **10 Claims**

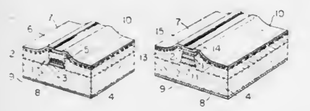
1. In a process for producing electromagnetic silicon steel having a cube-on-edge orientation, which process includes the steps of: preparing a melt of silicon steel containing from 0.02 to 0.06% carbon, from 0.0006 to 0.0080% boron, up to 0.0100% nitrogen and from 2.5 to 4.0% silicon; casting said steel; hot rolling said steel; cold rolling said steel to a thickness no greater than 0.020 inch; heat treating the cold rolled steel at a temperature between 1550° and 2000° F. in a hydrogen-bearing atmosphere; heat treating said steel at a temperature between 1300° and 1550° F. in a hydrogen-bearing atmosphere, said steel being decarburized to a carbon level below 0.005%, applying a refractory oxide coating to said steel; and final texture annealing said steel; the improvement comprising the step of removing at least 0.02 micron of surface from each side of said steel subsequent to said heat treatment at a temperature between 1550° and 2000° F. and prior to said heat treatment at a temperature between 1300° and 1550° F., thereby rendering said steel more susceptible to decarburization and the subsequent formation of a high quality refractory oxide coating.

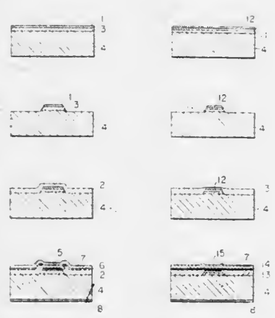
4,213,805

LIQUID PHASE EPITAXY METHOD OF FORMING A FILIMENTARY LASER DEVICE

Toshihisa Tsukada, Sekimachi, Japan, assignor to Hitachi, Ltd., Japan

Division of Ser. No. 627,863, Oct. 31, 1975, Pat. No. 4,121,177, which is a continuation-in-part of Ser. No. 474,023, May 28, 1974, abandoned. This application Apr. 11, 1978, Ser. No. 895,374
Claims priority, application Japan, May 28, 1973, 48-58643; May 28, 1973, 48-58644; Mar. 4, 1974, 49-24261
Int. Cl.[2] H01L *21/208, 21/302*
U.S. Cl. 148—171 **21 Claims**





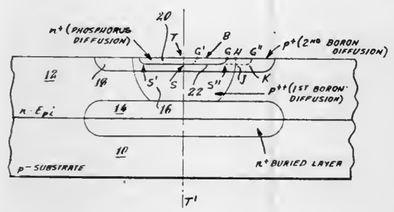
1. A method for fabricating a semiconductor device comprising the steps of:
preparing a semiconductor body consisting of a III–V compound semiconductor material not including Al, having a major surface, and having a first conductivity type;
growing by liquid phase epitaxy a multi-layered semiconductor crystal on the major surface of said semiconductor body, said multi-layered semiconductor crystal including:
(i) a laser active layer having two opposite surfaces, a bottom surface which faces towards the major surface of said body and a top surface which faces away from the major surface of said body, and
(ii) an upper semiconductor layer of a second conductivity type, opposite to said first conductivity type, being a top layer of said multi-layered semiconductor crystal, consisting of a material including Al and having a broader band gap than that of the material of said laser active layer;
selectively etching said multi-layered semiconductor crystal so as to form a mesa-shaped portion of said multi-layered semiconductor crystal on a part of said major surface and to expose a remaining part of said major surface of said body;
growing by liquid phase epitaxy a side semiconductor layer, consisting of a material different from and having a broader band gap than that of said laser active layer, on the exposed major surface and side surfaces of said mesa-shaped portion but not on an exposed top surface of said mesa-shaped portion; and
depositing first and second metal electrodes on said semiconductor body and said upper semiconductor layer, respectively.

4,213,806

FORMING AN IC CHIP WITH BURIED ZENER DIODE

Wei K. Tsang, Bedford, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Division of Ser. No. 801,410, May 27, 1977, Pat. No. 4,136,349. This application Oct. 5, 1978, Ser. No. 948,673
Int. Cl.[2] H01L *7/44*
U.S. Cl. 148—187 **6 Claims**



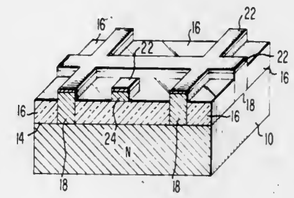
1. The method of making an IC chip with a buried Zener diode layer comprising the steps of:
diffusing p dopant into said chip through a first window having a predetermined lateral dimension in one direction to produce a first deep p layer having a second predetermined lateral surface dimension in said direction which is substantially larger than said first dimension;
diffusing p dopant into said chip to form a second p layer which is shallower than said first layer but which overlies said first layer and has side regions extending beyond said first layer in said one direction;
diffusing n dopant into said chip to form an n layer which is shallower than said second p layer and which is located with the surface boundaries of said first deep p layer, in said one direction; and
controlling the diffusion of said n layer to provide a lateral dimension in a second direction perpendicular to said one direction sufficient that the concentration of p dopant at the surface boundary of the n layer in said second direction is less than the concentration of p dopant at the buried horizontal interface between said n layer and the p dopant diffused in the first two diffusion steps.

4,213,807

METHOD OF FABRICATING SEMICONDUCTOR DEVICES

Wojciech Rosnowski, Summit, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 803,722, Jun. 6, 1977, abandoned. This application Apr. 20, 1979, Ser. No. 32,027
Int. Cl.[2] H01L *21/225, 21/308*
U.S. Cl. 148—187 **14 Claims**



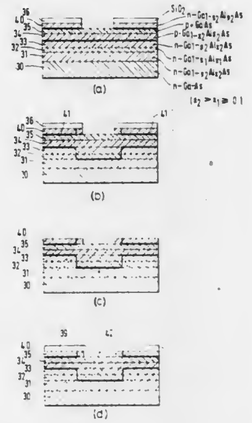
10. Method of fabricating a silicon semiconductor device comprising the steps of:
first forming a first masking layer of silicon oxide on a surface of a body of semiconductor material;
removing preselected portions of said first masking layer to expose surface portions of said body, other portions of said first masking layer remaining on said surface;
disposing a layer of aluminum dopant material over said other remaining portions of said first masking layer and said exposed surface portions, said aluminum having a diffusion coefficient with respect to said silicon oxide masking material which is large enough that allowing the aluminum to remain on said silicon oxide masking layer during diffusion of said aluminum into said semiconductor material would be detrimental to the intended device characteristics;
second forming a second masking layer over said layer of aluminum dopant material and selectively retaining said second masking layer to protect those portions of said layer of aluminum dopant material which overlie said exposed surface portions, while leaving the rest of said layer of aluminum unprotected;
first etching said unprotected portions of said layer of aluminum in an attempt to remove substantially all of said aluminum from said other remaining portions of said silicon oxide layer; and
second etching said other remaining portions of said silicon oxide layer with an etchant which selectively attacks said silicon oxide masking material, said second etching being carried out for a time which is long enough to remove any islands of aluminum on said other remaining portions of said silicon oxide masking layer which may not have been removed in said first etching step; and
heating said body to a diffusion temperature for said aluminum dopant material in said silicon semiconductor body for a time sufficient to produce a P type diffused region of a desired depth in which the conductivity type of said diffused region is controlled by said aluminum dopant material and said diffused region is at least partially bounded by a PN junction with a portion of said semiconductor body having an N type conductivity.

4,213,808

FABRICATION OF INJECTION LASERS UTILIZING EPITAXIAL GROWTH AND SELECTIVE DIFFUSION

George H. B. Thompson, Sawbridgeworth, and David F. Lovelace, Waltham Abbey, both of England, assignors to ITT Industries, Incorporated, New York, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,886
Claims priority, application United Kingdom, Apr. 1, 1977, 13957/77
Int. Cl.[2] H01L *21/225, 21/205, 33/00*
U.S. Cl. 148—188 **6 Claims**



1. A method of making a double heterostructure injection laser of III–V material, the method including the steps of:
forming by epitaxial growth a double heterostructure wherein an active layer of semiconductor material is sandwiched between upper and lower layers of higher band-gap semiconductor material, and wherein the upper layer is provided with a p-n junction dividing a lower part having the same conductivity type as that of the active layer and the lower layer from an upper part having the opposite conductivity type;
growing a layer of semiconductor material of the opposite conductivity than that of the upper part on upper layer, thereby producing a p-n junction which restricts current flow upon being reverse biased during the operation of the laser;
delineating a stripe on the upper surface of the semiconductive material; and
diffusing through said stripe a conductivity type determining dopant of the type opposite that of the active layer and of greater mobility than that used in the provision of the three layers of the heterostructure until the region of the p-n junction underlying the stripe is translated downwardly halting at the heterojunction between the active layer and the lower layer.

4,213,809

WATER-RESISTANT EXTRUDABLE AQUEOUS GEL BLASTING AGENT AND SIMPLIFIED METHOD OF MANUFACTURE

Neil E. Gehrig, Westwood Hills, and Edwin G. Marhofer, Pittsburg, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 955,051, Oct. 26, 1978, abandoned. This application Apr. 18, 1979, Ser. No. 31,246
Int. Cl.[2] C06B *31/30*
U.S. Cl. 149—60 **6 Claims**

1. The method of manufacturing a water-resistant extrudable aqueous gel blasting agent comprising the steps:
(a) Mixing a stabilizing amount of finely divided water-solu-

ble hydroxy-substituted thickening agent with a substantial proportion, between one-tenth and three-fourths of the total amount of particulate solid ammonium nitrate to yield a substantially uniform mixture of particulate solids.

(b) Adding to and mixing with the mixture of particulate solids of step (a) at least 6 percent hexamethylenetetramine by weight of the total composition, sufficient nitric acid, between 2 percent and 5 percent by weight of the total composition to yield a pH between 3.5 and 6.0 in the total composition and a quantity of water sufficient to produce a water content of 10 to 13 percent by weight of the total composition, to yield a substantially uniform mixture;

(c) Adding to and mixing with the mixture obtained in step (b) the remainder of the solid particulate ammonium nitrate, sufficient to yield a total ammonium nitrate content of 75 to 85 weight percent;

(d) Continuing mixing or allowing the mixture obtained in step (c) to stand for a period of time sufficient to permit the thickening effect of the hydroxy-substituted thickening agent to become substantially complete and

(e) Mixing with the product of step (d) a quantity of crosslinking agent sufficient to react with the hydroxy-substituted thickening agent to produce a gelling effect, yielding an extrudable aqueous gel blasting agent.

4,213,810

ORIENTATION LAYER FOR A LIQUID CRYSTAL DISPLAY AND METHOD OF MANUFACTURE

Hinrich Heynisch, Graefelfing, and Hans Krueger, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 4, 1979, Ser. No. 35,823

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820245

Int. Cl.² C09K *3/34;* **G02F** *1/13*

U.S. Cl. 156—73.1 **13 Claims**



1. In an improved method for the manufacture of an orientation layer which consists of parallel grooves introduced on a surface of a carrier plate by depositing a material under the influence of a flat, stationary wave field, for use in a liquid crystal display cell having two carrier plates which enclose a liquid crystal layer between them, the improvement of such method which comprises:

generating said wave field using ultrasonic waves.

4,213,811

CONTINUOUSLY ADVANCING MANDREL

Marcus A. Hall, Branford, Conn., and Thomas A. Kutnyak, Greenwood, S.C., assignors to Automation Industries, Inc., Greenwich, Conn.

Filed May 10, 1978, Ser. No. 903,772

Int. Cl.² B65H *8/00*

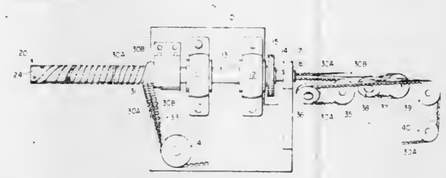
U.S. Cl. 156—195 **12 Claims**

1. In a continuously advancing definite length mandrel device for making indefinite length articles, including a frame and a tubular mandrel core axially rotatable with respect to the frame and drive means for rotating the core, the improvement which comprises

(a) a plurality of closed-loop belts each having portions wrapped helically about said core in multiple lead fashion with their convolutions defining a mandrel surface, whereby as the core is rotated additional convolutions of said belts are drawn onto one end of said core;

(b) feeding means on said frame for urging all of said convolutions toward the opposite end of said core;

(c) means associated with said belt convolutions for maintaining all of said convolutions in a sliding fit about said core; and



(d) a belt guide at said opposite end of said core fixed with respect to the frame for collapsing the successive convolutions inwardly and returning each belt facing one another side-by-side through the inside of the core toward the first mentioned end thereof, said guide being formed with a plurality of grooves for receiving the respective plurality of belts, said grooves being of equal length along their centerlines.

4,213,812

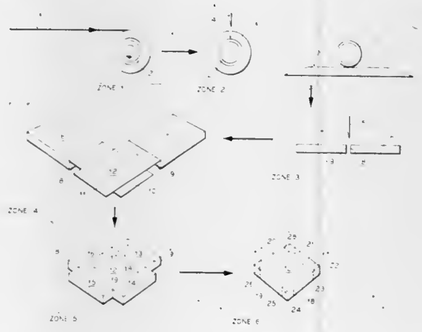
PROCESS FOR PREPARING CROSSLAPPED FILM STRUCTURES

Harold D. Boultinghouse, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 5, 1970, Ser. No. 16,743

Int. Cl.² B37B *7/08*

U.S. Cl. 156—226 **6 Claims**



1. A process for preparing at least one structure comprised of layered, nonbonded, crosslapped film from at least two layered, nonbonded film laminates produced from a single sheet of film whereby said film is continuously introduced into a winding zone containing therein a rotating means, accumulating said film in wrapped layers on the periphery of said rotating means until a desired thickness of layered film is established thereon, transferring said rotating means containing thereon said layered film to a zone wherein said layered film is removed from said rotating means by severing said layered film in a plane from the outer layer of said layered film to the periphery of said rotating means to thus produce at least one blanket of layered film, transferring said blanket of layered film to a zone and therein severing said blanket of layered film to thus produce said two layered nonbonded film laminates; said process further comprising a placement step, a first rotation step, and a second rotation step; said placement step comprising placing in a crosslapping zone and in the same plane a first of said film laminates having a first fastened edge, and a second of said film laminates having a second fastened edge such that said first fastened edge and said second fastened edge are adjacent and at an angle to each other; said first rotation step comprising rotating at least a first film ply of said first film laminate about said first fastened edge and placing said first film ply on said plane; said second rotation step comprising rotating at least a second film ply of said second film laminate about said second fastened edge and placing said second film ply on said plane overlapping said first film ply; said first and said second rotation steps being repeated in alternation until the desired number of film plies are placed in said structure.

4,213,813

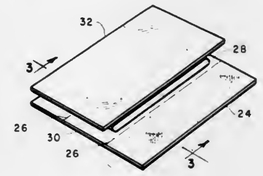
SANITARY NAPKIN

Laurel A. Hendricks, P.O. Box 943, Palo Alto, Calif. 94302

Filed Oct. 23, 1978, Ser. No. 953,782

Int. Cl.² B32B *31/16, 3/04;* **A61F** *13/16*

U.S. Cl. 156—226 **4 Claims**



1. A method of making a sanitary napkin comprising the steps of:

providing a rectangular sheet of thin absorbent fabric having a width equal to substantially thrice the desired width of the napkin and a length substantially the total desired length of said napkin including end tabs;

centering an absorbent pad in the central third of said fabric sheet, said pad having a width substantially equal to the desired width of said napkin and a length equal to the desired length of said napkin excluding end tabs;

providing a sheet of moisture barrier material over said pad and over one of said exposed thirds of said fabric sheet;

folding the uncovered third of said fabric sheet over the top of said pad and its covering moisture barrier;

folding the third of said fabric sheet and its covering moisture barrier over said uncovered third; and

sealing together all fabric and moisture barrier layers and sealing those layers extending beyond the ends of said pad into a unitary end tab at each end of said pad.

4,213,814

INSULATION PLATE FORMATION

Lambert Pasch, Nutheim, and Heinz Wagemann, Aachen, both of Fed. Rep. of Germany, assignors to Uniroyal A.G., Aachen, Fed. Rep. of Germany

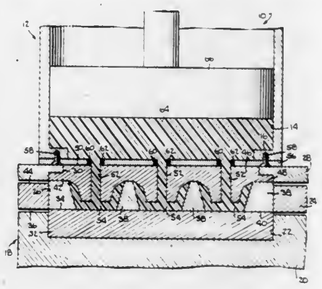
Division of Ser. No. 499,347, Aug. 21, 1974, Pat. No. 3,961,014, which is a division of Ser. No. 316,165, Dec. 18, 1972, Pat. No. 3,859,024. This application Dec. 12, 1975, Ser. No. 640,126

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1971, 2164219

Int. Cl.² B29F *1/06*

U.S. Cl. 156—242 **7 Claims**

1. A method of fabricating an insulation plate to be interpositioned between an elastomeric stock injection unit and a heated mold having inlet apertures for elastomeric stock; said method comprising impregnating a first body of heat-resistant, flexible fibers with a thermosetting resin, and curing said resin so as to form the same and said fibers into a hardened flexible first plate; impregnating a second body of heat-resistant, flexible fibers with a thermosetting resin, and shaping the latter said resin and the associated fibers to form a second plate of lesser thickness and hardness than said first plate; superposing said plates upon one another; interposing the superposed plates between said heated mold and said injection unit; affixing said superposed plates to said injection unit; moving said heated mold and said injection unit into opposed, pressing engagement with said superposed plates such that said heated mold forms cured impressions in said second plate corresponding to the outlines of said apertures while said second plate cures at least



partially, vulcanizes to said first plate and presents with the latter a composite flexible unit constituting the desired insulation plate; moving at least said heated mold out of engagement with said composite flexible unit to expose and make accessible said cured impressions; and forming apertures in and through said composite flexible unit at and through said cured impressions formed in said second plate.

4,213,815

CONTINUOUS PROCESS FOR PRODUCING, BY IRRADIATION, A MICROPOROUS RUBBER COMPOSITION SUITABLE FOR BATTERY SEPARATORS

Bruce S. Goldberg, Clifton, and Mahendra Shah, Newark, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 915,917

Int. Cl.² C08F *8/00;* **B29C** *19/00*

U.S. Cl. 156—244.11 **25 Claims**

1. In a process for producing microporous polymeric material, the improvement comprising:

compounding a sulfur free curable composition of a compound selected from the group consisting of curable natural rubber, polyisoprene, styrene-butadiene, nitrile-butadiene, and ethylene-propylene rubber, or a mixture of same with a curative for curing the composition by electron beam irradiation, said curative therefor being an ethylenically unsaturated curing agent of acrylate or methacrylate having more than one acrylate or methacrylate group present, or mixtures thereof, and rehydrated silica;

continuously forming a shape of said composition; and

continuously curing said formed shape by irradiation at an irradiation level of less than 10 megarads.

14. The process as defined in claim 1, wherein during said continuous forming of said shape the curable composition is extruded and in shaping to final form, backed with a sheet of an inert polymer, non-woven, heat-bonded web.

4,213,816

METHOD FOR BONDING POROUS COATING TO RIGID STRUCTURAL MEMBER

Harold B. Morris, Newnan, Ga., assignor to Glasrock Products, Inc., Fairburn, Ga.

Continuation-in-part of Ser. No. 764,952, Feb. 2, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 914,737

Int. Cl.² B29C *19/00*

U.S. Cl. 156—245 **11 Claims**

1. Method for bonding a layer of porous polymeric material to a rigid implantable portion of a prosthetic device, comprising the steps of (a) forming a substrate by coating the implant-

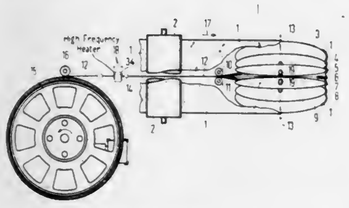
able portion with material which is chemically compatible with the porous polymeric material and which has a melt viscosity lower than that of the porous polymeric material, (b) covering the substrate with a porous polymeric material in powder form capable of forming said porous polymeric layer for forming a composite coating on the implantable portion, and (c) heating the substrate and porous polymeric material to a temperature high enough to cause the substrate material to flow into the adjacent pores and low enough so that the porous material will maintain its shape so that the porous layer will be bonded to the substrate and the outer pores will be open to accommodate tissue ingrowth.

4,213,817

APPARATUS FOR THE PRODUCTION OF AN ELECTRIC STACK CAPACITOR OF METALLIZED SYNTHETIC MATERIAL FILMS

Friedrich J. Gaenge, Ferdinand Utner, Harald Vetter, and Gerhart Vilsmeier, all of Regensburg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 815,217, Jul. 13, 1977, Pat. No. 4,128,926.
This application Jul. 27, 1978, Ser. No. 928,426
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1976, 2634442
Int. Cl.² B31F *1/34*
U.S. Cl. 156—474 **10 Claims**



1. A capacitor forming device for producing a stack capacitor formed from a synthetic material band with metal coatings therein, said band having longitudinal folds and being formed into a fold block, said device comprising: a deflection roller; a row of folding wheels inclined towards one another and arranged in a running direction of the band after the deflection roller; central axes of the folding wheels arranged to lie in one plane by providing a single curved axis member common to all folding wheels and substantially transverse to the running direction; a spacing of all the folding wheels from one another at a film inflow point of the folding wheels approximately corresponding with twice the width of the fold block to be produced; a spacing of the row of folding wheels at an outflow point of the synthetic material band being a smallest distance from one another relative to the spacing at the inflow position and consistent with folds formed in the band between adjacent folding wheels; a pair of contact pressure roller means arranged after an outflow point in the running direction of the band, said roller means further folding and pressing the folds together.

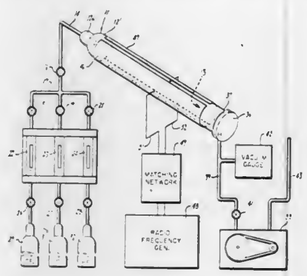
4,213,818

SELECTIVE PLASMA VAPOR ETCHING PROCESS

Kyle E. Lemons, San Jose; Richard C. Blish, II, Los Gatos, and Jan D. Reimer, Palo Alto, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 828,943, Aug. 29, 1977, abandoned.
This application Jan. 4, 1979, Ser. No. 1,039
Int. Cl.² H01L *21/306*; C23F *1/02*
U.S. Cl. 156—643 **14 Claims**

1. In a selective vapor etching process for performing operations on a body formed of at least two different materials which are exposed at one surface of the body and in which the body is disposed in a chamber having a pressure below atmosphere therein, creating by electrodeless electromagnetic discharge within the chamber a gas plasma having active species of atoms and molecules, and wherein said gas plasma consists essentially of a binary mixture of 5 to 95 mole percent sulfur hexafluoride and the balance helium, so that the gas plasma



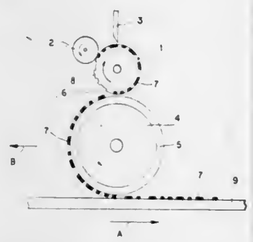
comes into contact with the surface of the body to chemically react at least one of the materials with an active species in the gas plasma to form a gas-non-gaseous chemical reaction, and controlling the chemical kinetics of the reaction so that the reaction can be made selective to one of said two different materials.

4,213,819

METHOD OF PRODUCING LARGE-FORMAT EMBOSSING TOOLS

Wilfried Werthmann, Krefeld, Fed. Rep. of Germany, assignor to Firma Standex International GmbH, Krefeld, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,432
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1977, 2706947
Int. Cl.² C23F *1/02*
U.S. Cl. 156—660 **3 Claims**



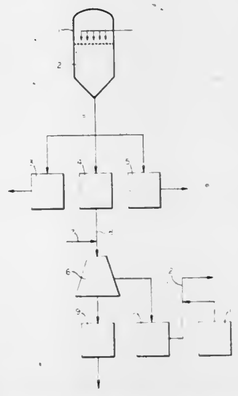
1. A method of making an embossing tool for the embossing of plates, sheets or foils, said method comprising the steps of:
(a) indirectly applying to a metal substrate of a large format press plate for a synthetic resin plate press a first layer of an etching resist in a predetermined pattern by applying a patterned layer of the resist by a patterned roll to a silicone-rubber surface of a transfer roll and then rolling the patterned layer onto said substrate with the silicone-rubber surface of the transfer roll;
(b) etching a surface of said substrate through said layer of resist to effect a first pattern etching of said surface; and
(c) repeating steps (a) and (b) in succession at least twice with application of a respective layer of resist to said substrate for each repetition out of total registry with an etch pattern previously produced in said surface of said substrate, the first of the etching operations being carried out to a depth of 80 to 100 microns, a second of the etching operations being carried out to a depth of 50 to 80 microns and a third etching operation being carried out to a lesser depth as low as 10 microns.

4,213,820

TREATMENT OF EFFLUENTS IN A CHLORINE BASED PULP BLEACHING PLANT

Bengt G. Broddevall, Skoghall, Sweden, assignor to Uddeholms Aktiebolag, Hagfors, Sweden

Filed Dec. 9, 1976, Ser. No. 749,102
Claims priority, application United Kingdom, Mar. 18, 1976, 10990/76
Int. Cl.² D21C *11/00*
U.S. Cl. 162—29 **9 Claims**



1. In a process for purifying a dark colored effluent of a chlorine based pulp mill bleaching plant, said effluent containing chlorine and colored lignin degradation product pollutants, said process comprising passing the effluent through a resin bed of an activated particulate, weakly basic anion exchange resin to retain said colored lignin degradation product pollutants in the resin bed until the resin has become saturated with said pollutants to a given degree, eluting the resin bed with an alkaline solution to release said pollutants therefrom, and disposing of the eluate, the improvement comprising separating the eluate released from the resin bed into fractions by color pattern, said fractions comprising a fore-cut (start fraction), an outer cut (end fraction) and a central cut, wherein the central cut comprises that portion of the eluate between about the first bed volume of eluate to about 1.8 to 2.4 bed volume of eluate, said central cut containing that portion of the eluate having the highest color concentration of any portion of the eluate and also containing a volume of eluate on either side of said portion of the eluate, and acidifying said central cut to a pH of less than about 2 to precipitate at least a majority of the total solids of the acidified effluent without precipitating solids in said fore-cut or said outer cut, separating the precipitate from the remainder of the central-cut, said remainder containing the majority of inorganic chlorine of said central cut, and disposing of said precipitate.

4,213,821

PULPING WITH QUINONES AND HYDROQUINONES

Naphtali N. Vanderhoek, Doncaster; Peter F. Nelson, Kew, and Alan Farrington, Donvale, all of Australia, assignors to Australian Paper Manufacturers Limited, Victoria, Australia

Filed May 25, 1977, Ser. No. 800,566
Claims priority, application Australia, Jun. 2, 1976, PC6141; Sep. 23, 1976, PC7473; Dec. 13, 1976, PC8455
Int. Cl.² D21C *3/02, 3/22*
U.S. Cl. 162—72 **25 Claims**

1. In a process for the delignification of lignocellulosic material wherein the lignocellulosic material is cooked with a neutral sulphite pulping liquor, the improvement comprising adding to the pulping liquor 0.001% to 10% by weight of an additive compound selected from the group consisting of anthraquinone, phenanthrenequinone, naphthoquinone, anthrone, anthrahydroquinone, naphthohydroquinone, phenanthrahydroquinone, the alkyl-, alkoxy-, hydroxy-, amino-, halo- or carboxy derivatives of said quinones or hydroquinones, the tautomeric form of said additive compounds and mixtures of said additive compounds.

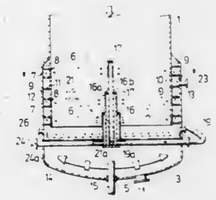
14. In a process for the delignification of lignocellulosic material wherein the lignocellulosic material is cooked with an alkaline pulping liquor, the improvement comprising adding to the pulping liquor 0.001% to 10% by weight of a hydroquinone selected from the group consisting of 9, 10-anthrahydroquinone, phenanthrahydroquinone, the alkyl-, alkoxy-, halo-, hydroxy-, amino-, or carboxy-derivatives of said hydroquinones and the tautomeric form of said hydroquinones and mixtures thereof.

4,213,822

APPARATUS FOR DISPLACEMENT WASHING OF FIBROUS MATERIAL SUSPENDED IN A LIQUID

Erik S. Eriksson, Rastorpsvägen 12, S-653 49 Karlstad, Sweden

Filed Oct. 12, 1978, Ser. No. 950,873
Int. Cl.² D21C *9/02*
U.S. Cl. 162—242 **7 Claims**



1. Apparatus for displacement washing of fibrous material suspended in a liquid comprising:
(a) a vessel having a substantially symmetrical cross section about an axis of symmetry and having an axially spaced inlet and outlet for a fibrous material-liquid suspension;
(b) a plurality of means disposed substantially on or adjacent the axis of symmetry of the vessel for introducing washing liquid into the interior of the vessel to displace suspension liquid from the fibrous material in selected zones of said vessel,
(c) means including at least one member pervious to the suspension liquid and substantially impervious to the fibrous material defining, together with the outer wall of the vessel, axially spaced and peripherally extending washing chambers for receiving liquid displaced from the fibrous material in respective ones of said selected zones,
(d) means including at least one member impervious to the suspension liquid and to the fibrous material defining further chambers with the outer wall of said vessel, said further chambers being located above or beneath a respective washing chamber peripherally of said vessel,
(e) restriction means of fixed flow-through area for communication of a washing chamber with an associated further chamber, said restriction means being arranged to control the flow of suspension liquid from said washing chamber to said associated further chamber, whereby substantially uniform distribution of the washing liquid flow through the fibrous material at any given cross section transverse to the vessel axis is obtained,
(f) means for recycling washing liquid drawn off from selected ones of said zones to selected others of said zones, said means comprising, for each of said washing-liquid introducing means, a conduit which is stationarily arranged in said vessel and which forms part of a conduit system extending between said selected one of said zones to said selected other of said zones in communication therewith,
(g) means for preventing the buildup of fibrous material on said recycling conduits comprising a perforated pipe disposed immediately above each of said recycling conduits

for injecting liquid into the fibrous material located in the vicinity thereof to prevent said material from settling on said conduits, and

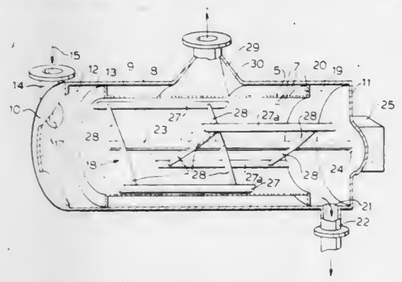
(h) a rotary agitator disposed just above the bottom of the vessel and below the recycling conduits for imparting rotary motion to the fibrous material to prevent fibrous material from settling at the bottom of the vessel.

4,213,823

PAPER MAKING MACHINE SCREEN WITH STAGGERED FOILS

Carl E. Wittig, Becket, and Raymond C. Vonderau, Lenox, both of Mass., assignors to Beloit Corporation, Beloit, Wis.

Filed Apr. 26, 1979, Ser. No. 33,730
Int. Cl.[2] D21D *5/02*
U.S. Cl. 162—380 **7 Claims**



1. A paper making machine screen apparatus for processing stock flowing to a headbox comprising, in combination:

an elongate cylindrically tubular screen;

a housing enclosing said screen;

supply means for supplying stock slurry into said housing to flow through said screen;

stock accepting means including an outlet pipe for receiving stock from said screen;

discharge means for receiving material not passing through the screen;

axially extending foil means mounted to rotate relative to said screen for generating pressure pulsations to move acceptable slurry through said screen;

means for driving said foil means rotatably;

said foil means comprising a plurality of foils arranged to move in circumferential direction along an adjacent face of said screen in the rotation of said foil means;

and at least some of said foils being axially substantially shorter than said screen and being in circumferentially offset interdigitated relation to other of said foils;

whereby the frequency of pulsations is increased but the total amplitude of the pulsations in the outlet pipe is reduced as compared with an arrangement in which all foils extend substantially the full length of the screen.

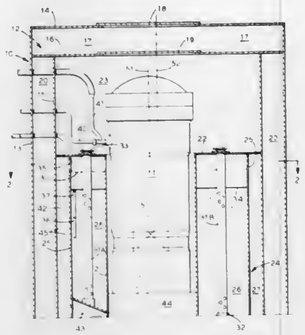
4,213,824

NUCLEAR STEAM SYSTEM CONTAINMENT

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 23, 1977, Ser. No. 809,220
Int. Cl.[2] G21C *15/18*
U.S. Cl. 176—38 **38 Claims**

1. An improved containment used for radiation shielding and pressure suppression comprising a dry well including a pressure vessel, a plurality of cocentric wall means, said plurality of cocentric wall means defining at least three annular regions about said dry well, a first annular region providing the containment used for radiation shielding, a second annular region which is substantially dry, a third annular region providing a wet well for relieving fluid pressure released from the pressure vessel into the dry well, and pipe connection means extending in the wet well from the dry well, a pool of liquid disposed to partially fill said third annular region, the upper and portion of the second and third annular regions having an enclosure, and a plurality of baffle plates extending vertically downward from



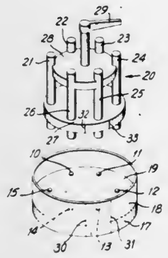
said enclosure in said third annular region into said pool of liquid so as to circumferentially divide the upper portion of said third annular region into a plurality of circumferential upper portions.

4,213,825

APPARATUS FOR TESTING REACTIONS

Rolf Saxholm, Box 3, 1362 Billingstad, Norway

Continuation-in-part of Ser. No. 502,107, Aug. 30, 1974, Pat. No. 3,981,776, which is a continuation-in-part of Ser. No. 156,738, Jun. 25, 1971, Pat. No. 3,843,450, which is a continuation-in-part of Ser. No. 705,539, Feb. 14, 1968, abandoned. This application Aug. 23, 1976, Ser. No. 716,684
The portion of the term of this patent subsequent to May 3, 1994, has been disclaimed.
Int. Cl.[2] C12K *1/00*
U.S. Cl. 435—291 **12 Claims**



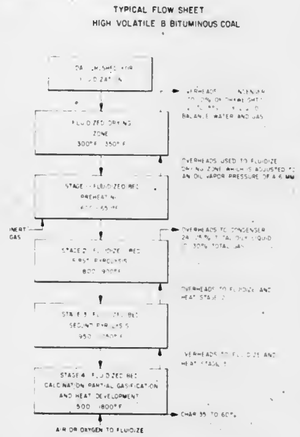
1. Apparatus for testing reactions comprising a support for a substrate capable of containing an agent, dispenser means for guiding and depositing a plurality of individual articles adapted for containing respective active constituents onto said substrate in spaced relation at pre-determined location, means for bringing said articles into contact with the substrate at a predetermined operative contact pressure, said constituents undergoing respective reaction with the agent of said substrate and producing detactable results, reader means for determining said detectable results at said predetermined locations, and means for releasably coupling and orienting the support respectively with the dispenser means to predetermine the locations of said articles on the substrate and with the reader means so that the position at which the reader means determines the said detectable results is also determined.

4,213,826

FLUIDIZED COAL CARBONIZATION

Ralph T. Eddinger, Princeton Junction, and Louis D. Friedman, New Brunswick, both of N.J., assignors to Cogas Development Company, Princeton, N.J.

Filed Oct. 2, 1978, Ser. No. 947,369
Int. Cl.[2] C10B *49/10*
U.S. Cl. 201—31 **3 Claims**



1. In the multistage fluidized carbonization of coal to produce oil, gas and char wherein the coal is:

1. Heated in a first stage below its fusion temperature under oxygen free conditions in a first fluidized bed formed by passing an inert gasiform stream upwardly through the stage to maintain the coal in the fluidized state;
2. In at least a second stage passing the so-treated coal into at least one other fluidized bed which is fluidized by the gaseous overheads from the subsequent stages at a temperature above that of the first bed and below the fusion point of the solids fed to that stage, under oxygen-free conditions, for a time sufficient to remove nearly all of the volatiles from the coal condensable oily liquids, and
3. In a final stage passing the thus-treated coal into a final fluidized bed which is fluidized by an oxygen-containing gas at a still higher temperature, to substantially devolatilize the coal, the improvement of recovering sensible heat from the overheads of stage 1 comprising the steps (1) providing a fluidized drying zone to receive the particulate coal feed; (2) using the stage 1 overheads as the fluidizing atmosphere in step (1) to heat and dry the particulate coal feed while maintaining the vapor pressure of the oil in the drying zone at a value of under 10 mm; (3) conveying the dried coal to stage 1; and (4) recovering oil from the overheads of the fluidized drying zone.

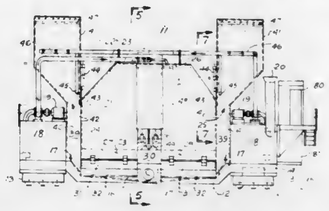
4,213,827

METHOD AND APPARATUS FOR QUENCHING COKE

Albert Calderon, 1065 Melrose, Bowling Green, Ohio 43402

Filed Jan. 5, 1977, Ser. No. 757,074
The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.
Int. Cl.[2] C10B *33/00, 39/04, 39/14*
U.S. Cl. 201—39 **5 Claims**

4. A method of controlling pollutions during the discharge of coke from a coke oven having a pusher side and a coke discharge opening, said method comprising the steps of moving a carriage into alignment with the coke discharge opening, pushing a body of hot coke out of the discharge opening of the oven, guiding the coke pushed from the oven into a chamber supported on said carriage, quenching the coke by directing liquid at coke which is pushed into said chamber for dropping the temperature of the coke, confining steam and vapor generated during the dropping of the temperature of the coke in the chamber for building a positive pressure within the chamber, forcing the steam and vapors generated from the quenching of the coke out of the chamber through a venturi-like opening by



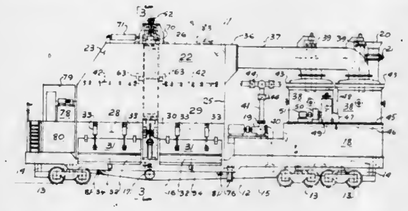
means of the positive pressure built up in the chamber, and spraying liquid at the gases forced through said venturi-like opening by the positive pressure in the chamber for cleaning the gases.

4,213,828

METHOD AND APPARATUS FOR QUENCHING COKE

Albert Calderon, 1065 Melrose, Bowling Green, Ohio 43402

Continuation-in-part of Ser. No. 757,074, Jan. 5, 1977. This application Jun. 7, 1977, Ser. No. 804,364
The portion of the term of this patent subsequent to Feb. 22, 1996, has been disclaimed.
Int. Cl.[2] C10B *33/00, 39/04, 39/14*
U.S. Cl. 201—39 **4 Claims**



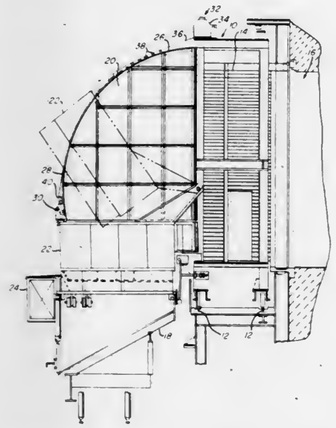
4. A method of controlling pollutions during the pushing of coke from a coke oven having a pusher side and a coke discharge opening, said method comprising the steps of providing a carriage having a chamber, moving the carriage into a selected position with respect to the coke oven to position the inlet of the chamber in alignment with the discharge opening of the coke oven, pushing coke through the discharge opening of the coke oven and into the chamber, directing fluid into the chamber for dropping the temperature of the coke in the chamber and for generating steam and vapors, confining steam and vapors generated from the quenching of coke within the chamber for creating and maintaining a positive pressure within the chamber and for forcing steam and vapors through a narrow opening having an inlet communicating with the chamber, providing a condenser on the carriage in the form of a receptacle for receiving and confining a body of fluid therein and having an inlet in fluid communication with the outlet side of the narrow opening, creating a slight negative draft in said condenser as coke is being pushed into the chamber, whereby steam forced out of said narrow opening is directed to said condenser, and directing fluid into the condenser at the steam and vapor in said condenser for condensing steam and vapor directed to the condenser.

4,213,829

RETRACTABLE HOOD FOR TRANSFER OF COKE

Donald L. Friend, Olympia Fields, Ill.; John A. Grosko, West Mifflin Boro, and Richard B. Liniger, II, Cranberry Township, Butler County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 4, 1979, Ser. No. 45,530
Int. Cl.[2] C01B *27/04*; B65G *11/00*
U.S. Cl. 202—263 **6 Claims**



1. In a hood for preventing escape of pollutants when transferring coke therethrough, said hood having a fixed section extending from an upper end to a lower end adjacent a container for receiving said coke, a retractable section pivotally attached to the lower end of said fixed section for movement concentrically over a portion thereof, and means for raising and lowering said retractable section, the improvement in said hood which comprises:

said fixed section having a circular arc-shaped portion extending longitudinally on the outer surface thereof remote from the pivot of said retractable section, said circular arc portion extending from the lower end of said fixed section upward at least to the height corresponding to the extreme upper position to which said retractable section is to be raised, at least one track extending longitudinally along the circular arc-shape portion of said fixed section, and a wheel assembly mounted on said retractable section and engaging said track so as to guide the retractable section during the raising and lowering thereof in order to prevent binding with the fixed section.

4,213,830

METHOD FOR THE TRANSFER OF HEAT

Franz Köppl, Im Schönblick 41, Tübingen, Fed. Rep. of Germany

Filed Sep. 22, 1977, Ser. No. 835,584
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1976, 2642836
Int. Cl.[2] C02B *1/04*
U.S. Cl. 203—11 **14 Claims**

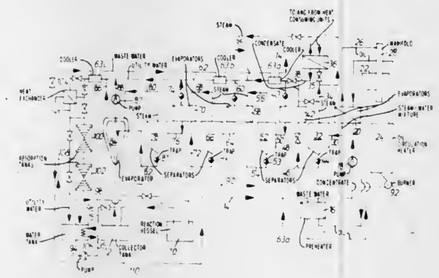
1. A metjhod for the transfer of heat in a system from a heat exchanger containing a fluid heating medium functioning as a heat source to at least one heat consuming unit operated at temperatures above 100° C. and using waste water as a heat transfer medium, said method comprising the steps of:

providing a high pressure section and low pressure section in said system and evaporating a portion of the waste water into steam in said high pressure section of said system by indirect heat exchange with said fluid medium;

separating the steam from the non-evaporated portion of the concentrated liquid waste water and the non-volatile impurities contained therein;

transferring heat by indirect heat exchange from the separated steam to the heat consuming unit;

condensing the steam into condensate suitable for industrial use diverting at least some of the pressurized steam for use in another part of the system when either or both of the following conditions occur: (1) the heat requirements of the heat consuming unit is reduced and (2) the waste water production is increased;



returning the condensate from said heat consuming unit to said low pressure section and transferring the residual heat of said returned condensate by indirect heat exchange to evaporate a further portion of the waste water into steam; and

separating the steam evaporated from said further portion of the waste water from the remaining non-evaporated portion of the waste water.

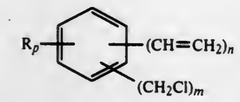
4,213,831

ALUMINUM CONTAINER FOR PROCESSING VINYLBENZYL CHLORIDES

Richard H. Hall, Midland; Daniel H. Haigh, Beaverton, and Robert D. Hansen, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 30, 1972, Ser. No. 302,231
Int. Cl.[2] B01D *3/00*
U.S. Cl. 203—86 **4 Claims**

3. A method for processing a compound having the formula



wherein R is an alkyl radical of 1–4 carbon atoms, m and n are independently one or two, and p is zero or one, by distilling, filtering or polymerizing said compound which consists of carrying out said processing in equipment of aluminum or alloy having an aluminum content of at least about 90 percent by weight.

4,213,832

DISTILLATION FOR SEPARATING DIALKYLKETONES FROM LOWER CHLOROHYDROCARBONS

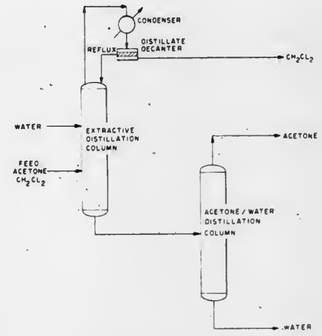
David Zudkevitch, Dover; Nirmal K. Khanna, Scotch Plains, and Robert F. Raczynski, Montague, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 21, 1978, Ser. No. 917,608
Int. Cl.[2] B01D *3/38*; C07C *45/24*
U.S. Cl. 203—95 **12 Claims**

1. The method for separating mixtures of dialkyl ketones having three to five carbon atoms with halogenated compounds selected from the group consisting of

(a) dihalogenated alkanes having two less carbon atoms than said ketone,

(b) monohalogenated alkanes, straight chain or branched, having the same number of carbon atoms as said ketone and not more than four carbon atoms if the halogen is bromine,



SEPARATION OF ACETONE FROM DICHLOROMETHANE BY EXTRACTIVE DISTILLATION

(c) monohalogenated dialkyl ethers having one carbon atom less than said ketone,

(d) monohalogenated, mono-unsaturated alkenes having the same number of carbon atoms as said ketone, and

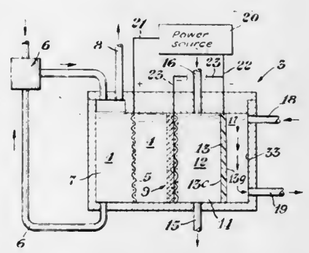
(e) mixtures thereof which comprises subjecting said mixture of dialkyl ketones and halogenated compounds to distillation in the presence of water to obtain the halogenated compounds substantially in the overhead condensate and the dialkyl ketones substantially in the bottom streams.

4,213,833

ELECTROLYTIC OXIDATION IN A CELL HAVING A SEPARATOR SUPPORT

Joseph D. Lefevre, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 5, 1978, Ser. No. 939,602
Int. Cl.[2] C25B *1/16, 1/26, 9/04, 13/04*
U.S. Cl. 204—98 **19 Claims**



1. An improved method of operating an electrolytic cell wherein there is:

an oxidizable material in aqueous dispersion is fed to an anolyte compartment in which there is an electrically charged oxidizing anode producing one product of the electrolysis plus positively charged cations in the anolyte;

a reducible catholyte is maintained in a catholyte compartment in which there is a catalytically active oxygen gas-bearing depolarized reducing cathode that is charged electrically at a lower electric potential than that of the anode producing negatively charged anions in the catholyte for another product of the electrolysis; and

an electrically conductive separator element separating anolyte from catholyte is spaced between the anode and the depolarized cathode and thereby functions to pass cations from the anolyte to the catholyte wherein said cations combine with said anions to produce said catholyte product; while

an appropriate direct current electrical potential is imposed between and across said anode and said cathode so that the anode is electrically more positive than the cathode thereby causing and maintaining the electrolysis of the electrolytic reactions in said anolyte and said catholyte;

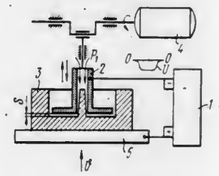
wherein the improvement comprises constructing said separator element from materials whereby it is less catalytically active than the cathode and; electrically connecting said separator element and said depolarizing cathode so as to maintain them during electrolysis at about the same electrical potential to render said separator element at least substantially non-bipolarizable.

4,213,834

ELECTROCHEMICAL WORKING METHOD AND SYSTEM FOR EFFECTING SAME

Andrei P. Semashko, ulitsa Rossiiskaya, 43/2, kv. 4; Nasikh Z. Gimaev, ulitsa 50 let SSSR, 31, kv. 12; Ivan V. Maximov, ulitsa Stepana Zlobina, 41, kv. 61; Sergei V. Bezrukov, ulitsa Kirova, 41, kv. 37, and Vladimir B. Rabinovich, ulitsa Stepana Zlobina, 42, kv. 46, all of Ufa, U.S.S.R.

Filed Feb. 1, 1979, Ser. No. 8,580
Int. Cl.[2] B23P *1/14*
U.S. Cl. 204—129.25 **5 Claims**



1. A method for electrochemical working of metals and alloys with the use of electrodes one of which is a workpiece, whereas the other is a tool electrode, comprising the following sequence of operations:

(a) setting one of said electrodes into forced oscillating motion in relation to the second electrode with the formation of an interelectrode gap;

(b) applying voltage pulses to said electrodes in synchronization with the frequency of said forced oscillation of one of said electrodes;

(c) continuing the application of said voltage pulses to said electrodes even at a moment when said electrodes are at a minimum distance from one the other;

(d) monitoring the change of the relative resistance of said interelectrode gap due to cavitation in the electrolyte as said electrodes are brought apart; said relative resistance meaning the relation between the time-variable resistance of said interelectrode gap and the value of that resistance with a minimum width of said interelectrode gap;

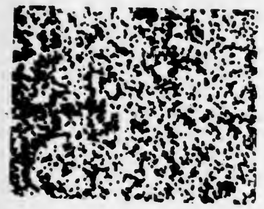
(e) controlling the width of said interelectrode gap and the pressure of the electrolyte at the inlet of the gap by keeping said change of the relative resistance of said interelectrode gap at a desired constant level.

4,213,835

METHOD FOR ELECTROLYTICALLY ETCHING OF A RECRYSTALLIZED ALUMINUM FOIL

Horst Fickelscher, Heidenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 2,966
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801218
Int. Cl.[2] C25F *3/04*
U.S. Cl. 204—129.25 **4 Claims**



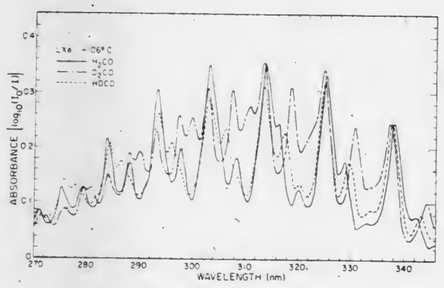
1. A method for electrolytically etching of a recrystallized aluminum foil comprising the steps of providing an etching bath with suitable electrode geometry for etching the foil approximately quasipotentiostatic according to the current density being attained when a constant anode potential is applied, positioning the foil in the bath, and potentiostatically etching the foil with a temporally constant anode potential, the step of etching including applying an anode potential for creating a current density above the current density for creating pitting of the aluminum during a first etching stage and in a following second etching stage reducing the anode potential to create a current density below the density at which pitting occurs.

4,213,836

LASER-INDUCED SEPARATION OF HYDROGEN ISOTOPES IN THE LIQUID PHASE

Samuel M. Freund; William B. Maier, II; Willard H. Beattie, and Redus F. Holland, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 4, 1977, Ser. No. 839,238
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—157.1 R **12 Claims**



1. A process for separating hydrogen isotopes which comprises (a) forming a liquid phase of hydrogen-bearing feedstock compound at a temperature at which the spectral features of the feedstock compound are narrow enough or the absorption edges sharp enough to permit spectral features corresponding to the different hydrogen isotopes to be separated to be distinguished, (b) irradiating the liquid phase at said temperature with monochromatic radiation of a first wavelength which selectively or at least preferentially excites those molecules of said feedstock compound containing a first hydrogen isotope, and (c) subjecting the excited molecules to physical or chemical processes or a combination thereof whereby said first hydrogen isotope contained in said excited molecules is separated from other hydrogen isotopes contained in the unexcited molecules in said liquid phase.

4,213,837

VINYL ESTER URETHANES

William W. Bristowe, Wilmington; Ernest C. Ford, Jr., Newark, both of Del., and Weldon N. Reed, Avondale, Pa., assignors to ICI Americas Inc., Wilmington, Del.

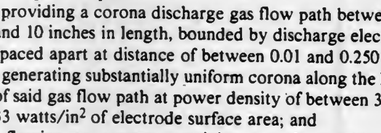
Filed Nov. 18, 1977, Ser. No. 852,625
Int. Cl.[2] C08F *283/02, 283/06*
U.S. Cl. 204—159.19 **32 Claims**

1. A vinyl ester urethane resin having the following formula:

B—I—A-M—$_y$A—I—B

wherein

A is a radical derived from a polyoxyalkylene bisphenol A having the following formula:



wherein

R' is C_1–C_4 alkylene group,

X is halogen

a is an integer equal to from 0 to 2, and

m and n are integers each of which is equal to at least 1 and the sum of which is equal to from about 9 to about 30;

M is a radical derived from (A) an unsaturated aliphatic polycarboxylic acid or an anhydride thereof, (B) a saturated aliphatic polycarboxylic acid or an anhydride thereof; (C) an aromatic polycarboxylic acid or anhydride thereof, or (D) mixtures of A, B, and C;

I is a radical derived from a polyfunctional isocyanate;

B is a radical derived from a monohydroxyl-terminated ester of acrylic acid;

y is an integer equal to from 1 to about 12.

4,213,838

CORONA REACTION SYSTEM

Frank E. Lowther, Buffalo, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

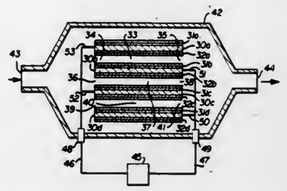
Division of Ser. No. 857,512, Dec. 5, 1977, Pat. No. 4,159,425, which is a continuation-in-part of Ser. No. 738,181, Nov. 2, 1976, which is a continuation-in-part of Ser. No. 632,620, Nov. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 509,278, Sep. 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 387,972, Aug. 13, 1973, abandoned, said Ser. No. 738,181, is a continuation-in-part of Ser. No. 579,739, Feb. 20, 1975, Pat. No. 3,996,122, which is a division of Ser. No. 387,972, Aug. 13, 1973, abandoned. This application Apr. 9, 1979, Ser. No. 28,451
Int. Cl.[2] C01B *13/11*
U.S. Cl. 204—176 **9 Claims**

1. A method for generating ozone by corona discharge, comprising the steps of:

(a) providing a corona discharge gas flow path between 2.0 and 10 inches in length, bounded by discharge electrodes spaced apart at distance of between 0.01 and 0.250 inch;

(b) generating substantially uniform corona along the length of said gas flow path at power density of between 3.5 and 33 watts/in^2 of electrode surface area; and

(c) flowing an oxygen-containing gas along said corona discharge gas flow path from the inlet end to the outlet end thereof for said ozone generation, at flow rate sufficient for the gas flow to remove substantially all of the heat generated by said corona discharge from said gas flow path, and discharging ozone-containing gas from said outlet end of said gas flow path, such that the pressure drop over said gas flow path is maintained between 0.1 and 2 lbs/in^2.



4,213,839

PROCESS FOR IMPROVING THE ADHESION OF PAINT TO STEEL SHEETS

Nazzareno Azzerri, Pomezia; Roberto Bruno, and Massimo Memmi, both of Rome, all of Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed Apr. 9, 1979, Ser. No. 28,925
Claims priority, application Italy, Apr. 14, 1978, 48908 A/78
Int. Cl.[2] C25D *13/20*
U.S. Cl. 204—181 R **5 Claims**



1. A method of producing on a steel sheet a paint system of improved adhesion to the sheet, comprising the steps of immersing a steel sheet in an aqueous solution of sodium sulphate of a concentration from 0.5 M to 2 M at a pH of 6 to 8 at a temperature of 20° to 100° C., connecting the immersed part alternately as cathode and anode for a period of time between 0.1 and 30 seconds at a current density of 1 to 50 A/dm^2, and subsequently painting said sheet.

4,213,840

LOW-RESISTANCE, FINE-LINE SEMICONDUCTOR DEVICE AND THE METHOD FOR ITS MANUFACTURE

Masahiro Omori, Palo Alto; James N. Wholey, Saratoga, and J. Ross Anderson, Sunnyvale, all of Calif., assignors to Avantek, Inc., Santa Clara, Calif.

Filed Nov. 13, 1978, Ser. No. 959,792
Int. Cl.[2] H01L *21/441*
U.S. Cl. 204—192 C **20 Claims**

1. A method of fabricating a Schottky gate electrode on a field effect transistor between source and drain regions, comprising the steps of

(a) depositing a first layer of photoresist material directly on a planar semiconductor surface,

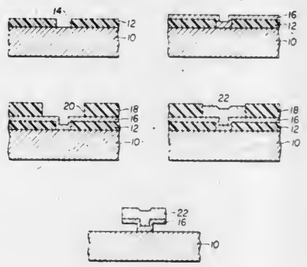
(b) photolithographically defining a first area of the first photoresist layer which area has its shortest dimension in the direction parallel to a hypothetical line extending from the source region to the drain region,

(c) removing the first area to form a base area for the gate electrode,

(d) depositing a first metal layer on top of the remaining first photoresist layer and the base area so that it is in electrical contact with the base area,

(e) depositing a second photoresist layer on the first metal layer,

(f) photolithographically defining an area of the second photoresist layer to be removed which area overshadows the base area, and removing this defined area to create an enlarged opening in the second photoresist layer, said opening being enlarged in the direction extending parallel to the hypothetical line running from the source region to the drain region, compared to the same dimension of the corresponding opening in the first photoresist layer,



(g) depositing a second metal layer in the enlarged opening of the second photoresist layer to thereby increase the thickness of the gate electrode in a direction perpendicular to the plane of the semiconductor surface while simultaneously enlarging the gate electrode in the direction parallel to the hypothetical line extending from the source region to the drain regions, and

(h) removing all of the remainder of the first and second photoresist layers and all of the first metal layer except that portion underlying the second metal layer.

4,213,841

PH MEASURING INSTRUMENT KIT

Maury Jungman, Bayville, N.Y., assignor to J & M Instruments Corp., Farmingdale, N.Y.

Division of Ser. No. 712,666, Aug. 9, 1976, Pat. No. 4,090,925. This application Apr. 4, 1978, Ser. No. 893,478
Int. Cl.[2] G01N *27/38*
U.S. Cl. 204—195 R **5 Claims**

1. A kit for determining the pH value of a specimen, said kit comprising:

(a) a measuring instrument including a pair of electrodes formed of dissimilar metals, an electromotive potential being generated between the electrodes upon placement of the electrodes in the specimen whose pH value is to be determined, meter means, the meter means comprising means quantitatively measuring an electrical characteristic of the specimen as a function of the electrolytic activity of the specimen and display means indicating the pH value of the specimen as a function of the electrical measurement, and

(b) a nonwoven polyamid filamentous web containing an

abrasive material for cleansing the electrodes to remove the contaminants therefrom,



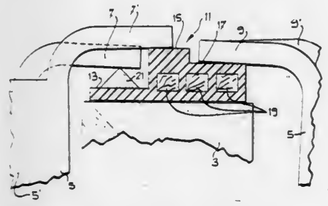
whereby reliable pH determinations can be repeatedly obtained by prior cleansing of the electrodes with the web.

4,213,842

CAPPING BOARD FOR ELECTROLYTIC METAL REFINING

Jean L. Dufresne, 366 St. Germain, Drummond, Quebec, Canada (J0C 1K0)

Continuation of Ser. No. 934,080, Sep. 8, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,226
Claims priority, application Canada, Aug. 4, 1978, 308835
Int. Cl.² C25C *7/00, 7/02*
U.S. Cl. 204—279 **8 Claims**



1. A capping board for supporting the extremities of electrodes immersed into an electrolytic cell, said capping board being molded from a plastic resin selected from the group consisting of polytetrafluoroethylene and acid resistant polyester, vinylester, epoxy and phenolic resins containing from 10 to 20% by weight of fiberglass, from 2 to 10% by weight of silica, from 2 to 10% by weight of mica and from 2 to 10% by weight of feldspar.

4,213,843

ELECTROLYSIS ELECTRODES AND METHOD OF MAKING SAME

Hideo Sato, and Takayuki Shimamune, both of Ichihara, Japan, assignors to Permelec Electrode Ltd., Ichihara, Japan

Filed Mar. 9, 1979, Ser. No. 19,208
Claims priority, application Japan, Mar. 24, 1978, 53/3300878
Int. Cl.² C25B *11/08, 11/10*
U.S. Cl. 204—290 F **9 Claims**

1. An electrode for use in electrolysis of an aqueous solution of a metal halide comprising:

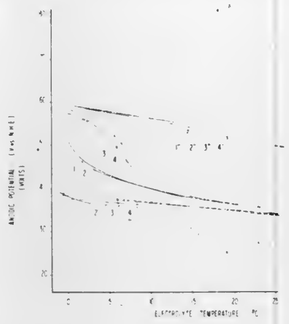
(a) an electroconductive substrate; and

(b) a coating on said substrate, said coating consisting essentially of:

(i) 5 to 75 mole percent of iridium oxide;

(ii) 5 to 70 mole percent of at least one metal oxide selected from the group consisting of oxides of titanium, tantalum and niobium, and

(iii) 20 to 70 mole percent of at least one of a member selected from the group consisting of tin oxide and cobalt oxide, with the sum of the mole percent of the



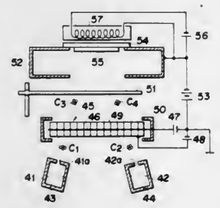
iridium oxide (i) plus the mole percent of the metal oxide (ii) being at least 30 mole percent.

4,213,844

ION PLATING APPARATUS

Kiyoshi Morimoto; Hiroshi Watanabe, both of Mobara, and Toshinori Takagi, Nagaokakyo, all of Japan, assignors to Futaba Denshi Kogyo K.K., Chiba, Japan

Filed Dec. 12, 1978, Ser. No. 968,817
Claims priority, application Japan, Dec. 13, 1977, 52-148869
Int. Cl.² C23C *15/00*
U.S. Cl. 204—298 **5 Claims**



1. In an ion plating apparatus having a plurality of vapor sources for supplying the vapors of evaporating materials, and the particles of said vapors being ionized and accelerated by an electric field to impinge on the surface of a substrate so as to form a film of said evaporating materials thereon, the improvement which comprises an ionization chamber provided so that it is common to a plurality of said vapor sources and positioned between said sources and said substrate, said ionization chamber comprising a plurality of parallel filaments extending along opposite sides of said chamber adapted to emit electrons when energized and heated and a plurality of electron-accelerating electrodes, all said electrodes provided between said filaments so that the vapors of the evaporating materials generated from said vapor sources pass between said electron accelerating electrodes, and said electron-accelerating electrodes adapted to be kept at a positive potenital with respect to said filaments thereby to ionize the vapors of the evaporating materials supplied from said plurality of said vapor sources.

4,213,845

LUBE OIL BLEND PROCESS AND COMPOSITION

Gary M. Masada, Corte Madera, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 13, 1978, Ser. No. 969,131
Int. Cl.² C10G *41/00*
U.S. Cl. 208—19 **8 Claims**

1. A process for producing a lube oil blend from (1) a gas oil selected from the group consisting of atmospheric and vacuum gas oils having normal boiling point ranges in the range 260° C. to 565° C., and (2) a raw hydrocrackate lube oil stock comprising:

producing a raffinate lube oil stock having, relative to said gas oil, a superior sunlight stability by contracting said gas oil with a suitable solvent under solvent-extracting conditions; and

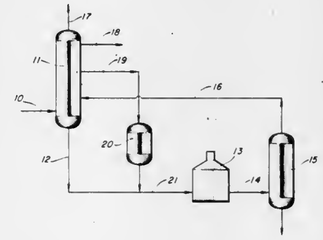
producing said blend by admixing said raffinate and raw stock, said blend (1) containing, in parts by volume, for each 100 parts of raffinate an amount of the raw stock in the range of from about 10 to 45 parts, and (2) exhibiting sunlight stability which is at least equivalent to that of said raffinate stock.

4,213,846

DELAYED COKING PROCESS WITH HYDROTREATED RECYCLE

Matthew C. Sooter; Lloyd G. Becraft, and William H. Kegler, all of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Jul. 17, 1978, Ser. No. 925,250
Int. Cl.² C10G *9/14*
U.S. Cl. 208—50 **7 Claims**



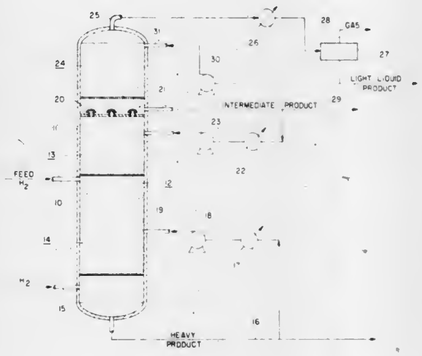
1. In a delayed coking process in which a liquid hydrocarbonaceous premium coke feedstock selected from the group consisting of thermal tar, pyrolysis tar, decant oil from a catalytic cracking operation and mixtures thereof combined with petroleum resid in an amount of up to 50 weight percent is heated in a coker furnace and then fed to a delayed coking drum, and in which overhead vapors from said coking drum are passed to a coker fractionator where they are separated into light hydrocarbon products and recycle gas oil, and in which said recycle gas oil is combined with said feedstock and returned directly to said coking furnace, the improvement wherein said recycle gas oil is hydrotreated after being separated from said light hydrocarbon products and prior to being combined with said feedstock and returned directly to said coking furnace and wherein the coke product from said delayed coking drum has a CTE of less than 5.0×10^{-7}/° C.

4,213,847

CATALYTIC DEWAXING OF LUBES IN REACTOR FRACTIONATOR

Nai Y. Chen, Titusville, N.J., and Ikai Wang, Hsinchu, Taiwan, assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 922,915, Jul. 10, 1978. This application May 16, 1979, Ser. No. 39,468
Int. Cl.² C10G *13/10, 13/16, 41/00*
U.S. Cl. 208—111 **9 Claims**



1. A process for catalytic, shape selective hydrodewaxing of lubricating oil fractions with improved viscosity index of the lubricating oil product which comprises introducing such fraction to an intermediate point in a vertical column of a hydrodewaxing catalyst maintained at hydrodewaxing conditions, introducing hydrogen to said column below said intermediate point for flow upwardly in said column, maintaining a temperature gradient in said column from a maximum below said intermediate point to a minimum thereabove whereby higher boiling constituents of said fraction are caused to flow downwardly as liquid countercurrent to said hydrogen at conversion conditions while lighter constituents of said fraction and conversion products are caused to flow upwardly as vapor concurrent with said hydrogen resulting in dewaxing conversion of different constituents at different levels of severity, withdrawing liquid lubricating oil products from the bottom of said column and withdrawing from the top of said column distillate lubricating products having improved viscosity index by reason of lower severity of treatment as compared with the same fraction when so treated at the same severity as that applied to said higher boiling constituents.

4,213,848

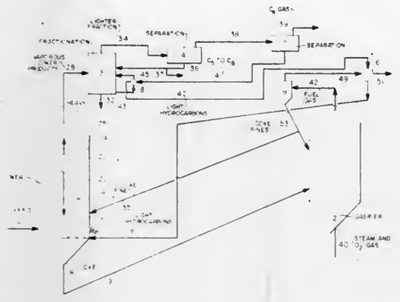
FLUID COKING AND GASIFICATION PROCESS

Arthur L. Saxton, Warren, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 806,350, Jun. 14, 1977, abandoned. This application Jul. 27, 1978, Ser. No. 928,728
Int. Cl.² C10G *9/32*
U.S. Cl. 208—127 **20 Claims**

1. In a fluid coking process comprising the step of reacting a preheated carbonaceous material feedstock in a coking zone containing a bed of fluidized solids maintained in a fluidized state by the introduction of a fluidizing gas, at fluid coking conditions, to form a coking zone vapor phase conversion product and coke, the improvement which comprises introducing into said coking zone hot light hydrocarbons in an

amount and at a temperature sufficient to provide substantially all of the heat requirement of said coking zone above that



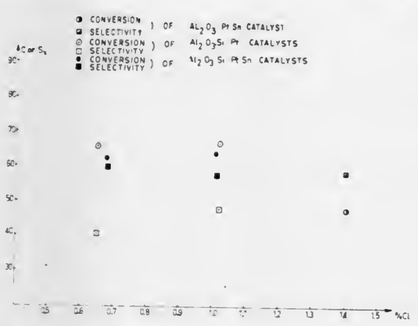
provided by the preheated feedstock, in the absence of recycled hot solids.

4,213,849

METHOD OF USING CATALYSTS FOR REFORMING OR ISOMERIZING HYDROCARBONS

Philippe Engelhard, Le Havre; Michel Legendre, Montivillier; Guy Paris, Le Havre, and Georges Szabo, Le Havre, all of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Division of Ser. No. 784,516, Apr. 4, 1977, Pat. No. 4,159,257. This application Apr. 9, 1979, Ser. No. 28,444
Claims priority, application France, Apr. 5, 1976, 76 09831
Int. Cl.[2] C10G *35/08*
U.S. Cl. 208—139 **40 Claims**



1. Method for the reforming of hydrocarbon fractions whose sulfur content is under 10 ppm, and whose boiling temperature under atmospheric pressure is between 35° and 250° C., comprising the use of a catalyst, in the presence of hydrogen, wherein said carrier is formed essentially of alumina, having between 0.1 and 3% of halogen present in a form combined with at least one other catalyst component, and further comprising on said carrier:

(a) from 0.02 to 2% of at least one platinum-group metal ingredient,

(b) from 0.02 to 2% of a tin ingredient,

(c) from 0.01 to 5% of a silicon ingredient, said percentages being based on the total catalyst weight per elemental form of each ingredient, said catalyst having been prepared by a process comprising the following steps:

calcining said alumina at between 300° and 700° C.,

contacting said alumina with a silicon compound of the general formula:



where Z_1, Z_2, Z_3, and Z_4 are each a halogen atom or a hydrocarbon radical having from one to four carbon atoms, said contacting step being followed by calcination at between 300° and 700° C.;

at least one impregnation of the alumina with at least one solution containing a compound of at least one element from the group consisting of the platinum-group metals and tin; said alumina being calcined after deposition of the platinum-group metals, at a temperature of less than 600° C. and, in the case of platinum at less than 550° C., and/or subjected to a water wash, and, after deposition of the tin when tin is deposited first, calcined at between 400° and 700° C. and/or subjected to a water wash; and

after the deposition of all metals, at least one calcination at a temperature of less than 550° C.,

incorporating said halogen on said carrier during preparation of the carrier or deposition of said ingredients or both.

21. Method for the isomerization hydrocarbons in the presence of hydrogen, comprising the use of a catalyst wherein said carrier is formed essentially of alumina, having between 0.1 and 3% of halogen present in a form combined with at least one other catalyst component, and further comprising on said carrier:

(a) from 0.02 to 2% of at least one platinum-group metal ingredient,

(b) from 0.02 to 2% of a tin ingredient,

(c) from 0.01 to 5% of a silicon ingredient, said percentages being based on the total catalyst weight per elemental form of each ingredient, said catalyst having been prepared by a process comprising the followings steps:

calcining said alumina at between 300° and 700° C.,

contacting said alumina with a silicon compound of the general formula:



where Z_1, Z_2, Z_3, and Z_4 are each a halogen atom or a hydrocarbon radical having from one to four carbon atoms, said contacting step being followed by calcination at between 300° and 700° C.;

at least one impregnation of the alumina with at least one solution containing a compound of at least one element from the group consisting of the platinum-group metals and tin; said alumina being calcined after deposition of the platinum-group metals, at a temperature of less than 600° C. and, in the case of platinum at less than 550° C., and/or subjected to a water wash, and, after deposition of the tin when tin is deposited first, calcined at between 400° and 700° C. and/or subjected to a water wash; and

after the deposition of all metals, at least one calcination at a temperature of less than 500° C.,

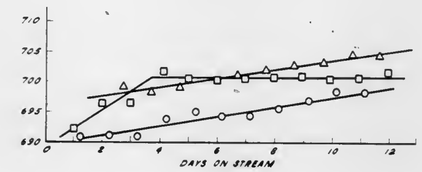
incorporating said halogen on said carrier during preparation of the carrier or deposition of said ingredients or both.

4,213,850

HYDRODESULFURIZATION OF OIL FEEDSTOCK WITH PRESULFIDED CATALYST

Frank C. Riddick, Jr., Orange, and Bernal Peralta, Santa Ana, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 800,792, May 26, 1977, abandoned. This application Jun. 29, 1978, Ser. No. 920,450
Int. Cl.[2] C10G *23/02*
U.S. Cl. 208—216 R **6 Claims**



1. A process for the desulfurization of a mineral oil feedstock containing organic sulfur compounds, which comprises contacting said feedstock plus added hydrogen, and under hydrofining conditions with a sulfided bed of catalyst comprising cobalt and/or nickel plus molybdenum and/or tungsten supported on a porous carrier which is essentially alumina, said catalyst bed having been converted from its initial oxide form to said sulfided form by a method which comprises passing a fluid sulfiding stream through said catalyst bed, said sulfiding stream comprising at the inlet to said catalyst bed (1) a gas stream comprising hydrogen, (2) sufficient free H_2S to provide an H_2S concentration in said gas stream of between about 0.3 and 10.0 vol % and (3) a liquid mineral oil fraction having a 50% boiling point above about 600° F. and containing at least about 0.5 wt.% of native organic sulfur, maintaining contacting temperatures in said bed above about 450° F. but not high enough to convert more than about 90% of said organic sulfur to H_2S whereby some H_2S is continuously generated throughout said bed, and while resultant sulfiding of said catalyst bed proceeds toward completion, withdrawing therefrom a total fluid effluent containing less total sulfur than the amount being fed thereto in said sulfiding stream.

4,213,851

FLOTATION SEPARATION OF GLASS FROM A MIXTURE OF COMMINUTED INORGANIC MATERIALS USING HYDROCARBON SULFONATES

William R. White, Pomona, and Gary P. Van Tighem, Ontario, both of Calif., assignors to Occidental Petroleum Corporation, Upland, Calif.

Continuation-in-part of Ser. No. 835,792, Sep. 22, 1977, Pat. No. 4,122,950, which is a continuation of Ser. No. 634,640, Nov. 24, 1975, abandoned. This application Aug. 11, 1978, Ser. No. 932,967
The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.
Int. Cl.[2] B03B *7/00*
U.S. Cl. 209—12 **25 Claims**

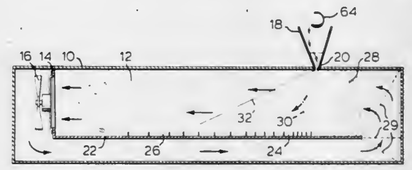
1. A process for the recovery of glass from solid wastes which comprises activating the surface of glass particles contained in a particulate mixture of glass containing inorganic materials formed from municipal solid waste and having a particle size up to about 10 mesh with at least one metal ion in a divalent or trivalent state and selected from metals of Groups II(a), III(b), IV(b), VII(a) and VIII of the Periodic Table at a pH where the metal ion chemically associates with the glass particles and at a pH where the metal ion remains chemically associated with the glass particles, to the action of a beneficiating amount of a collector reagent which is at least one water compatible sulfonated hydrocarbon containing at least 5 carbon atoms to form a float fraction comprising predominantly glass particles and an inorganic tailing of reduced glass content and including inorganic materials, exclusive of particulate glass particles, which are non-responsive to the beneficiating action of the collector reagent.

4,213,852

METHOD AND APPARATUS FOR PARTICLE CLASSIFICATION

Bernard Etkin, 44 Charles St. W., Toronto, Ontario, Canada (M4Y 1R8)

Continuation of Ser. No. 840,490, Oct. 7, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,615
Int. Cl.[2] B07B *4/02*
U.S. Cl. 209—136 **10 Claims**



1. Apparatus for classifying a mixture of particles according to size, density and shape of the component particles of said mixture, which comprises:

a gas flow tunnel having an upstream end and a downstream end;

a return conduit connecting the downstream end of the gas flow tunnel to the upstream end thereof, said return conduit and said gas flow tunnel being arranged adjacent to and generally alongside one another and communicating with one another at the upstream end of the gas flow tunnel to form a gas circulation duct;

a gas recirculation means in said return conduit to circulate gas through the gas flow tunnel and through the return conduit, the gas flow directions in the gas flow tunnel and in the return conduit being substantially opposed to one another;

a plurality of low turbulence gas flow-producing screens located in the path of air flow adjacent the upstream end of said gas flow tunnel and in the return conduit where it communicates with the gas flow tunnel and where the circulating gas therein changes its flow direction on passing from the return conduit to the gas flow tunnel, the upstream ones of said screens in the return conduit being angularly disposed with respect to one another, said screens being adapted to produce substantially uniform gas flow in the downstream direction and at a substantial angle to the vertical of RMS turbulence not greater than about 1%, with said tunnel;

feeding means near the upstream end of said tunnel, and communicating with the upper portion of said tunnel, and adapted to feed particles into the upper portion of said gas flow tunnel;

a plurality of particle collection means disposed along the bottom of the gas flow tunnel, serially arranged adjacent one another at increasing distances downstream from said feeding means.

4,213,853

FROTH FLOTATION

M. Phillip Jameson, Somerville, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Menlo Park, N.J.

Filed Jan. 25, 1978, Ser. No. 872,332
Int. Cl.[2] B03D *1/02*
U.S. Cl. 209—166 **11 Claims**

4. A process for concentrating cassiterite from a slimed ore pulp without desliming said pulp which comprises treating said pulp with an alum sodium silicate hydrosol, adjusting pH to a

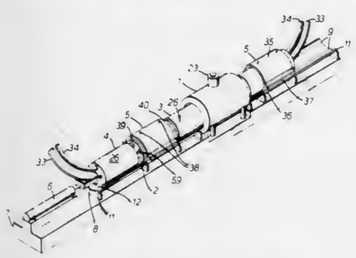
value in the range of 4 to 7, conditioning said pulp, using high energy agitation, with a dilute aqueous emulsion containing mineral oil and an N-alkyl sulfosuccinamate in which the alkyl group contains 12 to 22 carbon atoms and subjecting the pulp, without removing slimes, to froth flotation at a pH in the range of 4 to 7.

4,213,854

MAGNETIC SEPARATING APPARATUS WITH MAGNETIC SHIELDING MEANS

Zdenek J. J. Stekly, Hampshire Ct., Wayland, Mass. 01778

Filed Feb. 27, 1978, Ser. No. 881,810
Int. Cl.[2] B03C *1/10*
U.S. Cl. 209—223 R **8 Claims**



1. Magnetic separating apparatus comprising:

means for establishing a magnetic field in a predetermined zone;

a separating chamber having an inlet and an outlet for a fluid which carries magnetizable particles sought to be separated by said apparatus;

fluid-permeable and magnetizable packing material disposed within the separating chamber for collecting said particles when said chamber is in said predetermined zone;

means for moving the separating chamber between said predetermined zone and a cleaning and flushing zone remote from said predetermined zone whereat magnetizable particles collected at said packing material are flushed from said material to clean some for reuse; and

ferromagnetic shielding means for magnetically screening said separating chamber at said cleaning and flushing zone to facilitate said cleaning and flushing; said means comprising a continuous ferromagnetic cylinder for receiving said chamber therein, and a pair of ferromagnetic discs cooperating with and substantially closing the ends of said cylinder, to thereby substantially enclose all sides of said separating chamber when within said cleaning and flushing zone.

4,213,855

SIFTING EQUIPMENT FOR FINE-GRAINED BULK MATERIAL, PARTICULARLY FLOUR

Andreas Von Bennigsen-Mackiewicz, and Christoph Von Bennigsen-Mackiewicz, both of 3211 Bantein, Fed. Rep. of Germany

Continuation of Ser. No. 541,986, Jan. 17, 1975, abandoned. This application Aug. 22, 1977, Ser. No. 826,866
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1974, 2403091; Dec. 17, 1974, 2459537
Int. Cl.[2] B07B *1/06, 7/06*
U.S. Cl. 209—240 **23 Claims**

1. Sifting apparatus for fine grained bulk material comprising:

(a) a storage receptacle for said bulk material;

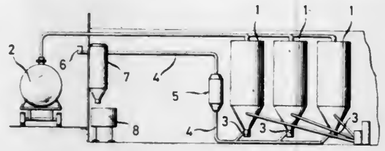
(b) receiving means for use of said bulk material;

(c) a transmission line connecting said storage receptacle and said receiving means;

(d) transit chamber means with a lengthwise axis mounted vertically as regards its lengthwise axis in said transmission line, said transit chamber means having a transmission line inlet connected to said transmission line between said storage receptacle and said transit chamber means, a transmission line outlet connected to said transmission line between said transit chamber means and said receiving means and a sifted material outlet at the bottom of said transit chamber means;

(e) a suction blower mounted in said transmission line between said transit chamber means and said receiving means;

(f) sieve means mounted in said transit chamber means ap-



proximately orthogonal to said lengthwise axis of the transit chamber means;

(g) a shut off valve mounted in said transmission line outlet that interrupts the transmission process in impulse-like manner, thereby generating back pressure for detaching contaminant particles adhering to said sieve means, said transmission line inlet positioned between a first hinged damper and said shut off valve;

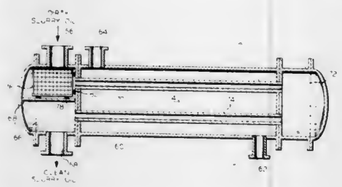
(h) said first hinged damper positioned in said sifted material outlet and opening simultaneously with the interruption of said transmission process.

4,213,856

METHOD AND APPARATUS FOR CLASSIFYING SOLIDS AND TRANSPORTING SOLIDS-LADEN FLUID

Larry V. Blake, Bartlesville, Okla.; Donald E. Womeldorph, Jr., Sweeny, Tex.; Oliver M. Surber, Sweeny, Tex., and John P. James, Sweeny, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 1, 1978, Ser. No. 965,718
Int. Cl.[2] B07B *1/00, 7/06*
U.S. Cl. 209—250 **7 Claims**



1. Apparatus for classifying solids and transporting a solids-laden fluid comprising:

at least one elongated tubular fluid transport means of circular cross section having an inlet end and a discharge end and adapted to transport a solids-laden fluid therethrough; and

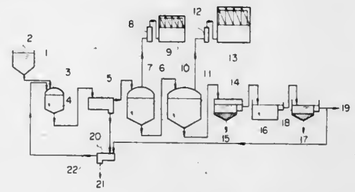
at least one screening means mounted adjacent said inlet end of said transport means, having a plurality of square openings whose diagonal dimension is substantially equal to the internal diameter of said fluid transport means and adapted to screen out and prevent the passage into said fluid transport means of solids having a maximum dimension capable of plugging said fluid transport means and to pass therethrough said fluid containing solids having a maximum dimension incapable of plugging said fluid transport means.

4,213,857

ANAEROBIC DIGESTION PROCESS

Masahiko Ishida; Ryoichi Haga, and Yoji Odawara, all of Hitachi, Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sep. 14, 1978, Ser. No. 942,285
Claims priority, application Japan, Sep. 14, 1977, 52-109973
Int. Cl.[2] C02C *1/16*
U.S. Cl. 210—6 **21 Claims**



1. An anaerobic digestion process comprising the following steps:

(1) Heating and stirring a mixture of crushed organic waste and the waste water obtained in step (9) at a temperature of 55°–75° C., while maintaining the pH of said mixture at 2.5–4.0 for making a slurry from said mixture,

(2) Obtaining a separated liquid portion and a residue from the slurry recovered from the first step by solid/liquid separation,

(3) Anaerobically digesting the separated liquid portion recovered from the second step under neutral to slightly alkaline conditions by introducing liquefaction and gasification bacteria to said liquid portion,

(4) Obtaining separated water by removing digestive sludge from the slurry obtained from the third step by solid/liquid separation,

(5) Aerobically treating the separated water obtained from step (4),

(6) Obtaining an effluent by solid/liquid separation from the liquid aerobically treated in step (5),

(7) Mixing together a part of the separated water obtained from step (6) with the residue obtained from the step (2),

(8) Obtaining washed residue and waste wash water from the mixture at the seventh step by solid/liquid separation, and

(9) Supplying said waste wash water obtained in step (8) to step (1).

13. An anaerobic digestion process comprising the following steps:

(1) Heating and stirring a mixture of crushed organic waste and the waste wash water obtained in step (9) at a temperature of 55°–75° C., while maintaining the pH of said mixture at 8.0–9.8 for making a slurry from said mixture,

(2) Obtaining a separated liquid portion and a residue from the slurry recovered from the first step by solid/liquid separation,

(3) Anaerobically digesting the separation liquid portion recovered from the second step under neutral to slightly alkaline conditions by introducing liquefaction and gasification bacteria to said liquid protion,

(4) Obtaining separated water by removing digestive sludge from the slurry obtained from the third step by solid/liquid separation,

(5) Aerobically treating the separated water obtained from step (4),

(6) Obtaining an effluent by solid/liquid separation from the liquid aerobically treated in step (5),

(7) Mixing together a part of the separated water obtained from step (6) with the residue obtained from the step (2),

(8) Obtaining washed residue and waste wash water from the mixture at the seventh step by solid/liquid separation, and

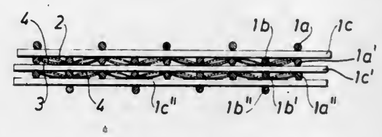
(9) Supplying said waste wash water obtained in step (8) to step (1).

4,213,858

SUPPORTING NET

Nils G. E. Boberg, Lund, and Per-Olov A. V. Carlsson, Sosdala, both of Sweden, assignors to Gambro AB, Sweden

Filed Nov. 17, 1978, Ser. No. 961,481
Claims priority, application Sweden, Nov. 18, 1977, 7713019
Int. Cl.[2] B01D *13/00, 31/00*
U.S. Cl. 210—23 R **26 Claims**



14. A method for the diffusion of a liquid between two membrane sheets comprising placing said two membrane sheets one over the other between a first supporting net and a second supporting net, said first and second supporting nets each comprising

(a) an outer layer of first strands, said first strands being spaced apart and substantially parallel to each other,

(b) an intermediate supporting layer of second strands, and

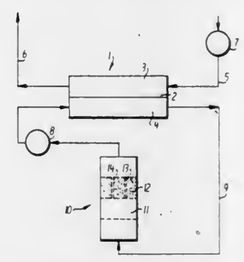
(c) an inner layer of third strands, said third strands being spaced apart and substantially parallel to each other, said third strands being substantially parallel to said first strands and being in a spaced relationship to said first strands such that, upon clamping of said membrane sheets between said first and second supporting nets, the first strands in the outer layer of said second supporting net penetrate into the spaces between the third strands of said inner layer of said first supporting net so as to clamp said membrane sheets against said intermediate supporting layers of said first supporting net and said second supporting net; and diffusing said liquid between said membrane sheets.

4,213,859

DIALYSIS WITH ION EXCHANGE EXTRACTION OF PHOSPHATES

Robert Smakman, Nigtevecht, and Gerrit H. van den Berg, Amsterdam,, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Apr. 10, 1978, Ser. No. 895,057
Claims priority, application Netherlands, Apr. 12, 1977, 7703937
Int. Cl.[2] B01D *13/00, 15/04, 31/00*
U.S. Cl. 210—27 **19 Claims**



1. An apparatus for the purification of blood comprising at least one selectively permeable membrane, a blood compartment on one side of the membrane and a clearance compartment on the other side thereof, means for passing through said

compartments blood and a dialysis liquid, respectively, for removing the waste products from the blood, and a sorbent which is in contact with the clearance liquid and serves to extract phosphates from the liquid discharged from the clearance compartment, said sorbent being an organic cation exchanger charged with ions of a metal whose phosphate is poorly soluble in water.

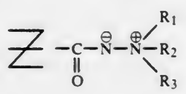
4,213,860

AFFINITY CHROMATOGRAPHY AND SUBSTRATE USEFUL THEREFOR

John C. M. Tsibris, Gainesville, Fla., assignor to Board of Regents, State of Florida for and on behalf of the University of Florida, Tallahassee, Fla.

Division of Ser. No. 701,410, Jun. 30, 1976, Pat. No. 4,162,355. This application Jun. 29, 1978, Ser. No. 920,634
Int. Cl.[2] B01D *15/08*
U.S. Cl. 210—31 C **10 Claims**

1. A system suitable for affinity chromatography comprising a column of support material coated with an addition copolymer of (1) at least one aminimide of the structural formula:



wherein

R_1 and R_2 are the same or different and represent lower alkyl;

R_3 represents an organic group, and

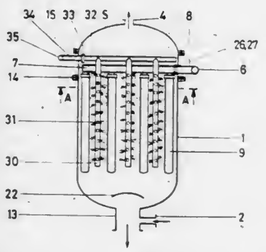
Z represents the residue of a polymerizable vinyl compound, and (2) a vinyl compound having at least one pendant halomethyl group; said copolymer having coupled thereto an amine ligand which affords sites for binding an affinity chromatography by reaction of said amine with a portion of the pendant halomethyl groups, the remainder of said pendant halomethyl groups being reacted with an amine containing a pendant hydrophilic group.

4,213,861

PRESSURE FILTER AND PROCESS FOR CLEANING IT

Hans Müller, Erlenbach, and Konstantin Sotirianos, Stäfa, both of Switzerland, assignors to Chemap AG, Männedorf, Switzerland

Division of Ser. No. 832,979, Sep. 13, 1977, Pat. No. 4,163,724. This application May 10, 1978, Ser. No. 904,560
Claims priority, application Switzerland, Sep. 16, 1976, 11854/76; Nov. 23, 1976, 14743/76; Dec. 18, 1976, 16050/76; Dec. 24, 1976, 16362/76; Jan. 12, 1977, 445/77; Feb. 9, 1977, 1759/77
Int. Cl.[2] B01D *29/38*
U.S. Cl. 210—82 **3 Claims**



1. A process of cleaning a filter comprised of elongated filter tank and a plurality of filter elements in the filter tank and spaced from each other in a direction substantially transverse to the elongation of the filter tank, comprising the steps of arranging said filter elements in a plurality of rows located one after the other and parallel to each other; positioning a plurality of further rows of flush-medium supplying tubes, also located one after the other and parallel to said first-mentioned rows of said filter elements, so that each of said supplying tubes are located between two adjacent filter elements, each of said tubes having a plurality of uniformly distributed openings provided with nozzles each of which is open toward the adjacent filter elements; communicating said supplying tubes with a common distributing conduit; and supplying a flushing medium from said distributing conduit into said supplying tubes, so that the flushing medium exits the nozzles and is sprayed onto said filter elements under positive pressure, whereby a filter cake accumulated on said filter elements during the filtering process is removed by the thus-sprayed under pressure flushing medium.

2. An arrangement for cleaning a filter, comprising in combination, an elongated filter tank; a plurality of filter elements in said filter tank and spaced from each other in a direction substantially transverse to the direction of elongation of said tank, said filter elements being arranged in a plurality of rows each located one after the other and parallel to each other; a plurality of further rows of flush-medium supplying tubes, located one after the other and parallel to said first-mentioned rows of said filter elements, so that each supplying tube is located between two adjacent filter elements, each of said supplying tubes having a plurality of uniformly distributed openings provided with nozzles each of which is open toward the adjacent filter elements; a common distributing conduit communicating a source of the flushing medium with said tubes; and means for imparting pressure to the flushing medium, so that the latter is supplied from said distributing conduit into said supplying tubes, exits said nozzles, and is sprayed under positive pressure onto said filter elements to thereby remove a filter cake accumulated on said filter elements during the filtering process.

4,213,862

GRAVITY SETTLING

H. R. Davis, Glenridge; R. H. Long, Morristown, and A. A. Simone, Dover, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 835,498, Sep. 22, 1977, Pat. No. 4,133,758, which is a continuation-in-part of Ser. No. 720,686, Sep. 7, 1976, abandoned. This application May 1, 1978, Ser. No. 901,295
Int. Cl.[2] B01D *21/10*
U.S. Cl. 210—83 **6 Claims**

1. A gravity settler for effecting solid-liquid separation, comprising:

a vessel, at least two vertically spaced essentially planar inverted V-shaped plates within the vessel, each of said inverted V-shaped plates being comprised of first and second downwardly oppositely inclined essentially planar sections which extend from the apex of the inverted V-shaped plate within the vessel to the lower portion thereof, adjacent the vessel wall, said at least two vertically spaced inverted V-shaped plates defining a substantially enclosed liquid-solid separating chamber therebetween;

inlet means for introducing liquid-solid feed into said chamber;

first and second underflow outlet means positioned above and adjacent to the lower portions of said first and second sections of the lower of the at least two inverted V-shaped plates; and

overflow outlet means below and adjacent to the apex of the higher of the at least two inverted V-shaped plates for withdrawing clarified liquid from said chamber.

5. A process for separating solids from a coal liquefaction product by gravity settling, comprising:

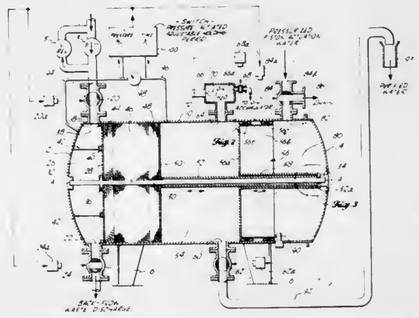
introducing a coal liquefaction product containing dispersed solids into a gravity settler at multiple locations; intercepting the settling path of the solids below each of the feed locations by bringing the solids into contact with essentially planar inclined intercepting surfaces which divide the gravity settler into separate separation zones within the settler to the lower portion thereof, thereby coalesce the solids and increase the solids settling rate, said inclined, intersecting surfaces being at least two vertically spaced, inverted V-shaped plates each being comprised of first and second downwardly oppositely inclined essentially planar sections which extend from the apex of the inverted V-shaped plate to adjacent the settler wall, said at least two vertically spaced inverted V-shaped plates defining a substantially enclosed separation zone therebetween; recovering solids containing underflow from the separate separation zones; and recovering an essentially solids free overflow from the separation zones.

4,213,863

FLOW-THROUGH COALESCING SEPARATOR

Joseph W. Anderson, Bellevue, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Jan. 8, 1979, Ser. No. 1,743
Int. Cl.[2] B01D *29/02*
U.S. Cl. 210—108 **16 Claims**



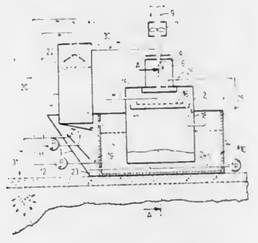
1. Apparatus for separating from water coalesced oil and uncoalesced oil, with solids and without solids, comprising a pressure vessel having a substantially cylindrical inside wall including therein a liquid receiving chamber and a processed liquid collecting chamber axially separated from said receiving chamber by an axially stretchable and compressible cylindrical filter body of open-pore flexible filter material received in sliding contact with said inside wall, said filter body substantially tightly filling the cross-sectional area of said vessel and having transversely disposed opposite end faces, multi-apertured end members attached to the respective end faces of said filter body so as to exert tension in the filter body over substantially the full cross-sectional area thereof by relative separation movement of said end members, the first such end member adjacent said receiving chamber being fixed against axial movement in said pressure vessel, the second such end member being axially movable in said vessel, means to introduce liquids under pressure into the receiving chamber, means to conduct liquids from the receiving chamber, means to conduct liquids from the collecting chamber after passing through the filter body, and force-applying means connected to said second end member and selectively operable to apply force thereto for moving the same axially in either of opposite directions, thereby alternately to stretch out the filter body forcibly to predetermined length and to compress the filter body against said first end member so as to squeeze oil and solids therefrom in a backwash direction.

4,213,864

COMBINATION OF A BIOLOGICAL DRY TOILET AND A BIOLOGICAL WASTE WATER PURIFYING PLANT

Aimo Asikainen, Lahti, Finland, assignor to Asko-Upo Oy, Lahti, Finland and AGA Heating AB, Gotenberg, Sweden

Filed Jan. 9, 1979, Ser. No. 2,058
Claims priority, application Finland, Jan. 24, 1978, 780219
Int. Cl.[2] C02C *1/04*
U.S. Cl. 210—151 **2 Claims**



1. An integrated domestic sewage disposal and water purification system comprising in combination:

a dry toilet tank;

an equalizing basin forming a water jacket around said dry toilet tank;

a biofilter through which the water to be purified is circulated;

a sludge sedimentation tank located below said biofilter and having an upper part and a lower part;

first pipe means including a first pump for removing water from the upper part of the sedimentation tank to the biofilter;

second pipe means including a second pump for removing sludge from the lower part of the sedimentation tank to a point in the upper part of the dry toilet tank;

third pipe means for feeding gray water from the household to filter means inside the dry toilet and then to a collecting basin;

fourth pipe means connecting said collecting basin to the equalizing basin;

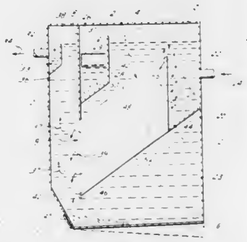
fifth pipe means including a third pump for feeding water from the equalizing basin to the biofilter; and overflow pipe means for discharging excess water from the upper part of the sedimentation tank to ground.

4,213,865

APPARATUS FOR SEPARATING SLUDGE, OIL AND THE LIKE FROM CONTAMINATED WATER

Karl Wagner, Houston, Tex., assignor to Fabrication Unlimited, Inc., Houston, Tex.

Filed Jul. 21, 1978, Ser. No. 927,141
Int. Cl.[2] B01D *21/10*
U.S. Cl. 210—522 **4 Claims**



1. Apparatus for separating sludge, oil and the like from contaminated water, comprising:

(a) a process tank having walls separating the tank into first and second compartments, one of said walls being substantially vertical and having an opening at the lower portion thereof to permit passage of the contaminated water from the first to the second compartment, and another of said walls being mounted in said tank intermediate the upper and lower portions of said tank, being positioned at an incline and being connected to the lower extremity of the first of said separating walls;
(b) an inlet mounted with said tank for carrying the contaminated water into the first compartment;
(c) a first outlet mounted with said tank for removing separated oil and the like from the first compartment;
(d) a second outlet mounted with said tank for removing the treated water from the second compartment;
(e) a third outlet mounted with said tank for removing separated sludge and the like from the second compartment; and
(f) a plate pack mounted on the inclined wall in said tank to slope downward from a first to a second end, said pack having
side walls, a top and a bottom connected to said side walls and forming a conduit for carrying the contaminated water from the first to the second end, said second end being mounted near the opening through said one wall in said tank, and a plurality of corrugated plates mounted one above the other and extending between said side walls to provide a plurality of passageways, said plates being sufficiently displaced from one another to permit laminar flow of the water through the passageways and the corrugations of said plates defining a plurality of upper and lower channels generally parallel with said other of said walls, the water passing from the first to the second compartment by flowing downwardly through the passageways and lower channels, the oil and the like separating from the water during such passage rising and flowing upwardly through said channels and out the first end, the sludge, and the like settling from the water during such passage and flowing out the second end, the ends of the plates disposed in the second end forming a plane which lies substantially vertical and substantially coplanar with said one of said walls when said pack is mounted on said inclined wall for substantially reducing clogging of the passageways during separation of the sludge from the water when flowing through said pack, the uppermost part of said pack being above the level of said inlet.

4,213,866

COMPOSITION AND PROCESS FOR REMOVING SULFUR SCALE FROM INTERSTICES IN PETROLEUM BEARING FORMATIONS AND THE LIKE TO IMPROVE THE FLOW OF PETROLEUM

Robert M. Ashby, 3845 Fairmeade Rd., Pasadena, Calif. 91107, and Frederick S. Kaveggia, 24772 Via San Felipe, Mission Viejo, Calif. 92675

Continuation of Ser. No. 793,150, May 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 536,336, Dec. 26, 1974, abandoned. This application Nov. 3, 1978, Ser. No. 957,537
Int. Cl.[2] E21B *43/27*
U.S. Cl. 252—8.55 C **29 Claims**

1. A composition suitable for the essentially complete dissolution of sulfur scale from petroleum passages comprising:
(a) an aqueous acidic solution of a primary acid selected from the class consisting of hydrochloric acid, phosphoric acid, formic acid, citric acid, oxalic acid, and any of said acids intensified with hydrofluoric acid;
(b) minor amounts of a vanadium compound selected from at least one member of the class consisting of vanadium pentoxide, vanadyl sulfate, vanadyl chloride and vanadyl phosphate, the vanadium compound being present in the amount of at least about 0.01 weight percent;
(c) minor amounts of a second acid selected from at least one member of the class consisting of acetic acid, hydroxymalonic acid, dihydroxymalonic acid, malonic acid, and ethylene-diamine-tetraacetic acid; and
(d) the second acid being present in the composition in the amount of at least about 0.5 weight percent.

4,213,867

FABRIC CONDITIONING COMPOSITIONS

Samuel Cukier, and Irshad A. Khan, both of Montreal, Canada, assignors to Domtar Inc., Montreal, Canada

Filed Dec. 29, 1978, Ser. No. 362
Int. Cl.[2] D06M *13/34, 13/46, 13/38*
U.S. Cl. 252—8.75 **12 Claims**

1. A homogeneous basic mix for fabric conditioning compositions pumpable at room temperature consisting essentially of:
(a) diluent consisting between about 15 and 35 percent by weight of the base mix,
(b) between about 50 and 60 percent by weight of quaternary ammonium compounds having the general formula $(R_1R_2R_3R_4N^+)X^-$ where R_1, R_2 represent alkyl groups having 1 to 3 carbon atoms, R_3 represents an alkyl group having 12 to 20 carbon atoms, R_4 is chosen from the group consisting of alkyl groups having 1 to 3 carbon atoms and alkyl groups having 12 to 20 carbon atoms; and where the anion X^- represents chloride, bromide, nitrate, bisulfate acetate, methylsulfate and ethylsulfate; and
(c) a member chosen from the group consisting of:
(i) fatty alcohols having the general formula ROH, where R is chosen from alkyl groups having between 18 and 28 carbon atoms,
(ii) phosphoric acid esters having the general formula

$$(RO)_m-\overset{\overset{O}{\|}}{P}-(OH)_n,$$

where R is chosen as defined in (i) above, and $m+n=3$ with $m \geqq 1$,
(iii) a mixture of (c) (i) and (c) (ii),
where the weight proportion of component (c) in the base mix can range from about 5 to 30 percent, so as to provide said homogeneous base mix for fabric conditioning compositions, which is pumpable at room temperature.

4,213,868

GALVANIC CORROSION PREVENTION COUPLING

Clarence J. Bitely, Jr., Limestone, N.Y.; Luther D. Dromgold, Bradford, Pa., and William S. Murray, Jr., Rumson, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,546
Int. Cl.[2] C10M *1/24, 3/18, 1/18, 3/12*
U.S. Cl. 252—11 **13 Claims**

1. An anti-galvanic corrosion coupling, consisting essentially of two dissimilar metals having a grease disposed therebetween, said grease consisting essentially of a hydrocarbon base oil and a stearate gelling agent selected from the class consisting of sodium, lithium and barium stearates.

4,213,869

MINIMAL BLOCKING THERMOPLASTIC MATERIAL AND LUBRICATING OIL COMPOSITION CONTAINING THE SAME

Edward J. Kosinsky, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 12, 1979, Ser. No. 29,419
Int. Cl.[2] C10M *1/24*
U.S. Cl. 252—37.5 **7 Claims**

1. A lubricating oil composition having a low viscosity index comprising a mineral lubricating oil containing from about 0.5 to about 5.0 percent by volume of conjugated diene-monovinylarene copolymer having incorporated into or onto said copolymer at least one metal salt of a metal selected from the group consisting of a metal of Group I, II, III or IV of the Periodic Table and a fatty acid having about 8 to about 30 carbon atoms per molecule and a polyhydrocarbylsiloxane silicone compound, the relative amounts of said metal salt and said silicone compound being sufficient to significantly reduce the blocking between contact surfaces of said conjugated diene-monovinylarene copolymer.

4,213,870

CLEANING AND LUBRICATING COMPOSITIONS AND METHOD OF USING THE SAME

Thomas J. Loran, Boulder Canyon, Boulder, Colo. 80302

Filed Jul. 29, 1977, Ser. No. 820,351
Int. Cl.[2] C10M *1/32*
U.S. Cl. 252—51.5 R **16 Claims**

1. A lubricating composition consisting essentially of:
fluorinated alkyl esters including a chemical structure having a fluorinated alkyl hydrophobic tail terminating in a hydrophilic ester group and having the structure

$$R(CF_2)_nCOOR'$$

wherein R is a material selected from the group consisting of H and CF_3, R' is a short chain alkyl compound, and n is equal to a positive integer such that the fluorinated alkyl esters have a relatively high molecular weight on the order of at least 300 which are normally solid under ambient conditions; and
another material selected from the group consisting of at least one of tetrafluoroethylene telomers and compatible anti-static agents.

5. The composition of claim 1 wherein the antistatic agent is an amine.

16. The method of lubricating the surface of a plastic material comprising the steps of:
intermixing a fluorinated alkyl ester with a material selected from the group consisting of tetrafluoroethylene telomers and anti-static agents compatible with said fluorinated alkyl esters together with a volatile solvent for the composition, said fluorinated alkyl esters having a fluorinated alkyl hydrophobic tail terminating in a hydrophibic ester group as defined by the structural formula

$$R(CR_2)_nCOOR'$$

wherein R is a material selected from the group consisting H and CF_3, R' is a short chain alkyl compound, and n is equal to a positive integer such that the fluorinated alkyl ester has a relatively high molecular weight which is normally solid under ambient conditions; and
applying said intermixture in a thin film to the surface to be lubricated whereby when the solvent evaporates a hard, solid wear-resistant lubricant coating is left upon the surface.

4,213,871

BIOLOGICAL ACTIVATORS

Tristan Bavaveas, Paris, France, assignor to Societe Anonyme dite:EPARCO, France

Filed Jul. 6, 1977, Ser. No. 813,231
Claims priority, application France, Jul. 6, 1976, 76 20586
Int. Cl.[2] C09K *3/00*
U.S. Cl. 252—60 **7 Claims**

1. A biological activator for septic tanks useful for increasing the bacteria therein consisting essentially of 50 to 90% silica in the form of SiO_2, 3 to 30% aluminum in the form of Al_2O_3 and 1 to 4% of iron in the form of Fe_2O_3 and 1 to 4% calcium in the form of $CaCO_3$ and at least one trace element selected from the group consisting of bismuth, cesium, titanium, copper, manganese, barium, cobalt, germanium, tin, zinc, beryllium, chromium and strontium, said activator being a non-corrosive mineral composition in finely divided form, nontoxic to bacteria, the majority of the particles of said composition having a particle size of less than about 50 microns and having a specific surface of about 4500 to 9000 $cm.^2/g.$ such as to provide a base for the anaerobic microbic flora thereby providing for an increase in the density of bacteria in the septic tank or an equivalent quantity of nutriment.

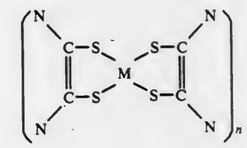
4,213,872

SLUDGE RESISTANT LIQUID DEVELOPER FOR ELECTROSTATIC IMAGES CONTAINING A METAL-DITHIOOXAMIDE PIGMENT OR COATING

Robert N. Cooper, Skokie, Ill., assignor to A. B. Dick Company, Niles, Ill.

Filed Jul. 17, 1978, Ser. No. 925,115
Int. Cl.[2] G03B *9/12*
U.S. Cl. 430—114 **7 Claims**

1. A liquid developer composition for visual development of latent electrostatic images comprising an inert liquid carrier and a compound having the general formula



in which M is a metal selected from the group consisting of nickel, cobalt, copper and iron and n is a whole number in which the compound in finely divided form is dispersed as a toner or part thereof in the carrier in an amount within the range of 2–20 parts by weight per 100 parts by weight of liquid carrier.

4,213,873

WATER BASED WINDOW, GLASS AND CHROME CLEANER COMPOSITION

Peter K. Church, Cascade, Colo., assignor to Leisure Products Corporation, Cascade, Colo.

Filed Mar. 10, 1978, Ser. No. 885,311
Int. Cl.[2] C11D *3/43, 1/72*
U.S. Cl. 252—174.21 **14 Claims**

1. A water based cleaning composition consisting essentially of water on the order of about 59.3 to about 99.58 weight percent, a cleaning agent selected from the group consisting of ammonium hydroxide, a monohydroxy alcohol containing not more than 3 carbon atoms and mixtures thereof on the order of about 0.31 to about 40.3 weight percent plus an amount of at least one lubricity compound selected from the group consisting of a water soluble polymer of ethylene glycol having at least 16 carbon atoms according to the formula $ROCH_2(CH_2OCH_2)_n CH_2OR$ having a molecular weight of at least 380 wherein n is at least seven and R is a radical selected from the group consisting of H^+ and CH_3^+ ammonium carbonate, ammonium bicarbonate and mixtures thereof on the order of about 0.025 to about 0.3 weight percent to impart substantial lubricity to the composition.

4,213,874

SYNTHETIC AMORPHOUS SODIUM ALUMINOSILICATE BASE EXCHANGE MATERIALS

Lloyd E. Williams, Bel Air, and Robert K. Mays, Havre de Grace, both of Md., assignors to J. M. Huber Corporation, Rumson, N.J.

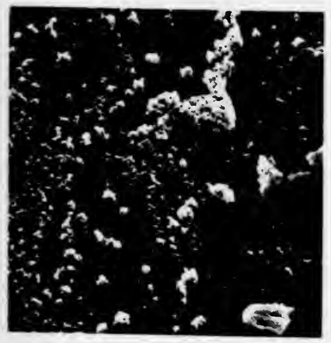
Continuation of Ser. No. 622,585, Oct. 15, 1975, abandoned, which is a division of Ser. No. 522,375, Nov. 8, 1974, abandoned. This application Jan. 27, 1978, Ser. No. 872,968
Int. Cl.[2] C01B *33/28;* C02B *1/44;* C11D *3/12, 3/14*
U.S. Cl. 252—174.25 **1 Claim**

1. A washing composition comprising a synthetic detergent surfactant including as an ion exchange and water softening

agent, a synthetic finely divided amorphous sodium aluminosilicate, said sodium aluminosilicate having the chemical composition

$$Na_2O.Al_2O_3.2.0\text{–}3.8SiO_2.XH_2O$$

wherein X has a value of 3 to 6, the primary particles of said aluminosilicate being spherical and in the 400–500 A range, said particles accreting into stable aggregates of irregular shapes and sizes ranging from 2000–5000 A, said aluminosilicate having an oil absorption of at least 75 cc/100 gms, a pack density of greater than 10 pounds per cubic foot, a pour density in the range of 9.0 to 9.2 lb/ft^3, a mercury intrusion void of greater than 2.0 cc/gm, a base exchange capacity of at least 255 mg $CaCO_3$/gm, and a water softening rate of at least 3.2 grains per gallon per minute; said softening agent being added at a



0.06% level to mixed Ca-Mg hard water with 7.0 gr./gal hardness; said sodium aluminosilicate ion exchange and water softening agent being present in said composition in sufficient amounts to provide a weight ratio of detergent surfactant to aluminosilicate of about 25:1 to 25:5, respectively; said amorphous sodium aluminosilicate being produced by the steps of: preparing an aqueous solution of 4 molar or lower sodium silicate, said silicate having a SiO_2/Na_2O mole ratio of from about 2.2 to 2.8, subjecting said solution to vigorous agitation and adding to said silicate solution a dilute solution of sodium aluminate, said sodium aluminate having a Na_2O/Al_2O_3 mole ratio of from 1.0 to 6.0; continuing the vigorous agitation of the reaction mass formed by the addition of said sodium aluminate to said sodium silicate solution at a precipitating temperature of about 25°–70° C.; and maintaining the pH of said reaction mass at a level of at least 10.5 to thereby precipitate the finely divided amorphous sodium aluminosilicate.

4,213,875

SYNTHESIZED SCENT

Arthur F. Isbell, Bryan, Tex., assignor to Meiller Research, Inc., College Station, Tex.

Filed Mar. 13, 1978, Ser. No. 885,941
Int. Cl.^{2} C07C *157/2*; C09K *3/00*
U.S. Cl. 252—188.3 R **11 Claims**

1. A kit for synthesizing a scent substantially similar to that produced in the anal glands of skunks and for masking human odor from detection by wild animals, consisting essentially of a first component comprising an aqueous solution of a trans-crotyl isothiuronium salt and a second component comprising an aqueous solution of base, that when combined yield trans-2-butene-1-thiol.

4,213,876

MULTI-PURPOSE BLOOD DILUENT FOR USE IN ELECTRONIC BLOOD ANALYSIS INSTRUMENTATION

Harold R. Crews, Miami; Dave Chastain, Jr., Ft. Lauderdale, and Stephen L. Ledis, Hialeah, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 22, 1978, Ser. No. 936,570
Int. Cl.^{2} G01N *33/16*; C09K *3/00*
U.S. Cl. 252—408 **8 Claims**

1. A multi-purpose blood diluent suitable for use in electronic enumeration and sizing of blood cells, determination of hemoblobin concentration and their collective indices and platelet parameters in a single blood sample by means of electronic instrumentation comprising:

A. an osmotically balanced solution of sodium chloride, a monobasic phosphate salt, a dibasic phosphate salt and sodium sulfate,

B. a bacteriostatic agent comprising a hydroxyquinoline, and

C. a hydrochloride compound selected from the family of anesthetic compounds compatible with said baceteriostatic agent for maintaining desired red blood cell morphology during operation of said instrumentation ; and

D. said diluent being an aqueous electrolytic solution maintained within a preselected range of pH and osmolality.

4,213,877

METHOD OF REACTIVATING A CATALYTIC COMPOSITE OF AN ADSORPTIVE CARRIER MATERIAL AND A MERCAPTAN OXIDATION CATALYST

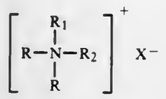
Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 26, 1978, Ser. No. 973,303
Int. Cl.^{2} B01J *31/40*
U.S. Cl. 252—412 **14 Claims**

1. A method of reactivating a deactivated catalytic composite of an adsorptive carrier material and a metal chelate mercaptan oxidation catalyst which has become deactivated in mercaptan oxidation, which comprises washing the thus deactivated composite with an aqueous quaternary ammonium compound solution at a temperature of from about 55°–175° C.

2. The method of claim **1** further characterized in that said metal chelate mercaptan oxidation catalyst is a metal phthalocyanine.

6. The method of claim **1** further characterized in that said quaternary ammonium compound is represented by the structural formula



wherein R is a hydrocarbon radical containing up to about 20 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl, and aralkyl, R_1 is a substantially straight chain alkyl radical containing from about 5 to about 20 carbon atoms, R_2 is selected from the group consisting of aryl, aralkyl and alkaryl, and X is an anion.

4,213,878

TRANSITION METAL COMPOSITION AND PROCESS

Ashley D. Bye, The Hague, Netherlands, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 25, 1978, Ser. No. 936,897
Claims priority, application United Kingdom, Aug. 31, 1977, 36342/77
Int. Cl.^{2} C08F *4/64*
U.S. Cl. 252—429 B **9 Claims**

1. A process for the production of a titanium trichloride-containing composition which process comprises

(1) reducing titanium tetrachloride by reacting the titanium tetrachloride with a reducing agent under conditions to give a titanium trichloride product which includes an associated aluminium compound containing aluminium and chlorine atoms, wherein the titanium trichloride is formed predominantly in the beta-form;

(2) contacting the reduction product with both compound E and compound L, compound L being added after the addition of compound E so that both compound E and compound L are present together, at least part of the contacting being effected at a temperature of at least 60° C. in the presence of at least compound E; and

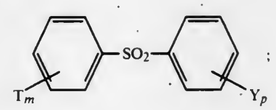
(3) washing the product obtained with an inert hydrocarbon or inert halohydrocarbon liquid

wherein

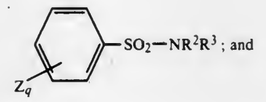
E is an ether or a thioether;

L is an organic sulphur-containing compound of one of the formulae (1), (2) or (3);

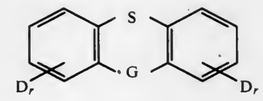
formula (1) is



formula (2) is



formula (3) is



where

T, or each T is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^1R^2$, or two groups T can together form a saturated or unsaturated hydrocarbon ring;

Y, or each Y is, independently, a halogen atom; an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^1R^2$, or two groups Y can together form a saturated or unsaturated hydrocarbon ring; or a group T and a group Y may be replaced by a link between the two phenyl groups attached to the $—SO_2—$ group, the linkage being either direct or through a group —O—, $—CH_2—$, $—NR^1—$, —S— or —CO—.

Z, or each Z is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^1R^2$, or two groups Z can together form a saturated or unsaturated hydrocarbon ring;

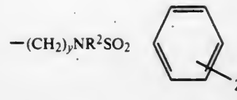
D, or each D is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^1R^2$;

G is —S—, —O—, $—NR^2—$ or —CO—;

R^1 is a hydrogen atom or a hydrocarbyl group;

R^2 is a hydrocarbyl group;

R^3 is a hydrocarbyl group or can be a group



m, p, q and r are each, independently, an integer from 0 up to 5; and

y is a positive integer.

4,213,879

CATALYST COMPOSITION

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 827,632, Aug. 25, 1977, Pat. No. 4,164,615.
This application Mar. 1, 1979, Ser. No. 16,752
Int. Cl.^{2} B01J *27/08, 27/10*
U.S. Cl. 252—429 R **24 Claims**

1. A composition comprising (A) a trivalent or tetravalent titanium compound wherein said titanium compound is a hydrocarbyl titanium compound or a hydrocarbyl titanium halide, (B) an alkali metal compound, and (C) an inorganic halide ion source, wherein said halide of said (A) or (C) is chloride, bromide, or iodide; optionally (D) a dihalobutene; and optionally (E) in admixture with carboxylic acid media;

wherein said (B) alkali metal compound is an alkali metal halide, nitrate, carboxylate, oxide, hydroxide, or mixture; said (C) can be supplied at least in part by said (A) titanium compound, said (B) alkali metal compound, or both; and molar ratios of (B) and (A) of about 0.1:1 to 20:1, and of said (C) as the halide ion to (A) of about 0.1:1 to 20:1.

4,213,880

HYDROCARBON SOLUTIONS OF ORGANOMAGNESIUM COMPOUNDS

George W. Knight, Lake Jackson, and Dennis E. Mach, Alvin, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 11, 1975, Ser. No. 612,397
Int. Cl.^{2} B01J *31/12*
U.S. Cl. 252—431 R **13 Claims**

1. A solution of a diorganomagnesium component suitable as an organometallic component in the preparation of a Ziegler catalyst for the polymerization of α-olefins which solution comprising a diorganomagnesium compound, a liquid hydrocarbon solvent, a solubilizing compound selected from the group consisting of an organozinc, organoboron or mixtures thereof in an amount sufficient to solubilize the diorganomagnesium compound and an agent that reduces the viscosity of the solution without destroying the solution or any component thereof in an amount sufficient to facilitate separation of suspended solids from the solution.

4,213,881

REFORMING WITH MULTIMETALLIC CATALYSTS

Paul E. Eberly, Jr., Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 862,116, Dec. 19, 1977, Pat. No. 4,151,115, and Ser. No. 862,114, Dec. 19, 1977, Pat. No. 4,148,758, each is a continuation-in-part of Ser. No. 826,996, Aug. 23, 1977, abandoned. This application Dec. 14, 1978, Ser. No. 969,548
Int. Cl.^{2} B01J *27/02*
U.S. Cl. 252—436 **9 Claims**

1. In a process for preparing a reforming catalyst wherein a Group VIII noble metal hydrogenation-dehydrogenation component, a component comprised of iridium or rhenium, or both, and a halogen component are composited with an inorganic oxide support, the improvement which comprises incorporating selenium, sulfurous acid or sulfuric acid, or both, as

components within said catalyst sufficient to increase the activity, or selectivity, or both.

4,213,882

PREPARATION METHOD FOR CATALYST SUPPORT AND MATERIALS PRODUCED THEREBY

Herbert Kranich, Jr., Littleton, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Aug. 9, 1976, Ser. No. 712,633

Int. Cl.[2] B01J *29/06, 35/00*

U.S. Cl. 252—455 R **9 Claims**

1. A process for the formation of a siliceous catalyst support which comprises:

(a) forming a mixture consisting essentially of, in parts by weight:

natural diatomite—60–65 parts

bentonite clay—18–22 parts

corn meal—15–20 parts

and sufficient water to impart an extrudable consistency;

(b) extruding said mixture through a die to form an extrudate and then separating said extrudate into a plurality of pellets;

(c) drying said pellets for at least about 20 minutes at a temperature of at least about 150° F., the time and temperature being selected such that all moisture is removed; and

(d) calcining said dried pellets at a temperature of at least about 1150° F. for at least about 30 minutes, until said corn meal is substantially completely removed from said pellets leaving a highly porous solid fused composite pellet of diatomite and clay.

4,213,883

METHOD FOR MANUFACTURE OF NEUTRON ABSORBING ARTICLES

Dean P. Owens, Tonawanda, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Dec. 30, 1977, Ser. No. 866,102

Int. Cl.[2] C04B *35/68*

U.S. Cl. 252—478 **10 Claims**

1. A one-step curing method for the manufacture of a neutron absorbing article which comprises irreversibly curing, in desired article form, a form-retaining mixture of boron carbide particles, curable phenolic resin in solid state and in particulate form and a minor proportion of a liquid medium, which boils at a temperature below 200° C., at an elevated temperature so as to obtain bonding of the irreversibly cured phenolic polymer resulting to the boron carbide particles and production of the neutron absorbing article in desired form.

4,213,884

MANUFACTURE OF A HIGHLY CONCENTRATED AQUEOUS SOLUTION OF A DICARBOXYLIC ACID DIAMINE SALT AND A NYLON PRECONDENSATE

Albrecht Eckell, Frankenthal; Paul Matthies, Heidelberg; Georg Pilz, Neustadt, and Rudi-Heinz Rotzoll, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,641

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728817

Int. Cl.[2] C08G *69/28;* **C07C** *51/52*

U.S. Cl. 260—29.2 N **6 Claims**

1. A process for the manufacture of highly concentrated aqueous solution of a salt of an alkanedicarboxylic acid of 6 to 12 carbon atoms and an alkane diamine of 6 to 12 carbon atoms which process consists essentially of:

adding molten alkane diamine to an aqueous solution containing from about 40 to 65% by weight of said salt and containing an excess amount of the dicarboxylic acid at a temperature of from 60° to 110° C., the amount of said molten alkane diamine being equivalent to the amount of dissolved dicarboxylic acid, and

allowing the final reaction temperature to rise to from 160° to 200° C. under super atmospheric pressure,

whereby a highly concentrated solution containing from 70 to 90% by weight of said salt and a nylon precondensate of the salt is formed.

4,213,885

BONDING AGENT FOR SHEET-FORMED FIBRE PRODUCTS

Anders Boberg; Bernt Larsson, and Folke Lundh, all of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Jun. 16, 1978, Ser. No. 916,177

Claims priority, application Sweden, Jun. 23, 1977, 7707295

Int. Cl.[2] C08L *33/14*

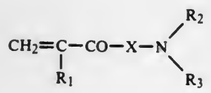
U.S. Cl. 260—29.6 TA **13 Claims**

1. An aqueous composition for preparing sheet-formed fibrous products comprising water suspended fibrous material and 0.5–20 percent by weight calculated as dry polymer based on dry fibre of a bonding agent comprising a particle-shaped polymer product dispersed in water and being produced through emulsion polymerization in the presence of an emulsifying system thereto adapted, having a particle size of 0.05–0.3 μm, having a cation-active charge at least in environments in which the pH is below 7, and comprising based on the entire quantity of monomer in the bonding agent

(a) 95–65% by weight of a hydrophobic monomer selected from the group of styrene, 2-ethyhexyl acrylate, butyl acrylate and mixtures thereof;

(b) 3–30% by weight of a hydrophilic monomer selected from the group of acrylamide, methacrylamide, acrylonitrile, 2-hydroxyethyl methacrylate, vinyl pyrrolidone and mixtures thereof;

(c) 0.5–5.0% by weight of a cation-active charged monomer selected from the group of acrylic compounds, methacrylic compounds, and mixtures thereof having the formula:



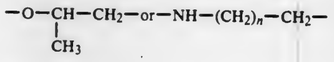
in which

R_1=H or CH_3

R_2=C_1—to C_4 alkyl, —CH_2—OH or —CH_2—CH_2—OH

R_3=—H or either of the alternatives according to R_2 and

X=—O—CH_2—CH_2—, —O—CH_2—CH_2—CH_2—,



in which n=0 to 3.

4,213,886

TREATMENT OF ALUMINUM FLAKE TO IMPROVE APPEARANCE OF COATING COMPOSITIONS

Robert L. Turner, Troy, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 800,065, May 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 588,609, Jun. 20, 1975, abandoned. This application Oct. 30, 1978, Ser. No. 955,649

Int. Cl.[2] C08K *9/04, 9/06*

U.S. Cl. 260—29.6 MM **5 Claims**

1. An improvement in water based coating compositions containing aluminum flake, the improvement comprising:

utilizing a coated aluminum flake;

wherein the aluminum flake was coated with at least 100% of the quantity required to form a monolayer on the surface area of the flake of mono-ethylenically unsaturated silane and was reacted with acrylic monomers having functional groups to form an acrylic topcoat on the flake;

wherein the silane is selected from the group consisting of vinyltrimethoxysilane, vinyltriethoxysilane, vinyltris (beta-methoxyethoxysilane) and gamma-methacryloxypropyltrimethoxysilane.

4,213,887

LITHOGRAPHIC PLATE FINISHER

John E. Walls, Annandale, and Thomas N. Gillich, Readington Township, Hunterdon County, both of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Jul. 16, 1979, Ser. No. 58,235

Int. Cl.[2] C08L *3/02, 39/06*

U.S. Cl. 260—29.6 E **12 Claims**

1. An aqueous lithographic plate finisher comprising

a. an hydrophilic polymer selected from the group consisting of a substantially cold water-soluble dextrin and polyvinyl pyrrolidone,

b. at least one nonionic surfactant having an hydrophile-lipophile balance of between about 12 and 18 either for an individual such surfactant or a blend thereof,

c. a humectant,

d. an inorganic salt, and

e. water.

4,213,888

PARTICULATE ELASTOMERIC MATERIALS AND METHOD

Rudolph F. Karg, and Harold J. Gros, both of Baton Rouge, La., assignors to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Continuation of Ser. No. 747,923, Dec. 6, 1976, abandoned. This application Jul. 14, 1978, Ser. No. 924,825

Int. Cl.[2] C08F *6/22*

U.S. Cl. 260—33.6 AQ **21 Claims**

1. In the preparation of free flowing particles of elastomeric polymers formed of monomers which are polymerizable in aqueous medium in the presence of an emulsifying agent to form a latex, the steps of coagulating the latex by control of one or more of the conditions of agitation, pH, temperature, time and flocculant additions to coagulate the formed elastomer into particles, separating the coagulated particles from the aqueous medium, washing the separated coagulated particles, dewatering the separated particles to a moisture content of less than 65%, screening the coagulated particles to subdivide the particles into an undersize of less than 0.5 mm and an oversize of more than 5 mm, and a product within the range of 0.5 to 5 millimeters in cross-section, and then drying and cooling the separated product particles while in a fluidized state in a continuous sequence of stages initially with hot gases for the removal of moisture and then with cooling gases to reduce the dried particles to a temperature below 120° C. and a moisture content below 3% by weight to minimize sticking, and admixing a solid partitioning agent with the dried particles in an amount within the range of 1–10% by weight to coat the surfaces of the dried particles to obstruct agglomeration between the dried particles.

4,213,889

FLAME RESISTANT RESIN COMPOSITIONS

Harry H. Beacham, Langhorne, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 859,838, Dec. 12, 1977. This application Feb. 13, 1979, Ser. No. 11,739

Int. Cl.[2] C08K *5/52*

U.S. Cl. 260—45.7 PH **6 Claims**

1. A flame resistant styrene-unsaturated polyester resin composition comprising said styrene-unsaturated polyester resin in combination with diallyl maleate and about 10 parts per hundred of an alkyl phosphate selected from the group consisting of octyl diphenyl phosphate and tributyl phosphate; the amount of diallyl maleate present in said styrene-unsaturated polyester resin being about 30 parts per hundred when tributyl phosphate is present in said composition and about 40 parts per hundred where octyl diphenyl phosphate is present in said composition.

4,213,890

PREPARATION OF TEREPHTHALOYL-TEREPHTHAL/OXAL COPOLYHYDRAZIDE CONTAINING ZINC COMPOUND

Walter Brodowski, Amorbach, and Michael Wallrabenstein, Worth am Main, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Oct. 4, 1978, Ser. No. 948,494

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744621

Int. Cl.[2] C08K *3/10*

U.S. Cl. 260—45.75 W **3 Claims**

1. A process for the production of a flame resistant film or fiber, comprising reacting a film or fiber of a terephthaloyl-terephthal/oxal copolyhydrazide having a mole ratio of oxalic acid dihydrazide to terephthalic acid dihydrazide structural units ranging between 19:6 and 6:19 with a solution of one or more inorganic or organic zinc salts to produce the metal chelate of said copolyhydrazide film or fiber and thereafter reacting and dechelating said metal chelate film or fiber with a solution of oxalic acid to obtain a low solubility zinc compound containing copolyhydrazide film or fiber.

4,213,891

THERMOFORMABLE, HIGH IMPACT LOW-SMOKE PLASTIC

George H. Wear, Mogadore, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 940,424, Sep. 7, 1978, abandoned, which is a continuation of Ser. No. 759,924, Jan. 17, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,417

Int. Cl.[2] C08L *23/28, 27/24, 33/08, 51/00*

U.S. Cl. 260—45.75 S **3 Claims**

1. In a high impact resistant plastic which is fire resistant when heated to flame temperature, comprising a blend of 100 parts by weight of a chlorinated polyvinyl chloride resin having an average molecular weight of from about 50,000 to 140,000; and from about 5 to 30 parts by weight of chlorinated polyethylene, the improvement comprising the chlorinated polyethylene comprising a heterogeneous mixture of from 50% to 95% of a chlorinated polyethylene having a molecular weight of at least 100,000 and a chlorine content of 30% to 45% and from 5% to 50% of the mixture being a low molecular weight chlorinated polyethylene of from 20,000 to 40,000 and having a chlorine content of from 25% to 45%; from about 10 to 20 parts by weight of a cross-linked alkyl acrylate polyvinyl chloride graft copolymer and from about 1 to 10 parts of an organo tin process aid and heat stabilizer, the combination of the graft copolymer, the process aid, and the chlorinated polyethylenes rendering sheets of the plastic thermoformable.

4,213,892

PROCESS FOR PREPARING OXIDATIVELY-STABLE POLYMERS BY REACTION WITH ANTIOXIDANT IN THE PRESENCE OF FREE RADICAL

Gerald Scott, 338 Station Rd., Knowle, Warwickshire, England

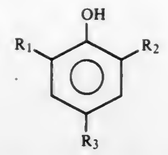
Filed Mar. 5, 1975, Ser. No. 555,678

Claims priority, application United Kingdom, Mar. 6, 1974, 10086/74; Jul. 11, 1974, 30870/74

Int. Cl.[2] C08K *5/05*

U.S. Cl. 260—45.95 C **11 Claims**

1. A process for preparing an oxidatively stable polymer which comprises reacting the polymer with an antioxidant of the formula:



in which R_1 and R_2 each independently represents a hydrogen atom or a tertiary alkyl radical such that at least one represents a tertiary alkyl radical and R_3 represents a hydrogen atom or an alkyl, hydroxy, hydroxyalkyl, alkoxyalkyl or mercaptoalkyl radical, said R radicals optionally being substituted by aromatic phenolic or aromatic amine groups, in the presence of a free radical with the proviso that when the free radical is produced by a free radical generator, said generator produces free radicals at a temperature below about 120° C.

4,213,893

FLAVIN ADENINE DINUCLEOTIDE-LABELED CONJUGATES FOR USE IN SPECIFIC BINDING ASSAYS

Robert J. Carrico, and Richard D. Johnson, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 917,962, Jun. 22, 1978. This application Oct. 12, 1978, Ser. No. 950,858

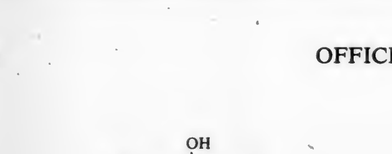
Int. Cl.[2] **C07C** *103/52;* **C07G** *7/00;* **A61K** *37/00;* **C07H** *19/16*

U.S. Cl. 260—112.5 R **42 Claims**

1. In a labeled conjugate for use in specific binding assays of the general formula:

labeling substance(NH-)(CO)L

wherein -(CO)L is a hapten of molecular weight greater than 100 or an antigenic polypeptide or protein bound to said labeling substance through an amide bond, characterized in that said labeling substance (NH-)- has the formula:



wherein Riboflavin-(Phos)$_2$-Ribose represents the riboflavin-pyrophosphate-ribose residue in flavin adenine dinucleotide and n=2 through 6.

4,213,894

DIPHENYLHYDANTOIN IMMUNOGEN CONJUGATES

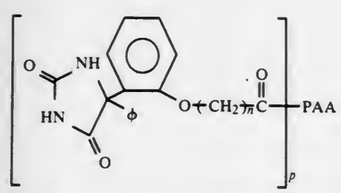
Robert T. Buckler, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 899,844, Apr. 25, 1978. This application Dec. 7, 1978, Ser. No. 967,132

Int. Cl.[2] **C07C** *103/52;* **C07G** *7/00;* **A61K** *37/100*

U.S. Cl. 260—112.5 R **3 Claims**

1. A diphenylhydantoin immunogen conjugate of the formula:



wherein ϕ is phenyl, PAA is an immunogenic polypeptide or protein having a molecular weight of at least 5,000 bonded through an amide linkage, n=2 through 6, and p=1 through 50.

4,213,895

N-[N-[N-[N-[N-(5-OXO-L-PROLYL)-L-HISTIDYL]-L-TRYPTOPHYL]-L-SERYL]-L-TYROSYL]GLYCINE AZIDE, AN INTERMEDIATE OF THE RELEASING AGENT OF LUTEINIZING HORMONE (LW) AND OF FOLLICLE STIMULATING HORMONE (FSH)

Hans U. Immer, Mount Royal; Verner R. Nelson, Kirkland, and Menfred K. Gotz, Hudson, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 456,343, Mar. 29, 1974, Pat. No. 4,159,980, which is a division of Ser. No. 226,508, Feb. 15, 1972, Pat. No. 3,835,108. This application Mar. 26, 1979, Ser. No. 23,563

Int. Cl.[2] **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **1 Claim**

1. N-[N-[N[N-[N-(5-Oxo-L-prolyl)-L-histidyl]-L-tryptophyl]-L-seryl]-L-tyrosyl]glycine azide.

4,213,896

RENNET CASEIN AND METHOD FOR TREATMENT THEREOF

Paul F. Davis, Addison, Ill., assignor to Kraft, Inc., Glenview, Ill.

Filed Apr. 26, 1979, Ser. No. 33,388

Int. Cl.[2] **A23J** *1/20*

U.S. Cl. 260—119 **6 Claims**

1. A method for treatment of rennet casein to provide a casein product with water binding properties comprising adding rennet casein to water to provide a casein dispersion, adding an orthophosphate salt of a monovalent cation to said dispersion, agitating said dispersion to solubilize said casein and adding a magnesium salt to said dispersion containing said rennet casein and said orthophosphate salt so as to cause partial destabilization and precipitation of said rennet casein.

4,213,897

DISAZO AND TRISAZO COMPOUNDS HAVING A 3-PYRIDINIUM OR SUBSTITUTED PYRIDINIUM-4-METHYL-6-HYDROXYPYRIDONE-2 COUPLING COMPONENT RADICAL

Helmut Moser, Oberwil, and Hans R. von Tobel, Riehen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

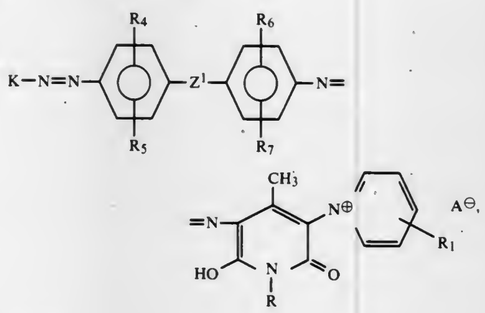
Filed Mar. 8, 1978, Ser. No. 884,413

Claims priority, application Switzerland, Mar. 14, 1977, 3158/77

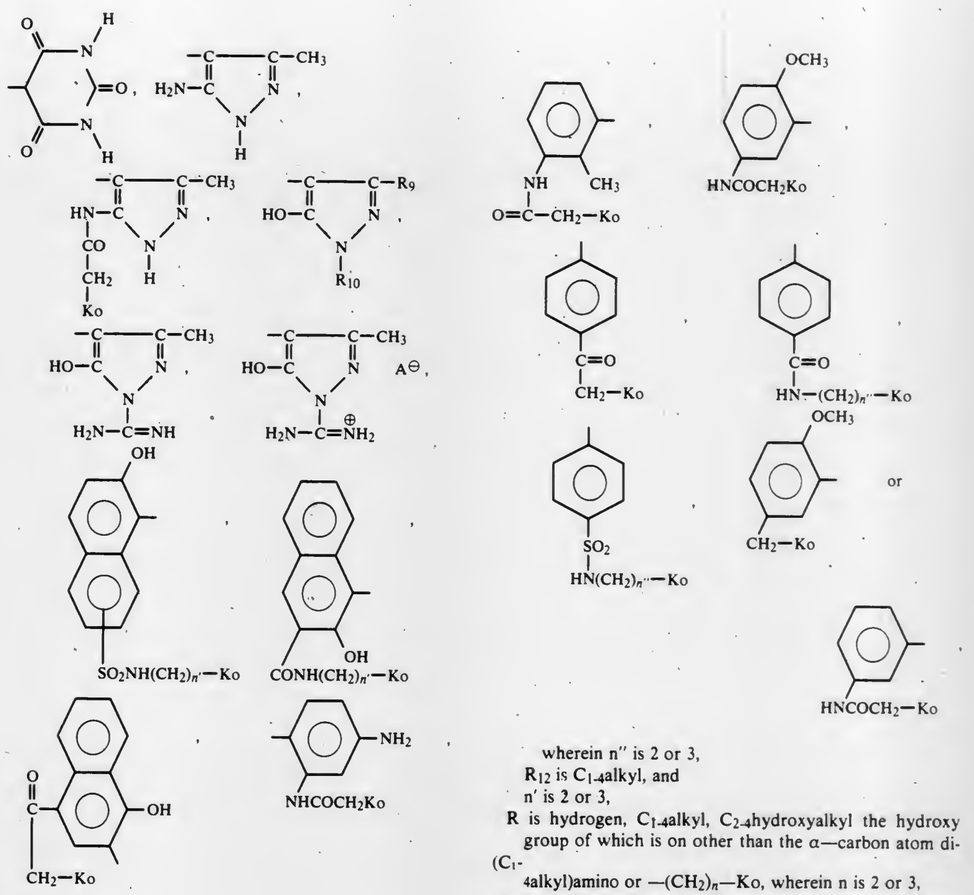
Int. Cl.[2] **C09B** *35/20, 35/22, 35/24, 35/32*

U.S. Cl. 260—154 **51 Claims**

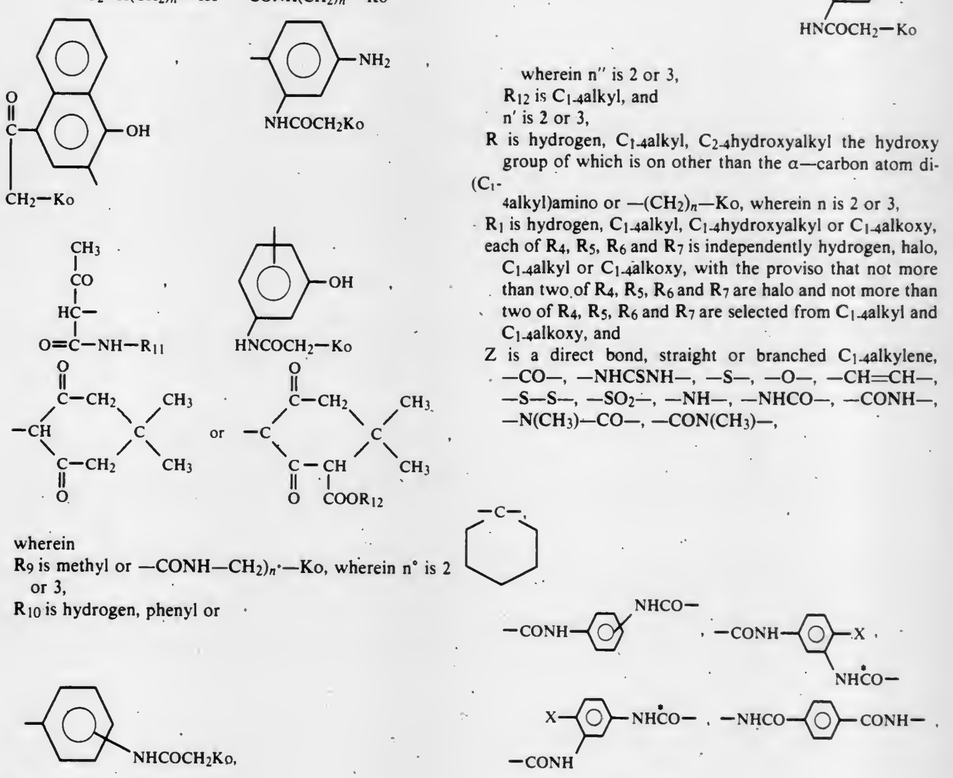
1. A compound of the formula



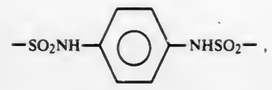
wherein
K is

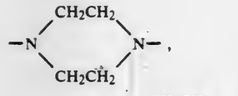


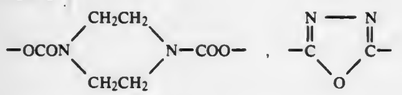
wherein n'' is 2 or 3,
R_{12} is C_{1-4}alkyl, and
n' is 2 or 3,
R is hydrogen, C_{1-4}alkyl, C_{2-4}hydroxyalkyl the hydroxy group of which is on other than the α—carbon atom di-(C_{1-4}alkyl)amino or $—(CH_2)_n—Ko$, wherein n is 2 or 3,
R_1 is hydrogen, C_{1-4}alkyl, C_{1-4}hydroxyalkyl or C_{1-4}alkoxy, each of R_4, R_5, R_6 and R_7 is independently hydrogen, halo, C_{1-4}alkyl or C_{1-4}alkoxy, with the proviso that not more than two of R_4, R_5, R_6 and R_7 are halo and not more than two of R_4, R_5, R_6 and R_7 are selected from C_{1-4}alkyl and C_{1-4}alkoxy, and
Z is a direct bond, straight or branched C_{1-4}alkylene, —CO—, —NHCSNH—, —S—, —O—, —CH=CH—, —S—S—, —SO_2—, —NH—, —NHCO—, —CONH—, —N(CH_3)—CO—, —CON(CH_3)—,

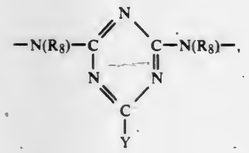


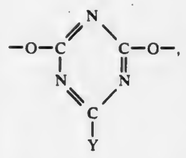
—SO_2NH—, —NHSO_2—,

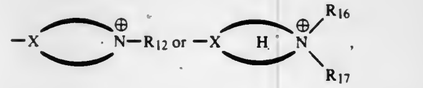


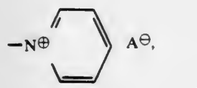












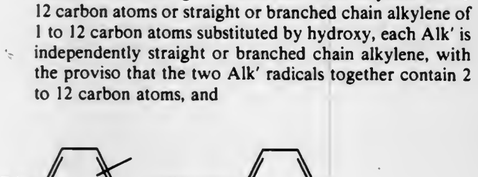
4,213,898

CATIONIC 5-ARYLAZO-6-HYDROXYPYRIDONE-2 DYES

Roland Entschel, Basel; Curt Mueller, Binningen, and Willy Steinemann, Basel, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 824,298, May 13, 1969, abandoned. This application Sep. 25, 1973, Ser. No. 400,527
Claims priority, application Switzerland, May 15, 1968, 7218/68; Aug. 2, 1968, 11581/68; Aug. 13, 1968, 12136/68
Int. Cl.[2] C09B 29/36, 31/14; D06P 1/08, 3/70
U.S. Cl. 260—156 27 Claims

1. A compound of the formula



wherein

D_{11} is phenyl, naphthyl, tetrahydronaphthyl, pyridyl, quinolyl, tetrahydroquinolyl, 1,2,4-triazolonyl, 1,2,4-triazolyl, indazolyl, 1,3,4-thiadiazolyl, thiazolyl or benzothiazolyl, or a substituted derivative thereof, wherein each substituent is independently halo, nitro, cyano, thiocyano, hydroxy, alkyl, alkoxy, trifluoroalkyl, trichloroalkyl, phenyl, phenoxy, chlorophenoxy, amino, alkylamino, dialkylamino, anilino, 2,4-dinitroanilino, phenylcarbamoyl, alkylsulfonyl, arylsulfonyl, sulfamoyl, alkylsulfamoyl, dialkylsulfamoyl, arylsulfamoyl, N-alkyl-N-phenylsulfamoyl, alkylcarbonyl, alkoxycarbonyl, alkylcarbonylamino, benzamido, benzoyl, alkylbenzoyl, phenylazo, diphenylazo or naphthylazo,

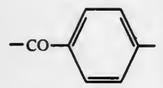
R_1 is hydrogen or cyano,

R_2' is alkyl, carbocyclic aryl, benzyl or heterocyclyl,

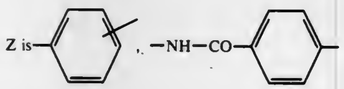
R' is hydrogen, alkyl, substituted alkyl, alkoxyalkyl, cyclohexyl, carbocyclic aryl, substituted carbocyclic aryl, heterocyclyl, substituted heterocyclyl, amino or substituted amino,

R'' is

Y' is —Alk—, —Z—Alk—, —Alk—Z—, —Alk'—Z—Alk'—, —CO—, $—SO_2—$ or



wherein Alk is straight or branched chain alkylene of 1 to 12 carbon atoms or straight or branched chain alkylene of 1 to 12 carbon atoms substituted by hydroxy, each Alk' is independently straight or branched chain alkylene, with the proviso that the two Alk' radicals together contain 2 to 12 carbon atoms, and



—$CON(R_8)(CH_2)_mN(R_8)CO$—, —$CON(R_8)—CH_2)_mO—CH_2)_mN(R_8)CO$—, —$CON(R_8)—CH_2)_mN(CH_3)—CH_2)_mN(R_8)CO$—, —$CON(R_8)—CH_2)_mO—CH_2)_mO—CH_2)_mN(R_8)CO$— or —N=N—,

wherein

each R_8 is independently hydrogen or n-C_{1-4}alkyl,

X is halo, n-C_{1-4}alkyl or n-C_{1-4}alkoxy,

Y is halo, $—NHCH_2CH_2OH$ or $—N(CH_2CH_2OH)_2$,

each m is independently 1, 2, 3 or 4, and

the * indicates the atom of Z bound to the 1-position,

wherein

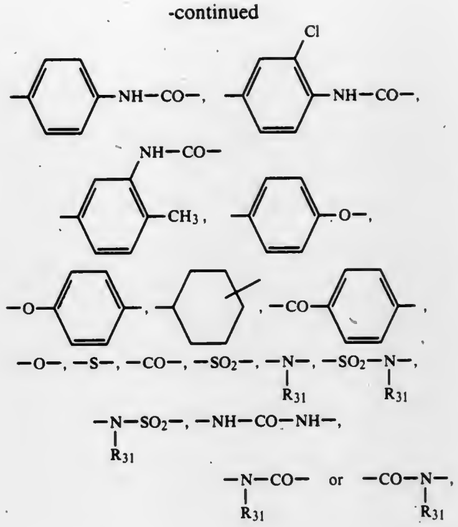
each Ko is independently $—N(CH_3)_2$, $—N^{\oplus}(CH_3)_3$ $A^{\ominus}$, $-N^{\oplus}(CH_3)_2—$ $—CH_2CH_2OH$ $A^{\ominus}$ or

and

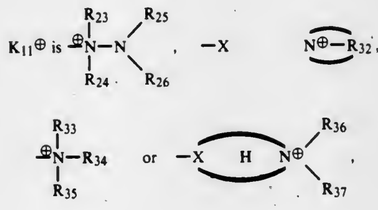
each $A^{\ominus}$ is independently an anion,

with the proviso that the maximum number of Ko groups is 2.

-continued



wherein R_{31} is hydrogen or alkyl,



m is 1 or 2,

r is 0 or 1, and

$A^{\ominus}$ is an anion,

wherein R_{12} is hydrocarbyl or substituted hydrocarbyl,

R_{16} is hydrocarbyl or substituted hydrocarbyl,

R_{17} is hydrocarbyl, substituted hydrocarbyl, amino or substituted amino,

each of R_{23} and R_{24} is independently alkyl, substituted alkyl, cycloalkyl or substituted cycloalkyl, or R_{23} and R_{24} taken together and with the nitrogen to which they are joined form a pyrrolidinium, piperazinium, morpholinium, aziridinium or piperidinium ring,

each of R_{25} and R_{26} is independently hydrogen, alkyl, substituted alkyl, cycloalkyl or substituted cycloalkyl,

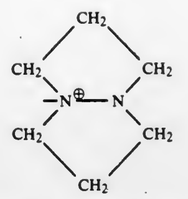
each of R_{32}, R_{33}, R_{34} and R_{36} is independently alkyl, substituted alkyl, carbocyclic aryl or substituted carbocyclic aryl,

R_{35} is alkyl, substituted alkyl, cycloalkyl or substituted cycloalkyl, and

R_{37} is amino, substituted amino, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, carbocyclic aryl or substituted carbocyclic aryl, or

R_{23} and R_{25} taken together and with the nitrogens to which they are joined form a pyrazolidinium, pyridazinium or pyrazolinium ring, or

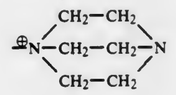
R_{23}, R_{24}, R_{25} and R_{26} taken together and with the nitrogens to which they are joined form a



ring, or

R_{33} and R_{34} taken together and with the nitrogen to which they are joined form a pyrrolidinium, piperidinium, morpholinium, aziridinium or piperazinium ring, or

R_{33}, R_{34} and R_{35} taken together and with the nitrogen to which they are joined are



or a pyridinium or quinolinium ring,



is a piperidinium, pyrrolidinium, morpholinium, aziridinium, piperazinium or pyrazolinium ring,



is a pyridinium, quinolinium, isoquinolinium, tetrahydroquinolinium, pyrazolium, triazolium, pyridazinium, imidazolium, pyrimidinium, thiazolium, benzothiazolium, thiadiazolium, indazolium, pyrrolium, indolium, oxazolium, isoxazolium or tetrazolium ring, and

X is a carbon or nitrogen atom,

wherein each hydrocarbyl is independently alkyl, cycloalkyl or carbocyclic aryl,

each substituent of substituted alkyl is independently halo, hydroxy, cyano or phenyl,

each substituent of substituted cycloalkyl is independently halo, hydroxy, cyano, phenyl or alkyl,

each substituent of substituted carbocyclic aryl and substituted heterocyclyl is independently halo, nitro, cyano, thiocyano, hydroxy, alkyl, alkoxy, trifluoroalkyl, trichloroalkyl, phenyl, phenoxy, amino, alkylamino, dialkylamino, anilino, alkylsulfonyl, carbocyclic arylsulfonyl, sulfamoyl, alkylsulfamoyl, dialkylsulfamoyl, carbocyclic arylsulfamoyl, phenylazo, diphenylazo or naphthylazo,

each substituent of substituted amino is independently alkyl, cycloalkyl, carbocyclic aryl or carbocyclic arylalkyl,

each carbocyclic aryl is independently phenyl, naphthyl or tetrahydronaphthyl,

each heterocyclyl is independently pyridyl, quinolyl, tetrahydroquinolyl, piperidyl, pyrrolidinyl, morpholinyl, aziridinyl, piperazinyl, isoquinolyl, pyrazolinyl, triazolyl, triazolonyl, pyridazinyl, imidazolyl, pyrimidinyl, thiazolyl, benzothiazolyl, indazolyl, pyrrolyl, indolyl, oxazolyl, isoxazolyl, pyrazolidinyl, trimethylenepyrazolidinyl, thienyl or tetrazolyl,

each alkyl, cycloalkyl, alkyl radical or each alkoxyalkyl,

trifluoroalkyl, trichloroalkyl, alkylamino, dialkylamino, alkylcarbonyl, alkylbenzoyl, arylalkyl, alkylcarbonylamino, alkylsulfonyl, alkylsulfamoyl, dialkylsulfamoyl, N-alkyl-N-phenylsulfamoyl, alkyl chain of substituted alkyl and cycloalkyl ring of substituted cycloalkyl independently has not more than 12 carbon atoms,
each alkoxy and alkoxy radical of alkoxycarbonyl and alkoxyalkyl independently has 1 to 6 carbon atoms, and
each halo is independently chloro, bromo or fluoro.

4,213,899

REACTIVE DYESTUFFS CONTAINING CHLORINE OR FLUORINE SUBSTITUENTS AND ONE OR MORE PYRIDINE RADICALS LINKED TO THE DYESTUFF AT THE 2-, 4- OR 6-POSITION

Duncan A. S. Phillips; Brian Anderson; Neville Jackson; Cecil V. Stead, and Alan T. Costello, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, United Kingdom

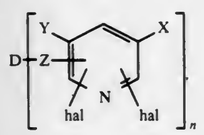
Filed Mar. 13, 1978, Ser. No. 886,127

Claims priority, application United Kingdom, May 27, 1977, 22471/77

Int. Cl.² C09B *62/36, 62/38, 62/40, 62/42*

U.S. Cl. 260—156 **6 Claims**

1. A dyestuff which is capable of reacting with cellulose at 40° C. in the presence of an acid binding agent to yield a colored product with resistance to acid bleeding, said dyestuff having the formula



where
D is a chromophoric group
n is 1 or 2
z is



where R is H, C_{1-4}alkyl, C_{1-4}alkyl substituted by OH, OSO_3H, CN or SO_3H or is phenyl
each hal independently represents a chlorine or fluorine atom occupying one of the remaining 2-, 4- and 6-positions of the pyridine nucleus
X is CN
Y is Cl.

4,213,900

SPRAY-DRYING METHOD FOR THE PREPARATION OF WATER-DISPERSIBLE PULVERULENT DISPERSE DYE FORMULATIONS

Ewald Daubach, Ludwigshafen; Dieter Horn; Erwin Hahn, both of Heidelberg, and Herbert Uhrig, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,527

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1977, 2732500

Int. Cl.² C09B *5/24, 6/00, 46/00*

U.S. Cl. 260—208 **13 Claims**

1. A process for the preparation of a water-dispersible pulverulent formation of a disperse dye, which comprises preparing a solution which comprises:
(a) one or more disperse dyes,
(b) one or more water-soluble anionic dispersants,
(c) from 0 to 20% by weight, based on (a+b+c+d), of further surfactants and
(d) from 0 to 20% by weight, based on (a+b+c+d), of agents which serve as protective colloids, the sum (c+d) being not greater than 20% by weight, dissolved in
(e) formic acid, formamide, N-methylformamide, butyrolactone, ethylene glycol, propylene glycol or a mixture of these and
(f) from 0 to 100% by weight, based on (e), of N,N-dimethylformamide, acetic acid or a mixture of these; and spray-drying said solution.

4,213,901

1-AZA-1,5,9-CYCLODODECATRIENES

Dieter Reinehr, Kandern, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

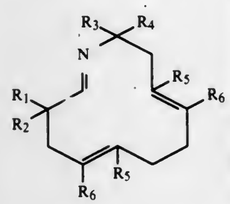
Filed Jul. 10, 1978, Ser. No. 923,437

Claims priority, application Switzerland, Jul. 19, 1977, 8913/77

Int. Cl.² C07D *225/02*

U.S. Cl. 260—239 BE **10 Claims**

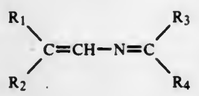
1. A compound of the formula I



(I)

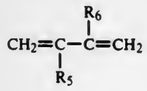
in which R_1 and R_3 independently of one another are hydrogen or alkyl having 1–8 C atoms and R_2 and R_4 independently of one another are alkyl having 1–8 C atoms, or R_1 and R_2 and/or R_3 and R_4 together with the bonding C atom form cycloalkyl having 5–8 C atoms, and R_5 and R_6 independently of one another are hydrogen or alkyl having 1–4 C atoms.

9. A process for the preparation of a compound of the formula I according to claim 1, which comprises reacting an aza-butadiene of the formula II



(II)

in which R_1 to R_4 are as defined in claim 1, in the presence of a catalyst which is a nickel-(O) complex of a diene of the formula III, obtained by the reduction of a carbonyl-free nickel compound in the presence of a diene of the formula III in the presence or absence of an electron donor ligand selected from the group consisting of alkyl phosphines, aryl phosphines, alkyl phosphites, aryl phosphites, alkyl argines, aryl arsines, alkyl antimonys and aryl antimonys, at a temperature between about −40° C. and 150° C. with a compound of the formula III



(III)

in which R_5 and R_6 are as defined in claim 1.

4,213,902

PROCESS FOR PRODUCING STEROIDAL 7α-ACYLTHIO-4-EN-3-ONES

Hiromi Okushima, Kawasaki; Issei Nitta, Machida, and Rikizo Furuya, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 882,225, Feb. 28, 1978, abandoned. This application Jan. 31, 1979, Ser. No. 8,173

Claims priority, application Japan, Mar. 17, 1977, 52/29586

Int. Cl.² C07J *19/00*

U.S. Cl. 260—239.57 **12 Claims**

1. In a process for producing a steroidal 7α-acylthio-4-en-3-one by the addition of a thiocarboxylic acid to a steroidal 4,6-dien-3-one, the improvement which comprises effecting the reaction in the presence of a strong acid in a neutral organic solvent.

4,213,903

BASIC AMINO ACID SALTS OF CHROMONES

John R. Bantick; David N. Hardern, and Thomas B. Lee, all of Loughborough, England, assignors to Fisons Limited, London, England

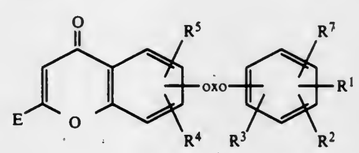
Filed Jan. 16, 1978, Ser. No. 869,653

Claims priority, application United Kingdom, Jan. 26, 1977, 3061/77

Int. Cl.² C07D *257/04, 311/22*

U.S. Cl. 548—250 **5 Claims**

1. A salt with a basic amino acid selected from the group consisting of lysine, arginine, ornithine, and the N-methyl derivatives of lysine, arginine, and ornithine, of a compound of the formula:



(I)

wherein R^1, R^2, R^3, R^4, R^5 and R^7 each represent a group selected from hydrogen, hydroxy, C1 to 6 alkoxy, C1 to 6 alkoxy substituted by phenyl, C2 to 6 alkanoyl, C3 to 6 alkenoyl, amino, C2 to 6 alkanoylamino, C2 to 6 alkenyl, halogen and C1 to 6 alkyl, at least one of R^1, R^2, R^3 and R^7 representing a group other than hydrogen and hydroxy,
or an adjacent pair of R^1, R^2, R^3 and R^7 either represent hydroxy and a 3-(N,N-dialkylamino)acryloyl radical or together represent a chain —COCH=CH—O—,
X represents an alkylene chain of 2 to 10 carbon atoms optionally substituted by a hydroxy group, and
E represents a carboxy or tetrazole group.

4,213,904

FLUORESCENT LABELING REAGENTS CONTAINING THE FLUORESCEIN AND EOSIN CHROMOPHORES

Richard P. Haugland, 1008 Orlando Cir., Plano, Tex. 75075

Filed Feb. 28, 1979, Ser. No. 16,084

Int. Cl.² C07D *405/08*

U.S. Cl. 260—326.5 CA **1 Claim**

1. Fluorescent labels for biomolecules comprising the fluorescein or eosin chromophores covalently attached at the 5 or 6 position to the nitrogen of a maleimide group.

4,213,905

PREPARATION OF 5-AROYL-1-LOWERALKYLPYRROLE-2-ACETIC ACID SALTS

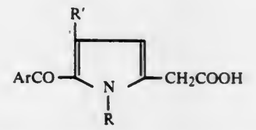
John R. Carson, Norristown, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Jun. 25, 1979, Ser. No. 51,646

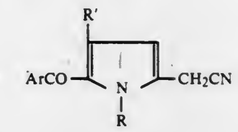
Int. Cl.² C07D *207/32*

U.S. Cl. 260—326.47 **15 Claims**

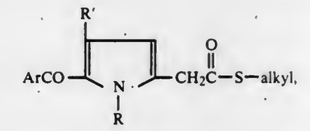
1. A process of preparing an alkali metal or alkaline earth metal salt of 5-aroyl-1-loweralkylpyrrole-2- acetic acid having the formula:



which comprises reacting a 5-aroyl-1-loweralkylpyrrole-2-acetonitrile having the formula:



with an alkyl mercaptan in the presence of mineral acid in an anhydrous aprotic organic solvent under an inert atmosphere at or below 10° C. to yield a thiol ester having the formula:



and then hydrolyzing said thiol ester by treatment with an aqueous solution of an alkali metal or alkaline earth metal hydroxide, wherein the above formulas, R is loweralkyl, R' is a member selected from the group consisting of hydrogen and loweralkyl, and Ar is a member selected from the group consisting of phenyl and phenyl substituted with from one to three substituents each selected from the group consisting of loweralkyl, loweralkoxy and halo.

4,213,906

HYDROGEN PEROXIDE OXIDATION PROCESS FOR KETONES

Frank Mares, Whippany, and Stephen E. Jacobson, Succasunna, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 21, 1978, Ser. No. 926,778

Int. Cl.² C07D *313/04*

U.S. Cl. 260—343 **3 Claims**

1. In a method for oxidizing a solution of cyclic ketone to obtain lactone with hydrogen peroxide in the presence of a catalyst comprising a member of the group consisting of arsenic as such or as an arsenic compound, the improvement which comprises addition to the solution of between about 0.5 to 3 equivalents of a buffering agent with respect to the equivalents of arsenic derivative employed, said buffering agent comprising salts of weak acids and bases or bases which form soluble salts with arsenic derivatives themselves, thereby suppressing the hydrolysis of the oxidation products.

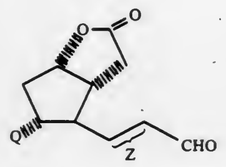
4,213,907

PROSTAGLANDIN INTERMEDIATES

Jasjit S. Bindra, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 25, 1976, Ser. No. 661,270
Int. Cl.² C07D *307/77*
U.S. Cl. 260—343.3 P **2 Claims**

1. A compound of the formula



wherein Z is a trans double bond and Q is selected from the group consisting of tetrahydropyran-2-yloxy and dimethyl-t-butylsilyloxy.

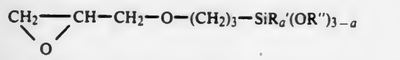
4,213,908

SILICEOUS DIOXOLANE DERIVATIVES AND THEIR APPLICATION TO THE MANUFACTURE OF ORGANOSILANE ESTERS CONTAINING EPOXY GROUPS

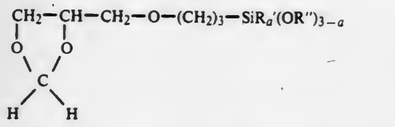
Hans-Joachim Kötzsch, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 469,937, May 14, 1974, Pat. No. 3,932,462, which is a division of Ser. No. 310,495, Nov. 29, 1972, Pat. No. 3,825,567. This application Nov. 26, 1975, Ser. No. 635,533
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1971, 2159991
Int. Cl.² C07F *7/08, 7/18*
U.S. Cl. 260—348.16 **6 Claims**

1. Process of producing 3-glycidyloxypropylalkoxysilanes of the formula:



wherein a is 0 or 1 and R′ and R″ each represent an alkyl radical wherein the R″ 's can be the same or different, which comprises heating a siliceous dioxolane of the formula:



wherein a, R′ and R″ are as defined for the 3 glycidyl derivative, at a temperature of about 130°–240° C. and pressure and for a time sufficient to split off formaldehyde from said siliceous dioxolane to form said glycidyl derivative.

4,213,909

PROCESS FOR THE PREPARATION OF 1-AMINO-4-BROMOANTHRAQUINONE-2-SULFONIC ACID II

Gerhard Berg; Walter Hohmann, both of Leverkusen; Karl-Julius Reubke, Cologne, and Klaus Wunderlich, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 5, 1978, Ser. No. 939,714
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740889
The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.
Int. Cl.² C07C *143/63*
U.S. Cl. 260—371 **14 Claims**

1. A process for preparing 1-amino-4-bromoanthraquinone-2-sulfonic acid or an alkali metal salt thereof which comprises:
(a) converting 1-nitroanthraquinone to 1-aminoanthraquinone by:
(1) contacting said 1-nitroanthrquinone with sodium sulfide and/or sodium bisulfide under reducing conditions; or
(2) contacting said 1-nitroanthraquinone with ammonia under conditions whereby the nitro group is replaced by an amino group;
(b) treating the product from step (a) with oleum at a temperature in the range from 90° to 150° C. optionally in the presence of an alkali metal sulfate and brominating the resultant sulfonated product with bromine at a temperature in the range from 60° to 100° C.; and
(c) thereafter recovering 1-amino-4-bromanthraquinone-2-sulfonic acid or an alkali metal salt thereof by a process comprising:
(1) adjusting the sulfuric acid concentration of the reaction mixture to a sulfuric acid content of 60 to 85 percent by weight; or
(2) stirring the reaction mixture into water, which optionally contains an alkali metal sulfate.

4,213,910

PROCESS FOR THE PREPARATION OF 1-AMINO-4-BROMOANTHRAQUINONE-2-SULPHONIC ACID I

Rolf Muders, Cologne; Heinrich Leister; Helmut Dittmer, both of Leverkusen, and Hubert Schönhagen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 5, 1978, Ser. No. 939,715
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740885
The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.
Int. Cl.² C07C *143/63*
U.S. Cl. 260—371 **11 Claims**

1. A process for preparing 1-amino-4-bromoanthraquinone-2-sulphonic acid or an alkali metal salt thereof which comprises contacting 1-amino-anthraquinone at a temperature in the range of 90° to 150° C. with an SO_3-containing sulphuric acid (oleum) and thereafter treating the resultant sulphonated 1-amino-anthraquinone with at least 0.5 molar equivalent of bromine, relative to 1 mol of 1-amino-anthraquinone, at temperatures in the range from 60° to 100° C.

4,213,911

PROCESS FOR PREPARING HIGH-MELTING CHENODEOXYCHOLIC ACID

Michael C. Attwell, Islington; Thomas F. Massiah, Agincourt; Roberto A. Vergottini, Rexdale, and Peter Ziegler, Toronto, all of Canada, assignors to Canada Packers Limited, Canada

Filed Nov. 7, 1978, Ser. No. 958,508
Int. Cl.² C07J *9/00*
U.S. Cl. 260—397.1 **12 Claims**

1. A process for preparing a high-melting form of chenodeoxycholic acid having a melting point of at least about 160° C. which comprises the steps of:
(a) suspending at least one form of chenodeoxycholic acid having a melting point of below 160° C. in a non-aromatic, liquid hydrocarbon having a boiling point of between about 65° and 140° C. to form a suspension having a boiling point of at least 65° C.;
(b) heating the suspension to a sufficiently high temperature of between about 65° and about 140° C. during a sufficiently long period of time for converting substantially all of the chenodeoxycholic acid into the high-melting form; and
(c) removing the high-melting form of chenodeoxycholic acid from the suspension.

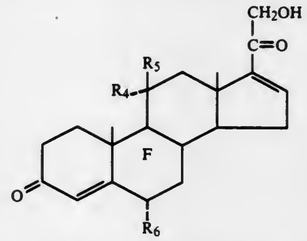
4,213,912

PROCESS FOR PREPARING STEROIDAL [16α,17-D]CYCLOHEXENE-21-CARBOXYLIC ACID ESTERS

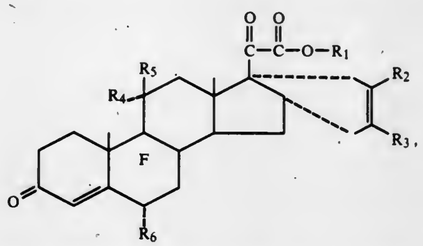
Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 26, 1979, Ser. No. 33,351
Int. Cl.² C07J *5/00*
U.S. Cl. 260—397.1 **1 Claim**

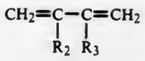
1. A process for converting a steroid having the formula



or the 1,2-dehydro derivative thereof, to a steroid having the formula



or the 1,2-dehydro derivative thereof, which comprises first converting the 21-hydroxy group of the starting steroid to a 21-carboxylic acid ester group and reacting the latter with a butadiene having the formula



under Diels-Alder wherein
R_1 is alkyl of 1 to 10 carbon atoms, aryl, or arylalkyl;
R_2 and R_3 are the same or different and are hydrogen, alkyl or aryl;
R_4 is hydrogen and R_5 is hydroxy or together R_4 and R_5 are =O; and
R_6 is hydrogen, methyl or fluorine.

4,213,913

TWO-STAGE PROCESS FOR SEPARATING MIXED FATTY-ACID ESTERS

Armand J. de Rosset, Clarendon Hills, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 12, 1979, Ser. No. 19,966
Int. Cl.² C09F *5/10*; C11B *3/00*
U.S. Cl. 260—428.5 **14 Claims**

1. A process for separating an ester of a polyethanoid fatty acid and an ester of a monoethanoid fatty acid from a first mixture comprising an ester of a polyethanoid fatty acid, an ester of a monoethanoid fatty acid and an ester of a saturated fatty acid which process comprises the steps of:
(a) contacting said first mixture at first adsorption conditions with a first adsorbent comprising a X or a Y zeolite containing at the exchangeable cationic sites at least one cation selected from the group consisting of cations of metals of Group IA of the Periodic Table of Elements and combinations thereof thereby selectively adsorbing said ester of a polyethanoid fatty acid;
(b) removing from said first adsorbent a first raffinate output stream comprising said ester of a monoethanoid fatty acid and said ester of a saturated fatty acid;
(c) contacting said first adsorbent at first desorption conditions with a desorbent material to effect the desorption of said ester of a polyethanoid fatty acid from said first adsorbent;
(d) removing from said first adsorbent a first extract output stream comprising said ester of a polyethanoid fatty acid;
(e) contacting a second mixture comprising said first raffinate output stream at second adsorption conditions with a second adsorbent comprising a X or a Y zeolite containing at exchangeable cationic sites cations selected from the group consisting of pi-bonding metals and one or more second cations selected from the group consisting of sodium, potassium, rubidium and cesium, thereby selectively adsorbing said ester of a monoethanoid fatty acid;
(f) removing from said second adsorbent a second raffinate output stream comprising said ester of a saturated fatty acid;
(g) contacting said second adsorbent at second desorption conditions with a desorbent material having the same composition as the desorbent material used in step (c) above to effect the desorption of said ester of a monoethanoid fatty acid from said second adsorbent;
(h) removing from said second adsorbent a second extract output stream comprising said ester of a monoethanoid fatty acid;
(i) passing said first extract output stream and said second extract output stream to a single desorbent recovery means and therein fractionating said output streams in admixture to separate substantially all of said desorbent material from the extracted esters of polyethanoid and monoethanoid fatty acids contained in the admixed output streams;
(j) supplying separate portions of the desorbent material from step (i) to said first and second adsorbents in steps (c) and (g), respectively, to remove adsorbed esters therefrom; and
(k) recovering from said desorbent recovery means an ex-

tract product stream comprising substantially all of said esters of a polyethanoid fatty acid and monoethanoid fatty acid contained in said first mixture.

2. The process of claim 1 further characterized in that said ester of a polyethanoid fatty acid, said ester of a monoethanoid fatty acid and said ester of a saturated fatty acid each contain from about 8 to about 30 carbon atoms per molecule.

4,213,914

ETHYLENIC SILICON COMPOUNDS AND THERMOPLASTIC ELASTOMERS OBTAINED THEREFROM

Michel Bargain, Lyons, and Marcel Lefort, Caluire, both of France, assignors to Rhone-Poulenc Industries, Paris, France

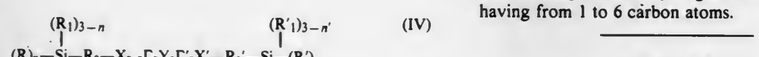
Division of Ser. No. 851,898, Nov. 16, 1977, Pat. No. 4,147,711, which is a division of Ser. No. 617,513, Sep. 29, 1975, Pat. No. 4,088,670. This application Dec. 1, 1978, Ser. No. 965,529

Claims priority, application France, Oct. 1, 1974, 74 33041; Feb. 11, 1975, 75 04191; Feb. 11, 1975, 75 04192

Int. Cl.² C07F *7/10*

U.S. Cl. 556—419 **41 Claims**

1. A polyethylenic silicon compound having the general formula:



(IV)

in which

each of n and n', which may be identical or different, is 1, 2 or 3;

each of R and R', which may be identical or different, is a monovalent organic group containing an ethylenic double bond and from 2 to 10 carbon atoms;

each of R_1 and R_1', which may be identical or different, is a straight or branched alkyl radical optionally substituted by one or more halogen atoms or cyano groups, or an aryl or alkylarly radical, optionally substituted by one or more halogen atoms;

each of R_2 and R_2', which may be identical or different, is a straight or branched alkylene or alkylidene radical having from 1 to 4 carbon atoms;

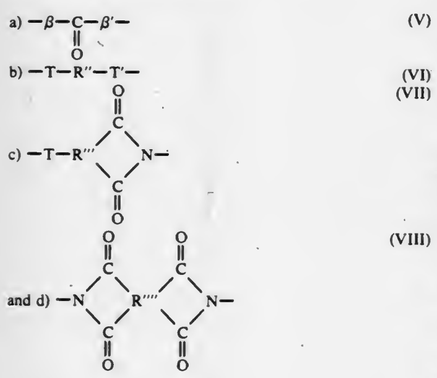
each of X and X', which may be identical or different, is a divalent radical consisting of, or containing, at least one O, S or N atom, the radicals X and X' being linked to the radicals R_2 and R'_2 via the hetero-atom;

each of Γ and Γ', which may be ientical or different, is an oganic radical having from 1 to 30 carbon atoms, selected from

(a) a divalent radical —G— and —G'— and

(b) a trivalent radical $—G_1<$ and $—G'_1<$;

Ψ is an organic radical selected from:



a) (V)

b) (VI)

(VII)

c)

(VIII)

and d)

in which

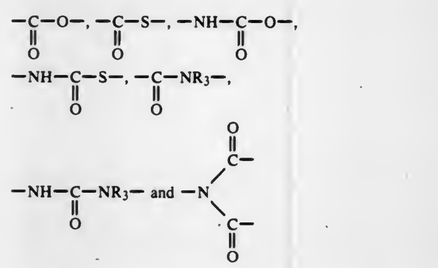
each of β and β' independently represents an oxygen or nitrogen atom;

R'' represents a valency bond or a divalent organic radical;

R''' represents a trivalent organic radical;

R'''' represents a tetravalent organic radical and

each of T and T', which may be identical or different, represents a functional group selected from



wherein R_3 represents a hydrogen atom or an alkyl radical having from 1 to 6 carbon atoms.

4,213,915

N-HALO-ALKYL THIOLCARBAMATES AND N-ALKENYL THIOLCARBAMATES

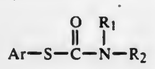
Jay K. Rinehart, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 30, 1976, Ser. No. 701,384

Int. Cl.² C07C *155/08*; A01N *9/12*

U.S. Cl. 260—455 A **14 Claims**

1. A compound represented by the general formula



wherein:

Ar is selected from the group consisting of:

α-naphthyl, β-naphthyl, phenyl, 4-chlorophenyl, 2-chlorophenyl, 3,4-dichlorophenyl, 4-nitrophenyl, 4-fluorophenyl, 4-bromophenyl, 3-methoxyphenyl, 3-methylthiophenyl, 4-methylthiophenyl, 4-alkylphenyl in which the alkyl has from one to four carbon atoms, and 3-alkylphenyl in which the alkyl has from one to four carbon atoms;

R_1 is selected from the group consisting of hydrogen, a straight chain alkyl having from one to three carbon atoms, a halo-alkyl having from three to four carbon atoms, said halo being chloro or bromo; and

R_2 is a halo-alkyl having from three to four carbon atoms, said halo being chloro or bromo.

4,213,916

CONVERSION OF STEREOISOMER INTO ITS DIASTEREOISOMER

John H. Davies; Basil T. Grayson, both of Canterbury, and Herbert P. Rosinger, Sittingbourne, all of England, assignors to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

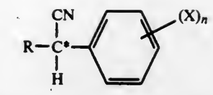
Filed Jun. 9, 1978, Ser. No. 914,571

Claims priority, application United Kingdom, Jun. 13, 1977, 24612/77

Int. Cl.² C07C *121/66, 121/75*

U.S. Cl. 260—465 D **7 Claims**

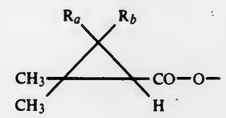
1. A process for the conversion of a stereoisomer into its diastereoisomer of a compound having the following general formula:



(I)

wherein the asterisk denotes an asymmetric carbon atom; n is 1 to 5; each X is independently a hydrogen, chlorine, fluorine or bromine atom, an alkyl or alkoxy group of 1 to 4 carbon atoms, a phenyl or phenoxy group, a phenylalkyl or alklphenyl group of up to 10 carbon atoms, or a nitro, hydroxy or cyano group; R is an organic residue containing one or more centres of asymmetry and is selected from:

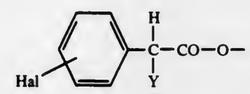
(a) a cyclopropane carboxylic acid residue having the following general formula:



(II)

wherein R_a and R_b both represent an alkyl group having from 1 to 6 carbon atoms; or R_a and R_b together represent an alkylene group having from 2 to 6 carbon atoms; or R_a represents a hydrogen atom and R_b represents an alkenyl group having from 2 to 6 carbon atoms and from 1 to 3 fluorine, chlorine or bromine atoms; with the provision that when one of R_a and R_b represent a methyl group the other does not, and

(b) a phenyl acetic acid residue having the following general formula:



(III)

wherein Hal represents a halogen atom, and Y represents an alkyl group of 1 to 6 carbon atoms;

which process comprises subjecting the said stereoisomer to the action of an alkali metal carbonate and an inert polar solvent at a temperature in the range 20° to 100° C. to effect conversion of configuration at the carbon atom denoted by the asterisk without interfering with one or more centres of asymmetry in R, and physically separating the required diastereoisomer from the resulting mixture of diastereoisomers.

4,213,917

ESTERIFICATION OF AROMATIC ALDEHYDES

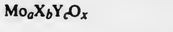
Serge R. Dolhyj, Parma; Dev D. Suresh, Macedonia, and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Dec. 1, 1978, Ser. No. 965,653

Int. Cl.² C07C *67/44*

U.S. Cl. 260—465 D **32 Claims**

1. A process for producing an aromatic ester by the oxidation of an aromatic aldehyde in which the aromatic aldehyde, an alcohol and molecular oxygen are contacted with a catalyst of the formula:



wherein

X is one or more elements selected from the group consisting of V, W, Sn, Cu, Sb and P; and

Y is one or more elements selected from the group consisting of Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, As, Bi, La, Ce, rare earths, Nb, Ta, Cr, U, Fe, Co, Ni, Zn, Cd, Ag and Tl; and

wherein

a is 0.1–20;

b is 0–4;

c is 0–2;

b+c>0; and

x is the number of oxygens required to satisfy the valence requirements of the other elements present.

4,213,918

PROCESS FOR PRODUCING CLEAR AQUEOUS SOLUTION OF OLEFIN SULFONIC ACID

Akira Hayashi, Sakura; Haruo Ohkouchi; Kyozo Kitano, both of Chiba, and Toshiaki Ogoshi, Funabashi, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1979, Ser. No. 20,336

Claims priority, application Japan, Mar. 20, 1978, 53-30979

Int. Cl.² C07C *143/02*

U.S. Cl. 260—513 T **7 Claims**

1. A process for producing a clear aqueous solution of the magnesium salt of an olefin sulfonic acid comprising the steps of:

(a) sulfonating at least one olefin having 8 to 22 carbon atoms by a gaseous sulfur trioxide diluted with an inert gas;

(b) neutralizing at least a portion of the sulfonic acid contained in the resulting sulfonated olefin by mixing said sulfonated olefin with (i) an aqueous inorganic alkali dispersion containing magnesium hydroxide, magnesium oxide or a mixture thereof and (ii) at least one water-soluble alkanol amine, in such amounts that the total amount of said inorganic alkali and said alkanol amine is within the range of from 1.0 to 1.1 chemical equivalent based on 1.0 chemical equivalent of the sulfonated olefin and that the amount of the inorganic alkali is within the range of from 0.75 to 0.95 chemical equivalent based on 1.0 chemical equivalent of the sulfonated olefin, and;

(c) heating the resulting neutralization mixture at a pH of from 6.0 to 8.0 to thereby hydrolyze the mixture.

4,213,919

MANUFACTURE OF β-CHLOROCARBOXYLIC ACID CHLORIDES

Joachim Datow; Martin Decker; Karl Merkel, all of Ludwigshafen, and Franz Neumayr, Weisenheim am Berg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 755,855, Dec. 30, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 959,834

Int. Cl.² C07C *51/58*

U.S. Cl. 260—544 K **4 Claims**

1. A process for the manufacture of a β-chlorocarboxylic acid chloride by the catalytic reaction of phosgene and an α,β-unsaturated carboxylic acid which comprises:

(a) in a first stage, reacting from about 5 to 40 mole % of the α,β-unsaturated carboxylic acid with hydrogen chloride in the absence of added solvents, and

(b) in a second stage, reacting the first stage reaction mixture with phosgene in the presence of an effective amount of a catalyst.

4,213,920

PROCESS FOR THE PRODUCTION OF SUBSTITUTED BENZALDEHYDES

Jacques Gosteli, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

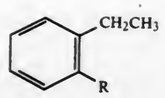
Filed Jun. 28, 1978, Ser. No. 920,102

Claims priority, application Switzerland, Jul. 6, 1977, 8338/77

Int. Cl.² C07C *45/00*

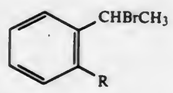
U.S. Cl. 568—424 **6 Claims**

1. A process for the production of benzaldehydes which are substituted in the ortho-position by an electrophilic group R, which comprises brominating an ortho-substituted compound of the formula I with elementary bromine



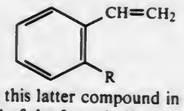
(I)

in which R represents the nitro group, the cyano group, an alkoxy group of1 to 8 carbon atoms or a halogen atom, under irradiation with visible light in an inert halogenated hydrocarbon solvent, at a temperature between 30° and 90° C. to give the bromide of the formula II



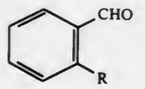
(II)

converting the resulting bromide at a temperature between 60° and 120° C. by treatment with an alkali bromide in an inert solvent other than that used above, into a styrene compound of the formula III



(III)

and ozonising this latter compound in an inert solvent to give the compound of the formula IV



(IV)

4,213,921

OLEFIN HYDROFORMYLATION

Thomas O. Mitchell, Trenton, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 753,749, Dec. 23, 1976, abandoned, which is a division of Ser. No. 681,883, Apr. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 443,557, Feb. 19, 1974, Pat. No. 3,980,583. This application Nov. 22, 1976, Ser. No. 962,941

Int. Cl.² C07C *45/10*

U.S. Cl. 568—455 **17 Claims**

1. In the method for hydroformylation of an olefin to produce aldehydes and alcohols, said process comprising reacting a mixture of said olefin with carbon monoxide and hydrogen under conversion conditions including a temperature of between about 25° C. and about 300° C., a pressure of between about atmospheric and about 150 atmospheres, a contact time of between about 5 minutes and about 2 hours, a hydrogen/carbon monoxide ratio of between about 0.3 and about 3, and a hydrogen/olefin ratio between about 0.5 scf/bbl and about 10 scf/bbl, said reacting being conducted by contacting said mixture with a hydroformylation catalyst, the improvement which comprises utilizing as said hydroformylation catalyst a catalytic material which comprises a substrate of a porous refractory oxide, said substrate having surface hydroxyl groups, a minimum surface area of about 10 m^2/g and pores with a minimum pore diameter of about 5 Angstrom Units, and substrate being modified by at least one amine functional member, containing the element silicon, coordinated to a metal function of a transition metal selected from the group consisting of nickel, cobalt and rhodium, said amine functional member acting as a bridging member between said substrate and said metal function, as a ligand covalently bonded to said substrate.

4,213,922

PROCESS FOR PRODUCING PHOSPHONIC ACID HALIDES

Ludwig Maier, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 880,904, Feb. 24, 1978, abandoned. This application Sep. 20, 1978, Ser. No. 944,232

Int. Cl.² C07F *9/146, 9/38*

U.S. Cl. 260—958 **8 Claims**

1. A process for producing phosphonic acid halides of the formula



(I)

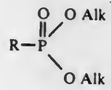
in which

R represents a straight-chain or branched-chain alkyl group which has 1 to 12 carbon atoms and which can be mono- to trisubstituted by fluorine, chlorine or bromine, and mono- or disubstituted by a phenyl group unsubstituted or substituted by fluorine, chlorine or bromine or by an alkyl group having 1 to 12 carbon atoms, or represents a cycloalkyl group which has 4 to 6 ring carbon atoms and which can be substituted by alkyl having 1 to 5 carbon atoms, or bound by an alkylene group having 1 to 4 carbon atoms, or R represents a phenyl group which is unsubstituted or substituted by fluorine, chlorine or bromine or by alkyl having 1 to 5 carbon atoms,

X_1 represents chlorine or bromine, and

X_2 represents an alkoxy group having 1 to 12 carbon atoms, chlorine or bromine,

which process comprises reacting a dialkylphosphonate of the formula II



(II)

wherein R has the meaning given under the formula I, and "Alk" represents an alkyl group having 1 to 12 carbon atoms, at 70° to 150° C., in the presence of 0.005 to 0.05 mol, per mol of dialkylphosphonate of the formula II, of a nitrogen compound selected from the group consisting of

(1) N,N-disubstituted formamides which are substituted on the nitrogen atom by lower alkyl groups or by a lower alkyl group and a phenyl group or by two phenyl groups, with two alkyl groups being able to form a polymethylene group which can be interrupted by an oxygen atom and which forms with the adjacent nitrogen atom a heterocyclic ring;

(2) tertiary amines selected from the group consisting of trialkylamines, N,N-dialkyl-arylamines, pyridine and N',N'-dialkylaminopyridine, with in each case two alkyl groups being able to form a polymethylene group which can be interrupted by an oxygen atom and which forms with the nitrogen atom a heterocyclic ring; and

(3) N,N-disubstituted phosphoric acid triamides selected from the group consisting of hexa-alkylphosphoric acid triamides, with in each case the two alkyl groups bound to a nitrogen atom being able to form a polymethylene group which can be interrupted by an oxygen atom and which forms with the nitrogen atom a heterocyclic ring;

with at least the equivalent amount of a thionyl halide of the formula III

$$SO(Hal)_2 \qquad \text{(III)}$$

in which "Hal" represents chlorine or bromine.

4,213,923

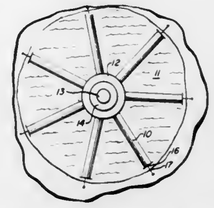
ENVIRONMENTAL CONTROL UNIT AND METHOD

John D. Bryson, Milwaukee, Wis., assignor to Will Ross, Inc., Milwaukee, Wis.

Filed Apr. 19, 1979, Ser. No. 31,662

Int. Cl.² B01F *3/04*

U.S. Cl. 261—120 **7 Claims**



1. An environmental control unit for dispensing odor neutralizing vapor over a liquid surface comprising:

a plurality of conduits for dispensing odor neutralizing vapor over the liquid surface, each of said conduits being partially submerged and sufficiently buoyant to be supported on the surface of the liquid at least partially by buoyant forces exerted by the liquid and having vapor dispensing outlets thereon located above the surface of the liquid and directing the vapor downwardly over the liquid surface; and

a central source of the vapor in fluid communication with said conduits.

4,213,924

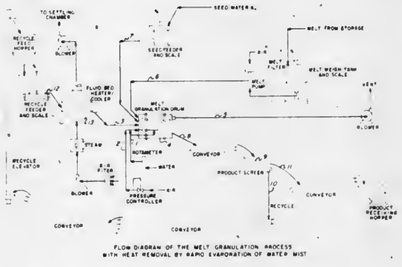
GRANULATION AND COATING BY IMPROVED METHOD OF HEAT REMOVAL

Arthur R. Shirley, Jr., Florence, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 850,588, Nov. 11, 1977, now Defensive Publication No. T980,005. This application Jun. 19, 1978, Ser. No. 916,988

Int. Cl.² B01J *2/12*

U.S. Cl. 264—7 **7 Claims**



FLOW DIAGRAM OF THE MELT GRANULATION PROCESS WITH HEAT REMOVAL BY RAPID EVAPORATION OF WATER MIST

1. In an improved process for the granulation of materials wherein same is effected in an enclosed vessel by spraying particles of molten material on rapidly moving granules of substrate such that the granules of substrate are increased in size by accretion as the sprayed particles solidify quickly on the surface of said substrate, and wherein at least a substantial amount of the heat of crystallization and associated heat from cooling the molten material and subsequently solid material is removed by evaporation of water in said enclosed vessel into air being moved through said enclosed vessel, the improvement in combination therewith which comprises the additional steps of:

(1) atomizing the water to be evaporated in said enclosed vessel into finely divided droplets having a median volume diameter of less than 1.967×10^{-4} ft;

(2) spraying said water droplets with a spray angle, the arc of which is at least 30 degrees;

(3) spraying said water droplets in such a manner that the liquid water comprising same totally evaporates while in said air in a period of time of less than 2 seconds and from a predetermined juxtaposed position such that no water in the liquid phase contacts either the sprayed particles of molten material or of the substrate granules which are increasing in size by accretion from the solidification of said sprayed particles of molten material, or both;

(4) controlling the moisture content of said air below the dew point of said air everywhere in said enclosed vessel, below the concentration in said air where condensation would take place on any surface inside said enclosed vessel, and below the concentration in said air where granules of substrate of any size or at any point in said enclosed vessel would absorb water from said air, thus preventing water absorption by said granules of substrate and condensation of water in the air onto the inner surfaces of said enclosed vessel; and

(5) removing said heat of crystallization and associated heat from cooling the molten material and subsequently solid material by evaporation of said finely divided droplets of water to give an overall heat transfer rate which is represented in Btu/hr by either the numerator or denominator of the following equation which represents the thermodynamics of the instant process, i.e.

$$\frac{4\pi\bar{r}n(t_a - t_w)(k_f + k_c) + W_a\Delta H_a + W_v\Delta H_v}{h_g N_g A_g (t_g - t_a) + q_i} = 1$$

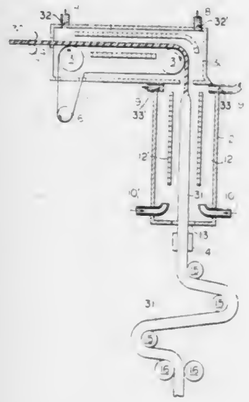
where π is the ratio of the circumference of a circle to its diameter and is 3.1416 and dimensionless; r is the average radius in ft. of an evaporating droplet over its life span and is a maximum of 6.56×10^{-5} ft; n is the number of water droplets present in atomized form in the vessel at a given instant and as such is dimensionless; t_a is the average dry bulb temperature of the air in °F.; t_w is the average wet bulb temperature of the air in °F.; t_g is the average temperature of granules in contact with the air in °F.; k_f is the thermal conductivity of the air in Btu-ft/(hr)(ft²)(°F.); k_c is the forced thermal convection of air in contact with water droplets in Btu-ft/(hr)(ft²)(°F.); W_a is the mass flow rate of air through the vessel less water evaporated in the vessel in lb/hr; ΔH_a is the difference in enthalpy of the air entering and leaving the vessel less water evaporated in the vessel in Btu/lb; W_v is the mass flow rate of water sprayed and evaporated in the vessel in lb/hr; ΔH_v is the average change in enthalpy of the water evaporated in the vessel after it is in the vapor phase in Btu/lb; h_g is the average heat transfer coefficient between granules and air in Btu/(ft²)(hr)(°F.); N_g is the number of granules exposed to the air at any one instant and is dimensionless; A_g is the average surface area of each one of those granules exposed to the air in square feet; and q_i is the rate of heat flow from granules to the air by indirect means in Btu/hr, and where the lefthand term of the numerator fully describes the rate of heat transfer by evaporation of water in Btu/hr, and the middle and righthand terms of the numerator fully describe the heat absorbed by the air and the water vapor, respectively, in Btu/hr, and the denominator fully describes the rate of heat transfer from granules to air in Btu/hr.

4,213,925

PROCESS FOR CONTINUOUSLY PRODUCING FOAMED SHEETS

Hiroshi Kiyono, Ohtsu; Akio Ishimoto, Kashihara; Yoichiro Noda, Saitama, and Kozo Yada, Shiga, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 785,293, Apr. 6, 1977, Pat. No. 4,124,344. This application Aug. 14, 1978, Ser. No. 933,575
Claims priority, application Japan, Apr. 9, 1976, 51-40624
Int. Cl.² B29D *27/00*
U.S. Cl. 264—22 **21 Claims**



1. A process for continuously producing a foamed sheet from a thermoplastic resin sheet containing a heat-decomposable blowing agent, said process comprising:

providing a thermoplastic resin sheet containing a heat-decomposable blowing agent;

supplying said sheet onto a conveyor and conveying said sheet horizontally by means of said conveyor;

supplying heat to said sheet, both from above and below said sheet, while said sheet is conveyed horizontally, and thereby heating said sheet to a temperature below the decomposition temperature of said blowing agent;

discharging said sheet from said conveyor and suspending the thus discharged sheet vertically;

heating the thus vertically suspended sheet to a temperature above said decomposition temperature, and thereby foaming said sheet; and

extending the thus foamed sheet by a sheet extending device.

4,213,926

METHOD FOR MAKING A DECORATIVE PLATE USED IN A BUILDING

Minoru Toyoda, Kodaira; Tohei Horishima, Koganei; Kenji Sugimoto, Tokyo, and Kensuke Aoyama, Sakato, all of Japan, assignors to Taisei Kensetsu Kabushiki Kaisha and Dai Nippon Printing Co., Ltd., both of Tokyo, Japan

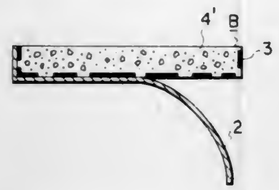
Continuation of Ser. No. 783,333, Mar. 31, 1977, abandoned. This application Jul. 28, 1978, Ser. No. 928,919
Int. Cl.² B28B *7/36*
U.S. Cl. 264—74 **11 Claims**

1. A process for making a decorative plate used in a building consisting essentially of the steps of:

(a) Preparing a transfer sheet by applying a primer layer comprising a water-soluble binder in an amount of 1 to 10 grams/m² (dry) on the surface of a synthetic resin sheet less than 0.5 mm thick and printing a pattern layer comprising a coloring agent and a binder at least one of which is water-soluble, on said primer layer;

(b) Making a mold for a slip casting wherein the pattern layer is on the inside surface of said mold by shaping the transfer sheet such that the surface of said pattern layer faces upward;

(c) Pouring a mixture comprising a hydraulic material and water into the mold for slip casting;



(d) Hardening said mixture; and

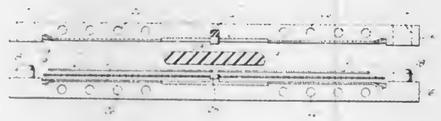
(e) Stripping said synthetic resin sheet from the resulting hardened configuration to produce said decorative plate.

4,213,927

METHOD OF MAKING PICTURE PHONOGRAPH RECORD

John D. Alberti, 1528 Turnbull Canyon Rd., Hacienda Heights, Calif. 91745

Division of Ser. No. 945,305, Sep. 25, 1978, which is a continuation-in-part of Ser. No. 836,500, Sep. 26, 1977, abandoned. This application Jun. 29, 1979, Ser. No. 53,341
Int. Cl.² B29D *17/00*
U.S. Cl. 264—107 **10 Claims**



1. That method of making a disc phonograph record having embedded visual material which comprises: providing at least one of a pair of record mold platens with a master sound track matrix; inserting the components of a three-part record assembly between said platens while open which assembly consists of a sheet carrying printed material sandwiched between a transparent plastic foil and a hot freshly extruded fluent lump of transparent plastic material facing toward said master matrix; closing said platens while heated against said record assembly to flatten and disperse said lump over the adjacent face of said sheet and to fuse the periphery thereof to the periphery of said foil; and cooling said platens and removing the record therefrom.

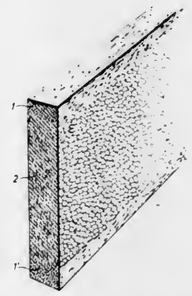
10. A method of pressing records carrying embedded visual material which comprises: providing upper and lower mold platens with a respective sound track matrix; inserting a flexible transparent plastic foil onto one mold platen; providing the other mold platen centrally thereof with a lump of preheated fluent transparent plastic, and heating and closing said mold platens with a core sheet imprinted with indicia sandwiched between and in contact with said foil and said lump of plastic thereby to disperse said lump to form a relatively thick rigid layer impressed with a sound record with the face of said core sheet inseparably adherent to a respective one of said transparent plastic layers and visible therethrough.

4,213,928

METHOD OF MAKING STRUCTURAL CHIPBOARD WOOD BEAM

Sven G. Casselbrant, Lidingö, Sweden, assignor to Kockums Industri AB, Söderhamn, Sweden

Division of Ser. No. 455,146, Mar. 27, 1974, Pat. No. 4,112,162. This application Jun. 19, 1978, Ser. No. 916,813
Int. Cl.² B29J *5/04*; B32B *5/12*
U.S. Cl. 264—113 **4 Claims**



1. A method of making a structural beam of compressed glued wood chips comprising the steps of:

preparing on a support surface a bed of glue-coated wood chips composed of laterally adjacent longitudinally disposed stringer bodies of similarly oriented chips extending for substantially the full length of the bed, in which bed a stringer body of chips of shape elongate in the principal direction of their fibers and positioned so that their fibers are oriented parallel to the support surface and predominantly in the longitudinal direction of the stringer is disposed on either side of a wider stringer of chips of flat shaped elongated in the principal direction of their fibers and position so that having their fibers oriented in various directions in planes parallel to the support surface of the bed;

heating the bed of wood chips;

compressing the bed of wood chips in a first pressing step subjecting the bed of chips to a pressure at right angles to the support surface for the bed with the wider cross sectional dimension of said beam being parallel to said support surface; and

after the aforesaid pressure has reached a predetermined value, subjecting the bed to a pressure greater than the aforesaid pressure and directed parallel to the supporting surface of the bed and at right angles to the longitudinal direction of the bed and of said stringer bodies.

4,213,929

SOLAR COLLECTOR

Michael J. Dobson, Barnhouse, Kemerton, Tewkesbury, Gloucestershire, England

Continuation-in-part of Ser. No. 692,507, Jun. 3, 1976. This application Sep. 22, 1978, Ser. No. 945,077
Int. Cl.² B28B *1/16*; F24J *3/02*; F28F *3/14*
U.S. Cl. 264—129 **6 Claims**

1. A method of making a concrete solar collector panel having a pattern of internal passageways comprising the steps of:

(a) depositing in a mold for the panel a first layer of fiber reinforced concrete slurry,

(b) placing on said first layer a dissolvable polymer foam core for forming the internal passageways,

(c) depositing a second layer of concrete slurry around said core,

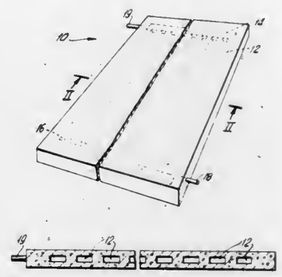
(d) depositing a third layer of fiber reinforced concrete slurry,

(e) releasing the panel from the mold when the concrete has set,

(f) curing the concrete,

(g) drying the panel,

(h) dissolving the polymer foam core in a solvent for the polymer,



(i) causing the solution of solvent and polymer to permeate and coat the concrete surfaces defining the internal passageways,

(j) draining the solution out of the internal passageways, and

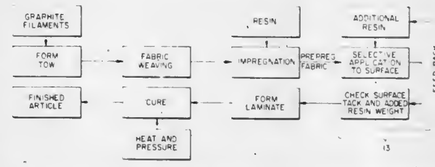
(k) evaporating the solvent from the solution which remains to form a hardened polymer coating on the surfaces of the internal passageways.

4,213,930

METHOD FOR INCREASING THE SURFACE TACK OF PREPREG MATERIALS

Richard B. Goodrich, Pleasanton, and Richard J. Moulton, Concord, both of Calif., assignors to Hexcel Corporation, San Francisco, Calif.

Filed May 24, 1978, Ser. No. 909,072
Int. Cl.² B29D *3/02*; B29G *5/00*
U.S. Cl. 264—135 **14 Claims**



1. A method for forming an article from a resin impregnated fabric, the fabric comprising a multitude of individual filaments distributed over the entire area of the fabric, the method comprising the steps of:

impregnating the fabric with an amount of resin which is less than the desired total amount of resin in the finished article, so that substantially the entire resin is absorbed into the fabric;

thereafter depositing on at least one surface of the impregnated fabric an amount of resin which represents the difference between the desired amount of resin in the finished article and the amount of resin previously impregnated into the fabric by depositing the resin difference at a multitude of individual, spaced apart areas substantially equally distributed over the surface of the fabric in such a manner that the resin difference remains on that surface and renders the surface relatively tacky;

thereafter placing the fabric into a mold so that the relatively tacky surface of the fabric faces a shaping surface of the mold;

adhering the fabric to the shaping surface with the relatively tacky surface of the fabric; and

thereafter subjecting the impregnated fabric while disposed in the mold to the required heat and pressure to conform

the fabric to the shaping surface, to cause the total amount of resin to distribute itself substantially uniformly throughout the fabric, and to cure the resin and thereby finish form the article.

4,213,931

PROCESS OF MANUFACTURING GYPSUM PRODUCTS

Viktor A. Trutnev, ulitsa letchika Babushkina, 31, kv. 233, Moscow; Vitaly I. Zlobin, ulitsa Koltsevaya, 13, kv. 72, Lobnya Moskovskoi oblasti; Valentin K. Kushnarenko, ulitsa Semashko, 34, kv. 6, Rostov-na-Donu; Valentin B. Ignatov, ulitsa M.Gorkogo, 70, kv. 151, Rostov-na-Donu; Boris V. Gannota, ulitsa Semashko, 25, kv. 34, Rostov-na-Donu; Nikolai S. Ambartsumyan, ulitsa Sedova, 94, Rostov-na-Donu, and Boris B. Volovik, ulitsa Pushkinskaya, 137/50, kv. 15, Rostov-na-Donu, all of U.S.S.R.

Filed Apr. 25, 1978, Ser. No. 900,020
Int. Cl.² C04B *11/00*
U.S. Cl. 264—234 **6 Claims**

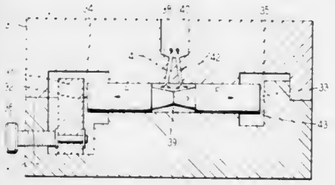
1. In a process of manufacturing gypsum products comprising crushing of natural dihydrous gypsum $CaSO_4.2H_2O$; molding of the crushed natural dihydrous gypsum; heat treating the molded products; cooling the heat-treated products; and treating the cooled products with water to strengthen the products, the improvement comprising: in the heat treatment, raising the temperature of the molded products from room temperature to a level within the range of 100° to 200° C. at a rate of 2 to 3 degrees per minute, and in the cooling step, cooling the products to a temperature not exceeding 50° C.

4,213,932

APPARATUS AND METHOD OF MOLDING A BICONICAL SOCKET

William C. Young, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 23, 1978, Ser. No. 918,412
Int. Cl.² B29F *1/00*
U.S. Cl. 264—236 **7 Claims**



7. A method of molding a biconical socket (**10**) of precise length (L or L') and concentricity characterized by the step of

inserting a mandrel assembly within a mold cavity, said mandrel assembly having a first mandrel member (**20**) with a frustoconical end (**22**) and a second mandrel member (**21**) with a frustoconical end (**23**), said frustoconical end of the first mandrel member having a pin (**24**) coaxially extending therefrom, said pin being slidingly accepted by a centrally disposed hole (**25**) in the frustoconical end of said second mandrel member to permit abutment, said pin being fabricated from a material having a thermal coefficient greater than that of the mandrel member material,

heating a preselected mold material to a predetermined temperature sufficient to soften the mold material as well as heat the mandrel material to thereby substantially reduce the clearance between said pin and hole and injecting said mold material into said mold cavity, said mold material being injected into the mold cavity under pressure to produce opposing forces (F, F') parallel to the longitudinal axis of said mandrel members thereby forcing said mandrel members slightly apart, and

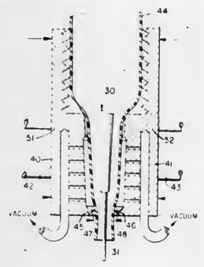
removing said mandrel assembly and the molded biconical socket from said mold cavity and said socket from said mandrel assembly.

4,213,933

METHOD OF MAKING A BLOW MOLDED CONTAINER HAVING AN INSERT MOLDED IN SITU

Orlando D. Cambio, Bristol, Wis., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Mar. 15, 1978, Ser. No. 886,714
Int. Cl.² B29C *17/07*; B29D *3/00*
U.S. Cl. 264—515 **20 Claims**



1. A method for producing a blow molded thermoplastic container having an insert therein comprising:

(a) positioning an insert having an elongated stem extending from the insert between open parts of a multipart mold having confronting cavities against which thermoplastic material is to be blown, such that a portion of said stem depends below said cavities;

(b) providing temporary supporting means for said insert means external of said mold;

(c) extruding heated tubular thermoplastic material between said parts of said multipart mold and around said insert in spaced relationship;

(d) closing said mold thereby pressurizing to drive inwardly radially a portion of said tubular thermoplastic material to adhere to at least a portion of said insert, and severing the stem portion depending below said cavities;

(e) applying pressure internally or vacuum externally of said tubular thermoplastic material to drive said tubular thermoplastic material against the cavities of said mold to form a container;

(f) thereafter opening the mold to free the blow molded thermoplastic container.

4,213,934

USE OF PHOSPHORYLATED OXYALKYLATED POLYOLS IN CONJUNCTION WITH SULFITE AND BISULFITE OXYGEN SCAVENGERS

Thomas J. Bellos, Kirkwood, Mo., and James E. Davis, Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 16, 1978, Ser. No. 887,148
Int. Cl.² C09K *15/32*; C23F *11/08, 11/16, 11/18*
U.S. Cl. 422—15 **11 Claims**

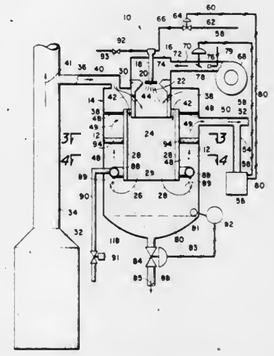
1. In a process of inhibiting corrosion of ferrous surfaces in an oxygenated aqueous system wherein oxygen scavengers of the sulfite and bisulfite type are employed, the improvement which comprises adding thereto a minor amount of phosphorylated oxyalkylated polyol which is sufficient to substantially prevent the precipitation of the sulfite or bisulfite without substantially affecting its oxygen scavenging properties.

4,213,935

APPARATUS FOR USE IN CONJUNCTION WITH BOILER FLUE GASES FOR GENERATING INERT BLANKETING GASES

Hershel E. Goodnight, and Alan D. Witwer, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Jun. 19, 1978, Ser. No. 916,767
Int. Cl.² B01J *7/00*
U.S. Cl. 422—111 **10 Claims**



1. Apparatus for use in conjunction with boiler flue gases for generating low oxygen contents inert blanketing gases, comprising:

(a) Combustion chamber means, and means to supply controlled fuel to a burner means to form a downflowing flame, in said combustion chamber;

(b) means to supply boiler flue gases to said combustion chamber;

(c) means to supply controlled air to said combustion chamber;

(d) means to flow the products of combustion of said flame upwardly in an annular space between said combustion chamber and the wall of a containing vessel;

(e) means to provide a downgoing spray of water, countercurrent in said annular space to cool said upflowing products of combustion, to form cooled inert exit gases;

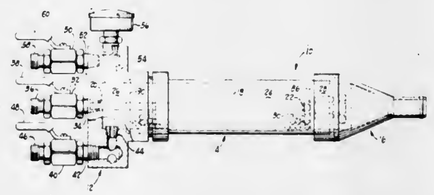
(f) means to monitor the percentage of oxygen in said inert exit gases; and means to control the supply of fuel, and the supply of air responsive to said oxygen monitor.

4,213,936

FOAM GENERATING AND SPRAYING APPARATUS

Robert Lodrick, 6721 Sunset Ave., Independence, Ohio 44131

Filed Aug. 9, 1978, Ser. No. 932,120
Int. Cl.² B01F *17/52*; B05B *7/04, 7/06, 7/12*
U.S. Cl. 422—133 **20 Claims**



1. A foam generating and spraying apparatus adapted to receive a quantity of hardenable polymeric resin and a foaming agent therefor, and discharge the foamed product thereof, said apparatus comprising:

(a) a resin conduit having inlet and outlet ends;

(b) a foaming chamber having inlet and outlet ends, said foaming chamber being disposed coaxially with respect to said resin conduit;

(c) resin inlet means upstream of said resin conduit for admitting a quantity of pressurized resin thereto;

(d) foaming agent inlet means upstream of said foaming chamber for admitting a quantity of pressurized foaming agent thereto;

(e) a mixing chamber downstream of said resin conduit and said foaming chamber, said mixing chamber including progressively inwardly sloping walls joining a discharge tube at the apex of said mixing chamber, the slope of said walls being in the range of from about 15° to about 30°; and,

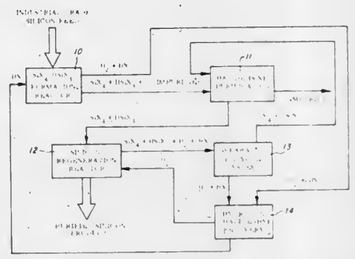
(f) spray means at the outlet end of said resin conduit for spraying resin against said sloping walls in the form of a hollow cone spray having a spray angle in the range of from about 45° to about 56°.

4,213,937

SILICON REFINERY

Francois A. Padovani, Dallas; Michael B. Miller, Richardson; James A. Moore, Dallas; James H. Fowler; Malcom N. June, both of, Plano, all of Tex.; James D. Matthews; T. R. Morton; Norbert A. Stotko, and Lewis B. Palmer, all of Denver, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 494,005, Jul. 31, 1974, Pat. No. 4,092,446.
This application Sep. 22, 1976, Ser. No. 726,018
Int. Cl.² B01J *8/18*; C01B *33/00*
U.S. Cl. 422—142 **28 Claims**



1. A closed cycle silicon refinery system for producing purified electronic grade silicon from impure silicon comprising:

(a) a first reactor having means therein for reacting a first stream comprised of hydrogen halide with said impure silicon to produce a second impurity containing effluent stream of halosilane and/or silicon halide and a third effluent stream comprised of hydrogen and unreacted hydrogen halide;

(b) purification means for removing impurities from said second stream to produce a fourth effluent stream of purified halosilane and/or silicon halide, and means coupling said purification means with said first reactor for receiving said second stream;

(c) a second reactor having means therein for reacting said fourth stream with a fifth stream comprised of hydrogen to produce said purified electronic grade silicon and a sixth effluent stream comprised of hydrogen halide and unreacted hydrogen, and means coupling said second reactor with said purification means to receive said fourth stream;

(d) separation means for separating a mixture of hydrogen and hydrogen halide to produce said first stream of hydrogen halide and said fifth stream of hydrogen, and means coupling said separation means with said first reactor to receive said third stream and with said second reactor to receive said sixth stream;

(e) means in fluid communicaton with said separation means

and said first reactor for passing said first stream to said first reactor; and

(f) means in fluid communication with said separation means and said second reactor for passing said fifth stream to said second reactor.

4,213,938

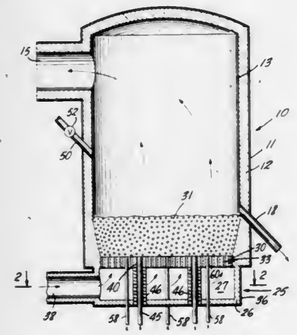
FLUID BED REACTOR

Robert Pyzel, 85 E. End Ave., New York, N.Y. 10028

Filed Mar. 29, 1976, Ser. No. 671,523

Int. Cl.² B01J *8/24, 8/44*

U.S. Cl. 422—143 **1 Claim**



1. An apparatus for carrying out reactions in a body of fluidized particles which comprises a vessel having sidewalls and a bottom and a gas outlet at its upper end, a perforated non-metallic grid extending between said sidewalls and separating said vessel into an upper portion defining a reaction chamber adapted to contain the fluidized bed above said grid and a lower plenum chamber below said grid for reception of an air stream for passage through said grid into said fluidized bed, means defining an inlet for said air stream in said plenum chamber, a plurality of refractory columns extending between the bottom of said vessel and the lower surface of said grid, said columns serving to support said grid radially inwardly of its periphery when said bed is at rest but said grid being susceptible of movement out of contact with said columns when air streams pass into said chamber and flow upwardly through said grid to fluidize said fluid bed at elevated temperatures, each of said columns having an internal axial bore and being defined by vertically superposed annular segments, at least one set of metallic conduit means for supplying fuel and reactant to said fluidized bed, at least some of the conduits passing axially through said bores in said refractory columns with sufficient clearance that the conduits can move freely in said bores in response to expansion and contraction forces brought about by temperature changes, said conduits thereby providing means for supplying reactants and fuel to the fluidized bed and simultaneously stabilizing the columns against displacement under reaction conditions.

4,213,939

DOUBLE VENTURI CARBON BLACK REACTOR SYSTEM

Theodore A. Ruble, deceased, late of Fort Worth, Tex. (by Eulalia B. Ruble, executrix), assignor to Sid Richardson Carbon & Gasoline Co., Fort Worth, Tex.

Filed Jul. 1, 1977, Ser. No. 812,345

Int. Cl.² F01C *21/00, 5/00*

U.S. Cl. 422—151 **1 Claim**

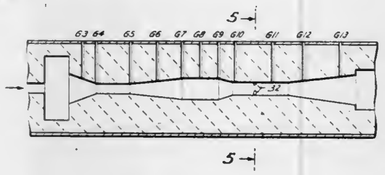
1. An apparatus for the production of carbon black comprising:

a reactor housing defining a longitudinally extending reactor tunnel of generally circular cross-sectional configuration and varying diameter;

said reactor tunnel comprising a combustion zone, a reaction zone, and a quench zone in contiguous axial alignment;

means for introducing fluid fuel and oxidant gas into said combustion zone for combustion therein to produce hot combustion products for flow downstream through said reactor tunnel;

means for injecting hydrocarbon feed stock into said reaction zone of said reactor tunnel for admixture with said hot flowing products of combustion to produce carbon black;



first and second Venturi-type flow constructions disposed in said reaction zone and spaced longitudinally from each other, each Venturi-constriction comprising a convergent section, a throat and a divergent section;

means for injecting secondary product gasses into said reaction zone at said second Venturi throat for controlling the effective area of said throat;

means in said quench zone for injecting quench water to cool the combustion products and reactants; and

collection means downstream from said quench zone to separate the carbon black produced in said reactor from off gasses.

4,213,940

APPARATUS FOR PULLING MONOCRYSTALLINE RIBBON-LIKE BODIES OUT OF A MOLTEN CRYSTALLINE FILM

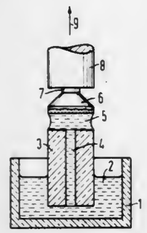
Manfred Zerbst, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 19, 1977, Ser. No. 817,068

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1976, 2632614

Int. Cl.² B01J *17/18*

U.S. Cl. 422—246 **1 Claim**



1. In an apparatus for pulling a silicon monocrystalline ribbon-like body from a molten silicon film positioned on an end surface of a profiling component having a capillary tube extending therethrough, one end of such tube opening into a melt reservoir having molten silicon therein and the other end of such tube terminating at the profiling component end surface, the improvement comprising wherein:

at least surfaces of the profiling component forming walls of the capillary tube and surfaces in contact with the molten silicon are composed of a monocrystalline sapphire.

4,213,941

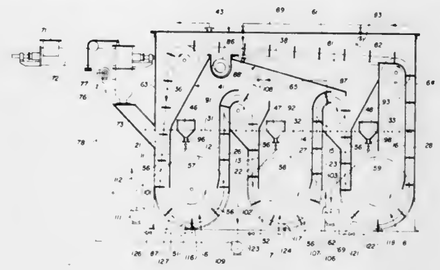
SOLVENT IMMERSION EXTRACTOR

Merton E. Boomer, 1473 Vista Grand Dr., San Leandro, Calif. 94577

Filed Dec. 4, 1978, Ser. No. 965,986

Int. Cl.² B01D *11/02*

U.S. Cl. 422—267 **6 Claims**



1. An immersion extractor for solid material containing an extractable component comprising:

means providing a plurality of adjacent chambers for liquid solvent for extracting said component from said material and for maintaining a solvent level in said chambers;

means for partitioning off a substantially vertical entryway at one side of each of said chambers and a substantially vertical exitway at the opposite side of each of said chambers maintaining a quiescent solvent surface therebetween;

a continuous conveyor for displacing said material through said chambers and being mounted for downward movement through said entryways and for upward movement through said exitways without disturbing said quiescent surface and having a return leg overhead of said chambers;

baffle means mounted between said quiescent solvent surface and said return leg and formed to divert falling solid material away from said quiescent surface and into one of said entryways; and

said first-named means including an outlet for decanting said solvent at said quiescent surface.

4,213,942

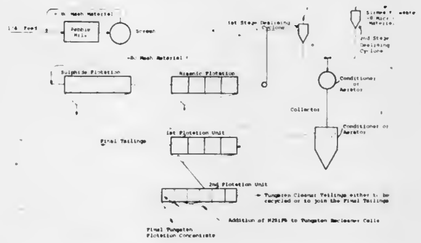
PROCESS FOR THE CONCENTRATION OF MINERAL BY FLOTATION PROCESS

Edward W. J. Thornton, Bathurst, Canada, assignor to Groupe Minier Sullivan Ltee/Sullivan Mining Group Ltd., Canada

Filed Jan. 23, 1978, Ser. No. 871,511

Int. Cl.² B01D *11/02;* **B03B** *7/00*

U.S. Cl. 423—53 **3 Claims**



1. A process for the recovery of wolframite and/or cassiterite which comprises:

grinding a wolframite and/or cassiterite bearing rock with coarse pieces of said rock and removing −80 mesh material,

floating off sulphides from the ground material,

desliming the sulphides free ground material to remove substantially all minus 8 micron material still present in the ground material, thereby forming a pulp,

conditioning the deslimed sulphides free pulp by a treatment selected from the group consisting of aerating with air agitation and conditioning with mechanical agitation, in the presence of about 2 to 3 pounds per ton of a substance selected from the group consisting of hydrofluoric acid, hydrofluosilicic acid and lactic acid, added as such,

activating the pulp by means of another treatment during about twenty minutes to about three hours in the presence of about 0.2 to about 2.50 pound per ton of pulp of one single emulsified collector selected from the group consisting of an emulsified fatty acid type collector and an emulsified organic phosphoric acid base collector, a paratolyl arsenic acid collector and a hyxroxamic acid collector and

floating said further activated pulp during about 5 to about 15 minutes at a pH ranging from about 5.5 to about 6.5, to recover said wolframite and/or cassiterite.

4,213,943

PRODUCTION OF ALUMINUM CHLORIDE FROM CLAY USING STAGED REACTORS

Edward S. Martin, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 22, 1978, Ser. No. 972,468

Int. Cl.² C01F *7/56, 7/58*

U.S. Cl. 423—135 **8 Claims**

1. A process for producing aluminum chloride from clay containing aluminum and silicon by chlorinating the clay at a temperature of about 550°–650° C. for a period of about 1½ to 2½ hours in the presence of an alkali metal compound as a catalyst, which comprises:

contacting the clay with a reducing agent and a gaseous chlorinating agent in a first stage to chlorinate a part of the aluminum in the clay,

transferring the clay from the first stage to at least one additional stage and again contacting it with a reducing agent and a gaseous chlorinating agent in each such stage,

collecting the effluent gases from each stage and separating aluminum chloride and silicon tetrachloride from such gases,

recycling silicon tetrachloride which is separated from the effluent gases back into each stage for contacting the clay, and

providing separate feed of silicon tetrachloride and chlorinating agent to each stage of the process and regulating the relative proportions of silicon tetrachloride and chlorinating agent in each feed to maximize production of aluminum chloride and minimize chlorination of silicon in the clay.

4,213,944

PROCESS FOR REMOVING NITROGEN OXIDES FROM GAS BY AMMONIA

Shigeru Azuhata, Hitachi; Hidetoshi Akimoto, Tokaimura; Hideo Kikuchi, Hitachi; Yukio Hishinuma, Hitachi; Ryoichiro Oshima, Hitachi, and Yoshijiro Arikawa, Kure, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 9, 1977, Ser. No. 859,176

Claims priority, application Japan, Dec. 10, 1976, 51-147747

Int. Cl.² B01D *53/00*

U.S. Cl. 423—235 **28 Claims**

1. A process for removing nitrogen oxides from a gas containing nitrogen oxides, which comprises adding a reducing agent selected from the group consisting of ammonia, ammonium salts, amines and amides and hydrogen peroxide to the gas, the gas having a temperature of 400°–1200° C., thereby decomposing the nitrogen oxides to a nitrogen gas and water.

4,213,945

PROCESS AND APPARATUS TO PURIFY WASTE INDUSTRIAL GASES

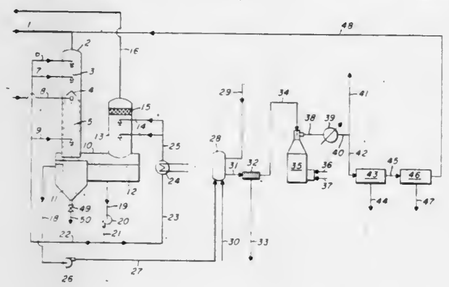
Egon Haese, Bochum; Hans Moll, Marl, and Rolf Willms, Bochum, all of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Mar. 24, 1978, Ser. No. 889,707

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2708919

Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—240 17 Claims



1. A process to purify industrial waste gases containing sulfur dioxide together with other polluting constituent gases selected from the group consisting of hydrogen fluoride, hydrochloric acid and sulfur trioxide, said process including the steps of:

increasing the dew point of industrial waste gases as a first stage within a reaction tank by the partial evaporation therewith of a solution of ammonium sulfate containing ammonium ions,

cooling the gases below the elevated dew point with a solution of ammonium sulfate as a second stage in the reaction tank,

supplying oxygen and/or NO_X into said reaction tank and treating the cooled gases with an ammonia mist as a third stage in the reaction tank to form ammonium salts from the polluting constituent gaseous content of the treated gases,

delivering the treated gases as a fourth stage into the bottom of the reaction tank to precipitate the ammonium salts therefrom by treatment of the polluting constituent gaseous content with a solution of ammonium sulfate containing ammonium ions,

collecting the precipitated ammonium salts below said fourth stage in a reservoir, and

feeding the purified waste gases from the reaction tank through a cooler for discharge into the atmosphere.

4,213,946

PROCESS FOR PREVENTING FORMATION OF GYPSUM SCALE IN A FLUE GAS DESULFURIZATION PROCESS

Isao Furuta; Kazuhito Yagaki, and Toyohiko Masuda, all of Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Dec. 19, 1977, Ser. No. 861,973

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657971

Int. Cl.[2] C01B *17/00*

U.S. Cl. 423—242 3 Claims

1. In a process for desulfurizing flue gas containing SO_2 by the lime-gypsum process wherein said SO_2 is absorbed in an aqueous solution of $Ca(OH)_2$ containing $CaCl_2$, the improvement comprising maintaining the concentration of $Ca(OH)_2$ in said absorbing solution at a level between 0.001% and 0.1% by weight and maintaining the concentration of $CaCl_2$ in said absorbing solution at less than 40% by weight, whereby the formation of gypsum scale is prevented.

4,213,947

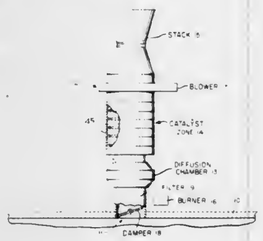
EMISSION CONTROL SYSTEM AND METHOD

Henry A. Fremont, and Edward F. Hedrick, both of Hamilton, Ohio, assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 594,945, Jul. 10, 1975, abandoned, which is a division of Ser. No. 513,452, Oct. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 433,783, Jan. 16, 1974, abandoned. This application Oct. 13, 1977, Ser. No. 841,667

Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—245 5 Claims



1. A method of treating for removal of pollutants from an effluent gaseous emission containing organic materials derived from an outlet of a dryer for drying wood-type products within an in-line, non-recirculating flow path connecting said outlet and a stack for venting a treated stream to the atmosphere comprising raising the temperature of said gaseous emission to a temperature within a range of temperatures effective both for catalytic action and for maintaining said entrained organic materials at a temperature prior to catalytic oxidation above that temperature at which condensation of said organic materials may occur, filtering said gaseous emission to remove therefrom particulate of gross size, adjusting the flow of said gaseous emission to provide substantially a uniform laminar flow across the area of flow path, heating a catalyst bed across substantially the area of the face against which said adjusted flow of gaseous emission is flowing to a temperature of from about 100° to about 150° F. above the temperature to which said gaseous emission was first heated both to maintain the temperature of said gaseous emission within said range and increase catalytic activity of said catalyst bed, catalytically oxidizing substantially all the organic materials in said gaseous emission, and then discharging continually to the atmosphere the treated stream caused to pass through said catalyst bed which shall be substantially equal in volume to the volume of said effluent gaseous emission which shall enter said flow path by applying negative pressure in said flow path downstream of said catalyst bed.

4,213,948

PREPARATION OF BORON TRICHLORIDE

John C. Crano, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 29, 1979, Ser. No. 43,292

Int. Cl.[2] C01B *35/06*

U.S. Cl. 423—292 18 Claims

1. In the continuous process of producing boron trichloride wherein liquid borate ester is contacted with chlorine in the presence of a free radical initiator in a reactor at temperatures of from about 20° C. to about 100° C. and vaporous boron trichloride is removed from the reactor, the improvement which comprises removing a purge fraction of the liquid reaction mixture from the reactor, distilling liquid reaction mixture removed from the reactor, and recycling distillate obtained from the distillation to the reactor.

4,213,949

PROCESS OF PREPARING PARTICULATE POLY(ALUMINO-SILICATE)

Walter Mahler, and William O. Forshey, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1978, Ser. No. 972,421

Int. Cl.[2] C01B *33/26, 33/28*

U.S. Cl. 423—329 16 Claims

1. Process for preparing particulate, porous, water-insoluble amorphous poly(alumino-silicate) having a Si/Al gram-atomic ratio of about 1:1 to 10:1, a pore volume of greater than 0.5 ml/g, an average pore diameter of 50 to 200 A and a surface area of 200 to 600 m^2/g by mixing an aqueous solution of an appropriate aluminate and an aqueous solution of an appropriate silicate, allowing the aluminate and silicate in the resultant mixture to polymerize to poly(alumino-silicate), freezing the mixture and thereafter thawing the mixture and isolating, washing, drying and recovering particulate poly(alumino-silicate) therefrom, said process characterized in that:

(a) the amounts, respectively, of aluminate and silicate, calculated as Al_2O_3 and SiO_2, are such that the total amount thereof in the mixture is about 4 to 25 weight % of the mixture, such that the Si/Al gram-atomic ratio in the mixture is about 1:1 to 10:1, and such that the amount, in the mixture, of at least one water-soluble compound which is precipitable from the mixture at −10° to −100° C. and which is inert to the aluminate, silicate and poly(alumino-silicate) is about 25 to 160 weight %, based on the combined weights of aluminate and silicate, calculated as Al_2O_3 and SiO_2; and

(b) the mixture is cooled to about −10° to −100° C. until it is frozen, to separate substantially all of the chemically unbound water as substantially pure ice and to precipitate water-soluble compound within the pores of the poly(alumino-silicate) particles being formed.

4,213,950

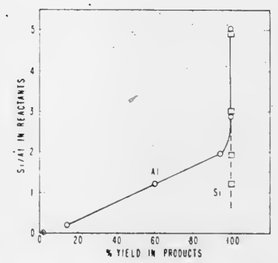
PROCESS FOR PREPARING AMORPHOUS PARTICULATE POLY(ALUMINO-SILICATE)

Walter Mahler, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1978, Ser. No. 972,422

Int. Cl.[2] C01B *33/26, 33/28*

U.S. Cl. 423—329 10 Claims



1. Improved process for preparing particulate, porous, amorphous water-insoluble poly(alumino-silicate) of high surface area by mixing an aqueous solution of an alkali metal aluminate and an aqueous solution of a silicon-containing compound, the improvement comprising using silicic acid as the silicon-containing compound and $MAlO_2$, wherein M is alkali metal, as the alkali metal aluminate, in such amounts that the Si/Al ratio provided by the silicic acid and $MAlO_2$ is 2:1 to 100:1, allowing the $MAlO_2$ and silicic acid in the resultant reaction mixture to polymerize to poly(alumino-silicate), and thereafter removing sufficient water from the reaction mixture to permit recovery therefrom, in high yield, of particulate poly(alumino-silicate) having a Si/Al ratio which is substantially the same as the Si/Al ratio provided by the silicic acid and $MAlO_2$ employed in the formation of the reaction mixture.

4,213,951

RECOVERY OF HYDROFLUORIC ACID FROM FLUOSILICIC ACID WITH HIGH PH HYDROLYSIS

Subhas K. Sikdar, San Juan Capistrano, and James H. Moore, La Verne, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Oct. 23, 1978, Ser. No. 953,802

Int. Cl.[2] C01B *33/12, 7/22;* C01D *3/02*

U.S. Cl. 423—339 29 Claims

1. A method for recovering sodium fluoride and solid amorphous silica from an aqueous solution of fluosilicic acid comprising the steps of:

(a) reacting in a first precipitation zone fluosilicic acid in aqueous solution with sufficient sodium hydroxide to form a first alkaline aqueous slurry having a pH of from about 11 to about 14 and comprising sodium metasilicate and precipitated sodium fluoride;

(b) recovering precipitated sodium fluoride from the first alkaline aqueous slurry leaving an aqueous solution comprising sodium metasilicate;

(c) combining the aqueous solution comprising sodium metasilicate in a second precipitation zone with fluosilicic acid or sodium fluosilicate or both to form a second alkaline aqueous slurry comprising amorphous silica and dissolved sodium fluoride by maintaining the pH of the second alkaline aqueous slurry at a value greater than 7 and up to about 9; the second alkaline aqueous slurry being at least saturated with sodium fluoride, and the temperature of the second alkaline aqueous slurry being substantially equal to its boiling point so that the second alkaline aqueous slurry contains precipitated amorphous silica;

(d) separating precipitated amorphous silica from the second alkaline aqueous slurry leaving an aqueous solution of sodium fluoride; and

(e) recovering sodium fluoride from the aqueous solution of sodium fluoride.

4,213,952

RECOVERY OF HYDROFLUORIC ACID FROM FLUOSILICIC ACID WITH HIGH PH HYDROLYSIS

Subhas K. Sikdar, San Juan Capistrano, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Oct. 23, 1978, Ser. No. 954,066

Int. Cl.[2] C01B *33/12, 7/22;* C01D *3/02*

U.S. Cl. 423—339 32 Claims

1. A method for recovering sodium fluoride and solid amorphous silica from an aqueous solution of fluosilicic acid comprising the steps of:

(a) reacting fluosilicic acid in aqueous solution with sodium sulfate to form sodium fluosilicate in a purification zone;

(b) reacting in a first precipitation zone the formed sodium fluosilicate with sufficient sodium hydroxide to form a first alkaline aqueous slurry having a pH of from about 11 to about 14 and comprising sodium metasilicate and precipitated sodium fluoride;

(c) recovering precipitated sodium fluoride from the first aqueous alkaline slurry leaving an aqueous solution comprising sodium metasilicate;

(d) combining the aqueous solution comprising sodium metasilicate in a second precipitation zone with fluosilicic acid or sodium fluosilicate or both to form a second alkaline aqueous slurry comprising amorphous silica and dissolved sodium fluoride by maintaining the pH of the second alkaline aqueous slurry at a value greater than 7 and up to about 9; the second alkaline aqueous slurry being at least saturated with sodium fluoride, and the temperature of the second alkaline aqueous slurry being substantially equal to its boiling point so that the second slurry contains precipitated amorphous silica;

(e) separating precipitated amorphous silica from the second alkaline aqueous slurry leaving an aqueous solution of sodium fluoride; and

(f) recovering sodium fluoride from the aqueous solution of sodium fluoride.

4,213,953

PROCESS FOR THE PREPARATION OF AMMONIA AND HEAVY WATER

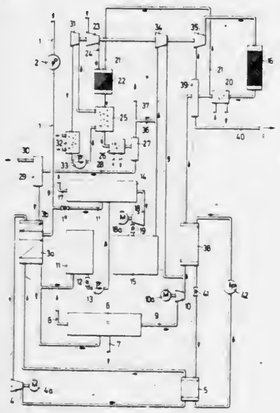
Charles Mandrin, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 12, 1977, Ser. No. 796,170

Claims priority, application Switzerland, May 13, 1976, 6020/76

Int. Cl.² C01C *1/04*

U.S. Cl. 423—359 **2 Claims**



1. A process for the production of ammonia and heavy water, said process comprising the steps of

enriching a flow of water with deuterium in a monothermal isotropic process;

supplying a first portion of the deuterium-enriched water to a heavy water preparation plant to produce heavy water and hydrogen;

storing a second portion of the deuterium-enriched water substantially without interruption during the colder half of a year;

electrolytically dissociating the stored deuterium-enriched water substantially without interruption during the warmer half of a year to form hydrogen;

storing a portion of the electrolytically-produced hydrogen during said warmer half of a year while supplying the remainder to a synthesis circuit of a synthesizing plant and subsequently supplying the stored hydrogen to the synthesis circuit during said colder half of a year;

removing some of the synthesis gas mixture from the synthesis circuit of the synthesizing plant;

burning the removed synthesis gas mixture with air to produce a mixture consisting mainly of water and nitrogen;

thereafter condensing and separating the water from the mixture of water and nitrogen;

supplying the nitrogen of the mixture of water and nitrogen, the hydrogen from the heavy water preparation plant and the electrolytically-produced hydrogen to the synthesis circuit of the synthesizing plant to produce ammonia; and

collecting deuterium-depleted water resulting from said burning step and feeding the collected deuterium-depleted water into the monothermal process.

4,213,954

AMMONIA PRODUCTION PROCESS

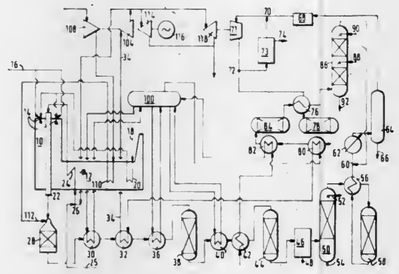
Alwyn Pinto, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sep. 5, 1978, Ser. No. 939,916

Claims priority, application United Kingdom, Sep. 16, 1977, 38713/77

Int. Cl.² C01C *1/04*

U.S. Cl. 423—359 **7 Claims**



1. In an ammonia production process which comprises the steps of

(a) reacting a carbonaceous feedstock with steam and/or oxygen to give a gas containing carbon monoxide;

(b) reacting the product of step (a) over a shift catalyst to convert carbon monoxide and steam to carbon dioxide and hydrogen and removing carbon oxides and steam from the resulting gas;

(c) reacting the hydrogen with nitrogen over an ammonia synthesis catalyst, cooling the reacted synthesis gas and recovering ammonia from it;

(d) heat exchanging hot gases produced in at least step (c) with water in a boiler producing steam at a pressure in the range 60–200 bar abs. and/or in a water heater feeding such a boiler;

(e) superheating steam from such a boiler by heat exchange with hot gases produced in step (a) or step (b); and

(f) letting down such steam in one or more expansion engines and thereby recovering useful power,

said process being previously subject to the defect that an accidental shut down of ammonia synthesis in step (c) decreases the supply of steam from step (d) and thus causes overheating of the heat exchangers providing superheating in step (e);

in step (c) (i) reacting and cooling the synthesis gas at a pressure under 150 bar abs., and

(ii) cooling the reacted synthesis gas at least partly by superheating steam produced in step (d) and/or reheating steam within or from one or more of the engines of step (f) whereby such a decrease in said supply of steam is accompanied by a compensating decrease in superheating capacity.

4,213,955

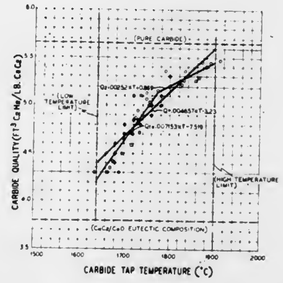
COMPUTERIZED PROCESS AND APPARATUS FOR USE WITH A SUBMERGED ARC ELECTRIC FURNACE TO PRODUCE METALLURGICAL PRODUCTS

Ralph A. Casciani, Tonawanda; Wilmer L. Wilbern, Niagara Falls; William E. Mangan, Bronxville, all of N.Y., and Paul D. Franson, St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 712,275, Aug. 6, 1976, abandoned, which is a continuation of Ser. No. 363,581, May 24, 1973, abandoned, which is a continuation of Ser. No. 77,853, Oct. 5, 1970, abandoned. This application Nov. 23, 1977, Ser. No. 854,257

Int. Cl.² C01B *31/32*

U.S. Cl. 423—442 **1 Claim**



1. In a process for the feeding of lime and carbon into an electric arc furnace to produce a calcium carbide product, said electric arc furnace having, in combination, (i) at least one vertical hollow electrode penetrating said furnace and embedded in a mixture of carbon and lime in proportions to provide a submerged arc calcium carbide-forming reaction zone extending substantially from about the lower tip of said electrode to the hearth of said furnace wherein molten calcium carbide is produced (ii) electrically actuatable feeding means for selectively feeding finely divided lime, or finely divided carbon, or a mixture of finely divided lime and carbon in calcium carbide-forming proportions through said hollow electrode into said submerged arc calcium carbide-forming reaction zone and (iii) electrically acttuatable electrode positioning means for maintaining the electric current of the submerged arc at a value which provides a temperature in said calcium carbide-forming reaction zone in the range of about 1640° C. to 1900° C. sufficient for producing calcium carbide by raising said hollow electrode whenever said electric arc current increases to a value which provides a temperature above said range and by lowering said electrode whenever said electric arc current decreases to a value which provides a temperature below said range, said process comprising, (a) continuously detecting the vertical position of said electrode with respect to the hearth of said electric furnace and continuously providing an electrical signal in relation thereto indicative of the position of the electrode tip within said electric arc furnace with respect to said hearth of said furnace, (b) providing an electrical signal indicative of an upper limit electrode tip position with respect to said hearth and a lower limit electrode tip position with respect to said hearth, such that said electrode is embedded in said mixture of lime and carbon, when within said limits and the electric arc current thereby established provides a temperature in the range specified in (iii) above, (c) continuously electrically comparing the electrical signal recited in (a) with the electrical signal recited in (b) and when (i) such electrical comparison indicates an electrode tip position higher than that desired, providing an electrical signal in response to such electrical comparison to actuate said feeding means to feed only lime through said hollow electrode into said submerged arc reaction zone to increase the resistance of the mixture of lime and carbon in said electric furnace thereby causing the electric arc current to decrease, such decrease in current causing said electrode positioning means to automatically lower the electrode and thereby re-establish the electrode tip position below said predetermined upper limit position (ii) such electrical comparison indicates an electrode tip position lower than that desired, providing an electrical signal in response to such electrical comparison to actuate said feeding means to feed only carbon through said hollow electrode into said submerged arc reaction zone to decrease the resistance of the mixture of lime and carbon in said electric furnace thereby causing the electric arc current to increase, such increase in current causing said electrode positioning means to automatically raise the electrode and thereby re-establish the electrode tip position above said predetermined lower limit position (iii) such electrical comparison indicates an electrode tip position within said upper and lower limit positions providing an electrical signal in response to such electrical comparison to actuate said feeding means to feed a predetermined mixture of lime and carbon through said hollow electrode into said submerged arc reaction zone; the improvement whereby the quality of the calcium carbide product is continuously monitored and regulated which improvement comprises,

(I). continuously measuring the temperature of molten calcium carbide product within said electric furnace and continuously providing an electrical signal in relation thereto, said signal being indicative of the quality of said molten calcium carbide product;

(II). providing an electrical signal indicative of the desired calcium carbide quality in correlation with the electrical signal of (I) when the calcium carbide quality expressed as Q satisfies one of the following equations and indicative of lower or higher than desired calcium carbide quality when the following equations are not satisfied:

$$Q=(0.00715T-7.52)\pm 10\%$$

for a measured calcium carbide temperature (T) expressed in degrees centigrade indicated by the electrical signal of (I) in the range of about 1640° C. and about 1760° C., and

$$Q=(0.00252T-0.67)\pm 10\%$$

for a measured calcium carbide temperature (T) expressed in degrees centigrade by the electrical signal of (I) in the range of about 1760° C. and 1900° C.;

(III). continuously electrically comparing the electrical signal recited in (I) with the electrical signal recited in (II) and when (i) such comparison indicates that the quality of calcium carbide product in said electric furnace is lower than the desired quality while concurrently the comparison of electrical signals recited in (c) indicates an electrode tip position higher than that desired, providing an electrical signal in response to such electrical comparison to actuate said feeding means to feed only lime through said hollow electrode into said submerged arc reaction zone to increase the resistance of the mixture of lime and carbon in said electric furnace thereby causing the electric arc current to decrease, such decrease in current causing said electrode positioning means to automatically lower the electrode and thereby re-establish the electrode tip position below said upper limit position (ii) such comparison indicates that the quality of calcium carbide product in said electric furnace is lower than the desired quality while concurrently the comparison of electrical signals recited in (c) indicates an electrode tip position equal to or lower than that desired, providing an electrical signal in response to such electrical comparison to actuate said feeding means to feed only carbon through said hollow electrode into said submerged arc reaction zone to decrease the resistance of the mixture of lime and carbon in said electric furnace thereby causing the electric arc current to increase, such increase in current causing said electrode positioning means to automatically raise the electrode and thereby re-establish the current in said range and also to increase the ratio of carbon to lime and

thereby increase the reduction of lime to carbide and consequently increasing the quality of the carbide product, (iii) such comparison indicates that the quality of calcium carbide product in said electric furnace is higher than the desired quality while concurrently the comparison of electrical signals recited in (c) indicates an electrode tip position equal to or higher than the desired, providing an electrical signal in response to such electrical comparison to actuate said feeding means to feed only lime through said hollow electrode into said submerged arc reaction zone to increase the resistance of the mixture of lime and carbon in said electric furnace thereby causing the electric arc current to decrease, such decrease in current causing said electrode positioning means to automatically lower the electrode and thereby re-establish the current in said range and also to decrease the ratio of carbon to lime and thereby decrease the reduction of lime to carbide and consequently decreasing the quality of the carbide product, (iv) such comparison indicates that the quality of calcium carbide product in said electric furnace is equal to the desired quality while concurrently the comparison of electrical signals recited in (c) indicates an electrode tip position higher than that desired, providing an electrical signal in response to such electrical comparison to actuate said feeding means to feed only lime through said hollow electrode into said submerged arc reaction zone to increase the resistance of the mixture of lime and carbon in said electric furnace thereby causing the electric arc current to decrease, such decrease in current causing said electrode positioning means to automatically lower the electrode and thereby re-establish the current in said range, (v) such comparison indicates that the quality of calcium carbide product in said electric furnace is equal to the desired quality while concurrently the comparison of electrical signals recited in (c) indicates an electrode tip position lower than that desired, providing an electrical signal in response to such electrical comparison to actuate said feeding means to feed only carbon through said hollow electrode into said submerged arc reaction zone to decrease the resistance of the mixture of lime and carbon in said electric furnace thereby causing the electric arc current to increase, such increase in current causing said electrode positioning means to automatically raise the electrode and thereby re-establish the current in said range.

4,213,956

GRANITE COMPOSITION

Alfred R. J. P. Ubbelohde, Platts Farm, Font Ridge Lane, Burwash, East Sussex, England

Filed Nov. 15, 1978, Ser. No. 961,024
Int. Cl.[2] C01B *31/04*
U.S. Cl. 423—448 **21 Claims**

1. A method for the production of highly anisotropic and well oriented graphite compositions which method comprises subjecting a dispersion of graphite crystallites in a matrix material to the action of a shear force alone or in combination with a compressive force, the matrix material being in a viscous pasty or plastic form at the temperature at which the shear force is applied and said matrix material including a component A which carbonizes at a temperature above 250° C. to leave not more than 25% by weight of carbon the remainder of component A on carbonization being volatile products and a component B which carbonizes at a temperature above 400° C. to leave at least 50% by weight of carbon in the form of a carbonaceous char comprising meso phase carbon, the difference in carbonization temperatures of said component A and said component B being at least 100° C. and wherein the matrix material comprises from 20 to 80% by weight component A and 80 to 20% by weight component B.

4,213,957

CARBON BLACK PRODUCTION

Harold R. Hunt, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 783,242, Mar. 31, 1977, Pat. No. 4,148,744.
This application Dec. 11, 1978, Ser. No. 968,157
Int. Cl.[2] C01B *31/02*; C09C *1/48*
U.S. Cl. 423—450 **8 Claims**

1. A process for the production of carbon black having reduced structure which comprises:

mixing a water solution of an alkali metal inorganic salt with oil wherein said oil has an SUS viscosity at 100° F. above about 50 seconds and an initial boiling point above about 350° F. and a suitable emulsifying agent at conditions which form an emulsion wherein said emulsifying agent is compatible with the other ingredients and forms an emulsion when agitated with a water solution of the alkali metal inorganic salt;

removing water from the emulsion under conditions to form a substantially water-free suspension;

filtering the substantially water-free suspension to produce a carbon black reaction additive;

dispersing the additive in a hydrocarbon material from which carbon black is to be produced; and

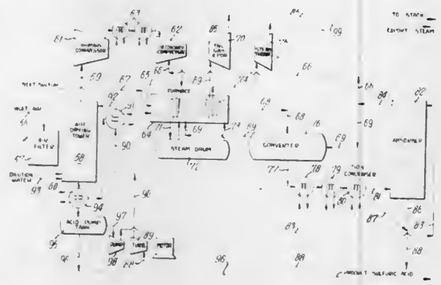
subjecting the hydrocarbon material containing said additive to enclosed-direct-flame-decomposition conditions to produce carbon black.

4,213,958

PRODUCTION OF SULPHUR TRIOXIDE, SULPHURIC ACID AND OLEUM

Gordon M. Cameron, Sudbury; Frederick W. S. Jones, Rosemere, and Peter D. Nolan, Sudbury, all of Canada, assignors to Canadian Industries Limited, Montreal, Canada

Continuation of Ser. No. 443,907, Feb. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 300,189, Oct. 24, 1972, abandoned. This application Nov. 14, 1977, Ser. No. 851,198
Int. Cl.[2] C01B *17/72, 17/08*
U.S. Cl. 423—522 **29 Claims**



1. In a process for making sulphuric acid in which a stream of air is passed through a drying unit where it is dried with a stream of concentrated sulphuric acid, the resulting dry process air is compressed to a pressure of 5 to 50 atmospheres and fed to a converter along with a dry sulphur dioxide-containing process gas stream wherein the sulphur dioxide is catalytically converted to sulphur trioxide and the resulting converted gas stream containing the sulphur trioxide together with a minor amount of unconverted sulphur dioxide is fed to an absorber wherein it is contacted with a stream of a sulphuric acid solution to form further sulphuric acid, the improvement comprising supplying to the absorber a stream of sulphuric acid solution essentially free of sulphur dioxide and passing said acid solution through the absorber countercurrently to the stream of converted gas under conditions whereby the unconverted sulphur dioxide present in the latter is dissolved in the sulphuric acid, reheating at least a portion of the exit gas from the absorber, and passing said portion of the reheated exit gas through an expander and thereafter discharging to the atmosphere, taking the entire flow of sulphur dioxide-containing sulphuric acid from the absorber and cooling and decompressing it to a pressure within the range of atmospheric pressure to 10 atmospheres but lower than that existing in the absorber by at least 4 atmospheres, passing said entire flow of sulphur dioxide-containing sulphuric acid at the resulting reduced pressure through the drying unit countercurrently to the stream of air which is free of SO_2 whereby simultaneously moisture is transferred from the air to the acid and sulphur dioxide is transferred from the acid to said air, using the resulting mixture of sulphur dioxide and dry air as process air, taking the essentially sulphur dioxide-free sulphuric acid stream from the drying unit and dividing it into two portions of which one is withdrawn as product sulphuric acid and the other is pumped directly to the absorber and used as the sulphuric acid solution for further absorption of sulphur dioxide and sulphur dioxide from the converted gas stream, said improvement being further characterized in that the sulphur dioxide absorbed by the sulphuric acid is transferred from the acid to the air such that the portion of sulphur dioxide-free sulphuric acid stream which is pumped directly to the absorber is capable of absorbing essentially all of the unconverted sulphur dioxide in the absorber.

4,213,959

MANUFACTURE OF ACICULAR, FERRIMAGNETIC IRON OXIDE

Rudolf Brodt, Weinheim; Helmut Jakusch; Eberhard Koester, both of Frankenthal; Werner Loeser, Ludwigshafen; Manfred Ohlinger, Frankenthal; Wilhelm Sarnecki, Limburgerhof, and Werner Steck, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,513
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735316
Int. Cl.[2] C01G *49/06*
U.S. Cl. 423—634 **2 Claims**

1. A process for the manufacture of acicular ferrimagnetic gamma-ferric oxide, comprising:

(a) Dehydrating at a temperature from about 300° to 650° C. a mixture of needle-shaped particles of 60 to 98% by weight of lepidocrocite and 2 to 40% by weight of goethite, said particles having a mean particle size of from 0.2 to 1.5 microns and a length:width ratio of at least 10;

(b) Reducing the particles thus obtained at a temperature of from 300° to 650° C. to magnetite particles by means of an organic compound which decomposes in this temperature range without producing ash or tar; and

(c) Oxidizing the resulting magnetite particles with an oxygen-containing gas at a temperature of from 200° to 500° C. to convert said resulting magnetite particles into acicular ferrimagnetic gamma-ferric oxide particles.

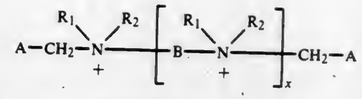
4,213,960

COSMETIC COMPOSITIONS FOR TREATING THE HAIR

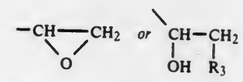
Jean-Francois Grollier; Claire Fiquet; Chantal Fourcadier, all of Paris; Claude Dubief, Versailles, and Daniele Cauwet, Crosne, all of France, assignors to L'Oreal, Paris, France

Filed Mar. 1, 1978, Ser. No. 882,424
Claims priority, application France, Mar. 2, 1977, 77 06032
Int. Cl.[2] A61K *7/06*
U.S. Cl. 424—47 **30 Claims**

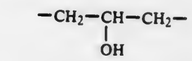
1. A cosmetic composition suitable for treating the hair which comprises: (a) from about 0.1 to about 5.0 percent by weight, based on the weight of the entire composition, of at least one water-soluble polyamino-amide derivative which is a condensation product of a polyalkylenepolyamine with a polycarboxylic acid, which has been alkylated with a bifunctional alkylating agent having the formula:



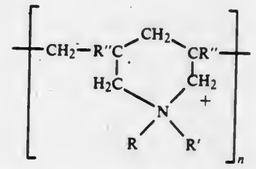
in which x is 0 or an integer from 1 to 7, A denotes a



group in which R_3 denotes halogen, R_1 and R_2 denote independently of one another, an alkyl or hydroxyalkyl group containing 1 to 4 carbon atoms, and B represents an alkylene group containing 2 to 6 carbon atoms, a



group or a group of formula $-(CH_2)_y-NH-CO-N-H-(CH_2)_y-$ in which y is an integer from 1 to 4; (B) from about 0.1 to about 10.0 percent by weight, based on the weight of the entire composition of at least one water-soluble high molecular weight quaternary ammonium polymer containing chain units of the formula:



in which R″ denotes a hydrogen atom or a methyl group, and R and R′ denote, independently of one another, an alkyl group having from 1 to 22 carbon atoms, a hydroxyalkyl group, or a lower amidoalkyl group, or R and R′, together with the nitrogen atom to which they are bonded, denote an heterocyclic group, said units being associated with a cosmetically acceptable anion; and (C) a sufficient amount of a carrier to constitute 100 percent by weight for the total composition in order to form an aqueous solution, an aqueous alcoholic solution, an aqueous-alcoholic-surface active agent solution, an emulsion, a cream, a gel or an aerosol.

4,213,961

ORAL COMPOSITIONS

Stephen N. Curtis, Edison, and Hridaya N. Bhargava, East Brunswick, both of N.J., assignors to Beecham, Inc., Clifton, N.J.

Filed Mar. 23, 1978, Ser. No. 889,205
Int. Cl.[2] A61K *7/22, 7/24*
U.S. Cl. 424—54 **17 Claims**

1. An oral composition useful for controlling dental plaque and gingivitis and for preventing caries which comprises from 0.1% to about 1.0% of a cationic antimicrobial agent useful for controlling plaque and gingivitis and for preventing caries selected from the group consisting of a bisbiguanide and a quaternary ammonium compound and from 0.1% to 3.5% of an anti-stain composition which anti-stain composition comprises 0.5% to 1.5% of a nonionic surfactant and 0.5% to 2.0% of ascorbic acid, said ascorbic acid being present in a molar excess of about 10:1 to about 25:1 over the cationic antimicrobial agent, in combination with a pharmaceutically acceptable carrier.

4,213,962

ARTIFICIAL MEDICAL MATERIAL WITH ANTICOAGULATIVE ACTIVITY

Yoshiharu Miura, 8-28, Katagiri-cho, Ibaraki, Osaka, Japan; Sadayoshi Aoyagi, Suita, and Kazuhisa Miyamoto, Osaka, both of Japan, assignors to Yoshiharu Miura and Hideo Doi, both of, Japan

Filed Jul. 25, 1978, Ser. No. 927,941

Claims priority, application Japan, Jul. 27, 1977, 52-90673

Int. Cl.[2] A61K *31/74, 31/78, 31/70, 31/725*

U.S. Cl. 424—78 **13 Claims**

1. An artificial medical material with anticoagulative activity which comprises a carrier material with heparin and antithrombin III co-immobilized thereon.

4,213,963

FLUSPIRILENE-CONTAINING COMPOSITIONS

Jean Mesens, Geel, and Victor Haagen, Vosselaar, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed Dec. 14, 1978, Ser. No. 969,526

Int. Cl.[2] A61K *31/79*

U.S. Cl. 424—80 **2 Claims**

1. An aqueous fluspirilene-containing pharmaceutical composition for intramuscular administration which comprises per milliliter of composition from 1.5 to 15 mg of microcrystalline fluspirilene having such a particle size distribution that not less than 50% of the particles have a sphere diameter between 3μ and 10μ and not less than 70% of the particles have a sphere diameter between 2μ and 15μ; from 8 to 40 mg of water-soluble polyvinylpyrrolidone; and from 0.13 to 0.42 millimoles of phosphate buffer, adjusting the pH of the composition to a value between 6.0 and 8.2.

4,213,964

DIPHENYLHYDANTOIN ANTIBODIES

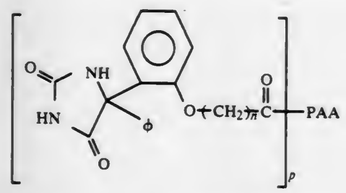
Robert T. Buckler, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 899,844, Apr. 25, 1978. This application Dec. 7, 1978, Ser. No. 967,136

Int. Cl.[2] A61K *39/00;* **C07C** *103/52;* **A61K** *45/02*

U.S. Cl. 424—85 **3 Claims**

1. An antibody prepared against a diphenylhydantoin immunogen conjugate of the formula:



wherein ϕ is phenyl, PAA is an immunogenic polypeptide or protein having a molecular weight of at least 5,000 bonded through an amide linkage, n=2 through 6, and p=1 through 50.

4,213,965

SMALL-PLAQUE VARIANT CANINE HERPESVIRUS VACCINE

Leland E. Carmichael, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 959,808, Nov. 13, 1978, abandoned. This application Jan. 23, 1979, Ser. No. 5,743

Int. Cl.[2] A61K *39/12*

U.S. Cl. 424—89 **14 Claims**

1. A method of increasing the resistance of dogs to Canine Herpesvirus infection which comprises inoculating susceptible pups or bitches prior to exposure to Canine Herpesvirus with a vaccine comprising a microplaque mP variant which has a plaque size about 0.7 times the diameter of the original Canine Herpesvirus isolate, said mP variant engendering resistance to virulent Canine Herpesvirus induced disease in the pups or the pups of said bitches.

4,213,966

METHOD FOR ISOLATING POLYETHER ANTIBIOTICS

Wen-Chih Liu, Princeton Junction; William E. Brown, and Gail L. Astle, both of Princeton, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 2, 1977, Ser. No. 802,768

Int. Cl.[2] A61K *35/00;* **C07H** *15/22*

U.S. Cl. 424—123 **8 Claims**

1. A method for isolating a polyether antibiotic selected from the group consisting of lonomycin, monensin, ionomycin, nigericin, lasalocid, salinomycin, and laidlomycin from its fermentation broth, which comprises adjusting the filtrate obtained from filtering of the fermentation broth to a slightly basic pH of within the range of from about 7.2 to about 8, extracting said filtrate with a water-immiscible organic solvent selected from the group consisting of ethyl acetate, butyl acetate, butanol, chloroform, methyl isobutyl ketone and benzene, said water-immiscible organic solvent being employed in a volume ratio to the filtrate of within the range of from about 2:1 to about 1:5, with the extraction being carried out 1 to 4 times; dissolving a concentrated form of the resulting organic phase in an aqueous lower alkanol solvent selected from the group consisting of methanol and ethanol; adjusting the pH of the resulting solution upwards to from about 9 to about 14; adding water to increase the volume of the solution from 1.5 to 3 fold; extracting the solution with a protic solvent selected from the group consisting of pentane, hexane, heptane, ligroin, and petroleum ether; and concentrating the resulting organic phase thereby causing the polyether antibiotic to crystallize out.

4,213,967

PESTICIDE CONTAINING IGNITION INHIBITOR

Werner Praxl, Rimbach, and Reiner Ehret, Weinheim, both of Fed. Rep. of Germany, assignors to Dr. Werner Freyberg, Chemische Fabrik Delitia Nachf., Laudenbach/Bergstr, Fed. Rep. of Germany

Filed Jun. 26, 1978, Ser. No. 919,176

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729887

Int. Cl.[2] A01N *11/00*

U.S. Cl. 424—128 **4 Claims**

1. A pesticide composition containing from about 40 to about 80 percent by weight of a metal phosphide selected from the group consisting of aluminum and magnesium phosphide, from about 15 to about 55 percent by weight of a pelleting agent, and as an ignition inhibiting agent, from about 0.5 to about 10 percent by weight, calculated on the metal phosphide, of a liquid aromatic hydrocarbon having a boiling point between about 130° and about 180° C. selected from the group consisting of hydrocarbons having a benzene or naphthalene nucleus and being substituted with alkyl substituents having from 1 to 4 carbon atoms, compounds with a benzene nucleus having up to 5 alkyl substituents, compounds with a naphthalene nucleus having up to 3 alkyl substituents, or isomeric mixtures of such aromatic hydrocarbons.

4,213,968

ENKEPHALIN DERIVATIVES

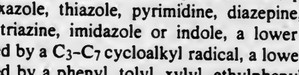
Abba J. Kastin, 4400 Morales St., Metairie, La. 70002, and David H. Coy, 4319 Perrier St., New Orleans, La. 65115

Filed Jun. 5, 1978, Ser. No. 912,412

Int. Cl.[2] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **15 Claims**

1. A pentapeptide of the formula



wherein: X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-norvaline, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, D-proline, D-histidine and D-arginine; Y is methionine or leucine and Z is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and loweralkoxy; and the pharmaceutically acceptable salts thereof.

4,213,969

PHOSPHONOUS ACID DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND THEIR USE IN COMBATTING MICROORGANISMS

Eric K. Baylis, and Wilfred Pickles, both of Stockport, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

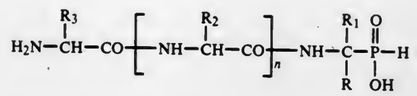
Filed Nov. 13, 1978, Ser. No. 960,266

Claims priority, application United Kingdom, Nov. 19, 1977, 48264/77

Int. Cl.[2] A61K *37/100;* **C07C** *103/52*

U.S. Cl. 424—177 **33 Claims**

1. A compound having the formula:



(I)

or the corresponding zwitterion form in which R and R_1 may be the same or different and each can be hydrogen, deuterium, lower alkyl, lower alkyl substituted by halogen, hydroxy, lower alkoxy, mercapto, carboxyl, S-substituted dithio groups, $—NR_4R_5$ wherein R_4 and R_5 can be the same or different and each is hydrogen, lower alkyl, guanidino or phenyl, or R_4 and R_5 together may form a polymethylene chain containing up to 6 carbon atoms which may be interrupted by oxygen or nitrogen, or phenoxy or phenoxy substituted by hydroxy or halogen, lower alkenyl, lower alkynyl, C_3–C_7 cycloalkyl, phenyl, phenyl substituted by loweralkyl, hydroxy, lower alkoxy or halogen, aziridine, oxetane, thiophene, furan, pyridine, azepine, isoxazole, thiazole, pyrimidine, diazepine, thiadiazole, triazole, triazine, imidazole or indole, a lower alkyl group substituted by a C_3–C_7 cycloalkyl radical, a lower alkyl group substituted by a phenyl, tolyl, xylyl, ethylphenyl, propylphenyl, isopropylphenyl, butylphenyl, isobutylphenyl, see-butylphenyl, tert-butylphenyl, or naphthyl radical, a lower alkyl group substituted by aciridine, oxetane, thiophene, furan, pyridine, azepine, isoxazole, thiazole, pyrimidine, diazepine, thiadiazole, triazole, triazine, imidazole or indole, or R and R_1 together form a polymethylene chain optionally interrupted by an oxygen, nitrogen or sulphur atoms, or R_1 represents, together with the C(R)-N< residue to which it is attached, the atoms required to complete a pyrrolidine, 4-hydroxypyrrolidine or pyrrolidone ring; and R_2 and R_3 may be the same or different and each can be hydrogen, lower alkyl lower alkyl substituted by halogen, hydroxy, lower alkoxy, mercapto, carboxyl, S-substituted dithio groups, $—NR_4R_5$ wherein R_4 and R_5 can be the same or different and each is hydrogen, lower alkyl, guanidino or phenyl, or R_4 and R_5 together may form a polymethylene chain containing up to 6 carbon atoms which may be interrupted by oxygen or nitrogen, or phenoxy or phenoxy substituted by hydroxy or halogen, C_3–C_7 cycloalkyl, phenyl, phenyl substituted by lower alkyl, hydroxy, lower alkoxy or halogen, or lower alkyl substituted by a C_3–C_7 cycloalkyl radical, lower alkyl substituted by aziridine, oxetane, thiophene, furan, pyridine, azepine, isoxazole, thiazole, pyrimidine, diazepine, thiadiazole, thiazole, triazine, imidazole or indole,;

aziridine, oxetane, thiophene, furan, pyridine, azepine, isoxazole, thiazole, pyrimidine, diazepine, thiadiazole, triazole, triazine, imidazole or indole,;

or R_2 and R_3, independently, together with the >C(H)-N< residue to which each is attached, by each represent the atoms required to complete a pyrrolidine, 4-hydroxypyrrolidine or pyrrolidone ring; and n is 0, 1, 2 or 3; as well as the esters thereof with alcohols selected from the group consisting of lower alkyl alcohols, aralkyl alcohols, phenols, alkanoyloxymethanols, amino-lower alkanoyloxymethanols, 3-hydroxyphthalide and 5-indanol; salts of the compounds of formula I, with acids or bases; and all optical isomers thereof.

28. An antimicrobial composition comprising an effective amount of a compound of formula I, according to claim 1 together with a suitable carrier.

30. A method of combatting plant pathogenic bacteria and fungi which comprises applying to their habitat an effective amount of a compound of formula I according to claim 1.

4,213,970

ANTIVIRAL COMPOSITIONS CONTAINING A TRANSFER-RIBONUCLEIC ACID

Guy Dirheimer, Strasbourg, and Pierre Louisot, Lyons, both of France, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,671

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824411

Int. Cl.[2] A61K *31/70, 31/665;* **C07H** *21/02*

U.S. Cl. 424—180 **4 Claims**

1. An antiviral pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective antiviral amount of eukaryotic transfer-ribonucleic acid.

2. A composition of claim 1, where said transfer-ribonucleic acid is derived from yeast.

4,213,971

4-N, 2'-N AND 4,2'-Di-N-FORTIMICIN AK DERIVATIVES

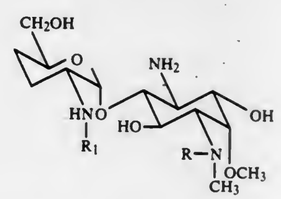
James B. McAlpine, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,242

Int. Cl.[2] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 424—181 **9 Claims**

1. A fortimicin AK derivative represented by the formula:



wherein: R and R_1 are the same or different members of the group consisiting of hydrogen, acyl, aminoacyl, diaminoacyl, N-lower-alkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted aminoacyl, loweralkyl, aminoloweralkyl, diaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, aminohydroxyloweralkyl, N,N-diloweralkylaminoloweralkyl, N-loweralkylaminohydroxyloweralkyl, N,N-diloweralkylaminohydroxyloweralkyl and the pharmaceutically acceptable salts thereof with the limitation that both R and R_1 cannot be hydrogen.

9. A pharmaceutical composition comprising an antibacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

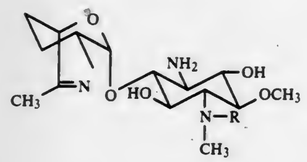
4,213,972

4-N, 2'-N AND 4,2'Di-N-FORTIMICINS AH AND AI

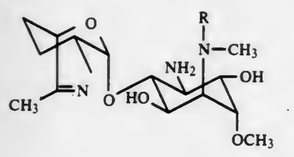
Jerry R. Martin, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,254
Int. Cl.[2] A61K *31/71;* **C07H** *15/22*
U.S. Cl. 424—181 **14 Claims**

1. 4-N,2'-N and 4,2'-Di-N-derivatives of fortimicins AI and AH represented by the formulae I and II respectively



I



II

wherein R is selected from the group consisting of acyl, aminoacyl, diaminoacyl, N-loweralkylaminoacyl, N,N-diloweralkylaminoloweralkyl, hydroxy-substituted aminoacyl, loweralkyl, hydroxyloweralkyl, aminoloweralkyl, diaminoloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, N-loweralkylaminohydroxyloweralkyl and N,N-diloweralkylaminohydroxyloweralkyl; and the pharmaceutically acceptable salts thereof.

14. A pharmaceutical composition comprising an anti-bacterially effective amount of a compound of claim **1** and a pharmaceutically acceptable carrier or diluent.

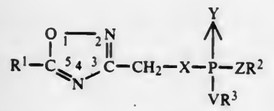
4,213,973

USE OF OXADIAZOLE DERIVATIVES FOR CORN ROOT WORM CONTROL

Ronald E. Wheeler, Martinez, and William F. King, Novato, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 18, 1978, Ser. No. 943,079
Int. Cl.[2] A01N *9/36*
U.S. Cl. 424—200 **2 Claims**

1. A method for killing corn root worms which comprises adding to the soil habitat of the root worms an insecticidally effective amount of a compound of the formula



wherein R^1, R^2 and R^3 are C_1-C_4 alkyl; X and Y are sulfur; and Z and V are oxygen.

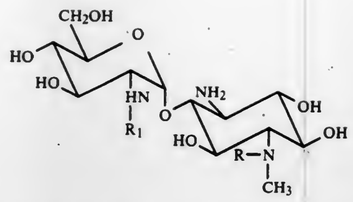
4,213,974

4-N, 2'-N AND 4,2'-Di-N-FORTIMICIN AO DERIVATIVES

Jerry R. Martin, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,249
Int. Cl.[2] A61K *31/71;* **C07H** *15/22*
U.S. Cl. 424—180 **12 Claims**

1. Fortimicin AO derivatives represented by the formula:



wherein: R and R_1 are the same or different members of the group consisting of hydrogen, acyl, aminoacyl, diaminoacyl N-loweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted aminoacyl, loweralkyl, aminoloweralkyl, diaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, aminohydroxyloweralkyl, N,-loweralkylaminohydroxyloweralkyl, N,N-diloweralkylaminohydroxyloweralkyl, and the pharmaceutically acceptable salts thereof with the limitation that R and R_1 each cannot be hydrogen.

8. A pharmaceutical composition comprising a compound of claim **1** and a pharmaceutically acceptable carrier or diluent.

4,213,975

INSECTICIDAL SYNERGISTIC MIXTURES OF O,O-DIETHYL O-(3,5,6-TRICHLORO-2-PYRIDINYL)PHOSPHOROTHIOATE AND O-ETHYL O-(4-(METHYLTHIO)PHENYL)-S-N-PROPYL PHOSPHOROTHIOATE

Larry L. Larson, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 23, 1979, Ser. No. 23,516
Int. Cl.[2] A01N *9/36*
U.S. Cl. 424—200 **7 Claims**

1. A synergistic insecticidal composition which comprises an inert carrier and a mixture of toxicants consisting essentially of about 1 part by weight of O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl)-phosphorothioate and from about ½ to about 8 parts by weight of O-ethyl O-(4-(methylthio)phenyl)-S-n-propyl phosphorothioate.

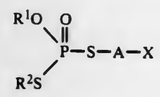
4,213,976

HALOALKYLDITHIOPHOSPHORIC ACID ESTERS

Hans-Peter Loeffler, Ludwigshafen; Heinrich Adolphi, Limburgerhof, and Karl Kiehs, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,544
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743349
Int. Cl.[2] A01N *9/36;* **C07F** *9/165*
U.S. Cl. 424—224 **7 Claims**

1. A haloalkyldithiophosphoric acid ester of the formula I



I

where R^1 is methyl or ethyl, R^2 is alkyl of 2 to 4 carbon atoms, A is linear or branched alkylene of 2 to 4 carbon atoms and X is chlorine or bromine.

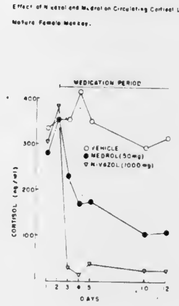
5. A process of pest control, wherein a haloalkyldithiophosphoric acid ester of the formula I is allowed to act on the pests or their habitat.

4,213,977

PITUITARY-ADRENAL INHIBITING METHOD

Harry P. Schane, Jr.; Homer R. Harding, both of Canaan, and John E. Creange, Kinderhook, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Nov. 20, 1978, Ser. No. 961,880
Int. Cl.[2] A61K *31/58*
U.S. Cl. 424—241 **2 Claims**



1. The method of suppressing pituitary-adrenal function without producing peripheral glucocorticoid effects in a person having an inappropriately high concentration of circulating corticoids and/or ACTH which comprises administering to the person an amount of (17α)-2'-(4-fluorophenyl)-2'H-pregna-2,4-dien-20-yno[3,2-c]pyrazol-17-ol effective in reducing the concentration of circulating corticoids and/or ACTH.

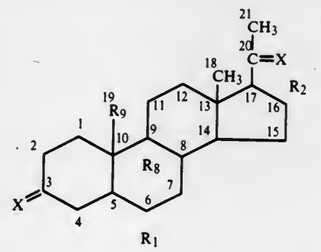
4,213,978

ANTI-ACNE AND ANTI-SEBORRHEA PRODRUG DERIVATIVES OF PROGESTERONE

Nicholas S. Bodor, Lawrence, and Kenneth B. Sloan, Eudora, both of Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

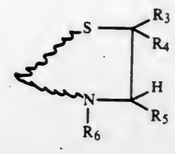
Continuation-in-part of Ser. No. 886,589, Mar. 14, 1978. This application Dec. 5, 1978, Ser. No. 966,585
Int. Cl.[2] A61K *31/58;* **C07J** *17/00*
U.S. Cl. 424—241 **41 Claims**

1. A method for topically treating acne or seborrhea on a subject afflicted with same which comprises topically administering thereto an anti-acne or anti-seborrhea effective amount of a compound having the formula



[I]

wherein each X is selected from the group consisting of 0 and



with the proviso that both X's cannot at the same time be 0, while either one or both can comprise the thiazolidine moiety;

R_1 is a member selected from the group consisting of H, C_1-C_8 alkyl and halogen;

R_2 is a member selected from the group consisting of H, OH, $OOCR_7$, halogen and C_1-C_{10} alkyl;

R_3 and R_4 may be the same or different and each is selected from the group consisting of H and C_1-C_8 alkyl;

R_5 is $—COOR_7$;

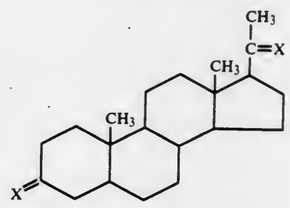
R_6 is a member selected from the group consisting of H, $—COR_7$, $—COOR_7$ and the pharmaceutically acceptable acid addition salts thereof;

R_7 is a member selected from the group consisting of H, C_1-C_{20} alkyl, C_2-C_{20} alkenyl, C_5-C_7 cycloalkyl, C_5-C_7 cycloalkyl-aryl, phenyl and C_1-C_4 alkyl substituted phenyl;

R_8 is a member selected from the group consisting of H, Cl and F; and

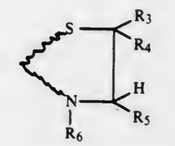
R_9 is a member selected from the group consisting of H and C_1-C_8 alkyl.

2. A method for topically treating acne or seborrhea on a subject afflicted with same which comprises topically administering thereto an anti-acne or anti-seborrhea effective amount of a compound having the formula



[II]

wherein each X is selected from the group consisting of 0 and



with the proviso that both X's cannot at the same time be 0, while either one or both can comprise the thiazolidine moiety;

R_3 and R_4 may be the same or different and each is selected from the group consisting of H and C_1-C_8 alkyl;

R_5 is $—COOR_7$;

R_6 is a member selected from the group consisting of H, $—COR_7$, $—COOR_7$ and the pharmaceutically acceptable acid addition salts thereof; and

R_7 is a member selected from the group consisting of H, C_1-C_{20} alkyl, C_2-C_{20} alkenyl, C_5-C_7 cycloalkyl, C_5-C_7 cycloalkyl-aryl, phenyl and C_1-C_4 alkyl substituted phenyl.

4,213,979

STABLE SPRAYABLE HYDROCORTISONE PRODUCT

Donald J. Levine, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

Filed Dec. 18, 1978, Ser. No. 970,705

Int. Cl.[2] A61K *31/56*

U.S. Cl. 424—243 **16 Claims**

1. An anti-inflammatory, antipruritic aqueous solution comprising hydrocortisone and PPG-12-PEG-50-Lanolin.

4,213,980

AZATHIANAPHTHALENES

Alex Sele, Muttenz; Pier G. Ferrini; Georges Haas, both of Binningen; Knut A. Jaeggi, Basel, and Alberto Rossi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

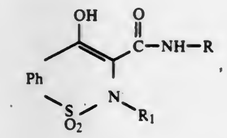
Filed Jan. 17, 1979, Ser. No. 4,113

Claims priority, application Switzerland, Jan. 30, 1978, 993/78

Int. Cl.[2] C07D *279/02*; A61K *31/54*

U.S. Cl. 424—246 **10 Claims**

1. A substituted 3,4-dihydro-2H-1,2-benzothiazine 1,1-dioxide of the formula



(I)

wherein Ph represents 1,2-phenylene or 1,2-phenylene substituted by lower alkyl, lower alkoxy, lower alkanoyl, halogen, trifluoromethyl or nitro, R represents benzopyrone or benzopyrone substituted by lower alkyl, lower alkoxy, halogen, hydroxy, lower alkanoyloxy, optionally lower-alkylated or lower-alkanoylated amino, trifluoromethyl or, at two adjacent carbon atoms, by lower alkylene or lower alkylenedioxy, and R_1 represents hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, lower alkenyl, phenyl-lower alkyl or phenyl-lower alkyl substituted by lower alkyl, lower alkoxy, halogen, trifluoromethyl or nitro or a pharmaceutically acceptable salt thereof.

10. A pharmaceutical preparation containing an antiinflammatorically effective amount of a compound as claimed in claim 1 or a pharmaceutically acceptable salt thereof with a base, together with conventional adjuvants or carriers.

4,213,981

INJECTABLE ANESTHETIC

Jon C. Wetzel, Plattsburgh, N.Y., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 787,643, Apr. 14, 1977, abandoned. This application Sep. 13, 1978, Ser. No. 941,999

Int. Cl.[2] A61K *31/415, 31/54*

U.S. Cl. 424—247 **7 Claims**

5. A method of inducing anesthesia in a mammal which comprises administering intravenously to said mammal an amount sufficient to produce a surgical plane of anesthesia of acepromazine, or a pharmaceutically acceptable salt thereof, and midaflur together or separately at approximately the same time, the ratio of midaflur to acepromazine being between about two hundred to one and about one to one.

4,213,982

NOVEL 4H-s-TRIAZOLO[4,3-a][1,5]BENZODIAZEPIN-5-ONES

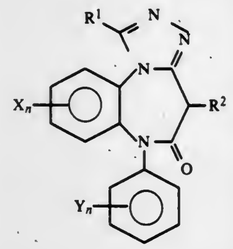
B. Richard Vogt, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 778,823, Mar. 17, 1977, Pat. No. 4,133,809, which is a division of Ser. No. 365,012, May 29, 1973, abandoned. This application Sep. 21, 1978, Ser. No. 944,532

Int. Cl.[2] A61K *31/535, 31/41, 31/44, 445*

U.S. Cl. 424—248.52 **7 Claims**

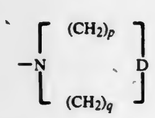
1. A method for promoting growth rate or feed efficiency in livestock which comprises administering to said livestock a growth promoting amount of a compound of the structure



wherein

R^1 is phenyl; X-substituted phenyl wherein X is as defined below; 2-, 3- or 4-pyridyl, cycloalkyl of 3–5 carbons;

R^2 is H; alkyl of 1–4 carbons optionally substituted by amino, mono-lower alkyl, di-lower alkyl amino, cyclic imines of formula



where D is methylene, oxygen or N-R^{10} and where p and q are the same or different and are the integers 1, 2, and 3 provided that p+q is at least 1; hydroxy; alkoxy of 1–6 carbons or



wherein



is an acyl group capable of removal and replacement by hydrogen or alkyl of 1–4 carbons and R^5 is alkyl of 1–5 carbons optionally substituted by phenyl or X-substituted phenyl; or R^5 is phenyl optionally substituted by 1 or more X-substitutents;

X and Y are the same or different and are hydrogen, F, Cl, Br, trifluoromethyl, alkyl of from 1–6 carbons, alkoxy of from 1–6 carbons, nitro, cyano, amino, alkanoylamino of 1–4 carbons, alkylthio of 1–6 carbons, alkylsulfinyl of 1–6 carbons or alkyl sulfonyl of 1–6 carbons;

R^{10} is hydrogen, alkyl of 1–4 carbons or phenyl optionally substituted by X, wherein X is as defined above; and

n is 0, 1 or 2.

4,213,983

TREATING GASTRO-INTESTINAL DISORDERS AND EMESIS WITH N-(HETEROCYCLIC SUBSTITUTED) BENZAMIDES

Michael S. Hadley, Sawbridgeworth, and Eric A. Watts, Harlow, both of England, assignors to Beecham Group Limited, England

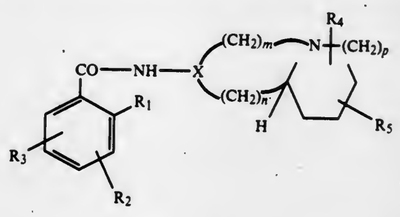
Filed Oct. 25, 1977, Ser. No. 845,027

Claims priority, application United Kingdom, Nov. 5, 1976, 46105/76

Int. Cl.[2] A61K *31/495*; C07D *471/04*

U.S. Cl. 424—250 **116 Claims**

81. A method of treating disorders of the gastro-intestinal function and emesis in humans and animals which comprises administering to a human or animal in need thereof a therapeutically effective amount of a compound of the formula (I)



(I)

or a pharmaceutically acceptable salt thereof wherein

R_1 is alkoxy of 1 to 6 carbon atoms;

R_2 and R_3 are the same or different and are hydrogen, halogen, CF_3, hydroxy, alkoxy of 1 to 6 carbon atoms, alkanoyl of 2 to 7 carbon atoms, amino, amino substituted by one or two alkyl moieties of 1 to 6 carbon atoms, alkanoylamino of 2 to 7 carbon atoms, aminocarbonyl or aminosulphone unsubstituted or substituted by one or two alkyl moieties of 1 to 6 carbon atoms, alkylsulphone of 1 to 6 carbon atoms or nitro;

X is either a nitrogen atom, in which case m+n is 3 to 5, m is 2 to 4 and n is 1 to 3; or X is CH in which case m+n is 2 to 5, m is 1 to 5, and n is 0 to 4;

p is 0 to 3;

R_4 is hydrogen, alkyl of 1 to 6 carbon atoms, phenyl or phenyl-alkyl of 1 to 6 carbon atoms in the alkyl moiety, said phenyl or phenyl-alkyl being nuclear-unsubstituted or nuclear substituted by alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, CF_3 or halogen, and R_5 is hydrogen; or R_4 and R_5 are attached to two adjacent carbon atoms and form together with these two adjacent carbon atoms, a fused benzene ring, which benzene ring is unsubstituted or substituted by alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, CF_3 or halogen, in combination with a pharmaceutically acceptable carrier.

4,213,984

11-(PIPERAZINO-ACETYL)-5,11-DIHYDRO-6H-PYRIDO[2,3-b][1,4]BENZODIAZEPIN-6-ONES AND SALTS THEREOF

Günther Schmidt, and Matyas Leitold, both of Biberach an der Riss, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

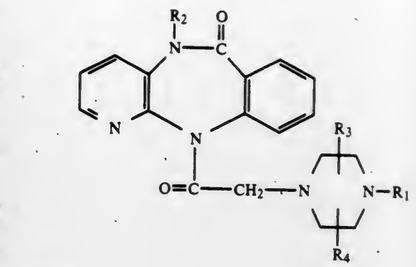
Filed May 19, 1978, Ser. No. 907,888

Claims priority, application Fed. Rep. of Germany, May 31, 1977, 2724434

Int. Cl.[2] A61K *31/55*; C07D *403/06*

U.S. Cl. 424—250 **11 Claims**

1. A compound of the formula



wherein

R_1 is alkyl of 3 to 12 carbon atoms; olefinic hydrocarbyl of 3 to 20 carbon atoms having 1 to 3 double bonds; methylenedioxy-benzyl; phenyl-(alkenyl of 2 to 4 carbon atoms); (cycloalkyl of 5 to 7 carbon atoms) - methyl; adamantylmethyl; or, when R_3 and/or R_4 are methyl or ethyl, also methyl or ethyl;

R_2 is hydrogen or methyl; and

R_3 and R_4 are each hydrogen, methyl or ethyl;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

11. The method of treating gastro-intestinal ulcers or inhibiting gastro-intestinal secretion in a warm-blooded animal, which comprises perorally, parenterally or rectally administering to said animal an effective anti-ulcerogenic or secretion-inhibiting amount of a compound of claim 1.

4,213,985

NOVEL 5,11-DIHYDRO-6H-PYRIDO-[2,3-b][1,4]-BENZODIAZEPINE-6-ONES

Günther Schmidt, and Matyas Leitold, both of Biberach an der Riss, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

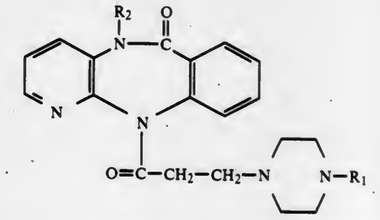
Filed May 19, 1978, Ser. No. 907,889

Claims priority, application Fed. Rep. of Germany, May 31, 1977, 2724501

Int. Cl.[2] A61K *31/55*; C02D *403/06*

U.S. Cl. 424—250 **9 Claims**

1. A compound of the formula



wherein R_1 is phenyl-(alkyl of 1 to 3 carbon atoms), and

R_2 is hydrogen or methyl, or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

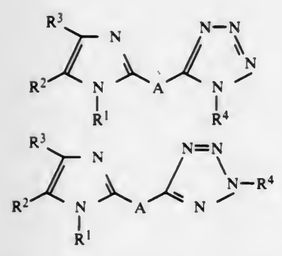
4,213,986

NOVEL DERIVATIVES OF IMIDAZOLE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND METHOD OF USE

Ulrich Gebert, Kelkheim; Josef Musil, Kirchzarten-Burg, and Rolf-Ortwin Weber, Wiesbaden-Naurod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 741,418, Nov. 12, 1976, Pat. No. 4,152,440.
This application Oct. 6, 1978, Ser. No. 949,018
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1976, 2650231
Int. Cl.[2] A61K *31/44, 31/495, 31/505*
U.S. Cl. 424—250 **8 Claims**

1. A physiologically-acceptable compound of one of the formulae



(I)

(II)

wherein

R^1 is a member selected from the group consisting of (a) a 6-membered heteroaromatic ring with up to two ring hetero atoms, each of which is a nitrogen atom, and (b) an alkyl group containing from 1 to 4 carbon atoms and substituted by such a heteroaromatic ring;

each of R^2 and R^3 is, independently, a hydrogen atom, alkyl having up to 4 carbon atoms, substituted or unsubstituted aryl or, together with the other of R^2 and R^3, unsubstituted —CH=CH—CH=CH— or —CH=CH—CH=CH— substituted by a member selected from the group consisting of alkyl having up to 4 carbon atoms, alkoxy having up to 4 carbon atoms, haloalkyl having up to 4 carbon atoms, halo and nitro;

R^4 is a member selected from the group consisting of a hydrogen atom, alkyl having up to 4 carbon atoms, aryl and aralkyl having up to 4 carbon atoms in the alkyl moiety; and

A is a single bond or alkylene having from 1 to 6 carbon atoms;

any substitutent of substituted aryl being a member selected from the group consisting of alkyl having up to 4 carbon atoms, alkoxy having up to 4 carbon atoms, haloalkyl having up to 4 carbon atoms, halo or nitro;

or a physiologically-acceptable salt thereof.

8. A phamaceutical composition for treating a purine metabolic disorder and having an active component in association with a pharmaceutical carrier or excipient, the active component comprising an antiuricopathic effective amount of a pharmacologically-acceptable compound according to claim **1** or of a physiologically-acceptable salt thereof.

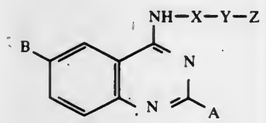
4,213,987

AGRICULTURAL FUNGICIDAL METHOD

Kazuto Nakagami; Shinji Yokoi, both of Yasumachi; Kenji Nishimura, Ube; Shigeki Nagai, Ube; Takeo Honda, Ube; Kiroku Oda, Ube; Katsutoshi Fujii, Ube; Ryuji Kobayashi, Ube, and Mikio Kojima, Ube, all of Japan, assignors to Sankyo Company Limited, Tokyo and Ube Industries, Ltd., Ube, both of, Japan

Filed May 30, 1978, Ser. No. 910,117
Claims priority, application Japan, Jun. 7, 1977, 52-67034
Int. Cl.[2] A01N *9/22*
U.S. Cl. 424—251 **33 Claims**

1. A method for protecting plants from fungicidal attack comprising applying to the site of said plants an agricultural fungicidal composition which contains as an active ingredient a fungicidally effective amount of a compound having the formula



wherein:

A and B are same or different and each represents a hydrogen atom, a lower alkyl group, a halogen atom or a nitro group;

X represents an alkylene group;

Y represents an oxygen atom or a sulfur atom; and

Z represents an alkyl group, an aralkyl group, a naphthyl group, an unsubstituted phenyl group or a phenyl group substituted with 1 to 3 substituents which are same or different and are selected from the group consisting of a lower alkyl group, a lower alkoxy group, a lower alkylthio group, a phenyl group, a trifluoromethyl group and a halogen atom; or a salt thereof;

and an agriculturally acceptable carrier.

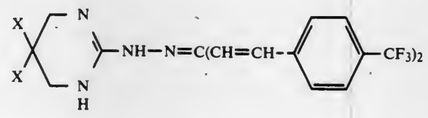
4,213,988

INSECTICIDAL 1,5-BIS(α,α,α-TRIFLUORO-P-TOLYL)-1,4-PENTADIEN-3-ONE (1,4,5,6-TETRAHYDRO-2-PYRIMIDINYL)HYDRAZONES

James B. Lovell, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 883,775, Mar. 6, 1978, Pat. No. 4,163,102, which is a continuation-in-part of Ser. No. 793,116, May 2, 1977, abandoned. This application Jan. 19, 1979, Ser. No. 4,645
The portion of the term of this patent subsequent to May 2, 1995, has been disclaimed.
Int. Cl.[2] A01N *9/22*
U.S. Cl. 424—251 **5 Claims**

1. A method for controlling fire ants and cockroaches comprising contacting the insects, their habitat, breeding grounds or feed with an insecticidally effective amount of a compound of the formula:



wherein X is hydrogen or methyl.

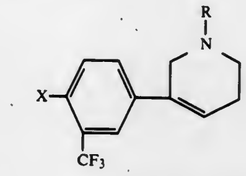
4,213,989

ANOREXIGENIC 3-PHENYL-TETRAHYDROPYRIDINES

Lucien Nedelec, Le Raincy; Jacques Guillaume, Sevran, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Roussel Uclaf, Paris, France

Filed Feb. 2, 1979, Ser. No. 9,234
Claims priority, application France, Feb. 8, 1978, 78 03526
Int. Cl.[2] A61K *31/44;* **C07D** *211/70*
U.S. Cl. 424—263 **6 Claims**

1. A method of curbing the appetite of warm-blooded animals comprising administering to warm-blooded animals an anorexigenically effective amount of at least one compound selected from the group consisting of 3-phenyl-tetrahydropyridines of the formula



wherein X is selected from the group consisting of hydrogen and chlorine and R is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, alkenyl and alkynyl of 3 to 5 carbon atoms and phenyl alkyl of 1 to 3 alkyl carbon atoms with the proviso that X is not hydrogen when R is benzyl and their non-toxic, pharmaceutically acceptable acid addition salts.

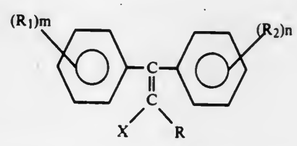
4,213,990

1,1-DIPHENYLETHENE DERIVATIVES AS MICROBICIDES

Willy Frick, Pfeffingen, and Adolf Hubele, Magden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,994
Claims priority, application Switzerland, Mar. 17, 1978, 2931/78
Int. Cl.[2] A01N *9/22;* **C07D** *233/58, 249/08*
U.S. Cl. 424—269 **15 Claims**

1. A compound of the formula I



(I)

in which X is fluorine or chlorine; R is a 1,2,4-triazolyl-1 group or imidazolyl-1 group, each of which is unsubstituted or substituted by methyl; whilst R_1 and R_2 independently of one another are each a number, determined by m and n respectively, of identical or different substituents from the group: halogen, C_1-C_3-alkyl, CF_3 or —CN; and m and n independently of one another are each 0, 1, 2 or 3.

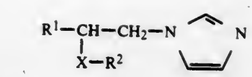
4,213,991

DERIVATIVES OF SUBSTITUTED N-ALKYL IMIDAZOLES AND COMPOSITIONS AND METHODS CONTAINING THE SAME

Keith A. M. Walker, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 30, 1978, Ser. No. 910,978
Int. Cl.[2] A01N *9/22;* **A61K** *31/415;* **C07D** *233/54*
U.S. Cl. 424—273 R **20 Claims**

1. A compound of the formula



(I)

wherein R^1 is phenethyl and R^2 is phenyl, each of said phenethyl or phenyl independently being unsubstituted or substituted in the phenyl ring by from 1 to 3 substituents selected from the group consisting of halo, lower alkyl and lower alkoxy with the proviso that at least one of R^1 and R^2 be substituted by lower alkoxy; X is oxygen in sulfur and the antimicrobial acid addition salts thereof.

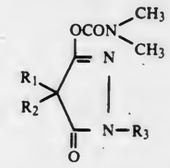
4,213,992

INSECTICIDAL CARBAMATES

Heinrich Adolphi, Limburgerhof; Annegrit Baumann, Mannheim; Rolf Huber, Ludwigshafen; Karl Kiehs, Lampertheim, and Franz Merger, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 807,065, Jun. 16, 1977, abandoned.
This application Jul. 20, 1978, Ser. No. 926,405
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630912
Int. Cl.[2] A61K *31/415;* **C07D** *231/34*
U.S. Cl. 424—273 P **4 Claims**

1. A carbamate of the formula



where R_1 and R_2 are identical or different and each is linear or branched alkyl of 1 to 4 carbon atoms or phenyl, and R_3 is linear or branched alkyl of 1 to 6 carbon atoms which is optionally substituted by phenyl or methoxy or is cycloalkyl of 3 to 6 carbon atoms, unsubstituted phenyl or phenyl bearing one or more halogen substituents.

4. A process for combatting pests, wherein the pests or the objects to be protected against pest attack are treated with an effective amount of a carbamate as claimed in claim **1**.

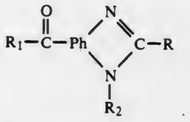
4,213,993

ACYL-BENZIMIDAZOLE-2-METHANOL DERIVATIVES

Ernst Habicht, Oberwil; Pier G. Ferrini, Binningen, and Alfred Sallmann, Bottmingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 825,630, Aug. 18, 1977, Pat. No. 4,141,982.
This application Nov. 20, 1978, Ser. No. 962,426
Claims priority, application Luxembourg, Aug. 27, 1976, 75684
Int. Cl.[2] A61K *31/415;* **C07D** *235/12*
U.S. Cl. 424—273 B **10 Claims**

1. A benz-acyl-benzimidazole-2-methanol derivative of the formula:



(I)

in which R is hydroxymethyl or etherified hydroxymethyl containing, as the etherified hydroxyl group, lower alkoxy, hydroxy-lower alkoxy, lower alkoxy-lower alkoxy or di-lower

alkylamino-lower alkoxy, R_1 is lower alkyl which is unsubstituted or substituted by lower alkoxy, lower alkylthio, lower alkylsulphinyl, lower alkylsulphonyl, phenylthio, phenylsulphinyl or phenylsulphonyl, or phenyl or phenyl-lower alkyl which are unsubstituted or substituted in the phenyl radical by lower alkyl, lower alkoxy or halogen, or is lower alkenyl or cycloalkyl having 3 to 8 carbon atoms, R_2 is hydrogen or lower alkyl and Ph is 1,2-phenylene which contains the radical of the formula R_1—C(=O)— and is otherwise unsubstituted or substituted by lower alkyl, lower alkoxy, hydroxyl halogen.

10. A pharmaceutical preparation containing an antiallergically effective amount of a compound as claimed in claim 1 together with a conventional pharmaceutical carrier.

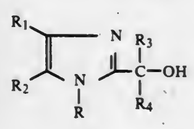
4,213,994

IMIDAZOLYL-(2)-CARBINOLS HAVING HYPOLIPIDEMIC ACTION AND PROCESS FOR PREPARING THEM

Ulrich Gebert, and Ernold Granzer, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 351,523, Apr. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 318,110, Dec. 26, 1972, abandoned. This application Jan. 24, 1979, Ser. No. 6,203
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1971, 2164919
Int. Cl.[2] **A61K** *31/415;* **C07D** *233/64, 235/12*
U.S. Cl. 424—273 R **25 Claims**

1. An imidazolyl-2-carbinol of the formula I(a)



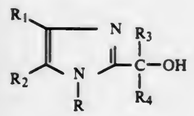
I(a)

wherein
R=lower alkyl, phenyl or benzyl,
R_1 and R_2=hydrogen,
R_3=hydrogen, lower alkyl or phenyl,
R_4=lower haloalkyl, lower haloalkoxyphenyl, 1-benzylimidazol-2-yl, monohalophenyl, dihalophenyl or R_3 and R_4 are together fluoryl of the formula



all of said alkyl and alkoxy groups having 1 to 4 carbon atoms, and the physiologically tolerable acid addition salts.

22. A method for lowering the serum lipid level in the treatment of hyperlipidemia which comprises administering an effective amount of from 100 to 1000 mg per dosage unit of a compound of the formula I(a)



I(a)

wherein
R=lower alkyl, phenyl or benzyl,
R_1 and R_2=hydrogen,
R_3=hydrogen, lower alkyl or phenyl,
R_4=lower haloalkyl, lower haloalkoxyphenyl, 1-benzylimidazol-2-yl, monohalophenyl, dihalophenyl or R_3 and R_4 are together fluoryl of the formula



all of said alkyl and alkoxy groups having 1 to 4 carbon atoms, or of a physiologically tolerable acid addition salt thereof.

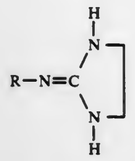
4,213,995

2-PHENYLIMINO-IMIDAZOLIDINES AND SALTS THEREOF

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein; Wolfgang Hoefke, Budenheim, all of Fed. Rep. of Germany, and Ludwig Pichler, Vienna, Austria, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,074
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 2806811
Int. Cl.[2] **A61K** *31/415;* **C07D** *233/50*
U.S. Cl. 424—273 R **3 Claims**

1. A compound of the formula



wherein R is 2,6-dichloro-4-hydroxymethyl-phenyl or tetrafluoro-phenyl; or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3. The method of reducing the blood pressure of a warm-blooded animal in need thereof, which comprises enterally or parenterally administering to said animal an effective hypotensive amount of a compound of claim **1**.

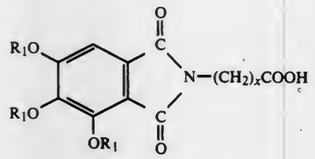
4,213,996

PHTHALIMIDE COMPOUNDS AND METHOD FOR TREATING DISORDERS OF THE HEART

Mohammed T. Shipchandler, Terre Haute, Ind., assignor to International Minerals & Chemical Corporation, Terre Haute, Ind.

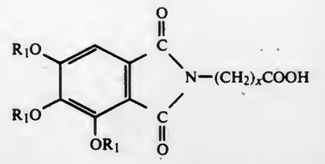
Filed Sep. 1, 1978, Ser. No. 939,169
Int. Cl.[2] **A61K** *31/40;* **C07D** *209/48*
U.S. Cl. 424—274 **4 Claims**

1. A method for the treatment or prophylaxis of cardiac disorders in a warm-blooded mammal which comprises the administration to said mammal of about 25 mg/kg of body weight to about 500 mg/kg per day of a compound of the formula



or a pharmaceutically-acceptable salt thereof, wherein x is an integer of from 1 to 10, and R_1 is selected from the group consisting of lower alkyl of from 1 to 5 carbon atoms.

4. A compound of the formula



or a pharmaceutically-acceptable salt thereof, wherein x is an integer of from 1 to 10, and R_1 is selected from the group consisting of lower alkyl of from 1 to 5 carbon atoms.

4,213,997

THERAPEUTIC AGENT FOR IMPROVING CARDIOVASCULAR FUNCTION

John Westley, Mountain Lakes, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 647,850, Jan. 9, 1976, abandoned, which is a division of Ser. No. 489,978, Jul. 19, 1974, abandoned. This application Jan. 20, 1978, Ser. No. 871,042
Int. Cl.[2] **A61K** *31/35*
U.S. Cl. 424—283 **2 Claims**

1. A pharmaceutical parenteral composition for producing myocardial stimulation in patients requiring such effects comprising an inert non-toxic pharmaceutically acceptable carrier base and, as the active ingredient, an amount which is effective in producing myocardial stimulation of lasalocid hexanoate, di-(N-methylglucamine) salt.

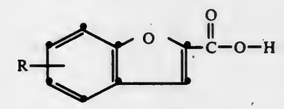
4,213,998

INHIBITION OF LIPOGENESIS

Donald T. Witiak, Columbus, Ohio; John B. Carr, Houston, Tex., and Harry J. Mersmann, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 9,338, Feb. 5, 1979, abandoned, which is a continuation of Ser. No. 904,084, May 8, 1978, abandoned, which is a continuation of Ser. No. 811,647, Jun. 30, 1977, abandoned. This application Jun. 7, 1979, Ser. No. 46,592
Int. Cl.[2] **A61K** *31/34*
U.S. Cl. 424—285 **1 Claim**

1. A method of inhibiting lipogenesis in a mammal, which comprises administering to a mammal, orally or parenterally, an effective amount of a compound of the formula



wherein R is cycloalkyl of from three to six carbon atoms; alkyl or alkoxy of from one to eight carbon atoms; or is phenyl, phenoxy, benzyl or benzoyl or any of these substituted by one of alkyl or alkoxy of from one to six carbon atoms, fluorine, chlorine, bromine, nitro, acetyl, acetoxy and hydroxy, with the proviso that R also can be chlorine substituted at the 7-position of the molecule.

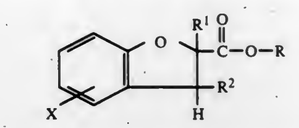
4,213,999

INHIBITION OF LIPOGENESIS

Donald T. Witiak, Columbus, Ohio; John B. Carr, Houston, Tex., and Harry J. Mersmann, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 9,338, Feb. 5, 1979, abandoned, which is a continuation of Ser. No. 904,084, May 8, 1978, abandoned, which is a continuation of Ser. No. 811,647, Jun. 30, 1977, abandoned. This application Jun. 7, 1979, Ser. No. 46,593
Int. Cl.[2] **A61K** *31/34*
U.S. Cl. 424—285 **1 Claim**

1. A method of inhibiting lipogenesis in a mammal, which comprises administering to a mammal, orally or parenterally, an effective amount of a compound of the formula



wherein R is alkyl of from one to four carbon atoms or is 2-propenyl,

(a) R^1 and R^2 together represent a second bond between the two carbon atoms, and X is one of the following moieties, bonded to the carbon atom in the indicated position on the molecule:
(1) 5-benzyl;
(2) 5-(alkyloxy of from three to six carbon atoms;
(3) 4-phenoxy;
(4) 5-benzoyl;
(5) 5-(4-acetylphenyl);
(6) 5-(4-(acetyloxy)phenyl);
(7) 5-(4-(1-hydroxyethyl)phenyl);
(8)5-(4-acetamidophenyl);
(9) 5-(4-aminophenyl);
or

(b) R^1 and R^2 each represents a hydrogen atom, and X is one of the following moieties, bonded to the carbon atom in the indicated position on the molecule:
(1) 5-phenyl;
(2) 5-cyclohexyl;
(3) 5-benzyl;
(4) 6-phenoxy;
(5) 4-phenoxy;
(6) 5-(4(1-hydroxyethyl)phenyl);
(7) 5-(4-chlorophenyl);
(8) 5-(4-acetamidophenyl).

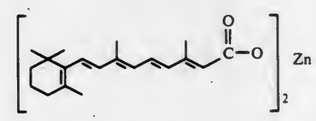
4,214,000

ZINC SALT OF ALL-TRANS-RETINOIC ACID FOR THE TREATMENT OF ACNE

Christopher M. Papa, Colts Neck, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

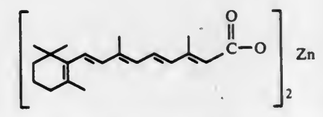
Filed Oct. 30, 1978, Ser. No. 955,997
Int. Cl.[2] **A61K** *31/315;* **C07F** *3/06*
U.S. Cl. 424—289 **29 Claims**

1. A zinc salt of all-trans-retinoic acid having the theoretical structural formula:



and a zinc content of about 7.1 to 8.5 weight percent.

2. A topical composition for the treatment of acne comprising a therapeutically effective concentration of a zinc salt of all-trans-retinoic acid in a pharmaceutically acceptable topical vehicle compatible therewith, said zinc salt having the theoretical structural formula:



and a zinc content of about 7.1 to 8.5 weight percent.

4,214,001

1-(4-ACYLAMINO-PHENYL)-2-AMINO-ETHANOLS AND SALTS THEREOF

Günther Engelhardt; Johannes Keck; Krüger, all of Biberach an der Riss; Klaus Noll, Warthausen, and Helmut Pieper, Biberach an der Riss, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

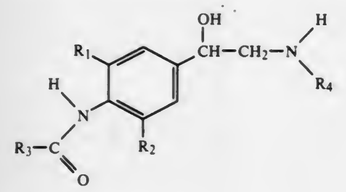
Filed Mar. 6, 1978, Ser. No. 883,814

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1977, 2710997

Int. Cl.[2] **A61K** *31/27, 31/275;* **C07C** *121/80, 125/06*

U.S. Cl. 424—300 **12 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, halogen or cyano;

R_2 is fluorine, cyano, trifluoromethyl, nitro or alkyl of 1 to 4 carbon atoms;

R_3 is alkoxy of 1 to 5 carbon atoms, alkenyloxy of 2 to 5 carbon atoms, aryloxy of 6 to 10 carbon atoms, aralkoxy of 7 to 11 carbon atoms, or

$-NR_5R_6$, where R_5 and R_6 are each hydrogen, alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, aryl of 6 to 10 carbon atoms or aralkyl of 7 to 11 carbon atoms; and

R_4 is cycloalkyl of 3 to 5 carbon atoms or alkyl of 3 to 5 carbon atoms;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

6. A compound of claim **1** having bronchospasmolytic activity selected from the group consisting of:

1-(4'-ethoxycarbonylamino-3'-chloro-5'-fluoro-phenyl)-2-tert.butylamino ethanol;

1-(4'-ethoxycarbonylamino-3'-cyano-5'-fluoro-phenyl)-2-tert.butylamino ethanol;

1-(4'-ethoxycarbonylamino-3'-cyano-phenyl)-2-tert-.butylamino-ethanol;

1-(4'-ethoxycarbonylamino- 3'3'-cyano-phenyl)-2-iso-propylamino-ethanol

and their non-toxic, pharmacologically acceptable acid addition salts.

4,214,002

PRESERVATION OF AQUEOUS SYSTEMS WITH 2-CHLORO-3-OXOBUTYRAMIDE DERIVATIVES

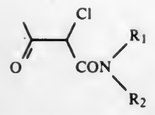
Harold A. Brandman, Glen Ridge; Milton Manowitz, Wayne, and David L. Coffen, Glen Ridge, all of N.J., assignors to Givaudan Corporation, Clifton and Hoffmann-La Roche Inc., Nutley, both of, N.J.

Filed Aug. 17, 1978, Ser. No. 934,309

Int. Cl.[2] **A01N** *9/12, 9/20;* **C07C** *97/16, 103/10*

U.S. Cl. 424—300 **22 Claims**

1. A method of inhibiting or preventing the growth of bacteria or fungi in an aqueous composition subject to spoilage thereby which comprises incorporating in said composition a bactericidally or fungicidally effective amount of a compound of the formula:



wherein R_1 is hydrogen or methyl and R_2 is hydrogen, methyl, acetyl, propionyl, butyroyl, carbomethoxy, carbethoxy, carbopropionoxy, or carbobutoxy.

4,214,003

METHOD OF TREATMENT

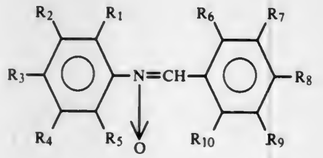
Henry F. Campbell, Lansdale; Norman J. Santora, Roslyn, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 839,961, Oct. 6, 1977, Pat. No. 4,153,722. This application Oct. 3, 1978, Ser. No. 948,622

Int. Cl.[2] **A61K** *31/095, 31/255, 31/265, 31/275*

U.S. Cl. 424—301 **16 Claims**

1. A method of treating inflammation in warmblooded animals comprising the topical administration to said animals of an effective amount of a pharmaceutically active compound of the formula:



where:

R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9 and R_{10} may be the same or different and are:

hydrogen,
alkyl,
cyano,
nitro,
amino,
haloloweraloxy,
haloloweralkyl,
halo,
loweralkoxy,
thio,
acylthio,
loweralkylthio,
loweralkylsulfinyl,
loweralkylsulfonyl and
hydroxy,

with the proviso that at least one R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9, and R_{10} is selected from the group consisting of thio, acylthio, loweralkylthio, loweralkylsulfinyl or loweralkylsulfonyl.

4,214,004

INSECTICIDAL CYCLOPROPANECARBOXYLATES FROM SUBSTITUTED [1,1'-BIPHENYL]-3-YLMETHYL COMPOUNDS

Ernest L. Plummer, North Tonawanda, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

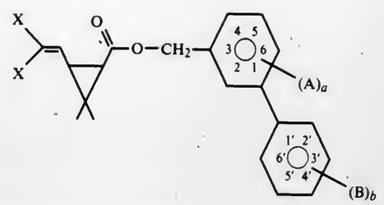
Filed Dec. 4, 1978, Ser. No. 966,405

The portion of the term of this patent subsequent to Dec. 21, 1995, has been disclaimed.

Int. Cl.[2] **C07C** *69/74;* **A01N** *9/30*

U.S. Cl. 424—305 **17 Claims**

1. A 3-(2,2-dihaloethenyl)-2,2-dimethylcyclopropanecarboxylate of the formula



wherein X is chloro or bromo, and

b is 0, a is 1-4, and

when a is 1,

A is 2-, 4- or 6-halo, 5-fluoro, 2-lower alkyl, 2 trifluoromethyl, and

when a is 2,

A is fluoro, 2 and 4-chloro, or 2 and 4-bromo, and

when a is 3 or 4,

A is fluoro;

or

a is 0, b is 1-5, and

when b is 1,

B is halo, 2' or 3'-lower alkyl, 2' or 3'-trifluoromethyl, or 2' or 3'-lower alkoxy, and

when b is 2,

B is fluoro, 2' and 4'-chloro, 2' and 4'-bromo, and

when b is 3, 4 or 5,

B is fluoro.

16. An insecticidal or acaricidal composition comprising an insecticidally or acaricidally effective amount of at least one compound of claim **1** in admixture with an agriculturally acceptable carrier.

4,214,005

FUNGICIDAL ALKOXYALKOXYACETYL ACYLALANINES

Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany; Adolf Hubele, Magden, and Walter Kunz, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

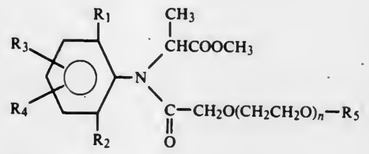
Filed May 24, 1979, Ser. No. 41,847

Claims priority, application Switzerland, Jun. 2, 1978, 6076/78

Int. Cl.[2] **A61K** *31/24;* **C07C** *101/447*

U.S. Cl. 424—309 **14 Claims**

1. A compound of the formula



(I)

wherein

R_1 represents C_1-C_4alkyl, C_1-C_4alkoxy or halogen,

R_2 represents C_1-C_3alkyl, C_1-C_4alkoxy or halogen,

R_3 represents hydrogen, C_1-C_3alkyl, C_1-C_4alkoxy or halogen,

R_4 represents hydrogen or methyl,

R_5 represents C_1-C_4alkyl or phenyl, and

n is 1, 2 or 3.

12. A fungicidal composition containing, as active component, a fungicidally effective amount of at least one compound according to claim **1** together with a suitable carrier therefor.

13. A method for controlling fungi, which comprises applying to said fungi or their environment a fungicidally effective amount of a compound according to claim **1**.

4,214,006

MOUTHWASH AND METHOD FOR PREVENTING AND REMOVING DENTAL PLAQUE

Geraldine H. Thiele, New Oxford, Pa., assignor to Oxford Hill, Ltd., Oxford, Pa.

Continuation-in-part of Ser. No. 642,114, Dec. 18, 1975, abandoned, and Ser. No. 483,010, Jun. 25, 1974, Pat. No. 3,982,017, and Ser. No. 369,236, Jun. 12, 1973, Pat. No. 3,924,000, and Ser. No. 283,662, Aug. 25, 1972, Pat. No. 3,805,776, and Ser. No. 283,663, Aug. 25, 1972, Pat. No. 3,828,772, and Ser. No. 123,830, Mar. 12, 1971, Pat. No. 3,767,812, and Ser. No. 113,362, Feb. 8, 1971, Pat. No. 3,741,204. This application Jul. 24, 1978, Ser. No. 927,614

The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.

Int. Cl.[2] **A61K** *31/20, 31/45*

U.S. Cl. 424—318 **18 Claims**

1. The method of treating teeth for the removal of dental plaque and/or dental calculus from said teeth which comprises contacting said teeth with a sufficient and effective amount to achieve said purpose of a mouthwash which is a liquefied composition of a therapeutically effective amount of a non-necrotic fatty acid compound prepared from an unsubstituted, unsaturated fatty acid having at least one double bond, water, a buffering agent and ethanol, the pH of said liquefied composition being between 9 and 11.

4,214,007

PROCESSED DRIED BEANS AS INSTANT FOOD AND THEIR MANUFACTURING METHOD

Yoshinobu Hase; Masaaki Yamauchi, both of Osaka, and Ryozo Handa, Hirakata, all of Japan, assignors to Kanebo Foods, Ltd., Tokyo, Japan

Filed Jan. 16, 1978, Ser. No. 870,025

Int. Cl.[2] **A23L** *1/20*

U.S. Cl. 426—44 **21 Claims**

5. A method for producing processed dried beans which are quickly restored to the condition of boiled soft raw beans by pouring hot water onto the processed dried beans, said beans being rich in starch and poor in both protein and fat,

the improvement comprising the successive steps of

(1) boiling raw beans at least once in water,

(2) subjecting said boiled beans to an enzymatic-treatment by contacting said boiled beans with an aqueous solution containing an enzyme acting on the pectic intercellular cellulosic materials of the bean cell walls, for a period of time sufficient to destroy the cellulosic substances or cellulosic and pectic substances of said cell tissues, said enzyme selected from the group consisting of cellulase produced by *Trichoderma viride* cellulase produced by *Irpex lacteus* and cellulase produced by *Trichoderma koningi* and a mixture of said cellulase and pectinase produced by *Rhizopus arrhizus* and pectinase produced by *Coniothrium diplodiella* at a pH of acidic to neutral such that the starch component of said beans becomes gelatinized, and thereafter

(3) drying said beans.

4,214,008

LACTIC ACID FERMENTATE FLAVORED PET FOOD

Richard L. Groben; Alfred J. Gryczka, and Alfred A. Franklin, all of Sarasota, Fla., assignors to Microlife Technics, Inc., Sarasota, Fla.

Continuation of Ser. No. 712,492, Aug. 9, 1976, Pat. No. 4,160,038. This application Mar. 14, 1979, Ser. No. 20,432

The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.

Int. Cl.[2] **A23K** *1/00, 1/10*

U.S. Cl. 426—53 **10 Claims**

1. A dry pet food composition for carnivorous lower animals consisting essentially of a dry cereal protein pet food including an effective level of an antimycotic agent to prevent mold

formation, said composition being packageable under non-sterile conditions and containing less than about 15 percent by weight moisture, and further including a flavoring from a dried edible material fermentate of lactic acid producing bacteria in an amount sufficient to produce a pH from about 3 to less than 6 which flavored food is palatable to dogs and flavor stable, wherein the edible material fermentate is prepared by growing the bacteria in the presence of a meaty protein, vegetable protein or mixture thereof until lactic acid and the flavoring is produced and then by drying the fermentate which is then mixed with the cereal protein pet food.

4,214,009

REPLACEMENT OF EGG ALBUMEN IN FOOD COMPOSITIONS

Pei K. Chang, Montrose, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 7, 1978, Ser. No. 931,706

The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.

Int. Cl.² A23C *21/00*

U.S. Cl. 426—558 **20 Claims**

1. A method for preparing egg albumen containing food products which comprises replacing at least a portion of the albumen requirement of said food product on a dry solids basis with a composition comprising a substantially non-heat denatured whey protein concentrate having at least 29% protein prepared substantially from acid cheese whey and from about 25% to 0% of another protein-containing whey-based product and 0.5% to 15% carboxymethylcellulose in such an amount that the total protein content provided by the whey protein concentrate and the egg albumen is no less than 38% below the protein content of the egg albumen on a dry basis originally present in the recipe.

4,214,010

REPLACEMENT OF WHOLE EGG IN BAKED CUSTARD

Constance R. Corbett, White Plains, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 26, 1978, Ser. No. 973,507

Int. Cl.² A23J *3/02*

U.S. Cl. 426—573 **17 Claims**

1. A method for preparing whole egg containing baked custard which comprises replacing up to about 75% of the whole egg requirement of said custard with an egg replacer composition comprising:

(a) from about 40% to about 60% of the composition of a blend of a whey solids product and from about 0.5% to about 5.0% based on the weight of the blend of carboxymethylcellulose, said whey solids product comprising:

(1) from about 75% to 100% of a substantially non-heat denatured whey protein concentrate having at least 35% protein wherein at least 50% of said protein is derived from acid whey, and

(2) from about 25% to 0% of another protein containing whey based product; and

(b) from about 60% to about 40% of the egg replacer composition of a lactylated shortening, said egg replacer composition replacing at least 90% of the whole egg solids replaced on a weight/weight basis, all percentages herein being on a dry weight basis.

4,214,011

FIBER-REINFORCED, ACTIVATED, ZEOLITE MOLECULAR SIEVE TABLETS AND CARBONATION OF AQUEOUS BEVERAGES THEREWITH

Herbert E. Strube, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

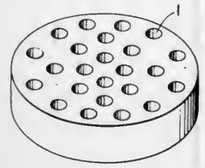
Filed Dec. 7, 1978, Ser. No. 967,184

Int. Cl.² A23L *2/40*; B01J *29/04*

U.S. Cl. 426—591 **28 Claims**

1. A composition of matter for preparing a non-fired, rigid composite, porous and activated zeolite molecular sieve material tablet for adsorbing and releasing adsorbable gases, said composition comprising:

(a) from about 82 to about 98.5% wt. % of activated crystalline zeolite molecular sieve material;



(b) from about 1 to about 15 wt. % of fibrous material selected from the group consisting of hydrophobic fibers and non-swelling hydrophilic fibers; and

(c) from about 0.5 to about 3 wt. % of tabletting lubricant; wherein said (a), (b) and (c) are uniformly mixed and tabletted into said rigid composite, porous and activated tablet.

4,214,012

FAT COMPOSITIONS

George E. Ainger, Wareham, and Brian L. Caverly, Meopham, both of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 393,865, Sep. 4, 1973, abandoned, which is a continuation of Ser. No. 210,550, Dec. 21, 1971, abandoned. This application Nov. 4, 1977, Ser. No. 848,675

Claims priority, application United Kingdom, Jan. 6, 1971, 714/71

Int. Cl.² A23C *15/12*

U.S. Cl. 426—607 **1 Claim**

1. A confectioner's butter having a slip melting point of between 28° and 40° C., a dilatation drop of at least 500 over the last 10° C. below the slip melting point, an Iodine Value of 10–25, and a fatty acid composition in random distribution of a blend consisting essentially of at least 88 wt % C_{10}–C_{18} fatty acids including at most 15 wt % stearic acid, of 80–50 wt % lauric and 20–50 wt % edible non-lauric fats wherein the sum of palmitic and stearic acid content is 45 wt %.

4,214,013

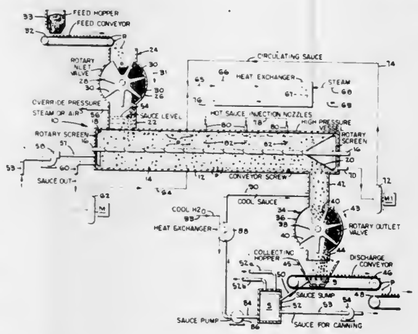
CONTINUOUS PRESSURE COOKING METHOD

Katsuji Hirahara, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 804,115, Jun. 6, 1977. This application Mar. 5, 1979, Ser. No. 17,628

Int. Cl.² A23L *3/22*

U.S. Cl. 426—629 **8 Claims**



1. A food processing method comprising the steps of substantially filling a vessel through a pressure sealing valve with a mass of particulate raw food product such as beans, tomatoes, etc., creating a pressure environment in the vessel that is above atmospheric pressure, heating a canning sauce for the product externally of the vessel to a temperature above 100° C., cooking the mass in the vessel by circulating the externally heated sauce into and out of the vessel and through the mass; discharging the mixture of hot sauce and cooked product through a pressure sealing valve to the atmosphere; cooling a body of canning sauce, cooling the mixture while still under pressure and just before discharge by pumping the cooled canning sauce into the mixture of heated canning sauce and entrained cooked product under pressure to bring the temperature of the combined sauces low enough to cool the particulate product to a temperature which will prevent flashing at atmospheric pressure; and discharging the cooled sauce and the cooled, cooked entrained product therein from the pressure environment to atmosphere.

4,214,014

METHOD FOR SURFACE TREATMENT OF CONTACT LENSES

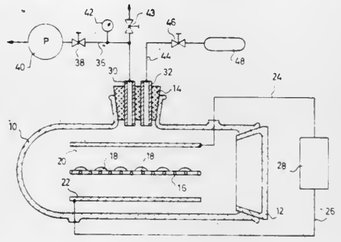
Peter Höfer, Aschaffenburg, and Wolfgang Kohl, Kleinwallstadt, both of Fed. Rep. of Germany, assignors to Titmus Eurocon Kontaklinsen GmbH & Co. KG, Aschaffenburg, Fed. Rep. of Germany

Filed Oct. 12, 1978, Ser. No. 950,894

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756114

Int. Cl.² G02B *1/12*; H01J *19/00*

U.S. Cl. 427—40 **9 Claims**



1. Method for treating the surface of a hard or dehydrated hydrophilic contact lens, which method comprises introducing a lens which has been shaped and polished into a container, evacuating the container, flushing same with an oxygen-containing atmosphere, re-evacuating to an absolute pressure of 10 mm Hg or less and then initiating a gas discharge and subjecting the lens to said gas discharge.

4,214,015

METHOD OF COATING METAL SUBSTRATES WITH ALLOYS AT ELEVATED SUBSTRATE TEMPERATURES

Herbert Stephan, Bruchköbel, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,896

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2820289

Int. Cl.² C23C *13/02*

U.S. Cl. 427—42 **6 Claims**

1. Method for the vapor deposition of a coating of oxidation and corrosion inhibiting alloys including alloys from the group of CoCrAlY and NiCoCrAlY on metal substrates in a vacuum coating chamber at a substrate temperature above 500° C. which comprises interrupting the coating process temporarily at least once, allowing the substrates to cool by at least 30° C. and no more than 100° C., and before the beginning of or during the resumed coating process the substrate temperature that was present before cooling is substantially restored.

4,214,016

PROCESS FOR MANUFACTURING PLASTIC ARTICLES HAVING ON THE SURFACE THEREOF A PROTECTED METAL FILM

Katsuhide Manabe, Ichinomiya; Jiro Masumi, Aichi; Tomotada Tochitani, Ichinomiya, and Kenzo Shinoda, Gifu, all of Japan, assignors to Toyoda Gosei Kabushiki-Kaisha (Toyoda Synthetics Co., Ltd.), Aichi, Japan

Division of Ser. No. 700,117, Jun. 28, 1976, Pat. No. 4,104,432. This application Apr. 24, 1978, Ser. No. 898,796

Int. Cl.² B05D *3/06*

U.S. Cl. 427—54.1 **8 Claims**

1. A process for manufacturing molded plastic articles having on the surface thereof a metal film coated with protective layers, characterized by (1) applying over said metal film a layer A consisting essentially of an acrylic copolymer of a lower alkyl ester of acrylic or methacrylic acid and a lower hydroxy-alkyl ester of acrylic or methacrylic acid and having a hydroxyl number of 10–150, and per 100 parts by weight of said copolymer 10–150 parts by weight of an anti-yellowing polyisocyanate and 2–10 parts by weight of an ultraviolet ray-absorbing agent and subjecting the mixture to heating to react the same; and then (2) while free hydroxyl groups are present in said layer A, applying over the heated layer A a layer B consisting essentially of an unsaturated polyester having terminal hydroxyl or carboxyl groups and about 10–80 parts by weight of an anti-yellowing polyisocyanate per 100 parts of said unsaturated polyester, which layer is curable by the action of ultraviolet rays and then curing the latter paint by irradiation of ultraviolet rays, or alternatively, reversing the order of said applying and corresponding curing steps A and B.

4,214,017

PREPARATION OF PLATINUM-COATED SUBSTRATES

Herbert A. Laitinen, and Joseph Rosenfarb, both of Gainesville, Fla., assignors to Board of Regents, State of Florida, for the use and benefit of the University of Florida, Tallahassee, Fla.

Filed Mar. 29, 1979, Ser. No. 25,117

Int. Cl.² C23C *3/00*

U.S. Cl. 427—92 **4 Claims**

1. A process for coating a substrate with a thin layer of platinum which comprises immersing a substrate in a molten salt solution containing platinum ions or haloplatinum ions for a time sufficient to deposit a thin film of platinum on the outer surface of the substrate, removing the coated substrate from the solution, and washing away any removable salt, said substrate being an n-type semiconductor or a metal coated with a passivation film capable of preventing ions of said metal from entering said solution.

4,214,018

METHOD FOR MAKING ADHERENT PINHOLE FREE ALUMINUM FILMS ON PYROELECTRIC AND/OR PIEZOELECTRIC SUBSTRATES

Bernard Halon, New York, N.Y., and Dorothy M. Hoffman, Titusville, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 14, 1978, Ser. No. 933,603

Int. Cl.² H04R *17/00*; B05D *5/12*

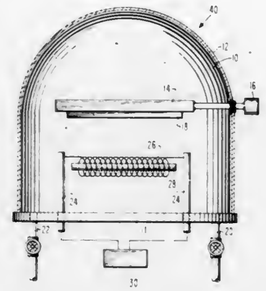
U.S. Cl. 427—100 **10 Claims**

1. A method of forming an adherent pinhole free aluminum film on a substrate comprising:

heating an oxygen containing piezoelectric substrate to from about 150° C. to about 350° C. at a pressure of from about 1×10^{-4} Torr to about 1×10^{-6} Torr for a time sufficient to desorb any gas molecules on the surface of said substrate;

cooling said substrate with dry oxygen to about 125° C. with

a partial oxygen pressure of from about 1×10^{-1} Torr to about 1×10^{-4} Torr;



terminating the flow of oxygen and further reducing the pressure to about 1×10^{-5} Torr or lower; and

evaporating an aluminum film on said substrate.

4,214,019

CAVITY FILLING WITH A HOT MELT ADHESIVE COMPOSITION

Donald D. Donermeyer, Springfield, and Joseph G. Martins, Ludlow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 4, 1978, Ser. No. 948,380
Int. Cl.² B23P *7/04*
U.S. Cl. 427—142 **20 Claims**

1. A method of filling a cavity in a substrate which comprises applying excess adhesive composition as a hot melt into the cavity, spreading the adhesive composition to fill the cavity, cooling the adhesive composition below its crystallization temperature and sanding the adhesive composition to provide a surface even with the surrounding substrate, wherein the adhesive composition comprises a block copolymer, aluminum powder, glass fiber and hollow inorganic silicate microspheres, wherein the block copolymer is selected from the group consisting of copolyesters, copolyamides, copoly(esteramides) and copoly(ether-esters) melting at a temperature of above about 150° C., having from about 30 to about 70 weight percent of hard segments and from about 70 to about 30 weight percent of soft segments; wherein the weight ratio of block copolymerto aluminum powder, glass fiber and silicate microspheres is in the range of about 3:7 to about 3:2, wherein the weight ratio of block copolymer to glass fiber is at least about 2:1, wherein the weight ratio of glass fiber to aluminum powder is at least about 1:9 and wherein the volume percentage of silicate microspheres is less than about 10.

4,214,020

PROCESSES FOR COATING BUNDLES OF HOLLOW FIBER MEMBRANES

Robert R. Ward, Cary; Richard C. Chang, Raleigh; James C. Danos, Chapel Hill, and Joseph A. Carden, Jr., Durham, all of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 17, 1977, Ser. No. 852,277
Int. Cl.² B05D *3/00, 1/18, 3/02*
U.S. Cl. 427—296 **32 Claims**

1. A process for coating the exteriors of hollow fibers assembled in the form of a bundle, which fibers, when coated, are suitable for fluid separations, comprising immersing the bundle of hollow fibers in a coating liquid containing material suitable for forming the coating and a sufficient amount of solvent to redissolve or resuspend any deposits on the hollow fibers of said material suitable for forming the coating which deposits are not retained on the hollow fibers; subjecting the hollow fibers to a pressure drop from the exterior to interior of the hollow fibers while the bundle is immersed in the coating liquid, said pressure drop being sufficient to provide a deposit of the material suitable for forming the coating on the hollow fibers; and removing the coating liquid from the bundle.

4,214,021

COATING PROCESS FOR CORROSION-INHIBITING POLY(ARYLENE SULFIDE) COATING COMPOSITIONS

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 832,503, Sep. 12, 1977, Pat. No. 4,145,326, which is a division of Ser. No. 346,834, Apr. 2, 1973, Pat. No. 4,064,084. This application Dec. 21, 1978, Ser. No. 972,083
Int. Cl.² B05D *3/02;* B32B *27/06*
U.S. Cl. 427—385 R **11 Claims**

1. A process for obtaining a smooth lightly colored cured coating of a poly(arylene sulfide) resin upon a substrate comprising forming a slurry comprising poly(arylene sulfide) resin, an inert liquid suspending agent, and about 0.5 to about 30 parts by weight of sodium nitrite per hundred parts by weight of poly(arylene sulfide) resin, coating the substrate with said slurry, and heating the coating under conditions sufficient to produce a cured coating.

4,214,022

COATING METAL BY IMMERSION

Jan Kunnen, Noordwijkerhout, and Abraham C. Van Der Schee, Oegstgeest, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 689,959, May 25, 1976, abandoned. This application Oct. 28, 1977, Ser. No. 846,459
Claims priority, application Netherlands, May 30, 1975, 7506413
Int. Cl.² B05D *1/18*
U.S. Cl. 427—435 **9 Claims**

1. In an autodeposition process of applying a coating of film-forming material to an acid-etchable metal wherein the metal surface is contacted with an aqueous dispersion of the film-forming material which contains a metal-etching acid, followed by drying the coating, the improvement which comprises dispersing the film-forming material in a cationic dispersion containing at least 0.1% cationic surfactant and a carboxylic acid radical which along with the metal ions obtained by etching the metal surface is capable of forming a negatively charged complex in the dispersion.

4,214,023

ORNAMENTAL DEVICE

Nancy C. Day, 100 Morgan St., Roxboro, N.C. 27573

Filed Apr. 5, 1978, Ser. No. 894,355
Int. Cl.² A47G *33/08*
U.S. Cl. 428—11 **1 Claim**



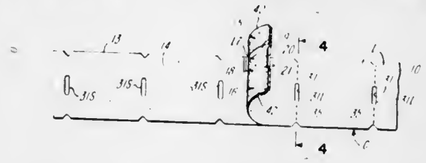
1. An ornamental device comprising three identical, normally planar, flexible panels, each of the panels being completely solid and imperforate with its perimeter being continuous and uninterrupted, means securing substantially one-half of adjacent peripheral edges of two of the panels together while leaving the remainder of the panels unattached, and means securing substantially all of the periphery of the third panel to the unattached one-half peripheral edge portions of the first two panels while leaving the remainder of the third panel unattached to provide a three-dimensional ornamental device having a hollow central body area and radially extending peripheral edge portions disposed in three different radial planes with the panels being connected together only at their peripheral edges with the central body area of the panels being free of each other, each of said panels being in the form of a five pointed, two-dimensional star forming a seven pointed three-dimensional star when assembled with only the peripheral edges of the star points being connected, each of said panels being constructed of flexible fabric material such as felt and the means for securing the peripheral edges of the panels together is in the form of stitching thereby forming a self-sustaining but flexible ornamental device in which the central areas of the panels may be removed apart, the bottom central area of the central body defined by the stitching including an aperture formed by interrrupting the stitching along a lower central peripheral portion of the panels for a short distance for reception of a Christmas tree trunk, branch, or the like, to enable the ornamental device to be used as the top ornament or other ornament on a Christmas tree.

4,214,024

COMPOSITE LABEL WEB AND METHOD OF MAKING SAME

David N. Jacobson, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Sep. 9, 1977, Ser. No. 832,033
Int. Cl.² B32B *3/10;* G09F *3/00;* A44C *3/00;* B32B *31/00*
U.S. Cl. 428—41 **15 Claims**



1. A composite web of pressure sensitive labels, comprising: a composite web including a web of supporting material and a web of label material having a patterned coating of pressure sensitive adhesive releasably securing the label material to the supporting material web, longitudinally spaced, lateral cuts dividing the label material into a series of labels, the adhesive being disposed along two laterally spaced, relatively wide, longitudinally extending zones and a relatively narrow, longitudinally extending intervening zone, a longitudinally extending adhesive-free zone between each relatively wide adhesive zone and the relatively narrow adhesive zone, the thicknesses of the relatively wide and narrow adhesive zones being substantially the same, and longitudinally spaced feed holes disposed at the lateral cuts and extending through the composite web and through the relatively narrow adhesive zone and the adhesive-free zones on the label material without extending into the relatively wide adhesive zones on the label material.

4,214,025

MESH ELECTRODES AND METHOD OF MAKING THEM

Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company Limited, Chelmsford, England

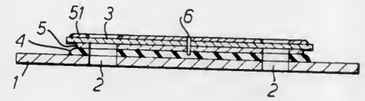
Filed Aug. 22, 1977, Ser. No. 826,956
Claims priority, application United Kingdom, Aug. 25, 1976, 35414/76
Int. Cl.² H01J *1/46*
U.S. Cl. 428—67 **12 Claims**

1. A method of making a mesh electrode including the steps of applying a first coat of settable refractory compound to one surface of a supporting plate having a plurality of apertures therein; firing said first coat to harden it and render it subsequently unmeltable; applying a second coat of settable refractory compound when the first coat is hard; pressing a sheet of mesh material into the second coat to bridge the apertures in the supporting plate; and firing the second coat to harden it and render it unmeltable so that said mesh material is retained in position substantially parallel to the supporting plate when the second coat is hard.

12. The method of making a segmented mesh electrode, which comprises the steps of:

(a) providing a metallic support plate with a pattern of apertures;

(b) forming a first coating of electrically insulating refractory material on one surface of said support plate, said first coating being fired and incapable of being subsequently melted and adhered to said one surface to define a refractory material supporting surface;



(c) forming a layer of refractory material on said refractory material supporting surface;

(d) pressing a sheet of mesh material into said layer of refractory material while firing same, thereby to form a second coating of unmeltable electrically insulating refractory material and adhere it with said mesh embedded therein to said first coat; and then

(e) cutting through said second coating and said mesh to separate said mesh into individual segments overlying respective apertures of said pattern.

4,214,026

SHEET MOLDING MATERIAL

Jyoji Ibata, Fuji; Hisaaki Fukui, Nobeoka; Takeo Yuasa, and Michio Katoh, both of Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 24, 1978, Ser. No. 936,551
Int. Cl.² B32B *13/12, 27/36, 27/38*
U.S. Cl. 428—67 **43 Claims**

1. A sheet molding material comprising (1) an interlayer containing a photopolymerizable resin and a photocuring agent for the photopolymerizable resin and (2) a surface layer of a thermosetting resin containing a heat curing agent for the thermosetting resin on both surfaces of the interlayer (1).

4,214,027

PROCESS FOR THE PRODUCTION OF FIBER-CONTAINING PLASTER BOARDS

Alfons Knauf, Saar; Jorg Bold, Kaiserslautern, and Siegfried Franke, Ochsenfurt, all of Fed. Rep. of Germany, assignors to Gebr. Knauf Westdeutsche Gipswerke, Iphofen, Fed. Rep. of Germany

Continuation of Ser. No. 782,716, Mar. 29, 1977, abandoned. This application Mar. 27, 1979, Ser. No. 24,336
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1976, 2613976
Int. Cl.² B32B *5/12, 3/18, 31/14*
U.S. Cl. 428—113 **17 Claims**

1. A monolithic, fiber-reinforced board which is sufficiently thick to be suitable for use as a floor element, which board comprises a plurality of layers each of which contains substantially homogeneously distributed reinforcing fibers and calcium sulfate binder, wherein the reinforcing fibers in each said layer are oriented predominantly in one direction, and wherein the direction of predominant fiber orientation in each layer deviates by about 90° from that in adjacent layers, said plural-

ity of layers being molded together under pressure prior to the setting of the calcium sulfate binder to consolidate said layers into a monolithic, fiber-reinforced board.

5. In a process for producing a monolithic, fiber-reinforced board which is sufficiently thick to be suitable for use as a floor element, which process comprises the steps of superimposing a plurality of fiber-reinforced board blanks, molding and drying; the improvement which comprises:

(a) using as said plurality of board blanks uncured board blanks containing substantially homogeneously distributed reinforcing fibers, calcium sulfate binder and a quantity of water in excess of the quantity necessary for setting said binder, wherein the reinforcing fibers of each board blank are oriented predominantly in one direction;

(b) superimposing said uncured board blanks such that the direction of predominant fiber orientation in each board blank deviates by about 90° from that in adjacent board blanks, thereby substantially reducing the anisotropy of bending strength in the horizontal directions of extension in the molded product of step (c); and

(c) molding the resultant superimposed board blanks under sufficient pressure prior to the setting of said calcium sulfate binder contained in said board blanks to form a monolithic fiber-reinforced board;

whereby the steps of setting and drying the individual board blanks and then gluing together the resultant cured blanks are avoided.

4,214,028

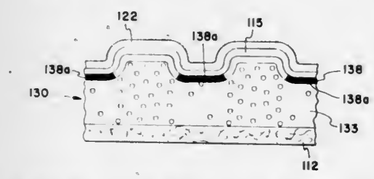
RESINOUS POLYMER SHEET MATERIALS HAVING SURFACE DECORATIVE EFFECTS AND METHODS OF MAKING THE SAME

Harry A. Shortway, Franklin Lakes; Alan A. Graham, Mercerville, and Charles H. Miller, Lawrenceville, all of N.J., assignors to Congoleum Corporation, Kearny, N.J.

Continuation-in-part of Ser. No. 879,171, Feb. 21, 1978, abandoned, and Ser. No. 942,246, Sep. 14, 1978, abandoned. This application Jan. 22, 1979, Ser. No. 5,277

Int. Cl.² B32B *5/20, 31/22, 31/26*

U.S. Cl. 428—159 **27 Claims**



1. A resinous polymer sheet material having substantially uniformly polymerized, cross-linked and thermoset mechanically embossed flat, dead or dull mat texture finish decorative effects over substantially its entire surface comprising:

a base layer or substrate;

a printing ink composition layer forming a pattern or design on said base layer or substrate; and

a resinous polymer wear layer on said printing ink composition layer comprising substantially uniformly therein polymerized, cross-linked and thermoset reactive polymerizable and cross-linkable monomeric materials and having mechanically embossed flat, dead or dull mat texture finish decorative effects over substantially its entire surface, which mechanically embossed flat, dead or dull mat texture finish decorative effects possess increased resistence to softening, melting or flowing due to subsequent increases in ambient temperatures.

4,214,029

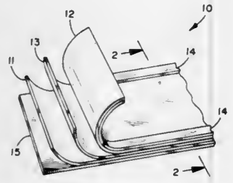
PACKAGING LAMINATE

Donald E. Barnes, Minnetonka, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 30, 1978, Ser. No. 955,888

Int. Cl.² B32B *7/10, 15/02*

U.S. Cl. 428—200 **2 Claims**



1. A unitary packaging laminate consisting essentially of a foil substrate, a polypropylene outer layer, an intermediate layer of polyethylene or ethylene-acrylic acid copolymer located between and adhered to said substrate and said outer layer, a printed adhesive pattern of low temperature heat sealable material on the exterior surface of said outer layer, and a coating of low temperature heat sealable material on the inner surface of said substrate.

4,214,030

THERMOFORMABLE-CROSSLINKABLE ETHYLENE POLYMER SHEET PER SE AND IN LAMINATE FORM AND THERMOFORMED SHEET PRODUCED THEREFROM

James L. Rakes, and Joseph R. Harder, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 6, 1978, Ser. No. 913,148

Int. Cl.² B32B *27/08, 27/32, 31/26*

U.S. Cl. 428—212 **33 Claims**

1. A sheet of a crosslinkable polymer of ethylene supported by a sheet of a support polymer where said crosslinkable polymer of ethylene is selected from a group consisting of ethylene homopolymers, copolymers of ethylene and at least one acyclic mono-1-olefin hydrocarbon having 3 to 8 carbon atoms per molecule, and mixtures of any two or more thereof, said crosslinkable polymer of ethylene having incorporated therein a suitable crosslinking agent and where said support polymer has a melt index which is sufficiently low to prevent said support polymer from being deformed when said support polymer is heated to a temperature suitable for crosslinking said crosslinkable polymer of ethylene.

8. A thermoformed article produced from a composite sheet having at least first and second layers, said first layer comprising a crosslinked polymer of ethylene selected from a group consisting of ethylene homopolymers, copolymers of ethylene and at least one acyclic mono-1-olefin hydrocarbon having 3 to 8 carbon atoms per molecule, and mixtures of any two or more thereof, said second layer comprising a support polymer having a melt index which is sufficiently low to prevent said support polymer from being deformed when said support polymer is heated to the temperature required to crosslink the crosslinkable polymer of ethylene from which said crosslinked polymer of ethylene was formed.

14. A method for producing a sheet of a crosslinkable polymer of ethylene where said crosslinkable polymer of ethylene is selected from a group consisting of ethylene homopolymers, copolymers of ethylene and at least one acyclic mono-1-olefin hydrocarbon having 3 to 8 carbon atoms per molecule, and mixtures of any two or more thereof, said crosslinkable polymer of ethylene having incorporated therein a suitable crosslinking agent, comprising the steps of:

extruding a sheet of said crosslinkable polymer of ethylene; and

supporting the sheet of said crosslinkable polymer of ethylene on a sheet of a support polymer where said support polymer has a melt index which is sufficiently low to prevent said support polymer from being deformed when said support polymer is heated to a temperature suitable for crosslinking said crosslinkable polymer of ethylene.

23. A method of thermoforming a sheet of a crosslinkable polymer of ethylene where said crosslinkable polymer of ethylene is selected from the group consisting of ethylene homopolymers, copolymers of ethylene and at least one acyclic mono-1-olefin hydrocarbon having 3 to 8 carbon atoms per molecule, and mixtures of any two or more thereof, said crosslinkable polymer of ethylene having incorporated therein a suitable crosslinking agent, comprising the steps of:

supporting said sheet of a crosslinkable polymer of ethylene on a sheet of a support polymer, to thereby form a composite sheet where said support polymer has a melt index which is sufficiently low to prevent said support polymer from being deformed when said support polymer is heated to a temperature suitable for crosslinking said crosslinkable polymer of ethylene;

heating said composite sheet to a temperature sufficient to produce significant crosslinking of said crosslinkable polymer of ethylene, said temperature also being suitable to soften the sheet of said crosslinkable polymer of ethylene and the sheet of said support polymer to the extent necessary for the thermoforming process; and

thermoforming said composite sheet to produce a desired product.

4,214,031

CONDUCTIVE SUBSTRATE FOR ELECTROSENSITIVE RECORDING MATERIAL

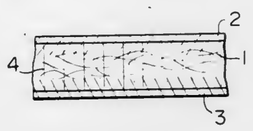
Nobuhiro Miyakawa, Kobe; Eiichi Inoue, and Hiroshi Kokado, both of Tokyo, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Apr. 22, 1976, Ser. No. 679,358

Claims priority, application Japan, Apr. 28, 1975, 50-50691

Int. Cl.² B32B *7/02, 7/10*

U.S. Cl. 428—213 **16 Claims**



1. An electroconductive substrate for an electrically responsive recording material comprising a porous substrate and a layer of at least one electric conductor selected from the group consisting of cationic conductors and anionic conductors, said conductor layer being formed in the porous substrate along the entire thickness direction thereof extending from one surface of said porous substrate to the other surface of said porous substrate, wherein said conductor layer has a three layer distribution structure comprising (a) a layer of a cationic electroconductive resin distributed predominantly in the one surface portion of the porous substrate, (b) a layer of an anionic electroconductive resin distributed predominantly in the other surface portion of the porous substrate, and (c) a layer of a polysalt of the cationic electroconductive resin and the anionic electroconductive resin interposed between both the electroconductive resin layers (a) and (b) in such a positional relationship that the polysalt layer (c) is adjacent to said electroconductive resin layers (a) and (b), wherein said three layer distribution structure is formed by impregnating one surface of the porous substrate with the cationic electroconductive resin and impregnating the other surface of the porous substrate with the anionic electroconductive resin.

4,214,032

INSULATING FELTS REINFORCED BY FIBROUS MATERIALS PARTICULARLY FOR THE WATERPROOFING AND/OR CORROSION-PROOFING OF METAL AND/OR CONCRETE OBJECTS

Rezsö Csikós, Andra's Balogh, both of Veszprém, Jozsef Herendi, Balatonal madi, Peter L. Farkas, Veszprém, János Reményi, Veszprém, Sándor Koltary, Veszprém, all of Hungary, assignors to Magyar Ásványolaj és Földgáz Kisérleti Intézet, Veszprém, Hungary

Filed May 16, 1977, Ser. No. 796,885

Claims priority, application Hungary, May 19, 1976, MA 2775

Int. Cl.² B32B *11/02, 11/10;* **D06N** *5/00*

U.S. Cl. 428—280 **6 Claims**

1. In an insulating felt for waterproofing and/or corrosion-proofing metal and concrete objects, said insulating felt comprising asphalt, a softener, a plasticizer, fine-grained material and a reinforcing material wherein the improvement comprises the felt additionally contains a pyrolytic resin, the pyrolytic resin and the asphalt when admixed in liquid phase, at a temperature over the softening point, producing a homogeneous mixture of the asphalt and the pyrolytic resin, said pyrolytic resin being present in an amount by weight of 23 to 39%, said asphalt being present in an amount of from 35 to 54% by weight, said softener being present in an amount of from 4 to 7% by weight, said plasticizer being present in an amount of from 2.5 to 8% by weight, said fine-grained material being present in an amount of from 2 to 4% by weight and said reinforcing material being present in an amount of from 10 to 25% by weight.

4,214,033

NOVEL MESH FABRIC AND WIG AND HAIR-PIECE MADE THEREFROM

John D. Clifton, 50 Elgin Crescent, London W 11, England, and Victor W. Titow, Stoke Poges, England, assignors to John David Clifton, London, England

Filed Oct. 14, 1977, Ser. No. 842,328

Claims priority, application United Kingdom, Oct. 18, 1976, 43129/76; Apr. 12, 1977, 14987/77

Int. Cl.² D03D *9/00*

U.S. Cl. 428—255 **5 Claims**

1. A novel mesh fabric formed from filaments of a synthetic material having a mean diameter of not greater than 0.11 mm, a breaking load of not less than 0.45 lbs, and a stiffness of at least 3:1 as determined by the loop test, the fabric having a stable mesh structure, a mesh size equal to at least twice the size of the mean diameter of the filament and a bursting strength of not less than 20 p.s.i.

4,214,034

AGRICULTURAL COVERING MULTILAYER FILM OR SHEET STRUCTURE AND METHOD FOR THERMAL INSULATION

Yoshiaki Kodera, Kusatsu; Kiyoyuki Watanabe, Jyoyo; Tetsuo Kadoya, Osaka, and Tadashi Taguchi, Kyoto, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 1, 1978, Ser. No. 911,955

Int. Cl.² B32B *5/18, 27/42*

U.S. Cl. 428—315 **4 Claims**

1. A covering multilayer film or sheet structure for agricultural application, which consists essentially of:

(I) a film or sheet of a resin composition comprising (A) 100 parts by weight of a thermoplastic resin selected from the group consisting of polyethylene, ethylene/vinyl acetate copolymer, mixtures thereof, and vinyl chloride resins and (B) about 1 to about 40 parts by weight of an acetal resin having a degree of polymerization of about 500 to about 3,500 and selected from the group consisting of polyoxy-

methylene polymer and polyoxymethylene copolymer containing up to about 3% by weight of a comonomer, and

(2) a layer of the thermoplastic resin (A) laminated to at least one surface of the film or sheet (1).

4,214,035

ANTISTATIC COATED POLYESTER FILM

John M. Heberger, Greenville, S.C., assignor to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 1,328, Jan. 5, 1979, abandoned. This application Jan. 31, 1979, Ser. No. 8,012

Int. Cl.[2] B32B *27/08, 27/30, 27/36*

U.S. Cl. 428—340 **20 Claims**

1. A biaxially oriented polyester film comprising a polyester film support coated on one side with a latex coating, said coating including:

stearamidopropyldimethyl-β-hydroxy-ethylammonium nitrate, present in a concentration in the range of between 2.75% and 3.25% by weight, based on the total weight of the latex coating; and

a crosslinkable methylmethacrylate-ethyl acrylate-methacrylamide terpolymer, having a glass transition temperature in the range of between about 40° C. and 50° C., present in a concentration in the range of between about 0.75% and 1.25% by weight based on the total weight of the latex coating wherein the weight ratio of said stearamidopropyldimethyl-β-hydroxy-ethylammonium nitrate to said crosslinkable methylmethacrylate-ethyl acrylate-methacrylamide terpolymer is in the range of between about 2.75:1 and 3.25:1.

12. A film in accordance with claim **1** wherein opposite said latex coating is coated with a second latex coating, said second latex coating comprising a crosslinkable methylmethacrylate-ethylacrylate-methacrylamide terpolymer having a glass transition temperature in the range of between about 40° C. and 50° C., and present in a concentration of between about 3.0% and 4.0% by weight, based on the total weight of said second latex coating.

13. A process for forming an antistatic biaxially oriented polyester film comprising the steps of:

applying a latex coating, said coating comprising stearamidopropyldimethyl-β-hydroxy-ethylammonium nitrate, present in a concentration in the range of between about 2.75% and 3.25% by weight, based on the total weight of said latex coating, and a crosslinkable methylmethacrylate-ethylacrylate-methacrylamide terpolymer having a glass transition temperature in the range of between about 40° C. and 50° C. and present in a concentration in the range of between about 0.75% and 1.25% by weight based on the total weight of the latex coating wherein the weight ratio of said nitrate to said terpolymer is in the range of between about 2.75:1 and 3.25:1, to a uniaxially drawn polyester film;

heating said coated, uniaxially drawn film at a temperature in the range of between about 90° C. and 110° C. wherein said coating is dried;

stretching said coated uniaxially drawn film in a direction normal to the direction of the uniaxially drawn film wherein biaxially drawn film is produced.

19. A process in accordance with claim **13** wherein said uniaxially drawn film is coated with a second coating on the side opposite said first coated side, said second coating comprising a latex coating including a crosslinkable methylmethacrylate-ethyl acrylate-methacrylamide terpolymer having a glass transition temperature in the range of between about 40° C. and 50° C., present in a concentration in the range of between 3.0% and 4.0% by weight, based on the total weight of said second latex coating.

4,214,036

CHANNEL-SHAPED SEALING, TRIMMING AND GUIDING STRIPS

Robert G. Bright, Viersen, Fed. Rep. of Germany, assignor to Draftex Development AG, Switzerland

Filed Sep. 5, 1978, Ser. No. 939,655

Int. Cl.[2] B32B *3/26;* **E06B** *7/16, 7/23*

U.S. Cl. 428—358 **10 Claims**

1. A channel-shaped sealing, trimming or finishing, or guiding strip, comprising

channel-shaped flexible covering material, and

a carrier completely embedded in the flexible material,

the flexible covering material and the carrier forming a closed loop,

relatively stiff and substantially incompressible lengths of the carrier alternating along the length of the strip with relatively flexible and compressible lengths of the carrier,

the relatively flexible and compressible lengths of the carrier being positioned at predetermined places where bends in the strip are required in use.

9. A channel-shaped sealing, trimming or finishing strip for embracing and fitting onto a flange surrounding a predetermined opening, comprising

a length of channel-shaped metal carrier connected to itself to form a closed loop sized to match the length of the flange, the carrier comprising a series of U-shaped elements and relatively flexible connecting links connecting each element to the two adjacent elements,

the U-shaped elements which form part of the carrier in regions between those parts of the said loop which are required to accommodate bends in the flange being additionally connected together by relatively inflexible connecting links which make the carrier relatively stiffer and less compressible over those regions than at the parts which are required to accommodate the bends in the flange, and

flexible channel-shaped covering material in which the metal carrier is completely embedded.

4,214,037

SILICON NITRIDE COATED CARBON FIBERS AND COMPOSITES

Francis S. Galasso, Manchester, and Richard D. Veltri, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 30, 1979, Ser. No. 25,528

Int. Cl.[2] C23C *11/08*

U.S. Cl. 428—367 **3 Claims**

1. A non-conductive fiber which comprises: a carbon fiber having a thin adherent coating of silicon nitride, said coating having a thickness of from about 0.05 to about 2 microns.

4,214,038

FABRIC TREATMENT COMPOSITIONS CONTAINING POLYGLYCEROL ESTERS

Charles B. McCarty, and Paul Seiden, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

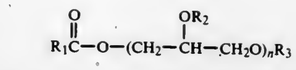
Continuation of Ser. No. 851,249, Nov. 14, 1977, abandoned, which is a continuation of Ser. No. 647,969, Jan. 9, 1976, abandoned. This application Jan. 22, 1979, Ser. No. 5,114

Int. Cl.[2] B32B *9/04;* **B08B** *3/00;* **F26B** *7/00*

U.S. Cl. 428—411 **13 Claims**

1. An article adapted for providing fabric softening within an automatic clothes dryer, said article comprising:

(a) a fabric softening amount of softening composition comprising a fatty alkyl polyglycerol ester softener component having the formula



wherein R_1 is a C_9 to C_{23} aliphatic acylic hydrocarbyl group, and R_2 and R_3 are selected from the group consisting of hydrogen and C_8 to C_{24} fatty acyl groups and n is from about 2 to about 4, wherein the crystal melting point of said fatty polyglycerol ester is above about 38° C., and wherein the degree of esterification of said polyglycerol ester is from about 0.2 to about 0.6; and

(b) a dispensing means which provides for release of said softening composition within an automatic laundry dryer at dryer operating temperatures, wherein when said dispensing means is a flexible substrate in a sheet configuration the softening composition is impregnated or coated onto the substrate to provide a weight ratio of softening composition to dry substrate ranging from about 10:1 to 0.5:1.

4,214,039

POLYPROPYLENE FILM WITH PRIMER OF A WATER DISPERSED EPOXY RESIN COATING

Robert H. Steiner, Rochester; Gary L. Duncan, Pittsford, and Robert E. Touhsaent, Fairport, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 828,585, Aug. 29, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,073

Int. Cl.[2] B32B *27/38*

U.S. Cl. 428—414 **12 Claims**

1. A thermoplastic film substrate having a topcoat of a heat sealable vinylidene chloride multi-polymer containing at least 50% by weight of vinylidene chloride, said film having a primer coat, intermediate said substrate film surface and said topcoat, comprising the reaction product of an acidified aminoethylated vinyl polymer and an epoxy resin.

7. A polypropylene film substrate having a topcoat consisting of a sealable vinylidene chloride polymer containing at least 50% by weight of vinylidene chloride, said polypropylene film having a primer coat intermediate said substrate film surface and said topcoat, said primer coat consisting of the reaction product of an acidified aminoethylated vinyl polymer and an epoxy resin.

4,214,040

CROSS-LINKABLE, SATURATED POLYESTER COATING COMPOSITIONS

Jacques Meyer, Paris, and Daniel Bernelin, Ris Orangis, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 6, 1978, Ser. No. 893,932

Claims priority, application France, May 23, 1977, 77 15622

Int. Cl.[2] C08G *63/70;* **B32B** *15/08, 27/36*

U.S. Cl. 428—458 **29 Claims**

1. A thermosetting composition of matter comprising (i) a cross-linkable, saturated, hydroxylated polyester resin, (ii) a cross-linking agent for the polyester (i), said cross-linking agent being a compound comprised of both a carboxylic acid anhydride moiety and a carboxylic acid function, and (iii) a metallic oxide, the metal cation of which oxide is selected from the group consisting of zinc, magnesium, cadmium, iron (II) and alkaline earth in an amount between about 0.5% and 5% by weight metal with respect to the weight of the polyester resin.

4,214,041

COMPOSITE ALUMINUM CAPACITOR FOIL

Julius C. Fister, Jr., Hamden, Conn.; William C. Setzer, Creve Coeur, Mo., and Leon Cox, Pinson, Tenn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 1, 1978, Ser. No. 965,592

Int. Cl.[2] B21C *37/00;* **C25D** *7/04*

U.S. Cl. 428—607 **11 Claims**

1. A composite aluminum capacitor foil having a thickness from 0.0001 to 0.01 inch and having a relatively lower purity core of an aluminum base alloy having not less than about 0.03% each iron and silicon clad on both sides with a relatively higher purity aluminum base alloy having not more than about 0.02% each iron and silicon, wherein said cladding constitutes not more than 20% of the thickness of said composite on each side, wherein said composite is characterized by low cost and good capacitance and leakage characteristics.

4,214,042

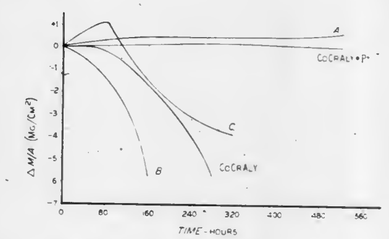
TITANIUM BEARING MCRALY TYPE ALLOY AND COMPOSITE ARTICLES

Lloyd W. Wilson, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1977, Ser. No. 863,818

Int. Cl.[2] B32B *15/00*

U.S. Cl. 428—678 **5 Claims**



1. A coated article having hot corrosion resistance comprising:

(a) a substrate selected from the group consisting of iron, nickel and cobalt base alloys; and

(b) an MCrAlY type overlay alloy coating on said substrate, said coating consisting of by weight about 3–6 percent titanium, about 10–40 percent chromium, about 9–25 percent aluminum and about 0.01–5.0 percent reactive metal selected from the group consisting of yttrium, scandium, thorium and other rare earth elements, balance selected from the group consisting of nickel, cobalt and iron, said coated article having improved resistance to hot corrosion by virtue of the presence of titanium in the coating.

4,214,043

RECHARGEABLE ELECTROCHEMICAL CELL

Huibert J. H. van Deutekom, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 833,301, Sep. 14, 1977, abandoned. This application May 4, 1978, Ser. No. 902,712

Claims priority, application Netherlands, Feb. 3, 1978, 7801243

Int. Cl.[2] H01M *4/00*

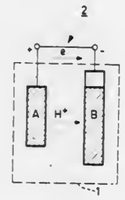
U.S. Cl. 429—27 **3 Claims**

1. A rechargeable electrochemical cell which is sealed from the external environment, comprising, in a chamber which is sealed from the environment:

a positive electrode comprising an electrochemically active material selected from the group consisting of nickel hydroxide, silver oxide and manganese oxide;

a negative electrode made of an electrochemically active

material comprising $LaNi_n$, n being between 4.8 and 5.4, wherein La may be partially substituted with an element selected from the group consisting of calcium, thorium, titanium, rare earth metals and yttrium, and wherein Ni may be partially substituted with an element selected from the group consisting of copper, chromium and iron, said $LaNi_n$ or substitution product thereof having a $CaCu_5$ crystal structure; and



an aqueous electrolyte having a pH exceeding 7;

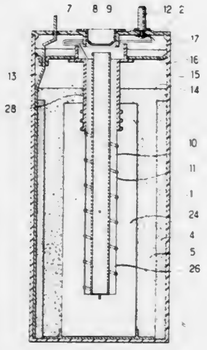
wherein the quantity of the electrochemically active material of the negative electrode exceeds that of the positive electrode by at least approximately 15%, and in the fully discharged state of the positive electrode the electrochemically active compound of the negative electrode, as regards the excess, is at least partially present as a hydride, namely in the charged state.

4,214,044

AIR-DEPOLARIZED CELL

Robert Chevet, St. Benoit, and Pierre Lenfant, Buxerolles, both of France, assignors to Compagnie Industrielle des Piles Electriques "CIPEL", Levallois-Perret, France

Continuation of Ser. No. 895,396, Apr. 11, 1978, abandoned.
This application May 31, 1979, Ser. No. 44,256
Claims priority, application France, Apr. 14, 1977, 77 11234
Int. Cl.[2] H01M *12/06*
U.S. Cl. 429—27 **5 Claims**



1. An air-depolarized electric cell having a casing with oxygen-impermeable bottom and sides, a positive electrode including a catalytic mass containing an organic binder, a negative electrode, an electrolyte disposed between the electrodes, an oxygen-impermeable transverse wall sealed to the sides of the casing and spaced above the negative electrode and electrolyte to provide a gas space between the wall and the electrolyte, a ventilation duct formed within the positive electrode, and a tube sealingly extending through said transverse wall and entering the ventilation duct for connecting the interior of the catalytic mass to a source of oxygen on the other side of the transverse wall from said gas space, wherein the improvement comprises:

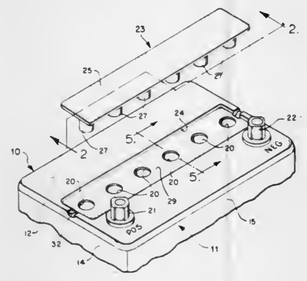
said tube being made of a plastic material impervious to oxygen, the catalytic mass being molded around the tube, and the binder for the catalytic mass and the plastic material of the tube being chosen to have a common solvent, so that the material of the tube is superficially dissolved by said solvent to provide strong adherence of the catalytic mass to the tube.

4,214,045

CONTAINER FOR A MAINTENANCE-FREE BATTERY

Gottfried W. Jutte, Indianapolis, and John V. McHugh, Greenfield, both of Ind., assignors to The Richardson Company, Des Plaines, Ill.

Filed Aug. 21, 1978, Ser. No. 935,250
Int. Cl.[2] H01M *2/12*
U.S. Cl. 429—87 **24 Claims**



1. A battery container for a battery comprising, in combination:

a container base including side walls forming a compartment for the battery;

means for enclosing said container base including a cover member having a top surface, a bottom surface adapted for engaging the side walls of said container base, a recess on said top surface defining a first opposing surface, and at least one filler well portion extending from said recess to the interior of the battery container, and a flange portion generally surrounding said filler well portion;

a vent cover including a generally flat body portion seated within said recess and dimensioned to provide a gas escape gap between the side walls of said recess and the side walls of said vent cover, and a bottom surface defining a second opposing surface;

venting means including at least one vent plug portion projecting from said bottom surface of said vent cover body portion, said one vent plug portion having a sidewall extending through said filler well into the interior of the battery container, and an axially directed recess between said vent plug sidewall and filler well for establishing a first passageway for conveying gases egressing from said battery container, said vent plug portion including a lug portion which cooperates with said flange portion to secure said vent cover to said means for enclosing said container base; and

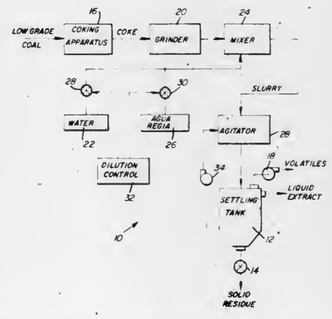
means including at least one rib portion on at least one of said opposing surfaces for spacing said bottom surface of said vent cover from said first opposing surface of said recess to form a second passageway, said second passageway providing gas passing communication between said first passageway and said gas escape gap.

4,214,046

METHOD OF EXTRACTING A LIQUID ELECTROLYTE AND OTHER PRODUCTS FROM COAL

Owen R. Waltrip, Roseville, Calif., assignor to Nuclear Supreme, Casper, Wyo.

Filed Feb. 15, 1979, Ser. No. 12,561
Int. Cl.[2] H01M *6/04, 10/08*
U.S. Cl. 429—198 **15 Claims**



1. A method of producing a liquid extract, substantially free of metallic components, from a carbonaceous material containing trace amounts of the metallic components, including the steps of: reducing the carbonaceous material to particle size; mixing the particles of carbonaceous material with an acid having metal dissolving and oxidizing powers; diluting the acid before said mixing to regulate said dissolving and oxidizing powers resulting in formation of a mixture having a solid phase within which the metallic components are confined; and settling the mixture to separate a liquid phase from the solid phase as the liquid extract.

4,214,047

PHOTOGRAPHIC ELEMENTS HAVING HYDROPHILIC COLLOID LAYERS CONTAINING HYDROPHOBIC ADDENDA UNIFORMLY LOADED IN LATEX POLYMER PARTICLES

Tsang J. Chen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 936,155, Aug. 23, 1978, abandoned, which is a continuation of Ser. No. 880,684, Feb. 23, 1978, which is a continuation of Ser. No. 744,680, Nov. 24, 1976, abandoned, and Ser. No. 778,182, Mar. 16, 1977, abandoned, each is a continuation-in-part of Ser. No. 653,816, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 575,680, May 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 506,919, Sep. 17, 1974, abandoned. Continuation of Ser. No. 778,184, Mar. 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 744,842, Nov. 24, 1976, abandoned, which is a continuation-in-part of said Ser. No. 653,816, which is a continuation-in-part of said Ser. No. 575,680, which is a continuation-in-part of said Ser. No. 506,919. This application May 4, 1979, Ser. No. 36,262
Int. Cl.[2] G03C *5/24, 1/76, 3/00*
U.S. Cl. 430—448 **42 Claims**

1. In a photographic element comprised of

a support and, coated on the support,

one or more hydrophilic colloid layers, at least one of which is a silver halide emulsion layer,

the improvement in which at least one of the hydrophilic colloid layers contains in a photographically useful amount loaded polymer particles of from 0.02 to 0.2 micron in average diameter consisting essentially of a loadable polymer, with greater than 2 percent by weight of the polymer being derived from monomers capable of forming water soluble homopolymers, and, loaded into and distributed through said particles, a hydrophobic developing agent, the weight ratio of the



hydrophobic developing agent to said loadable polymer being from about 1:4 to 3:1.

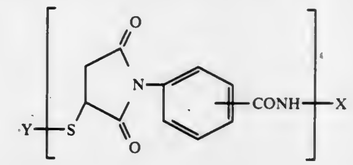
4,214,048

REAGENT SUITABLE FOR ENZYME IMMUNO ASSAY

Tsunehiro Kitagawa, Nagasaki, Japan, assignor to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

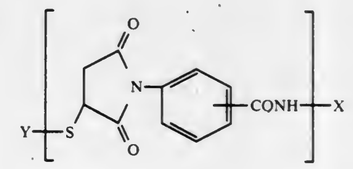
Division of Ser. No. 748,135, Dec. 6, 1976, Pat. No. 4,150,033.
This application Apr. 26, 1978, Ser. No. 900,167
Claims priority, application Japan, Dec. 12, 1975, 50-148787
Int. Cl.[2] C12Q *1/66;* **C12N** *9/96*
U.S. Cl. 435—7 **18 Claims**

1. An enzyme-labeled antigen suitable for an enzyme immuno assay having the following formula:



wherein X and Y are different and are each an enzyme or antigen.

14. In a method for conducting an enzyme immuno assay which comprises subjecting an enzyme-labeled antigen, an unlabeled antigen and an antibody to a competitive antigen-antibody reaction in a buffered solution, separating the enzyme-labeled antigen bound to the antibody from the free labeled antigen, and determining the amount of the unlabeled antigen by measuring an enzyme activity of either the labeled antigen bound to the antibody or the free labeled antigen, the improvement wherein the enzyme-labeled antigen has the following formula:

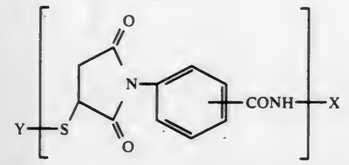


wherein X and Y are different and are each an enzyme or antigen.

15. A kit for an enzyme immuno assay which comprises subjecting an enzyme-labeled antigen, an unlabeled antigen and an antibody to a competitive antigen-antibody reaction in a buffered solution, separating the enzyme-labeled antigen bound to the antibody from the free labeled antigen, and determining the amount of the unlabeled antigen by measuring an enzyme activity of either the labeled antigen bound to the

antibody or the free labeled antigen, said kit containing the following three components as essential components:

Component A: an enzyme-labeled antigen of the formula:



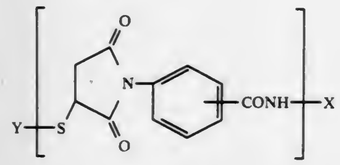
wherein X and Y are different and are each an enzyme or antigen,

Component B: an antibody against the antigen of component A, and

Component C: a substrate for the enzyme of the component A.

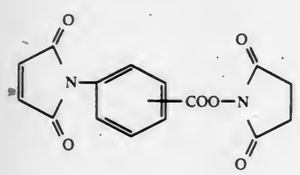
17. A process for preparing an enzyme-labeled antigen suitable for an enzyme immuno assay having the following formula:

(II)



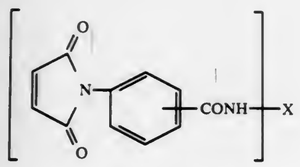
wherein X and Y are different and are each an enzyme or antigen, which comprises reacting a compound of the formula:

(I)



with an antigen or enzyme containing an amino group but having no thiol group under conditions which produce a bound product of the formula:

(III)



wherein X is the same as defined above,

and reacting the resulting bound product (III) with an enzyme or antigen containing a thiol group under conditions which produce the enzyme labeled antigen.

4,214,049

ASSAY OF SERINE PROTEASES USING NOVEL CHROMOGENIC ENZYME SUBSTRATES

Bo T. af Ekenstam, Mölndal; Leif E. Aurell; Karl G. Claeson, both of Särö; Birgitta G. Karlsson; Stig I. Gustavsson, both of Mölndal, and Gun A. Olausson, Västra Frölunda, all of Sweden, assignors to AB Kabi, Stockholm, Sweden

Division of Ser. No. 888,586, Mar. 20, 1978, Pat. No. 4,137,225, which is a continuation of Ser. No. 697,002, Jun. 17, 1976, abandoned. This application Oct. 27, 1978, Ser. No. 955,441
Claims priority, application Sweden, Jul. 11, 1975, 7507974
Int. Cl.² G01N *31/14*
U.S. Cl. 435—23 **31 Claims**

1. A method for the quantitative determination of serine proteases which comprises contacting the substrate for which said determination is desired with a diagnostically active chromogenic substrate with good solubility and a high specificity to serine proteases, having the following general formula:

H—D—A_1—A_2—A_3—NH—R

or salts thereof, wherein A_1 is an amino acid selected from the group consisting of Gly, Ala, Val, Leu, Ile, Pip, Pro, and Aze; A_2 is an amino acid selected from the group consisting of Gly, Ala, Val, Leu, Ile, Pip, Pro, Aze, and Phe; A_3 is an amino acid selected from the group consisting of Arg, Lys, and Orn; and R is a chromophoric group, and then spectrophotometrically measuring the degree of enzymatic hydrolysis.

4,214,050

PREVENTION OF ELECTRODE FOULING

George A. Blay, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 6, 1978, Ser. No. 957,947
Int. Cl.² C12Q *1/29*
U.S. Cl. 435—29 **22 Claims**

1. In a process wherein the pH of the anaerobic bacteria-containing liquid of a continuous anaerobic digestion process is monitored by means of a pH measuring device containing electrodes which are immersed in said bacteria-containing liquid in order to obtain a measurement of the pH of said bacteria-containing liquid, said electrodes comprising a reference electrode and a glass electrode, said anaerobic digestion process being one wherein the anaerobic bacteria of said bacteria-containing liquid decompose organic molecules to mainly carbon dioxide and methane, the improvement which comprises cyclically immersing said electrodes in said bacteria-containing liquid and in a bactericidal solution so as to prevent fouling of said electrodes, each cycle comprising a first time period during which said electrodes are immersed in said bacteria-containing liquid in order to measure the pH thereof and a second time period during which said electrodes are immersed in said bactericidal solution, the time ratio of said first time period to said second time period being no greater than about 10:1, said first time period of said cycle during which said electrodes are immersed in said bacteria-containing liquid not exceeding about ten hours in duration, said bactericidal solution containing a bactericide which is effective in killing said anaerobic bacteria, and said bactericidal solution containing an amount of said bactericide effective to kill the anaerobic bacteria remaining on the said electrodes after their having been immersed in the said bacteria-containing liquid.

4,214,051

PROCESS FOR PREPARING 9α-OH BN ACID METHYL ESTER

Merle G. Wovcha; Frederick J. Antosz, both of Kalamazoo; John M. Beaton, Portage; Alfred B. Garcia, Kalamazoo, and Leo A. Kominek, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 844,366, Oct. 21, 1977. This application Apr. 23, 1979, Ser. No. 32,184
Int. Cl.² C12P *33/16*
U.S. Cl. 435—55 **11 Claims**

8. A process for preparing 9α-OH BN acid methyl ester in its essentially pure form which comprises cultivating a Mycobacterium mutant which is characterized by its ability to selectively degrade steroids having 17-alkyl side chains of from 8 to 10 carbon atoms, inclusive, and accumulate 9α-OH BN acid methyl ester in the fermentation beer, in an aqueous nutrient culture medium under aerobic conditions in the presence of a steroid containing from 8 to 10 carbon atoms, inclusive, in the 17-alkyl side chain and isolating said compound in its essentially pure form from the culture medium.

4,214,052

PROCESS FOR PREPARING 9α-OH BN ALCOHOL

Merle G. Wovcha; Frederick J. Antosz, both of Kalamazoo; John M. Beaton, Portage; Alfred B. Garcia, Kalamazoo, and Leo A. Kominek, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 844,366, Oct. 21, 1977. This application Apr. 23, 1979, Ser. No. 32,185
Int. Cl.² C12P *33/16*
U.S. Cl. 435—55 **11 Claims**

1. A process for preparing 9α-OH BN alcohol in its essentially pure form which comprises cultivating *Mycobacterium fortuitum* NRRL B-8119 in an aqueous nutrient culture medium under aerobic conditions in the presence of a steroid containing from 8 to 10 carbon atoms, inclusive, in the 17-alkyl side chain and isolating said compound in its essentially pure form from the culture medium.

4,214,053

LATEX FOAM RUBBER

David Porter, Sarnia, Canada, assignor to Polysar International, S.A., Fribour, Switzerland

Filed Jan. 29, 1979, Ser. No. 7,509
Claims priority, application Canada, Dec. 18, 1978, 318128
Int. Cl.² C08J *9/30*
U.S. Cl. 521—70 **10 Claims**

1. A method for broadening the gel range of alkali metal fluosilicate gelling agents, in foamed acid-coagulable rubber latex polymer compounds which are to be gelled by subjecting them to a preliminary heat treatment prior to drying, comprising including in the latex compound a water-soluble ammonium or amine sulfamate in an amount of at least 0.5 part by weight of sulfamate per 100 parts by weight of dry solids in the uncompounded latex, said sulfamate being one which hydrolyzes in water when the temperature is raised but which is characterized by little or no hydrolysis in water at ambient temperatures and being one in which the ammonium or amine radical is derived from an amine (including ammonia) which has a boiling point in the range of −35° C. to +300° C.

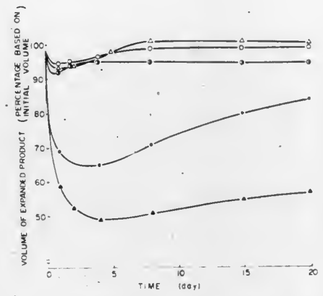
4,214,054

EXPANDED OLEFIN POLYMER

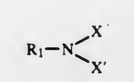
Seizaburo Watanabe, and Yutaka Matsuki, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Oct. 19, 1978, Ser. No. 952,865
Int. Cl.² C08J *9/14*
U.S. Cl. 521—95 **6 Claims**

1. An expanded article of an olefin polymer comprising an expanded product of an olefin polymer containing at least one compound, which imports little shrinkage to said expanded article after expansion selected from the group consisting of the compounds represented by the formulas (I), (II) and (III) as set forth below in an amount of 0.1 to 10% by weight based on the weight of said resin and having a closed cellular character-

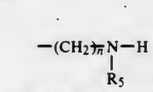


istic value of 0 to 0.5 g/cm³, a bulk density of 10 to 200 kg/m³ and a compressive strength coefficient of 2.15×10^{-3} to 2.89×10^{-2}:

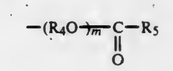


(I)

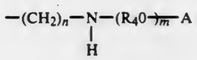
wherein R_1 is an alkyl group having 10 to 24 carbon atoms, X and X' each hydrogen atom, an alkyl group having 1 to 24 carbon atoms which may be substituted or a substituent selected from the group consisting of $-(CH_2)_nNH_2$ wherein n is an integer of 1 to 22,



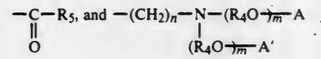
wherein R_5 is an alkyl having 1 to 24 carbon atoms, $-(R_4O)_mH$ wherein R_4 is an alkylene group having 1 to 5 carbon atoms and m an integer of 1 to 10,



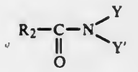
wherein R_5 is an alkyl having 1 to 24 carbon atoms,



wherein n is an integer of 1 to 22 and A is hydrogen atom or

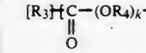


wherein A' is hydrogen atom or



(II)

wherein R_2 is an alkyl group having 9 to 23 carbon atoms, Y and Y' each hydrogen atom, an alkyl having 1 to 24 carbon atoms, an acyl having 10 to 24 carbon atoms or a substituent of the formula $-(R_4O)_mA_2$ wherein A_2 is hydrogen atom, an alkyl having 1 to 24 carbon atoms or acyl having 10 to 24 carbon atoms;



(III)

wherein means plural alkyl or hydroxyalkyl groups corresponding in number to the integer l, which may be the same or different, each having 9 to 23 carbon atoms, R_4 an alkylene group having 1 to 5 carbon atoms, k an integer of 0 to 7, l an integer of 2 to 8 and Z a l-valent residue of l-valent polyhydric alcohol from which l hydroxyl groups are eliminated.

4,214,055

HIGH RESILIENCE FLAME-RETARDANT POLYURETHANE FOAMS BASED ON POLYMER/POLYOL COMPOSITIONS

Carl G. Seefried, Jr.; George H. Armstrong, and Russell Van Cleve, all of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 17, 1978, Ser. No. 961,717
Int. Cl.² C08G *18/14, 18/63;* **C08K** *5/06;* **C09K** *3/00*
U.S. Cl. 521—137 **4 Claims**

1. A high resilience flame-retardant urethane foam made from tolylene diisocyanate and a polymer/polyol composition, said polymer/polyol composition consisting essentially of a stable dispersion, in an ethylene oxide-capped polyol having a hydroxyl number of less than about 38, of an interpolymer of a monomer mixture composed of a minor amount of acrylonitrile and a major amount of vinylidene chloride.

3. A polymer/polyol composition consisting essentially of a stable dispersion, in an ethylene oxide-capped polyol having a hydroxyl number of less than about 38, of an interpolymer of a monomer mixture composed of a minor amount of acrylonitrile and a major amount of vinylidene chloride, the amount by weight of monomer mixture required, relative to the polyol, sufficient to provide a high resilience, flame-retardant polyurethane foam.

4,214,056

METHOD FOR PREPARING A MONOALKENYL AROMATIC POLYBLEND HAVING A DISPERSED RUBBER PHASE AS PARTICLES WITH A BIMODAL PARTICLE SIZE DISTRIBUTION

Richard E. Lavengood, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 907,521, May 19, 1978, abandoned. This application Apr. 9, 1979, Ser. No. 28,414
Int. Cl.² C08L *9/06, 51/04*
U.S. Cl. 525—71 **25 Claims**

1. A method for preparing monoalkenyl aromatic polymeric polyblends having improved toughness which comprises blending (1) a first monoalkenylaromatic polymeric polyblend having dispersed diene rubber particles, said rubber particles being grafted with and have occluded said monoalkenyl aromatic polymer, said particles having an average diameter of about 0.5 to 1.0 microns with (2) a second monoalkenyl aromatic polymeric polyblend having dispersed diene rubber particles, said particles being grafted with and having occluded said monoalkenyl aromatic polymer, said particles having an average diameter of about 2.0 to 3.0 microns forming a third monoalkenyl aromatic polymeric polyblend, having a dispersed diene rubber phase with a bimodal rubber particle size distribution wherein about 70 to 95% of said rubber particles have an average diameter of about 0.5 to 1.0 microns and 5 to 30% of said rubber particles have an average diameter of about 2.0 to 3.0 microns providing said third polyblend with improved toughness and gloss said first and second polyblends being prepared by polymerization of a solution of a monoalkenyl aromatic monomer having said diene rubber dissolved therein.

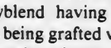
4,214,057

COATING COMPOSITION FOR PLASTIC SUBSTRATES

Shunichi Ishihara, Chiba, and Toraichi Katsube, Kawasaki, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

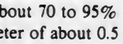
Filed Feb. 15, 1978, Ser. No. 877,934
Int. Cl.² C08L *83/06, 33/06*
U.S. Cl. 525—100 **9 Claims**

1. A coating composition consisting essentially of:
(A) the hydrolyzed product of a tetraalkoxysilane of the formula



(I)

wherein R is an alkyl group of 1 to 4 carbon atoms
(B) the hydrolyzed product of one or more silicon compounds of the formula



(II)

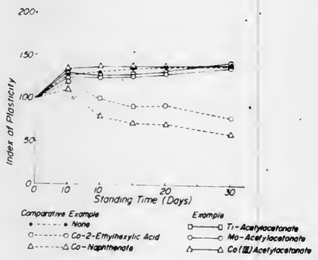
wherein R′ is a hydrocarbon group having 1 to 2 carbon atoms, R″ is a substituted or unsubstituted hydrocarbon group having 1 to 3 carbon atoms or an acyl group having 1 to 3 carbon atoms, and
(C) poly (vinyl acetate), the sum of the percentages A, B, and C equalling 100 percent and on triangular coordinates the proportions by weight of the components (A), (B) and (C) falling in the area defined by:
(A):(B):(C)=40:42.5:17.5 (percent by weight)
(A):(B):(C)=17.5:72.5:10 (percent by weight)
(A):(B):(C)=17.5:60:22.5 (percent by weight)
(A):(B):(C)=40:35:25 (percent by weight).

4,214,058

VULCANIZABLE RUBBER COMPOSITION CONTAINING METAL ORGANIC COMPOUNDS

Takaaki Imamura, Akigawa; Takahiro Kawagoe, Tokorozawa; Toshio Chikaraishi, Akigawa, and Takashi Nyomura, Kodaira, all of Japan, assignors to Bridgestone Tire Company, Tokyo, Japan

Filed Oct. 17, 1977, Ser. No. 842,995
Claims priority, application Japan, Oct. 20, 1976, 51-125031
Int. Cl.² C08C *19/26, 19/20;* **C08F** *36/04*
U.S. Cl. 525—348 **14 Claims**



1. A vulcanizable rubber composition having an excellent adhesive property when vulcanized in contact with metals which comprises
(a) 100 parts by weight of a diene type rubber
(b) from 0.5 to 10 parts by weight of a vulcanizing agent selected from the group consisting of sulfur, morpholine disulfide, 2-(4′-morpholinodithio) benzothiazole and thiuram compounds and
(c) from 0.01 to 1 part by weight (as metal content) of at least one metal compound selected from the class consisting of an aliphatic carboxylic acid salt, an alicyclic carboxylic acid salt and an aromatic carboxylic acid salt of titanium and molybdenum, titanyl acetylacetonate, bis-tris(acetylacetonate) titanium (IV), hexachlorotitanate (IV), molybdenyl acetylacetonate, and molybdenum (III) acetylacetonate.

4,214,059

METHOD FOR THE PRODUCTION OF IODOPHOR POWDERS

Peter Hofer, Liestal, Switzerland, assignor to The Purdue Frederick Company, New York, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,683
Int. Cl.² A01N *11/00;* **C08F** *8/22*
U.S. Cl. 525—356 **11 Claims**

1. Method of producing an iodophor powder, which comprises adding to a suspension of a powdered iodophor-forming compound in a solution of iodine dissolved in a solvent in which said iodophor-forming compound is insoluble an iodide dissolved in a solvent system miscible with said solvent for said iodine, thus causing iodine to add to said iodophor-forming compound to form the corresponding iodophor in solid form.

4,214,060

FLUOROPOLYMER COMPOSITION

David Apotheker, and Paul J. Krusic, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 562,648, Mar. 27, 1975, Pat. No. 4,035,565. This application Nov. 30, 1976, Ser. No. 746,002
Int. Cl.² C08F *214/16*
U.S. Cl. 525—387 **26 Claims**

1. A fluoropolymer composition which comprises
(A) a copolymer whose interpolymerized units consist essentially of
(1) up to 3 mole % of units derived from a bromine-containing olefin with the proviso that enough of such units are present to provide at least 0.05 weight % bromine in the copolymer, and
(2) enough units derived from component (2.1) or (2.2) as follows to make up the remainder of the copolymer:
(2.1) at least one fluorine-containing monomer which is copolymerizable with component (1), contains 2–7 carbon atoms, contains no bromine atom, and contains at least as many fluorine atoms as carbon atoms, or
(2.2) about 50–99 mole % of tetrafluoroethylene, about 1–50 mole % of a C_2-C_4 olefinic hydrocarbon and from 0 to about 30 mole % of vinylidene fluoride, and
(B) about 0.5–10% of an organic peroxide based on the weight of component (A).

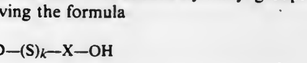
4,214,061

PRESSURE-SENSITIVE ADHESIVE

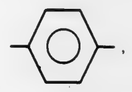
Yu-Sun Lee, Parma Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 3, 1978, Ser. No. 957,600
Int. Cl.² C08L *75/00*
U.S. Cl. 525—455 **31 Claims**

1. A pressure sensitive adhesive composition comprising the reaction product of (A) at least one alkyl acrylate liquid polymer containing both terminal and random hydroxyl functionality totaling an average of about 1.4 to about 6 hydroxyl groups per molecule, and having the formula



wherein k is 1 or 2, X is $(C_nH_{2n}O)_m(C_nH_{2n})_p$ or $(C_nH_{2n})_m$



m is an integer from 0 to 10; n and p are integers from 1 to 10; and D is an aliphatic backbone containing polymerized units of at least 65 weight percent based upon the total polymer weight of at least one alkyl acrylate wherein the alkyl group contains from 3 to 10 carbon atoms, (B) at least one isocyanate prepolymer of a polyester glycol or a polyalkylene ether glycol, and (C) at least one alkanediol containing from 3 to 10 carbon atoms.

4,214,062

POLYCARBONATE FILMS OF LOW FLAMMABILITY AND IMPROVED STRESS CRACK RESISTANCE

Rudolf Binsack, Krefeld; Joachim Wank, and Eckart Reese, both of Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 3, 1978, Ser. No. 875,014
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1977, 2706126
Int. Cl.² C08K *5/42*
U.S. Cl. 525—470 **18 Claims**

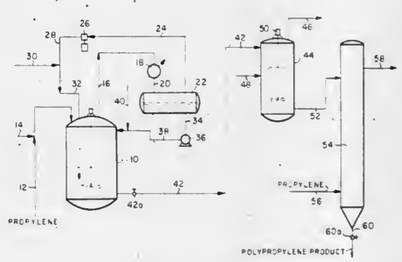
1. Polycarbonate films, characterized in that they contain about 0.01% by weight to 2% by weight of a NH_4 salt, alkali metal salt or alkaline earth metal salt of a perhalogenoalkanesulphonic acid.

4,214,063

AUTOREFRIGERATED POLYMERIZATION PROCESS

Edwin D. Luallin, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 11, 1979, Ser. No. 2,627
Int. Cl.² C08F *2/02, 6/28*
U.S. Cl. 526—68 **10 Claims**



1. A method for producing a solid polypropylene or propylene copolymer product which comprises:
contacting a Ziegler-type polymerization cocatalyst system with a body of liquid propylene at an elevated temperature in a reaction zone having a propylene liquid phase and a propylene vapor phase whereby heat of reaction is removed by continuously withdrawing the vapor phase from the reaction, said reaction zone being maintained at a temperature and pressure whereby the liquid phase and vapor phase are in equilibrium;
withdrawing portions of the liquid phase as a slurry containing solid polymerized product, liquid propylene, amorphous polymer and catalyst residue from the reaction zone;
introducing the slurry into a degassing zone being maintained at pressure below that of the reaction zone to convey the slurry from the reaction zone with concommitant removal of vaporized propylene therefrom;
adding an effective amount of agents for catalyst deactivation and solubilization to the slurry in the degassing zone for a time sufficient to deactivate and solubilize catalyst residues;
introducing the slurry into a wash zone maintained at substantially the same pressure of said degassing zone;
contacting the slurry with liquid propylene countercurrently in the wash zone to separate deactivated, solubi-

lized catalyst residue and amorphous polymer from the solid polymer product; and
recovering the resulting purified solid polymer product.

4,214,064
PROCESS FOR PRODUCING A CASTING PLATE OF POLYMETHYL METHACRYLATE

Hiroyuki Kanazawa, Niihama, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 640,387, Dec. 12, 1975, abandoned. This application Nov. 30, 1977, Ser. No. 856,019
Claims priority, application Japan, Dec. 13, 1974, 49-143737
Int. Cl.[2] C08F *2/44, 2/02, 20/18*
U.S. Cl. 526—193 **3 Claims**

1. In a process for producing a casting plate of polymethyl methacrylate by continuously subjecting a methyl methacrylate monomer or a syrup containing soluble polymeric resins in the methyl methacrylate monomer incorporated with a sulfur-containing compound selected from the group consisting of dioctyl sulfide, 1,3-di-n-dodecylthiopropane, ethyl dodecyl thiopropionate, methyl dodecyl thioisobutyrate, dilauryl thiodipropionate, distearyl thiodipropionate, lauryl stearyl thiodipropionate, dibutyl thiodiundecathiolate and dioctyl thiodiundecathiolate, in an amount of 0.005 to 5% by weight based on the produced polymer, to casting polymerization, the improvement which consists essentially of adding a surfactant selected from the group consisting of an anionic or nonionic surfactant to the starting mixture comprising the monomer or syrup incorporated with the sulfur-containing compound in an amount of 0.0001 to 1% by weight based on the produced polymer to obtain the casting plate having an improved thermal stability.

4,214,065
REINFORCED POLYLACTAMS

Charles V. Goebel, Jr., Wyomissing, Pa., assignor to The Polymer Corporation, Reading, Pa.

Filed Dec. 21, 1978, Ser. No. 971,926
Int. Cl.[2] C08K *9/06*
U.S. Cl. 528—27 **7 Claims**

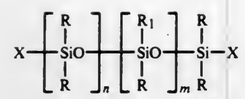
1. A method of reinforcing a polylactam comprising the steps of:
reacting a ketene with an amino silicate ester to form a β keto-amide and a reactive silicate ester end group;
treating the surface of inorganic filler particles by reaction with the silicate ester end group;
dispersing the treated filler particles in a lactam monomer; and
adding a catalyst and heating the dispersion to initiate a base catalized, anionic polymerization of the lactam.

4,214,066
ORGANOPOLYSILOXANES MODIFIED WITH POLY-CARBODIIMIDE

Hans-Heinrich Moretto, Cologne; Helmut Steinberger, Leverkusen, both of Fed. Rep. of Germany; Ingrid Larking, Landvetter, Sweden, and Hans Sattlegger, Odenthal-Gloebusch, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,128
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730743
Int. Cl.[2] C08G *77/04*
U.S. Cl. 528—28 **7 Claims**

1. A process for preparing a polysiloxane modified with polycarbodiimide characterized in that the polysiloxane and polycarbodiimide are present as discernible phases, which comprises mixing a liquid polysiloxane of the following formula:



in which
R represents an optionally substituted alkyl, alkenyl or halogenoalkyl radical with up to about 10 C atoms,
R_1 represents hydrogen or an optionally substituted alkyl, alkenyl, aryl or halogenoalkyl radical with up to about 10 C atoms;
X is hydroxyl-, vinyl- or methyl-;
n=2 to about 1,000 and
m=0 to about 50
with a polyisocyanate of the formula

OCN—R'—NCO

in which
R' represents an alkylene or arylene radical with up to 24 C atoms which is optionally also substituted by isocyanate groups,
and a catalyst which accelerates the carbodiimidization.

4,214,067
SEALING COMPOSITION

Marvin Packer, Broomall, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1977, Ser. No. 860,561
Int. Cl.[2] C08G *59/66*
U.S. Cl. 528—93 **7 Claims**

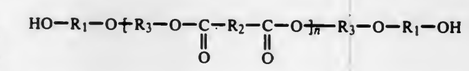
1. A composition for sealing acrylic plastics in frames which is resistant to adhesion failure induced by thermal and moisture variations of ambient weather consisting of a diglycidyl ether of bisphenol A, a liquid polysulfide polymer in a concentration of from at least about 1.25 to about 1.8 times the diglycidyl ether of bisphenol A concentration and a curing agent in an amount sufficient to cure the composition.

4,214,068
ESTERS CONTAINING PHENOLIC GROUPS AS EPOXY RESIN CURING AGENTS

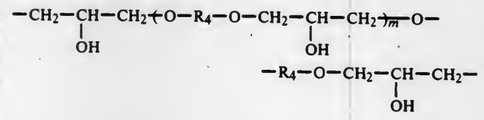
Gerardus C. M. Schreurs; Werner Th. Raudenbusch, and Theodorus N. Visser, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 10, 1979, Ser. No. 37,609
Claims priority, application United Kingdom, May 22, 1978, 21051/78
Int. Cl.[2] C08G *59/62*
U.S. Cl. 528—98 **9 Claims**

1. A phenolic compound, suitable as a curing agent for epoxy resins, having the generalized formula:



wherein n is a number having an average value of from 0.3 to 4, R_1 is the hydrocarbon residue of a dihydric phenol, R_2 is the hydrocarbon residue of a dicarboxylic acid, and R_3 is a divalent group having a formula:



wherein m is a number having an average value of from 0 to 4, and R_4 is the hydrocarbon residue of a dihydric phenol.

4,214,069
FLAME-RESISTANT COPOLYESTERS CONTAINING PHOSPHONIC GROUPS

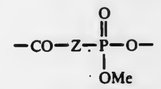
Paul Couchoud, Dardilly, and Yves Vaginay, Lyons, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Oct. 12, 1977, Ser. No. 841,439
Claims priority, application France, Oct. 15, 1976, 76 31319; Dec. 29, 1976, 76 39701
Int. Cl.[2] C08G *63/18, 63/68*
U.S. Cl. 528—167 **12 Claims**

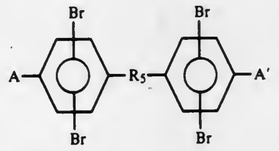
1. Flame-resistant copolyesters which may be spun and made into a film, characterized in that they consist essentially of from 85 to 96% of repeating units of the formula:

—CO—R—CO—O—R_1—O—

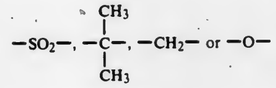
in which R, derived from acid reactants, is a divalent aromatic paraphenylene or 2,6-naphthylene radical, which may be replaced to the extent of at most 19.5 mol %, relative to the sum of the radicals R, by another aromatic radical selected from the metaphenylene group or by an aliphatic radical comprising from 6 to 12 carbon atoms, or to extent of at most 2 mol % by a trivalent or tetravalent radical, and in which R_1 is a divalent aliphatic or cycloalkane radical or a mixture of two or several of these radicals, which may be replaced by at most 2 mol % of a trivalent or tetravalent radical, the sum of the trivalent or tetravalent radicals not exceeding 2 mol %, relative to all of the acid reactants; from 2 to 10% of units of the formula:



in which Me represents a metal selected from Na, K, Ca or Zn, and Z represents the paraphenylene group or a divalent aliphatic group which contains from 1 to 18 carbon atoms, or a divalent aliphatic group which contains from 1 to 18 carbon atoms and hetero-atoms, and a branched aliphatic group which contains from 1 to 18 carbon atoms, the branch being an aliphatic radical which may be halogenated and having from 1 to 6 carbon atoms; and from 2 to 8% of units produced from a brominated compound of the formula:



in which R_5 is a direct bond or represents a group;



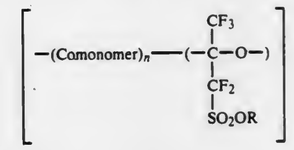
and A and A' represent either —CO—OX groups, where X=H or a lower alkyl group, or —X'OH groups, where X'=a $-(OCH_2—CH_2)_n$ group, and n=1 to 10.

4,214,070
POLYMERS OF 2-KETOPENTAFLUOROPROPANESULFONIC ACID AND RELATED ACIDS WITH ETHYLENE OR FLUORINATED UNSATURATED MONOMERS

Carl G. Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 602,756, Aug. 7, 1975, Pat. No. 4,160,780. This application Jan. 18, 1979, Ser. No. 4,482
Int. Cl.[2] C08G *2/26*
U.S. Cl. 528—220 **4 Claims**

1. A solid, moldable, dyeable copolymer of the formula



wherein the comonomer is ethylene, vinyl fluoride, vinylidene fluoride, tetrafluoroethylene or trifluoroethylene, R is H or CF_2CH_3 and n is 2-500.

4,214,071
AMIDE-IMIDE POLYMERS

William M. Alvino, Pittsburgh, and Lawrence W. Frost, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 180,190, Sep. 13, 1971, Pat. No. 3,892,768. This application Apr. 11, 1975, Ser. No. 567,220
Int. Cl.[2] C08G *73/11*
U.S. Cl. 528—222 **20 Claims**

1. A method of preparing an amide-imide polymer without liberation of water after polymerization, comprising:
(1) preparing a dinitro imide intermediate by reacting a first compound selected from the group consisting of nitroamine, diamine, or mixture thereof, with a second compound selected from the group consisting of dianhydride, nitroanhydride, acyl-anhydride, anhydride equivalent, or mixtures thereof, where said first and second compounds are selected to provide the two nitro groups in said dinitro imide;
(2) reducing the two nitro groups in said dinitro imide intermediate to amino groups to form a diamino imide intermediate; and
(3) reacting said diamino imide intermediate with at least one diacid halide to produce said amide-imide polymer.

4,214,072
PROCESS FOR THE MANUFACTURE OF LINEAR HIGH MOLECULAR WEIGHT POLYESTERS

Hans-Josef Sterzel, Dannstadt-Schauernheim; Kasimir Von Dziembowski, and Hans Pirzer, both of Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,632
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738093; Jan. 27, 1978, 2803530
Int. Cl.[2] C08G *63/18*
U.S. Cl. 528—272 **10 Claims**

1. A process for the manufacture of high molecular weight linear polyesters which are derived from dicarboxylic acids or their ester-forming derivatives and from diols, which comprises condensing polyester precondensates, having a relative viscosity of at least 1.05, under reduced pressure the condensation being started at from 290° to 340° C. and the temperature being lowered as the condensation progresses, the final temperature being at least 10° C. above the melting point of the particular polyester produced.

4,214,073

POLY-(CARBONATE-URETHANE)-TRIOLS AND PREPARATION THEREOF

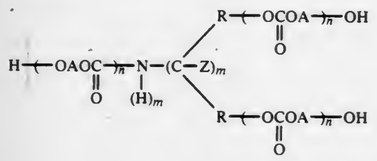
Claude G. Passagne, Champigny sur Marne; Jean-Pierre G. Senet, Melun; Remy R. Lippler, and Jacques Plazanet, both of Bergerac, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Division of Ser. No. 855,963, Nov. 30, 1977, Pat. No. 4,165,423. This application May 29, 1979, Ser. No. 43,340

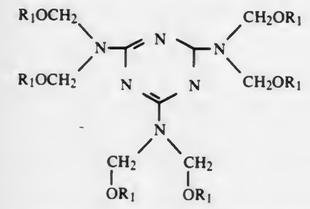
Int. Cl.[2] C08G *18/00*

U.S. Cl. 528—369 **2 Claims**

1. A resin obtained by reaction of a poly-(carbonate-urethane)-triol of the formula:



wherein A is an alkylene or cycloalkylene group, R is an alkylene group having up to 4 carbon atoms, Z is an alkyl group having up to 4 carbon atoms, n is a number representing the degree of polymerisation, and m is an integer selected from 0 and 1, said poly-(carbonate-urethane)-triol having a molecular weight of less than 5000 and being liquid, with an etherified melamine-formaldehyde condensate of the formula:



where R_1 is an alkyl group having up to 4 carbon atoms.

4,214,074

HYDROXYALKYL DERIVATIVES OF AMINOGLYCOSIDE ANTIBIOTICS

Kenneth Richardson; Rhona M. Plews, both of Canterbury, and James R. Wright, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

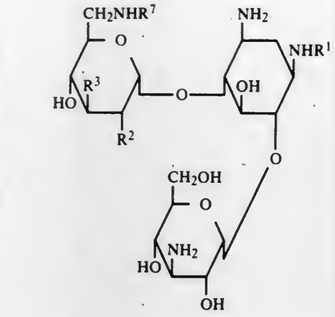
Continuation-in-part of Ser. No. 859,376, Dec. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 804,322, Jun. 7, 1977, abandoned. This application Nov. 7, 1978, Ser. No. 958,409

Claims priority, application United Kingdom, Jun. 16, 1976, 24989/76; Sep. 28, 1976, 40145/76; Dec. 8, 1976, 51294/76

Int. Cl.[2] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—10 **19 Claims**

1. A compound of the formula



and the pharmaceutically-acceptable acid addition salts thereof; wherein

R^2 is selected from the group consisting of hydroxy and amino;

R^3 is selected from the group consisting of hydrogen and hydroxy;

R^7 is selected from the group consisting of hydrogen and alkyl having from 1 to 4 carbon atoms; and

R^1 is selected from the group consisting of

and



wherein

R^8 is alkyl having from 2 to 5 carbon atoms at least 2 of which bear one hydroxy group;

R^9 is alkyl having from 1 to 5 carbon atoms at least one of which bears one hydroxy group; and

R^{10} is alkyl having from 1 to 5 carbon atoms at least one of which bears one hydroxy group.

4,214,075

6'-EPI-FORTIMICIN A AND B DERIVATIVES

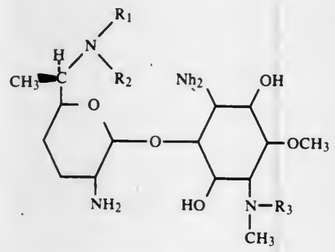
John S. Tadanier, and Jerry R. Martin, both of Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 21, 1977, Ser. No. 863,004

Int. Cl.[2] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **17 Claims**

1. A 6'-epi-fortimicins A and B and derivatives of the formula



wherein R_1 is hydrogen or lower alkyl, R_2 is hydrogen or loweralkyl and R_3 is selected from the group consisting of hydrogen, loweralkyl, aminoloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminohydroxyloweralkyl, aminohydroxyloweralkyl, aminoacyl, hydroxylacyl, acyl, N-monoloweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted aminoacyl or an amino acid residue; and the pharmaceutically acceptable salts thereof.

4,214,076

2'-N-SUBSTITUTED FORTIMICIN B AND DERIVATIVES

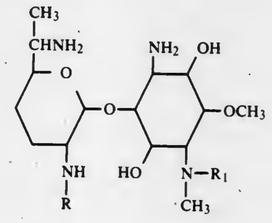
James B. McAlpine, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 21, 1977, Ser. No. 863,013

Int. Cl.[2] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **1 Claim**

1. 2'-N-substituted naphthyl Fortimicins B of the formula



(I)

wherein R is β-naphthoyl, γ-naphthoyl, γ-naphthyl; and R_1 is acyl, aminoacyl, N-monoloweralkylaminoacyl, N,N-dilower-alkyl-aminoacyl, hydroxy-substituted aminoacyl, an amino acid residue, loweralkyl, aminoloweralkyl, hydroxyloweral-kyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylamino-loweralkyl, aminohydroxyloweralkyl, N-loweralkylaminohy-droxyloweralkyl, N,N-diloweralkylaminohydroxyloweralkyl, and the pharmaceutically acceptable salts thereof.

4,214,077

1-N-SUBSTITUTED DERIVATIVES OF SELDOMYCIN FACTOR 5

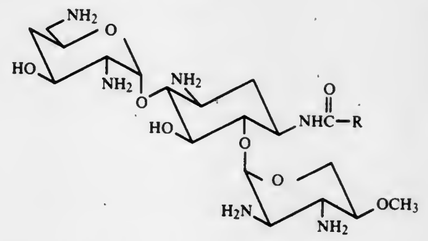
Ronald E. Carney, Gurnee, Ill., and Stephen Hanessian, Beaconsfield, Canada, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 21, 1978, Ser. No. 879,415

Int. Cl.[2] C07H *15/22*

U.S. Cl. 536—17 R **10 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of loweralkyl, aminoloweralkyl, hydroxyloweralkyl, aminohydroxyloweral-kyl with the proviso that R cannot be aminohydroxybutyryl and the pharmaceutically acceptable acid addition salts thereof.

4,214,078

FORTIMICIN AL

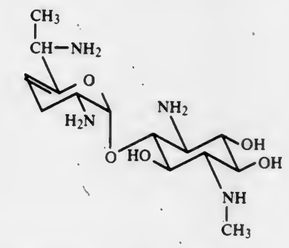
Alma W. Goldstein, Lake Bluff, and Earl E. C. Fager, Lake Villa, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,243

Int. Cl.[2] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **1 Claim**

1. Fortimicin AL represented by the formula



or a pharmaceutically acceptable salt thereof.

4,214,079

4-N, 2'-N AND 4,2'-Di-N-FORTIMICIN AL DERIVATIVES

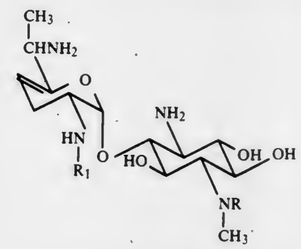
Jerry R. Martin, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill. and Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,246

Int. Cl.[2] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **10 Claims**

1. A fortimicin AL derivative represented by the formula:



wherein: with the limitation that R and R_1 each cannot be hydrogen, R and R_1 are the same or different members of the group consisting of hydrogen, acyl, aminoacyl, diaminoacyl, N-loweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted aminoacyl, loweralkyl, aminoloweralkyl, diaminoloweralkyl, hydroxyloweralkyl, N-loweralkylamino-loweralkyl, N,N-diloweralkylaminoloweralkyl, N-loweralk-ylaminohydroxyloweralkyl, N,N-diloweralkylaminohydroxy-loweralkyl and the pharmaceutically acceptable salts thereof.

4,214,080

FORTIMICINS AM AND AP

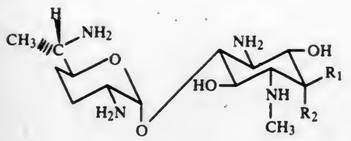
Ronald E. Carney, Gurnee, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,251

Int. Cl.[2] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **3 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or hydroxy and R_2 is hydrogen when R_1 is hydroxy and hydroxy when R_1 is hydrogen and the pharmaceutically acceptable salts thereof.

4,214,081

IMINO CONTAINING MORPHOLINE COMPOUNDS

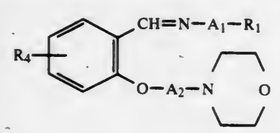
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 916,979, Jun. 19, 1978, Pat. No. 4,156,079. This application Dec. 26, 1978, Ser. No. 973,197

Int. Cl.² C07D *295/12*

U.S. Cl. 542—424 **4 Claims**

1. A compound having the formula



wherein R_1 is alkyl, cycloalkyl or aryl; R_4 is alkoxy; A_1 is a saturated bond or an alkylene group having 1 to 4 carbon atoms; and A_2 is an alkylene group having 2 to 5 carbon atoms; wherein alkyl and alkoxy are groups having 1 to 6 carbon atoms; cycloalkyl is a group having 3 to 7 carbon atoms; and aryl is phenyl or phenyl substituted with a halogen, alkyl, alkoxy, trifluoromethyl, nitro or amino group.

4,214,082

ANTHRAQUINONE REACTIVE DYESTUFFS

Wolfgang Harms; Klaus Wunderlich, both of Leverkusen, and Klaus von Oertzen, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

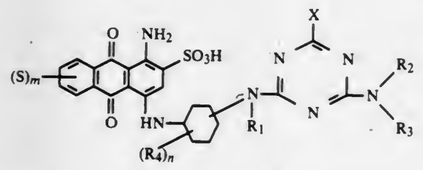
Filed Apr. 20, 1979, Ser. No. 31,851

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 2817733

Int. Cl.² C07D *251/50*

U.S. Cl. 544—189 **4 Claims**

1. Dyestuffs of the formula



wherein

S=a SO_3H, chlorine, bromine, hydroxyl and acetylamino,

m=0, 1 or 2,

X=F, Cl or Br,

R_1 and R_2=H or optionally substituted C_1-C_4-alkyl and

R_3=optionally substituted phenyl, naphthyl or optionally substituted C_1-C_4-alkyl, at least one of the radicals R_2 or R_3 containing at least one group which confers solubility in water.

R_4=an optionally substituted C_1-C_4- alkyl and

n=1, 2, 3 or 4.

4,214,083

PROCESS FOR DECOLORIZING LUBRICATING OIL ADDITIVES

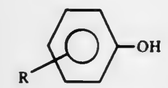
John M. Larkin, Austin, Tex.; William P. Cullen; Rodney L. Sung, both of Fishkill, N.Y., and Benjamin H. Zoleski, Beacon, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 757,401, Jan. 6, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 896,840

Int. Cl.² C07D *473/16, 403/04, 215/10*

U.S. Cl. 544—277 **4 Claims**

1. A process for decolorizing a lube oil additive of the group of (1) overbased sulfurized calcium alkylphenolates produced by: first, contacting an alkylphenol of the formula:



where R is alkyl of from 5 to 50 carbons with a first addition of calcium alkoxyalkoxide of the formula:

$Ca(O—A—OR')2$

where A is alkanediyl of from 1 to 6 carbons and R' is alkyl of from 1 to 25 carbons at a first temperature between about 200° F. and 420° F. utilizing a mole ratio of calcium alkoxyalkoxide to said alkylphenol of between about 0.225:1 and 0.45:1,

second, contacting the resulting mixture with sulfur in the presence of hydrocarbon lubricating oil at a second temperature between about 440° and 460° F. utilizing a mole ratio of sulfur to initial alkylphenol of between about 0.5:1 and 8:1, said hydrocarbon oil in said second contacting constituting between about 13 and 30 wt. % of said reaction mixture and

subsequently, third, contacting the mixture with a second addition of calcium alkoxyalkoxide at said first temperature in a mole ratio of calcium alkoxyalkoxide to initial alkylphenol of between about 0.15:1 and 0.375:1 in sufficient amount so that the total calcium alkoxyalkoxide employed in the first and third contacting will total a mole ratio of calcium alkoxyalkoxide to initial alkylphenol of between about 0.5:1 and 0.6:1, and (2) the reaction product of halogenated polyalkylenes having a molecular weight ranging from about 300 to 5000 or copolymers thereof with an excess of an aromatic heterocyclic amine reacted at a temperature of around 80° to 160° C. in the presence of an alkali or alkaline earth metal salt; the amount of heterocycle reacted being in excess of 1.5 to 30 moles per mole of said halogenated polyalkylenes with the amount of said metal being in an amount ranging from 0.2 to 3.0 moles per mole of said polyalkylenes; said polyalkylene being a chlorinated polyalkylene, said heterocyclic amine being pyridine, pico line, methylethylpyridine, quinoline, isoquinoline, phenazine, purine or pyridine and said salt being sodium carbonate, sodium bicarbonate, or sodium gluconate, which process comprises contacting in a polar solvent said additive with 1 to 75 parts by weight of an alkali metal hydride per 1000 parts of said additive and separating the treated additive from said polar solvent.

4,214,084

ETHANOPYRROLO[1,2-B]ISOQUINOLINES

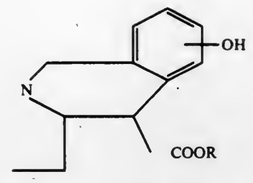
Robert L. Clarke, Bethlehem, and Sol J. Daum, Albany, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 894,894, Apr. 10, 1978, Pat. No. 4,179,567. This application May 24, 1979, Ser. No. 41,907

Int. Cl.² C07D *471/08, 471/18, 451/02;* A61K *31/465*

U.S. Cl. 546—72 **4 Claims**

1. A compound of the formula



wherein R is alkyl of 1 to 3 carbon atoms, and the hydroxy group is in the 6- or 8-position of the pyrrolo[1,2-b]isoquinoline ring; or a pharmaceutically acceptable acid-addition salt thereof.

4,214,085

11-[3-OXO-ω-(2- AND 3-FURYL)-LOWER-ALKYL]HEXAHYDRO-2,6-METHANO-3-BENZAZOCINES

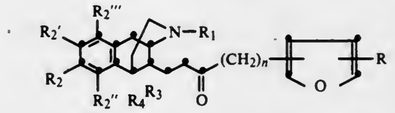
Thomas R. Lewis, Bethlehem, and William F. Michne, Poestenkill, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 886,781, Mar. 15, 1978, abandoned. This application May 4, 1979, Ser. No. 36,060

Int. Cl.² C07D *405/06*

U.S. Cl. 546—97 **5 Claims**

1. A compound having the formula



where R is hydrogen or lower-alkyl; R_1 is hydrogen, lower-alkyl, cyclo-lower-alkyl-lower-alkyl, phenyl-lower-alkyl, lower-alkenyl or lower-alkynyl; R_2, R_2', R_2'' and R_2''' are each hydrogen, or three of them are hydrogen and the fourth is hydroxy, methoxymethoxy, lower-alkoxy or 2-tetrahydropyranyloxy; R_3 and R_4 are each hydrogen or lower-alkyl, or R_3 and R_4 together are divalent lower-alkylene, $—(CH_2)_m—$, where m is one of the integers 3 and 4; and n is 0 or the integers 1 or 2; or an acid-addition salt thereof.

4,214,086

PROCESS FOR PRODUCING HYDROXYDIARYL ETHERS

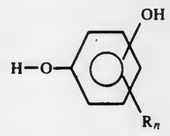
Hansjakob Fäh, Ettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 848,671, Nov. 4, 1977, abandoned. This application May 9, 1979, Ser. No. 37,561

Int. Cl.² C07D *213/63, 213/64*

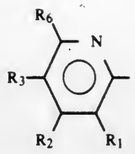
U.S. Cl. 546—290 **12 Claims**

1. Process for producing hydroxydiaryl ethers of the formula I

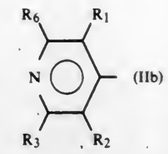


(I)

wherein R represents an alkyl group having 1 to 4 carbon atoms or chlorine, n represents 0, 1, 2, 3 or 4, and X represents a 2-pyridinyl group of the formula IIa or a 4-pyridinyl group of the formula IIb

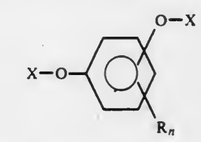


(IIa)



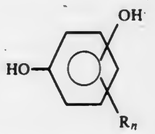
(IIb)

wherein R_1, R_2 and R_3 each represent hydrogen, an alkyl group having 1 to 4 carbon atoms, an alkyl group which has 1 to 4 carbon atoms and which is mono- or disubstituted by halogen, phenyl, halogen, carboxyl, alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl group, trifluoromethyl, nitro, cyano or benzoyl, and R_6 has all the meanings given, with the exception of halogen, for R_1, R_2 and R_3, which process comprises reacting a diether of the formula III



(III)

wherein R, n and X having the meanings given under the formula I, in a polar aprotic solvent, in the presence of 0.1 to 1 mole of alkali per mole of diether of the formula III, with a dihydroxybenzene of the formula IV



(IV)

wherein R and n have the meanings given under the formula I.

4,214,087

PRODUCTION OF CARBOXYLIC ACIDS FROM NITRILES

Anthony J. Fanelli, Rockaway, and Abraham P. Gelbein, Plainfield, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Dec. 13, 1978, Ser. No. 968,757

Int. Cl.² C07C *63/24, 63/26;* C07D *213/55*

U.S. Cl. 546—319 **14 Claims**

1. In a process for hydrolizing a nitrile to the corresponding carboxylic acid, the improvement comprising:

effecting said hydrolysis by reacting steam and a nitrile selected from the group consisting of (1) pyridine substituted with from 1 to 2 cyano groups and (2) aromatic nitriles having from 1 to 2 cyano groups substituted on an aromatic nucleus selected from the group consisting of benzene and naphthalene, and intermediate hydrolysis products of (1) and (2), in the vapor phase, in the presence of an acid catalyst in solid form selected from the group consisting of silica gel, silica-alumina, supported phosphoric acid, group III metal phosphates, Group III metal sulfates and transition metal oxides at a temperature which is above the dew point of both the nitrile and corresponding carboxylic acid; and stripping ammonia evolved in said hydrolysis and absorbed by the catalyst from said catalyst to increase the product ratio of carboxylic acid product to amide byproduct.

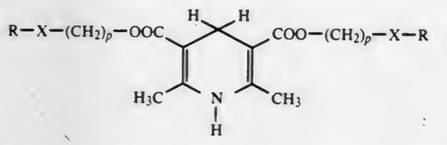
4,214,088

1,4-DIHYDRO-2,6-DIMETHYLPYRIDENE-3,5-DICARBOXYLIC ESTERS

Gerd Abeler, Griesheim über Darmstadt, and Rudolf Maul, Lorsch, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

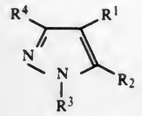
Filed Nov. 8, 1978, Ser. No. 958,760
Claims priority, application Sweden, Nov. 11, 1977, 7713799
Int. Cl.[2] C07D *213/80*
U.S. Cl. 546—321 4 Claims

1. A stabiliser of the formula I



(I)

in which R is branched-chain or straight-chain C_1–C_{20} alkyl, X is sulfur and p denotes the numbers 1–4 inclusive.



wherein either R^1 or R^2 is —CONHR[5] in which R^5 is phenyl optionally substituted with one, two or three substituents independently chosen from the group consisting of C_1 to C_4 alkyl, C_1 to C_4 alkoxy, halogen, trifluoromethyl, nitro and cyano; R^3 is chosen from the group consisting of hydrogen, C_1 to C_4 alkyl, C_1 to C_4 hydroxyalkyl, phenyl and $—CH_2COOR^6$ wherein R^6 is C_1 to C_4 alkyl; R^4 and R^1 or R^2, whichever is not —CONHR[5], are independently chosen from the group consisting of hydrogen, halogen and C_1 to C_4 alkyl; R^2 and R^4 are not both hydrogen when R^1 is —CONHR[5]; R^1 and R^3 are not both hydrogen when R^2 is —CONHR[5]; R^2, R_3 and R^4 are not each methyl when R^1 is —CONHR[5] and R^5 is phenyl; and R^1 and R^3 are not both methyl when R^4 is hydrogen and R^2 is —CONHR[5] and R^5 is phenyl.

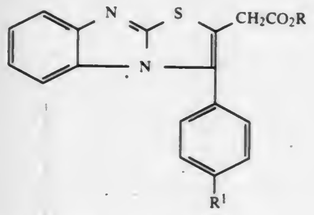
4,214,089

THIAZOLO[3,2-A]BENZIMIDAZOLES, IMIDAZO[2,1-B]THIAZOLES, AND RELATED COMPOUNDS AS ANTINEOPLASTIC AGENTS, AND ENHANCERS OF THE IMMUNE RESPONSE

Richard L. Fenichel, Wyncote; Peter H. L. Wei, Springfield; Francis J. Gregory, Berwyn, and Harvey E. Alburn, West Chester, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 679,941, Apr. 26, 1976, abandoned, which is a continuation of Ser. No. 523,763, Nov. 14, 1974, abandoned. This application Jul. 18, 1978, Ser. No. 925,728
Int. Cl.[2] C07D *277/24*
U.S. Cl. 548—151 2 Claims

1. A chemical compound having the structure:



wherein R is hydrogen or lower alkyl of from 1 to 4 carbon atoms; and R^1 is chloro; and the pharmaceutically acceptable salts thereof.

4,214,090

FUNGICIDAL CARBOXAMIDOPYRAZOLES

John L. Huppatz, Weetan gera, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Austria

Division of Ser. No. 756,069, Jan. 3, 1977, Pat. No. 4,134,987. This application Oct. 13, 1978, Ser. No. 951,376
Claims priority, application Australia, Jan. 14, 1976, PC 4527
Int. Cl.[2] C07D *231/16, 231/14*
U.S. Cl. 548—377 11 Claims

1. A compound of the formula

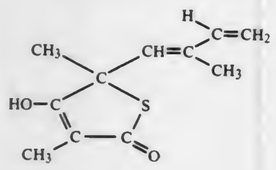
4,214,091

ANTIBIOTIC NO. 2-200 AND PROCESS FOR PRODUCING THEREOF

Hideo Oishi, Sayama; Takao Noto, Machida; Yoshiharu Nawata, Kodaira; Hiroshi Okazaki, Sayama; Hiroshi Sasaki, Higashikurume; Kunio Ando, Kawasaki, and Haruki Ogawa, Chofu, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1978, Ser. No. 944,303
Claims priority, application Japan, Sep. 22, 1977, 52-113205
Int. Cl.[2] C07D *333/32;* A61K *31/38*
U.S. Cl. 549—62 1 Claim

1. An antibiotic No. 2-200 of the formula:



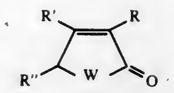
4,214,092

REARRANGEMENT OF ACYLOXY FURANS AND THIOPHENES PREPARED FROM BUTENOLIDES

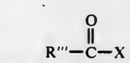
George A. Kraus, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Feb. 21, 1979, Ser. No. 13,519
Int. Cl.[2] C07D *333/16, 307/12*
U.S. Cl. 549—64 9 Claims

1. A method of preparing rearranged acyloxy furans and thiophenes from butenolides, comprising:
reacting a butenolide of the formula:



wherein R, R′ and R″ are selected from the group consisting of hydrogen and non-functionally substituted alkyls, alkenyls, alkynyls and aryls, and W is selected from the group consisting of oxygen and sulfur with an acid and halide acylating agent of the formula:



wherein R‴ is selected from the same group as R, R′ and R″ and X is a halide said reaction being conducted in an inert atmosphere and in the presence of a strong organic base and a suitable organic solvent for said base to provide an acylated furan ring containing intermediate;
separating said intermediate from other reaction materials; and thereafter
reacting said acylated furan ring containing intermediate, in the presence of at least a catalytically effective amount of a lewis acid in an anhydrous solvent to provide a rearranged acyloxy furan or thiophene analog thereof.

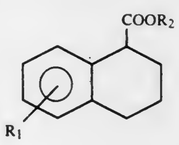
4,214,093

AMINO- OR GUANIDINO-1,2,3,4-TETRAHYDRO-1-NAPHTHOIC ESTERS

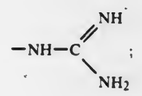
Setsuro Fujii, Toyonaka; Yojiro Sakurai, Kamakura; Toyoo Nakayama, and Ryoji Matsui, both of Funabashi, all of Japan, assignors to Torii & Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 953,735, Oct. 23, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,594
Claims priority, application Japan, Oct. 27, 1977, 52-128874; Oct. 27, 1977, 52-128875
Int. Cl.[2] C07C *101/48;* A61K *31/24*
U.S. Cl. 560—34 12 Claims

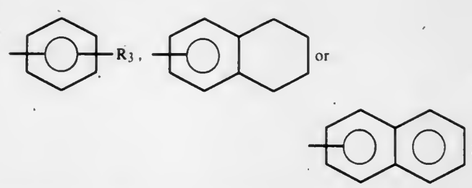
1. An amino- or guanidino-1,2,3,4-tetrahydro-1-naphthoic ester represented by the formula,



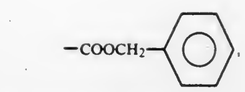
wherein R_1 is $—NH_2$ or



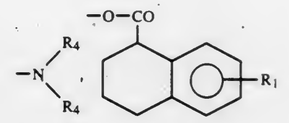
R_2 is



R_3 is —H, —R_4, —O—R_4, —COOH, —$COOR_4$,



—$NHCOCH_3$, a halogen, —CN,



or $—(CH_2)_n—COOCH_2—CO—R_5$; R_4 is a lower alkyl group; R_5 is —O—R_4, $—NH_2$or



and n is 0, 1 or 2; or a pharmaceutically acceptable acid addition salt of said ester.

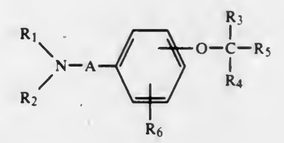
4,214,094

SUBSTITUTED-PHENYL SUBSTITUTED-ALKYL ETHERS AND THE PREPARATION THEREOF

Takashi Kamiya, Suita, and Yoshihisa Saito, Takarazuka, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 583,474, Jun. 3, 1975, abandoned. This application Mar. 30, 1977, Ser. No. 782,967
Int. Cl.[2] C07C *101/72;* A61K *31/24*
U.S. Cl. 560—42 45 Claims

1. Substituted-phenyl substituted-alkyl ether of the formula:



wherein
R_1 is aryl or ar(lower)alkyl;
R_2 is hydrogen, lower alkyl, aryl or ar(lower)alkyl;
R_3 is lower alkyl;
R_4 is hydrogen or lower alkyl;
R_5 is carboxy or lower alkoxycarbonyl;
R_6 is hydrogen, hydroxy or lower alkoxy; and
A is lower alkylene; in which the aryl or the ar(lower)alkyl for R_1 and R_2 may be substituted with halogen, hydroxy or lower alkoxy; and pharmaceutically acceptable salts thereof.

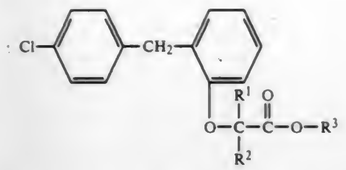
4,214,095

CHLOROBENZYL PHENOXY ALKOXYLATES

Kurt Thiele; Quazi Ahmed, both of Zofingen; Rudolf Adrian, Vordemwald, and Ulrich Jahn, Zofingen, all of Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

Filed Jan. 25, 1979, Ser. No. 6,542
Int. Cl.[2] C07C *69/76*
U.S. Cl. 560—57 6 Claims

1. A compound of the formula (1)



(1)

wherein R^1 and R^2 are different alkyls of from 1 to 4 carbon atoms and R^3 is selected from the group consisting of alkyls having from 1 to 4 carbon atoms and methyl pyridine; and the acid addition salts of said formula (1) compound with a pharmaceutically acceptable acid when R^3 is methyl pyridine.

4,214,096

NOVEL ISOTHIOURONIUM SALTS

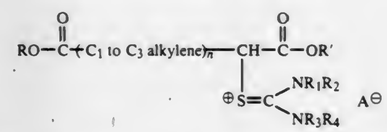
Thomas C. Klingler; Ritchie A. Wessling, and Dale S. Gibbs, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 569,416, Apr. 18, 1975, abandoned. This application Jun. 15, 1979, Ser. No. 48,954

Int. Cl.² C07C *157/02, 157/05, 161/00*

U.S. Cl. 560—147 **8 Claims**

1. A surfactant corresponding to the formula



wherein:

R and R′ are each independently alkyl or alkaryl groups of from about 4 to about 20 carbon atoms;

R_1, R_2, R_3 and R_4 are each independently alkyl or hydroxyalkyl of from 1 to 4 carbon atoms, allyl or R_1 and R_3 are part of a single ethylene or propylene moiety which joins the two nitrogen atoms to form a 5- or 6-membered cyclic thiourea;

n is 0 or 1;

$A^{\ominus}$ is an anion.

4,214,097

PROCESS FOR PREPARING DIHALOVINYLCYCLOPROPANECARBOXYLATES

Kiyoshi Kondo; Kiyohide Matsui; Akira Negishi, all of Kanagawa, and Yuriko Takahatake, Tokyo, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

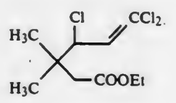
Division of Ser. No. 606,807, Aug. 22, 1975. This application Jan. 20, 1978, Ser. No. 870,974

Claims priority, application Japan, Feb. 24, 1975, 50/21857

Int. Cl.² C07C *69/65*

U.S. Cl. 560—213 **1 Claim**

1. A process for preparing the compound



which comprises dehydrohalogenating ethyl 4,6,6,6-tetrachloro-3,3-dimethylhexanoate in dimethylformamide with sodium ethoxide at a temperature between about 50° and 150° C. to eliminate one mole of HCl and produce said compound.

4,214,098

UNSATURATED ALCOHOLS AND ESTERS

Aaldert J. de Jong, and Hendricus J. Heijmen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

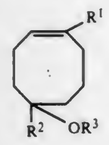
Filed Oct. 25, 1977, Ser. No. 844,956

Claims priority, application United Kingdom, Nov. 1, 1976, 45309/76

Int. Cl.² C07C *35/20, 69/145*

U.S. Cl. 560—231 **6 Claims**

1. A cyclooctene derivative of the formula:



in which R^1 and R^2 each represents an alkyl group of 1 to 4 carbon atoms and R^3 represents a hydrogen atom or an acyl group of 1 to 4 carbon atoms.

4,214,099

INTERMEDIATES FOR SYNTHESIS OF PRECURSORS FOR PROSTAGLANDINS

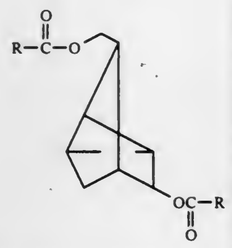
Elias J. Corey, Cambridge, Mass.; Jasjit S. Bindra, Groton, and Thomas K. Schaaf, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 787,593, Apr. 14, 1977, Pat. No. 4,122,093, which is a division of Ser. No. 720,239, Sep. 3, 1976, abandoned, which is a division of Ser. No. 633,222, Nov. 19, 1975, Pat. No. 3,992,438, which is a division of Ser. No. 409,068, Oct. 24, 1973, Pat. No. 3,943,151. This application Jun. 22, 1978, Ser. No. 917,855

Int. Cl.² C07C *69/08, 69/16, 69/28*

U.S. Cl. 560—256 **1 Claim**

1. A compound of the structure:



wherein R is hydrogen or lower alkyl.

4,214,100

PROCESS FOR PREVENTING BLACKENING OF PHTHALIC ACID

Makoto Komatsu; Tazuo Ohta; Toru Tanaka, and Kimiko Akagi, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 657,279, Feb. 11, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,709

Claims priority, application Japan, Feb. 18, 1975, 50-20090

Int. Cl.² C07C *51/33*

U.S. Cl. 562—416 **11 Claims**

1. In a process for producing phthalic acid by the oxidation, in a liquid phase, of tolualdehyde with molecular oxygen or a gas containing molecular oxygen in the presence of an Mn salt and bromine employing a lower aliphatic monocarboxylic acid as a solvent, the improvement comprising conducting the oxidation of the tolualdehyde in the presence of an alkylbenzene in an amount satisfying the formula

$$M \leqq -0.15A^2 + 15A + 40$$

wherein M is the Mn atom concentration in ppm by weight on the basis of the reaction solution, said reaction solution being the total of solvent and water present in the reaction system, and A is an amount in % by weight of the alkylbenzene added based on the total amount of the tolualdehyde and the alkylbenzene and is in a range of from more than 0 to 50 inclusive.

4,214,101

PROCESS FOR PREPARING ETHER CARBOXYLATES

Bunji Miya, and Akio Kimura, both of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1978, Ser. No. 896,088

Claims priority, application Japan, May 16, 1977, 52-56205

Int. Cl.² C07C *51/24, 59/00*

U.S. Cl. 562—421 **8 Claims**

1. A process for preparing an ether carboxylate, which comprises the steps of: intimately contacting, at a temperature of 50° to 95° C., oxygen gas with a liquid reaction mixture consisting essentially of a material selected from the group consisting of

(a) a compound or mixture of compounds having the formula

$$RO(CH_2CH_2O)_nH$$

wherein R is octylphenyl, nonylphenyl, dodecylphenyl or alkyl having 8 to 22 carbon atoms, and n is an integer of from 1 to 100,

(b) oxyethylene-oxypropylene block copolymer having an average molecular weight of from 1000 to 12000 and containing from 10 to 80% by weight of ethylene oxide units, and mixtures thereof,

dissolved or dispersed in water, said reaction mixture containing from 0.5 to 10% by weight of catalyst based on the weight of said material, said catalyst being composed of an inactive carrier having from 1 to 10% by weight of palladium supported on said carrier, said reaction mixture also containing caustic alkali so that said reaction mixture has a pH of from 8 to 13, the oxygen gas being contacted with said reaction mixture for a period of time effective to transform said material to the corresponding carboxylate.

4. A process according to claim 1 in which said material is component (a) wherein R is octylphenyl, nonylphenyl or dodecylphenyl.

4,214,102

AMINO-ETHER AMPHOTERIC SURFACE-ACTIVE COMPOUNDS

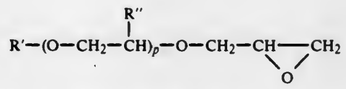
Peter Leenders, Allendale, N.J., assignor to Henkel Inc., Hoboken, N.J.

Filed Apr. 14, 1978, Ser. No. 896,294

Int. Cl.² C07C *143/14, 101/30;* **C11D** *1/18, 3/30*

U.S. Cl. 562—564 **4 Claims**

1. An amino-ether amphoteric surface-active compound mixture produced by reacting a glycidyl ether having the formula



wherein R″ is a member selected from the group consisting of hydrogen and methyl; R′ is a member selected from the group consisting of aliphatic primary alkyl having from 8 to 22 carbon atoms, aliphatic primary alkenyl having from 12 to 20 carbon atoms and 2-alkylalkanols having from 10 to 36 carbon atoms; and p is an integer from 0 to 3; with a substantial excess of an N-hydroxy-C_{2-4}-alkyl-C_{2-6}-alkylene diamine, removing the excess diamine, reacting the resulting substituted amino-ether with from 1.5 mols to 4 mols per mol of said substituted amino-ether of an N-alkylating agent selected from the group consisting of halo-C_{2-4}-alkanoic acids, halo-C_{2-4}-alkane sulfonic acids and halo-C_{3-4}-hydroxyalkane sulfonic acids, under alkaline reaction conditions maintained by the addition of an alkali metal hydroxide solution, and recovering said amino-ether amphoteric surface-actice compound mixture.

4,214,103

PURIFICATION OF BROMINATED ORGANIC PRODUCTS

John A. Garman, and Rastko I. Mamuzic, both of West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed Nov. 30, 1978, Ser. No. 965,091

Int. Cl.² C07C *41/12*

U.S. Cl. 568—639 **14 Claims**

1. A process, for purifying a member selected from the group consisting of partially brominated diphenyl ethers, mixtures thereof, and blends thereof with other materials comprising the steps of:

dissolving the member in an organic solvent and maintaining the resulting solution at an elevated temperature below the reflux temperature of the solution while substantially excluding water from the solution;

adding a finely divided basic solid to the solution and agitating for a time sufficient to enhance the purity of the product;

thereafter filtering the solution; and

thereafter stripping the solvent therefrom.

4,214,104

USE OF CYCLOHEXENE-(1)-DIONE-(3,6)-TETRAALKYL DIKETALS

Rudolf Pistorius, Ober-Mörlen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

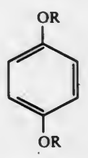
Division of Ser. No. 872,450, Jan. 26, 1978, Pat. No. 4,160,109. This application Oct. 31, 1978, Ser. No. 956,332

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703453

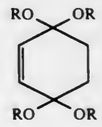
Int. Cl.² C07C *41/00*

U.S. Cl. 568—648 **4 Claims**

1. A method for the preparation of a hydroquinone dialkyl ether of the formula



wherein R is a primary or secondary alkyl radical of from 1 to 4 carbon atoms, which comprises acidifying and heating, to a temperature of from about 60° to 120° C., a cyclohexene-(1)-dione-(3,6)-tetraalkyl diketal of the formula



4,214,105

PROCESS FOR THE HYDROXYLATION OF PHENOL

Hermann Seifert, Cologne; Helmut Waldmann; Wulf Schwerdtel, both of Leverkusen, and Wolfgang Swodenk, Odenthal-Gloebusch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 731,889, Oct. 13, 1976, which is a continuation of Ser. No. 554,048, Feb. 28, 1975, Pat. No. 4,053,523. This application Sep. 15, 1978, Ser. No. 942,717

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1974, 2410742

The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.

Int. Cl.² C07C *37/00, 39/08*

U.S. Cl. 568—771 **14 Claims**

1. A process for preparing pyrocatechol and hydroquinone wherein phenol is reacted at the start of the reaction with substantially anhydrous hydrogen peroxide dissolved in a non-aqueous solvent in an amount of 5 to 30 weight percent, said hydrogen peroxide having been obtained by distilling off water from an aqueous solution of hydrogen peroxide while the same is in admixture with a non-aqueous organic solvent which solvent boils at a higher temperature than phenol to leave behind as the bottoms product of the distillation a substantially anhydrous hydrogen peroxide dissolved in said non-aqueous organic solvent, the reaction being carried out in the presence of a strong acid at a temperature of 20°–150° C. in a reaction mixture consisting essentially of said hydrogen peroxide, said solvent, said phenol and said strong acid and wherein pyrocataechol and hydroquinone are recovered.

4,214,106

PROCESS FOR THE PREPARATION OF ETHYLENE GLYCOL

Dieter Freudenberger, Hofheim am Taunus, and Friedrich Wunder, Flörsheim am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 5, 1978, Ser. No. 893,823

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715666

Int. Cl.² C07C *31/20*

U.S. Cl. 568—864 **12 Claims**

1. A process for the preparation of ethylene glycol from glycolic acid, which comprises reacting a solution consisting essentially of glycolic acid, or, glycolic acid and a solvent selected from the group consisting of cyclic ethers, open-chain ethers and water, with hydrogen in the presence of a hydrogenation catalyst which consists essentially of a platinum metal of group VIII and/or a compound thereof in admixture with either

1. an element of group VIIb and/or a compound thereof, or
2. gold or silver and/or a compound thereof, or
3. an element of group VIIb and/or a compound thereof as well as gold or silver and/or a compound thereof.

4,214,107

HYDRATION OF OLEFINS USING ZEOLITE CATALYSTS

Clarence D. Chang, Princeton, and Norman J. Morgan, Burlington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 26, 1978, Ser. No. 919,194

Int. Cl.² C07C *29/04*

U.S. Cl. 568—897 **1 Claim**

1. A process for directly hydrating propylene to isopropyl alcohol, which comprises contacting a mixture of propylene and water, said mixture having a mole ratio of propylene to water in the range of 0.5 to 1.5, with a synthetic crystalline aluminosilicate catalyst consisting essentially of HZSM-5, said contacting being conducted at a temperature of about 100° to about 240° C., a pressure from about 50 p.s.i.g. to 1500 p.s.i.g, and at a space velocity based on liquid olefin of about 0.25 to 10 LHSV, whereby directly forming isopropyl alcohol substantially free of ether and hydrocarbon by-product.

4,214,108

1,5,9-CYCLODODECATRIENE FROM BUTADIENE TRIMERIZATION USING DIBENZYLBENZENES

Wolfgang Zaar, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

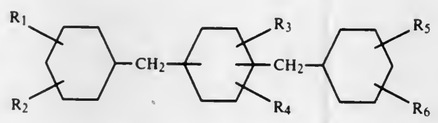
Filed Jun. 4, 1979, Ser. No. 45,287

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825341

Int. Cl.² C07C *3/60, 13/02*

U.S. Cl. 585—23 **6 Claims**

1. In the method for producing cyclododecatri(1,5,9)enes by catalytically trimerizing butadienes on a catalyst of titanium halide and alkylaluminum halide in the presence of hydrocarbons or halogenated hydrocarbons, the improvement comprising: carrying out the reaction in the presence of dibenzylbenzenes having the general formula:



where R_1 through R_6 represent hydrogen atoms, halogen atoms, alkyl groups, aralkyl groups, cycloalkyl groups or aryl groups, the dibenzylbenzenes being used in at least equimolar amounts with respect to the titanium compound.

4,214,109

POLYMER BOUND (PENTAHAPTOCYCLOPENTADIENYL)BISCARBONYL RHODIUM HYDROFORMYLATION CATALYST

John T. Carlock, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

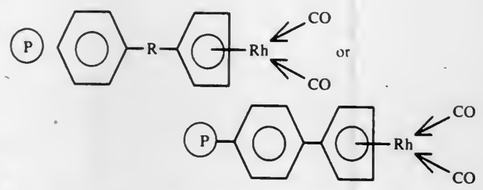
Division of Ser. No. 877,440, Feb. 13, 1978. This application Jan. 29, 1979, Ser. No. 7,085

Int. Cl.² C07C *29/16*

U.S. Cl. 568—909 **2 Claims**

1. A method for the conversion of olefins to alcohols comprising:

(a) converting olefins to aldehydes by a hydroformylation reaction in the presence of a catalyst having the structure



wherein R is an alkyl group containing from 1 to 10 carbon atoms and Ⓟ represents a styrene polymer backbone, said conversion occurring taking place at a temperature of from about 90° C. to about 140° C. and pressures of from about 300 psig to about 5000 psig in the presence of mixture of hydrogen and carbon monoxide;

(b) purging the reactor of the mixture of hydrogen and carbon monoxide and replacing with hydrogen, and;

(c) converting the aldehydes formed in (a) to alcohols at pressures of about 100 psig to 3000 psig and temperatures of from about 20° C. to about 140° C.

4,214,110

PROCESS FOR PRODUCING HYDROCARBONS

Tatsuo Moroe, Musashino; Akira Komatsu, Tokyo; Kiyosumi Doi, Fujisawa, and Mitio Moroe, Musashino, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 523,782, Nov. 13, 1974, abandoned. This application Jul. 23, 1976, Ser. No. 708,246

Claims priority, application Japan, Nov. 15, 1973, 48-128650

Int. Cl.² C07C *3/26*

U.S. Cl. 585—241 **2 Claims**

1. A process for producing a hydrocarbon product consisting essentially of hydrocarbons having about 10 to 50 carbon atoms with 60% or more of said product consisting of hydrocarbons containing 25 to 35 carbon atoms which comprises subjecting a synthetic polyisoprene rubber having 92 to 97% cis-type double bonds to a thermally destructive distillation at about 300 to 400° C for about 30 minutes under a reduced pressure of about 0.1 to 5 mm. Hg. to obtain said hydrocarbon product consisting essentially of hydrocarbons having about 10 to 50 carbon atoms with 60% or more of said product consisting of hydrocarbons containing 25 to 35 carbon atoms, said hydrocarbon product not having a bad odor and containing scarcely any resinous material.

4,214,111

METHOD OF PRODUCING OLEFIN OLIGOMERS AND HYDROGENATION PRODUCTS THEREOF

Takanori Kitamura, and Masuhiko Tamura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Nov. 6, 1978, Ser. No. 958,144

Claims priority, application Japan, Nov. 8, 1977, 52/134481; Sep. 4, 1978, 53/108853

Int. Cl.² C07C *3/18, 5/04*

U.S. Cl. 585—255 **14 Claims**

1. A method of producing an olefin oligomer, which comprises feeding to the polymerization system (i) at least one alpha-olefin having a terminal vinyl group and containing 6 to 14 carbon atoms, (ii) isobutylene and/or diisobutylene, and optionally (iii) 1-butene so that the conditions

$$0.25 \leqq \frac{b + 2c + d}{a} \leqq 4,$$

$$0 \leqq \frac{d}{b + 2c} \leqq 2.5 \text{ and}$$

$$0 \leqq \frac{d}{a} \leqq 2.5$$

wherein a is the number of moles of the alpha-olefin having a terminal vinyl group and containing 6 to 14 carbon atoms as fed to the polymerization system, b is the number of moles of isobutylene as fed to the polymerization system, c is the number of moles of diisobutylene as fed to the polymerization system and d is the number of moles of 1-butene as fed to the polymerization system, may be satisfied, while carrying out the polymerization in the presence of an aluminum halide catalyst.

4,214,112

PROCESS FOR PREPARING OLEFIN OLIGOMER

Hiroshi Mandai, Chiba; Anri Tominaga, Funabashi; Yoshikazu Yoshimura, Chiba, and Hiroshi Isa, Yachiyo, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,205

Claims priority, application Japan, Mar. 27, 1978, 53-35231

Int. Cl.² C07C *3/18*

U.S. Cl. 585—532 **9 Claims**

1. A process for producing an olefin oligomer comprising polymerizing at least one olefin having not less than 6 carbon atoms in the presence of a catalyst consisting essentially of (a) at least one aluminum halide, (b) at least one polyhydric alcohol derivative of which alcohol the hydrogen atoms of the entire hydroxyl groups are substituted with either one or both of alkyl and acyl groups and (c) at least one compound selected from the group consisting of nickel compounds and cobalt compounds.

4,214,113

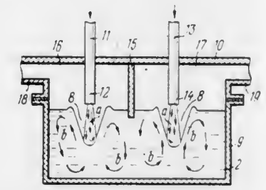
METHOD FOR CARRYING OUT PYROLYSIS OF HYDROCARBON STARTING PRODUCTS

Elena D. Khmelevskaya, Yaroslavskoe shosse, 142, kv. 106, Moscow; Grigory I. Dvoskin, Mytischi, Sharapovsky proezd, 18, kv. 4, Moskovskaya oblast; Vladislav A. Kablikov, Sretensky bulvar, 6/1, kv. 122, Moscow; Zinovy F. Chukhanov, ulitsa D. Ulyanova, 3, kv. 40, Moscow; Vadim M. Volny, ulitsa Butlerova, 34, korpus 1, kv. 29, Moscow; Tamara N. Mukhina, Festivalnaya ulitsa, 15, korpus 3, kv. 44, Moscow; Genrikh L. Stolyar, Kievskaya ulitsa, 18, kv. 51, Moscow; Olga E. Volnaya, ulitsa Butlerova, 34, korpus 1, kv. 29, Moscow, and Nikolai F. Kuptsov, ulitsa Shafeeva, 18, kv. 25, Ufa, all of U.S.S.R.

Division of Ser. No. 811,137, Jun. 28, 1977. This application Dec. 6, 1978, Ser. No. 966,781

Int. Cl.² C07C *3/30*

U.S. Cl. 585—634 **3 Claims**



1. In a method for carrying out pyrolysis of hydrocarbon starting products utilizing a casing having a substantially cylindrical side wall and a liquid heat carrier disposed therein said liquid heat carrier being at a predetermined level in said casing and defining a space above the surface of said liquid heat carrier, a substantially cylindrical baffle located within said casing substantially coaxially with respect to said cylindrical wall and dividing said space into a heating zone and a pyrolysis zone, said baffle extending a small distance below the surface of said heat carrier, the insulation comprising the steps of:

directing a jet of gaseous heating agent onto the surface of the heat carrier in the heating zone;

directing a jet of hydrocarbon starting products onto the surface of the heat carrier in the pyrolysis zone so than an intensive heat transfer occurs from the heat carrier to the hydrocarbon starting products which contact the surface of the heat carrier whereby pyrolysis products are formed; and

removing the pyrolysis products from said casing.

4,214,114

ISOPARAFFIN-OLEFIN ALKYLATION UTILIZING EVAPORATIVE COOLING IN A REACTOR-DEPROPANIZER

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 26, 1979, Ser. No. 7,120

Int. Cl.² C07C *3/54*

U.S. Cl. 585—715 **12 Claims**

1. An alkylation process which comprises:

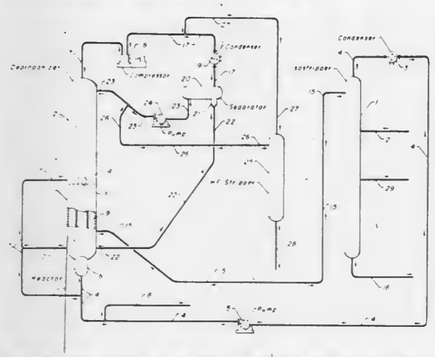
(a) introducing upwardly into an alkylation reaction zone maintained under alkylation reaction conditions including liquid phase alkylation, an alkylation reaction mixture comprising an isoparaffinic hydrocarbon, a lower boiling normal paraffinic hydrocarbon, an olefinic hydrocarbon and an acid alkylation catalyst;

(b) reacting the olefinic hydrocarbon with a portion of said isoparaffinic hydrocarbon in said zone;

(c) vaporizing from the liquid reaction mixture of said zone

by the exothermic heat of reaction, a sufficient quantity of unreacted isoparaffinic and normal paraffinic hydrocarbons to provide an adequate evaporative cooling effect to maintain the reaction mixture in said zone at a temperature of from about 30° to about 100° F. without extraneous cooling;

(d) passing the resultant vapors from said liquid phase in the reaction zone upwardly into a separation zone in open communication with said reaction zone;



(e) separating normal paraffinic hydrocarbon vapor from unreacted isoparaffinic hydrocarbon in said separation zone and returning said unreacted isoparaffinic hydrocarbon as a liquid to the alkylation reaction zone; and

(f) separating the liquid phase from the alkylation reaction zone into an alkylate phase and a catalyst phase, recycling the separated catalytic phase to said alkylation reaction zone and recovering the alkylate product from said alkylate phase.

4,214,115

ALKYLATION PROCESS UTILIZING PLURAL OLEFINIC REACTANTS

Donald J. Makovec, and Thomas Hutson, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 9, 1978, Ser. No. 904,149
Int. Cl.² C07C *3/54*
U.S. Cl. 585—716 **6 Claims**

1. A process for producing an alkylation reaction product from an isoparaffinic reactant and two different olefinic reactants which comprises:

passing the isoparaffin reactant and a first olefinic reactant in admixture with an acid alkylation catalyst through an alkylation zone under alkylating conditions to form a first alkylate stream,

separating said first alkylate stream into a first hydrocarbon phase comprising alkylation products and unreacted isoparaffin and an acid alkylation catalyst phase,

passing said first hydrocarbon phase to a first surge zone,

passing a second olefinic reactant and said first hydrocarbon phase in said first surge zone in admixture with an acid alkylation catalyst through said alkylation zone under alkylating conditions to form a second alkylate stream,

separating said second alkylate stream into a second hydrocarbon phase comprising alkylation products unreacted isoparaffin and an acid alkylation catalyst phase,

passing a first portion of said second hydrocarbon phase to a fractionation zone and a second portion of said second hydrocarbon phase to a second surge zone,

passing the accumulated hydrocarbon liquid held in the second surge zone to the fractionation zone after said first



portion of second hydrocarbon phase has been fractionated and said alkylation zone has returned to the cycle of passing said first olefinic reactant and isoparaffin through the alkylation zone to form said first alkylation stream,

recovering alkylate product from said fractionation zone, and

continuously recycling separated acid alkylation catalyst phase to the alkylation zone with appropriate heating or cooling of said catalyst phase thereby obtaining optimum temperature in the particular alkylation reaction based on said first or said second olefinic reactant.

4,214,116

HYDROCARBON ISOMERIZATION UTILIZING A HYDROCARBON PROMOTER WITH TANTALUM PENTAFLUORIDE AND HYDROGEN HALIDE CATALYST

David A. McCaulay, Homewood, and Thomas D. Nevitt, Naperville, both of Ill., assignors to Standard Oil Co. (Indiana), Chicago, Ill.

Filed Jun. 11, 1979, Ser. No. 47,060
Int. Cl.² C07C *5/28*
U.S. Cl. 585—747 **9 Claims**

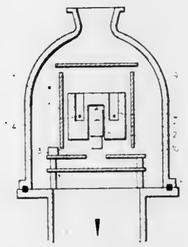
1. An isomerization process which comprises isomerizing a hydrocarbon stream comprising at least one saturated C_5–C_6 hydrocarbon in the presence of hydrogen and a catalyst comprising tantalum pentafluoride and hydrogen halide and in the presence of a hydrocarbon promoter comprising at least one member selected from the group consisting of C_8–C_{14} multiple-branched paraffins, wherein the total concentration of C_8–C_{14} multiple-branched paraffins is in the range of about 1 to 50 parts by weight per 100 parts by weight of said saturated C_5–C_6 hydrocarbons.

4,214,117

FURNACE HEATED BY RADIATION

Günter Hentze, Odenthal-Hahnenberg, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1978, Ser. No. 869,886
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1977, 2704870
Int. Cl.² E01D *15/00*
U.S. Cl. 13—31 R **2 Claims**



1. A furnace for analytical measurements comprising:

(a) a radiation source comprising an incandescent lamp,

(b) a hollow cylinder composed of one from the group of metal, graphite and ceramic material spaced apart from and surrounding the incandescent lamp for absorbing the radiation emitted therefrom,

(c) temperature sensing means attached to the outside of the hollow cylinder for monitoring the temperature at its surface,

(d) a regulatable power supply connected to the incandescent lamp and to the temperature sensing means and regulated in response to the monitored temperature,

(e) a container enclosing the lamp, cylinder and temperature sensing means with an inert atmosphere therein, and

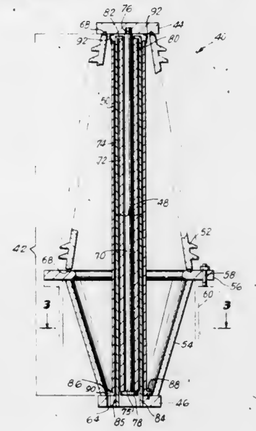
(f) the overall heat capacity of the furnace is in the range of 0.5–10 cal/° C.

4,214,118

ELECTRICAL BUSHING

Keith I. Gray, LaVerne, Calif., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 8, 1976, Ser. No. 721,379
Int. Cl.² H01B *17/26*
U.S. Cl. 174—15 BH **17 Claims**



1. An electrical bushing comprising:

an elongated, hollow insulator column having first and second ends, said insulator column having a first coefficient of thermal expansion;

a first conductive flange adjacent said first end of said insulator column;

a second conductive flange adjacent said second end of said insulator column;

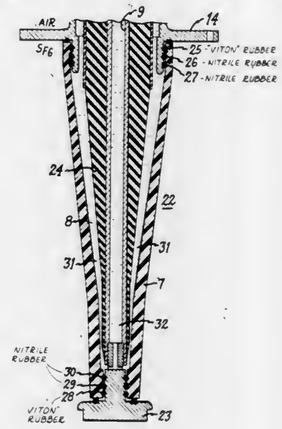
through-rod assembly means for biasing said first conductive flange towards said second conductive flange such that said first and second conductive flanges cooperate with the insulator column to form a substantially enclosed chamber whose axial length is defined by the distance between said conductive flanges; said through-rod assembly means comprising a plurality of elements, at least two of said elements having differing coefficients of thermal expansion, said elements arranged in such a manner that the effective coefficient of thermal expansion of said through-rod assembly means in the direction of said axial length of said chamber is approximately equal to the effective coefficient of thermal expansion of said insulator column in the direction of said axial length of said chamber.

4,214,119

CORROSIVE RESISTANT SEAL FOR EPOXY SHELL BUSHINGS, METHOD OF PROVIDING SAME, AND GASKET THEREFOR

William A. Keen, Jr., Cheshire, Mass., assignor to General Electric Company

Filed May 3, 1978, Ser. No. 902,492
Int. Cl.² H01B *19/30*; F16J *15/10*
U.S. Cl. 174—31 R **3 Claims**



1. A high voltage oil-filled bushing for use with an enclosure containing a fluid comprising:

a top porcelain portion and a bottom epoxy portion;

a connecting flange at one end and a metal lip at an opposite end of the bottom portion;

a paper wound metal conducting tube concentrically located within the top and bottom portions;

at least one acid resistant fluoroelastomer rubber outer gasket and at least one fluid impervious nitrile rubber inner gasket at the flange end of the bottom portion for preventing contact between the oil and the fluid at the flange end of the bottom portion; and

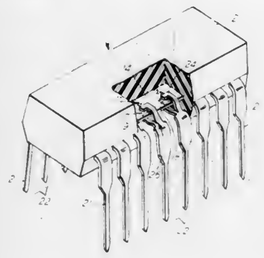
at least one acid resistant fluoroelastomer rubber outer gasket and at least one fluid impervious nitrile rubber inner gasket at the metal lip end of the bottom portion for preventing contact between the oil and the fluid at the metal lip end of the bottom portion.

4,214,120

ELECTRONIC DEVICE PACKAGE HAVING SOLDER LEADS AND METHODS OF ASSEMBLING THE PACKAGE

William T. Jones, Jr., and Edward J. Moulis, both of Raytown, Mo., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,289
Int. Cl.² H05K *1/06*
U.S. Cl. 174—52 FP **8 Claims**



1. An electrical structure comprising:

a metal body having at least one end with first and second lateral edges and a top edge extending between the lateral edges, the end having a first slit extending from the first lateral edge of the body toward the center of the body and a second slit located substantially at a right angle to the first slit, the second slit originating at an intersection with the first slit and extending away from said end of the body, said first and second slits forming a lead stub bounded by said first lateral edge of the body and by said first and second slits, said first slit also forming a flag from the body, said flag being bounded by said first slit, by an end portion of said first lateral edge of said body, by the top edge of the end and by an end portion of the second lateral edge of the body, the flag being attached to the body by a support bounded by an extension of the second lateral edge away from the flag and by the second slit; and

a substrate having two major surfaces and at least one contact pad located on each of the surfaces adjacent to an edge thereof, the lead stub being located against the contact pad on the one major surface of the substrate and the support forming a step adjacent to the edge of the substrate, the flag being offset by the height of the step with respect to the lead stub and located against the corresponding contact pad on the other major surface of the substrate.

4,214,121

ELECTRICAL JOINT COMPOUND

Mitchell D. Charneski, 25900 Mulberry Dr., Southfield, Mich. 48034; James K. Kelley, 9188 Grafton Rd., Carleton, Mich. 48117, and Frank J. Gazdecki, 11243 Wynn Dr., Pinckney, Mich. 48169

Continuation-in-part of Ser. No. 648,453, Jan. 12, 1976, abandoned. This application Mar. 3, 1978, Ser. No. 882,994
Int. Cl.² H02G *15/00*
U.S. Cl. 174—84 C **13 Claims**



1. A compression electrical-mechanical joint for electrically and mechanically connecting the bared ends of electrical power cables capable of carrying heavy current in power distribution systems, characterized in that the joint has an electrical conductance at least substantially equal to an equal length of conductor, capable of maintaining high conductance and mechanical strength over a very great number of thermal recyclings which comprises

a connector body having a tubular portion,

the bared end of an electrical conductor in said portion,

a highly thermally conductive compound comprising a thermosetting hardened resin containing a uniformly dispersed mixture of fine and coarse metal particles, said fine particles being 200–500 mesh, said coarse particles being 10–100 mesh, the ratio by weight of coarse particles (C) to fine particles (F) being expressed by:

C/F – 1/20 to 1/1,

the ratio by weight of all metal particles (P) to resin (R) is expressed by:

P/R = 3/2 to 6/1

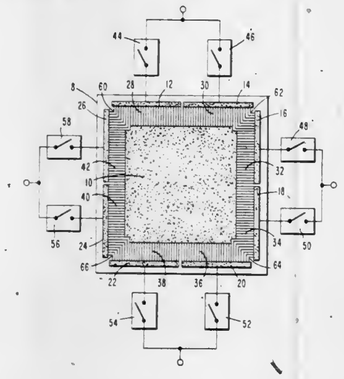
and in which the tubular metal portion has been compressed onto the cable end with a force intensity sufficient to have substantially reduced the diameter of the cable and to produce substantial contact between the inner surface of the connector body and outer surface portions of the conductor.

4,214,122

RESISTIVE PLANAR GRAPHICAL ENTRY DEVICE

Victor B. Kley, Berkeley, Calif., assignor to Kley, Fitting, Fitting, Nalley and Smith, Berkeley, Calif.

Continuation-in-part of Ser. No. 867,516, Jan. 6, 1978, which is a continuation-in-part of Ser. No. 712,748, Aug. 9, 1976, Pat. No. 4,079,194. This application Mar. 6, 1979, Ser. No. 18,031
Int. Cl.² G08C *21/00*
U.S. Cl. 178—18 **6 Claims**



1. A graphical entry device comprising an electrically insulated substrate; and a patterned resistive layer on the substrate wherein the patterned resistive layer includes

a rectangular graphic area with four edges and four corners,

four pairs of conductor strips spaced from and extending along the respective four edges of the graphic area, each conductor strip of the four pairs of conductor strips extending along a respective one half of a respective edge of the four edges from a respective corner of the four corners to a middle portion of the respective edge,

four edge connecting means joining the respective pairs of conductor strips to the respective edges, said four edge connecting means each having an effective resistance parallel to the respective edges of the rectangular graphic area substantially greater than that of the graphic area and the four pairs of conductor strips, and

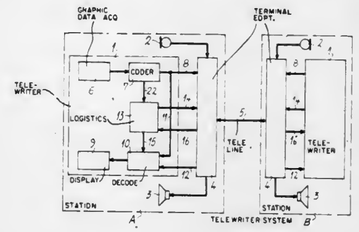
four corner connecting means joining outer end portions of the four pairs of conductor strips adjacent to the respective four corners, each of said four corner connecting means having an effective resistance which is substantially greater than that of the graphic area and the four pairs of conductor strips and which is selected to improve the linearity of a voltage gradient in the rectangular graphic area.

4,214,123

BIDIRECTIONAL TELEWRITING SYSTEM OPERATING IN AN ALTERNATING MODE OVER A SINGLE CARRIER

Jean-Paul G. Dagnelie, Rennes, France, assignor to Etablissement Public de Diffusion dit "Telediffusion de France", Montrouge, France

Filed Sep. 5, 1978, Ser. No. 939,188
Claims priority, application France, Sep. 26, 1977, 77 29413
Int. Cl.² H04L *5/16*; G08C *21/00*
U.S. Cl. 370—31 **7 Claims**



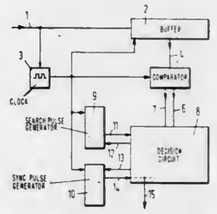
1. A bidirectional telewriting system, which operates in an alternating mode over a single carrier, comprising an information transmission route having opposite ends, two telewriting apparatus respectively connected at said opposite ends of said telewriting information transmission route, the transmission route being connected in each apparatus to a coupler having an input connected by a transmission link to the output of a modulator which modulates the carrier with the local telewriting information, the output of the coupler being connected by a reception link to the input of a demodulator which demodulates the signal coming from the transmission route, the modulator being connected to a telewriting transmitter and the demodulator to an information display apparatus, in which commutators are connected in the transmission and reception links and are adapted to close one link while opening the other link and vice versa, the commutators being controlled by a controlling circuit which causes said commutators to maintain closure of the transmission link when the transmitter from the apparatus in which it is a part is in or is passing to the enabled state and the transmission link is already closed, the control circuit in the other apparatus applying to its associated commutator signals such that the states of the links are the inverse of those in the first apparatus, said system being characterized by the control circuit activating the aforesaid commutators to alternately close the transmission and reception links when said transmitters in the apparatus are at rest and inversely the states of the associated links when the transmitter with its transmission links closed passes to the rest state.

4,214,124

METHOD AND DEVICE FOR EXTRACTING A SYNCHRONIZING SIGNAL FROM AN INCOMING PCM SIGNAL

Daniel J. Jarus, XA Kouderkerk aan de Rijn, Netherlands, assignor to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

Filed Sep. 25, 1978, Ser. No. 945,223
Claims priority, application Netherlands, Sep. 29, 1977, 7710670
Int. Cl.² H04L *7/00*
U.S. Cl. 375—114 **14 Claims**



1. Method for extracting a synchronizing signal from an incoming PCM signal having a synchronizing signal occurring periodically in the incoming signal being searched and a synchronizing pulse being delivered to a following circuit when said synchronizing signal is found in said incoming signal, said method comprising: searching for and counting the synchronizing signals in one and the same position in the received signal, detecting an incorrect synchronizing signals, and searching for the synchronizing signal simultaneously in another position in the incoming signal immediately after an incorrect synchronizing signal has been detected.

4,214,125

METHOD AND APPARATUS FOR SPEECH SYNTHESIZING

Forrest S. Mozer, 38 Somerset Pl., Berkeley, Calif. 94707, and Richard P. Stauduhar, Berkeley, Calif., assignors to Forrest S. Mozer, Berkeley, Calif.

Continuation of Ser. No. 632,140, Nov. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 525,388, Nov. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 432,859, Jan. 14, 1974, abandoned. This application Jan. 21, 1977, Ser. No. 761,210
Int. Cl.² G10L *1/00*
U.S. Cl. 179—1 SM **100 Claims**

1. A method of analyzing speech information comprising the steps of time quantizing the amplitude of electrical signals representative of selected speech information into digital form, selectively compressing the time quantized signals by discarding selected portions thereof while substantially simultaneously generating instruction signals as to which portions have been discarded, and storing both the compressed signals and instruction signals, wherein said method further includes:

(a) time differentiating the electrical signals prior to the time quantizing step and the signal compressing and storing steps include the steps,

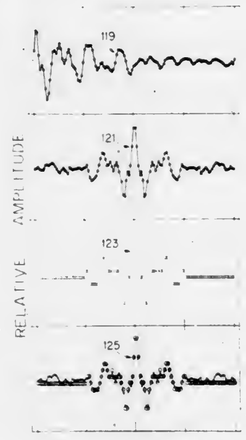
(b) selecting signals representative of certain phoneme and phoneme groups from the time quantized signals and replacing portions of these selected signals corresponding to parts of the pitch periods of the certain phonemes and phoneme groups by a constant amplitude signal while generating instruction signals as to which phonemes and phoneme groups have been so selected,

(c) selecting signals representative of certain phonemes and phoneme groups from the time quantized signals and storing only portions of these selected time quantized signals corresponding to every nth pitch period of the waveform of the original speech information electrical

signal, and storing instruction signals as to which phonemes and phoneme groups have been so selected and storing instruction signals as to the values of n,

(d) separating and storing the time quantized signals representative of spoken words into two or more parts, with such parts of later words that are identical to parts of earlier words being deleted from storage while instructions signals as to which parts are deleted are stored,

(e) storing portions of the time quantized signals corresponding to selected phonemes and phoneme groups according to their ability to blend naturally with any other phoneme, the selected phonemes and phoneme groups including



voiced and unvoiced fricatives, voiced and unvoiced stop consonants, and nasal consonants,

(f) delta-modulating the time quantized signals, and

(g) Mozer phase-adjusting a selected periodic waveform by Fourier transforming the time quantized signals to generate a set of discrete amplitudes and phase angles, adjusting these phase angles so that the inverse Fourier transformation of the amplitudes and new phases is symmetric, inverse Fourier transforming the phase adjusted amplitudes and phases, storing one-half of a selected waveform as representative of each discrete set of phase adjusted amplitudes and phases and discarding the other half of the selected waveform.

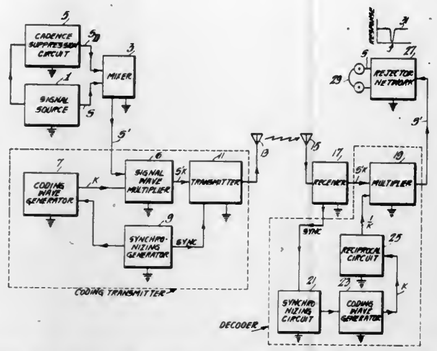
4,214,126

CADENCE SUPPRESSION SYSTEM

Frank P. Wipff, Garland, Tex., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1945, Ser. No. 591,067
Int. Cl.[2] H04K *1/02*
U.S. Cl. 179—1.5 M **25 Claims**

23. The method of suppressing cadence in a communication signal comprising the steps of delaying the envelope of said signal, generating a spurious signal having characteristics which are a function of the delayed envelope of said communication signals, and combining said communication signals and said spurious signal to provide a distorted communication



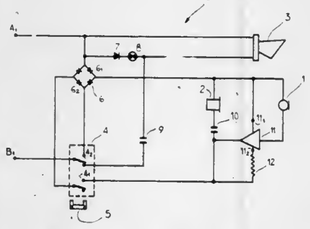
signal in which the original signal cadence is substantially suppressed.

4,214,127

INTRINSICALLY SAFE TELEPHONE NETWORK

Michel L. Oules, Sevres, France, assignor to S.I.L.E.C.-Division Signalisation Industrielle, Paris, France

Filed May 17, 1978, Ser. No. 907,051
Claims priority, application France, May 18, 1977, 77 15444
Int. Cl.[2] H04M *1/18*
U.S. Cl. 179—2 R **6 Claims**



1. An intrinsically safe telephone network comprising a manual exchange, various supply sources including a d.c. supply source, all the supply sources being at said exchange, a limiter-repeater circuit coupled to said manual exchange and said d.c. supply source, a remote telephone set and a telephone line, interconnecting said limiter-repeater circuit and said telephone set, wherein the telephone set comprises a solid-state amplifier serially connected with a microphone, said amplifier being supplied with an operating voltage from said d.c. supply source only when the telephone handset is off-hook, and a loud-speaker, said loud-speaker being a.c. connected by a capacitive connection to the telephone line when the telephone handset is on-hook.

4,214,128

METHOD AND APPARATUS FOR DEMULTIPLEXING MULTIPLEXED SEISMIC DATA

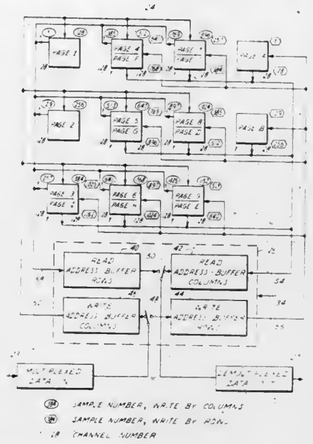
David B. Bovee, Katy, and Ben B. Thigpen, Houston, both of Tex., assignors to Western Geophysical Co. of America, Houston, Tex.

Filed Sep. 28, 1978, Ser. No. 946,897
Int. Cl.[2] H04J *3/02*; G01V *1/24*
U.S. Cl. 370—112 **12 Claims**

1. An improved method for demultiplexing a plurality of scans of multiplexed digital data samples from a first recording cycle of a multiple input-channel data acquisition system, from

channel-sequential order by sample number to sample-sequential order by channel number, comprising the steps of:

assigning a plurality of memory elements in a digital memory to form a two dimensional rectangular array of rows and columns of elements;



sequentially loading each side scan of multiplexed data samples into said array by columns, a different column being selected for each scan; and

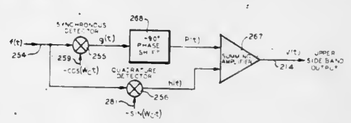
sequentially extracting said column-loaded data samples from said array by rows in demultiplexed format, a different row being selected for each channel.

4,214,129

SIDEBAND CANCELLATION CIRCUIT FOR A TRANSMISSION LINE COMMUNICATIONS SYSTEM RECEIVER

Mahlon D. Kimbrough, Hurst, Tex., assignor to Reliance Telecommunication Electronics Company, Bedford, Tex.

Filed Dec. 4, 1978, Ser. No. 966,194
Int. Cl.[2] H04J *1/14*
U.S. Cl. 370—57 **9 Claims**



9. In a plural channel telephone carrier system for transmitting and receiving a plurality of frequency spaced double sideband amplitude modulated carrier signals on a trunk line between two end central offices, each of said carrier signals being associated with one of said channels, one of the sidebands of said channel carrier signal containing signalling information signals for said channel and the other of the sidebands of said channel carrier signal containing signalling information signals for the next adjacent channel, a receiver for recovering the signalling information signals for said channel comprising:

a source of first and second reference signals out of phase with but at the same frequency as said carrier signal;

a first means responsive to said received channel carrier signal and said first reference signal for generating an output signal representing the demodulated signalling information signals contained in said channel carrier signal;

a second means responsive to said received channel carrier signal and said second reference signal for generating an output signal representing the demodulated signalling information signals contained in said channel carrier signal, the demodulated signalling information signals for said channel being in phase and the demodulated signalling information signals for the next adjacent channel being out of phase with the respective parts of said first means output signal; and

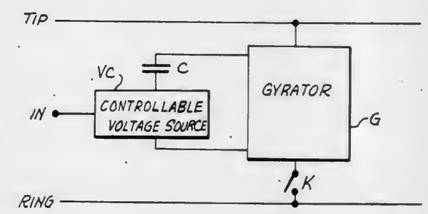
means responsive to said first and second output signals for summing the output signals whereby the demodulated signalling information signals which are in phase are added and the demodulated signalling information signals which are out of phase are cancelled.

4,214,130

SIGNAL COUPLER

Philip J. Questad, Kirkland, Wash., assignor to Teltone Corporation, Kirkland, Wash.

Filed Mar. 10, 1978, Ser. No. 885,375
Int. Cl.[2] H04M *1/00*
U.S. Cl. 179—81 R **16 Claims**



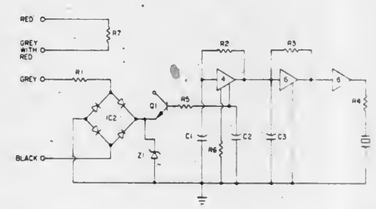
1. In a telephone communication system including balanced tip and ring leads and a gyrator and a capacitor circuit, said gyrator and capacitor circuit connected together so as to perform the function of an inductor, said gyrator and capacitor circuit connected to said balanced tip and ring leads for providing a holding current path when a telephone is connected to said tip and ring leads, the improvement comprising modulation means referenced to a predetermined voltage level for modulating the holding current flowing through said gyrator.

4,214,131

ELECTRONIC AUDIO SIGNALLING DEVICE FOR TELEPHONES

Terry D. Bush, and D. Joseph Denen, both of Columbus, Ohio, assignors to Floyd Bell Associates Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 843,456, Oct. 19, 1977, Pat. No. 4,157,459. This application Dec. 18, 1978, Ser. No. 970,633
The portion of the term of this patent subsequent to Jun. 5, 1996, has been disclaimed.
Int. Cl.[2] H04M *1/00*
U.S. Cl. 179—84 T **9 Claims**



1. A signalling device for telephones or the like comprising a housing, a printed circuit board mounted within the housing and carrying solid state circuit components in a circuit, a piezoelectric actuated flexible diaphragm also mounted within the housing in spaced relationship to said circuit board, said flexible diaphragm carrying a piezoelectric element connected in the circuit, said circuit including:

a set of leads adapted to be connected to the telephone voltage supply line for receiving signalling voltage therefrom;

a square wave oscillator audio-signalling circuit connected to said leads and including a square wave driving network with oscillator frequency controlling components connected to a buffer driving network including said piezoelectric element;

a rectifying and voltage-limiting network connected between the leads and the oscillator circuit for receiving, rectifying and limiting the voltage supplied by the telephone voltage supply line to a selected range and applying the resulting output voltage to the oscillator circuit, said rectifying and voltage limiting network including a full wave bridge rectifier which effects full wave rectification of the incoming signal voltage allowing both halves to provide voltage to the oscillator circuit, a voltage dropping element connected with the bridge rectifier to serve as a current limiting element to protect the rectifier, and a voltage clamping element connected to the output of the rectifier and cooperating with said voltage dropping element for suppressing the application of voltages other than proper signalling voltages to the oscillator circuit; and a disabling network connected between the leads and the oscillator circuit for disabling the oscillator circuit except when proper signalling voltage is supplied through said leads so as to prevent undesired audio outputs in the telephone to which it is applied when voltages other than proper signalling voltages are present on the telephone voltage supply line, said disabling network including signal-attenuating components for preventing application of voltages to the oscillator circuit unless they are in the selected range of proper signalling voltages.

4,214,132

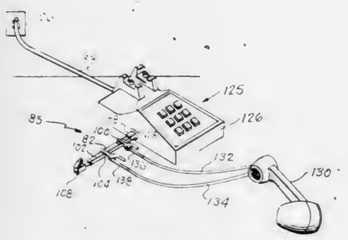
TESTING TOOLS FOR MODULAR TELEPHONE SYSTEM

Thomas W. Kelso, P.O. Box 452, Little River, Tex. 76554

Filed Jan. 24, 1978, Ser. No. 871,857

Int. Cl.[2] H04M *1/24*

U.S. Cl. 179—175 **12 Claims**



11. A testing tool for electrical connector systems of the type that employ miniature modular telephone plugs and jacks, each of said plugs and jacks having at least three wires terminated therein, which comprises:

connector means adapted to mate with one of said miniature modular plugs or jacks and having at least three test wires terminated;

at least three exposed conductor pads connected respectively in series with said three test wires for permitting attachment of test apparatus thereto; and

a rigid, elongated housing for supporting said pads.

4,214,133

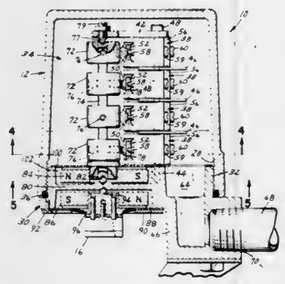
ROTARY SHAFT POSITION SWITCH

Byron F. Wolford, Rte. 6, Fergus Falls, Minn. 56537, and John F. Rose, Rte. 1, Underwood, Minn. 56586

Continuation-in-part of Ser. No. 758,577, Jan. 12, 1977, abandoned. This application Dec. 22, 1977, Ser. No. 863,219

Int. Cl.[2] H01H *3/32, 19/60*

U.S. Cl. 200—31 R **12 Claims**



1. A rotary shaft position indicator and control, comprising:

a housing having a first part with a switch cavity and a second part including means for sealing said housing from the exterior surroundings of said housing whereby said switch cavity is protected from dust, moisture, corrosive or explosive foreign materials;

switch means disposed within said switch cavity for providing indication or control signals when actuated;

a rotatable spindle mounted within said cavity and having a first axis of rotation, said spindle further having means for selectively actuating said switch means upon rotation of said spindle;

a first magnet secured to said rotatable spindle adjacent said switch cavity;

a second magnet having a second axis of rotation and being magnetically coupled through a wall of said housing second part to said first magnet whereby upon rotation of said second magnet said spindle is thereby rotated; and

means for flexibly coupling the rotary shaft to said second magnet whereby the rotational axis of the rotary shaft may be misaligned with respect to said first rotational axis.

2. A rotary shaft position indicator and control in accordance with claim 1 wherein said first and second magnets are annular magnets having their central axes normally aligned along said first rotational axis of said spindle.

4,214,134

TIME DETECTING SWITCH FOR ALARM CLOCK

Masuo Ogihara; Kozo Chimura, and Nobuo Shinozaki, all of Yotsukaido, Japan, assignors to Seiko Koko Kabushiki Kaisha, Japan

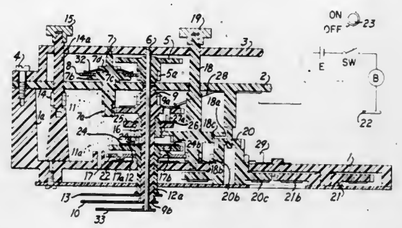
Filed May 22, 1978, Ser. No. 908,559

Claims priority, application Japan, May 26, 1977, 52-67947[U]

Int. Cl.[2] G04C *21/16;* **H01H** *43/10*

U.S. Cl. 200—37 R **2 Claims**

1. A time detecting switch for an alarm clock having phase detecting type slide switches disposed between rotatable coaxially mounted pairs of time wheels and detecting wheels which are rotated to phases corresponding to an alarm signalling time according to an alarm signalling time setting comprising: one of the pair of two kinds of wheels, the time wheels and the detecting wheels, comprising a disk of electrically insulating material having a hole therethrough and an electrically conductive switch plate mounted on one face of said disk and having an electric contacting portion extending through said



hole in said disk and bent to form a contacting face in the same plane with the other face of said disk.

4,214,135

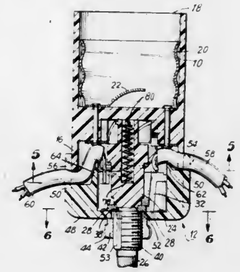
BOTTOM TURN SOCKET

Ronald G. Munroe, Georgetown, S.C., assignor to Eagle Electric Mfg. Co., Inc., Long Island City, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,986

Int. Cl.[2] H01R *33/28, 13/58*

U.S. Cl. 200—51.17 **6 Claims**



1. A bottom turn socket comprising a husk, means at one end of said husk for receiving the threaded base of a light bulb, means within said husk for supplying electric power to said light bulb via said threaded base, means within said husk for selectively interrupting the flow of electric power flow to said light bulb, said means for interrupting electric power flow including a switch, said switch including a central axial stem, means mounting said stem to the other end of said husk, said other end of the husk having a centrally disposed bottom opening recess, said stem being located centrally of said recess, said stem terminating with a manually operable turn knob, said switch being manipulated by partial rotation of said turn knob, terminal means at the other end of said husk within said recess for connection to the ends of a line cord so as to furnish electric power to said light bulb, a generally cup-shaped cover housing including a crown and a skirt, said crown having an opening through which the stem extends, and means detachably mounting said cover housing to said other end of said husk, said cover housing covering the other end of said husk and said skirt being telescoped over said other end, said cover housing having at least one peripheral slot in its skirt in which said line cord is located, said cover housing including at least one interior boss adjacent said slot, said boss having a chisel-shaped tip extending into said recess and radially aligned with said slot, the tip of said boss pinching said line cord against the other end of said husk when the cover housing is emplaced, to provide strain relief.

4,214,136

ELECTRICAL SWITCHES FOR CONTROL DEVICES SUCH AS TEMPERATURE REGULATORS

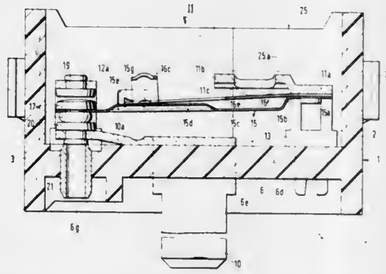
Guglielmo Rossi, Linkenheim, and Hans Bösing, Oftersheim, both of Fed. Rep. of Germany, assignors to Ranco Incorporated, Columbus, Ohio

Filed Feb. 16, 1979, Ser. No. 13,194

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807943

Int. Cl.[2] H01H *5/26*

U.S. Cl. 200—67 DA **15 Claims**



1. An electrical switch for use in a control device such as a temperature regulator, comprising:

a housing having two stops, at least one of which is a fixed switch contact; and,

a movable switch contact assembly which is movable between the two stops and is normally in abutment with one of said stops;

the improvement comprising;

the movable switch contact assembly comprising a contact and contact carrying arm of electrically conductive material, and a Q-shaped snap action spring cooperating with said arm to snap move the arm for opening and closing the contacts said spring having two legs which are drawn toward each other to stress the spring and a trip tongue projecting from a portion of the spring interconnecting said legs, and

said arm and said snap action spring being cantilevered within the housing and disposed substantially parallel to one another.

4,214,137

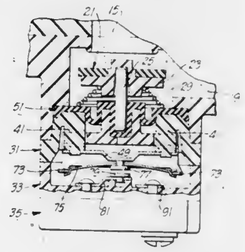
PRESSURE SWITCH WITH SNAP ELEMENT

E. Dale Hartley, Los Angeles, Calif., assignor to Product Research and Development, Anaheim, Calif.

Filed Oct. 13, 1978, Ser. No. 951,110

Int. Cl.[2] H01H *35/34*

U.S. Cl. 200—83 P **7 Claims**



1. A pressure switch comprising:

a housing;

a first contact;

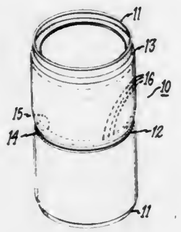
means for mounting said first contact in said housing;
a second contact;
a support;
means for mounting said support in said housing with said second contact being intermediate said support and said first contact;
first means in said housing exposable to fluid under pressure and movable in a first direction in response thereto;
a carrier mounted for movement in said housing with said first means;
a bistable spring;
means for mounting the bistable spring on the carrier for movement with the carrier, said second contact being carried by said bistable spring and being movable by said bistable spring into and out of engagement with said support and said first contact;
first resilient means for urging the carrier in opposition to the fluid pressure;
said first resilient means engaging said mounting means for the bistable spring;
at least portions of said bistable spring, said mounting means for the bistable spring and the first resilient means being conductive and forming at least a portion of a circuit leading to said second contact;
said carrier having at least one lug, said mounting means for the bistable spring including a conductive switch bracket having an opening therein, said lug projecting through said opening; and
said first resilient means including a conductive coil spring engaging said switch bracket around said opening and surrounding said lug, said coil spring and said switch bracket forming portions of said circuit.

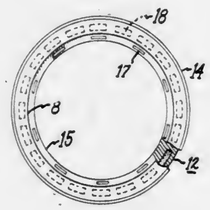
4,214,138

VAPOR SHIELD SUPPORT RING FOR A VACUUM INTERRUPTER

John R. Lucek, Cheshire, and David L. McCall, Dalton, both of Mass., assignors to General Electric Company, New York, N.Y.

Filed Mar. 8, 1978, Ser. No. 884,617
Int. Cl.[2] H01H *9/02;* **C03B** *19/04;* **C03C** *27/00;* **H01H** *33/00*
U.S. Cl. 200—144 B **13 Claims**





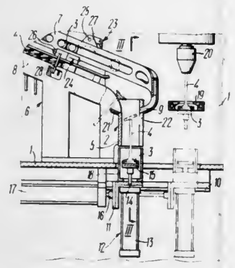
1. An improved shield support ring for vacuum switch enclosures of the type consisting of a glass envelope containing a shield support ring having a plurality of passages through the ring for the transport of molten glass during the glass forming process, the improvement which comprises:
the passages of said shield support ring having a minor and major dimension wherein the minor dimension is less than the major dimension for providing encapsulation of the passages within the glass envelope.

4,214,139

APPARATUS FOR SURFACING INTERNAL COMBUSTION ENGINES VALVES

Anatoly E. Kozlov, ulitsa Revoljutsionnaya, 73, kv. 85, Tolyatti; Bogdan P. Budzan, Dneprovskaya naberezhnaya, 11, kv. 122, Kiev; Daniil A. Dudko, ulitsa Anri Barbjusa, 22/26, kv. 113, Kiev; Boleslav I. Maximovich, ulitsa Anri Barbjusa, 22/26, kv. 107, Kiev; Vitaly V. Zavodian, bulvar Lepse, 55, kv. 20, Kiev; Anatoly A. Mozzhukhin, ulitsa Grodnenskaya, 3/5, kv. 37, Kiev; Vladimir P. Sotchenko, ulitsa P. Tychiny, 13, kv. 210, Kiev; Vladimir M. Golovnin, Moskovsky prospekt, 78/178, kv. 338, and Nail S. Farrakhov, ulitsa Jubileinaya, 1114, kv. 142, both of Tolyatti, all of U.S.S.R.

Filed Mar. 10, 1978, Ser. No. 885,201
Int. Cl.[2] B05C *13/02;* **H05B** *5/00*
U.S. Cl. 219—9.5 **6 Claims**



1. An apparatus for surfacing internal combustion engine valves by fusing refractory alloy rings applied to the seating surfaces of heads of the valves comprising:
a means for fitting a ring to be fused onto a valve and for positioning the valve with its head downwards including: a vertically positioned tubular body having in its wall a transverse slot; a chute adjoining the upper end of said body and adapted for feeding thereto the valve with its head upwards; a chute ajoining the wall of said body and adapted for delivering the ring through said slot to the interior of said body; a thrust member arranged on an upper portion of said body and interacting with the valve stem so that the valve is positioned with its head downwards when said valve enters said body;
a heating means for fusing the rings to the heads;
a pushing means adapted for delivering the valve to said heating means and mounted underneath said body for reversible movement so that said pushing means is alternatively placed under said heating means and under said tubular body, said pushing means including:
a platform adapted for receiving the valve head downwards; and
a means for fixing the valve within said heating means.

4,214,140

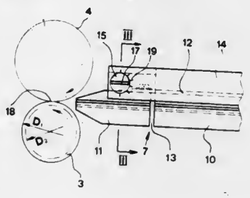
RESISTANCE WELDING MACHINE FOR SEAM WELDING OF BLANKS OR THE LIKE

Paul Opprecht, Im hintern Bernold, 8962 Bergdietikon, Switzerland

Filed Sep. 18, 1978, Ser. No. 943,296
Claims priority, application Switzerland, Oct. 27, 1977, 13069/77
Int. Cl.[2] B23K *31/06, 11/06*
U.S. Cl. 219—61.3 **10 Claims**

1. A resistance welding machine for seam welding of blanks, comprising:

a pair of cooperating electrode rolls for welding rolled blanks at a welding seam;
a movable guide device arranged forwardly of said electrode rolls for producing an exact overlap at the edges of the rolled blanks and for guiding the overlapped blank edges to a welding point between the electrode rolls;
said movable guide device comprising at least two relatively movable sections including a first section and a second movable section;



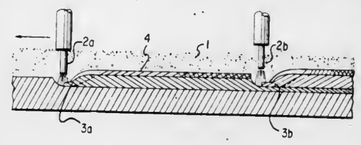
said second movable section being located forwardly and in the vicinity of the welding point between the pair of cooperating electrode rolls;
said first section being operatively associated with one of the electrode rolls; and
adjusting means for aligning the movable second section of the guide device essentially at the welding point and independently of the first section.

4,214,141

MULTIPLE ELECTRODE SUBMERGED ARC WELDING METHOD

Naoki Okuda, Kamakura, and Akira Nakano, Hiratsuka, both of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Dec. 29, 1978, Ser. No. 974,546
Claims priority, application Japan, Dec. 29, 1977, 52/160428; Dec. 29, 1977, 52/160429; Aug. 21, 1978, 53/102156
Int. Cl.[2] B23K *9/18*
U.S. Cl. 219—73 **11 Claims**



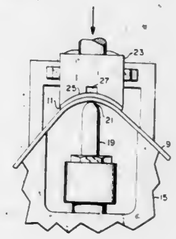
1. A multiple electrode welding method which comprises:
arranging a plurality of electrodes in such a manner that the distance is at least 300 mm between a first molten pool formed by multilayer welding by a single or a plurality of electrodes preceding along a weld line and a subsequent molten pool formed by a single subsequent electrode or plurality of subsequent electrodes;
forming slag having a composition which comprises:
TiO_2:20–65% by weight
CaF_2:9.6–40% by weight, and
Al_2O_3: 10–56% by weight
on weld metal formed by an electrode or a preceding electrode forming a preceding layer, and
welding along said weld line, without removing said slag, using said single subsequent electrode or said subsequent plurality of electrodes for forming said subsequent molten pool layer.

4,214,142

APPARATUS AND PROCESS FOR WELDING PLATED PARTS

Alton L. Crosby, Seneca Falls, and Harry R. Swank, Waterloo, both of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 21, 1978, Ser. No. 935,232
Int. Cl.[2] B23K *11/30*
U.S. Cl. 219—86.25 **12 Claims**



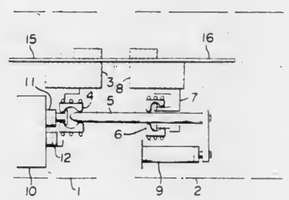
1. In a process for welding plated rimbands and plated ear members having base and upstanding portions and suitable to an implosion-resistant cathode ray tube wherein the plated rimbands and ear members base portion are placed in contacting relationship between first and second electrodes which are energized in an amount and for a time sufficient to effect welding thereof, the improvement comprising the step of forming said second electrode to have a surface contour substantially similar to the surface contour of said base portion of the ear member and a slot therein positionally located substantially opposite to said first electrode.

4,214,143

CONDUCTOR CONNECTOR IN FLASH WELDING APPARATUS

Takao Kawanami, Tohkai; Hiromi Tajiri, and Akiyoshi Uomori, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Steel Corporation, both of Tokyo, Japan

Filed Jul. 14, 1978, Ser. No. 924,571
Claims priority, application Japan, Jul. 15, 1977, 52/84769
Int. Cl.[2] B23K *11/04;* **H01R** *41/00*
U.S. Cl. 219—97 **2 Claims**



1. A flash welding apparatus comprising:
a pair of electrode tables which face each other and can be relatively shifted, one of the tables having disposed therein a first electrode, a first sliding conductor, and a transformer for welding, the transformer having a secondary winding, one end of the secondary winding being connected to the first electrode and the other end of the secondary winding being connected to the first sliding conductor, the other of the tables having disposed therein a second electrode, a second sliding conductor connected to the second electrode, and a connecting conductor disposable in the second sliding conductor during a nonwelding time to avoid obstructing a space between the pair of electrode tables and capable of being extended and inserted in the first sliding conductor during a welding

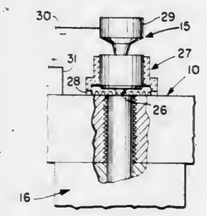
time to electrically connect both sliding conductors and thereby connect the other end of the secondary winding to the second electrode.

4,214,144

STUD WELDING APPARATUS AND PROCESS

Gary R. Spiegelberg, Lagrange, Ohio, assignor to Erico Products, Inc., Cleveland, Ohio

Filed Mar. 16, 1978, Ser. No. 887,051
Int. Cl.[2] B23K *9/20, 9/28*
U.S. Cl. 219—99 **17 Claims**



1. Apparatus for facilitating the drawn arc stud welding closure of hole ends in metal objects, comprising a stud larger than and for stud welding over a hole end in a metal object, an electrically conductive refractory insert for drawing a welding arc removably secured within said hole with an end of the insert approximately flush with said hole end, a flux projection secured to the end of a stud to be stud welded against the metal object, and connecting means for electrically connecting the insert to the metal object, whereby stud welding equipment may be electrically connected to the insert and stud for drawing a welding arc between them and effecting the stud welding closure.

13. A method of closing hole ends in metal objects comprising the steps of:

removably securing within a hole in a metal object a refractory electrode means for drawing a welding arc with an end of the electrode means approximately flush with said hole end, connecting stud welding apparatus to the electrode means and a stud, and stud welding the stud to the metal object during which a welding arc is struck between the stud and electrode means.

4,214,145

MILD STEEL, FLUX-CORED ELECTRODE FOR ARC WELDING

Albert J. Zvanut, Whittier, and Michael S. Sierdzinski, Montclair, both of Calif., assignors to Stoody Company, Industry, Calif.

Filed Jan. 25, 1979, Ser. No. 6,316
Int. Cl.[2] B23K *35/24, 35/34, 35/36, 35/40*
U.S. Cl. 219—145.22 **4 Claims**

1. A mild steel, flux-cored electrode for arc welding, comprising:

a sheath of mild steel formed from a strip having an initial thickness of approximately 0.012 inch and a width of approximately 0.505 inch, said sheath being closed to an external diameter of approximately three thirty-seconds of one inch and defining a space for containing a core; and

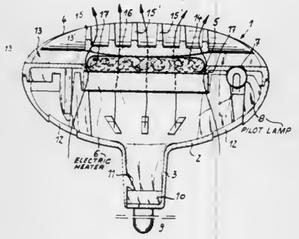
a core in said sheath comprising approximately forty-five percent of the weight of said electrode for any given length, and including a major component of iron powder having an apparent density of approximately three grams per cubic centimeter, said core also including manganese and silicon in an approximate ratio of three to one respectively, whereby upon welding, said electrode will provide a deposit of mild steel consisting of iron and other components in amounts not greater than 1.7 percent manganese and 0.6 percent silicon, by weight of the deposit metal.

4,214,146

ELECTRICALLY HEATED VAPORIZER DEVICE FOR DISPENSING A THERMALLY VOLATILIZABLE SUBSTANCE

Georg Schimanski, Breckerfeld, Fed. Rep. of Germany, assignor to Globol-Werk GmbH, Neuburg, Fed. Rep. of Germany

Filed Jun. 15, 1978, Ser. No. 915,608
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730855
Int. Cl.[2] A01M *1/20;* **A61L** *9/02;* **F22B** *1/28*
U.S. Cl. 219—274 **10 Claims**



1. A device for dispensing a thermally volatilizable substance, comprising:

a hollow housing;

an open-ended, open top linear guide channel having a planar floor extending from end to end formed across the upper portion of said housing;

a window formed in the floor of said channel;

a heater disposed beneath said window in alignment therewith and forming a support for a member introduced into said channel through an open end thereof and containing a volatilizable substance;

a protective grid secured to said housing and spanning the open top of said channel above said window and juxtaposed therewith so that said member can be inserted into said channel in a feed direction without removing said grid,; and

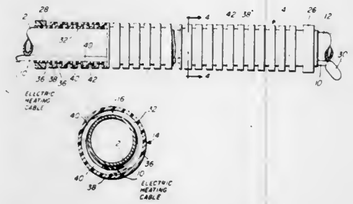
at least one elongated runner on said grid extending linearly in said feed direction and engageable with said member introduced into said channel, for pressing said member against said heater.

4,214,147

ELECTRIC HEATING SYSTEM FOR CONTROLLING TEMPERATURE OF PIPES TO PREVENT FREEZING AND CONDENSATION

Richard A. Kraver, 8111 NW. 54th St., Miami, Fla. 33166

Filed Jun. 19, 1978, Ser. No. 916,734
Int. Cl.[2] F16L *53/00;* **F24H** *1/12;* **H05B** *3/58*
U.S. Cl. 219—301 **5 Claims**



1. A condensation and temperature control system for a pipe carrying a liquid, comprising in combination when installed on the pipe a tubular enclosure for the pipe and an elongated electrical heater in the enclosure adjacent the pipe, the enclosure having walls of substantially uniform thickness and that are substantially non-pervious to moisture said walls being corrugated in the direction of the tubular longitudinal axis so as

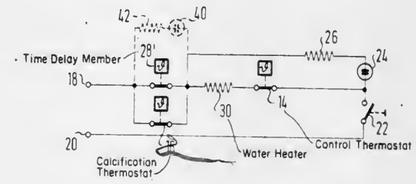
to provide a series of axially-displaced air-cell spaces extending circumferentially around the pipe, the innermost diameter of said walls being larger than the outer diameter of the pipe to provide space between said tubular enclosure and said pipe for said heater, the heater being located to heat air in the air cells and by movement of such heated air in said air cells to warm the pipe for preventing freezing of liquid in the pipe, the corrugations rendering the tubular enclosure freely flexible transversely to its longitudinal axis for following a pipe around curves.

4,214,148

INDICATOR FOR THE EXTENT OF CLARIFICATION OF WATERHEATERS IN ELECTRIC HOUSEHOLD APPLIANCES

Werner Fleischhauer, Stein, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 27, 1977, Ser. No. 864,476
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1976, 2659079
Int. Cl.[2] H05B *1/02;* **A47J** *31/56, 31/58;* **F24H** *1/10*
U.S. Cl. 219—308 **10 Claims**



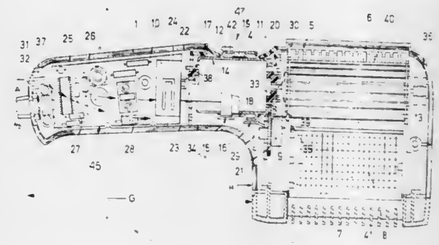
1. In a water heater associated with an electric household appliance, said water heater being subject to calcification caused reduction in heat transfer through the wall of the water container of the water heater, said water heater having a heater resistor adjacent the water container, a first temperature-dependent switch thermally coupled to the water container being in circuit with said heater resistor to act as the final control for the water heater; the improvement comprising the combination therewith of means for indicating calcification of the water heater, said calcification indicating means comprising a second temperature-dependent switch thermally coupled to the water container, the switching temperature of the second temperature-dependent switch being below the switching temperature of the first temperature-dependent switch and in the range of temperatures which occur with calcification in the water-heating operation, a calcification indicating signal and a time delay member operative after a predetermined time delay to actuate said indicating signal, said time delay member being so arranged in circuit with said first and second temperature-dependent switches that said time delay member is operative to actuate said indicating signal when only a second temperature dependent switch is in responded condition, and which time delay member ceases operation and returns to its original state when the first temperature-dependent switch is in its responded state.

4,214,149

HAND-HELD BLOW DRYER WITH THUMB-OPERABLE CONTROLS

Karl-Heinz Hoffmann, Wehrheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,715
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1977, 2750954
Int. Cl.[2] H05B *1/00*
U.S. Cl. 219—370 **10 Claims**



1. A blow dryer comprising:

a housing having a slim handle shaped to be held in the hand and formed with a window, and a large head formed with an outlet;

blower means including an electric motor in said handle having an output shaft extending into said head and a motor casing formed generally as a body of revolution, and a fan mounted in said head on said shaft and rotatable by said motor to blow air from said outlet;

heater means in said housing electrically energizable to heat the air blown by said fan;

a variable circuit element connected to one of said means;

circuit means connectable to a source of electricity and to said circuit element and connected to said one means for varying the energization thereof;

an annular adjustment member carried on and coaxially surrounding said motor casing and rotatable about the axis thereof, said member being exposed at and operable through said window; and

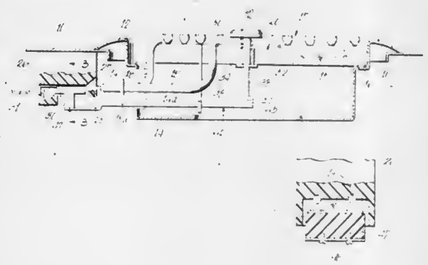
a formation on said member lin'ing same to said circuit element for operation of said one means by said adjustment member.

4,214,150

ELECTRIC HEATING ELEMENTS

Donald M. Cunningham, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 10, 1978, Ser. No. 904,556
Int. Cl.[2] H05B *1/02, 3/68*
U.S. Cl. 219—452 **6 Claims**



1. An electric heating element of the type comprising a

sheathed unit having a flat, spiralled active heating portion with a pair of terminal portions extending downwardly from and laterally of said heating portion, each terminal portion having a rigid terminal pin extending outwardly of the sheated end, said flat heating portion being adapted to directly support a cooking vessel to heat the latter and its contents, the improvement comprising support means, said sheathed with being removable mounted on said support means:

a pair of contact members carried by said support means and, each adapted for connection to an electric power conductor, said contact members being adapted for electric contact with respective terminal pins to provide electrical current to said active heating portion to heat the same,

vertically movable means normally disposed in an upper position above the plane of said flat heating portion when no cooking vessel is supported on said active heating portion, but movable downwardly to a lower position at least within said plane by the weight of a cooking vessel placed on said active heating portion, and

means providing for movement of at least one of said contact members out of electrical contact with its respective terminal pin in response to movement of said vertically movable means to its upper position.

4,214,151

CONTROL INSTRUMENT FOR ELECTRIC COOKER PLATES

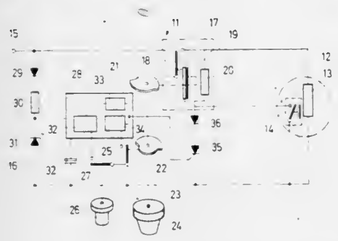
Robert Kicherer, Knittlingen, and Wilfried Schilling, Kraichtal, both of Fed. Rep. of Germany, assignors to E.G.O. Regeltechnik GmbH, Fed. Rep. of Germany

Filed Jul. 5, 1978, Ser. No. 922,027

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731782

Int. Cl.² H05B *1/02*

U.S. Cl. 219—492 **9 Claims**



1. A control instrument for an electric cooker plate, comprising a manually, substantially steplessly adjustable power control instrument which feeds electrical power to the cooker plate in the form of power pulses, having an expansion element with an electric heating means, and a time switch member for increasing the power adjusted on the power control instrument for a predetermined period in an initial cooking phase, the time switch member comprising an electronic counter timing member and at least one divider which, via an electronic switch element, reduces the power supplied to the heating means during said period in a predetermined division ratio, whereby the power fed to the cooker plate is raised according to said predetermined division ratio and in dependence upon the manual adjustment of the control instrument.

4,214,152

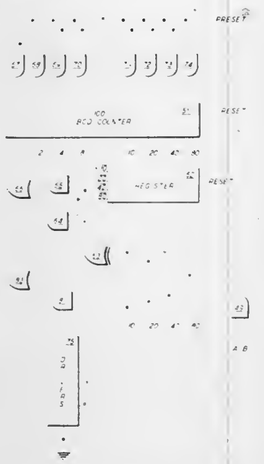
ERROR CORRECTION IN A REMOTE METER READING DEVICE

Donald T. Hess, Garden City, N.Y., assignor to Cain Encoder Company, Greenville, N.C.

Filed May 12, 1978, Ser. No. 905,538

Int. Cl.² G06M *3/12*

U.S. Cl. 235—92 EC **27 Claims**



1. In a device for remotely reading the positions of at least two continuously positionable indicators representing a less significant and a more significant digit in any number system, movement of the more significant of the two indicators being in a ratio of 1/N to the less significant indicator where N is the base of the number system employed, a method of correction for errors in the mechanical positions of the indicators comprising:

(a) automatically taking readings of said indicators to one decimal place to give a reading consisting of an integer and a decimal and sequentially, with sensing means, starting with the least significant indicator and storing said reading in storage means;

(b) for each reading after the first automatically, with adding means, adding a correction to the more significant indicator being read, to obtain a corrected reading, based on the last previous reading which will at least approximately tend to make the reading one which falls half way between two adjacent integers on said more significant indicator, assuming the more significant indicator being read is in the correct mechanical position; and

(c) automatically supplying as the reading, from said adding means, the integer which forms part of the corrected reading.

4,214,153

TAPE AND TAPE READER ARRANGEMENT FOR PROGRAMMABLE CONTROLLERS

Ralph Ogden, 1304 Fisher St., Munster, Ind.

Continuation-in-part of Ser. No. 779,579, Mar. 21, 1977, abandoned. This application Aug. 10, 1978, Ser. No. 932,475

Int. Cl.² G06K *7/06;* **G06F** *15/46;* **G09C** *1/00;* **G09B** *23/00*

U.S. Cl. 235—376 **21 Claims**

1. In a programmable controller system for controlling an industrial process, with the system including a central processing unit including an access type memory including a binary notation system responsive instruction register, a programming tape, a tape reader for sensing computer data bits on the programming tape when passed therethrough and connected to said unit for storing the data bits in said memory register, means for connecting I/O devices to said unit, and a work

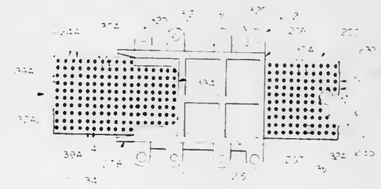
sheet having its face delineated to define the steps of the process in consecutive sequence down the sheet and in manually marked data bit binary notation system fashion horizontal computer word form for each such process step listing in data bit areas of the individual computer words the I/O device functions of the respective process steps and delineating the computer words in equal lengths by means of vertically aligned computer word end indicia at either end of the computer words,

the improvement wherein said tape comprises:

a ribbon formed from light pervious material and including means for delineating same to define a group of channels extending longitudinally thereof for the tape length and shaped and spaced transversely thereof to be aligned congruently with a group of said work sheet words consisting of a predetermined consecutive number of said work sheet words, when said ribbon is disposed with one side of same in juxtaposition with said work sheet face and said words are viewed through the tape,

said ribbon being further delineated by said delineating means along its respective channels to define in said channels I/O device data bit spaces consecutively corresponding to and formed to be congruent with said work sheet data bit areas when said ribbon channels are disposed in congruency with said work sheet words,

means for manually marking said tape spaces, when said tape is sequentially placed in juxtaposed congruency with consecutive of said work sheet word groups in overlying relation to the word spaces thereof, corresponding to the location of the I/O device function marks and the word end indicia of the respective words of the individual



words of the respective work sheet word groups, for transferring onto said tape from said work sheet the process step data word and said word end indicia thereof for each word of consecutive of said work sheet word groups, to form on said tape consecutive sets of said word data, in each set of which the word data of said process steps are consecutively and sequentially disposed transversely of said tape,

said delineating means comprising uniformly spaced apart dots imprinted on the other side of said ribbon by electrically conductive ink,

with said dots of each tape channel being aligned longitudinally of said tape to form the respective channels and said dots of the respective channels and said dots of the respective channels being aligned transversely of the tape to form spaced columns of said dots,

and with the spacing of said columns of dots in the respective channels forming the data bit spaces of the respective channels,

said means for marking said tape channel data bit spaces comprising means for making the tape markings electrically conductive and electrically connect the channel dots defining a tape data bit space to be marked in accordance with the manual markings of the respective work sheet word data bit areas,

said reader including means for serially sensing said tape word sets in consecutive sequence with continuous movement of said tape through said reader for the length of said tape,

said register including means for storing in same, in said consecutive sequence, said word sets for controlling said process through said central processing unit,

said sensing means of said reader comprising a pair of electrical contact rows over which said tape passes with such contacts engaging said other side of said tape,

with the contacts of said contact rows being spaced for congruency with said spacing of said tape dots of said tape channels and columns, and with said marked tape data bit spaces electrically connecting adjacent pairs of said contacts aligned with the respective tape columns as said tape moves thereover to comprise said reader sensing means.

4,214,154

LIGHT BEAM SCANNING APPARATUS

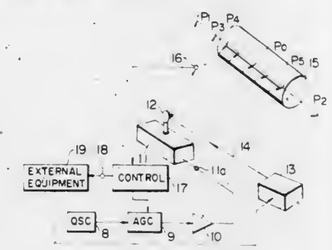
Hideaki Sato, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,053

Claims priority, application Japan, Oct. 24, 1977, 52-127797

Int. Cl.² G01J *1/20*

U.S. Cl. 250—201 **12 Claims**



1. Light beam scanning apparatus comprising:

a light beam generating means for generating a light beam;

a scanning means for deflecting the direction of said light beam emitted from said light beam generating means;

at least one light beam detect means provided on a scanning line formed by the deflected light beam; and

a first control means for controlling the length of the scanning line according to an output of said light beam detect means.

4,214,155

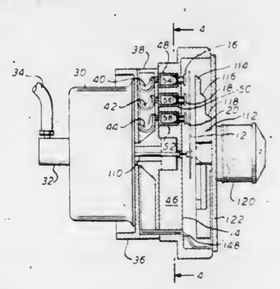
SYSTEM FOR DETECTING POSITION OF GAUGE POINTER

George D. Jones, Deerfield, Wis., assignor to Airco, Inc., Montvale, N.J.

Filed Apr. 26, 1978, Ser. No. 899,929

Int. Cl.² G01D *5/34*

U.S. Cl. 250—231 R **8 Claims**



1. A meter having a faceplate, said meter further having a pointer movable in a plane generally parallel to the plane of said faceplate, said pointer adapted to move in response to changes in a detected parameter, light means to direct an elongated beam of light generally along the path of movement of said pointer, said elongated beam of light being directed

toward one side of said pointer opposite said faceplate, detector means located in said faceplate on the other side of said pointer, said detector means being adjustably positionable along said elongated beam of light, said detector means adapted to sense a diminishment of the intensity of said elongated beam of light when said pointer is positioned substantially directly between said light source means and said detector means.

4,214,156

GYRODYNAMIC FIXTURE FOR MEASURING THRUST FORCE COMPONENTS

John W. Farrell, Dallas, Tex., and Jere L. Andrews, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 22, 1978, Ser. No. 972,303
Int. Cl.² G01D *5/34*
U.S. Cl. 250—231 SE **4 Claims**



1. A gyrodynamic fixture for measuring thrust force components of a rocket motor comprising:
(a) an air bearing assembly for support of said motor;
(b) spin-up means for providing initial spin-up of said rocket motor;
(c) a mirror mounted orthogonal to the spin axis of said motor and on the surface of said motor;
(d) a screen disposed in spaced relation with said mirror, the centerline of said screen being spaced from the centerline of said mirror;
(e) a highly collimated light source spaced from said mirror for reflecting light therefrom to said screen; and
(f) an electo optical tracker means for receiving the reflected light from said screen.

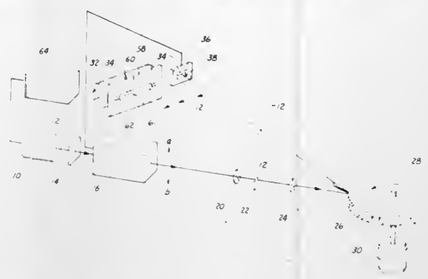
4,214,157

APPARATUS AND METHOD FOR CORRECTING IMPERFECTION IN A POLYGON USED FOR LASER SCANNING

Frank T. Check, Jr., Orange, and Ronald P. Sansone, Weston, both of Conn., assignors to Pitney Bowes, Inc., Stamford, Conn.

Filed Jul. 7, 1978, Ser. No. 922,596
Int. Cl.² H01J *3/14*
U.S. Cl. 250—236 **11 Claims**

1. In a light scanning apparatus comprising means for generating a laser beam, means for modulating the amplitude of the beam, a multifaceted reflective polygon positioned in the beam path, means for rotating the polygon, the beam being reflected from successive facets of the polygon and sweeping along a scan path to provide successive raster lines, a photoreceptor positioned to have the raster lines extending thereacross, the improvement comprising a beam deflection system, the deflection system including electro-optical sensing means, the sensing means being a pair of juxtaposed photodetectors being juxtaposed along an axis in registry with the scan path ahead of the photoreceptor, the electro-optical sensing means detecting the presence of the beam and in response thereto providing at least one signal indicative of the presence of the beam with respect to the longitudinal scan path axis, the signal indicative of the beam comprising a signal generated from at least one of the photodetectors, means receiving the signal indicative of the



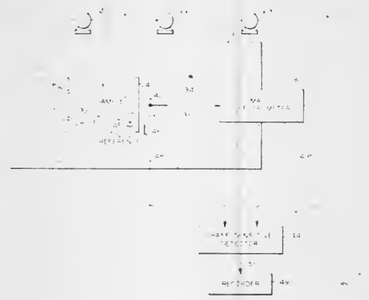
presence of the beam and in response thereto deflecting the beam toward the scan path axis.

4,214,158

DETERMINATION OF INFINITE DILUTION ACTIVITY COEFFICIENTS ($\gamma\infty$) USING MOLECULAR BEAMS

Thomas W. Schmidt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 30, 1979, Ser. No. 7,737
Int. Cl.² B31D *59/44*
U.S. Cl. 250—281 **4 Claims**



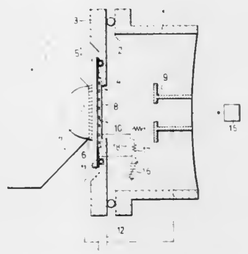
1. A method for determining infinite dilution activity coefficients comprising the steps of:
forming a first molecular beam from the vapor associated with a solution containing a solvent and a solute infinitely dilute in said solvent;
forming a second molecular beam from the vapor associated with said solvent;
passing said first molecular beam and said second molecular beam alternately to the inlet of a mass spectrometer means, said mass spectrometer means providing a first output signal which is representative of the difference in the pressure of said solute in said first molecular beam and the pressure of said solute in said second molecular beam (ΔP_1) when said mass spectrometer means is set to the mass of said solute, said mass spectrometer means providing a second output signal which is representative of the difference in the pressure of said solvent in said first molecular beam and the pressure of said solvent in said second molecular beam (ΔP_2) when said mass spectrometer means is set to the mass of said solvent; and
establishing the infinite dilution activity coefficient for said solute in response to said first output signal and said second output signal.

4,214,159

APPARATUS FOR ANALYZING SAMPLES BY ELECTROMAGNETIC IRRADIATION

Franz Hillenkamp, Frankfurt; Raimund Kaufmann, Düsseldorf-Meerbush; Rainer Nitsche, Frankfurt; Eberhard Unsöld, Munich, and Reiner Wechsung, Cologne, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Köln-Bayental, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,491
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739829
Int. Cl.² B01D *59/44*; H01J *39/34*
U.S. Cl. 250—288 **20 Claims**



1. In an apparatus for analyzing a sample by electromagnetic irradiation, including a vacuum chamber having an opening; a covering glass closing off said opening; support means for holding the sample in the vacuum chamber; said support means being arranged at said covering glass for positioning the sample immediately adjacent said covering glass; means for irradiating the sample with an electromagnetic beam including a focusing system arranged externally of said vacuum chamber at said covering glass for focusing the electromagnetic beam on the sample through said covering glass; a mass analyzer disposed in the vacuum chamber; means for extracting particles from the sample and introducing them into the mass analyzer; the improvement comprising a layer of conductive material situated in the vicinity of said support means in the zone of the sample for effecting an even potential distribution in the zone of the sample; said layer being situated between the focusing system and the sample and extending along a face of said covering glass in the path of the beam; said layer being transparent to said beam.

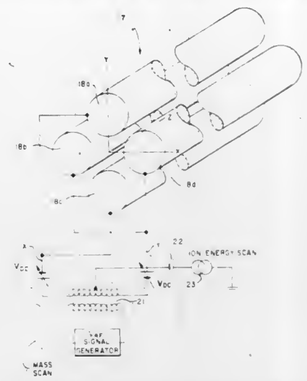
4,214,160

MASS SPECTROMETER SYSTEM AND METHOD FOR CONTROL OF ION ENERGY FOR DIFFERENT MASSES

William J. Fies, Portola Valley, Calif.; Ronald D. Smith, Bovingdon, Fed. Rep. of Germany; John R. Reeher, and Michael S. Story, both of Los Gatos, Calif., assignors to Finnigan Corporation, Sunnyvale, Calif.

Filed Mar. 4, 1976, Ser. No. 664,046
Int. Cl.² H01J *39/34*
U.S. Cl. 250—292 **3 Claims**

1. In a mass spectrometer system having a gas inlet means and an ionizing volume, a multi-pole mass filter having a plurality of electrodes, focusing means for coupling said ionizing volume to said mass filter, and means for applying to said electrodes a mass setting voltage consisting of a combination of a radio frequency voltage, V_{RF}, and a dc voltage, V_{DC}, of increasing amplitude to select an ion fragment of a predetermined mass, such applying means also including means connected to said electrodes and responsive to said mass setting voltage for adjusting the ion energy of said selected ion in accordance with the mass of said ion by changing the potential



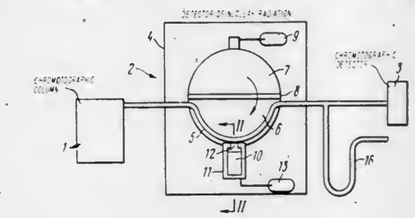
differences between said ionizing volume and the axis potential of said electrodes.

4,214,161

APPARATUS FOR RADIOCHROMATOGRAPHIC ANALYSIS OF MIXTURE OF SUBSTANCES CONTAINING COMPONENTS TAGGED BY RADIOACTIVE ISOTOPES

Viktor L. Talroze; Vladimir D. Grishin, and Boris A. Galushkin, all of Moscow, U.S.S.R., assignors to Institut Khimicheskoi Fiziki Akademii Nauk USSR, U.S.S.R.

Filed Jan. 5, 1978, Ser. No. 867,154
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 2446411
Int. Cl.² G01T *1/161*
U.S. Cl. 250—303 **4 Claims**



1. A device for radiochromatographic analysis of mixtures of substances containing components tagged by radioactive isotopes comprising: a chromatographic column; a detector of nuclear radiation connected in series with the outlet of said chromatographic column along the flow of the substance being analyzed; a chromatographic detector connected in series with the outlet of said detector of nuclear radiation along the flow of the substance being analyzed; said nuclear radiation detector including a tubular shaped light-transparent cell, one end of said tube being in fluid communication with said chromatographic column and comprising the inlet of said detector of nuclear radiation, the other end of said tube being in fluid communication with said chromatographic detector and comprising the outlet of said detector of nuclear radiation; a scintillator constituting a solid layer overlying the inner surface of said tube; a heater movable along the length of said tube; a cooler movable along the length of said tube consecutively with said heater; means for moving said heater and cooler consecutively along the length of said tube; a light detector optically connected to said tube and movable therealong; and means for moving said light detector along said tube.

4,214,162

CORPUSCULAR BEAM MICROSCOPE FOR RING SEGMENT FOCUSING

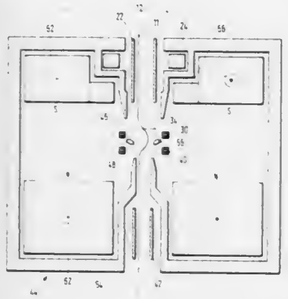
Walter Hoppe, Lochham, and Dieter Typke, Gauting, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Continuation of Ser. No. 724,056, Sep. 16, 1976, abandoned. This application Mar. 3, 1978, Ser. No. 883,005

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1975, 2541915

Int. Cl.² H01J *37/26*

U.S. Cl. 250—311 **6 Claims**



1. In a corpuscular beam microscope having a longitudinal axis on which a specimen holder is located and about which a combined condenser and objective magnetic lens system is symmetrically disposed for producing a composite magnetic field along said axis to cause a corpuscular beam to form an angle of at least 30° with said axis at the location of said specimen holder, the improvement wherein said lens system comprises:

(a) means for producing a first component of said composite magnetic field, said first component having a maximum field strength at a first point on said axis substantially at said location of said specimen holder; and

(b) means for producing a second component of said composite magnetic field, said second component having a maximum field strength at a second point on said axis, said second point being separated from said first point by a distance less than five times the arithmetic mean of half the half height widths, respectively, of said first component and said second component.

4,214,163

METHOD AND APPARATUS FOR CORRECTING ASTIGMATISM IN A SCANNING ELECTRON MICROSCOPE OR THE LIKE

Takao Namae, and Teruo Someya, both of Akishimashi, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1978, Ser. No. 970,860

Claims priority, application Japan, Dec. 29, 1977, 52-157790

Int. Cl.² G01M *23/00*

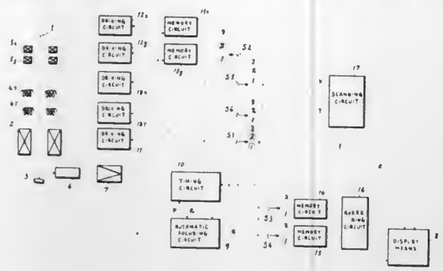
U.S. Cl. 250—311 **7 Claims**

1. A method for automatically correcting astigmatism in a scanning electron microscope or the like having a focusing lens system for focusing the electron beam on a specimen, and an xy type electromagnetic stigmator for correcting the astigmastism of said focusing lens system, said method comprising:

(a) a step for scanning the electron beam repeatedly on the specimen,

(b) a step for successively and independently changing the excitation current flowing through the x and y direction coils constituting the xy type stigmator,

(c) a step for converting the signal emanating from the specimen into a signal indicative of the electron beam diameter in the scanning direction during each scan, and



(d) a step for locking the excitation current flowing through the x and y direction coils when the conversion signal reaches a value indicative of the minimum beam diameter.

4,214,164

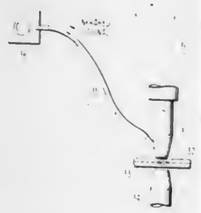
CONTROL OF SPOT WELD QUALITY BY INFRARED THERMAL SENSING

Alan C. Traub, Framingham, and Riccardo Vanzetti, Walpole, both of Mass., assignors to Vanzetti Infrared & Computer System Incorporated, Canton, Mass.

Filed Jul. 19, 1978, Ser. No. 926,055

Int. Cl.² G01J *1/00*

U.S. Cl. 250—338 **4 Claims**



1. A method of automatically operating a spot welder comprising the steps of:

during each weld measuring the temperature produced within one of a pair of welding tips to produce a thermal signal proportional to the temperature of the weld instant by instant;

sampling said thermal signal and digitally storing a value corresponding to the sampled thermal signal produced for a good weld; and

thereafter, comparing said thermal signal with a signal proportional to the stored digital value to generate a control signal for controlling the welding power of said spot welder during each weld.

4,214,165

PYROELECTRIC IR DETECTOR WITH SIGNAL CAPACITIVELY COUPLED TO AN OUTPUT CIRCUIT

Charles K. Asawa, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 21, 1979, Ser. No. 13,705

Int. Cl.² G01J *1/00*

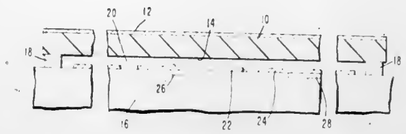
U.S. Cl. 250—338 **6 Claims**

1. A pyroelectric detector including, in combination:

(a) a pyroelectric substrate having first and second major surfaces, with said first and second major surfaces adapted to receive chopped incoming infrared radiation;

(b) a continuous infrared absorbing metal electrode member disposed on said first major surface for receiving chopped incoming infrared radiation and conducting same to said pyroelectric substrate for developing voltages thereacross in response and proportional to photon energy received; and

(c) means including a plurality of discrete metallic electrode members displaced from and capacitively coupled to said



second major surface of said pyroelectric substrate for supporting said pyroelectric substrate and minimizing heat transfer from said substrate, whereby pyroelectric voltages developed across said substrate are capacitively coupled to and readout from said discrete electrode members.

4,214,166

MAGNETIC LENS SYSTEM FOR CORPUSCULAR RADIATION EQUIPMENT

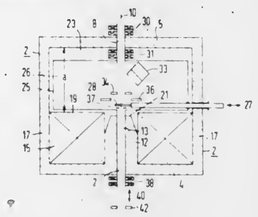
Isolde Dietrich; Fred Fox, both of Munich; Erwin Knapek, Unterhaching; Karl Nachtrieb, Munich; Reinhard Weyl, Assling; Helmut Zerbst, and Guy Lefranc, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 890,922

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726195

Int. Cl.² G01N *23/00*

U.S. Cl. 250—396 ML **15 Claims**



1. A magnetic lens system for corpuscular radiation equipment operating in a vacuum, which is capable of being set up for transmission type scanning, comprising:

(a) a shield housing of superconducting material provided with openings to allow passage of a corpuscular beam;

(b) a shielding device consisting of one hollow shielding cylinder of superconductive material disposed coaxially with the beam direction axis of the lens system and situated within the shield housing in such a manner that one end is separated from the facing interior surface of the shield housing, thereby defining a cavity within the shield housing;

(c) at least one current carrying lens coil winding, which is arranged about the shielding device and within the shield housing so that its flat side at the cavity end of the shield device further defines the cavity, generating a magnetic field for beam guidance, said shield housing and shielding cylinder guiding said magnetic field within said cavity; and

(d) a vacuum chamber arranged in the cavity to receive an object to be examined.

4,214,167

DEVICE FOR PROTECTION OF THE GONADS

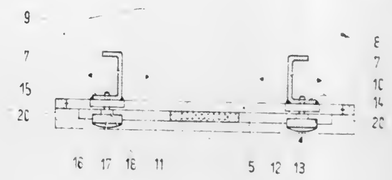
Ernst-August Gäde, Annastrase 10, Limburg, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,862

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 7727061[U]

Int. Cl.² G21F *3/00*

U.S. Cl. 250—515 **7 Claims**



4. A device for protection of gonads in x-ray diagnosis comprising a retaining frame for fastening to the collimator of an x-ray diagnosis instrument by means of insert strips, said retaining frame having means for receiving a movable support strip of material that is permeable to x-rays and which supports a member of material that is impermeable to x-rays, a plurality of insert strips for fastening said retaining frame to said collimator and means disposing said insert strips on said frame so that the relative position of said insert strips with respect to each other can be adjusted whereby the protective device can be fastened to different x-ray diagnosis instruments.

4,214,168

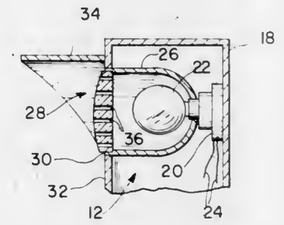
TRAFFIC LIGHT AND MOTOR VEHICLE TAILLIGHT LENSES

Thomas S. Kulka, 200 Film Bldg., 2108 Payne Ave., Cleveland, Ohio 44114

Continuation of Ser. No. 727,662, May 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 563,322, Mar. 31, 1975, abandoned. This application Sep. 12, 1978, Ser. No. 941,683

Int. Cl.² B60Q *1/00*

U.S. Cl. 362—311 **17 Claims**



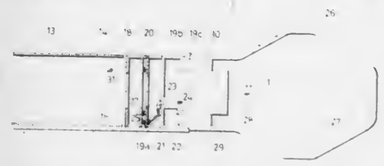
1. A signal device of the type in which at least one light transmitting means is provided to emit a visual signal to motorists, the improvement comprising lens means associated with and covering said light transmitting means, said lens means being transparent or translucent and of a desired color and including at least two perforations extending entirely through said lens means perpendicular to the plane of said lens means and being uncovered at the front surface of the lens means, said perforations being arranged in a predetermined pattern and being of sufficient dimensional area so as to visually interrupt light projected horizontally by said light transmitting means through said lens means, whereby the light transmitted through said lens means is of such desired color where no perforations appear and is of the color of said light transmitting means in the perforated area in accordance with said pattern, thereby facilitating recognition of the signal by motorists by

providing a constantly changing light pattern as a motorist approaches the signal device.

4,214,169
DEVICE FOR DETECTING AMOUNT OF X-RAY RADIATION

Toshihiro Hotta, Misukinoshitayashiki, and Takao Makino, Hikone, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed May 10, 1979, Ser. No. 37,498
Claims priority, application Japan, May 11, 1978, 53-56245
Int. Cl.[1] G03B *41/16*
U.S. Cl. 250—505 **2 Claims**

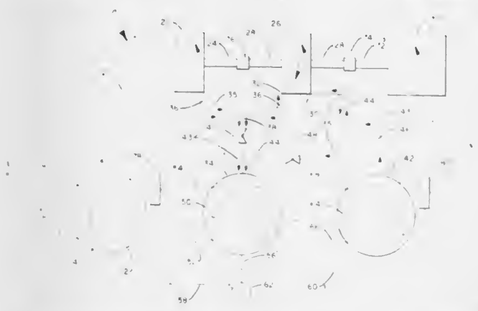


1. A device for detecting an X-ray irradiation amount characterized in that the device comprises connecting a closed case capable of interrupting an X-ray transmission to the other end of a cover cylinder open at one end to the patient side, disposing a light conducting cylinder at the connection between said cover cylinder and said case, said light conducting cylinder condensing and leading the X-rays irradiated from the X-ray tube inside said case exclusively into said cover cylinder, and disposing in said cylinder a means for converging X-rays to be projected from said one end of said cylinder and a means for detecting irradiated X-ray beams.

4,214,170
POWER GENERATION-REFRIGERATION SYSTEM

Louis H. Leonard, Cranberry Lake, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,887
Int. Cl.[2] F02G *3/00*
U.S. Cl. 290—1 R **8 Claims**

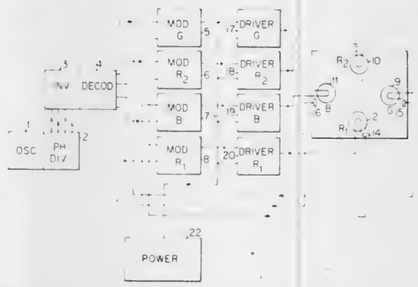


1. A power generation-refrigeration system comprising:
first means for transferring heat from a source thereof to a refrigerant;
first means for extracting kinetic energy from the heated refrigerant;
means for passing refrigerant between the first heat transferring means and the first means for extracting kinetic energy;
a reversible turbomachine having a compressor mode of operation for compressing refrigerant passing therethrough and a turbine mode of operation for extracting further kinetic energy from the heated refrigerant;
a condenser for condensing the refrigerant;
means for passing refrigerant between the condenser and the first heat transferring means;
an evaporator for transferring heat from a heat transfer medium to the refrigerant to cool the heat transfer medium and evaporate the refrigerant;
a first flow path in communication with the first means for extracting kinetic energy, the reversible turbomachine, and the condenser for passing refrigerant therebetween;
a second flow path in communication with the first means for extracting kinetic energy, the reversible turbomachine, the condenser, and the evaporator for passing refrigerant therebetween;
means for directing refrigerant through the first flow path when the reversible turbomachine is in the turbine mode and through the second flow path when the reversible turbomachine is in the compressor mode;
power means for generating power;
first connecting means for connecting the reversible turbomachine and the power means and having a power generation position wherein energy extracted from the refrigerant by the reversible turbomachine is transmitted to the power means to generate power; and
second connecting means for connecting the first means for extracting kinetic energy and the reversible turbomachine and having a refrigeration position wherein energy extracted from the refrigerant by the first means for extracting kinetic energy is transmitted to the reversible turbomachine to compress refrigerant passing therethrough, and a power generation position wherein energy extracted from the refrigerant by the first means for extracting kinetic energy is transmitted to the reversible turbomachine to assist the generation of the power.

4,214,171
PLURAL PHASE PULSED POWER SUPPLY

Robert P. Gyori, Studio City, Calif., assignor to De luxe General, Incorporated, Los Angeles, Calif.

Continuation of Ser. No. 742,809, Nov. 18, 1976, abandoned. This application Feb. 27, 1978, Ser. No. 882,291
Int. Cl.[2] G05B *13/02*
U.S. Cl. 307—39 **12 Claims**

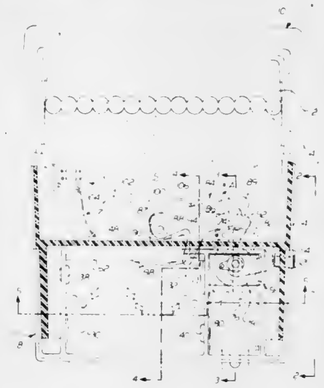


3. A plural phase power supply for individually supplying regulated electric power to plural phase loads, comprising;
(a) electric oscillatory means (**1**) for continuously producing successive cycles of electrical energy.
(b) phase-divider means (**2**) for producing plural series of pulses in separate circuits from said successive cycles of electrical energy, said phase-divider means electrically connected to said electric oscillatory means for actuation thereby,
(c) Plural pulse-width modulator means (**5-8**) each connected in the circuit of a separate said plural phase load and to said phase-divider means to accept one of said series of plural pulses for altering the time duration of the pulses thereof,
(d) plural control means (**14-16**) each connected to a said plural pulse-width modulator means to control the pulse width supplied by that pulse-width modulator in accordance with the output supplied by said control means,
(e) driver means (**17-20**) individually connected to said pulse-width means to control the level of power regulated by said pulse-width modulator means, and
(f) power supply means (**22**) individually connected to each said driver means to provide an electrical energy output thereto that is individually altered by each said pulse-width modulator means according to the control thereover exerted by the corresponding said control means.

4,214,172
INTERLOCK FOR POWER SOURCES IN DATA PROCESSING APPARATUS

Gary G. See, Chagrin Falls, Ohio, assignor to Telxon Corporation, Bath, Ohio

Filed Feb. 15, 1979, Ser. No. 12,399
Int. Cl.[2] H02J *9/00;* **E05B** *65/46*
U.S. Cl. 307—150 **15 Claims**



14. A hand held electronic data processing device including electrical circuitry adversely affected by removal of electric power therefrom, a housing, separate first and second electric power sources each adapted to be connected in said housing and selectively removable therefrom, means for coupling electric power from said first and second electric power sources, respectively, to said electrical circuitry, selectively removable means for holding said first and second electric power sources, respectively, in said housing, and means carried in said housing and coacting between said respective first and second electric power source holding means for lockingly engaging said second power source holding means to restrain removal of said second electric power source from the housing when the first electric power source is removed from said housing.

4,214,173
SYNCHRONOUS BINARY COUNTER UTILIZING A PIPELINE TOGGLE SIGNAL PROPAGATION TECHNIQUE

Jay Popper, New York, N.Y., assignor to Standard Microsystems Corp., Hauppauge, N.Y.

Filed Mar. 3, 1978, Ser. No. 883,285
Int. Cl.[2] H03K *21/34, 23/30*
U.S. Cl. 307—224 C **3 Claims**

1. A synchronous, high speed binary counter, comprising a plurality of counter stages, each counter stage having a first output state and a second output state, each counter stage experiencing a state change in response to a toggle signal applied thereto and subject to transient toggle signals when a change of state signal is not applied thereto, means for applying the toggle signal to one of the counter stages, a first MOS device connected between successive ones of the counter stages, said device being responsive to the first state of the preceding counter stage for transferring the toggle signal applied to the preceding counter stage to the next succeeding counter stage and responsive to the second state of the preceding counter stage for blocking the transfer of the toggle signal, a second MOS device connected between the output of said first MOS device and ground and responsive to a non-toggle

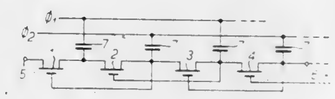


clock signal applied thereto for grounding any transient toggle signals to the counter stages, and a third MOS device also connected between the output of said first MOS device and ground and responsive to the second state of the preceding counter stage for grounding the toggle signal input to the next succeeding counter stage when said first MOS device is to be in said blocking condition.

4,214,174
VOLTAGE MULTIPLIER EMPLOYING CLOCK GATED TRANSISTOR CHAIN

John F. Dickson, Long Buckby, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Mar. 22, 1978, Ser. No. 888,990
Claims priority, application United Kingdom, Mar. 25, 1977, 12716/77
Int. Cl.[2] G11C *11/40;* **H03K** *7/02*
U.S. Cl. 307—229 **8 Claims**



1. A voltage multiplier circuit arrangement, comprising a plurality of transistors having respective main electrodes cascade connected in a series, each transistor having a control electrode connected to a respective junction formed by the main electrodes of two further transistors in said series, said two further transistors being connected adjacent to and toward the output side of said each transistor, said arrangement further comprising first and second input lines arranged to have an alternating voltage applied between them, capacitor means for connecting each said junction to one of the first and second input lines, junctions which are immediately adjacent to one another in the series being respectively connected to different ones of the first and second input lines.

4,214,175
HIGH-PERFORMANCE ADDRESS BUFFER FOR RANDOM-ACCESS MEMORY

John Y. Chan, Belmont, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sep. 22, 1978, Ser. No. 944,687
Int. Cl.[2] H03K *5/02, 3/353;* **G11C** *7/06, 8/00*
U.S. Cl. 307—264 **5 Claims**

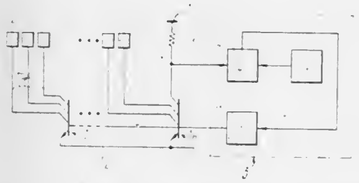
1. A buffer circuit apparatus having a high-low state input and a pair of high-low state outputs, comprising:

means for initially providing that both outputs are in their low states;
means for sampling the input to determine the state of said input;
first output determining means for providing that subsequent to said input being sampled as of one state, one of the outputs is driven to its high state after a substantially



certain period of time subsequent to said sampling, with the other output remaining in its low state; and
second output determining means for providing that subsequent to said input being sampled as of the other state, the other output is driving to its high state in a period of time less than said substantially certain period of time, with the one output being held in its low state upon the other output being driven to its high state.

4,214,176
STABILIZED CURRENT SOURCES NETWORK
Jury K. Kushner, ulitsa Khersonskaya, 25, Kv. 62, Moscow, U.S.S.R.
Filed Sep. 22, 1978, Ser. No. 944,984
Int. Cl.² H03J *1/12*
U.S. Cl. 307—297 **2 Claims**



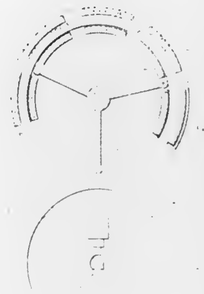
1. A stabilized current sources network for feeding electronic elements comprising:
n multiple collector transistors each having m collectors;
a load resistor; a first lead and a second lead of said load resistor;
a stabilization unit means for comparing any voltage on said load resistor with a reference voltage and for amplifying the difference signal between said voltages, said stabilizing unit means having an input and an output;
a first common bus;
a second common bus;
said m collectors of each of said multiple collector transistors, coupled to said electronic elements;
said emitters of said multiple collector transistors, coupled to said second common bus;
one of said m collectors of any one of said n multiple collector transistors, coupled to one of said leads of said load resistor;
said second lead of said load resistor coupled to said first common bus;
said input of said stabilization unit means coupled to said first lead of said load resistor;
said output of said stabilization unit means coupled to bases of said n multiple collector transistors.

4,214,177
MONITORING CIRCUIT
Werner Raggenbass, Schwerzenbach, and Kurt Zwar, Brugg, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland
Filed Feb. 16, 1978, Ser. No. 878,479
Claims priority, application Switzerland, Mar. 4, 1977, 2700/77
Int. Cl.² H03K *5/18*
U.S. Cl. 307—355 **14 Claims**



1. A monitoring circuit for detecting the simultaneous deviation of m out of n a.c. input signals from a predetermined set of signal characteristics, wherein n and m are integers and n is greater than m, said circuit comprising:
(A) n functional units, each of said functional units including an a.c. input, at least one d.c. input, an a.c. output and a d.c. output;
(B) means for connecting a different one of said n a.c. input signals to said a.c. input of each of said functional units such that each of said functional units is associated with a different one of said a.c. signals; and
(C) logic circuit means connected to said functional units for generating:
(1) a d.c. output signal at least whenever m out of n input signals have maxima and minima which both lie above or both lie below a predetermined signal range corresponding to at least one of said predetermined set of signal characteristics; and
(2) an a.c. output signal whenever all of said n input signals have maxima and minima which respectively lie above and below said predetermined signal range.

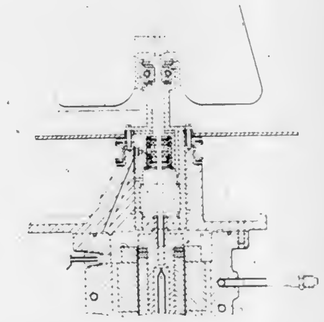
4,214,178
ROTATING ELECTROMAGNETIC SOLENOID MOTOR
Richard E. Tippner, 2050 NE. 39th St., Apt. 109 South, Lighthouse Point, Fla. 33069
Continuation of Ser. No. 574,751, May 5, 1975, abandoned, Continuation-in-part of Ser. No. 278,721, Aug. 8, 1972, abandoned. This application Nov. 2, 1978, Ser. No. 956,601
Int. Cl.² H02K *37/00*
U.S. Cl. 310—14 **6 Claims**



1. An electric motor unit comprising:
(a) A frame;
(b) a plurality of at least five electro-magnetic solenoids of equal axial length spaced apart on the frame in a circular pattern and including a core passageway, said solenoids being grouped together in an array with uniform separations in the array which are smaller than the length of the solenoid, the portion unoccupied by solenoids being substantially greater than the length of a solenoid;
(c) a rotatable circular armature coupled to the frame and having a plurality in excess of the number of solenoids of spaced, magnetizable elements separated by non-magnetizable elements, said elements being arranged to pass through said core passageway;
(d) means for electrically energizing said solenoids one at a time and in sequence so that during one revolution each solenoid is energized the same number of times as there are magnetic segments in the armature;
(e) an output shaft coupled to said armature; each of said magnetizable elements being equal in length to said solenoid axial length; said energizing means being so arranged that a solenoid is energized when the magnetizable element is two-thirds into the solenoid and after said magnetic element has been pulled in the remaining one-third, said solenoid is de-energized and the next adjacent solenoid is energized.

4,214,179
ROTOR IMBALANCE DETECTOR FOR A CENTRIFUGE
Kenneth E. Jacobson, Fremont, and William S. Gutierrez, San Francisco, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Mar. 15, 1979, Ser. No. 20,894
Int. Cl.² H02K *11/00;* **B04B** *9/02;* **H01H** *35/02*
U.S. Cl. 310—68 B **5 Claims**

1. A centrifuge having a rotor chamber and a motor mounted beneath the chamber; a drive spindle assembly extending from the motor to the rotor chamber; a drive spindle mounted in the drive spindle assembly extending into the chamber, the drive spindle being electrically connected to ground; a rotor adapted to be mounted on the drive spindle; and an improved rotor imbalance detector comprising:
a rotatable electrically conducting ring supported in the drive spindle assembly, surrounding and concentric with the drive spindle but spaced therefrom a predetermined amount so that the conducting ring is only contacted by the spindle when the spindle becomes imbalanced to a predetermined extent, the conducting ring being so constructed and arranged as to rotate when contacted with the imbalanced spindle;
insulating support means in the drive spindle assembly supporting the conducting ring in a spaced relation with the spindle, insulating the conducting ring from contact with



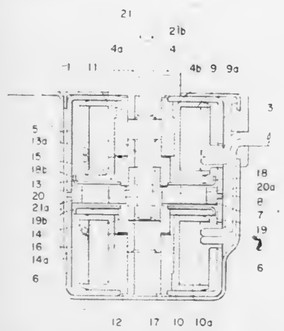
the spindle assembly, and yet permitting rotational movement of the conducting ring with respect to the insulating support means;
means for de-energizing the power supplied to the motor; and
a conductive lead, having a portion thereof in electrical contact with the conducting ring, for grounding an electrical signal from the de-energizing means when an imbalanced rotor causes the electrically grounded spindle to move out of its normal axis of rotation and contact the conducting ring, the lead being in sliding contact with the conducting ring so that the lead remains in continuous contact with the conducting ring.

4,214,180
MINIATURE ELECTRIC MOTOR EMPLOYING A CONVERSION MECHANISM FOR LINEAR MOVEMENT
Tomohisa Kuwako, Anjo; Takashi Ozaki, and Yoshitaka Iwase, both of Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
Filed Mar. 23, 1978, Ser. No. 889,449
Int. Cl.² H02K *7/00*
U.S. Cl. 310—80 **5 Claims**

1. A miniature electric motor with a mechanism for converting rotational motion into linear motion, comprising:
(a) a housing having a first and a second section;
(b) a shaft movably supported in said housing for movement only axially thereof;
(c) motor members which are annular flat bodies supported within said housing in coaxial relation to said shaft;
(d) an annular permanent magnet stator stationarily supported within said housing in coaxial relation to said shaft and magnetized for providing alternating north and south poles at equal angular spacings therearound;
(e) annular exciting coil members supported within said housing in coaxial relation to said annular flat body rotor members;
(f) yoke members made of magnetic material, said yoke members being positioned relative to said annular exciting coil members, said stator, and said annular flat body rotor members so that a magnetic flux generated by said annular

exciting coil members when said annular exciting coil members are energized, forms a magnetic loop with said pole means for rotating said rotor in a predetermined direction about said shaft;

(g) motion translating means located within said housing and interposed between said shaft and said rotor for transmitting said rotational motion of said annular flat body rotor members to said shaft to cause said shaft to undergo motion in a linear direction which is parallel to the longitudinal axis of said shaft, said motion translating means further comprising, said shaft having an helically threaded portion and an unthreaded portion, rotor boss members attached at each end thereto and having their interior helically threaded to engage said helically threaded portion of



said shaft for causing said shaft to undergo said linear motion upon movement of said annular flat body rotor members;

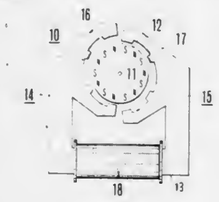
(h) linear motion means located at said first section of said housing for engaging with said unthreaded portion of said shaft for causing said shaft to move only axially in relation to said housing; and

(i) a friction preventing sleeve member separate from said motion translating means and located in said second section of said housing and lining a space in said second section of said housing into which said shaft is displaced upon movement in one direction of said annular flat body rotor means for reducing wear due to friction upon contact of said shaft with said friction preventing sleeve member.

4,214,181
SELF-STARTING MINIATURE SYNCHRONOUS MOTORS

Yukihiro Nagahori, Kawasaki, Japan, assignor to Jeco Co., Ltd., Kawasaki, Japan

Filed Aug. 8, 1977, Ser. No. 822,687
Int. Cl.² H02K *21/00*
U.S. Cl. 310—162 **6 Claims**

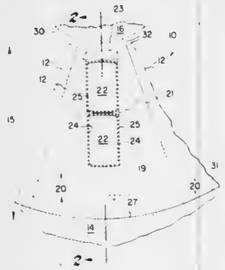


1. A self-starting miniature synchronous motor comprising a rotor provided with a plurality of equally spaced poles of alternate polarities; the number of the pole pairs n being equal to or larger than 5, where n represents an odd integer, a pair of first and second stators having opposed semicircular portions each of the same diameter and both stator diameters being greater than the diameter of the rotor and arranged to surround the rotor; a single exciting coil for exciting said pair of stators; the centers of the semicircular portions of said pair of stators being located at points displaced from the axis of rotation of said rotor such that said semicircular portions will be point symmetrical with respect to the axis of rotation of the rotor, the semicircular portions of the first and second stators being respectively formed with main pole pieces at the adjacent portions thereof, notches at other portions, and interpole pieces adjacent the main pole pieces which are located closest to said rotor, the radial spacing of said interpole pieces from said rotor being greater than the spacing of said main pole pieces located closest to said rotor and less than the spacing of the other main pole pieces from said rotor such that a large torque is applied to the rotor irrespective of the angular position thereof thus positively self-starting the rotor without a dead center condition.

4,214,182
SUPPORT STRUCTURE FOR ARMATURE CONDUCTORS

Thomas A. Keim, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 20, 1978, Ser. No. 917,170
Int. Cl.² H02K *1/00*
U.S. Cl. 310—216 **16 Claims**



1. In an electrodynamic machine having an annular cylindrical ferromagnetic stator core and a cylindrical rotor rotatably mounted coaxially therewith and separated therefrom by an annular cylindrical air gap, the improvement comprising:

a plurality of insulated longitudinally-extending armature conductors uniformly spaced circumferentially within said air gap;

a plurality of electrically nonconducting means for supporting said armature conductors at spaced locations therealong relative to said stator core, each of said supporting means comprising a plurality of generally coplanar wedge-shaped composite members;

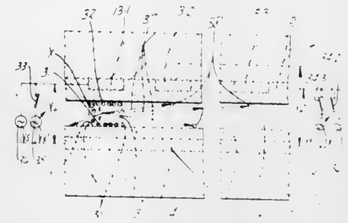
each of said members comprising a stack of spaced mounting teeth and spacer members interleaved therewith, each said stack having a slot therethrough for insertion of the conductors being supported, said mounting teeth and said spacer members being bonded to said conductors;

said spacer members each having a discontinuity generally transverse to a radius passing through said conductors defining a hole between adjacent mounting teeth, the mounting tooth area axially adjacent each said discontinuity, respectively defining a boundary of each hole, respectively providing a spring section in each of said teeth, respectively to allow axial expansion of said conductors without relative slipping between said mounting teeth and said conductors.

4,214,183
MULTIPLE GASEOUS DISCHARGE DISPLAY/MEMORY PANEL HAVING IMPROVED VOLTAGE CHARACTERISTICS

Roger E. Ernsthausen, Luckey, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 293,817, Oct. 2, 1972, Pat. No. 4,114,064, which is a continuation-in-part of Ser. No. 60,376, Aug. 3, 1970, abandoned. This application Apr. 25, 1978, Ser. No. 900,033
Int. Cl.² H01J *1/90, 61/30, 61/35*
U.S. Cl. 313—221 **3 Claims**

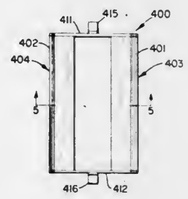


1. As an article of manufacture, a dielectric charge storage body for a multiple gas discharge device, said dielectric body being selectively enriched with at least one element selected from the group consisting of ribidium and francium, in an amount sufficient to provide gas discharge device operating voltages which are substantially uniform and which do not significantly change with time after a period of aging and said body having a gas contacting charge storage side surface and an electrode contacting side surface.

4,214,184
GETTER COMPRISING U-SHAPED, PARALLEL, LINEAR CHANNELS CONTAINING GETTER MATERIAL

Paolo D. Porta, and Elio Rabusin, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Continuation of Ser. No. 774,426, Mar. 4, 1977, Pat. No. 4,134,041. This application Jun. 16, 1978, Ser. No. 916,213
Claims priority, application Italy, May 12, 1976, 23184 A/76
Int. Cl.² H01J *29/84, 31/00*
U.S. Cl. 313—481 **3 Claims**



1. A color television picture tube comprising:

(I)

(A) a glass cone portion;

(B) a glass window portion;

(C) a metal screening cone located within the volume defined by the glass cone portion and the glass screen portion, at least a major part of the metal screening cone being distanced away from the glass cone portion; and

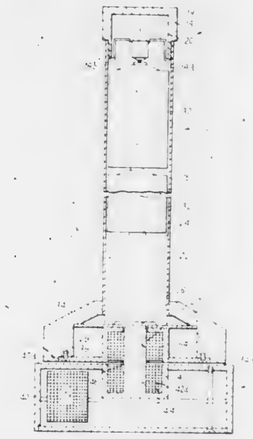
(D) an evaporable getter device comprising two parallel linear channel holders having U-shaped cross-sections, each containing a source of evaporable getter material, each linear holder having an inner facing wall, two side walls and two end walls, the outer portion forming the opening of the cross-sectional U-shape, linear holders being joined to each other by metal strips connecting the ends of each of the linear holders to form a closed loop substantially lying in a single plane, such that the openings of the linear holders are facing substantially outwards and away from each other, said metal connecting strips further comprising support legs for mounting the getter device;

(II) with the provisos that (a) the evaporable getter device is mounted on the metal screening cone by means of the support legs at a point between the metal screening cone and the glass cone portion, and (b) the evaporable getter device is oriented in such a way as to evaporate the getter material in a direction substantially parallel to a line formed by the nearest intersection of the glass cone portion and the glass window portion.

4,214,185
LIGHT SOURCES

Alan G. Breeze, 76 Greenfields Ave., Alton, Hampshire, England

Filed Oct. 10, 1978, Ser. No. 949,497
Int. Cl.² H05B *37/00*
U.S. Cl. 315—86 **11 Claims**



1. A light source comprising a lamp bulb, an electrical power source for illuminating the lamp bulb, a housing for containing said lamp bulb and said power source, a surface for supporting said housing, switch means for selectively coupling the power source to said bulb, control means for controlling said switch means, said control means being coupled to and operated by an a.c. supply such that when said housing is mounted on the supporting surface and the a.c. supply is maintained, said power source is disconnected from the bulb, and when the a.c. supply is interrupted, said power source is connected to illuminate the bulb, means for securing said housing on said supporting surface, the securing means comprising transformer means having a magnetically attractable component and a magnetically attracting component, one of the components mounted on said supporting surface and the other of said components mounted in said housing, means coupling the a.c. supply to said transformer means to produce magnetic forces between said components, such magnetic forces being sufficient to secure said housing on said supporting surface but allowing manual separation of said housing from said supporting surface whether the a.c. supply is maintained or interrupted.

4,214,186

CIRCUIT FOR TRANSISTOR BALLASTS FOR THE GENTLE IGNITION OF FLUORESCENT LAMPS

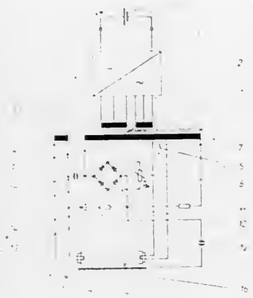
Peter K. Kreutzer, Bettengasse 20, D-7750 Konstanz, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 965,193

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808261

Int. Cl.² H05B *41/14, 41/26*

U.S. Cl. 315—102 **7 Claims**



1. A ballast circuit for a pre-heat type fluorescent lamp comprising a voltage source means including a transformer,

said transformer having a primary winding, a secondary operating winding, an auxiliary ignition winding and at least one filament heating winding,

rectifier means,

ballast resistor means connected to the D.C. output terminals of said rectifier means, one end of said operating winding connected to an A.C. input terminal of said rectifier means,

impedance means connecting one end of said ignition winding to the other A.C. input terminal of the rectifier means,

and capacitor means connected from said other A.C. input terminal to said lamp to provide the voltage from the ignition winding thereto after a predetermined time as determined by said ballast resistor means.

4,214,187

ION SOURCE PRODUCING A DENSE FLUX OF LOW ENERGY IONS

Georges Mourier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 30, 1979, Ser. No. 7,895

Claims priority, application France, Feb. 3, 1978, 78 03098

Int. Cl.² H01J *27/00*

U.S. Cl. 315—111.8 **6 Claims**

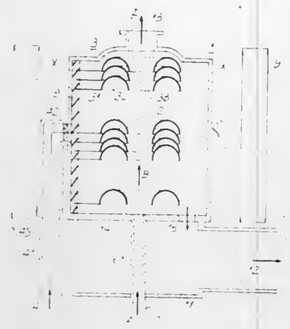
1. An ion source producing a dense flux of low energy ions, comprising:

a vacuum enclosure,

a microwave circuit placed in said vacuum enclosure, in which an electromagnetic wave is able to propagate along a direction ZZ, comprising generally ring-shaped conducting elements which are arranged periodically so as to be roughly centred on said direction ZZ,

inlet means for a neutral gas at one end of said microwave circuit, said gas being at least partially ionized in the centre part on the rings by means of the energy given to it by said electromagnetic wave, thus forming a plasma,

means for guiding said plasma along the direction ZZ,



means for pumping remaining unionized atoms in a direction normal to ZZ along said microwave circuit.

4,214,188

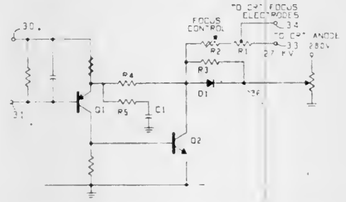
DYNAMIC FOCUS FOR A CATHODE RAY TUBE

Michael P. Bafaro, Park Ridge, and James J. Parker, Elmhurst, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 22, 1978, Ser. No. 908,297

Int. Cl.² H01J *29/58*

U.S. Cl. 315—382 **7 Claims**



1. In a cathode ray tube device for displaying information by means of a raster:

a cathode ray tube having an anode and a focus electrode;

an input source of AC voltage having variations of substantially parabolic waveform at both horizontal and vertical rates;

a source of high voltage DC coupled to the anode;

transistor means for amplifying said input AC voltage and coupled to ground and to the ac input source; and

resistive means including first and second elements, the first element coupled between the source of high voltage and the focus electrode, the second element coupled between the focus electrode and the transistor means, the first element having a resistance substantially greater than that of the second element.

4,214,189

REGULATED DEFLECTION CIRCUIT

Walter Böhringer, Schlieren, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,174

Claims priority, application United Kingdom, Jan. 23, 1978, 2658/78

Int. Cl.² H01J *29/70, 29/76*

U.S. Cl. 315—408 **7 Claims**

1. A regulated deflection circuit, comprising:

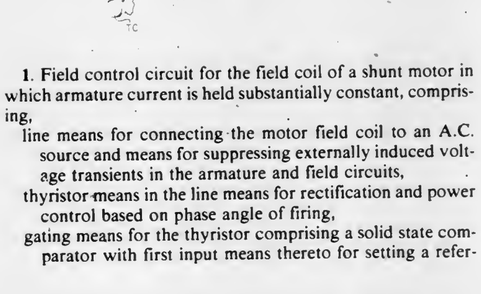
a deflection circuit including at least a first deflection switch for generating first and second intervals within each deflection cycle;

a source of operating voltage;

an input transformer including first and second windings magnetically loosely coupled to each other, for providing a substantial leakage inductance to the flow of current in said transformer;

bidirectional switching means series coupled with said first winding and said source of operating voltage for controlling the flow of current in said first winding;

second switching means coupled to said secondary winding and said first deflection switch, the polarities of said first



and second windings and of said second switching means such as to provide substantially simultaneous conduction of said bidirectional and second switching means;

control means coupled to said bidirectional switching means and responsive to an energy level of said deflection circuit for switching said bidirectional switching means into conduction at a variable instant within one of said first and second intervals for providing regulation;

a resonant circuit coupled to said bidirectional switching means for coupling a substantially complete cycle of resonant current through said bidirectional switching means for commutating off said bidirectional switching means.

4,214,190

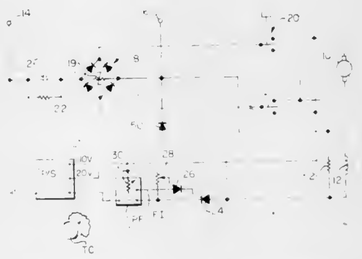
TENSION CONTROLLING

Allen E. Ottoson, Westboro, Mass., assignor to Vee Arc Corporation, Westboro, Mass.

Filed Jan. 19, 1978, Ser. No. 870,630

Int. Cl.² H02P *3/14*

U.S. Cl. 318—356 **1 Claim**



1. Field control circuit for the field coil of a shunt motor in which armature current is held substantially constant, comprising,

line means for connecting the motor field coil to an A.C. source and means for suppressing externally induced voltage transients in the armature and field circuits,

thyristor means in the line means for rectification and power control based on phase angle of firing,

gating means for the thyristor comprising a solid state comparator with first input means thereto for setting a reference level and second input means thereto providing a ramp form current input rising up to and above said reference level to produce a gating pulse, means for adjusting the ramp slope to control time of input rise to the reference level, means for protecting the comparator from heat produced within the circuit,

means for adjusting the reference level to compensate the tolerances of the adjusting and second input means so that the ramp adjusting means from control circuit to control circuit are equally calibrated despite such tolerances to provide uniform control,

and wherein said solid state comparator comprises a programmable unijunction transistor (P.U.T.), said second input means comprise a capacitor and charging circuit therefor connected to said P.U.T. anode providing said ramp for a current input to the anode of the transistor by discharge of the capacitor, said reference level means comprising a variable voltage source connected to the gate of the P.U.T.

4,214,191

SYSTEM FOR AUTOMATIC MANAGEMENT OF TOOL LIFE

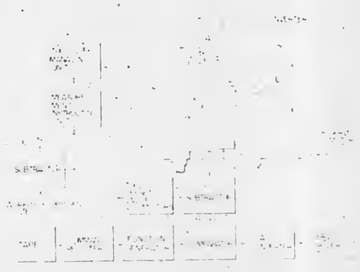
Toshiaki Watanabe, and Hideo Yuhara, both of Kasugai, Japan, assignors to Okuma Machinery Works Ltd., Nagoya, Japan

Filed Sep. 21, 1977, Ser. No. 835,362

Claims priority, application Japan, Sep. 29, 1976, 51/117433

Int. Cl.² G05B *13/00*

U.S. Cl. 318—561 **4 Claims**



1. An automatic management system for tool life in a numerical machine tool including a tool post, a turret head journaled in said tool post for carrying a plurality of equally circumferentially spaced cutting tools of the same shape having their cutting edges disposed on the same circumference, a chuck releasably grasping a workpiece, a measuring unit responsive to a measurement instructing signal for automatically measuring the radial dimension of the workpiece grasped by said chuck, and means for turning said turret head, said system comprising:

subtracting means for subtracting a signal representing the reference radial dimension of said workpiece from a signal representing the radial dimensions of said workpiece measured by said measuring unit thereby providing an output representing the amount of tool offset;

tool life managing means for removing a radial deviation component due to heat from the amount of tool offset provided by the output of said subtracting means thereby accumulating solely a tool wear component, said tool life managing means actuating the turret head turning means to exchange a fresh one for a used one of said cutting tools when the accumulated value attains a preset value; and

measurement instructing means for applying the measurement instructing signal to said measuring unit at the time determined by the output of said subtracting means.

4,214,192

PATH CONTROL APPARATUS FOR THE COMPUTER DIRECTED CONTROL OF A NUMERICALLY CONTROLLED MACHINE TOOL

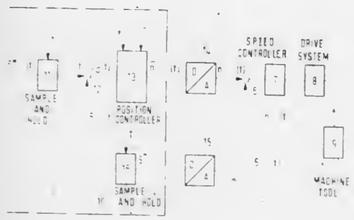
Günter Brömer, Erlangen-Spardorf; Horst Gose; Klaus-Rüdiger Hoffmann, both of Erlangen, and Christian Seeliger, Grossenseebach b. Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,423

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1976, 2659090

Int. Cl.² G05B *19/24*

U.S. Cl. 318—573 **1 Claim**



1. In a path control apparatus for the computer directed control of a numerically controlled machine tool with controlled drives in the feed axes, wherein the computer determines the trajectory to be run from input data, the improvement comprising:

(a) the computer including means for interpolating which resolve the determined three dimensional trajectory by way of interpolation completely into axial, velocity proportional feed increments and forms digital position reference values,

(b) the computer including an additional input unit for digital actual position values of the feed axis drives, and

(c) the computer including means for discrete position control for each controlled feed axis drive which compare the digital position reference values with the digital actual position values and from reference values for the speed control loop of the respective feed axis drive comprising:

(1) a first difference forming and sampling means for converting a digital position reference value ($S_{soll}(t)$) into a discrete position reference value differences ($\Delta S_{soll}(\nu T)$), and a second difference forming and sampling means for converting an actual digital value ($S_{ist}(t)$) into a discrete actual value position difference ($\Delta S_{ist}(\nu T)$),

(2) comparison means having as inputs the discrete position reference value difference ($\Delta S_{soll}(\nu T)$) and the discrete actual position value difference ($\Delta S_{ist}(\nu T)$) and forming a discrete trailing distance difference ($\Delta S_d(\nu T)$),

(3) summing means having as an input the discrete trailing distance difference ($\Delta S_d(\nu T)$) and forming a discrete trailing distance ($S_d(\nu T)$),

(4) position controlling means having as an input the trailing distance ($S_d(\nu T)$) for forming a discrete speed reference value ($n_{soll}(\nu T)$), and

(5) zero-order holding means having as an input the discrete speed reference value ($n_{soll}(\nu T)$) for forming a discrete, stored speed reference value ($n_{\overline{soll}}(t)$) for delivery to the speed control loop of the respective feed axis drive; and

(d) means for synchronously operating said means for discrete position control.

4,214,193

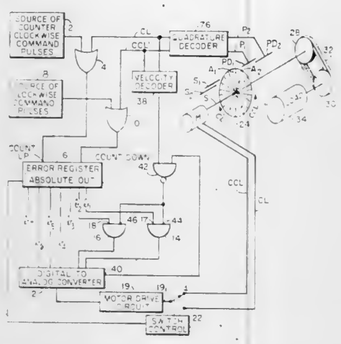
DIGITAL SERVO ANTI-HUNT CIRCUIT

Martin K. Mason, West Newbury, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 10, 1978, Ser. No. 949,486

Int. Cl.² G05B *5/01*

U.S. Cl. 318—611 **1 Claim**



1. A digital servo system for controlling the rotation of a motor through a predetermined number of angular increments in response to a series of command pulses, comprising

means for counting a series of command pulses,

a motor,

means for producing a number of position pulses proportional to the number of angular increments through which said motor has rotated,

means for deriving a digital signal representing the difference between the number of command pulses and the number of position pulses,

means responsive to said digital signal for applying control voltage to said motor,

means for providing a first signal when said motor is at rest,

means for providing a second signal when said digital signal representation is zero, and

means for preventing at least one of the least significant bits of said digital representation from reaching the means responsive to the digital representation for applying a control voltage to said motor when said first signal indicates the motor is essentially at rest and the second signal indicates that the digital signal represents a zero count.

4,214,194

TIMING CIRCUITRY AND METHOD FOR A STEPPING MOTOR

Thomas Horning, San Fernando, Calif., assignor to Data Products Corporation, Woodland Hills, Calif.

Filed Dec. 2, 1977, Ser. No. 856,649

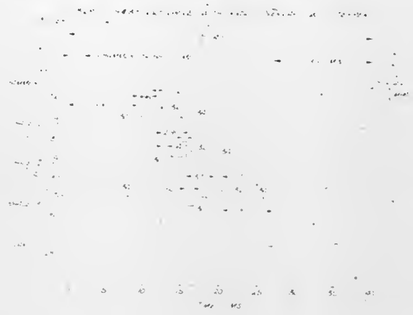
Int. Cl.² H02K *37/00*

U.S. Cl. 318—696 **11 Claims**

1. An improvement in a method for driving and stopping a stepping motor capable of executing repetitive angular steps on a motor shaft and having a plurality of stator and rotor poles, said stator poles being grouped into a multiple of phased sets, said phased sets of stator poles being sequentially individually activated so that the rotor poles assume a plurality of equilibrium configurations wherein each stator pole of the activated one of said phased sets of stator poles is aligned with a rotor pole, said improvement comprising the steps of:

repetitively simultaneously activating, alternately with said sequential individual activation, at least two of said multiple of phased sets of stator poles to create a plurality of quasi-equilibrium configurations with respect to the relative position of said stator poles and rotor poles wherein none of the stator poles are aligned with a rotor pole and wherein each quasi-equilibrium configuration is positionally distinguishable from each of said plurality of equilibrium configurations, whereby said motor runs in a smooth and uniform manner; and

stopping said motor at a predetermined shaft position by initially activating said stator poles to step said shaft toward said predetermined shaft position, momentarily



activating at least two of said phased sets of stator poles to retard the rotation of the shaft by urging the shaft in a reverse direction toward a quasi-equilibrium configuration, and finally again activating said stator poles to complete the step to said predetermined position, whereby said motor will stop in a smooth, nonoscillatory manner.

4,214,195

MOTOR CONTROL CIRCUITS

Robert J. Logan, Sheffield, England, assignor to Inductive Controls Limited, Sheffield, England

Filed Mar. 20, 1978, Ser. No. 888,300

Claims priority, application United Kingdom, Mar. 22, 1977, 12132/77

Int. Cl.² H02P *7/64*

U.S. Cl. 318—745 **6 Claims**



1. A squirrel cage motor control circuit for controlling the direction of rotation of a motor having first, second and third stator windings to be fed from a three-phase supply, and having a squirrel cage rotor, said circuit comprising first, second and third saturable reactors having respective main windings to be connected, respectively, between first, second and third phases of the supply and said first, second and third stator windings; a fourth saturable reactor having a main winding to be connected between said second supply phase and said third stator winding; a fifth saturable reactor having a main winding to be connected between said third supply phase and said second stator winding; each said saturable reactor having respective excitation winding means, and each of said second and third saturable reactors having a magnetisation curve relating magnetising force and applied voltage which exhibits a knee point for zero current in the respective excitation winding means and for substantially the phase voltage applied across the main winding; the circuit further comprising means to supply direct current selectively to the excitation winding means to cause at least near saturation of the cores of said first, second and third reactors to run the motor in one direction in a high torque condition, whilst said fourth and fifth reactors are in an unexcited/high impedance state; and to limit excitation of said first, fourth and fifth reactors to only partial excitation for running the motor in the reverse direction in a lower torque condition, whilst said second and third reactors are in an unexcited state and a magnetising current flows therethrough greater than that required for operation at said knee point but not greater than the full load design current of said main windings of said second and third reactors.

4,214,196

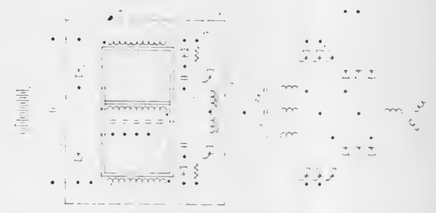
ENERGY CONTROLLER FOR CONVERSION FROM A DIRECT CURRENT SOURCE TO A VARIABLE FREQUENCY LOAD

Jay Boyce, Anaheim, Calif., assignor to Jay Boyce & Associates, Anaheim, Calif.

Filed Aug. 14, 1978, Ser. No. 933,656

Int. Cl.² H02P *7/42, 7/64*

U.S. Cl. 318—811 **12 Claims**



1. A turn-off circuit for a multiphase motor comprising a DC powered three element core transformer including:

i. a central core element having a winding thereon;

ii. outer core elements bearing loosely coupled positive and negative windings, thereby reducing rf transients, the central and outer windings being closely coupled, thereby enhancing pulse generation;

iii. a plurality of parallel connected capacitors coupled to the central winding to fire simultaneously and thereby provide uniform and suitably shaped trapezoidal turn off pulses; and,

iv. positively and negatively biased turn off SCRs to sequentially fire and admit the turn off pulses to the central winding for switching DC power from the motor.

4,214,197

BATTERY CHARGER FOR A PORTABLE RADIO

Friedrich H. Mann, and Paul F. Sensabaugh, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Dec. 26, 1978, Ser. No. 973,646

Int. Cl.² H01M *10/46;* **H02J** *7/00;* **H01R** *13/54*

U.S. Cl. 320—2 **14 Claims**

1. A battery charger for portable radios of variable lengths having a battery pack and a plurality of charging terminals on the outer surface of said battery pack comprising, in combination, a housing having a central recess for slidably accommodating a portable radio, stop means on said housing engagable with a radio inserted in said recess for positioning said portable radio at a fixed axial position within said recess, a plurality of sets of charging contacts arranged in axially spaced relationship on the inner wall of said central recess for circuit making engagement with said charging terminals on said battery pack, one of said sets of charging contacts being arranged for circuit making engagement with the charging terminals on the battery

pack of a portable radio of one selected length and another set of charging contacts being arranged for said circuit making



engagement with the charging terminals on the battery pack on the radio of another selected length.

4,214,198

ELECTRICAL POWER UNIT

Franklin R. Schneider, Seattle, Wash., assignor to Dynamote Corporation, Seattle, Wash.

Filed Sep. 1, 1977, Ser. No. 829,955
Int. Cl.[2] H02J *7/14*
U.S. Cl. 320—15 **21 Claims**



1. An electrical power unit for increasing the DC power output of an electrical generating system on an engine driven vehicle, the said system being of the type including a first DC storage battery having a characteristic voltage; a dynamo driven by said vehicle engine and having a field winding terminal, a plurality of AC voltage output terminal means having a regulated and substantially constant amplitude AC output voltage thereon, and a DC output terminal isolated from said electrical generating system and which under normal use delivers low voltage DC power to said electrical generating system; and voltage regulator means having input means connected to said DC storage battery and a field output terminal connected to said field winding terminal of said dynamo controlling the field in said dynamo in response to variations in voltage at said DC output terminal; the said power unit comprising:

(a) step down transformer means connected to said plurality of AC voltage output terminal means for producing a first lower AC voltage; and

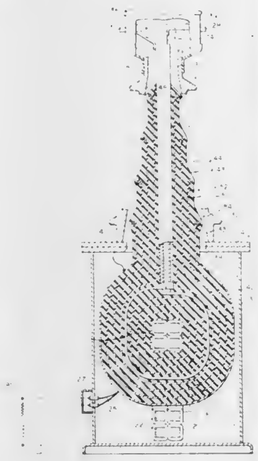
(b) means for rectifying said first lower AC voltage to produce a first DC voltage at a first rectifier output terminal having increased power capability in proportion to the turns ratio of said step down transformer means; wherein said input means on said voltage regulator means is connected to said first rectifier output terminal and said voltage regulator means is responsive to variations in said first DC voltage to maintain said first DC voltage at a relatively constant, desired and nonvariable level, and wherein said first rectifier output terminal is connected to said first battery to maintain the charge thereof and to supply power to any electrical load applied to said first battery.

4,214,199

CURRENT TRANSFORMER

Edmond E. Conner, Brookfield, Ohio, and Edward C. Wentz, Hickory, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1978, Ser. No. 881,475
Int. Cl.[2] G05F *3/00*
U.S. Cl. 323—6 **6 Claims**



1. A current transformer for monitoring the current flowing in an electrical circuit of an electrical power transmission and distribution system, comprising:

a magnetic core;

first and second windings disposed in inductive relation with said magnetic core;

said first winding being adapted to be energized by the current flowing in the electrical circuit of the electrical power transmission and distribution system,

said second winding having a plurality of conductor turns,

an inductance element including a winding having terminals, with the terminals being directly connected to said second winding to connect the winding of said inductance element across at least certain of the conductor turns of said second winding,

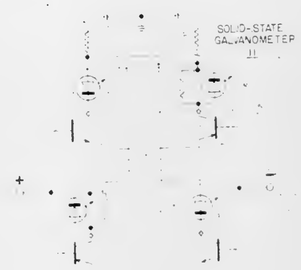
said inductance element having a substantially linear voltage versus excitation current characteristic, and an inductance which is less than the inductance of said second winding, to increase the total excitation current required to magnetize said magnetic core and reduce the residual flux in said magnetic core when the magnetic field intensity is reduced to zero.

4,214,200

LIGHT-EMISSIVE ELECTRICAL MEASUREMENT APPARATUS WITH FLOATING INPUTS

James F. Hollander, 3000 Douglas Ave., No. 13, Des Moines, Iowa 50310

Filed Nov. 1, 1978, Ser. No. 956,669
Int. Cl.[2] G01R *19/00, 19/16*
U.S. Cl. 324—122 **5 Claims**



1. Electrical measurement apparatus comprising

a plurality of means for emitting light in response to a first electrical current, each said light-emitting means having a different turn-on threshold to said first current, each said light-emitting means having two terminals for entry and exit respectively of said first current;

meter scale means for displaying a plurality of magnitudes of a same sign to be measured, said light-emitting means being physically arranged relative to said meter scale means in order of increasing current threshold so as to correspond to said magnitudes of said meter scale means;

means for providing an electrical current to be measured;

means for supplying said first electrical current for said light-emitting means; and

means for controlling said first current in response to said measurement current comprising first and second semiconductively-complementary active semiconductor means each having first and second output-control conductors and an input-sensing conductor, said first output-control conductor of said first semiconductor means being electrically connected to said first output-control conductor of said second semiconductor means, said second output-control conductors of said first and second semiconductor means being two output terminals for said control means, said input-sensing conductor of said first semiconductor means and said input-sensing conductor of said second semiconductor means being connected to said measurement current means so that said measurement current passes into one of said input-sensing conductors, thence to the first output-control conductor of the semiconductor means having said one said input-sensing conductor and to the first output-control conductor of the other semiconductor means and thence from the other said input-sensing conductor of said other semiconductor means to said measurement current providing means;

said light-emitting means terminals, said first current supply means and said first current control means output terminals being electrically connected in a single series configuration including said light-emitting means and said control means;

said plurality of light-emitting means being successively turned on with increasing measurement current magnitude, all said plurality of light-emitting means emitting light when said measurement current is present in an amount corresponding to the largest magnitude to be measured on said meter scale means.

4,214,201

INTEGRATED CIRCUIT TESTING PROBE

Walter P. Kern, Cohasset, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Feb. 24, 1978, Ser. No. 880,788
Int. Cl.[2] G01R *1/06*
U.S. Cl. 324—158 P **23 Claims**



1. In a probe for electrically contacting the lead of an IC with a plurality of contact tip portions spaced apart sufficiently to permit measurement of electrical activity in a lead element therebetween, that improvement comprising

a support having an axis, and

a plurality of contact elements carried by said support, each said element having an operating position,

at least one said element having a rest position with a portion of itself spaced from said support and being resiliently movable about said axis to an operating position against said support,

said elements in said operating positions having coplanar contact tip portions,

said one element having one leg extending generally along said axis and the other leg generally transverse to said axis and having said tip portion thereon, whereby said one leg acts as a torsion spring when said tip portion is moved between its rest and operating positions.

4,214,202

SLOW SQUARE WAVE MODULATED GYROMAGNETIC RESONANCE SPECTROMETER FOR AUTOMATIC ANALYSIS AND PROCESS CONTROL

Maurizio Bonori, Rome, Italy, assignor to Cafiero Franconi, Rome, Italy, a part interest

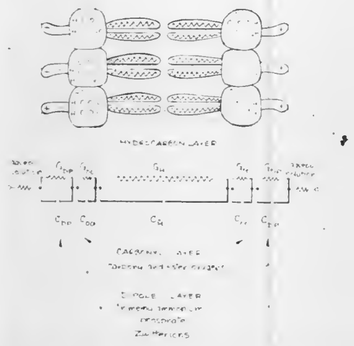
Filed Apr. 20, 1978, Ser. No. 898,296
Int. Cl.[2] G01R *33/08*
U.S. Cl. 324—313 **15 Claims**



1. A gyromagnetic resonance spectrometer for analyzing a sample containing gyromagnetic species, comprising: means for generating a vectorial uniform DC polarizing magnetic field of an intensity H_o which is sufficient to cause said gyromagnetic species to resonate; a probe for supporting the sample within said DC field and including a magnetic assembly with a magnetic structure having associated input and output circuit

means, coupled to RF transmitting means and RF receiving means, respectively, and said sample being located adjacent to said magnetic assembly, said transmitting means generating a signal at a frequency ω_o for exciting said sample through said magnetic assembly, with an RF magnetic field orthogonal to said DC field and of a power level set by said RF transmitter means, thereby generating a resonance signal which is coupled to said receiving means; magnetic field modulating means including coil means having windings with their axes dipsosed in predetermined orientation with respect to said DC field, and signal generating means connected to said windings for supplying to said windings a drive current which is at a frequency ω_o and which is switched between first and second intensity values thereby producing a square wave modulating magentic field which adds vectorially to said DC field, resulting in a square wave modulated vectorial magnetic field which is distributed over the sample volume, the extreme field intensity values of said modulated field on each of said species within said sample remaining substantially constant for a time corresponding to approximately the length of each half-period of said modulation frequency, one of said extreme intensity values of the field intensity corresponding to the peak value and the other to the valley value of said modulated field, said modulated field providing square wave periodical modulation of the intensity of the resonance curve of each gyromagnetic species within said sample, said frequency ω_m being substantially less than both the said frequency ω_o and the width of the resonance curve of said sample, said modulation of the resonance intensity reulsting in a switching of said resonance intensity between first and second different levels corresponding to the extreme distributions of said modulated field on said species with said sample, whereby the resultant resonance signal is constituted by a frequency modulation spectrum centered around ω_o and having sideband components separated by frequency ω_m, and having amplitudes proportional to the difference between said first and second resonance intensity levels; said receiving means comprising detecting means for detecting one or more signal components of said modulation spectrum of said resultant resonance signal, and signal processing means for processing the detecting signal components and providing an output indicative of the difference between said first and second resonance intensity levels.

suring the overall conductance and capacitance of the membrane at each of a plurality of frequencies in said range and for



recording the same, said last-mentioned means including second electrodes separate from said first electrodes.

4,214,204

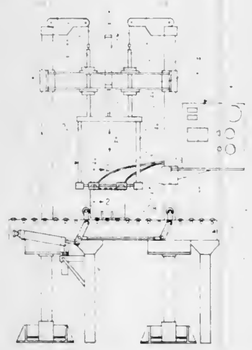
HIGH RATE, BATTERY TESTING APPARATUS AND METHOD

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 887,063, Mar. 16, 1978, Ser. No. 770,889, Feb. 22, 1977, and Ser. No. 697,786, Jun. 21, 1976, which is a continuation of Ser. No. 618,772, Oct. 2, 1975, Pat. No. 3,980,126, which is a continuation-in-part of Ser. No. 432,545, Jan. 11, 1974, Pat. No. 3,954,216, which is a continuation-in-part of Ser. No. 395,528, Sep. 10, 1973, Pat. No. 3,861,575, which is a division of Ser. No. 184,338, Sep. 28, 1971, abandoned, said Ser. No. 770,889, is a continuation of Ser. No. 600,840, Jul. 31, 1975, Pat. No. 4,027,797, which is a division of Ser. No. 475,273, May 31, 1974, Pat. No. 3,938,368. This application Apr. 11, 1978, Ser. No. 895,520

Int. Cl.² G01N *27/46*

U.S. Cl. 324—437 **8 Claims**



1. An apparatus for "high-rate" testing storage batteries of the type having a case and at least one terminal extending therethrough, said apparatus comprising:

(a) A work surface for supporting batteries to be tested;

(b) a frame associated with said work surface;

(c) a battery processing head mounted on said frame for reciprocal movement with respect to said frame between at least standby and battery testing positions;

(d) battery terminal connecting means mounted on said head for establishing electrical contact with said battery terminals upon movement of said head to said battery testing position, said battery terminal connecting means comprising at least one battery terminal connecting block mounted on said battery processing head for slideable movement with respect to said head along an axis transverse to the axis of reciprocation of said head, said battery terminal connecting block adapted to mateably receive at least one battery terminal post insert, said battery terminal post insert having a lower surface defined thereon to create an air tight seal between said insert and at least a portion of the battery case disposed adjacent to said battery terminal post; and

(e) high rate testing means electrically connected to said battery terminal connecting means for selectively "high-rate" testing each of said batteries when said batteries are electrically connected thereto through said battery terminal connecting means.

4,214,203

LOCATION AND EFFECT OF ADSORBED CHEMICALS ON THE DIELECTRIC SUBSTRUCTURE OF MEMBRANES BY ULTRA LOW FREQUENCY SPECTROMETRY

Hans G. L. Coster, Randwick; Robert G. Ashcroft, Valcluse, and John R. Smith, Coogee, all of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Jun. 16, 1978, Ser. No. 916,147

Claims priority, application Australia, Jun. 17, 1977, PD475

Int. Cl.² G01N *27/42*

U.S. Cl. 324—425 **5 Claims**

1. Apparatus for measuring and recording the variation with frequency of the overall capacitance and conductance of a membrane, such as a bimolecular lipid or protein membrane, comprising: means for supporting such a membrane in an electrolyte, first electrodes in said electrolyte for passing an alternating current through the membrane, means for generating an alternating voltage at any desired frequency of a plurality of frequencies within a range of from 0.001 Hz to about 1000 Hz and applying same to said electrodes, means for mea-

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4,214,205

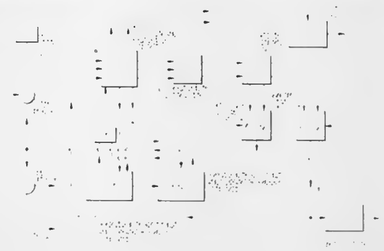
RADIO RECEIVING AND RETRANSMITTING APPARATUS WITH FREQUENCY LOCK CIRCUIT

Ashley W. Guest, Bristol, England, assignor to British Aircraft Corporation, London, England

Continuation-in-part of Ser. No. 731,357, Oct. 12, 1976, abandoned. This application Jul. 5, 1978, Ser. No. 922,218

Int. Cl.² H04B *7/155*

U.S. Cl. 455—20 **7 Claims**



1. A method of detecting an incoming RF signal and transmitting a corresponding regenerated signal at a predetermined frequency, comprising:

sweeping a first local oscillator signal through a range of frequencies and mixing the first local oscillator signal with an incoming RF signal;

detecting the presence, in the mixed signals, of a first IF signal within a predetermined frequency range and thereupon stopping the sweep;

enabling closed-loop frequency locking means which adjusts the frequency of the first local oscillator until the frequency of the first IF signal is equal to a first reference frequency;

thereafter sweeping a second local oscillator signal through a range of frequencies and mixing the second local oscillator signal with the output of the first local oscillator;

detecting the presence, in the mixed local oscillator signals, of a second IF signal within a predetermined frequency range and thereupon stopping the sweep;

enabling closed-loop frequency locking means to cause it to adjust the frequency of the second local oscillator until the frequency of the second IF signal is equal to a second reference frequency; and thereupon transmitting the signal at the frequency of the output of the second local oscillator.

4,214,206

DIGITAL TRANSMISSION SYSTEM HAVING DIRECT BIT EXTRACTION FROM SCRAMBLED BIT STREAMS

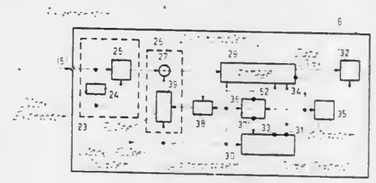
Klaas Everaarts, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,824

Claims priority, application Netherlands, Sep. 27, 1977, 7710503

Int. Cl.² H04B *7/155*

U.S. Cl. 375—4 **3 Claims**



1. An improved digital transmission system with direct bit extraction from a scrambled bit stream, said transmission system having a plurality of regenerative repeaters constituting a digital link between a transmitter terminal station and a receiver terminal station, each terminal station having associated digital peripheral equipment, the transmitter peripheral equipment including means for dividing the bit stream to be transmitted into consecutive transmission frames having a fixed number of bit positions and for inserting at least one extra bit in a given bit position of each of the consecutive transmission frames, said transmitter peripheral equipment furthermore including a scrambler in which said bit stream divided into consecutive transmission frames having a fixed number of bit positions and at least one extra bit added in a given bit position of each consecutive transmission frame is combined modulo-2 with a scramble pulse pattern for generating a scrambled bit stream for transmission by said digital link and reception by said receiver, said receiver peripheral equipment including a descrambler for descrambling the transmitted scrambled bit stream received from the digital link, said receiver peripheral equipment furthermore including means for selecting extra bits inserted into the consecutive transmission frames, wherein the improvement comprises:

a transmission clock pulse counter in said transmitter and in said receiver peripheral equipment for counting clock pulses in said means for dividing said bit stream, said counters having a final counting position in a given fixed relation to the number of bit positions per transmission frame;

said clock pulse counters supplying a setting pulse in their final counting position;

a pulse pattern generator in said scrambler and descrambler adjusted to an initial generation state by a setting pulse from said clock pulse counter for generating a given fixed scramble pulse pattern;

said regenerative repeaters and said receiver peripheral equipment including:

selection means for selecting the extra bits inserted in said consecutive transmission frames on the basis of said fixed relation between the final counting position of said clock pulse counters and the number of bit positions per transmission frame;

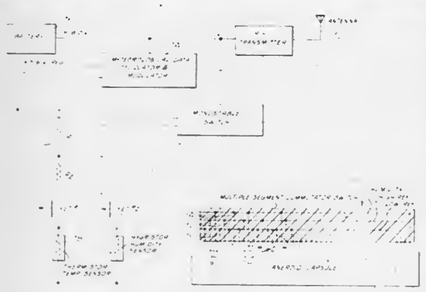
said selection means in said receiver peripheral equipment also supplying synchronizing pulses for synchronizing the transmission clock pulse counter in the receiver peripheral equipment with that in the transmitter peripheral equipment.

4,214,207

SWITCHING CIRCUIT FOR RADIOSONDE

Vernon E. Dickson; James G. C. Lee, both of Toronto, and Gurbachan S. Saini, Markham, all of Canada, assignors to Sangamo Company Limited, Canada

Continuation of Ser. No. 778,815, Mar. 17, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,449
Claims priority, application Canada, Sep. 10, 1976, 260967
Int. Cl.² H04B *1/034*
U.S. Cl. 455—95 **19 Claims**



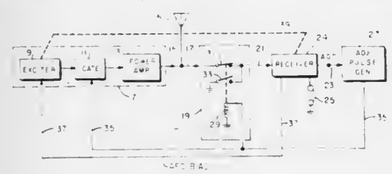
10. A radiosonde comprising:
a transmitter and means for modulating said transmitter;
a multiple segment switch element having a plurality of contacts including a series of interconnected contacts;
a wiper movable along said multiple segment switch element and electrically connecting to differing ones of said contacts during wiper movement;
a pressure sensitive device operatively engaging said wiper and moving said wiper along said multiple segment switch element in response to pressure changes;
an atmospheric information sensing element;
a fixed resistance coupled to said modulating means; and
a switching device coupling said modulating means to said atmospheric information sensing element via said fixed resistance;
said series of contacts being coupled to said modulating means via a portion of said fixed resistance and bypassing said information sensing element and said switching device so that when said wiper connects electrically to any contact of said series, reference signals are transmitted by said sonde and atmospheric information signals are transmitted at certain other positions of said wiper along said multiple segment switch element.

4,214,208

JAMMING OF KEYED CONTINUOUS WAVE RADIO SIGNALS

Richard V. O'Donnell, Freehold, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1963, Ser. No. 300,708
Int. Cl.² H04K *3/00*
U.S. Cl. 455—1 **1 Claim**



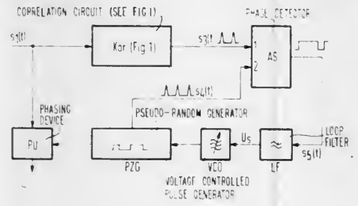
1. A jamming station for radiotelegraph signals comprising, a transmitter, said transmitter comprising an exciter, the output of said exciter being connected to the input of a power amplifier via a normally closed gate, the output of said power amplifier being connected to a duplex antenna; a receiver the input of said receiver being connected to said duplex antenna via a transmit-receive switch which is normally in the receive position, means to gang tune said receiver and transmitter to a radiotelegraph signal to be jammed, an automatic frequency control bias connected from said receiver to said exciter, an adjustable pulse generator having its input connected to the automatic gain control line of said receiver and arranged to generate a pulse at the end of each pulse of radio frequency in said radiotelegraph signal, the pulse output of said pulse generator being arranged to open said gate and to energize said transmit-receive switch, thereby causing said jammer to emit a pulse or radio frequency energy and to simultaneously disable said receiver, the duration of the pulse output of said pulse generator being adjusted to substantially fill in the gaps or spaces in said radiotelegraph signal, and means to monitor the output of said receiver.

4,214,209

CIRCUIT FOR SYNCHRONIZING A PSEUDO-RANDOM GENERATOR MOUNTED AT A RECEIVER FOR COMMUNICATION TRANSMISSION SYSTEMS UTILIZING PSEUDO-NOISE PHASE SHIFT KEYING

Walter P. Baier, Kaiserslautern, and Harald Grammueller, Unterpfaffenhofen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 942,125
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742696
Int. Cl.² H04K *1/04;* **H04L** *7/00, 27/10*
U.S. Cl. 375—1 **8 Claims**



1. A circuit for interference suppressing communication transmission systems having narrow-band, conventional message modulation and additional pseudo-random phase shift keying (PN-PSK), and which serves to synchronize a pseudo-random generator which is located at the receiver and which actuates a phase shifting device at the receiver which cancels phase shift keying accomplished at the transmitter by using a regulating loop with a delay device such as a delay line for correlating the received signal with the pseudo-random sequence which is produced at the receiver, and in conformity with the transmitted pseudo-random sequence, consists of an apparently random line-up of the binary values L and H in a fixed pulse plan, where the sequence repeats after a specific number of timing pulses, characterized in that said delay device (VL) which is fed with the received signal ($s_1(t)$) possesses k output tappings with the time spacing (T_c) between them which corresponds to the inverse value of the pulse train frequency of the pseudo-random sequence, and a first portion (k_H) of the tappings is connected directly to an adder (S) and a second portion (k_L) of the tappings is connected to a 180° phase shifting element (Ph) which has its output connected to said adder (S), and the program selection of the tappings for the two portions is such that the one portion corresponds to the L-values and the other portion to the H-values of the binary pseudo-random sequence or a portion thereof, and a rectifier receiving the output signal of the adder (S), a phase detector (AS) receiving the output ($s_3(t)$) of said rectifier (GR) which has the form of a pulse and said phase detector (AS) also

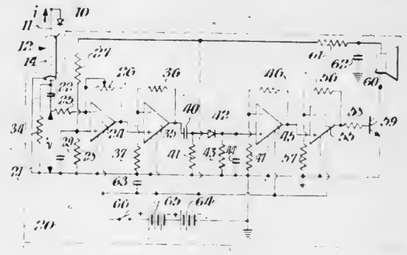
receiving a signal ($s_4(t)$) which is periodically derived from the pseudo-random generator (PZG) mounted at the receiver, during each pseudo-random sequence produced by said generator (PZG) and which is in a suitable pulse form, said phase detector (AS) producing an output voltage ($s_5(t)$) which is a regulating voltage dependent upon the mutual phase state of the two input signals and which is used to regulate the pulse train frequency of the pseudo-random generator (PZG) mounted at the receiver.

4,214,210

ELECTROMAGNETIC NOISE SOURCE LOCATOR

Martin W. O'Shea, Manchaug, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jan. 9, 1978, Ser. No. 868,020
Int. Cl.² H04B *1/18, 17/00*
U.S. Cl. 455—282 **6 Claims**



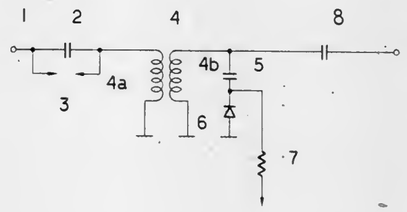
1. An apparatus for locating the source of sparking electromagnetic noise radiation comprising:
(a) an indicator means for producing an indication of the presence of an electrical signal;
(b) an audio amplifier, an output thereof being electrically connected to said indicator means; and
(c) an r.f. antenna-detector means comprising a conductive loop, a diode, a capacitor and a coaxial cable that has a center conductor and a cylindrical outer conductor, said loop having an area of less than 1 square inch and being connected between said conductors at one end of said cable with said diode forming a part of said loop; said loop, said diode, said capacitor and said cable conductors forming a series circuit which is connected across the input of said audio amplifier.

4,214,211

ELECTROSTATIC DESTRUCTION PREVENTING CIRCUIT FOR USE IN A RECEIVER

Tomohisa Yokogawa, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 19, 1978, Ser. No. 917,041
Claims priority, application Japan, Jun. 22, 1977, 52-74247
Int. Cl.² H04B *1/10*
U.S. Cl. 455—287 **3 Claims**



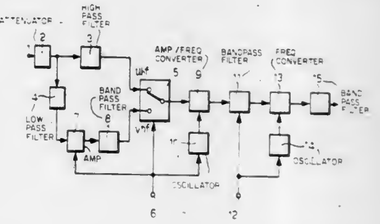
1. In an electrostatic destruction preventing circuit for use in a receiver for receiving radio waves of AM and FM broadcastings of the type including an antenna input circuit and a spark-gap discharge element to an antenna terminal to prevent the electrostatic destruction of a first stage transistor in the receiver, the improvement characterized by a capacitor connected in series between the antenna terminal and said antenna input circuit and a spark-gap discharge element connected in parallel to said capacitor, whereby the electrostatic destruction of a first transistor of the receiver is prevented.

4,214,212

TUNER DEVICE FOR A TELEVISION RECEIVER

Edoardo Dipietromaria, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Rivalta, Italy

Continuation-in-part of Ser. No. 768,672, Feb. 14, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,445
Claims priority, application Italy,
Int. Cl.² H04B *1/26*
U.S. Cl. 455—190 **5 Claims**



1. A signal tuning device for a television receiver, including an intermediate frequency amplifier for receiving, selecting, amplifying ad converting to the intermediate frequency of the television receiver signals belonging to both the VHF and UHF ranges; said device including a first section for receiving and amplifying signals belonging to the UHF range and converting them to said intermediate frequency; said first section including first circuit means for amplifying UHF signals and converting signals belonging to the VHF range into signals belonging to the UHF range, and second circuit means for supplying a first local signal and mixing said first local signal with the amplified UHF signals from said first circuit means so as to convert them to said intermediate frequency for application to said IF amplifier; said first section including a plurality of circuit elements being formed by means of the deposition of conductive or resistive material onto a support made of insulating material; said plurality of circuit elements including resonant lines, conductive circuit elements, resistive circuit elements, inductive circuit elements and capacitive circuit elements; said device further including a second section for receiving and amplifying signals belonging to the VHF range and for generating a second local signal and supplying said amplified VHF signals and said second local signal to said first circuit means of said first section; said first circuit means mixing said second local signal and said amplified VHF signals to convert them into signals to the UHF range.

4,214,213

SIGNAL SELECTING SYSTEM

Ronald G. Ferrie, Pittsburgh, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 25, 1977, Ser. No. 845,213
Int. Cl.² H03K *5/18, 5/20*
U.S. Cl. 328—117 **1 Claim**

1. A signal selecting system responsive to signals from a plurality of signal sources for rapidly comparing and selecting the best quality signal, comprising:
a plurality of detectors with a detector coupled to and responsive to each one of said sources for continuously detecting the quality of said signals from said sources for

thereby continuously and simultaneously providing from each detector detected signals indicative of the quality of the signal present at the source,

a comparator,

means coupled to said plurality of detectors for sequentially coupling said detected signals from said plurality of sources to a first input of said comparator,

reference means coupled to said plurality of detectors for coupling the detected signals from a selected one of said sources to a second input of said comparator,

said comparator being responsive to the simultaneously and continuously detected signals at said first and second



inputs thereof for providing a control signal when the signal at said first input indicates a better quality signal than at said second input,

said reference means including means coupled to said first means and responsive to said control signal for providing a signal indicative of the source of the detected signal coupled to the first input of the comparator and for gating the detected signal corresponding to said indicative signal to the second input of said comparator, and

means responsive to said indicative signal and coupled to said plurality of sources for gating that source corresponding to said indicative signal out of the system.

4,214,214

CONNECTING CABLE

George W. Merriman, 90 Pierrepont St., Brooklyn, N.Y. 11201

Filed Aug. 3, 1978, Ser. No. 930,644

Int. Cl.[2] H03F *3/16*

U.S. Cl. 330—65 **11 Claims**



1. A connecting cable for connecting an electric pickup of a musical instrument with output terminals to a load, said connecting cable comprising:

(a) a coaxial cable having a central conductor and a further conductor;

(b) an input connector comprising a conventional male phone plug having first and second input terminals adapted to be connected to the output terminals of said pickup, and first and second output terminals connected to the central and further conductors of said coaxial cable respectively;

(c) a single transistor, in the form of a field effect transistor having a source, a drain and a gate terminal, said gate terminal connected to said first input terminal and said drain terminal connected to said first output terminal, disposed within said conventional male phone plug; and

(d) an output connector connected to the other end of said coaxial cable.

4,214,215

LOW NOISE-HIGH GAIN JFET AMPLIFIER FOR A PIEZOELECTRIC TRANSDUCER

Arthur J. Mellen, Clearwater, Fla., and Adolf Reitlinger, Kingston, N.Y., assignors to Contact Communication Corporation, Clearwater, Fla.

Filed Aug. 2, 1978, Ser. No. 930,364

Int. Cl.[2] H03F *3/185*

U.S. Cl. 330—277 **6 Claims**



1. A two wire sensing transducer and amplifier combination, comprising

a piezoelectric transducer having first and second electrical leads,

a junction field effect transistor (JFET) having drain, source, and gate electrodes,

a first transistor having collector, emitter, and base electrodes,

means for connecting one lead of the transducer to the gate electrode of said JFET,

means for connecting said source and base electrodes together,

first and second terminals connected, respectively, to said drain and collector electrodes and to the second lead of the transducer,

a first voltage divider connected between said emitter electrode and said second terminal,

a second voltage divider connected between said connected source and base electrodes and said first voltage divider, thereby to provide a first bootstrapping feedback connection to the base of the transistor means,

a resistor means connected between said gate electrode and said second voltage divider, thereby to provide a second bootstrapping feedback connection to the gate of the JFET,

first and second supply lines for providing connection to a D.C. voltage source,

means for coupling said first and second terminals to said first and second supply lines, respectively, and

output circuit means connected between said supply lines and separate from said transistor means and from said first and second terminals for coupling from said supply lines an output signal produced by said combination of transducer and amplifier.

4,214,216

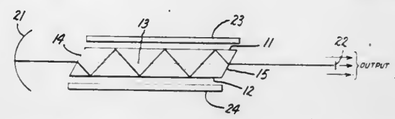
FACE-PUMPED LASER WITH DIFFRACTION-LIMITED OUTPUT BEAM

William B. Jones, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 851,445, Nov. 14, 1977, abandoned. This application Oct. 2, 1978, Ser. No. 947,567

Int. Cl.[2] H01S *3/08*

U.S. Cl. 331—94.5 C **14 Claims**



1. A multiple reflection face-pumped laser for emitting a diffraction-limited output beam in a longitudinal direction, comprising:

an elongated slab of homogeneous active laser medium having at least two optically plane faces extending substantially parallel to each other, the effective optical length of said active medium for a ray of optical energy passing therethrough being less in the plane of reflection than in a plane perpendicular to said plane of reflection and containing said ray;

pumping means for impinging electromagnetic radiation upon at least one of said optically plane faces to excite atoms of said active medium to a metastable state so as to produce a population inversion therein;

optically plane reflective means spaced from said active medium at one end thereof; and

concave spherical reflective means spaced from said active medium at the opposite end thereof,

said plane reflective means and said spherical reflective means defining opposite ends of a cavity resonant to optical energy passing through said active medium in a general direction parallel to said two optically plane faces of said active medium and normal to the surface of said spherical reflective means at the point of impingement thereon, such that said cavity is stable in said plane of reflection but unstable in said plane perpendicular to the plane of reflection.

4,214,217

ELECTRONIC TUNING CIRCUIT HAVING IMAGE TRAPPING ELEMENT

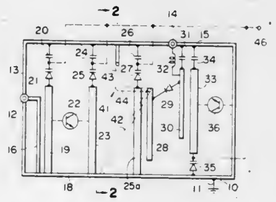
Mitsuo Saito, and Sadahiko Yamashita, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 14, 1979, Ser. No. 12,216

Claims priority, application Japan, Feb. 15, 1978, 53-17275

Int. Cl.[2] H03J *3/00, 5/00*

U.S. Cl. 334—45 **8 Claims**



1. A tuning device comprising:

a first resonant circuit including a transmission line and a coupling circuit reactively coupled therewith;

a second resonant circuit including a transmission line and a coupling circuit reactively coupled therewith, the transmission lines of said first and second resonant circuits being parallel to each other; and

an image frequency trapping circuit having a first section extending from a point intermediate said transmission lines to a point connected to the coupling circuit of said first resonant circuit intersecting the transmission line of said first resonant circuit, and a second section extending at an angle to said transmission lines from the connection point of said first section with said coupling circuit to a point adjacent to the transmission line of said second resonant circuit.

4,214,218

IMPEDANCE MATCHED TUNING DEVICE HAVING IMAGE TRAPPING CIRCUIT

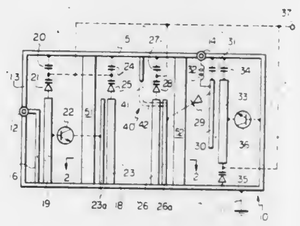
Mitsuo Saito; Mitsuo Makimoto, and Sadahiko Yamashita, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 27, 1979, Ser. No. 15,601

Claims priority, application Japan, Feb. 28, 1978, 53-22973

Int. Cl.[2] H03J *3/00, 5/00*

U.S. Cl. 334—45 **3 Claims**



3. A bandpass filter comprising:

a conductive housing;

a dielectric substrate supported in said housing;

a pair of first and second resonant circuits each including an elongated conductor to serve as a transmission line and a capacitive element connected to the transmission line in series between a pair of oppositely facing walls of said housing, the transmission lines of said resonant circuits being disposed on said substrate and arranged in parallel to each other;

an image frequency trapping circuit arranged to intersect the transmission line of one of said first and second resonant circuits for absorbing the microwave energy at the image frequency of the bandpass filter;

a first elongated conductor disposed on said substrate extending across said oppositely facing walls in parallel with, and adjacent to, the transmission line of said first resonant circuit; and

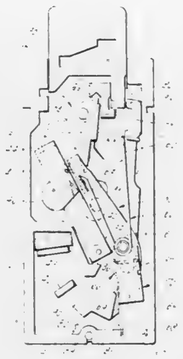
a second elongated conductor disposed on said substrate extending across said oppositely facing walls in parallel with, and adjacent to, the transmission line of said second resonant circuit remote from the transmission line of said first resonant circuit, said first and second conductors being spaced respective distances from the adjacent transmission lines to compensate for the difference between the characteristic impedances of said transmission lines resulting from the intersection of said image frequency trapping circuit with the transmission line of said one resonant circuit.

4,214,219

PUSH-PUSH SWITCH

Bernard DiMarco, and John C. Hempstead, both of Bellefontaine, Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Apr. 28, 1978, Ser. No. 901,081
Int. Cl.[2] H01H *73/48, 75/00, 77/00*
U.S. Cl. 335—23 **12 Claims**



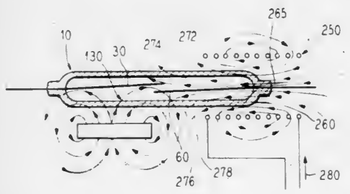
1. A switch including relatively movable and stationary contacts; a mechanism for operating said movable contact into and out of engagement with said stationary contact; a housing wherein said contacts and said mechanism are disposed; said housing including a front, opposed side walls extending rearward from said front, and opposed end walls connecting said side walls along opposite edges thereof; said mechanism including a rearwardly depressible portion extending through an opening in said front; first means biasing said portion forward; said mechanism including support means, a contactor assembly mounted on said support means for movement relative thereto between a reset and a tripped position, latch means for normally holding said assembly in said reset position, said assembly including said movable contact, first spring means biasing said movable contact toward engagement with said stationary contact when said assembly is in said reset position, another spring means biasing said assembly toward said tripped position to separate said movable contact from said stationary contact when said latch means releases said assembly; release means operable to release said latch by depressing said portion when said assembly is in said reset position; and automatic trip means operable to release said latch upon the occurrence of predetermined fault conditions.

4,214,220

WIDE RANGE MAGNETICALLY BIASED REED SWITCH

Daniel L. Queen, Chicago, Ill., assignor to Chamberlain Manufacturing Corp., Elmhurst, Ill.

Filed Sep. 5, 1978, Ser. No. 939,486
Int. Cl.[2] H01H *51/27*
U.S. Cl. 335—153 **6 Claims**



1. An improved, normally closed, reed relay having a hollow non-magnetic housing with a first and a second closed end; a first and a second magnetic reed contact supported by the housing, with the first contact having a section extending through the first closed end and into the housing and the second contact having a section extending through the second closed end and into the housing and with an end portion of each of the sections positioned adjacent to one another within the housing to form an open circuit between the contacts;

the improvement comprising:

a permanent magnet, adjacent the outside surface of the housing, centered with respect to the section of the first contact within the housing, and having a flux distribution oriented substantially perpendicular to the first and second contacts such that the first and said second magnetic reed contacts form a closed circuit due to the effects of at least a portion of said flux distribution of said permanent magnet; and,

an electrical coil adapted to receive the second end of the housing and substantially centered axially with respect to the second closed end of the housing where the section of the second contact enters the housing; said coil being operative to produce, in response to a first electrical current, a magnetic flux primarily near the second end of the housing, parallel to the second contact, of a selected magnitude, operative to offset at least a portion of said flux distribution of said permanent magnet resulting in said first and said second magnetic reed contacts forming an open circuit for the duration of said first electrical current in said electrical coil

the location of said permanent magnet and of said coil with respect to the second end and the magnetic flux distribution associated with said coil requiring a second current, at least ten times greater than said first current, to reclose the contacts.

4,214,221

CONVERGENCE ASSEMBLY FOR CATHODE RAY TUBE

Brian R. Sowter, and William A. Warwick, both of Winchester, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,440
Claims priority, application United Kingdom, Dec. 9, 1977, 51439/77
Int. Cl.[2] H01F *7/06;* **H01J** *29/66*
U.S. Cl. 335—212 **10 Claims**



1. An electromagnetic lateral convergence assembly for use in a color cathode ray tube apparatus comprising an electrically-insulating planar support adapted to be mounted on the neck of a cathode ray tube in a plane orthogonal to the neck, a first planar magnetic core of high permeability magnetic material having a generally central aperture and having integral pole pieces extending toward the center of the aperture, at least three electrical coil assemblies mounted on selected pole pieces for producing, when energized, a magnetic field within the aperture, and means securing the magnetic coil assemblies to

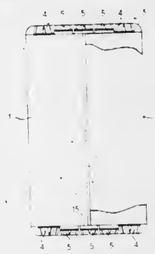
said insulating support to hold said magnetic core in spaced parallel relationship with said support.

4,214,222

IMPROVED CLAMPING MEMBERS IN A HORIZONTAL MAGNETIC CORE POWER TRANSFORMER

Jean P. Lafaye, Oullins, France, assignor to Jeumont-Schneider, Puteaux, France

Filed Mar. 6, 1979, Ser. No. 18,096
Claims priority, application France, Mar. 9, 1978, 78 06738
Int. Cl.[2] H01F *27/26*
U.S. Cl. 336—84 M **2 Claims**



1. An improved power transformer having a horizontal magnetic core with a rectangular cross-section, end clamping members on opposite sides of said core with ends bearing on walls of a transformer tank, each clamping member having a number of longitudinal beams (**5**) intermediate and juxtaposed with two longitudinal side beams (**4**), said two side beams (**4**) each comprising of a set of magnetic laminations (**6**, **7**) of the same width and welded at their edge to a number of cross-plates (**11**); said intermediate beams (**5**) being between said two side beams (**4**) and each comprising a set of laminations (**6**,**7**) of the same width and welded at their edge to a number of cross plates (**11**), the laminations of the intermediate beams being narrower than the laminations of the said side beams and each having a longitudinal extending flat iron member (**15**) welded at its edges along the ends of the cross-plates (**11**), the two side beams (**4**) and the intermediate beams (**5**) being of the same height and being so disposed that their magnetic laminations are positioned on edge, each set of magnetic laminations (**6**, **7**) having at its centre a longitudinally extending wedge-shaped member (**8**) and being strengthened on each side by another longitudinally extending flat iron member (**9**, **10**) of the same width.

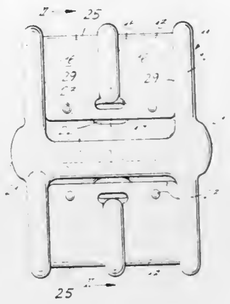
4,214,223

FUSE

Friedrich J. A. Kourimsky, Bensheim, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 6, 1978, Ser. No. 922,264
Claims priority, application United Kingdom, Jul. 7, 1977, 28454/77
Int. Cl.[2] H01H *85/04*
U.S. Cl. 337—293 **9 Claims**

1. A fuse comprising a thin metal strip of constant thickness having a slot extending to locations adjacent a pair of opposite ends of the strip to define relatively wide, spaced apart, side portions connected by relatively narrow fusible links at the ends, the strip being reversely folded along a line transverse to the slot and attached to oppositely directed faces of an insulating support one end of which is received within the fold so that the side portions of the strip adjacent the fold line define tab contacts for mating within receptacle contacts on a fuse board the supports having a recess or aperture underlying each fusible link so that the fusible links are spaced from surfaces of the support.

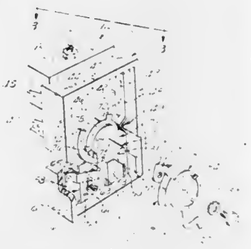


4,214,224

MULTI-FUNCTION SELF-CLEANING OVEN THERMOSTAT

Calvin J. Holtkamp, Mansfield, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Sep. 25, 1978, Ser. No. 945,399
Int. Cl.[2] H01H *37/36*
U.S. Cl. 337—323 **11 Claims**



1. A thermostat suitable for the control of a pyrolytic, self-cleaning oven comprising:

a housing;

an axially movable shaft mounted on the housing and rotatable for angular displacement between two end positions, an increment of shaft axial movement being in response to and directly related to an increment of shaft rotational movement;

an electrical switch means having a switching point adjustable in response to axial movement of the shaft;

an element movable in response to changing temperature, the movable element actuating the electrical switch means between open and closed conditions at a switching point determined by the axial position of the shaft; and

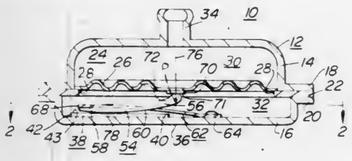
means for relocating at least one end position for adjustably limiting the range of angular displacement of the shaft between the two end positions so as to limit the range of shaft axial movement and therefore determine the range of switching points.

4,214,225

SIGNAL TRANSDUCING DEVICE

Laurence N. Wesson, Collegeville, Pa., assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 26, 1978, Ser. No. 972,874
Int. Cl.[2] H01C *10/00*
U.S. Cl. 338—155 **18 Claims**



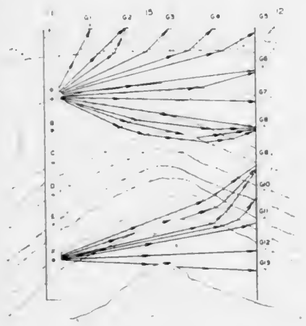
1. A signal transducing device comprising a first element having a contact surface with a conductive path, a second element having an arcuate contact surface with an arcuate non circular conductive path and being movable with respect to and engaging by rocking action the contact surface of the first element, the conductive paths of the elements electrically contacting each other at a location which is displaceable along their paths with the movement of the second element, positioning means for retaining the elements for relative movement, actuating means for moving and positioning the second element with respect to the first element and controlling the contact location of the elements, the actuating means engaging the second element and being displaceable in a predetermined direction for moving the second element, the displacement in the predetermined direction of the actuating means having a linear relationship to the displacement of the contact location along the paths of the elements, and connecting means electrically joined with the conductive paths of the first and second elements for providing an output signal determined by the position of one element with respect to the other.

4,214,226

SYSTEM FOR PLOTTING SUBSOIL STRUCTURE AND METHOD THEREFOR

Keshavaiyengar Y. Narasimhan, Huntington Beach; Robert Nathan, Pasadena, and Shakkottai P. Parthasarathy, Burbank, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 6, 1977, Ser. No. 830,846
Int. Cl.[2] G01V *1/12, 1/20, 1/34*
U.S. Cl. 367—27 **5 Claims**



1. In a method for obtaining relatively high resolution information of the subsoil structure between two spaced apart boreholes, the steps comprising:

placing a plurality of signal sources at preselected distances from one another in one borehole;

placing a plurality of signal detectors at preselected distances in at least the second borehole;

activating each of said sources in a selected sequence;

receiving at each of said detectors, signals which propagate to said detectors through said subsoil structure as a result of each activated source; and

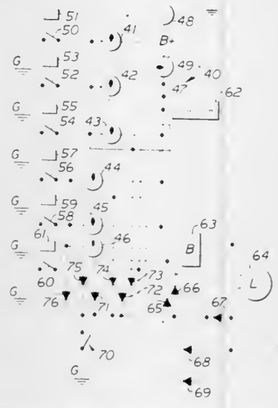
processing the signals received at each detector as a result of the activation of said sources, including signals at frequencies greater than 160 Hz to obtain data adapted to produce subsoil structure information of incremental areas on the order of ($\lambda/3$) for producing a tomograph of the substructure between said boreholes, where λ is the wavelength of processed signals.

4,214,227

INSTRUMENT PANEL ASSEMBLY

Stamos I. Papasideris, Bristol, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 675,026, Apr. 8, 1976, abandoned. This application Jun. 19, 1978, Ser. No. 917,135
Int. Cl.[2] G08B *19/00*
U.S. Cl. 340—52 F **18 Claims**



1. In a signaling system having a plurality of indicator lamps connected in parallel, a corresponding plurality of control switches connected respectively in series with said indicator lamps for selectively energizing said lamps, and an alarm, the improvement comprising

circuit means for connecting said alarm in parallel with a first portion only of said plurality of indicator lamps for concurrent operation of said alarm and first portion of the lamps upon closing of any of the control switches associated therewith to energize the associated indicator lamps of said first portion and permitting energization of the remainder of said lamps by their associated control switches without energization of said alarm.

4,214,228

ERROR-CORRECTING AND ERROR-DETECTING SYSTEM

Yasuhiro Nara, Chigasaki; Yukio Sohma, and Akira Hattori, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 5, 1978, Ser. No. 939,488
Claims priority, application Japan, Dec. 23, 1977, 52-155952
Int. Cl.[2] G06F *11/12*
U.S. Cl. 371—40 **10 Claims**

1. A check bits generating system for use in an error-correcting and error-detecting system, having means for performing both a b-bit single burst block error correcting operation and a double burst block error detecting operation in accordance

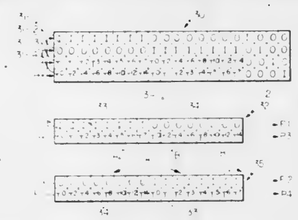
with a (k, l) type check matrix comprising: a check-bits generating circuit, operated in accordance with said (k, l) type check matrix, for receiving input data which is to be checked for errors and for producing an output check-bits code wherein said (k, l) type check matrix is constructed from:

a first means for providing outputs corresponding to submatrices (**1**) and (**2**) to said check-bits generating circuit,

said sub-matrix (**1**) consisting of an (m, l) type reference sub-matrix (where $m<k$), and said sub-matrix (**1**) is composed of a plurality of (m, n) type unit-matrices (where $n<l$),

said sub-matrix (**2**) consisting of one or more (m, l) type sub-matrices, each of said one or more (m, l) type sub-matrices is also composed of said plurality of (m, n) type unit-matrices;

shifting means, operatively connected to said check-bits



generating circuit, for shifting the locations of said plurality of (m, n) type unit-matrices in each of said sub-matrices (**1**) and (**2**) by a circular shift wherein said locations are different from each other; and

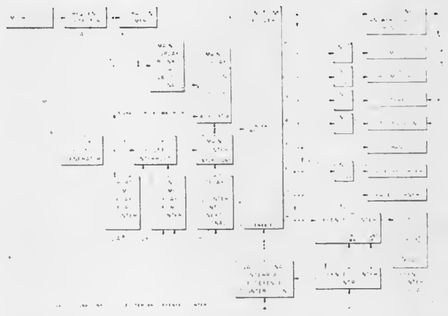
second means, operatively connected to said check-bits generating circuit, for alternately stacking respective rows of said sub-matrix (**1**) and said sub-matrix (**2**) by means of reciprocal replacement to compose said (k, l) type check matrix, wherein said check-bits generating circuit is comprised of a plurality of identical circuit units having outputs, said input data is provided to said plurality of identical circuit units, said input data is shifted by said shifting means so that said plurality of identical circuit units function in accordance with said sub-matrix (**1**) and said sub-matrix (**2**), said outputs of said plurality of identical circuit units are rearranged by said second means to form said output check-bits code.

4,214,229

REMOTE CONTROL APPARATUS

William J. Warner, 305 Memorial Dr., Suite 514A, Cambridge, Mass. 02139

Filed Nov. 16, 1978, Ser. No. 961,375
Int. Cl.[2] H04Q *9/00*
U.S. Cl. 340—148 **18 Claims**



1. Apparatus for remotely controlling automatic apparatus by means of a user operated transmitter comprising:

(a) means for controlling the frequency of the transmitter;

(b) a receiver for receiving signals from the transmitter within a predetermined frequency range;

(c) means at the receiver for detecting receipt of a signal within the predetermined range and for transmitting back to the transmitter a signal indicating such receipt;

(d) means at the receiver for detecting the duration of a signal received within the predetermined frequency range and for indicating when such a signal has been continuously so received for a predetermined period, and

(e) means at the receiver responsive to signals detected as defined in (c) and (d) for energizing controls,

whereby the user adjusts the frequency to come within the receiver's range, the receiver informs the user when the frequency is correct, thereafter the user holds the signal for the predetermined duration and the receiver informs him when he has succeeded in so doing.

4,214,230

PERSONAL IDENTIFICATION SYSTEM

Viiveke Fak, Ryttaregängen 24, S-58266 Linköping, Sweden; Ingemar B. Ingemarsson, Hedborns gata 2, Linköping, Sweden (S-58249); Rolf Blom, Rydsvägen 318C, Linköping, Sweden; Robert Forchheimer, Braxstigen 5, S-13500 Tyresö, Sweden, and Bjorn I. Hellberg, Ettoresg. 3, 58266 Linköping, Sweden

Filed Jan. 19, 1978, Ser. No. 870,818
Int. Cl.[2] G06K *7/08;* **G06F** *7/06;* **H04Q** *9/00*
U.S. Cl. 340—149 A **11 Claims**



1. For use in a system for providing transaction security to a cardholder's account in a commercial institution, wherein the cardholder has a secret identification number, and the institution has a secret number, the combination comprising:

means having a data input, a data output and a key input, for enciphering clear data applied at said data input under control of a key comprised of key bits applied at said key input, in accordance with an enciphering process;

means for applying a customer account number to the data input of said enciphering means; and,

means for applying at the key input the combination of said customer's secret number and said institution's secret number,

whereby a first cipher is generated at the output of said enciphering means.

4,214,231

IN-BORE TELEMETRY INFORMATION MEASURING SYSTEM

William Donnally, Mine Hill, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 26, 1979, Ser. No. 24,140
Int. Cl.[2] H04Q *9/00*
U.S. Cl. 340—207 R **13 Claims**

1. An improved electronic system for measuring in-bore

telemetry information for tube-fired munitions where high frequency response up to 20 KHZ is acceptable to telemeter several frequency channels, comprising:

(a) means for sensing a plurality of levels of acceleration, said means disposed inside a tube-fired projectile;

(b) means for conditioning and filtering a signal input;



(c) means for converting analog data by a Delta-Modulation method;

(d) means for binary recirculation, said means accomplishing repetition of measurement of the in-bore information; and

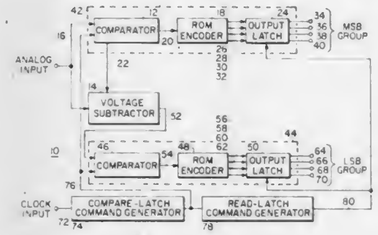
(e) a binary shift register for conveying input digital data to a ground-station facility through a transmission link.

4,214,232

SERIAL-PARALLEL ANALOG-TO-DIGITAL CONVERTER USING VOLTAGE SUBTRACTION

Pern Shaw; Fuad H. Musa, both of Austin, Tex., and Stephen J. Kreinick, San Diego, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 17, 1977, Ser. No. 807,471
Int. Cl.[2] H03K *13/175*
U.S. Cl. 340—347 AD **13 Claims**



1. An analog-to-digital converter comprising:

(a) means for receiving an analog signal;

(b) first comparator means responsive to said analog signal and including

(i) means for providing a first series of reference voltages ranging between a minimum voltage and a maximum voltage;

(ii) a first plurality of differential comparison circuits, each having associated with it one of said first series of reference voltages, each of said differential comparison circuits comprising

a current splitting network having first and second terminals for providing first and second increments of current when said analog signal exceeds said associated reference voltage; and

means having a third terminal for providing a third increment of current when said analog signal is less than said associated reference voltage;

(iii) a plurality of first output means each having an output terminal, each of said first output means being coupled to said first terminal of an associated differential comparison circuit and to said third terminal of an adjacent differential comparison circuit, and a pair of second output means each having an output terminal, one of said second output means being coupled to said first terminal of the differential comparison circuit associated with said minimum voltage, and one of said second output means being coupled to said third terminal of the differential comparison circuit associated with said maximum voltage, one of said output means generating a first output signal at its output terminal in the absence of any current increment input to such output means; and

(iv) current summing means responsive to said second terminals for adding said second increments of current to form a reference current;

(c) first encoder means responsive to said first output signal for producing a first digital number;

(d) subtractor means responsive to said analog signal and said reference current for producing an intermediate output signal;

(e) second comparator means responsive to said intermediate output signal and including

(i) means for providing a second series of reference voltages; and

(ii) comparison means responsive to said second series of reference voltages and said intermediate output signal for generating a second output signal; and

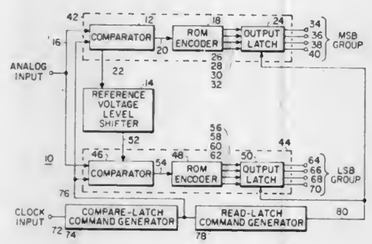
(f) second encoder means responsive to said second output signal for producing a second digital number.

4,214,233

SERIAL PARALLEL ANALOG-TO-DIGITAL CONVERTER USING VOLTAGE LEVEL SHIFTING OF A MINIMUM REFERENCE VOLTAGE

Pern Shaw; Fuad H. Musa, both of Austin, Tex., and Stephen J. Kreinick, San Diego, Calif., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jun. 17, 1977, Ser. No. 807,472
Int. Cl.[2] H03K *13/175*
U.S. Cl. 340—347 AD **4 Claims**



1. An analog-to-digital converter comprising:

(a) means for receiving an analog signal;

(b) first comparator means responsive to said analog signal and including

(i) means for providing a first series of reference voltages ranging between a minimum reference voltage and a maximum reference voltage;

(ii) a first plurality of differential comparison circuits, each having associated with it one of said first series of reference voltages and each including means for generating a first increment of current when said analog signal exceeds said associated reference voltage and means for generating a second increment of current when said analog signal is less than said associated reference voltage;

(iii) means responsive to said first and second increments of current for generating a first output signal;

(iv) first current summing means for adding said first increments of current to form a first reference current;

(v) means for providing first and second constant current signals; and

(vi) second current summing means for adding said first reference current and said first constant current signal to produce a second reference current;

(c) first encoder means responsive to said first output signal for producing a first digital number;

(d) a reference voltage level shifting circuit comprising

(i) a current mirror circuit having a first terminal responsive to said second reference current and a second terminal, said current mirror circuit producing at said second terminal a mirror current equal in magnitude to said second reference current; and

(ii) resistance means having a first terminal coupled to said minimum reference voltage and a second terminal coupled to the second terminal of said current mirror circuit and providing a shifted maximum reference voltage;

(e) second comparator means including

(i) means for providing a second series of reference voltages, said means comprising a resistive ladder network having first and second terminals, said first terminal being coupled to said shifted maximum reference voltage, and an operational amplifier having a non-inverting input coupled to said second constant current signal, an output, and an inverting input coupled to said output and to the second terminal of said resistive ladder network; and

(ii) comparison means responsive to said second series of reference voltages and said analog signal for generating a second output signal; and

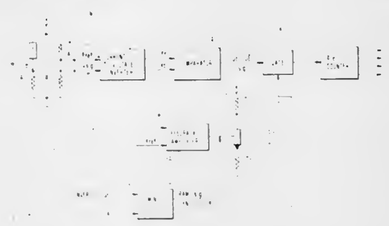
(f) second encoder means responsive to said second output signal for producing a second digital number.

4,214,234

RANGE TRACKING ANALOG TO DIGITAL CONVERTER FOR USE WITH A BRIDGE

Joseph E. Cunningham, Jr., Boulder, and Anthony Grombone, Lafayette, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,329
Int. Cl.[2] H03K *13/20*
U.S. Cl. 340—347 AD **1 Claim**



1. A range-tracking circuit whose output is independent of variations in supply voltage comprising:

means including a bridge circuit for producing an error voltage proportional to changes in a sensed condition;

a capacitor;

a power supply connected to the bridge circuit and to the capacitor;

clock means for producing clock pulses;

counter means for counting clock pulses;

timing means connected to said clock means and said counter means for initiating the start of a counting time period;

means connected to said bridge circuit, said capacitor and said timing means for establishing a capacitor voltage corresponding to the zero point of the error voltage range prior to initiating the start of a counting time period;

means for charging the capacitor to full-scale error voltage during a full digital scale counting time period; and

comparator means connected to compare error voltage and capacitor voltage and connected to said counter means to interrupt the count prior to full digital scale when the error is less than full scale,

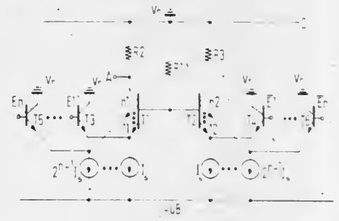
whereby the count produced by the counter means represents error in the sensed condition independent of supply voltage variation.

4,214,235

DIGITAL TO ANALOG CONVERTER USING MULTIPLE EMITTER TRANSISTORS

Fritz Meyer, Graefelfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,702
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 DA **6 Claims**



1. A circuit for the generation of 2^n-step digital signals from n-binary signals of a very high bit rate comprising:

a base-coupled differential amplifier having first and second multi-emitter transistors each having n emitters respectively connected to n emitter follower transistors having base signal inputs, with emitter follower transistors connected to said second multi-emitter transistor having base signal inputs which are the inverse of the base signal inputs for corresponding ones of said emitter follower transistors connected to said first multi-emitter transistor;

two sets of n current sources respectively associated with each multi-emitter transistor, one current source interconnected between each multi-emitter transistor-emitter follower transistor connection and an operating potential, and each set providing currents which are 2^{n-1} times an initial current value with a lowest-value current source from each set respectively connected to a first emitter of each multi-emitter transistor and the remainder of said current sources respectively connected to corresponding emitters of said first and second multi-emitter transistors; and

an output tap connected to the collector of said first multi-emitter transistor.

4,214,236

DRIVER CIRCUIT FOR AN ELECTRICAL LOAD WITH CAPABILITY FOR DETECTING A SHORT IN THE LOAD

Ralph W. Carp, and William R. Groff, both of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1978, Ser. No. 947,787
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—642 **8 Claims**

1. A driver circuit for use with a programmable electronic logic device of the type having at least one bidirectional input-/output (I/O) terminal which is pulled up to a normally logic high state when unloaded and pulled down to a logic low state when loaded and further having program-controlled internal switching means for pulling down the I/O terminal to a logic low state by program control, the driver circuit being adapted to drive a d.c. electrical load under normal load conditions and respond to a shorted load under abnormal load conditions, the circuit comprising:

a voltage sensing circuit connected between the I/O terminal and a reference potential, the voltage sensing circuit having an I/O terminal sensing point and an output feedback sensing point, the voltage at the I/O terminal sensing point being normally greater than the voltage at the output feedback sensing point under normal load conditions;

comparator means, connected to the voltage sensing circuit and responsive to the voltage difference between the I/O terminal sensing point and the output feedback sensing point, for comparing the voltages at the sensing points and producing an output signal at a first level when the I/O terminal sensing point voltage exceeds the output feedback sensing point voltage, and at a second level when the output feedback sensing point voltage exceeds the I/O terminal sensing point voltage;

driver switch means, responsive to the output signal of the comparator means, for enabling energization of the electrical load upon the occurrence of a comparator output



signal at the first level and disabling energization of the load upon the occurrence of a comparator output signal at the second level; and

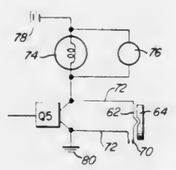
output feedback means, connected between the driver switch means and the output feedback sensing point, for communicating a feedback voltage to the output feedback sensing point upon the occurrence of a short condition to cause the voltages at the output feedback sensing point and I/O terminal sensing point to enter a logic high state that can be detected by program logic and used to cause the internal switch means to close and pull down the I/O terminal, thereby disabling energization of the electrical load.

4,214,237

ELECTRICAL INDICATOR MEANS FOR INDICATING THE CORRECT POSITION OF A CASETTE IN FLOW CONTROLLING

Nicholas Zissimopoulos, Schaumburg, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 21, 1979, Ser. No. 12,989
Int. Cl.[2] G07F *11/60*; G08B *21/00*
U.S. Cl. 340—686 **6 Claims**



1. In flow controlling apparatus including a separate casette defining a liquid flow path, and a controller adapted to receive and hold said casette, the improvement comprising, in combination:

means for indicating the correct positioning of the casette in the controller, said means comprising: a rotationally movable member, movable in a manner relating to the position of the casette, and a bearing member, one of said members defining a projection adapted to bear against the other member; an electrical switch adapted to be opened and closed by one of said members; a recess defined in the member which does not carry the projection, said recess being adapted to receive the projection in the position of the rotationally movable member when the casette is correctly positioned in the controller;

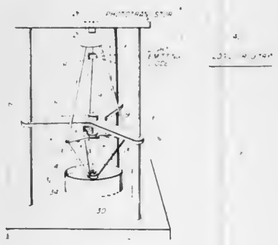
and alarm means operated by said switch, whereby said switch is closed to operate said alarm means when the projection of the movable member is spaced from said recess, and said switch is open when said projection is positioned in the recess.

4,214,238

SEISMIC TRIGGER

William M. Adams, Honolulu, Hi.; Robert F. Blakely, Bloomington, Ind.; Charles R. Ellis, Bloomington, Ind., and Judson Mead, Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Mar. 8, 1977, Ser. No. 775,591
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—690 **10 Claims**



1. A device for detecting seismic variances comprising:

a power source;

photoelectric switching means in circuit with said power source;

inverted, compound pendulum means moveably mounted such that oscillation of said pendulum means activates said switching means; and

response means, in circuit with said power source and said switching means, for registering the activation of said switching means and responding in a pre-determined manner only to a repetition rate of oscillation of the pendulum means equal to or greater than a selectable threshold.

4,214,239

MAGNETIC DRUM STORAGE FOR THE TRACK BEFORE DETECT SYSTEM

George M. Dillard, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1963, Ser. No. 270,119
Int. Cl.[2] G01S *9/02*
U.S. Cl. 343—5 VQ **6 Claims**

1. A track detection system comprising;

receiving means for receiving reflected radio frequency signals from an object in a given medium;

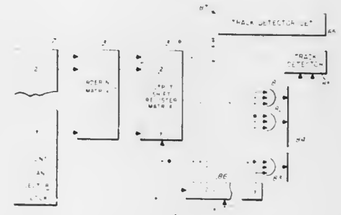
said receiving means for receiving said signals at a predetermined scan rate;

storage means operatively coupled to said receiving means for storing information corresponding to reflected radio frequency signals from an object in a given medium;

referencing means included in said storage means for referencing received reflected radio frequency signals with respect to the azimuth from which the reflected information is received during a scan of said receiving means;

said storage means being adapted for storing a multitude of scans;

ordering means operatively coupled to said storage means for accepting information from said storage means and sorting said information according to range and sector where range is broken up into a discrete number of increments referred to as range bins and where range is the distance from the receiving means to an object in a medium and sector is the azimuth from which a signal is received at a given time;



other storage means operatively connected to said ordering means for storing information corresponding to the number of hits per range bin where hits are defined as the times when an object is illuminated by radio frequency energy; said number of hits per range bin having been stored in said first mentioned storage means as range information; and

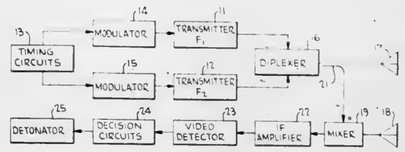
track detector means operatively connected to said other storage means for making a decision as to the absence or presence of a track in the medium.

4,214,240

CODED PULSE RADAR FUZE

Frank Weiss, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 3, 1964, Ser. No. 416,684
Int. Cl.[3] F42C *13/04*
U.S. Cl. 343—7 PF **11 Claims**



1. A coded pulse radar proximity fuze with improved electronic countermeasure protection, comprising:

(a) transmitting means for radiating a recurring sequence of three pulses of two alternate frequencies at a target, each of said pulses being separated in time by the desired radar round trip delay time and each of said sequences of pulses being separated in time by a greater time than the desired radar round trip delay time;

(b) means for receiving reflections of said recurring sequence of three pulses radiated at a target by said transmitting means;

(c) means connected to said receiving means and to said transmitting means for combining the output of said receiving means with a portion of the output of said transmitting means;

(d) means connected to said combining means for amplifying that portion of the output of said combining means having a frequency equal to the difference between said two alternate frequencies; and

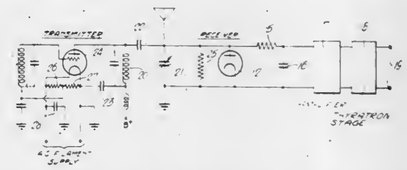
(e) means connected to said means for amplifying for detecting a sequence of two pulses separated in time by the desired radar round trip delay time.

4,214,241

PROXIMITY CONTROL SYSTEM

Joseph C. Tellier, 4005 Redden Rd., Drexel Hill, Pa. 19026

Filed Mar. 11, 1944, Ser. No. 526,037
Int. Cl.[2] G01S *9/02*
U.S. Cl. 343—7 PF **2 Claims**



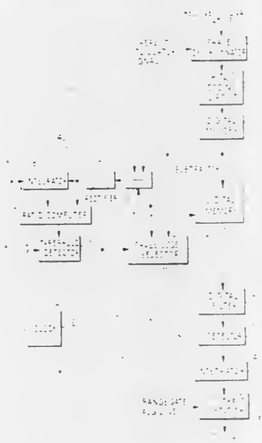
1. In a proximity-controlled bomb adapted to be dropped upon a target and adapted to reach a fixed velocity, a fixed radio-frequency control mechanism comprising a continuous wave radio transmitter and receiver operating at a fixed frequency and having a fixedly tuned network in common, an antenna coupled to said network, a detector coupled to said network for deriving a difference-frequency signal by heterodyning the transmitted wave and the wave reflected from said target, and means coupled to said detector and responsive to signal amplitudes derived only when said bomb and target reach a predetermined proximity.

4,214,242

METHOD AND APPARATUS FOR ELIMINATING MULTIPLE-TIME ECHOES IN PULSE DOPPLER RADARS

Jean-Marie H. Colin, Paris, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 6, 1978, Ser. No. 967,076
Claims priority, application France, Dec. 8, 1977, 77 36971
Int. Cl.[2] G01S *9/42*
U.S. Cl. 343—7.7 **6 Claims**



1. A method for decreasing the effect of multiple-time echoes in the receiving signals of pulse Doppler radar apparatus of the type employing unequal transmitted pulse spacing and coherent only on reception, comprising the steps of:

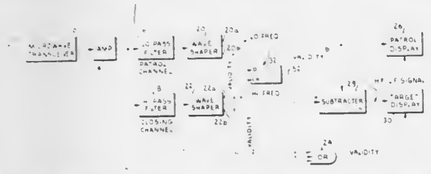
computing within each range gate, the absolute value of the difference between the last two phase pulses received;
comparing the computed absolute value thus obtained to the average of N absolute values previously computed;
determining the presence of a multiple-time echo whenever the last of said absolute values is at least k times greater than the average of the preceding N absolute values; and
substituting the last previous phase pulse for that detected in a range gate in which said absolute value is greater than k times the average of said preceding N absolute values.

4,214,243

HARMONIC DETECTOR FOR TRAFFIC RADAR

Robert E. Patterson, Lee's Summit, Mo., assignor to M. P. H. Industries, Inc., Chanute, Kans.

Filed Sep. 18, 1978, Ser. No. 943,199
Int. Cl.[2] G01S *9/44*
U.S. Cl. 343—8 **9 Claims**



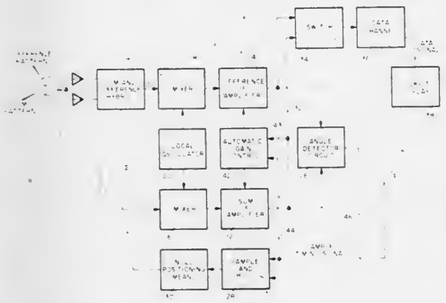
8. In a traffic radar receiver for use on a moving patrol vehicle, a method of identifying a target vehicle and determining the speed thereof, said method comprising the steps of:
receiving a Doppler signal having a low frequency component representing the speed of the patrol vehicle;
deriving from said Doppler signal a low frequency speed signal corresponding to said low frequency component, and a high frequency speed signal of unknown validity;
recognizing the phase relationship between the two speed signals;
deriving target speed information from said speed signals; and
displaying said speed information unless the phase relationship between the two speed signals remains constant for a predetermined period of time, whereby speed information is not displayed if said low and high frequency speed signals are phase coherent.

4,214,244

NULL PATTERN TECHNIQUE FOR REDUCTION OF AN UNDESIRABLE INTERFERING SIGNAL

Michael W. McKay, Maitland, and Evan L. McDirmit, Orlando, both of Fla., assignors to Martin Marietta Corporation, Orlando, Fla.

Filed Dec. 20, 1971, Ser. No. 210,270
Int. Cl.[2] G01S *7/36*
U.S. Cl. 343—18 E **22 Claims**



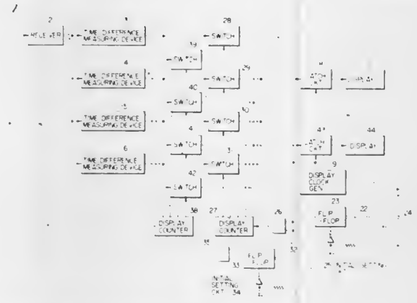
8. A null pattern angle tracking technique for reducing the effect of an undesirable cofrequency interfering signal in a data link channel comprising at least one antenna operative in the electromagnetic domain and having the capability of producing at least one sharp angular null as measured in its polar pattern amplitude characteristic, detector means for recovering desired information from a remote data channel transmitter that is substantially continuously interrupted, as well as making apparent the existence of an unwanted signal, means for redirecting the polar pattern amplitude characteristic of said antenna means such that angle tracking from the desired source is accomplished, means enabling any unwanted signal present to be utilized during such interruptions of the desired signal for redirecting the antenna by the unwanted signal source rather than by the desired source, such that the polar pattern null of the antenna is pointed in the direction of the unwanted signal, thus suppressing the unwanted signal and allowing the desired source to be utilized with a considerably improved signal-to-unwanted-signal ratio.

4,214,245

LORAN RECEIVING APPARATUS

Teruhisa Fujino, Kawasaki; Fujio Osawa, Tama; Noriaki Nagao, Toshima, and Shigeo Hanji, Musashino, all of Japan, assignors to Kabushiki Kaisha Koden Seisakusho, Tokyo, Japan

Filed Sep. 20, 1978, Ser. No. 944,522
Claims priority, application Japan, Sep. 26, 1977, 52-114763; Nov. 9, 1977, 52-150204[U]
Int. Cl.[2] G01S *1/24*
U.S. Cl. 343—103 **13 Claims**



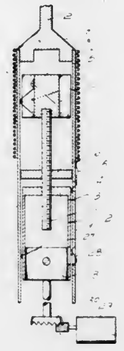
1. A Loran receiving apparatus comprising:
a Loran receiver for measuring the time differences between a Loran signal from a master station and Loran signals from a plurality of slave stations and providing the measured time differences as time difference signals at individual measured output terminals;
display mode changeover means manually controlled to set first and second display modes alternately with each other;
a display for providing a display of each time difference signal supplied thereto;
means for supplying the time difference signals at the measured output terminals to said display in a repeating cyclic order when the display mode changeover means is set in the first display mode; and
means for continuously supplying to said display that one of the time difference signals which is supplied to said display in the first display mode immediately before the first display mode is switched to the second one when said display mode changeover means is set in the second display mode.

4,214,246

CONTINUALLY ADJUSTABLE FREQUENCY ANTENNA

Juan M. Arechavala, Diagonal Norte, 825-Buenos Aires, Argentina

Filed Nov. 29, 1978, Ser. No. 964,397
Claims priority, application Argentina, Jan. 20, 1978, 274490; Jan. 29, 1978, 270164
Int. Cl.[2] H01Q *9/00*
U.S. Cl. 343—750 **6 Claims**



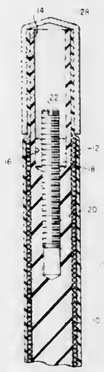
1. A continually adjustable frequency antenna, comprising
(a) a supporting tube connected to an antenna and having a winding on its exterior;
(b) a sliding piston mounted for upward and downward movement within said supporting tube and having means thereon preventing it from rotating with respect to said supporting tube;
(c) a threaded rod attached by one of its ends to said sliding piston;
(d) a second tube within said supporting tube and receiving said threaded rod when said sliding piston moves downwardly;
(e) means for rotatably driving said second tube;
(f) said threaded rod being moved from its uppermost to its lowermost position by a rotating nut located at one end of said second tube.

4,214,247

TUNABLE FIBERGLASS WHIP ANTENNA

Thomas A. Richmond, Middletown, N.Y., assignor to Avnet, Incorporated, Ellenville, N.Y.

Filed Oct. 13, 1978, Ser. No. 951,162
Int. Cl.[2] H01Q *1/36*
U.S. Cl. 343—752 **1 Claim**



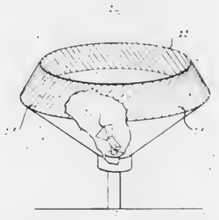
1. A tunable fiberglass whip antenna comprising an elongated tubular fiberglass core having a two-step axial bore at its upper end, a conductive coil wrapped around the exterior surface of said fiberglass core with the upper portion of said coil being tightly wound and enveloping said bore, an internally threaded insert secured at the bottom of the large diameter section of said bore near the top of said coil, and a metallic screw in threaded engagement with the insert and adapted to extend through said insert from beyond the top of said coil into the small diameter portion of said bore, whereby said screw may be longitudinally adjusted relative to said tightly wound coil by rotation of said screw within said insert to thereby vary the inductive coupling between said tightly wound coil and said screw, said core and coil are enveloped in a plastic shrink tube, the open end of said axial bore being enclosed by a cap.

4,214,248

TRANSREFLECTOR SCANNING ANTENNA

Harry M. Cronson, Lexington; David Lamensdorf, Arlington, and Gerald F. Ross, Lexington, all of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Jun. 22, 1978, Ser. No. 918,182
Int. Cl.[2] H01Q *3/18, 15/24*
U.S. Cl. 343—756 **6 Claims**



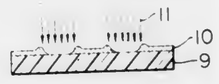
1. An antenna of the type that includes a transreflector and a feed antenna therefor, said transreflector having an internal focal circle and created by a plurality of reflecting elements arranged on a surface of revolution formed about a generating axis whereon each of said reflecting elements is in an angular relationship of substantially 45° with each crossed meridian of said surface of revolution, wherein said feed antenna comprises an array of simultaneously operable radiation devices each oriented to provide a radiation polarization vector when radiating that is substantially parallel to directly illuminated reflecting elements and positioned with respect to one another such that the locus of their radiation phase centers is a line which forms an angle of substantially 45° with said radiation polarization vector.

4,214,249

RECORDING MEMBER FOR LASER BEAM AND PROCESS FOR RECORDING

Masanao Kasai; Hitoshi Hanadate, both of Tokyo; Yoshioki Hajimoto, Chofu; Takashi Kitamura, and Kiyonobu Endo, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 497,741, Aug. 15, 1974, abandoned. This application Sep. 21, 1976, Ser. No. 725,348
Claims priority, application Japan, Aug. 20, 1973, 48/93188; Sep. 7, 1973, 48/100833
Int. Cl.[2] G01G *15/34*
U.S. Cl. 346—76 L **10 Claims**



1. A laser beam recording member which consists essentially of a recording layer disposed on a surface of a support and which has information in said recording layer in the form of a

groove which extends at least to said surface of said support and which is formed directly therein by evaporation of the recording layer by means of the radiation energy of a laser beam in those portions exposed to the laser beam without application of further means, wherein said recording layer is from 10 microns 10 millimicrons in thickness and is composed of a non-metallic layer composed of a member selected from the group consisting of the chalcogen elements S, Se and Te, mixtures thereof and a chalcogenide compound of at least one of S, Se and Te with at least one of As, Bi, Sb, Ge, Si, Sn, In, Zn, Fe, Cu, Ag, Ni, Al, V and Pb.

4. A process for laser beam recording which comprises exposing a recording member to a modulated laser beam, said recording member comprising a recording layer which is disposed on a surface of a support and which comprises a non-metallic layer which is from 10 microns to 10 millimicrons in thickness and is composed of a member selected from the group consisting of the chalcogen elements, S, Se and Te, mixtures thereof and a chalcogenide compound of at least one of S, Se and Te with at least one of As, Bi, Sb, Ge, Si, Sn, In, Zn, Fe, Cu, Ag, Ni, Al, V and Pb to thereby record information in the recording layer in the form of a groove which extends at least to said surface of said support and which is formed directly therein by evaporation of the recording layer by means of the radiation energy of said modulated laser beam in accordance with the pattern formed thereon by the modulated laser beam without application of further means.

4,214,250

INDICATING RECORDER

Hisaya Fujita; Hiroshi Ando, and Setsuo Sato, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,151
Claims priority, application Japan, Nov. 14, 1977, 52-136417
Int. Cl.[2] G01D *15/00*
U.S. Cl. 346—145 **7 Claims**



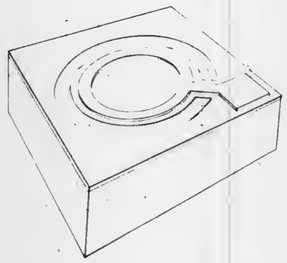
1. An indicating recorder comprising:
a housing unit having a front door, said housing unit being composed entirely of a square prismatic housing;
an internal frame unit located within said housing unit behind said front door;
said internal frame unit comprising (1) left and right side plates positioned respectively adjacent the corresponding sides of said housing unit, (2) an upper beam extending transversely between said side plates, (3) a lower beam extending transversely between said side plates, and (4) a recording chart holder also extending transversely between said side plates;
said beams and said chart holder being formed as shapes having uniform cross-sections;
said internal frame unit having secured thereto an indicating recorder mechanism, a chart feed mechanism and electrical resistance means for sensing the indicator position;
support means integral with said housing unit at one side thereof, said support means including means to accommodate swinging movement of a device supported thereby about a vertical axis;
means mounting said internal frame unit on said support means to provide for swinging movement of said frame unit about said vertical axis, into and out of said housing unit;
an electric power source unit located in a space in said housing unit separate from said swingable internal frame unit, said electric power source unit comprising a unit frame fixedly secured to said housing unit independently of said frame unit; and
an electric power transformer and terminal board means forming part of said power source unit to remain fixed in position within said housing unit when said frame unit has been swung out to provide access to said recorder mechanism or the other elements mounted on said frame unit.

4,214,251

RADIATION-EMITTING SEMICONDUCTOR DIODE

Werner Schairer, Flein, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,141
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 2755433
Int. Cl.[2] H01L *33/00*
U.S. Cl. 357—17 **6 Claims**



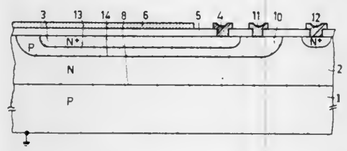
1. A radiation-emitting semiconductor diode having a pn-junction which runs parallel to a main surface of the semiconductor body, characterized in that the pn-junction is limited by a groove which is interrupted at one point by means of a web for a conductor track running on the web, and a connection is made between an electrode, located inside the region of the semiconductor surface enclosed by the groove, and a connection surface located outside the region of the semiconductor surface enclosed by the groove.

4,214,252

SEMICONDUCTOR DEVICE HAVING A MOS-CAPACITOR

Joachim Goerth, Lüneburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,442
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735529; Jun. 15, 1978, 2826192
Int. Cl.[2] H01G *29/78*
U.S. Cl. 357—23 **7 Claims**



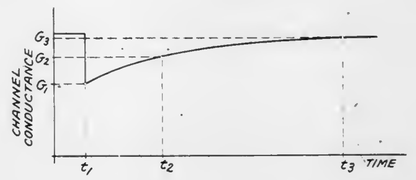
1. A semiconductor device comprising a semiconductor substrate of first conductivity type; a semiconductor layer of second conductivity type overlying said semiconductor substrate; an insulating layer on said semiconductor layer; a conductive layer formed on said insulating layer; a highly doped zone of said second conductivity type formed in the surface of said semiconductor layer; said highly doped zone, said insulating layer, and said conductive layer forming a MOS-capacitor; a further zone of said first conductivity type entirely surrounding said highly doped zone and interposed between said highly doped zone and said semiconductor layer; and a separate connection electrode at each of said highly doped zone, said further zone, and said semiconductor layer.

4,214,253

RADIATION DETECTOR

Robert N. Hall, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 13, 1977, Ser. No. 805,857
Int. Cl.[2] H01L *27/14*
U.S. Cl. 397—29 **9 Claims**



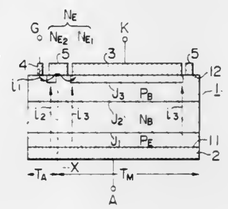
1. A semiconductor device comprising:
an elongated-shaped body of monocrystalline semiconductor material having a longitudinal dimension,
said body including a first elongated-shaped region of a one conductivity type located entirely within and generally conforming to the shape of said body, and a second region of the opposite conductivity type completely enclosing said first region and forming a PN junction therewith completely contained within said body,
a first ohmic contact to said second region at one end of said longitudinal dimension and a second ohmic contact to said second region at the other end of said longitudinal dimension.

4,214,254

AMPLIFIED GATE SEMICONDUCTOR CONTROLLED RECTIFIER WITH REDUCED LIFETIME IN AUXILIARY THYRISTOR PORTION

Shin Kimura; Hiroshi Fukui, both of Hitachi, and Yoshio Terasawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1978, Ser. No. 882,332
Claims priority, application Japan, Mar. 9, 1977, 52-25580
Int. Cl.[2] H01L *29/74*
U.S. Cl. 357—38 **10 Claims**



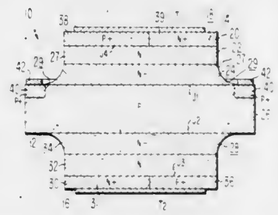
1. A semiconductor rectifier comprising
a semiconductor substrate having a pair of main surfaces and consisting of four alternate P-type and N-type layers continuously formed between said pair of main surfaces, any contiguous layers defining a PN junction between them, one of said main surfaces consisting of exposed surfaces of one outermost layer and one intermediate layer and the other main surface being the exposed surface of the other outermost layer, and said one outermost layer consisting of a main region and an auxiliary region having a smaller area than said main region and separated from said main region by said one intermediate layer;
a first main electrode disposed on said one main surface of said semiconductor substrate and kept in ohmic contact with said main region;
a second main electrode disposed on said other main surface of said semiconductor substrate and kept in ohmic contact with said other outermost layer;
a gate electrode disposed on said one main surface of said semiconductor substrate and kept in ohmic contact with the portion of said one intermediate layer in the neighborhood of said auxiliary region; and
an auxiliary gate electrode disposed on said one main surface of said semiconductor substrate, extended on said one intermediate layer along the periphery of said main region and having its portion in ohmic contact with said auxiliary region, wherein the life time of the carriers in a first portion of said substrate which registers on the projection of said auxiliary region in the direction perpendicular to said one main surface and the life time of the carriers in a second portion of said substrate in the vicinity of said first portion are made shorter than the life time of the carriers in a third portion of said substrate which registers on a similar projection of said main region.

4,214,255

GATE TURN-OFF TRIAC WITH DUAL LOW CONDUCTIVITY REGIONS CONTACTING CENTRAL GATE REGION

John M. S. Neilson, Mountaintop, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 7, 1977, Ser. No. 849,398
Claims priority, application United Kingdom, Feb. 7, 1977, 04944/77
Int. Cl.[2] H01L *29/747*
U.S. Cl. 357—39 **17 Claims**



1. A gate turn-off semiconductor triac device having first and second main terminals and a gate electrode and capable (1) when it is in its high impedance state of blocking voltages applied across its main terminals in either polarity and (2) of being placed in a low impedance state for conducting current in a direction determined by the polarity of the voltage applied across its main terminals, said gate turn-off semiconductor triac device comprising:
a body of semiconductor material having first and second major sides;
a first region having a first conductivity type;
a gate region having a second conductivity type disposed adjacent said first region, said gate region forming a first PN junction with said first region at its interface therewith, said gate region having a higher conductivity than the adjacent portion of said first region;
a second region having said first conductivity type disposed adjacent said gate region and forming a second PN junction with said gate region at its interface therewith, the portion of said second region adjacent said gate region

having a lower conductivity than said gate region, said second region being spaced apart from said first region by said gate region;

a first first-type emitter region having said first conductivity type disposed adjacent said first region and said first major side of said body of semiconductor material, said first first-type emitter region being spaced from said gate region by said first region;

a second first-type emitter region having said first conductivity type disposed adjacent said second region and said second major surface of said body of semiconductor material, said second first-type emitter region being spaced from said gate region by said second region;

a first second-type emitter region having said second conductivity type disposed adjacent said second region and said second major side of said body of semiconductor material, said first second-type emitter region forming a third PN junction with said second region at its interface therewith, said first second-type emitter region being spaced apart from said gate region by said second region;

a second second-type emitter region having said second conductivity type disposed adjacent said first region and said first major side of said body of semiconductor material, said second second-type emitter region forming a fourth PN junction with said first region at its interface therewith, said second second-type emitter region being spaced apart from said gate region by said first region;

first main terminal means disposed adjacent said first major side of said body of semiconductor material and contacting said first first-type emitter region and said second second-type emitter region;

second main terminal means disposed adjacent said second major side of said body of semiconductor material and contacting said second first-type emitter region and said first second-type emitter region;

gate electrode means contacting said gate region;

said first second-type emitter region isolated from said gate region by said second and third PN junctions which together constitute a pair of back-to-back PN junctions;

said second second-type emitter region isolated from said gate region by said first and fourth PN junctions which together constitute a pair of back-to-back PN junctions;

whereby a gate signal of a predetermined polarity can switch said triac from its low impedance state to its high impedance state.

4,214,256

TANTALUM SEMICONDUCTOR CONTACTS AND METHOD FOR FABRICATING SAME

Hormazdyar M. Dalal, Wappingers Falls; Majid Ghafghaichi, Poughkeepsie; Lucian A. Kasprzak, Hopewell Junction, and Hans Wimpfheimer, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 827,912, Aug. 26, 1977. This application Sep. 8, 1978, Ser. No. 941,100

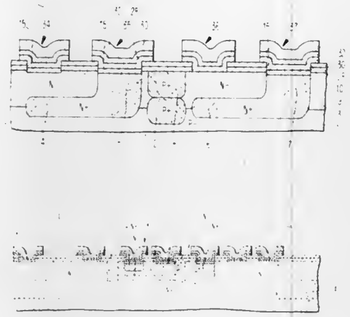
Int. Cl.[2] H01L *23/48, 29/46, 29/54*

U.S. Cl. 357—71 **6 Claims**

1. A semiconductor contact comprising:

a silicon semiconductor substrate;

a layer of tantalum disposed atop said substrate;



a layer of chrome containing chromium oxide disposed atop said tantalum layer; and

a layer of aluminum disposed atop said chrome layer.

4,214,257

METHOD AND COLOR TELEVISION PICTURE TUBE FOR REPRODUCING THREE-DIMENSIONAL IMAGE

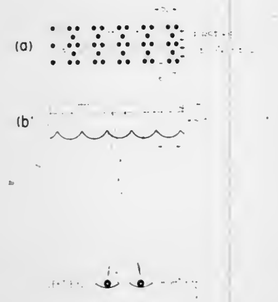
Satoshi Yamauchi, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 4, 1978, Ser. No. 948,477

Claims priority, application Japan, Nov. 10, 1977, 52-121757

Int. Cl.[2] H04N *9/60*

U.S. Cl. 358—3 **7 Claims**



1. A stereoscopic color television image reproducing system, comprising:

a color television picture tube having a screen comprising a multiplicity of trios of picture elements comprising color dots or strips;

means for providing a color television signal with horizontal line interlace between successive fields, the video information in each field corresponding to a different one of two observation eyes than the video information in the immediately preceding and succeeding fields;

means for scanning said screen during each field so that alternate ones of said picture elements are excited during each horizontal line, with picture elements in vertical alignment being excited during successive lines of the same field, each field forming a vertical strip pattern of effective scan of said picture elements, adjacent fields corresponding to two different observation eyes exciting different picture elements to provide one vertical strip pattern corresponding to a left eye image and another intermeshed vertical strip pattern corresponding to a right eye image, with horizontal line interlace between successive fields; and

a lenticular lens disposed in juxtaposition with said screen and comprising a plurality of vertical lenticules, each lenticule being disposed in alignment with one strip of said left eye image and one strip of said right eye image, to focus said images to stereoscopically reproduce said color television signal.

4,214,258

PORTABLE TELEVISION CAMERA AND TAPE RECORDER COMBINATION

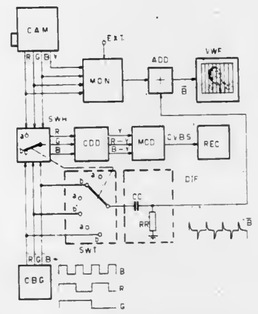
Nicolaas J. L. van der Valk, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,321

Claims priority, application Netherlands, Dec. 7, 1977, 7713500

Int. Cl.[2] H04N *5/76, 9/62, 9/04*

U.S. Cl. 358—4 **3 Claims**



1. A portable television camera and tape recorder combination comprising a camera, a tape recording device, a bar generator for testing purposes at the tape recording device, a monitoring device for signal supply to a view finder and a change-over device for supplying the signal of the camera and bar generator, respectively, to the tape recording device, wherein the combination further comprises a superposition stage, coupled between said monitoring device and said view finder, having a first input connected to said monitoring device, a second input, and an output connected to said view finder, and a series arrangement of a signal differentiating circuit and an on-off switching device coupled to said change-over device, said series arrangement being provided between the output of the bar generator and the second input of said superposition stage, whereby when said tape recording device is being supplied with signals from said bar generator, a visual pattern will appear in said view finder indicative of this condition.

4,214,259

COLOR VIDEO TAPE RECORDER/REPRODUCER WITH CHROME CORRECTOR

David T. L. Chang, Palo Alto, Calif., assignor to Recortec, Inc., Sunnyvale, Calif.

Filed Apr. 7, 1978, Ser. No. 894,419

Int. Cl.[2] H04N *5/795*

U.S. Cl. 358—8 **9 Claims**

1. An EIAJ-2 video tape recorder and reproducer machine for recording a signal representing a video signal which includes luminescence and chrominance information onto a cassette-type video tape and for reproducing the video signal recorded on a cassette-type video tape, said machine comprising:

a rotatable drum;

means for rotating said drum;

a first record/playback head carried by said drum at a first position along its circumference;

a second record/playback head carried by said drum at a second position along said circumference which is diametricallyopposite said first position;

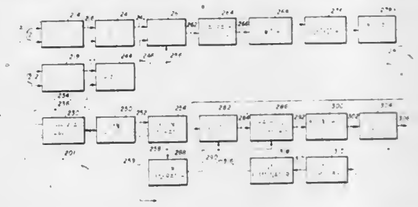
means for transporting a portion of the video tape past said drum, said tape being wrapped about said circumference of said drum so as to define a helical path about at least a 180 degree arc such that as said drum rotates, said first and said second heads define a series of tracks on the tape which are aligned at an acute angle with respect to the length of said tape, said transporting means including capstan means for driving said video tape;

means for rotating said capstan;

modulator means for frequency modulating a carrier signal during the record operation with the video signal including the luminescence and the chrominance information to develop a modulated signal, said modulated signal being coupled to said first and second heads, whereby said modulated signal is recorded onto said series of tracks;

record control means including means for controlling the rotational speed of said drum at a rate commensurate with an increased standard frame rate of said video signal such that an integer number of said tracks greater than one are used to record each field of said video signal, means for recording a control signal having a frequency commensurate with the color frame rate onto said video tape, and capstan controller means for controlling the rotational speed of said capstan during recording at a rate commensurate with said color frame rate;

playback control means including means for reproducing said recorded color frame rate control signal, capstan controller means for controlling the rotation speed of the capstan during playback at a rate commensurate with said



color frame rate, drum control means for controlling the rotatinal speed of said drum during playback at a rate equal with the speed of said drum during recording, whereby said first and second heads access said series of recorded tracks of the video signal;

video signal reproducer means coupled to said first record/playback head and to said second record/playback head to receive video signals reproduced by said heads from tracks on the tape, said video signal reproducer means including video signal splicing means for splicing the portions of the modulated signal developed by said first and second heads to develop a spliced reproduced video signal demodulator means for receiving and decoding said spliced reproduced modulator signal to develop a demodulated reproduced video signal, output terminal means for receiving said reproduced video signal; and chroma corrector means responsive to the rotational speed of the drum and operative to develop a first correction signal when said first record/playback head is accessing the extremities of a respective track and a second correction signal when said second record/playback head is accessing the extremities of a respective track, wherein said video signal reproducer means is responsive to said first correction signal and operative to develop said reproduced modulated signal so as to correct for a decrease in pressure between said first head and the tape at the extremities of the respective track, and responsive to said second correction signal and operative to develop said reproduced modulated signal so as to correct for a decrease in pressure between said second head and the tape at the extremities of the respective track.

4,214,260

CIRCUIT FOR THE LINE SYNCHRONIZATION IN A TELEVISION RECEIVER HAVING A GATED AUXILIARY CONTROL LOOP

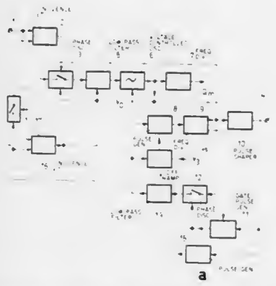
Jan van Straaten, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 727,714, Sep. 29, 1976, abandoned. This application Sep. 28, 1978, Ser. No. 946,971

Claims priority, application Netherlands, Oct. 3, 1975, 7511633

Int. Cl.[2] **H04N** *9/44, 5/04*

U.S. Cl. 358—17 **10 Claims**



a

1. A line synchronizing circuit comprising an oscillator having a reference signal input, a control input means for controlling at least one of the parameters of frequency and phase of said oscillator, and an output; a coincidence stage having first input means for receiving a pulse shaped line synchronization signal, second input means for receiving gate pulses derived from said oscillator output, and an output, a first phase discriminator having a first input means coupled to said stage output, a second input means for receiving a pulsatory reference signal derived from said oscillator output, and an output means for providing a signal indicative of the phase difference between the signals at said discriminator input means; a first low pass filter having an input coupled to said discriminator output means and an output means coupled to said oscillator control input means for providing a smoothed discriminator output voltage thereto; and an auxiliary control loop means for providing that the central instant of a signal pulse substantially coincides with the central instant of an edge occurring in said reference signal, said loop including a second phase discriminator having two inputs coupled to receive said gate pulses and said reference signal derived from said oscillator output respectively, and an output means for providing a signal in accordance with a possible interval between said instants; and a second low pass filter having an input coupled to said second discriminator output means and an output means coupled to said oscillator reference signal input for applying a smoothed voltage thereto; whereby said interval is reduced to substantially zero.

4,214,261

SYNCHRONIZING APPARATUS FOR REMOTE TELEVISION APPARATUS

Lucas J. Bazin, Vincentown; Gary R. Peterson, Runnemede, and Dennis M. Schneider, Sewell, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 11, 1979, Ser. No. 2,726

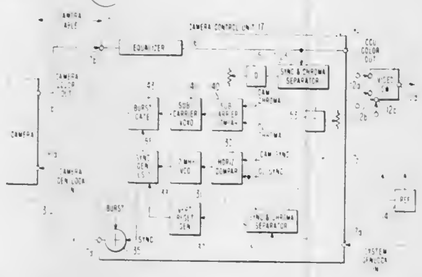
Int. Cl.[2] **H04N** *9/46*

U.S. Cl. 358—19 **7 Claims**

1. A sychronizing apparatus for use in a television system including a remote color television signal generating apparatus of the type having an input terminal adapted to receive a composite sync and burst reference signal from a reference signal source for providing at an output terminal a composite television signal synchronized to the composite sync and burst reference signal, a first cable coupled at one end to said one input terminal of said remote television apparatus and a second cable coupled at one end to said output terminal of said remote television apparatus, comprising:

first means adapted to be coupled to said second cable at the end opposite said one end for separating the sync and color burst signals from said composite television signal from said television apparatus;

second means responsive to said composite sync and burst reference signal from said reference signal source for separating said composite reference signal to provide a separate reference sync signal and reference color burst signal;



third means responsive to said color burst signals from said remote apparatus and said reference color burst signals for generating advanced color burst signals to compensate for delays through said cables;

fourth means responsive to said apparatus sync signals from said remote apparatus and said reference sync signals for generating advanced sync signals to compensate for delays through said cables; and

fifth means adapted to be coupled to said first cable at the end opposite said one end and responsive to said advanced color burst signals and said advanced sync signals for providing to said television apparatus advanced composite sync and color burst reference signals.

4,214,262

DIGITAL APPARATUS FOR CORRECTING A TIME-BASE ERROR IN A TELEVISION VIDEO SIGNAL

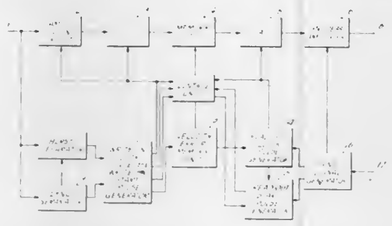
Mineo Mizukami, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1978, Ser. No. 941,936

Claims priority, application Japan, Sep. 13, 1977, 52-110747

Int. Cl.[2] **H04N** *9/46*

U.S. Cl. 358—19 **6 Claims**



1. A time-base corrector providing compensation for a time-base error contained in a composite color video signal, said composite color video signal including a horizontal synchronizing signal and a color burst signal, said corrector comprising:

(a) means for generating a first clock pulse train, the frequency of said first clock pulse train being controlled by a control signal and the starting phase of oscillation of said first clock pulse train being determined by a one cycle burst pulse;

(b) means responsive to said first clock pulse train for encoding said composite color video signal into a digitized signal;

(c) means for storing said digitized signal in response to said first clock pulse train;

(d) means for producing a second clock pulse train having a predetermined phase relationship with a reference signal; and

(e) means responsive to said second clock pulse train for reading out the digital signal stored in said memory means; said first clock pulse generating means characterized by;

(f) means responsive to said color burst signal for producing said one-cycle burst pulse, said one-cycle burst pulse having a predetermined phase relationship with said horizontal synchronizing signal and said one-cycle burst pulse being applied to said first clock pulses generating means;

(g) first counting means for counting said first clock pulse train and for generating a third clock pulse train, the frequency of said third clock pulse train being equal to a subcarrier frequency;

(h) second counting means for counting said third clock pulse and for generating a point pulse when said third clock pulse count has reached a predetermined number, the frequency of said point pulse being equal to a horizontal synchronizing frequency and said third clock pulse count being different between an odd line of said video signal and an even line of said video signal; and

(i) means for phase-comparing said one-cycle burst pulse with said point pulse, the output of said phase comparator means being supplied to said first clock pulse generating means as said control signal.

4,214,263

TELEVISION SYSTEM FOR DISPLAYING AND RECORDING PATHS OF MOTION

Arthur Kaiser, Trumbull, Conn., assignor to CBS Inc., New York, N.Y.

Filed Sep. 20, 1978, Ser. No. 944,236

Int. Cl.[2] **H04N** *5/22, 7/18, 5/22*

U.S. Cl. 358—22 **16 Claims**



1. Method for generating a video signal for displaying simultaneously a succession of images of an object moving over a selectable time period in an otherwise substantially static scene, comprising the steps of:

(a) storing for the duration of a selected time period a reference frame of video representing said scene at the start of a selected time period;

(b) comparing picture elements of selected television frames subsequently arriving during the selected time period with corresponding picture elements of the said reference frame;

(c) separately storing those picture elements of the subsequently arriving frames which are shown by the comparison to be different from those in said reference frame and assigning to the later value for a picture element separately stored priority over an earlier separately stored value derived during the selected time period for the same picture element; and

(d) at the termination of the selected time period, providing a video signal for display representing at least those picture elements separately stored during the selected time period.

4,214,264

HYBRID COLOR IMAGE SENSING ARRAY

John S. Hayward, Rochester; Benjamin B. Snavely, Fairport, and Pin S. Tschang, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1979, Ser. No. 15,973

Int. Cl.[2] **H04N** *9/07;* **H01L** *27/14*

U.S. Cl. 358—44 **14 Claims**



1. A hybrid color image sensing array, comprising:

(a) an array of semiconductor image sensing elements, at least some of which elements having superposed upper and lower light responsive channels for producing first and second photosignals, the intrinsic spectral responses of said upper and lower channels being different due to the differential absorption of light by a semiconductor material; and

(b) an array of color filter elements disposed over the array of image sensing elements, the array of filter elements having;

(1) elements having a first relative transmittance adapted to tailor the spectral responses of an image sensing element such that the photosignals produced by the element possess a component representing the response of the element to light in a first spectral region and a component representing the response of the element to light in a second spectral region, and

(2) elements having a second relative transmittance adapted to tailor the spectral responses of an image sensing element such that the photosignals produced by the element posssess a component representing the response of the element to light in said first spectral region and a component representing the response of the element to light in a third spectral region.

4,214,265

METHOD AND DEVICE FOR SUPERVISING THE SPEED OF AN OBJECT

Lykke Olesen, Granvägen 4, 130 40 Djurhamn, Sweden

Continuation-in-part of Ser. No. 731,278, Oct. 12, 1976, abandoned. This application Apr. 14, 1978, Ser. No. 896,411

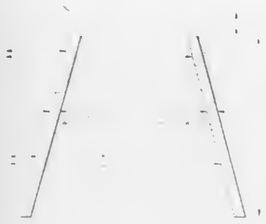
Claims priority, application Sweden, Oct. 16, 1975, 7511635

Int. Cl.[2] **H04N** *7/18*

U.S. Cl. 358—93 **5 Claims**

1. A method for supervising the speed of an object, such as a vehicle, relative to a reference point, comprising the steps of

(a) mounting a TV-camera at said reference point and directing said TV-camera at a certain angle (α) to the direction of movement of said object so that said object will pass substantially sideways in the field of view of the TV-camera;
(b) triggering a pulse generator by means of video signals derived from said TV-camera; and



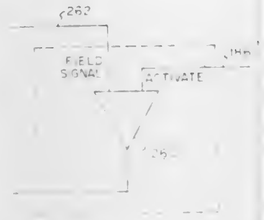
(c) counting the pulses generated by said pulse generator while the image of said object is passing between two given marking lines on the TV-image, said marking lines corresponding to a measuring distance, the counted number of pulses constituting a measure of the speed of said object.

4,214,266
REAR VIEWING SYSTEM FOR VEHICLES
Charles H. Myers, 2848 Scottsdale Dr., San Jose, Calif. 95122
Filed Jun. 19, 1978, Ser. No. 916,519
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—108 **9 Claims**



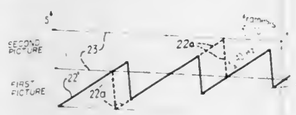
1. A system for assisting an operator while backing into a given parking site a self-propelled transporter having a forwardly facing operator's station from which the operator's vision directly to the rear of the transporter is blocked by part of the transporter;
a closed circuit video system including rearwardly directed camera means at the rear of the transporter for viewing the zone immediately to the rear of the transporter otherwise blocked from the operator's vision, and a viewing montior at the operator's station operatively connected to the camera means;
distance indicating means for visually indicating at the operator's station, as the transporter is being backed into a parking site, the decreasing distance from the transporter to the rear end of the parking site;
a backing target having a preselected dimensional parameter for placing at the parking site to be viewed by the camera as the transporter is backed toward the parking site; and
legend means coupled to said viewing monitor in said video system for providing an indication at said monitor, as the transporter approaches said target while being backed, of the decreasing distance from the transporter to the backing target by utilizing the correspondingly increasing size of the preselected dimensional parameter of the backing target image appearing at the monitor.

4,214,267
STEREOFLUOROSCOPY SYSTEM
John A. Roese, 6315 Camino Corto, San Diego, Calif. 92120, and A. Franklin Turner, 748 S. El Molino Ave., Pasadena, Calif. 91106
Filed Nov. 23, 1977, Ser. No. 854,259
Int. Cl.[2] H04N *9/54*
U.S. Cl. 358—111 **30 Claims**



1. A stereoscopic fluoroscopy system comprising:
a source of radiation to radiate an object;
conversion means to receive radiated images reflective of said object from said source and to convert said images to a first electronic video signal and a second electronic video signal wherein each video signal is reflective of said object along respective lines of sight separated by a viewing angle;
transmission means conductively connected to said conversion means to receive and transmit said video signals; and
display means conductively connected to said transmission means to receive said video signals and generate optically viewable images reflective of said object, said display means including:
a television monitor conductively connected to receive said video signals and generate said optically viewable images,
synchronization detector means conductively connected to said transmission means to receive said video signals to detect video signal synchronization signal,
means conductively connected to said synchronization,
detector means to transmit said synchronization signal,
a portable electro-optic shutter viewer having electro-optic shutters positionable proximate each eye of the viewer, means to receive said synchronization signal and means conductively connected thereto to alternatingly activate each electro-optic shutter in synchronization with said synchronization signal so that said viewer perceives a three-dimensional image.

4,214,268
METHOD AND APPARATUS FOR VIDEO RECORDING A FILM SCAN SIGNAL
Eduard Keznickl, and Kurt Boehm, both of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria
Filed Sep. 28, 1978, Ser. No. 946,777
Claims priority, application Switzerland, Oct. 3, 1977, 012042/77
Int. Cl.[2] H04N *5/76*
U.S. Cl. 358—127 **12 Claims**



1. In a method for video recording of pictures from a moving picture film including the steps of continuously moving the film relative to a recording screen, periodically scanning each of the pictures of the film, respectively, linewise, the moving picture frequency with respect to the scanning frequency being in a predetermined relationship with respect to each other for achieving a predetermined recording picture frequency, the improvement comprising the step of
maintaining the following relationship with respect to the scanning frequency (f_A) with different moving picture frequencies (f_L):

$$f_L + f_A = +F$$

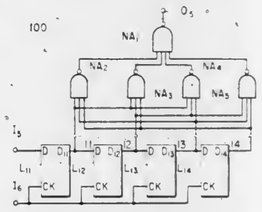
wherein F is the desired predetermined recording picture frequency, and
said step of scanning comprises scanning fractions of a picture per scanning period, at least with one of the moving picture frequencies which is used, said fractions differing from 1 picture per scanning period.

4,214,269
REAL TIME DIGITAL SCAN CONVERTER
Edward J. Parker, Seattle, and James C. Behlen, Jr., Redmond. both of Wash., assignors to Advanced Technology Laboratories, Inc., Bellevue, Wash.
Filed Mar. 9, 1979, Ser. No. 19,321
Int. Cl.[2] H04N *5/02*
U.S. Cl. 358—140 **18 Claims**



7. A digital scan converter for supplying an analog signal representing signal information that is supplied by a scanning system of the type wherein said scanning system provides a sequence of discrete analog signals that are associated with a plurality of radially extending scan lines which are angularly spaced apart from one another and referenced to a polar coordinate system, said digital scan converter comprising:
signal sampling means connected for receiving said sequence of analog signals, said signal sampling means including means for digitizing each of said analog signals at a rate that is determined by the pulse repetition rate of an applied first clock signal to supply an ordered set of digitally encoded signals representative of each of said analog signals;
first signal generating means for supplying said first clock signal to said signal sampling means, said first signal generating means including means for supplying said first clock signal at a pulse repetition rate proportional to the cosine of the azimuthal angle of the scan line associated with the analog signal currently being supplied to said signal sampling means by said scanning system;
memory means connected for receiving said ordered sets of digitally encoded signals supplied by said signal sampling means, said memory means for storing values representative of each digitally encoded signal of said sequences of digitally encoded signals, said memory means being addressable to partition said memory means as a rectangular array of storage locations having a predetermined number of columns and a predetermined number of rows;
memory control means operably interconnected with said memory means and said signal sampling means for loading values corresponding to successive sets of digitally encoded signals into successive column locations of said rectangular array of storage locations with values corresponding to each particular ordered set of digitally encoded words being located into the successive row locations of a single column of said rectangular array of storage locations, said memory control means further including means for sequentially accessing said memory means on a row-by-row basis relative to said rectangular array of storage locations;
data means for reading the values stored as rows of said rectangular memory array to form a sequence of digitally encoded signals representative of each row of said stored values, said data means for reading said values being responsive to an applied second clock signal and including means for sequentially reading the values within a particular row of said rectangular memory array at a rate determined by the pulse repetition rate of said second clock signal;
second signal generating means for supplying said second clock signal, said second signal generating means including means for varying said pulse repetition rate of said second clock signal on a row-by-row basis relative to said memory array of said memory means to decrease said pulse repetition rate as each successive row of stored values is read from said memory means; and
digital-to-analog signal conversion means connected for receiving said sequence of digitally encoded signals representative of each of said rows of stored values, said digital-to-analog signal conversion means for supplying said analog output signal representative of said signal information.

4,214,270
DIGITAL VERTICAL SYNC SIGNAL SEPARATOR
Hiroshi Morito, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Feb. 10, 1978, Ser. No. 876,939
Claims priority, application Japan, Feb. 10, 1977, 52/14381
Int. Cl.[2] H04N *5/10;* **H03K** *5/20*
U.S. Cl. 358—154 **4 Claims**



1. A signal detector circuit comprising:
n stages of data latch circuits connected in series;
an input terminal coupled to a first stage of said data latch circuits for receiving an input signal;
means for applying clock pulses to said data latch circuits to shift a signal from said input terminal along said data latch circuits;
a plurality of first logic circuits each having n—m input ends and an output end and deriving an output in response to n—m inputs;
means for connecting the output ends of selected n—m ones of said data latch circuits to said n—m input ends of selected ones of said first logic circuits in such a manner that the output ends of different ones of said data latch circuits are combined with the input ends of different ones of said first logic circuits;
a second logic circuit having an input end connected to the output ends of said first logic circuits and an output end, and deriving an output in response to an input applied to said input end; and

an output terminal coupled to said output end of said second logic circuit,

said integer n is an integer of 3 to 6, and said input signal is a composite synchronizing signal in a television signal, said output signal derived from said output terminal corresponding to the vertical synchronizing pulses in said composite synchronizing signal.

4,214,271

TECHNIQUE FOR DC RESTORATION IN AC COUPLED DISPLAY SYSTEMS

George R. Jones, Greenbelt, Md., and Peter K. Raimondi, Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 821,371, Aug. 3, 1977, abandoned. This application Feb. 16, 1979, Ser. No. 12,784

Int. Cl.[2] H04N *5/16, 5/33*

U.S. Cl. 358—166 **6 Claims**



1. A technique for processing video detector signals in an AC coupled viewing system, the technique comprising:

scanning a scene input signal off a scanner mirror over a detector array for generating detector output corresponding to the intensity of said scene input signal therefrom that are applied through capacitors to a plurality of preamplifiers and for simultaneously picking off a transducer output signal from said scanner mirror for applying synchronizing clockpulse timer signals to a controller of said viewing system;

applying mathematical algorithms on peamplified detector output signals wherein said mathematical algorithms are applied to a selected number of adjacent scan lines;

DC restoring said preamplified detector output signals that have mathematical algorithms applied thereto by continuously calculating histogram values to establish the difference in gray levels between said selected number of adjacent scan lines to establish a mode of the difference representing the maximum number of occurrences of the gray level differences on a PIXEL-by-PIXEL basis between at least two of said selected number of adjacent scan lines and adding said mode of the difference to adjacent scan lines to maintain a predominant DC component of said scene input signal for producing DC restored signals on a line-to-line basis;

processing said DC restored signals into a visual image corresponding to the intensity of said scene input signal; and

displaying said visual image on a display device.

4,214,272

VIDEO HIGHLIGHT ATTENUATION PROCESSOR

John H. Hapgood, Daleville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 17, 1979, Ser. No. 30,789

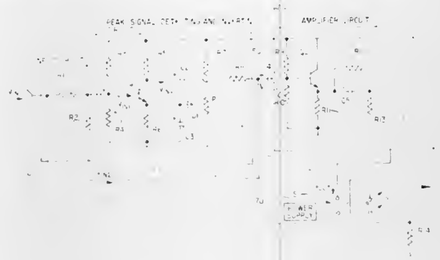
Int. Cl.[2] H04N *5/197*

U.S. Cl. 358—170 **4 Claims**

1. Anti-bloom apparatus for attenuating a video signal having peak portions produced by brightly lit areas in a scene being televised, the apparatus comprising:

a. input means for receiving the video signal and for deriving first and second signals corresponding to the video signal,

b. means for detecting and inverting the peak portions of said first signal having an amplitude greater than a predetermined maximum to produce an intermediate signal, and



c. means for combining said intermediate signal with said second signal such that an output signal is produced which corresponds to the video signal with the D.C. level of the peak portions attenuated.

4,214,273

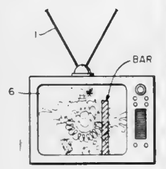
CIRCUIT FOR INDICATING ANTENNA SIGNAL INPUT LEVEL ON TELEVISION RECEIVER SCREEN

Timothy W. Brown, Williamsville, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 19, 1979, Ser. No. 21,384

Int. Cl.[2] H04N *5/50*

U.S. Cl. 358—188 **4 Claims**



1. A television receiver circuit for indication on-screen of the optimum television antenna position and adjustment, said receiver including an RF tuner-amplifier, an IF amplifier stage, an AGC circuit providing an AGC signal to a gain control terminal on at least one of said tuner-amplifier and of said IF amplifier stage, a synchronizing pulse separator having a horizontal pulse output terminal and a vertical pulse output terminal, and a video channel having a modulating input terminal, said receiver circuit comprised of a first monostable multivibrator and with a triggering input coupled to one of said pulse output terminals of said separator, of a second monostable multivibrator with a variable-length-pulse input terminal coupled to said gain control terminal and with a triggering-input terminal coupled to the other of pulse output terminals said terminals of an AND circuit with inputs coupled to the outputs of said monostable multivibrators and with output coupled to said modulating input terminal.

4,214,274

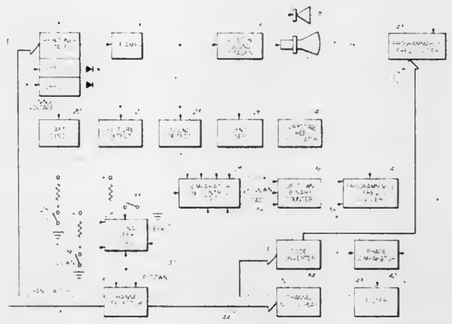
FREQUENCY SYNTHESIZER TUNING SYSTEM WITH VARIABLE DWELL SIGNAL SEEK

Theodore S. Rzeszewski, Lombard, and Paul D. Frantzis, Chicago, both of Ill., assignors to Matsushita Electric Corporation, Franklin Park, Ill.

Filed Jun. 19, 1978, Ser. No. 916,489

Int. Cl.[2] H04N *5/44*

U.S. Cl. 358—193.1 **6 Claims**



1. A frequency synthesizer signal seek electronic tuning system for a tuner of a television receiver capable of receiving a composite television signal, said system including in combination:

control means for electronically step tuning the tuner of said television receiver channel-by-channel to a nominal tuning condition for each channel automatically in a signal seek mode of operation;

adjusting means coupled with said control means for automatically adjusting the tuning of said receiver to compensate for mistuning when said nominal tuning condition does not properly tune said receiver; and

timing means coupled with at least said control means and responsive to a change in channel selection by said control means to be set to a first predetermined timing period for channel-to-channel changes of a first type effected by said control means and to be set to a second predetermined timing period longer than said first predetermined timing period for channel-to-channel changes of a second type effected by said control means, the output of said timing means being coupled with said control means for causing said control means to step tune the tuner of the television receiver to the next channel in response to an output pulse produced by said timing means at the end of said predetermined timing periods.

4,214,275

APPARATUS AND A PROCESS FOR READING A TARGET OF A CAMERA TUBE

Pierre Felix, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 5, 1978, Ser. No. 939,661

Claims priority, application France, Sep. 9, 1977, 77 27316

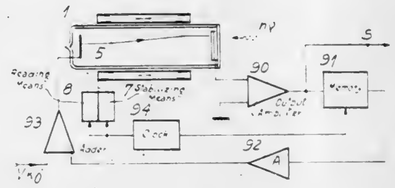
Int. Cl.[2] H04N *5/34*

U.S. Cl. 358—223 **10 Claims**

1. A process for reading a target of a television camera tube with adjustable integration time by scanning the inner surface of the target in a plurality of parallel lines by an electron beam, wherein the reading of each line of order n successively comprises:

a stabilization phase along the line of order n of the potentials developed during an irradiation on the inner surface of the target in relation to its outer surface, said stabilization phase being effected by a scan along this line of order n by an electron beam which stabilizes the potentials along the line in question to a value Vo in relation to said outer surface, said stabilization phase being followed by:

the actual reading phase of the line of order n after a predetermined delay ti corresponding to the integration time ti of the target adjustable from $ti=k\cdot t_1$ to $ti=p\cdot t_1$, where k represents a mixed number smaller than 1, p represents an integer greater than or equal to 1, and where t_1 represents the scanning time of the line of order n, said reading phase being effected by scanning of the inner surface of the target along the line of order n by an electron beam which stabilizes the potentials of the inner surface of the target to



a value V'o in relation to the outer surface of the target, stabilization of the potentials to the value V'o generating a current representative of the video frequency image signal, wherein the stabilization potentials Vo and V'o of the inner surface of the target along the line of order n during the stabilization phase and during the actual reading phase have different values, the potential V'o being lower than Vo in absolute value, $|V'o| < |Vo|$, the video-frequency reading signal corresponding to a charge proportional to the radiation received during irradiation of the target over the integration time ti being reduced by a quantity proportional to $|Vo-V'o|$.

4,214,276

PRINTING METHODS FOR PRODUCING PRINTS HAVING IMAGES OF VARIABLE SIZE AND TEXT

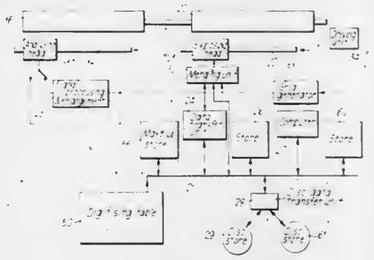
Peter C. Pugsley, Pinner, and Peter J. Wood, Potters Bar, both of England, assignors to Crosfield Electronics Limited, London, England

Filed Jun. 24, 1977, Ser. No. 809,684

Claims priority, application United Kingdom, Jun. 28, 1976, 26842/76

Int. Cl.[2] H04N *1/00*

U.S. Cl. 358—256 **6 Claims**



1. A method of image reproduction for forming a whole-page image from a number of separate input images, comprising the steps of: scanning each of the input images and reproducing it at the required enlargement or reduction to produce a pre-print;

assembling all the pre-prints on a digitiser table in the relative positions required for the finished page;

placing a position-sensing device on the digitiser table at points defining the boundaries of the required picture portions to be reproduced, and generating corresponding

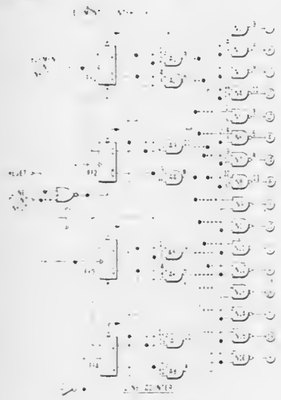
boundary-representing signals defining the positions of these points;
transferring the said boundary representing signals into a store;
under the control of the said boundary signals, deriving output signals including line signals for each of the input images crossed by the page line, within the limits defined by the said boundary representing signals for that input image; and
using the output signals to control the treatment of a sheet or surface for use in the preparation of a printed page.

4,214,277

HALFTONE IMPLEMENTATION APPARATUS

George H. Urich, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 2, 1979, Ser. No. 8,731
Int. Cl.² H04N *1/40*
U.S. Cl. 358—283 **10 Claims**



5. In an imaging system, apparatus for generating halftone signals in relation to an applied scanned raster analog signal comprising:
first circuit means for generating count signals representative of halftone cells comprising M×N picture elements, said halftone cells being repetitive throughout the entire image being scanned,
second circuit means coupled to said first circuit means for generating enabling signals in accordance with a predetermined pattern, said pattern determining the sequence of conversion of said analog signal to halftone signals within each of said halftone cells,
third circuit means coupled to said second circuit means for summing the signals generated by said second circuit means with the applied scanned raster analog signal, and
fourth circuit means coupled to said third circuit means for generating a first binary signal if said summed signal is greater than a predetermined threshold voltage level and for generating a second binary signal if said summed signal is less than said predetermined threshold voltage level.

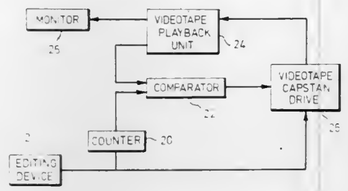
4,214,278

EDITING SYSTEM FOR VIDEOTAPE SOUND

Brian K. Hunt, Hamilton, and Leopold H. O'Donnell, Toronto, both of Canada, assignors to SCP Producer's Services Limited, Toronto, Canada

Filed Nov. 30, 1978, Ser. No. 964,903
Int. Cl.² G11B *27/02;* **H04N** *5/78*
U.S. Cl. 360—14 **16 Claims**

1. A method of editing sound for videotape recordings comprising; slaving the movements of a videotape past a video playback head to the movements of a synchronizer shaft which synchronizes at least one sound film being edited, the slaving being accomplished by moving the videotape past the video head in such a direction and for such a distance as to establish parity between progressively coded signals associated with



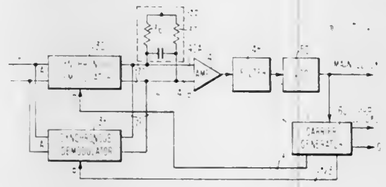
frames of the video information recovered from the tape by the playback head and similarly progressively coded signals generated indicating cumulative displacement of the synchronizer shaft; and displaying the recovered video information.

4,214,279

CLOCKING SYSTEM FOR SERVO SIGNAL HAVING TWO OR MORE HARMONICALLY RELATED FREQUENCIES

Richard K. Oswald, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 25, 1979, Ser. No. 6,403
Int. Cl.² G11B *5/09, 21/10*
U.S. Cl. 360—51 **7 Claims**



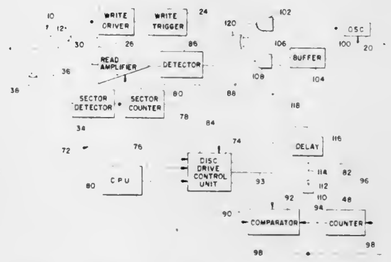
1. A system for generating a clock signal from a source signal having at least two harmonically related and phase coherent frequencies, said clock signal having a frequency corresponding to a multiple of one of said two related frequencies and being phase locked to the lower of said two related frequencies, said system comprising:
(a) a voltage controlled oscillator (VCO) having a nominal frequency a multiple of said lower frequency and a control terminal for receiving a phase error signal to vary said nominal frequency, said phase error signal representing the instantaneous phase error between the output of said voltage controlled oscillator and said source signal relative to a predetermined lock point;
(b) means for generating said phase error signal comprising:
(1) first and second synchronous demodulators, each having a first input for receiving said source signal, a second input for receiving a carrier signal, and an output, each said synchronous demodulator generating a signal at its output representing the total energy contained in portions of said source signal supplied to said input, which portions are selected by the carrier signal supplied to said second input;
(2) means connected between the output of said VCO and said second inputs of said synchronous demodulators for generating first and second carrier signals at frequencies corresponding respectively to said two harmonically related frequencies of said source signal;
(3) and means connected between the outputs of said synchronous demodulators and the control input of said VCO to combine said output signals of said demodulators to provide said phase error signal.

4,214,280

METHOD AND APPARATUS FOR RECORDING DATA WITHOUT RECORDING ON DEFECTIVE AREAS OF A DATA RECORDING MEDIUM

Martin O. Halfhill, San Jose, Calif., and James O. Jacques, Limerick, Pa., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1978, Ser. No. 911,006
Int. Cl.² G11B *5/09, 15/04*
U.S. Cl. 360—53 **12 Claims**



1. A method of transferring data between a data supply and a disk file including a disk having a track divided into sectors, each sector having an address recording area followed by a data recording area, and one sector having a defective area, comprising the steps of:
(a) detecting the defective area on the data recording area to identify the defective area;
(b) writing an address of the defective area on the address recording area;
(c) recording data on the data recording area of the one sector including;
(i) continuously receiving data from the data supply for recording on the one sector,
(ii) detecting the defective area, with the address written on the address recording area;
(iii) writing a first part of the received data on the data recording area until the defective area is detected,
(iv) delaying writing the remaining part of the received data when the defective area is detected to avoid writing on the defective area, and
(v) subsequently writing the remaining part of the data on the data recording area succeeding the defective area; and
(d) continuously delivering the data written on the data recording area to the data supply, including:
(i) detecting the defective area with the address written on the address recording area;
(ii) reading the data written on the data recording area;
(iii) transferring with delay to the data supply the first part of the data read from the one sector between the beginning of the data recording area and the defective area until the defective area is detected; and
(iv) transferring without delay to the data supply the remaining data read from the one sector succeeding the defective area.

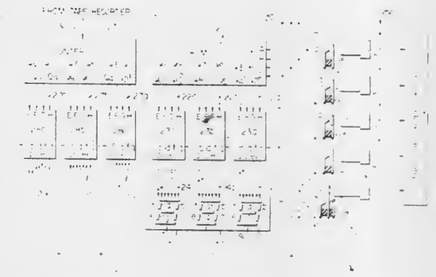
4,214,281

TAPE RECORDER WITH MEANS FOR DISPLAYING OPERATION MODES IN THE FORM OF CHARACTERS

Masanobu Sato; Ken Satoh; Toshihiro Nakao, and Kenzi Furuta, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1978, Ser. No. 944,003
Claims priority, application Japan, Sep. 30, 1977, 52-117558
Int. Cl.² G11B *5/09, 5/00*
U.S. Cl. 360—61 **4 Claims**

1. A tape recorder with means for displaying operation modes in the form of characters comprising:
a tape recorder body;
a mode control switch group which is mounted on said tape recorder body and includes a plurality of operation mode control switches to control operation modes of the tape recorder, said operation modes being fast rewind, rewind, record, or play;
a display control switch group including a plurality of display control switches which are operated interlocking with said operation mode control switches;



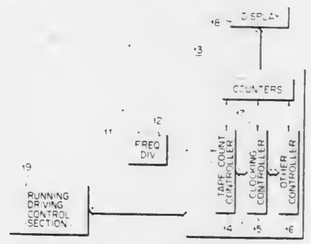
a read only memory for producing first code signals corresponding to an operation mode control switch selectively operated;
a first decoder group for converting said first code signals into second code signals; and
display means including a plurality of segment display sections for displaying alphabetic characters corresponding to said second code signals.

4,214,282

TAPE RECORDER

Masanobu Sato, and Kenzi Furuta, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1979, Ser. No. 7,461
Claims priority, application Japan, Feb. 13, 1978, 53/15242
Int. Cl.² G11B *15/18, 15/52, 19/06*
U.S. Cl. 360—69 **4 Claims**



1. A tape recorder including a run/drive control section for controlling a tape mode such as recording, reproducing, rewinding or fast feeding, a multi-function logic section for processing at a different priority order a magnetic tape run count function for counting a signal from a magnetic tape run detection section for detecting a magnetic tape run and a time count processing function for counting a signal from the time count function section, and an electron-optical display device for displaying an output from the multi-function logic section, in which said multi-function logic section comprises:
first memory means for storing a microprogram for effecting a magnetic tape run process or a time count process based on said magnetic tape run detecting signal and predetermined data necessary for the process;
second memory means connected to said first memory means for defining a location by address data outputted through an address controller from said first memory

means, for effecting a read/write operation by an instruction signal outputted from said first memory means and for storing a time count pulse and said tape run detection signal;

calculating means connected to said second memory means for outputting data from a predetermined location of said second memory means, for calculating data from said predetermined location of said second memory means based on data which is outputted from said instruction decoder and for, when said data is a magnetic tape run detection signal, adding a preset numeral value and outputting a result of addition to the electron-optical display device;

address modifying means connected to said first memory means and said instruction decoder to modifying the address of the location of said first memory means;

and decoding means for decoding a signal outputted from said address modifying means.

4,214,283

DRIVE MECHANISM FOR CASSETTE TAPE RECORDERS

Akihiro Fushimi; Noboru Tabara, and Mikio Isaki, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 31, 1979, Ser. No. 8,286

Claims priority, application Japan, Jan. 31, 1978, 53-8789; Feb. 28, 1978, 53-21438

Int. Cl.[2] G11B *15/43, 15/32, 5/54*

U.S. Cl. 360—71 **34 Claims**



1. A drive mechanism for use in a cassette tape recorder including first and second reel bases rotatably mounted on a chassis, comprising

drive means for rotating the first and second reel bases in opposite tape take-up directions to pull in the slack of a tape after a cassette is loaded and an electrical power is turned on, and

means for changing said drive means into another state after substantial removal of the tape slack.

4,214,284

METHOD AND APPARATUS FOR CONTROLLING TAPE RECORDER

Thomas J. Mussatt, Riverton, Ill., assignor to Sangamo Weston, Inc., Atlanta, Ga.

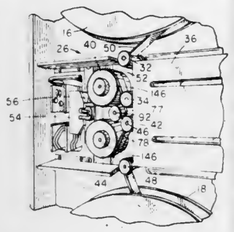
Filed Apr. 17, 1978, Ser. No. 897,136

Claims priority, application United Kingdom, Apr. 18, 1977, 16063/77

Int. Cl.[2] G11B *15/48*

U.S. Cl. 360—72.1 **39 Claims**

1. In combination with tape recorder means including first and second reels, transducer means and transport means for transporting tape from one of said reels in predetermined relation with said transducer means onto the other of said reels, control apparatus comprising: signal entry means selectively operable for generating function signals representative of functions desired to be performed by said recorder means when a location parameter of said tape attains a predetermined value; sensing means associated with said recorder means for sensing said parameter and for generating value signals representative of the value of said parameter; data processor circuit means responsive to said function signals and said value signals for



generating command signals when said value signals indicate said parameter has attained said predetermined value; and control means for effecting said desired function in said recorder means in response to said command signals.

4,214,285

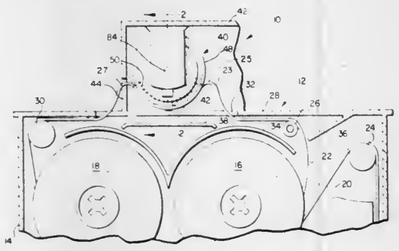
SOUND MOTION PICTURE SYSTEM HAVING CONCENTRATED AUDIO SYSTEM

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 25, 1978, Ser. No. 899,782

Int. Cl.[2] G11B *5/008, 15/38, 15/66*

U.S. Cl. 360—90 **9 Claims**



1. A tape drive and transducer system for recording of information on or providing playback from a recording tape, said system having drive means responsive to engagement with said tape for advancing said tape in a given direction, a transducer for facilitating recording or playback of audio information responsive to engagement with said tape during its said advancement therepast, and means for urging said tape into engagement with said drive means and said transducer, the improvement wherein said drive means and said transducer are combined in adjoining relation to one surface of said tape with their respective areas of engagement with said tape in a side-by-side arrangement generally lateral to said given direction and wherein said urging means includes means acting at least in part through said drive means for attracting said tape into engagement with said combined drive means and transducer and thereby concentrate the mass of said system at this point so as to reduce flutter in said recording or playback.

4,214,286

FLEXIBLE DISK PACK AND IMPROVED TRANSDUCING-MANIPULATION THEREOF

Herbert U. Ragle, Thousand Oaks, and Dean DeMoss, Camarillo, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 711,628, Aug. 4, 1976. This application Oct. 2, 1978, Ser. No. 947,555

Int. Cl.[2] G11B *5/105*

U.S. Cl. 360—99 **14 Claims**



1. Improved dual-transducer assembly means, adapted for use with flexible recording media adapted to be presented along a prescribed read/write locus;

the transducer assembly means including a pair of opposed transducer-head means each mounted on a transducer arm under a deflection hood and being adapted to be presented into transducing relation on opposite sides of a medium segment at a prescribed read/write site along said locus; and

including, in combination therewith, the improvement comprising:

a pair of opposed stabilizer/cleaner means arranged so as to opposingly and resiliently engage the media, just upstream of the respective head means at said site, and along said locus, so as to stabilize the media and reduce flutter, as well as clean it, each stabilizer-cleaner means being disposed protectedly under its respective hood.

4,214,287

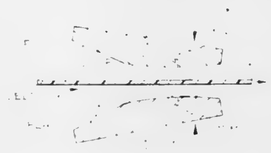
NOVEL TSF HEAD PAIR FOR DUAL RECORDING ON FLEXIBLE DISKS

Roger R. Stromsta; Marshall R. Nathanson, both of Thousand Oaks, and Dennis S. Morton, Simi Valley, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 20, 1978, Ser. No. 926,429

Int. Cl.[2] G11B *5/60*

U.S. Cl. 360—103 **15 Claims**



1. A recording arrangement comprising a pair of opposed recording means adapted to be translated relative to prescribed flexible media, while recording or detecting data indicia thereon, each recording means being disposed on one respective side of the intermediate medium and comprising improved air-bearing surface means that is adapted to be flown above said flexible media and at relatively close tolerances thereabove, this surface means being characterized by a pair of opposed edge surfaces, each surface comprising a relatively flat, tapered entry-segment and an adjacent "spherical-flat" working-segment, said working segments being relatively identically curved and accommodating transducer means, whereby low-velocity stability is enhanced and "head crash" is alleviated.

4,214,288

DIRECT CURRENT MOTOR CONTROL WITH PROTECTIVE SOLENOID LATCHING

David T. Cavil, Menomonee Falls, Wis., and Gerald N. McAuliffe, Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 8, 1978, Ser. No. 967,611

Int. Cl.[2] H02P *3/00*

U.S. Cl. 361—6 **23 Claims**



1. A direct current motor control circuit adapted for connection to first and second supply terminals of a DC power source and to a DC motor connected between positive and negative terminals of a DC power source, said control circuit comprising a solenoid including a solenoid coil connected between the first and second supply terminals, and having a pair of solenoid contacts connected in series relation with the DC motor between the positive and negative terminals and which close to energize the DC motor when current flows through said solenoid coil, semiconductor switching means having first and second terminals connected in series relation with said solenoid coil between the first and second supply terminals for controlling the current flow through said solenoid coil, and protective solenoid latching circuit means connected to said semiconductor switching means for controlling conduction of said switching means to selectively prevent current flow through said solenoid coil and closing of said solenoid contacts.

4,214,289

STABILIZING EQUIPMENT FOR POWER TRANSMISSION SYSTEM

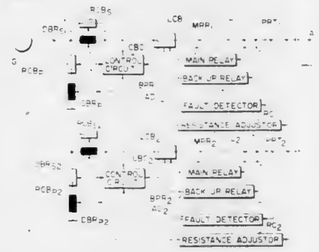
Kei Otsuka; Masamichi Shigehara, and Sumio Yokokawa, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed May 4, 1978, Ser. No. 902,919

Claims priority, application Japan, May 24, 1977, 52-60210

Int. Cl.[2] H02H *7/06*

U.S. Cl. 361—20 **18 Claims**



1. A stabilizing equipment for a power transmission system having a power source system, at least one transmission line and at least one line circuit breaker inserted between said power source system and said transmission line for interrupting said transmission line when a fault occurs on said transmission line, said stabilizing equipment comprising:

a fault detector for detecting said fault,
a series damping resistor for connection in series with said line circuit breaker,
first means for inserting said series damping resistor between said power source system and said line circuit breaker before said line circuit breaker is interrupted and after said fault is detected by said fault detector,
a parallel damping resistor,
second means for inserting said parallel damping resistor between said power source system and ground after said line circuit breaker is interrupted, and
third means for separating said parallel damping resistor first and subsequently said series damping resistor before said line circuit breaker is reclosed after reclosing conditions are satisfied.

4,214,290

CONTROL CIRCUIT FOR ELECTROMAGNETICALLY OPERATED CONTACTOR

Albert E. Sloan, Gateshead, England, assignor to Sevcon Limited, Gateshead, England

Filed Mar. 18, 1977, Ser. No. 778,857
Claims priority, application United Kingdom, Mar. 19, 1976, 11219/76
Int. Cl.² H01F *7/18*
U.S. Cl. 361—154 **6 Claims**



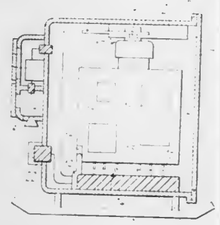
1. In combination with an electromagnetically operated contactor having an actuating coil connected to a d.c. source, a circuit for controlling the mean current supplied from the d.c. source to the actuating coil, the circuit comprising semiconductor switching means connected between the d.c. source and the coil and operable repetitively to connect the coil to and disconnect the coil from the d.c. source thereby to vary the mean voltage applied to the coil, and control circuit means for varying the mark-to-space ratio of switching of the semiconductor switching means, the control circuit means comprising voltage sensing means connected to the d.c. source for sensing the voltage of the d.c. source and means for varying the mark-to-space ratio of switching of the semiconductor switching means in dependence only on the magnitude of the sensed voltage, said means reducing said mark-to-space ratio on increase of said sensed voltage, whereby the mean voltage applied to the coil is maintained substantially constant so that the mean current in the coil on energization of the contactor is held at a predetermined level at least equal to the holding current of the coil substantially independent of the magnitude of the source voltage over a range of d.c. source voltages.

4,214,291

EXPLOSION-PROOF SWITCHGEAR APPARATUS

Vitaly I. Koshman, bulvar Shevchenko, 123, kv. 25, Donetsk; Mikhail A. Nagorny, ulitsa Sotsialisticheskaya, 146, kv. 2, Makeevka, Donetskaya oblast, and Vladimir F. Petrichenko, ulitsa Prozhektornaya, 6, kv. 44, Donetsk, all of U.S.S.R.

Filed Dec. 27, 1978, Ser. No. 973,564
Claims priority, application U.S.S.R., Jan. 10, 1978, 2569051
Int. Cl.² H02B *11/22*
U.S. Cl. 361—338 **2 Claims**



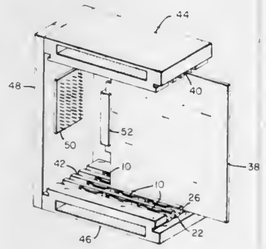
1. An explosion-proof switchgear apparatus comprising:
an enclosure with a guide;
a carriage mounted within the enclosure for travel along said guide;
a pivot pin whereon said carriage is mounted;
a separable contact system including: a movable part and a fixed part, said fixed part of said separable contact system being mounted within said enclosure on the side opposite to said guide;
electric devices;
a chassis to accommodate said electric devices, having a vertical slot;
said movable part of said separable contact system, mounted on said chassis at the side thereof whereon said vertical slot is located;
a guiding retainer means received into said vertical slot of said chassis;
said guiding retainer means secured to the same side of said enclosure, whereon said fixed part of said separable contact system is arranged; and
a coupling unit mounted on said pivot pin and secured to said chassis in the side thereof which is reverse to the side whereon said vertical slot is located.

4,214,292

PRINTED CIRCUIT BOARD GUIDE SPRING

Gary R. Johnson, Eagan, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 964,991
Int. Cl.² H05K *7/20*
U.S. Cl. 361—386 **4 Claims**



1. A guide spring, comprising:
a rectangular planar base member;

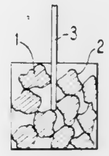
a plurality of spring-like members formed integrally with said base member along one side thereof and at a right angle thereto in a like first direction therefrom;
first and second flange members formed integrally with said base member along the opposite ends thereof and at a right angle thereto in a like second direction, opposite to said first direction, therefrom;
said first and second flange members having first and second tab members, respectively, formed integrally therewith in an opposing direction, and extending generally toward each other; and,
a third flange member formed integrally with an end one of said spring-like members and in the same plane as said first flange member.

4,214,293

ELECTROLYTIC CAPACITORS

Henley F. Sterling, Great Dunmow; Eric L. Bush, Matching Green, Near Harlow, and Stephen J. McManus, Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 787,672, Apr. 14, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 14,008
Claims priority, application United Kingdom, May 20, 1976, 20879/76
Int. Cl.² H01G *9/00*
U.S. Cl. 361—433 **27 Claims**



1. An anode for an electrolytic capacitor comprising:
a core material consisting essentially of particles of an electrically insulating substance having a first degree of hardness; and
a coating of valve metal, having a second degree of less than said first degree of hardness, on the core material wherein the coated core material is pressure compacted into a porous coherent anode body without sintering and the degree of porosity is partially controlled by the thickness of the valve metal coating.

4,214,294

ADJUSTABLE LAMP FOR FURNITURE ATTACHMENT

Charles C. Bartlett, P.O. Box 489, Waterloo, N.Y. 13165

Filed Sep. 29, 1978, Ser. No. 947,210
Int. Cl.² F21V *33/00, 21/14, 21/22*
U.S. Cl. 362—127 **8 Claims**

1. A lamp for attachment to a piece of furniture including
an electrical source of illumination mounted within a shade,
a support standard mounted by a pivot to said shade whereby the angular position of the shade in reference to the axis of the standard is adjustable,
an elongated housing enclosing said standard having at least one friction bushing secured therein for engaging the standard in friction supporting contact whereby the standard can be moved axially within the housing and also rotated about its axis within said bushing,
a mounting fixture having a base securable to a piece of furniture and a frame rotatably mounted on the base by means of a horizontal hinge, said frame arranged to slidably receive said housing therein, and a locking means for securing the housing within the frame at a predetermined position, and
an adjustable bracket acting between the base and the frame being operable to change the angular relationship therebetween whereby the frame may be moved to a vertical position when the base is affixed to an inclined surface.

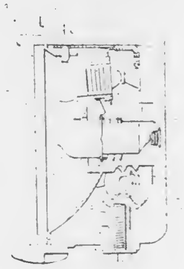


4,214,295

PORTABLE ELECTRIC LAMP ADJUSTABLE FROM SPOT BEAM TO DIFFUSED BEAM

Harold Morton, Audenshaw, England, assignor to Oldham Batteries Limited, Manchester, England

Continuation-in-part of Ser. No. 744,850, Nov. 24, 1976, abandoned. This application Mar. 3, 1978, Ser. No. 883,424
Claims priority, application United Kingdom, Dec. 22, 1975, 52384/77
Int. Cl.² F21L *23/00*
U.S. Cl. 362—164 **6 Claims**



1. A portable electric lamp comprising:
a body including a lens, a lens holder, a reflector, and a bulb holder connectable through switching means with a source of electric power, a diffuser sleeve translucent to light co-axial with and surrounding the bulb holder, and drive means operatively engaged with the diffuser sleeve for effecting the axial movement thereof relative to the bulb holder between a retracted position at which light emanating from a bulb held in the bulb holder is focused into a spot beam by the reflector, and an extended position at which light emanating from the bulb is diffused or scattered by passage through said diffuser sleeve without reducing the overall intensity of the light passing through the lens.

4,214,296

ROTATABLE LAMP FIXTURE

Fred M. Magett, 33 W. 83rd St., Chicago, Ill. 60620

Filed Jul. 3, 1978, Ser. No. 921,270
Int. Cl.[2] F21V *21/30*
U.S. Cl. 362—35 15 Claims



1. A self rotating lamp fixture comprising
(a) a vertically extending support member;
(b) a hollow ornamental shell member rotatably mounted on said support member, said support member being disposed substantially within said shell member;
(c) means associated with said support member for rotatably supporting said shell member said associated means being constructed and arranged so that the entire shell member is adapted to rotate about said support member;
(d) a motor disposed within said shell member for rotating said shell member about said support member;
(e) motor support means disposed within said shell member for supporting said motor;
(f) drive means interconnecting said motor and said vertically extending support member;
(g) electrical circuitry including electrical wiring adapted to be connected to a source of electrical power and extending into said shell member and connected to provide a current path to said motor;
(h) said motor being effective when energized to rotate said shell member about said vertically extending support member

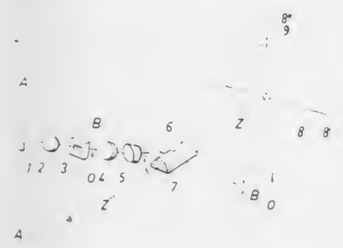
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4,214,297

ARRANGEMENT FOR SPECTRAL DISPERSION OF A BUNDLE OF LIGHT

Gebhard Kühn, and Ludwig Meier, both of Jena, German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed Feb. 7, 1978, Ser. No. 878,609
Claims priority, application German Democratic Rep., Mar. 29, 1977, 198110
Int. Cl.[2] F21V *5/00*
U.S. Cl. 362—327 1 Claim



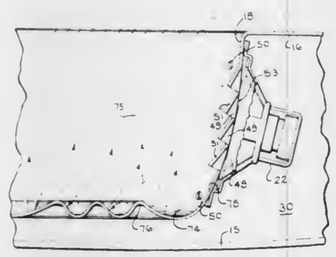
1. An arrangement for spectral dispersion of a bundle of light, particularly for producing artificial rainbows in planetaria, comprising
a light source for producing a directed bundle of light,
a condensor lens,
an aperture,
said light source and said condensor lens illuminating said aperture,
an imaging system,
a prism,
said imaging system being for imaging said aperture upon said prism, said prism spectrally dispersing said bundle of light,
and a cylindrical reflector having a cylinder axis and being tiltable about a first axis substantially at right angles to said cylinder axis,
said light source, said condenser lens,
said imaging system, said prism and said cylindrical reflector being arranged in optical alignment about a common optical axis and being tiltable about said first axis and about a second axis,
said second axis being substantially at right angles to that plane being defined by said cylinder axis and said first axis.

4,214,298

COMBINATION ACOUSTIC CONDITIONER AND LIGHT FIXTURE

Robert L. Propst, Ann Arbor; Travis M. Randolph, and Theodore M. Reyda, both of Saugatuck, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Dec. 6, 1977, Ser. No. 857,894
Int. Cl.[2] H04M *1/22*
U.S. Cl. 362—253 8 Claims



1. In a light fixture assembly which includes a support, a light reflecting element mounted on said support and a light source mounted on said support for directing light against said reflecting element, a sound emitter mounted on said support at a position to direct sound waves against said reflecting element, said reflecting element having non-uniformly shaped undulating surfaces for disseminating incident light and sound waves in a plurality of directions to produce substantially indistinct and unintelligible sounds for masking external sounds in the vicinity of said light fixture assembly and to diffuse the light from said light source.

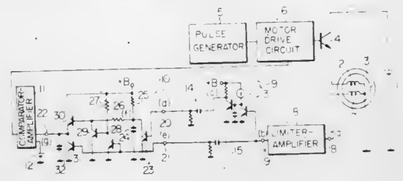
4,214,299

FREQUENCY-VOLTAGE CONVERTER

Harushige Nakagaki; Syunji Iwasaki, both of Toyokawa, and Isao Fukushima, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 6, 1978, Ser. No. 940,007
Claims priority, application Japan, Sep. 9, 1977, 52-107797
Int. Cl.[2] H02M *7/00*
U.S. Cl. 363—8 5 Claims

1. A frequency-voltage converter for converting a frequency to a DC voltage by use of a first pulse train having repetition pulses proportional to the frequency of an input signal and a second pulse train having repetition pulses obtained by shifting the pulses of said first pulse train in timing phase, said frequency-voltage converter comprising; a saw-tooth wave voltage generator circuit driven by said second pulse train for generating repetition saw-tooth wave signal, and a sample-and-hold circuit connected to said saw-tooth wave generator circuit and driven by said first pulse train for sampling and holding each pulse of said saw-tooth wave voltage, thereby producing a DC voltage.

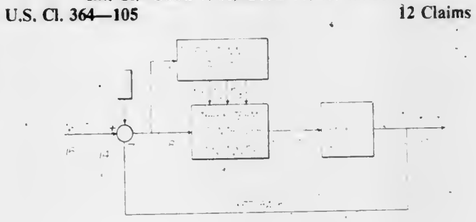


4,214,300

THREE TERM (PID) CONTROLLERS

Paul Barlow, Liverpool, England, and Kenneth R. Jones, 99 Stairhaven Rd., Liverpool, L19 7NW, Merseyside, England, assignors to Kenneth Robert Jones, Liverpool, England

Filed May 15, 1978, Ser. No. 906,253
Claims priority, application United Kingdom, May 17, 1977, 20597/77
Int. Cl.[2] G06G *7/66*; G05B *11/42, 13/00*
U.S. Cl. 364—105 12 Claims



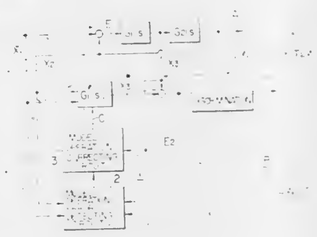
1. An electronic circuit for adjusting a variable parameter of a dynamic system in response to a signal representative of the system performance so as to optimize the system performance with respect to that parameter, the circuit comprising:
(a) means for extracting from the dynamic system a first signal dependent upon the system performance;
(b) a plurality of performance index blocks coupled to said means for extracting so as to receive said first signal each of said blocks for providing a different predetermined characteristic function of said first signal;
(c) switch means coupling said means for extracting to said plurality of performance index blocks for selecting one of said performance index blocks;
(d) means coupled to said performance blocks for periodically sampling and comparing the output level from a selected performance index block with a previously sampled level and for providing a difference signal indicative of whether the result of said comparison is positive or negative;
(e) means coupled to said means for sampling and comparing for providing a first pulsed signal wherein pulses and zero levels are respectively indicative of the incidence of opposite polarity levels in said difference signal;
(f) means coupled to said means for providing a first pulsed signal for converting said first pulsed signal into a second pulsed signal wherein the leading and trailing edges of the pulses correspond to the incidence of adjacent pulses in said first pulsed signal;
(g) means for shifting the zero axis position in relation to said second pulsed signal to obtain positive and negative signals whose width is indicative of the extent to which the parameter to be varied must be increased or decreased; and
(h) integrator means for receiving said positive and negative signals and for providing an output signal for adjusting said parameter.

4,214,301

DIAGNOSTIC DEVICE FOR USE WITH AUTOMATIC CONTROL SYSTEMS

Nobuo Kurihara, Hitachiota; Yoshio Sato, Hitachi; Shigeyoshi Kawano, Hitachiota; Michihiro Iioka, Katsuta; Daizo Iba, and Tadashi Kurihara, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 7, 1978, Ser. No. 884,235
Claims priority, application Japan, Mar. 8, 1977, 52-24383
Int. Cl.[2] G05B *17/00, 13/02*; G06F *15/46*
U.S. Cl. 364—119 3 Claims



1. A diagnostic device for use with an object to be diagnosed, said object having an automatic control system forming a closed loop and including an integration element in said object, said diagnostic device sampling the input and output of said object with a fixed periodic time so as to obtain digital signals, and detecting an abnormal state of said object in accordance with said digital signals so as to indicate the occurrence of the abnormal state, said diagnostic device comprising:
mathematical model means simulating an input-output characteristic of said object to be diagnosed;
first means for applying to said model means said sampled input of said object in the present period of time when said object output satisfies a predetermined condition for letting the model means execute a calculation to obtain an output of said model means corresponding to the output of said object, and for letting the model means output coincide with the object output in the present period of time without executing the model means calculation when said object output does not satisfy said predetermined condition, said predetermined condition being that a rate of change of said object output is larger than a predetermined value, so that accumulation of errors in the model means calculation when the predetermined condition is not satisfied is avoided; and
second means for comparing the output of said model means controlled by said first means with the output of said object in the present period of time, and then for detecting an abnormal state of said object in accordance with a deviation output obtained by the comparison so as to indicate the occurrence of the abnormal state.

4,214,302

EIGHT BIT STANDARD CONNECTOR BUS FOR SIXTEEN BIT MICROCOMPUTER

Robert W. Schmidt, Stafford, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 24, 1978, Ser. No. 898,736
Int. Cl.² G06F *13/00*
U.S. Cl. 364—200 **6 Claims**



1. A microcomputer comprising: a processor board containing a microprocessor having sixteen-bit bidirectional data terminals; at least two memory boards each containing separate eight-bit unidirectional Data In and Data Out lines, each memory board containing a memory array and coupling means connecting the array to the Data In lines and to the Data Out lines to transfer data to and from the array; a connector board containing a standardized bus with a plurality of plug-in connectors to receive the processor board and memory boards, the connector board having separate eight-bit Data In and Data Out lines for connection to said lines on the memory boards; means to cross-connect the data to and from the eight-bit Data In and Data Out lines for one of the memory boards but not the other; and connecting means on the processor board to connect the sixteen-bit bidirectional data terminals to the two separate eight-bit Data In and Data Out lines of the connector board, said microprocessor including means for simultaneously transmitting or simultaneously receiving sixteen bits to or from said memory arrays by utilizing said Data In and Data Out lines as a sixteen-bit bidirectional bus.

4,214,303

WORD ORIENTED HIGH SPEED BUFFER MEMORY SYSTEM CONNECTED TO A SYSTEM BUS

Thomas F. Joyce, Burlington; Thomas O. Holtey, Newton Lower Falls, and William Panepinto, Jr., Tewksbury, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 22, 1977, Ser. No. 863,093
Int. Cl.² G06F *13/00*
U.S. Cl. 364—200 **11 Claims**

1. A data processing system comprising:
a system bus;
a central processing unit coupled to said bus and being operative to generate memory requests, each memory request including a main memory address;
an addressable main memory coupled to said bus, said main memory including a plurality of sets of locations for storing a plurality of words, each word location being designated by an address coded to include a first portion and a second portion; and,
a cache unit coupled to said bus and to said central processing unit, said cache unit comprising:
a register for storing said main memory address received from said central processing unit;
an addressable data store, said data store having a plurality of locations for storing the contents of subsets of said sets of locations for storing said plurality of words, each word location being designated by said second portion of said address;
an addressable directory, said directory including a plurality of locations corresponding in number to said plurality of data store locations for storing a plurality of said first portion of said addresses in a location designated by said second portion of said address, each address location of said directory specified by said second portion of said address having a corresponding address location in said data store storing said word specified by said second portion of said address and said first portion of said address stored in said address location of said directory specified by said second portion of said address, said cache unit and said directory receiving said main memory address from said central processing unit when requesting said word from said main memory; and,
control means coupled to said register and responsive to each memory request received from said central processing unit and coded to specify a read operation for indicating if said word requested by said central processing unit is stored in said data store by comparing said first portion of each main memory address received from said central processing unit with said first portion address stored in the location of said directory read out in response to said second portion of each main memory address received from said central processing unit, and in the absence of said equal comparison requesting said word from said main memory by generating a signal for transferring signals representative of said main memory address to said register and to said main memory, said control means being operative upon receiving said word from main memory to generate signals for writing said word in said data store at the location designated by said second portion of said address stored in said register and for concurrently writing said first portion of said main memory address stored in said register in said directory in said location designated by said second portion of said main memory address.

4,214,304

MULTIPROGRAMMED DATA PROCESSING SYSTEM WITH IMPROVED INTERLOCK CONTROL

Tsuguo Shimizu, and Tsuguo Matsuura, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,215
Claims priority, application Japan, Oct. 28, 1977, 52-128703
Int. Cl.² G06F *13/00, 15/16*
U.S. Cl. 364—200 **16 Claims**

1. In a multiprogrammed data processing system comprising:
means for processing data;
main storage means for storing data; and
main storage control means, connected to said processing means and said main storage means, for controlling the transfer of request signals and data therebetween;
the improvement wherein said main storage control means includes:
request register means, connected to said processing means, for storing request signals from said processing means, each of which signals comprises
an address signal to indicate a location within said main storage means, and
a command signal to indicate an operation to be performed by said main storage control means on data stored in said location;
first and second interlock address register means, connected to said processing means, for respectively storing first and second parts of an interlocked address within said main storage means as first and second interlock addresses, respectively;
first comparing means, connected to said processing means and said first interlock address register means, for determining coincidence between said first interlock address and a corresponding first part of an address of each succeeding request signal provided by said processing means to be performed;
second comparing means, connected to said second interlock address register means and said processing means, for determining coincidence between said second interlock address and a corresponding second part of said address of said each succeeding request signal provided by said processing means; and
transfer means, connected to said processing means, for simultaneously supplying each succeeding request signal from said processing means to said first comparing means and said request register means; and
control means, connected to said request register means and said first and second comparing means, for transferring each succeeding request signal stored in said request register means to said main storage means in response to a non-coincidence signal provided by either of said first or second comparing means.

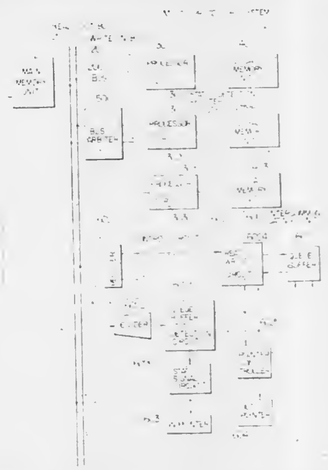
4,214,305

MULTI-PROCESSOR DATA PROCESSING SYSTEM

Yoshiaki Tokita, and Keisuke Okajima, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 20, 1978, Ser. No. 917,373
Claims priority, application Japan, Jun. 20, 1977, 52-72075
Int. Cl.² G06F *13/00*
U.S. Cl. 364—200 **5 Claims**

1. A stored program control type multiprocessor data processing system including a main memory unit having programs and data stored therein and a write-in bus and a read-out bus by which processors are connected to the main memory unit, said system comprising:
(1) a bus arbiter;
(2) a plurality of processors; and
(3) an intercommunicating unit;
(1) said bus arbiter being connected between said processors and said write-in and read-out buses and comprising:
(a) preference selection means for preferentially selecting any one of said processors according to a predetermined sequence when a bus request is made by every one of said processors simultaneously, and
(b) means for connecting one of said processors selected by said preference selection circuit to said buses selectively,
(2) said plurality of processors being disposed to be connected to said buses selectively and commonly through said bus arbiter, said processors being adapted so that when a particular process is executed by a selected one of said processors, said selected processor writes information relating to said particular process in said main memory unit and executes an intercommunicating information write-in instruction so that after execution of said particular process a first address of a storage area of said main memory unit having said information stored therein is supplied to said write-in bus as an intercommunicating information corresponding to said particular process or a successive process of another of said processors, said selected processor, when idle, executing an intercommunicating information readout instruction to execute a process corresponding to an intercommunicating information read out,
(3) said intercommunicating unit comprising:
(i) a queue buffer including:
(a) a buffer comprising a plurality of registers and adapted to store intercommunicating information in a first-in first-out manner.
(b) write-in address designating means for designating one of said registers in said buffer for writing intercommunicating information thereinto, and
(c) read-out address designating means for designating one of said registers in said buffer for reading out intercommunicating information therefrom,
(ii) control means including:
(a) means disposed to receive an operation code and intercommunicating information from said write-in bus to discriminate one or the other of a write signal and a read signal in accordance with said operation code,
(b) queue buffer status detecting means disposed to receive an input value to said write-in address designating means and an input value to said read-out address designating means for comparing the same, whereby upon reception of said write signal from discriminating means, when the presence of one or a



predetermined number of registers in which intercommunicating information is unwritten in said buffer is identified as a result of the comparison a write enable signal is generated, and when the absence of such unwritten registers is identified a write inhibit signal is generated, while upon reception of said read signal from said discriminating means, when the presence of at least one register in which intercommunicating information is written in said buffer is identified as a result of said comparison a read enable signal is generated, and when the absence of such written register is identified a read inhibit signal is generated.

(c) pointer control means disposed to selectively receive the write enable signal and the read enable signal from said queue buffer status detecting means to delay the same by at least a time sufficient to complete an operation of writing intercommunicating information into said queue buffer, and an operation of reading out intercommunicating information from said queue buffer and transmitting it to said read-out bus, respectively, and then applying it selectively to an in-pointer and out-pointer to thereby cause the same to count up,

(d) said in-pointer having a counting capacity equal to the number of registers in said buffer and adapted to increase the count thereof by one in response to every write enable signal applied from said pointer control means and apply said count value to said write-in address designating means thereby causing the same to designate in accordance with said count value, a corresponding one of the registers in said buffer for writing intercommunicating information thereinto,

(e) said out-pointer having a counting capacity equal to the number of registers in said buffer and adapted to increase the count thereof by one in response to every read enable signal from said pointer control means and apply said count value to said read-out address designating means thereby causing the same to designate in accordance with said count value, a corresponding one of the registers in said buffer for reading out intercommunicating information therefrom,

(f) status signal means selectively responsive to said write signal, said read signal, said in-pointer count count-up signal and said out-pointer count count-up signal to selectively supply said write inhibit signal, said read inhibit signal, a write-in completion signal and a read-out completion signal to a selected one of said processors through said read-out bus, and

(g) read/write control means responsive to said write enable signal to receive intercommunicating information from said discriminating means in said control means and supply the same to said queue buffer and responsive to said read enable signal to read out intercommunicating information from said queue buffer and supply the same to said read-out bus.

4,214,306

ELECTRONIC FUEL INJECTION CONTROL APPARATUS

Akio Kobayashi, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed May 17, 1978, Ser. No. 907,054
Claims priority, application Japan, May 31, 1977, 52-64068
Int. Cl.[2] F02D *5/00*; G06F *15/20*
U.S. Cl. 364—431 5 Claims

1. An electronic fuel injection control system for an automotive vehicle driven by an internal combustion engine having an output shaft, said system being operative to reduce the resonance of said vehicle and comprising:

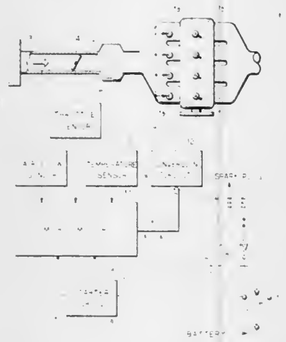
means for generating at every rotation of said output shaft an intake signal related to an intake parameter of said engine;

means for generating at every rotation of said output shaft a speed signal related to the rotational velocity of said output shaft;

controlling means responsive to said intake signal means and said speed signal means for generating an output signal related to the amount of fuel to be injected in said engine, said controlling means including:

means for monitoring the existence of operating conditions in said engine conducive to the amplification of resonance in said vehicle upon changes in the output torque of said engine,

means responsive to said monitoring means for generating a control signal proportional to said speed during the absence of said conductive operating conditions and related to a modified speed signal during the presence of said conducive operating conditions, said modified speed signal being respectively smaller and greater than



said speed signal as said speed signal increases and decreases, said modified speed signal thus being delayed with respect to said speed signal so that changes in said control signal are delayed during periods of said conducive operating conditions, and

means for generating said output signal proportional to said intake signal and inversely proportional to said control signal at every rotation of said output shaft, changes in said output signal being thereby delayed during periods of said conducive operating conditions to avoid amplification of resonance in said vehicle upon changes in the output torque of said engine, thereby improving the smoothness of operation of said engine; and

means responsive to the output signal of said controlling means for controlling the amount of fuel injected in said engine at every rotation of said output shaft.

4,214,307

DECELERATION LEAN OUT FEATURE FOR ELECTRONIC FUEL MANAGEMENT SYSTEMS

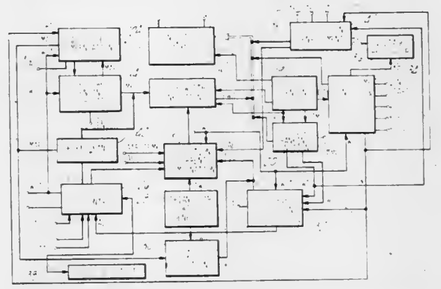
William A. Peterson, Jr., Rochester, and Roman O. Marchak, Northville, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 918,307
Int. Cl.[2] G06F *15/46*; F02M *7/00, 51/00*
U.S. Cl. 364—431 10 Claims

1. An electronic control unit for the management of the air/fuel ratio of an internal combustion engine with an exhaust gas recirculation (EGR) valve, said electronic control unit comprising:

base calibration means for regulating the air/fuel ratio of the engine in response to sensed engine operating parameters indicative of one of the mass air flow and mass fuel flow inducted into the engine, said base calibration means regulating the air/fuel ratio by sensing one of said mass air flow and said mass fuel flow and calculating the other from a predetermined schedule of desired air/fuel ratios; and

lean out means for increasing the air/fuel ratio of said internal combustion engine during decelerations, said lean out means preventing increased emissions during decelerations because of EGR valve response delay; wherein said lean out means comprises means for sensing a deceleration and for generating a deceleration signal indicating that the



engine is experiencing a deceleration greater than a predetermined amount indicative of EGR valve response delay; and

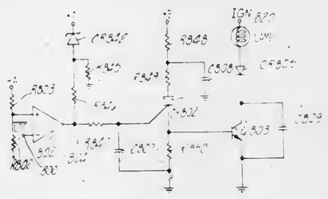
means responsive to said deceleration signal for increasing said air/fuel ratio when the deceleration of the engine increases beyond said predetermined amount, said means for increasing said air/fuel ratio connected to said base calibration means and operable to change said scheduled air/fuel ratio.

4,214,308

CLOSED LOOP SENSOR CONDITION DETECTOR

Ralph W. Carp, Newport News, Va., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 918,308
Int. Cl.[2] G06F *15/46*; F02M *7/00, 51/00*
U.S. Cl. 364—431 9 Claims



1. A latched indicator circuit for providing a visual indication of a sensed failure condition of a closed loop electronic control unit having an exhaust gas sensor, which visual indication is electronically nonresetable once the condition has occurred, said indicator circuit comprising:

condition indication means for generating a condition signal indicative of the occurrence of the failure condition;

latching means for generating an indicator signal when energized, said latching means having a control electrode receiving said condition signal and operable to energize said latching means upon receipt of the condition signal, wherein said latching means will remain energized until mechanically disconnected from a power supply which substantially remains on at all times; said latching means including an SCR device with its anode and cathode terminals connected in series with said power supply and a reference potential, wherein the gate terminal of the SCR is said control electrode, and the presence of said condition signal produces latched conduction in said SCR to provide said indication signal representative of the energization of the latching means; and impedance means further connected in series with said SCR between said power supply and reference for limiting the amount of current drawn through said SCR during its latched state and for generating a control voltage dependent upon said limited current which is said indication signal, said impedance means thereby limiting the power dissipation of the indicator circuit during latched time periods; and

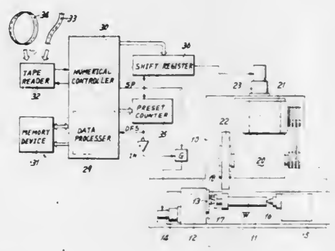
indicator means responsive to said indicator signal for generating a visual indication of the energization state of said latching means and the occurrence of the failure condition; said indicator means energized with a second power supply which is turned off when said electronic control unit is not on.

4,214,309

NUMERICAL CONTROLLER FOR CONTROLLING MACHINING OF OVAL WORKPIECE

Tsuyoshi Koide, Toyota, and Yasuji Oda, Kariya, both of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha, Aichi, Japan

Filed Oct. 31, 1978, Ser. No. 956,231
Claims priority, application Japan, Nov. 8, 1977, 52/134452
Int. Cl.[2] B23B *1/00*
U.S. Cl. 364—474 5 Claims



1. A numerical controller for controlling the machining of a workpiece comprising:

a first servomechanism coupled to said workpiece and responsive to a first chain of feed pulses for effecting rotation of said workpiece;

a second servomechanism coupled to a tool slide and responsive to a second chain of feed pulses for effecting a feed movement of said tool slide relative to said workpiece;

data processing means coupled to said first and second servomechanisms for producing said first and second chains of feed pulses in accordance with a profiling program so as to machine said workpiece to a predetermined oval form in accordance with said profiling program, said data processing means comprising,

memory means for storing said profiling program composed of a series of data blocks,

data read-out means for reading out a successive one of said data block from said memory means,

interpolation processing means for processing profiling data included in said successive one of said data blocks read out from said memory means so as to provide interpolation data in the form of said first and second chains of feed pulses, said second chain of feed pulses to be distributed in connection with said first chain of feed pulses,

pulse distribution means for applying said first and second chains of said feed pulses respectively to said first and second servomechanisms, respectively,

means for ascertaining whether or not said workpiece is in a rough machining operation or in a fine machine operation,

read-out control means for controlling said read-out means to successive read out a predetermined number of data blocks of said series of said data blocks when it is ascer-

tained that said workpiece is in said rough machining operation,

data accumulating means for accumulating profiling data included in said predetermined number of said data blocks, and

interpolation control means for controlling said interpolation processing means to provide said interpolation data based upon the accumulated profiling data accumulated by said data accumulating means;

wherein the number of said predetermined number of data blocks is predetermined such that the amount of time spent by said interpolation processing means during reading and processing of the profiling data included in said predetermined number of data blocks is less than the duration time of the distribution of said first and said second chains of feed pulses derived from said predetermined number of data blocks, whereby uninterrupted workpiece machining is achieved

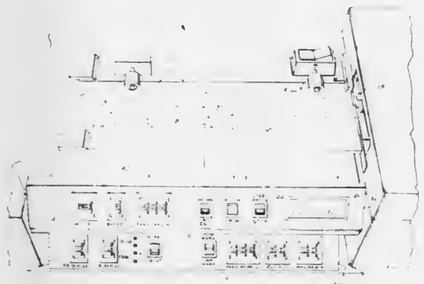
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4,214,310

MANAGEMENT DATA SYSTEM FOR PRINT SORTER

Gerald R. Strunc, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Oct. 10, 1978, Ser. No. 949,694
Int. Cl.[2] G06M *3/06*
U.S. Cl. 364—475 **17 Claims**



1. In a photographic print cutting and sorting system in which individual photographic prints are cut from a strip of photographic paper and sorted into good, remake and reject prints as a function of remake and reject indicia associated with the remake and reject prints, respectively, a management data system comprising:

first storage means for storing a first good print count, a first remake print count, a first reject print count, a first total print count, a first good order count, a first remake order count, a first reject order count, and a first total order count;

digital processor means for incrementing the first good print count for each print cut which has neither remake nor reject indicia associated therewith, incrementing the first remake print count for each remake print indicated by the remake indica, incrementing the first reject print count for each reject print indicated by the reject indicia, incrementing the first total print count for each print cut, incrementing the first good order count for each order completed which contains only good prints, incrementing the first remake order count for each order completed which contains at least one remake print, incrementing the first reject order count for each order completed which contains at least one reject print, and incrementing the first total order count for each order completed; and

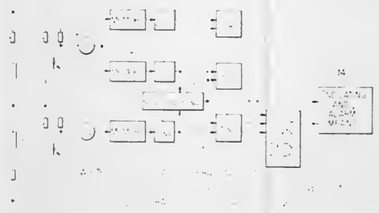
data retrieval means for retrieving data which is a function of the first counts.

4,214,311

METHOD AND APPARATUS FOR MEASURING INSULATION RESISTANCE

Koichi Nakashima; Kiyosi Nagaoka, and Toshibisa Hikosaka, all of Wakayama, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Nov. 28, 1977, Ser. No. 855,344
Claims priority, application Japan, Dec. 2, 1976, 51-144905
Int. Cl.[2] G01R *27/00*
U.S. Cl. 364—482 **6 Claims**



1. A method for providing the values needed for calculation of the insulation resistance in a non-grounded DC circuit having load means connected to the circuit comprising the steps of:

(a) selectively and successively grounding the positive line and the negative line through a measurement resistance for forceably changing the proportions among the voltage on the positive line, the voltage on the negative line and the voltage on the ground line;

(b) measuring two instantaneous voltage values from among the voltage on the positive line, the voltage on the negative line and the voltage on the ground line for both said successive groundings; and

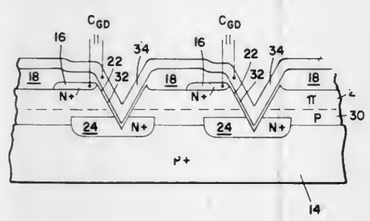
(c) temporarily and successively storing said measured instantaneous voltage values.

4,214,312

VMOS FIELD ALIGNED DYNAMIC RAM CELL

Gideon D. Amir, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Jan. 8, 1979, Ser. No. 1,712
Int. Cl.[2] G11C *11/40, 11/24*
U.S. Cl. 365—182 **5 Claims**



1. In a semiconductor memory device, including an array of single transistor memory cells comprising:

A—a substrate of low resistivity semiconductor material of a preselected polarity;

B—an epitaxial layer on said substrate having the same polarity but a higher resistivity than said substrate;

C—a series of elongated, parallel and spaced-apart bit line regions situated in and having the opposite polarity of said epitaxial layer;

D—a layer of insulative material covering said bit line regions;

E—a plurality of buried capacitor regions located within said substrate below and to one side of each said bit line region and having the same polarity as said bit line regions;

F—a plurality of recesses having a V-shaped cross section, each having one sloping sidewall located directly adjacent to one side of a said bit line region, each said recess extending downwardly into a said buried capacitor region;

G—a thin gate dielectric material within each said recess; and

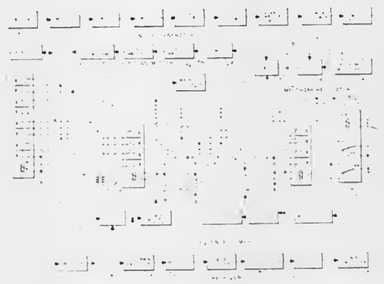
H—conductive gate means covering said gate dielectric material within each said recess and connected to an elongated word line of conductive material extending to gate means of other cells in the array in a direction generally perpendicular to said bit lines.

4,214,313

MULTIPLE SONAR MASKING AND JAMMING COUNTERMEASURE SYSTEM

Keith E. Geren; Warren A. Sauer, and Donald A. Young, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1961, Ser. No. 106,420
Int. Cl.[2] H04K *3/00*
U.S. Cl. 367—1 **19 Claims**



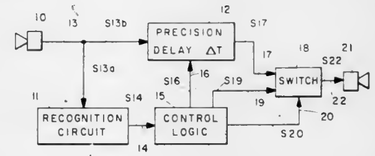
1. A masking-jamming sonar countermeasure system comprising in combination, a receiver, a transmitter, a sequence timer connected between said receiver and said transmitter for regulating the operative time intervals thereof, and means coupled to the input of said transmitter for driving same with predetermined sonar signals and psuedo noise signals alternately applied thereto on a time-shared basis.

4,214,314

PRECISION TRANSPONDER AND METHOD OF COMMUNICATING THEREWITH

Frederick N. Spiess, La Jolla; Dwight E. Boegeman, San Diego; Frank V. Pavlicek, San Diego, and Carl D. Lowenstein, San Diego, all of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Mar. 13, 1978, Ser. No. 885,893
Int. Cl.[2] H04B *1/59*
U.S. Cl. 367—2 **10 Claims**



1. A transponder being operative to receive first input signals followed by second input signals and to provide a precision delayed return of said second input signals in response to the detection of said first input signals regardless of any unpredictable and variable delay incurred in detecting said first input signals due to signal strength variations and the like; said transponder being comprised of;

means for receiving said first and second input signals;

means for detecting said first input signals and for generating recignition signals in response thereto anytime prior to the receipt of said second input signals;

control means for generating first control signals defining a first time interval overlapping the receipt of said second input signals, and for generating second control signals defining a second time interval following said first time interval and being of the same duration as said first time interval;

delay means for delaying all signals from said means for receiving during said first time interval in response to said first control signals, and for outputting said delayed signals during said second time interval in response to said second control signals; and

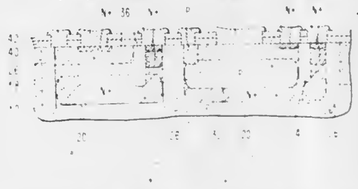
means for transmitting signals representative of said output signals from said delay means during said second time interval.

4,214,315

METHOD FOR FABRICATING VERTICAL NPN AND PNP STRUCTURES AND THE RESULTING PRODUCT

Narasipur G. Anantha, Hopewell Junction; Harsaran S. Bhatia, Wappingers Falls, and James L. Walsh, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 844,767, Oct. 25, 1977, Pat. No. 4,159,915.
This application Mar. 16, 1979, Ser. No. 21,123
Int. Cl.[2] H01L *27/02*
U.S. Cl. 357—44 **12 Claims**



1. A verticle NPN and PNP semiconductor device comprising:

a silicon semiconductor body composed of a substrate and an N-type epitaxial layer having regions of monocrystalline silicon isolated from one another by isolating regions;

a buried N-type region overlapping the juncture of said substrate and said epitaxial layer and located in at least one of said regions of monocrystalline silicon;

an NPN device located in said at least one of said regions of monocrystalline silicon which includes a collector reach-through connecting the surface of the monocrystalline silicon with said buried region, a base region spaced from said collector reach-through extending into said body from the surface of said body, and an emitter region within said base region extending from the surface of said body into said base region;

a PNP device located in one of said regions of monocrystalline silicon other than or containing a NPN device which includes a buried P-type emitter region connected to the surface of the monocrystalline silicon by a P-type reach-through, an N type base region above the said emitter region and a Schottky Barrier collector at the said surface of the monocrystalline silicon and within said base region; and

electrical contacts to said emitter, base and collector of said NPN device and to said emitter, base and collector of said PNP device.

4,214,316

METHOD AND APPARATUS FOR SYNCHRONOUSLY TUNING THE MULTI-CHANNEL SUPERHETERODYNE RECEIVER OF A DF SYSTEM

Stephen E. Lipsky, East Hills, N.Y., assignor to General Instrument Corporation, Clifton, N.J.

Continuation-in-part of Ser. No. 650,905, Jan. 21, 1976, abandoned. This application Jun. 23, 1977, Ser. No. 809,196

Int. Cl.² H04B 1/26

U.S. Cl. 455—141 **46 Claims**



33. In a N-channel (N>1) single band DF system of the type having N remote RF signal receiving and IF signal generating portions, each having substantially the same band coverage and each of which includes an antenna and a local oscillator, and a centrally located IF signal processing portion, operatively connected to each of said remote portions by a different set of video transmission lines, a method for synchronizing the frequency of the local oscillator of each of said remote portions, comprising the steps of: generating a local oscillator signal continuously frequency variable over a given frequency range in accordance with a frequency determining signal, combining the signal received at said antenna and the generated local oscillator signal to form an IF signal, transmitting said IF signal over the set of said transmission lines associated with said remote portion, receiving said frequency determining signal from said set of transmission lines, and transferring the received frequency determining signal to the local oscillator; and, at said central portion, the steps of: receiving the IF signal from each of the sets of transmission lines, processing the received IF signals to produce DF information, generating a frequency determining signal which is continuously frequency variable over a preselected frequency range; and transmitting said frequency determining signal over each of the sets of transmission lines.

DESIGN PATENTS

GRANTED JUL. 22, 1980

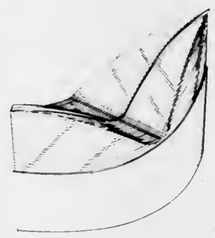
ERRATA

For CLASS	See PATENT NO.
D26-046	256,061

255,952
GARMENT
Milton Goldstone, New York, N.Y., assignor to The H. W. Gossard Co., Chicago, Ill.
Filed Mar. 29, 1978, Ser. No. 891,259
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—183



255,953
DISPOSABLE CAP
John S. Gates, Columbus, and James E. Randall, Worthington, both of Ohio, assignors to Lin-N-Look Company, Inc., Columbus, Ohio
Filed Jun. 5, 1978, Ser. No. 912,587
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—254

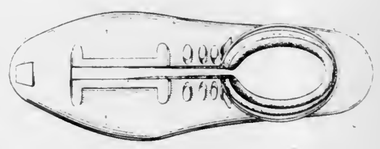


255,954
CAST BOOT OR THE LIKE
Lorraine D. Foote, 2501 Shaytown Rd., Rte. #2, Vermontville, Mich. 49096
Filed Jun. 30, 1978, Ser. No. 920,738
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—264

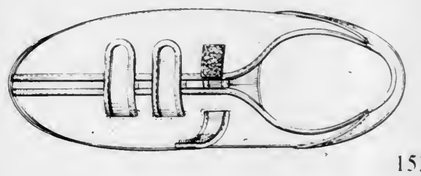


255,955
FIGURE SKATE BOOT
Philip V. Chiarella, Hampstead, Canada, assignor to Les Produits Sportifs Micron Inc. - Micron Sports Products Inc., Montreal, Canada
Filed Jul. 13, 1978, Ser. No. 924,389
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—275

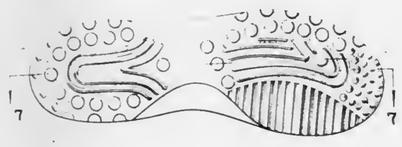




255,956
SPORTS SHOE
Ira J. Hirsch, 1107 Broadway, New York, N.Y. 10010
Filed Sep. 11, 1978, Ser. No. 941,419
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



255,957
ATHLETIC SHOE SOLE
Joseph Pasquier, Montfaucon, France, assignor to G E P, Saint Germain sur Moine, France
Filed Aug. 9, 1978, Ser. No. 933,128
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



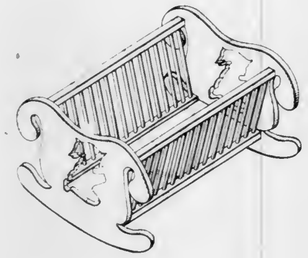
255,958
SUN SHADE OR SIMILAR ARTICLE
Charles E. Browning, 10415 SE. 174th #5371, Renton, Wash. 98055, assignor to Charles E. Browning, Renton, Wash.
Filed Aug. 24, 1977, Ser. No. 827,163
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D3—5



255,959
CONVERTIBLE CHAIR
Bruce D. Mitchell, 2430 Evans St., Omaha, Nebr. 68111
Filed Nov. 17, 1977, Ser. No. 852,373
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—3



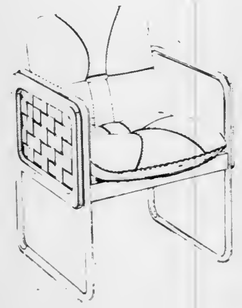
255,960
CRADLE OR SIMILAR ARTICLE
Michael J. Sedillo, 8565 Stratus Dr., Orangevale, Calif. 95662
Filed Dec. 6, 1977, Ser. No. 858,003
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—15



255,961
HOLDER FOR INDIVIDUAL JELLY CUPS
Charles F. Kerr, 515 Robertson Way, Sacramento, Calif. 95818
Filed May 26, 1978, Ser. No. 910,147
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—28



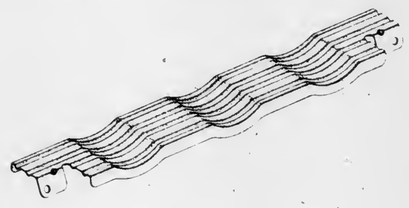
255,962
CHAIR
Robert L. Wilson, Senatobia, Miss., assignor to Chromcraft Corporation, Amsterdam, N.Y.
Filed Jan. 31, 1978, Ser. No. 873,826
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



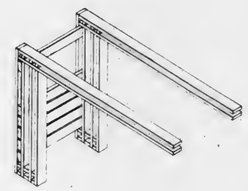
255,963
COT
Bertrand M. Baker, 109 N. Warbler La., Sarasota, Fla. 33577
Filed Feb. 22, 1978, Ser. No. 880,313
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



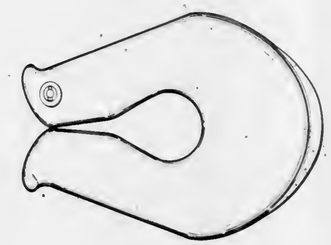
255,964
SHELF FOR SUPPORTING CANS
Bernard T. Anderson, Garden Grove, and Theodore Yedinak, Fountain Valley, both of Calif., assignors to B & T Manufacturing Corporation, Garden Grove, Calif.
Filed Jul. 3, 1978, Ser. No. 921,479
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181



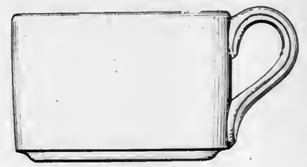
255,965
SUPPORT FOR USE WITH ELECTRONIC COMPUTER UNITS
David A. O'Connor, Virginia Beach, Va., assignor to Virginia National Bankshares, Inc., Norfolk, Va.
Division of Ser. No. 669,604, Mar. 23, 1976. This application Feb. 24, 1978, Ser. No. 880,977
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191

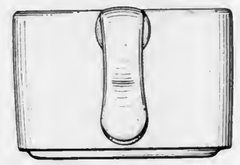


255,966
INFLATABLE RECREATIONAL CUSHION
Myrtle Stadel, 3902 Walton Dr., Lansing, Mich. 48910
Filed Jul. 10, 1978, Ser. No. 923,042
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

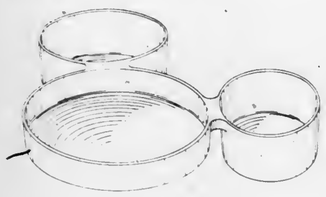


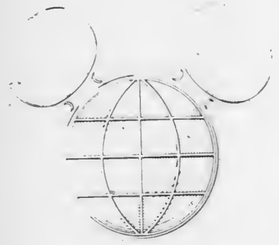
255,967
CUP
Niels R. Andersen, Rude, Denmark, assignor to Dansk International Designs Ltd., Mount Kisco, N.Y.
Filed Jun. 1, 1977, Ser. No. 802,385
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9





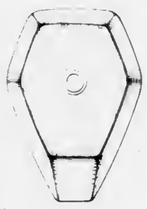
255,968
COMPARTMENTED SERVING TRAY
David A. Shack, 2160 Lyndway Rd., Beachwood, Ohio 44122
Filed May 24, 1978, Ser. No. 908,995
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—38



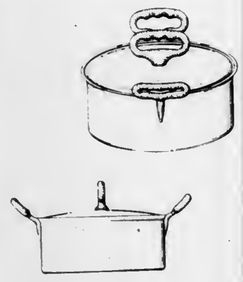


255,969
JUICE EXTRACTOR ATTACHMENT FOR A MIXER
Norman A. Steinkamp, La Grange Park, Ill., assignor to Sunbeam Corporation
Filed Jul. 13, 1978, Ser. No. 924,314
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—48





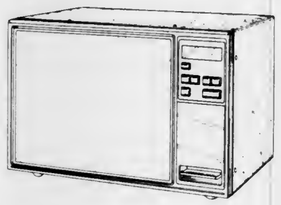
255,970
PAN
Bonnie K. Lackmann, 620 Madison, Anoka, Minn. 55303
Filed Mar. 30, 1978, Ser. No. 891,932
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—97



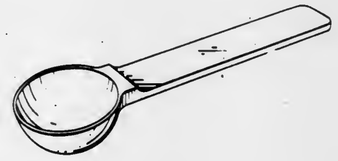
255,971
TURNER OR THE LIKE
Roger L. Kelly, Palatine, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 28, 1978, Ser. No. 937,494
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—102

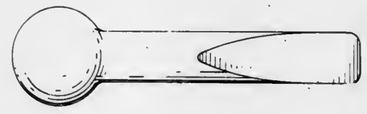


255,972
MICROWAVE OVEN
Daisaku Mori; Yoichi Takahashi, both of Kouriyama, and Hanji Takahashi, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Mar. 23, 1978, Ser. No. 889,586
Claims priority, application Japan, Oct. 4, 1977, 52-39563
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128

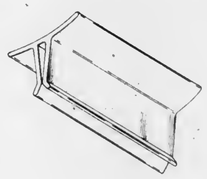


255,973
SPOON
Andre Morin, 59 Place Mansfield, Dollard des Ormeaux, Quebec, Canada
Filed Apr. 20, 1978, Ser. No. 898,501
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—138





255,974
DETACHABLE FINGER GUARD FOR A KNIFE BLADE
Charles E. Jacoby, 2142 Covington Ave., Bethlehem, Pa. 18017
Filed Nov. 7, 1977, Ser. No. 848,973
Term of patent 14 years
Int. Cl. D07—*03, 99*
U.S. Cl. D7—152

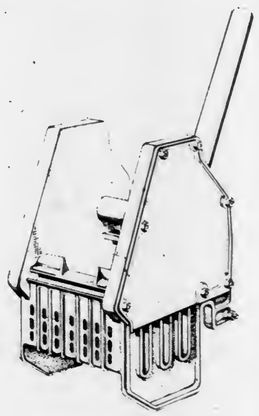


255,975
KNEADING BLADE FOR A FOOD MACHINE
Teruo Masuda, Itsukaichi, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan
Filed Oct. 31, 1978, Ser. No. 956,346
Term of patent 14 years
Int. Cl. D15—*08;* D07—*04*
U.S. Cl. D7—160





255,976
DOWNWARD PRESSURE MOP WRINGER
Dale T. Maza, and Greg P. Terek, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Dec. 23, 1977, Ser. No. 863,899
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—187



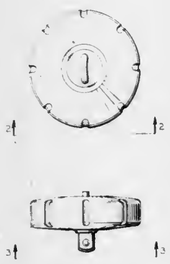
255,977
BLOW-THROUGH FIREPLACE POKER
Howard A. Holleman, Bay Village, Ohio, assignor to Hydro Tube Corporation, Oberlin, Ohio
Continuation-in-part of Ser. No. 714,819, Aug. 16, 1976, Pat. No. Des. 248,209. This application May 31, 1978, Ser. No. 911,295
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—210



255,978
RATCHET WRENCH LEVER
Robert V. Albertson, 2100 Shadywood Rd., Wayzata, Minn. 55391
Filed Nov. 21, 1977, Ser. No. 853,640
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—25



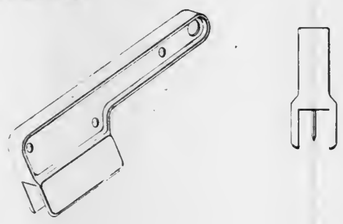
255,979
RATCHET TOOL HANDLE
Raymond O. Boursaw, Rte. 3, Box 1230, Rainier, Oreg. 97048
Filed May 12, 1978, Ser. No. 905,419
Term of patent 14 years
Int. Cl. D08—*06*
U.S. Cl. D8—25



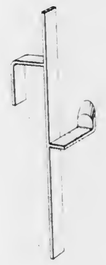
255,980
ANGLE SNIPS
Quenton F. Winget, 6992 S. 85 East, Midvale, Utah 84047
Filed May 15, 1978, Ser. No. 906,031
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—52



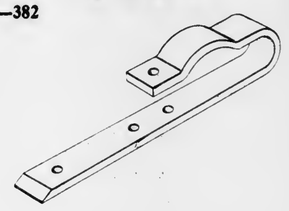
255,981
RECORD ALBUM JACKET OPENER
Henry Carbo, 5137 West Blvd., Los Angeles, Calif. 90043
Filed Sep. 19, 1977, Ser. No. 834,665
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98



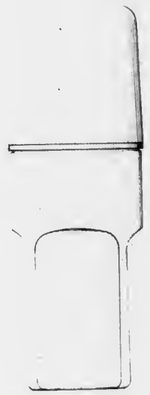
255,982
FAN BRACKET
Albert R. Germann, 2121 E. 12th, Apt. 1, Winfield, Kans. 67156
Filed Feb. 17, 1978, Ser. No. 879,010
Term of patent 7 years
Int. Cl. D8—*08*
U.S. Cl. D8—366



255,983
CARGO RESTRAINT CLIP
George W. Armstrong, Farmingdale, and Eric G. Aronson, Livingston, both of N.J., assignors to Sea-Land Service, Inc., Elizabeth, N.J.
Filed Sep. 15, 1977, Ser. No. 833,598
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



255,984
BOTTLE
Edward C. Kozlowski, Trumbull, Conn., and John D. Campbell, Northport, N.Y., assignors to The Gillette Company, Boston, Mass.
Filed Nov. 9, 1977, Ser. No. 850,005
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1



255,985
BOTTLE
Barry G. Seelig, Tuxedo, and Robert E. Lee, Pound Ridge, both of N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 18, 1977, Ser. No. 853,009
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—61



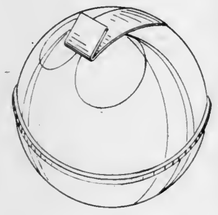
255,986
BOTTLE OR SIMILAR ARTICLE
Ta-Peng Chang, Cliffside Park, and Lois B. Pritchard, Glen Rock, both of N.J., assignors to Lever Brothers Company, New York, N.Y.
Filed May 1, 1978, Ser. No. 901,665
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—64



255,987
BOTTLE
Giovanni Gentili, Bologna, Italy, assignor to Panigal S.p.A. Saponerie Italiane Conserve Pecori S.p.A., Bologna, Italy
Filed Nov. 8, 1977, Ser. No. 850,068
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 801
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—71



255,988
BEVERAGE CONTAINER
Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., Stamford, Conn.
Filed Aug. 25, 1977, Ser. No. 827,533
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—83



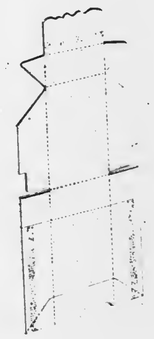
255,989
COMBINED BOTTLE AND CAP
Frank F. Lipsz, St. Laurent, Canada, assignor to Leabrooke Manufacturing Inc., Montreal, Canada
Filed Sep. 26, 1977, Ser. No. 836,911
Claims priority, application Canada, Aug. 29, 1977, 2908771
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—131



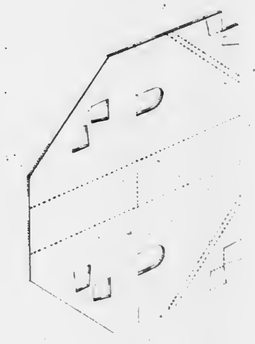
255,990
COMBINED BOTTLE AND CAP
Michael P. Lucas, Hingham, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 20, 1978, Ser. No. 888,598
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—147



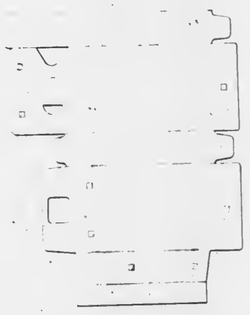
255,991
FLIP TOP DISPENSER BOX BLANK
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Nov. 4, 1977, Ser. No. 848,495
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



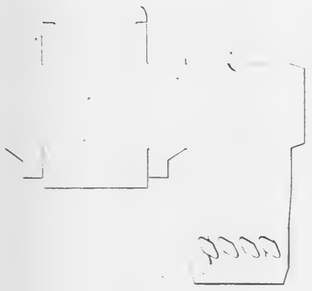
255,992
CORNER PAD BLANK
David R. Card, Memphis, Tenn., assignor to Champion International Corporation, Stamford, Conn.
Filed Dec. 5, 1977, Ser. No. 857,404
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



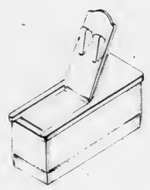
255,993
SLIDE TOP CARTON BLANK OR SIMILAR ARTICLE
Herbert L. Lambert, Manchester, Mo., assignor to Champion International Corporation, Stamford, Conn.
Filed Mar. 9, 1978, Ser. No. 884,860
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



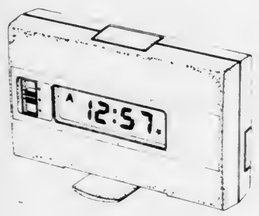
255,994
BLANK FOR A FOLDABLE CARTON
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Mar. 29, 1978, Ser. No. 891,475
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



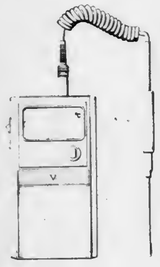
255,995
DISPENSING CLOSURE
William G. Kinslow, Kansas City, Mo., assignor to Ethyl Development Corporation, Baton Rouge, La.
Filed May 22, 1978, Ser. No. 908,056
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—275



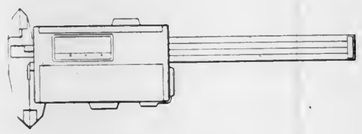
255,996
POCKETABLE WATCH
Shuichi Tamura, Tokyo, Japan, assignor to Tamura Electric Works, Ltd., Tokyo, Japan
Filed May 31, 1978, Ser. No. 911,092
Claims priority, application Japan, Dec. 2, 1977, 52-47567
Term of patent 14 years
Int. Cl. D10—*01, 02*
U.S. Cl. D10—15



255,997
ELECTRONIC THERMOMETER
Hisashi Maeda, Nagaokakyo, Japan, assignor to Omron Tateishi Electronics Co., Kyoto, Japan
Filed Oct. 18, 1977, Ser. No. 843,358
Claims priority, application Japan, Apr. 18, 1977, 52-14610[U]
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



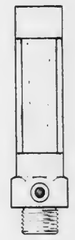
255,998
CALIPER
H. Jackson Merchant, North Scituate, R.I., assignor to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.
Filed Apr. 17, 1978, Ser. No. 896,994
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73



255,999
FLUID FLOW INDICATOR
Sture G. Molijn, Linköping, Sweden, assignor to Mobil Oil AB Sweden, Danderyd, Sweden
Filed Apr. 6, 1978, Ser. No. 893,954
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



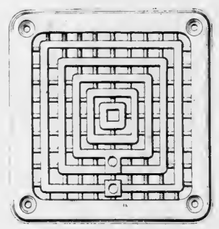
256,000
FLUID FLOW INDICATOR
Sture G. Molijn, Linköping, Sweden, assignor to Mobil Oil AB Sweden, Danderyd, Sweden
Filed Apr. 7, 1978, Ser. No. 894,630
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



256,001
REFLECTOR ASSEMBLY
Mike H. Curran, 1738 E. Montecito, Phoenix, Ariz. 85016
Filed Mar. 27, 1978, Ser. No. 890,852
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



256,002
HORN GRILLE
Owen G. Price, Mokena, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.
Filed May 15, 1978, Ser. No. 905,579
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—121



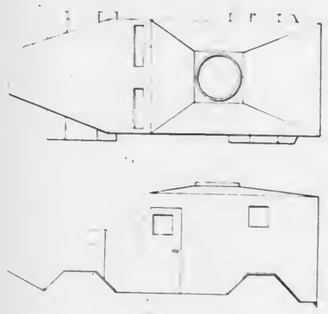
256,003
EARRING
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Sep. 29, 1978, Ser. No. 947,242
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—43



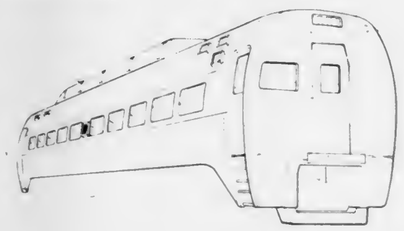
256,004
MEDALLION OR SIMILAR ARTICLE
Ellena M. E. Freeman, 5376 Magnolia St., Philadelphia, Pa. 19144
Filed Jan. 19, 1978, Ser. No. 817,093
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D11—110



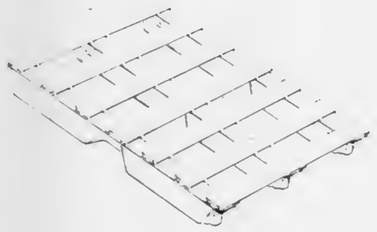
256,005
ARMORED CAR BODY
Russell E. Bauer, 920 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Filed Oct. 11, 1977, Ser. No. 844,791
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—12



256,006
RAILWAY CAR BODY
John Cuccio, Westport, and Mace H. Bell, Jr., Rowayton, both of Conn., assignors to The Budd Company, Troy, Mich.
Filed Jan. 3, 1978, Ser. No. 866,482
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D12—40



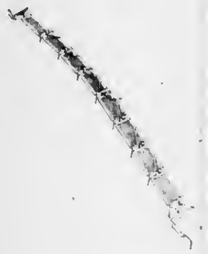
256,007
PALLET
Gerald M. Chillog, 1531 La Colina, Tustin, Calif. 92705
Filed Feb. 21, 1978, Ser. No. 879,686
Term of patent 7 years
Int. Cl. D9—*99*
U.S. Cl. D12—53



256,008
TIRE
Jean Menin, Maurecourt, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, France
Filed Nov. 29, 1978, Ser. No. 964,456
Claims priority, application France, Jul. 13, 1978, 78 41567
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



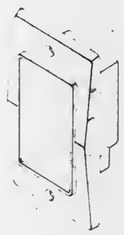
256,009
SKI RACK FOR AN AUTOMOBILE OR THE LIKE
Daniel C. Mendenhall, 15370 NW. Norwich St., Beaverton, Oreg. 97005
Filed May 10, 1978, Ser. No. 904,638
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



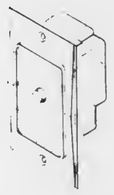
256,010
TERMINAL CONNECTOR COVER
William L. Fry, Haughton, England, assignor to Lucas Industries Limited, Birmingham, England
Filed Sep. 24, 1976, Ser. No. 726,343
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



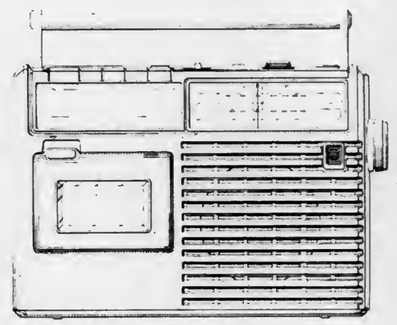
256,011
LIGHT-INTENSITY CONTROL CONTACT SWITCH OR THE LIKE
Takehiko Matsuda, Matsudo, Japan, assignor to Toyostar Corporation, Tokyo, Japan
Filed Feb. 15, 1979, Ser. No. 12,510
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—38



256,012
LIGHT-INTENSITY CONTROL CONTACT SWITCH OR THE LIKE
Takehiko Matsuda, Matsudo, Japan, assignor to Toyostar Corporation, Matsudo, Japan
Filed Mar. 20, 1979, Ser. No. 22,373
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—38

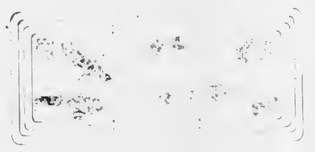


256,013
COMBINED CASSETTE TAPE PLAYER AND RADIO
Richard Culbertson, Manlius, N.Y., assignor to General Electric Company
Filed Sep. 21, 1977, Ser. No. 835,409
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5

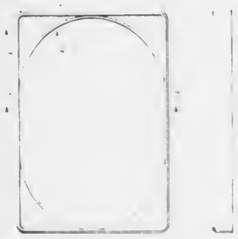


256,014
VEHICLE SPEAKER
Robert A. Noga, 13404 Calais Dr., Del Mar, Calif. 92014
Filed Nov. 7, 1977, Ser. No. 849,072
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33

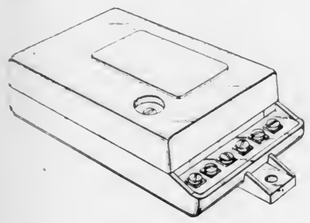


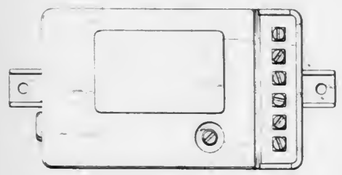


256,015
LOUDSPEAKER MOUNTING BRACKET
Glenn F. Doherty, Newburyport, Mass., assignor to Epicure Products, Inc., Newburyport, Mass.
Filed Mar. 20, 1978, Ser. No. 888,518
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—37



256,016
RADIO TRANSMITTER
Keisuke Iwata, Tokyo, Japan, assignor to Iwata Electric Co., Ltd., Tokyo, Japan
Filed Feb. 21, 1978, Ser. No. 879,620
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—95

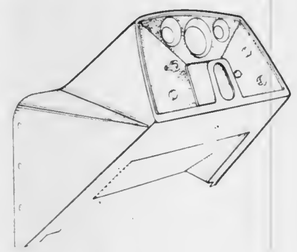




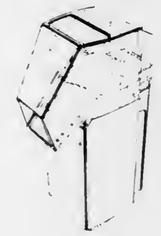
256,017
TRACTOR
Horst Emundts, Bochum, and Peter Kramer, Troisdorf-Spich, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany
Filed Mar. 6, 1978, Ser. No. 884,022
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 436238
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—23



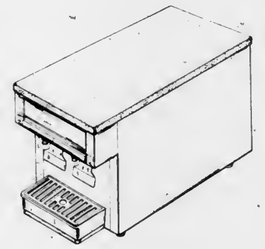
256,018
TRACTOR CONSOLE
Lawrence J. Stone, Livonia, and Richard J. Wells, Ferndale, both of Mich., assignors to Massey-Ferguson Inc.,, Detroit, Mich.
Filed Mar. 13, 1978, Ser. No. 886,002
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—28



256,019
HOT AIR CORN POPPER
Melvin H. Boldt, Glenview; Thurber H. Morrison, Evanston, and Wayne J. Franek, Palatine, all of Ill., assignors to National Presto Industries, Inc., Eau Claire, Wis.
Filed Apr. 10, 1978, Ser. No. 895,003
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—105



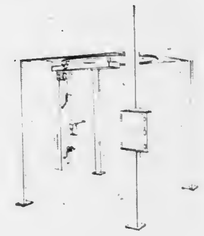
256,020
BEVERAGE DISPENSER
Craig A. Swanson, Ramsey, Minn., assignor to The Cornelius Company, Anoka, Minn.
Filed Apr. 10, 1978, Ser. No. 894,669
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—112



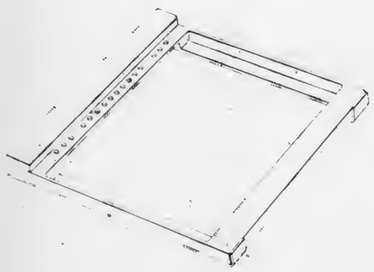
256,021
EXPANDABLE ELEMENT FOR HOLDING A WORKPIECE TO BE TOOLED
Sixten Jansson, Industrihuset, 950 10 Lulea, Sweden
Filed Dec. 29, 1977, Ser. No. 865,888
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—140



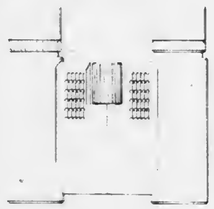
256,022
WRAPPING APPARATUS FOR PALLETIZED LOADS
Michael H. Shulman, 45 Bruce Farm Dr., Willowdale, Ontario, Canada
Filed Sep. 13, 1977, Ser. No. 832,989
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—145

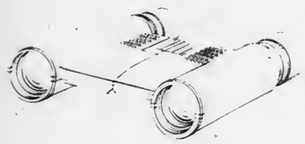


256,023
STAGE FOR TRANSPARENCY PROJECTION
Paul Constantine, New York; Melvyn Ettinger, East Meadow, both of N.Y., and Harry S. Rubin, Willow Grove, Pa., assignors to Instructo/McGraw-Hill, Inc., Paoli, Pa.
Filed Dec. 1, 1977, Ser. No. 856,414
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—26



256,024
BINOCULARS
Seijiro Noda, Yokohama, and Hitoshi Suyama, Tokyo, both of Japan, assignors to Nippon Kogaku K.K.
Filed Apr. 19, 1978, Ser. No. 897,933
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—59





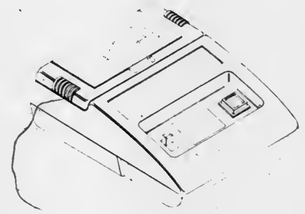
256,025
SPECTACLE FRAME EYE PIECE
Shari Lewis, Beverly Hills, Calif., assignor to SLS Entertainment Enterprises, Inc., Hollywood, Calif.
Filed Jun. 1, 1978, Ser. No. 911,362
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—78



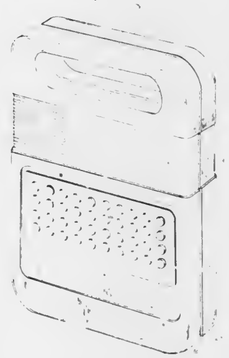
256,026
GUITAR
Adrian B. McCracken, 228 Galest, Chillicothe, Mo. 64601
Filed Jun. 12, 1978, Ser. No. 914,594
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14



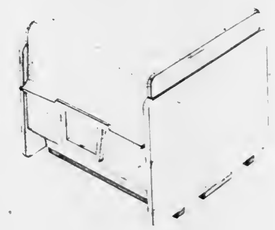
256,027
COMBINATION COUNTER AND TABULATOR FOR CONTROLLING FOOD INTAKE
Spencer L. Mackay, Canoga Park; Frederick G. Mackay, and Allan B. Johnson, both of Tarzana, all of Calif., assignors to Teledyne Industries, Inc.
Filed Sep. 26, 1977, Ser. No. 836,604
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—6



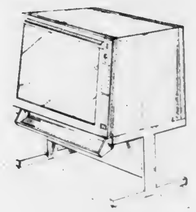
256,028
CASE FOR AN ELECTRONIC LEARNING AID, GAME OR SIMILAR APPARATUS
William J. Lawrence, and Richard R. Nesbitt, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed May 1, 1978, Ser. No. 901,549
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—60



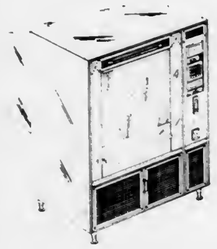
256,029
HINGED TOP CARD FILE
James F. Hampshire; Greg P. Terek, and Richard C. Sankovich, all of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Dec. 12, 1977, Ser. No. 859,955
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



256,030
VENDING MACHINE
Theodore C. Youngkin, North Hollywood, and Richard R. Stutsman, Mt. Baldy, both of Calif., assignors to Rod Pierce & Associates, Marina del Rey, Calif.
Filed Nov. 4, 1977, Ser. No. 848,451
Term of patent 14 years
Int. Cl. D20—*1*
U.S. Cl. D20—4



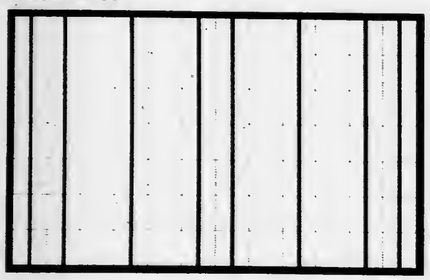
256,031
VENDING MACHINE
Walter E. Moore, Bel-Nor, and Albert K. Grethey, Bridgeton, both of Mo., assignors to UMC Industries, Inc., Stamford, Conn.
Filed Sep. 22, 1978, Ser. No. 944,883
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—4



256,032
ILLUMINATED SIGN
Ralph Kutschmende, 395 Manhattan Ave., Brooklyn, N.Y. 11211
Filed Feb. 22, 1978, Ser. No. 880,238
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—10



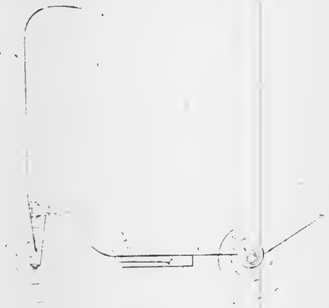
256,033
GAME BOARD
Michael H. Saint Ive, Englewood, Colo., assignor to Lagess Corp., Englewood, Colo.
Filed Sep. 14, 1978, Ser. No. 942,407
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—34



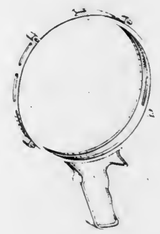
256,034
CARD AND CHIP RACK
Lee A. Beaman, 3312 NE. 259th St., Ridgefield, Wash. 98642
Filed Jun. 5, 1978, Ser. No. 912,242
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—55



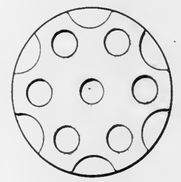
256,035
SCOOTER OR SIMILAR ARTICLE
Robert L. Lockhart, 1442 92nd Ave., Oakland, Calif. 94603
Filed Apr. 18, 1978, Ser. No. 897,533
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—81



256,036
BALL GAME TRACKWAY
Hon Y. Fu; Hon Y. Hin, and Hon Y. Wing, all of Room 904-5, Easy Commercial Bldg., 253-261 Hennessy Rd., Hong Kong, Hong Kong
Filed Apr. 17, 1978, Ser. No. 896,913
Claims priority, application United Kingdom, Nov. 3, 1977, 982153/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—92



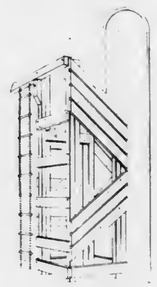
256,037
DESK GAME PUZZLE
Frank S. Csoka, Sea Cliff, N.Y., assignor to Fun Things, Inc., New York, N.Y.
Filed Dec. 30, 1977, Ser. No. 866,472
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—104



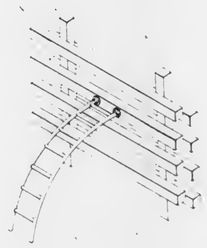
256,038
WATER SKI TOW HANDLE
Dwight W. Presser, 3184 Middlebelt Rd., West Bloomfield Township, Oakland County, Mich. 48033
Filed Sep. 26, 1977, Ser. No. 836,691
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—230



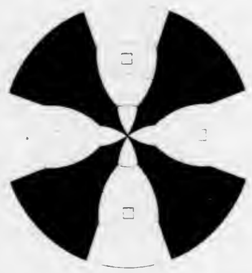
256,039
PLAYGROUND STRUCTURE
Berthold B. Dieter, and Charles L. Gibson, both of Terre Haute, Ind., assignors to Creative Playgrounds Corporation, Terre Haute, Ind.
Filed Nov. 17, 1977, Ser. No. 852,583
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



256,040
CHILD RECREATION CLIMBER STRUCTURE
Frank W. Beller, Aurora, Ill., assignor to Recreation Systems Co., North Aurora, Ill.
Filed Jul. 31, 1978, Ser. No. 929,826
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—245



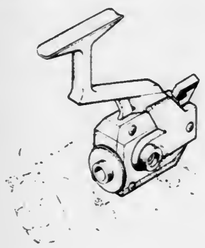
256,041
GUN TARGET
Charles R. Dulude, 33 Burnside Ave., East Hartford, Conn. 06108
Filed Apr. 7, 1978, Ser. No. 894,644
Term of patent 14 years
Int. Cl. D22—*04*
U.S. Cl. D22—15



256,042
HANDLE FOR A FISHING ROD
Katsuhiko Shimodaira, No. 14-8, Miyasaka 3-chome, Setagaya-ku, Tokyo, Japan
Filed Jul. 18, 1978, Ser. No. 925,711
Claims priority, application Japan, Mar. 14, 1978, 53-539551
Term of patent 7 years
Int. Cl. D22—*05*
U.S. Cl. D22—23



256,043
FISHING SPINNING REEL BODY OR THE LIKE
Tetsuyuki Doi, and Masakazu Sakamoto, both of Fukuyama, Japan, assignors to Ryobi Limited
Filed Mar. 15, 1978, Ser. No. 886,858
Claims priority, application Japan, Sep. 21, 1977, 52-37906
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



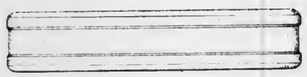
256,044
FISHING LURE
William D. Storm, Norman, Okla., assignor to Storm Plastics, Inc., Norman, Okla.
Filed Dec. 8, 1977, Ser. No. 858,731
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28



256,045
FISHING LURE
Nicholas A. Philips, P.O. Box 1273, Traverse City, Mich. 49684
Filed Jan. 16, 1978, Ser. No. 869,933
Term of patent 3½ years
Int. Cl. D22—*05*
U.S. Cl. D22—28

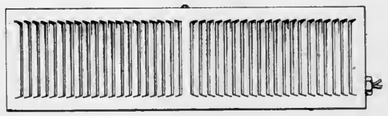


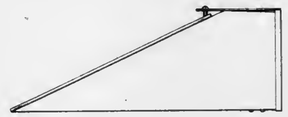
256,046
PIPE CLAMP SEAL
Duane O. Perrin, 2522 232nd St., Torrance, Calif. 90505
Filed Jun. 27, 1978, Ser. No. 919,743
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—47



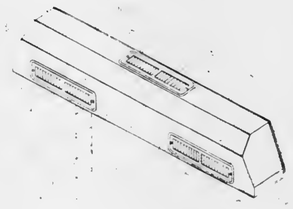


256,047
HEAT EXCHANGER
Garold L. Wormington, 600 S. Scenic, Springfield, Mo. 65802
Filed Dec. 27, 1977, Ser. No. 864,923
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—115

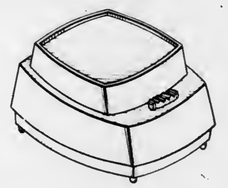




256,048
FIREPLACE HOOD
Rex M. Brown, 435 E., 1st N., Smithfield, Utah 84335
Continuation of Ser. No. 749,298, Dec. 10, 1976, abandoned, which is a continuation of Ser. No. 606,064, Aug. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 538,100, Jan. 2, 1975, all abandoned. This application Feb. 1, 1978, Ser. No. 874,543
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—151

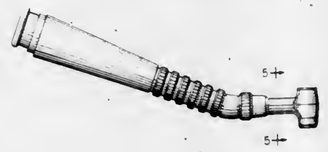


256,049
STERILIZER UNIT
Michael D. Thomas, Arab, Ala., assignor to Ryder International Corporation, Hanover Park, Ill.
Filed Mar. 3, 1978, Ser. No. 883,344
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—9

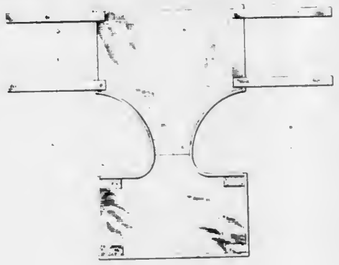


256,050
DENTAL HANDPIECE
John D. Nilles, Roselle, and Stanley L. Stankiewicz, Chicago, both of Ill., assignors to American Hospital Supply Corporation
Filed May 30, 1978, Ser. No. 910,968
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—12





256,051
HOSPITAL GARMENT
Mary D. Hardison, 1505 - 42nd St., West Palm Beach, Fla. 33407
Filed Nov. 4, 1977, Ser. No. 848,319
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—50



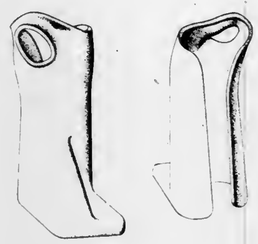
256,052
PIPETTE TIP
Donald H. De Vaughn, San Francisco, Calif., assignor to Bio-Plas, San Francisco, Calif.
Filed Oct. 25, 1977, Ser. No. 845,250
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—55



256,053
SPECIMEN DEVICE
Carl J. Steigerwald, Wauconda, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Apr. 20, 1978, Ser. No. 898,004
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—56



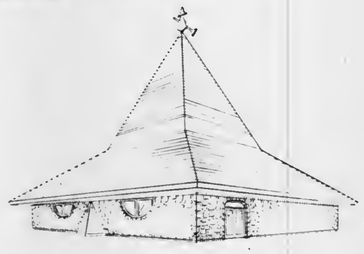
256,054
WRIST IMMOBILIZER
Alan Finnieston, 1901 NW. 17th Ave., Miami, Fla. 33125
Filed Mar. 16, 1978, Ser. No. 887,460
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



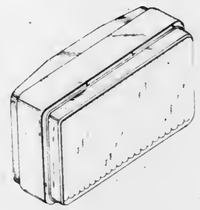
256,055
WRIST AND HAND ZONE IMMOBILIZER
Alan Finnieston, 1901 NW. 17th Ave., Miami, Fla. 33125
Filed Apr. 4, 1978, Ser. No. 893,607
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



256,056
BUILDING
Willis J. Gottschalk, 711 E. Highway 212, Watertown, S. Dak. 57201
Filed Feb. 22, 1978, Ser. No. 880,324
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—9



256,057
FOG LIGHT
Matsuo Ichikawa, Takasaki, Japan, assignor to Ichikawa Press Industries Co., Ltd., Takasaki, Japan
Filed Jul. 18, 1978, Ser. No. 925,888
Claims priority, application Japan, Mar. 10, 1978, 53/8976
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—29



256,058
HANGING ASH RECEIVER OR THE LIKE
James O. Brooks, 11840 Chandler Blvd., Apt. 206, North Hollywood, Calif. 91607
Filed Jan. 5, 1978, Ser. No. 867,287
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—14



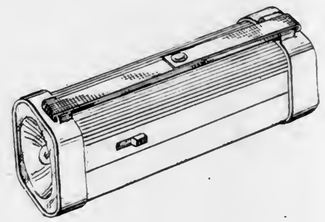
256,059
RAZOR
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jun. 26, 1978, Ser. No. 919,034
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—46



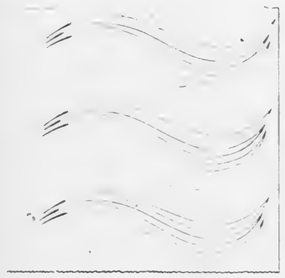
256,060
POULTRY CAGE EGG RAMP
Gerald L. Kitson, 9709 Belding Rd. NE., Rockford, Mich. 49341
Continuation-in-part of Ser. No. 481,390, Jun. 20, 1974, Pat. No. D. 247,450, which is a continuation-in-part of Ser. No. 409,019, Oct. 23, 1973, Pat. No. D. 241,356, which is a continuation-in-part of Ser. No. 130,861, Apr. 2, 1971, Pat. No. D. 228,802. This application Dec. 30, 1977, Ser. No. 866,069
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



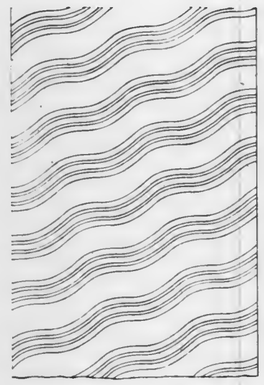
256,061
COMBINED PORTABLE SPOT/FLOOD LIGHT
Thomas Zelina, Erie, Pa., assignor to Lighting Systems, Erie, Pa.
Continuation-in-part of Ser. No. 729,587, Oct. 4, 1976, Pat. No. Des. 247,457. This application Dec. 19, 1977, Ser. No. 862,144
The portion of the term of this patent subsequent to Mar. 7, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—46



256,062
NONWOVEN SHEET MATERIAL OR THE LIKE
Charlotte D. Joachim, Cincinnati, Ohio; Alvin C. March, Aurora, Ind., and Kay S. Ratliff, Hamilton, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Nov. 13, 1978, Ser. No. 960,135
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 P



256,063
NONWOVEN SHEET MATERIAL OR THE LIKE
Klaus Burg, Teaneck, N.J., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Nov. 27, 1978, Ser. No. 964,016
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—1 P



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See*—
Cooper, Robert N., 4,213,872, Cl. 430-114.000.

A. Raymond: *See*—
Pierron, Claude; and Kirchgaesser, Johannes, 4,213,589, Cl. 248-74.00R.

Aanonsen, Bent; Odberg, Paul-Johny; and Samuelsen, Eirik, to Dyno Industries A.S. Method and apparatus for the continuous production of a slurry explosive containing an emulsified liquid component. 4,213,712, Cl. 366-178.000.

AB Kabi: *See*—
af Ekenstam, Bo T.; Aurell, Leif E.; Claeson, Karl G.; Karlsson, Birgitta G.; Gustavsson, Stig I.; and Olausson, Gun A., 4,214,049, Cl. 435-23.000.

AB Volvo: *See*—
Pilhall, Stig T. L., 4,213,675, Cl. 350-307.000.

Abbott Laboratories: *See*—
Carney, Ronald E.; and Hanessian, Stephen, 4,214,077, Cl. 536-17.00R.
Carney, Ronald E., 4,214,080, Cl. 536-17.00R.
Goldstein, Alma W.; and Fager, Earl E. C., 4,214,078, Cl. 536-17.00R.
Martin, Jerry R., 4,213,972, Cl. 424-181.000.
Martin, Jerry R., 4,213,974, Cl. 424-180.000.
Martin, Jerry R., 4,214,079, Cl. 536-17.00R.
McAlpine, James B., 4,213,971, Cl. 424-181.000.
McAlpine, James B., 4,214,076, Cl. 536-17.00R.
Tadanier, John S.; and Martin, Jerry R., 4,214,075, Cl. 536-17.00R.

Abe, Fumiyuki; Hayashi, Yoshimasa; and Kimura, Akira, to Nissan Motor Company, Limited. Low-noise-level reciprocating piston engine. 4,213,440, Cl. 123-195.00C.

Abe, Shunichi: *See*—
Akiyama, Mistuo; and Abe, Shunichi, 4,213,692, Cl. 355-14.00D.

Abeler, Gerd; and Maul, Rudolf, to Ciba-Geigy Corporation. 1,4-Dihydro-2,6-dimethylpyridene-3,5-dicarboxylic esters. 4,214,088, Cl. 546-321.000.

Abersfelder, Gunter: *See*—
Andres, Rudolf; Grantz, Helmut; Abersfelder, Gunter; and Busch, Gerhard, 4,213,581, Cl. 242-107.40R.

Able, Edward T.: *See*—
Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., 4,213,333, Cl. 73-136.00R.

Absler, Howard; Juszak, Joseph; and Gore, Thomas, to Uarço Incorporated. Continuous business form assembly. 4,213,639, Cl. 282-11.50A.

ACF Industries, Incorporated: *See*—
Orum, Paul R.; and Vyvial, Larry A., 4,213,480, Cl. 137-556.000.
VanDyke, Ronald D., 4,213,590, Cl. 410-64.000.

Adams, Nancy: *See*—
Gueret, Jean-Louis H.; and Adams, Nancy, 4,213,472, Cl. 132-88.700.

Adams, William M.; Blakely, Robert F.; Ellis, Charles R.; and Mead, Judson, to Indiana University Foundation. Seismic trigger. 4,214,238, Cl. 340-690.000.

Adolphi, Heinrich; Baumann, Annegrit; Huber, Rolf; Kiehs, Karl; and Merger, Franz, to BASF Aktiengesellschaft. Insecticidal carbamates. 4,213,992, Cl. 424-273.00P.

Adolphi, Heinrich: *See*—
Loeffler, Hans-Peter; Adolphi, Heinrich; and Kiehs, Karl, 4,213,976, Cl. 424-224.000.

Adrian, Rudolf: *See*—
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, 4,214,095, Cl. 560-57.000.

Advanced Design and Construction: *See*—
Hardesty, Robert D., 4,213,628, Cl. 280-412.000.

Advanced Technology Laboratories, Inc.: *See*—
Parker, Edward J.; and Behlen, James C., Jr., 4,214,269, Cl. 358-140.000.

af Ekenstam, Bo T.; Aurell, Leif E.; Claeson, Karl G.; Karlsson, Birgitta G.; Gustavsson, Stig I.; and Olausson, Gun A., to AB Kabi. Assay of serine proteases using novel chromogenic enzyme substrates. 4,214,049, Cl. 435-23.000.

AGA Heating AB: *See*—
Asikainen, Aimo, 4,213,864, Cl. 210-151.000.

Agency of Industrial Science and Technology, The: *See*—
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, 4,213,857, Cl. 210-6.000.

AHI Operations Limited: *See*—
Wenham, Douglas L., 4,213,341, Cl. 73-421.00A.

Ahmed, Quazi: *See*—
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, 4,214,095, Cl. 560-57.000.

Ahrweiler, Karl-Heinz, to Eduard Kusters. Press for compacting material to form a traveling web. 4,213,748, Cl. 425-371.000.

Ainger, George E.; and Caverly, Brian L., to Lever Brothers Company. Fat compositions. 4,214,012, Cl. 426-607.000.

Air Industrie: *See*—
Guibet, Jean-Pierre, 4,213,771, Cl. 55-483.000.

Airco, Inc.: *See*—
Jones, George D., 4,214,155, Cl. 250-231.00R.

Aisin Seiki Kabushiki Kaisha: *See*—
Ban, Masashi; Tachino, Tomio; and Kizaki, Jiro, 4,213,535, Cl. 220-20.500.

Akagi, Kimiko: *See*—
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, 4,214,100, Cl. 562-416.000.

Akimoto, Hidetoshi: *See*—
Azuhata, Shigeru; Akimoto, Hidetoshi; Kikuchi, Hideo; Hishinuma, Yukio; Oshima, Ryoichiro; and Arikawa, Yoshijiro, 4,213,944, Cl. 423-235.000.

Akiyama, Mistuo; and Abe, Shunichi, to Konishiroku Photo Industry Co., Ltd. Bias voltage switching circuit for controlling concentration of image in copying apparatus. 4,213,692, Cl. 355-14.00D.

Aktiebolaget Bofors: *See*—
Boberg, Anders; Larsson, Bernt; and Lundh, Folke, 4,213,885, Cl. 260-29.6TA.
Johansson, Arne; and Larsson, Torsten, 4,213,257, Cl. 37-142.00R.

Akzo N.V.: *See*—
Kunnen, Jan; and Van Der Schee, Abraham C., 4,214,022, Cl. 427-435.000.
Smakman, Robert; and van den Berg, Gerrit H., 4,213,859, Cl. 210-27.000.

Akzona Incorporated: *See*—
Brodowski, Walter; and Wallrabenstein, Michael, 4,213,890, Cl. 260-45.75W.
O'Connor, John J., 4,213,764, Cl. 23-230.00B.

Alamance Industries, Inc.: *See*—
Safrit, Sam C.; Cassidy, Edward L., Sr.; Cothran, William B.; and Farrell, Roscoe M., 4,213,312, Cl. 66-177.000.

Albanese, Vincent M., to Nalco Chemical Company. Electrostatic precipitation. 4,213,767, Cl. 55-5.000.

Alberti, John D. Method of making picture phonograph record. 4,213,927, Cl. 264-107.000.

Alburn, Harvey E.: *See*—
Fenichel, Richard L.; Wei, Peter H. L.; Gregory, Francis J.; and Alburn, Harvey E., 4,214,089, Cl. 548-151.000.

Alcan Research and Development Limited: *See*—
Dewing, Ernest W.; Huni, Jean-Paul R.; Sood, Raman R.; and Southam, Frederick W., 4,213,599, Cl. 266-166.000.

Aldridge, R. Warren, Jr. Align boring machine. 4,213,721, Cl. 408-54.000.

Alexander, John D.: *See*—
Bogert, Clayton; Alexander, John D.; and Krautheim, Leonard, 4,213,359, Cl. 82-47.000.

All American Products Company, Inc.: *See*—
Shaw, Nathan O., 4,213,658, Cl. 308-15.000.

All Nighter Stove Works, Inc.: *See*—
Morande, James A., Jr., 4,213,443, Cl. 126-72.000.

Allegheny Ludlum Industries, Inc.: *See*—
Datta, Amitava, 4,213,804, Cl. 148-111.000.

Allied Chemical Corporation: *See*—
Mares, Frank; and Jacobson, Stephen E., 4,213,906, Cl. 260-343.000.
Zudkevitch, David; Khanna, Nirmal K.; and Raczynski, Robert F., 4,213,832, Cl. 203-95.000.

Aluminum Company of America: *See*—
Martin, Edward S., 4,213,943, Cl. 423-135.000.

Alvino, William M.; and Frost, Lawrence W., to Westinghouse Electric Corp. Amide-imide polymers. 4,214,071, Cl. 528-222.000.

Ambartsumyan, Nikolai S.: *See*—
Trutnev, Viktor A.; Zlobin, Vitaly I.; Kushnarenko, Valentin K.; Ignatov, Valentin B.; Gannota, Boris V.; Ambartsumyan, Nikolai S.; and Volovik, Boris B., 4,213,931, Cl. 264-234.000.

AMCA International Corporation: *See*—
Heckelsberg, Robert E., 4,213,282, Cl. 52-404.000.

Amerace Corporation: *See*—
Goldberg, Bruce S.; and Shah, Mahendra, 4,213,815, Cl. 156-244.110.

American Can Company: *See*—
Boardman, Alfred H., 4,213,538, Cl. 220-268.000.
Gold, Vance B.; and Vandlik, Robert P., 4,213,319, Cl. 72-34.000.
Meyers, George L., 4,213,559, Cl. 229-16.00D.

American Cyanamid Company: *See*—
Lovell, James B., 4,213,988, Cl. 424-251.000.

American HCP: *See*—
Vandenbossche, Benjamin E., 4,213,498, Cl. 165-136.000.

American Hoechst Corporation: *See—*
Heberger, John M., 4,214,035, Cl. 428-340.000.
Walls, John E.; and Gillich, Thomas N., 4,213,887, Cl. 260-29.60E.

American Home Products Corporation: *See—*
Fenichel, Richard L.; Wei, Peter H. L.; Gregory, Francis J.; and Alburn, Harvey E., 4,214,089, Cl. 548-151.000.
Immer, Hans U.; Nelson, Verner R.; and Gotz, Menfred K., 4,213,895, Cl. 260-112.50R.
Wetzel, Jon C., 4,213,981, Cl. 424-247.000.

American Microsystems, Inc.: *See—*
Amir, Gideon D., 4,214,312, Cl. 365-182.000.

American Seating Company: *See—*
Sulewsky, James E., 4,213,516, Cl. 181-286.000.

American Standard Inc.: *See—*
Ruff, Robert O., 4,213,317, Cl. 70-450.000.

Amiot, Jacques H. J., to Moulinex, Societe Anonyme. Domestic electrical appliance. 4,213,569, Cl. 241-37.500.

Amir, Gideon D., to American Microsystems, Inc. VMOS Field aligned dynamic ram cell. 4,214,312, Cl. 365-182.000.

AMP Incorporated: *See—*
Kourimsky, Friedrich J. A., 4,214,223, Cl. 337-293.000.

Analog Devices, Incorporated: *See—*
Tsang, Wei K., 4,213,806, Cl. 148-187.000.

Anantha, Narasipur G.; Bhatia, Harsaran S.; and Walsh, James L., to International Business Machines Corporation. Method for fabricating vertical NPN and PNP structures and the resulting product. 4,214,315, Cl. 357-44.000.

Anderson, Brian: *See—*
Phillips, Duncan A. S.; Anderson, Brian; Jackson, Neville; Stead, Cecil V.; and Costello, Alan T., 4,213,899, Cl. 260-156.000.

Anderson, J. Hilbert. Vortex generator for separating a gaseous and liquid refrigerant. 4,213,308, Cl. 62-196.00R.

Anderson, J. Ross: *See—*
Omori, Masahiro; Wholey, James N.; and Anderson, J. Ross, 4,213,840, Cl. 204-192.00C.

Anderson, Joseph W., to Marine Construction & Design Co. Flow-through coalescing separator. 4,213,863, Cl. 210-108.000.

Ando, Hiroshi: *See—*
Fujita, Hisaya; Ando, Hiroshi; and Sato, Setsuo, 4,214,250, Cl. 346-145.000.

Ando, Koji, to Fujitec Co., Ltd. Elevator control system. 4,213,517, Cl. 187-29.00R.

Ando, Kunio: *See—*
Oishi, Hideo; Noto, Takao; Nawata, Yoshiharu; Okazaki, Hiroshi; Sasaki, Hiroshi; Ando, Kunio; and Ogawa, Haruki, 4,214,091, Cl. 549-62.000.

Andres, Rudolf; Grantz, Helmut; Abersfelder, Gunter; and Busch, Gerhard, to Daimler-Benz Aktiengesellschaft. Wind-up mechanism for the elimination of belt looseness in a safety belt system. 4,213,581, Cl. 242-107.40R.

Andrews, Jere L.: *See—*
Farrell, John W.; and Andrews, Jere L., 4,214,156, Cl. 250-231.0SE.

Antosz, Frederick J.: *See—*
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,214,051, Cl. 435-55.000.
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,214,052, Cl. 435-55.000.

Aoki, Teruo: *See—*
Minami, Hidehiro; and Aoki, Teruo, 4,213,430, Cl. 123-440.000.

Aoyagi, Sadayoshi: *See—*
Miura, Yoshiharu; Aoyagi, Sadayoshi; and Miyamoto, Kazuhisa, 4,213,962, Cl. 424-78.000.

Aoyama, Kensuke: *See—*
Toyoda, Minoru; Horishima, Tohei; Sugimoto, Kenji; and Aoyama, Kensuke, 4,213,926, Cl. 264-74.000.

Apotheker, David; and Krusic, Paul J., to Du Pont de Nemours, E. I., and Company. Fluoropolymer composition. 4,214,060, Cl. 525-387.000.

Aqua Star Pool Company: *See—*
Scourtes, Chris N., 4,213,210, Cl. 4-543.000.

Arcanum Corporation: *See—*
Caswell, Bruce F., 4,213,779, Cl. 75-34.000.

Arechavala, Juan M. Continually adjustable frequency antenna. 4,214,246, Cl. 343-750.000.

Arie, Yehuda: *See—*
Williams, Richard; and Arie, Yehuda, 4,213,798, Cl. 136-89.0SJ.

Arikawa, Yoshijiro: *See—*
Azuhata, Shigeru; Akimoto, Hidetoshi; Kikuchi, Hideo; Hishinuma, Yukio; Oshima, Ryoichiro; and Arikawa, Yoshijiro, 4,213,944, Cl. 423-235.000.

Arlt, Christian; and Arlt, Gerhard. Sealing insert for the tight connection of two pipes. 4,213,619, Cl. 277-207.00A.

Arlt, Gerhard: *See—*
Arlt, Christian; and Arlt, Gerhard, 4,213,619, Cl. 277-207.00A.

Armitage, Harry J. Work cutting. 4,213,356, Cl. 82-2.00B.

Armstrong, David A., to British Steel Corporation. Profile gauging. 4,213,245, Cl. 33-174.00P.

Armstrong, George H.: *See—*
Seefried, Carl G., Jr.; Armstrong, George H.; and Van Cleve, Russell, 4,214,055, Cl. 521-137.000.

Asahi-Dow Limited: *See—*
Watanabe, Seizaburo; and Matsuki, Yutaka, 4,214,054, Cl. 521-95.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Ibata, Jyoji; Fukui, Hisaaki; Yuasa, Takeo; and Katoh, Michio, 4,214,026, Cl. 428-67.000.
Ishihara, Shunichi; and Katsube, Toraichi, 4,214,057, Cl. 525-100.000.

Asawa, Charles K., to Hughes Aircraft Company. Pyroelectric IR detector with signal capacitively coupled to an output circuit. 4,214,165, Cl. 250-338.000.

Ashby, Robert M.; and Kaveggia, Frederick S. Composition and process for removing sulfur scale from interstices in petroleum bearing formations and the like to improve the flow of petroleum. 4,213,866, Cl. 252-8.55C.

Ashcroft, Robert G.: *See—*
Coster, Hans G. L.; Ashcroft, Robert G.; and Smith, John R., 4,214,203, Cl. 324-425.000.

Ashton, Harold P.: *See—*
Petruzzi, Thomas G.; Ashton, Harold P.; and Conti, Rino, 4,213,271, Cl. 47-39.000.

Asikainen, Aimo, to Asko-Upo Oy; and AGA Heating AB. Combination of a biological dry toilet and a biological waste water purifying plant. 4,213,864, Cl. 210-151.000.

Asko-Upo Oy: *See—*
Asikainen, Aimo, 4,213,864, Cl. 210-151.000.

Astle, Gail L.: *See—*
Liu, Wen-Chih; Brown, William E.; and Astle, Gail L., 4,213,966, Cl. 424-123.000.

Atkinson, James E.: *See—*
West, Wilbur C.; and Atkinson, James E., 4,213,408, Cl. 111-85.000.

Attwell, Michael C.; Massiah, Thomas F.; Vergottini, Roberto A.; and Ziegler, Peter, to Canada Packers Limited. Process for preparing high-melting chenodeoxycholic acid. 4,213,911, Cl. 260-397.100.

Aulich, Hubert; Douklias, Nikolaos; Hacker, Heinz; and Zeidler, Guenter, to Siemens Aktiengesellschaft. Light waveguide with a high tensile strength. 4,213,672, Cl. 350-96.230.

Auman, John T.: *See—*
Irwin, Clarence C.; Manz, David F.; and Auman, John T., 4,213,652, Cl. 297-478.000.

Aurell, Leif E.: *See—*
af Ekenstam, Bo T.; Aurell, Leif E.; Claeson, Karl G.; Karlsson, Birgitta G.; Gustavsson, Stig I.; and Olausson, Gun A., 4,214,049, Cl. 435-23.000.

Australian Paper Manufacturers Limited: *See—*
Vanderhoek, Naphtali N.; Nelson, Peter F.; and Farrington, Alan, 4,213,821, Cl. 162-72.000.

Automation Industries, Inc.: *See—*
Hall, Marcus A.; and Kutnyak, Thomas A., 4,213,811, Cl. 156-195.000.

Automobiles Peugeot: *See—*
Mauron, Gerard, 4,213,637, Cl. 280-802.000.

Avantek, Inc.: *See—*
Omori, Masahiro; Wholey, James N.; and Anderson, J. Ross, 4,213,840, Cl. 204-192.00C.

AVM Corporation: *See—*
Sheppard, William L., 4,213,595, Cl. 251-308.000.

Avnet, Incorporated: *See—*
Richmond, Thomas A., 4,214,247, Cl. 343-752.000.

Azuhata, Shigeru; Akimoto, Hidetoshi; Kikuchi, Hideo; Hishinuma, Yukio; Oshima, Ryoichiro; and Arikawa, Yoshijiro, to Hitachi, Ltd. Process for removing nitrogen oxides from gas by ammonia. 4,213,944, Cl. 423-235.000.

Azzerri, Nazzareno; Bruno, Roberto; and Memmi, Massimo, to Centro Sperimentale Metallurgico S.p.A. Process for improving the adhesion of paint to steel sheets. 4,213,839, Cl. 204-181.00R.

B. F. Goodrich Company, The: *See—*
Lee, Yu-Sun, 4,214,061, Cl. 525-455.000.
Porter, John P., 4,213,331, Cl. 73-105.000.

B. K. Sweeney Manufacturing Co.: *See—*
Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., 4,213,333, Cl. 73-136.00R.

Babcock & Wilcox Company, The: *See—*
Jabsen, Felix S., 4,213,824, Cl. 176-38.000.

Badali, Joseph A., to Browning Arms Company. Box magazine follower system. 4,213,262, Cl. 42-50.000.

Bafaro, Michael P.; and Parker, James J., to Motorola, Inc. Dynamic focus for a cathode ray tube. 4,214,188, Cl. 315-382.000.

Baier, Walter P.; and Grammueller, Harald, to Siemens Aktiengesellschaft. Circuit for synchronizing a pseudo-random generator mounted at a receiver for communication transmission systems utilizing pseudo-noise phase shift keying. 4,214,209, Cl. 375-1.000.

Bailey, Thomas G. Fluid mixing devices. 4,213,711, Cl. 366-150.000.

Ballard, Paul T.: *See—*
Hill, Henry A.; Figoski, John W.; and Ballard, Paul T., 4,213,706, Cl. 356-353.000.

Balogh, Andras: *See—*
Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; Farkas, L. Peter; Remenyi, Janos; and Koltay, Sandor, 4,214,032, Cl. 428-280.000.

Ban, Masashi; Tachino, Tomio; and Kizaki, Jiro, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Fluid reservoirs for master cylinders. 4,213,535, Cl. 220-20.500.

Bantick, John R.; Hardern, David N.; and Lee, Thomas B., to Fisons Limited. Basic amino acid salts of chromones. 4,213,903, Cl. 548-250.000.

Bargain, Michel; and Lefort, Marcel, to Rhone-Poulenc Industries. Ethylenic silicon compounds and thermoplastic elastomers obtained therefrom. 4,213,914, Cl. 556-419.000.

Barlow, Paul; and Jones, Kenneth R., to Jones, Kenneth Robert. Three term (PID) controllers. 4,214,300, Cl. 364-105.000.

Barnes, Donald E., to Champion International Corporation. Packaging laminate. 4,214,029, Cl. 428-200.000.

Barnes, Floyd A., Jr., to Youngstown Sheet and Tube Company. Method and apparatus for upsetting pipe. 4,213,322, Cl. 72-357.000.

Barnum, Ronald E.: *See—*
Tefft, Franklin A.; Perez, Ricardo L.; and Barnum, Ronald E., 4,213,584, Cl. 244-17.130.

Barsony, Imre: *See—*
Madec, Marcel; Espitalie, Jean; Laporte, Jean-Loup; and Barsony, Imre, 4,213,763, Cl. 23-230.0EP.

Bartha, Peter; and Tutsek, Alexander, to Refratechnik GmbH. Glass forming compound and brick made therwith. 4,213,789, Cl. 106-52.000.

Bartlett, Charles C. Adjustable lamp for furniture attachment. 4,214,294, Cl. 362-127.000.

BASF Aktiengesellschaft: *See—*
Adolphi, Heinrich; Baumann, Annegrit; Huber, Rolf; Kiehs, Karl; and Merger, Franz, 4,213,992, Cl. 424-273.00P.
Brodt, Rudolf; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Ohlinger, Manfred; Sarnecki, Wilhelm; and Steck, Werner, 4,213,959, Cl. 423-634.000.
Datow, Joachim; Decker, Martin; Merkel, Karl; and Neumayr, Franz, 4,213,919, Cl. 260-544.00K.
Daubach, Ewald; Horn, Dieter; Hahn, Erwin; and Uhrig, Herbert, 4,213,900, Cl. 260-208.000.
Eckell, Albrecht; Matthies, Paul; Pilz, Georg; and Rotzoll, Rudi-Heinz, 4,213,884, Cl. 260-29.20N.
Hahn, Erwin; Magerkurth, Bernhard; Lach, Dietrich; and Wuertele, Lothar, 4,213,760, Cl. 8-94.170.
Kretschmer, Alfred; Ruettiger, Wilhelm; and Wuerz, Albrecht, 4,213,217, Cl. 8-151.000.
Loeffler, Hans-Peter; Adolphi, Heinrich; and Kiehs, Karl, 4,213,976, Cl. 424-224.000.
Ruske, Manfred; and Elser, Wolfgang, 4,213,757, Cl. 8-518.000.
Schoettle, Klaus; Dobler, Peter; Lewin, Helmut; and Koester, Eberhard, 4,213,222, Cl. 15-100.000.
Sterzel, Hans-Josef; Von Dziembowski, Kasimir; and Pirzer, Hans, 4,214,072, Cl. 528-272.000.

BASF Wyandotte Corporation: *See—*
Schweickart, Albert J.; and Mooney, Thomas F., III, 4,213,336, Cl. 73-215.000.

Basler, Gunter: *See—*
Ries, Karl; Hannoschock, Kurt; Rozic, Krsto-Marijan; and Basler, Gunter, 4,213,552, Cl. 226-170.000.

Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, to Polysius AG. Process for the production of cement in a fluidized bed. 4,213,790, Cl. 106-100.000.

Bauer, Werner R., to Robertshaw Controls Company. Reversing valve construction and parts therefor and methods of making the same. 4,213,483, Cl. 137-625.290.

Bauman, Albert J.; and Morelli, Frank A. Nondestructive testing of HEPA filters. 4,213,768, Cl. 55-97.000.

Baumann, Annegrit: *See—*
Adolphi, Heinrich; Baumann, Annegrit; Huber, Rolf; Kiehs, Karl; and Merger, Franz, 4,213,992, Cl. 424-273.00P.

Bavaveas, Tristan, to Societe Anonyme dite:EPARCO. Biological activators. 4,213,871, Cl. 252-60.000.

Baxter Travenol Laboratories, Inc.: *See—*
Bayham, Edward L., 4,213,561, Cl. 233-14.00R.
Shim, Norm, 4,213,454, Cl. 128-214.00E.
Zissimopoulos, Nicholas, 4,214,237, Cl. 340-686.000.

Bayer Aktiengesellschaft: *See—*
Berg, Gerhard; Hohmann, Walter; Reubke, Karl-Julius; and Wunderlich, Klaus, 4,213,909, Cl. 260-371.000.
Binsack, Rudolf; Wank, Joachim; and Reese, Eckart, 4,214,062, Cl. 525-470.000.
Harms, Wolfgang; Wunderlich, Klaus; and von Oertzen, Klaus, 4,214,082, Cl. 544-189.000.
Hentze, Gunter, 4,214,117, Cl. 13-31.00R.
Moretto, Hans-Heinrich; Steinberger, Helmut; Larking, Ingrid; and Sattlegger, Hans, 4,214,066, Cl. 528-28.000.
Muders, Rolf; Leister, Heinrich; Dittmer, Helmut; and Schonhagen, Hubert, 4,213,910, Cl. 260-371.000.
Seifert, Hermann; Waldmann, Helmut; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,214,105, Cl. 568-771.000.

Bayham, Edward L., to Baxter Travenol Laboratories, Inc. Flexible, collapsible container for blood and the like which is free of liquid-trapping folds. 4,213,561, Cl. 233-14.00R.

Baylis, Eric K.; and Pickles, Wilfred, to Ciba-Geigy Corporation. Phosphonous acid derivatives, processes for their preparation and their use in combatting microorganisms. 4,213,969, Cl. 424-177.000.

Bazin, Lucas J.; Peterson, Gary R.; and Schneider, Dennis M., to RCA Corporation. Synchronizing apparatus for remote television apparatus. 4,214,261, Cl. 358-19.000.

BBC Brown Boveri & Company Limited: *See—*
Kaufmann, Meinolph, 4,213,676, Cl. 350-336.000.
Raggenbass, Werner; and Zwar, Kurt, 4,214,177, Cl. 307-355.000.

Beacham, Harry H., to FMC Corporation. Flame resistant resin compositions. 4,213,889, Cl. 260-45.7PH.

Beaton, John M.: *See—*
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,214,051, Cl. 435-55.000.
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,214,052, Cl. 435-55.000.

Beattie, Willard H.: *See—*
Freund, Samuel M.; Maier, William B., II; Beattie, Willard H.; and Holland, Redus F., 4,213,836, Cl. 204-157.10R.

Bechtel International Corporation: *See—*
Grenia, James D., 4,213,653, Cl. 299-11.000.

Beck, Frederick R., to McGill Manufacturing Company, Inc. Ignition control system with safety switches. 4,213,513, Cl. 180-272.000.

Beckel, Kurt: *See—*
Brozel, Rudolf; Beckel, Kurt; and Berkhout, Jan, 4,213,330, Cl. 73-65.000.

Beckman Instruments, Inc.: *See—*
Haunold, Otto; and Greene, Malbone W., 4,213,703, Cl. 356-244.000.
Jacobson, Kenneth E.; and Gutierrez, William S., 4,214,179, Cl. 310-68.00B.

Becraft, Lloyd G.: *See—*
Sooter, Matthew C.; Becraft, Lloyd G.; and Kegler, William H., 4,213,846, Cl. 208-50.000.

Becton Dickinson & Company: *See—*
Kreutz, George D.; Scott, L. J.; and Kelly, James P., 4,213,528, Cl. 206-205.000.

Beecham Group Limited: *See—*
Hadley, Michael S.; and Watts, Eric A., 4,213,983, Cl. 424-250.000.

Beecham, Inc.: *See—*
Curtis, Stephen N.; and Bhargava, Hridaya N., 4,213,961, Cl. 424-54.000.

Behlen, James C., Jr.: *See—*
Parker, Edward J.; and Behlen, James C., Jr., 4,214,269, Cl. 358-140.000.

Belknap, Raymond R.: *See—*
Guebert, Gerald E.; and Belknap, Raymond R., 4,213,492, Cl. 160-124.000.

Bell, Frederick K.; and Tuss, John J., to Bendix Corporation, The. Coordinate measuring machine having a failsafe protection system. 4,213,244, Cl. 33-1.00M.

Bell Telephone Laboratories, Incorporated: *See—*
Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., 4,213,698, Cl. 355-77.000.
Johnston, Wilbur D., Jr., 4,213,801, Cl. 148-33.300.
Young, William C., 4,213,932, Cl. 264-236.000.

Bellos, Thomas J.; and Davis, James E., to Petrolite Corporation. Use of phosphorylated oxyalkylated polyols in conjunction with sulfite and bisulfite oxygen scavengers. 4,213,934, Cl. 422-15.000.

Beloit Corporation: *See—*
Wittig, Carl E.; and Vonderau, Raymond C., 4,213,823, Cl. 162-380.000.

Bemis Manufacturing Company: *See—*
Bemis, Richard A.; and Rummele, John E., 4,213,211, Cl. 4-239.000.

Bemis, Richard A.; and Rummele, John E., to Bemis Manufacturing Company. Toilet seat elevator device. 4,213,211, Cl. 4-239.000.

Bendix Corporation, The: *See—*
Bell, Frederick K.; and Tuss, John J., 4,213,244, Cl. 33-1.00M.
Carp, Ralph W.; and Groff, William R., 4,214,236, Cl. 340-642.000.
Carp, Ralph W., 4,214,308, Cl. 364-431.000.
Peterson, William A., Jr.; and Marchak, Roman O., 4,214,307, Cl. 364-431.000.
Rogers, Francis R.; and Eastman, James M., 4,213,741, Cl. 417-79.000.

Benjamin, Benjamin C., to Schmelzer Corporation. Valve control mechanism. 4,213,481, Cl. 137-596.180.

Bennett, Joe B., to Owens-Corning Fiberglas Corporation. Filament wound pipe coupling. 4,213,641, Cl. 285-369.000.

Benthos, Inc.: *See—*
Raymond, Samuel O.; and Hayward, Gary G., 4,213,329, Cl. 73-52.000.

Berezin, Evgeny N.: *See—*
Vydrin, Vladimir N.; Berezin, Evgeny N.; and Dremin, Vladimir G., 4,213,320, Cl. 72-189.000.

Berg, Gerhard; Hohmann, Walter; Reubke, Karl-Julius; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Process for the preparation of 1-amino-4-bromoanthraquinone-2-sulfonic acid II. 4,213,909, Cl. 260-371.000.

Bergen-Brunswig Corporation: *See—*
Halasz, Peter R., 4,213,598, Cl. 206-45.140.

Bergner, Robert L.: *See—*
Rothwarf, Frederick; Bergner, Robert L.; Leupold, Herbert A.; and Tauber, Arthur, 4,213,802, Cl. 148-101.000.

Berkhout, Jan: *See—*
Brozel, Rudolf; Beckel, Kurt; and Berkhout, Jan, 4,213,330, Cl. 73-65.000.

Bernelin, Daniel: *See—*
Meyer, Jacques; and Bernelin, Daniel, 4,214,040, Cl. 428-458.000.

Best & Donovan: *See—*
Wikoff, Mark W., 4,213,334, Cl. 73-144.000.

Bexford Limited: *See—*
Cook, Alan H., 4,213,783, Cl. 430-533.000.

Beyer, Rudiger: *See—*
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.

Beziac, Gilbert F. A.: *See—*
Euler, August H. L.; and Beziac, Gilbert F. A., 4,213,739, Cl. 416-226.000.

Bezrukov, Sergei V.: *See—*
Semashko, Andrei P.; Gimaev, Nasikh Z.; Maximov, Ivan V.; Bezrukov, Sergei V.; and Rabinovich, Vladimir B., 4,213,834, Cl. 204-129.250.

Bhargava, Hridaya N.: *See—*
Curtis, Stephen N.; and Bhargava, Hridaya N., 4,213,961, Cl. 424-54.000.

Bhatia, Harsaran S.: *See—*
Anantha, Narasipur G.; Bhatia, Harsaran S.; and Walsh, James L., 4,214,315, Cl. 357-44.000.

Bindra, Jasjit S., to Pfizer Inc. Prostaglandin intermediates. 4,213,907, Cl. 260-343.30P.

Bindra, Jasjit S.: *See—*
Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,214,099, Cl. 560-256.000.

Binsack, Rudolf; Wank, Joachim; and Reese, Eckart, to Bayer Aktiengesellschaft. Polycarbonate films of low flammability and improved stress crack resistance. 4,214,062, Cl. 525-470.000.

Biondetti, Mario; and Marchioro, Ignazio, to Escher Wyss Limited. Controlled deflection roll. 4,213,232, Cl. 29-116.0AD.

Biskis, Kestutis, to International Harvester Company. Variable flow rate control with mechanical override for closed center valve. 4,213,300, Cl. 60-420.000.

Bitely, Clarence J., Jr.; Dromgold, Luther D.; and Murray, William S., Jr., to Witco Chemical Corporation. Galvanic corrosion prevention coupling. 4,213,868, Cl. 252-11.000.

Blackwell, Jennings P., to Phillips Petroleum Company. Coating process for corrosion-inhibiting poly(arylene sulfide) coating compositions. 4,214,021, Cl. 427-385.00R.

Blake, Larry V.; Womeldorph, Donald E., Jr.; Surber, Oliver M.; and James, John P., to Phillips Petroleum Company. Method and apparatus for classifying solids and transporting solids-laden fluid. 4,213,856, Cl. 209-250.000.

Blakely, Robert F.: *See—*
Adams, William M.; Blakely, Robert F.; Ellis, Charles R.; and Mead, Judson, 4,214,238, Cl. 340-690.000.

Blanc, Jean-Pierre; and Meiller, Francois, to Rhone-Poulenc Industries. Hardening catalysts and alkali metal silicate compositions containing same. 4,213,785, Cl. 106-38.350.

Blay, George A., to Celanese Corporation. Prevention of electrode fouling. 4,214,050, Cl. 435-29.000.

Blaylock, Tommey J. Clutch throw-out bearing plate. 4,213,522, Cl. 192-98.000.

Blind, Karl; and Klotz, Arthur, to Filterwerk Mann & Hummel GmbH. Knee lever lock for air filter covers and the like. 4,213,643, Cl. 292-247.000.

Blish, Richard C., II: *See—*
Lemons, Kyle E.; Blish, Richard C., II; and Reimer, Jan D., 4,213,818, Cl. 156-643.000.

Block, Duncan G.: *See—*
Mayo, William E.; Raghavan, Mathur; Shapiro, Stanley; Hardy, Ronald G.; and Block, Duncan G., 4,213,800, Cl. 148-2.000.
Raghavan, Mathur; Shapiro, Stanley; Hardy, Ronald G.; and Block, Duncan G., 4,213,799, Cl. 148-2.000.

Blom, Rolf: *See—*
Fak, Viiveke; Ingemarsson, Ingemar B.; Blom, Rolf; Forchheimer, Robert; and Hellberg, Bjorn I., 4,214,230, Cl. 340-149.00A.

Boardman, Alfred H., to American Can Company. Can end closure. 4,213,538, Cl. 220-268.000.

Boberg, Anders; Larsson, Bernt; and Lundh, Folke, to Aktiebolaget Bofors. Bonding agent for sheet-formed fibre products. 4,213,885, Cl. 260-29.6TA.

Boberg, Nils G. E.; and Carlsson, Per-Olov A. V., to Gambro AB. Supporting net. 4,213,858, Cl. 210-23.00R.

Bocksruker, Ronald W.: *See—*
McCaney, Carlos P.; and Bocksruker, Ronald W., 4,213,387, Cl. 100-245.000.

Bodor, Nicholas S.; and Sloan, Kenneth B., to INTERx Research Corporation. Anti-acne and anti-seborrhea prodrug derivatives of progesterone. 4,213,978, Cl. 424-241.000.

Boegeman, Dwight E.: *See—*
Spiess, Frederick N.; Boegeman, Dwight E.; Pavlicek, Frank V.; and Lowenstein, Carl D., 4,214,314, Cl. 367-2.000.

Boehm, Kurt: *See—*
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Boehringer Ingelheim GmbH: *See—*
Dirheimer, Guy; and Louisot, Pierre, 4,213,970, Cl. 424-180.000.
Engelhardt, Gunther; Keck, Johannes; Kruger; Noll, Klaus; and Pieper, Helmut, 4,214,001, Cl. 424-300.000.
Schmidt, Gunther; and Leitold, Matyas, 4,213,984, Cl. 424-250.000.
Schmidt, Gunther; and Leitold, Matyas, 4,213,985, Cl. 424-250.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, 4,213,995, Cl. 424-273.00R.

Boeing Company, The: *See—*
Murphy, Patrick, 4,213,585, Cl. 244-54.000.
Roeseler, William G.; Warner, Gary J.; and Odell, Richard B., 4,213,587, Cl. 244-213.000.

Bogert, Clayton; Alexander, John D.; and Krautheim, Leonard, to Lever Manufacturing Co. Fluid jet cutter with confined passageway for fluid disposal. 4,213,359, Cl. 82-47.000.

Bohner, Beat: *See—*
Schurter, Rolf; Rempfler, Hermann; and Bohner, Beat, 4,213,774, Cl. 71-94.000.

Bohringer, Walter, to RCA Corporation. Regulated deflection circuit. 4,214,189, Cl. 315-408.000.

Bold, Jorg: *See—*
Knuaf, Alfons; Bold, Jorg; and Franke, Siegfried, 4,214,027, Cl. 428-113.000.

Bonaddio, Robert M., to PPG Industries, Inc. Method of and apparatus for initiating a damage-free score in a refractory material. 4,213,550, Cl. 225-2.000.

Bonomo, Melvin E.; Coldren, Kenneth M.; Lemke, Verne O.; Rathbun, Loren L.; and Towner, Ronald D., to M & W Gear Company. Rotor-stator configuration for water brake dynamometer. 4,213,332, Cl. 73-134.000.

Bonori, Maurizio, to Franconi, Cafiero, a part interest. Slow square wave modulated gyromagnetic resonance spectrometer for automatic analysis and process control. 4,214,202, Cl. 324-313.000.

Boogers, Wilhelmus P. L., to B.V. Arenco P.M.B. Method and device for dividing tobacco leaves or the like into pieces. 4,213,468, Cl. 131-145.000.

Boomer, Merton E. Solvent immersion extractor. 4,213,941, Cl. 422-267.000.

Bosch-Siemens Hausgerate GmbH: *See—*
Fleischhauer, Werner, 4,214,148, Cl. 219-308.000.

Bosing, Hans: *See—*
Rossi, Guglielmo; and Bosing, Hans, 4,214,136, Cl. 200-67.0DA.

Bottger, Paul E. K. Medical multi-purpose instrument. 4,213,456, Cl. 128-218.00P.

Boultinghouse, Harold D., to Phillips Petroleum Company. Process for preparing crosslapped film structures. 4,213,812, Cl. 156-226.000.

Bourne, Alan J.: *See—*
Pope, George A.; and Bourne, Alan J., 4,213,491, Cl. 152-330.00L.

Bourne, William R.: *See—*
Poe, L. Richard; and Bourne, William R., 4,213,642, Cl. 292-241.000.

Bovee, David B.; and Thigpen, Ben B., to Western Geophysical Co. of America. Method and apparatus for demultiplexing multiplexed seismic data. 4,214,128, Cl. 370-112.000.

Bowles, Colin M., to Westinghouse Brake and Signal Co. Ltd. Fluidically operated railway switch machine. 4,213,588, Cl. 246-259.000.

Boyce, Jay, to Jay Boyce & Associates. Energy controller for conversion from a direct current source to a variable frequency load. 4,214,196, Cl. 318-811.000.

Brademeyer, David L., to General Motors Corporation. Master cylinder assembly and brake system incorporating same. 4,213,655, Cl. 303-6.00C.

Bradley, Phecell. Electromagnetic augmentation of internal combustion engines. 4,213,428, Cl. 123-46.00E.

Braginetz, Paul A.; and Floyd, Paul D., to Virginia Panel Corporation. Mechanism for positioning a test adapter in operative relationship with a receiver. 4,213,666, Cl. 339-75.00M.

Brakebill, Harold G., to Robertshaw Controls Company. Method of making a pilot operated valve positioner. 4,213,233, Cl. 29-157.10R.

Brandman, Harold A.; Manowitz, Milton; and Coffen, David L., to Givaudan Corporation; and Hoffmann-La Roche Inc. Preservation of aqueous systems with 2-chloro-3-oxobutyramide derivatives. 4,214,002, Cl. 424-300.000.

Braun Aktiengesellschaft: *See—*
Hoffmann, Karl-Heinz, 4,214,149, Cl. 219-370.000.

Braun, Charles H.: *See—*
Peffer, Robert M.; and Braun, Charles H., 4,213,603, Cl. 271-229.000.

Breashears, James C.: *See—*
Cowles, Clarence W.; Breashears, James C.; and Mungons, Edwin M., 4,213,729, Cl. 414-462.000.

Breda Termomeccanica S.p.A.: *See—*
Straffi, Franco, 4,213,499, Cl. 165-162.000.

Breed, David S. Ball rotor safety and arming delay device. 4,213,395, Cl. 102-236.000.

Breeze, Alan G. Light sources. 4,214,185, Cl. 315-86.000.

Brenner, Charles H., to Motorola, Inc. Spin processing active optical fuze. 4,213,394, Cl. 102-213.000.

Bresie, Don A.; Fowler, Donald W.; and Burns, Jack M., to Texas Gas Transport Company. Method and system for producing and transporting natural gas. 4,213,476, Cl. 137-2.000.

Bridgestone Tire Company: *See—*
Imamura, Takaaki; Kawagoe, Takahiro; Chikaraishi, Toshio; and Nyomura, Takashi, 4,214,058, Cl. 525-348.000.

Bright, Robert G., to Draftex Development AG. Channel-shaped sealing, trimming and guiding strips. 4,214,036, Cl. 428-358.000.

Bristowe, William W.; Ford, Ernest C., Jr.; and Reed, Weldon N., to ICI Americas Inc. Vinyl ester urethanes. 4,213,837, Cl. 204-159.190.

British Aircraft Corporation: *See—*
Guest, Ashley W., 4,214,205, Cl. 455-20.000.

British-American Tobacco Company Limited: *See—*
Horsewell, Henry G.; Green, John D.; Luke, John A.; and Harrison, Raymond J., 4,213,470, Cl. 131-261.00B.

British Steel Corporation: *See—*
Armstrong, David A., 4,213,245, Cl. 33-174.00P.
Middlemiss, Andrew; and Malkani, Dalip T., 4,213,231, Cl. 29-18.000.

Brodasky, Thomas F., to Upjohn Company, The. Sample supply device. 4,213,326, Cl. 73-23.100.

Broddevall, Bengt G., to Uddeholms Aktiebolag. Treatment of effluents in a chlorine based pulp bleaching plant. 4,213,820, Cl. 162-29.000.

Brodowski, Walter; and Wallrabenstein, Michael, to Akzona Incorporated. Preparation of terephthaloyl-terephthal/oxal copolyhydrazide containing zinc compound. 4,213,890, Cl. 260-45.75W.

Brodt, Rudolf; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Ohlinger, Manfred; Sarnecki, Wilhelm; and Steck, Werner, to BASF Aktiengesellschaft. Manufacture of acicular, ferrimagnetic iron oxide. 4,213,959, Cl. 423-634.000.

Bromer, Gunter; Gose, Horst; Hoffmann, Klaus-Rudiger; and Seeliger, Christian, to Siemens Aktiengesellschaft. Path control apparatus for the computer directed control of a numerically controlled machine tool. 4,214,192, Cl. 318-573.000.

Brouthers, Paul E., to D.W.A. Associates, Inc. Firearm trigger guard assembly. 4,213,263, Cl. 42-59.000.

Brown, Donald J., to Knox Manufacturing Co. Overlay device for use with an illuminated transparency viewer. 4,213,260, Cl. 40-158.00B.

Brown, Paul R.: *See—*
De George, Robert P.; Brown, Paul R.; and Carbone, Victor T., 4,213,733, Cl. 414-751.000.

Brown, Timothy W., to GTE Products Corporation. Circuit for indicating antenna signal input level on television receiver screen. 4,214,273, Cl. 358-188.000.

Brown, William E.: *See—*
Liu, Wen-Chih; Brown, William E.; and Astle, Gail L., 4,213,966, Cl. 424-123.000.

Browning Arms Company: *See—*
Badali, Joseph A., 4,213,262, Cl. 42-50.000.

Brozel, Rudolf; Beckel, Kurt; and Berkhout, Jan. Machine for measuring the moments of inertia. 4,213,330, Cl. 73-65.000.

Bruno, Roberto: *See—*
Azzerri, Nazzareno; Bruno, Roberto; and Memmi, Massimo, 4,213,839, Cl. 204-181.00R.

Brunswick Corporation: *See—*
Floeter, Larry A., 4,213,353, Cl. 74-878.000.

Bryan, Henry A.; Martin, Walter H.; and Konves, Richard L. Powder dispenser. 4,213,423, Cl. 119-86.000.

Bryant, Nelson; and Hoppe, Rudy, to Powers Manufacturing, Inc. Glass inspection method and apparatus. 4,213,702, Cl. 356-239.000.

Bryson, John D., to Will Ross, Inc. Environmental control unit and method. 4,213,923, Cl. 261-120.000.

Buckler, Robert T., to Miles Laboratories, Inc. Diphenylhydantoin immunogen conjugates. 4,213,894, Cl. 260-112.50R.

Buckler, Robert T., to Miles Laboratories, Inc. Diphenylhydantoin antibodies. 4,213,964, Cl. 424-85.000.

Budzan, Bogdan P.: *See—*
Kozlov, Anatoly E.; Budzan, Bogdan P.; Dudko, Daniil A.; Maximovich, Boleslav I.; Zavodian, Vitaly V.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; Golovnin, Vladimir M.; and Farrakhov, Nail S., 4,214,139, Cl. 219-9.500.

Bulova Watch Company, Inc.: *See—*
Dolezal, Zdenek; and Hof, Urs J., 4,213,292, Cl. 368-204.000.

Bureika, Mindaugas N.: *See—*
Yascheritsyn, Petr I.; Sidorenko, Valery A.; Morgunsky, Evgeny I.; Vishnev, Nikolai V.; Bureika, Mindaugas N.; Plotnikov, Vladimir A.; and Volkov, Anatoly T., 4,213,358, Cl. 82-36.00R.

Burian, Paul D.; and Sempliner, Arthur T., to Clairol, Inc. Manicuring unit. 4,213,471, Cl. 132-73.600.

Burnett, John S. Support device. 4,213,213, Cl. 5-450.000.

Burns, Jack M.: *See—*
Bresie, Don A.; Fowler, Donald W.; and Burns, Jack M., 4,213,476, Cl. 137-2.000.

Burns, Richard H.; and Crabtree, Kenneth, to Singer Company, The. Method and apparatus for sensing the position of a writing laser beam. 4,213,704, Cl. 356-349.000.

Burroughs Corporation: *See—*
Lin, An-Chung R., 4,213,717, Cl. 401-18.000.
Ragle, Herbert U.; and DeMoss, Dean, 4,214,286, Cl. 360-99.000.
Stromsta, Roger R.; Nathanson, Marshall R.; and Morton, Dennis S., 4,214,287, Cl. 360-103.000.

Burson, Bob O., to R. E. Phelon Company, Inc. Capacitor discharge ignition and alternator auxiliary power system. 4,213,436, Cl. 123-599.000.

Burton, Charles A., to United States of America, Navy. Radioactive source manipulator and stowage device. 4,213,646, Cl. 294-86.00A.

Burton, Charles G., to Chisholm-Ryder Company, Inc. Bean snipper. 4,213,383, Cl. 99-636.000.

Busch, Gerhard: *See—*
Andres, Rudolf; Grantz, Helmut; Abersfelder, Gunter; and Busch, Gerhard, 4,213,581, Cl. 242-107.40R.

Bush, Eric L.: *See—*
Sterling, Henley F.; Bush, Eric L.; and McManus, Stephen J., 4,214,293, Cl. 361-433.000.

Bush, Terry D.; and Denen, D. Joseph, to Floyd Bell Associates Inc. Electronic audio signalling device for telephones. 4,214,131, Cl. 179-84.00T.

Buss, Kenton A., to Igloo Corporation. Thermal container with quick-release lid-mounted flask. 4,213,310, Cl. 62-457.000.

B.V. Arenco P.M.B.: *See—*
Boogers, Wilhelmus P. L., 4,213,468, Cl. 131-145.000.

Bye, Ashley D., to Imperial Chemical Industries Limited. Transition metal composition and process. 4,213,878, Cl. 252-429.00B.

C. L. Frost & Son, Inc.: *See—*
Frost, Charles C.; and Weis, Siegfried K., 4,213,523, Cl. 193-37.000.

C. Mayo, Inc.: *See—*
Mayo, Carlos, 4,213,445, Cl. 126-143.000.

Caccavale, Patrick W., to Sherri Cup, Inc. Container lid assembly. 4,213,537, Cl. 220-215.000.

Cadillac Gage Company: *See—*
Jackson, Theodore A., 4,213,376, Cl. 89-34.000.

Cahill, James P.: *See—*
Silverman, John H.; and Cahill, James P., 4,213,284, Cl. 53-74.000.

Cain Encoder Company: *See—*
Hess, Donald T., 4,214,152, Cl. 235-92.0EC.

Cain, George R., to Koppers Company, Inc. One-spot coke quench car coke distribution system. 4,213,489, Cl. 141-70.000.

Calderon, Albert. Method and apparatus for quenching coke. 4,213,827, Cl. 201-39.000.

Calderon, Albert. Method and apparatus for quenching coke. 4,213,828, Cl. 201-39.000.

California Processing Machinery: *See—*
Meissner, Konrad E., 4,213,382, Cl. 99-486.000.

Calvert, Rodney K.; Scott, Dale K.; and Fishback, Alton J., to Meaq Corporation, The. Machine for applying an article carrier to a plurality of bottles. 4,213,283, Cl. 53-48.000.

Cambio, Orlando D., to Respiratory Care, Inc. Method of making a blow molded container having an insert molded in situ. 4,213,933, Cl. 264-515.000.

Cameron, Gordon M.; Jones, Frederick W. S.; and Nolan, Peter D., to Canadian Industries Limited. Production of sulphur trioxide, sulphuric acid and oleum. 4,213,958, Cl. 423-522.000.

Campbell, Barry D.: *See—*
Graham, Robert H.; and Campbell, Barry D., 4,213,526, Cl. 198-400.000.

Campbell, Henry F.; Santora, Norman J.; and Douglas, George H., to William H. Rorer, Inc. Method of treatment. 4,214,003, Cl. 424-301.000.

Campbell Soup Company: *See—*
Helmer, Warren D.; and Small, Robert E., 4,213,229, Cl. 17-46.000.

Canada Packers Limited: *See—*
Attwell, Michael C.; Massiah, Thomas F.; Vergottini, Roberto A.; and Ziegler, Peter, 4,213,911, Cl. 260-397.100.

Canadian Industries Limited: *See—*
Cameron, Gordon M.; Jones, Frederick W. S.; and Nolan, Peter D., 4,213,958, Cl. 423-522.000.

Canon Kabushiki Kaisha: *See—*
Kasai, Masanao; Hanadate, Hitoshi; Hajimoto, Yoshioki; Kitamura, Takashi; and Endo, Kiyonobu, 4,214,249, Cl. 346-76.00L.
Mikajiri, Kazukichi, 4,213,688, Cl. 354-23.00D.
Momiyama, Kikuo, 4,213,674, Cl. 350-227.000.
Sato, Hideaki, 4,214,154, Cl. 250-201.000.
Sato, Tadashi, 4,213,604, Cl. 271-233.000.
Sugiura, Muneharu; Minami, Setsuo; and Miyamoto, Koichi, 4,213,690, Cl. 355-8.000.

Carbone, Victor T.: *See—*
De George, Robert P.; Brown, Paul R.; and Carbone, Victor T., 4,213,733, Cl. 414-751.000.

Carbonnel, Henri, to Novatome. Process and apparatus for low pressure casting. 4,213,494, Cl. 164-4.000.

Carborundum Company, The: *See—*
Owens, Dean P., 4,213,883, Cl. 252-478.000.

Carden, Joseph A., Jr.: *See—*
Ward, Robert R.; Chang, Richard C.; Danos, James C.; and Carden, Joseph A., Jr., 4,214,020, Cl. 427-296.000.

Cardenas, Ricardo L.; and Carlin, Joseph T., to Texaco Inc. Oil recovery process: injection of fatty alcohol followed by soap. 4,213,500, Cl. 166-273.000.

Carlin, Joseph T.: *See—*
Cardenas, Ricardo L.; and Carlin, Joseph T., 4,213,500, Cl. 166-273.000.

Carlock, John T., to Conoco, Inc. Polymer bound (pentahaptocyclopentadienyl)biscarbonyl rhodium hydroformylation catalyst 4,214,109, Cl. 568-909.000.

Carlsson, Per-Olov A. V.: *See—*
Boberg, Nils G. E.; and Carlsson, Per-Olov A. V., 4,213,858, Cl. 210-23.00R.

Carmichael, Leland E., to Cornell Research Foundation, Inc. Small-plaque variant canine herpesvirus vaccine. 4,213,965, Cl. 424-89.000.

Carney, Ronald E.; and Hanessian, Stephen, to Abbott Laboratories. 1-N-Substituted derivatives of seldomycin factor 5. 4,214,077, Cl. 536-17.00R.

Carney, Ronald E., to Abbott Laboratories. Fortimicins AM and AP. 4,214,080, Cl. 536-17.00R.

Carp, Ralph W.; and Groff, William R., to Bendix Corporation, The. Driver circuit for an electrical load with capability for detecting a short in the load. 4,214,236, Cl. 340-642.000.

Carp, Ralph W., to Bendix Corporation, The. Closed loop sensor condition detector. 4,214,308, Cl. 364-431.000.

Carr, John B.: *See—*
Witiak, Donald T.; Carr, John B.; and Mersmann, Harry J., 4,213,998, Cl. 424-285.000.
Witiak, Donald T.; Carr, John B.; and Mersmann, Harry J., 4,213,999, Cl. 424-285.000.

Carrico, Robert J.; and Johnson, Richard D., to Miles Laboratories, Inc. Flavin adenine dinucleotide-labeled conjugates for use in specific binding assays. 4,213,893, Cl. 260-112.50R.

Carrier Corporation: *See—*
Leonard, Louis H., 4,214,170, Cl. 290-1.00R.

Carson, Andrew B., Jr., to General Electric Company. Ribbon stripping mechanism. 4,213,716, Cl. 400-196.100.

Carson, Don B., to UOP Inc. Isoparaffin-olefin alkylation utilizing evaporative cooling in a reactor-depropanizer. 4,214,114, Cl. 585-715.000.

Carson, John R., to McNeilab, Inc. Preparation of 5-aroyl-1-loweralkyl-pyrrole-2-acetic acid salts. 4,213,905, Cl. 260-326.470.

Casciani, Ralph A.; Wilbern, Wilmer L.; Mangan, William E.; and Franson, Paul D., to Union Carbide Corporation. Computerized process and apparatus for use with a submerged arc electric furnace to produce metallurgical products. 4,213,955, Cl. 423-442.000.

Casselbrant, Sven G., to Kockums Industri AB. Method of making structural chipboard wood beam. 4,213,928, Cl. 264-113.000.

Cassidy, Edward L., Sr.: *See—*
Safrit, Sam C.; Cassidy, Edward L., Sr.; Cothran, William B.; and Farrell, Roscoe M., 4,213,312, Cl. 66-177.000.

Caswell, Bruce F., to Arcanum Corporation. Treatment of steel mill waste materials. 4,213,779, Cl. 75-34.000.

Caterpillar Tractor Co.: *See—*
Habiger, Cyril W., 4,213,484, Cl. 137-636.100.
Lingenfelser, Daniel J., 4,213,592, Cl. 248-313.000.
Papasideris, Stamos I., 4,214,227, Cl. 340-52.00F.

Cattorini, Joseph F.; Park, Thomas R.; and Martin, John K., to Documation Incorporated. Printer elevator control mechanism. 4,213,601, Cl. 270-61.00F.

Cauwet, Daniele: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,213,960, Cl. 424-47.000.

Caverly, Brian L.: *See—*
Ainger, George E.; and Caverly, Brian L., 4,214,012, Cl. 426-607.000.

Cavil, David T.; and McAuliffe, Gerald N., to Outboard Marine Corporation. Direct current motor control with protective solenoid latching. 4,214,288, Cl. 361-6.000.

CBS Inc.: *See—*
Kaiser, Arthur, 4,214,263, Cl. 358-22.000.

Celanese Corporation: *See—*
Blay, George A., 4,214,050, Cl. 435-29.000.

Celotex Corporation, The: *See—*
Funk, Smith A.; Klasen, Charles J.; and Vilmanis, Ilmars, 4,213,487, Cl. 138-149.000.

Centro Sperimentale Metallurgico S.p.A.: *See—*
Azzerri, Nazzareno; Bruno, Roberto; and Memmi, Massimo, 4,213,839, Cl. 204-181.00R.
Marianeschi, Edmondo; and Marini, Paolo, 4,213,792, Cl. 106-286.600.

Ceram-Dent, Inc.: *See—*
Rose, Stanley E., 4,213,495, Cl. 164-34.000.

Chamberlain, Frederick R.: *See—*
United States of America, National Aeronautics and Space Administration; and Chamberlain, Frederick R., 4,213,684, Cl. 354-118.000.

Chamberlain Manufacturing Corp.: *See—*
Queen, Daniel L., 4,214,220, Cl. 335-153.000.

Champion International Corporation: *See—*
Barnes, Donald E., 4,214,029, Cl. 428-200.000.
Fremont, Henry A.; and Hedrick, Edward F., 4,213,947, Cl. 423-245.000.

Chan, John Y., to Fairchild Camera and Instrument Corporation. High-performance address buffer for random-access memory. 4,214,175, Cl. 307-264.000.

Chandler Evans Inc.: *See—*
Grennan, Charles W., 4,213,735, Cl. 415-21.000.

Chang, Clarence D.; and Morgan, Norman J., to Mobil Oil Corporation. Hydration of olefins using zeolite catalysts. 4,214,107, Cl. 568-897.000.

Chang, David T. L., to Recortec, Inc. Color video tape recorder/reproducer with chrome corrector. 4,214,259, Cl. 358-8.000.

Chang, Pei K., to Stauffer Chemical Company. Replacement of egg albumen in food compositions. 4,214,009, Cl. 426-558.000.

Chang, Richard C.: *See—*
Ward, Robert R.; Chang, Richard C.; Danos, James C.; and Carden, Joseph A., Jr., 4,214,020, Cl. 427-296.000.

Charneski, Mitchell D.; Kelley, James K.; and Gazdecki, Frank J. Electrical joint compound. 4,214,121, Cl. 174-84.00C.

Chastain, Dave, Jr.: *See—*
Crews, Harold R.; Chastain, Dave, Jr.; and Ledis, Stephen L., 4,213,876, Cl. 252-408.000.

Check, Frank T., Jr.; and Sansone, Ronald P., to Pitney Bowes, Inc. Apparatus and method for correcting imperfection in a polygon used for laser scanning. 4,214,157, Cl. 250-236.000.

Chemap AG: *See—*
Muller, Hans; and Sotirianos, Konstantin, 4,213,861, Cl. 210-82.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Zaar, Wolfgang, 4,214,108, Cl. 585-23.000.

Chen, Nai Y.; and Wang, Ikai, to Mobil Oil Corporation. Catalytic dewaxing of lubes in reactor fractionator. 4,213,847, Cl. 208-111.000.

Chen, Tsang J., to Eastman Kodak Company. Photographic elements having hydrophilic colloid layers containing hydrophobic addenda uniformly loaded in latex polymer particles. 4,214,047, Cl. 430-448.000.

Cheng, Sheng-Hsiung. Oil-water interfacial detector. 4,213,340, Cl. 73-304.00R.

Chevet, Robert; and Lenfant, Pierre, to Compagnie Industrielle des Piles Electriques "CIPEL". Air-depolarized cell. 4,214,044, Cl. 429-27.000.

Chevron Research Company: *See—*
Masada, Gary M., 4,213,845, Cl. 208-19.000.
Pyle, Walter R., 4,213,488, Cl. 141-1.000.
Wheeler, Ronald E.; and King, William F., 4,213,973, Cl. 424-200.000.

Chien, Loring C., to Dresser Industries, Inc. Oilfield pump stroke monitor. 4,213,740, Cl. 417-63.000.

Chikaraishi, Toshio: *See—*
Imamura, Takaaki; Kawagoe, Takahiro; Chikaraishi, Toshio; and Nyomura, Takashi, 4,214,058, Cl. 525-348.000.

Chimura, Kozo: *See—*
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,214,134, Cl. 200-37.00R.

Chisholm-Ryder Company, Inc.: *See—*
Burton, Charles G., 4,213,383, Cl. 99-636.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Oishi, Hideo; Noto, Takao; Nawata, Yoshiharu; Okazaki, Hiroshi; Sasaki, Hiroshi; Ando, Kunio; and Ogawa, Haruki, 4,214,091, Cl. 549-62.000.

Chukhanov, Zinovy F.: *See—*
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,214,113, Cl. 585-634.000.

Church, Peter K., to Leisure Products Corporation. Water based window, glass and chrome cleaner composition. 4,213,873, Cl. 252-174.210.

Ciba-Geigy Corporation: *See—*
Abeler, Gerd; and Maul, Rudolf, 4,214,088, Cl. 546-321.000.
Baylis, Eric K.; and Pickles, Wilfred, 4,213,969, Cl. 424-177.000.
Eckhardt, Wolfgang; Hubele, Adolf; and Kunz, Walter, 4,214,005, Cl. 424-309.000.
Fah, Hansjakob, 4,214,086, Cl. 546-290.000.
Frick, Willy; and Hubele, Adolf, 4,213,990, Cl. 424-269.000.
Gosteli, Jacques, 4,213,920, Cl. 568-424.000.
Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,213,993, Cl. 424-273.00B.
Maier, Ludwig, 4,213,922, Cl. 260-958.000.
Reinehr, Dieter, 4,213,901, Cl. 260-239.0BE.
Schurter, Rolf; Rempfler, Hermann; and Bohner, Beat, 4,213,774, Cl. 71-94.000.
Sele, Alex; Ferrini, Pier G.; Haas, Georges; Jaeggi, Knut A.; and Rossi, Alberto, 4,213,980, Cl. 424-246.000.

Citizen Watch Co., Ltd.: *See—*
Mabuchi, Hiroshi; and Yabe, Isao, 4,213,293, Cl. 368-152.000.

Claeson, Karl G.: *See—*
af Ekenstam, Bo T.; Aurell, Leif E.; Claeson, Karl G.; Karlsson, Birgitta G.; Gustavsson, Stig I.; and Olausson, Gun A., 4,214,049, Cl. 435-23.000.

Clairol, Inc: *See—*
Burian, Paul D.; and Sempliner, Arthur T., 4,213,471, Cl. 132-73.600.

Clapp, Roy A. Electromagnetically actuated shutter mechanism for cameras. 4,213,689, Cl. 354-234.000.

Clarke, Robert L.; and Daum, Sol J., to Sterling Drug Inc. Ethanopyrrolo[1,2-b]isoquinolines. 4,214,084, Cl. 546-72.000.

Claudius Peters AG: *See—*
Knorr, Gunter, 4,213,287, Cl. 53-573.000.

Claypool, James P., to Claypool, James P.; and Trombley, James E. Breech locking mechanism. 4,213,261, Cl. 42-16.000.

Clifton, John D.; and Titow, Victor W., to Clifton, John David. Novel mesh fabric and wig and hair-piece made therefrom. 4,214,033, Cl. 428-255.000.

Clifton, John David: *See—*
Clifton, John D.; and Titow, Victor W., 4,214,033, Cl. 428-255.000.

CMI Corporation: *See—*
Swisher, George W., Jr.; and Steele, Thomas L., 4,213,719, Cl. 404-84.000.

Coda, Alfred. Wall-mounted displays. 4,213,259, Cl. 40-152.100.

Coffen, David L.: *See—*
Brandman, Harold A.; Manowitz, Milton; and Coffen, David L., 4,214,002, Cl. 424-300.000.

Cogas Development Company: *See—*
Eddinger, Ralph T.; and Friedman, Louis D., 4,213,826, Cl. 201-31.000.

Coha, Thomas F.; and Owen, Marvin L., to General Motors Corporation. Antirattle structure for a transmission ratio indicator assembly. 4,213,415, Cl. 116-28.100.

Coldren, Kenneth M.: *See—*
Bonomo, Melvin E.; Coldren, Kenneth M.; Lemke, Verne O.; Rathbun, Loren L.; and Towner, Ronald D., 4,213,332, Cl. 73-134.000.

Colin, Jean-Marie H., to International Standard Electric Corporation. Method and apparatus for eliminating multiple-time echoes in pulse Doppler radars. 4,214,242, Cl. 343-7.700.

Colt, John Z.: *See—*
Thompson, Leo M.; Colt, John Z.; and Szpakowski, Robert J., 4,213,545, Cl. 222-386.500.

Colvin, David S. Adjustable socket. 4,213,355, Cl. 81-128.000.

Combustion Engineering, Inc.: *See—*
Kochey, Edward L., 4,213,402, Cl. 110-171.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Huppatz, John L., 4,214,090, Cl. 548-377.000.

Compagnie Francaise de Raffinage: *See—*
Engelhard, Philippe; Legendre, Michel; Paris, Guy; and Szabo, Georges, 4,213,849, Cl. 208-139.000.

Compagnie Francaise des Petroles: *See—*
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Compagnie Industrielle des Piles Electriques "CIPEL": *See—*
Chevet, Robert; and Lenfant, Pierre, 4,214,044, Cl. 429-27.000.

Computer Ribbon Systems, Inc.: *See—*
Nicholson, Albert N., 4,213,419, Cl. 118-670.000.

Congoleum Corporation: *See—*
Shortway, Harry A.; Graham, Alan A.; and Miller, Charles H., 4,214,028, Cl. 428-159.000.

Conner, Edmond E.; and Wentz, Edward C., to Westinghouse Electric Corp. Current transformer. 4,214,199, Cl. 323-6.000.

Conner, William R., Jr., to Stahl-Urban Company. Method of and apparatus for processing parts of garments, such as collars. 4,213,547, Cl. 223-2.000.

Conoco, Inc.: *See—*
Carlock, John T., 4,214,109, Cl. 568-909.000.
Sooter, Matthew C.; Becraft, Lloyd G.; and Kegler, William H., 4,213,846, Cl. 208-50.000.
Whitfill, Donald L., 4,213,762, Cl. 23-230.00R.

Consumers Glass Company Limited: *See—*
Mancini, Derek V., 4,213,285, Cl. 53-137.000.

Contact Communication Corporation: *See—*
Mellen, Arthur J.; and Reitlinger, Adolf, 4,214,215, Cl. 330-277.000.

Conti, Rino: *See—*
Petruzzi, Thomas G.; Ashton, Harold P.; and Conti, Rino, 4,213,271, Cl. 47-39.000.

Continental Group, Inc., The: *See—*
Fernandez, Luis, 4,213,751, Cl. 425-566.000.

Cook, Alan H., to Bexford Limited. Photographic film subbing layer comprising vinylidene chloride and itaconic acid or ester copolymer. 4,213,783, Cl. 430-533.000.

Cooper, Frank W., Jr., to Westinghouse Electric Corp. Apparatus for remotely repairing tubes in a steam generator. 4,213,732, Cl. 414-728.000.

Cooper, Robert N., to A. B. Dick Company. Sludge resistant liquid developer for electrostatic images containing a metal-dithiooxamide pigment or coating. 4,213,872, Cl. 430-114.000.

Copolymer Rubber & Chemical Corporation: *See—*
Karg, Rudolph F.; and Gros, Harold J., 4,213,888, Cl. 260-33.6AQ.

Corbett, Constance R., to Stauffer Chemical Company. Replacement of whole egg in baked custard. 4,214,010, Cl. 426-573.000.

Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., to Pfizer Inc. Intermediates for synthesis of precursors for prostaglandins. 4,214,099, Cl. 560-256.000.

Cornell Research Foundation, Inc.: *See—*
Carmichael, Leland E., 4,213,965, Cl. 424-89.000.

Corning Glass Works: *See—*
Lemker, Richard S.; and Storey, Clyde H., 4,213,772, Cl. 65-30.00R.

Corse, Louis G., to Machines Chambon. Method for preconditioning lumps of sugar. 4,213,249, Cl. 34-12.000.

Cosby, Phillip A., to Graham Magnetics Incorporated. Tape cartridge strap cleaner. 4,213,223, Cl. 15-304.000.

Costello, Alan T.: *See—*
Phillips, Duncan A. S.; Anderson, Brian; Jackson, Neville; Stead, Cecil V.; and Costello, Alan T., 4,213,899, Cl. 260-156.000.

Coster, Hans G. L.; Ashcroft, Robert G.; and Smith, John R., to Unisearch Limited. Location and effect of adsorbed chemicals on the dielectric substructure of membranes by ultra low frequency spectrometry. 4,214,203, Cl. 324-425.000.

Cothran, William B.: *See—*
Safrit, Sam C.; Cassidy, Edward L., Sr.; Cothran, William B.; and Farrell, Roscoe M., 4,213,312, Cl. 66-177.000.

Cotton Incorporated: *See—*
Winch, Allen R., 4,213,218, Cl. 8-151.000.

Couchoud, Paul; and Vaginay, Yves, to Rhone-Poulenc-Textile. Flame-resistant copolyesters containing phosphonic groups. 4,214,069, Cl. 528-167.000.

Coulter Electronics, Inc.: *See—*
Crews, Harold R.; Chastain, Dave, Jr.; and Ledis, Stephen L., 4,213,876, Cl. 252-408.000.

Courtney, Albert L. Water ski tow assembly. 4,213,413, Cl. 114-253.000.

Cowles, Clarence W.; Breashears, James C.; and Mungons, Edwin M., to Wilmoth, Eugene. Vehicle attached carrier pivotable about plural axes. 4,213,729, Cl. 414-462.000.

Cox, Leon: *See—*
Fister, Julius C., Jr.; Setzer, William C.; and Cox, Leon, 4,214,041, Cl. 428-607.000.

Cox, Mark S. Sounding banjo and head therefor. 4,213,368, Cl. 84-269.000.

Coy, David H.: *See—*
Kastin, Abba J.; and Coy, David H., 4,213,968, Cl. 424-177.000.

Crabtree, Kenneth: *See—*
Burns, Richard H.; and Crabtree, Kenneth, 4,213,704, Cl. 356-349.000.

Crano, John C., to PPG Industries, Inc. Preparation of boron trichloride. 4,213,948, Cl. 423-292.000.

Crawford, Herbert M. Differential transmission assembly. 4,213,352, Cl. 74-677.000.

Creange, John E.: *See—*
Schane, Harry P., Jr.; Harding, Homer R.; and Creange, John E., 4,213,977, Cl. 424-241.000.

Crews, Harold R.; Chastain, Dave, Jr.; and Ledis, Stephen L., to Coulter Electronics, Inc. Multi-purpose blood diluent for use in electronic blood analysis instrumentation. 4,213,876, Cl. 252-408.000.

Cromley, Harold D., to Marshall Equipment Co. Inc. Emergency ventilation system for enclosed livestock confinement structures. 4,213,379, Cl. 98-33.00R.

Cronson, Harry M.; Lamensdorf, David; and Ross, Gerald F., to Sperry Corporation. Transreflector scanning antenna. 4,214,248, Cl. 343-756.000.

Crosby, Alton L.; and Swank, Harry R., to GTE Products Corporation. Apparatus and process for welding plated parts. 4,214,142, Cl. 219-86.250.

Crosfield Electronics Limited: *See—*
Pugsley, Peter C.; and Wood, Peter J., 4,214,276, Cl. 358-256.000.

Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; Farkas, L. Peter; Remenyi, Janos; and Koltay, Sandor, to Magyar Asvanyolaj es Foldgaz Kiserleti Intezet. Insulating felts reinforced by fibrous materials particularly for the waterproofing and/or corrosion-proofing of metal and/or concrete objects. 4,214,032, Cl. 428-280.000.

Cuisinarts, Inc.: *See—*
Jones, Barbara A., 4,213,570, Cl. 241-38.000.

Cukier, Samuel; and Khan, Irshad A., to Domtar Inc. Fabric conditioning compositions. 4,213,867, Cl. 252-8.750.

Cullen, William P.: *See—*
Larkin, John M.; Cullen, William P.; Sung, Rodney L.; and Zoleski, Benjamin H., 4,214,083, Cl. 544-277.000.

Cunningham, Donald M., to Emerson Electric Co. Electric heating elements. 4,214,150, Cl. 219-452.000.

Cunningham, Joseph E., Jr.; and Grombone, Anthony, to International Business Machines Corporation. Range tracking analog to digital converter for use with a bridge. 4,214,234, Cl. 340-347.0AD.

Curtis, Eugene E. Composite balloon figure and method of making the same. 4,213,267, Cl. 46-87.000.

Curtis, Stephen N.; and Bhargava, Hridaya N., to Beecham, Inc. Oral compositions. 4,213,961, Cl. 424-54.000.

Cuypers, Martinus H.: *See—*
Horowitz, Alexandre; and Cuypers, Martinus H., 4,213,350, Cl. 474-264.000.

D.W.A. Associates, Inc.: *See—*
Brouthers, Paul E., 4,213,263, Cl. 42-59.000.

Dagnelie, Jean-Paul G., to Etablissement Public de Diffusion dit "Telediffusion de France". Bidirectional telewriting system operating in an alternating mode over a single carrier. 4,214,123, Cl. 370-31.000.

Dahinden, Walter, to Dornag. Method and means for cooling down a stationary twist drill by a coolant. 4,213,354, Cl. 82-1.00C.

Dahlem, Peter, to Lindemann Maschinenfabrik GmbH. Scrap shearing machine. 4,213,385, Cl. 100-95.000.

Dai-Ichi Seiko Co., Ltd.: *See—*
Katata, Tetsuo, 4,213,578, Cl. 242-74.000.

Dai Nippon Printing Co., Ltd.: *See—*
Toyoda, Minoru; Horishima, Tohei; Sugimoto, Kenji; and Aoyama, Kensuke, 4,213,926, Cl. 264-74.000.

Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf; Grantz, Helmut; Abersfelder, Gunter; and Busch; Gerhard, 4,213,581, Cl. 242-107.40R.
Mehren, Herbert; and Wulf, Helmut, 4,213,396, Cl. 104-130.000.
Sacco, Bruno; Dalheimer, Walter; and Schwarz, Friedrich, 4,213,638, Cl. 280-808.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Kitagawa, Tsunehiro, 4,214,048, Cl. 435-7.000.

Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, to International Business Machines Corporation. Tantalum semiconductor contacts and method for fabricating same. 4,214,256, Cl. 357-71.000.

Dalheimer, Walter: *See—*
Sacco, Bruno; Dalheimer, Walter; and Schwarz, Friedrich, 4,213,638, Cl. 280-808.000.

Dalle, Jean-Paul. Process for treating cellulosic materials with liquid ammonia. 4,213,761, Cl. 8-125.000.

Dana Corporation: *See—*
Mazziotti, Philip J., 4,213,512, Cl. 180-233.000.

Danos, James C.: *See—*
Ward, Robert R.; Chang, Richard C.; Danos, James C.; and Carden, Joseph A., Jr., 4,214,020, Cl. 427-296.000.

Dart Industries Inc.: *See—*
Petruzzi, Thomas G.; Ashton, Harold P.; and Conti, Rino, 4,213,271, Cl. 47-39.000.

Data Products Corporation: *See—*
Horning, Thomas, 4,214,194, Cl. 318-696.000.

Datow, Joachim; Decker, Martin; Merkel, Karl; and Neumayr, Franz, to BASF Aktiengesellschaft. Manufacture of β-chlorocarboxylic acid chlorides. 4,213,919, Cl. 260-544.00K.

Datta, Amitava, to Allegheny Ludlum Industries, Inc. Processing for cube-on-edge oriented silicon steel. 4,213,804, Cl. 148-111.000.

Daubach, Ewald; Horn, Dieter; Hahn, Erwin; and Uhrig, Herbert, to BASF Aktiengesellschaft. Spray-drying method for the preparation of water-dispersible pulverulent disperse dye formulations. 4,213,900, Cl. 260-208.000.

Daum, Sol J.: *See—*
Clarke, Robert L.; and Daum, Sol J., 4,214,084, Cl. 546-72.000.

Davidson, Louie E.: *See—*
Samour, Carlos M.; Jackson, Earl G.; Thomas, Samuel J.; and Davidson, Louie E., 4,213,486, Cl. 138-143.000.

Davidson, William E.: *See—*
Reinstadler, Kenneth A.; and Davidson, William E., 4,213,258, Cl. 38-77.200.

Davies, John H.; Grayson, Basil T.; and Rosinger, Herbert P., to Shell Internationale Research Maatschappij B.V. Conversion of stereoisomer into its diastereoisomer. 4,213,916, Cl. 260-465.00D.

Davis, H. R.; Long, R. H.; and Simone, A. A., to Lummus Company, The. Gravity settling. 4,213,862, Cl. 210-83.000.

Davis, James E.: *See—*
Bellos, Thomas J.; and Davis, James E., 4,213,934, Cl. 422-15.000.
Davis, Michael D.; and Gustner, Harold L., to Eaton Corporation. Hydraulic pump and improved by-pass flow means therefor. 4,213,744, Cl. 417-310.000.
Davis, Paul F., to Kraft, Inc. Rennet casein and method for treatment thereof. 4,213,896, Cl. 260-119.000.
Dawson, Oscar E. Afro oil comb. 4,213,473, Cl. 132-113.000.
Day, John C. Liquid fuel to gas converter for engines. 4,213,433, Cl. 123-549.000.
Day, Nancy C. Ornamental device. 4,214,023, Cl. 428-11.000.
De luxe General, Incorporated: *See—*
Gyori, Robert P., 4,214,171, Cl. 307-39.000..
De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See—*
Jarus, Daniel J., 4,214,124, Cl. 375-114.000.
Kuijt, Cornelis, 4,213,602, Cl. 271-279.000.
Deardorff, Duane R.; and Mann, William W., to Sperry Corporation. Dust system for a grinder-mixer. 4,213,571, Cl. 241-48.000.
DeBrick, Eric, to New River Manufacturing Company, Inc. Resilient universal locomotive suspension. 4,213,399, Cl. 105-157.00R.
Decker, Martin: *See—*
Datow, Joachim; Decker, Martin; Merkel, Karl; and Neumayr, Franz, 4,213,919, Cl. 260-544.00K.
De Deugd, Johannes A. G., to U.S. Philips Corporation. Method and apparatus for extruding a burred edge of a hole in a metal sheet. 4,213,323, Cl. 72-358.000.
de Deugd, Johannes A. G.: *See—*
Tielemans, Leonardus P. M.; and de Deugd, Johannes A. G., 4,213,659, Cl. 308-167.000.
Dedolph, Richard R., to Gravi-Mechanics Co. Field transplant systems and methods and components thereof. 4,213,273, Cl. 47-74.000.
De George, Robert P.; Brown, Paul R.; and Carbone, Victor T., to Houdaille Industries, Inc. Automatic side gauge for machine tool workpiece control and method. 4,213,733, Cl. 414-751.000.
De Geus, Arie M. Solar powered cooling apparatus. 4,213,305, Cl. 62-2.000.
De Haas, Hans: *See—*
Grebe, Klaus; and De Haas, Hans, 4,213,777, Cl. 75-0.5BA.
de Jong, Aaldert J.; and Heijmen, Hendricus J., to Shell Oil Company. Unsaturated alcohols and esters. 4,214,098, Cl. 560-231.000.
De Luca, Carlo: *See—*
Stulen, Foster B.; and De Luca, Carlo, 4,213,467, Cl. 128-733.000.
DeMoss, Dean: *See—*
Ragle, Herbert U.; and DeMoss, Dean, 4,214,286, Cl. 360-99.000.
Demrick, Carl J., to Herder, N.V. Bushing and grease retainer for casters. 4,213,226, Cl. 16-36.000.
Denen, D. Joseph: *See—*
Bush, Terry D.; and Denen, D. Joseph, 4,214,131, Cl. 179-84.00T.
Denninger, Claude; and Moutton, Louis, to SOGEMARIC, Societe de Gestion et de Marketing pour Industries de Consommation. Explosive trap for animals. 4,213,265, Cl. 43-84.000.
Denver Splint Company, The: *See—*
Shippert, Ronald D., 4,213,452, Cl. 128-89.00R.
de Rosset, Armand J., to UOP Inc. Two-stage process for separating mixed fatty-acid esters. 4,213,913, Cl. 260-428.500.
Dewing, Ernest W.; Huni, Jean-Paul R.; Sood, Raman R.; and Southam, Frederick W., to Alcan Research and Development Limited. Apparatus for the production of aluminium. 4,213,599, Cl. 266-166.000.
Dickey, Thomas E. Four-in-a-row board game. 4,213,616, Cl. 273-271.000.
Dickson, John F., to Plessey Handel und Investments AG. Voltage multiplier employing clock gated transistor chain. 4,214,174, Cl. 307-229.000.
Dickson, Vernon E.; Lee, James G. C.; and Saini, Gurbachan S., to Sangamo Company Limited. Switching circuit for radiosonde. 4,214,207, Cl. 455-95.000.
Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, to Otto Fuchs KG; and Schuco Heinz Schurmann GmbH & Co. Tool for deforming a plurality of groove defining flanges against insulating bars in the grooves. 4,213,236, Cl. 29-243.500.
Dienstuhl, Karl W.: *See—*
Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,213,236, Cl. 29-243.500.
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and Lefranc, Guy, to Siemens Aktiengesellschaft. Magnetic lens system for corpuscular radiation equipment. 4,214,166, Cl. 250-396.0ML.
Di Gaetano, Nicholas A. Device for use in counting small items. 4,213,730, Cl. 414-675.000.
Dillard, George M., to United States of America, Navy. Magnetic drum storage for the track before detect system. 4,214,239, Cl. 343-5.0VQ.
DiMarco, Bernard; and Hempstead, John C., to Gould Inc. Push-push switch. 4,214,219, Cl. 335-23.000.
Dipietromaria, Edoardo, to Indesit Industria Elettrodomestici Italiana S.p.A. Tuner device for a television receiver. 4,214,212, Cl. 455-190.000.
Dirheimer, Guy; and Louisot, Pierre, to Boehringer Ingelheim GmbH. Antiviral compositions containing a transfer-ribonucleic acid. 4,213,970, Cl. 424-180.000.
Di Rosa, Gaetano, to F.A.T.A.-Fabrica Apparecchi Di Sollevamento E Trasporto Ed Affini S.p.A. Dampened suspended carrier suspension. 4,213,398, Cl. 105-150.000.
Di Stefano, Alfonso. Rotary engine. 4,213,427, Cl. 123-43.0AA.
Dittmer, Helmut: *See—*
Muders, Rolf; Leister, Heinrich; Dittmer, Helmut; and Schonhagen, Hubert, 4,213,910, Cl. 260-371.000.
Dobler, Peter: *See—*
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Dobson, Michael J. Solar collector. 4,213,929, Cl. 264-129.000.
Dr. C. Otto & Comp. G.m.b.H.: *See—*
Haese, Egon; Moll, Hans; and Willms, Rolf, 4,213,945, Cl. 423-240.000.
Dr. Franzen Analysentechnik GmbH & Co. Kommanditgesellschaft: *See—*
Franzen, Jochen; and Weiss, Gerhard, 4,213,557, Cl. 228-122.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Stotz, Erich; and Sivers, Rolf, 4,213,632, Cl. 280-697.000.
Dr. Werner Freyberg, Chemische Fabrik Delitia Nachf.: *See—*
Praxl, Werner; and Ehret, Reiner, 4,213,967, Cl. 424-128.000.
Documation Incorporated: *See—*
Cattorini, Joseph F.; Park, Thomas R.; and Martin, John K., 4,213,601, Cl. 270-61.00F.
Doi, Hideo: *See—*
Miura, Yoshiharu; Aoyagi, Sadayoshi; and Miyamoto, Kazuhisa, 4,213,962, Cl. 424-78.000.
Doi, Kiyosumi: *See—*
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Dolezal, Zdenek; and Hof, Urs J., to Bu'ova Watch Company, Inc. Thermoelectrically-powered wrist watch. 4,213,292, Cl. 368-204.000.
Dolhyj, Serge R.; Suresh, Dev D.; and Grasselli, Robert K., to Standard Oil Company. Esterification of aromatic aldehydes. 4,213,917, Cl. 260-465.00D.
Domtar Inc.: *See—*
Cukier, Samuel; and Khan, Irshad A., 4,213,867, Cl. 252-8.750.
Lucas, John M., 4,213,708, Cl. 356-429.000.
Donermeyer, Donald D.; and Martins, Joseph G., to Monsanto Company. Cavity filling with a hot melt adhesive composition. 4,214,019, Cl. 427-142.000.
Donlon, Frances M.; and Van Buskirk, Jerry H. Rescue vest for newborn babies. 4,213,204, Cl. 2-94.000.
Donnally, William, to United States of America, Army. In-bore telemetry information measuring system. 4,214,231, Cl. 340-207.00R.
Dornag: *See—*
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Douaud, Andre; and Rialan, Joseph, to Institut Francais du Petrole. Method and device for automatically adjusting the spark advance of a controlled ignition engine. 4,213,429, Cl. 123-414.000.
Douglas, George H.: *See—*
Campbell, Henry F.; Santora, Norman J.; and Douglas, George H., 4,214,003, Cl. 424-301.000.
Douklias, Nikolaos: *See—*
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Dow Chemical Company, The: *See—*
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Klingler, Thomas C.; Wessling, Ritchie A.; and Gibbs, Dale S., 4,214,096, Cl. 560-147.000.
Knight, George W.; and Mach, Dennis E., 4,213,880, Cl. 252-431.00R.
Larson, Larry L., 4,213,975, Cl. 424-200.000.
Lefevre, Joseph D., 4,213,833, Cl. 204-98.000.
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Bright, Robert G., 4,214,036, Cl. 428-358.000.
Dragerwerk Aktiengesellschaft: *See—*
Warncke, Ernst; and Pasternack, Adalbert, 4,213,453, Cl. 128-202.260.
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Dresser Industries, Inc.: *See—*
Chien, Loring C., 4,213,740, Cl. 417-63.000.
Drimmer, Bernard E., to United States of America, Army. Anti-tank mine with peripheral charge initiation. 4,213,391, Cl. 102-8.000.
Droese, K. H.; and Fluehter, Jurgen. Method of an installation for breeding sea-water creatures in tanks. 4,213,421, Cl. 119-3.000.
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Bitely, Clarence J., Jr.; Dromgold, Luther D.; and Murray, William S., Jr., 4,213,868, Cl. 252-11.000.
Dubief, Claude: *See—*
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Kozlov, Anatoly E.; Budzan, Bogdan P.; Dudko, Daniil A.; Maximovich, Boleslav I.; Zavodian, Vitaly V.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; Golovnin, Vladimir M.; and Farrakhov, Nail S., 4,214,139, Cl. 219-9.500.
Dufour, Martin J., to W. C. Lamb. Pipe inspection system and method. 4,213,345, Cl. 73-637.000.
Dufresne, Jean L. Capping board for electrolytic metal refining. 4,213,842, Cl. 204-279.000.
Dumont, Claude: *See—*
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Duncan, Gary L.: *See—*
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Dunlop Limited: *See—*
Ottewell, Roger J.; and Lowe, Jack M., 4,213,485, Cl. 138-130.000.
Pope, George A.; and Bourne, Alan J., 4,213,491, Cl. 152-330.00L.
Ware, Peter G., 4,213,234, Cl. 29-159.100.
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Krespan, Carl G., 4,214,070, Cl. 528-220.000.
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Mahler, Walter, 4,213,950, Cl. 423-329.000.
Turner, Robert L., 4,213,886, Cl. 260-29.6MM.
Wolf, Anthony D., 4,213,773, Cl. 71-92.000.
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Dynamit Nobel Aktiengesellschaft: *See—*
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Dynamote Corporation: *See—*
Schneider, Franklin R., 4,214,198, Cl. 320-15.000.
Dyno Industries A.S.: *See—*
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E.G.O. Regeltechnik GmbH: *See—*
Kicherer, Robert; and Schilling, Wilfried, 4,214,151, Cl. 219-492.000.
E. R. Squibb & Sons, Inc.: *See—*
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Liu, Wen-Chih; Brown, William E.; and Asfle, Gail L., 4,213,966, Cl. 424-123.000.
Varma, Ravi K., 4,213,912, Cl. 260-397.100.
Vogt, B. Richard, 4,213,982, Cl. 424-248.520.
Eagle Electric Mfg. Co., Inc.: *See—*
Munroe, Ronald G., 4,214,135, Cl. 200-51.170.
East Wind Industries, Inc.: *See—*
Melander, Clarence, 4,213,219, Cl. 9-4.00R.
Eastman, James M.: *See—*
Rogers, Francis R.; and Eastman, James M., 4,213,741, Cl. 417-79.000.
Eastman Kodak Company: *See—*
Chen, Tsang J., 4,214,047, Cl. 430-448.000.
Evans, John D., Jr., 4,213,707, Cl. 356-387.000.
Hayward, John S.; Snavely, Benjamin B.; and Tschang, Pin S., 4,214,264, Cl. 358-44.000.
Peffer, Robert M.; and Braun, Charles H., 4,213,603, Cl. 271-229.000.
Wooding, David L.; and Pletcher, Robert W., 4,213,794, Cl. 134-6.000.
Eaton Corporation: *See—*
Davis, Michael D.; and Gustner, Harold L., 4,213,744, Cl. 417-310.000.
Mihalic, William T., 4,213,442, Cl. 123-198.00F.
Eberle, William J., to General Battery Corporation. High rate, battery testing apparatus and method. 4,214,204, Cl. 324-437.000.
Eberly, Paul E., Jr., to Exxon Research & Engineering Co. Reforming with multimetallic catalysts. 4,213,881, Cl. 252-436.000.
Eckell, Albrecht; Matthies, Paul; Pilz, Georg; and Rotzoll, Rudi-Heinz, to BASF Aktiengesellschaft. Manufacture of a highly concentrated aqueous solution of a dicarboxylic acid diamine salt and a nylon precondensate. 4,213,884, Cl. 260-29.20N.
Eckhardt, Wolfgang; Hubele, Adolf; and Kunz, Walter, to Ciba-Geigy Corporation. Fungicidal alkoxyalkoxyacetyl acylalanines. 4,214,005, Cl. 424-309.000.
Eda, Tadahiro: *See—*
Imai, Chikara; Tatsumi, Susumu; and Eda, Tadahiro, 4,213,693, Cl. 355-14.00D.
Eddinger, Ralph T.; and Friedman, Louis D., to Cogas Development Company. Fluidized coal carbonization. 4,213,826, Cl. 201-31.000.
Eduard Kusters: *See—*
Ahrweiler, Karl-Heinz, 4,213,748, Cl. 425-371.000.
Eggert, Hans-Joachim; Zenkert, Heinrich; Kuehne, Rudi; and Oberberger, Otto, to Siemens Aktiengesellschaft. Electrical housing with stacking bumpers. 4,213,532, Cl. 206-504.000.
Ehret, Reiner: *See—*
Praxl, Werner; and Ehret, Reiner, 4,213,967, Cl. 424-128.000.
Ehrlinger, Friedrich; Mann, Egon; Fischer, Manfred; and Jocham, Rudolf, to Zahnradfabrik Friedrichshafen AG. Hydraulic wheel drive with clutch. 4,213,514, Cl. 180-308.000.
Eibofner, Eugen: *See—*
Reich, Heinrich; and Eibofner, Eugen, 4,213,756, Cl. 433-126.000.
Eickmann, Karl. Internal gear hydraulic device with balancing recesses in the housing and crescent shaped separation member. 4,213,746, Cl. 418-71.000.
Ellis, Charles R.: *See—*
Adams, William M.; Blakely, Robert F.; Ellis, Charles R.; and Mead, Judson, 4,214,238, Cl. 340-690.000.
Ellis, Clarence E. Slow cooking apparatus. 4,213,381, Cl. 99-446.000.
Ellis, James R., to LeRoy Enterprises, Inc. Apparatus for applying liquid coating to food products. 4,213,417, Cl. 118-30.000.
Ellson, Allan H., to Pye (Electronic Products) Ltd. Apparatus for the infusion of a labor-inducing drug into the bloodstream of a patient. 4,213,455, Cl. 128-214.00E.
Elmberg, Dwayne R.; and Hawkins, Royal R., to Honeywell Inc. Slope control system. 4,213,503, Cl. 172-4.500.
Elsbett, Gunter: *See—*
Elsbett, Ludwig; and Elsbett, Gunter, 4,213,438, Cl. 123-668.000.
Elsbett, Ludwig; and Elsbett, Gunter. Piston for internal combustion engines, especially diesel engines. 4,213,438, Cl. 123-668.000.
Elser, Wolfgang: *See—*
Ruske, Manfred; and Elser, Wolfgang, 4,213,757, Cl. 8-518.000.
Ely, Richard R., to Itek Corporation. Instant film color back adaptor for a camera-processor. 4,213,695, Cl. 355-45.000.
Emerson Electric Co.: *See—*
Cunningham, Donald M., 4,214,150, Cl. 219-452.000.
Endo, Kiyonobu: *See—*
Kasai, Masanao; Hanadate, Hitoshi; Hajimoto, Yoshioki; Kitamura, Takashi; and Endo, Kiyonobu, 4,214,249, Cl. 346-76.00L.
Energy Alternatives, Inc.: *See—*
Spaulding, David B., 4,213,404, Cl. 110-229.000.
Engelhard Minerals & Chemicals Corporation: *See—*
Jameson, M. Phillip, 4,213,853, Cl. 209-166.000.
Engelhard, Philippe; Legendre, Michel; Paris, Guy; and Szabo, Georges, to Compagnie Francaise de Raffinage. Method of using catalysts for reforming or isomerizing hydrocarbons. 4,213,849, Cl. 208-139.000.
Engelhardt, Gunther; Keck, Johannes; Kruger; Noll, Klaus; and Pieper, Helmut, to Boehringer Ingelheim GmbH. 1-(4-Acylamino-phenyl)-2-amino-ethanols and salts thereof. 4,214,001, Cl. 424-300.000.
English Electric Valve Company Limited: *See—*
Nixon, Ralph D., 4,214,025, Cl. 428-67.000.
Entschel, Roland; Mueller, Curt; and Steinemann, Willy, to Sandoz Ltd. Cationic 5-arylazo-6-hydroxypyridone-2 dyes. 4,213,898, Cl. 260-156.000.
Equipment Company of America: *See—*
Thurmond, Elmer T., Jr., 4,213,647, Cl. 294-90.000.
Erickson, Donald P. Air distribution control system. 4,213,447, Cl. 126-429.000.
Erickson, Erick E.; Wildman, John R.; and Meyer, Burton C., to Marvin Glass & Associates. Multi-stage vehicle toy. 4,213,268, Cl. 46-202.000.
Erico Products, Inc.: *See—*
Spiegelberg, Gary R., 4,214,144, Cl. 219-99.000.
Eriksson, Erik S. Apparatus for displacement washing of fibrous material suspended in a liquid. 4,213,822, Cl. 162-242.000.
Ernsthausen, Roger E., to Owens-Illinois, Inc. Multiple gaseous discharge display/memory panel having improved voltage characteristics. 4,214,183, Cl. 313-221.000.
Ernstsson, Ernst G.; and Nantin, Hans O. I., to Tetra Pak International AB. Method and an arrangement for the cleaning and sterilizing of a filler pipe on a packing machine. 4,213,795, Cl. 134-22.00C.
Escher Wyss Limited: *See—*
Biondetti, Mario; and Marchioro, Ignazio, 4,213,232, Cl. 29-116.0AD.
Espitalie, Jean: *See—*
Madec, Marcel; Espitalie, Jean; Laporte, Jean-Loup; and Barsony, Imre, 4,213,763, Cl. 23-230.0EP.
Estes, Robert F.: *See—*
Olsen, Everett O.; Estes, Robert F.; Rezendes, Paul W.; and Williams, George F., 4,213,478, Cl. 137-85.000.
ETA A.G. Ebauches-Fabrik: *See—*
Perrot, Friedrich, 4,213,295, Cl. 368-236.000.
Etablissement Public de Diffusion dit "Telediffusion de France": *See—*
Dagnelie, Jean-Paul G., 4,214,123, Cl. 370-31.000.
Etkin, Bernard. Method and apparatus for particle classification. 4,213,852, Cl. 209-136.000.
Euler, August H. L.; and Beziac, Gilbert F. A., to Societe Nationale Industrielle Aerospatiale. Helicopter rotor blade. 4,213,739, Cl. 416-226.000.
Evans, John D., Jr., to Eastman Kodak Company. Device for improving the accuracy of optical measuring apparatus and the like. 4,213,707, Cl. 356-387.000.
Everaarts, Klaas, to U.S. Philips Corporation. Digital transmission system having direct bit extraction from scrambled bit streams. 4,214,206, Cl. 375-4.000.
Exxon Research & Engineering Co.: *See—*
Eberly, Paul E., Jr., 4,213,881, Cl. 252-436.000.
Luallin, Edwin D., 4,214,063, Cl. 526-68.000.
Saxton, Arthur L., 4,213,848, Cl. 208-127.000.
F.A.T.A.-Fabrica Apparecchi Di Sollevamento E Trasporto Ed Affini S.p.A.: *See—*
Di Rosa, Gaetano, 4,213,398, Cl. 105-150.000.
Fabrication Unlimited, Inc.: *See—*
Wagner, Karl, 4,213,865, Cl. 210-522.000.
Fager, Earl E. C.: *See—*
Goldstein, Alma W.; and Fager, Earl E. C., 4,214,078, Cl. 536-17.00R.
Fah, Hansjakob, to Ciba-Geigy Corporation. Process for producing hydroxydiaryl ethers. 4,214,086, Cl. 546-290.000.
Fairchild Camera and Instrument Corporation: *See—*
Chan, John Y., 4,214,175, Cl. 307-264.000.
Fak, Viiveke; Ingemarsson, Ingemar B.; Blom, Rolf; Forchheimer, Robert; and Hellberg, Bjorn I. Personal identification system. 4,214,230, Cl. 340-149.00A.

Fanelli, Anthony J.; and Gelbein, Abraham P., to Lummus Company, The. Production of carboxylic acids from nitriles. 4,214,087, Cl. 546-319.000.

Farkas, L. Peter: *See—*
Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; Farkas, L. Peter; Remenyi, Janos; and Koltay, Sandor, 4,214,032, Cl. 428-280.000.

Farrakhov, Nail S.: *See—*
Kozlov, Anatoly E.; Budzan, Bogdan P.; Dudko, Daniil A.; Maximovich, Boleslav I.; Zavodian, Vitaly V.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; Golovnin, Vladimir M.; and Farrakhov, Nail S., 4,214,139, Cl. 219-9.500.

Farrell, John W.; and Andrews, Jere L., to United States of America, Army. Gyrodynamic fixture for measuring thrust force components. 4,214,156, Cl. 250-231.0SE.

Farrell, Roscoe M.: *See—*
Safrit, Sam C.; Cassidy, Edward L., Sr.; Cothran, William B.; and Farrell, Roscoe M., 4,213,312, Cl. 66-177.000.

Farrington, Alan: *See—*
Vanderhoek, Naphtali N.; Nelson, Peter F.; and Farrington, Alan, 4,213,821, Cl. 162-72.000.

Faulstich, Marga; Geiler, Volkmar; and Gliemeroth, Georg, to Jenaer Glaswerk Schott & Gen. Lightweight, high refractive index glasses for spectacle lenses. 4,213,786, Cl. 106-47.00Q.

Faulstich, Marga; Geiler, Volkmar; and Gliemeroth, Georg, to Jenaer Glaswerk Schott & Gen. High refractive index glasses of limited specific gravity for distance and near vision spectacle lenses. 4,213,787, Cl. 106-47.00Q.

Fegel, Albert: *See—*
Roeschlaub, Ronald C.; and Fegel, Albert, 4,213,328, Cl. 73-49.700.

Feichtinger, Gerhard; Skatsche, Othmar; and List, Hans, to List, Hans. Internal combustion engine. 4,213,439, Cl. 123-195.00S.

Felix, Pierre, to Thomson-CSF. Apparatus and a process for reading a target of a camera tube. 4,214,275, Cl. 358-223.000.

Fenichel, Richard L.; Wei, Peter H. L.; Gregory, Francis J.; and Alburn, Harvey E., to American Home Products Corporation. Thiazolo[3,2-a]benzimidazoles, imidazo [2,1-b]thiazoles, and related compounds as antineoplastic agents, and enhancers of the immune response. 4,214,089, Cl. 548-151.000.

Fernandez, Luis, to Continental Group, Inc., The. Valve gate mechanism for injection molding. 4,213,751, Cl. 425-566.000.

Ferraro, Frank A.; and Kiraly, Ernest F., to Warner-Lambert Company. Ladies' razor system. 4,213,240, Cl. 30-47.000.

Ferrie, Ronald G., to RCA Corporation. Signal selecting system. 4,214,213, Cl. 328-117.000.

Ferrini, Pier G.: *See—*
Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,213,993, Cl. 424-273.00B.
Sele, Alex; Ferrini, Pier G.; Haas, Georges; Jaeggi, Knut A.; and Rossi, Alberto, 4,213,980, Cl. 424-246.000.

Fickelscher, Horst, to Siemens Aktiengesellschaft. Method for electrolytically etching of a recrystallized aluminum foil. 4,213,835, Cl. 204-129.250.

Fies, William J.; Smith, Ronald D.; Reeher, John R.; and Story, Michael S., to Finnigan Corporation. Mass spectrometer system and method for control of ion energy for different masses. 4,214,160, Cl. 250-292.000.

Figoski, John W.: *See—*
Hill, Henry A.; Figoski, John W.; and Ballard, Paul T., 4,213,706, Cl. 356-353.000.

Fike Metal Products Corporation: *See—*
McIntire, Ronald A., 4,213,567, Cl. 239-396.000.

Filer, Burt. Tube extractor. 4,213,239, Cl. 29-726.000.

Filterwerk Mann & Hummel GmbH: *See—*
Blind, Karl; and Klotz, Arthur, 4,213,643, Cl. 292-247.000.

Fink, Anton; and Fink, Nicholas A. Centrifugally-actuated chuck attachment. 4,213,621, Cl. 279-1.00C.

Fink, Nicholas A.: *See—*
Fink, Anton; and Fink, Nicholas A., 4,213,621, Cl. 279-1.00C.

Finnigan Corporation: *See—*
Fies, William J.; Smith, Ronald D.; Reeher, John R.; and Story, Michael S., 4,214,160, Cl. 250-292.000.

Fiquet, Claire: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,213,960, Cl. 424-47.000.

Firth, Rowland V. D., III; and Goff, Willie, Jr., to International Business Machines Corporation. Printer ribbon supply mechanism with end of ribbon detect expedient which reduces ribbon drag. 4,213,575, Cl. 242-57.000.

Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., to Bell Telephone Laboratories, Incorporated. Apparatus and method for holding and planarizing thin workpieces. 4,213,698, Cl. 355-77.000.

Fischer, Manfred: *See—*
Ehrlinger, Friedrich; Mann, Egon; Fischer, Manfred; and Jocham, Rudolf, 4,213,514, Cl. 180-308.000.

Fishback, Alton J.: *See—*
Calvert, Rodney K.; Scott, Dale K.; and Fishback, Alton J., 4,213,283, Cl. 53-48.000.

Fisons Limited: *See—*
Bantick, John R.; Hardern, David N.; and Lee, Thomas B., 4,213,903, Cl. 548-250.000.

Fister, Julius C., Jr.; Setzer, William C.; and Cox, Leon, to Swiss Aluminium Ltd. Composite aluminum capacitor foil. 4,214,041, Cl. 428-607.000.

Fivian, Daniel A., to Maag Gear-Wheel & Machine Company Limited. Method for dressing a grinding wheel. 4,213,277, Cl. 51-325.000.

Flatland, Lloyd P. Rotary connector for a dental handpiece. 4,213,243, Cl. 433-126.000.

Fleischhauer, Werner, to Bosch-Siemens Hausgerate GmbH. Indicator for the extent of clarification of waterheaters in electric household appliances. 4,214,148, Cl. 219-308.000.

Floeter, Larry A., to Brunswick Corporation. Control unit for marine engines employing throttle only control. 4,213,353, Cl. 74-878.000.

Floyd Bell Associates Inc.: *See—*
Bush, Terry D.; and Denen, D. Joseph, 4,214,131, Cl. 179-84.00T.

Floyd, Paul D.: *See—*
Braginetz, Paul A.; and Floyd, Paul D., 4,213,666, Cl. 339-75.00M.

Fluck, Jakob: *See—*
Schefer, Kurt; and Fluck, Jakob, 4,213,573, Cl. 242-18.00A.

Fluehter, Jurgen: *See—*
Droese, K. H.; and Fluehter, Jurgen, 4,213,421, Cl. 119-3.000.

FMC Corporation: *See—*
Beacham, Harry H., 4,213,889, Cl. 260-45.7PH.
Hirahara, Katsuji, 4,214,013, Cl. 426-629.000.
Plummer, Ernest L., 4,214,004, Cl. 424-305.000.

Focke, Heinz, to Focke & Pfuhl. Cutting apparatus for separating cigarette wrapper blanks from web. 4,213,362, Cl. 83-100.000.

Focke & Pfuhl: *See—*
Focke, Heinz, 4,213,362, Cl. 83-100.000.

Fogarty, A. Edward: *See—*
Hyland, Joseph F.; Hyland, Barbara B.; Fogarty, A. Edward; Fogarty, Bonnie R.; and Spinale, Frank A., 4,213,266, Cl. 46-1.00R.

Fogarty, Bonnie R.: *See—*
Hyland, Joseph F.; Hyland, Barbara B.; Fogarty, A. Edward; Fogarty, Bonnie R.; and Spinale, Frank A., 4,213,266, Cl. 46-1.00R.

Forchheimer, Robert: *See—*
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Ford, Ernest C., Jr.: *See—*
Bristowe, William W.; Ford, Ernest C., Jr.; and Reed, Weldon N., 4,213,837, Cl. 204-159.190.

Ford Motor Company: *See—*
Simko, Aladar O., 4,213,435, Cl. 123-446.000.

Forshey, William O., Jr.: *See—*
Mahler, Walter; and Forshey, William O., Jr., 4,213,949, Cl. 423-329.000.

Forster, Siegfried; Hewing, Gunter; and Kleemann, Manfred, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Vehicular propulsion gas turbine motor. 4,213,297, Cl. 60-39.51R.

Foundos, Stavros, to National Research Development Corporation. Apparatus for determining the result of answers to a set of related questions. 4,213,251, Cl. 35-9.00R.

Fourcadier, Chantal: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,213,960, Cl. 424-47.000.

Fowler, Donald W.: *See—*
Bresie, Don A.; Fowler, Donald W.; and Burns, Jack M., 4,213,476, Cl. 137-2.000.

Fowler, James H.: *See—*
Padovani, Francois A.; Miller, Michael B.; Moore, James A.; Fowler, James H.; June, Malcom N.; Matthews, James D.; Morton, T. R.; Stotko, Norbert A.; and Palmer, Lewis B., 4,213,937, Cl. 422-142.000.

Fox, Fred: *See—*
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and Lefranc, Guy, 4,214,166, Cl. 250-396.0ML.

Fox, Kenneth H. S. Fishing reel. 4,213,579, Cl. 242-84.20B.

Foxboro Company, The: *See—*
Olsen, Everett O.; Estes, Robert F.; Rezendes, Paul W.; and Williams, George F., 4,213,478, Cl. 137-85.000.

Frame, Robert R., to UOP Inc. Method of reactivating a catalytic composite of an adsorptive carrier material and a mercaptan oxidation catalyst. 4,213,877, Cl. 252-412.000.

Francombe, Maurice H.: *See—*
Noreika, Alexander J.; and Francombe, Maurice H., 4,213,781, Cl. 75-134.00P.

Franconi, Cafiero: *See—*
Bonori, Maurizio, 4,214,202, Cl. 324-313.000.

Franke, Siegfried: *See—*
Knuaf, Alfons; Bold, Jorg; and Franke, Siegfried, 4,214,027, Cl. 428-113.000.

Frankel, David C.: *See—*
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Franklin, Alfred A.: *See—*
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Franson, Paul D.: *See—*
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Frantzis, Paul D.: *See—*
Rzeszewski, Theodore S.; and Frantzis, Paul D., 4,214,274, Cl. 358-193.100.

Franzen, Jochen; and Weiss, Gerhard, to Dr. Franzen Analysentechnik GmbH & Co. Kommanditgesellschaft. Method for producing a mass filter analyzer system and analyzer system produced according to the method. 4,213,557, Cl. 228-122.000.

Freeman, Alfred B. Analog displays for electronic timepieces. 4,213,294, Cl. 368-82.000.

Fremont, Henry A.; and Hedrick, Edward F., to Champion International Corporation. Emission control system and method. 4,213,947, Cl. 423-245.000.

Freudenberger, Dieter; and Wunder, Friedrich, to Hoechst Aktiengesellschaft. Process for the preparation of ethylene glycol. 4,214,106, Cl. 568-864.000.

Freund, Samuel M.; Maier, William B., II; Beattie, Willard H.; and Holland, Redus F., to United States of America, Energy. Laser-induced separation of hydrogen isotopes in the liquid phase. 4,213,836, Cl. 204-157.10R.

Frick, Willy; and Hubele, Adolf, to Ciba-Geigy Corporation. 1,1-Diphenylethene derivatives as microbicides. 4,213,990, Cl. 424-269.000.

Friedman, Louis D.: *See—*
Eddinger, Ralph T.; and Friedman, Louis D., 4,213,826, Cl. 201-31.000.

Friedrich, Reinhard, to Werner & Pfleiderer. Method of and apparatus for controlling the viscosity of molten plastics material which is to be moulded. 4,213,747, Cl. 425-144.000.

Friend, Donald L.; Grosko, John A.; and Liniger, Richard B., II, to United States Steel Corporation. Retractable hood for transfer of coke. 4,213,829, Cl. 202-263.000.

Frost, Charles C.; and Weis, Siegfried K., to C. L. Frost & Son, Inc. Conveyor roller assembly. 4,213,523, Cl. 193-37.000.

Frost, Lawrence W.: *See—*
Alvino, William M.; and Frost, Lawrence W., 4,214,071, Cl. 528-222.000.

Fuji Electric Co., Ltd.: *See—*
Otsuka, Kei; Shigehara, Masamichi; and Yokokawa, Sumio, 4,214,289, Cl. 361-20.000.

Fuji Jokogyo Kabushiki Kaisha: *See—*
Inoue, Motozo; Kumeta, Mitsuzo; Ueno, Hideo; Okamura, Yoshinao; and Suzuki, Tadashi, 4,213,596, Cl. 254-134.30R.

Fuji Photo Film Co., Ltd.: *See—*
Ikenoue, Shinpei; and Masuda, Takao, 4,213,784, Cl. 430-616.000.
Kamiyama, Kouzi, 4,213,788, Cl. 106-47.00Q.

Fuji Photo Optical Co., Ltd.: *See—*
Koda, Takao, 4,213,685, Cl. 354-193.000.

Fujii, Hirokazu. Method and structure for preventing removal of grip covers from metallic bats. 4,213,607, Cl. 273-72.00A.

Fujii, Katsutoshi: *See—*
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,213,987, Cl. 424-251.000.

Fujii, Setsuro; Sakurai, Yojiro; Nakayama, Toyoo; and Matsui, Ryoji, to Torii & Co., Ltd. Amino- or guanidino-1,2,3,4-tetrahydro-1-naphthoic esters. 4,214,093, Cl. 560-34.000.

Fujii, Yoshizo: *See—*
Miyashita, Toshio; Fujii, Yoshizo; and Sawabe, Takeshi, 4,213,524, Cl. 194-2.000.

Fujino, Teruhisa; Osawa, Fujio; Nagao, Noriaki; and Hanji, Shigeo, to Kabushiki Kaisha Koden Seisakusho. Loran receiving apparatus. 4,214,245, Cl. 343-103.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; and Saito, Yoshihisa, 4,214,094, Cl. 560-42.000.

Fujita, Hisaya; Ando, Hiroshi; and Sato, Setsuo, to Yokogawa Electric Works, Ltd. Indicating recorder. 4,214,250, Cl. 346-145.000.

Fujitec Co., Ltd.: *See—*
Ando, Koji, 4,213,517, Cl. 187-29.00R.

Fujitsu Limited: *See—*
Nara, Yasuhiro; Sohma, Yukio; and Hattori, Akira, 4,214,228, Cl. 371-40.000.

Fukui, Hiroshi: *See—*
Kimura, Shin; Fukui, Hiroshi; and Terasawa, Yoshio, 4,214,254, Cl. 357-38.000.

Fukui, Hisaaki: *See—*
Ibata, Jyoji; Fukui, Hisaaki; Yuasa, Takeo; and Katoh, Michio, 4,214,026, Cl. 428-67.000.

Fukushima, Isao: *See—*
Nakagaki, Harushige; Iwasaki, Syunji; and Fukushima, Isao, 4,214,299, Cl. 363-8.000.

Funk, Smith A.; Klasen, Charles J.; and Vilmanis, Ilmars, to Celotex Corporation, The. Laminate of metal with thermoplastic material. 4,213,487, Cl. 138-149.000.

Furrow, Mitchell J. Wheel rim with non-slip interlocking device. 4,213,654, Cl. 301-20.000.

Furukawa, Masamichi, to Ricoh Company, Ltd. Electronic shutter driving device for camera. 4,213,683, Cl. 354-24.000.

Furuta, Isao; Yagaki, Kazuhito; and Masuda, Toyohiko, to Kobe Steel, Ltd. Process for preventing formation of gypsum scale in a flue gas desulfurization process. 4,213,946, Cl. 423-242.000.

Furuta, Kenzi: *See—*
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,214,281, Cl. 360-61.000.
Sato, Masanobu; and Furuta, Kenzi, 4,214,282, Cl. 360-69.000.

Furuya, Nobuo: *See—*
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,213,541, Cl. 222-92.000.

Furuya, Rikizo: *See—*
Okushima, Hiromi; Nitta, Issei; and Furuya, Rikizo, 4,213,902, Cl. 260-239.570.

Fushimi, Akihiro; Tabara, Noboru; and Isaki, Mikio, to Pioneer Electronic Corporation. Drive mechanism for cassette tape recorders. 4,214,283, Cl. 360-71.000.

Futaba Denshi Kogyo K.K.: *See—*
Morimoto, Kiyoshi; Watanabe, Hiroshi; and Takagi, Toshinori, 4,213,844, Cl. 204-298.000.

Gade, Ernst-August. Device for protection of the gonads. 4,214,167, Cl. 250-515.000.

Gaenge, Friedrich J.; Utner, Ferdinand; Vetter, Harald; and Vilsmeier, Gerhart. Apparatus for the production of an electric stack capacitor of metallized synthetic material films. 4,213,817, Cl. 156-474.000.

Galasso, Francis S.; and Veltri, Richard D., to United Technologies Corporation. Silicon nitride coated carbon fibers and composites. 4,214,037, Cl. 428-367.000.

Gale, Michael T., to RCA Corporation. Projector for reading out color-encoded focused image holograms employing an optimum encoding scheme. 4,213,673, Cl. 350-162.0SF.

Galushkin, Boris A.: *See—*
Talroze, Viktor L.; Grishin, Vladimir D.; and Galushkin, Boris A., 4,214,161, Cl. 250-303.000.

Gambro AB: *See—*
Boberg, Nils G. E.; and Carlsson, Per-Olov A. V., 4,213,858, Cl. 210-23.00R.

Gannota, Boris V.: *See—*
Trutnev, Viktor A.; Zlobin, Vitaly I.; Kushnarenko, Valentin K.; Ignatov, Valentin B.; Gannota, Boris V.; Ambartsumyan, Nikolai S.; and Volovik, Boris B., 4,213,931, Cl. 264-234.000.

Garcia, Alfred B.: *See—*
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,214,051, Cl. 435-55.000.
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,214,052, Cl. 435-55.000.

Gardner, James J. Fireplace heater unit. 4,213,444, Cl. 126-130.000.

Garman, John A.; and Mamuzic, Rastko, to Great Lakes Chemical Corporation. Purification of brominated organic products. 4,214,103, Cl. 568-639.000.

Garrett, Roger; and Liversain, Andre. Programmer. 4,213,562, Cl. 236-46.00R.

Gates, Wendall C. Liquid sampler device. 4,213,342, Cl. 73-421.00B.

Gazdecki, Frank J.: *See—*
Charneski, Mitchell D.; Kelley, James K.; and Gazdecki, Frank J., 4,214,121, Cl. 174-84.00C.

Gebert, Ulrich; Musil, Josef; and Weber, Rolf-Ortwin, to Hoechst Aktiengesellschaft. Novel derivatives of imidazole and pharmaceutical compositions containing them and method of use. 4,213,986, Cl. 424-250.000.

Gebert, Ulrich; and Granzer, Ernold, to Hoechst Aktiengesellschaft. Imidazolyl-(2)-carbinols having hypolipidemic action and process for preparing them. 4,213,994, Cl. 424-273.00R.

Gebr. Knauf Westdeutsche Gipswerke: *See—*
Knuaf, Alfons; Bold, Jorg; and Franke, Siegfried, 4,214,027, Cl. 428-113.000.

Gehrig, Neil E.; and Marhofer, Edwin G., to Gulf Oil Corporation. Water-resistant extrudable aqueous gel blasting agent and simplified method of manufacture. 4,213,809, Cl. 149-60.000.

Geiler, Volkmar: *See—*
Faulstich, Marga; Geiler, Volkmar; and Gliemeroth, Georg, 4,213,786, Cl. 106-47.00Q.
Faulstich, Marga; Geiler, Volkmar; and Gliemeroth, Georg, 4,213,787, Cl. 106-47.00Q.

Gelbein, Abraham P.: *See—*
Fanelli, Anthony J.; and Gelbein, Abraham P., 4,214,087, Cl. 546-319.000.

General Battery Corporation: *See—*
Eberle, William J., 4,214,204, Cl. 324-437.000.

General Dynamics Corporation Pomona Division: *See—*
Sanders, Ralph K., 4,213,624, Cl. 280-43.120.

General Electric Company: *See—*
Carson, Andrew B., Jr., 4,213,716, Cl. 400-196.100.
Hall, Robert N., 4,214,253, Cl. 397-29.000.
Hardy, Albert L., 4,213,338, Cl. 73-299.000.
Hawkins, Larry L., 4,213,250, Cl. 34-53.000.
Jones, Clifford M.; and Surber, William A., 4,213,714, Cl. 400-124.000.
Jones, William B., Jr., 4,214,216, Cl. 331-94.50C.
Keen, William A., Jr., 4,214,119, Cl. 174-31.00R.
Keim, Thomas A., 4,214,182, Cl. 310-216.000.
Kiefer, George E.; and Herbst, LeRoy J., 4,213,313, Cl. 68-12.00R.
Lucek, John R.; and McCall, David L., 4,214,138, Cl. 200-144.00B.
Mann, Friedrich H.; and Sensabaugh, Paul F., 4,214,197, Cl. 320-2.000.
Reinstadler, Kenneth A.; and Davidson, William E., 4,213,258, Cl. 38-77.200.
Sawyer, Thomas F., 4,213,497, Cl. 164-60.000.

General Instrument Corporation: *See—*
Lipsky, Stephen E., 4,214,316, Cl. 455-141.000.

General Motors Corporation: *See—*
Brademeyer, David L., 4,213,655, Cl. 303-6.00C.
Coha, Thomas F.; and Owen, Marvin L., 4,213,415, Cl. 116-28.100.
Hamparian, Nshan, 4,213,441, Cl. 123-196.00R.
Irwin, Clarence C.; Manz, David F.; and Auman, John T., 4,213,652, Cl. 297-478.000.
Kennedy, Lawrence C.; and Kowalis, Joseph, 4,213,620, Cl. 277-235.00B.
Longhouse, Richard E., 4,213,426, Cl. 123-41.490.
Persson, Frederick M.; and Frankel, David C., 4,213,556, Cl. 228-104.000.
Prescott, John F., Jr.; and Roberts, William H., 4,213,327, Cl. 73-38.000.

Williams, James R., 4,213,738, Cl. 416-95.000.
General Tire & Rubber Company, The: *See—*
Wear, George H., 4,213,891, Cl. 260-45.75S.
Geren, Keith E.; Sauer, Warren A.; and Young, Donald A., to United States of America, Navy. Multiple sonar masking and jamming countermeasure system. 4,214,313, Cl. 367-1.000.
Geretzki, Helmut, to Windmoller & Holscher. Gearing for driving a plate cylinder of a printing press at a non-uniform speed. 4,213,388, Cl. 101-216.000.
Gerhardt, Kyle D. Wind engine. 4,213,737, Cl. 416-41.000.
Ghafghaichi, Majid: *See—*
Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, 4,214,256, Cl. 357-71.000.
Giallorenzi, Thomas G.: *See—*
Milton, A. Fenner; and Giallorenzi, Thomas G., 4,213,670, Cl. 350-96.160.
Gibbs, Dale S.: *See—*
Klingler, Thomas C.; Wessling, Ritchie A.; and Gibbs, Dale S., 4,214,096, Cl. 560-147.000.
Gibson, John D. Self tripping dammer. 4,213,502, Cl. 172-1.000.
Gilck, Lawrence J.; and Lojek, John S., to Uniroyal Ltd. Herbicidal concentrate containing ketone and amide solvents. 4,213,776, Cl. 71-117.000.
Gilhooly, James E. Multiple firmness multiple sleeper mattress. 4,213,214, Cl. 5-464.000.
Giller, Henricus F. J. I.; and T'Jampens, Germain R., to U.S. Philips Corporation. Tungsten/bromine cycle lamp. 4,213,662, Cl. 316-24.000.
Gillich, Thomas N.: *See—*
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Gillot, Gary W.; and Wright, David H. Setting apparatus. 4,213,680, Cl. 354-12.000.
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Semashko, Andrei P.; Gimaev, Nasikh Z.; Maximov, Ivan V.; Bezrukov, Sergei V.; and Rabinovich, Vladimir B., 4,213,834, Cl. 204-129.250.
Givaudan Corporation: *See—*
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Glasrock Products, Inc.: *See—*
Morris, Harold B., 4,213,816, Cl. 156-245.000.
Gliemeroth, Georg: *See—*
Faulstich, Marga; Geiler, Volkmar; and Gliemeroth, Georg, 4,213,786, Cl. 106-47.00Q.
Faulstich, Marga; Geiler, Volkmar; and Gliemeroth, Georg, 4,213,787, Cl. 106-47.00Q.
Globol-Werk GmbH: *See—*
Schimanski, Georg, 4,214,146, Cl. 219-274.000.
Goebel, Charles V., Jr., to Polymer Corporation, The. Reinforced polylactams. 4,214,065, Cl. 528-27.000.
Goerth, Joachim, to U.S. Philips Corporation. Semiconductor device having a MOS-capacitor. 4,214,252, Cl. 357-23.000.
Goff, Willie, Jr.: *See—*
Firth, Rowland V. D., III; and Goff, Willie, Jr., 4,213,575, Cl. 242-57.000.
Gold, Vance B.; and Vandlik, Robert P., to American Can Company. Thickness gauge. 4,213,319, Cl. 72-34.000.
Goldberg, Bruce S.; and Shah, Mahendra, to Amerace Corporation. Continuous process for producing, by irradiation, a microporous rubber composition suitable for battery separators. 4,213,815, Cl. 156-244.110.
Goldmann, Wolf: *See—*
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.
Goldstein, Alma W.; and Fager, Earl E. C., to Abbott Laboratories. Fortimicin AL. 4,214,078, Cl. 536-17.00R.
Golovnin, Vladimir M.: *See—*
Kozlov, Anatoly E.; Budzan, Bogdan P.; Dudko, Daniil A.; Maximovich, Boleslav I.; Zavodian, Vitaly V.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; Golovnin, Vladimir M.; and Farrakhov, Nail S., 4,214,139, Cl. 219-9.500.
Gomori, Janos. Incineration plant. 4,213,403, Cl. 110-216.000.
Gondek, John T. Hydraulic coupler. 4,213,482, Cl. 137-614.010.
Gongwer, Calvin A., to Innerspace Corporation. Turbomachinery and method of operation. 4,213,736, Cl. 415-182.000.
Goodman, David S.; and Stanfield, George I., to International Telephone and Telegraph Corporation. Electrical contact. 4,213,668, Cl. 339-217.00R.
Goodnight, Hershel E.; and Witwer, Alan D., to John Zink Company. Apparatus for use in conjunction with boiler flue gases for generating inert blanketing gases. 4,213,935, Cl. 422-111.000.
Goodrich, Richard B.; and Moulton, Richard J., to Hexcel Corporation. Method for increasing the surface tack of prepreg materials. 4,213,930, Cl. 264-135.000.
Gore, Thomas: *See—*
Absler, Howard; Juszak, Joseph; and Gore, Thomas, 4,213,639, Cl. 282-11.50A.
Gose, Horst: *See—*
Bromer, Gunter; Gose, Horst; Hoffmann, Klaus-Rudiger; and Seeliger, Christian, 4,214,192, Cl. 318-573.000.
Gosteli, Jacques, to Ciba-Geigy Corporation. Process for the production of substituted benzaldehydes. 4,213,920, Cl. 568-424.000.
Gotaverken Anteknik AB: *See—*
Lis, Per-Arne; and Olausson, Karl A., 4,213,405, Cl. 110-234.000.
Gotz, Menfred K.: *See—*
Immer, Hans U.; Nelson, Verner R.; and Gotz, Menfred K., 4,213,895, Cl. 260-112.50R.
Gould Inc.: *See—*
DiMarco, Bernard; and Hempstead, John C., 4,214,219, Cl. 335-23.000.
Gray, Keith I., 4,214,118, Cl. 174-15.0BH.
Strybel, Richard V., 4,213,216, Cl. 7-170.000.
Graham, Alan A.: *See—*
Shortway, Harry A.; Graham, Alan A.; and Miller, Charles H., 4,214,028, Cl. 428-159.000.
Graham Magnetics Incorporated: *See—*
Cosby, Phillip A., 4,213,223, Cl. 15-304.000.
Graham, Robert H.; and Campbell, Barry D., to Molson Companies Limited, The. Apparatus for unscrambling and erecting a plurality of non-vertical bottles. 4,213,526, Cl. 198-400.000.
Grammueller, Harald: *See—*
Baier, Walter P.; and Grammueller, Harald, 4,214,209, Cl. 375-1.000.
Granger, Maurice. Apparatus for the cutting and simultaneous dispensing of a web of roll material. 4,213,363, Cl. 83-298.000.
Grantz, Helmut: *See—*
Andres, Rudolf; Grantz, Helmut; Abersfelder, Gunter; and Busch, Gerhard, 4,213,581, Cl. 242-107.40R.
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Graphic Controls Corporation: *See—*
Osenkarski, Paul D., 4,213,463, Cl. 128-639.000.
Grasselli, Robert K.: *See—*
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Gravi-Mechanics Co.: *See—*
Dedolph, Richard R., 4,213,273, Cl. 47-74.000.
Gray, Keith I., to Gould Inc. Electrical bushing. 4,214,118, Cl. 174-15.0BH.
Gray, Stanley, to Mechanical Technology Incorporated. Compliant hydrodynamic bearing with tubular support element. 4,213,657, Cl. 308-9.000.
Grayson, Basil T.: *See—*
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Great Lakes Chemical Corporation: *See—*
Garman, John A.; and Mamuzic, Rastko, 4,214,103, Cl. 568-639.000.
Grebe, Klaus; and De Haas, Hans, to Mannesmann Aktiengesellschaft. Making iron powder having fiber-like particles. 4,213,777, Cl. 75-0.5BA.
Green, John D.: *See—*
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Greene, Malbone W.: *See—*
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Gregory, Francis J.: *See—*
Fenichel, Richard L.; Wei, Peter H. L.; Gregory, Francis J.; and Alburn, Harvey E., 4,214,089, Cl. 548-151.000.
Grenia, James D., to Bechtel International Corporation. Method of mining of thick seam materials. 4,213,653, Cl. 299-11.000.
Grennan, Charles W., to Chandler Evans Inc. Constant flow centrifugal pump. 4,213,735, Cl. 415-21.000.
Grise, Frederick G. J.: *See—*
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Grishin, Vladimir D.: *See—*
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Groben, Richard L.; Gryczka, Alfred J.; and Franklin, Alfred A., to Microlife Technics, Inc. Lactic acid fermentate flavored pet food. 4,214,008, Cl. 426-53.000.
Groff, William R.: *See—*
Carp, Ralph W.; and Groff, William R., 4,214,236, Cl. 340-642.000.
Grogg, Charles J., Sr. Amusement vehicle. 4,213,269, Cl. 46-219.000.
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, to L'Oreal. Cosmetic compositions for treating the hair. 4,213,960, Cl. 424-47.000.
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Grosko, John A.: *See—*
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Groupe Minier Sullivan Ltee/Sullivan Mining Group Ltd.: *See—*
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GTE Laboratories Incorporated: *See—*
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Brown, Timothy W., 4,214,273, Cl. 358-188.000.
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GTE Sylvania Wiring Devices Incorporated: *See—*
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Wittes, James M.; and Tibolla, Julius F., 4,213,669, Cl. 339-272.0UC.
Gudelis, Drasutis; and Vetrane, David D., to Nida Corporation. Electronic teaching and testing device. 4,213,253, Cl. 35-19.00A.
Gudorf, James L., to Mead Corporation, The. Method of forming a lead to an electrode on a charge plate. 4,213,238, Cl. 29-878.000.
Guebert, Gerald E.; and Belknap, Raymond R. Drapery rod clip. 4,213,492, Cl. 160-124.000.
Gueret, Jean-Louis H.; and Adams, Nancy, to L'Oreal. Finger mountable makeup applicator. 4,213,472, Cl. 132-88.700.
Guest, Ashley W., to British Aircraft Corporation. Radio receiving and retransmitting apparatus with frequency lock circuit. 4,214,205, Cl. 455-20.000.
Guibet, Jean-Pierre, to Air Industrie. Filter and method of making. 4,213,771, Cl. 55-483.000.
Guillaume, Jacques: *See—*
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Gulf Oil Corporation: *See—*
Gehrig, Neil E.; and Marhofer, Edwin G., 4,213,809, Cl. 149-60.000.
Gunners, Nils-Erik; Hellgren, Rune V.; and Liljergren, Torsten. Gun projectile arranged with a base drag reducing system. 4,213,393, Cl. 102-49.300.
Gustavsson, Stig I.: *See—*
af Ekenstam, Bo T.; Aurell, Leif E.; Claeson, Karl G.; Karlsson, Birgitta G.; Gustavsson, Stig I.; and Olausson, Gun A., 4,214,049, Cl. 435-23.000.
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Gyori, Robert P., to De luxe General, Incorporated. Plural phase pulsed power supply. 4,214,171, Cl. 307-39.000.
H. C. Price Co.: *See—*
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Haagen, Victor: *See—*
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Haapala, Ray E. Cake layer cutter. 4,213,241, Cl. 30-115.000.
Haas, Georges: *See—*
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Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, to Ciba-Geigy Corporation. Acyl-benzimidazole-2-methanol derivatives. 4,213,993, Cl. 424-273.00B.
Habiger, Cyril W., to Caterpillar Tractor Co. Single handle control apparatus. 4,213,484, Cl. 137-636.100.
Hacker, Heinz: *See—*
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Hadley, Michael S.; and Watts, Eric A., to Beecham Group Limited. Treating gastro-intestinal disorders and emesis with n-(heterocyclic substituted) benzamides. 4,213,983, Cl. 424-250.000.
Haese, Egon; Moll, Hans; and Willms, Rolf, to Dr. C. Otto & Comp. G.m.b.H. Process and apparatus to purify waste industrial gases. 4,213,945, Cl. 423-240.000.
Hafner, Hans W., to Pfister GmbH. Hydrostatic setting apparatus for support of loads. 4,213,509, Cl. 177-199.000.
Hafner & Krullmann GmbH: *See—*
Hafner, Manfred, 4,213,536, Cl. 220-82.00R.
Hafner, Manfred, to Hafner & Krullmann GmbH. Container for convoluted wire or the like. 4,213,536, Cl. 220-82.00R.
Haftmann, Johannes; and Schmeykal, Rudolf, to Nixdorf Computer AG. Ink ribbon cartridge having a replaceable ribbon magazine. 4,213,715, Cl. 400-196.100.
Haga, Ryoichi: *See—*
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Hagen, Hans, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Pneumatically suspended bus. 4,213,625, Cl. 280-43.230.
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Hahn, Erwin; Magerkurth, Bernhard; Lach, Dietrich; and Wuertele, Lothar, to BASF Aktiengesellschaft. Deliming of hides. 4,213,760, Cl. 8-94.170.
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Hake, Kenneth A., to Kent Manufacturing Co., Inc. Drag harrow pressure adjusting device. 4,213,506, Cl. 172-624.000.
Halasz, Peter R., to Bergen-Brunswig Corporation. Compact sanitary kit package. 4,213,598, Cl. 206-45.140.
Halfhill, Martin O.; and Jacques, James O., to Xerox Corporation. Method and apparatus for recording data without recording on defective areas of a data recording medium. 4,214,280, Cl. 360-53.000.
Hall, A. Douglass. Container opener. 4,213,215, Cl. 7-152.000.
Hall, Marcus A.; and Kutnyak, Thomas A., to Automation Industries, Inc. Continuously advancing mandrel. 4,213,811, Cl. 156-195.000.
Hall, Richard H.; Haigh, Daniel H.; and Hansen, Robert D., to Dow Chemical Company, The. Aluminum container for processing vinylbenzyl chlorides. 4,213,831, Cl. 203-86.000.
Hall, Robert E. Adjustable mailbox standard. 4,213,560, Cl. 232-39.000.
Hall, Robert N., to General Electric Company. Radiation detector. 4,214,253, Cl. 397-29.000.
Hallock, Robert L. Sheet metal nail with lockable legs. 4,213,373, Cl. 85-11.000.
Halon, Bernard; and Hoffman, Dorothy M., to RCA Corporation. Method for making adherent pinhole free aluminum films on pyroelectric and/or piezoelectric substrates. 4,214,018, Cl. 427-100.000.
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Hamparian, Nshan, to General Motors Corporation. Engine with wall rib oil gauge mounting and drain means. 4,213,441, Cl. 123-196.00R.
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Hardern, David N.: *See—*
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Hardesty, Robert D., to Pottratz, Tom; Pottratz, Ronald, Jr.; and Advanced Design and Construction. Pulling hitch for agricultural implements. 4,213,628, Cl. 280-412.000.
Harding, Homer R.: *See—*
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Hardy, Albert L., to General Electric Company. Liquid level indicator. 4,213,338, Cl. 73-299.000.
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Raghavan, Mathur; Shapiro, Stanley; Hardy, Ronald G.; and Block, Duncan G., 4,213,799, Cl. 148-2.000.
Harms, Wolfgang; Wunderlich, Klaus; and von Oertzen, Klaus, to Bayer Aktiengesellschaft. Anthraquinone reactive dyestuffs. 4,214,082, Cl. 544-189.000.
Harris, Robert J.; and Sikes, Gail T., to H. C. Price Co. Containerized pipe coating material. 4,213,530, Cl. 206-447.000.
Harrison, Frank. Vehicle radiator cleaning and testing system. 4,213,474, Cl. 134-102.000.
Harrison, Raymond J.: *See—*
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Hartley, E. Dale, to Product Research and Development. Pressure switch with snap element. 4,214,137, Cl. 200-83.00P.
Hartmann, Karl. Process for production of individual portions from blocks of deep-frozen foodstuffs. 4,213,360, Cl. 83-15.000.
Hartwell Corporation: *See—*
Poe, L. Richard; and Bourne, William R., 4,213,642, Cl. 292-241.000.
Harvard College, President and Fellows: *See—*
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Hase, Yoshinobu; Yamauchi, Masaaki; and Handa, Ryozo, to Kanebo Foods, Ltd. Processed dried beans as instant food and their manufacturing method. 4,214,007, Cl. 426-44.000.
Hattis, Russell E.; and Yan, Chan K., to W. Haking Enterprises Limited. Film advancing mechanism. 4,213,687, Cl. 354-213.000.
Hattori, Akira: *See—*
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Haugland, Richard P. Fluorescent labeling reagents containing the fluorescein and eosin chromophores. 4,213,904, Cl. 260-326.5CA.

Haunold, Otto; and Greene, Malbone W., to Beckman Instruments, Inc. Photometer with stationary sample holder and rotatable shutter. 4,213,703, Cl. 356-244.000.

Hauser, Raimund: *See—*
Keznickl, Eduard; and Boehm, Kurt, 4,214,268, Cl. 358-127.000.

Hawkins, Larry L., to General Electric Company. Temperature compensation for clothes dryer timer selectors. 4,213,250, Cl. 34-53.000.

Hawkins, Royal R.: *See—*
Elmberg, Dwayne R.; and Hawkins, Royal R., 4,213,503, Cl. 172-4.500.

Haworth Mfg., Inc.: *See—*
Haworth, Richard G., 4,213,493, Cl. 160-351.000.

Haworth, Richard G., to Haworth Mfg., Inc. Fabric retainer for panel. 4,213,493, Cl. 160-351.000.

Hayashi, Akira; Ohkouchi, Haruo; Kitano, Kyozo; and Ogoshi, Toshiaki, to Lion Fat & Oil Co., Ltd., The. Process for producing clear aqueous solution of olefin sulfonic acid. 4,213,918, Cl. 260-513.00T.

Hayashi, Yoshimasa: *See—*
Abe, Fumiyuki; Hayashi, Yoshimasa; and Kimura, Akira, 4,213,440, Cl. 123-195.00C.

Hayata, Toshinori; Tsuji, Kunio; and Mitsui, Hajime, to West Electric Co., Ltd. Flash camera. 4,213,681, Cl. 354-21.000.

Hayward, Gary G.: *See—*
Raymond, Samuel O.; and Hayward, Gary G., 4,213,329, Cl. 73-52.000.

Hayward, John S.; Snavely, Benjamin B.; and Tschang, Pin S., to Eastman Kodak Company. Hybrid color image sensing array. 4,214,264, Cl. 358-44.000.

Headley, Kenneth N., to Hooker Chemicals & Plastics Corporation. Flash drying sludge derived fuel process. 4,213,407, Cl. 110-346.000.

Heberger, John M., to American Hoechst Corporation. Antistatic coated polyester film. 4,214,035, Cl. 428-340.000.

Hebert, Raymond T. Thermosiphon solar space heating system with phase change materials. 4,213,448, Cl. 126-434.000.

Heckelsberg, Robert E., to AMCA International Corporation. Metal panel roofing structure. 4,213,282, Cl. 52-404.000.

Hedger, John H. Reciprocating engine with improved power output means. 4,213,377, Cl. 91-187.000.

Hedrick, Edward F.: *See—*
Fremont, Henry A.; and Hedrick, Edward F., 4,213,947, Cl. 423-245.000.

Heeb, Othmar: *See—*
Maier, Elmar; and Heeb, Othmar, 4,213,301, Cl. 60-407.000.

Hefty, Arpad: *See—*
Hefty, Bela; and Hefty, Arpad, 4,213,212, Cl. 4-243.000.

Hefty, Bela; and Hefty, Arpad, to Hygomat AG. Arrangement for fitting and changing a tubular cover made of plastic film on a toilet seat, and method for forming a tube. 4,213,212, Cl. 4-243.000.

Heijmen, Hendricus J.: *See—*
de Jong, Aaldert J.; and Heijmen, Hendricus J., 4,214,098, Cl. 560-231.000.

Hellberg, Bjorn I.: *See—*
Fak, Viiveke; Ingemarsson, Ingemar B.; Blom, Rolf; Forchheimer, Robert; and Hellberg, Bjorn I., 4,214,230, Cl. 340-149.00A.

Hellgren, Rune V.: *See—*
Gunners, Nils-Erik; Hellgren, Rune V.; and Liljergren, Torsten, 4,213,393, Cl. 102-49.300.

Helmer, Warren D.; and Small, Robert E., to Campbell Soup Company. Mechanical deboning of poultry. 4,213,229, Cl. 17-46.000.

Hempstead, John C.: *See—*
DiMarco, Bernard; and Hempstead, John C., 4,214,219, Cl. 335-23.000.

Hendricks, Laurel A. Sanitary napkin. 4,213,813, Cl. 156-226.000.

Henkel Inc.: *See—*
Leenders, Peter, 4,214,102, Cl. 562-564.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Rose, David; Weinrich, Erwin; and Lieske, Edgar, 4,213,758, Cl. 8-409.000.

Henshaw, Terry L., to Union Pump Company. Modified volute pump casing. 4,213,742, Cl. 417-206.000.

Hentze, Gunter, to Bayer Aktiengesellschaft. Furnace heated by radiation. 4,214,117, Cl. 13-31.00R.

Herbst, LeRoy J.: *See—*
Kiefer, George E.; and Herbst, LeRoy J., 4,213,313, Cl. 68-12.00R.

Hercules Incorporated: *See—*
Miltenberger, Louis E., 4,213,566, Cl. 239-265.430.

Herder, N.V.: *See—*
Demrick, Carl J., 4,213,226, Cl. 16-36.000.

Herendi, Jozsef: *See—*
Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; Farkas, L. Peter; Remenyi, Janos; and Koltay, Sandor, 4,214,032, Cl. 428-280.000.

Herman Miller, Inc.: *See—*
Propst, Robert L.; Randolph, Travis M.; and Reyda, Theodore M., 4,214,298, Cl. 362-253.000.

Herriott, Donald R.: *See—*
Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., 4,213,698, Cl. 355-77.000.

Hess, Donald T., to Cain Encoder Company. Error correction in a remote meter reading device. 4,214,152, Cl. 235-92.0EC.

Hewing, Gunter: *See—*
Forster, Siegfried; Hewing, Gunter; and Kleemann, Manfred, 4,213,297, Cl. 60-39.51R.

Hewlett-Packard Company: *See—*
Mason, Martin K., 4,214,193, Cl. 318-611.000.

Hexcel Corporation: *See—*
Goodrich, Richard B.; and Moulton, Richard J., 4,213,930, Cl. 264-135.000.

Heynisch, Hinrich; and Krueger, Hans, to Siemens Aktiengesellschaft. Orientation layer for a liquid crystal display and method of manufacture. 4,213,810, Cl. 156-73.100.

Hibbard, Linda A., to Phoenix Products, Inc. Waterproof storage bag and backpack. 4,213,549, Cl. 224-209.000.

Hicks, D. Michelle. Body tethered ball game. 4,213,611, Cl. 273-414.000.

Hikosaka, Toshihisa: *See—*
Nakashima, Koichi; Nagaoka, Kiyosi; and Hikosaka, Toshihisa, 4,214,311, Cl. 364-482.000.

Hill, Henry A.; Figoski, John W.; and Ballard, Paul T., to University of Arizona Foundation, The. Background compensating interferometer. 4,213,706, Cl. 356-353.000.

Hillenkamp, Franz; Kaufmann, Raimund; Niltsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, to Leybold-Heraeus GmbH. Apparatus for analyzing samples by electromagnetic irradiation. 4,214,159, Cl. 250-288.000.

Hilti Aktiengesellschaft: *See—*
Maier, Elmar; and Heeb, Othmar, 4,213,301, Cl. 60-407.000.

Hirahara, Katsuji, to FMC Corporation. Continuous pressure cooking method. 4,214,013, Cl. 426-629.000.

Hirobe, Koei; Yanagida, Kiyomi; Hirokane, Tadashi; and Takahashi, Akihiko, to Sumitomo Aluminum Smelting Company, Ltd.; and Nihon Atsuen Kogyo K.K. Continuous casting and cladding process and apparatus for producing metal clad. 4,213,558, Cl. 228-176.000.

Hirokane, Tadashi: *See—*
Hirobe, Koei; Yanagida, Kiyomi; Hirokane, Tadashi; and Takahashi, Akihiko, 4,213,558, Cl. 228-176.000.

Hishinuma, Yukio: *See—*
Azuhata, Shigeru; Akimoto, Hidetoshi; Kikuchi, Hideo; Hishinuma, Yukio; Oshima, Ryoichiro; and Arikawa, Yoshijiro, 4,213,944, Cl. 423-235.000.

Hitachi, Ltd.: *See—*
Azuhata, Shigeru; Akimoto, Hidetoshi; Kikuchi, Hideo; Hishinuma, Yukio; Oshima, Ryoichiro; and Arikawa, Yoshijiro, 4,213,944, Cl. 423-235.000.
Kimura, Shin; Fukui, Hiroshi; and Terasawa, Yoshio, 4,214,254, Cl. 357-38.000.
Kurihara, Nobuo; Sato, Yoshio; Kawano, Shigeyoshi; Iioka, Michihiro; Iba, Daizo; and Kurihara, Tadashi, 4,214,301, Cl. 364-119.000.
Nakagaki, Harushige; Iwasaki, Syunji; and Fukushima, Isao, 4,214,299, Cl. 363-8.000.
Shimizu, Tsuguo; and Matsuura, Tsuguo, 4,214,304, Cl. 364-200.000.
Tokita, Yoshiaki; and Okajima, Keisuke, 4,214,305, Cl. 364-200.000.
Tsukada, Toshihisa, 4,213,805, Cl. 148-171.000.

HNT AG: *See—*
Husler, Balthasar, 4,213,374, Cl. 85-13.000.

Hocker, Eitel: *See—*
Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,213,236, Cl. 29-243.500.

Hoechst Aktiengesellschaft: *See—*
Freudenberger, Dieter; and Wunder, Friedrich, 4,214,106, Cl. 568-864.000.
Gebert, Ulrich; Musil, Josef; and Weber, Rolf-Ortwin, 4,213,986, Cl. 424-250.000.
Gebert, Ulrich; and Granzer, Ernold, 4,213,994, Cl. 424-273.00R.
Pistorius, Rudolf, 4,214,104, Cl. 568-648.000.

Hoefke, Wolfgang: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, 4,213,995, Cl. 424-273.00R.

Hoen, Cuyler, to Simmons Fastener Corporation. Rotatable locking fastener. 4,213,230, Cl. 24-217.00R.

Hof, Urs J.: *See—*
Dolezal, Zdenek; and Hof, Urs J., 4,213,292, Cl. 368-204.000.

Hofer, Peter; and Kohl, Wolfgang, to Titmus Eurocon Kontaklinsen GmbH & Co. KG. Method for surface treatment of contact lenses. 4,214,014, Cl. 427-40.000.

Hofer, Peter, to Purdue Frederick Company, The. Method for the production of iodophor powders. 4,214,059, Cl. 525-356.000.

Hoffman, Dorothy M.: *See—*
Halon, Bernard; and Hoffman, Dorothy M., 4,214,018, Cl. 427-100.000.

Hoffman, Jay, to Singer Company, The. Kinematic inertial sensor. 4,213,343, Cl. 73-505.000.

Hoffmann, Karl-Heinz, to Braun Aktiengesellschaft. Hand-held blow dryer with thumb-operable controls. 4,214,149, Cl. 219-370.000.

Hoffmann, Klaus-Rudiger: *See—*
Bromer, Gunter; Gose, Horst; Hoffmann, Klaus-Rudiger; and Seeliger, Christian, 4,214,192, Cl. 318-573.000.

Hoffmann-La Roche Inc.: *See—*
Brandman, Harold A.; Manowitz, Milton; and Coffen, David L., 4,214,002, Cl. 424-300.000.
Westley, John, 4,213,997, Cl. 424-283.000.

Hofmann, Karl, to Robert Bosch GmbH. Fuel injection nozzle. 4,213,568, Cl. 239-533.400.

Hohmann, Walter: *See—*
Berg, Gerhard; Hohmann, Walter; Reubke, Karl-Julius; and Wunderlich, Klaus, 4,213,909, Cl. 260-371.000.

Hold, Peter; Tadmor, Zehev; and Scharer, Hans R., to USM Corporation. Adjustable homogenization extruder. 4,213,710, Cl. 366-81.000.

Holderness, Eugene R., to Occidental Research Corporation. Conveyor apparatus for stacking and distributing comminuted material. 4,213,724, Cl. 414-133.000.

Holland, Redus F.: *See—*
Freund, Samuel M.; Maier, William B., II; Beattie, Willard H.; and Holland, Redus F., 4,213,836, Cl. 204-157.10R.

Hollander, James F. Light-emissive electrical measurement apparatus with floating inputs. 4,214,200, Cl. 324-122.000.

Hollister Incorporated: *See—*
Nolan, John L.; and Nordby, Harvey M., 4,213,458, Cl. 128-283.000.

Holtey, Thomas O.: *See—*
Joyce, Thomas F.; Holtey, Thomas O.; and Panepinto, William, Jr., 4,214,303, Cl. 364-200.000.

Holtkamp, Calvin J., to White Consolidated Industries, Inc. Multi-function self-cleaning oven thermostat. 4,214,224, Cl. 337-323.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Takeuchi, Masayuki; Nakamura, Kenji; and Handa, Masahiro, 4,213,288, Cl. 56-11.600.

Honda, Takeo: *See—*
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,213,987, Cl. 424-251.000.

Honeywell Inc.: *See—*
Elmberg, Dwayne R.; and Hawkins, Royal R., 4,213,503, Cl. 172-4.500.

Honeywell Information Systems Inc.: *See—*
Joyce, Thomas F.; Holtey, Thomas O.; and Panepinto, William, Jr., 4,214,303, Cl. 364-200.000.

Hoogovens Ijmuiden, B.V.: *See—*
Majoor, Hendrik, 4,213,577, Cl. 242-72.00R.

Hooker Chemicals & Plastics Corporation: *See—*
Headley, Kenneth N., 4,213,407, Cl. 110-346.000.

Hoppe, Rudy: *See—*
Bryant, Nelson; and Hoppe, Rudy, 4,213,702, Cl. 356-239.000.

Hoppe, Walter; and Typke, Dieter, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Corpuscular beam microscope for ring segment focusing. 4,214,162, Cl. 250-311.000.

Hori, Tetsuo: *See—*
Yoneyama, Tetsuhito; Tomizawa, Shiro; Hori, Tetsuo; and Ojima, Teruhiko, 4,213,803, Cl. 148-102.000.

Horishima, Tohei: *See—*
Toyoda, Minoru; Horishima, Tohei; Sugimoto, Kenji; and Aoyama, Kensuke, 4,213,926, Cl. 264-74.000.

Horn, Dieter: *See—*
Daubach, Ewald; Horn, Dieter; Hahn, Erwin; and Uhrig, Herbert, 4,213,900, Cl. 260-208.000.

Horning, Thomas, to Data Products Corporation. Timing circuitry and method for a stepping motor. 4,214,194, Cl. 318-696.000.

Horowitz, Alexandre; and Cuypers, Martinus H., to Varitrac AG. Edge-active belt. 4,213,350, Cl. 474-264.000.

Horrer, Erwin; and Leidinger, Gustav. Grading vehicle. 4,213,507, Cl. 172-784.000.

Horsewell, Henry G.; Green, John D.; Luke, John A.; and Harrison, Raymond J., to British-American Tobacco Company Limited. Tobacco-smoke filters. 4,213,470, Cl. 131-261.00B.

Hosch, Carl A.; and Hosch, Michael L. Small animal holder. 4,213,424, Cl. 119-98.000.

Hosch, Michael L.: *See—*
Hosch, Carl A.; and Hosch, Michael L., 4,213,424, Cl. 119-98.000.

Hoshino, Tadayoshi; and Sudo, Yoichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Construction of stitching portions of gas bags. 4,213,634, Cl. 280-728.000.

Hotta, Toshihiro; and Makino, Takao, to Kabushiki Kaisha Morita Seisakusho. Device for detecting amount of X-ray radiation. 4,214,169, Cl. 250-505.000.

Houdaille Industries, Inc.: *See—*
De George, Robert P.; Brown, Paul R.; and Carbone, Victor T., 4,213,733, Cl. 414-751.000.

Hubele, Adolf: *See—*
Eckhardt, Wolfgang; Hubele, Adolf; and Kunz, Walter, 4,214,005, Cl. 424-309.000.
Frick, Willy; and Hubele, Adolf, 4,213,990, Cl. 424-269.000.

Huber, Rolf: *See—*
Adolphi, Heinrich; Baumann, Annegrit; Huber, Rolf; Kiehs, Karl; and Merger, Franz, 4,213,992, Cl. 424-273.00P.

Huber, Wolfgang: *See—*
Olschewski, Armin; and Huber, Wolfgang, 4,213,656, Cl. 308-8.200.

Hughes Aircraft Company: *See—*
Asawa, Charles K., 4,214,165, Cl. 250-338.000.
Sengstock, Paul J., Jr.; and Dutcher, Gerald L., 4,213,586, Cl. 244-158.000.

Hulsing, Kenneth L. Fuel injector. 4,213,564, Cl. 239-88.000.

Huni, Jean-Paul R.: *See—*
Dewing, Ernest W.; Huni, Jean-Paul R.; Sood, Raman R.; and Southam, Frederick W., 4,213,599, Cl. 266-166.000.

Hunt, Brian K.; and O'Donnell, Leopold H., to SCP Producer's Services Limited. Editing system for videotape sound. 4,214,278, Cl. 360-14.000.

Hunt, Harold R.; and Mills, King L., to Phillips Petroleum Company. Carbon black production. 4,213,957, Cl. 423-450.000.

Huppatz, John L., to Commonwealth Scientific and Industrial Research Organization. Fungicidal carboxamidopyrazoles. 4,214,090, Cl. 548-377.000.

Hurt, Frank K.; and Wellons, Edwin L., to Mefcor, Inc. Pump assembly driven by endless conveyor. 4,213,743, Cl. 417-229.000.

Husler, Balthasar, to HNT AG. Fastener. 4,213,374, Cl. 85-13.000.

Hutson, Thomas, Jr.: *See—*
Makovec, Donald J.; and Hutson, Thomas, Jr., 4,214,115, Cl. 585-716.000.

Hygomat AG: *See—*
Hefty, Bela; and Hefty, Arpad, 4,213,212, Cl. 4-243.000.

Hyland, Barbara B.: *See—*
Hyland, Joseph F.; Hyland, Barbara B.; Fogarty, A. Edward; Fogarty, Bonnie R.; and Spinale, Frank A., 4,213,266, Cl. 46-1.00R.

Hyland, Joseph F.; Hyland, Barbara B.; Fogarty, A. Edward; Fogarty, Bonnie R.; and Spinale, Frank A., to Hasbro Industries, Inc. Tumbling toy. 4,213,266, Cl. 46-1.00R.

Iba, Daizo: *See—*
Kurihara, Nobuo; Sato, Yoshio; Kawano, Shigeyoshi; Iioka, Michihiro; Iba, Daizo; and Kurihara, Tadashi, 4,214,301, Cl. 364-119.000.

Ibata, Jyoji; Fukui, Hisaaki; Yuasa, Takeo; and Katoh, Michio, to Asahi Kasei Kogyo Kabushiki Kaisha. Sheet molding material. 4,214,026, Cl. 428-67.000.

ICI Americas Inc.: *See—*
Bristowe, William W.; Ford, Ernest C., Jr.; and Reed, Weldon N., 4,213,837, Cl. 204-159.190.

Igloo Corporation: *See—*
Buss, Kenton A., 4,213,310, Cl. 62-457.000.

Ignatov, Valentin B.: *See—*
Trutnev, Viktor A.; Zlobin, Vitaly I.; Kushnarenko, Valentin K.; Ignatov, Valentin B.; Gannota, Boris V.; Ambartsumyan, Nikolai S.; and Volovik, Boris B., 4,213,931, Cl. 264-234.000.

Iioka, Michihiro: *See—*
Kurihara, Nobuo; Sato, Yoshio; Kawano, Shigeyoshi; Iioka, Michihiro; Iba, Daizo; and Kurihara, Tadashi, 4,214,301, Cl. 364-119.000.

Ikenoue, Shinpei; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Process for producing heat developable light-sensitive compositions and elements. 4,213,784, Cl. 430-616.000.

Imai, Chikara; Tatsumi, Susumu; and Eda, Tadahiro, to Ricoh Company, Ltd. Electrostatographic apparatus comprising improved developing bias control. 4,213,693, Cl. 355-14.00D.

Imamura, Takaaki; Kawagoe, Takahiro; Chikaraishi, Toshio; and Nyomura, Takashi, to Bridgestone Tire Company. Vulcanizabie rubber composition containing metal organic compounds. 4,214,058, Cl. 525-348.000.

Immer, Hans U.; Nelson, Verner R.; and Gotz, Menfred K., to American Home Products Corporation. N-[N-[N-[N-[N-(5-Oxo-L-prolyl)-L-histidyl]-L-tryptophyl]-L-seryl]-L-tyrosyl]glycine azide, an intermediate of the releasing agent of luteinizing hormone (LW) and of follicle stimulating hormone (FSH). 4,213,895, Cl. 260-112.50R.

Imperial Chemical Industries Limited: *See—*
Bye, Ashley D., 4,213,878, Cl. 252-429.00B.
Phillips, Duncan A. S.; Anderson, Brian; Jackson, Neville; Stead, Cecil V.; and Costello, Alan T., 4,213,899, Cl. 260-156.000.
Pinto, Alwyn, 4,213,954, Cl. 423-359.000.
Ridyard, Denis R. A.; and Taylor, Charles W., 4,213,759, Cl. 8-643.000.

Indesit Industria Elettrodomestici Italiana S.p.A.: *See—*
Dipietromaria, Edoardo, 4,214,212, Cl. 455-190.000.

Indiana University Foundation: *See—*
Adams, William M.; Blakely, Robert F.; Ellis, Charles R.; and Mead, Judson, 4,214,238, Cl. 340-690.000.

Inductive Controls Limited: *See—*
Logan, Robert J., 4,214,195, Cl. 318-745.000.

Industrial & Municipal Engineering, Inc.: *See—*
Pearson, Leland E., 4,213,479, Cl. 137-493.000.

Ingemarsson, Ingemar B.: *See—*
Fak, Viiveke; Ingemarsson, Ingemar B.; Blom, Rolf; Forchheimer, Robert; and Hellberg, Bjorn I., 4,214,230, Cl. 340-149.00A.

Innerspace Corporation: *See—*
Gongwer, Calvin A., 4,213,736, Cl. 415-182.000.

Inokuchi, Nobuyuki; and Hamada, Kouzo, to Toyota Kodosha Kogyo Kabushiki Kaisha. Two-stage air bag system. 4,213,635, Cl. 280-737.000.

Inoue, Eiichi: *See—*
Miyakawa, Nobuhiro; Inoue, Eiichi; and Kokado, Hiroshi, 4,214,031, Cl. 428-213.000.

Inoue, Motozo; Kumeta, Mitsuzo; Ueno, Hideo; Okamura, Yoshinao; and Suzuki, Tadashi, to Fuji Jokogyo Kabushiki Kaisha. Wheeled, overhead wire installing apparatus. 4,213,596, Cl. 254-134.30R.

Inoue, Takemi: *See—*
Sato, Masato; and Inoue, Takemi, 4,213,414, Cl. 115-73.000.

Insall, John N.; and Walker, Peter S., to New York Society for the Relief of the Ruptured and Crippled. Knee-joint prosthesis. 4,213,209, Cl. 3-1.911.

Institut Francais du Petrole: *See—*
Douaud, Andre; and Rialan, Joseph, 4,213,429, Cl. 123-414.000.
Madec, Marcel; Espitalie, Jean; Laporte, Jean-Loup; and Barsony, Imre, 4,213,763, Cl. 23-230.0EP.

Institut Khimicheskoi Fiziki Akademii Nauk USSR: *See—*
Talroze, Viktor L.; Grishin, Vladimir D.; and Galushkin, Boris A., 4,214,161, Cl. 250-303.000.

International Business Machines Corporation: *See—*
Anantha, Narasipur G.; Bhatia, Harsaran S.; and Walsh, James L., 4,214,315, Cl. 357-44.000.

Cunningham, Joseph E., Jr.; and Grombone, Anthony, 4,214,234, Cl. 340-347.0AD.
Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, 4,214,256, Cl. 357-71.000.
Firth, Rowland V. D., III; and Goff, Willie, Jr., 4,213,575, Cl. 242-57.000.
Kuseski, Roger E., 4,213,694, Cl. 355-26.000.
Oswald, Richard K., 4,214,279, Cl. 360-51.000.
Sowter, Brian R.; and Warwick, William A., 4,214,221, Cl. 335-212.000.

International Harvester Company: *See*—
Biskis, Kestutis, 4,213,300, Cl. 60-420.000.
Rubenstein, Raymond D.; and Rescorla, Charles L., 4,213,511, Cl. 180-139.000.

International Minerals & Chemical Corporation: *See*—
Shipchandler, Mohammed T., 4,213,996, Cl. 424-274.000.

International Standard Electric Corporation: *See*—
Colin, Jean-Marie H., 4,214,242, Cl. 343-7.700.
Sterling, Henley F.; Bush, Eric L.; and McManus, Stephen J., 4,214,293, Cl. 361-433.000.

International Telephone and Telegraph Corporation: *See*—
Goodman, David S.; and Stanfield, George I., 4,213,668, Cl. 339-217.00R.

INTERx Research Corporation: *See*—
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,213,978, Cl. 424-241.000.

Iowa State University Research Foundation, Inc.: *See*—
Kraus, George A., 4,214,092, Cl. 549-64.000.

Irontite Products, Inc.: *See*—
Roeschlaub, Ronald C.; and Fegel, Albert, 4,213,328, Cl. 73-49.700.

Irwin, Clarence C.; Manz, David F.; and Auman, John T., to General Motors Corporation. Linear locking seat belt retractor. 4,213,652, Cl. 297-478.000.

Isa, Hiroshi: *See*—
Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, 4,214,112, Cl. 585-532.000.

Isaki, Mikio: *See*—
Fushimi, Akihiro; Tabara, Noboru; and Isaki, Mikio, 4,214,283, Cl. 360-71.000.

Isbell, Arthur F., to Meiller Research, Inc. Synthesized scent. 4,213,875, Cl. 252-188.30R.

Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, to Agency of Industrial Science and Technology, The. Anaerobic digestion process. 4,213,857, Cl. 210-6.000.

Ishihara, Shunichi; and Katsube, Toraichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Coating composition for plastic substrates. 4,214,057, Cl. 525-100.000.

Ishikawa, Ro: *See*—
Sugimoto, Shigetoki; Ishikawa, Ro; and Matsushita, Shigeo, 4,213,677, Cl. 350-96.180.

Ishimoto, Akio: *See*—
Kiyono, Hiroshi; Ishimoto, Akio; Noda, Yoichiro; and Yada, Kozo, 4,213,925, Cl. 264-22.000.

Itek Corporation: *See*—
Ely, Richard R., 4,213,695, Cl. 355-45.000.

Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, to Onoda Cement Co., Ltd. Metallic squeeze-out tube with resinous layer on its surface. 4,213,541, Cl. 222-92.000.

ITT Industries, Incorporated: *See*—
Thompson, George H. B.; and Lovelace, David F., 4,213,808, Cl. 148-188.000.

Iwasaki, Syunji: *See*—
Nakagaki, Harushige; Iwasaki, Syunji; and Fukushima, Isao, 4,214,299, Cl. 363-8.000.

Iwase, Yoshitaka: *See*—
Kuwako, Tomohisa; Ozaki, Takashi; and Iwase, Yoshitaka, 4,214,180, Cl. 310-80.000.

Izuta, Mitugu: *See*—
Yasui, Yasuyosi; Izuta, Mitugu; and Okaguchi, Sigeki, 4,213,660, Cl. 308-177.000.

J. M. Huber Corporation: *See*—
Williams, Lloyd E.; and Mays, Robert K., 4,213,874, Cl. 252-174.250.

J & M Instruments Corp.: *See*—
Jungman, Maury, 4,213,841, Cl. 204-195.00R.

Jaakkola, Aarno, to Oy Lival AB. Joint means for light fittings, such as office lamps. 4,213,591, Cl. 248-281.100.

Jabsen, Felix S., to Babcock & Wilcox Company, The. Nuclear steam system containment. 4,213,824, Cl. 176-38.000.

Jackson, Clarence L. Spraying system. 4,213,565, Cl. 239-170.000.

Jackson, Earl G.: *See*—
Samour, Carlos M.; Jackson, Earl G.; Thomas, Samuel J.; and Davidson, Louie E., 4,213,486, Cl. 138-143.000.

Jackson, James F.: *See*—
Stookey, Gary K.; and Jackson, James F., 4,213,446, Cl. 126-192.000.

Jackson, Neville: *See*—
Phillips, Duncan A. S.; Anderson, Brian; Jackson, Neville; Stead, Cecil V.; and Costello, Alan T., 4,213,899, Cl. 260-156.000.

Jackson, Theodore A., to Cadillac Gage Company. Storage and feeding apparatus for ammunition belts. 4,213,376, Cl. 89-34.000.

Jacobson, David N., to Monarch Marking Systems, Inc. Composite label web and method of making same. 4,214,024, Cl. 428-41.000.

Jacobson, Kenneth E.; and Gutierrez, William S., to Beckman Instruments, Inc. Rotor imbalance detector for a centrifuge. 4,214,179, Cl. 310-68.00B.

Jacobson, Stephen E.: *See*—
Mares, Frank; and Jacobson, Stephen E., 4,213,906, Cl. 260-343.000.

Jacques, James O.: *See*—
Halfhill, Martin O.; and Jacques, James O., 4,214,280, Cl. 360-53.000.

Jaeggi, Knut A.: *See*—
Sele, Alex; Ferrini, Pier G.; Haas, Georges; Jaeggi, Knut A.; and Rossi, Alberto, 4,213,980, Cl. 424-246.000.

Jager, Tilo: *See*—
Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,213,236, Cl. 29-243.500.

Jahn, Ulrich: *See*—
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, 4,214,095, Cl. 560-57.000.

Jakusch, Helmut: *See*—
Brodt, Rudolf; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Ohlinger, Manfred; Sarnecki, Wilhelm; and Steck, Werner, 4,213,959, Cl. 423-634.000.

James, John P.: *See*—
Blake, Larry V.; Womeldorph, Donald E., Jr.; Surber, Oliver M.; and James, John P., 4,213,856, Cl. 209-250.000.

Jameson, M. Phillip, to Engelhard Minerals & Chemicals Corporation. Froth flotation. 4,213,853, Cl. 209-166.000.

Jamieson, Robert S. Method and apparatus for minimizing drag of plural-hull craft. 4,213,412, Cl. 114-61.000.

Jansen, Wilhelm: *See*—
Moser, Gottfried; and Jansen, Wilhelm, 4,213,519, Cl. 188-71.400.

Janssen Pharmaceutica N.V.: *See*—
Mesens, Jean; and Haagen, Victor, 4,213,963, Cl. 424-80.000.

Jarus, Daniel J., to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Method and device for extracting a synchronizing signal from an incoming PCM signal. 4,214,124, Cl. 375-114.000.

Jay Boyce & Associates: *See*—
Boyce, Jay, 4,214,196, Cl. 318-811.000.

Jeco Co., Ltd.: *See*—
Nagahori, Yukihiro, 4,214,181, Cl. 310-162.000.

Jenaer Glaswerk Schott & Gen.: *See*—
Faulstich, Marga; Geiler, Volkmar; and Gliemeroth, Georg, 4,213,786, Cl. 106-47.00Q.
Faulstich, Marga; Geiler, Volkmar; and Gliemeroth, Georg, 4,213,787, Cl. 106-47.00Q.

Jennings, Garman C. Back pack grinding apparatus. 4,213,276, Cl. 51-170.00R.

Jenoptik Jena G.m.b.H.: *See*—
Kuhn, Gebhard; and Meier, Ludwig, 4,214,297, Cl. 362-327.000.

Jerhammar, Lars-Olow. Navigational aid device for determining direction in a chart. 4,213,248, Cl. 33-431.000.

Jeumont-Schneider: *See*—
Lafaye, Jean P., 4,214,222, Cl. 336-84.00M.

Jocham, Rudolf: *See*—
Ehrlinger, Friedrich; Mann, Egon; Fischer, Manfred; and Jocham, Rudolf, 4,213,514, Cl. 180-308.000.

Johansson, Arne; and Larsson, Torsten, to Aktiebolaget Bofors. Securing member for wear parts for earth-moving machines. 4,213,257, Cl. 37-142.00R.

John Zink Company: *See*—
Goodnight, Hershel E.; and Witwer, Alan D., 4,213,935, Cl. 422-111.000.

Johns-Manville Corporation: *See*—
Kranich, Herbert, Jr., 4,213,882, Cl. 252-455.00R.

Johnson, Gary R., to Sperry Corporation. Printed circuit board guide spring. 4,214,292, Cl. 361-386.000.

Johnson & Johnson: *See*—
Papa, Christopher M., 4,214,000, Cl. 424-289.000.

Johnson, Ralph E., to Singer Company, The. Adjustable hook for a sewing machine. 4,213,410, Cl. 112-228.000.

Johnson, Richard D.: *See*—
Carrico, Robert J.; and Johnson, Richard D., 4,213,893, Cl. 260-112.50R.

Johnston, Wilbur D., Jr., to Bell Telephone Laboratories, Incorporated. Ohmic contact of N-GaAs to electrical conductive substrates by controlled growth of N-GaAs polycrystalline layers. 4,213,801, Cl. 148-33.300.

Jolley, Glenn L. Tractor implement carrying apparatus. 4,213,505, Cl. 172-510.000.

Jones, Barbara A., to Cuisinarts, Inc. Food processor with metering dispenser. 4,213,570, Cl. 241-38.000.

Jones, Charles E., to WMI Corporation. Molded plastic guitars. 4,213,370, Cl. 84-291.000.

Jones, Clifford M.; and Surber, William A., to General Electric Company. Printer having variable character density. 4,213,714, Cl. 400-124.000.

Jones, Frederick W. S.: *See*—
Cameron, Gordon M.; Jones, Frederick W. S.; and Nolan, Peter D., 4,213,958, Cl. 423-522.000.

Jones, George D., to Airco, Inc. System for detecting position of gauge pointer. 4,214,155, Cl. 250-231.00R.

Jones, George R.; and Raimondi, Peter K., to United States of America, Army. Technique for DC restoration in AC coupled display systems. 4,214,271, Cl. 358-166.000.

Jones, Kenneth R.: *See*—
Barlow, Paul; and Jones, Kenneth R., 4,214,300, Cl. 364-105.000.

Jones, Kenneth Robert: *See*—
Barlow, Paul; and Jones, Kenneth R., 4,214,300, Cl. 364-105.000.

Jones, William B., Jr., to General Electric Company. Face-pumped laser with diffraction-limited output beam. 4,214,216, Cl. 331-94.50C.

Jones, William T., Jr.; and Moulis, Edward J., to Western Electric Company, Inc. Electronic device package having solder leads and methods of assembling the package. 4,214,120, Cl. 174-52.0FP.

Joyce, Thomas F.; Holtey, Thomas O.; and Panepinto, William, Jr., to Honeywell Information Systems Inc. Word oriented high speed buffer memory system connected to a system bus. 4,214,303, Cl. 364-200.000.

June, Malcom N.: *See*—
Padovani, Francois A.; Miller, Michael B.; Moore, James A.; Fowler, James H.; June, Malcom N.; Matthews, James D.; Morton, T. R.; Stotko, Norbert A.; and Palmer, Lewis B., 4,213,937, Cl. 422-142.000.

Jungman, Maury, to J & M Instruments Corp. pH Measuring instrument kit. 4,213,841, Cl. 204-195.00R.

Juszak, Joseph: *See*—
Absler, Howard; Juszak, Joseph; and Gore, Thomas, 4,213,639, Cl. 282-11.50A.

Jutte, Gottfried W.; and McHugh, John V., to Richardson Company, The. Container for a maintenance-free battery. 4,214,045, Cl. 429-87.000.

Kabel-und Metallwerke Gutehoffnungshuette AG: *See*—
Rohner, Peter, 4,213,582, Cl. 242-110.000.

Kablikov, Vladislav A.: *See*—
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,214,113, Cl. 585-634.000.

Kabushiki Kaisha Koden Seisakusho: *See*—
Fujino, Teruhisa; Osawa, Fujio; Nagao, Noriaki; and Hanji, Shigeo, 4,214,245, Cl. 343-103.000.

Kabushiki Kaisha Mino Seisakusho: *See*—
Mino, Masao; and Ohno, Takeshi, 4,213,574, Cl. 242-43.200.

Kabushiki Kaisha Morita Seisakusho: *See*—
Hotta, Toshihiro; and Makino, Takao, 4,214,169, Cl. 250-505.000.

Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,213,389, Cl. 101-295.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Kawaharazaki, Takashi; Teraoka, Fuminori; Kubota, Tatsushi; and Matsui, Kenji, 4,213,580, Cl. 242-107.000.
Kuwako, Tomohisa; Ozaki, Takashi; and Iwase, Yoshitaka, 4,214,180, Cl. 310-80.000.
Yoshitsugu, Noritada; Motonami, Masanao; and Katsuno, Mitsuaki, 4,213,651, Cl. 297-475.000.

Kadoya, Tetsuo: *See*—
Kodera, Yoshiaki; Watanabe, Kiyoyuki; Kadoya, Tetsuo; and Taguchi, Tadashi, 4,214,034, Cl. 428-315.000.

Kaessner, Hugo; and Loehr, Wilhelm, to Pfaudler Werke A.G. One piece agitator for closed vessel. 4,213,713, Cl. 366-279.000.

Kahn, Arthur R. Cooking machine. 4,213,380, Cl. 99-349.000.

Kaiser, Arthur, to CBS Inc. Television system for displaying and recording paths of motion. 4,214,263, Cl. 358-22.000.

Kaiser Steel Corporation: *See*—
Oswald, Donald E., 4,213,418, Cl. 118-635.000.

Kaltenbach & Voigt GmbH & Co.: *See*—
Reich, Heinrich; and Eibofner, Eugen, 4,213,756, Cl. 433-126.000.

Kamiya, Takashi; and Saito, Yoshihisa, to Fujisawa Pharmaceutical Co., Ltd. Substituted-phenyl substituted-alkyl ethers and the preparation thereof. 4,214,094, Cl. 560-42.000.

Kamiyama, Kouzi, to Fuji Photo Film Co., Ltd. Fluoride and phosphate containing optical glass. 4,213,788, Cl. 106-47.00Q.

Kamppinen, Holger. Fan device for rotary mowers. 4,213,289, Cl. 56-295.000.

Kanazawa, Hiroyuki, to Sumitomo Chemical Company, Limited. Process for producing a casting plate of polymethyl methacrylate. 4,214,064, Cl. 526-193.000.

Kanebo Foods, Ltd.: *See*—
Hase, Yoshinobu; Yamauchi, Masaaki; and Handa, Ryozo, 4,214,007, Cl. 426-44.000.

Kanervo, Seppo, to Oy Wartsila AB. Perforation method. 4,213,361, Cl. 83-30.000.

Kao Soap Co., Ltd.: *See*—
Miya, Bunji; and Kimura, Akio, 4,214,101, Cl. 562-421.000.

Karg, Rudolph F.; and Gros, Harold J., to Copolymer Rubber & Chemical Corporation. Particulate elastomeric materials and method. 4,213,888, Cl. 260-33.6AQ.

Karlsson, Birgitta G.: *See*—
af Ekenstam, Bo T.; Aurell, Leif E.; Claeson, Karl G.; Karlsson, Birgitta G.; Gustavsson, Stig I.; and Olausson, Gun A., 4,214,049, Cl. 435-23.000.

Kasai, Masanao; Hanadate, Hitoshi; Hajimoto, Yoshioki; Kitamura, Takashi; and Endo, Kiyonobu, to Canon Kabushiki Kaisha. Recording member for laser beam and process for recording. 4,214,249, Cl. 346-76.00L.

Kasprzak, Lucian A.: *See*—
Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, 4,214,256, Cl. 357-71.000.

Kastin, Abba J.; and Coy, David H. Enkephalin derivatives. 4,213,968, Cl. 424-177.000.

Katata, Tetsuo, to Dai-Ichi Seiko Co., Ltd. Cassette tape reel. 4,213,578, Cl. 242-74.000.

Katoh, Michio: *See*—
Ibata, Jyoji; Fukui, Hisaaki; Yuasa, Takeo; and Katoh, Michio, 4,214,026, Cl. 428-67.000.

Katoh, Mitsumi: *See*—
Niimi, Koji; Katoh, Mitsumi; and Wachi, Masatada, 4,213,366, Cl. 84-1.010.

Katsube, Toraichi: *See*—
Ishihara, Shunichi; and Katsube, Toraichi, 4,214,057, Cl. 525-100.000.

Katsuno, Mitsuaki: *See*—
Yoshitsugu, Noritada; Motonami, Masanao; and Katsuno, Mitsuaki, 4,213,651, Cl. 297-475.000.

Katz, Louis; and Weil, Kurt W., to Sonometrics Systems, Inc. Transducer assembly. 4,213,464, Cl. 128-645.000.

Kaufmann, Meinolph, to BBC Brown Boveri & Company Limited. Liquid crystal display for reflection operation with a guest-host liquid crystal layer and method of making. 4,213,676, Cl. 350-336.000.

Kaufmann, Raimund: *See*—
Hillenkamp, Franz; Kaufmann, Raimund; Niltsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,214,159, Cl. 250-288.000.

Kaveggia, Frederick S.: *See*—
Ashby, Robert M.; and Kaveggia, Frederick S., 4,213,866, Cl. 252-8.55C.

Kawagoe, Takahiro: *See*—
Imamura, Takaaki; Kawagoe, Takahiro; Chikaraishi, Toshio; and Nyomura, Takashi, 4,214,058, Cl. 525-348.000.

Kawaguchi, Yosio: *See*—
Nagai, Shigeki; Sekioka, Hakobu; Takenaka, Mitsuaki; Sakata, Masazumi; Kawaguchi, Yosio; Takamura, Seiji; and Nishimura, Minoru, 4,213,775, Cl. 71-103.000.

Kawaharazaki, Takashi; Teraoka, Fuminori; Kubota, Tatsushi; and Matsui, Kenji, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Seatbelt retractor. 4,213,580, Cl. 242-107.000.

Kawanami, Takao; Tajiri, Hiromi; and Uomori, Akiyoshi, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Steel Corporation. Conductor connector in flash welding apparatus. 4,214,143, Cl. 219-97.000.

Kawano, Shigeyoshi: *See*—
Kurihara, Nobuo; Sato, Yoshio; Kawano, Shigeyoshi; Iioka, Michihiro; Iba, Daizo; and Kurihara, Tadashi, 4,214,301, Cl. 364-119.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Sato, Masato; and Inoue, Takemi, 4,213,414, Cl. 115-73.000.

Keck, Johannes: *See*—
Engelhardt, Gunther; Keck, Johannes; Kruger; Noll, Klaus; and Pieper, Helmut, 4,214,001, Cl. 424-300.000.

Keen, William A., Jr., to General Electric Company. Corrosive resistant seal for epoxy shell bushings, method of providing same, and gasket therefor. 4,214,119, Cl. 174-31.00R.

Kegler, William H.: *See*—
Sooter, Matthew C.; Becraft, Lloyd G.; and Kegler, William H., 4,213,846, Cl. 208-50.000.

Keim, Thomas A., to General Electric Company. Support structure for armature conductors. 4,214,182, Cl. 310-216.000.

Kelley, James K.: *See*—
Charneski, Mitchell D.; Kelley, James K.; and Gazdecki, Frank J., 4,214,121, Cl. 174-84.00C.

Kelley, John S.; Grise, Frederick G. J.; and Lovell, Walter C., to USM Corporation. Punch press and method for making can ends with closures. 4,213,324, Cl. 72-405.000.

Kellner, Ferdinand. Closeup focusing mechanism for an objective of long focal length. 4,213,686, Cl. 354-195.000.

Kelly, James P.: *See*—
Kreutz, George D.; Scott, L. J.; and Kelly, James P., 4,213,528, Cl. 206-205.000.

Kelso, Thomas W. Testing tools for modular telephone system. 4,214,132, Cl. 179-175.000.

Kemmerling, Gary. Seal remover. 4,213,235, Cl. 29-235.000.

Kendall Company, The: *See*—
Samour, Carlos M.; Jackson, Earl G.; Thomas, Samuel J.; and Davidson, Louie E., 4,213,486, Cl. 138-143.000.

Kennedy, Lawrence C.; and Kowalis, Joseph, to General Motors Corporation. Cylinder head gasket. 4,213,620, Cl. 277-235.00B.

Kent Manufacturing Co., Inc.: *See*—
Hake, Kenneth A., 4,213,506, Cl. 172-624.000.

Kern, Walter P., to Teradyne, Inc. Integrated circuit testing probe. 4,214,201, Cl. 324-158.00P.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Forster, Siegfried; Hewing, Gunter; and Kleemann, Manfred, 4,213,297, Cl. 60-39.51R.

Keznickl, Eduard; and Boehm, Kurt, to Vockenhuber, Karl; and Hauser, Raimund. Method and apparatus for video recording a film scan signal. 4,214,268, Cl. 358-127.000.

Khan, Irshad A.: *See*—
Cukier, Samuel; and Khan, Irshad A., 4,213,867, Cl. 252-8.750.

Khanna, Nirmal K.: *See*—
Zudkevitch, David; Khanna, Nirmal K.; and Raczynski, Robert F., 4,213,832, Cl. 203-95.000.

Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F. Method for carrying out pyrolysis of hydrocarbon starting products. 4,214,113, Cl. 585-634.000.

Kicherer, Robert; and Schilling, Wilfried, to E.G.O. Regeltechnik GmbH. Control instrument for electric cooker plates. 4,214,151, Cl. 219-492.000.

Kiefer, George E.; and Herbst, LeRoy J., to General Electric Company. Relay control circuit for washing appliance. 4,213,313, Cl. 68-12.00R.

Kiehs, Karl: *See—*
Adolphi, Heinrich; Baumann, Annegrit; Huber, Rolf; Kiehs, Karl; and Merger, Franz, 4,213,992, Cl. 424-273.00P.
Loeffler, Hans-Peter; Adolphi, Heinrich; and Kiehs, Karl, 4,213,976, Cl. 424-224.000.

Kikuchi, Hideo: *See—*
Azuhata, Shigeru; Akimoto, Hidetoshi; Kikuchi, Hideo; Hishinuma, Yukio; Oshima, Ryoichiro; and Arikawa, Yoshijiro, 4,213,944, Cl. 423-235.000.

Kimberly-Clark Corporation: *See—*
Sigl, Wayne C.; and LaBorde, Philip A., 4,213,459, Cl. 128-287.000.

Kimbrough, Mahlon D., to Reliance Telecommunication Electronics Company. Sideband cancellation circuit for a transmission line communications system receiver. 4,214,129, Cl. 370-57.000.

Kimura, Akio: *See—*
Miya, Bunji; and Kimura, Akio, 4,214,101, Cl. 562-421.000.

Kimura, Akira: *See—*
Abe, Fumiyuki; Hayashi, Yoshimasa; and Kimura, Akira, 4,213,440, Cl. 123-195.00C.

Kimura, Shin; Fukui, Hiroshi; and Terasawa, Yoshio, to Hitachi, Ltd. Amplified gate semiconductor controlled rectifier with reduced lifetime in auxiliary thyristor portion. 4,214,254, Cl. 357-38.000.

Kindlmann, Peter J.: *See—*
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,213,496, Cl. 164-147.000.

King, William B. Safety barrier for a vehicle. 4,213,636, Cl. 280-749.000.

King, William F.: *See—*
Wheeler, Ronald E.; and King, William F., 4,213,973, Cl. 424-200.000.

Kiraly, Ernest F.: *See—*
Ferraro, Frank A.; and Kiraly, Ernest F., 4,213,240, Cl. 30-47.000.

Kirchgaesser, Johannes: *See—*
Pierron, Claude; and Kirchgaesser, Johannes, 4,213,589, Cl. 248-74.00R.

Kitagawa, Tsunehiro, to Dainippon Pharmaceutical Co., Ltd. Reagent suitable for enzyme immuno assay. 4,214,048, Cl. 435-7.000.

Kitajima, Hiroshi: *See—*
Komatsu, Seigi; and Kitajima, Hiroshi, 4,213,228, Cl. 17-11.000.

Kitamura, Takanori; and Tamura, Masuhiko, to Kuraray Co., Ltd. Method of producing olefin oligomers and hydrogenation products thereof. 4,214,111, Cl. 585-255.000.

Kitamura, Takashi: *See—*
Kasai, Masanao; Hanadate, Hitoshi; Hajimoto, Yoshioki; Kitamura, Takashi; and Endo, Kiyonobu, 4,214,249, Cl. 346-76.00L.

Kitano, Kyozo: *See—*
Hayashi, Akira; Ohkouchi, Haruo; Kitano, Kyozo; and Ogoshi, Toshiaki, 4,213,918, Cl. 260-513.00T.

Kiyono, Hiroshi; Ishimoto, Akio; Noda, Yoichiro; and Yada, Kozo, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Process for continuously producing foamed sheets. 4,213,925, Cl. 264-22.000.

Kizaki, Jiro: *See—*
Ban, Masashi; Tachino, Tomio; and Kizaki, Jiro, 4,213,535, Cl. 220-20.500.

Klasen, Charles J.: *See—*
Funk, Smith A.; Klasen, Charles J.; and Vilmanis, Ilmars, 4,213,487, Cl. 138-149.000.

Kleemann, Manfred: *See—*
Forster, Siegfried; Hewing, Gunter; and Kleemann, Manfred, 4,213,297, Cl. 60-39.51R.

Kley, Fitting, Fitting, Nalley and Smith: *See—*
Kley, Victor B., 4,214,122, Cl. 178-18.000.

Kley, Victor B., to Kley, Fitting, Fitting, Nalley and Smith. Resistive planar graphical entry device. 4,214,122, Cl. 178-18.000.

Klingler, Michael R. Manipulating rotary control device. 4,213,416, Cl. 116-309.000.

Klingler, Thomas C.; Wessling, Ritchie A.; and Gibbs, Dale S., to Dow Chemical Company, The. Novel isothiouronium salts. 4,214,096, Cl 560-147.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Moser, Gottfried; and Jansen, Wilhelm, 4,213,519, Cl. 188-71.400.

Klotz, Arthur: *See—*
Blind, Karl; and Klotz, Arthur, 4,213,643, Cl. 292-247.000.

Knapek, Erwin: *See—*
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and Lefranc, Guy, 4,214,166, Cl. 250-396.0ML.

Knight, George W.; and Mach, Dennis E., to Dow Chemical Company, The. Hydrocarbon solutions of organomagnesium compounds. 4,213,880, Cl. 252-431.00R.

Knippel, Willis H., to Pullman Incorporated. Double locking door latch mechanism for railway hopper cars. 4,213,725, Cl. 414-387.000.

Knock, Harry A. Insulation gun. 4,213,490, Cl. 141-311.00R.

Knorr, Gunter, to Claudius Peters AG. Filling machine for valve bags. 4,213,287, Cl. 53-573.000.

Knowles, Warren D., to Singer Company, The. Readily attachable and detachable sole plate for a sewing machine. 4,213,411, Cl. 112-240.000.

Knox Manufacturing Co.: *See—*
Brown, Donald J., 4,213,260, Cl. 40-158.00B.

Knuaf, Alfons; Bold, Jorg; and Franke, Siegfried, to Gebr. Knauf Westdeutsche Gipswerke. Process for the production of fiber-containing plaster boards. 4,214,027, Cl. 428-113.000.

Kobayashi, Akio, to Nippondenso Co., Ltd. Electronic fuel injection control apparatus. 4,214,306, Cl. 364-431.000.

Kobayashi, Ryuji: *See—*
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,213,987, Cl. 424-251.000.

Kobe Steel, Ltd.: *See—*
Furuta, Isao; Yagaki, Kazuhito; and Masuda, Toyohiko, 4,213,946, Cl. 423-242.000.
Okuda, Naoki; and Nakano, Akira, 4,214,141, Cl. 219-73.000.

Kochey, Edward L., to Combustion Engineering, Inc. Cooling means for a water-filled ash hopper. 4,213,402, Cl. 110-171.000.

Kockums Industri AB: *See—*
Casselbrant, Sven G., 4,213,928, Cl. 264-113.000.

Koda, Takao, to Fuji Photo Optical Co., Ltd. Folding type photographic camera. 4,213,685, Cl. 354-193.000.

Kodera, Yoshiaki; Watanabe, Kiyoyuki; Kadoya, Tetsuo; and Taguchi, Tadashi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Agricultural covering multilayer film or sheet structure and method for thermal insulation. 4,214,034, Cl. 428-315.000.

Koehler-Dayton, Inc.: *See—*
Weik, Kirby B., 4,213,593, Cl. 248-501.000.

Koester, Eberhard: *See—*
Brodt, Rudolf; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Ohlinger, Manfred; Sarnecki, Wilhelm; and Steck, Werner, 4,213,959, Cl. 423-634.000.
Schoettle, Klaus; Dobler, Peter; Lewin, Helmut; and Koester, Eberhard, 4,213,222, Cl. 15-100.000.

Kohl, Wolfgang: *See—*
Hofer, Peter; and Kohl, Wolfgang, 4,214,014, Cl. 427-40.000.

Koide, Tsuyoshi; and Oda, Yasuji, to Toyoda-Koki Kabushiki-Kaisha. Numerical controller for controlling machining of oval workpiece. 4,214,309, Cl. 364-474.000.

Kojima, Mikio: *See—*
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,213,987, Cl. 424-251.000.

Kokado, Hiroshi: *See—*
Miyakawa, Nobuhiro; Inoue, Eiichi; and Kokado, Hiroshi, 4,214,031, Cl. 428-213.000.

Koltay, Sandor: *See—*
Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; Farkas, L. Peter; Remenyi, Janos; and Koltay, Sandor, 4,214,032, Cl. 428-280.000.

Komatsu, Akira: *See—*
Moroe, Tatsuo; Komatsu, Akira; Doi, Kiyosumi; and Moroe, Mitio, 4,214,110, Cl. 585-241.000.

Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, to Mitsubishi Gas Chemical Company, Inc. Process for preventing blackening of phthalic acid. 4,214,100, Cl. 562-416.000.

Komatsu, Seigi; and Kitajima, Hiroshi, to Seigi Komatsu. Device for cutting off the neck meat of a fowl. 4,213,228, Cl. 17-11.000.

Kominek, Leo A.: *See—*
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,214,051, Cl. 435-55.000.
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,214,052, Cl. 435-55.000.

Kondo, Kiyoshi; Matsui, Kiyohide; Negishi, Akira; and Takahatake, Yuriko, to Sagami Chemical Research Center. Process for preparing dihalovinylcyclopropanecarboxylates. 4,214,097, Cl. 560-213.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Akiyama, Mistuo; and Abe, Shunichi, 4,213,692, Cl. 355-14.00D.

Konves, Richard L.: *See—*
Bryan, Henry A.; Martin, Walter H.; and Konves, Richard L., 4,213,423, Cl. 119-86.000.

Koppe, Herbert: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, 4,213,995, Cl. 424-273.00R.

Koppers Company, Inc.: *See—*
Cain, George R., 4,213,489, Cl. 141-70.000.

Koppl, Franz. Method for the transfer of heat. 4,213,830, Cl. 203-11.000.

Koshman, Vitaly I.; Nagorny, Mikhail A.; and Petrichenko, Vladimir F. Explosion-proof switchgear apparatus. 4,214,291, Cl. 361-338.000.

Kosinsky, Edward J., to Phillips Petroleum Company. Minimal blocking thermoplastic material and lubricating oil composition containing the same. 4,213,869, Cl. 252-37.500.

Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Siliceous dioxolane derivatives and their application to the manufacture of organosilane esters containing epoxy groups. 4,213,908, Cl. 260-348.160.

Kourimsky, Friedrich J. A., to AMP Incorporated. Fuse. 4,214,223, Cl. 337-293.000.

Kowalis, Joseph: *See—*
Kennedy, Lawrence C.; and Kowalis, Joseph, 4,213,620, Cl. 277-235.00B.

Kozlov, Anatoly E.; Budzan, Bogdan P.; Dudko, Daniil A.; Maximovich, Boleslav I.; Zavodian, Vitaly V.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; Golovnin, Vladimir M.; and Farrakhov, Nail S. Apparatus for surfacing internal combustion engines valves. 4,214,139, Cl. 219-9.500.

Kraft, Inc.: *See—*
Davis, Paul F., 4,213,896, Cl. 260-119.000.

Kranich, Herbert, Jr., to Johns-Manville Corporation. Preparation method for catalyst support and materials produced thereby. 4,213,882, Cl. 252-455.00R.

Krapcho, John, to E. R. Squibb & Sons, Inc. Imino containing morpholine compounds. 4,214,081, Cl. 542-424.000.

Kraus, Bernd: *See—*
Peter, Cornelius; and Kraus, Bernd, 4,213,335, Cl. 73-204.000.

Kraus, George A., to Iowa State University Research Foundation, Inc. Rearrangement of acyloxy furans and thiophenes prepared from butenolides. 4,214,092, Cl. 549-64.000.

Krautheim, Leonard: *See—*
Bogert, Clayton; Alexander, John D.; and Krautheim, Leonard, 4,213,359, Cl. 82-47.000.

Krautkramer-Branson, Incorporated: *See—*
Rose, Joseph L., 4,213,344, Cl. 73-620.000.

Kraver, Richard A. Electric heating system for controlling temperature of pipes to prevent freezing and condensation. 4,214,147, Cl. 219-301.000.

Kreft, Wilfried: *See—*
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.

Kreinick, Stephen J.: *See—*
Shaw, Pern; Musa, Fuad H.; and Kreinick, Stephen J., 4,214,232, Cl. 340-347.0AD.
Shaw, Pern; Musa, Fuad H.; and Kreinick, Stephen J., 4,214,233, Cl. 340-347.0AD.

Kremp, Richard E.; and Vandeman, Fred N. Process for removal of silver from photographic film. 4,213,782, Cl. 430-432.000.

Krespan, Carl G., to Du Pont de Nemours, E. I., and Company. Polymers of 2-ketopentafluoropropanesulfonic acid and related acids with ethylene or fluorinated unsaturated monomers. 4,214,070, Cl. 528-220.000.

Kretschmer, Alfred; Ruettiger, Wilhelm; and Wuerz, Albrecht, to BASF Aktiengesellschaft. Process for continuously washing a printed textile sheet-like structure. 4,213,217, Cl. 8-151.000.

Kretzer, Horst: *See—*
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.

Kreutz, George D.; Scott, L. J.; and Kelly, James P., to Becton Dickinson & Company. Package for acid container. 4,213,528, Cl. 206-205.000.

Kreutzer, Peter K. Circuit for transistor ballasts for the gentle ignition of fluorescent lamps. 4,214,186, Cl. 315-102.000.

Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., to B. K. Sweeney Manufacturing Co. High torque multiplier and readout apparatus. 4,213,333, Cl. 73-136.00R.

Krishnan, Mithra S. Game racquets. 4,213,608, Cl. 273-73.00C.

Krob, Erwin; and Svoboda, Josef, to TMC Corporation. Brake for skis. 4,213,629, Cl. 280-605.000.

Krueger, Hans: *See—*
Heynisch, Hinrich; and Krueger, Hans, 4,213,810, Cl. 156-73.100.

Kruger: *See—*
Engelhardt, Gunther; Keck, Johannes; Kruger; Noll, Klaus; and Pieper, Helmut, 4,214,001, Cl. 424-300.000.

Krusic, Paul J.: *See—*
Apotheker, David; and Krusic, Paul J., 4,214,060, Cl. 525-387.000.

Kubota, Kikuo; Yamagishi, Yoshiaki; and Yamaguchi, Masaru, to Toyo Seikan Kaisha Limited. Rotary blow molding machine. 4,213,750, Cl. 425-531.000.

Kubota, Tatsushi: *See—*
Kawaharazaki, Takashi; Teraoka, Fuminori; Kubota, Tatsushi; and Matsui, Kenji, 4,213,580, Cl. 242-107.000.

Kudryavtsev, Lev A.: *See—*
Tumanov, Evgeny S.; Zhamkov, Nikolai V.; and Kudryavtsev, Lev A., 4,213,325, Cl. 73-1.00G.

Kuehne, Rudi: *See—*
Eggert, Hans-Joachim; Zenkert, Heinrich; Kuehne, Rudi; and Oberberger, Otto, 4,213,532, Cl. 206-504.000.

Kuhn, Gebhard; and Meier, Ludwig, to Jenoptik Jena G.m.b.H. Arrangement for spectral dispersion of a bundle of light. 4,214,297, Cl. 362-327.000.

Kuijt, Cornelis, to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Switching device for letters and the like. 4,213,602, Cl. 271-279.000.

Kulik, Alphonse C., to USM Corporation. Wiper motion stop. 4,213,221, Cl. 12-12.400.

Kulka, Thomas S. Traffic light and motor vehicle taillight lenses. 4,214,168, Cl. 362-311.000.

Kumeta, Mitsuzo: *See—*
Inoue, Motozo; Kumeta, Mitsuzo; Ueno, Hideo; Okamura, Yoshinao; and Suzuki, Tadashi, 4,213,596, Cl. 254-134.30R.

Kummer, Werner: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, 4,213,995, Cl. 424-273.00R.

Kunnen, Jan; and Van Der Schee, Abraham C., to Akzo N.V. Coating metal by immersion. 4,214,022, Cl. 427-435.000.

Kunz, Walter: *See—*
Eckhardt, Wolfgang; Hubele, Adolf; and Kunz, Walter, 4,214,005, Cl. 424-309.000.

Kupper, Wilhelm, to W. Schlafhorst & Co. Ring spinning frame with drawing mechanism stop motion. 4,213,290, Cl. 57-85.000.

Kuptsov, Nikolai F.: *See—*
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,214,113, Cl. 585-634.000.

Kuraray Co., Ltd.: *See—*
Kitamura, Takanori; and Tamura, Masuhiko, 4,214,111, Cl. 585-255.000.

Kurihara, Nobuo; Sato, Yoshio; Kawano, Shigeyoshi; Iioka, Michihiro; Iba, Daizo; and Kurihara, Tadashi, to Hitachi, Ltd. Diagnostic device for use with automatic control systems. 4,214,301, Cl. 364-119.000.

Kurihara, Tadashi: *See—*
Kurihara, Nobuo; Sato, Yoshio; Kawano, Shigeyoshi; Iioka, Michihiro; Iba, Daizo; and Kurihara, Tadashi, 4,214,301, Cl. 364-119.000.

Kuseski, Roger E., to International Business Machines Corporation. Copy production machines. 4,213,694, Cl. 355-26.000.

Kushnarenko, Valentin K.: *See—*
Trutnev, Viktor A.; Zlobin, Vitaly I.; Kushnarenko, Valentin K.; Ignatov, Valentin B.; Gannota, Boris V.; Ambartsumyan, Nikolai S.; and Volovik, Boris B., 4,213,931, Cl. 264-234.000.

Kushner, Jury K. Stabilized current sources network. 4,214,176, Cl. 307-297.000.

Kutnyak, Thomas A.: *See—*
Hall, Marcus A.; and Kutnyak, Thomas A., 4,213,811, Cl. 156-195.000.

Kuwako, Tomohisa; Ozaki, Takashi; and Iwase, Yoshitaka, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Miniature electric motor employing a conversion mechanism for linear movement. 4,214,180, Cl. 310-80.000.

LaBorde, Philip A.: *See—*
Sigl, Wayne C.; and LaBorde, Philip A., 4,213,459, Cl. 128-287.000.

Lach, Dietrich: *See—*
Hahn, Erwin; Magerkurth, Bernhard; Lach, Dietrich; and Wuertele, Lothar, 4,213,760, Cl. 8-94.170.

Lacroix, Paul: *See—*
Mas, Henri; and Lacroix, Paul, 4,213,256, Cl. 36-124.000.

Lafaye, Jean P., to Jeumont-Schneider. Improved clamping members in a horizontal magnetic core power transformer. 4,214,222, Cl. 336-84.00M.

Lagg, Jerry W. Turbine power generator. 4,213,734, Cl. 415-4.000.

Laitinen, Herbert A.; and Rosenfarb, Joseph, to University of Florida, Board of Regents, State of Florida, for the use and benefit of the. Preparation of platinum-coated substrates. 4,214,017, Cl. 427-92.000.

Laitram Corporation, The: *See—*
Lapeyre, James M.; and Lapeyre, Fernand S., 4,213,527, Cl. 198-853.000.

Lambert, Gary M., to GTE Laboratories Incorporated. Fiber optic connectors and methods of affixing optical fibers thereto. 4,213,671, Cl. 350-96.210.

Lamensdorf, David: *See—*
Cronson, Harry M.; Lamensdorf, David; and Ross, Gerald F., 4,214,248, Cl. 343-756.000.

Land, Edwin H., to Polaroid Corporation. Sound motion picture system having concentrated audio system. 4,214,285, Cl. 360-90.000.

Lane, William E. Sun tracking solar energy boiler. 4,213,303, Cl. 60-641.000.

Langdon, Roger M., to Marconi Company Limited, The. Liquid level sensing devices. 4,213,337, Cl. 73-290.00V.

Lange, Gerd: *See—*
Pietsch, Helge; and Lange, Gerd, 4,213,594, Cl. 248-550.000.

Lanzilloti, J. J. Lens testing apparatus and method. 4,213,701, Cl. 356-124.000.

Lapeyre, Fernand S.: *See—*
Lapeyre, James M.; and Lapeyre, Fernand S., 4,213,527, Cl. 198-853.000.

Lapeyre, James M.; and Lapeyre, Fernand S., to Laitram Corporation, The. Chain link conveyors. 4,213,527, Cl. 198-853.000.

Laporte, Jean-Loup: *See—*
Madec, Marcel; Espitalie, Jean; Laporte, Jean-Loup; and Barsony, Imre, 4,213,763, Cl. 23-230.0EP.

Larkin, John M.; Cullen, William P.; Sung, Rodney L.; and Zoleski, Benjamin H., to Texaco Inc. Process for decolorizing lubricating oil additives. 4,214,083, Cl. 544-277.000.

Larking, Ingrid: *See—*
Moretto, Hans-Heinrich; Steinberger, Helmut; Larking, Ingrid; and Sattlegger, Hans, 4,214,066, Cl. 528-28.000.

Larry, Ronald G. Shock distributing panel. 4,213,202, Cl. 2-2.000.

Larson, Larry L., to Dow Chemical Company, The. Insecticidal synergistic mixtures of O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl)phosphorothioate and O-ethyl O-(4-(methylthio)phenyl)-S-n-propyl phosphorothioate. 4,213,975, Cl. 424-200.000.

Larsson, Bernt: *See—*
Boberg, Anders; Larsson, Bernt; and Lundh, Folke, 4,213,885, Cl. 260-29.6TA.

Larsson, Torsten: *See—*
Johansson, Arne; and Larsson, Torsten, 4,213,257, Cl. 37-142.00R.

Laupman, Robert R., to Novanex Automation N.V. Speaker system. 4,213,515, Cl. 181-145.000.

Lava Crucible Refractories Co.: *See—*
Miller, Eldon D., 4,213,780, Cl. 75-58.000.

Lavengood, Richard E., to Monsanto Company. Method for preparing a monoalkenyl aromatic polyblend having a dispersed rubber phase as particles with a bimodal particle size distribution. 4,214,056, Cl. 525-71.000.

Lavoie, Edward: *See—*
von Hardenberg, Paul W.; Mard, Kenneth C.; and Lavoie, Edward, 4,213,518, Cl. 188-1.00B.

Layne, Richard C. Dock seal for building doorway. 4,213,279, Cl. 52-173.0DS.

Leblanc, Michele, to Societe d'Optique Precision Electronique et Mecanique Sopelem. Fire control device. 4,213,700, Cl. 356-73.000.

Ledis, Stephen L.: *See—*
Crews, Harold R.; Chastain, Dave, Jr.; and Ledis, Stephen L., 4,213,876, Cl. 252-408.000.

Lee, James G. C.: *See—*
Dickson, Vernon E.; Lee, James G. C.; and Saini, Gurbachan S., 4,214,207, Cl. 455-95.000.

Lee, Thomas B.: *See—*
Bantick, John R.; Hardern, David N.; and Lee, Thomas B., 4,213,903, Cl. 548-250.000.

Lee, Yu-Sun, to B. F. Goodrich Company, The. Pressure-sensitive adhesive. 4,214,061, Cl. 525-455.000.

Leeds & Northrup Company: *See—*
Morse, Richard H., 4,213,304, Cl. 60-664.000.

Leenders, Peter, to Henkel Inc. Amino-ether amphoteric surface-active compounds. 4,214,102, Cl. 562-564.000.

Lefevre, Joseph D., to Dow Chemical Company, The. Electrolytic oxidation in a cell having a separator support. 4,213,833, Cl. 204-98.000.

Lefort, Marcel: *See—*
Bargain, Michel; and Lefort, Marcel, 4,213,914, Cl. 556-419.000.

Lefranc, Guy: *See—*
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and Lefranc, Guy, 4,214,166, Cl. 250-396.0ML.

Legendre, Michel: *See—*
Engelhard, Philippe; Legendre, Michel; Paris, Guy; and Szabo, Georges, 4,213,849, Cl. 208-139.000.

Leidinger, Gustav: *See—*
Horrer, Erwin; and Leidinger, Gustav, 4,213,507, Cl. 172-784.000.

Leifeld, Ferdinand, to Trutzschler GmbH & Co. KG. Web guiding device, 4,213,553, Cl. 226-196.000.

Leister, Heinrich: *See—*
Muders, Rolf; Leister, Heinrich; Dittmer, Helmut; and Schonhagen, Hubert, 4,213,910, Cl. 260-371.000.

Leisure Products Corporation: *See—*
Church, Peter K., 4,213,873, Cl. 252-174.210.

Leitold, Matyas: *See—*
Schmidt, Gunther; and Leitold, Matyas, 4,213,984, Cl. 424-250.000.
Schmidt, Gunther; and Leitold, Matyas, 4,213,985, Cl. 424-250.000.

Lemke, Verne O.: *See—*
Bonomo, Melvin E.; Coldren, Kenneth M.; Lemke, Verne O.; Rathbun, Loren L.; and Towner, Ronald D., 4,213,332, Cl. 73-134.000.

Lemker, Richard S.; and Storey, Clyde H., to Corning Glass Works. Process for producing a gradient photochromic ophthalmic lens. 4,213,772, Cl. 65-30.00R.

Lemons, Kyle E.; Blish, Richard C., II; and Reimer, Jan D., to Signetics Corporation. Selective plasma vapor etching process. 4,213,818, Cl. 156-643.000.

Lenfant, Pierre: *See—*
Chevet, Robert; and Lenfant, Pierre, 4,214,044, Cl. 429-27.000.

Leonard, Louis H., to Carrier Corporation. Power generation-refrigeration system. 4,214,170, Cl. 290-1.00R.

LeRoy Enterprises, Inc.: *See—*
Ellis, James R., 4,213,417, Cl. 118-30.000.

Leupold, Herbert A.: *See—*
Rothwarf, Frederick; Bergner, Robert L.; Leupold, Herbert A.; and Tauber, Arthur, 4,213,802, Cl. 148-101.000.

Lever Brothers Company: *See—*
Ainger, George E.; and Caverly, Brian L., 4,214,012, Cl. 426-607.000.

Lever Manufacturing Co.: *See—*
Bogert, Clayton; Alexander, John D.; and Krautheim, Leonard, 4,213,359, Cl. 82-47.000.

Levine, Donald J., to Plough, Inc. Stable sprayable hydrocortisone product. 4,213,979, Cl. 424-243.000.

Levy, Dudley D. Device for vaporizing liquid hydrocarbon fuel. 4,213,432, Cl. 123-549.000.

Lewin, Helmut: *See—*
Schoettle, Klaus; Dobler, Peter; Lewin, Helmut; and Koester, Eberhard, 4,213,222, Cl. 15-100.000.

Lewis, Bernard R. Key actuated security entry system. 4,213,315, Cl. 70-94.000.

Lewis, Jay L., to Robertshaw Controls Company. Intermittent patient suction system and control means therefor. 4,213,457, Cl. 128-276.000.

Lewis, Thomas R.; and Michne, William F., to Sterling Drug Inc. 11-[3-Oxo-ω-(2- and 3-furyl)-lower-alkyl]hexahydro-2,6-methano-3-benzazocines. 4,214,085, Cl. 546-97.000.

Leybold-Heraeus GmbH: *See—*
Hillenkamp, Franz; Kaufmann, Raimund; Niltsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,214,159, Cl. 250-288.000.
Stephan, Herbert, 4,214,015, Cl. 427-42.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Schairer, Werner, 4,214,251, Cl. 357-17.000.

Liebert, Oskar; and Worner, Michael, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N). Remote-control adjustment, retrofit system for an ink supply in a printing machine. 4,213,390, Cl. 101-365.000.

Lieske, Edgar: *See—*
Rose, David; Weinrich, Erwin; and Lieske, Edgar, 4,213,758, Cl. 8-409.000.

Lighthipe, Charles H., Jr., to Morse Manufacturing Company, Inc. Drum handling apparatus. 4,213,727, Cl. 414-420.000.

Liljergren, Torsten: *See—*
Gunners, Nils-Erik; Hellgren, Rune V.; and Liljergren, Torsten, 4,213,393, Cl. 102-49.300.

Lin, An-Chung R., to Burroughs Corporation. Ball point pen, ink and its eradicator system. 4,213,717, Cl. 401-18.000.

Lindemann Maschinenfabrik GmbH: *See—*
Dahlem, Peter, 4,213,385, Cl. 100-95.000.

Lingenfelser, Daniel J., to Caterpillar Tractor Co. Bracket assembly for mounting fire extinguishers thereon. 4,213,592, Cl. 248-313.000.

Liniger, Richard B., II: *See—*
Friend, Donald L.; Grosko, John A.; and Liniger, Richard B., II, 4,213,829, Cl. 202-263.000.

Lion Fat & Oil Co., Ltd., The: *See—*
Hayashi, Akira; Ohkouchi, Haruo; Kitano, Kyozo; and Ogoshi, Toshiaki, 4,213,918, Cl. 260-513.00T.
Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, 4,214,112, Cl. 585-532.000.

Lippler, Remy R.: *See—*
Passagne, Claude G.; Senet, Jean-Pierre G.; Lippler, Remy R.; and Plazanet, Jacques, 4,214,073, Cl. 528-369.000.

Lipsky, Stephen E., to General Instrument Corporation. Method and apparatus for synchronously tuning the multi-channel superheterodyne receiver of a DF system. 4,214,316, Cl. 455-141.000.

Lis, Per-Arne; and Olausson, Karl A., to Gotaverken Anteknik AB. Water-cooled grate. 4,213,405, Cl. 110-234.000.

List, Hans: *See—*
Feichtinger, Gerhard; Skatsche, Othmar; and List, Hans, 4,213,439, Cl. 123-195.00S.

Litton Systems, Inc.: *See—*
Sanders, Virgil E., 4,213,705, Cl. 356-350.000.

Liu, Wen-Chih; Brown, William E.; and Astle, Gail L., to E. R. Squibb & Sons, Inc. Method for isolating polyether antibiotics. 4,213,966, Cl. 424-123.000.

Lively, Steven A.; and Gwin, Richard B., to H. C. Price Co. Cutting device for pipe jackets. 4,213,357, Cl. 82-4.00C.

Liversain, Andre: *See—*
Garrett, Roger; and Liversain, Andre, 4,213,562, Cl. 236-46.00R.

Lodge-Cottrell, Ltd.: *See—*
Wyatt, John G., 4,213,766, Cl. 55-2.000.

Lodrick, Robert. Foam generating and spraying apparatus. 4,213,936, Cl. 422-133.000.

Loeffler, Hans-Peter; Adolphi, Heinrich; and Kiehs, Karl, to BASF Aktiengesellschaft. Haloalkyldithiophosphoric acid esters. 4,213,976, Cl. 424-224.000.

Loehr, Wilhelm: *See—*
Kaessner, Hugo; and Loehr, Wilhelm, 4,213,713, Cl. 366-279.000.

Loeser, Werner: *See—*
Brodt, Rudolf; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Ohlinger, Manfred; Sarnecki, Wilhelm; and Steck, Werner, 4,213,959, Cl. 423-634.000.

Logan, Robert J., to Inductive Controls Limited. Motor control circuits. 4,214,195, Cl. 318-745.000.

Lojek, John S.: *See—*
Gilck, Lawrence J.; and Lojek, John S., 4,213,776, Cl. 71-117.000.

Long, R. H.: *See—*
Davis, H. R.; Long, R. H.; and Simone, A. A., 4,213,862, Cl. 210-83.000.

Longhouse, Richard E., to General Motors Corporation. Shrouding for engine mounted cooling fan. 4,213,426, Cl. 123-41.490.

Lopez-Martinez, Luis J. A. Process for the binding of books, magazines and the like. 4,213,220, Cl. 11-1.00R.

Loran, Thomas J. Cleaning and lubricating compositions and method of using the same. 4,213,870, Cl. 252-51.50R.

L'Oreal: *See—*
Grollier, Jean-Francois; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,213,960, Cl. 424-47.000.
Gueret, Jean-Louis H.; and Adams, Nancy, 4,213,472, Cl. 132-88.700.

Louisot, Pierre: *See—*
Dirheimer, Guy; and Louisot, Pierre, 4,213,970, Cl. 424-180.000.

Lovelace, David F.: *See—*
Thompson, George H. B.; and Lovelace, David F., 4,213,808, Cl. 148-188.000.

Lovell, James B., to American Cyanamid Company. Insecticidal 1,5-bis(α,α,α-trifluoro-p-tolyl)-1,4-pentadien-3-one (1,4,5,6-tetrahydro-2-pyrimidinyl)hydrazones. 4,213,988, Cl. 424-251.000.

Lovell, Walter C.: *See—*
Kelley, John S.; Grise, Frederick G. J.; and Lovell, Walter C., 4,213,324, Cl. 72-405.000.

Lowe, Jack M.: *See—*
Ottewell, Roger J.; and Lowe, Jack M., 4,213,485, Cl. 138-130.000.

Lowenstein, Carl D.: *See—*
Spiess, Frederick N.; Boegeman, Dwight E.; Pavlicek, Frank V.; and Lowenstein, Carl D., 4,214,314, Cl. 367-2.000.

Lowther, Frank E., to Union Carbide Corporation. Corona reaction system. 4,213,838, Cl. 204-176.000.

Luallin, Edwin D., to Exxon Research & Engineering Co. Autorefrigerated polymerization process. 4,214,063, Cl. 526-68.000.

Lucas Industries Limited: *See—*
Read, Martin A., 4,213,425, Cl. 123-478.000.

Lucas, John M., to Domtar Inc. Graininess sensor. 4,213,708, Cl. 356-429.000.

Lucek, John R.; and McCall, David L., to General Electric Company. Vapor shield support ring for a vacuum interrupter. 4,214,138, Cl. 200-144.00B.

Luke, John A.: *See—*
Horsewell, Henry G.; Green, John D.; Luke, John A.; and Harrison, Raymond J., 4,213,470, Cl. 131-261.00B.

Lumby, Dale, to TRW Inc. Strut rod mounting assembly. 4,213,718, Cl. 403-197.000.

Lummus Company, The: *See—*
Davis, H. R.; Long, R. H.; and Simone, A. A., 4,213,862, Cl. 210-83.000.
Fanelli, Anthony J.; and Gelbein, Abraham P., 4,214,087, Cl. 546-319.000.

Lumoprint Zindler KG (GmbH & Co.): *See—*
Salger, Werner, 4,213,617, Cl. 277-12.000.

Lundh, Folke: *See—*
Boberg, Anders; Larsson, Bernt; and Lundh, Folke, 4,213,885, Cl. 260-29.6TA.

M. P. H. Industries, Inc.: *See—*
Patterson, Robert E., 4,214,243, Cl. 343-8.000.

M & W Gear Company: *See—*
Bonomo, Melvin E.; Coldren, Kenneth M.; Lemke, Verne O.; Rathbun, Loren L.; and Towner, Ronald D., 4,213,332, Cl. 73-134.000.

Maag Gear-Wheel & Machine Company Limited: *See—*
Fivian, Daniel A., 4,213,277, Cl. 51-325.000.

Maag, Oskar, to Maag Zahnrader & Maschinen Aktiengesellschaft. Support arrangement for a workpiece table of a gear testing machine. 4,213,401, Cl. 108-20.000.

Maag Zahnrader & Maschinen Aktiengesellschaft: *See—*
Maag, Oskar, 4,213,401, Cl. 108-20.000.

Mabuchi, Hiroshi; and Yabe, Isao, to Citizen Watch Co., Ltd. Receiving unit for timepieces. 4,213,293, Cl. 368-152.000.

Mach, Dennis E.: *See—*
Knight, George W.; and Mach, Dennis E., 4,213,880, Cl. 252-431.00R.

Machines Chambon: *See—*
Corse, Louis G., 4,213,249, Cl. 34-12.000.

Madec, Marcel; Espitalie, Jean; Laporte, Jean-Loup; and Barsony, Imre, to Institut Francais du Petrole. Method and device for analyzing geological sediments and for determining their organic sulfur content. 4,213,763, Cl. 23-230.0EP.

Magerkurth, Bernhard: *See—*
Hahn, Erwin; Magerkurth, Bernhard; Lach, Dietrich; and Wuertele, Lothar, 4,213,760, Cl. 8-94.170.

Magett, Fred M. Rotatable lamp fixture. 4,214,296, Cl. 362-35.000.

Magnuson, Lars. Spool making machine. 4,213,576, Cl. 242-67.30R.

Magyar Asvanyolaj es Foldgaz Kiserleti Intezet: *See—*
Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; Farkas, L. Peter; Remenyi, Janos; and Koltay, Sandor, 4,214,032, Cl. 428-280.000.

Mahler, Walter; and Forshey, William O., Jr., to Du Pont de Nemours, E. I., and Company. Process of preparing particulate poly(alumino-silicate). 4,213,949, Cl. 423-329.000.

Mahler, Walter, to Du Pont de Nemours, E. I., and Company. Process for preparing amorphous particulate poly(alumino-silicate). 4,213,950, Cl. 423-329.000.

Maier, Elmar; and Heeb, Othmar, to Hilti Aktiengesellschaft. Compressed air apparatus for driving fastening elements. 4,213,301, Cl. 60-407.000.

Maier, Ludwig, to Ciba-Geigy Corporation. Process for producing phosphonic acid halides. 4,213,922, Cl. 260-958.000.

Maier, William B., II: *See—*
Freund, Samuel M.; Maier, William B., II; Beattie, Willard H.; and Holland, Redus F., 4,213,836, Cl. 204-157.10R.

Majoor, Hendrik, to Hoogovens Ijmuiden, B.V. Expandable coiler mandrel. 4,213,577, Cl. 242-72.00R.

Makimoto, Mitsuo: *See—*
Saito, Mitsuo; Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,214,218, Cl. 334-45.000.

Makino, Takao: *See—*
Hotta, Toshihiro; and Makino, Takao, 4,214,169, Cl. 250-505.000.

Makovec, Donald J.; and Hutson, Thomas, Jr., to Phillips Petroleum Company. Alkylation process utilizing plural olefinic reactants. 4,214,115, Cl. 585-716.000.

Malkani, Dalip T.: *See—*
Middlemiss, Andrew; and Malkani, Dalip T., 4,213,231, Cl. 29-18.000.

Maloney, John V.: *See—*
Scrivo, Jerry V.; and Maloney, John V., 4,213,644, Cl. 293-117.000.

Mamuzic, Rastko: *See—*
Garman, John A.; and Mamuzic, Rastko, 4,214,103, Cl. 568-639.000.

Manabe, Katsuhide; Masumi, Jiro; Tochitani, Tomotada; and Shinoda, Kenzo, to Toyoda Gosei Kabushiki-Kaisha (Toyoda Synthetics Co., Ltd.). Process for manufacturing plastic articles having on the surface thereof a protected metal film. 4,214,016, Cl. 427-54.100.

Mancini, Derek V., to Consumers Glass Company Limited. Cartoning apparatus. 4,213,285, Cl. 53-137.000.

Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, to Lion Fat & Oil Co., Ltd., The. Process for preparing olefin oligomer. 4,214,112, Cl. 585-532.000.

Mandrin, Charles, to Sulzer Brothers Limited. Process for the preparation of ammonia and heavy water. 4,213,953, Cl. 423-359.000.

Maney, Thomas P. Adjustable paper cap. 4,213,206, Cl. 2-197.000.

Mangan, William E.: *See—*
Casciani, Ralph A.; Wilbern, Wilmer L.; Mangan, William E.; and Franson, Paul D., 4,213,955, Cl. 423-442.000.

Mann, Egon: *See—*
Ehrlinger, Friedrich; Mann, Egon; Fischer, Manfred; and Jocham, Rudolf, 4,213,514, Cl. 180-308.000.

Mann, Friedrich H.; and Sensabaugh, Paul F., to General Electric Company. Battery charger for a portable radio. 4,214,197, Cl. 320-2.000.

Mann, William W.: *See—*
Deardorff, Duane R.; and Mann, William W., 4,213,571, Cl. 241-48.000.

Mannesmann Aktiengesellschaft: *See—*
Grebe, Klaus; and De Haas, Hans, 4,213,777, Cl. 75-0.5BA.

Mannesmannufer Aktiengesellschaft: *See—*
Ries, Karl; Hannoschock, Kurt; Rozic, Krsto-Marijan; and Basler, Gunter, 4,213,552, Cl. 226-170.000.

Manowitz, Milton: *See—*
Brandman, Harold A.; Manowitz, Milton; and Coffen, David L., 4,214,002, Cl. 424-300.000.

Manz, David F.: *See—*
Irwin, Clarence C.; Manz, David F.; and Auman, John T., 4,213,652, Cl. 297-478.000.

Marchak, Roman O.: *See—*
Peterson, William A., Jr.; and Marchak, Roman O., 4,214,307, Cl. 364-431.000.

Marchioro, Ignazio: *See—*
Biondetti, Mario; and Marchioro, Ignazio, 4,213,232, Cl. 29-116.0AD.

Marconi Company Limited, The: *See—*
Langdon, Roger M., 4,213,337, Cl. 73-290.00V.

Mard, Kenneth C.: *See—*
von Hardenberg, Paul W.; Mard, Kenneth C.; and Lavoie, Edward, 4,213,518, Cl. 188-1.00B.

Mares, Frank; and Jacobson, Stephen E., to Allied Chemical Corporation. Hydrogen peroxide oxidation process for ketones. 4,213,906, Cl. 260-343.000.

Marhofer, Edwin G.: *See—*
Gehrig, Neil E.; and Marhofer, Edwin G., 4,213,809, Cl. 149-60.000.

Marianeschi, Edmondo; and Marini, Paolo, to Centro Sperimentale Metallurgico S.p.A.; and Terni-Societe per l'Industria e l'Elettricita S.p.A. Coating solution for applying tensioning coatings to electrical steel strip. 4,213,792, Cl. 106-286.600.

Marine Construction & Design Co.: *See—*
Anderson, Joseph W., 4,213,863, Cl. 210-108.000.

Marini, Paolo: *See—*
Marianeschi, Edmondo; and Marini, Paolo, 4,213,792, Cl. 106-286.600.

Marmol, Ronald A., to United Technologies Corporation. Bearing support structure combining fluid damping and spring damping apparatus. 4,213,661, Cl. 308-184.00R.

Marne, Sheldon. Metatarso-phalangeal joint implant. 4,213,208, Cl. 3-1.910.

Marsh, David R.: *See—*
Sullivan, John B.; and Marsh, David R., 4,213,252, Cl. 35-10.240.

Marshall Equipment Co. Inc.: *See—*
Cromley, Harold D., 4,213,379, Cl. 98-33.00R.

Martin, Edward S., to Aluminum Company of America. Production of aluminum chloride from clay using staged reactors. 4,213,943, Cl. 423-135.000.

Martin, Jerry R., to Abbott Laboratories. 4-N, 2'-N and 4,2'Di-N-fortimicins AH and AI. 4,213,972, Cl. 424-181.000.

Martin, Jerry R., to Abbott Laboratories. 4-N,2'-N and 4,2'-Di-N-fortimicin AO derivatives. 4,213,974, Cl. 424-180.000.

Martin, Jerry R., to Abbott Laboratories. 4-N, 2'-N and 4,2'-Di-N-fortimicin AL derivatives. 4,214,079, Cl. 536-17.00R.

Martin, Jerry R.: *See—*
Tadanier, John S.; and Martin, Jerry R., 4,214,075, Cl. 536-17.00R.

Martin, John K.: *See—*
Cattorini, Joseph F.; Park, Thomas R.; and Martin, John K., 4,213,601, Cl. 270-61.00F.

Martin Marietta Corporation: *See—*
McKay, Michael W.; and McDirmit, Evan L., 4,214,244, Cl. 343-18.00E.

Martin, Walter H.: *See—*
Bryan, Henry A.; Martin, Walter H.; and Konves, Richard L., 4,213,423, Cl. 119-86.000.

Martino, Peter V. Apparatus for processing a particulating printing plate. 4,213,420, Cl. 118-713.000.

Martins, Joseph G.: *See—*
Donermeyer, Donald D.; and Martins, Joseph G., 4,214,019, Cl. 427-142.000.

Marvin Glass & Associates: *See—*
Erickson, Erick E.; Wildman, John R.; and Meyer, Burton C., 4,213,268, Cl. 46-202.000.
Wildman, John R.; and Meyer, Burton C., 4,213,612, Cl. 273-355.000.

Mas, Henri; and Lacroix, Paul. Snow shoe. 4,213,256, Cl. 36-124.000.

Masada, Gary M., to Chevron Research Company. Lube oil blend process and composition. 4,213,845, Cl. 208-19.000.

Masalov, Gennady F.: *See—*
Polovnikov, Sergei V.; Zaznobin, Anatoly M.; Masalov, Gennady F.; and Mischenkov, Alexandr A., 4,213,346, Cl. 73-660.000.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Hagen, Hans, 4,213,625, Cl. 280-43.230.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N): *See*—
Liebert, Oskar; and Worner, Michael, 4,213,390, Cl. 101-365.000.

Mason, Martin K., to Hewlett-Packard Company. Digital servo anti-hunt circuit. 4,214,193, Cl. 318-611.000.

Massey, Richard C. Cap for the nozzle of a caulking cartridge. 4,213,546, Cl. 222-546.000.

Massiah, Thomas F.: *See*—
Attwell, Michael C.; Massiah, Thomas F.; Vergottini, Roberto A.; and Ziegler, Peter, 4,213,911, Cl. 260-397.100.

Masuda, Takao: *See*—
Ikenoue, Shinpei; and Masuda, Takao, 4,213,784, Cl. 430-616.000.

Masuda, Toyohiko: *See*—
Furuta, Isao; Yagaki, Kazuhito; and Masuda, Toyohiko, 4,213,946, Cl. 423-242.000.

Masumi, Jiro: *See*—
Manabe, Katsuhide; Masumi, Jiro; Tochitani, Tomotada; and Shinoda, Kenzo, 4,214,016, Cl. 427-54.100.

Matsui, Kenji: *See*—
Kawaharazaki, Takashi; Teraoka, Fuminori; Kubota, Tatsushi; and Matsui, Kenji, 4,213,580, Cl. 242-107.000.

Matsui, Kiyohide: *See*—
Kondo, Kiyoshi; Matsui, Kiyohide; Negishi, Akira; and Takahatake, Yuriko, 4,214,097, Cl. 560-213.000.

Matsui, Ryoji: *See*—
Fujii, Setsuro; Sakurai, Yojiro; Nakayama, Toyoo; and Matsui, Ryoji, 4,214,093, Cl. 560-34.000.

Matsuki, Yutaka: *See*—
Watanabe, Seizaburo; and Matsuki, Yutaka, 4,214,054, Cl. 521-95.000.

Matsushita Electric Corporation: *See*—
Rzeszewski, Theodore S.; and Frantzis, Paul D., 4,214,274, Cl. 358-193.100.

Matsushita Electric Industrial Co., Ltd.: *See*—
Saito, Mitsuo; and Yamashita, Sadahiko, 4,214,217, Cl. 334-45.000.
Saito, Mitsuo; Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,214,218, Cl. 334-45.000.

Matsushita, Shigeo: *See*—
Sugimoto, Shigetoki; Ishikawa, Ro; and Matsushita, Shigeo, 4,213,677, Cl. 350-96.180.

Matsuura, Tsuguo: *See*—
Shimizu, Tsuguo; and Matsuura, Tsuguo, 4,214,304, Cl. 364-200.000.

Matte, Roger A. Motorcycle railway attachment. 4,213,397, Cl. 105-95.000.

Matthews, James D.: *See*—
Padovani, Francois A.; Miller, Michael B.; Moore, James A.; Fowler, James H.; June, Malcom N.; Matthews, James D.; Morton, T. R.; Stotko, Norbert A.; and Palmer, Lewis B., 4,213,937, Cl. 422-142.000.

Matthies, Paul: *See*—
Eckell, Albrecht; Matthies, Paul; Pilz, Georg; and Rotzoll, Rudi-Heinz, 4,213,884, Cl. 260-29.20N.

Maul, Rudolf: *See*—
Abeler, Gerd; and Maul, Rudolf, 4,214,088, Cl. 546-321.000.

Mauron, Gerard, to Automobiles Peugeot; and Societe Anonyme Automobiles Citroen. Passive safety belt for an automobile vehicle. 4,213,637, Cl. 280-802.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Hoppe, Walter; and Typke, Dieter, 4,214,162, Cl. 250-311.000.

Maximov, Ivan V.: *See*—
Semashko, Andrei P.; Gimaev, Nasikh Z.; Maximov, Ivan V.; Bezrukov, Sergei V.; and Rabinovich, Vladimir B., 4,213,834, Cl. 204-129.250.

Maximovich, Boleslav I.: *See*—
Kozlov, Anatoly E.; Budzan, Bogdan P.; Dudko, Daniil A.; Maximovich, Boleslav I.; Zavodian, Vitaly V.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; Golovnin, Vladimir M.; and Farrakhov, Nail S., 4,214,139, Cl. 219-9.500.

Mayo, Carlos, to C. Mayo, Inc. Fireplace combustion air duct apparatus. 4,213,445, Cl. 126-143.000.

Mayo, William E.; Raghavan, Mathur; Shapiro, Stanley; Hardy, Ronald G.; and Block, Duncan G., to Swiss Aluminium Ltd. Electrical conductivity of aluminum alloys through the addition of yttrium. 4,213,800, Cl. 148-2.000.

Mays, Robert K.: *See*—
Williams, Lloyd E.; and Mays, Robert K., 4,213,874, Cl. 252-174.250.

Mazziotti, Philip J., to Dana Corporation. Power shaft support bearing. 4,213,512, Cl. 180-233.000.

McAlpine, James B., to Abbott Laboratories. 4N, 2'-N and 4,2'-Di-N-fortimicin AK derivatives. 4,213,971, Cl. 424-181.000.

McAlpine, James B., to Abbott Laboratories. 2'-N-Substituted fortimicin B and derivatives. 4,214,076, Cl. 536-17.00R.

McAuliffe, Gerald N.: *See*—
Cavil, David T.; and McAuliffe, Gerald N., 4,214,288, Cl. 361-6.000.

McCabe, Francis J. Telescoping heat responsive releasing means. 4,213,227, Cl. 16-48.500.

McCabe, Francis J. Press. 4,213,365, Cl. 83-530.000.

McCall, David L.: *See*—
Lucek, John R.; and McCall, David L., 4,214,138, Cl. 200-144.00B.

McCaney, Carlos P.; and Bocksruker, Ronald W. Can crusher. 4,213,387, Cl. 100-245.000.

McCarty, Charles B.; and Seiden, Paul, to Procter & Gamble Company, The. Fabric treatment compositions containing polyglycerol esters. 4,214,038, Cl. 428-411.000.

McCaulay, David A.; and Nevitt, Thomas D., to Standard Oil Co. (Indiana). Hydrocarbon isomerization utilizing a hydrocarbon promoter with tantalum pentafluoride and hydrogen halide catalyst. 4,214,116, Cl. 585-747.000.

McClenan, Warren G. Visually inspectable grounding connector for electrical cable. 4,213,664, Cl. 339-14.00R.

McCord Corporation: *See*—
Scrivo, Jerry V.; and Maloney, John V., 4,213,644, Cl. 293-117.000.

McDirmit, Evan L.: *See*—
McKay, Michael W.; and McDirmit, Evan L., 4,214,244, Cl. 343-18.00E.

McGill Manufacturing Company, Inc.: *See*—
Beck, Frederick R., 4,213,513, Cl. 180-272.000.

McHugh, John V.: *See*—
Jutte, Gottfried W.; and McHugh, John V., 4,214,045, Cl. 429-87.000.

McIntire, Ronald A., to Fike Metal Products Corporation. Discharge nozzle for fluorinated hydrocarbon fire suppression system. 4,213,567, Cl. 239-396.000.

McKay, Michael W.; and McDirmit, Evan L., to Martin Marietta Corporation. Null pattern technique for reduction of an undesirable interfering signal. 4,214,244, Cl. 343-18.00E.

McKenzie, Geoffrey F. Container lifter. 4,213,728, Cl. 414-446.000.

McManus, Stephen J.: *See*—
Sterling, Henley F.; Bush, Eric L.; and McManus, Stephen J., 4,214,293, Cl. 361-433.000.

McNeil Corporation: *See*—
Shannon, Joseph W., 4,213,339, Cl. 73-304.00R.

McNeilab, Inc.: *See*—
Carson, John R., 4,213,905, Cl. 260-326.470.

McPeak, Walter G. Neckbone and shoulder protective apparel for barbell lifters. 4,213,605, Cl. 272-119.000.

Mead Corporation, The: *See*—
Calvert, Rodney K.; Scott, Dale K.; and Fishback, Alton J., 4,213,283, Cl. 53-48.000.
Gudorf, James L., 4,213,238, Cl. 29-878.000.

Mead, Judson: *See*—
Adams, William M.; Blakely, Robert F.; Ellis, Charles R.; and Mead, Judson, 4,214,238, Cl. 340-690.000.

Mechanical Seal & Service, Inc.: *See*—
Thurber, Mickey D., 4,213,618, Cl. 277-93.00R.

Mechanical Technology Incorporated: *See*—
Gray, Stanley, 4,213,657, Cl. 308-9.000.

MedaSonics, Inc.: *See*—
Reinertson, John E.; and Wells, John L., 4,213,348, Cl. 73-765.000.

Mefcor, Inc.: *See*—
Hurt, Frank K.; and Wellons, Edwin L., 4,213,743, Cl. 417-229.000.

Mehren, Herbert; and Wulf, Helmut, to Daimler-Benz Aktiengesellschaft. Traffic system with drive channel and road vehicles mechanically cross guided-therein. 4,213,396, Cl. 104-130.000.

Meier, Ludwig: *See*—
Kuhn, Gebhard; and Meier, Ludwig, 4,214,297, Cl. 362-327.000.

Meiller, Francois: *See*—
Blanc, Jean-Pierre; and Meiller, Francois, 4,213,785, Cl. 106-38.350.

Meiller Research, Inc.: *See*—
Isbell, Arthur F., 4,213,875, Cl. 252-188.30R.

Meissner, Konrad E., to California Processing Machinery. Selective pitter for fruits of the drupe type. 4,213,382, Cl. 99-486.000.

Melander, Clarence, to East Wind Industries, Inc. Tensioning device for an inflatable structure. 4,213,219, Cl. 9-4.00R.

Mellen, Arthur J.; and Reitlinger, Adolf, to Contact Communication Corporation. Low noise-high gain JFET amplifier for a piezoelectric transducer. 4,214,215, Cl. 330-277.000.

Memmi, Massimo: *See*—
Azzerri, Nazzareno; Bruno, Roberto; and Memmi, Massimo, 4,213,839, Cl. 204-181.00R.

Merger, Franz: *See*—
Adolphi, Heinrich; Baumann, Annegrit; Huber, Rolf; Kiehs, Karl; and Merger, Franz, 4,213,992, Cl. 424-273.00P.

Merkel, Karl: *See*—
Datow, Joachim; Decker, Martin; Merkel, Karl; and Neumayr, Franz, 4,213,919, Cl. 260-544.00K.

Merriman, George W. Connecting cable. 4,214,214, Cl. 330-65.000.

Mersmann, Harry J.: *See*—
Witiak, Donald T.; Carr, John B.; and Mersmann, Harry J., 4,213,998, Cl. 424-285.000.
Witiak, Donald T.; Carr, John B.; and Mersmann, Harry J., 4,213,999, Cl. 424-285.000.

Mesens, Jean; and Haagen, Victor, to Janssen Pharmaceutica N.V. Fluspirilene-containing compositions. 4,213,963, Cl. 424-80.000.

Messer Griesheim GmbH: *See*—
Pfeiffer, Ferdinand; and Rottwinkel, Leo, 4,213,501, Cl. 169-46.000.

Metallhuttenwerke Lubeck GmbH: *See*—
Sitz, Claus, 4,213,778, Cl. 75-25.000.

Metz Mannheim GmbH: *See*—
Metz, Walter, 4,213,347, Cl. 73-716.000.

Metz, Walter, to Metz Mannheim GmbH. Indicating device for measuring and control apparatus. 4,213,347, Cl. 73-716.000.

Meyer, Burton C.: *See*—
Erickson, Erick E.; Wildman, John R.; and Meyer, Burton C., 4,213,268, Cl. 46-202.000.
Wildman, John R.; and Meyer, Burton C., 4,213,612, Cl. 273-355.000.

Meyer, Fritz, to Siemens Aktiengesellschaft. Digital to analog converter using multiple emitter transistors. 4,214,235, Cl. 340-347.0DA.

Meyer, Jacques; and Bernelin, Daniel, to Rhone-Poulenc Industries. Cross-linkable, saturated polyester coating compositions. 4,214,040, Cl. 428-458.000.

Meyers, George L., to American Can Company. Divided display carton. 4,213,559, Cl. 229-16.00D.

Michne, William F.: *See*—
Lewis, Thomas R.; and Michne, William F., 4,214,085, Cl. 546-97.000.

Microlife Technics, Inc.: *See*—
Groben, Richard L.; Gryczka, Alfred J.; and Franklin, Alfred A., 4,214,008, Cl. 426-53.000.

Middlemiss, Andrew; and Malkani, Dalip T., to British Steel Corporation. Manufacture of metal strip. 4,213,231, Cl. 29-18.000.

Mihalic, William T., to Eaton Corporation. Valve selector for shaft-mounted rockers. 4,213,442, Cl. 123-198.00F.

Mikajiri, Kazukichi, to Canon Kabushiki Kaisha. Automatic exposure time control apparatus for camera. 4,213,688, Cl. 354-23.00D.

Miles, Alfred. Coupling for interconnecting conduits. 4,213,640, Cl. 285-137.00R.

Miles Laboratories, Inc.: *See*—
Buckler, Robert T., 4,213,894, Cl. 260-112.50R.
Buckler, Robert T., 4,213,964, Cl. 424-85.000.
Carrico, Robert J.; and Johnson, Richard D., 4,213,893, Cl. 260-112.50R.

Milgram, Jerome H., to Offshore Devices, Inc. Self-reversing hydraulic control system and self-reversing pump incorporating such system. 4,213,298, Cl. 60-369.000.

Miller, Charles H.: *See*—
Shortway, Harry A.; Graham, Alan A.; and Miller, Charles H., 4,214,028, Cl. 428-159.000.

Miller, Eldon D., to Lava Crucible Refractories Co. Method of introducing calcium and calcium alloys into a vessel of molten metal. 4,213,780, Cl. 75-58.000.

Miller, Jonathan, to Shop-Vac Corporation. By-pass type portable vacuum cleaner. 4,213,224, Cl. 15-344.000.

Miller, Michael B.: *See*—
Padovani, Francois A.; Miller, Michael B.; Moore, James A.; Fowler, James H.; June, Malcom N.; Matthews, James D.; Morton, T. R.; Stotko, Norbert A.; and Palmer, Lewis B., 4,213,937, Cl. 422-142.000.

Mills, King L.: *See*—
Hunt, Harold R.; and Mills, King L., 4,213,957, Cl. 423-450.000.

Miltenberger, Louis E., to Hercules Incorporated. Nested cone extendible nozzle system for a rocket motor. 4,213,566, Cl. 239-265.430.

Milton, A. Fenner; and Giallorenzi, Thomas G., to United States of America, Navy. Planar fiber optic star and access coupler. 4,213,670, Cl. 350-96.160.

Minami, Hidehiro; and Aoki, Teruo, to Nissan Motor Company, Limited. Spark-ignition internal combustion engine capable of reducing noxious constituents in exhaust gases. 4,213,430, Cl. 123-440.000.

Minami, Setsuo: *See*—
Sugiura, Muneharu; Minami, Setsuo; and Miyamoto, Koichi, 4,213,690, Cl. 355-8.000.

Minkiewicz, Andre E.; and Poirier, Norbert, to Compagnie Francaise des Petroles. Method and apparatus for automatic welding of bevelled tubes. 4,213,555, Cl. 228-29.000.

Minkin, Gary E. Power parts washer. 4,213,475, Cl. 134-111.000.

Mino, Masao; and Ohno, Takeshi, to Kabushiki Kaisha Mino Seisakusho. Grooved traverse drum used in drum winder. 4,213,574, Cl. 242-43.200.

Minolta Camera Kabushiki Kaisha: *See*—
Yamada, Seiji, 4,213,682, Cl. 354-23.00D.

Mischenkov, Alexandr A.: *See*—
Polovnikov, Sergei V.; Zaznobin, Anatoly M.; Masalov, Gennady F.; and Mischenkov, Alexandr A., 4,213,346, Cl. 73-660.000.

Mita Industrial Company Limited: *See*—
Miyakawa, Nobuhiro; Inoue, Eiichi; and Kokado, Hiroshi, 4,214,031, Cl. 428-213.000.

Mitani, Akira; and Sanguu, Isao, to Nippon Electric Co., Ltd. Reel drive motor control system for cassette/cartridge tape recorders. 4,213,583, Cl. 242-186.000.

Mitchell, Thomas O.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Olefin hydroformylation. 4,213,921, Cl. 568-455.000.

Mitsubishi Chemical Industries Ltd.: *See*—
Okushima, Hiromi; Nitta, Issei; and Furuya, Rikizo, 4,213,902, Cl. 260-239.570.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Kawanami, Takao; Tajiri, Hiromi; and Uomori, Akiyoshi, 4,214,143, Cl. 219-97.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, 4,214,100, Cl. 562-416.000.

Mitsui, Hajime: *See*—
Hayata, Toshinori; Tsuji, Kunio; and Mitsui, Hajime, 4,213,681, Cl. 354-21.000.

Miura, Koryo. Method of and apparatus for measuring stiffness. 4,213,349, Cl. 73-847.000.

Miura, Yoshiharu; Aoyagi, Sadayoshi; and Miyamoto, Kazuhisa, to Miura, Yoshiharu; and Doi, Hideo. Artificial medical material with anticoagulative activity. 4,213,962, Cl. 424-78.000.

Miya, Bunji; and Kimura, Akio, to Kao Soap Co., Ltd. Process for preparing ether carboxylates. 4,214,101, Cl. 562-421.000.

Miyakawa, Nobuhiro; Inoue, Eiichi; and Kokado, Hiroshi, to Mita Industrial Company Limited. Conductive substrate for electrosensitive recording material. 4,214,031, Cl. 428-213.000.

Miyamoto, Kazuhisa: *See*—
Miura, Yoshiharu; Aoyagi, Sadayoshi; and Miyamoto, Kazuhisa, 4,213,962, Cl. 424-78.000.

Miyamoto, Koichi: *See*—
Sugiura, Muneharu; Minami, Setsuo; and Miyamoto, Koichi, 4,213,690, Cl. 355-8.000.

Miyashita, Toshio; Fujii, Yoshizo; and Sawabe, Takeshi, to Shinko Automatic Device Co., Ltd. Automatic vending machine with lottery bonus. 4,213,524, Cl. 194-2.000.

Mizukami, Mineo, to Nippon Electric Co., Ltd. Digital apparatus for correcting a time-base error in a television video signal. 4,214,262, Cl. 358-19.000.

Mobil Oil Corporation: *See*—
Chang, Clarence D.; and Morgan, Norman J., 4,214,107, Cl. 568-897.000.
Chen, Nai Y.; and Wang, Ikai, 4,213,847, Cl. 208-111.000.
Mitchell, Thomas O.; and Whitehurst, Darrell D., 4,213,921, Cl. 568-455.000.
Steiner, Robert H.; Duncan, Gary L.; and Touhsaent, Robert E., 4,214,039, Cl. 428-414.000.

Modersohn, Charles W., to Warner Electric Brake & Clutch Company. Clutch-brake assembly for rotary implements. 4,213,521, Cl. 192-18.00R.

Moll, Hans: *See*—
Haese, Egon; Moll, Hans; and Willms, Rolf, 4,213,945, Cl. 423-240.000.

Molson Companies Limited, The: *See*—
Graham, Robert H.; and Campbell, Barry D., 4,213,526, Cl. 198-400.000.

Momiyama, Kikuo, to Canon Kabushiki Kaisha. Tessar form photographic lens. 4,213,674, Cl. 350-227.000.

Monarch Marking Systems, Inc.: *See*—
Jacobson, David N., 4,214,024, Cl. 428-41.000.

Monsanto Company: *See*—
Donermeyer, Donald D.; and Martins, Joseph G., 4,214,019, Cl. 427-142.000.
Lavengood, Richard E., 4,214,056, Cl. 525-71.000.
Ward, Robert R.; Chang, Richard C.; Danos, James C.; and Carden, Joseph A., Jr., 4,214,020, Cl. 427-296.000.

Montgomery, Gary V., to Sunbeam Plastics Corporation. Child-resistant closure. 4,213,534, Cl. 215-216.000.

Moog, Robert A., to Norlin Music, Inc. Monophonic touch sensitive keyboard. 4,213,367, Cl. 84-1.220.

Mooney, Thomas F., III: *See*—
Schweickart, Albert J.; and Mooney, Thomas F., III, 4,213,336, Cl. 73-215.000.

Moore, George B. Steering stabilizer apparatus. 4,213,626, Cl. 280-94.000.

Moore, James A.: *See*—
Padovani, Francois A.; Miller, Michael B.; Moore, James A.; Fowler, James H.; June, Malcom N.; Matthews, James D.; Morton, T. R.; Stotko, Norbert A.; and Palmer, Lewis B., 4,213,937, Cl. 422-142.000.

Moore, James H.: *See*—
Sikdar, Subhas K.; and Moore, James H., 4,213,951, Cl. 423-339.000.

Moore, Malcolm, to s.a. Texaco Belgium n.v. Method of measuring low concentrations of a light absorbing component. 4,213,699, Cl. 356-70.000.

Moore, Robert G. Two-stage vehicle spring suspension. 4,213,633, Cl. 280-716.000.

Morande, James A., Jr., to All Nighter Stove Works, Inc. Stove construction. 4,213,443, Cl. 126-72.000.

Morelli, Frank A.: *See*—
Bauman, Albert J.; and Morelli, Frank A., 4,213,768, Cl. 55-97.000.

Moretto, Hans-Heinrich; Steinberger, Helmut; Larking, Ingrid; and Sattlegger, Hans, to Bayer Aktiengesellschaft. Organopolysiloxanes modified with poly-carbodiimide. 4,214,066, Cl. 528-28.000.

Morgan, Norman J.: *See*—
Chang, Clarence D.; and Morgan, Norman J., 4,214,107, Cl. 568-897.000.

Morgunsky, Evgeny I.: *See*—
Yascheritsyn, Petr I.; Sidorenko, Valery A.; Morgunsky, Evgeny I.; Vishnev, Nikolai V.; Bureika, Mindaugas N.; Plotnikov, Vladimir A.; and Volkov, Anatoly T., 4,213,358, Cl. 82-36.00R.

Morimoto, Kiyoshi; Watanabe, Hiroshi; and Takagi, Toshinori, to Futaba Denshi Kogyo K.K. Ion plating apparatus. 4,213,844, Cl. 204-298.000.

Morito, Hiroshi, to Nippon Electric Co., Ltd. Digital vertical sync signal separator. 4,214,270, Cl. 358-154.000.

Moroe, Mitio: *See*—
Moroe, Tatsuo; Komatsu, Akira; Doi, Kiyosumi; and Moroe, Mitio, 4,214,110, Cl. 585-241.000.

Moroe, Tatsuo; Komatsu, Akira; Doi, Kiyosumi; and Moroe, Mitio, to Takasago Perfumery Co., Ltd. Process for producing hydrocarbons. 4,214,110, Cl. 585-241.000.

Morris, Harold B., to Glasrock Products, Inc. Method for bonding porous coating to rigid structural member. 4,213,816, Cl. 156-245.000.

Morrison, Donald R. Portable vibrating concrete screed. 4,213,749, Cl. 425-456.000.

Morse Manufacturing Company, Inc.: *See*—
Lighthipe, Charles H., Jr.; 4,213,727, Cl. 414-420.000.

Morse, Richard H., to Leeds & Northrup Company. Boiler control system. 4,213,304, Cl. 60-664.000.

Morton, Dennis S.: *See—*
Stromsta, Roger R.; Nathanson, Marshall R.; and Morton, Dennis S., 4,214,287, Cl. 360-103.000.

Morton, Harold, to Oldham Batteries Limited. Portable electric lamp adjustable from spot beam to diffused beam. 4,214,295, Cl. 362-164.000.

Morton, T. R.: *See—*
Padovani, Francois A.; Miller, Michael B.; Moore, James A.; Fowler, James H.; June, Malcom N.; Matthews, James D.; Morton, T. R.; Stotko, Norbert A.; and Palmer, Lewis B., 4,213,937, Cl. 422-142.000.

Moser, Gottfried; and Jansen, Wilhelm, to Klockner-Humboldt-Deutz Aktiengesellschaft. Disc brake, especially for motor vehicles. 4,213,519, Cl. 188-71.400.

Moser, Helmut; and von Tobel, Hans R., to Sandoz Ltd. Disazo and trisazo compounds having a 3-pyridinium or substituted pyridinium-4-methyl-6-hydroxypyridone-2 coupling component radical. 4,213,897, Cl. 260-154.000.

Motonami, Masanao: *See—*
Yoshitsugu, Noritada; Motonami, Masanao; and Katsuno, Mitsuaki, 4,213,651, Cl. 297-475.000.

Motorola, Inc.: *See—*
Bafaro, Michael P.; and Parker, James J., 4,214,188, Cl. 315-382.000.
Brenner, Charles H., 4,213,394, Cl. 102-213.000.
Shaw, Pern; Musa, Fuad H.; and Kreinick, Stephen J., 4,214,232, Cl. 340-347.0AD.
Shaw, Pern; Musa, Fuad H.; and Kreinick, Stephen J., 4,214,233, Cl. 340-347.0AD.

Moulinex, Societe Anonyme: *See—*
Amiot, Jacques H. J., 4,213,569, Cl. 241-37.500.

Moulis, Edward J.: *See—*
Jones, William T., Jr.; and Moulis, Edward J., 4,214,120, Cl. 174-52.0FP.

Moulton, Richard J.: *See—*
Goodrich, Richard B.; and Moulton, Richard J., 4,213,930, Cl. 264-135.000.

Mourier, Georges, to Thomson-CSF. Ion source producing a dense flux of low energy ions. 4,214,187, Cl. 315-111.800.

Moutton, Louis: *See—*
Denninger, Claude; and Moutton, Louis, 4,213,265, Cl. 43-84.000.

Mozer, Forrest S.; and Stauduhar, Richard P., to Mozer, Forrest S. Method and apparatus for speech synthesizing. 4,214,125, Cl. 179-1.0SM.

Mozzhukhin, Anatoly A.: *See—*
Kozlov, Anatoly E.; Budzan, Bogdan P.; Dudko, Daniil A.; Maximovich, Boleslav I.; Zavodian, Vitaly V.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; Golovnin, Vladimir M.; and Farrakhov, Nail S., 4,214,139, Cl. 219-9.500.

Muders, Rolf; Leister, Heinrich; Dittmer, Helmut; and Schonhagen, Hubert, to Bayer Aktiengesellschaft. Process for the preparation of 1-amino-4-bromoanthraquinone-2-sulphonic acid I. 4,213,910, Cl. 260-371.000.

Mueller, Curt: *See—*
Entschel, Roland; Mueller, Curt; and Steinemann, Willy, 4,213,898, Cl. 260-156.000.

Mukhina, Tamara N.: *See—*
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,214,113, Cl. 585-634.000.

Muller, Hans; and Sotirianos, Konstantin, to Chemap AG. Pressure filter and process for cleaning it. 4,213,861, Cl. 210-82.000.

Mungons, Edwin M.: *See—*
Cowles, Clarence W.; Breashears, James C.; and Mungons, Edwin M., 4,213,729, Cl. 414-462.000.

Munroe, Ronald G., to Eagle Electric Mfg. Co., Inc. Bottom turn socket. 4,214,135, Cl. 200-51.170.

Murphy, Patrick, to Boeing Company, The. Mounting system for a wing mounted aircraft engine. 4,213,585, Cl. 244-54.000.

Murray, Ronald A.; and Piccirillo, Gary P., to TRW Inc. Electrical connector. 4,213,665, Cl. 339-17.00D.

Murray, William S., Jr.: *See—*
Bitely, Clarence J., Jr.; Dromgold, Luther D.; and Murray, William S., Jr., 4,213,868, Cl. 252-11.000.

Musa, Fuad H.: *See—*
Shaw, Pern; Musa, Fuad H.; and Kreinick, Stephen J., 4,214,232, Cl. 340-347.0AD.
Shaw, Pern; Musa, Fuad H.; and Kreinick, Stephen J., 4,214,233, Cl. 340-347.0AD.

Musil, Josef: *See—*
Gebert, Ulrich; Musil, Josef; and Weber, Rolf-Ortwin, 4,213,986, Cl. 424-250.000.

Mussatt, Thomas J., to Sangamo Weston, Inc. Method and apparatus for controlling tape recorder. 4,214,284, Cl. 360-72.100.

Myers, Charles H. Rear viewing system for vehicles. 4,214,266, Cl. 358-108.000.

Nachtrieb, Karl: *See—*
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and Lefranc, Guy, 4,214,166, Cl. 250-396.0ML.

Nagahori, Yukihiro, to Jeco Co., Ltd. Self-starting miniature synchronous motors. 4,214,181, Cl. 310-162.000.

Nagai, Shigeki; Sekioka, Hakobu; Takenaka, Mitsuaki; Sakata, Masazumi; Kawaguchi, Yosio; Takamura, Seiji; and Nishimura, Minoru, to Ube Industries, Ltd. Diphenyl ether derivatives and herbicidal compositions containing the same. 4,213,775, Cl. 71-103.000.

Nagai, Shigeki: *See—*
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,213,987, Cl. 424-251.000.

Nagao, Noriaki: *See—*
Fujino, Teruhisa; Osawa, Fujio; Nagao, Noriaki; and Hanji, Shigeo, 4,214,245, Cl. 343-103.000.

Nagaoka, Kiyosi: *See—*
Nakashima, Koichi; Nagaoka, Kiyosi; and Hikosaka, Toshihisa, 4,214,311, Cl. 364-482.000.

Nagel, Hans J.; and Schumacher, Egon, to Nagel, Hans J. Grated floor conveyor for poultry enclosure. 4,213,422, Cl. 119-21.000.

Nagelmeyer, Edward B. Energy transfer and air purifying devices. 4,213,769, Cl. 55-216.000.

Nagorny, Mikhail A.: *See—*
Koshman, Vitaly I.; Nagorny, Mikhail A.; and Petrichenko, Vladimir F., 4,214,291, Cl. 361-338.000.

Nakagaki, Harushige; Iwasaki, Syunji; and Fukushima, Isao, to Hitachi, Ltd. Frequency-voltage converter. 4,214,299, Cl. 363-8.000.

Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, to Sankyo Company Limited; and Ube Industries, Ltd. Agricultural fungicidal method. 4,213,987, Cl. 424-251.000.

Nakamura, Kenji: *See—*
Takeuchi, Masayuki; Nakamura, Kenji; and Handa, Masahiro, 4,213,288, Cl. 56-11.600.

Nakano, Akira: *See—*
Okuda, Naoki; and Nakano, Akira, 4,214,141, Cl. 219-73.000.

Nakao, Toshihiro: *See—*
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,214,281, Cl. 360-61.000.

Nakashima, Koichi; Nagaoka, Kiyosi; and Hikosaka, Toshihisa, to Sumitomo Metal Industries, Ltd. Method and apparatus for measuring insulation resistance. 4,214,311, Cl. 364-482.000.

Nakayama, Toyoo: *See—*
Fujii, Setsuro; Sakurai, Yojiro; Nakayama, Toyoo; and Matsui, Ryoji, 4,214,093, Cl. 560-34.000.

Nalco Chemical Company: *See—*
Albanese, Vincent M., 4,213,767, Cl. 55-5.000.

Namae, Takao; and Someya, Teruo, to Nihon Denshi Kabushiki Kaisha. Method and apparatus for correcting astigmatism in a scanning electron microscope or the like. 4,214,163, Cl. 250-311.000.

Nantin, Hans O. I.: *See—*
Ernstsson, Ernst G.; and Nantin, Hans O. I., 4,213,795, Cl. 134-22.00C.

Nara, Yasuhiro; Sohma, Yukio; and Hattori, Akira, to Fujitsu Limited. Error-correcting and error-detecting system. 4,214,228, Cl. 371-40.000.

Narasimhan, Keshavaiyengar Y.; Nathan, Robert; and Parthasarathy, Shakkottai P., to United States of America, National Aeronautics and Space Administration. System for plotting subsoil structure and method therefor. 4,214,226, Cl. 367-27.000.

Nathan, Robert: *See—*
Narasimhan, Keshavaiyengar Y.; Nathan, Robert; and Parthasarathy, Shakkottai P., 4,214,226, Cl. 367-27.000.

Nathanson, Marshall R.: *See—*
Stromsta, Roger R.; Nathanson, Marshall R.; and Morton, Dennis S., 4,214,287, Cl. 360-103.000.

National Research Development Corporation: *See—*
Foundos, Stavros, 4,213,251, Cl. 35-9.00R.

Nawata, Yoshiharu: *See—*
Oishi, Hideo; Noto, Takao; Nawata, Yoshiharu; Okazaki, Hiroshi; Sasaki, Hiroshi; Ando, Kunio; and Ogawa, Haruki, 4,214,091, Cl. 549-62.000.

Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, to Roussel Uclaf. Anorexigenic 3-phenyl-tetrahydropyridines. 4,213,989, Cl. 424-263.000.

Negishi, Akira: *See—*
Kondo, Kiyoshi; Matsui, Kiyohide; Negishi, Akira; and Takahatake, Yuriko, 4,214,097, Cl. 560-213.000.

Negroni, Eugenio; and Negroni, Roberto. Honeycomb muffle in tank furnaces for glass melting. 4,213,753, Cl. 432-247.000.

Negroni, Roberto: *See—*
Negroni, Eugenio; and Negroni, Roberto, 4,213,753, Cl. 432-247.000.

Neilson, John M. S., to RCA Corporation. Gate turn-off triac with dual low conductivity regions contacting central gate region. 4,214,255, Cl. 357-39.000.

Nelson, Peter F.: *See—*
Vanderhoek, Naphtali N.; Nelson, Peter F.; and Farrington, Alan, 4,213,821, Cl. 162-72.000.

Nelson, Verner R.: *See—*
Immer, Hans U.; Nelson, Verner R.; and Gotz, Menfred K., 4,213,895, Cl. 260-112.50R.

Neumayr, Franz: *See—*
Datow, Joachim; Decker, Martin; Merkel, Karl; and Neumayr, Franz, 4,213,919, Cl. 260-544.00K.

Nevitt, Thomas D.: *See—*
McCaulay, David A.; and Nevitt, Thomas D., 4,214,116, Cl. 585-747.000.

New River Manufacturing Company, Inc.: *See—*
DeBrick, Eric, 4,213,399, Cl. 105-157.00R.

New York Society for the Relief of the Ruptured and Crippled: *See—*
Insall, John N.; and Walker, Peter S., 4,213,209, Cl. 3-1.911.

Nicholson, Albert N., to Computer Ribbon Systems, Inc. Apparatus for cleaning and re-inking printer ribbons. 4,213,419, Cl. 118-670.000.

Nida Corporation: *See—*
Gudelis, Drasutis; and Vetrane, David D., 4,213,253, Cl. 35-19.00A.

Nievelt, Frank J. Device for supporting tomato plants. 4,213,272, Cl. 47-45.000.

Nihon Atsuen Kogyo K.K.: *See—*
Hirobe, Koei; Yanagida, Kiyomi; Hirokane, Tadashi; and Takahashi, Akihiko, 4,213,558, Cl. 228-176.000.

Nihon Denshi Kabushiki Kaisha: *See—*
Namae, Takao; and Someya, Teruo, 4,214,163, Cl. 250-311.000.

Niimi, Koji; Katoh, Mitsumi; and Wachi, Masatada, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument of wave memory reading type. 4,213,366, Cl. 84-1.010.

Niltsche, Rainer: *See—*
Hillenkamp, Franz; Kaufmann, Raimund; Niltsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,214,159, Cl. 250-288.000.

Nippon Electric Co., Ltd.: *See—*
Mitani, Akira; and Sanguu, Isao, 4,213,583, Cl. 242-186.000.
Mizukami, Mineo, 4,214,262, Cl. 358-19.000.
Morito, Hiroshi, 4,214,270, Cl. 358-154.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Niimi, Koji; Katoh, Mitsumi; and Wachi, Masatada, 4,213,366, Cl. 84-1.010.

Nippon Selfoc Company, Limited: *See—*
Sugimoto, Shigetoki; Ishikawa, Ro; and Matsushita, Shigeo, 4,213,677, Cl. 350-96.180.

Nippon Steel Corporation: *See—*
Kawanami, Takao; Tajiri, Hiromi; and Uomori, Akiyoshi, 4,214,143, Cl. 219-97.000.

Nippondenso Co., Ltd.: *See—*
Kobayashi, Akio, 4,214,306, Cl. 364-431.000.

Nishimura, Kenji: *See—*
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,213,987, Cl. 424-251.000.

Nishimura, Minoru: *See—*
Nagai, Shigeki; Sekioka, Hakobu; Takenaka, Mitsuaki; Sakata, Masazumi; Kawaguchi, Yosio; Takamura, Seiji; and Nishimura, Minoru, 4,213,775, Cl. 71-103.000.

Nissan Motor Company, Limited: *See—*
Abe, Fumiyuki; Hayashi, Yoshimasa; and Kimura, Akira, 4,213,440, Cl. 123-195.00C.
Minami, Hidehiro; and Aoki, Teruo, 4,213,430, Cl. 123-440.000.

Nitta, Issei: *See—*
Okushima, Hiromi; Nitta, Issei; and Furuya, Rikizo, 4,213,902, Cl. 260-239.570.

Nixdorf Computer AG: *See—*
Haftmann, Johannes; and Schmeykal, Rudolf, 4,213,715, Cl. 400-196.100.

Nixon, Ralph D., to English Electric Valve Company Limited. Mesh electrodes and method of making them. 4,214,025, Cl. 428-67.000.

Noda, Yoichiro: *See—*
Kiyono, Hiroshi; Ishimoto, Akio; Noda, Yoichiro; and Yada, Kozo, 4,213,925, Cl. 264-22.000.

Nolan, John L.; and Nordby, Harvey M., to Hollister Incorporated. Sealing and attachment assembly for medical drainage pouch. 4,213,458, Cl. 128-283.000.

Nolan, Peter D.: *See—*
Cameron, Gordon M.; Jones, Frederick W. S.; and Nolan, Peter D., 4,213,958, Cl. 423-522.000.

Noll, Klaus: *See—*
Engelhardt, Gunther; Keck, Johannes; Kruger; Noll, Klaus; and Pieper, Helmut, 4,214,001, Cl. 424-300.000.

Nordby, Harvey M.: *See—*
Nolan, John L.; and Nordby, Harvey M., 4,213,458, Cl. 128-283.000.

Noreika, Alexander J.; and Francombe, Maurice H., to Westinghouse Electric Corp. Deposition of solid semiconductor compositions and novel semiconductor materials. 4,213,781, Cl. 75-134.00P.

Norlin Music, Inc.: *See—*
Moog, Robert A., 4,213,367, Cl. 84-1.220.

Noto, Takao: *See—*
Oishi, Hideo; Noto, Takao; Nawata, Yoshiharu; Okazaki, Hiroshi; Sasaki, Hiroshi; Ando, Kunio; and Ogawa, Haruki, 4,214,091, Cl. 549-62.000.

Novanex Automation N.V.: *See—*
Laupman, Robert R., 4,213,515, Cl. 181-145.000.

Novaro Investments Limited: *See—*
Sandborn, Edmund B., 4,213,280, Cl. 52-309.900.

Novatome: *See—*
Carbonnel, Henri, 4,213,494, Cl. 164-4.000.

Nubani, Jawdat I.; and Sawicki, Frank S., to RCA Corporation. Wet carbon-dioxide treatment of partially-completed CRT. 4,213,663, Cl. 316-24.000.

Nuclear Supreme: *See—*
Waltrip, Owen R., 4,214,046, Cl. 429-198.000.

Nygren, Gordon W. Golf club head with center of gravity near its striking face. 4,213,613, Cl. 273-169.000.

Nyomura, Takashi: *See—*
Imamura, Takaaki; Kawagoe, Takahiro; Chikaraishi, Toshio; and Nyomura, Takashi, 4,214,058, Cl. 525-348.000.

Oberberger, Otto: *See—*
Eggert, Hans-Joachim; Zenkert, Heinrich; Kuehne, Rudi; and Oberberger, Otto, 4,213,532, Cl. 206-504.000.

Oberer, Walter. Cylindrical clamping mandrel for a buffing or polishing pad of specific size. 4,213,278, Cl. 51-368.000.

Occidental Petroleum Corporation: *See—*
White, William R.; and Van Tighem, Gary P., 4,213,851, Cl. 209-12.000.
Woinsky, Samuel G., 4,213,302, Cl. 60-641.000.

Occidental Research Corporation: *See—*
Holderness, Eugene R., 4,213,724, Cl. 414-133.000.
Sikdar, Subhas K.; and Moore, James H., 4,213,951, Cl. 423-339.000.
Sikdar, Subhas K., 4,213,952, Cl. 423-339.000.

O'Connor, John J., to Akzona Incorporated. Method for determining immunochemical substances. 4,213,764, Cl. 23-230.00B.

Oda, Kiroku: *See—*
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,213,987, Cl. 424-251.000.

Oda, Nobuo. Radio controlled wheel toy. 4,213,270, Cl. 46-254.000.

Oda, Yasuji: *See—*
Koide, Tsuyoshi; and Oda, Yasuji, 4,214,309, Cl. 364-474.000.

Odawara, Yoji: *See—*
Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, 4,213,857, Cl. 210-6.000.

Odberg, Paul-Johny: *See—*
Aanonsen, Bent; Odberg, Paul-Johny; and Samuelsen, Eirik, 4,213,712, Cl. 366-178.000.

Odell, Richard B.: *See—*
Roeseler, William G.; Warner, Gary J.; and Odell, Richard B., 4,213,587, Cl. 244-213.000.

O'Donnell, Leopold H.: *See—*
Hunt, Brian K.; and O'Donnell, Leopold H., 4,214,278, Cl. 360-14.000.

O'Donnell, Richard V., to United States of America, Army. Jamming of keyed continuous wave radio signals. 4,214,208, Cl. 455-1.000.

Oehmig, Robert G. Threshold and door sealing structure. 4,213,275, Cl. 49-468.000.

Offshore Devices, Inc.: *See—*
Milgram, Jerome H., 4,213,298, Cl. 60-369.000.

Ogawa, Haruki: *See—*
Oishi, Hideo; Noto, Takao; Nawata, Yoshiharu; Okazaki, Hiroshi; Sasaki, Hiroshi; Ando, Kunio; and Ogawa, Haruki, 4,214,091, Cl. 549-62.000.

Ogden, Ralph. Tape and tape reader arrangement for programmable controllers. 4,214,153, Cl. 235-376.000.

Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, to Seiko Koko Kabushiki Kaisha. Time detecting switch for alarm clock. 4,214,134, Cl. 200-37.00R.

Ogoshi, Toshiaki: *See—*
Hayashi, Akira; Ohkouchi, Haruo; Kitano, Kyozo; and Ogoshi, Toshiaki, 4,213,918, Cl. 260-513.00T.

Ohkouchi, Haruo: *See—*
Hayashi, Akira; Ohkouchi, Haruo; Kitano, Kyozo; and Ogoshi, Toshiaki, 4,213,918, Cl. 260-513.00T.

Ohlinger, Manfred: *See—*
Brodt, Rudolf; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Ohlinger, Manfred; Sarnecki, Wilhelm; and Steck, Werner, 4,213,959, Cl. 423-634.000.

Ohno, Takeshi: *See—*
Mino, Masao; and Ohno, Takeshi, 4,213,574, Cl. 242-43.200.

Ohta, Tazuo: *See—*
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, 4,214,100, Cl. 562-416.000.

Ohuchi, Kenji: *See—*
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,213,541, Cl. 222-92.000.

Oie, Naoyuki: *See—*
Sakamoto, Kiyoshi; Tsukakoshi, Yukio; and Oie, Naoyuki, 4,213,679, Cl. 353-72.000.

Oishi, Hideo; Noto, Takao; Nawata, Yoshiharu; Okazaki, Hiroshi; Sasaki, Hiroshi; Ando, Kunio; and Ogawa, Haruki, to Chugai Seiyaku Kabushiki Kaisha. Antibiotic No. 2-200 and process for producing thereof. 4,214,091, Cl. 549-62.000.

Ojima, Teruhiko: *See—*
Yoneyama, Tetsuhito; Tomizawa, Shiro; Hori, Tetsuo; and Ojima, Teruhiko, 4,213,803, Cl. 148-102.000.

Okaguchi, Sigeki: *See—*
Yasui, Yasuyosi; Izuta, Mitugu; and Okaguchi, Sigeki, 4,213,660, Cl. 308-177.000.

Okajima, Keisuke: *See—*
Tokita, Yoshiaki; and Okajima, Keisuke, 4,214,305, Cl. 364-200.000.

Okamura, Yoshinao: *See—*
Inoue, Motozo; Kumeta, Mitsuzo; Ueno, Hideo; Okamura, Yoshinao; and Suzuki, Tadashi, 4,213,596, Cl. 254-134.30R.

Okazaki, Hiroshi: *See—*
Oishi, Hideo; Noto, Takao; Nawata, Yoshiharu; Okazaki, Hiroshi; Sasaki, Hiroshi; Ando, Kunio; and Ogawa, Haruki, 4,214,091, Cl. 549-62.000.

Okuda, Naoki; and Nakano, Akira, to Kobe Steel, Ltd. Multiple electrode submerged arc welding method. 4,214,141, Cl. 219-73.000.

Okuma Machinery Works Ltd.: *See—*
Watanabe, Toshiaki; and Yuhara, Hideo, 4,214,191, Cl. 318-561.000.

Okushima, Hiromi; Nitta, Issei; and Furuya, Rikizo, to Mitsubishi Chemical Industries Ltd. Process for producing steroidal 7α-acylthio-4-en-3-ones. 4,213,902, Cl. 260-239.570.

Olausson, Gun A.: *See—*
af Ekenstam, Bo T.; Aurell, Leif E.; Claeson, Karl G.; Karlsson, Birgitta G.; Gustavsson, Stig I.; and Olausson, Gun A., 4,214,049, Cl. 435-23.000.

Olausson, Karl A.: *See—*
Lis, Per-Arne; and Olausson, Karl A., 4,213,405, Cl. 110-234.000.

Olberz, Norbert J.; and Hagmueller, Artie, to Olberz, Norbert J., a part interest. Sole for hiking boots and the like. 4,213,255, Cl. 36-32.00R.

Oldham Batteries Limited: *See—*
Morton, Harold, 4,214,295, Cl. 362-164.000.

Olesen, Lykke. Method and device for supervising the speed of an object. 4,214,265, Cl. 358-93.000.

Olin Corporation: *See—*
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,213,496, Cl. 164-147.000.

Olschewski, Armin; and Huber, Wolfgang, to SKF Kugellagerfabriken GmbH. Drilling bit. 4,213,656, Cl. 308-8.200.

Olsen, Everett O.; Estes, Robert F.; Rezendes, Paul W.; and Williams, George F., to Foxboro Company, The. Transducer assembly providing pneumatic output proportional to electrical input signal. 4,213,478, Cl. 137-85.000.

Olympus Optical Co., Ltd.: *See—*
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,214,281, Cl. 360-61.000.
Sato, Masanobu; and Furuta, Kenzi, 4,214,282, Cl. 360-69.000.

Omori, Masahiro; Wholey, James N.; and Anderson, J. Ross, to Avantek, Inc. Low-resistance, fine-line semiconductor device and the method for its manufacture. 4,213,840, Cl. 204-192.00C.

Onishi, Sigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha. 2-Cycle engine of an active thermoatmosphere combustion type. 4,213,431, Cl. 123-73.00R.

Onoda Cement Co., Ltd.: *See—*
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,213,541, Cl. 222-92.000.

Onofrio, Carmen. Air-filter purger for internal combustion engines. 4,213,437, Cl. 123-179.00A.

Opprecht, Paul. Resistance welding machine for seam welding of blanks or the like. 4,214,140, Cl. 219-61.300.

Orum, Paul R.; and Vyvial, Larry A., to ACF Industries, Incorporated. Manual override for hydraulic gate valve actuators. 4,213,480, Cl. 137-556.000.

Osawa, Fujio: *See—*
Fujino, Teruhisa; Osawa, Fujio; Nagao, Noriaki; and Hanji, Shigeo, 4,214,245, Cl. 343-103.000.

Osenkarski, Paul D., to Graphic Controls Corporation. Body electrode with indicator to ensure optimal securement. 4,213,463, Cl. 128-639.000.

O'Shea, Martin W., to Sprague Electric Company. Electromagnetic noise source locator. 4,214,210, Cl. 455-282.000.

Oshima, Ryoichiro: *See—*
Azuhata, Shigeru; Akimoto, Hidetoshi; Kikuchi, Hideo; Hishinuma, Yukio; Oshima, Ryoichiro; and Arikawa, Yoshijiro, 4,213,944, Cl. 423-235.000.

Oswald, Donald E., to Kaiser Steel Corporation. Enlongated bar support means for the spray coating and conveying of drum parts. 4,213,418, Cl. 118-635.000.

Oswald, Richard K., to International Business Machines Corporation. Clocking system for servo signal having two or more harmonically related frequencies. 4,214,279, Cl. 360-51.000.

Otsuka, Kei; Shigehara, Masamichi; and Yokokawa, Sumio, to Fuji Electric Co., Ltd. Stabilizing equipment for power transmission system. 4,214,289, Cl. 361-20.000.

Ottewell, Roger J.; and Lowe, Jack M., to Dunlop Limited. Hose. 4,213,485, Cl. 138-130.000.

Otto Fuchs KG: *See—*
Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,213,236, Cl. 29-243.500.

Ottoson, Allen E., to Vee Arc Corporation. Tension controlling. 4,214,190, Cl. 318-356.000.

Oules, Michel L., to S.I.L.E.C.-Division Signalisation Industrielle. Intrinsically safe telephone network. 4,214,127, Cl. 179-2.00R.

Outboard Marine Corporation: *See—*
Cavil, David T.; and McAuliffe, Gerald N., 4,214,288, Cl. 361-6.000.

Owen, Marvin L.: *See—*
Coha, Thomas F.; and Owen, Marvin L., 4,213,415, Cl. 116-28.100.

Owens-Corning Fiberglas Corporation: *See—*
Bennett, Joe B., 4,213,641, Cl. 285-369.000.

Owens, Dean P., to Carborundum Company, The. Method for manufacture of neutron absorbing articles. 4,213,883, Cl. 252-478.000.

Owens-Illinois, Inc.: *See—*
Ernsthausen, Roger E., 4,214,183, Cl. 313-221.000.

Oxford Hill, Ltd.: *See—*
Thiele, Geraldine H., 4,214,006, Cl. 424-318.000.

Oy Lival AB: *See—*
Jaakkola, Aarno, 4,213,591, Cl. 248-281.100.

Oy Wartsila AB: *See—*
Kanervo, Seppo, 4,213,361, Cl. 83-30.000.

Ozaki, Takashi: *See—*
Kuwako, Tomohisa; Ozaki, Takashi; and Iwase, Yoshitaka, 4,214,180, Cl. 310-80.000.

Packer, Marvin, to RCA Corporation. Sealing composition. 4,214,067, Cl. 528-93.000.

Padovani, Francois A.; Miller, Michael B.; Moore, James A.; Fowler, James H.; June, Malcom N.; Matthews, James D.; Morton, T. R.; Stotko, Norbert A.; and Palmer, Lewis B., to Texas Instruments Incorporated. Silicon refinery. 4,213,937, Cl. 422-142.000.

Pako Corporation: *See—*
Strunc, Gerald R., 4,214,310, Cl. 364-475.000.

Pallmann KG Maschinenfabrik: *See—*
Pallmann, Wilhelm, 4,213,572, Cl. 241-292.100.

Pallmann, Wilhelm, to Pallmann KG Maschinenfabrik. Blade holder. 4,213,572, Cl. 241-292.100.

Palmer, Lewis B.: *See—*
Padovani, Francois A.; Miller, Michael B.; Moore, James A.; Fowler, James H.; June, Malcom N.; Matthews, James D.; Morton, T. R.; Stotko, Norbert A.; and Palmer, Lewis B., 4,213,937, Cl. 422-142.000.

Pandolfi, Alberto S. Water proportioning and delivering device particularly for coffee machines. 4,213,544, Cl. 222-250.000.

Panepinto, William, Jr.: *See—*
Joyce, Thomas F.; Holtey, Thomas O.; and Panepinto, William, Jr., 4,214,303, Cl. 364-200.000.

Papa, Christopher M., to Johnson & Johnson. Zinc salt of all-trans-retinoic acid for the treatment of acne. 4,214,000, Cl. 424-289.000.

Papasideris, Stamos I., to Caterpillar Tractor Co. Instrument panel assembly. 4,214,227, Cl. 340-52.00F.

Parcero-de Zarzosa, Ma. Hilda: *See—*
Zarzosa-Castilla, Agustin F.; and Parcero-de Zarzosa, Ma. Hilda, 4,213,281, Cl. 52-323.000.

Paris, Guy: *See—*
Engelhard, Philippe; Legendre, Michel; Paris, Guy; and Szabo, Georges, 4,213,849, Cl. 208-139.000.

Park, Thomas R.: *See—*
Cattorini, Joseph F.; Park, Thomas R.; and Martin, John K., 4,213,601, Cl. 270-61.00F.

Parker, Edward J.; and Behlen, James C., Jr., to Advanced Technology Laboratories, Inc. Real time digital scan converter. 4,214,269, Cl. 358-140.000.

Parker, James J.: *See—*
Bafaro, Michael P.; and Parker, James J., 4,214,188, Cl. 315-382.000.

Parthasarathy, Shakkottai P.: *See—*
Narasimhan, Keshavaiyengar Y.; Nathan, Robert; and Parthasarathy, Shakkottai P., 4,214,226, Cl. 367-27.000.

Partington, Everett J. Attachment for saber saw. 4,213,242, Cl. 30-374.000.

Pasch, Lambert; and Wagemann, Heinz, to Uniroyal A.G. Insulation plate formation. 4,213,814, Cl. 156-242.000.

Passagne, Claude G.; Senet, Jean-Pierre G.; Lippler, Remy R.; and Plazanet, Jacques, to Societe Nationale des Poudres et Explosifs. Poly-(carbonate-urethane)-triols and preparation thereof. 4,214,073, Cl. 528-369.000.

Pasternack, Adalbert: *See—*
Warncke, Ernst; and Pasternack, Adalbert, 4,213,453, Cl. 128-202.260.

Patlico Rights N.V.: *See—*
van Kuijk, Josephus P. M., 4,213,563, Cl. 237-2.00B.

Patterson, Robert E., to M. P. H. Industries, Inc. Harmonic detector for traffic radar. 4,214,243, Cl. 343-8.000.

Pavlicek, Frank V.: *See—*
Spiess, Frederick N.; Boegeman, Dwight E.; Pavlicek, Frank V.; and Lowenstein, Carl D., 4,214,314, Cl. 367-2.000.

Peabody, William A.; and Schaaf, Ernest M., to Peabody, William A. Method and apparatus for increasing air conditioner efficiency. 4,213,306, Cl. 62-85.000.

Pearson, Leland E., to Industrial & Municipal Engineering, Inc. Eduction unit. 4,213,479, Cl. 137-493.000.

Pedler, Keith. Firearm safety device. 4,213,375, Cl. 89-31.000.

Peffer, Robert M.; and Braun, Charles H., to Eastman Kodak Company. Method and apparatus for locating a moving sheet at a registration position. 4,213,603, Cl. 271-229.000.

Peralta, Bernal: *See—*
Riddick, Frank C., Jr.; and Peralta, Bernal, 4,213,850, Cl. 208-216.00R.

Perez, Gilbert H. Modular solar collector panel and manifold therefor. 4,213,450, Cl. 126-448.000.

Perez, Ricardo L.: *See—*
Tefft, Franklin A.; Perez, Ricardo L.; and Barnum, Ronald E., 4,213,584, Cl. 244-17.130.

Permelec Electrode Ltd.: *See—*
Sato, Hideo; and Shimamune, Takayuki, 4,213,843, Cl. 204-290.00F.

Perrot, Friedrich, to ETA A.G. Ebauches-Fabrik. Arrangement for securing a dial to a plate in a timepiece. 4,213,295, Cl. 368-236.000.

Persson, Frederick M.; and Frankel, David C., to General Motors Corporation. Method and apparatus to detect automatic wire bonder failure. 4,213,556, Cl. 228-104.000.

Peter, Cornelius; and Kraus, Bernd, to Robert Bosch GmbH. Flow rate meter with temperature dependent resistor. 4,213,335, Cl. 73-204.000.

Peterson, Gary R.: *See—*
Bazin, Lucas J.; Peterson, Gary R.; and Schneider, Dennis M., 4,214,261, Cl. 358-19.000.

Peterson, William A., Jr.; and Marchak, Roman O., to Bendix Corporation, The. Deceleration lean out feature for electronic fuel management systems. 4,214,307, Cl. 364-431.000.

Petrichenko, Vladimir F.: *See—*
Koshman, Vitaly I.; Nagorny, Mikhail A.; and Petrichenko, Vladimir F., 4,214,291, Cl. 361-338.000.

Petrolite Corporation: *See—*
Bellos, Thomas J.; and Davis, James E., 4,213,934, Cl. 422-15.000.

Petruzzi, Thomas G.; Ashton, Harold P.; and Conti, Rino, to Dart Industries Inc. Planter. 4,213,271, Cl. 47-39.000.

Pevsner, Paul H. Miniature balloon catheter. 4,213,461, Cl. 128-348.000.

Pfaudler Werke A.G.: *See—*
Kaessner, Hugo; and Loehr, Wilhelm, 4,213,713, Cl. 366-279.000.

Pfeiffer, Ferdinand; and Rottwinkel, Leo, to Messer Griesheim GmbH. Process and device for evaporating large quantities of low boiling liquefied gases. 4,213,501, Cl. 169-46.000.

Pfister GmbH: *See—*
Hafner, Hans W., 4,213,509, Cl. 177-199.000.

Pfizer Inc.: *See—*
Bindra, Jasjit S., 4,213,907, Cl. 260-343.30P.
Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,214,099, Cl. 560-256.000.
Richardson, Kenneth; Plews, Rhona M.; and Wright, James R., 4,214,074, Cl. 536-10.000.

Philippi, George J. Practice weight attachment for golf clubs and method of weighting same. 4,213,614, Cl. 273-194.00B.

Phillips, Duncan A. S.; Anderson, Brian; Jackson, Neville; Stead, Cecil V.; and Costello, Alan T., to Imperial Chemical Industries Limited. Reactive dyestuffs containing chlorine or fluorine substituents and one or more pyridine radicals linked to the dyestuff at the 2-, 4- or 6-position. 4,213,899, Cl. 260-156.000.

Phillips Petroleum Company: *See—*
Blackwell, Jennings P., 4,214,021, Cl. 427-385.00R.
Blake, Larry V.; Womeldorph, Donald E., Jr.; Surber, Oliver M.; and James, John P., 4,213,856, Cl. 209-250.000.
Boultinghouse, Harold D., 4,213,812, Cl. 156-226.000.
Hunt, Harold R.; and Mills, King L., 4,213,957, Cl. 423-450.000.
Kosinsky, Edward J., 4,213,869, Cl. 252-37.500.
Makovec, Donald J.; and Hutson, Thomas, Jr., 4,214,115, Cl. 585-716.000.
Rakes, James L.; and Harder, Joseph R., 4,214,030, Cl. 428-212.000.
Schmidt, Thomas W., 4,214,158, Cl. 250-281.000.
Stapp, Paul R., 4,213,879, Cl. 252-429.00R.

Phoenix Products, Inc.: *See—*
Hibbard, Linda A., 4,213,549, Cl. 224-209.000.

Piccirillo, Gary P.: *See—*
Murray, Ronald A.; and Piccirillo, Gary P., 4,213,665, Cl. 339-17.00D.

Pichler, Ludwig: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, 4,213,995, Cl. 424-273.00R.

Pickles, Wilfred: *See—*
Baylis, Eric K.; and Pickles, Wilfred, 4,213,969, Cl. 424-177.000.

Pieper, Helmut: *See—*
Engelhardt, Gunther; Keck, Johannes; Kruger; Noll, Klaus; and Pieper, Helmut, 4,214,001, Cl. 424-300.000.

Pierron, Claude; and Kirchgaesser, Johannes, to A. Raymond. Clamp for securing round articles. 4,213,589, Cl. 248-74.00R.

Pietsch, Helge; and Lange, Gerd. Vehicle seat. 4,213,594, Cl. 248-550.000.

Pifer, William J. Recreational vehicle multi-level cooler. 4,213,309, Cl. 62-332.000.

Pilhall, Stig T. L., to AB Volvo. Interiorly adjustable outside rear view mirror for vehicles. 4,213,675, Cl. 350-307.000.

Pilz, Georg: *See—*
Eckell, Albrecht; Matthies, Paul; Pilz, Georg; and Rotzoll, Rudi-Heinz, 4,213,884, Cl. 260-29.20N.

Pinto, Alwyn, to Imperial Chemical Industries Limited. Ammonia production process. 4,213,954, Cl. 423-359.000.

Pioneer Electronic Corporation: *See—*
Fushimi, Akihiro; Tabara, Noboru; and Isaki, Mikio, 4,214,283, Cl. 360-71.000.
Yokogawa, Tomohisa, 4,214,211, Cl. 455-287.000.

Pirzer, Hans: *See—*
Sterzel, Hans-Josef; Von Dziembowski, Kasimir; and Pirzer, Hans, 4,214,072, Cl. 528-272.000.

Pistorius, Rudolf, to Hoechst Aktiengesellschaft. Use of cyclohexene-(1)-dione-(3,6)-tetraalkyl diketals. 4,214,104, Cl. 568-648.000.

Pitney Bowes, Inc.: *See—*
Check, Frank T., Jr.; and Sansone, Ronald P., 4,214,157, Cl. 250-236.000.

Plazanet, Jacques: *See—*
Passagne, Claude G.; Senet, Jean-Pierre G.; Lippler, Remy R.; and Plazanet, Jacques, 4,214,073, Cl. 528-369.000.

Plessey Handel und Investments AG: *See—*
Dickson, John F., 4,214,174, Cl. 307-229.000.

Pletcher, Robert W.: *See—*
Wooding, David L.; and Pletcher, Robert W., 4,213,794, Cl. 134-6.000.

Plews, Rhona M.: *See—*
Richardson, Kenneth; Plews, Rhona M.; and Wright, James R., 4,214,074, Cl. 536-10.000.

Plotnikov, Vladimir A.: *See—*
Yascheritsyn, Petr I.; Sidorenko, Valery A.; Morgunsky, Evgeny I.; Vishnev, Nikolai V.; Bureika, Mindaugas N.; Plotnikov, Vladimir A.; and Volkov, Anatoly T., 4,213,358, Cl. 82-36.00R.

Plough, Inc.: *See—*
Levine, Donald J., 4,213,979, Cl. 424-243.000.

Plummer, Ernest L., to FMC Corporation. Insecticidal cyclopropanecarboxylates from substituted [1,1'-biphenyl]-3-ylmethyl compounds. 4,214,004, Cl. 424-305.000.

Poe, L. Richard; and Bourne, William R., to Hartwell Corporation. Rotary latch and method of operation. 4,213,642, Cl. 292-241.000.

Poirier, Norbert: *See—*
Minkiewicz, Andre E.; and Poirier, Norbert, 4,213,555, Cl. 228-29.000.

Polaroid Corporation: *See—*
Land, Edwin H., 4,214,285, Cl. 360-90.000.

Polovnikov, Sergei V.; Zaznobin, Anatoly M.; Masalov, Gennady F.; and Mischenkov, Alexandr A. Method and apparatus for testing cyclically operated mechanical members for defects. 4,213,346, Cl. 73-660.000.

Polymer Corporation, The: *See—*
Goebel, Charles V., Jr., 4,214,065, Cl. 528-27.000.

Polysar International, S.A.: *See—*
Porter, David, 4,214,053, Cl. 521-70.000.

Polysius AG: *See—*
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.

Pomerantzeff, Oleg; and Webb, Robert H., to Retina Foundation. Scanning ophthalmoscope for examining the fundus of the eye. 4,213,678, Cl. 351-7.000.

Pope, George A.; and Bourne, Alan J., to Dunlop Limited. Pneumatic tire containing water-dispersible puncture sealant. 4,213,491, Cl. 152-330.00L.

Popper, Jay, to Standard Microsystems Corp. Synchronous binary counter utilizing a pipeline toggle signal propagation technique. 4,214,173, Cl. 307-224.00C.

Porta, Paolo D.; and Rabusin, Elio, to S.A.E.S. Getters S.p.A. Getter comprising U-shaped, parallel, linear channels containing getter material. 4,214,184, Cl. 313-481.000.

Portass, Michael L., to Vickers Limited. Tensioning of members. 4,213,720, Cl. 405-195.000.

Porter, David, to Polysar International, S.A. Latex foam rubber. 4,214,053, Cl. 521-70.000.

Porter, John P., to B. F. Goodrich Company, The. Surface irregularity analyzer. 4,213,331, Cl. 73-105.000.

Pottratz, Ronald, Jr.: *See—*
Hardesty, Robert D., 4,213,628, Cl. 280-412.000.

Pottratz, Tom: *See—*
Hardesty, Robert D., 4,213,628, Cl. 280-412.000.

Poulsen, Martin E.: *See—*
Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., 4,213,698, Cl. 355-77.000.

Powers Manufacturing, Inc: *See—*
Bryant, Nelson; and Hoppe, Rudy, 4,213,702, Cl. 356-239.000.

PPG Industries, Inc.: *See—*
Bonaddio, Robert M., 4,213,550, Cl. 225-2.000.
Crano, John C., 4,213,948, Cl. 423-292.000.
Rinehart, Jay K., 4,213,915, Cl. 260-455.00A.

Praxl, Werner; and Ehret, Reiner, to Dr. Werner Freyberg, Chemische Fabrik Delitia Nachf. Pesticide containing ignition inhibitor. 4,213,967, Cl. 424-128.000.

Precise Metal Parts Company: *See—*
Silverman, John H.; and Cahill, James P., 4,213,284, Cl. 53-74.000.

Prescott, John F., Jr.; and Roberts, William H., to General Motors Corporation. Flow bench. 4,213,327, Cl. 73-38.000.

Price, Howard C. Board game with movable playing pieces. 4,213,615, Cl. 273-260.000.

Priebe, Fritz, to Schloemann-Siemag Aktiengesellschaft. Apparatus for fitting an extrusion die holder onto the press stem of an indirect metal extrusion press. 4,213,318, Cl. 72-21.000.

Procter & Gamble Company, The: *See—*
McCarty, Charles B.; and Seiden, Paul, 4,214,038, Cl. 428-411.000.
Strube, Herbert E., 4,214,011, Cl. 426-591.000.

Product Research and Development: *See—*
Hartley, E. Dale, 4,214,137, Cl. 200-83.00P.

Production Experts, Inc.: *See—*
Sroub, Joseph W., 4,213,650, Cl. 297-281.000.

Properzi, Giulio. Rolling method and rolling mill for an ingot originating from a continuous casting machine of the wheel-and-belt type. 4,213,321, Cl. 72-235.000.

Propst, Robert L.; Randolph, Travis M.; and Reyda, Theodore M., to Herman Miller, Inc. Combination acoustic conditioner and light fixture. 4,214,298, Cl. 362-253.000.

Pugsley, Peter C.; and Wood, Peter J., to Crosfield Electronics Limited. Printing methods for producing prints having images of variable size and text. 4,214,276, Cl. 358-256.000.

Pullman Incorporated: *See—*
Knippel, Willis H., 4,213,725, Cl. 414-387.000.
Synder, Richard C.; Sims, Roger D.; and Rousseau, George L., 4,213,400, Cl. 105-199.00C.

Purdue Frederick Company, The: *See—*
Hofer, Peter, 4,214,059, Cl. 525-356.000.

Pye (Electronic Products) Ltd.: *See—*
Ellson, Allan H., 4,213,455, Cl. 128-214.00E.

Pyle, Walter R., to Chevron Research Company. Valve means responsive to the operation of a vapor-seal valve for preventing fuel spillage from the discharge spout of a vapor-recovery fuel dispensing nozzle. 4,213,488, Cl. 141-1.000.

Pyzel, Robert. Fluid bed reactor. 4,213,938, Cl. 422-143.000.

Queen, Daniel L., to Chamberlain Manufacturing Corp. Wide range magnetically biased reed switch. 4,214,220, Cl. 335-153.000.
Questad, Philip J., to Teltone Corporation. Signal coupler. 4,214,130, Cl. 179-81.00R.
R. E. Phelon Company, Inc.: *See*—
Burson, Bob O., 4,213,436, Cl. 123-599.000.
Rabinovich, Vladimir B.: *See*—
Semashko, Andrei P.; Gimaev, Nasikh Z.; Maximov, Ivan V.; Bezrukov, Sergei V.; and Rabinovich, Vladimir B., 4,213,834, Cl. 204-129.250.
Rabusin, Elio: *See*—
Porta, Paolo D.; and Rabusin, Elio, 4,214,184, Cl. 313-481.000.
Raczynski, Robert F.: *See*—
Zudkevitch, David; Khanna, Nirmal K.; and Raczynski, Robert F., 4,213,832, Cl. 203-95.000.
Rae, Donald A. Card with removable three dimensional figurine. 4,213,531, Cl. 206-463.000.
Ragard, Phillip A., to Universal Instruments Corporation. Component sequencing and taping machine. 4,213,286, Cl. 53-493.000.
Raggenbass, Werner; and Zwar, Kurt, to BBC Brown Boveri & Company Limited. Monitoring circuit. 4,214,177, Cl. 307-355.000.
Raghavan, Mathur; Shapiro, Stanley; Hardy, Ronald G.; and Block, Duncan G., to Swiss Aluminium Ltd. Improving the electrical conductivity of aluminum alloys through the addition of mischmetal. 4,213,799, Cl. 148-2.000.
Raghavan, Mathur: *See*—
Mayo, William E.; Raghavan, Mathur; Shapiro, Stanley; Hardy, Ronald G.; and Block, Duncan G., 4,213,800, Cl. 148-2.000.
Ragle, Herbert U.; and DeMoss, Dean, to Burroughs Corporation. Flexible disk pack and improved transducing-manipulation thereof. 4,214,286, Cl. 360-99.000.
Raimondi, Peter K.: *See*—
Jones, George R.; and Raimondi, Peter K., 4,214,271, Cl. 358-166.000.
Rakes, James L.; and Harder, Joseph R., to Phillips Petroleum Company. Thermoformable-crosslinkable ethylene polymer sheet per se and in laminate form and thermoformed sheet produced therefrom. 4,214,030, Cl. 428-212.000.
Ramsay, George S. Smoker's pipe having a hollow pipe body formed from metallic half sections. 4,213,469, Cl. 131-199.000.
Ranco Incorporated: *See*—
Rossi, Guglielmo; and Bosing, Hans, 4,214,136, Cl. 200-67.0DA.
Randolph, Travis M.: *See*—
Propst, Robert L.; Randolph, Travis M.; and Reyda, Theodore M., 4,214,298, Cl. 362-253.000.
Rathbun, Loren L.: *See*—
Bonomo, Melvin E.; Coldren, Kenneth M.; Lemke, Verne O.; Rathbun, Loren L.; and Towner, Ronald D., 4,213,332, Cl. 73-134.000.
Ratliff, Willa Dean L. Woman's outer garment and pattern therefor. 4,213,203, Cl. 2-79.000.
Raudenbusch, Werner T.: *See*—
Schreurs, Gerardus C. M.; Raudenbusch, Werner T.; and Visser, Theodorus N., 4,214,068, Cl. 528-98.000.
Raygo Wagner, Inc.: *See*—
Robnett, James J.; and Thomas, Dennis R., 4,213,726, Cl. 414-420.000.
Raymond, Samuel O.; and Hayward, Gary G., to Benthos, Inc. Method and apparatus for inspecting containers. 4,213,329, Cl. 73-52.000.
Rayner, Ross H. Clothes line separator. 4,213,597, Cl. 254-388.000.
Raypak Produkten B.V.: *See*—
Widdershoven, Louis H., 4,213,406, Cl. 110-326.000.
RCA Corporation: *See*—
Bazin, Lucas J.; Peterson, Gary R.; and Schneider, Dennis M., 4,214,261, Cl. 358-19.000.
Bohringer, Walter, 4,214,189, Cl. 315-408.000.
Ferrie, Ronald G., 4,214,213, Cl. 328-117.000.
Gale, Michael T., 4,213,673, Cl. 350-162.0SF.
Halon, Bernard; and Hoffman, Dorothy M., 4,214,018, Cl. 427-100.000.
Neilson, John M. S., 4,214,255, Cl. 357-39.000.
Nubani, Jawdat I.; and Sawicki, Frank S., 4,213,663, Cl. 316-24.000.
Packer, Marvin, 4,214,067, Cl. 528-93.000.
Rosnowski, Wojciech, 4,213,807, Cl. 148-187.000.
Williams, Richard; and Arie, Yehuda, 4,213,798, Cl. 136-89.0SJ.
Wipff, Frank P., 4,214,126, Cl. 179-1.50M.
Read, Martin A., to Lucas Industries Limited. Internal combustion engine fuel injection control. 4,213,425, Cl. 123-478.000.
Recortec, Inc.: *See*—
Chang, David T. L., 4,214,259, Cl. 358-8.000.
Reed, Weldon N.: *See*—
Bristowe, William W.; Ford, Ernest C., Jr.; and Reed, Weldon N., 4,213,837, Cl. 204-159.190.
Reeher, John R.: *See*—
Fies, William J.; Smith, Ronald D.; Reeher, John R.; and Story, Michael S., 4,214,160, Cl. 250-292.000.
Reese, Eckart: *See*—
Binsack, Rudolf; Wank, Joachim; and Reese, Eckart, 4,214,062, Cl. 525-470.000.
Refratechnik GmbH: *See*—
Bartha, Peter; and Tutsek, Alexander, 4,213,789, Cl. 106-52.000.
Reich, Heinrich; and Eibofner, Eugen, to Kaltenbach & Voigt GmbH & Co. Dental-instrument handle. 4,213,756, Cl. 433-126.000.
Reimer, Jan D.: *See*—
Lemons, Kyle E.; Blish, Richard C., II; and Reimer, Jan D., 4,213,818, Cl. 156-643.000.
Reinehr, Dieter, to Ciba-Geigy Corporation. 1-Aza-1,5,9-cyclododecatrienes. 4,213,901, Cl. 260-239.0BE.
Reinertson, John E.; and Wells, John L., to MedaSonics, Inc. Self-calibrating automatic zeroing strain gauge circuit. 4,213,348, Cl. 73-765.000.
Reinstadler, Kenneth A.; and Davidson, William E., to General Electric Company. Steam iron water gauge. 4,213,258, Cl. 38-77.200.
Reiter Machine Works, Ltd.: *See*—
Schefer, Kurt; and Fluck, Jakob, 4,213,573, Cl. 242-18.00A.
Reitlinger, Adolf: *See*—
Mellen, Arthur J.; and Reitlinger, Adolf, 4,214,215, Cl. 330-277.000.
Reliance Telecommunication Electronics Company: *See*—
Kimbrough, Mahlon D., 4,214,129, Cl. 370-57.000.
Remenyi, Janos: *See*—
Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; Farkas, L. Peter; Remenyi, Janos; and Koltay, Sandor, 4,214,032, Cl. 428-280.000.
Rempfler, Hermann: *See*—
Schurter, Rolf; Rempfler, Hermann; and Bohner, Beat, 4,213,774, Cl. 71-94.000.
Rems-Werk Christian Foll und Sohne GmbH & Co.: *See*—
Wagner, Rudolf, 4,213,722, Cl. 408-73.000.
Wagner, Rudolf, 4,213,723, Cl. 408-239.00A.
Renheim, Gunnar, to Siemens Aktiengesellschaft. Electroencephalograph. 4,213,465, Cl. 128-731.000.
Rescorla, Charles L.: *See*—
Rubenstein, Raymond D.; and Rescorla, Charles L., 4,213,511, Cl. 180-139.000.
Respiratory Care, Inc.: *See*—
Cambio, Orlando D., 4,213,933, Cl. 264-515.000.
Retina Foundation: *See*—
Pomerantzeff, Oleg; and Webb, Robert H., 4,213,678, Cl. 351-7.000.
Reubke, Karl-Julius: *See*—
Berg, Gerhard; Hohmann, Walter; Reubke, Karl-Julius; and Wunderlich, Klaus, 4,213,909, Cl. 260-371.000.
Reuter, Edward J., to Reuter, Inc. Container cover hinge means. 4,213,539, Cl. 220-333.000.
Reuter, Inc.: *See*—
Reuter, Edward J., 4,213,539, Cl. 220-333.000.
Reyda, Theodore M.: *See*—
Propst, Robert L.; Randolph, Travis M.; and Reyda, Theodore M., 4,214,298, Cl. 362-253.000.
Rezendes, Paul W.: *See*—
Olsen, Everett O.; Estes, Robert F.; Rezendes, Paul W.; and Williams, George F., 4,213,478, Cl. 137-85.000.
Rhone-Poulenc Industries: *See*—
Bargain, Michel; and Lefort, Marcel, 4,213,914, Cl. 556-419.000.
Blanc, Jean-Pierre; and Meiller, Francois, 4,213,785, Cl. 106-38.350.
Meyer, Jacques; and Bernelin, Daniel, 4,214,040, Cl. 428-458.000.
Rhone-Poulenc-Textile: *See*—
Couchoud, Paul; and Vaginay, Yves, 4,214,069, Cl. 528-167.000.
Rialan, Joseph: *See*—
Douaud, Andre; and Rialan, Joseph, 4,213,429, Cl. 123-414.000.
Richard Seifert & Co. GmbH & Co. KG: *See*—
Ries, Karl; Hannoschock, Kurt; Rozic, Krsto-Marijan; and Basler, Gunter, 4,213,552, Cl. 226-170.000.
Richardson Company, The: *See*—
Jutte, Gottfried W.; and McHugh, John V., 4,214,045, Cl. 429-87.000.
Richardson, Kenneth; Plews, Rhona M.; and Wright, James R., to Pfizer Inc. Hydroxyalkyl derivatives of aminoglycoside antibiotics. 4,214,074, Cl. 536-10.000.
Richmond, Thomas A., to Avnet, Incorporated. Tunable fiberglass whip antenna. 4,214,247, Cl. 343-752.000.
Ricoh Company, Ltd.: *See*—
Furukawa, Masamichi, 4,213,683, Cl. 354-24.000.
Imai, Chikara; Tatsumi, Susumu; and Eda, Tadahiro, 4,213,693, Cl. 355-14.00D.
Yamauchi, Satoshi, 4,214,257, Cl. 358-3.000.
Riddick, Frank C., Jr.; and Peralta, Bernal, to Union Oil Company of California. Hydrodesulfurization of oil feedstock with presulfided catalyst. 4,213,850, Cl. 208-216.00R.
Ridyard, Denis R. A.; and Taylor, Charles W., to Imperial Chemical Industries Limited. Coloration process: mixed dyes for differential-dyeing nylon mixtures. 4,213,759, Cl. 8-643.000.
Ries, Karl; Hannoschock, Kurt; Rozic, Krsto-Marijan; and Basler, Gunter, to Mannesmannufer Aktiengesellschaft; and Richard Seifert & Co. GmbH & Co. KG. Conveyor belt for filmstrip positioning. 4,213,552, Cl. 226-170.000.
Rinehart, Jay K., to PPG Industries, Inc. N-Halo-alkyl thiolcarbamates and N-alkenyl thiolcarbamates. 4,213,915, Cl. 260-455.00A.
Ritzmann, Horst: *See*—
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.
Robb, Frank B.: *See*—
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Robert Bosch GmbH: *See*—
Hofmann, Karl, 4,213,568, Cl. 239-533.400.
Peter, Cornelius; and Kraus, Bernd, 4,213,335, Cl. 73-204.000.
Vogtmann, Hans-Jorg; and Stumpp, Gerhard, 4,213,434, Cl. 123-462.000.
Roberts, Samuel A. Pump for central heating system. 4,213,745, Cl. 417-363.000.

Roberts, William H.: *See*—
Prescott, John F., Jr.; and Roberts, William H., 4,213,327, Cl. 73-38.000.
Robertshaw Controls Company: *See*—
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Brakebill, Harold G., 4,213,233, Cl. 29-157.10R.
Lewis, Jay L., 4,213,457, Cl. 128-276.000.
Wooding, Robert L., 4,213,291, Cl. 368-263.000.
Robinson, James W., Jr. Automatic fishing apparatus. 4,213,264, Cl. 43-16.000.
Robnett, James J.; and Thomas, Dennis R., to Raygo Wagner, Inc. Container carrier vehicle. 4,213,726, Cl. 414-420.000.
Roeschlaub, Ronald C.; and Fegel, Albert, to Irontite Products, Inc. Apparatus for fluid pressure testing of engine cylinder heads and similar parts. 4,213,328, Cl. 73-49.700.
Roese, John A.; and Turner, A. Franklin. Stereofluoroscopy system. 4,214,267, Cl. 358-111.000.
Roeseler, William G.; Warner, Gary J.; and Odell, Richard B., to Boeing Company, The. Hinge arrangement for control surfaces. 4,213,587, Cl. 244-213.000.
Rogers, Francis R.; and Eastman, James M., to Bendix Corporation, The. Variable flow ejector. 4,213,741, Cl. 417-79.000.
Rohm, Gunter H. Lockable chuck for hammer drill. 4,213,622, Cl. 279-1.00K.
Rohm, Gunter H. Nonloosening drill chuck. 4,213,623, Cl. 279-1.00C.
Rohner, Peter, to Kabel-und Metallwerke Gutehoffnungshuette AG. Winding device. 4,213,582, Cl. 242-110.000.
Romine, Ernest H. Thread compliance gauge. 4,213,247, Cl. 33-199.00R.
Rongved, Leif: *See*—
Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., 4,213,698, Cl. 355-77.000.
Rose, David; Weinrich, Erwin; and Lieske, Edgar, to Henkel Kommanditgesellschaft auf Aktien. Oxidation hair dyes based upon tetraaminopyrimidine developers and couplers therefor. 4,213,758, Cl. 8-409.000.
Rose, John F.: *See*—
Wolford, Byron F.; and Rose, John F., 4,214,133, Cl. 200-31.00R.
Rose, Joseph L., to Krautkramer-Branson, Incorporated. Method and apparatus for providing dynamic focussing and beam steering in an ultrasonic apparatus. 4,213,344, Cl. 73-620.000.
Rose, Stanley E., to Ceram-Dent, Inc. Investment casting method. 4,213,495, Cl. 164-34.000.
Rosenfarb, Joseph: *See*—
Laitinen, Herbert A.; and Rosenfarb, Joseph, 4,214,017, Cl. 427-92.000.
Rosinger, Herbert P.: *See*—
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Rosnowski, Wojciech, to RCA Corporation. Method of fabricating semiconductor devices. 4,213,807, Cl. 148-187.000.
Ross, Gerald F.: *See*—
Cronson, Harry M.; Lamensdorf, David; and Ross, Gerald F., 4,214,248, Cl. 343-756.000.
Ross, Roger J., to Singer Company, The. Needle bar support. 4,213,409, Cl. 112-158.00R.
Rossi, Alberto: *See*—
Sele, Alex; Ferrini, Pier G.; Haas, Georges; Jaeggi, Knut A.; and Rossi, Alberto, 4,213,980, Cl. 424-246.000.
Rossi, Guglielmo; and Bosing, Hans, to Ranco Incorporated. Electrical switches for control devices such as temperature regulators. 4,214,136, Cl. 200-67.0DA.
Rossollin, Jean-Claude, to United Patents Trust Reg.-U.P.T. Method and apparatus for removing waste pieces from a pre-cut sheet. 4,213,378, Cl. 93-36.00A.
Roth, Manfred; and Dreier, Juergen, to Roth Werke GmbH. Solar collector. 4,213,449, Cl. 126-447.000.
Roth Werke GmbH: *See*—
Roth, Manfred; and Dreier, Juergen, 4,213,449, Cl. 126-447.000.
Rothwarf, Frederick; Bergner, Robert L.; Leupold, Herbert A.; and Tauber, Arthur, to United States of America, Army. Method of treating a permanent magnet alloy. 4,213,802, Cl. 148-101.000.
Rottwinkel, Leo: *See*—
Pfeiffer, Ferdinand; and Rottwinkel, Leo, 4,213,501, Cl. 169-46.000.
Rotzoll, Rudi-Heinz: *See*—
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Rousseau, George L.: *See*—
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Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,213,989, Cl. 424-263.000.
Rowlinson, James S. Steering shaft and flange and method of making same. 4,213,351, Cl. 74-492.000.
Rozic, Krsto-Marijan: *See*—
Ries, Karl; Hannoschock, Kurt; Rozic, Krsto-Marijan; and Basler, Gunter, 4,213,552, Cl. 226-170.000.
Rubenstein, Raymond D.; and Rescorla, Charles L., to International Harvester Company. Constant flow hydraulic system. 4,213,511, Cl. 180-139.000.
Ruble, Eulalia B., executrix: *See*—
Ruble, Theodore A., deceased, 4,213,939, Cl. 422-151.000.
Ruble, Theodore A., deceased (by Ruble, Eulalia B., executrix), to Sid Richardson Carbon & Gasoline Co. Double venturi carbon black reactor system. 4,213,939, Cl. 422-151.000.
Ruettiger, Wilhelm: *See*—
Kretschmer, Alfred; Ruettiger, Wilhelm; and Wuerz, Albrecht, 4,213,217, Cl. 8-151.000.
Ruff, Robert O., to American Standard Inc. Blank filler plate for lock edge cut-out. 4,213,317, Cl. 70-450.000.
Ruhl, Edward A., to USM Corporation. One-piece hinged guard. 4,213,645, Cl. 293-145.000.
Rummele, John E.: *See*—
Bemis, Richard A.; and Rummele, John E., 4,213,211, Cl. 4-239.000.
Ruske, Manfred; and Elser, Wolfgang, to BASF Aktiengesellschaft. Aqueous dye formulations for cellulose or cellulose-containing fibers. 4,213,757, Cl. 8-518.000.
Rzeszewski, Theodore S.; and Frantzis, Paul D., to Matsushita Electric Corporation. Frequency synthesizer tuning system with variable dwell signal seek. 4,214,274, Cl. 358-193.100.
S.A.E.S. Getters S.p.A.: *See*—
Porta, Paolo D.; and Rabusin, Elio, 4,214,184, Cl. 313-481.000.
S.I.L.E.C.-Division Signalisation Industrielle: *See*—
Oules, Michel L., 4,214,127, Cl. 179-2.00R.
Sacco, Bruno; Dalheimer, Walter; and Schwarz, Friedrich, to Daimler-Benz Aktiengesellschaft. Installation for changing the position of an upper fastening or deflection point of a safety belt. 4,213,638, Cl. 280-808.000.
Safrit, Sam C.; Cassidy, Edward L., Sr.; Cothran, William B.; and Farrell, Roscoe M., to Alamance Industries, Inc. Panty hose with stretch-cotton panty. 4,213,312, Cl. 66-177.000.
Sagami Chemical Research Center: *See*—
Kondo, Kiyoshi; Matsui, Kiyohide; Negishi, Akira; and Takahatake, Yuriko, 4,214,097, Cl. 560-213.000.
Sahlin, Hans O. Device for a portable power saw. 4,213,364, Cl. 83-471.300.
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Saito, Mitsuo; and Yamashita, Sadahiko, to Matsushita Electric Industrial Co., Ltd. Electronic tuning circuit having image trapping element. 4,214,217, Cl. 334-45.000.
Saito, Mitsuo; Makimoto, Mitsuo; and Yamashita, Sadahiko, to Matsushita Electric Industrial Co., Ltd. Impedance matched tuning device having image trapping circuit. 4,214,218, Cl. 334-45.000.
Saito, Yoshihisa: *See*—
Kamiya, Takashi; and Saito, Yoshihisa, 4,214,094, Cl. 560-42.000.
Sakamoto, Kiyoshi; Tsukakoshi, Yukio; and Oie, Naoyuki, to Sanyo Electric Co., Ltd. Projector. 4,213,679, Cl. 353-72.000.
Sakata, Masazumi: *See*—
Nagai, Shigeki; Sekioka, Hakobu; Takenaka, Mitsuaki; Sakata, Masazumi; Kawaguchi, Yosio; Takamura, Seiji; and Nishimura, Minoru, 4,213,775, Cl. 71-103.000.
Sakurai, Yojiro: *See*—
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Salger, Werner, to Lumoprint Zindler KG (GmbH & Co.). Assembly for sealing lead-in areas in a developer station. 4,213,617, Cl. 277-12.000.
Sallmann, Alfred: *See*—
Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,213,993, Cl. 424-273.00B.
Samour, Carlos M.; Jackson, Earl G.; Thomas, Samuel J.; and Davidson, Louie E., to Kendall Company, The. Coated pipe and process for making same. 4,213,486, Cl. 138-143.000.
Samuelsen, Eirik: *See*—
Aanonsen, Bent; Odberg, Paul-Johny; and Samuelsen, Eirik, 4,213,712, Cl. 366-178.000.
Sandborn, Edmund B., to Novaro Investments Limited. Modular unit for the construction of floating decks of liquid storage tanks. 4,213,280, Cl. 52-309.900.
Sanders, Ralph K., to General Dynamics Corporation Pomona Division. Pallet transport system. 4,213,624, Cl. 280-43.120.
Sanders, Virgil E., to Litton Systems, Inc. Four mode Zeeman laser gyroscope with minimum hole burning competition. 4,213,705, Cl. 356-350.000.
Sandoz Ltd.: *See*—
Entschel, Roland; Mueller, Curt; and Steinemann, Willy, 4,213,898, Cl. 260-156.000.
Moser, Helmut; and von Tobel, Hans R., 4,213,897, Cl. 260-154.000.
Sangamo Company Limited: *See*—
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Sangamo Weston, Inc.: *See*—
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Sankyo Company Limited: *See*—
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,213,987, Cl. 424-251.000.
Sansone, Ronald P.: *See*—
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Santora, Norman J.: *See—*
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Sanyo Electric Co., Ltd.: *See—*
Sakamoto, Kiyoshi; Tsukakoshi, Yukio; and Oie, Naoyuki, 4,213,679, Cl. 353-72.000.

Sardo, Alberto, to Xeda International S.A. Automatic machine for in particular calibrating fruit and vegetables. 4,213,533, Cl. 209-654.000.

Sarna, Abraham; and Sarna, David. Artists' portfolio. 4,213,520, Cl. 190-16.000.

Sarna, David: *See—*
Sarna, Abraham; and Sarna, David, 4,213,520, Cl. 190-16.000.

Sarnecki, Wilhelm: *See—*
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Sasaki, Hiroshi: *See—*
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Sasaki, Takehiko; and Yashiro, Yuji, to Sharp Kabushiki Kaisha. Electronic type music learning aids. 4,213,372, Cl. 84-470.00R.

Sato, Hideaki, to Canon Kabushiki Kaisha. Light beam scanning apparatus. 4,214,154, Cl. 250-201.000.

Sato, Hideo; and Shimamune, Takayuki, to Permelec Electrode Ltd. Electrolysis electrodes and method of making same. 4,213,843, Cl. 204-290.00F.

Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, to Olympus Optical Co., Ltd. Tape recorder with means for displaying operation modes in the form of characters. 4,214,281, Cl. 360-61.000.

Sato, Masanobu; and Furuta, Kenzi, to Olympus Optical Co., Ltd. Tape recorder. 4,214,282, Cl. 360-69.000.

Sato, Masato; and Inoue, Takemi, to Kawasaki Jukogyo Kabushiki Kaisha. Engine exhaust means for motor propelled boats. 4,213,414, Cl. 115-73.000.

Sato, Nobuhiro. Optical assembly for detecting an abnormality of an organ or tissue and method. 4,213,462, Cl. 128-634.000.

Sato, Setsuo: *See—*
Fujita, Hisaya; Ando, Hiroshi; and Sato, Setsuo, 4,214,250, Cl. 346-145.000.

Sato, Tadashi, to Canon Kabushiki Kaisha. Automatic original handling device. 4,213,604, Cl. 271-233.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Ink supply device for hand labeler. 4,213,389, Cl. 101-295.000.

Sato, Yoshio: *See—*
Kurihara, Nobuo; Sato, Yoshio; Kawano, Shigeyoshi; Iioka, Michihiro; Iba, Daizo; and Kurihara, Tadashi, 4,214,301, Cl. 364-119.000.

Satoh, Ken: *See—*
Sato, Masanobu; Satoh, Ken; Nakao, Toshihiro; and Furuta, Kenzi, 4,214,281, Cl. 360-61.000.

Sattlegger, Hans: *See—*
Moretto, Hans-Heinrich; Steinberger, Helmut; Larking, Ingrid; and Sattlegger, Hans, 4,214,066, Cl. 528-28.000.

Sauer, Warren A.: *See—*
Geren, Keith E.; Sauer, Warren A.; and Young, Donald A., 4,214,313, Cl. 367-1.000.

Saunders, Thomas E.: *See—*
Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., 4,213,698, Cl. 355-77.000.

Sawabe, Takeshi: *See—*
Miyashita, Toshio; Fujii, Yoshizo; and Sawabe, Takeshi, 4,213,524, Cl. 194-2.000.

Sawicki, Frank S.: *See—*
Nubani, Jawdat I.; and Sawicki, Frank S., 4,213,663, Cl. 316-24.000.

Sawyer, Thomas E., to General Electric Company. Method for casting directionally solidified articles. 4,213,497, Cl. 164-60.000.

Saxholm, Rolf. Apparatus for testing reactions. 4,213,825, Cl. 435-291.000.

Saxton, Arthur L., to Exxon Research & Engineering Co. Fluid coking and gasification process. 4,213,848, Cl. 208-127.000.

Schaaf, Ernest M.: *See—*
Peabody, William A.; and Schaaf, Ernest M., 4,213,306, Cl. 62-85.000.

Schaaf, Thomas K.: *See—*
Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,214,099, Cl. 560-256.000.

Schaberg, Frank: *See—*
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.

Schaefer, John W. Engine emission pollutant separator. 4,213,770, Cl. 55-269.000.

Schairer, Werner, to Licentia Patent-Verwaltungs-G.m.b.H. Radiation-emitting semiconductor diode. 4,214,251, Cl. 357-17.000.

Schane, Harry P., Jr.; Harding, Homer R.; and Creange, John E., to Sterling Drug Inc. Pituitary-adrenal inhibiting method. 4,213,977, Cl. 424-241.000.

Scharer, Hans R.: *See—*
Hold, Peter; Tadmor, Zehev; and Scharer, Hans R., 4,213,710, Cl. 366-81.000.

Schefer, Kurt; and Fluck, Jakob, to Reiter Machine Works, Ltd. Air coupling. 4,213,573, Cl. 242-18.00A.

Schepers, Georg: *See—*
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.

Scheppele, Lyle W., to Toledo Stamping & Manufacturing Company. Feed delivery apparatus. 4,213,525, Cl. 198-364.000.

Schilling, Wilfried: *See—*
Kicherer, Robert; and Schilling, Wilfried, 4,214,151, Cl. 219-492.000.

Schimanski, Georg, to Globol-Werk GmbH. Electrically heated vaporizer device for dispensing a thermally volatilizable substance. 4,214,146, Cl. 219-274.000.

Schloemann-Siemag Aktiengesellschaft: *See—*
Priebe, Fritz, 4,213,318, Cl. 72-21.000.

Schmelter, Herbert: *See—*
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.

Schmelzer Corporation: *See—*
Benjamin, Benjamin C., 4,213,481, Cl. 137-596.180.

Schmeykal, Rudolf: *See—*
Haftmann, Johannes; and Schmeykal, Rudolf, 4,213,715, Cl. 400-196.100.

Schmidt, Gunther; and Leitold, Matyas, to Boehringer Ingelheim GmbH. 11-(Piperazino-acetyl)-5,11-dihydro-6H-pyrido[2,3-b][1,4]benzodiazepin-6-ones and salts thereof. 4,213,984, Cl. 424-250.000.

Schmidt, Gunther; and Leitold, Matyas, to Boehringer Ingelheim GmbH. Novel 5,11-dihydro-6H-pyrido-[2,3-b][1,4]-benzodiazepine-6-ones. 4,213,985, Cl. 424-250.000.

Schmidt, Robert W., to Texas Instruments Incorporated. Eight bit standard connector bus for sixteen bit microcomputer. 4,214,302, Cl. 364-200.000.

Schmidt, Thomas W., to Phillips Petroleum Company. Determination of infinite dilution activity coefficients ($\gamma\infty$) using molecular beams. 4,214,158, Cl. 250-281.000.

Schneider, Dennis M.: *See—*
Bazin, Lucas J.; Peterson, Gary R.; and Schneider, Dennis M., 4,214,261, Cl. 358-19.000.

Schneider, Franklin R., to Dynamote Corporation. Electrical power unit. 4,214,198, Cl. 320-15.000.

Schneider, Fred A. Rotary, hand-held apparatus for performing various soil working operations. 4,213,504, Cl. 172-25.000.

Schnieder, Erich: *See—*
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.

Schoettle, Klaus; Dobler, Peter; Lewin, Helmut; and Koester, Eberhard, to BASF Aktiengesellschaft. Cleaning apparatus for a web of plastics film having a magnetic coating. 4,213,222, Cl. 15-100.000.

Schonhagen, Hubert: *See—*
Muders, Rolf; Leister, Heinrich; Dittmer, Helmut; and Schonhagen, Hubert, 4,213,910, Cl. 260-371.000.

Schreurs, Gerardus C. M.; Raudenbusch, Werner T.; and Visser, Theodorus N., to Shell Oil Company. Esters containing phenolic groups as epoxy resin curing agents. 4,214,068, Cl. 528-98.000.

Schuco Heinz Schurmann GmbH & Co.: *See—*
Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,213,236, Cl. 29-243.500.

Schumacher, Egon: *See—*
Nagel, Hans J.; and Schumacher, Egon, 4,213,422, Cl. 119-21.000.

Schurter, Rolf; Rempfler, Hermann; and Bohner, Beat, to Ciba-Geigy Corporation. Pyridyloxy-phenoxy-α-propionic acid aminoalkyl esters. 4,213,774, Cl. 71-94.000.

Schwarz, Frederick M., to United Technologies Corporation. Seal clearance control system for a gas turbine. 4,213,296, Cl. 60-39.14R.

Schwarz, Friedrich: *See—*
Sacco, Bruno; Dalheimer, Walter; and Schwarz, Friedrich, 4,213,638, Cl. 280-808.000.

Schweickart, Albert J.; and Mooney, Thomas F., III, to BASF Wyandotte Corporation. Device for measuring flow of weak cell liquor. 4,213,336, Cl. 73-215.000.

Schwerdtel, Wulf: *See—*
Seifert, Hermann; Waldmann, Helmut; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,214,105, Cl. 568-771.000.

Sciaky Intertechnique, S.A.: *See—*
Sciaky, Mario M., 4,213,554, Cl. 228-2.000.

Sciaky, Mario M., to Sciaky Intertechnique, S.A. Friction welding machine. 4,213,554, Cl. 228-2.000.

Scott, Dale K.: *See—*
Calvert, Rodney K.; Scott, Dale K.; and Fishback, Alton J., 4,213,283, Cl. 53-48.000.

Scott, Gerald. Process for preparing oxidatively-stable polymers by reaction with antioxidant in the presence of free radical. 4,213,892, Cl. 260-45.95C.

Scott, L. J.: *See—*
Kreutz, George D.; Scott, L. J.; and Kelly, James P., 4,213,528, Cl. 206-205.000.

Scourtes, Chris N., to Aqua Star Pool Company. Air channel device. 4,213,210, Cl. 4-543.000.

SCP Producer's Services Limited: *See—*
Hunt, Brian K.; and O'Donnell, Leopold H., 4,214,278, Cl. 360-14.000.

Scrivo, Jerry V.; and Maloney, John V., to McCord Corporation. Energy-absorbing bumper assembly. 4,213,644, Cl. 293-117.000.

See, Gary G., to Telxon Corporation. Interlock for power sources in data processing apparatus. 4,214,172, Cl. 307-150.000.

Seefried, Carl G., Jr.; Armstrong, George H.; and Van Cleve, Russell, to Union Carbide Corporation. High resilience flame-retardant polyurethane foams based on polymer/polyol compositions. 4,214,055, Cl. 521-137.000.

Seeliger, Christian: *See—*
Bromer, Gunter; Gose, Horst; Hoffmann, Klaus-Rudiger; and Seeliger, Christian, 4,214,192, Cl. 318-573.000.

Seiden, Paul: *See—*
McCarty, Charles B.; and Seiden, Paul, 4,214,038, Cl. 428-411.000.

Seifert, Hermann; Waldmann, Helmut; Schwerdtel, Wulf; and Swodenk, Wolfgang, to Bayer Aktiengesellschaft. Process for the hydroxylation of phenol. 4,214,105, Cl. 568-771.000.

Seigi Komatsu: *See—*
Komatsu, Seigi; and Kitajima, Hiroshi, 4,213,228, Cl. 17-11.000.

Seiko Koko Kabushiki Kaisha: *See—*
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,214,134, Cl. 200-37.00R.

Seitzer, Walter H., to Suntech, Inc. Coal drying process. 4,213,752, Cl. 432-14.000.

Sekioka, Hakobu: *See—*
Nagai, Shigeki; Sekioka, Hakobu; Takenaka, Mitsuaki; Sakata, Masazumi; Kawaguchi, Yosio; Takamura, Seiji; and Nishimura, Minoru, 4,213,775, Cl. 71-103.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Kiyono, Hiroshi; Ishimoto, Akio; Noda, Yoichiro; and Yada, Kozo, 4,213,925, Cl. 264-22.000.
Kodera, Yoshiaki; Watanabe, Kiyoyuki; Kadoya, Tetsuo; and Taguchi, Tadashi, 4,214,034, Cl. 428-315.000.

Sele, Alex; Ferrini, Pier G.; Haas, Georges; Jaeggi, Knut A.; and Rossi, Alberto, to Ciba-Geigy Corporation. Azathianaphthalenes. 4,213,980, Cl. 424-246.000.

Sell, Sanford S. Drink container holder. 4,213,649, Cl. 297-189.000.

Semashko, Andrei P.; Gimaev, Nasikh Z.; Maximov, Ivan V.; Bezrukov, Sergei V.; and Rabinovich, Vladimir B. Electrochemical working method and system for effecting same. 4,213,834, Cl. 204-129.250.

Sempliner, Arthur T.: *See—*
Burian, Paul D.; and Sempliner, Arthur T., 4,213,471, Cl. 132-73.600.

Senet, Jean-Pierre G.: *See—*
Passagne, Claude G.; Senet, Jean-Pierre G.; Lippler, Remy R.; and Plazanet, Jacques, 4,214,073, Cl. 528-369.000.

Sengstock, Paul J., Jr.; and Dutcher, Gerald L., to Hughes Aircraft Company. Spin activated safety circuit for spacecraft. 4,213,586, Cl. 244-158.000.

Sensabaugh, Paul F.: *See—*
Mann, Friedrich H.; and Sensabaugh, Paul F., 4,214,197, Cl. 320-2.000.

Setzer, William C.: *See—*
Fister, Julius C., Jr.; Setzer, William C.; and Cox, Leon, 4,214,041, Cl. 428-607.000.

Sevcon Limited: *See—*
Sloan, Albert E., 4,214,290, Cl. 361-154.000.

Severijns, Adrianus P.; and Staas, Frans A., to U.S. Philips Corporation. Superleak. 4,213,311, Cl. 62-514.00R.

Shaffer, Detmer B., to Sparkle Wash, Inc. Mobile cleaning unit. 4,213,796, Cl. 134-26.000.

Shah, Mahendra: *See—*
Goldberg, Bruce S.; and Shah, Mahendra, 4,213,815, Cl. 156-244.110.

Shannon, Joseph W., to McNeil Corporation. Reservoir sensor. 4,213,339, Cl. 73-304.00R.

Shapiro, Stanley: *See—*
Mayo, William E.; Raghavan, Mathur; Shapiro, Stanley; Hardy, Ronald G.; and Block, Duncan G., 4,213,800, Cl. 148-2.000.
Raghavan, Mathur; Shapiro, Stanley; Hardy, Ronald G.; and Block, Duncan G., 4,213,799, Cl. 148-2.000.

Sharar, Stephen T. Heat transfer lens steam turbine. 4,213,299, Cl. 60-676.000.

Sharp Kabushiki Kaisha: *See—*
Sasaki, Takehiko; and Yashiro, Yuji, 4,213,372, Cl. 84-470.00R.

Shaw, Nathan O., to All American Products Company, Inc. Tool guide bushing mounting assembly. 4,213,658, Cl. 308-15.000.

Shaw, Pern; Musa, Fuad H.; and Kreinick, Stephen J., to Motorola, Inc. Serial-parallel analog-to-digital converter using voltage subtraction. 4,214,232, Cl. 340-347.0AD.

Shaw, Pern; Musa, Fuad H.; and Kreinick, Stephen J., to Motorola Inc. Serial parallel analog-to-digital converter using voltage level shifting of a minimum reference voltage. 4,214,233, Cl. 340-347.0AD.

Shell Internationale Research Maatschappij B.V.: *See—*
Davies, John H.; Grayson, Basil T.; and Rosinger, Herbert P., 4,213,916, Cl. 260-465.00D.

Shell Oil Company: *See—*
de Jong, Aaldert J.; and Heijmen, Hendricus J., 4,214,098, Cl. 560-231.000.
Schreurs, Gerardus C. M.; Raudenbusch, Werner T.; and Visser, Theodorus N., 4,214,068, Cl. 528-98.000.
Witiak, Donald T.; Carr, John B.; and Mersmann, Harry J., 4,213,998, Cl. 424-285.000.
Witiak, Donald T.; Carr, John B.; and Mersmann, Harry J., 4,213,999, Cl. 424-285.000.

Sheppard, William L., to AVM Corporation. Butterfly valve. 4,213,595, Cl. 251-308.000.

Sher, Arden. Radiant energy to electric energy converter. 4,213,797, Cl. 136-89.0SP.

Sherri Cup, Inc.: *See—*
Caccavale, Patrick W., 4,213,537, Cl. 220-215.000.

Shigehara, Masamichi: *See—*
Otsuka, Kei; Shigehara, Masamichi; and Yokokawa, Sumio, 4,214,289, Cl. 361-20.000.

Shim, Norm, to Baxter Travenol Laboratories, Inc. Control system for metering apparatus for a fluid infusion system. 4,213,454, Cl. 128-214.00E.

Shimamune, Takayuki: *See—*
Sato, Hideo; and Shimamune, Takayuki, 4,213,843, Cl. 204-290.00F.

Shimizu, Tsuguo; and Matsuura, Tsuguo, to Hitachi, Ltd. Multiprogrammed data processing system with improved interlock control. 4,214,304, Cl. 364-200.000.

Shinko Automatic Device Co., Ltd.: *See—*
Miyashita, Toshio; Fujii, Yoshizo; and Sawabe, Takeshi, 4,213,524, Cl. 194-2.000.

Shinoda, Kenzo: *See—*
Manabe, Katsuhide; Masumi, Jiro; Tochitani, Tomotada; and Shinoda, Kenzo, 4,214,016, Cl. 427-54.100.

Shinozaki, Nobuo: *See—*
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,214,134, Cl. 200-37.00R.

Shipchandler, Mohammed T., to International Minerals & Chemical Corporation. Phthalimide compounds and method for treating disorders of the heart. 4,213,996, Cl. 424-274.000.

Shippert, Ronald D., to Denver Splint Company, The. Compound splint and kit. 4,213,452, Cl. 128-89.00R.

Shirley, Arthur R., Jr., to Tennessee Valley Authority. Granulation and coating by improved method of heat removal. 4,213,924, Cl. 264-7.000.

Shop-Vac Corporation: *See—*
Miller, Jonathan, 4,213,224, Cl. 15-344.000.

Shortway, Harry A.; Graham, Alan A.; and Miller, Charles H., to Congoleum Corporation. Resinous polymer sheet materials having surface decorative effects and methods of making the same. 4,214,028, Cl. 428-159.000.

Shreve, James S., to United States of America, Army. Phase measuring device. 4,213,697, Cl. 356-351.000.

Sid Richardson Carbon & Gasoline Co.: *See—*
Ruble, Theodore A., deceased, 4,213,939, Cl. 422-151.000.

Sidorenko, Valery A.: *See—*
Yascheritsyn, Petr I.; Sidorenko, Valery A.; Morgunsky, Evgeny I.; Vishnev, Nikolai V.; Bureika, Mindaugas N.; Plotnikov, Vladimir A.; and Volkov, Anatoly T., 4,213,358, Cl. 82-36.00R.

Siegfried Aktiengesellschaft: *See—*
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, 4,214,095, Cl. 560-57.000.

Siemens Aktiengesellschaft: *See—*
Aulich, Hubert; Douklias, Nikolaos; Hacker, Heinz; and Zeidler, Guenter, 4,213,672, Cl. 350-96.230.
Baier, Walter P.; and Grammueller, Harald, 4,214,209, Cl. 375-1.000.
Bromer, Gunter; Gose, Horst; Hoffmann, Klaus-Rudiger; and Seeliger, Christian, 4,214,192, Cl. 318-573.000.
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and Lefranc, Guy, 4,214,166, Cl. 250-396.0ML.
Eggert, Hans-Joachim; Zenkert, Heinrich; Kuehne, Rudi; and Oberberger, Otto, 4,213,532, Cl. 206-504.000.
Fickelscher, Horst, 4,213,835, Cl. 204-129.250.
Heynisch, Hinrich; and Krueger, Hans, 4,213,810, Cl. 156-73.100.
Meyer, Fritz, 4,214,235, Cl. 340-347.0DA.
Renheim, Gunnar, 4,213,465, Cl. 128-731.000.
Windele, Josef, 4,213,551, Cl. 226-74.000.
Zerbst, Manfred, 4,213,940, Cl. 422-246.000.

Sierdzinski, Michael S.: *See—*
Zvanut, Albert J.; and Sierdzinski, Michael S., 4,214,145, Cl. 219-145.220.

Sigl, Wayne C.; and LaBorde, Philip A., to Kimberly-Clark Corporation. Disposable diaper with localized area of increased density. 4,213,459, Cl. 128-287.000.

Signetics Corporation: *See—*
Lemons, Kyle E.; Blish, Richard C., II; and Reimer, Jan D., 4,213,818, Cl. 156-643.000.

Sikdar, Subhas K.; and Moore, James H., to Occidental Research Corporation. Recovery of hydrofluoric acid from fluosilicic acid with high pH hydrolysis. 4,213,951, Cl. 423-339.000.

Sikdar, Subhas K., to Occidental Research Corporation. Recovery of hydrofluoric acid from fluosilicic acid with high pH hydrolysis. 4,213,952, Cl. 423-339.000.

Sikes, Gail T.: *See—*
Harris, Robert J.; and Sikes, Gail T., 4,213,530, Cl. 206-447.000.

Silverman, John H.; and Cahill, James P., to Precise Metal Parts Company. Automatic bagging apparatus. 4,213,284, Cl. 53-74.000.

Simko, Aladar O., to Ford Motor Company. Air/fuel ratio regulator. 4,213,435, Cl. 123-446.000.

Simmons Fastener Corporation: *See—*
Hoen, Cuyler, 4,213,230, Cl. 24-217.00R.

Simone, A. A.: *See—*
Davis, H. R.; Long, R. H.; and Simone, A. A., 4,213,862, Cl. 210-83.000.

Sims, Roger D.: *See—*
Synder, Richard C.; Sims, Roger D.; and Rousseau, George L., 4,213,400, Cl. 105-199.00C.

Singer Company, The: *See—*
Burns, Richard H.; and Crabtree, Kenneth, 4,213,704, Cl. 356-349.000.
Hoffman, Jay, 4,213,343, Cl. 73-505.000.
Johnson, Ralph E., 4,213,410, Cl. 112-228.000.
Knowles, Warren D., 4,213,411, Cl. 112-240.000.
Ross, Roger J., 4,213,409, Cl. 112-158.00R.
Sullivan, John B.; and Marsh, David R., 4,213,252, Cl. 35-10.240.

Sitz, Claus, to Metallhuttenwerke Lubeck GmbH. Process for treating a mud produced during gas scrubbing in a blast furnace or a steelworks. 4,213,778, Cl. 75-25.000.

Sivers, Rolf: *See—*
Stotz, Erich; and Sivers, Rolf, 4,213,632, Cl. 280-697.000.

Skaife, Vivian A., Irrevocable Trust: *See—*
Skaife, William A., 4,213,274, Cl. 47-81.000.

Skaife, William A., to Skaife, Vivian A., Irrevocable Trust, Margaret R. Skaife, Trustee. Aerated continuously watered plant and seed organic growing medium and container for same. 4,213,274, Cl. 47-81.000.

Skatsche, Othmar: *See—*
Feichtinger, Gerhard; Skatsche, Othmar; and List, Hans, 4,213,439, Cl. 123-195.00S.

SKF Industrial Trading and Development Company B.V.: *See—*
Timmer, Hendrikus J. M., 4,213,225, Cl. 16-21.000.

SKF Kugellagerfabriken GmbH: *See—*
Olschewski, Armin; and Huber, Wolfgang, 4,213,656, Cl. 308-8.200.

Sloan, Albert E., to Sevcon Limited. Control circuit for electromagnetically operated contactor. 4,214,290, Cl. 361-154.000.

Sloan, Kenneth B.: *See—*
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,213,978, Cl. 424-241.000.

Smakman, Robert; and van den Berg, Gerrit H., to Akzo N.V. Dialysis with ion exchange extraction of phosphates. 4,213,859, Cl. 210-27.000.

Small, Robert E.: *See—*
Helmer, Warren D.; and Small, Robert E., 4,213,229, Cl. 17-46.000.

Smit Ovens Nijmegen B.V.: *See—*
Wens, Johannes C., 4,213,754, Cl. 432-115.000.

Smith International, Inc.: *See—*
Tschirky, John E.; and Sullivan, Wayne M., 4,213,508, Cl. 175-235.000.

Smith, John R.: *See—*
Coster, Hans G. L.; Ashcroft, Robert G.; and Smith, John R., 4,214,203, Cl. 324-425.000.

Smith, Nancy O. Ski mitten. 4,213,205, Cl. 2-161.00A.

Smith, Ronald D.: *See—*
Fies, William J.; Smith, Ronald D.; Reeher, John R.; and Story, Michael S., 4,214,160, Cl. 250-292.000.

Snavely, Benjamin B.: *See—*
Hayward, John S.; Snavely, Benjamin B.; and Tschang, Pin S., 4,214,264, Cl. 358-44.000.

Societe Anonyme Automobiles Citroen: *See—*
Mauron, Gerard, 4,213,637, Cl. 280-802.000.

Societe Anonyme dite:EPARCO: *See—*
Bavaveas, Tristan, 4,213,871, Cl. 252-60.000.

s.a. Texaco Belgium n.v.: *See—*
Moore, Malcolm, 4,213,699, Cl. 356-70.000.

Societe d'Optique Precision Electronique et Mecanique Sopelem: *See—*
Leblanc, Michele, 4,213,700, Cl. 356-73.000.

Societe Nationale des Poudres et Explosifs: *See—*
Passagne, Claude G.; Senet, Jean-Pierre G.; Lippler, Remy R.; and Plazanet, Jacques, 4,214,073, Cl. 528-369.000.

Societe Nationale Industrielle Aerospatiale: *See—*
Euler, August H. L.; and Beziac, Gilbert F. A., 4,213,739, Cl. 416-226.000.

SOGEMARIC, Societe de Gestion et de Marketing pour Industries de Consommation: *See—*
Denninger, Claude; and Moutton, Louis, 4,213,265, Cl. 43-84.000.

Sohma, Yukio: *See—*
Nara, Yasuhiro; Sohma, Yukio; and Hattori, Akira, 4,214,228, Cl. 371-40.000.

Someya, Teruo: *See—*
Namae, Takao; and Someya, Teruo, 4,214,163, Cl. 250-311.000.

Sonometrics Systems, Inc.: *See—*
Katz, Louis; and Weil, Kurt W., 4,213,464, Cl. 128-645.000.

Sood, Raman R.: *See—*
Dewing, Ernest W.; Huni, Jean-Paul R.; Sood, Raman R.; and Southam, Frederick W., 4,213,599, Cl. 266-166.000.

Sooter, Matthew C.; Becraft, Lloyd G.; and Kegler, William H., to Conoco, Inc. Delayed coking process with hydrotreated recycle. 4,213,846, Cl. 208-50.000.

Sotchenko, Vladimir P.: *See—*
Kozlov, Anatoly E.; Budzan, Bogdan P.; Dudko, Daniil A.; Maximovich, Boleslav I.; Zavodian, Vitaly V.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; Golovnin, Vladimir M.; and Farrakhov, Nail S., 4,214,139, Cl. 219-9.500.

Sotirianos, Konstantin: *See—*
Muller, Hans; and Sotirianos, Konstantin, 4,213,861, Cl. 210-82.000.

Southam, Frederick W.: *See—*
Dewing, Ernest W.; Huni, Jean-Paul R.; Sood, Raman R.; and Southam, Frederick W., 4,213,599, Cl. 266-166.000.

Sowter, Brian R.; and Warwick, William A., to International Business Machines Corporation. Convergence assembly for cathode ray tube. 4,214,221, Cl. 335-212.000.

Sparkle Wash, Inc.: *See—*
Shaffer, Detmer B., 4,213,796, Cl. 134-26.000.

Spaulding, David B., to Energy Alternatives, Inc. Solid refuse furnace. 4,213,404, Cl. 110-229.000.

Sperry Corporation: *See—*
Cronson, Harry M.; Lamensdorf, David; and Ross, Gerald F., 4,214,248, Cl. 343-756.000.
Deardorff, Duane R.; and Mann, William W., 4,213,571, Cl. 241-48.000.
Johnson, Gary R., 4,214,292, Cl. 361-386.000.

Spiegelberg, Gary R., to Erico Products, Inc. Stud welding apparatus and process. 4,214,144, Cl. 219-99.000.

Spiess, Frederick N.; Boegeman, Dwight E.; Pavlicek, Frank V.; and Lowenstein, Carl D., to University of California, Regents of the. Precision transponder and method of communicating therewith. 4,214,314, Cl. 367-2.000.

Spinale, Frank A.: *See—*
Hyland, Joseph F.; Hyland, Barbara B.; Fogarty, A. Edward; Fogarty, Bonnie R.; and Spinale, Frank A., 4,213,266, Cl. 46-1.00R.

Sprague Electric Company: *See—*
O'Shea, Martin W., 4,214,210, Cl. 455-282.000.

Sroub, Joseph W., to Production Experts, Inc. Glider. 4,213,650, Cl. 297-281.000.

Staas, Frans A.: *See—*
Severijns, Adrianus P.; and Staas, Frans A., 4,213,311, Cl. 62-514.00R.

Stahl-Urban Company: *See—*
Conner, William R., Jr., 4,213,547, Cl. 223-2.000.

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, to Boehringer Ingelheim GmbH. 2-Phenylimino-imidazolidines and salts thereof. 4,213,995, Cl. 424-273.00R.

Standard Microsystems Corp.: *See—*
Popper, Jay, 4,214,173, Cl. 307-224.00C.

Standard Oil Company: *See—*
Dolhyj, Serge R.; Suresh, Dev D.; and Grasselli, Robert K., 4,213,917, Cl. 260-465.00D.

Standard Oil Co. (Indiana): *See—*
McCaulay, David A.; and Nevitt, Thomas D., 4,214,116, Cl. 585-747.000.

Standex International GmbH, Firma: *See—*
Werthmann, Wilfried, 4,213,819, Cl. 156-660.000.

Stanfield, George I.: *See—*
Goodman, David S.; and Stanfield, George I., 4,213,668, Cl. 339-217.00R.

Stanford, Louise A. Bread box dispenser. 4,213,540, Cl. 221-150.00R.

Stapp, Paul R., to Phillips Petroleum Company. Catalyst composition. 4,213,879, Cl. 252-429.00R.

Starbuck, Arthur E. Process for desulfurization of coal and ores. 4,213,793, Cl. 106-286.800.

Stauduhar, Richard P.: *See—*
Mozer, Forrest S.; and Stauduhar, Richard P., 4,214,125, Cl. 179-1.05M.

Stauffer Chemical Company: *See—*
Chang, Pei K., 4,214,009, Cl. 426-558.000.
Corbett, Constance R., 4,214,010, Cl. 426-573.000.

Stead, Cecil V.: *See—*
Phillips, Duncan A. S.; Anderson, Brian; Jackson, Neville; Stead, Cecil V.; and Costello, Alan T., 4,213,899, Cl. 260-156.000.

Steck, Werner: *See—*
Brodt, Rudolf; Jakusch, Helmut; Koester, Eberhard; Loeser, Werner; Ohlinger, Manfred; Sarnecki, Wilhelm; and Steck, Werner, 4,213,959, Cl. 423-634.000.

Steele, Thomas L.: *See—*
Swisher, George W., Jr.; and Steele, Thomas L., 4,213,719, Cl. 404-84.000.

Steichen, Clemons P. Oxygen tank holding device for wheelchairs. 4,213,648, Cl. 297-188.000.

Steinberger, Helmut: *See—*
Moretto, Hans-Heinrich; Steinberger, Helmut; Larking, Ingrid; and Sattlegger, Hans, 4,214,066, Cl. 528-28.000.

Steinemann, Willy: *See—*
Entschel, Roland; Mueller, Curt; and Steinemann, Willy, 4,213,898, Cl. 260-156.000.

Steiner, Robert H.; Duncan, Gary L.; and Touhsaent, Robert E., to Mobil Oil Corporation. Polypropylene film with primer of a water dispersed epoxy resin coating. 4,214,039, Cl. 428-414.000.

Stekly, Zdenek J. J. Magnetic separating apparatus with magnetic shielding means. 4,213,854, Cl. 209-223.00R.

Stephan, Herbert, to Leybold-Heraeus GmbH. Method of coating metal substrates with alloys at elevated substrate temperatures. 4,214,015, Cl. 427-42.000.

Sterling Drug Inc.: *See—*
Clarke, Robert L.; and Daum, Sol J., 4,214,084, Cl. 546-72.000.
Lewis, Thomas R.; and Michne, William F., 4,214,085, Cl. 546-97.000.
Schane, Harry P., Jr.; Harding, Homer R.; and Creange, John E., 4,213,977, Cl. 424-241.000.

Sterling, Henley F.; Bush, Eric L.; and McManus, Stephen J., to International Standard Electric Corporation. Electrolytic capacitors. 4,214,293, Cl. 361-433.000.

Sterzel, Hans-Josef; Von Dziembowski, Kasimir; and Pirzer, Hans, to BASF Aktiengesellschaft. Process for the manufacture of linear high molecular weight polyesters. 4,214,072, Cl. 528-272.000.

Stevens, Daniel M. Collapsible and adjustable gage apparatus. 4,213,246, Cl. 33-178.00F.

Stolyar, Genrikh L.: *See—*
Khmelevskaya, Elena D.; Dvoskin, Grigory I.; Kablikov, Vladislav A.; Chukhanov, Zinovy F.; Volny, Vadim M.; Mukhina, Tamara N.; Stolyar, Genrikh L.; Volnaya, Olga E.; and Kuptsov, Nikolai F., 4,214,113, Cl. 585-634.000.

Stoody Company: *See—*
Zvanut, Albert J.; and Sierdzinski, Michael S., 4,214,145, Cl. 219-145.220.

Stookey, Gary K.; and Jackson, James F. Stove door operator. 4,213,446, Cl. 126-192.000.

Storey, Clyde H.: *See—*
Lemker, Richard S.; and Storey, Clyde H., 4,213,772, Cl. 65-30.00R.

Story, Michael S.: *See—*
Fies, William J.; Smith, Ronald D.; Reeher, John R.; and Story, Michael S., 4,214,160, Cl. 250-292.000.

Stotko, Norbert A.: *See—*
Padovani, Francois A.; Miller, Michael B.; Moore, James A.; Fowler, James H.; June, Malcom N.; Matthews, James D.; Morton, T. R.; Stotko, Norbert A.; and Palmer, Lewis B., 4,213,937, Cl. 422-142.000.

Stotz, Erich; and Sivers, Rolf, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Rear axle suspension. 4,213,632, Cl. 280-697.000.

Straffi, Franco, to Breda Termomeccanica S.p.A. Supporting grate for tube plates and relative assembling in a steam generator or the like. 4,213,499, Cl. 165-162.000.

Stritzl, Karl: *See—*
Svoboda, Josef; Wuerthner, Herbert; and Stritzl, Karl, 4,213,630, Cl. 280-634.000.

Stromsta, Roger R.; Nathanson, Marshall R.; and Morton, Dennis S., to Burroughs Corporation. Novel TSF head pair for dual recording on flexible disks. 4,214,287, Cl. 360-103.000.

Strube, Herbert E., to Procter & Gamble Company, The. Fiber-reinforced, activated, zeolite molecular sieve tablets and carbonation of aqueous beverages therewith. 4,214,011, Cl. 426-591.000.

Strunc, Gerald R., to Pako Corporation. Management data system for print sorter. 4,214,310, Cl. 364-475.000.

Strybel, Richard V., to Gould Inc. Service tool. 4,213,216, Cl. 7-170.000.

Stulen, Foster B., to Harvard College, President and Fellows. Monitoring myoelectric signals. 4,213,466, Cl. 128-733.000.

Stulen, Foster B.; and De Luca, Carlo, to Harvard College, President and Fellows. Monitoring myoelectric signals. 4,213,467, Cl. 128-733.000.

Stumpp, Gerhard: *See—*
Vogtmann, Hans-Jorg; and Stumpp, Gerhard, 4,213,434, Cl. 123-462.000.

Sudo, Yoichi: *See—*
Hoshino, Tadayoshi; and Sudo, Yoichi, 4,213,634, Cl. 280-728.000:

Sugimoto, Kenji: *See—*
Toyoda, Minoru; Horishima, Tohei; Sugimoto, Kenji; and Aoyama, Kensuke, 4,213,926, Cl. 264-74.000.

Sugimoto, Shigetoki; Ishikawa, Ro; and Matsushita, Shigeo, to Nippon Selfoc Company, Limited. Light coupling and branching device using light focusing transmission body. 4,213,677, Cl. 350-96.180.

Sugiura, Muneharu; Minami, Setsuo; and Miyamoto, Koichi, to Canon Kabushiki Kaisha. Copying apparatus having a high-speed copying optical system. 4,213,690, Cl. 355-8.000.

Sulewsky, James E., to American Seating Company. Acoustical wall panel. 4,213,516, Cl. 181-286.000.

Sullivan, John B.; and Marsh, David R., to Singer Company, The. Repeating pattern simulation of a polygon face object system. 4,213,252, Cl. 35-10.240.

Sullivan, Wayne M.: *See—*
Tschirky, John E.; and Sullivan, Wayne M., 4,213,508, Cl. 175-235.000.

Sulzer Brothers Limited: *See—*
Mandrin, Charles, 4,213,953, Cl. 423-359.000.

Sumitomo Aluminum Smelting Company, Ltd.: *See—*
Hirobe, Koei; Yanagida, Kiyomi; Hirokane, Tadashi; and Takahashi, Akihiko, 4,213,558, Cl. 228-176.000.

Sumitomo Chemical Company, Limited: *See—*
Kanazawa, Hiroyuki, 4,214,064, Cl. 526-193.000.

Sumitomo Metal Industries, Ltd.: *See—*
Nakashima, Koichi; Nagaoka, Kiyosi; and Hikosaka, Toshihisa, 4,214,311, Cl. 364-482.000.

Sunbeam Plastics Corporation: *See—*
Montgomery, Gary V., 4,213,534, Cl. 215-216.000.

Sung, Rodney L.: *See—*
Larkin, John M.; Cullen, William P.; Sung, Rodney L.; and Zoleski, Benjamin H., 4,214,083, Cl. 544-277.000.

Suntech, Inc.: *See—*
Seitzer, Walter H., 4,213,752, Cl. 432-14.000.

Surber, Oliver M.: *See—*
Blake, Larry V.; Womeldorph, Donald E., Jr.; Surber, Oliver M.; and James, John P., 4,213,856, Cl. 209-250.000,

Surber, William A.: *See—*
Jones, Clifford M.; and Surber, William A., 4,213,714, Cl. 400-124.000.

Suresh, Dev D.: *See—*
Dolhyj, Serge R.; Suresh, Dev D.; and Grasselli, Robert K., 4,213,917, Cl. 260-465.00D.

Suzuki, Tadashi: *See—*
Inoue, Motozo; Kumeta, Mitsuzo; Ueno, Hideo; Okamura, Yoshinao; and Suzuki, Tadashi, 4,213,596, Cl. 254-134.30R.

Svoboda, Josef; Wuerthner, Herbert; and Stritzl, Karl, to TMC Corporation. Spring locking device. 4,213,630, Cl. 280-634.000.

Svoboda, Josef: *See—*
Krob, Erwin; and Svoboda, Josef, 4,213,629, Cl. 280-605.000.

Swank, Harry R.: *See—*
Crosby, Alton L.; and Swank, Harry R., 4,214,142, Cl. 219-86.250.

Swanson, Arthur P. Grip bumper. 4,213,609, Cl. 273-75.000.

Swartwout, Robert L. Appalachian dulcimer lapboard. 4,213,369, Cl. 84-284.000.

Swenson, Rudolph E. Tongue blade for mouth gag for adults. 4,213,451, Cl. 128-12.000.

Swisher, George W., Jr.; and Steele, Thomas L., to CMI Corporation. Grade averaging apparatus. 4,213,719, Cl. 404-84.000.

Swiss Aluminium Ltd.: *See—*
Fister, Julius C., Jr.; Setzer, William C.; and Cox, Leon, 4,214,041, Cl. 428-607.000.
Mayo, William E.; Raghavan, Mathur; Shapiro, Stanley; Hardy, Ronald G.; and Block, Duncan G., 4,213,800, Cl. 148-2.000.
Raghavan, Mathur; Shapiro, Stanley; Hardy, Ronald G.; and Block, Duncan G., 4,213,799, Cl. 148-2.000.

Swodenk, Wolfgang: *See—*
Seifert, Hermann; Waldmann, Helmut; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,214,105, Cl. 568-771.000.

Synder, Richard C.; Sims, Roger D.; and Rousseau, George L., to Pullman Incorporated. Resilient railway body center plate. 4,213,400, Cl. 105-199.00C.

Syntex (U.S.A.) Inc.: *See—*
Walker, Keith A. M., 4,213,991, Cl. 424-273.00R.

Szabo, Georges: *See—*
Engelhard, Philippe; Legendre, Michel; Paris, Guy; and Szabo, Georges, 4,213,849, Cl. 208-139.000.

Szpakowski, Robert J.: *See—*
Thompson, Leo M.; Colt, John Z.; and Szpakowski, Robert J., 4,213,545, Cl. 222-386.500.

Tabara, Noboru: *See—*
Fushimi, Akihiro; Tabara, Noboru; and Isaki, Mikio, 4,214,283, Cl. 360-71.000.

Tachino, Tomio: *See—*
Ban, Masashi; Tachino, Tomio; and Kizaki, Jiro, 4,213,535, Cl. 220-20.500.

Tadanier, John S.; and Martin, Jerry R., to Abbott Laboratories. 6'-Epifortimicin A and B derivatives. 4,214,075, Cl. 536-17.00R.

Tadmor, Zehev: *See—*
Hold, Peter; Tadmor, Zehev; and Scharer, Hans R., 4,213,710, Cl. 366-81.000.

Taguchi, Tadashi: *See—*
Kodera, Yoshiaki; Watanabe, Kiyoyuki; Kadoya, Tetsuo; and Taguchi, Tadashi, 4,214,034, Cl. 428-315.000.

Taisei Kensetsu Kabushiki Kaisha: *See—*
Toyoda, Minoru; Horishima, Tohei; Sugimoto, Kenji; and Aoyama, Kensuke, 4,213,926, Cl. 264-74.000.

Tajiri, Hiromi: *See—*
Kawanami, Takao; Tajiri, Hiromi; and Uomori, Akiyoshi, 4,214,143, Cl. 219-97.000.

Takagi, Toshinori: *See—*
Morimoto, Kiyoshi; Watanabe, Hiroshi; and Takagi, Toshinori, 4,213,844, Cl. 204-298.000.

Takahashi, Akihiko: *See—*
Hirobe, Koei; Yanagida, Kiyomi; Hirokane, Tadashi; and Takahashi, Akihiko, 4,213,558, Cl. 228-176.000.

Takahatake, Yuriko: *See—*
Kondo, Kiyoshi; Matsui, Kiyohide; Negishi, Akira; and Takahatake, Yuriko, 4,214,097, Cl. 560-213.000.

Takamura, Seiji: *See—*
Nagai, Shigeki; Sekioka, Hakobu; Takenaka, Mitsuaki; Sakata, Masazumi; Kawaguchi, Yosio; Takamura, Seiji; and Nishimura, Minoru, 4,213,775, Cl. 71-103.000.

Takasago Perfumery Co., Ltd.: *See—*
Moroe, Tatsuo; Komatsu, Akira; Doi, Kiyosumi, and Moroe, Mitio, 4,214,110, Cl. 585-241.000.

Takenaka, Mitsuaki: *See—*
Nagai, Shigeki; Sekioka, Hakobu; Takenaka, Mitsuaki; Sakata, Masazumi; Kawaguchi, Yosio; Takamura, Seiji; and Nishimura, Minoru, 4,213,775, Cl. 71-103.000.

Takeuchi, Masayuki; Nakamura, Kenji; and Handa, Masahiro, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission device for a power-operated lawn mower. 4,213,288, Cl. 56-11.600.

Talroze, Viktor L.; Grishin, Vladimir D.; and Galushkin, Boris A., to Institut Khimicheskoi Fiziki Akademii Nauk USSR. Apparatus for radiochromatographic analysis of mixture of substances containing components tagged by radioactive isotopes. 4,214,161, Cl. 250-303.000.

Tamura, Masuhiko: *See—*
Kitamura, Takanori; and Tamura, Masuhiko, 4,214,111, Cl. 585-255.000.

Tanaka, Toru: *See—*
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, 4,214,100, Cl. 562-416.000.

Tatsumi, Susumu: *See—*
Imai, Chikara; Tatsumi, Susumu; and Eda, Tadahiro, 4,213,693, Cl. 355-14.00D.

Tauber, Arthur: *See—*
Rothwarf, Frederick; Bergner, Robert L.; Leupold, Herbert A.; and Tauber, Arthur, 4,213,802, Cl. 148-101.000.
Taylor, Charles W.: *See—*
Ridyard, Denis R. A.; and Taylor, Charles W., 4,213,759, Cl. 8-643.000.
TDK Electronics Company Limited: *See—*
Yoneyama, Tetsuhito; Tomizawa, Shiro; Hori, Tetsuo; and Ojima, Teruhiko, 4,213,803, Cl. 148-102.000.
Tefft, Franklin A.; Perez, Ricardo L.; and Barnum, Ronald E., to United Technologies Corporation. Helicopter hover stability and cruise gust effect alleviation. 4,213,584, Cl. 244-17.130.
Tellier, Joseph C. Proximity control system. 4,214,241, Cl. 343-7.0PF.
Telling, Edward F., to Trewhella Bros. (UK) Ltd. Compacting apparatus. 4,213,384, Cl. 100-74.000.
Telling, Vera I., to Trewhella Bros. (UK) Ltd. Compacting apparatus. 4,213,386, Cl. 100-98.00R.
Teltone Corporation: *See—*
Questad, Philip J., 4,214,130, Cl. 179-81.00R.
Telxon Corporation: *See—*
See, Gary G., 4,214,172, Cl. 307-150.000.
Tennessee Valley Authority: *See—*
Shirley, Arthur R., Jr., 4,213,924, Cl. 264-7.000.
Teradyne, Inc.: *See—*
Kern, Walter P., 4,214,201, Cl. 324-158.00P.
Teraoka, Fuminori: *See—*
Kawaharazaki, Takashi; Teraoka, Fuminori; Kubota, Tatsushi; and Matsui, Kenji, 4,213,580, Cl. 242-107.000.
Terasawa, Yoshio: *See—*
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Terni-Societe per l'Industria e l'Elettricita S.p.A.: *See—*
Marianeschi, Edmondo; and Marini, Paolo, 4,213,792, Cl. 106-286.600.
Tetra Pak International AB: *See—*
Ernstsson, Ernst G.; and Nantin, Hans O. I., 4,213,795, Cl. 134-22.00C.
Texaco Inc.: *See—*
Cardenas, Ricardo L.; and Carlin, Joseph T., 4,213,500, Cl. 166-273.000.
Larkin, John M.; Cullen, William P.; Sung, Rodney L.; and Zoleski, Benjamin H., 4,214,083, Cl. 544-277.000.
Texas Gas Transport Company: *See—*
Bresie, Don A.; Fowler, Donald W.; and Burns, Jack M., 4,213,476, Cl. 137-2.000.
Texas Instruments Incorporated: *See—*
Padovani, Francois A.; Miller, Michael B.; Moore, James A.; Fowler, James H.; June, Malcom N.; Matthews, James D.; Morton, T. R.; Stotko, Norbert A.; and Palmer, Lewis B., 4,213,937, Cl. 422-142.000.
Schmidt, Robert W., 4,214,302, Cl. 364-200.000.
Textron, Inc.: *See—*
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Thayer, Orla E. Axial flow valve. 4,213,371, Cl. 84-390.000.
Thiele, Geraldine H., to Oxford Hill, Ltd. Mouthwash and method for preventing and removing dental plaque. 4,214,006, Cl. 424-318.000.
Thiele, Kurt; Ahmed, Quazi; Adrian, Rudolf; and Jahn, Ulrich, to Siegfried Aktiengesellschaft. Chlorobenzyl phenoxy alkoxylates. 4,214,095, Cl. 560-57.000.
Thiem, James E. Dispenser for dispensing the contents of collapsible packages. 4,213,543, Cl. 222-103.000.
Thigpen, Ben B.: *See—*
Bovee, David B.; and Thigpen, Ben B., 4,214,128, Cl. 370-112.000.
Thomas, Dennis R.: *See—*
Robnett, James J.; and Thomas, Dennis R., 4,213,726, Cl. 414-420.000.
Thomas, Samuel J.: *See—*
Samour, Carlos M.; Jackson, Earl G.; Thomas, Samuel J.; and Davidson, Louie E., 4,213,486, Cl. 138-143.000.
Thompson, George H. B.; and Lovelace, David F., to ITT Industries, Incorporated. Fabrication of injection lasers utilizing epitaxial growth and selective diffusion. 4,213,808, Cl. 148-188.000.
Thompson, Leo M.; Colt, John Z.; and Szpakowski, Robert J., to Textron, Inc. Expanding bellows for expulsion tank. 4,213,545, Cl. 222-386.500.
Thompson, Roy R., Jr. Silver reclamation apparatus. 4,213,600, Cl. 266-170.000.
Thompson, Woodrow F. Trailer hitch. 4,213,627, Cl. 280-406.00A.
Thomson-CSF: *See—*
Felix, Pierre, 4,214,275, Cl. 358-223.000.
Mourier, Georges, 4,214,187, Cl. 315-111.800.
Thornton, Edward W. J., to Groupe Minier Sullivan Ltee/Sullivan Mining Group Ltd. Process for the concentration of mineral by flotation process. 4,213,942, Cl. 423-53.000.
Thurber, Mickey D., to Mechanical Seal & Service, Inc. Self-contained rotary mechanical seals. 4,213,618, Cl. 277-93.00R.
Thurmond, Elmer T., Jr., to Equipment Company of America. Drum lifter. 4,213,647, Cl. 294-90.000.
Tibolla, Julius F.: *See—*
Wittes, James M.; and Tibolla, Julius F., 4,213,669, Cl. 339-272.0UC.
Tielemans, Leonardus P. M.; and de Deugd, Johannes A. G., to U.S. Philips Corporation. Connecting rod bearing arrangement. 4,213,659, Cl. 308-167.000.
Tietz, Werner. Cylinder-lock mechanism and key means therefore. 4,213,316, Cl. 70-35.00B.
Timmer, Hendrikus J. M., to SKF Industrial Trading and Development Company B.V. Castor assembly. 4,213,225, Cl. 16-21.000.
Tippner, Richard E. Rotating electromagnetic solenoid motor. 4,214,178, Cl. 310-14.000.
Titmus Eurocon Kontaklinsen GmbH & Co. KG: *See—*
Hofer, Peter; and Kohl, Wolfgang, 4,214,014, Cl. 427-40.000.
Titow, Victor W.: *See—*
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T'Jampens, Germain R.: *See—*
Giller, Henricus F. J. I.; and T'Jampens, Germain R., 4,213,662, Cl. 316-24.000.
TMC Corporation: *See—*
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Svoboda, Josef; Wuerthner, Herbert; and Stritzl, Karl, 4,213,630, Cl. 280-634.000.
Tochitani, Tomotada: *See—*
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Tokita, Yoshiaki; and Okajima, Keisuke, to Hitachi, Ltd. Multi-processor data processing system. 4,214,305, Cl. 364-200.000.
Toledo Stamping & Manufacturing Company: *See—*
Scheppele, Lyle W., 4,213,525, Cl. 198-364.000.
Tominaga, Anri: *See—*
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Tomizawa, Shiro: *See—*
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Torii & Co., Ltd.: *See—*
Fujii, Setsuro; Sakurai, Yojiro; Nakayama, Toyoo; and Matsui, Ryoji, 4,214,093, Cl. 560-34.000.
Touhsaent, Robert E.: *See—*
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Towmotor Corporation: *See—*
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Toyo Seikan Kaisha Limited: *See—*
Kubota, Kikuo; Yamagishi, Yoshiaki; and Yamaguchi, Masaru, 4,213,750, Cl. 425-531.000.
Toyoda Gosei Kabushiki-Kaisha (Toyoda Synthetics Co., Ltd.): *See—*
Manabe, Katsuhide; Masumi, Jiro; Tochitani, Tomotada; and Shinoda, Kenzo, 4,214,016, Cl. 427-54.100.
Toyoda-Koki Kabushiki-Kaisha: *See—*
Koide, Tsuyoshi; and Oda, Yasuji, 4,214,309, Cl. 364-474.000.
Toyoda, Minoru; Horishima, Tohei; Sugimoto, Kenji; and Aoyama, Kensuke, to Taisei Kensetsu Kabushiki Kaisha; and Dai Nippon Printing Co., Ltd. Method for making a decorative plate used in a building. 4,213,926, Cl. 264-74.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ban, Masashi; Tachino, Tomio; and Kizaki, Jiro, 4,213,535, Cl. 220-20.500.
Hoshino, Tadayoshi; and Sudo, Yoichi, 4,213,634, Cl. 280-728.000.
Onishi, Sigeru, 4,213,431, Cl. 123-73.00R.
Yasui, Yasuyosi; Izuta, Mitugu; and Okaguchi, Sigeki, 4,213,660, Cl. 308-177.000.
Yoshitsugu, Noritada; Motonami, Masanao; and Katsuno, Mitsuaki, 4,213,651, Cl. 297-475.000.
Toyota Kodosha Kogyo Kabushiki Kaisha: *See—*
Inokuchi, Nobuyuki; and Hamada, Kouzo, 4,213,635, Cl. 280-737.000.
Trader, David A. Handbag lock. 4,213,314, Cl. 70-68.000.
Traub, Alan C.; and Vanzetti, Riccardo, to Vanzetti Infrared & Computer System Incorporated. Control of spot weld quality by infrared thermal sensing. 4,214,164, Cl. 250-338.000.
Trewhella Bros. (UK) Ltd.: *See—*
Telling, Edward F., 4,213,384, Cl. 100-74.000.
Telling, Vera I., 4,213,386, Cl. 100-98.00R.
Trombley, James E.: *See—*
Claypool, James P., 4,213,261, Cl. 42-16.000.
Trutnev, Viktor A.; Zlobin, Vitaly I.; Kushnarenko, Valentin K.; Ignatov, Valentin B.; Gannota, Boris V.; Ambartsumyan, Nikolai S.; and Volovik, Boris B. Process of manufacturing gypsum products. 4,213,931, Cl. 264-234.000.
Trutzschler GmbH & Co. KG: *See—*
Leifeld, Ferdinand, 4,213,553, Cl. 226-196.000.
TRW Inc.: *See—*
Lumby, Dale, 4,213,718, Cl. 403-197.000.
Murray, Ronald A.; and Piccirillo, Gary P., 4,213,665, Cl. 339-17.00D.
Wesson, Laurence N., 4,214,225, Cl. 338-155.000.
Tsang, Wei K., to Analog Devices, Incorporated. Forming an IC chip with buried zener diode. 4,213,806, Cl. 148-187.000.
Tschang, Pin S.: *See—*
Hayward, John S.; Snavely, Benjamin B.; and Tschang, Pin S., 4,214,264, Cl. 358-44.000.
Tschirky, John E.; and Sullivan, Wayne M., to Smith International, Inc. Downhole fire control. 4,213,508, Cl. 175-235.000.
Tsibris, John C. M., to University of Florida, Board of Regents, State of Florida for and on behalf of the. Affinity chromatography and substrate useful therefor. 4,213,860, Cl. 210-31.00C.

Tsuji, Kunio: *See—*
Hayata, Toshinori; Tsuji, Kunio; and Mitsui, Hajime, 4,213,681, Cl. 354-21.000.
Tsukada, Toshihisa, to Hitachi, Ltd. Liquid phase epitaxy method of forming a filimentary laser device. 4,213,805, Cl. 148-171.000.
Tsukakoshi, Yukio: *See—*
Sakamoto, Kiyoshi; Tsukakoshi, Yukio; and Oie, Naoyuki, 4,213,679, Cl. 353-72.000.
Tumanov, Evgeny S.; Zhamkov, Nikolai V.; and Kudryavtsev, Lev A. Device for introducing particles into analyzer of dustiness of gaseous medium. 4,213,325, Cl. 73-1.00G.
Turner, A. Franklin: *See—*
Roese, John A.; and Turner, A. Franklin, 4,214,267, Cl. 358-111.000.
Turner, Robert L., to Du Pont de Nemours, E. I., and Company. Treatment of aluminum flake to improve appearance of coating compositions. 4,213,886, Cl. 260-29.6MM.
Tuss, John J.: *See—*
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Tutsek, Alexander: *See—*
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Tyler, Derek E.: *See—*
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Typke, Dieter: *See—*
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Uarco Incorporated: *See—*
Absler, Howard; Juszak, Joseph; and Gore, Thomas, 4,213,639, Cl. 282-11.50A.
Ubbelohde, Alfred R. J. P. Granite composition, 4,213,956, Cl. 423-448.000.
Ube Industries, Ltd.: *See—*
Nagai, Shigeki; Sekioka, Hakobu; Takenaka, Mitsuaki; Sakata, Masazumi; Kawaguchi, Yosio; Takamura, Seiji; and Nishimura, Minoru, 4,213,775, Cl. 71-103.000.
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,213,987, Cl. 424-251.000.
Uddeholms Aktiebolag: *See—*
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Union Carbide Corporation: *See—*
Casciani, Ralph A.; Wilbern, Wilmer L.; Mangan, William E.; and Franson, Paul D., 4,213,955, Cl. 423-442.000.
Lowther, Frank E., 4,213,838, Cl. 204-176.000.
Seefried, Carl G., Jr.; Armstrong, George H.; and Van Cleve, Russell, 4,214,055, Cl. 521-137.000.
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Union Oil Company of California: *See—*
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Uniroyal A.G.: *See—*
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Uniroyal Ltd.: *See—*
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Coster, Hans G. L.; Ashcroft, Robert G.; and Smith, John R., 4,214,203, Cl. 324-425.000.
United Patents Trust Reg.-U.P.T.: *See—*
Rossollin, Jean-Claude, 4,213,378, Cl. 93-36.00A.
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Army: *See—*
Donnally, William, 4,214,231, Cl. 340-207.00R.
Drimmer, Bernard E., 4,213,391, Cl. 102-8.000.
Farrell, John W.; and Andrews, Jere L., 4,214,156, Cl. 250-231.0SE.
Hapgood, John H., 4,214,272, Cl. 358-170.000.
Jones, George R.; and Raimondi, Peter K., 4,214,271, Cl. 358-166.000.
O'Donnell, Richard V., 4,214,208, Cl. 455-1.000.
Rothwarf, Frederick; Bergner, Robert L.; Leupold, Herbert A.; and Tauber, Arthur, 4,213,802, Cl. 148-101.000.
Shreve, James S., 4,213,697, Cl. 356-351.000.
Weiss, Frank, 4,214,240, Cl. 343-7.0PF.
Energy: *See—*
Freund, Samuel M.; Maier, William B., II; Beattie, Willard H.; and Holland, Redus F., 4,213,836, Cl. 204-157.10R.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Chamberlain, Frederick R. System for forming a quadrifid image comprising angularly related fields of view of a three dimensional object. 4,213,684, Cl. 354-118.000.
National Aeronautics and Space Administration: *See—*
Narasimhan, Keshavaiyengar Y.; Nathan, Robert; and Parthasarathy, Shakkottai P., 4,214,226, Cl. 367-27.000.
Navy: *See—*
Burton, Charles A., 4,213,646, Cl. 294-86.00A.
Dillard, George M., 4,214,239, Cl. 343-5.0VQ.
Geren, Keith E.; Sauer, Warren A.; and Young, Donald A., 4,214,313, Cl. 367-1.000.
Milton, A. Fenner; and Giallorenzi, Thomas G., 4,213,670, Cl. 350-96.160.
U.S. Philips Corporation: *See—*
De Deugd, Johannes A. G., 4,213,323, Cl. 72-358.000.
Everaarts, Klaas, 4,214,206, Cl. 375-4.000.
Giller, Henricus F. J. I.; and T'Jampens, Germain R., 4,213,662, Cl. 316-24.000.
Goerth, Joachim, 4,214,252, Cl. 357-23.000.
Severijns, Adrianus P.; and Staas, Frans A., 4,213,311, Cl. 62-514.00R.
Tielemans, Leonardus P. M.; and de Deugd, Johannes A. G., 4,213,659, Cl. 308-167.000.
van der Valk, Nicolaas J. L., 4,214,258, Cl. 358-4.000.
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United States Steel Corporation: *See—*
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United Technologies Corporation: *See—*
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Marmol, Ronald A., 4,213,661, Cl. 308-184.00R.
Schwarz, Frederick M., 4,213,296, Cl. 60-39.14R.
Tefft, Franklin A.; Perez, Ricardo L.; and Barnum, Ronald E., 4,213,584, Cl. 244-17.130.
von Hardenberg, Paul W.; Mard, Kenneth C.; and Lavoie, Edward, 4,213,518, Cl. 188-1.00B.
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Universal Instruments Corporation: *See—*
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University of Arizona Foundation, The: *See—*
Hill, Henry A.; Figoski, John W.; and Ballard, Paul T., 4,213,706, Cl. 356-353.000.
University of California, Regents of the: *See—*
Spiess, Frederick N.; Boegeman, Dwight E.; Pavlicek, Frank V.; and Lowenstein, Carl D., 4,214,314, Cl. 367-2.000.
University of Florida, Board of Regents, State of Florida for and on behalf of the: *See—*
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University of Florida, Board of Regents, State of Florida, for the use and benefit of the: *See—*
Laitinen, Herbert A.; and Rosenfarb, Joseph, 4,214,017, Cl. 427-92.000.
Unsold, Eberhard: *See—*
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de Rosset, Armand J., 4,213,913, Cl. 260-428.500.
Frame, Robert R., 4,213,877, Cl. 252-412.000.
Upjohn Company, The: *See—*
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Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,214,051, Cl. 435-55.000.
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,214,052, Cl. 435-55.000.
Urich, George H., to Xerox Corporation. Halftone implementation apparatus. 4,214,277, Cl. 358-283.000.
Usel, Hubert. Electrically ignitable cartridge-less bullet. 4,213,392, Cl. 102-38.00R.
USM Corporation: *See—*
Hold, Peter; Tadmor, Zehev; and Scharer, Hans R., 4,213,710, Cl. 366-81.000.
Kelley, John S.; Grise, Frederick G. J.; and Lovell, Walter C., 4,213,324, Cl. 72-405.000.
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Ruhl, Edward A., 4,213,645, Cl. 293-145.000.
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Valsamis, Lefteris N., to USM Corporation. Rotary processor. 4,213,709, Cl. 366-76.000.
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van den Berg, Gerrit H.: *See—*
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Vandenbossche, Benjamin E., to American HCP. Low-cost flexible plastic heat exchanger. 4,213,498, Cl. 165-136.000.

Vanderhoek, Naphtali N.; Nelson, Peter F.; and Farrington, Alan, to Australian Paper Manufacturers Limited. Pulping with quinones and hydroquinones. 4,213,821, Cl. 162-72.000.

Van Der Schee, Abraham C.: *See*—
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van der Valk, Nicolaas J. L., to U.S. Philips Corporation. Portable television camera and tape recorder combination. 4,214,258, Cl. 358-4.000.

van Deutekom, Huibert J. H., to U.S. Philips Corporation. Rechargeable electrochemical cell. 4,214,043, Cl. 429-27.000.

Vandlik, Robert P.: *See*—
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VanDyke, Ronald D., to ACF Industries, Incorporated. Hitch head having manual jaw unlock. 4,213,590, Cl. 410-64.000.

van Kuijk, Josephus P. M., to Patlico Rights N.V. Heat storage and transmission apparatus for heat from a fluid heated by the sun. 4,213,563, Cl. 237-2.00B.

van Straaten, Jan, to U.S. Philips Corporation. Circuit for the line synchronization in a television receiver having a gated auxiliary control loop. 4,214,260, Cl. 358-17.000.

Van Tighem, Gary P.: *See*—
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Vanzetti Infrared & Computer System Incorporated: *See*—
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Vanzetti, Riccardo: *See*—
Traub, Alan C.; and Vanzetti, Riccardo, 4,214,164, Cl. 250-338.000.

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Horowitz, Alexandre; and Cuypers, Martinus H., 4,213,350, Cl. 474-264.000.

Varma, Ravi K., to E. R. Squibb & Sons, Inc. Process for preparing steroidal [16α,17-d]cyclohexene-21-carboxylic acid esters. 4,213,912, Cl. 260-397.100.

Vee Arc Corporation: *See*—
Ottoson, Allen E., 4,214,190, Cl. 318-356.000.

Velasquez, Robert L. Automatic damper for furnace vent pipe. 4,213,477, Cl. 137-15.000.

Velazquez, Jacinto. Toy baseball game. 4,213,610, Cl. 273-93.00R.

Veltri, Richard D.: *See*—
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Verachtert, Antonius P. Excavators. 4,213,731, Cl. 414-723.000.

Vergottini, Roberto A.: *See*—
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Vetrane, David D.: *See*—
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Vickers Limited: *See*—
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Vilmanis, Ilmars: *See*—
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Vilsmeier, Gerhart: *See*—
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Virginia Panel Corporation: *See*—
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Vishnev, Nikolai V.: *See*—
Yascheritsyn, Petr I.; Sidorenko, Valery A.; Morgunsky, Evgeny I.; Vishnev, Nikolai V.; Bureika, Mindaugas N.; Plotnikov, Vladimir A.; and Volkov, Anatoly T., 4,213,358, Cl. 82-36.00R.

Visser, Theodorus N.: *See*—
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Vockenhuber, Karl: *See*—
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Vogt, B. Richard, to E. R. Squibb & Sons, Inc. Novel 4H-S-triazolo[4,3-A] [1,5]benzodiazepin-5-ones. 4,213,982, Cl. 424-248.520.

Vogtmann, Hans-Jorg; and Stumpp, Gerhard, to Robert Bosch GmbH. Fuel injection system. 4,213,434, Cl. 123-462.000.

Volkov, Anatoly T.: *See*—
Yascheritsyn, Petr I.; Sidorenko, Valery A.; Morgunsky, Evgeny I.; Vishnev, Nikolai V.; Bureika, Mindaugas N.; Plotnikov, Vladimir A.; and Volkov, Anatoly T., 4,213,358, Cl. 82-36.00R.

Volnaya, Olga E.: *See*—
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Volny, Vadim M.: *See*—
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Volovik, Boris B.: *See*—
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Von Bennigsen-Mackiewicz, Andreas; and Von Bennigsen-Mackiewicz, Christoph. Sifting equipment for fine-grained bulk material, particularly flour. 4,213,855, Cl. 209-240.000.

Von Bennigsen-Mackiewicz, Christoph: *See*—
Von Bennigsen-Mackiewicz, Andreas; and Von Bennigsen-Mackiewicz, Christoph, 4,213,855, Cl. 209-240.000.

Vonderau, Raymond C.: *See*—
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Von Dziembowski, Kasimir: *See*—
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von Hardenberg, Paul W.; Mard, Kenneth C.; and Lavoie, Edward, to United Technologies Corporation. Fixed position pendular-type vibration absorber with linearization at fixed or variable frequencies. 4,213,518, Cl. 188-1.00B.

von Oertzen, Klaus: *See*—
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von Tobel, Hans R.: *See*—
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Vydrin, Vladimir N.; Berezin, Evgeny N.; and Dremin, Vladimir G. Roll-forging mill. 4,213,320, Cl. 72-189.000.

Vyvial, Larry A.: *See*—
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W. & A. Manufacturing Co., Inc.: *See*—
West, Wilbur C.; and Atkinson, James E., 4,213,408, Cl. 111-85.000.

W. C. Lamb: *See*—
Dufour, Martin J., 4,213,345, Cl. 73-637.000.

W. Haking Enterprises Limited: *See*—
Hattis, Russell E.; and Yan, Chan K., 4,213,687, Cl. 354-213.000.

W. Schlafhorst & Co.: *See*—
Kupper, Wilhelm, 4,213,290, Cl. 57-85.000.

Wachi, Masatada: *See*—
Niimi, Koji; Katoh, Mitsumi; and Wachi, Masatada, 4,213,366, Cl. 84-1.010.

Wagemann, Heinz: *See*—
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Wagner, Karl, to Fabrication Unlimited, Inc. Apparatus for separating sludge, oil and the like from contaminated water. 4,213,865, Cl. 210-522.000.

Wagner, Rudolf, to Rems-Werk Christian Foll und Sohne GmbH & Co. Transportable external thread cutting machine. 4,213,722, Cl. 408-73.000.

Wagner, Rudolf, to Rems-Werk Christian Foll und Sohne GmbH & Co. Thread cutting die stock. 4,213,723, Cl. 408-239.00A.

Waldmann, Helmut: *See*—
Seifert, Hermann; Waldmann, Helmut; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,214,105, Cl. 568-771.000.

Walker, Keith A. M., to Syntex (U.S.A.) Inc. Derivatives of substituted N-alkyl imidazoles and compositions and methods containing the same. 4,213,991, Cl. 424-273.00R.

Walker, Peter S.: *See*—
Insall, John N.; and Walker, Peter S., 4,213,209, Cl. 3-1.911.

Wallrabenstein, Michael: *See*—
Brodowski, Walter; and Wallrabenstein, Michael, 4,213,890, Cl. 260-45.75W.

Walls, John E.; and Gillich, Thomas N., to American Hoechst Corporation. Lithographic plate finisher. 4,213,887, Cl. 260-29.60E.

Walsh, James L.: *See*—
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Waltrip, Owen R., to Nuclear Supreme. Method of extracting a liquid electrolyte and other products from coal. 4,214,046, Cl. 429-198.000.

Wang, Ikai: *See*—
Chen, Nai Y.; and Wang, Ikai, 4,213,847, Cl. 208-111.000.

Wank, Joachim: *See*—
Binsack, Rudolf; Wank, Joachim; and Reese, Eckart, 4,214,062, Cl. 525-470.000.

Ward, Robert R.; Chang, Richard C.; Danos, James C.; and Carden, Joseph A., Jr., to Monsanto Company. Processes for coating bundles of hollow fiber membranes. 4,214,020, Cl. 427-296.000.

Ware, Peter G., to Dunlop Limited. Method and apparatus for manufacturing vehicle wheel rims from spirally wound sheet metal. 4,213,234, Cl. 29-159.100.

Warncke, Ernst; and Pasternack, Adalbert, to Dragerwerk Aktiengesellschaft. Breathing device having oxygen donor chemical cartridge. 4,213,453, Cl. 128-202.260.

Warner Electric Brake & Clutch Company: *See*—
Modersohn, Charles W., 4,213,521, Cl. 192-18.00R.

Warner, Gary J.: *See*—
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Warner-Lambert Company: *See*—
Ferraro, Frank A.; and Kiraly, Ernest F., 4,213,240, Cl. 30-47.000.

Warner, William J. Remote control apparatus. 4,214,229, Cl. 340-148.000.

Warwick, William A.: *See*—
Sowter, Brian R.; and Warwick, William A., 4,214,221, Cl. 335-212.000.

Watanabe, Hiroshi: *See*—
Morimoto, Kiyoshi; Watanabe, Hiroshi; and Takagi, Toshinori, 4,213,844, Cl. 204-298.000.

Watanabe, Kiyoyuki: *See*—
Kodera, Yoshiaki; Watanabe, Kiyoyuki; Kadoya, Tetsuo; and Taguchi, Tadashi, 4,214,034, Cl. 428-315.000.

Watanabe, Seizaburo; and Matsuki, Yutaka, to Asahi-Dow Limited. Expanded olefin polymer. 4,214,054, Cl. 521-95.000.

Watanabe, Toshiaki; and Yuhara, Hideo, to Okuma Machinery Works Ltd. System for automatic management of tool life. 4,214,191, Cl. 318-561.000.

Watson, Thomas E., to Westinghouse Electric Corp. Oil separation and return system for centrifugal refrigerant compressors. 4,213,307, Cl. 62-192.000.

Watts, Eric A.: *See*—
Hadley, Michael S.; and Watts, Eric A., 4,213,983, Cl. 424-250.000.

Wear, George H., to General Tire & Rubber Company, The. Thermoformable, high impact low-smoke plastic. 4,213,891, Cl. 260-45.75S.

Weaver, Ralph W.: *See*—
Krieger, Raymond L.; Weaver, Ralph W.; and Able, Edward T., 4,213,333, Cl. 73-136.00R.

Webb, Robert H.: *See*—
Pomerantzeff, Oleg; and Webb, Robert H., 4,213,678, Cl. 351-7.000.

Weber, Heinrich: *See*—
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.

Weber, Rolf-Ortwin: *See*—
Gebert, Ulrich; Musil, Josef; and Weber, Rolf-Ortwin, 4,213,986, Cl. 424-250.000.

Weber, Rudolf: *See*—
Bauer, Klaus; Goldmann, Wolf; Kretzer, Horst; Weber, Heinrich; Beyer, Rudiger; Kreft, Wilfried; Schaberg, Frank; Weber, Rudolf; Schmelter, Herbert; Ritzmann, Horst; Schnieder, Erich; and Schepers, Georg, 4,213,790, Cl. 106-100.000.

Wechsung, Reiner: *See*—
Hillenkamp, Franz; Kaufmann, Raimund; Niltsche, Rainer; Unsold, Eberhard; and Wechsung, Reiner, 4,214,159, Cl. 250-288.000.

Wei, Peter H. L.: *See*—
Fenichel, Richard L.; Wei, Peter H. L.; Gregory, Francis J.; and Alburn, Harvey E., 4,214,089, Cl. 548-151.000.

Weik, Kirby B., to Koehler-Dayton, Inc. Aircraft seat with concealed locking and releasing mechanism. 4,213,593, Cl. 248-501.000.

Weil, Kurt W.: *See*—
Katz, Louis; and Weil, Kurt W., 4,213,464, Cl. 128-645.000.

Weiner, Israel H. Tick removing forceps. 4,213,460, Cl. 128-303.00R.

Weinrich, Erwin: *See*—
Rose, David; Weinrich, Erwin; and Lieske, Edgar, 4,213,758, Cl. 8-409.000.

Weis, Siegfried K.: *See*—
Frost, Charles C.; and Weis, Siegfried K., 4,213,523, Cl. 193-37.000.

Weiss, Frank, to United States of America, Army. Coded pulse radar fuze. 4,214,240, Cl. 343-7.0PF.

Weiss, Gerhard: *See*—
Franzen, Jochen; and Weiss, Gerhard, 4,213,557, Cl. 228-122.000.

Wellons, Edwin L.: *See*—
Hurt, Frank K.; and Wellons, Edwin L., 4,213,743, Cl. 417-229.000.

Wells, John L.: *See*—
Reinertson, John E.; and Wells, John L., 4,213,348, Cl. 73-765.000.

Wenham, Douglas L., to AHI Operations Limited. Apparatus for sampling a flow of liquid from a fluid at least some of which is a liquid. 4,213,341, Cl. 73-421.00A.

Wens, Johannes C., to Smit Ovens Nijmegen B.V. System for sealing the rotary tube of a rotary tubular kiln. 4,213,754, Cl. 432-115.000.

Wentz, Edward C.: *See*—
Conner, Edmond E.; and Wentz, Edward C., 4,214,199, Cl. 323-6.000.

Werner & Pfleiderer: *See*—
Friedrich, Reinhard, 4,213,747, Cl. 425-144.000.

Werthmann, Wilfried, to Standex International GmbH, Firma. Method of producing large-format embossing tools. 4,213,819, Cl. 156-660.000.

Wessling, Ritchie A.: *See*—
Klingler, Thomas C.; Wessling, Ritchie A.; and Gibbs, Dale S., 4,214,096, Cl. 560-147.000.

Wesson, Laurence N., to TRW Inc. Signal transducing device. 4,214,225, Cl. 338-155.000.

West Electric Co., Ltd.: *See*—
Hayata, Toshinori; Tsuji, Kunio; and Mitsui, Hajime, 4,213,681, Cl. 354-21.000.

West, Wilbur C.; and Atkinson, James E., to W. & A. Manufacturing Co., Inc. Combination ripper, mixer and planter. 4,213,408, Cl. 111-85.000.

Western Electric Company, Inc.: *See*—
Jones, William T., Jr.; and Moulis, Edward J., 4,214,120, Cl. 174-52.0FP.

Western Geophysical Co. of America: *See*—
Bovee, David B.; and Thigpen, Ben B., 4,214,128, Cl. 370-112.000.

Western Reserve Electronics, Inc.: *See*—
Wise, David S., 4,213,696, Cl. 355-45.000.

Westinghouse Brake and Signal Co. Ltd.: *See*—
Bowles, Colin M., 4,213,588, Cl. 246-259.000.

Westinghouse Electric Corp.: *See*—
Alvino, William M.; and Frost, Lawrence W., 4,214,071, Cl. 528-222.000.
Conner, Edmond E.; and Wentz, Edward C., 4,214,199, Cl. 323-6.000.
Cooper, Frank W., Jr., 4,213,732, Cl. 414-728.000.
Noreika, Alexander J.; and Francombe, Maurice H., 4,213,781, Cl. 75-134.00P.
Watson, Thomas E., 4,213,307, Cl. 62-192.000.

Westley, John, to Hoffmann-La Roche Inc. Therapeutic agent for improving cardiovascular function. 4,213,997, Cl. 424-283.000.

Wetzel, Jon C., to American Home Products Corporation. Injectable anesthetic. 4,213,981, Cl. 424-247.000.

Weyl, Reinhard: *See*—
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and Lefranc, Guy, 4,214,166, Cl. 250-396.0ML.

Wheeler, Ronald E.; and King, William F., to Chevron Research Company. Use of oxadiazole derivatives for corn root worm control. 4,213,973, Cl. 424-200.000.

Whitaker, James L., to Robb, Frank B., a part interest. Means for stacking and shipping containers in multiples. 4,213,529, Cl. 206-427.000.

White Consolidated Industries, Inc.: *See*—
Holtkamp, Calvin J., 4,214,224, Cl. 337-323.000.

White, William R.; and Van Tighem, Gary P., to Occidental Petroleum Corporation. Flotation separation of glass from a mixture of comminuted inorganic materials using hydrocarbon sulfonates. 4,213,851, Cl. 209-12.000.

Whitehurst, Darrell D.: *See*—
Mitchell, Thomas O.; and Whitehurst, Darrell D., 4,213,921, Cl. 568-455.000.

Whitfill, Donald L., to Conoco, Inc. Determination of chromate ion in drilling mud filtrates. 4,213,762, Cl. 23-230.00R.

Whiting, Thomas A. Astronomical optical simulator. 4,213,254, Cl. 35-43.000.

Whiting, Winslow. Stabbing guide. 4,213,237, Cl. 29-272.000.

Wholey, James N.: *See*—
Omori, Masahiro; Wholey, James N.; and Anderson, J. Ross, 4,213,840, Cl. 204-192.00C.

Wible, John E., to Towmotor Corporation. Article retention device. 4,213,510, Cl. 180-68.500.

Widdershoven, Louis H., to Raypak Produkten B.V. Draft interrupter of a gas-fired boiler installation. 4,213,406, Cl. 110-326.000.

Wikoff, Mark W., to Best & Donovan Tensiometer. 4,213,334, Cl. 73-144.000.

Wilbern, Wilmer L.: *See*—
Casciani, Ralph A.; Wilbern, Wilmer L.; Mangan, William E.; and Franson, Paul D., 4,213,955, Cl. 423-442.000.

Wildman, John R.; and Meyer, Burton C., to Marvin Glass & Associates. Shiftable game target and projectile launching device for actuating same. 4,213,612, Cl. 273-355.000.

Wildman, John R.: *See*—
Erickson, Erick E.; Wildman, John R.; and Meyer, Burton C., 4,213,268, Cl. 46-202.000.

Wilkerson, Edward D. Vehicl wheel alignment adjustment device. 4,213,631, Cl. 280-661.000.

Will Ross, Inc.: *See*—
Bryson, John D., 4,213,923, Cl. 261-120.000.

William H. Rorer, Inc.: *See*—
Campbell, Henry F.; Santora, Norman J.; and Douglas, George H., 4,214,003, Cl. 424-301.000.

Williams, George F.: *See*—
Olsen, Everett O.; Estes, Robert F.; Rezendes, Paul W.; and Williams, George F., 4,213,478, Cl. 137-85.000.

Williams, James R., to General Motors Corporation. Cooling air control valve. 4,213,738, Cl. 416-95.000.

Williams, Lloyd E.; and Mays, Robert K., to J. M. Huber Corporation Synthetic amorphous sodium aluminosilicate base exchange materials. 4,213,874, Cl. 252-174.250.

Williams, Richard; and Arie, Yehuda, to RCA Corporation. Tellurium schottky barrier contact for amorphous silicon solar cells. 4,213,798, Cl. 136-89.0SJ.

Willms, Rolf: *See*—
Haese, Egon; Moll, Hans; and Willms, Rolf, 4,213,945, Cl. 423-240.000.

Wilmoth, Eugene: *See*—
Cowles, Clarence W.; Breashears, James C.; and Mungons, Edwin M., 4,213,729, Cl. 414-462.000.

Wilson, Bobby R. Tooth paste dispenser. 4,213,542, Cl. 222-102.000.

Wilson, Eddie K., Sr. Process for producing portland and other hydraulic cements. 4,213,791, Cl. 106-100.000.

Wilson, Frederick M. Artificial heart and method of pumping blood. 4,213,207, Cl. 3-1.700.

Wilson, Lloyd W., to United Technologies Corporation. Titanium bearing MCrAlY type alloy and composite articles. 4,214,042, Cl. 428-678.000.

Wilson, Robert E. Device to improve shooting a basketball. 4,213,606, Cl. 273-1.50A.

Wilson, Stephen T., to Union Carbide Corporation. Oxidative coal desulfurization using lime to regenerate alkali metal hydroxide from reaction product. 4,213,765, Cl. 44-15.00R.

Wimpfheimer, Hans: *See*—
Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, 4,214,256, Cl. 357-71.000.

Winch, Allen R., to Cotton Incorporated. Impregnator/rinser. 4,213,218, Cl. 8-151.000.

Windele, Josef, to Siemens Aktiengesellschaft. Recording carrier transport assembly for use with side margin punched recording carrier webs. 4,213,551, Cl. 226-74.000.

Windmoller & Holscher: *See*—
Geretzki, Helmut, 4,213,388, Cl. 101-216.000.

Wipff, Frank P., to RCA Corporation. Cadence suppression system. 4,214,126, Cl. 179-1.50M.

Wise, David S., to Western Reserve Electronics, Inc. Scan mechanism for a microfilm reader/printer. 4,213,696, Cl. 355-45.000.
Witco Chemical Corporation: *See—*
Bitely, Clarence J., Jr.; Dromgold, Luther D.; and Murray, William S., Jr., 4,213,868, Cl. 252-11.000.
Witiak, Donald T.; Carr, John B.; and Mersmann, Harry J., to Shell Oil Company. Inhibition of lipogenesis. 4,213,998, Cl. 424-285.000.
Witiak, Donald T.; Carr, John B.; and Mersmann, Harry J., to Shell Oil Company. Inhibition of lipogenesis. 4,213,999, Cl. 424-285.000.
Wittes, James M., to GTE Sylvania Wiring Devices Incorporated. Dead front connector. 4,213,667, Cl. 339-103.00R.
Wittes, James M.; and Tibolla, Julius F., to GTE Sylvania Wiring Devices Incorporated. Terminal collar. 4,213,669, Cl. 339-272.0UC.
Wittig, Carl E.; and Vonderau, Raymond C., to Beloit Corporation. Paper making machine screen with staggered foils. 4,213,823, Cl. 162-380.000.
Witwer, Alan D.: *See—*
Goodnight, Hershel E.; and Witwer, Alan D., 4,213,935, Cl. 422-111.000.
WMI Corporation: *See—*
Jones, Charles E., 4,213,370, Cl. 84-291.000.
Woinsky, Samuel G., to Occidental Petroleum Corporation. Process and system for recovery of energy from geothermal brines and other water containing sources. 4,213,302, Cl. 60-641.000.
Wolf, Anthony D., to Du Pont de Nemours, E. I., and Company. Herbicidal substituted bicyclic triazoles. 4,213,773, Cl. 71-92.000.
Wolford, Byron F.; and Rose, John F. Rotary shaft position switch. 4,214,133, Cl. 200-31.00R.
Womeldorph, Donald E., Jr.: *See—*
Blake, Larry V.; Womeldorph, Donald E., Jr.; Surber, Oliver M.; and James, John P., 4,213,856, Cl. 209-250.000.
Wood, Bruce G. Insulative wide style watchband. 4,213,548, Cl. 224-168.000.
Wood, Peter J.: *See—*
Pugsley, Peter C.; and Wood, Peter J., 4,214,276, Cl. 358-256.000.
Wooding, David L.; and Pletcher, Robert W., to Eastman Kodak Company. Cleaning station. 4,213,794, Cl. 134-6.000.
Wooding, Robert L., to Robertshaw Controls Company. Alarm clock construction. 4,213,291, Cl. 368-263.000.
Worner, Michael: *See—*
Liebert, Oskar; and Worner, Michael, 4,213,390, Cl. 101-365.000.
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., to Upjohn Company, The. Process for preparing 9α-OH BN acid methyl ester. 4,214,051, Cl. 435-55.000.
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., to Upjohn Company, The. Process for preparing 9α-OH BN alcohol. 4,214,052, Cl. 435-55.000.
Wright, David H.: *See—*
Gillot, Gary W.; and Wright, David H., 4,213,680, Cl. 354-12.000.
Wright, James R.: *See—*
Richardson, Kenneth; Plews, Rhona M.; and Wright, James R., 4,214,074, Cl. 536-10.000.
Wuertele, Lothar: *See—*
Hahn, Erwin; Magerkurth, Bernhard; Lach, Dietrich; and Wuertele, Lothar, 4,213,760, Cl. 8-94.170.
Wuerthner, Herbert: *See—*
Svoboda, Josef; Wuerthner, Herbert; and Stritzl, Karl, 4,213,630, Cl. 280-634.000.
Wuerz, Albrecht: *See—*
Kretschmer, Alfred; Ruettiger, Wilhelm; and Wuerz, Albrecht, 4,213,217, Cl. 8-151.000.
Wulf, Helmut: *See—*
Mehren, Herbert; and Wulf, Helmut, 4,213,396, Cl. 104-130.000.
Wunder, Friedrich: *See—*
Freudenberger, Dieter; and Wunder, Friedrich, 4,214,106, Cl. 568-864.000.
Wunderlich, Klaus: *See—*
Berg, Gerhard; Hohmann, Walter; Reubke, Karl-Julius; and Wunderlich, Klaus, 4,213,909, Cl. 260-371.000.
Harms, Wolfgang; Wunderlich, Klaus; and von Oertzen, Klaus, 4,214,082, Cl. 544-189.000.
Wyatt, John G., to Lodge-Cottrell, Ltd. Method and means for distributing gas along an extended inlet portion of gas treatment means. 4,213,766, Cl. 55-2.000.
Xeda International S.A.: *See—*
Sardo, Alberto, 4,213,533, Cl. 209-654.000.
Xerox Corporation: *See—*
Halfhill, Martin O.; and Jacques, James O., 4,214,280, Cl. 360-53.000.
Urich, George H., 4,214,277, Cl. 358-283.000.
Yabe, Isao: *See—*
Mabuchi, Hiroshi; and Yabe, Isao, 4,213,293, Cl. 368-152.000.
Yada, Kozo: *See—*
Kiyono, Hiroshi; Ishimoto, Akio; Noda, Yoichiro; and Yada, Kozo, 4,213,925, Cl. 264-22.000.
Yagaki, Kazuhito: *See—*
Furuta, Isao; Yagaki, Kazuhito; and Masuda, Toyohiko, 4,213,946, Cl. 423-242.000.
Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Programmed exposure control system for a camera. 4,213,682, Cl. 354-23.00D.
Yamagishi, Yoshiaki: *See—*
Kubota, Kikuo; Yamagishi, Yoshiaki; and Yamaguchi, Masaru, 4,213,750, Cl. 425-531.000.
Yamaguchi, Masaru: *See—*
Kubota, Kikuo; Yamagishi, Yoshiaki; and Yamaguchi, Masaru, 4,213,750, Cl. 425-531.000.
Yamashita, Sadahiko: *See—*
Saito, Mitsuo; and Yamashita, Sadahiko, 4,214,217, Cl. 334-45.000.
Saito, Mitsuo; Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,214,218, Cl. 334-45.000.
Yamauchi, Masaaki: *See—*
Hase, Yoshinobu; Yamauchi, Masaaki; and Handa, Ryozo, 4,214,007, Cl. 426-44.000.
Yamauchi, Satoshi, to Ricoh Company, Ltd. Method and color television picture tube for reproducing three-dimensional image. 4,214,257, Cl. 358-3.000.
Yan, Chan K.: *See—*
Hattis, Russell E.; and Yan, Chan K., 4,213,687, Cl. 354-213.000.
Yanagida, Kiyomi: *See—*
Hirobe, Koei; Yanagida, Kiyomi; Hirokane, Tadashi; and Takahashi, Akihiko, 4,213,558, Cl. 228-176.000.
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., to Olin Corporation. Electromagnetic casting apparatus. 4,213,496, Cl. 164-147.000.
Yascheritsyn, Petr I.; Sidorenko, Valery A.; Morgunsky, Evgeny I.; Vishnev, Nikolai V.; Bureika, Mindaugas N.; Plotnikov, Vladimir A.; and Volkov, Anatoly T. Rotary cutting tool. 4,213,358, Cl. 82-36.00R.
Yashiro, Yuji: *See—*
Sasaki, Takehiko; and Yashiro, Yuji, 4,213,372, Cl. 84-470.00R.
Yasui, Yasuyosi; Izuta, Mitugu; and Okaguchi, Sigeki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Bearing assembly construction. 4,213,660, Cl. 308-177.000.
Yokogawa Electric Works, Ltd.: *See—*
Fujita, Hisaya; Ando, Hiroshi; and Sato, Setsuo, 4,214,250, Cl. 346-145.000.
Yokogawa, Tomohisa, to Pioneer Electronic Corporation. Electrostatic destruction preventing circuit for use in a receiver. 4,214,211, Cl. 455-287.000.
Yokoi, Shinji: *See—*
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,213,987, Cl. 424-251.000.
Yokokawa, Sumio: *See—*
Otsuka, Kei; Shigehara, Masamichi; and Yokokawa, Sumio, 4,214,289, Cl. 361-20.000.
Yoneyama, Tetsuhito; Tomizawa, Shiro; Hori, Tetsuo; and Ojima, Teruhiko, to TDK Electronics Company Limited. R_2Co_{17} Rare type-earth-cobalt, permanent magnet material and process for producing the same. 4,213,803, Cl. 148-102.000.
Yoshimura, Yoshikazu: *See—*
Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, 4,214,112, Cl. 585-532.000.
Yoshitsugu, Noritada; Motonami, Masanao; and Katsuno, Mitsuaki, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Seatbelt system. 4,213,651, Cl. 297-475.000.
Young, Donald A.: *See—*
Geren, Keith E.; Sauer, Warren A.; and Young, Donald A., 4,214,313, Cl. 367-1.000.
Young, William C., to Bell Telephone Laboratories, Incorporated. Apparatus and method of molding a biconical socket. 4,213,932, Cl. 264-236.000.
Youngstown Sheet and Tube Company: *See—*
Barnes, Floyd A., Jr., 4,213,322, Cl. 72-357.000.
Yuasa, Takeo: *See—*
Ibata, Jyoji; Fukui, Hisaaki; Yuasa, Takeo; and Katoh, Michio, 4,214,026, Cl. 428-67.000.
Yuhara, Hideo: *See—*
Watanabe, Toshiaki; and Yuhara, Hideo, 4,214,191, Cl. 318-561.000.
Yun, Ik Y.: *See—*
Yarwood, John C.; Yun, Ik Y.; Tyler, Derek E.; and Kindlmann, Peter J., 4,213,496, Cl. 164-147.000.
Zaar, Wolfgang, to Chemische Werke Huls Aktiengesellschaft. 1,5,9-Cyclododecatriene from butadiene trimerization using dibenzylbenzenes. 4,214,108, Cl. 585-23.000.
Zahnradfabrik Friedrichshafen AG: *See—*
Ehrlinger, Friedrich; Mann, Egon; Fischer, Manfred; and Jocham, Rudolf, 4,213,514, Cl. 180-308.000.
Zarzosa-Castilla, Agustin F.; and Parcero-de Zarzosa, Ma. Hilda. Construction of roofs, floors and beams. 4,213,281, Cl. 52-323.000.
Zavodian, Vitaly V.: *See—*
Kozlov, Anatoly E.; Budzan, Bogdan P.; Dudko, Daniil A.; Maximovich, Boleslav I.; Zavodian, Vitaly V.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; Golovnin, Vladimir M.; and Farrakhov, Nail S., 4,214,139, Cl. 219-9.500.
Zaznobin, Anatoly M.: *See—*
Polovnikov, Sergei V.; Zaznobin, Anatoly M.; Masalov, Gennady F.; and Mischenkov, Alexandr A., 4,213,346, Cl. 73-660.000.
Zeidler, Guenter: *See—*
Aulich, Hubert; Douklias, Nikolaos; Hacker, Heinz; and Zeidler, Guenter, 4,213,672, Cl. 350-96.230.
Zenkert, Heinrich: *See—*
Eggert, Hans-Joachim; Zenkert, Heinrich; Kuehne, Rudi; and Oberberger, Otto, 4,213,532, Cl. 206-504.000.
Zerbst, Helmut: *See—*
Dietrich, Isolde; Fox, Fred; Knapek, Erwin; Nachtrieb, Karl; Weyl, Reinhard; Zerbst, Helmut; and Lefranc, Guy, 4,214,166, Cl. 250-396.0ML.
Zerbst, Manfred, to Siemens Aktiengesellschaft. Apparatus for pulling monocrystalline ribbon-like bodies out of a molten crystalline film. 4,213,940, Cl. 422-246.000.

Zhamkov, Nikolai V.: *See—*
Tumanov, Evgeny S.; Zhamkov, Nikolai V.; and Kudryavtsev, Lev A., 4,213,325, Cl. 73-1.00G.
Ziegler, Peter: *See—*
Attwell, Michael C.; Massiah, Thomas F.; Vergottini, Roberto A.; and Ziegler, Peter, 4,213,911, Cl. 260-397.100.
Zissimopoulos, Nicholas, to Baxter Travenol Laboratories, Inc. Electrical indicator means for indicating the correct position of a casette in flow controlling. 4,214,237, Cl. 340-686.000.
Zlobin, Vitaly I.: *See—*
Trutnev, Viktor A.; Zlobin, Vitaly I.; Kushnarenko, Valentin K.; Ignatov, Valentin B.; Gannota, Boris V.; Ambartsumyan, Nikolai S.; and Volovik, Boris B., 4,213,931, Cl. 264-234.000.
Zoleski, Benjamin H.: *See—*
Larkin, John M.; Cullen, William P.; Sung, Rodney L.; and Zoleski, Benjamin H., 4,214,083, Cl. 544-277.000.
Zudkevitch, David; Khanna, Nirmal K.; and Raczynski, Robert F., to Allied Chemical Corporation. Distillation for separating dialkylketones from lower chlorohydrocarbons. 4,213,832, Cl. 203-95.000.
Zvanut, Albert J.; and Sierdzinski, Michael S., to Stoody Company. Mild steel, flux-cored electrode for arc welding. 4,214,145, Cl. 219-145.220.
Zwar, Kurt: *See—*
Raggenbass, Werner; and Zwar, Kurt, 4,214,177, Cl. 307-355.000.
Zweben, Leon L. Mercury vapor purifier enclosure. 4,213,755, Cl. 433-49.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JULY, 1980

NOTE —Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Borden, John V. Dental handpiece. Re. 30,340, Cl. 433-126.000.

Golas, Eugene A.; and Singh, Shri N., to United States Steel Corporation. Method and single piece annular nozzle to prevent alumina buildup during continuous casting of Al-killed steel. Re. 30,343, Cl. 222-590.000.

Klaber, Michael C. Foldable pen. Re. 30,346, Cl. 401-131.000.

Laitram Corporation, The: *See*—
Lapeyre, James M., Re. 30,341, Cl. 198-834.000.

Lapeyre, James M., to Laitram Corporation, The. Conveyor drive. Re. 30,341, Cl. 198-834.000

McNeil, Harold L., to Temple Baptist Church, a part interest. Round trampoline. Re. 30,344, Cl. 272-65.000.

Micro Electronics, Inc.: *See*—
Perrino, Joseph A., Re. 30,342, Cl. 81-9.50B.

Mobil Oil Corporation: *See*—
Musgrave, Albert W., Re. 30,347, Cl. 367-51.000.

Musgrave, Albert W., to Mobil Oil Corporation. Corrections for seismic data obtained from expanding-spread. Re. 30,347, Cl. 367-51.000.

Perrino, Joseph A., to Micro Electronics, Inc. Wire stripper having replaceable blades. Re. 30,342, Cl. 81-9.50B.

Singh, Shri N.: *See*—
Golas, Eugene A.; and Singh, Shri N., Re. 30,343, Cl. 222-590.000.

Temple Baptist Church: *See*—
McNeil, Harold L., Re. 30,344, Cl. 272-65.000.

United States Steel Corporation: *See*—
Golas, Eugene A.; and Singh, Shri N., Re. 30,343, Cl. 222-590.000.

LIST OF PLANT PATENTEES

Holtkamp, Hermann, Sr. African violet plant. 4,577, 7-22-80, Cl. 69.000.

Holtkamp, Hermann, Sr. African violet plant. 4,578, 7-22-80, Cl. 69.000.

Jackson & Perkins Co.: *See*—
Warriner, William A., 4,576, Cl. 20.000.

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Jacoby, Charles E. Detachable finger guard for a knife blade. 255,974, 7-22-80, Cl. D7-152.000.

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O'Connor, David A., 255,965, Cl. D6-191.000.
Wells, Richard J.: *See—*
Stone, Lawrence J.; and Wells, Richard J., 256,018, Cl. D15-28.000.
Wilson, Robert L., to Chromcraft Corporation. Chair. 255,962, 7-22-80, Cl. D6-69.000.
Wing, Hon Y.: *See—*
Fu, Hon Y.; Hin, Hon Y.; and Wing, Hon Y., 256,036, Cl. D21-92.000.
Winget, Quenton F. Angle snips. 255,980, 7-22-80, Cl. D8-52.000.
Wormington, Garold L. Heat exchanger. 256,047, 7-22-80, Cl. D23-115.000.
Yedinak, Theodore: *See—*
Anderson, Bernard T.; and Yedinak, Theodore, 255,964, Cl. D6-181.000.
Youngkin, Theodore C.; and Stutsman, Richard R., to Rod Pierce & Associates. Vending machine. 256,030, 7-22-80, Cl. D20-4.000.
Zelina, Thomas, to Lighting Systems. Combined portable spot/flood light. 256,061, 7-22-80, Cl. D26-46.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 22, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 4,213,202
79 4,213,203
94 4,213,204
161 A 4,213,205
197 4,213,206

CLASS 3
1.7 4,213,207
1.91 4,213,208
1.911 4,213,209

CLASS 4
239 4,213,211
243 4,213,212
543 4,213,210

CLASS 5
450 4,213,213
464 4,213,214

CLASS 7
152 4,213,215
170 4,213,216

CLASS 8
94.17 4,213,760
125 4,213,761
151 4,213,217
4,213,218
409 4,213,758
518 4,213,757
643 4,213,759

CLASS 9
4 R 4,213,219

CLASS 11
1 R 4,213,220

CLASS 12
12.4 4,213,221

CLASS 13
31 R 4,214,117

CLASS 15
100 4,213,222
304 4,213,223
344 4,213,224

CLASS 16
21 4,213,225
36 4,213,226
48.5 4,213,227

CLASS 17
11 4,213,228
46 4,213,229

CLASS 23
230 B 4,213,764
230 EP 4,213,763
230 R 4,213,762

CLASS 24
217 R 4,213,230

CLASS 29
18 4,213,231
116 AD 4,213,232
157.1 R 4,213,233
159.1 4,213,234
235 4,213,235
243.5 4,213,236
272 4,213,237
726 4,213,239
878 4,213,238

CLASS 30
47 4,213,240
115 4,213,241
374 4,213,242

CLASS 33
1 M 4,213,244
174 P 4,213,245
178 F 4,213,246
199 R 4,213,247
431 4,213,248

CLASS 34
12 4,213,249
53 4,213,250

CLASS 35
9 R 4,213,251
10.24 4,213,252
19 A 4,213,253
43 4,213,254

CLASS 36
32 R 4,213,255
124 4,213,256

CLASS 37
142 R 4,213,257

CLASS 38
77.2 4,213,258

CLASS 40
152.1 4,213,259
158 B 4,213,260

CLASS 42
16 4,213,261
50 4,213,262
59 4,213,263

CLASS 43
16 4,213,264
84 4,213,265

CLASS 44
15 R 4,213,765

CLASS 46
1 R 4,213,266
87 4,213,267
202 4,213,268
219 4,213,269
254 4,213,270

CLASS 47
39 4,213,271
45 4,213,272
74 4,213,273
81 4,213,274

CLASS 49
468 4,213,275

CLASS 51
170 R 4,213,276
325 4,213,277
368 4,213,278

CLASS 52
173 DS 4,213,279
309.9 4,213,280
323 4,213,281
404 4,213,282

CLASS 53
48 4,213,283
74 4,213,284
137 4,213,285
493 4,213,286
573 4,213,287

CLASS 55
2 4,213,766
5 4,213,767
97 4,213,768
216 4,213,769
269 4,213,770
483 4,213,771

CLASS 56
11.6 4,213,288
295 4,213,289

CLASS 57
85 4,213,290

CLASS 60
39.14 R 4,213,296
39.51 R 4,213,297
369 4,213,298
407 4,213,301
420 4,213,300
641 4,213,302
4,213,303
664 4,213,304
676 4,213,299

CLASS 62
2 4,213,305
85 4,213,306
192 4,213,307
196 R 4,213,308
332 4,213,309
457 4,213,310
514 R 4,213,311

CLASS 65
30 R 4,213,772

CLASS 66
177 4,213,312

CLASS 68
12 R 4,213,313

CLASS 70
35 B 4,213,316
68 4,213,314
94 4,213,315
450 4,213,317

CLASS 71
92 4,213,773
94 4,213,774
103 4,213,775
117 4,213,776

CLASS 72
21 4,213,318
34 4,213,319
189 4,213,320
235 4,213,321
357 4,213,322
358 4,213,323
405 4,213,324

CLASS 73
1 G 4,213,325
23.1 4,213,326
38 4,213,327
49.7 4,213,328
52 4,213,329
65 4,213,330
105 4,213,331
134 4,213,332
136 R 4,213,333
144 4,213,334
204 4,213,335
215 4,213,336
290 V 4,213,337
299 4,213,338
304 R 4,213,339
4,213,340
421 A 4,213,341
421 B 4,213,342
505 4,213,343
620 4,213,344
637 4,213,345
660 4,213,346
716 4,213,347
765 4,213,348
847 4,213,349

CLASS 74
492 4,213,351
677 4,213,352
878 4,213,353

CLASS 75
0.5 BA 4,213,777
25 4,213,778
34 4,213,779
58 4,213,780
134 P 4,213,781

CLASS 81
9.5 B Re.30,342
128 4,213,355

CLASS 82
1 C 4,213,354
2 B 4,213,356
4 C 4,213,357
36 R 4,213,358
47 4,213,359

CLASS 83
15 4,213,360
30 4,213,361
100 4,213,362
298 4,213,363
471.3 4,213,364
530 4,213,365

CLASS 84
1.01 4,213,366
1.22 4,213,367
269 4,213,368
284 4,213,369
291 4,213,370
390 4,213,371
470 R 4,213,372

CLASS 85
11 4,213,373
13 4,213,374

CLASS 89
31 4,213,375
34 4,213,376

CLASS 91
187 4,213,377

CLASS 93
36 A 4,213,378

CLASS 98
33 R 4,213,379

CLASS 99
349 4,213,380
446 4,213,381
486 4,213,382
636 4,213,383

CLASS 100
74 4,213,384
95 4,213,385
98 R 4,213,386
245 4,213,387

CLASS 101
216 4,213,388
295 4,213,389
365 4,213,390

CLASS 102
8 4,213,391
38 R 4,213,392
49.3 4,213,393
213 4,213,394
236 4,213,395

CLASS 104
130 4,213,396

CLASS 105
95 4,213,397
150 4,213,398
157 R 4,213,399
199 C 4,213,400

CLASS 106
38.35 4,213,785
47 Q 4,213,786
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52 4,213,789
100 4,213,790
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286.6 4,213,792
286.8 4,213,793

CLASS 108
20 4,213,401

CLASS 110
171 4,213,402
216 4,213,403
229 4,213,404
234 4,213,405
326 4,213,406
346 4,213,407

CLASS 111
85 4,213,408

CLASS 112
158 R 4,213,409
228 4,213,410
240 4,213,411

CLASS 114
61 4,213,412
253 4,213,413

CLASS 115
73 4,213,414

CLASS 116
28.1 4,213,415
309 4,213,416

CLASS 118
30 4,213,417
635 4,213,418
670 4,213,419
713 4,213,420

CLASS 119
3 4,213,421
21 4,213,422
86 4,213,423
98 4,213,424

CLASS 123
41.49 4,213,426
43 AA 4,213,427
46 E 4,213,428
73 R 4,213,431
179 A 4,213,437
195 C 4,213,440
195 S 4,213,439
196 R 4,213,441
198 F 4,213,442
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446 4,213,435
462 4,213,434
478 4,213,425
549 4,213,432
4,213,433
599 4,213,436
668 4,213,438

CLASS 126
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130 4,213,444
143 4,213,445
192 4,213,446
429 4,213,447
434 4,213,448
447 4,213,449
448 4,213,450

CLASS 128
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89 R 4,213,452
202.26 4,213,453
214 E 4,213,454
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218 P 4,213,456
276 4,213,457
283 4,213,458
287 4,213,459
303 R 4,213,460
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731 4,213,465
733 4,213,466
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CLASS 131
145 4,213,468
199 4,213,469
261 B 4,213,470

CLASS 132
73.6 4,213,471
88.7 4,213,472
113 4,213,473

CLASS 134
6 4,213,794
22 C 4,213,795
26 4,213,796
102 4,213,474
111 4,213,475

CLASS 136
89 SJ 4,213,798
89 SP 4,213,797

CLASS 137
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85 4,213,478
493 4,213,479
556 4,213,480
596.18 4,213,481
614.01 4,213,482
625.29 4,213,483
636.1 4,213,484

CLASS 138
130 4,213,485
143 4,213,486
149 4,213,487

CLASS 141
1 4,213,488
70 4,213,489
311 R 4,213,490

CLASS 148
2 4,213,799
4,213,800
33.3 4,213,801
101 4,213,802
102 4,213,803
111 4,213,804
171 4,213,805
187 4,213,806
4,213,807
188 4,213,808

CLASS 149
60 4,213,809

CLASS 152
330 L 4,213,491

CLASS 156
73.1 4,213,810
195 4,213,811
226 4,213,812
4,213,813
242 4,213,814
244.11 4,213,815
245 4,213,816
474 4,213,817
643 4,213,818
660 4,213,819

CLASS 160
124 4,213,492
351 4,213,493

CLASS 162
29 4,213,820
72 4,213,821
242 4,213,822
380 4,213,823

CLASS 164
4 4,213,494
34 4,213,495
60 4,213,497
147 4,213,496

CLASS 165
136 4,213,498
162 4,213,499

CLASS 166
273 4,213,500

CLASS 169
46 4,213,501

CLASS 172
1 4,213,502
4.5 4,213,503
25 4,213,504
510 4,213,505
624 4,213,506
784 4,213,507

CLASS 174
15 BH 4,214,118
31 R 4,214,119
52 FP 4,214,120
84 C 4,214,121

CLASS 175
235 4,213,508

CLASS 176
38 4,213,824

CLASS 177
199 4,213,509

CLASS 178
18 4,214,122

CLASS 179

1 SM 4,214,125
1.5 M 4,214,126
2 R 4,214,127
81 R 4,214,130
84 T 4,214,131
175 4,214,132

CLASS 180

68.5 4,213,510
139 4,213,511
233 4,213,512
272 4,213,513
308 4,213,514

CLASS 181

145 4,213,515
286 4,213,516

CLASS 187

29 R 4,213,517

CLASS 188

1 B 4,213,518
71.4 4,213,519

CLASS 190

16 4,213,520

CLASS 192

18 R 4,213,521
98 4,213,522

CLASS 193

37 4,213,523

CLASS 194

2 4,213,524

CLASS 198

364 4,213,525
400 4,213,526
834 Re.30,341
853 4,213,527

CLASS 200

31 R 4,214,133
37 R 4,214,134
51.17 4,214,135
67 DA 4,214,136
83 P 4,214,137
144 B 4,214,138

CLASS 201

31 4,213,826
39 4,213,827
4,213,828

CLASS 202

263 4,213,829

CLASS 203

11 4,213,830
86 4,213,831
95 4,213,832

CLASS 204

98 4,213,833
129.25 4,213,834
4,213,835
157.1 R 4,213,836
159.19 4,213,837
176 4,213,838
181 R 4,213,839
192 C 4,213,840
195 R 4,213,841
279 4,213,842
290 F 4,213,843
298 4,213,844

CLASS 206

45.14 4,213,598
205 4,213,528
427 4,213,529
447 4,213,530
463 4,213,531
504 4,213,532

CLASS 208

19 4,213,845
50 4,213,846
111 4,213,847
127 4,213,848
139 4,213,849
216 R 4,213,850

CLASS 209

12 4,213,851
136 4,213,852
166 4,213,853
223 R 4,213,854
240 4,213,855
250 4,213,856
654 4,213,533

CLASS 210

6 4,213,857
23 R 4,213,858
27 4,213,859
31 C 4,213,860
82 4,213,861
83 4,213,862
108 4,213,863
151 4,213,864
522 4,213,865

CLASS 215

216 4,213,534

CLASS 219

9.5 4,214,139
61.3 4,214,140
73 4,214,141
86.25 4,214,142
97 4,214,143
99 4,214,144
145.22 4,214,145
274 4,214,146
301 4,214,147
308 4,214,148
370 4,214,149
452 4,214,150
492 4,214,151

CLASS 220

20.5 4,213,535
82 R 4,213,536
215 4,213,537
268 4,213,538
333 4,213,539

CLASS 221

150 R 4,213,540

CLASS 222

92 4,213,541
102 4,213,542
103 4,213,543
250 4,213,544
386.5 4,213,545
546 4,213,546
590 Re.30,343

CLASS 223

2 4,213,547

CLASS 224

168 4,213,548
209 4,213,549

CLASS 225

2 4,213,550

CLASS 226

74 4,213,551
170 4,213,552
196 4,213,553

CLASS 228

2 4,213,554
29 4,213,555
104 4,213,556
122 4,213,557
176 4,213,558

CLASS 229

16 D 4,213,559

CLASS 232

39 4,213,560

CLASS 233

14 R 4,213,561

CLASS 235

92 EC 4,214,152
376 4,214,153

CLASS 236

46 R 4,213,562

CLASS 237

2 B 4,213,563

CLASS 239

88 4,213,564
170 4,213,565
265.43 4,213,566
396 4,213,567
533.4 4,213,568

CLASS 241

37.5 4,213,569
38 4,213,570
48 4,213,571
292.1 4,213,572

CLASS 242

18 A 4,213,573
43.2 4,213,574
57 4,213,575
67.3 R 4,213,576
72 R 4,213,577
74 4,213,578
84.2 B 4,213,579
107 4,213,580
107.4 R 4,213,581
110 4,213,582
186 4,213,583

CLASS 244

17.13 4,213,584
54 4,213,585
158 4,213,586
213 4,213,587

CLASS 246

259 4,213,588

CLASS 248

74 R 4,213,589
281.1 4,213,591
313 4,213,592
501 4,213,593
550 4,213,594

CLASS 250

201 4,214,154
231 R 4,214,155
231 SE 4,214,156
236 4,214,157
281 4,214,158
288 4,214,159
292 4,214,160
303 4,214,161
311 4,214,162
4,214,163
338 4,214,164
4,214,165
396 ML 4,214,166
505 4,214,169
515 4,214,167

CLASS 251

308 4,213,595

CLASS 252

8.55 C 4,213,866
8.75 4,213,867
11 4,213,868
37.5 4,213,869
51.5 R 4,213,870
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174.21 4,213,873
174.25 4,213,874
188.3 R 4,213,875
4,213,876
412 4,213,877
429 B 4,213,878
429 R 4,213,879
431 R 4,213,880
436 4,213,881
455 R 4,213,882
478 4,213,883

CLASS 254

134.3 R 4,213,596
388 4,213,597

CLASS 260

29.2 N 4,213,884
29.6 E 4,213,887
29.6 MM 4,213,886
29.6 TA 4,213,885
33.6 AQ 4,213,888
45.7 PH 4,213,889
45.75 S 4,213,891
45.75 W 4,213,890
45.95 C 4,213,892
112.5 R 4,213,893
4,213,894
4,213,895
119 4,213,896
154 4,213,897
156 4,213,898
4,213,899
208 4,213,900
239 BE 4,213,901
239.57 4,213,902
326.47 4,213,905
326.5 CA 4,213,904
343 4,213,906
343.3 P 4,213,907
348.16 4,213,908
371 4,213,909
4,213,910
397.1 4,213,911
4,213,912
428.5 4,213,913
455 A 4,213,915
465 D 4,213,916
4,213,917
513 T 4,213,918
544 K 4,213,919
958 4,213,922

CLASS 261

120 4,213,923

CLASS 264

7 4,213,924
22 4,213,925
74 4,213,926
107 4,213,927
113 4,213,928
129 4,213,929
135 4,213,930
234 4,213,931
236 4,213,932
515 4,213,933

CLASS 266

166 4,213,599
170 4,213,600

CLASS 270

61 F 4,213,601

CLASS 271

229 4,213,603
233 4,213,604
279 4,213,602

CLASS 272

65 Re.30,344
119 4,213,605

CLASS 273

1.5 A 4,213,606
72 A 4,213,607
73 C 4,213,608
75 4,213,609
93 R 4,213,610
169 4,213,613
194 B 4,213,614
260 4,213,615
271 4,213,616
355 4,213,612
414 4,213,611

CLASS 277

12 4,213,617
93 R 4,213,618
207 A 4,213,619
235 B 4,213,620

CLASS 279

1 C 4,213,621
4,213,623
1 K 4,213,622

CLASS 280

43.12 4,213,624
43.23 4,213,625
94 4,213,626
406 A 4,213,627
412 4,213,628
605 4,213,629
634 4,213,630
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716 4,213,633
728 4,213,634
737 4,213,635
749 4,213,636
802 4,213,637
808 4,213,638

CLASS 282

11.5 A 4,213,639

CLASS 285

137 R 4,213,640
369 4,213,641

CLASS 290

1 R 4,214,170

CLASS 292

241 4,213,642
247 4,213,643

CLASS 293

117 4,213,644
145 4,213,645

CLASS 294

86 A 4,213,646
90 4,213,647

CLASS 297

188 4,213,648
189 4,213,649
281 4,213,650
475 4,213,651
478 4,213,652

CLASS 299

11 4,213,653

CLASS 301

20 4,213,654

CLASS 303

6 C 4,213,655

CLASS 307

39 4,214,171
150 4,214,172
224 C 4,214,173
229 4,214,174
264 4,214,175
297 4,214,176
355 4,214,177

CLASS 308

8.2 4,213,656
9 4,213,657
15 4,213,658
167 4,213,659
177 4,213,660
184 R 4,213,661

CLASS 310

14 4,214,178
68 B 4,214,179
80 4,214,180
162 4,214,181
216 4,214,182

CLASS 313

221 4,214,183
481 4,214,184

CLASS 315

86 4,214,185
102 4,214,186
111.8 4,214,187
382 4,214,188
408 4,214,189

CLASS 316

24 4,213,662
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CLASS 318

356 4,214,190
561 4,214,191
573 4,214,192
611 4,214,193
696 4,214,194
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811 4,214,196

CLASS 320

2 4,214,197
15 4,214,198

CLASS 323

6 4,214,199

CLASS 324

122 4,214,200
158 P 4,214,201
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425 4,214,203
437 4,214,204

CLASS 328

117 4,214,213

CLASS 330

65 4,214,214
277 4,214,215

CLASS 331

94.5 C 4,214,216

CLASS 334

45 4,214,217
4,214,218

CLASS 335

23 4,214,219
153 4,214,220
212 4,214,221

CLASS 336

84 M 4,214,222

CLASS 337

293 4,214,223
323 4,214,224

CLASS 338

155 4,214,225

CLASS 339

14 R 4,213,664
17 D 4,213,665
75 M 4,213,666
103 R 4,213,667
217 R 4,213,668
272 UC 4,213,669

CLASS 340

52 F 4,214,227
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149 A 4,214,230
207 R 4,214,231
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4,214,234
347 DA 4,214,235
642 4,214,236
686 4,214,237
690 4,214,238

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5 VQ 4,214,239
7 PF 4,214,240
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7.7 4,214,242
8 4,214,243
18 E 4,214,244
103 4,214,245
750 4,214,246
752 4,214,247
756 4,214,248

CLASS 346

76 L 4,214,249
145 4,214,250

CLASS 350

96.16 4,213,670
96.18 4,213,677
96.21 4,213,671
96.23 4,213,672
162 SF 4,213,673
227 4,213,674
307 4,213,675
336 4,213,676

CLASS 351

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CLASS 353

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CLASS 354

12 4,213,680
21 4,213,681
23 D 4,213,682
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213 4,213,687
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CLASS 355

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CLASS 357

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71 4,214,256

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D2—	183	255,952		102	255,971		147	255,990		157	256,009	D19—	60	256,028	D23—	47	256,046
	254	255,953		128	255,972		245	255,991	D13—	24	256,010		76	256,029		115	256,047
	264	255,954		138	255,973			255,992		38	256,011	D20—	4	256,030		151	256,048
	275	255,955		152	255,974			255,993			256,012			256,031	D24—	9	256,049
	309	255,956		160	255,975			255,994	D14—	5	256,013		10	256,032		12	256,050
	320	255,957		187	255,976		275	255,995		33	256,014	D21—	34	256,033		50	256,051
D3—	5	255,958		210	255,977	D10—	15	255,996		37	256,015		55	256,034		55	256,052
D6—	3	255,959	D8—	25	255,978		57	255,997		95	256,016		81	256,035		56	256,053
	15	255,960			255,979		73	255,998	D15—	23	256,017		92	256,036		64	256,054
	28	255,961		52	255,980		96	255,999		28	256,018		104	256,037			256,055
	69	255,962		98	255,981			256,000		105	256,019		230	256,038	D25—	9	256,056
	79	255,963		366	255,982		111	256,001		112	256,020		244	256,039	D26—	29	256,057
	181	255,964		382	255,983		121	256,002		140	256,021		245	256,040		46	256,061
	191	255,965	D9—	1	255,984	D11—	43	256,003		145	256,022				D27—	14	256,058
	201	255,966		61	255,985		110	256,004	D16—	26	256,023	D22—	15	256,041	D28—	46	256,059
D7—	9	255,967		64	255,986	D12—	12	256,005		59	256,024		23	256,042	D30—	2	256,060
	38	255,968		71	255,987		40	256,006		78	256,025		25	256,043	D92—	1 P	256,062
	48	255,969		83	255,988		53	256,007	D17—	14	256,026		28	256,044			256,063
	97	255,970		131	255,989		147	256,008	D18—	6	256,027			256,045			

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4,213,521
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4,213,933
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58 : 4,214,083
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4,213,904
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4,214,233
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DESIGN PATENTS

1 : 256,049
6 : 255,981
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8 : 256,033
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256,004
256,061
44 : 255,998
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47 : 255,992
48 : 256,028
49 : 255,980
256,048
51 : 255,965
255,976
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53 : 255,958
256,034

PLANT PATENTS

06 : 4,576

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Sidney A. Diamond, *Commissioner*

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Vol. 996 Number 5

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 29, 1980



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

July 29, 1980 Volume 996 Number 5

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

June 17, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Errata

Defensive Publications published in the OFFICIAL GAZETTE of Mar. 4, 1980, were numbered incorrectly. The correct numbers are as follows:

T992,001 for the Defensive Publication entitled "Preformed Hot-melt Sealant Strip."

T992,002 for the Defensive Publication entitled "Coating Composition."

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,668,658, Re. S.N. 128,348, Filed Mar. 10, 1980, Cl. 360/97, MAGNETIC RECORD DISK COVER, Ralph Flores, et al., Owner of Record: *International Business Machines Corporation, Armonk, N.Y.,* Attorney or Agent: Elliott I. Pollock, Ex. Gp.: 235

3,887,768, Re. S.N. 144,533, Filed Apr. 28, 1980, Cl. 178/67, SIGNAL STRUCTURES FOR DOUBLE SIDE BAND-QUADRATURE CARRIER MODULATION, George D. Forney, Jr., et al., Owner of Record: *Codex Corporation, Newton, Mass.,* Attorney or Agent: Robert E. Hillman, Ex. Gp.: 233

3,911,202, Re. S.N. 079,566, Filed Sep. 27, 1979, Cl. 174/120 SR, ELECTRON CURED PLASTIC INSULATED CONDUCTORS, Clifford R. Stine, et al., Owner of Record: *Eaton Corporation, Mantua, Ohio,* Attorney or Agent: Clelle W. Upchurch, Ex. Gp.: 213

3,956,740, Re. S.N. 114,708, Filed Jan. 23, 1980, Cl. 364/900, PORTABLE DATA ENTRY APPARATUS, Michael Dale Jones, et al., Owner of Record: *Inventors,* Attorney or Agent: J. Herman Yount Jr., et al., Ex. Gp.: 237

3,973,051, Re. S.N. 152,561, Filed May 22, 1980, Cl. 426/574, PECTATE GELLED FOOD PRODUCTS AND METHOD, Keith Buckley, et al., Owner of Record: *Mars Limited, London, England,* Attorney or Agent: Richard Whiting, et al., Ex. Gp.: 172

3,975,965, Re. S.N. 138,766, Filed Apr. 9, 1980, Cl. 74/242.11 R, TENSIONING APPARATUS, Billy L. Speer, Owner of Record: *Dayco Corporation, Dayton, Ohio,* Attorney or Agent: Charles E. Bricker, Ex. Gp.: 352

4,016,575, Re. S.N. 116,082, Filed Jan. 28, 1980, Cl. 354/33, EXPOSURE CONTROL SYSTEM FOR FLASH PHOTOGRAPHY, Takashi Uchiyama, et al., Owner of Record: *Canon Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: David Toren, et al., Ex. Gp.: 211

4,049,158, Re. S.N. 135,734, Filed Mar. 31, 1980, Cl. 222/95, PRESSURIZED CONTAINER-DISPENSERS AND FILLING METHOD, Vincent Lo, et al., Owner of Record: *S. C. Johnson & Son, Inc., Racine, Wis.,* Attorney or Agent: Joseph T. Kivlin, Jr., et al., Ex. Gp.: 311

4,073,077, Re. S.N. 123,671, Filed Feb. 22, 1980, Cl. 337/50, SNOWPLOW BLADE EXTENSION, Albert E. Essell (Deceased), et al., Owner of Record: *Inventors,* Attorney or Agent: Harold S. Meyer, Ex. Gp.: 337

4,086,702, Re. S.N. 102,384, Filed Dec. 11, 1979, Cl. 433/21, MULTI-STRANDED COILED ORTHODONTIC ARCH WIRE, Melvin Wallshein, Owner of Record: *Inventor,* Attorney or Agent: Leonard Holtz, Ex. Gp.: 333

4,088,138, Re. S.N. 148,159, Filed May 7, 1980, Cl. 128/419 D, CARDIAC RESUSCITATOR AND MONITORING APPARATUS, Archibald W. Diack, et al., Owner of Record: *C.R.C. Successor Corporation, Secaucus, N.J.,* Attorney or Agent: Daniel P. Chernoff, et al., Ex. Gp.: 335

4,107,675, Re. S.N. 151,606, Filed May 20, 1980, Cl. 343/65 R, TRANSPONDER-RESPONDER SYSTEM, John C. Sellers, et al., Owner of Record: *Inventors,* Attorney or Agent: Ernest I. Gifford, et al., Ex. Gp.: 222

4,133,763, Re. S.N. 143,227, Filed Apr. 24, 1980, Cl. 210/232, FILTER ASSEMBLY WITH REPLACEABLE FILTER ELEMENT, Roydon B. Cooper, Owner of Record: *Pall Corporation, Glen Cove, N.Y.,* Attorney or Agent: John R. Janes, Ex. Gp.: 176

4,150,765, Re. S.N 136,231, Filed Apr. 1, 1980, Cl. 220/269, TAB CONSTRUCTION FOR EASY OPENING CONTAINER, Stanley L. Mazurek, Owner of Record: *The Continental Group, Inc., New York, N.Y.,* Attorney or Agent: J. E. Kerwin, et al., Ex. Gp.: 241

PATENT NOTICES

Certificates of Correction for the Week of July 29, 1980

Re. 30,264	4,171,290	4,190,788	4,198,387
D. 255,039	4,171,730	4,191,765	4,198,390
3,724,269	4,172,628	4,192,016	4,198,400
3,838,132	4,173,387	4,192,130	4,198,659
3,893,966	4,175,071	4,192,160	4,199,210
3,976,636	4,176,093	4,192,336	4,199,309
3,997,676	4,176,962	4,192,396	4,199,393
4,002,823	4,177,223	4,192,953	4,199,519
4,003,148	4,177,727	4,192,968	4,199,554
4,022,598	4,178,606	4,193,064	4,199,607
4,078,798	4,179,507	4,193,116	4,199,624
4,088,040	4,180,469	4,193,439	4,200,419
4,088,430	4,180,882	4,193,455	4,200,570
4,110,610	4,181,130	4,193,799	4,201,168
4,123,533	4,181,836	4,193,838	4,201,306
4,126,468	4,181,970	4,193,894	4,201,508
4,126,731	4,182,019	4,193,912	4,202,531
4,143,675	4,182,821	4,193,943	4,202,605
4,144,250	4,182,847	4,193,993	4,202,638
4,149,307	4,183,127	4,194,028	4,202,706
4,149,882	4,184,307	4,194,350	4,202,907
4,150,397	4,185,229	4,194,353	4,202,937
4,153,641	4,185,986	4,194,548	4,203,015
4,156,785	4,186,632	4,195,114	4,203,305
4,159,995	4,186,763	4,195,618	4,203,461
4,162,042	4,187,644	4,196,139	4,203,476
4,162,782	4,188,439	4,196,284	4,203,635
4,162,846	4,188,949	4,196,681	4,203,909
4,162,940	4,189,189	4,197,252	4,203,993
4,163,501	4,189,470	4,197,413	4,204,236
4,166,109	4,189,474	4,197,496	4,204,663
4,166,282	4,189,499	4,197,611	4,204,715
4,167,938	4,189,546	4,197,651	4,204,723
4,168,147	4,189,576	4,197,938	4,204,871
4,168,384	4,189,736	4,197,979	4,204,984
4,169,209	4,189,899	4,198,380	4,206,020
4,170,703	4,190,467		

Disclaimers

3,871,833.—*Jerome S. Spevack,* New Rochelle, N.Y. MEANS FOR IMPROVING THERMAL CONTROL IN DUAL TEMPERATURE SYSTEMS. Patent dated Mar. 18, 1975. Disclaimer filed May 29, 1980, by the assignee, *Deuterium Corporation.*

Hereby enters this disclaimer to claims 8 and 9 of said patent.

3,940,473.—*Jerome S. Spevack,* New Rochelle, N.Y. THERMAL CONTROL IN DUAL TEMPERATURE SYSTEMS. Patent dated Feb. 24, 1976. Disclaimer filed May 29, 1980, by the assignee, *Deuterium Corporation.*

Hereby enters this disclaimer to claims 20, 22, 23 and 24 of said patent.

4,150,299.—*Stanley J. Kasicwicz,* Southfield, Mich. and *James R. Van Sickle,* New Baltimore, Mich. LEVEL SENSOR FOR AN AIR-SPRING SHOCK ABSORBER. Patent dated Apr. 17, 1979. Disclaimer filed June 2, 1980, by the inventor.

Hereby enters this disclaimer to entire term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing polices of the agency-sponsors.

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Copies of patent applications cited are available from the National Technical Information Service (NTIS). Springfield, Va., 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 6-082,355. Circuit for the Adaptive Suppression of Narrow Band Interference. Filed Oct. 5, 1979.

Patent application 6-088,504. Acetylene Terminated Matrix and Adhesive Oligomeric Compositions. Filed Oct. 26, 1979.

Patent application 6-088,505. Reactive Diluents for Acetylene Terminated Matrix and Adhesive Resins. Filed Oct. 26, 1979.

Patent application 6-090,385. Simplified Electrical Feedthrough System for Pressurized Containers. Filed Nov. 1, 1979.

Patent application 6-092,817. Slot Chevron Element for Periodic Antennas and Radomes. Filed Nov. 9, 1979.

Patent application 6-097,778. Phenylmethylpolysilane Polymers and Process for Their Preparation. Filed Nov. 27, 1979.

Patent application 6-100,179. Grease Compositions. Filed Dec. 4, 1979.

Patent application 6-100,180. Grease Compositions Based on Fluorinated Polysiloxanes. Filed Dec. 4, 1979.

Patent application 6-100,301. Fluorine-Containing Benzimidazoles. Filed Dec. 4, 1979.

Patent application 6-100,319. Depositing Optical Films of Controlled Composition. Filed Dec. 5, 1979.

Patent application 6-100,327. Purification of Acetylene-Terminated Polyimide Oligomers. Filed Dec. 5, 1979.

Patent 4,181,678. Symmetrical Perfluoroalkylene Oxide Alpha, Omega-Diacyl Fluorides. Filed Sept. 15, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,181,679. Omega-Iodoperfluoroalkylene Oxide Acyl Fluorides. Filed Oct. 24, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,181,681. 2-Amino-4-Ethynylphenol. Filed July 19, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,184,125. Analog Tuning Voltage Circuit With Analog Signal Multiplexing. Filed July 7, 1978. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,185,031. Fluorinated Phosphinic Acids. Filed Sept. 27, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,041. Channel Sealant Compositions. Filed Sept. 2, 1977. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,081. Procedure for the Synthesis of Stoichiometric Proportioned Indium Phosphide. Filed July 31, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,247. Means for Reducing Spurious Frequencies in a Direct Frequency Synthesizer. Filed Jan. 3, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,858. Secondary Seal for Tubing Joined Via V-Band Couplings. Filed June 28, 1978. Patented Jan. 29, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administrative Service Division Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6-050,896. Polybutylbenzylphenols and Benzyl-3,4-Methylenedioxybenzenes in Insect Population Control. Filed June 21, 1979.

Patent application 6-088,665. Method and Apparatus for Background Corrected Simultaneous Multielement Atomic Absorption Analysis. Filed Oct. 26, 1979.

Patent application 6-099,813. Automatic Moisture Control for Roller Applicator. Filed Dec. 3, 1979.

Patent application 6-101,983. Device for Collecting and Transferring Particulate Material. Filed Dec. 10, 1979.

Patent 4,188,422. Shrink-Resistant Textiles Containing Polypropylene Proteinous Fiber Blend Produced by Immersing Textile in an Inert Liquid at High Temperature. Filed Sept. 30, 1977. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,189,303. Method of Shrinkproofing Animal Fibers With Ozone. Filed May 10, 1978. Patented Feb. 19, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 4,148,663. Refractory Concretes. Filed June 21, 1977. Patented Apr. 10, 1979. Not available NTIS.

Patent 4,151,438. Distributed Electrical Leads for Thermionic Converter. Filed Aug. 17, 1977. Patented Apr. 24, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., NW.,
Washington, D.C. 20240

Patent application 6-075,385. Open Surface Flotation Method. Filed Sept. 13, 1979.

Patent application 6-085,449. Copper Electrowinning and CR Reduction in Spent Etchants Using Porous Fixed Bed Coke Electrodes. Filed Oct. 16, 1979.

Patent application 6-085,452. Fly Ash-Based Cement. Filed Oct. 16, 1979.

Patent application 6-085,569. Self-Contained Closed Circuit Breathing Apparatus Having a Balanced Breathing Resistance System. Filed Oct. 17, 1979.

Patent application 6-087,852. Selective Removal of Mercury From Cyanide Solutions. Filed Oct. 24, 1979.

Patent application 6-090,786. Leaching Uranium Ores. Filed Nov. 2, 1979.

Patent application 6-097,751. Molybdenite Flotation. Filed Nov. 27, 1979.

Patent application 6-097,756. Siliceous Adsorbent for Heavy Metals. Filed Nov. 27, 1979.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-056,769. MHD Pinch Interrupting Switch for High Currents. Filed July 2, 1979.

Patent application 6-078,402. Mono-Substituted Phthalonitriles and Phthalocyanines. Filed Sept. 24, 1979.

Patent application 6-087,269. A Method To Determine the Shear Absorption of a Rubberlike Material. Filed Oct. 22, 1979.

Patent application 587,515. Inflatable Roadway. Filed June 16, 1975.

Patent application 652,035. A Parachute Attachment Swivel. Filed Jan. 26, 1976.

Patent application 660,308. Autopilot Hardover Failure Protection System. Filed Feb. 23, 1976.

Patent application 660,604. Timed Missile Flight Termination System. Filed Feb. 23, 1976.

Patent application 664,714. Deployable Rotor. Filed Mar. 8, 1976.

Patent application 672,195. An Acousto-Optic Q-Switch. Filed Mar. 31, 1975.

Patent application 673,180. Acousto-Optical Transducer. Filed Apr. 2, 1976.

Patent application 673,339. Method for Making Beam Leads for Ceramic Substrates. Filed Apr. 2, 1976.

Patent application 674,716. Adaptive Direction of Arrival Antennae System. Filed Apr. 8, 1976.

Patent application 674,999. Determination of Thermal Impedances of Bonding Layers in Infrared Photoconductors. Filed Apr. 8, 1976.

Patent application 676,018. Projectile Power Generator. Filed Apr. 12, 1976.

Patent application 677,182. A Method for Closing Elastomeric Tubes in the Walls of Fluid-Filled Vessels. Filed Apr. 15, 1976.

Patent application 677,191. An Electronically Variable Surface Acoustic Wave Phase Shifter. Filed Apr. 15, 1976.

Patent application 677,198. Gas Laser Starting. Filed Apr. 15, 1976.

Patent application 678,264. Improved Metal Vapor Laser Tube. Filed Apr. 19, 1976.

Patent application 678,572. Soluble Binders for Plastic Bonded Explosives and Propellants. Filed Apr. 20, 1976.

Patent application 679,310. Fiber Optics Grinding and Polishing Disc. Filed Apr. 22, 1976.

Patent application 681,665. Solid State Step Transmitter. Filed Apr. 27, 1976.

Patent application 681,864. Capacitiance Transducer for the Measurement of Bending Strains at Elevated Temperatures. Filed Apr. 30, 1976.

Patent application 953,510. Electronic Breathing Mixture Control. Filed Oct. 23, 1979.

Patent 4,153,808. Novel Prostaglandin Derivatives, Certain In Vivo and In Vitro Effects Thereof and Processes for the Preparation of Same. Filed Nov. 28, 1975. Patented May 8, 1979. Not available NTIS.

Patent 4,170,706. Method for Preparing the Bispicrate Salt of 2,3,7,8-Tetraazaspiro(4,4)Nonane. Filed Aug. 28, 1978. Patented Oct. 9, 1979. Not available NTIS.

Patent 4,173,591. Process for the Preparation of 1,3,5-Trifluoro-2,4,6-Trinitrobenzene. Filed Aug. 28, 1978. Patented Nov. 6, 1979. Not available NTIS.

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Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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	Milwaukee Public Library	(414) 278-3043

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 28, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock: Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids: Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-2-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-3-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-7-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-27-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-2-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-29-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	10-10-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-12-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers, Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-21-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-11-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	2-1-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements, Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during June 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,091,768 to 3,095,571, inclusive
Plant Patents ..... Numbers 2,262 to 2,268, inclusive

REISSUE PATENTS

GRANTED JUL. 29, 1980

ERRATA

For CLASS	See PATENT NO.
228-056	30,348

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,348

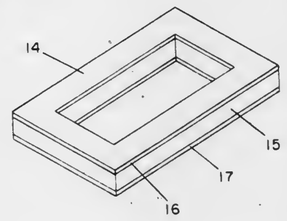
SOLDER PREFORM

Norman Hascoe, Larchmont, N.Y., assignor to Semi-Alloys, Inc., Mount Vernon, N.Y.

Original No. 4,020,987, dated May 3, 1977, Ser. No. 615,545, Sep. 22, 1975. Application for reissue Jan. 10, 1979, Ser. No. 2,325

Int. Cl.² B23K *35/26;* H01L *23/10*

U.S. Cl. 228—56 4 Claims



4. A solder preform comprising a relatively thick flat ring of an alloy comprising preponderantly lead and tin and having the characteristic that it solidifies from the fluid state as a homogeneous mixture and a relatively thin coating clad on each surface thereof of an oxidation-resistant alloy consisting of 92–98% tin and 2–8% silver.

Re. 30,349

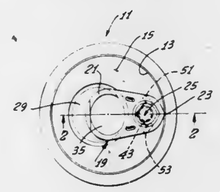
EASY-OPENING CONTAINER WALL WITH CORELINE VENT

Francis M. Silver, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio

Original No. 3,404,801, dated Oct. 8, 1968, Ser. No. 632,630, Apr. 21, 1967. Application for reissue Jan. 2, 1970, Ser. No. 10,660

Int. Cl.² B65D *41/32*

U.S. Cl. 220—271 56 Claims



1. In an easy-opening container wall, the combination of:

a scoreline in the container wall defining a rupturable web in the container wall, said rupturable web defining a wall segment at least partially removable from the container wall;

a tab for initiating removal of said wall segment, said tab having a *longitudinally* handle portion and a rupturing portion;

interconnecting means for attaching said tab intermediate said portions thereof to the container wall with the rupturing portion lying closely adjacent said rupturable web and being engageable with said wall segment whereby movement of said handle portion of said *longitudinally* tab away from the container wall forces said rupturing portion toward the container wall *while said tab remains longitudinally rigid*; [and]

rupturable scoreline means in the container wall adjacent said interconnecting means rupturable in response to movement of the handle portion of the tab away from the container wall *while said tab remains longitudinally rigid* to form an aperture in the container wall to facilitate continued movement of said handle portion away from the container wall *while said tab remains longitudinally rigid* whereby such continued movement of the handle portion causes said rupturing portion to initiate severance of said wall segment from the container wall along said rupturable web[.]*; and*

said longitudinally rigid tab remaining longitudinally rigid during rupture of both said scoreline and said rupturable scoreline means and during movement of the handle portion away from the container wall whereby the rupturing portion of said rigid tab bears downwardly on said container wall while lifting on said interconnecting means as said handle portion of said rigid tab is moved away from said container wall.

Re. 30,350

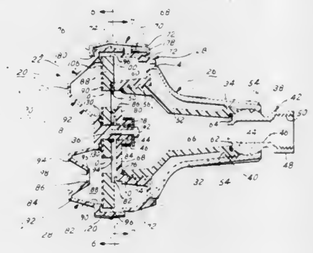
SELECTABLE MULTIPLE-NOZZLE SHOWERHEAD

Samuel F. Peterson, Chicago, Ill., and Alfons Rundzaitis, Beverly Shores, Ind., assignors to Associated Mills, Inc., Chicago, Ill.

Original No. 3,998,390, dated Dec. 21, 1976, Ser. No. 682,988, May 4, 1976. Application for reissue Dec. 20, 1977, Ser. No. 862,531

Int. Cl.² A62C *31/02*

U.S. Cl. 239—394 38 Claims



1. An improved showerhead having at least two spray nozzles and being adapted to be connected with a source of water under pressure and to permit the user to select the spray nozzle through which water is to be discharged, the improved showerhead comprising:

a housing including means which defines a conduit through which water may flow and having a first end and a second end which may be connected with the source of water under pressure and which communicates with the conduit means so that water from the source may flow through the conduit means;

a disc member having a front surface, a rear surface and an outer peripheral edge and being connected with the first end of the housing so that the water flowing in the conduit means communicates with the [near] *rear* surface of the disc member, the disc member having a central, circular aperture formed therein so that the central axes of the central aperture and of the disc member are coaxial and having a first, offset aperture formed therein between the central aperture and the outer peripheral edge of the disc member so that the central axis of the first aperture is parallel to the central axis of the disc member, with both

the central aperture and the first aperture extending through the disc member from its front surface to its rear surface;

a shoulder formed around the central aperture on the rear surface of the disc member and projecting rearwardly so as to define a rearward continuation of the central aperture;

a dial assembly connected with the housing and including a dial member, a plate and a seal;

the dial member having a front surface, a rear surface and an outer peripheral circular side edge that extends rearwardly from the rear surface of the dial member, the dial member also having at least two spaced, separate spray nozzles formed therein and opening forwardly therefrom so that water may be sprayed, through a spray nozzle, from the front of the dial member;

the plate having a front surface, a rear surface, an outer peripheral, circular edge whose diameter is less than the diameter of the outer peripheral edge of the dial member and whose thickness, parallel to the central axis of the plate, is less than the length of the rearward extension of the outer peripheral edge of the dial member, the plate also including a circular, central aperture whose central axis is coaxial with the central axis of the plate and offset nozzle apertures, one for each of the spray nozzles, disposed between the central axis and the outer peripheral edge of the plate so that the radial distance between the central axis of each spray aperture and the central axis of the plate is equal to the radial distance between the central axis of the first aperture and the central axis of the central aperture of the disc member;

a rearwardly projecting post formed on the rear surface of the dial member so that its central axis is coaxial with the central axis of the dial member, the post having an outer diameter substantially equal to that of the central apertures of the disc member and the plate and having a length greater than the thickness of the plate but less than the combined thicknesses of the plate and the length of the shoulder on the disc member, with the post projecting through the central aperture of the plate and into the central aperture of the disc member so that the front surface of the plate is adjacent to the rear surface of the dial member, so that the rear surface of the plate is adjacent to the front surface of the disc member and so that the distal end of the post is journaled in the central aperture of the disc member whereby the dial member and plate may be rotated relatively to the disc member, about their coaxial central axis, and thus the nozzle apertures may be moved into and out of registry with the first aperture of the disc member;

the seal being disposed between the rear surface of the dial member and the front surface of the plate for preventing leakage therebetween;

means for preventing relative movement between the dial member and the plate and for aligning each offset aperture of the plate with a spray nozzle;

means mounted in the distal end of the post for biasing the dial assembly rearwardly with respect to the disc member;

sealing means for preventing water from leaking between the rear surface of the plate and the front surface of the disc member when the first aperture and a nozzle aperture are in registry, the sealing means being mounted on the front surface of the disc member and disposed between the rear surface of the plate and the front surface of the disc member, the sealing means including a first portion, a second portion and a third portion, with the first portion of the sealing means extending completely around the first aperture, with the second portion of the sealing means extending from the first portion in one direction along the path of travel of the nozzle apertures, as the dial assembly is moved with respect to the disc member, and defining a first isolated area which is generally similar in shape and dimensions to the shape and dimensions of the nozzle apertures in the plate so that when a nozzle aperture in the plate is positioned adjacent to one side of but not in fluid communication with the first aperture, the second portion of the sealing means is disposed about the nozzle aperture, and with the third portion of the sealing means extending, from the first portion in the other direction along the path of travel and defining a second isolated area which is generally similar in shape and dimensions to the shape and dimensions of the nozzle apertures in the plate so that when a nozzle aperture in the plate is positioned adjacent to the other side of but not in fluid communication with the first aperture, the third portion of the sealing means is disposed about the nozzle aperture; and

means for latching the dial assembly to the disc member so that the rear surface of the plate is retained in position adjacent to the front surface of the disc member and so that the sealing means is retained in sealing relationship between the rear surface of the plate and the front of the disc member surface, the latch means being mounted on the outer peripheral edge of the disc member adjacent to the first aperture and including an intermediate portion and a distal end portion, with the intermediate portion extending from the disc member over the outer peripheral edge of the dial member and with the distal end portion abutting a portion of the front surface of the dial member.

Re. 30,351

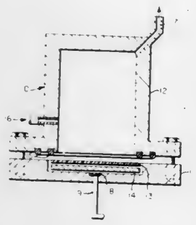
AROMATIC POLYIMIDE, POLYESTER AND POLYAMIDE SEPARATION MEMBRANES

Harvey H. Hoehn, Hockessin, Del., and John W. Richter, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 3,899,309, dated Aug. 12, 1975, Ser. No. 322,800, Jan. 11, 1973. Continuation-in-part of Ser. No. 273,802, Jul. 20, 1972, abandoned. Application for reissue May 18, 1976, Ser. No. 687,639

Int. Cl.[2] **B01D** *53/22, 31/00*

U.S. Cl. 55—16 **24 Claims**



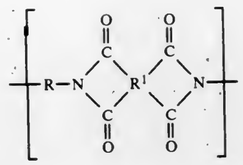
1. The process of separating [fluids] *a mixture of gases* using a semipermeable membrane of which at least 50% by weight consists essentially of a polymer whose main chain has a repeating unit containing at least one group selected from the group consisting of aromatic imide, aromatic ester and aromatic amide groups, in which said repeating unit

(a) contains at least one rigid divalent subunit, the two main chain single bonds extending from which are not colinear,

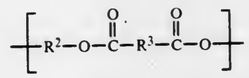
(b) is sterically unable to rotate 360° around one or more of said main chain single bonds, and

(c) has more than 50% of its main chain atoms in aromatic groups,

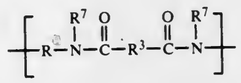
the said aromatic imide repeating unit having the formula



R and R^1 are, respectively, a divalent and tetravalent organic radical, the said aromatic ester repeating unit having the formula



wherein each of R^2 and R^3, alike or different, is a divalent organic radical, and the said aromatic amide repeating unit having the formula



wherein R and R^3 are as defined above and R^7 is hydrogen, lower alkyl or phenyl.

Re. 30,352

OPTICALLY ANISOTROPIC AROMATIC POLYAMIDE DOPES

Stephanie L. Kwolek, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 3,671,542, dated Jun. 20, 1972, Ser. No. 827,345, May 23, 1969. Continuation-in-part of Ser. No. 736,410, Jun. 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 644,851, Jun. 9, 1967, abandoned, which is a continuation-in-part of Ser. No. 556,934, Jun. 13, 1966, abandoned. Application for reissue Oct. 12, 1978, Ser. No. 951,051

The portion of the term of this patent subsequent to Jun. 20, 1999, has been disclaimed.

Int. Cl.[2] **C08K** *3/06, 3/16, 5/20, 5/21*

U.S. Cl. 260—30.8 R **2 Claims**

1. Optically anisotropic dope consisting essentially of:

I. at least about 5 percent by weight of a polymer having an inherent viscosity of at least 0.7 and consisting essentially of at least one type of carbocyclic aromatic homo- or copolyamide having chain extending bonds from each aromatic nucleus which are coaxial or parallel and oppositely directed, and

II. at least one liquid medium selected from the group consisting of:

A. amides and ureas selected from the group consisting of: N,N-dimethylacetamide, N,N-dimethylpropionamide, N,N-dimethylbutyramide, N,N-dimethylisobutyramide, N,N-dimethylmethoxyacetamide, N,N-diethylacetamide, N-methylpyrrolidone-2, N-methylpiperidone-2, N-methylcaprolactam, N-ethylpyrrolidone-2, [N-acetylpyrrolidone] *N-acetylpyrrolidine,* N-acetylpiperidine, N,N'-dimethylethyleneurea, N,N'-dimethylpropyleneurea hexamethylphosphoramide, and N,N,N',N'-tetramethylurea and containing a salt from the group consisting of lithium chloride and calcium chloride

B. concentrated sulfuric acid,

C. hydrofluoric acid, and

D. chloro-, fluoro- or methane-sulfonic acids, said polymer being present in the dope in a concentration above the level at which there is a decrease in viscosity with increasing concentration represented by a sharp discontinuity in the slope of the plot of the dope viscosity vs. polymer concentration curve without the formation of a solid phase.

Re. 30,353

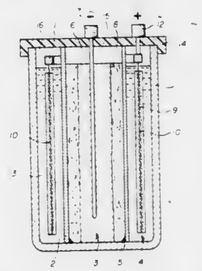
ELECTRIC ACCUMULATOR WITH A SOLID ELECTROLYTE

Michel Voinov, Geneva, Switzerland, assignor to Batelle Development Corporation, Columbus, Ohio

Original No. 4,069,372, dated Jan. 17, 1978, Ser. No. 746,108, Nov. 30, 1976. Application for reissue Feb. 9, 1978, Ser. No. 876,427

Int. Cl.[3] **H01M** *6/30*

U.S. Cl. 429—104 **11 Claims**



3. [The accumulator of claim 1,] *An electric accumulator comprising an anode compartment containing an anode formed from at least one metal selected from the group consisting of metals belonging to Groups Ia, IIa, IIb and IIIb of the periodic table of elements; a cathode compartment containing a cathode formed at least partly from a conducting member comprising a substance capable of accepting electrons, to form anions by cathodic reduction, and an electrolyte consisting of a substance capable of dissolving the product or products generated during discharge of the accumulator, said electrolyte being maintained in a molten state; the anode compartment and cathode compartment being separated from each other by a wall impervious to fluids and formed from a solid mineral electrolyte capable of allowing selective migration of the anode metal in the form of cations; wherein the anode compartment contains a porous matrix adjacent said anode and at least one salt of the anode metal capable of allowing migration of this metal in the form of cations, said salt being maintained in a molten state and permeating said porous matrix, with said salt and said matrix being interposed between the anode and said separation wall, and* wherein said anode metal salt is selected from the group consisting of compounds of the two general formulas:

$$Me(BR_4)_n \text{ and } Me(AlR_4)_n$$

(in which Me represents a metal selected from the group consisting of metals belonging to Groups Ia, IIa, IIb and IIIb of the periodic table of elements, R represents an alkyl or aryl group and n is 1, 2 or 3, according to the valency of the metal Me) and mixtures of at least two of these compounds.

Re. 30,354

NOVEL ETHEREALLY MONOSUBSTITUTED MONOSACCHARIDES

Paul Gordon, Chicago, Ill., assignor to Strategic Medical Research Corp., Greenwich, Conn.

Original No. 3,939,145, dated Feb. 17, 1976, Ser. No. 337,134, Mar. 1, 1973. Application for reissue Feb. 17, 1978, Ser. No. 878,938

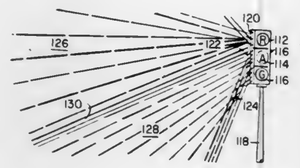
Int. Cl.[2] **C07H** *15/12, 17/02*

U.S. Cl. 536—4 **38 Claims**

25. An ethereally monosubstituted monosaccharide having the

formula S-O-Y, and therapeutically effective and acceptable organic and inorganic acid salts thereof, wherein S is the residue of a monosaccharide selected from the group consisting of pentoses, hexoses and heptoses and Y is selected from the group consisting of N',N'-dimethylamino-n-propyl, N',N'-dimethylaminoisopropyl, N-methyl piperidyl, N',N'-dimethylaminoethyl, and 2',N',N'-trimethylamino-n-propyl.

Re. 30,355
TRAFFIC FLOW CONTROL SYSTEM
Moody L. Coffman, 1832 NW. 17th St., Oklahoma City, Okla. 73106
Original No. 3,533,062, dated Oct. 6, 1970, Ser. No. 606,828, Jan. 3, 1967. Application for reissue Oct. 4, 1972, Ser. No. 294,882
Int. Cl.[2] G08G *1/07, 1/095*
U.S. Cl. 340—40 **19 Claims**



19. Method of controlling stop-and-go traffic in a control zone from a traffic signal adjacent said zone and having a view lens, comprising displaying at said lens a "go" indication to traffic at sufficiently short distances from said signal to permit safe transit through said zone at normal zone speed, while simultaneously displaying at said lens, a "stop" indication to traffic at greater distances.

PLANT PATENTS

GRANTED JULY 29, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,579
MINIATURE ROSE PLANT
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 11, 1979, Ser. No. 29,142
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bush, rounded, much branched, habit, substantially as illustrated and described, characterized by buds and flowers of a red and white bi-color, with the red coloring on top side of petal, being of a shade generally near Crimson 22 or lighter, the bud and flower resembling the variety Magic Carrousel (U.S. Plant Pat. No. 3,601) in form and color but being generally smaller in size; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of flowers borne singly and sometimes several together.

4,580
MINIATURE ROSE PLANT
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 18, 1979, Ser. No. 30,996
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated, and described, characterized by buds and flowers of a rich yellow color, being of a shade generally near Saffron Yellow 7/2 or Buttercup Yellow 5/2 or lighter, the yellow color remaining on lower petal surface but the upper surfaces tending to become overlaid (beginning at petal tips) with orange red and becoming deep red at maturity, the bud and flower resembling the variety Over The Rainbow (U.S. Plant Pat. No. 3,472) in general form and size and the Floribunda variety Circus (U.S. Plant Pat. No. 1,382, expired) in coloring; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of small to medium size — semi-glossy foliage and an abundance of flowers usually borne singly but sometimes several together.

4,581
MINIATURE ROSE PLANT
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 27, 1979, Ser. No. 33,845
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are of an orange or orange blend coloring, the buds and flowers resembling Gloriglo (Miniature — U.S. Plant Pat. No. 4,305) in size and color, the present variety having more petals, and a more compact plant habit, the mature flowers often aging quite red in cooler weather; and further characterized by a plant which is easy to propagate from soft wood cuttings, with an abundance of flowers usually borne singly on slender wirey stems.

4,582
ROSE PLANT
F. Harmon Saville, 58 Hammond St., Rowley, Mass. 01969
Filed May 4, 1979, Ser. No. 36,004
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by unusual bicolor flowers with red to orange-red upper petal surface and yellow to yellow-orange reverse, borne primarily one to a stem on a vigorous plant with attractive foliage.

4,583
ROSE PLANT
O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91761
Continuation of Ser. No. 848,724, Nov. 4, 1977, abandoned. This application Mar. 22, 1979, Ser. No. 22,968
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of inside petals of a dark red shade of peculiar brightness and life, with reverse of the petals yellowish cream producing a bicolor effect, with long, tapered formal buds, upright, tall plant habit, and waxy shiny foliage with generally better growth than the parents.

4,584
CHRYSANTHEMUM PLANT
Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Mar. 15, 1979, Ser. No. 20,773
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant as shown and described, known by the cultivar name Lodestar and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; spooned daisy capitulum type; dark yellow ray floret color; diameter across face of capitulum ranging from 70 to 75 mm at maturity; uniform eight week photoperiodic flowering response to short days; short plant height when grown as a pinched spray pot, and spreading branching pattern.

4,585
CHRYSANTHEMUM PLANT
Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Mar. 8, 1979, Ser. No. 18,484
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant as shown and described, known by the cultivar name Surf and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; white ray floret color; diameter across face of capitulum ranging from 65 to 95 mm. at maturity; uniform eight week flowering response; short plant height, and semi-spreading branching pattern.

4,586
CHRYSANTHEMUM PLANT
Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Mar. 15, 1979, Ser. No. 20,772
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant as shown and described, known by the cultivar name Applause and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; pompon capitulum type; yellow green (immature) to dark yellow (mature) ray floret color; diameter across face of capitulum ranging from 35 to 50 mm at maturity; uniform eight week photoperiodic flowering response to short days; short plant height when grown as a pinched spray pot, and semi-spreading branching pattern.

PATENTS

GRANTED JUL. 29, 1980

ERRATA

For CLASS	See PATENT NO.
433–189	4,214,366
433–060	4,214,367
368–028	4,214,433
368–071	4,214,434
474–148	4,214,488
440–013	4,214,547
052–726	4,214,665
339–274	4,214,733
430–082	4,214,907
568–461	4,215,076
568–454	4,215,077
375–114	4,215,239
370–116	4,215,244
370–084	4,215,245
455–612	4,215,269
375–005	4,215,311
455–284	4,215,312
455–326	4,215,313
371–069	4,215,335
370–097	4,215,348
340–695	4,215,349

PATENTS

GRANTED JULY 29, 1980

GENERAL AND MECHANICAL

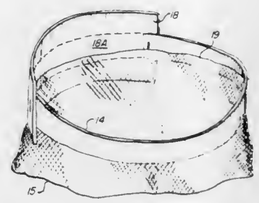
4,214,317
PROTECTIVE APPAREL
Thomas E. Kelly, Sr., 14202 Baldwin Mill Rd., Baldwin, Md. 21013
Filed Feb. 2, 1979, Ser. No. 8,883
Int. Cl.³ A41D *13/08;* **A61F** *9/06*
U.S. Cl. 2—2 **5 Claims**

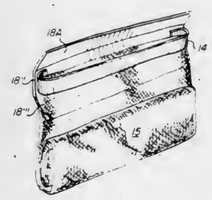


1. In an article of apparel for protecting a user from debris resultant to overhead operation of a tool held in a first hand of a user including a sleeve having upper and lower portions, means for retaining the sleeve lower portion around a first hand of a user, and means for spreading the sleeve upper portion around a said overhead operation, the improvement comprising: the sleeve having means for providing protective visual access through an area thereof to said overhead operation, including a transparent flexible upper part extending substantially around the sleeve; the sleeve having means for preventing debris from being blown out of the sleeve as result of motion of said a user's first hand during said overhead operation of a tool including the sleeve having a lower filter-type flexible porous part extending substantially around the sleeve, said pores having proportion for passage of air while retaining debris within the sleeve; and said means for spreading the sleeve including a handle having orientation for grasping by a second hand of a user.

4,214,318
PORTABLE ROLL-UP BUG NETTING EMPLOYING INTEGRAL STORAGE ENVELOPE
Manuel D. Gomez, 935 E. Morning Star, Tempe, Ariz. 85283
Filed May 21, 1979, Ser. No. 40,731
Int. Cl.³ A42B *3/00, 5/00*
U.S. Cl. 2—4 **2 Claims**

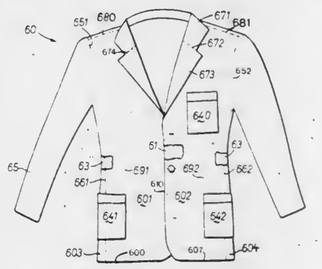
1. A head screen comprising:
a protective veil formed of an open-ended cylindrical like small mesh plastic screening having a mesh size which prohibits mosquitos from passing therethrough,
an elastic band formed around one end of said screening,
said band being positionable around the crown of a hat of a user,
a tie string being mounted around the other end of said screening for snugly fastening said other end around the neck of the user,
a strip of pliable material attached to said band at said one end to extend outwardly of said band and inwardly thereof over a part of said band and said screening,
said material being provided with spaced fold lines extending longitudinally of its length for aiding in folding it over on itself with the veil folded and lying along one of its surfaces,
whereby when said screening is folded laterally thereof to the length of said material and then longitudinally thereof to lie over at least a part of said material, said material then may be folded over said screening along said fold lines to form an overlapping covering therefor, and





a fastening means secured to another side of said material for detachably interconnecting the overlapped portions of said material to form a packet for said veil.

4,214,319
OUTERWEAR GARMENT ARTICLE
Didier Bollag, Josefstrasse 59, CH-8005 Zurich, Switzerland
Filed Sep. 18, 1978, Ser. No. 943,527
Claims priority, application Switzerland, Oct. 6, 1977, 12203/77
Int. Cl.² A41D *1/02*
U.S. Cl. 2—108 **12 Claims**



1. In an outerwear garment article of the type comprising two front parts and a dorsal connecting part; each of said front parts having a terminal front edge seam and a side seam joining each of said front parts with said dorsal connecting part; the improvement wherein each of said front parts comprises two substantially coextensive cloth layers extending from said front edge seam to said side seam and being adhesively connected to form a drapeably structured composite stratum between said terminal front edge seam and said side seam.

4,214,320

SURGICAL GOWN AND METHOD OF DONNING GOWN

Nathan L. Belkin, Huntington, N.Y., assignor to Superior Surgical Mfg. Co., Inc., Seminole, Fla.

Filed Jan. 11, 1979, Ser. No. 2,947
Int. Cl.[2] A41D *13/00*
U.S. Cl. 2—114 **14 Claims**



1. A surgical gown comprising:
first and second elongated sleeves for receiving the arms of the wearer;
a front panel extending lengthwise from an area above the chest to an area below the knees of the wearer and crosswise between the two sleeves;
an extended side panel adjoining said front panel adjacent a first sleeve and along the length of one side, said side panel including an enlarged opening in the upper end having a shoulder band enclosing the outer perimeter of said opening, said opening being sufficiently large to receive the length of the upper arm between the shoulder and elbow of the wearer, said side panel being of sufficient width to extend completely around the back and overlap a portion of the front panel to enclose the body of the wearer;
said shoulder band being disposed over the shoulder on the opposite side in a closed position and said second sleeve extending throught said opening; and
said shoulder band coacting with the shoulder and said second sleeve on the opposite side to position the hanging lower portion of the elongated panel edge in overlapping relation to the front panel of the gown to maintain the gown in a closed position.

4,214,321

GLOVE FOR USE WITH ORGANIC SOLVENTS

Elie S. Nuwayser, Wellesley, Mass., assignor to Abcor, Inc., Wilmington, Mass.

Filed Dec. 21, 1978, Ser. No. 971,800
Int. Cl.[2] B32B *27/06;* **A41D** *19/00*
U.S. Cl. 2—167 **5 Claims**



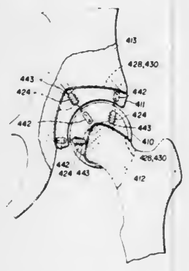
1. A glove adapted for use with organic solvents and other chemicals, which glove is composed of a flexible multilaminate sheet material in glove form, wherein the sheet material comprises a multilaminate sheet material consisting essentially of:
(a) an outer, flexible, solvent resistant abrasion-resistant polymer layer comprising a fluorocarbon resin or a plasticized polyester resin;
(b) an integral essentially pin-hole-free, extruded or rolled, aluminum-foil, flexible material having a thickness of at least about 0.5 to 3 mils; and
(c) an inner heat-sealable thermoplastic polymer material comprising a polyethylene or polypropylene resin, the multilaminate sheet material heat-sealed along the peripheral edges of the glove form by the inner thermoplastic polymer layer to the opposite inner thermoplastic layer.

4,214,322

LONG-TERM ENDOPROSTHESIS

Werner Kraus, 41 Augustenstrasse, Munich, Fed. Rep. of Germany

Division of Ser. No. 779,127, Mar. 18, 1977. This application May 30, 1979, Ser. No. 43,775
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611744
Int. Cl.[2] A61F *1/24*
U.S. Cl. 3—1.91 **5 Claims**



1. A long-term endoprosthesis comprising, in combination, a body member for implanting in the bone of a person, said body member having an outer surface configured for intimate contact with the bone in which said body member is implanted, a conductor wound on said body member having turns disposed in closely spaced relationship within the major portion of the area of contact between said body member outer surface and the bone, and means for coupling said wound conductor to an associated source of alternating electric power to produce an electomotive force in said wound conductor resulting in a voltage difference between the turns of said wound conductor at least some of the turns of said wound conductor being adapted to form electrodes for enhancing the growth of new bone in said area of contact, said associated source of alternating electric power comprising a permanent magnet movable with respect to said wound conductor forming said electrodes.

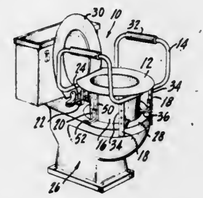
4,214,323

RAISED TOILET SEAT APPARATUS

Morton I. Thomas, Nyack, N.Y., assignor to Temco Products, Inc., Passaic, N.J.

Filed Aug. 16, 1978, Ser. No. 934,081
Int. Cl.[2] A47K *13/00, 13/08, 13/26*
U.S. Cl. 4—237 **6 Claims**

1. An improved raised toilet seat apparatus adapted to fit on a conventional commode of the type having a bowl and a hinged toilet seat connected to said bowl by two threaded mounting bolt means, said apparatus comprising:
a seat;
a splash guard connected to said seat;
a plurality of support bracket means connected to said seat for contacting said bowl and supporting said seat above said bowl;
at least two spaced apart L-shaped bracket means connected to said seat for stabilizing said apparatus, said L-shaped bracket means including an upright section connected to said seat and a horizontal foot section connected to said upright section; and,



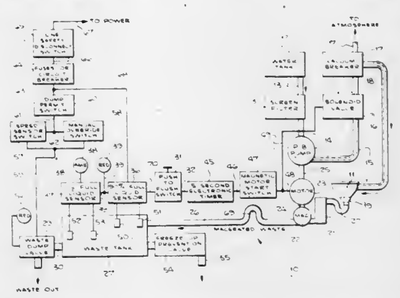
locking bar means including two aperture means therein for receiving said two threaded mounting bolts of said commode and for spanning the distance therebetween, said locking bar means forming a receiving gap between itself and said commode,
wherein the horizontal foot section of said L-shaped bracket means has a thickness slightly less than said receiving gap between said locking bar means and said commode.

4,214,324

HUMAN WASTE STORAGE AND DISPOSAL SYSTEMS FOR RAILROADS OR THE LIKE

James M. Kemper, Sherman Oaks, and William I. Mercer, West Hills, both of Calif., assignors to Monogram Industries, Inc., Santa Monica, Calif.

Filed Aug. 18, 1978, Ser. No. 935,065
Int. Cl.[2] E03D *9/10*
U.S. Cl. 4—300 **6 Claims**



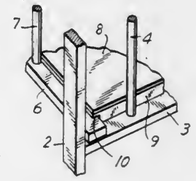
1. A human waste disposal system for a vehicle or the like comprising:
at least one toilet bowl;
a waste discharge outlet coupled to said bowl;
a flushing fluid inlet coupled to both said bowl and a source of flushing fluid;
an elongated vertically mounted receiver coupled directly to said outlet for receiving a mixture of waste and flushing fluid from said bowl, said outlet being coupled to said receiver at the top thereof
macerator vacuum pumping means comprising a vacuum pump grinder and a motor having a rotatable motor shaft coupled to said pump grinder for actuating the same, said grinder including a positive displacement vacuum pump actuated by said motor shaft having a slurry discharge outlet and an inlet, an apertured plate closing off the inlet of said pump with said motor shaft extending through said plate, a collector housing for receiving said mixture therein having an inlet coupled to said receiver and an outlet coupled to said pump inlet with said plate separating said pump from said collector housing, a cutting blade fixed to the shaft of said motor and rotatable over said apertured plate on the side of said plate adjacent said collector housing, and blade biasing means associated with said motor and said motor shaft for biasing said blade against said plate, and said macerator vacuum pumping means being connected directly to said receiver at the bottom thereof for creating a vacuum whereby atmospheric pressure, combined with the force of gravity, pushes said mixture out of said receiver to and into said pumping means, said receiver including means therein for controlling the quantity of mixture being pushed into said pumping means while storing the remainer of said mixture adjacent said pumping means, said macerator vacuum pumping means macerating said mixture to form a slurry.

4,214,325

DISMOUNTABLE FRAME FOR CHILDREN'S FURNITURE

Carlos J. Camacho, Barcelona, Spain, assignor to Forminfan, S.A., Granollers

Filed Sep. 18, 1978, Ser. No. 943,215
Int. Cl.[2] A47C *27/08*
U.S. Cl. 5—99 B **2 Claims**



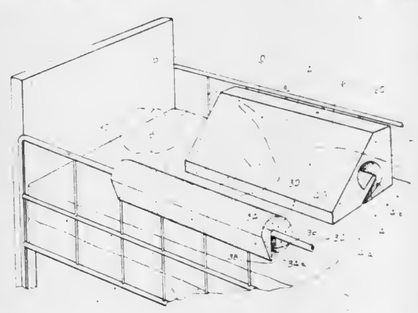
1. An improved collapsable frame assembly for furniture, of the type employing a rectangular enclosure formed by four independent side members, said side members are fixed together but detachable from each other and a base member, said improvement comprising: the base is made up of two co-planar sections which on two opposing edges are provided with tongues, in the continuous plane for support and abutting against respective lower side beams of two opposite side members, said lower side beams of the other two side members formed to support the corresponding edges of base panels whose edges butt against the bars of the said members providing rigidity to the entire frame.

4,214,326

BODY POSITIONER AND PROTECTION APPARATUS

Donald C. Spann, 5 Ferncreek Crt., Greenville, S.C.

Filed May 31, 1979, Ser. No. 44,180
Int. Cl.[3] A47B *96/00;* **A47C** *21/00*
U.S. Cl. 5—431 **6 Claims**



1. Apparatus for positioning and protecting the body of a

patient lying laterally upon a hospital bed and the like of the type having an upright side frame, said apparatus comprising:

an elongated body positioner block constructed from a resilient material having a length substantially greater than its width for stably supporting a substantial portion of the patient's lateral body length;

a removable elongated core formed and cut out in the interior of said elongated block;

longitudinal internal channel means formed in said core; and

opening means formed in the outside of said core communicating with said channel means accommodating placement of said elongated core over an edge of said side frame;

whereby said elongated core may be selectively removed from said body positioner block and utilized as a protective cushion guarding said patient's body from forceful contact with said side frame of said bed while said elongated body positioner may be utilized to position a patient in said bed.

4,214,327

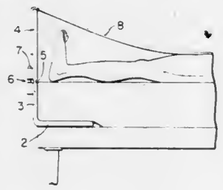
BLANKET SUPPORT AND FOOTREST

Phyllis Smith, 3507 North Dr., Greenville, Ohio 45331

Filed Dec. 28, 1978, Ser. No. 974,027

Int. Cl.[2] A47C *21/00*

U.S. Cl. 5—444 **6 Claims**



1. A blanket support and footrest, which includes:

a lower portion comprising a bottom and a side which is rigidly connected to said bottom, and is substantially perpendicular thereto, so that said lower portion has an essentially L-shaped cross section;

a flat upper portion pivotally connected to said side of said lower portion; and

means operatively connected to said upper and lower portions for selectively

(a) holding said upper portion upright in alignment with said side so that said upper portion forms an extension of said side, and

(b) releasing said upper portion to allow same to be folded toward said side.

4,214,328

SUSPENDED PROTECTIVE SHEETS

Byron K. Custer, Jr., and Ruth M. Custer, both of 725 Parkview Dr., Johnstown, Pa. 15905

Filed Jan. 25, 1979, Ser. No. 6,465

Int. Cl.[2] A47G *23/00*

U.S. Cl. 5—494 **20 Claims**

1. A restraining device which comprises

a. a fabric band

b. means for anchoring said fabric band to a bed

c. a top sheet for laying over said fabric band

d. mating ends on said top sheet and fabric band

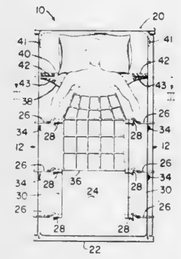
e. releasable fastener means on said ends that when fastened will define an opening for closely and completely encircling a person's torso beneath the underarms

f. means for suspending a portion of said top sheet a spaced distance above said fabric band

g. a section of said top sheet that extends away from said mating ends

h. means in said section for preventing a person's hand from grasping anything between said top and bottom sheets which comprises

i. another sheet mating with said section to form



j. a pocket and

k. a semi-rigid material insertable into said pocket.

4,214,329

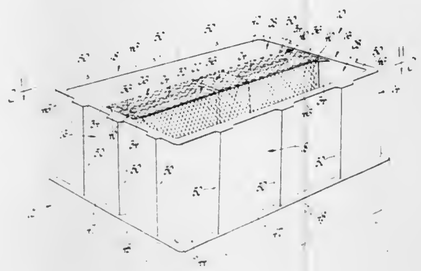
MOLDED PLASTIC BEE FEEDER

Stanley R. Kozlowicz, 4476 Tulane, Dearborn Heights, Mich. 48125

Filed Apr. 5, 1979, Ser. No. 27,222

Int. Cl.[3] A01K *53/00*

U.S. Cl. 6—5 **15 Claims**



1. A bee feeder comprising a molded plastic receptacle adapted to be mounted on top of a hive body, the receptacle including side walls cooperatively defining a rectangular shape and a bottom wall that extends between the side walls to define an upwardly opening configuration for receiving liquid feed, a hollow projection that extends upwardly from the bottom wall within the interior of the receptacle such that bees can pass upwardly and downwardly through the bottom wall through the projection, the projection defining an upper opening through which bees pass between the feeder and the hive body, said opening having at least a portion thereof located inwardly from each of the side walls, and a grid that covers the projection opening in a spaced relationship thereto extending downwardly to the bottom wall in a spaced relationship to the projection so as to provide bees access to the feed.

4,214,330

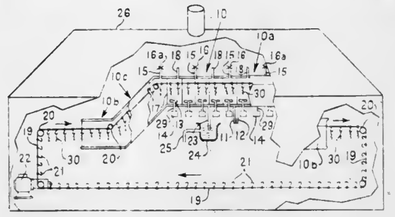
METHOD FOR TREATMENT OF FIBERS WITH OZONE-STEAM MIXTURES

Walter J. Thorsen, El Cerrito, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 23, 1979, Ser. No. 15,503

Int. Cl.[3] D06B *3/30*

U.S. Cl. 8—149.2 **4 Claims**



1. A method for treating fibers with an ozone-stream mixture, which comprises

(a) conveying the substance through an open-ended chamber having a horizontal middle section,

(b) centrally introducing the ozone-steam mixture in said horizontal middle section,

(c) exposing the fibers to the ozone-steam mixture in said horizontal middle section, and

(d) confining said ozone-steam mixture within said middle section by maintaining the bottom of said section about 15-45 centimeters above the top of the open chamber end.

4,214,331

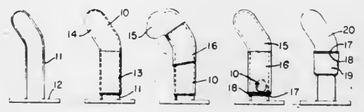
METHOD FOR PROCESSING SOCKS

Baxter P. Freeze, Randleman, N.C., assignor to Commonwealth Hosiery Mills, Inc., Randleman, N.C.

Filed Jun. 1, 1979, Ser. No. 44,587

Int. Cl.[3] D06B *5/24*

U.S. Cl. 8—150 **3 Claims**



1. A method for processing anklet socks knit with at least some thermoplastic stretchable yarns and having cuff portions comprising the steps of; placing a plurality of anklet socks in a dye bath, subjecting the anklet socks to said dye bath for a predetermined time interval, extracting excess fluid from said socks leaving said socks damp to the touch, placing a first sock on a sock form while damp, placing a second sock over said first sock while damp to envelope said first sock to form a pair of socks on said form, removing said pair of socks from said form, and heating said pair of socks to dry them whereby wrinkles are removed and the paired socks have substantial bulk and stretch.

4,214,332

METHOD OF CONSTRUCTING WELDED METAL SKIN BOAT HULLS AND HULLS MADE THEREBY

Eugene M. Stoner, Stuart, Fla., assignor to ARES, Inc., Port Clinton, Ohio

Filed Apr. 24, 1978, Ser. No. 899,370

Int. Cl.[2] B63B *3/00*

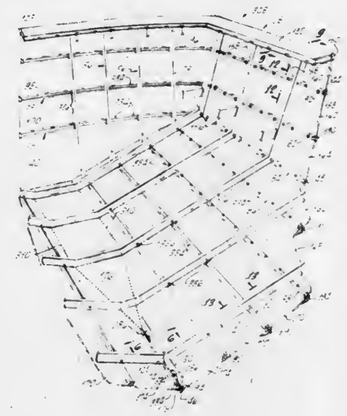
U.S. Cl. 9—6 M **22 Claims**

1. A method of constructing a welded metal skin boat hull of specified configuration, which comprises the steps of:

(a) interconnecting a plurality of transverse hull frames with hull members to fix the frames in a longitudinally spaced apart relationship defining approximately a specified hull configuration;

(b) connecting a plurality of elongated continuous stringers in longitudinal extending and spaced apart relationship to the transverse frames so as to form a hull framework;

(c) positioning elongated metal hull skin panels longitudinally on the framework, with each of the panels being shaped to span and overlap a selected pair of the longitudinal stringers;



(d) positioning a plurality of elongated skin panel bridging fairings to overlap marginal edges of adjacent skin panels over at least substantial lengths thereof, and adjustably attaching the fairings to corresponding ones of the longitudinal stringers so as to clamp the skin panels to the longitudinal stringers;

(e) realigning the hull to the specified hull configuration by unclamping, adjusting and reclamping the skin panels as necessary; and

(f) permanently welding the fairings to the skin panels along external longitudinal intersections therebetween to form watertight weld seams.

4,214,333

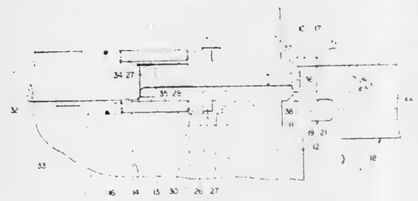
APPARATUS FOR TRIMMING BOLTHEADS OR THE LIKE

Nelson I. Kin, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio

Filed Nov. 9, 1978, Ser. No. 959,080

Int. Cl.[2] B21K *1/50*

U.S. Cl. 10—20 **23 Claims**



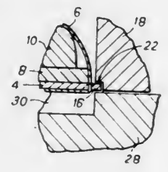
1. A machine for producing bolts or the like comprising a frame, a slide on said frame reciprocable along a line of movement between a forward position and a rearward position, a tool on said frame, a trim die on said slide, said tool operating to support a bolt blank having a nonpolygonal head for trimming of said head by said trim die as said slide moves to said forward position, said trim die providing a polygonal shaped opening and polygonal cutting edges at the forward end of said

opening facing said tool, said cutting edges engaging said nonpolygonal head as said slide moves to said forward position and cooperating with said tool to shear away material of said nonpolygonal head to produce a polygonal head on said blank, said tool and die providing opposed stop surfaces which engage when said machine is operating without blanks, engagement of said opposed stop surfaces preventing contact between said cutting edges and said tool.

4,214,334
MANUFACTURE OF FOOTWEAR

William Williams, Queniborough, England, and Michael L. Crane, St Savior, Channel Islands, assignors to Delplast Limited, Leicester, England

Filed Nov. 27, 1978, Ser. No. 963,771
Int. Cl.[3] A43D *9/00;* **A43B** *3/12*
U.S. Cl. 12—142 RS **10 Claims**

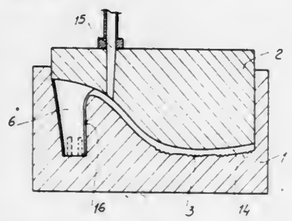


1. A method of manufacturing casual footwear as defined herein, comprising the steps of procuring an upper constituted by at least one strap or band and an insole, assembling the upper and the insole by passing end portions of the strap(s) through apertures provided in marginal portions of the insole and securing the strap end portions to an under surface of the insole, inserting a positioning support within the upper/insole assembly, positioning the assembly in a mould closing member of a moulding apparatus, providing mouldable plastics material to a mould cavity of a second member of the moulding apparatus and closing said mould cavity by means of said mould closing member so as to trap marginal edge portions of the insole against the two mould members.

4,214,335
METHOD FOR MAKING SOLES

Edoardo Ughi, Via Plinio, 4, Lecco, Italy

Filed Feb. 5, 1979, Ser. No. 9,524
Claims priority, application Italy, Apr. 28, 1978, 22856 A/78
Int. Cl.[2] A43D *25/00;* **A43B** *13/28*
U.S. Cl. 12—146 BR **6 Claims**

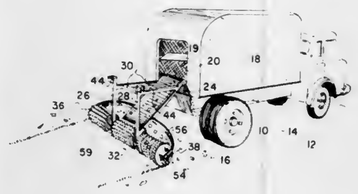


1. An improved method for making soles provided with high heel, for women shoes, in a single piece, by injection molding thermoplastics materials in a mould formed by several complementary portions defining therebetween the cavity of the sole heel, wherein in the heel cavity, before the injection, are inserted a sheet material for laterally and rearwardly covering the heel and a stiffening core or rigid structure, characterized in that said rigid structure is provided with a downwardly vertical direction concavely curved front wall and, at the front face thereof, with two continous side fins projecting for a length equal to the covering sheet material thickness and, at the base thereof, with slots and at least two blind holes effective to fix the heel top-piece.

4,214,336
TRASH PICKING DEVICE

Lloyd D. Peterson, 11546 Zea St., NW., Coon Rapids, Minn. 55433

Filed Jan. 2, 1979, Ser. No. 479
Int. Cl.[2] E01H *1/00, 12/00*
U.S. Cl. 15—3 **8 Claims**

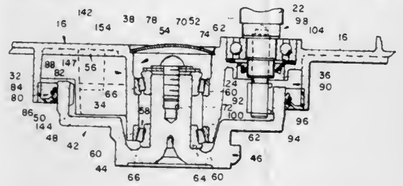


1. In a self propelled trash pick up vehicle having a trash receiving area provided with an entrance, an attachable collecting device comprising a support structure, an upper end section of which is adapted to be secured to said entrance; a central spiked roller rotatably mounted at a lower end section of said support structure; an endless belt movable between said lower end and said upper end sections that is drivingly connected to said central roller for conveying litter picked up by projecting spaced spikes of said roller into said receiving area, together with stripper means associated with the lower end section of the support structure for removal of said litter from said spikes and onto said belt, with the spikes of said roller resting on a ground surface, when the collecting device is attached to the vehicle, so as to support the roller, in the position of use.

4,214,337
FLOOR POLISHER

Wilfred C. Nise, Spring Lake, Mich., and Bertel S. Nelson, Naperville, Ill., assignors to Clarke-Gravely Corporation, Muskegon, Mich.

Filed May 16, 1979, Ser. No. 39,313
Int. Cl.[2] A47L *11/162*
U.S. Cl. 15—49 R **27 Claims**

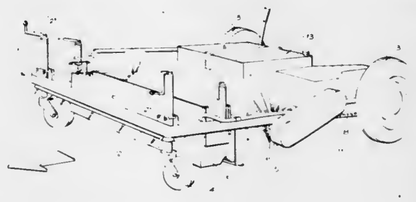


1. A drive for a compact rotary floor maintenance device, comprising:
- a motor support base having a depending, annular skirt and a depending hub concentric with said skirt, said base having a motor shaft aperture therein;
- a carrier having a generally vertical annular flange and a centrally disposed spindle, said spindle extending into said hub;
- means within said hub for supporting said spindle for rotary motion, said carrier and said skirt defining a drive housing within which a liquid lubricant may be disposed;
- a ring gear on said annular flange and engageable by a pinion gear secured to a motor shaft extending through the motor shaft aperture;
- seal means carried by one of said annular skirt and said flange for sealing the space between said flange and said skirt to prevent leakage of lubricant therethrough; and
- breather means carried by said base and extending into said drive housing for communicating said housing with atmosphere, preventing a build up of pressure within the housing during drive operation and for permitting said housing to be stored in any position without leakage of lubricant from said drive housing.

4,214,338
INDUSTRIAL SWEEPER

Allan H. Kyle, P.O. Box 88, Kempsey, New South Wales, Australia (2440)

Filed Feb. 5, 1979, Ser. No. 9,667
Claims priority, application Australia, Feb. 9, 1978, PD3318
Int. Cl.[2] A47L *11/292*
U.S. Cl. 15—83 **9 Claims**



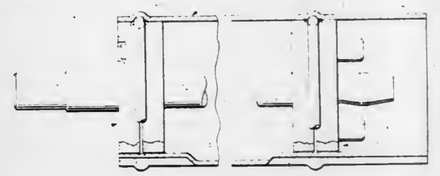
1. Sweeping apparatus comprising:
- a framework having forward and rearward ends;
- an axle assembly bearing a pair of ground engaging rear wheels and mounted transversely in the vicinity of the rearward end of said framework;
- a pair of independently suspended ground engaging front wheels mounted substantially toward the forward end of said framework;
- a cylindrical sweeping brush comprising an elongate shaft with bristles extending radially therefrom and along the length thereof rotatably mounted transversely within said framework;
- an elongate refuse catcher substantially equal in length to said sweeping brush and mounted near and substantially parallel thereto within said framework;
- drive means connecting said axle assembly and said sweeping brush to cause the latter to rotate about its cylindrical axis in response to the rotation of said rear wheels;
- an elongate, perforated sprinkler pipe extending across the forward end of said framework forwardly of and substantially parallel to said sweeping brush;
- a water tank and a water pump both mounted within said framework;
- water lines connecting an outlet of said water tank to an inlet of said water pump and an outlet of said water pump to said sprinkler pipe; and
- drive means connecting said axle assembly and said water pump to cause the latter to pump water from said water tank to said sprinkler pipe whereupon water is sprayed through the perforations in said sprinkler pipe in response to the rotation of said rear wheels.

4,214,339
ROTARY BROOM CORE ASSEMBLAGE

Arthur E. Drumm, Marysville, Ohio, assignor to Marysville Rotary Broom Service, Inc., Marysville, Ohio

Filed Apr. 23, 1979, Ser. No. 32,171
Int. Cl.[2] A46B *13/02*
U.S. Cl. 15—179 **4 Claims**

3. A rotary broom assemblage comprising a generally cylindrical core upon the exterior of which a plurality of brush elements are secured in radially projecting relationship, said core having a pair of outwardly directed, annular depressions in its wall portion respectively adjacent to each end of the core, a drive shaft adapted to be co-axially inserted within said core, a pair of circular plates secured to said drive shaft for revolution therewith, said plates being axially spaced relative to each other so that the periphery of each said plate lies immediately adjacent one of said annular depressions in the core, a second pair of circular plates mounted on said shaft for axial movements relative thereto and being respectively disposed adjacent said first pair of circular plates, fastening means for respectively moving the second pair of plates towards abutting engagement respectively with said first pair of plates, the

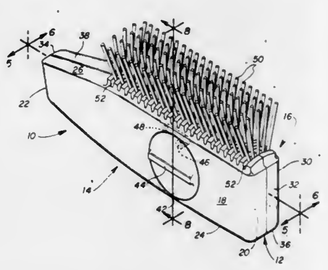


abutting surfaces of said circular plates each having an inclined circumferential edge surface to define an outwardly opening groove with the abutting plate, a split ring disposed in each said groove formed by said abutting plates and extending substantially around said plates, said ring being expansible radially outwardly in response to relative axial displacement of said plates toward each other to expand said ring radially into engagement with the adjacent annular groove in said core, whereby said core is locked against axial displacement relative to said circular plates and is frictionally engaged by said expanded ring to rotate with said drive shaft.

4,214,340
RETRACTABLE BRUSH WITH ROTATABLE ACTUATING MECHANISM

Fred A. Youngberg, Irving, and Clarence D. Zierhut, Richardson, both of Tex., assignors to John Lewis, Arlington, Tex., a part interest

Filed Feb. 8, 1979, Ser. No. 10,430
Int. Cl.[2] A46B *9/08*
U.S. Cl. 15—184 **5 Claims**



1. A retractable brush comprising:
- a housing having first and second sidewalls, end walls, a convex top wall and a bottom wall;
- said convex top wall of said housing including a plurality of elongated apertures extending between said first and second sidewalls of said housing;
- bristle carrying means having first and second sidewalls and a flexible top wall;
- a plurality of bristles mounted to said flexible top wall of said bristle carrying means and being disposed substantially perpendicular to said flexible top wall of said bristle carrying means;
- said bristle carrying means being disposed within said housing, such that said first sidewall of said bristle carrying means lies adjacent said first sidewall of said housing and

said second sidewall of said bristle carrying means lies adjacent said second sidewall of said housing and further being positioned within said housing for slidable movement therein, such that said bristle carrying means is movable between a retracted position wherein said bristle carrying means and said plurality of bristles are contained within said housing and an extended position wherein said bristle carrying means is contained within said housing and said plurality of said bristles extend through said plurality of elongated apertures beyond said convex top wall of said housing in a radially spread position to thereby widen the brushing area of the retractable brush;

said plurality of bristles being maintained in said substantially perpendicular position to said flexible top wall of said bristle carrying means in said retracted position;

said flexible top wall of said bristle carrying means in said extended position of said bristle carrying means engaging said convex top wall of said housing, such that said flexible top wall of said bristle carrying means conforms to the interior surface of said convex top wall of said housing to thereby force said plurality of bristles to radially spread within said plurality of elongated apertures to extend ones of said plurality of bristles beyond said first and second sidewalls of said housing in said extended position of said bristle carrying means;

said first sidewall of said bristle carrying means including an elongated slot;

said first sidewall of said housing including knob means rotatably mounted within said first sidewall of said housing;

said knob means including pin means extending inwardly into said housing for engaging said elongated slot in said first sidewall of said bristle carrying means, such that upon rotation of said knob means, said bristle carrying means and said plurality of bristles move between said retracted position and said extended position to retract and extend said plurality of bristles from said housing;

said second sidewall of said housing disposed adjacent said second sidewall of said bristle carrying means including rib means; and

said second sidewall of said bristle carrying means including a groove positioned for engaging said rib means of said second sidewall of said housing for guiding said bristle carrying means between said retracted position and said extended position.

4,214,341

HYGIENIC AND COSMETIC SPONGE OR THE LIKE

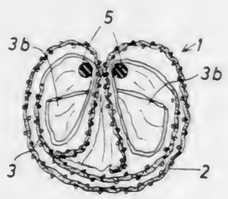
Ewald Rath, Geranienstr. 5, 5600 Wuppertal 21, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,795

Claims priority, application Fed. Rep. of Germany, May 29, 1978, 2823332

Int. Cl.³ A47L *17/08*

U.S. Cl. 15—210 R **4 Claims**



1. A surgical sponge comprising a bulbous jacket of gauze material having a edge portion gathered together to form a constricted tubular neck at a proximal end of the jacket, said neck being turned radially inwardly of the jacket and forming a filling core of the sponge, a rubber ring disposed interiorly of the jacket and contracted onto the inturned neck thereof retaining it in the constricted inturned position, wherein the gauze material consists of two or more gauze layers forming the jacket and each of the one or the several inside lying gauze layers having at least two opposite terminal sections are gathered together with the outside lying gauze layer to form the inwardly turned neck and the filling core of the sponge.

4,214,342

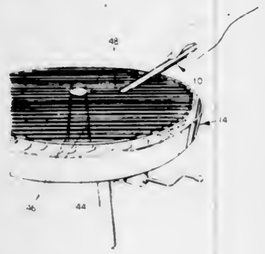
GRILL CLEANING TOOL

Paul D. Amundsen, 704 S.W. 119th, Seattle, Wash. 98146

Filed Jun. 22, 1978, Ser. No. 917,870

Int. Cl.³ A47L *17/00*

U.S. Cl. 15—236 R **6 Claims**



1. A grill cleaning tool for removing deposits from the surface of grill rods comprising:

(a) a body which forms a handle for the tool having a first end; and

(b) a straight projection of rigid material extending from the first end of the handle, the projection having a wall having a curved transverse cross-section and an end portion opposite the handle, defining a closed end groove for closely receiving a grill rod, and wherein the projection is beveled so that the wall has opposite edges which extend angularly from the end of the projection on either side of the groove beyond the closed end of the groove toward the handle to permit the tool to engage the grill rod at a low relative angle.

4,214,343

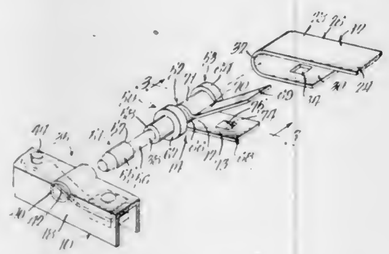
ARM ADAPTOR FOR HOOK-TYPE BLADE

Dennis A. Dudek, Dyer, Ind., assignor to The Anderson Company of Indiana, Gary, Ind.

Filed Feb. 22, 1979, Ser. No. 14,072

Int. Cl.² A47L *1/00;* **B60S** *1/02*

U.S. Cl. 15—250.32 **6 Claims**



1. An adaptor for connecting a windshield wiper arm to a windshield wiper blade wherein the wiper arm has an end that is hook-shaped with the hook being formed by an end portion of the arm being bent back to lie parallel to said arm, said adaptor comprising a double-ended pin, a U-shaped member having a center portion and a pair of legs, said center portion of the "U" being secured onto one end portion of said pin, said legs having outer end portions spaced apart a greater distance than said end portion of the hook is spaced from said arm, a lug on at least one leg of said U-shaped member being adapted to seat in a recess in one portion of the hook end of the arm, the other end portion of said double-ended pin having a recess around the outer periphery thereof whereby said other end portion of the pin may be inserted in aligned openings in a blade and a spring on the blade seats in said recess to retain the pin from the adaptor and the arm assembled with the blade.

4,214,344

WINDSHIELD WIPER

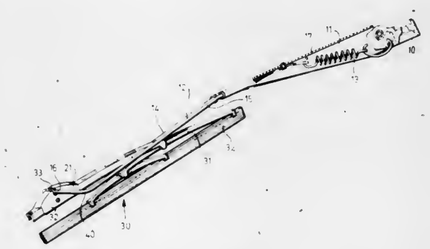
Alfred Kohler, and Hans Prohaska, both of Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 20, 1979, Ser. No. 22,198

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812412

Int. Cl.² B60S *1/40*

U.S. Cl. 15—250.32 **4 Claims**



1. A windshield wiper assembly comprising:

a supporting yoke having a recess;

a wiper blade coupled to said supporting yoke and including a wiping element;

a wiper arm comprising a wire yoke including two parallel legs; and

a web connecting said legs, said recess being adapted to pivotally retain said web.

4,214,345

MACHINE FOR SEVERING POULTRY INTO PREDETERMINED PORTIONS

William D. Duncan, and Carolyn L. Duncan, both of Kokomo, Ind., assignors to Duncan Creations, Inc., Kokomo, Ind.

Continuation of Ser. No. 725,559, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 583,875, Jun. 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 436,361, Jan. 24, 1974, Pat. No. 3,950,820. This application Aug. 23, 1978, Ser. No. 936,046

Int. Cl.² A22C *21/00*

U.S. Cl. 17—11 **7 Claims**

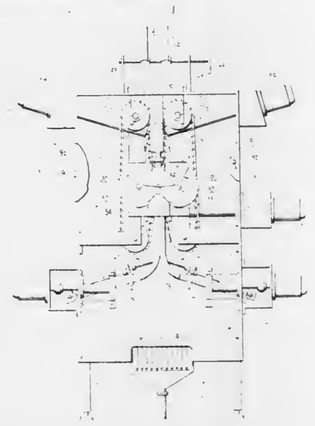
1. In a machine of the type wherein a succession of eviscerated poultry carcasses are introduced at the input end of a conveyor means which carries the carcasses away from the input in a predetermined path into engagement with a plurality of circular knives spaced in succession along said path which automatically successively sever at least the breast meat, thighs and wings from each of said carcasses and split the carcasses into two portions, each of said circular knives being subjected to a stream of water, the improvement which comprises:

means for rotating each of said knives at a speed in excess of 2000 rpm;

nozzle means for each of said circular knives comprising at least two orifices each positioned respectively facing the opposite sides of the knives to direct jets of water against the opposite surfaces thereof over areas extending to points at least three-fourths of the distance inwardly from the peripheries of the knives;

conduit means for supplying water under pressure to each of said nozzle means;

enclosure means surrounding said conveyor means and circular knives for confining water thrown off by centrifugal force from said knives, and drain means for discharging excess water thrown off;



said enclosure means being provided with an opening for carcasses to be successively introduced to the conveyor means input, and having at least one other opening to permit removal of split carcasses and products severed from the carcasses;

said conveyor means including collector means to direct said split carcasses and products severed from the carcasses to said other opening to minimize contact with said water.

4,214,346

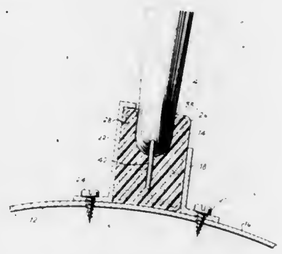
BRUSH STICK

George K. McDonald, P.O. Drawer E, Lamesa, Tex. 79331, assignor to George K. McDonald, Lamesa, Tex.

Filed Dec. 26, 1978, Ser. No. 972,672

Int. Cl.² D01B *1/06*

U.S. Cl. 19—60 **5 Claims**



1. In cotton processing equipment having

a. a first cylinder with cotton on the surface thereof, and

b. a doffing cylinder adjacent the first cylinder; an improved elongated brush on the doffing cylinder comprising:

c. a stick made of expanded rigid thermoplastic having closed cells on the interior and a dense non-cellular skin,

d. the stick having a rectangular cross section of a width and height, and

e. a length several times the height, and

f. a series of holes in the width side along the length, and

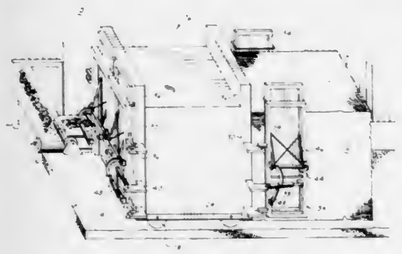
g. natural bristles in the holes.

4,214,347

METHOD AND APPARATUS OF FEEDING COTTON TO A GIN

Jimmy F. Prather, P.O. Box 629, Brownfield, Tex. 79316

Filed Apr. 25, 1979, Ser. No. 33,112
Int. Cl.[2] D01G *7/00*
U.S. Cl. 19—64.5 **10 Claims**



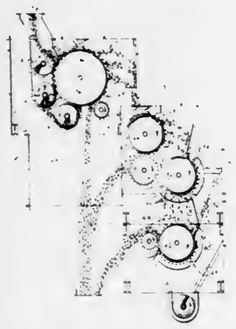
1. In the process of feeding seed cotton to a cotton gin including:
   a. placing a module of seed cotton on a slab,
   b. advancing a module feeder against the module of seed cotton, thereby
   c. taking the seed cotton from the module; the improved method of supporting and backing up the last portion or remnant of the module as it is being fed into the feeder comprising the following steps:
   d. swinging a door about a vertical axis on a door jamb on either side of the module feeder from a wing open position on the module feeder into a closed end position upon the module feeder as soon as the doors may be swung about the end of the module, then after the doors are closed
   e. pushing the bottom of the door against the module while holding the top of the door in the same position relative to the feeder, and
   f. continuing to push the bottom door inward until the door is adjacent to feeder means within the feeder and has about the same angle as the feeder means from top to bottom.

4,214,348

TRASH BY-PASS FOR BURR AND STICK MACHINE

Robert C. Schwartz, and John E. Sparks, both of Lubbock, Tex., assignors to Horn and Gladden Lint Cleaner Co., Inc., Lubbock, Tex.

Filed Jan. 11, 1979, Ser. No. 2,587
Int. Cl.[2] D01B *1/00*
U.S. Cl. 19—203 **4 Claims**



1. In a cotton gin burr and stick machine having:
   a. a cotton inlet,
   b. a directing conveyor,
   c. a first set of rotating saws,
   d. a plurality of beater arms in proximity to said first set of rotating saws,
   e. doffing brushes adjacent to the first set of rotating saws,
   f. a clean cotton chute,
   g. a reclamation chute,
   h. a first set of reclamation saws in the reclamation chute,
   j. a second set of reclamation saws in the reclamation chute,
   k. doffing brushes adjacent to both the first and second set of reclamation saws,
   m. beater bars in proximity to the first set of reclamation saws,
   n. beater bars in proximity to the second set of reclamation saws,
   o. a final set of reclamation saws,
   p. beater bars in proximity to said final set of reclamation saws,
   q. a set of doffing brushes adjacent to the final set of reclamation saws; the improved structure for the machine comprising:
   r. a trash by-pass panel between the second and final set of reclamation saws,
   s. said panel pivoted to said reclamation chute wall,
   t. adjusting means attached to the panel for pivoting said panel, so that said panel either
      (i) excludes the trash from or
      (ii) directs the trash to the final set of reclamation saws according to its position.

4,214,349

TIE WRAP

Emil L. Munch, Cincinnati, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 30, 1978, Ser. No. 965,106
Int. Cl.[2] B65D *63/00*
U.S. Cl. 24—16 PB **6 Claims**



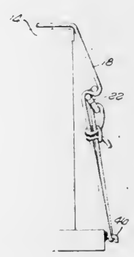
1. A tie comprising: a head having an elongated flexible strap integrally formed therewith, a passage through said head extending substantially perpendicular to said strap for longitudinally receiving said strap, said passage having an entrance end and an exit end, said strap having a plurality of longitudinally-spaced teeth thereon and terminating at a free end, said teeth having shoulders facing toward said head and having teeth cam surfaces facing toward said free end, said shoulders and cam surfaces on each tooth meeting at intersections, at least one pawl in said passage for cooperating with said teeth, said pawl extending in a direction from said entrance end of said passage toward said exit end thereof, said pawl having a pawl cam surface facing toward said entrance end of said passage and a pawl terminal end facing toward said exit end of said passage, said pawl projecting generally radially into said passage to restrict the opening therethrough to a size less than the size of said strap across said intersections, said pawl being movable generally radially outwardly for movement of said teeth intersections therepast when said strap is extended through said passage, said strap being insertable through said entrance end of said passage by cooperation between said teeth cam surfaces and said pawl cam surface to cam said pawl generally radially outwardly for movement of said teeth shoulders past said pawl terminal end for providing cooperation between said shoulders and said pawl terminal end to prevent reverse movement of said strap out of said passage, said pawl terminal end being spaced a substantial distance from said passage exit end such that said pawl is not accessible through said exit end for releasing same from engagement with said shoulders, said teeth cam surfaces being shaped for normally cooperating with said pawl terminal end to bias same outwardly and provide insertion of said strap through said passage in a direction from said exit end toward said entrance end, and abutment means on said strap adjacent said free end thereof for engaging said pawl terminal end to prevent insertion of said strap through said exit end of said passage, said abutment means being freely movable past said pawl when said strap is inserted into said passage through said entrance end thereof.

4,214,350

ROPE BINDER

William L. Copelan, 31843 Tennessee, Yucaipa, Calif. 92399

Filed Feb. 5, 1979, Ser. No. 9,749
Int. Cl.[2] F16G *11/10*
U.S. Cl. 24—129 R **1 Claim**



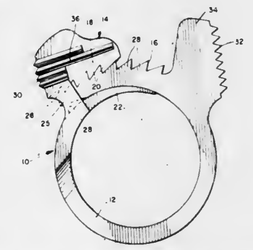
1. An integrally formed rope binder for use when applying tension to a rope securing a load comprising:
   an end base member having a first end leg and a central leg whose axes extend generally transverse to the axis of the end base member for enabling a rope having a thickness less than the distance between said legs to move at any point between said legs with relative ease; and
   a generally U-shaped arm defined by a pair of end posts inter-connected by a side post, one of said end posts being integrally connected to one end of said end base and a free end of said other end post being spaced from said central leg for enabling a rope to pass intermediate said end post free end and said central leg, the axis of said end base and the axis of said integrally connected end post intersecting to define an obtuse angle, and whereby said binder is easily removable from said rope.

4,214,351

SNAP-ON CLAMP

Raymond C. Wenk, 340 N. Walkup, Crystal Lake, Ill. 60014

Filed Aug. 15, 1978, Ser. No. 933,942
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—255 SL **42 Claims**



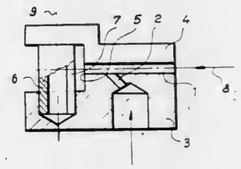
1. A clamp comprising an open-ended substantially annular band having a pair of opposed, interlockable members disposed at the open ends thereof, one of said interlockable members including a generally arcuate jaw defined by an outer cantilevered toothed arm extending in a direction circumferentially of the band and having a plurality of teeth along the inside thereof and an inner arm spaced radially inwardly of said outer arm defining a mouth between said arms, said outer arm of said one interlockable member being radially movable independently of said inner arm and the sides of said outer arm being exposed for grasping to effect said movement, and the other of said interlockable members comprising a toothed tongue positionable within said mouth between the arms of said one interlockable member and having a plurality of teeth along the outside thereof oriented for interlocking engagement with the teeth of the toothed arm of said one interlockable member for closing the clamp, whereby the clamp can be opened by lifting the outer cantilevered arm of said one interlockable member independently of the inner arm thereof and radially outwardly of said tongue to disengage the respective teeth thereof.

4,214,352

NOZZLE FOR TEXTURING THREAD

Miloslav Pávek; Miroslav Novácek; Jiří Fantl, all of Liberec; Jan Kára, Prague, and Zdenek Kašparek, Liberec, all of Czechoslovakia

Filed Nov. 20, 1978, Ser. No. 962,046
Claims priority, application Czechoslovakia, Nov. 22, 1977, 7680/77
Int. Cl.[2] D02G *1/16*
U.S. Cl. 28—254 **1 Claim**



1. Nozzle for texturing thread by a gaseous fluid stream, comprising a first duct for guiding the thread and a second duct for feeding the gaseous fluid, the second duct opening into the first duct and being disposed at a substantial angle with respect thereto, the first duct having an angular cross section, a texturing bridge disposed at the exit of the first duct formed by a hollow tube having an axis skewed relative to the longitudinal axis of the first duct, the tube having an open end and a side wall which is provided with a longitudinal wedge-shaped opening, disposed opposite the exit opening of the first duct, the longitudinal opening extending through the sidewall of the tube to the hollow interior thereof being directed angularly toward and intersecting the longitudinal axis of the first duct, the thread being pre-textured as it enters the first duct through which it travels in a longitudinal direction in a first plane past the intersection of the first and second ducts, thence entering through the opening in the side wall of the tube wherein it is subjected to final texturing and thence being withdrawn through the same opening in a second plane different from the first entry plane thereof for withdrawal from the interior of the hollow tube through the open end.

4,214,353

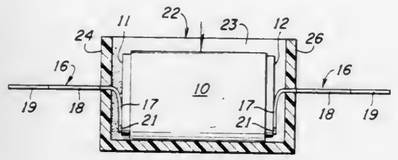
METHOD OF ASSEMBLING HEATED TERMINALS AND ROLLED FILM CAPACITORS WITHIN PLASTIC BOXES

Robert F. Kalina, Lombard, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,152
Int. Cl.[2] H01G *4/32*
U.S. Cl. 29—25.42 **8 Claims**

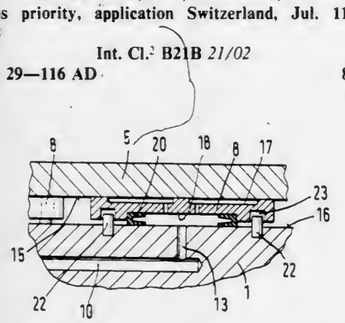
1. A method of assembling leads to a boxed electrical component, which comprises:

heating a pair of terminals;
moving the heated terminals through and into a thermoplastic box; and



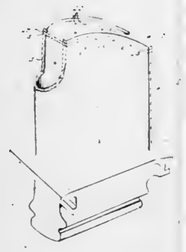
inserting the component into the box to deflect the terminals into engagement with sections of the component.

4,214,354
CONTROLLED DEFLECTION ROLL
Rolf Lehmann, Rudolfstetten, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland
Filed Jun. 25, 1979, Ser. No. 51,635
Claims priority, application Switzerland, Jul. 11, 1978, 7514/78
Int. Cl.² B21B *21/02*
U.S. Cl. 29—116 AD **8 Claims**



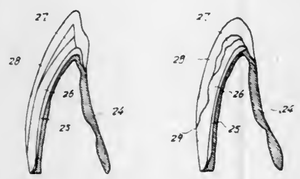
1. A controlled deflection roll comprising:
a stationary roll support;
a substantially tubular-shaped roll shell;
means for mounting said substantially tubular-shaped roll shell to be rotatable about said stationary roll support;
at least one hydrostatic pressure element arranged between said roll support and said roll shell;
said hydrostatic pressure element being guided at said roll support and having a contact surface against which slidingly bears an inner surface of said roll shell;
a hydraulic pressure chamber arranged between the roll support and said pressure element for the infeed of a hydraulic pressurized fluid medium; said contact surface of said pressure element being provided with a number of hydrostatic bearing pockets;
throttle channel means for connecting said hydrostatic bearing pockets with said pressure chamber;
said pressure element constituting a substantially plate-like pressure element arranged in an intermediate space between the inner surface of said roll shell and an outer surface of said roll support;
seal means retained at the pressure element; and
said pressure chamber being bounded by the outer surface of said roll support, a surface of the pressure element confronting the outer surface of said roll support and said seal means retained at the pressure element.

4,214,355
METHOD FOR REPAIRING A TURBOMACHINERY BLADE TIP
John W. Zelahy, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Dec. 21, 1977, Ser. No. 862,781
Int. Cl.² B23P *15/04, 7/00*
U.S. Cl. 29—156.8 B **3 Claims**



1. In a method for repairing a turbomachinery blade which includes an airfoil-shaped hollow body having sidewalls defining one portion of an internal cavity and an airfoil-shaped tip cap defining the radially outer boundary of said internal cavity, the steps of:
removing the tip cap from the blade body;
providing an airfoil-shaped closure plate of a first alloy selected from the group consisting of nickel-base and cobalt-base superalloys, and characterized by high mechanical strength properties at elevated temperatures;
diffusion bonding the closure plate to the sidewalls;
providing a rib member substantially of the airfoil shape of the closure plate and of a second alloy of composition different from that of the first alloy and characterized by resistance to oxidation, sulfidation and thermal fatigue at elevated temperatures; and then,
diffusion bonding the rib member to the periphery of the closure plate.

4,214,356
ARTIFICIAL PORCELAIN TOOTH MANUFACTURING
Susumu Takenaka, Osaka; Hideo Ishii, Toyonaka, and Masao Katooka, Ikeda, all of Japan, assignors to Sansha Electric Manufacturing Co., Ltd., Osaka, Japan
Filed Feb. 2, 1978, Ser. No. 874,498
Claims priority, application Japan, Feb. 7, 1977, 52-12769
Int. Cl.² B21F *43/00*
U.S. Cl. 29—160.6 **2 Claims**



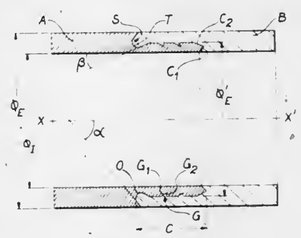
1. The method of manufacturing an artificial porcelain coated metal dental crown comprising the steps of forming a metal crown by casting, drawing and the like, applying an opaque layer to at least a portion of the metal crown to shield the color of the metal, applying at least one layer of a slurry containing porcelain materials in overlying relationship to coat said opaque layer, vibrating said metal crown with said layers thereon at an ultrasonic frequency to condense said porcelain materials and expel air and liquid therefrom and then firing the coated metal crown to form the completed dental crown.

4,214,357
PUNCHING DEVICE
Elsworth R. Delves, Lower Mackworth Village, England, assignor to Purpose Engineers Limited, Little Eaton, England
Filed Jan. 25, 1979, Ser. No. 6,501
Claims priority, application United Kingdom, Feb. 16, 1978, 06258/78
Int. Cl.² B23P *15/18*
U.S. Cl. 29—233 **11 Claims**



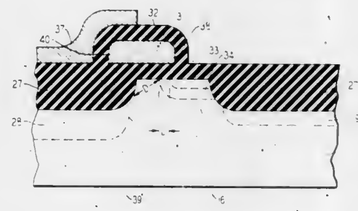
1. A punching device comprising a tool holder mounted for linear movement, a linkage attached to the tool holder, a first piston-cylinder unit connected to the linkage and actuable to effect initial predetermined free movement of the tool holder in the operating direction, and a second piston-cylinder unit connected to the linkage and actuable at the end of said predetermined free movement to effect further working movement of the tool holder in the working direction.

4,214,358
METHOD OF ASSEMBLY OF TWO METALLIC PARTS
Adrien Clerc, Sassenage, France, assignor to Commissariat a l'Energie Atomique, France
Filed Mar. 22, 1978, Ser. No. 888,914
Claims priority, application France, Mar. 25, 1977, 77 09046
Int. Cl.² B21D *39/00*; B23P *11/00*
U.S. Cl. 29—520 **3 Claims**



1. A method of assembly of two tubular parts, the first part being formed of a hard metal the second part being formed of a malleable metal, the two tubular parts having a common axis of assembly, said method comprising the steps of (1) machining the end portion of said first part to reduce the external diameter of the end portion of said first part over a given length, designated as the assembly length, said first part end portion being machined along the assembly length in such a manner that the assembly length is a surface of revolution about the axis of the said first part, said surface of revolution including a groove at the portion of the assembly length most remote from the end of the first tubular part which carries said surface of revolution, said groove having a first conical surface at an angle α to the axis of the said first tubular part, said groove having a second conical surface at an angle β to the axis of said first tubular part, the said first and second conical surfaces being joined at corresponding ends thereof by a curved, beaded segment, designated as a toric surface, the said first conical surface opening to the original external surface of the said first tubular part, the said second conical surface opening to said portion of reduced diameter of the first tubular part, said assembly length also having at least one reversed conical surface groove of revolution axially spaced from said first mentioned groove, said reversed conical surface groove having one surface perpendicular to the axis of the first tubular part and having its other surface in the form of a conical surface which is opposite in direction, with respect to the axis of the first tubular part, to the conical surfaces in the first mentioned groove and (2) forcing an end of the second tubular part against the first tubular part end having said reduced external diameter, in a coaxial direction, to thereby deform the second tubular part end into said first mentioned groove on the first tubular part, and to thereby deform a portion of the second tubular part into said conical surface groove of revolution, the said end of the second tubular part completely filling the volume of material removed by machining from the said end of the first tubular part, the external and internal diameters of the first and second tubular parts, after said forcing step, being the same.

4,214,359
MOS DEVICES HAVING BURIED TERMINAL ZONES UNDER LOCAL OXIDE REGIONS
Dawon Kahng, Bridgewater Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 7, 1978, Ser. No. 967,222
Int. Cl.² B01J *17/00*
U.S. Cl. 29—571 **7 Claims**



1. A method of fabricating signal translating devices of the MOS type in a silicon semiconductor chip **10**, said chip having at least a portion adjoining one surface of one conductivity type, said method comprising:
(1) defining on the one surface of the chip at least one active device area,
(2) forming from a portion of the chip adjacent the one surface at least one mesa **16** including said active device area,
(3) making a first selective introduction of significant impurities of one conductivity type in portions of the chip other than the mesa,
(4) heating the chip to grow surface portions **27** of silicon dioxide adjoining the mesa and to diffuse the first introduced impurities further in said chip to form terminal zones **28**, **29**, **30** beneath the oxide portions and adjoining at least one side of the mesa,
(5) forming on a portion of the mesa **16** a gate electrode **31**, the gate electrode having one edge **38** located on top of the mesa **16** and the opposite edge over the oxide portion adjoining the one side of the mesa, the one edge **38** of the gate electrode **31** being located a predetermined lateral distance from the end **39** of the buried terminal zone **28**

under the oxide portion adjacent the one side of the mesa, said buried terminal zone constituting the drain zone,

(6) making a second selective introduction of significant impurities of both conductivity types into the mesa portion **16** not covered by the gate electrode **31**, and

(7) heating the chip to diffuse the second introduced impurities to form a channel zone **34** and a source zone **33** and to adjust the dimensions therebetween and with the drain zone **28**.

4,214,360

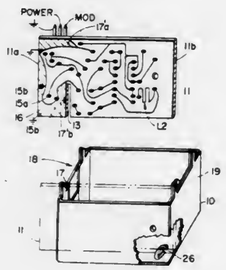
METHOD OF MAKING A RADIO FREQUENCY OSCILLATOR-MODULATOR WITH GROUND METALLIZATION

Wade B. Tuma, Campbell, and Niles E. Strohl, Sunnyvale, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Division of Ser. No. 818,838, Jul. 25, 1977, Pat. No. 4,152,671. This application Oct. 10, 1978, Ser. No. 949,848

Int. Cl.[2] H01R *43/00*

U.S. Cl. 29—829 **6 Claims**



1. A method of forming a radio frequency oscillator-modulator comprising the following steps: providing a printed circuit board with a radio frequency coaxial terminal, an oscillator and modulator, ground metallization effectively surrounding said radio frequency coaxial terminal, and a slot adjacent said metallization; forming a metal box with a slot from a single metal sheet; mating said slot of said box with said slot of said board to place said oscillator and modulator within said box and concurrently a portion of at least one side of said slot of said box making direct electrical contact with said metallization.

4,214,361

METHOD OF MAKING INSULATED ELECTRICAL TERMINATIONS

Daniel R. Coldren, Enola, and James E. Marley, Dauphin, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 863,567, Dec. 22, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,551

Int. Cl.[2] H01R *43/04*

U.S. Cl. 29—863 **4 Claims**

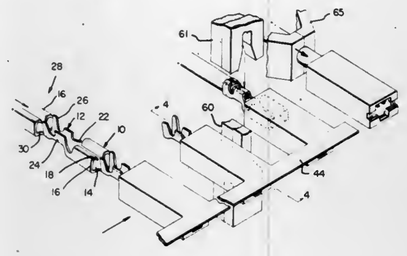
1. A method of producing insulated terminals on the ends of wires comprising the steps of:

providing a continuous plastic strip of connector housings in side-by-side spaced-apart relationship,

feeding said strip past a terminal insertion station and partially inserting an electrical terminal into each housing so that the crimp portion of each terminal is outside of its associated housing,

winding said strip onto a reel,

feeding said strip from said reel to a terminal applicator, crimping said terminals to wires as said strip is fed to said applicator, and



inserting said terminals entirely into said housing so that the crimp portion of each terminal is contained within its respective housing.

4,214,362

GRIPPING MEANS

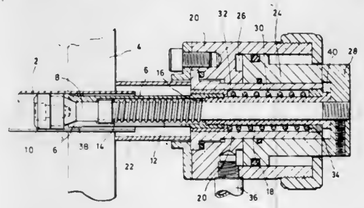
James H. Beard, Melton Mowbray, England, assignor to Production Engineering Research Association of Great Britain, Great Britain

Filed Nov. 13, 1978, Ser. No. 959,428

Claims priority, application United Kingdom, Nov. 26, 1977, 49310/77

Int. Cl.[2] B23P *19/02*

U.S. Cl. 29—726 **10 Claims**



1. A gripping mechanism for removing tubular members extending through a support wall by drawing the tubular members through the support wall, said gripping mechanism comprising a main body portion, said main body portion having front and rear ends, a central bore extending entirely through said main body portion, a collet arrangement projecting from said main body portion and having an expandable front portion for positioning in a tubular member to be withdrawn, said collet arrangement being tubular and including a rear portion slidably guided in said central bore for movement through said main body portion, an annular chamber in at least a rear part of said main body portion surrounding said central bore, an annular piston device telescoped within said annular chamber and having front and rear ends, a draw bar extending entirely through said collet arrangement and having a front end in the form of an enlarged head portion cooperative with said collet arrangement front portion upon relative rearward movement of said draw bar, coupling means coupling a rear portion of said draw bar to said piston device for effecting rearward movement of said draw bar through said collet arrangement and said main body portion in response to rearward movement of said piston device, said main body portion having a tubular front end portion defining reaction means for reaction engagement with a support wall in telescoped relation to a tubular member to be drawn through said support wall, said piston device front end setting off a front part of said annular chamber, and means for introducing a fluid under pressure into said annular chamber front part for reacting on said piston device for effecting rearward movement of said piston device

together with an initial rearward movement of said draw bar relative to said collet arrangement to extend said collet arrangement front portion into gripping engagement with a tubular body and subsequent rearward movement in unison of said draw bar and said collet arrangement.

4,214,363

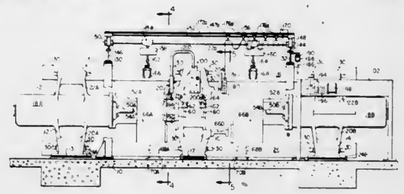
METHOD AND APPARATUS FOR PRESSING WHEELS AND OTHER MEMBERS ONTO OR OFF OF AN AXLE

Jack A. Rickrode, and Charles W. Frame, both of Chambersburg, Pa., assignors to Chambersburg Engineering Company, Chambersburg, Pa.

Filed Dec. 19, 1978, Ser. No. 971,058

Int. Cl.[2] B23P *19/02*

U.S. Cl. 29—802 **23 Claims**



1. An improved hydraulic press for mounting a larger diameter member having a conforming part on an axle seat by press fit, or the like, or demounting such a member from an axle seat, said press having spaced apart and opposed hydraulic cylinders containing axially aligned rams, a supply of incompressible fluid and means to connect and feed fluid between said supply and the cylinders, control means to control flow of fluid to and from said cylinders in order to selectively drive each ram toward the other and to retract said rams, and tension tie means connecting the cylinders mechanically together in order to accept, distribute, and balance tension forces generated by action of at least one of the rams tending to drive the cylinders apart, the improvement comprising:

ram extensions on the rams,

control means for the rams to enable the ram extensions to engage the ends of an axle and clamp that axle between them, thereby providing full support for the axle, and

further control means to cause the rams when in axle clamp position to move in synchronism, whereby one of the rams is selected as a drive member to drive the axle and the other ram.

4,214,364

HERMETIC AND NON-HERMETIC PACKAGING OF DEVICES

Jacques R. St. Louis, Ottawa; Manfred Thumm, Nepean, and Geoffrey N. Gale, Woodlawn, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 21, 1979, Ser. No. 41,003

Int. Cl.[3] H01R *43/00*

U.S. Cl. 29—827 **11 Claims**

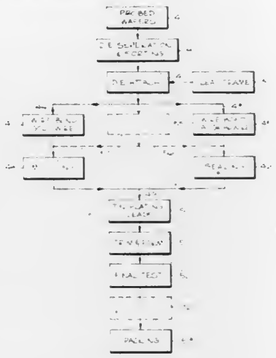
1. A method of hermetic and non-hermetic packaging of devices, comprising:

providing a plurality of lead frame strips, each strip including a plurality of lead frames, each lead frame including a die mounting position and a plurality of leads associated with each die mounting position;

feeding said strips sequentially to a die mounting apparatus and mounting a die at each said die mounting position;

feeding said strips to a wire bonding position and wire bonding said dies to said leads;

selectively feeding said strips alternatively to one of an hermetic sealing apparatus and a non-hermetic sealing apparatus, to form a plurality of packaged devices on each strip, a device at each frame;



trimming and forming said leads;

separating said packaged devices from said strips.

4,214,365

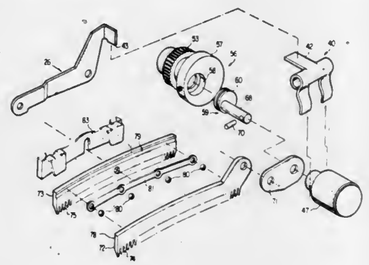
BLADE ASSEMBLY

Henry J. Walter, Wilton, Conn., and William Mack, Commack, N.Y., assignors to Clairol Inc., New York, N.Y.

Division of Ser. No. 823,796, Aug. 11, 1977. This application Oct. 16, 1978, Ser. No. 951,959

Int. Cl.[2] B26B *19/02*

U.S. Cl. 30—224 **6 Claims**



1. A blade assembly for shears including

a pair of blades each having

a spine and

a cutting edge thereon, said cutting edges being positioned adjacent each other in shearing relationship, at least one of said blades having a generally longitudinal recess in the spine thereof adjacent the other of said blades,

at least one of said blades having a groove therein in communication with said recess,

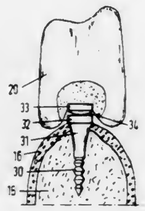
a plurality of balls spaced longitudinally from each other in rolling engagement with a wall of said groove and with the opposite spine portion of the opposite blade, and

retaining means for maintaining said blades in shearing relationship.

4,214,366
DENTURE CONSTRUCTION

Ernst A. Laban, Burgemeester de Zeeuwstraat 36, Numansdorp, Netherlands

Filed Oct. 16, 1978, Ser. No. 951,649
Claims priority, application Netherlands, Oct. 20, 1977, 7711536; May 19, 1978, 7805476
Int. Cl.³ A61C 13/22
U.S. Cl. 433—189 11 Claims

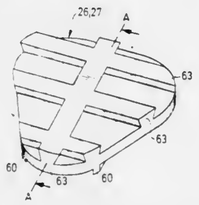


1. In a denture apparatus including an implant having a base portion for insertion in a patient's jaw and a head portion having a first surface for supporting a denture element, said apparatus further including a denture element having a second surface for directly engaging said first surface for mounting said denture element on said implant, the improvement wherein there are provided a magnetic element and a magnetically attractable element, one in each of said head portion and said denture element in the vicinity of said first and second surfaces, and wherein one of said surfaces is flat, and wherein the other of said surfaces is convex.

4,214,367
DENTAL ARTICULATOR

Heinz Mack, Heideckstr. 14, 8 Munich 19, Fed. Rep. of Germany, and Günter Singer, Munich, Fed. Rep. of Germany, assignors to Heinz Mack, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 666,395, Mar. 12, 1976, Pat. No. 4,058,895. This application Sep. 7, 1977, Ser. No. 831,116
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1975, 2511388; Nov. 15, 1975, 2551189
The portion of the term of this patent subsequent to Nov. 22, 1994, has been disclaimed.
Int. Cl.² A61C 11/00
U.S. Cl. 433—60 16 Claims



1. A mounting plate for use with a dental articulator including upper and lower frames, said mounting plate comprising a plate member including a plurality of raised webs formed in the surface thereof which, in use, constitutes the surface of the mounting plate which faces away from the corresponding frame and a plurality of raised support members formed in the opposite surface thereof which, in use, constitutes the surface of the mounting plate which faces toward the corresponding frame, said plate member further including a threaded bore and a pair of depressions formed in said lower surface, said depressions being located on opposite sides of said threaded bore in line therewith, said raised support webs being dovetailed in cross section.

4,214,368
DIPSTICK FOR LIQUID NITROGEN

John B. Peterson, Madison, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,642
Int. Cl.² G01F 23/04
U.S. Cl. 33—126.7 R 5 Claims

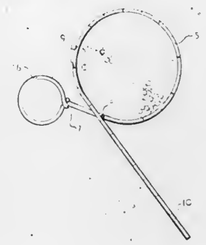


1. A dipstick for measuring the level of liquid nitrogen in a container, said dipstick consisting essentially of a high impact styrene plastic material, said plastic material being such that it is inert to liquid nitrogen and it will not shatter after going from the atmosphere to exposure to liquid nitrogen for a period of time sufficient to make a measurement of the height of said liquid nitrogen in said container, said pre-determined period of time being within the range of approximately 8 to approximately 10 seconds, said plastic material being black in color, said color being selected such that the frostline formed on said dipstick by the freezing moisture in the air on said dipstick after said dipstick is dipped into said container of liquid nitrogen will be readily visible on said dipstick, said dipstick plastic material having a predetermined flexibility whereby the dipstick is highly waveable in the air to permit rapid frostline formation after said immersion in said liquid nitrogen to perform said liquid nitrogen level measurement, and said dipstick plastic being flexible to permit improved flexibility for storage of said dipstick between such uses, said dipstick being of generally flat elongated configuration having an elongated axis and having a generally rectilinear cross-sectional shape, said cross-sectional shape having a relatively high width-to-thickness ratio with a width of about ½ inch and a thickness of about 2 millimeters, with said width being measured as the long dimension of said cross-sectional shape and said thickness being measured as the short direction of said cross-sectional shape, said pre-determined width-to-thickness ratio being on the order of 6 to 1, whereby said improved flexibility for waveability in use and said improved storability between uses is enhanced, and an indicia printed in white on at least one side of said dipstick, said indicia being printed on at least one of the two surfaces of said dipstick defined by said larger width and the elongated axis of said dipstick, said indicia being oriented on said surface defined by said length and said thickness in such an orientation that the reading of said indicia corresponds to the height of the liquid nitrogen in said container, and so that upon removal of the dipstick from said liquid nitrogen and waving the dipstick in air, frost forms on the dipstick to cover those indicia values that were below the upper surface of the liquid nitrogen level whereby the indicia value at the upper surface of the frostline corresponds to the height of the liquid nitrogen in said container.

4,214,369
PASTA MEASURER

Ronald J. Wasik, and Janice E. Wasik, both of 1293 Limberlost Rd., London, Ontario, Canada (N6G 3M3)

Filed Nov. 13, 1978, Ser. No. 959,713
Int. Cl.² G01B 3/02
U.S. Cl. 33—137 R 3 Claims

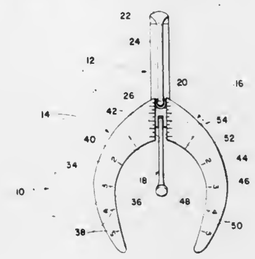


1. A measuring device for accurately measuring the amount of uncooked spaghetti or vermicelli required to produce a given volume of cooked pasta comprising:
a flexible calibrated measuring line,
a ring on one end thereof,
a reference point for said calibrations on said line spaced from said ring said reference point is an external projection against which the looped free end portion of the line has sliding engagement, and
means for relating the said calibrations to volume of cooked pasta wherein said means comprises a finger grip tab at the free end of said line, said tab containing indicia for relating said calibrations to said volume of cooked pasta.

4,214,370
HOOF ALIGNMENT TOOL

Bud A. Beaston, Rte. 1, Box 88, Sperry, Okla. 74073

Filed Aug. 7, 1978, Ser. No. 931,505
Int. Cl.² A01L 11/00
U.S. Cl. 33—195 5 Claims

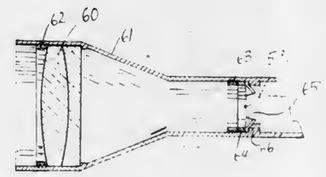


1. A hoof alignment device for measuring and determining the shape of a horse's hoof, the device comprising:
(a) a vertical hinge member;
(b) a pair of arm members each having one end hingedly attached to the hinge member and pivotal in a substantially horizontal plane, each arm member having an inwardly facing concave arcuate edge surface substantially conforming to the shape of a horse's hoof wall, each said arcuate edge surface terminating with a straight edge surface near the hinge member;
(c) a straightedge member having one end pivotally carried by the lower end of the hinge member and being pivotal in a substantially vertical plane, said straightedge member being pivotal adjacent the said arm member straight edge surfaces; and
(d) a first set of opposing measurement indicia provided along each arcuate edge surface, a second measurement indicia provided along the straightedge member, and a third set of opposing measurement indicia provided on the straight edge surface of the arm members adjacent the straightedge member to measure the angle of the straightedge member with respect to the horizontal plane.

4,214,371
DEVICE FOR ILLUMINATING RETICLES IN OPTICAL INSTRUMENTS

Benjamin F. Bush, 7860 Eagles Nest Rd., Sacramento, Calif. 95826

Filed Jan. 27, 1977, Ser. No. 763,236
Int. Cl.³ F41G 1/32
U.S. Cl. 33—241 4 Claims

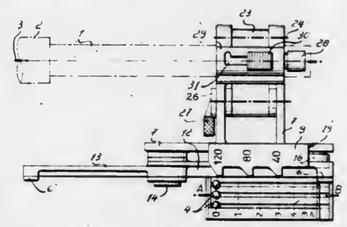


1. In an optical instrument having an objective lens within an outer tube member, a reticle and an illumination means for illuminating said reticle, said reticle mounted within said tube member along the longitudinal axis thereof, said illumination means comprising a pair of mirror means mounted to the inside surface of the tube member on either side of said axis adjacent said reticle, said mirror means having curved shapes for focusing light entering said tube member through said objective lens onto said reticle to illuminate same.

4,214,372
AIMING INSTRUMENT

Maurice Rusbach, Nyon, Switzerland, assignor to Sarmac S.A., Carouge, Switzerland

Filed Jul. 28, 1977, Ser. No. 819,987
Claims priority, application Switzerland, Aug. 12, 1976, 10249/76
Int. Cl.² F41G 1/02
U.S. Cl. 33—252 2 Claims



1. An aiming instrument for small arms weapons, comprising a frame, means to secure the frame to the barrel of a weapon, sighting means comprising an alidade carried by the frame and swingable about a horizontal axis relative to the frame to establish a vertical reference, a scale carried by the frame for reading said vertical reference in terms of range, said scale being visible from the rear to a user of the weapon, chamber means carried by said frame, said chamber means being arcuate about a horizontal axis, a volume of liquid in said chamber means, said chamber means having indicia to indicate the position of said body of liquid therein, the horizontal extent of said chamber means being substantially greater than the extent of said

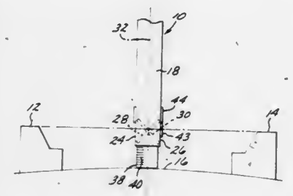
chamber means radially of the last-named axis, whereby any tilting of said axes is easily visible because said body of liquid then occupies different positions relative to said indicia on opposite sides of said chamber means.

4,214,373

GRADE CHECKER

William R. Vessey, 16442 Harbour La., Huntington Beach, Calif. 92649

Filed Oct. 2, 1978, Ser. No. 947,728
Int. Cl.[2] G01C *9/00, 5/00, 15/00*
U.S. Cl. 33—277 **3 Claims**



1. A grade checker for determining the elevation of a grade relative to a pair of reference points spaced apart on opposite sides of the grade, said checker comprising:

an elongated sighting tube adapted for location between the pair of reference points, the upper extremity of said sighting tube including a viewing window, and the lower extremity of said sighting tube including a pair of oppositely facing target windows;

light directing means located in said lower extremity of said sighting tube adjacent said target windows and defining a pair of oppositely inclined, side-by-side reflecting surfaces located adjacent said target windows, respectively, and operative to display to a viewer at said viewing window, aligned images of said reference points each aligned with respect to the other when said target windows are in said alignment with said reference points; and,

a grade engaging element mounted to said sighting tube and longitudinally extensible relative to said sighting tube for elevating said target windows into alignment, respectively, with said reference points, said sighting tube and said grade engaging element including indication means formed thereon for indicating the amount of relative longitudinal extension therebetween whereby the elevation of said grade may be determined.

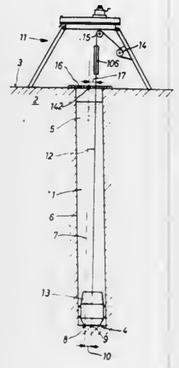
4,214,374

METHOD OF AND APPARATUS FOR MEASURING THE DEVIATION OF THE CENTER AXIS OF BORE HOLES AND TRENCHES RELATIVE TO THE DESIGN VERTICAL CENTER AXIS THEREOF

Giosue Miotti, Carpenedo, Italy, assignor to Comar reg. Trust, Vaduz, Liechtenstein

Filed Jan. 9, 1979, Ser. No. 2,154
Claims priority, application Switzerland, Nov. 29, 1978, 12228/78
Int. Cl.[3] E21B *47/02;* **G01C** *9/00;* **E02D** *27/00*
U.S. Cl. 33—300 **17 Claims**

1. In an apparatus for measuring the deviation of the run of the actual center axis of bore holes or trenches filled with bentonite relative to the design vertical center axis thereof, the excavation of said bore holes and trenches proceeding by utilization of bentonite fluid filling substantially completely said bore holes and said trenches such to back the side walls of said bore holes and said trenches to prevent a cave-in thereof, which apparatus comprises a gauge means arrestable inside said bore hole or said trench, a cable means for suspending and controlling said gauge means, a supporting frame means for supporting said gauge means, a tensioning device means to apply a predetermined tension force at one end of said cable means, and an instrument means to control the verticality of said cable means, an improvement comprising that said cable means includes a service cable means and a measuring cable means, said service cable means being interchangeable with said measuring cable means, said gauge means including a predetermined mass resulting in a force of gravity exceeding the tensile strength of said measuring cable means, wherein said gauge means includes a body provided with a plurality of



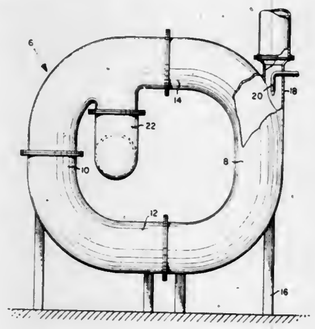
circumferentially arranged protrusions for keeping said gauge means aligned within said bore hole or trench, said cylindrical body including a centrally arranged socket means open toward the top end of said body, a top section of said body being shaped in form of a funnel such to provide a guideway leading to said socket means, the improvement further comprising a plug means arranged to be suspended at one end from said cable means, which plug means is arranged to releasably lock into said socket means.

4,214,375

FLASH DRYER

Francis E. Albus, Hatboro, and George W. Fendler, Doylestown, both of Pa., assignors to Aljet Equipment Company, Willow Grove, Pa.

Continuation-in-part of Ser. No. 805,833, Jun. 13, 1977, abandoned. This application Jun. 2, 1978, Ser. No. 911,889
Int. Cl.[2] F26B *3/08*
U.S. Cl. 34—10 **4 Claims**



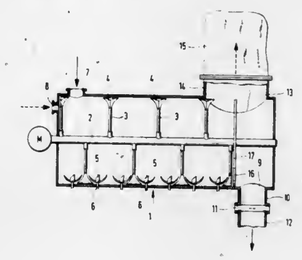
2. A method of drying particulate matter comprising: introducing wet solid particulate matter into a conduit, introducing a single stream of heated gas into said conduit and into contact with said particulate matter therein, withdrawing dried solid particulate matter from said conduit, and withdrawing gas from said conduit wherein the rates of introduction and withdrawal of gas are the same and the rates of introduction and withdrawal of solid matter are the same, and controlling the rates of introduction and withdrawal of gas and solid matter so that the quantity per unit time of solid material passing a point in the conduit immediately following the material inlet, divided by the quantity of solid material introduced and withdrawn from the conduit per unit time is less than the quantity per unit time of gas passing a point in said conduit immediately following the gas inlet divided by the quantity of gas introduced and withdrawn per unit time.

4,214,376

PROCESS AND APPARATUS FOR THE CONTINUOUS DRYING AND/OR GRANULATING OF LOOSE MATERIAL

Roland Lücke, Paderborn-Wewer, and Eberhard Lipp, Paderborn, both of Fed. Rep. of Germany, assignors to Gerbruder Lodige Maschinenbau-Gesellschaft mbH, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,342
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730941; Jul. 8, 1977, 2730942
Int. Cl.[3] F26B *3/08*
U.S. Cl. 34—10 **24 Claims**



1. A process for the continuous drying and/or granulating of loose material located within a closed chamber comprising the steps of:

continuously blowing a gas such as air as a drying medium through the loose material simultaneously with the material being mechanically swirled up inside of said closed chamber,

said gas being blown in a direction transverse to that in which the material is being swirled up to provide a conveying force for moving the material through said chamber;

the improvement comprising:

subjecting said material to a mechanical conveying force as it is swirled up,

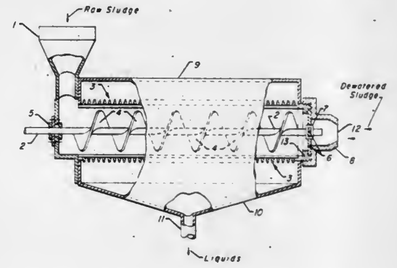
said mechanical conveying force being smaller than and in a direction opposite to that in which the material is conveyed by said gas force.

4,214,377

MECHANICAL DEWATERING PROCESS

Vere Maffet, West Chester, Pa., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 891,437, Mar. 29, 1978, Pat. No. 4,160,732, and a continuation-in-part of Ser. No. 909,587, May 25, 1978, which is a continuation-in-part of Ser. No. 775,673, Mar. 8, 1977, Pat. No. 4,128,946, Ser. No. 813,577, Jul. 7, 1977, Pat. No. 4,098,006, Ser. No. 813,578, Jul. 7, 1977, Pat. No. 4,099,336, Ser. No. 844,097, Oct. 20, 1977, Pat. No. 4,121,349, Ser. No. 858,879, Dec. 8, 1977, Pat. No. 4,161,825, and Ser. No. 891,437, Mar. 29, 1978, Pat. No. 4,160,732, which is a continuation-in-part of said Ser. No. 813,577, said Ser. No. 858,879 is a continuation-in-part of said Ser. No. 813,577, and said Ser. No. 813,578, said Ser. No. 844,097, is a continuation-in-part of said Ser. No. 813,578, said Ser. No. 813,577, and said Ser. No. 813,578 an continuation-in-part of said Ser No. 775,673.
Int. Cl.[2] F26B *7/00*
U.S. Cl. 34—12 **7 Claims**



1. A process for dewatering fibrous organic waste which comprises the steps of:

(a) passing a feed stream comprising organic waste and which comprises 50 wt.% water and at least 5 wt.% fibers on a dry basis into a first end of a first dewatering zone comprising a cylindrical chamber having a cylindrical porous wall formed by parallel windings which are spaced apart by a distance of about 0.0075 to about 0.013 cm. with the inner surface of the windings of the porous wall being attached to longitudinal support rods which extend from a first end to a second end of the porous wall;

(b) pressurizing the feed stream within the first dewatering zone to a superatmospheric pressure by rotating a screw conveyor having a helical blade which begins at the first end of the first dewatering zone and which is centrally mounted within the cylindrical chamber while constricting the opening available at a second end of the first dewatering zone to less than the available cross-sectional area of the cylindrical chamber, the blade of the screw conveyor having a helical outer edge which is separated from the inner surface of the support rods by a distance of from about 0.10 to 4.0 cm. along the length of the porous wall, and with the screw conveyor having a length to diameter ratio above 2:1;

(c) maintaining a substantially continuous and unagitated cylindrical layer of filter media comprising fibers derived from the feed stream in an annular space located between the inner surface of the porous wall of the cylindrical chamber and the helical outer edge of the screw conveyor, and simultaneously transferring the organic waste located between the grooves of the helical blade of the screw conveyor and surrounded by said cylindrical layer of filter media from the first end of the first dewatering zone to the second end of the first dewatering zone;

(d) withdrawing water radially from the first dewatering zone through the porous wall and through said cylindrical layer of filter media; and,

(e) withdrawing a first dewatering zone solids stream having

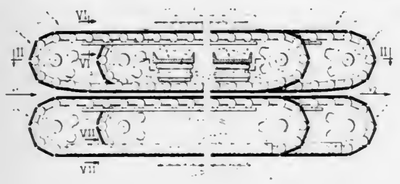
a higher organic waste solids content than the feed stream from the second end of the first dewatering zone.

4,214,378

MACHINE FOR DRYING AND BUTT-JOINTING WOOD VENEER BY CONTINUOUS CONTACT ENGAGEMENT

Jean-Marie M. Martin, 23, rue de Turin, Paris 8eme, France

Filed Dec. 19, 1978, Ser. No. 970,897
Claims priority, application France, Dec. 22, 1977, 77 38743
Int. Cl.[2] F26B *13/12*
U.S. Cl. 34—148 **5 Claims**



1. A machine for drying and butt-jointing unwound or sectioned wood veneer by continuous contact engagement comprising

an effective drying and jointing zone defined therein, which zone includes

an input conveyor and an output conveyor which are driven independently, each of said conveyors including an upper set and a lower set of endless chains having inter-articulated elements,

each of said chains having an active run and a return run,

sprockets and roller means running on supporting guide-rails simultaneously driving said chains,

pairs of said active runs facing each other and compressing and conveying the veneer therebetween through the own weight of said endless chains,

means to heat said return runs,

said input and output conveyors adjoiningly juxtaposed in said effective drying and jointing zone in the form of groups of active runs of alternating ones of said chains belonging to each of said conveyors,

said active runs arranged in an even number of said chains in one said conveyor and an odd number of said chains in the other said conveyor,

first pressure-adjustment means provided at an entrance to said effective zone above said chains of said input conveyor including weighty elements associated with an elastically deformable chamber,

second pressure-adjustment means provided at an exit from said effective zone above said chains of said output conveyor including weighty elements associated with an elastically deformable chamber,

said input conveyor being driven at a higher speed than said output conveyor.

4,214,379

DRYER RACK USING STAGGERED ROLLERS

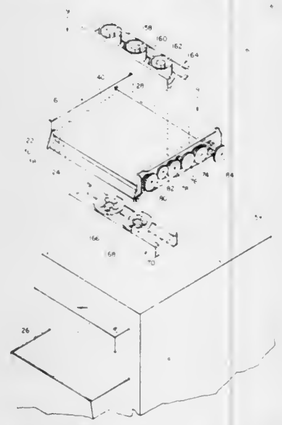
Henry F. Hope, 3192 Huntingdon Rd., Huntingdon Valley, Pa. 19006, and Stephen F. Hope, 2548 Wyandotte Rd., Willow Grove, Pa. 19090

Continuation-in-part of Ser. No. 737,199, Oct. 29, 1976, Pat. No. 4,079,635, which is a continuation-in-part of Ser. No. 555,961, Mar. 10, 1975, Pat. No. 3,989,176, said Ser. No. 555,961, is a continuation-in-part of Ser. No. 457,829, Apr. 4, 1974, abandoned, and Ser. No. 513,244, Oct. 9, 1974, Pat. No. 3,952,610. This application Mar. 24, 1977, Ser. No. 780,922
Int. Cl.[2] F26B *13/08*
U.S. Cl. 34—159 **20 Claims**

1. A dryer rack for transporting and drying webs, such as photographic films, comprising:

a series of transport rollers positioned in a staggered pattern without forming nips to transport the films through the rack along a sinuous path, the rollers positioned on one side of the films being spaced closely enough together so that the rollers alone channel air directed into the spaces between the rollers in a manner which accelerates the air into jets of air impinging on the films transported through the rack, the space between adjacent rollers being free and unobstructed by means for conducting an air flow between the rollers and on sections of films to be dried;

fan means positioned adjacent the rollers for directing air upon at least some of the rollers and upon the films being



transported thereby, the air flowing freely from the fan means to the tranport rollers without confinement by ducts or tubes; and

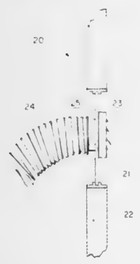
means for rotating the rollers including a plurality of power transmitting gears driving each other, a plurality of cluster drive gears coaxially rotated by the power transmitting gears, each cluster drive gear having a pitch diameter smaller than the associated power transmitting gear, and a plurality of clusters of gears for coaxially rotating the transport rollers, each cluster of gears being driven by a cluster drive gear.

4,214,380

DRYER EXHAUST VENT

Stephen T. Meyer, Indianapolis, Ind., assignor to Deflecto Corporation, Indianapolis, Ind.

Filed Sep. 5, 1978, Ser. No. 939,459
Int. Cl.[2] F24F *13/18*
U.S. Cl. 34—235 **16 Claims**



1. A clothes dryer exhaust vent for connecting an interior dryer exhaust duct to the atmosphere said dryer exhaust vent comprising:

a frame portion;

a connecting duct section integral with said frame portion, said duct section including a flow passageway therethrough, said flow passageway extending through said frame portion;

a plurality of tapered tab members integral with said connecting duct section and of a suitable size and configuration for snapping into corresponding recess portions of an adjoining duct section; and

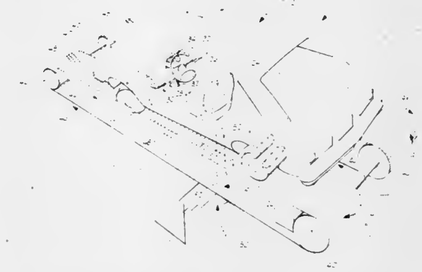
a plurality of louvered fin members pivotally retained within said frame portion and outwardly movable, in response to dryer exhaust, between a flow-passageway-closed position and a flow-passageway-open position, each one of said plurality of fin members having two side edges, an upper pivot axis edge and a lower pivoting edge, each of said fin members further including two oppositely disposed pivot stems in longitudinal alignment with said upper pivot axis edge and extending beyond said side edges, said pivot stems extending into said frame portion.

4,214,381

RESPONSE EVALUATION MODULE FOR TEACHING DRIVER TRAINING

George H. Clark, and Mary A. Clark, both of Carlsbad, Calif., assignors to Rescorp, Carlsbad, Calif.

Filed Nov. 13, 1978, Ser. No. 959,729
Int. Cl.[2] G09B *9/04*
U.S. Cl. 35—11 R **8 Claims**



1. A response evaluation module for teaching driver training, the module comprising:

a vehicle having standard automotive equipment therein such as a seat, steering wheel, accelerator, brakes, speedometer, ignition, and tires;

movable belt means constructed and adapted when mounted to receive said vehicle tires thereon, said belt means simulating a roadway;

means mounting said belt means constructed and adapted to be driven to rotatably drive said belt means;

a telescopeable notocord attached to the bottom of said vehicle and means stationary relative said vehicle and operable to allow movement of said vehicle forward, backward, and laterally on said belt means for simulating sliding, skidding, fish tailing, and hydroplaning; and

a dome surrounding said vehicle and providing a hemisphere screen for showing landscape on the screen to simulate actual road traffic conditions.

4,214,382

TRAINING BAR

Shin Matsutani, 1093 W. 26th St., #4, San Pedro, Calif. 90731

Filed Aug. 4, 1978, Ser. No. 930,923
Int. Cl.[3] A63K *3/00*
U.S. Cl. 35—29 R **3 Claims**

1. A training bar for use with first and second runners, said training bar comprising:

a substantially rigid elongated member having first and second ends;

a first belt to be worn by said first runner, said first belt being coupled to said first end of said member;

a second belt to be worn by said second runner, said second belt being coupled to said second end of said member;

a first shock absorber disposed between said first end of said member and said first belt;



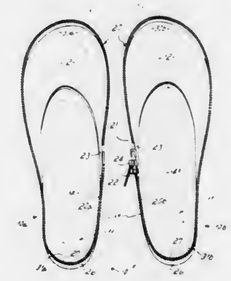
said elongated member being of sufficient length that when said bar is worn by the runners, neither runner interferes with the running of the other when the two runners are running in tandem.

4,214,383

STORABLE SLIPPERS

James H. Allen, Covington, Ky., assignor to 'Totes', Incorporated, Loveland, Ohio

Filed Oct. 12, 1978, Ser. No. 950,565
Int. Cl.[2] A43B *3/24*
U.S. Cl. 36—1 **10 Claims**



1. A pair of shoes comprising

a right foot shoe and a left foot shoe, and

a fastener connected to each of said shoes, said fasteners cooperating to connect said right and left shoes together in a storage configuration where the shoe uppers are in face-to-face relation, and where the shoe soles constitute the outer faces, in the storable package so formed when storage of the shoes is desired by a user.

4,214,384

REPLACEABLE HEEL CONSTRUCTION FOR SHOES

Ricardo Gonzalez R., Carrera 13 No. 37-43, Piso 12, Bogota, Colombia

Filed Oct. 18, 1978, Ser. No. 952,391
Int. Cl.[2] A43B *21/36*
U.S. Cl. 36—42 **5 Claims**

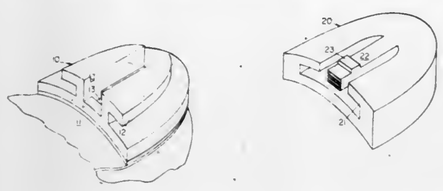
1. A replaceable heel construction for shoes comprising

a first coupling element,

a second coupling element slidably mounted in interlocking relationship on said first coupling element and defining a shoe heel thereon,

a flexible stem mounted in cantilevered relationship on said second coupling element, and

means for releasably securing said second coupling element to said first coupling element comprising a locking tab



formed externally on said stem and disposed in a locking groove defined on said first coupling element, and releasable wedge means for forcing said locking tab into said locking groove.

4,214,385

APPARATUS FOR TAKING UP AND REMOVING MATTER FROM A SURFACE

Boleslaw Baranowski, and William Baranowski, both of 306 Harrison Gardens, Harrison, N.J. 07029

Filed Oct. 16, 1978, Ser. No. 951,754

Int. Cl.[2] E01H *5/02*

U.S. Cl. 37—130 **2 Claims**



1. In an apparatus for taking up and removing matter from a surface upon movement of said apparatus in a predetermined direction along said surface, said apparatus having a scoop portion and a handle portion secured thereto, said scoop portion having a front surface for engagement with said matter upon said movement of said apparatus and a back surface, the improvement comprising:

an axle;

at least one wheel mounted rotatably on said axle and for rolling along said surface, said wheel having a predetermined diameter;

said axle secured to said apparatus at a predetermined point therealong and for being positioned parallel to said surface and normal to said predetermined direction; and

upon said wheel rotating along said surface, said predetermined diameter of said wheel and said axle secured to said apparatus at said predetermined point maintaining said scoop portion at a predetermined angle with respect to said surface;

means for selectively skewing said scoop portion about a normal to said surface whereby said scoop portion may be selectively skewed to one of a plurality of predetermined positions relative to said predetermined direction, said skewing means further comprising:

a first rod and a second rod substantially equal in length to said first rod;

said first rod pivotally secured at one end thereof adjacent to one end of said axle and substantially perpendicular thereto;

said second rod pivotally secured at one end thereof adjacent the other end of said axle and substantially perpendicular thereto;

the other end of said first rod pivotally secured to one end of a longitudinally extending cross-member;

the other end of said second rod pivotally secured to the other end of said cross-member;

said cross-member pivotally mounted on said handle for pivotal movement about a second predetermined point;

lever means secured to said cross-member for pivoting said cross-member about said second predetermined point upon application of force;

whereupon, pivoting of said cross-member about said second predetermined point will cause said first and second rods to rotate said axle about said predetermined point.

4,214,386

BUCKET WHEEL EXCAVATOR WITH VIBRATING BUCKETS

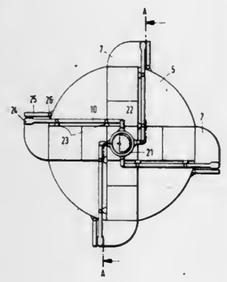
Rüdiger Franke, Mettmann, Fed. Rep. of Germany, assignor to DEMAG Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Feb. 7, 1979, Ser. No. 10,314

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1978, 2805389

Int. Cl.[2] E02F *3/24*

U.S. Cl. 37—190 **8 Claims**



1. Apparatus for mining and excavating, comprising

(a) a support;

(b) a bucket wheel rotatable on said support;

(c) power means on said support for rotating said bucket wheel;

(d) a plurality of circumferentially spaced excavating buckets on said wheel;

(e) cutting elements pivotally positioned in each said bucket; the improvement characterized by

(f) vibrating means disposed in the axis of said bucket wheel;

(g) a plurality of vibrator bars on said wheel; and

(h) each said bar extending between said vibrating means and one of said cutting elements;

(i) whereby the vibrating energy from said vibrating means is transmitted over said bars to each of said cutting elements.

4,214,387

TRENCHING APPARATUS AND METHOD

Herman F. Boehme; Avadhesh N. L. Srivastav, and Joe C. Lochridge, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Jun. 1, 1978, Ser. No. 911,370

Int. Cl.[2] B02F *3/88*

U.S. Cl. 37—195 **26 Claims**

1. Apparatus for trenching on the bottom of a body of water comprising

a movable frame member,

at least one cutting assembly,

assembly support means connected to said frame member for supporting each cutting assembly and for moving each cutting assembly at least in a laterally directed plane substantially normal to a longitudinal axis of said frame member,

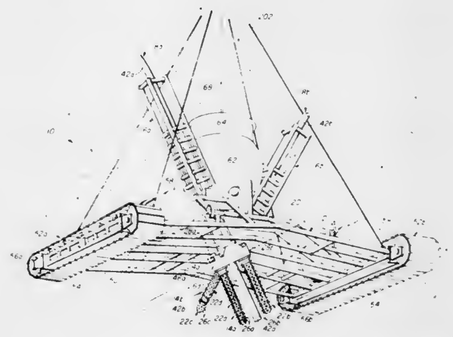
each said cutting assembly comprising

at least two actuatable cutting tools, each tool having

a mechanical cutting means secured thereto for cutting movement, and

drive means actuatable for driving, relative to a cutting tool axis, said cutting means in said cutting movement,

said cutting tool axes for each assembly being substantially aligned in an assembly cutting plane,



tool support means for supporting each of said cutting tools in a downwardly extending direction for cutting movement about their respective tool axes, said tool support means being connected to and movable by said assembly support means,

means for rotating said tool support means and said assembly cutting plane about an assembly longitudinal axis, for varying the cutting width of said cutting assembly, said assembly axis being substantially parallel to both said assembly cutting plane and said laterally directed plane, and

spoil removal means, supported in a proximate relation to each said cutting assembly, for removing spoil produced by operation of each said cutting assembly.

4,214,388

ADHESIVE LAYER POCKETED SCROLL FOR READING MACHINE

Herbert C. Dickey, North Reading, Mass., assignor to The Ealing Corporation, South Natick, Mass.

Continuation-in-part of Ser. No. 772,982, Feb. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 581,588, May 28, 1975, Pat. No. 4,020,576. This application Jul. 14, 1978, Ser. No. 924,496

Int. Cl.[3] A47G *1/17*; G03B *21/64*

U.S. Cl. 40—159 **9 Claims**

1. A pocketed scroll for the holding and display of pages of reading material in a reel-to-reel reading machine, comprising:

(a) a flexible planar backing sheet having a width and a length much longer than its width;

(b) a layer of adhesive disposed over said flexible backing sheet;

(c) a pocket-forming flexible planar sheet disposed over said layer of adhesive, said pocket-forming flexible planar sheet defining a plurality of holes in bands periodically spaced along the length of said pocket-forming sheet, said bands extending across the width of said pocket-forming sheet;

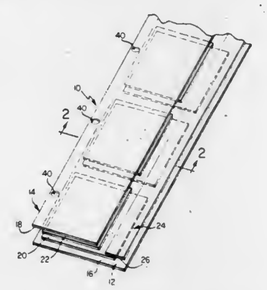
(d) a flexible transparent planar facing sheet disposed over said pocket-forming sheet, said facing sheet having a width and a length substantially longer than its width, said facing sheet adhering to said backing sheet in the area defined by said holes.

3. A pocketed carrier for the presentation of pages of conventional printed matter in scroll form within a reel-to-reel reading machine comprising:

(a) a backing sheet having a width and a length much longer than its width;

(b) a relatively thin and transport facing sheet having a width and a length much longer than its width, said facing sheet being disposed over said backing sheet;

(c) a layer of adhesive material having a width and a length substantially longer than its width, said adhesive material being different from the material of which said facing sheet is made and said adhesive material being positioned between said facing and backing sheets, being disposed on one of said sheets and adhered selectively to the other sheet; and



(d) sheet means, disposed between said adhesive layer and said other sheet, said sheet means being positioned, configured and dimensioned to achieve selective adhesion between said facing and backing sheets along seams disposed across the width of and periodically along the length of said facing and backing sheets after activation of said adhesive layer, said seams being positioned, configured and dimensioned to define a plurality of pockets, periodically disposed along the length of said carrier, each of said pockets being defined between a pair of adjacent seams, the width of said sheet means extending across the width of said backing sheet from a first position over said backing sheet to a second position over said backing sheet and said facing sheet extending from a point between the edge of the backing sheet, adjacent said first position, and the first position, and extending toward but not reaching said second position, to define a clearance between the edge of said facing sheet and said second position.

4,214,389

APPARATUS AND METHOD FOR IGNITION IDENTIFICATION OF INTERNAL COMBUSTION ENGINES

Harry H. Fitzgerald, 16023 47th Ave. S., Seattle, Wash. 98188, and Robert G. Fitzgerald, Box 6071, Odessa, Tex. 79760

Filed Oct. 4, 1977, Ser. No. 839,398

Int. Cl.[2] G09F *3/00*

U.S. Cl. 40—316 **1 Claim**

1. A universal ignition identification apparatus for engines having a plurality of cylinders, a distributor, and ignition cables, comprising in combination:

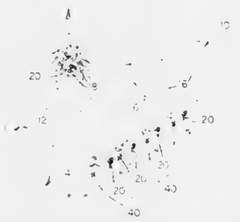
(a) a first plurality of clips, each having a two-legged, spring-biased portion for attachment to said engine distributor by insertion of at least one leg into each said distributor sockets,

(b) a second plurality of clips, each having a two-legged, spring-biased portion for resilient attachment about each said ignition cables near each said cable distributor end portion,

(c) a third plurality of clips, each having a two-legged,

spring-biased portion for resilient attachment about each said ignition cables near each said cable cylinder end portion,

(d) said two-legged clips of said first, second and third plurality are identically shaped clips arranged in three consecutively numbered sets and wherein each clip is provided with at least one thin and flat extending leg portion made from a thermo-plastic material,

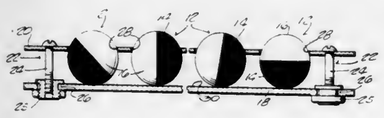


(e) a plurality of magnet indicators for magnetic attachment at said engine at a location adjacent each said cylinder,

(f) said first, second, third plurality of clips and said plurality of magnets, each being consecutively numbered, and

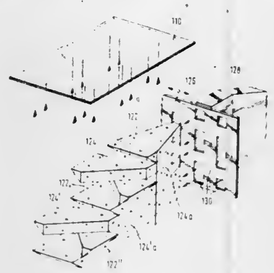
(g) each said identically numbered clips and said identically numbered magnet corresponding to said engine associated firing cylinder number, whereby constant ignition identification of said engine cylinder/ignition sequence is maintained for external ignition component replacement.

4,214,390
PANEL ASSEMBLY
Gerard Kluiters, Tholenseweg 7, Amstelveen, Netherlands
Filed Jan. 11, 1979, Ser. No. 2,679
Int. Cl.[2] G09F *9/30, 9/40*
U.S. Cl. 40—447 **4 Claims**



1. A decorative panel assembly comprising a first panel, a second panel including a plurality of apertures therethrough, means for supporting said second panel in spaced parallel relation from said first panel, and a plurality of spheres housed between said first panel and said second panel, said spheres being freely rotatably supported in said apertures by a surface of said first panel and by the peripheries of said apertures in said second panel and for universal rotation in any direction to permit any surface portion of the spheres to be exposed through said apertures, and said spheres each including a portion projecting through said apertures, and at least a plurality of said spheres each having a portion of its external surface being one color shade and another portion of its external surface being another color shade, said spheres being adapted to be rotated manually.

4,214,391
OPTICAL NUMERICAL SEGMENT DISPLAY
Walter Angst, Zumikon, Switzerland, assignor to Ackeret Design & Engineering, Ebmatingen, Switzerland
Filed Feb. 13, 1978, Ser. No. 877,221
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1977, 2707081
Int. Cl.[2] G09F *13/18*
U.S. Cl. 40—451 **55 Claims**



1. An optical display for presenting at a display field at least one digit in a seven segment arrangement, comprising

a light source,

seven transparent substantially planar plate elements for each digit arranged in a stack, each plate element having a light inlet at one of its edges, the light inlets of all seven plate elements being adjacent each other and confronting the light source to be irradiated by said light source,

a coded shutter element having transparent and opaque areas being disposed between said light source and said plate element light inlets, said shutter element being incrementally movable across the light source and the light inlets of said plate elements to permit and prevent, respectively, light passage from said light source into said plate elements,

said plate elements having means causing the light injected into the light inlet of a plate element to propagate in the plate element substantially parallel to the plane of said plate element,

each plate element having a chamfered edge portion remote from said light inlet of said plate element, said chamfered edge portion having a prism surface oriented oblique to the plane of the plate element and totally reflecting light impinging thereon out of said plane of said plate element in a direction transversely thereof to present one segment of the digit, the display field comprising a plane substantially parallel to the plate elements, said chamfered edge portions of each of the seven stacked plate elements corresponding to one of the seven segments forming a digit, whereby substantially all of the light injected into the light inlet of a plate element will illuminate the respective segment.

4,214,392
DISPLAY STRUCTURE
Gary R. Virsen, Rte. #2, Box 42, Rogers, Minn. 55374
Filed Aug. 25, 1978, Ser. No. 936,723
Int. Cl.[2] G09F *07/20*
U.S. Cl. 40—605 **4 Claims**

1. A display structure comprising:

(a) frame means including at least a pair of generally rectangular frames each defining a display area and each including a horizontal top frame member having downturned opposite end portions and a U-shaped frame member having a horizontal bottom portion and a pair of laterally spaced generally vertical tubular side frame portions having open upper ends;

(b) said end portions of the top frame member including connector pins received in respective open upper ends of said side frame portions;

(c) said side frame portions having opposed longitudinal slots to the interior thereof;

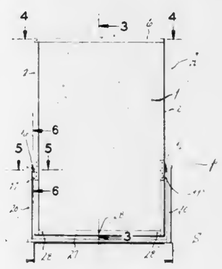
(d) display panels each disposed in a different display area and each having outwardly projecting mounting tabs at the opposite side edges thereof received in the slots of respective side frame members, said mounting tabs having lower ends engaging the lower ends of said slots to be supported thereby;



(e) hinge means connecting said frames for pivotal movement relative to each other on a vertical axis;

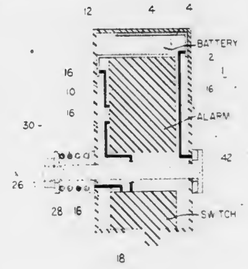
(f) and leg means for supporting said frames comprising a generally U-shaped member having a bottom cross bar portion and laterally spaced leg portions extending upwardly from said cross bar portion, further including a yoke element at the upper end of one of said leg portions and slidably receiving one of said bottom frame portions, and a clamping member on said yoke element for releasably locking said one of the bottom frame portions against sliding movements in said yoke element.

4,214,393
COUNTERBALANCE DISPLAY SIGN
Charles H. Long, Ormond Beach, Fla., assignor to Stout Industries, Inc., St. Louis, Mo.
Continuation of Ser. No. 857,658, Dec. 5, 1977, abandoned, which is a continuation of Ser. No. 732,505, Oct. 14, 1976, abandoned. This application Dec. 7, 1978, Ser. No. 967,243
Int. Cl.[3] G09F *19/00*
U.S. Cl. 40—613 **2 Claims**



1. A display sign comprising a normally vertically disposed, relatively thin, normally non-air resistant panel for inscription of promotional and informational material thereon, said panel having lateral marginal portions contoured into general box-like configuration, channel-shaped members secured on said panel marginal portions, transversely aligned pivot pins projecting laterally outwardly from opposite lateral marginal portions of said panel and being fixed thereon, an upright presented in laterally spaced relaionship to each panel marginal portion, said pivot pins being received in the outer portions thereof within each of said upright supports thereby rendering said panel swingable within a vertical plane about said uprights, said pivot pins developing a transverse pivot axis demarcating the upper limit of a zone constituting the lower third portion of said panel, counterweights secured to the lower end portion of said panel on opposite faces thereof and between the lateral marginal portions thereof for movement therewith and being spacedly below said pivot axis, said counterweights being of such weight that when combined with the weight of the panel below said pivot axis will approximate between two and three times the weight of the panel above said pivot axis thereby preventing said display sign from overturning under impact of strong winds.

4,214,394
FISHING ALARM DEVICE
Regis P. Shogan, 1739 Mountain View Dr., Monroeville, Pa. 15146
Filed May 19, 1978, Ser. No. 907,505
Int. Cl.[2] A01K *97/12*
U.S. Cl. 43—17 **4 Claims**



1. An alarm device adapted to be mounted on a fishing rod having an electrically insulating fishing line, comprising:

an electrically driven alarm;

an electrical power source; and

adjustably biased structure for supporting said fishing line and for completing an electrical circuit through said alarm and power source upon removal of said fishing line from a supported position, said structure including a fixed contact surface having an opening therethrough and a bar movable in spaced relation through said opening, said bar having a movable contact surface contactable with said fixed contact surface upon movement of said bar within said opening, said fishing line being removably supportable between said fixed contact surface and said movable contact surface, said structure biasing said movable contact surface toward contact with said fixed contact surface, said fixed contact surface and said moveable contact surface being electrically connected to said electrically driven alarm and said electrical power source such that said electrical circuit is completed when said moveable contact surface contacts said fixed contact surface upon removal of said fishing line.

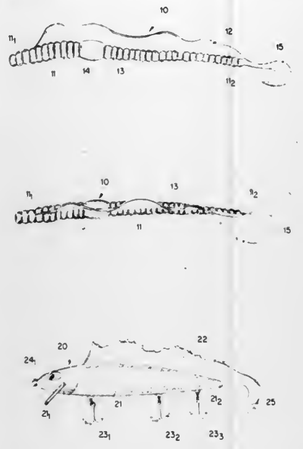
4,214,395
LEVER ASSEMBLIES
Benjamin P. Caldwell, Jr., P.O. Drawer D, Bluffton, S.C. 29910
Continuation of Ser. No. 727,436, Sep. 28, 1976, abandoned. This application Oct. 17, 1978, Ser. No. 952,208
Int. Cl.[2] A01K *87/00*
U.S. Cl. 43—18 R **22 Claims**



1. Composite, resilient, cantilevered lever means useful in the construction of sporting equipment comprising a handle portion and at least one elongated resilient lever assembly extending therefrom to a tapered tip end, the handle portion being held substantially fixed and the lever assembly being flexed from its normal position of coaxiality of its elongated axis with the handle portion upon application of a force to said tip end, said elongated assembly comprising a hollow outer lever and an inner lever therein, said outer and inner levers being attached at their respective base ends to a handle portion, the outer lever continuously tapering to said tip end from said handle portion, the inner lever having a cross-sectional area less than the inner cross-sectional area of the outer lever to define an annular space between the inner surface of the outer lever and the outer surface of the inner lever along at least a portion of the length of said outer lever from the handle portion toward said tip, the inner lever having a length less than said outer lever, the outer surfaces of said inner lever being continuous and without deformation.

4,214,396
FISHING LURES
Herman P. Firmin, 11325 Granberry St., Baton Rouge, La. 70811
Filed Sep. 11, 1978, Ser. No. 941,567
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.24 **10 Claims**

1. As an article of manufacture, an aquatic fishing lure for use with a rod, line and hook, by virtue of which the lure can be attached via the line to the rod and used in casting, comprising
an elongate body member, and
a thin, flexible elongate dorsal fin which extends longitudinally over a major portion of the length of the body member, said fin including
an inner side which is attached in substantially a straight line with, continuous and tautly adjoined throughout its length to said elongate body member, and
an outer, unattached side of longer length than said inner side, said outer side being continuous loose, gathered and laying on both sides of the line formed by the inner side of said fin, and ruffled as contrasted with said inner side, some of said ruffles lying to one side of a vertical plane through said straight line, and others of the ruffles lying to the other side,

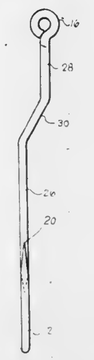


whereby on casting the lure into water, and the lure is moved relatively thereto, the outer side of the fin will undulate, or ripple to simulate life-like action.

4,214,397
FISHING WORM LURE
Leslie W. Kent, 5111 Stagecoach, Tyler, Tex. 75701
Continuation of Ser. No. 761,948, Jan. 24, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,511
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.28 **8 Claims**

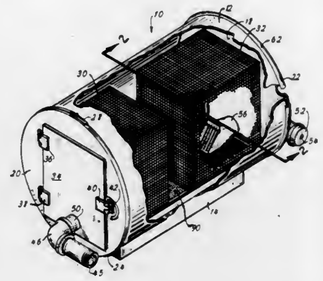
1. A flexible fishing lure for creating visual and auditory stimuli while being towed through water comprising:
a solid flexible elongate head portion having a predetermined cross sectional shape and having front and rear ends, said solid flexible elongate head portion formed from flexible elastomeric material for providing lifelike flexibility and for being penetrated by the pointed end of a fishing hook while being of sufficient dimension and strength for positively and securely receiving and supporting the fishing hook inserted therein to provide a water tight connection between said solid flexible elongate head portion and the fishing hook, such that said fishing hook pointed end penetrates and is securely supported by said solid flexible elongate head portion;
a flexible buoyant elongate tubular central portion having an integral and continuous exterior surface to prevent water from entering the fishing lure through said exterior surface of said flexible elongate tubular central portion, said flexible buoyant elongate tubular central portion further having front and rear ends, said front end of said flexible elongate tubular central portion being integrally connected to said rear end of said solid flexible elongate head portion in order to prevent water from entering said flexible elongate tubular central portion through said front end of said flexible elongate tubular central portion and to permit the fishing lure to twist and flex during the towing thereof through the water;
structure forming a centrally disposed hollow continuous unobstructed closed cavity extending through said flexible elongate tubular central portion and having a uniform cylindrical cross sectional shape and being disposed substantially parallel to said exterior surface of said flexible elongate tubular central portion, one end of said hollow continuous unobstructed closed cavity being closed by said solid flexible elongate head portion and the opposite end thereof being open, such that said centrally disposed hollow continuous unobstructed closed cavity fills with air prior to being submerged in water, said cavity being configured and structured to retain air to therefore be made buoyant, said hollow continuous unobstructed closed cavity thereafter receiving water only through said open end during towing of the fishing lure under water in order to release air bubbles from within the fishing lure, said solid flexible elongate head portion being nonbuoyant such that said flexible buoyant elongate tubular central portion is maintained at a higher level than said solid flexible elongate head portion when the fishing lure is generally stationary under water; and
a flexible hollow tail portion integrally extending from said rear end of said flexible elongate tubular central portion and operable to move during towing of the fishing lure under water to create visual and auditory stimuli to attract fish to the fishing lure.

4,214,398
FISHHOOK
John W. Campbell, and Lawrance W. Campbell, both of 1120 Federal Dr., Montgomery, Ala. 36107
Filed Oct. 28, 1977, Ser. No. 846,533
Int. Cl.[2] A01K *83/00*
U.S. Cl. 43—43.16 **3 Claims**



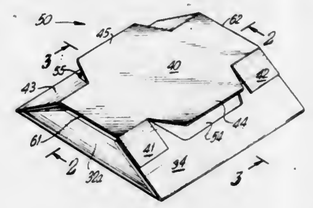
1. A fishhook comprising, a bend defining a gap between an upwardly directed point at one end and an upwardly directed other end, a lower shank portion whose length equals the gap width, connected to said other end of the bend and lying in the same plane, an upwardly directed first offset connected to the upper end of the lower shank portion and laterally inclined with respect to the plane of the bend and lower shank portion, the lower shank portion being that portion of the shank commencing at a point diametrically opposite the tip of said upwardly directed point and terminating at the commencement of said first offset, the length of said first offset being equal to substantially half the gap width and a second offset extending from the upper end of the first offset and terminating at its upper end in means for attachment of a fishing line; whereby when any portion of the fishhook strikes a fish said first offset acts as an eccentric or lever to swivel the fishhook so as to turn the point toward the direction of the striking force on the hook, thereby automatically engaging the point and setting the fishhook to exert maximum hold in the flesh of a fish upon exertion of pull on the fishing line.

4,214,399
ANIMAL TRAP
Ross Bradley, 3929 Porter Ave., Knoxville, Tenn. 37914
Filed Dec. 20, 1978, Ser. No. 970,976
Int. Cl.[2] A01K *69/06*
U.S. Cl. 43—66 **10 Claims**



1. A device for trapping a multiplicity of live animals without terrifying said animals comprising:
a horizontally positioned cylindrical outer housing made of a material capable of withstanding the gnawing of entrapped animals, said housing having at least one opened end and suitable for placing bait therein;
a cover disc suitable for securing to and covering said open end, said cover disc defining an aperture therethrough suitable for the passage of an animal of the type being trapped;
a basket made of a material capable of withstanding the gnawing of entrapped animals, said basket having a multiplicity of perforations which will allow the passage of air and odors therethrough but which perforations are too small for the entrapped animal to pass through, said basket further being securely attached to said cover disc such that said aperture through said cover disc opens to the interior of said basket; and
a one-way passage device attached to said cover disc such that an animal lured by the odor of bait passing through said aperture in said cover disc must also pass through said one-way passage device to reach the interior of said basket thereby resulting in the animal being entrapped in said basket and out of reach of bait placed in said outer housing.

4,214,400
INSECT CAPTURING DEVICE
Thomas R. Patmore, Elm Grove, and Daniel J. Boyle, Hartland, both of Wis., assignors to Champion International Corporation, Stamford, Conn.
Filed Nov. 17, 1978, Ser. No. 961,511
Int. Cl.[2] A01M *1/10, 1/14*
U.S. Cl. 43—121 **13 Claims**



1. An insect capturing device of substantially hollow construction comprising:
a base member;
opposed front and back walls each of which extends in-

wardly and upwardly from said base member at substantially an acute angle, each of said front and back walls having an aperture extending from the top portion of the wall to an intermediate portion thereof thus providing said device with a first pair of access apertures to the interior portion thereof;

a pair of opposed side walls each of which extends inwardly and upwardly from said base member at substantially an acute angle relative to said base member, the top edge of each of said side walls being free;

a cover member connecting said front and back walls, said cover member having a width less than that of said base member, said cover member being spaced from said side walls so as to provide said device with a second pair of access apertures to the interior portion thereof, each lateral edge of said cover member extending over a portion of one of said side walls;

two pair of support panels, each pair of support panels being connected to a side wall, each said support panel including a leg portion hingedly connected to a flap portion, with each leg portion of said support panels being hingedly connected to the opposed side edges of the associated side wall, and with the flap portion of said support panel underlying and being adhesively connected to the adjacent surface of one of said front and back walls, said support panels functioning to maintain the respective angles of said associated front, back and side walls relative to said base; and

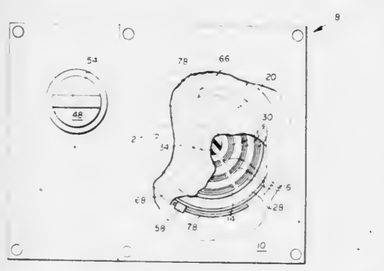
an adhesive substance disposed on the inside surface of the base.

4,214,401

SIMULATED BURNER FOR A TOY COOKING RANGE

Edward C. Teter, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Nov. 24, 1978, Ser. No. 963,501
Int. Cl.² A63H *3/52*
U.S. Cl. 46—14 **10 Claims**



1. A simulated burner for a toy cooking range comprising:

a first rotatable member having at least one slot extending therethrough;

a second member adjacent one side of the first member and rotatable therewith, said second member having a projection simulating a heated element complementary to and in register with the one slot; and

cam means for axially moving the second member relative to the first member for moving the projection varying distances from the one side through the slot in one direction and back to the one side in the opposite direction for varying the amount of the projection visible from the opposite side of the first member, the burner simulating a "no heat" condition when the projection is adjacent the one side of the slot, and simulating gradually increasing and decreasing heat conditions as the projection is gradually moved in the one direction and opposite direction respectively.

4,214,402

TOY ASSEMBLY WITH RECONFIGURABLE PARTS AND REMOVABLE APPENDAGES

Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 950,147
Int. Cl.³ A63H *33/06, 17/00, 11/10, 33/26*
U.S. Cl. 46—17 **27 Claims**



1. A reconfigurable toy vehicle comprising:

a main body section including a rear body section and having at least one wheel for locomotion, the main body section incorporating an electric motor and at least one electric energy cell providing power for the motor, the motor being operatively connected to the wheel to drive the same, the main body section further incorporating control means for energizing the motor and for selectively causing the wheel to turn in one of a clockwise and counterclockwise direction;

a front body section removably mounted to the main body section, the front body section configured to simulate another vehicle, whereby the front body section when removed from the toy vehicle comprises a second separate toy;

a pair of side body members each having a hollow main section and a removable nose cone mounted thereto, the hollow main section configured to simulate a main body of a boat, the two nose cones being attachable to a front and a rear side of either hollow main section when the same is removed from the toy vehicle, the assembled hollow main section and the two nose cones comprising a separate toy boat, and

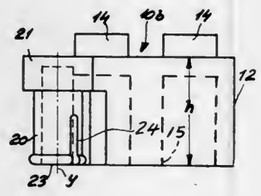
a pair of toy handguns, each handgun being removably attachable to a side of each hollow main section of the side body members to simulate wings for the toy vehicle.

4,214,403

HINGE ELEMENT

Jens N. Knudsen, Billund, Denmark, assignor to Interlego, A.G., Switzerland

Filed Oct. 2, 1978, Ser. No. 947,433
Claims priority, application Denmark, Oct. 13, 1977, 4564/77
Int. Cl.² A63H *33/08, 33/04*
U.S. Cl. 46—25 **3 Claims**



1. A hinge element comprising a pair of box-shaped toy

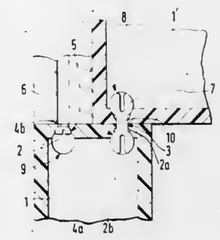
building blocks, each having four side walls and a bottom wall defining an open inner and an outer face, at least one projection extending outwardly from one face of said bottom wall, said blocks having the same height and being hingedly connected along one corner of each block defined by a pair of adjacent side walls, one of said blocks having a tubular bush and the other block having a complementary cylindrical pivot pin, the location of said bush and pivot pin relative to the blocks being such that the pivot pin is rotatably mountable within the bush with the axis of the bush, the axis of the pivot pin and the axis of a corner edge in each block coinciding.

4,214,404

STRUCTURAL ELEMENT OF AN ASSEMBLY KIT

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3 (Tumlingen), Fed. Rep. of Germany

Filed Aug. 15, 1977, Ser. No. 824,958
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1976, 2636904
Int. Cl.² A63H *33/10*
U.S. Cl. 46—26 **7 Claims**



1. An assembly kit, comprising a first structural element associated with a first connecting element having a smaller transverse cross section; a second structural element associable with a second connecting element having a greater transverse cross-section; and a hollow third structural element to which said first and second structural elements are detachably connected, said third structural element having at least one undercut groove including a first undercut portion having a smaller transverse cross-section so that said first connecting element can be received in said first undercut portion of said groove to thereby accomplish the aforesaid connection of said first structural element to said third structural element, and a second undercut portion having a greater cross-section so that said second connecting element after detachment of the aforesaid connection of said first structural element to said third structural element can be alternately received in said second undercut portion of the same groove to thereby alternately connect said second structural element to said third structural element, said second undercut portion of said groove being open into the hollow of said third structural element.

4,214,405

FOUR-WAY DOUBLE DOOR FRAME

John M. Chupik, P.O. Box 1008, Temple, Tex. 76501

Filed May 1, 1979, Ser. No. 34,961
Int. Cl.² E05D *7/02*
U.S. Cl. 49—382 **5 Claims**

1. A four-way double door frame for a pair of doors, one of which is fixed and the other swinging, wherein the swinging door may be either left- or right-handed and may be either in-swinging or out-swinging, comprising:

a head jamb,

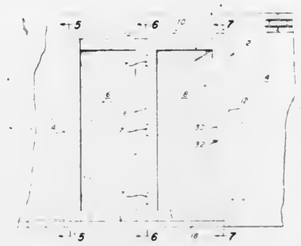
a fixed-door jamb,

a strike jamb for the swinging door,

a sill, and

a center mull, said jambs all having a door-rabbet portion adjacent one longitudinal edge and an unrabbeted portion adjacent the other longitudinal edge,

said center mull having oppositely disposed door-rabbet portions on respectively opposite sides thereof adjacent one longitudinal edge and an unrabbeted portion adjacent



the other longitudinal edge, and a plurality of hinge mortises symmetrically placed along the length of one rabbeted portion, and

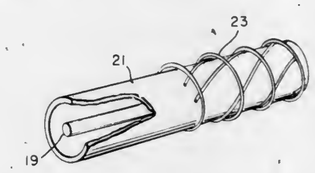
joint means at opposite ends of the fixed-door jamb, the strike jamb, and the center mull for joining either end thereof selectively to either the sill or the head jamb.

4,214,406

DIMENSIONALLY STABLE SUPPORT STRUCTURE

Alois Wittmann, Palos Verdes, and Ronald J. McGrath, Covina, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1978, Ser. No. 973,492
Int. Cl.² E04H *9/00*
U.S. Cl. 52—1 **1 Claim**



1. A dimensionally stable support structure for supporting antennas, optical systems, and the like, comprising:

A first structural material having a predetermined coefficient of thermal expansion;

A second structural material having a negative lesser coefficient of thermal expansion bonded to said first structural material; and

Heat pipe structural means integrally combined with said materials for reducing the temperature gradient through and along said support structure.

4,214,407

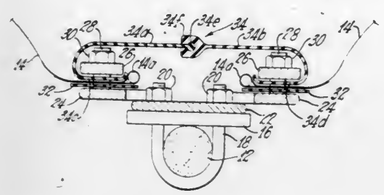
WEATHERPROOF JOINT COVER FOR FABRIC ROOFS

Kenneth F. Charter, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 16, 1978, Ser. No. 952,024
Int. Cl.² E04G *11/04;* **E04C** *1/34*
U.S. Cl. 52—63 **8 Claims**

1. In a fabric roof structure wherein elongated clamp mounting base plates are secured along a suspended cable on the upper side thereof, two elongated lower clamp plates are secured respectively along opposite edge portions of each base plate on the upper surface thereof, two elongated upper clamp plates are secured respectively to the lower clamp plates on each base plate, and edge portions of two fabric panels are clamped between the lower and upper clamp plates respectively on opposite sides of the cable, the improvement compris-

ing a weatherproof joint cover between the fabric panels, the joint cover covering the upper sides of the upper clamp plates on opposite sides of the cable from above, being readily open-



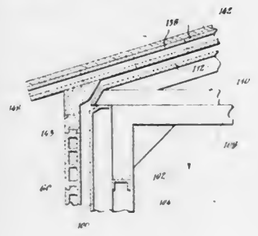
able and resealable from the upper side of the fabric panels, and including gasket portions between the upper clamp plates and the fabric panels respectively on opposite sides of the cable.

4,214,408

MONOLITHIC ROOM ENCLOSING MODULE AND METHOD OF FORMING THE SAME

Frank D. Rich, Jr., Darien, Conn., assignor to F. D. Rich Housing Corp., Stamford, Conn.

Filed May 8, 1978, Ser. No. 903,906
Int. Cl.[2] E04B *2/64*
U.S. Cl. 52—79.1 **20 Claims**



1. The method of forming a monolithic room-enclosing module comprising the steps of

providing a unitary wall-supporting base slab;

dry-stacking a plurality of rows of blocks on said base slab to form the major portions of at least two opposed module walls; and thereafter

pouring a plastic structural material into a first mold adjacent one end of each wall of dry-stacked blocks to form structural posts at least at one end of each module wall of said dry-stacked blocks but not substantially within or between the individual blocks, said structural posts providing lateral support for said dry-stacked blocks;

pouring a plastic structural material into a second mold over the top of each module wall of said dry-stacked blocks to form a structural spandrel beam over each wall of said dry-stacked blocks, the weight of said spandrel beam acting on said dry-stacked blocks therebelow to hold said dry-stacked blocks in close compressive relationship with each other for providing each of said module walls with structural stability;

joining said spandrel beams with a roof spanning said base slab; and

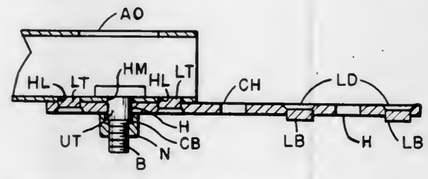
coating at least one face of each of said module walls of dry-stacked blocks with a skin of cementitious material after removal of said first and second molds to provide a continuous surface coating over said at least one face of each of said module walls.

4,214,409

SPACE FRAME CONSTUCTION

Dale H. Gebhardt, and Carl H. LaLonde, both of Warren, Ohio, assignors to Van Huffel Tube Corporation, Warren, Ohio

Filed Oct. 28, 1977, Ser. No. 846,406
Int. Cl.[2] E04H *12/08*
U.S. Cl. 52—127 **4 Claims**



1. A space frame module of generally pentahedron pyramidal configuration comprising:

a generally square base made up of four chord members arranged in a single plane and connected at their extremities to form base corners;

four strut members connected to the base corners and converging to form an apex;

said strut members being of tube cross-sectional configuration and having a substantial straight length and with smooth curve portions near their longitudinal ends with the distal portions each being in a straight section in a plane parallel to the plane of said chord members and parallel to each other, said distal portions being tubular in cross-section; said straight sections each having an access opening in an interior side of the tube section to facilitate handling of fastening means,

a connector plate at each of said base corners and at said apex for connecting said chord members and said strut members to form said module; and

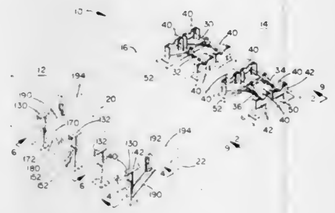
said plate presenting coplanar bearing seats for said chord members on one face of said plate and coplanar bearing seats for said strut members on the opposite face of said plate.

4,214,410

MOBILE HOME EARTHQUAKE SUPPORT

Tommy Mitsueda, 909 S. Toland St., Santa Ana, Calif. 92704

Filed Jun. 28, 1978, Ser. No. 919,912
Int. Cl.[2] E04B *1/343*
U.S. Cl. 52—143 **14 Claims**



1. A mobile home support comprising:

a first plurality of stanchions;

a base member attached to said stanchions for placement on substrata in a manner permitting movement thereof on said substrata;

means on said stanchions for affixing them to the axle of a mobile home;

at least one second stanchion adapted for placement in the forward area of the mobile home;

means for connecting said second stanchion to the bottom of said mobile home;

a plate connected to said second stanchion for said second stanchion to rest upon adapted for movement over the substrata upon which said stanchion is placed;

means on said first stanchions having openings adapted to receive the wheel drum lugs of a mobile home; and,

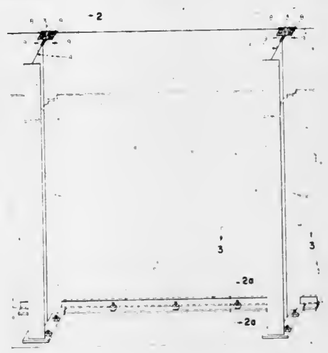
at least one cross bracing member connecting said first stanchions to a point on said axle between the wheeldrums.

4,214,411

PANEL AND JOINT SYSTEM AND TRANSPARENT ACOUSTIC BARRIERS EMPLOYING SAME

William H. Pickett, Framingham, Mass., assignor to The Fanwall Corporation, Framingham, Mass.

Filed Jan. 16, 1978, Ser. No. 869,621
Int. Cl.[2] E04B *1/82*
U.S. Cl. 52—144 **16 Claims**



1. An outdoor panel system suitable for use as an acoustic barrier along rights of way and bridges, comprising:

a supporting frame which includes a pair of widely spaced-apart posts having a first coefficient of thermal expansion affecting the spacing between posts,

an extended panel of generally rigid material having a coefficient of thermal expansion substantially greater than that of said frame,

said panel sized to span the distance between said posts, the margins of said panel subject to movement relative to the posts, back and forth in the direction of extent of the panel, due to thermal expansion and contraction,

face portions of said panel exposed to variable wind loadings that tend to produce bowing of said panel with corresponding tendency to draw the edges of the panel toward each other,

and a joint means between the panel and the posts, capable of secure retention of the panel despite extreme variations in temperature and wind loading relative to normal values, while permitting the panel to be of economical thickness,

said joint means including, at each edge of the panel corresponding to a post, a load transfer formation of rigid material joined to and extending along the edge of the panel, and protruding to the side of the panel,

a corresponding opposed post surface disposed inwardly along said panel and spaced normally from said load transfer formation,

and a corresponding elastomeric, resilient loadbearing element disposed between said panel transfer formation and said post surface,

said elastomeric and resilient load bearing element having an uncompressed thickness substantially greater than the normal space between said panel load bearing formation and said post surface, whereby at normal condition said elastomeric element is disposed under compression and transfers stress between said post surface and said panel load bearing formation, placing the panel under tension,

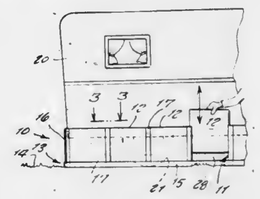
said elastomeric load bearing element thereby serving as a spring element, enabling said panel edges to draw toward each other with further compression of said elastomeric element and enabling said panel edges to move apart with attendant expansion of said elastomeric element, while in each case maintaining continued pressure contact between said elastomeric element and said load bearing formation.

4,214,412

PANEL HOLDER AND FASTENER FOR HOME, COMMERCIAL AND INDUSTRIAL USE

Gary S. Barylski, Queen of the Lakes, R.D. #1, Huron, Ohio 44839

Filed Dec. 4, 1978, Ser. No. 966,275
Int. Cl.[2] B60R *27/00*
U.S. Cl. 52—169.12 **1 Claim**



1. A panel holder and fastener assembly, comprising, in combination, a stationary framework securable around a peripheral lower edge of a mobile home body or other home, commercial or industrial structure, and a plurality of vertically slidable panels supported in said framework; said framework comprising a horizontal base frame of channels upon the ground and a plurality of corner posts and intermediate "H" channels extending vertically therebetween, said corner posts and "H" channels each having a vertical groove on opposite side edges thereof, said panels being slidable in said grooves; each said horizontal channel including an inwardly lip along one upper edge thereof, and said posts and "H" channels each including sideward protrusions that snap-fit under said lip; upper ends of said posts and "H" channels being supported in brackets secured to said mobile home body; said brackets including a pivotable locking bar for locking under a screw head.

4,214,413

BUILDING STRUCTURE

Emilio Gonzalez Espinosa de Los Monteros, Alamedade Colonnums, Malaga, Spain

Filed Mar. 30, 1979, Ser. No. 25,487
Claims priority, application Spain, Jun. 8, 1978, 470621
Int. Cl.[2] E04H *1/04*
U.S. Cl. 52—236.1 **7 Claims**

1. A system for constructing a building comprising:

a plurality of vertical columns;

first pairs of horizontal beams supported by the columns at first height intervals;

second pairs of horizontal beams supported by the columns at second height intervals midway between the first height intervals;

horizontal slabs extending between the beams of each pair of beams and supported thereon to form floors and ceilings, and

pairs of adjoining panel members extending obliquely between the first and second pairs of beams to form walls, wherein each panel member has top and bottom ends with horizontally extending lip portions disposed along the

ends with spaces between the lip portions, which lip portions rest upon the beams to support the panel members and which lip portions are alternately spaced on adjoining



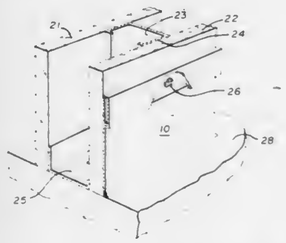
panel members with the lip portions on one member being received in the spaces between the lip portions of the other member.

4,214,414

REMOUNTABLE UNITARY WALL BASE TRIM

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Sep. 18, 1978, Ser. No. 943,585
Int. Cl.² E04F *19/04*
U.S. Cl. 52—288 **11 Claims**



1. A remountable unitary extruded plastic base for wall construction providing a decorative finished appearance, said extrusion having a pre-installed generally L-shape comprising:

a first leg having two opposite edges wherein one edge has an inturned stub member disposed at right angles thereto and connecting the leg to a flexible hinge means, and the other edge having a snap engageable lip portion;

a second leg having an upper and lower edge, the upper edge being connected to said flexible hinge means, said second leg being longer than said first leg and having a node member located thereon to provide snap engageability with the lip portion upon rotation of said first leg around said hinge means toward said second leg, and a planar attachment surface along said second leg located between the hinge means and node member adapted to receive fasteners therethrough for securement to a wall; and

said flexible hinge means comprising a V-shaped notch connecting the inturned stub and upper edge of the second leg, whereby the first leg is rotatable toward the second leg to snap engage the lip portion to said node member, wherein the first leg resides in parallel planar spaced apart relationship with the attachment surface to cover the attachment surface and conceal fasteners within a pocket portion defined therebetween thereby providing a decorative trim appearance.

4,214,415

EXPANDED STORE FRONT SYSTEM

Ronald D. Sukolics, Creve Coeur, Mo., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Oct. 16, 1978, Ser. No. 951,921
Int. Cl.² E04B *2/88, 1/62*
U.S. Cl. 52—395 **33 Claims**



1. An improved expanded wall system for a building or the like comprising:

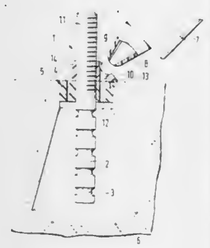
a vertical mullion structure having a structural mullion portion and a mullion half portion, said structural mullion portion being provided with a continuous slot along the entire length thereof, said mullion half portion being provided with anchor means comprising an insulating anchor portion and a screw portion, said screw portion being received within a tapped hole provided in said insulating anchor portion, said anchor means being adapted to be received in said slot so as to rigidly secure said mullion half portion to said structural mullion portion wherein said anchor means provides a thermal break between said mullion half portion and said structural mullion portion and wherein said insulating anchor further comprises a second portion provided with an abutment ridge adapted to mate with a corresponding abutment ridge on said mullion half portion so as to prohibit rotational movement of said insulating anchor portion as said screw portion is screwed into said insulating anchor portion.

4,214,416

ARRANGEMENT FOR ANCHORING A MOUNTING ELEMENT IN A HOLE OF A SUPPORTING STRUCTURE

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3,(Tumlingen), Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,550
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743301; Nov. 24, 1977, 2752461
Int. Cl.² E04B *1/38*
U.S. Cl. 52—704 **20 Claims**



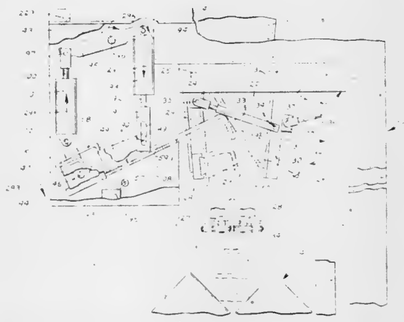
4. An arrangement for anchoring a mounting element in a hole of a supporting structure by a binding material which is supplied into the hole from an outlet end of an injecting device, wherein the mounting element has an outer portion projecting outwardly beyond a face of the supporting structure to mount an object to the latter, and an inner portion located in the hole of the structure to be anchored in the latter and bounding with a wall of the structure an inlet opening, the arrangement comprising an insert element located in said inlet opening and closing the latter, said insert element being provided with a filling opening for passing the binding material and with an inner opening for passing the inner portion of the mounting element; and a mouthpiece element on said filling opening, provided with a setting recess located at an acute angle to an axis of the hole of the supporting structure and arranged for receiving the outlet end of the injecting device, said mouthpiece element having a sleeve-shaped portion with a further inner opening for passing the outer portion of the mounting element, so that when the mounting element extends through said inner openings of said insert element and said sleeve-shaped portion of said mouthpiece element inwardly of said elements, the mounting element is fixed relative to the hole of the supporting structure and at the same time the setting recess of the mouthpiece element communicates with said filling opening of said insert element.

4,214,417

BAG TOP FORMING AND RETAINING APPARATUS

Gaylerd M. Lieder, Minneapolis, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Feb. 22, 1979, Ser. No. 14,055
Int. Cl.² B65B *7/06*
U.S. Cl. 53—371 **24 Claims**



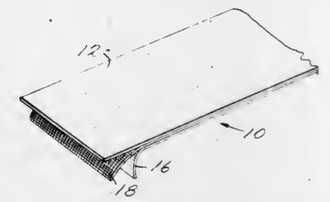
1. Bag top forming and retaining apparatus for a bag having top edges defining a bag mouth, opposite side wall portions, a leading vertical edge and a trailing vertical edge comprising a frame, a transverse pivot member pivotally mounted on the frame for pivotal movement about a transverse axis, a first and a second finger assembly each having a first end portion and a second end portion, first pivot means mounting the first finger assembly first end portion on the pivot member for pivotal movement about a first axis that is about at right angles to the transverse pivot axis, second pivot means mounting the second finger assembly first end portion on the pivot member for pivotal movement about a pivot axis that is substantially parallel to the pivot axis of the first pivot assembly, operable first power means for pivoting the finger assemblies about their pivot axis between an in position and an out position that the finger assembly second end portions are more remote from one another than they are in their in positions, operable second power means for pivoting the pivot member about its pivot axis between a first position that the finger assembly second end portions are at a first elevation and a second position at a higher elevation than the first elevation, a bag top conveyor assembly that includes a first bag top conveyor member and a second bag top conveyor member, means for mounting the bag top conveyor members for movement between a spread apart condition and a together position to conveyingly engage a bag top and operable third power means for moving the conveyor members between their spread apart and together positions, the conveyor members each having first and second end portions and an intermediate portion, the conveyor members in their together position having their intermediate portions adjacent the second finger assembly second end portion when the second finger assembly is in its second out position, and their first end portions more remote from the first finger assembly than their second end portions, and control means for operating the power means to move the conveyor members to their together position after the finger assemblies in their out position have pivoted to their first position about the transverse axis, and after operating the conveyer members power means to move the conveyor members toward their together position, operate the other two power means to move the finger assemblies to their in and second elevation positions and thereafter to their out position.

4,214,418

METHOD OF CONSTRUCTING A THERMAL INSULATION PACKET

Stuart B. Smith, 2069 Christian Cir., Conyers, Ga. 30207

Filed Aug. 28, 1978, Ser. No. 937,133
Int. Cl.² B65B *43/02*
U.S. Cl. 53—452 **5 Claims**



1. A method of constructing an insulation packet comprising the steps of:

(a) adhesively securing together a sheet of metal foil, a sheet of fiberglass fabric and a sheet of paper with the fiberglass fabric located between said sheets of foil and paper to form a composite flexible sheet material, the outwardly facing surface of said paper sheet having a heat-activated adhesive coating thereon,

(b) forming a first tubular section from said composite sheet material with said heat-activated adhesive-coated surface of said sheet material on the interior of said section and with the edges of said composite sheet overlapping each other along the longitudinal axis of said tubular section,

(c) applying heat to the said overlapping edges to activate the adhesive and seal the edges together,

(d) severing the tubular section at a selected point intermediate its ends and generally transverse to its longitudinal axis to form a plurality of smaller tubular sections from said first section,

(e) closing and sealing one end of a said smaller tubular section to form a container,

(f) filling said container with an insulation material, and

(g) closing and sealing the other end of said container.

4,214,419

COLLATING AND SHRINK WRAP PACKAGING APPARATUS

Fred E. Allen, Vineland; Bruce W. Thuener, and Ronald F. Turpin, both of Millville, all of N.J., assignors to Wheaton Industries, Millville, N.J.

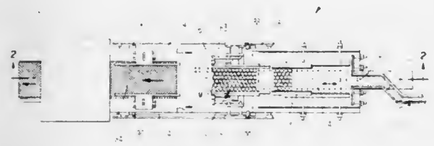
Filed Oct. 2, 1978, Ser. No. 947,394
Int. Cl.² B65B *35/40*
U.S. Cl. 53—543 **30 Claims**

1. Apparatus for collating articles into a module and shrink wrapping in the course of longitudinal movement thereof, said apparatus comprising:

means for mass feeding articles into an article module forming means, said feeding means adapted to interrupt the mass feeding of articles and to remove articles rearwardly of a predetermined module cut-off point;

means for draping under tension a module wrapping film forwardly of said forming means in precise alignment with said module forming means in the direction of travel thereof;

said forming means adapted for slideably transferring a module formed in said forming means forwardly to a wrapping position, said forming means having three-sided contact with said formed module for providing stability to said articles in the course of transferring said module to a wrapping position in the course of said transfer, said draped film being wrapped from the front to the rear of said module along the top and bottom thereof, said module forming means comprises two laterally adjustable side rail members for determining the sides of said module, said side rail members being attached to a carriage means



disposed to the side and below said module forming means, said carriage means adapted to effect said sliding transfer of said module, said module forming means further including

(a) an article stop means at the forward end thereof, said stop means adapted to be removed from its article stopping position during said sliding transfer movement, so as to avoid interference therewith, and

(b) an article pushing means at the rear end thereof, said article pushing means adapted to be removed from its article pushing position during activation of said means for mass feeding articles into said article module forming means so as to avoid interference therewith;

means at said wrapping position for rear and side sealing of said collated article module;

means for shrinking said wrapping film over said collated module; and

conveyor means for transferring said module from said wrapping position through said means for shrinking said wrapping film.

4,214,420

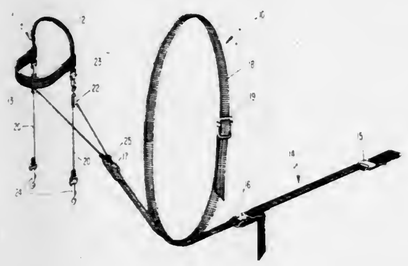
HARNESS DEVICE

Kenneth B. Ferree, 542 W. California St., Ontario, Calif. 91761

Filed May 25, 1977, Ser. No. 800,397

Int. Cl.[2] B68B *1/00*

U.S. Cl. 54—35 **6 Claims**



1. A harness device used in combination with a conventional bridle for effecting head control of a horse, said harness device comprising:

(a) strap means having two ends with a first end thereof being attachable to a saddle means, said strap means being adapted to function in a dual mode whereby it extends forward from the saddle means between the front legs when controlling the upward head movement of a horse and extends along the mane of the horse when controlling the downward head movement of a horse,

(b) a neck strap means connected to the strap means intermediate the ends of the strap means and being effective to encircle the neck of the horse,

(c) a crown assembly effective to fit over the ears of the horse,

(d) said crown assembly including a poll strap extending across the poll area of the head,

(e) pulley means connected to the crown assembly at each end of the poll strap, and

(f) a plurality of control lines adapted for attachment at one end thereof to an end of a bit in the horse's mouth and at the other end thereof to the other end of the strap means,

(g) each said control line extending through a respective one of the pulley means.

4,214,421

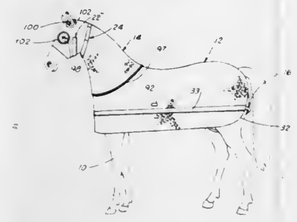
HORSE BLANKET AND HOOD APPARATUS

Dick R. Battle, 2422 NW. 59th, Oklahoma City, Okla. 73112, and Dick M. Battle, 8000 Lakehurst Rd., Oklahoma City, Okla. 93120

Filed Sep. 6, 1977, Ser. No. 830,432

Int. Cl.[3] B68C *5/00*

U.S. Cl. 54—79 **4 Claims**



1. In combination with a horse blanket having an outer surface, an inner surface, a left rear corner portion and a right rear corner portion, the improvement comprising a leg strap closure assembly connected to each of the left rear corner portion and the right rear corner portion, each leg strap closure assembly comprising:

a first strap having a fixed end connected to a portion of the outer surface of the horse blanket, and having a free second end;

a snap shackle connected to the free second end of the first strap;

a second strap having a fixed end connected to a portion of the inner surface of the horse blanket opposite the fixed end of the first strap, and having a free second end, the second strap constructed of an elastic material; and

a D-ring connected to the free second end of the second strap, the snap shackle being removably connected to the D-ring with the first and second straps to provide a resilient attachment to each respective rear leg of a horse.

4,214,422

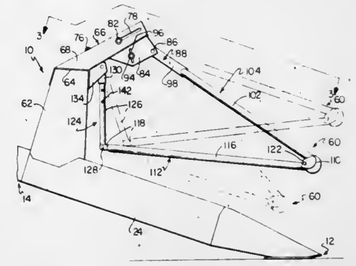
FORAGE HARVESTER WITH ADJUSTABLE CROP GUIDANCE APPARATUS

Kenneth R. McMillen, Canton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Nov. 13, 1978, Ser. No. 959,563

Int. Cl.[2] A01D *45/02*

U.S. Cl. 56—119 **11 Claims**



1. In combination with a crop harvesting header having means for severing rows of standing crops from the ground as the header is advanced across a field and for conveying the severed crop stalks in rearwardly converging streams toward an outlet, guidance apparatus for the stalks above said conveying means comprising:

a pair of rearwardly converging, laterally spaced and fore-and-aft extending guides disposed to gather the stalks laterally;

a knock-down bar adjacent the rear of said guides and transverse to the path of travel of said conveying means in disposition for leaning the stalks back toward the front of the header as they approach said outlet so as to promote butt-first delivery of the stalks through said outlet; and

means mounting said knock-down bar for yielding movement upwardly away from said conveying means to the extent required by the volume of converging streams of stalks passing beneath the bar.

4,214,423

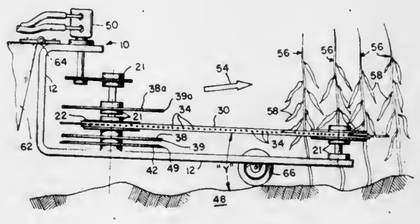
APPARATUS FOR HARVESTING BEANS OR SIMILAR CROPS

Alfred H. Dewey, Jr., 292 S. Main St., Canandaigua, N.Y. 14424

Filed Sep. 18, 1978, Ser. No. 943,500

Int. Cl.[2] A01D *45/22*

U.S. Cl. 56—130 **15 Claims**



1. Apparatus for use in harvesting beans and similar crops grown in substantially parallel, spaced apart rows, comprising:

a frame;

at least two pairs of cooperating drive pulleys rotatably mounted on said frame, each of said pairs of pulleys being mounted in tandem and having a front pulley and a rear pulley, said two pairs of drive pulleys arranged in a spaced apart relationship;

separate belts mounted on each of said pairs of drive pulleys and rotatable therewith, said belts being disposed in side-by-side relationship, each separate belt carrying thereon flexible support means for gently engaging and supporting said beans or similar crops from a point proximate the front pulleys to a point proximate the rear pulleys of each of said pairs of cooperating drive pulleys as the harvest-apparatus is moved along the row of crops being harvested;

means for driving said pulleys and thereby said belts at a speed closely approximating the speed at which the harvesting apparatus is being driven over the ground;

cutting means mounted coaxially with each of said rear pulleys of said pairs of pulleys for cutting the tops of the plants having pods thereon from the stalks of said crop being harvested at a preselected location on the stalk; and

stripper means mounted coaxially with each rear pulley of said pairs of pulleys for engaging the cut stalks of the harvested crop at an appropriate position on the stalk for stripping the cut stalks from the flexible support means to thereby expel the harvested crop.

4,214,424

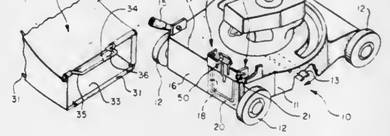
CATCHER SECUREMENT FOR REAR BAGGER

Donald L. Gobin, Savannah, Ga., assignor to Roper Corporation, Kankakee, Ill.

Filed Jan. 22, 1979, Ser. No. 5,363

Int. Cl.[2] A01D *35/22*

U.S. Cl. 56—202 **7 Claims**



1. In a rotary mower assembly, the combination comprising a mower having an inverted housing containing a rotary blade with means on the housing for driving the blade, the housing having a rear edge and a planar rear surface adjacent thereto having an extensive discharge opening, a substantially flat cover plate dimensioned to cover the opening, hinge means located at the rear edge of the housing for hingeing the cover plate for swinging movement between a vertical closing position and an upraised, substantially horizontal open position, means for biasing the cover plate to its closing position, the plate having a pair of integral arms projecting upwardly adjacent the lateral edges of the plate and presenting operating surfaces substantially in the plane of the plate, a pair of parallel guide plates secured to the top of the housing adjacent the rear edge thereof in vertically extending position, the guide plates being closely spaced alongside of the respective arms, the guide plates having angled but parallel slots formed therein accessible from their rear edges and extending forwardly and downwardly to a bottom portion spaced forwardly of the hinge and substantially at hinge level, a grass catcher having a frame defining a mouth dimensioned to accommodate the cover plate and including a support bar spaced forwardly from the mouth and parallel thereto, the pair of arms having respective notches at their ends, the notches being rearwardly facing when the arms are in vertical position, the notches being complementary to the bottom portions of the respective slots so that when the bar on the catcher is registered with the slots and pressed forwardly therein the bar engages the operating surfaces on the arms for progressively swinging the cover plate into horizontal position until the bar reaches the bottom portions of the slots where it is latched captive between the notches and the respective slots thereby attaching the grass catcher to the mower and holding the cover plate in an open

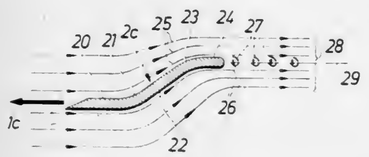
position to create a path for discharge of clippings into the mouth of the bag.

4,214,425
CROP HARVESTERS
Helwig Schmitt, Grebenstein bei Kassel, Fed. Rep. of Germany, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Jun. 14, 1978, Ser. No. 915,421
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727549
Int. Cl.² A01D *75/22;* **56** *228*
U.S. Cl. 56—228 **8 Claims**



1. A crop harvester comprising a crop gathering head, and a harvester body operatively connected to the crop gathering head, characterized in that at least part of the harvester body is connected to the crop gathering head by pivot means which permits pivotal movement of at least said part of the harvester body relative to the crop gathering head from a working position to a transport position to reduce the width of the harvester and wherein the harvester body houses a lower threshing cylinder, an upper threshing cylinder positioned to receive crop from the lower threshing cylinder and grain separating apparatus positioned to receive crop from the upper threshing cylinder, the portion of the harvester body housing the upper threshing cylinder and the grain separating apparatus being connected to the remainder of the harvester body and to the crop gathering head by said pivot means.

4,214,426
NOISE DAMPING ARRANGEMENT IN ROTATING CUTTING DEVICES
Sture V. Lindblad, Stockholm, Sweden, assignor to Stiga AB, Tranas, Sweden
Filed Jan. 13, 1978, Ser. No. 869,054
Claims priority, application Sweden, Jan. 18, 1977, 7700499
Int. Cl.² A01D *55/18*
U.S. Cl. 56—295 **4 Claims**



1. A rotary cutting device, usable in grass mowers and the like of the type having a rotational shaft, comprising a rotary member, which is substantially flat and rigidly secured to said rotational shaft at right angles to the axis of rotation thereof, said rotary member including a plurality of active elements, each active element having the form of an elongated blade substantially rectangular in plan, the longer sides of the blade forming leading and trailing edges of the blade during rotation;
each blade having means for damping noise, said noise damping means comprising a substantially flat leading portion formed along the major outer end part of the leading edge of the blade and a substantially flat trailing portion formed along the opposed major outer end part of the trailing edge of the blade, cross sections of said leading edge flat portion being parallel to and offset below corresponding cross sections of said trailing edge flat portion and being interconnected by an inclined intermediate portion merging by smooth roundings into the respective flat portions, said cross sections being in respective cross-sectional planes parallel to the axis of rotation and perpendicular to the longitudinal direction of said blade, said leading and trailing edges being continuous and unbroken, said leading edge forming only a single cutting edge, said single cutting edge leading at least a substantial length of said flat leading portion, the said trailing edge at said flat trailing portion of said blade being rounded for facilitating release, without disturbing turbulence, from said edge of air flowing past said blade, said trailing edge portion cross sections being relatively short in cross section as compared to the corresponding cross sections of said intermediate portion at least toward the radially outer end of said intermediate portion.

4,214,427
MECHANICAL GRAPE HARVESTING DEVICE
Charles E. Bobard, Beaune; Just M. Dalaunay, Gevrey Chamberlin, and Raymond M. Darcy, Beaune, all of France, assignors to Establissments Bobard Jeune, Beaune, France
Filed Dec. 27, 1976, Ser. No. 754,748
Claims priority, application France, Dec. 29, 1975, 75 39935
Int. Cl.² A01D *46/00*
U.S. Cl. 56—330 **29 Claims**



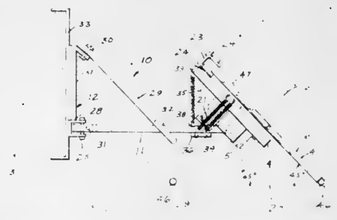
1. A mechanical grape harvesting device adapted for detaching grapes or berries directly from vertically extending vines as the device moves along rows of vines comprising:
vertically extending support means,
a plurality of elongated blades mounted one above the other on said support means and extending therefrom in a generally horizontal direction, each of said blades being of a resilient material which is flexible in a horizontal direction along the direction of motion of the device and substantially rigid in a vertical direction,
and drive means connected to said support means for providing a cyclical vertically reciprocating and horizontally translational motion thereto to move the blades while maintained in a substantially horizontal position in a closed curve path first to penetrate into the vegetation for a distance at least to the vertical medial plane of the vertically extending vines, then in a generally vertical first direction through the vegetation during which the blades contact the grapes or berries and to strip them directly from the vines, then outwardly from the vegetation and then in a generally vertical second direction opposite to said first direction, the horizontal flexibility of the blades permitting them to bend as they contact the vines and vegetation while the device is normally moving along a row of vines.

4,214,428
RAKING AND BALING MACHINE
Robert O. Caraway, Hwy. 109, Meansville, Ga. 30256
Filed Oct. 18, 1978, Ser. No. 952,348
Int. Cl.² A01D *77/00, 89/00, 87/12*
U.S. Cl. 56—341 **11 Claims**



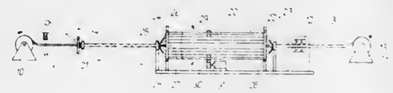
1. A raking and baling apparatus comprising a tractor, a baler coupled with the rear of the tractor and moving therewith, a power lift means on the front of the tractor including an implement support, a pair of multi-wheel fingerwheel rake assemblies connected with and carried by said implement support with the fingerwheels of each rake assembly disposed generally in a plane which is at an acute angle to the path of movement of the apparatus and with the two planes of the fingerwheels of the two rake assemblies diverging forwardly for the purpose of clearing a wide swath extending on opposite sides of the apparatus and producing a single windrow of material cleared from said swath having a width sufficiently narrow to pass between the wheels of the tractor and be acted on rearwardly of the tractor by said baler during a single pass of the apparatus over a field, and said power lift means on the front of the tractor comprising a front end loader attachment including articulated lift arms, cylinder means to raise and lower the articulated lift arms, and additional cylinder means connected to and moving with said arms, a normally level frame coupled with one pair of said arms near the rear of said frame and coupled with said additional cylinder means near the front of said frame, said implement support comprising an additional frame coupled with the last-named frame and extending forwardly thereof, and said rake assemblies each having a primary support arm pivoted to one side of said additional frame near the front thereof and at an acute angle thereto, the primary support arms diverging rearwardly and being substantially normal to said planes.

4,214,429
BRUSH RAKE
Frederick R. Ellis, 23 Lakeview Ave., Ripley, N.Y. 14775
Filed Aug. 28, 1978, Ser. No. 937,261
Int. Cl.² A01D *77/06*
U.S. Cl. 56—377 **16 Claims**



1. A rake (**10**) for removing foreign material from rows (**19**) comprising,
a forwardly extending tongue (**11**),
attaching means (**12**) for attaching said tongue to the front end of a tractor (**13**),
a frame (**14**),
pivot means (**15**) swingably attaching said frame to said tongue (**11**) to swing about a vertical pivot,
a wheel (**16**) rotatably supported on said frame,
resilient means (**21**) urging said frame to swing to a position at an acute angle to the direction of travel of said tractor,
tooth means (**18**) on the periphery of said wheel (**16**) for engaging the ground to rotate the wheel (**16**) and rake the foreign material from the rows (**20**).

4,214,430
METHOD AND APPARATUS FOR THE LAYERWISE SZ-STRANDING OF ELEMENTS TO BE STRANDED ABOUT A FLEXIBLE CORE STRAND
Dieter Vogelsberg, Coburg, and Helmut Pascher, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Jan. 25, 1979, Ser. No. 6,797
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804480
Int. Cl.² H01B *13/02;* **D07B** *3/00*
U.S. Cl. 57—6 **10 Claims**

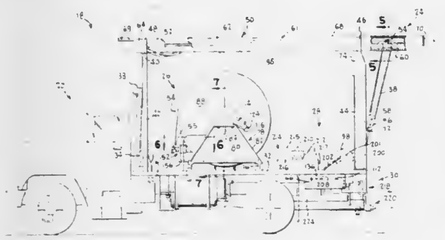


1. A method for the layerwise stranding of elements to be stranded, especially of elements of electric cables, about a flexible core strand, in which the elements to be stranded continuously run off from stationary supplies and are temporarily run concentrically to the core strand which is held stretched, whereby stranding lays are stored, and in which the elements to be stranded are subsequently guided around the core strand in directions alternating at intervals and in the process are cabled onto the core strand, which is guided in a manner secure against torsion, with a definite length of lay and with alternating direction of lay, comprising, for the purpose of temporary storage of stranding lays, the elements to be stranded
(a) first temporarily cabling the elements to be stranded onto the core strand with a direction of lay alternating at intervals by means of torsioning the core strand;
(b) roping down the elements from the core strand by leading the elements to be stranded around the core strand synchronously with the final stranding; and
(c) then feeding the elements spaced from and parallel to the core strand, which is conducted freely torsionable, or to the stranding axis, respectively, to the final cabling operation.

4,214,431
METHOD AND APPARATUS FOR RIGGING MARINE VESSELS
Wayne M. Bruce, 29 Little River Rd., South Dartmouth, Mass. 02748, and Walter J. Bruce, 109 Oakland St., New Bedford, Mass. 01730
Continuation of Ser. No. 920,125, Jun. 28, 1978, Pat. No. 4,142,353. This application Nov. 7, 1978, Ser. No. 958,450
The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.
Int. Cl.³ B65H *69/06*
U.S. Cl. 57—22 **13 Claims**

1. A marine rigging apparatus for splicing new wire cable of the type having twisted wire strands to a portion of work wire cable taken from a rotatable drum on a fishing vessel docked or moored adjacent a dock, said apparatus comprising a motor vehicle, a base mounted on said motor vehicle, bearing means

fixedly mounted on said base, shaft means mounted on said bearing means for rotation about the axis of said shaft means, said axis of said shaft means being fixedly positioned with respect to said base, at least one drum rotatably supported by said shaft means, power means operatively connected to said drum for rotating said drum about the axis of the shaft means to wind said worn cable onto said drum, clamping means mounted on said base for restraining portions of cables to be spliced with the cables being restrained against rotation about the axes of the cables, and twister means mounted on said base for rotating a first of said cables in a direction opposed to the natural twist of said first cable to relieve the tension in the strands of said first cable at a desired location on the cable to permit an efficient and quick splicing of a second of said cables to said first cable.



10. A method of removing the worn free end of an old wire cable on a rotatable drum of a fishing vessel moored against a dock and splicing new wire cable to the opposite less-worn end of the old cable, said method comprising the steps of positioning a power driven rotatable reel drum adjacent the vessel, attaching the worn free end of said old cable to said reel drum, rotating said reel drum to effect removal of all of the old cable from the fishing vessel, clamping a portion of the opposite less-worn end of said old cable and the free end of the new cable inwardly of their ends in vise means to restrain the cables, gripping the new cable near the clamped portion of the new cable and rotating the new cable about the axis of the cable in a direction opposed to the natural twist of the cable to provide an untwisted portion of the strands of the new cable, splicing the less worn end of the old cable into the untwisted portion of new cable, terminating the clamping and gripping, and unreeling the combined cable onto the drum of the vessel.

4,214,432

APPARATUS FOR FORMING S-Z TWISTED STRAND UNITS

Gerald A. Scheidt, Dunwoody, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,105
Int. Cl.³ H01B *13/04*
U.S. Cl. 57—293 **7 Claims**



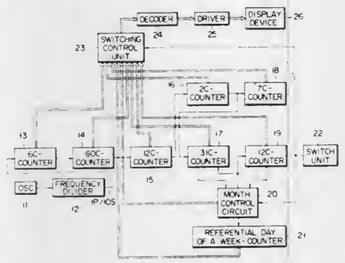
1. Apparatus for forming S-Z twisted strand units comprising a frame; an elongated body mounted to said frame for rotation about a longitudinal body axis and being comprised of an assembly of at least three tubules located radially about said body axis extending side by side longitudinally between opposite body ends; a first strands twisting head rigidly mounted to one end of said elongated body and a second strands twisting head rigidly mounted to the other end of said elongated body with each of said strands twisting heads having a plurality of sheaves each provided with an annular groove; and wherein the sheaves of each twisting head are mounted for rotary movement about mutual parallel axes with each sheave being aligned to receive strands extending linearily through a different one of said tubules with the groove of at least one sheave of each twisting head being partially offset axially from the groove of an adjacent sheave; and means for rotating said elongated body and said first and second strands twisting heads about said longitudinal body axis whereby strand units may be passed a plurality of times through the elongated body by routing the strand units through the body between the first and second twisting heads successively through the tubules without strand units moving in opposite directions through the body coming into contact with one another or with the body ends, and the body with its assembly of tubules rotated about the longitudinal body axis thereby forming the strands into S-Z twisted strand units.

4,214,433

CALENDAR DISPLAY APPARATUS

Hiroyuki Terao, Kodaira, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,203
Claims priority, application Japan, Mar. 30, 1977, 52-35690
Int. Cl.² G04B *19/24, 19/30*
U.S. Cl. 368—28 **11 Claims**



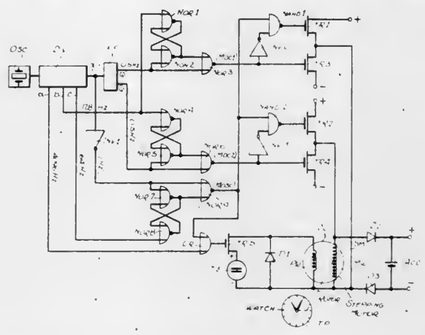
1. A calendar display apparatus which comprises:
an electronic calendar display panel device (**26**) selectively indicating the 1st to 31st days constituting at least one month, said days being arranged at least in a plurality of columns in conformity to the serial order of the seven days of the week;
a source (**11**) of referential clock pulses;
data signal-generating means (**17, 19**) for producing, according to said referential clock pulses, at least date data and "month" data;
column data producing means (**21**) coupled to said data signal-generating means (**17, 19**) for producing column data corresponding to a column of a calendar table in which there falls a particular day of the week in the month indicated by the "month" data;
column-specifying means (**35***a*–**35***g*) for receiving the column data delivered from the column data producing means (**21**) and designating the column of the calendar table in which there falls said particular day of the week;
month-shift instruction-generating means (S_2, S_3, S_4) for shifting month data on the calendar forward or backward; and
data-shifting means (**51***a*–**51***c*, **49***a*–**49***c*) for changing a column data supplied to the column-specifying means (**35***a*–**35***g*) from the column data producing means (**21**).

4,214,434

ELECTRONIC WATCHES

Hans-Rudolf Sutter, Pieterlen, Switzerland, assignor to Bulova Watch Company, Inc., Flushing, N.Y.

Filed Dec. 12, 1978, Ser. No. 968,694
Claims priority, application Switzerland, Dec. 16, 1977, 15504/77
Int. Cl.² G04C *3/00*
U.S. Cl. 368—71 **8 Claims**



1. A miniature electronic timepiece having an analog display provided by time-indicating hands, said timepiece comprising:
A. circuit means requiring a direct energizing voltage at a predetermined level and including a high-frequency time base and a multi-stage frequency divider coupled thereto to provide low-frequency timing pulses;
B. a stepping motor operatively coupled to said hands to drive same, said motor including a stator coil wound on a core and an auxiliary coil wound on said core, said auxiliary coil constituting the primary of a transformer whose secondary is said stator coil;
C. a driver stage responsive to said timing pulses to produce drive pulses which are applied to said stator coil to actuate said motor;
D. a d-c voltage source having a voltage output whose level differs from said predetermined level; and
E. a voltage converter coupled to said source to produce an energizing voltage for said circuit means at said predetermined level, said converter incorporating said transformer and further including a pulse-actuated electronic voltage chopper interposed between said d-c source and said primary to supply a periodically-interrupted voltage thereto, thereby producing an alternating voltage at said secondary, a rectifier coupled to said secondary to yield said energizing voltage, and means to inhibit actuation of said chopper when said driver stage produces drive pulses to prevent interaction between the operation of said converter and said driver stage.

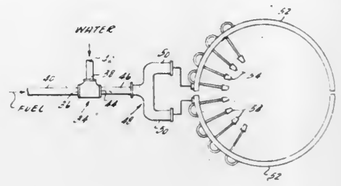
4,214,435

METHOD FOR REDUCING NITROUS OXIDE EMISSIONS FROM A GAS TURBINE ENGINE

Thomas C. Campbell, Glendale, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 819,022, Jul. 25, 1977, abandoned. This application Oct. 2, 1978, Ser. No. 947,683
Int. Cl.² F02C *7/00*
U.S. Cl. 60—39.05 **3 Claims**

1. A simplified method for reducing NO_x emissions from a gas turbine engine having a combustor in which a flow of pressurized air is mixed with fuel and combusted comprising the steps of:
(a) providing a flow of fuel under pressure;
(b) providing a flow of water under pressure;
(c) mixing directly, the fuel flow and the water flow in a water:fuel ratio in the range of 0.6 to 1.4 by weight and wherein the conditions are sufficient to produce turbulent mixing with a Reynolds number of at least 1500 in the resulting mixture; and



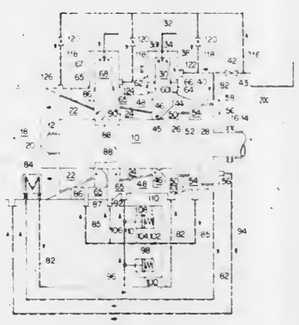
(d) delivering the resulting mixture to a plurality of combustor nozzles for combustion, said combustion occurring within thirty seconds from the time the fuel and water flows are mixed.

4,214,436

THRUST COMPENSATION AND COOLING SYSTEM FOR GAS TURBINES

Norbert Romeyke, Lampertheim, and Richard Kalbfuss, Mannheim, both of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Jun. 22, 1978, Ser. No. 918,155
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1977, 2728400
Int. Cl.² F02C *7/02, 7/18*
U.S. Cl. 60—39.09 R **21 Claims**



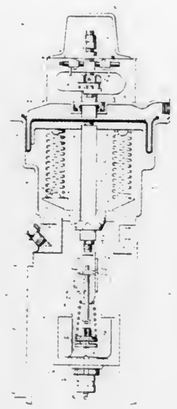
1. A gas turbine engine, comprising:
a first turbine stage having a first power fluid intake means for supplying a hot power fluid flow through the first turbine stage;
balance piston means for equalizing an axial thrust of the gas turbine engine;
first and second pressurized fluid chambers located adjacent to first and second sides of the balance piston means respectively;
means for introducing a fluid at a first predetermined pressure into the first pressurized fluid chamber;
means for introducing a fluid at a second predetermined pressure into the second pressurized fluid chamber, the second pressure being less than the first pressure;
the first power fluid intake means being adjacent to the first pressurized fluid chamber with the hot power fluid therein at a pressure lower than the pressure of the first pressurized fluid chamber; and
first transfer gasket means for maintaining a pressure difference between the first and second chambers, the gasket means coacting with the balance piston means.

4,214,437

SPEED ADJUST

Richard R. Gillespie, P.O. Box 4675, Odessa, Tex. 79760

Filed Apr. 10, 1978, Ser. No. 895,135
Int. Cl.[3] F02C 9/28
U.S. Cl. 60—39.28 R 2 Claims



1. In a governor for an engine having
a. a housing,
b. fuel feed means in the housing for regulating the fuel fed to the engine,
c. a ballhead in the housing with
(i) flyweights pivoted thereto,
(ii) means for rotating the ballhead at a speed directly related to the engine speed,
(iii) a thrust bearing contacting the flyweights, and
(iv) a speeder rod attached to said thrust bearing,
(v) said speeder rod forming a part of the fuel feed means,
d. a speeder spring biasing the thrust bearing against the flyweights, and
e. a speeder plug bearing against the speeder spring; the improved structure for positioning the speeder plug comprising:
f. a diaphragm attached to the housing,
g. a diaphragm plate attached to the diaphragm, and
h. a diaphragm case forming a fluid chamber on one side of the diaphragm plate,
j. an actuator rod securely attached to the diaphragm plate, on the side of the plate opposite the chamber,
k. the speeder plug securely attached to the actuator rod,
m. so that the speeder plug is directly connected to the diaphragm plate,
n. low speed compression springs bearing against the same side of the diaphragm plate as the actuator rod is attached to,
o. a stud attached to the diaphragm plate and extending through the diaphragm case,
p. a nut on the stud above the diaphragm case,
q. at least one normal speed spring attached to the top of the diaphragm case,
r. a crosshead assembly on top of the spring,
s. space between the top of the crosshead assembly and the nut when the diaphragm is in the position nearest the diaphragm case whereby only the low speed compression spring biases the diaphragm plate until the diaphragm plate moves downward and the nut contacts the crosshead assembly.

4,214,438

PYROTECHNIC COMPOSITION AND METHOD OF INFLATING AN INFLATABLE DEVICE

Brian K. Hamilton; Eugene F. Garner, both of Canyon Country, and Charles Jackson, Newhall, all of Calif., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Feb. 3, 1978, Ser. No. 875,052
Int. Cl.[2] C06B 45/10
U.S. Cl. 60—205 11 Claims

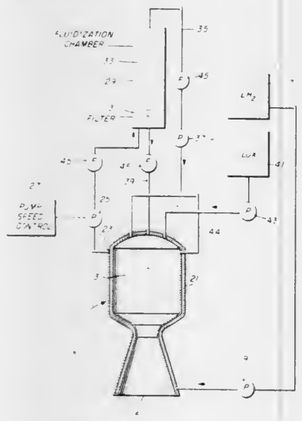
1. A pyrotechnic gas generating composition for generating a gas for inflation of an inflatable restraint, said composition consisting essentially of an organic fuel, an oxidizer and a viscosity modifier or precursor thereof, said organic fuel and said oxidizer upon combustion generating a gas and a non-gaseous constituent comprising a metallic salt or oxide, said metallic salt or oxide being in the form of a liquid having a viscosity of less than about 2,000 cps at the flame temperature of said composition, said viscosity modifier or precursor thereof being selected from the group consisting of alumina trihydrate, calcium sulfate, and mixtures thereof and being present in an amount effective to increase the viscosity of said liquid to at least about 10,000 cps.

4,214,439

MULTI COMPONENT PROPULSION SYSTEM AND METHOD

Joe L. Browning, Indian Head, and Crestus L. Adams, Bryans Road, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1966, Ser. No. 551,492
Int. Cl.[3] F02K 9/70
U.S. Cl. 60—216 9 Claims



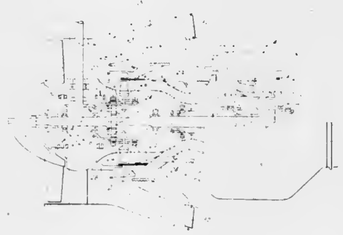
1. In a multi-component propulsion system having a combustion chamber,
means to supply liquid hydrogen from a source of liquid hydrogen,
a fluidization chamber,
metallic particles in said fluidization chamber,
means to allow vaporization of said liquid hydrogen,
means for passing said vaporized hydrogen into said fluidization chamber to thereby activate said metallic particles therein to a fluidized state,
passage means from said fluidization chamber to said combustion chamber to allow a small selected portion of said vaporized hydrogen and a selected portion of said fluidized metallic particles to pass into said combustion chamber,
means to supply a liquid oxidizer to said combustion chamber to allow said liquid oxidizer to be injected into said combustion chamber to be combusted with said metallic particles, and
a supply line from said fluidization chamber to said combustion chamber to recover a major portion of said vaporized hydrogen and to pass said recovered vaporized hydrogen into said combustion chamber to allow said vaporized hydrogen to mix with the products of combustion of said liquid oxidizer and said metallic particles.

4,214,440

COMPOSITE GAS TURBINE ENGINE FOR V/STOL AIRCRAFT

Gerhard Rücker, Karlsfeld, Fed. Rep. of Germany, assignor to Moteren-Und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,690
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745131
Int. Cl.[2] F02K 3/04; F02C 3/06
U.S. Cl. 60—226 B 11 Claims



1. A composite gas turbine engine for V/STOL aircraft, comprising:
a fan,
a lift device,
a compressor,
a turbine,
two annular ducts arranged one within the other, the inner duct leading air from the fan to the compressor and turbine, and the outer duct leading air from the fan so that it bypasses the compressor and turbine,
a supercharger between the fan and compressor, the supercharger being within the inner duct,
a drive shaft rotated by the turbine, and
means for alternatively coupling the drive shaft either to the fan or to the supercharger and lift device.

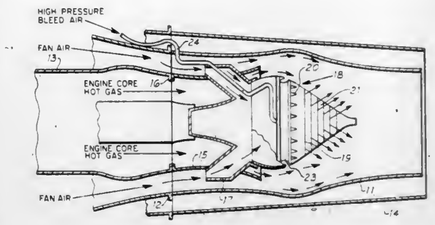
4,214,441

INFRARED SUPPRESSOR DEVICE

Thorvald E. Mouritsen, and William E. Simpkin, both of Dallas, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 12, 1978, Ser. No. 941,702
Int. Cl.[3] F02K 3/04; B64D 33/04
U.S. Cl. 60—262 7 Claims

1. An infrared suppressor for the exhaust of an infrared radiation source comprising,
a tailpipe for receiving hot exhaust gases from said infrared radiation source and low temperature fan air,
a contoured plug fitted within said tailpipe and positioned to have said hot gases flow over the surface thereof, said contoured plug being sufficiently large to prevent direct viewing of said infrared radiation source,
an annular vortex cavity on said contoured plug for reenergizing the boundary layer built up along the surface of said contoured plug for maintaining flow of said hot exhaust gases in contact with said contoured plug,
means for supplying high pressure bleed air to said vortex cavity, and



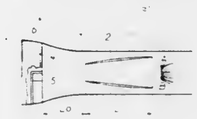
means for diverting a portion of said low temperature fan air inside said contoured plug.

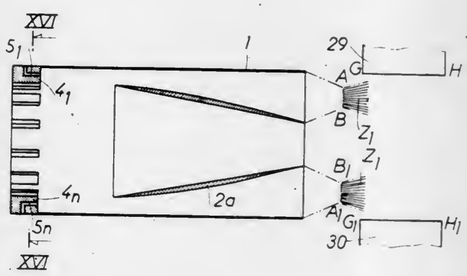
4,214,442

COMBUSTION CHAMBERS OPERATING ON A SUPERSONIC STREAM CHIEFLY FOR JET ENGINES

Lucien Reingold, Paris, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Aug. 8, 1968, Ser. No. 752,451
Int. Cl.[3] F02K 7/10
U.S. Cl. 60—270 R 15 Claims





1. A method for producing permanent combustion under substantially detonating conditions, comprising the steps of subdividing a stream of combustion-sustaining fluid flowing at supersonic speed into two parallel streams; modifying the speed of at least one of said parallel streams to make the latter flow at different speeds over predetermined paths; injecting fuel into the stream flowing at the higher speed; and constraining the parallel streams flowing at different speeds to mix at the downstream end of said paths to thereby produce a system of shock waves bounded by a surface converging first in the direction of flow and diverging thereafter and having thus a transverse cross-section of minimum area, so as to cause the combustion to start in the vicinity of said transverse cross-section of minimum area.

4,214,443

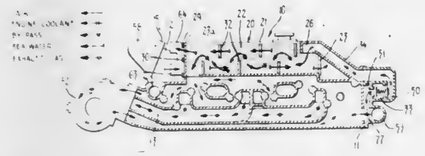
MARINE ENGINE MANIFOLD

Frederik J. Herenius, Peterborough, England, assignor to Perkins Engines Limited, Peterborough, England

Division of Ser. No. 783,353, Mar. 31, 1977. This application Sep. 1, 1978, Ser. No. 939,014
Int. Cl.[2] F01N 7/06
U.S. Cl. 60—321 5 Claims

1. A manifold comprising a body connectible to exhaust and

induction parts of an internal combustion engine, an induction manifold and an exhaust manifold respectively comprising an induction duct and an exhaust duct formed integrally with said body, means for connecting said ducts respectively to said parts, walls integrally formed with said body enclosing said ducts and defining a coolant jacket including a lower portion surrounding said ducts, means for connecting said coolant jacket to a source of liquid coolant including a coolant outlet of said engine, header walls formed integrally with said body to create an upper portion of said coolant jacket defining a header above the lower portion, heat exchange means located in said header, said heat exchange means forming an inlet passage for



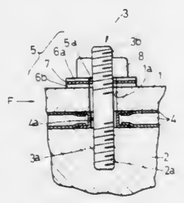
engine coolant flowing from said source, and a double acting thermostatically controlled valve operable in response to the temperature of said engine coolant, said valve including a first valve seat and a first valve closure controlling access of said engine coolant to said heat exchanger and a second valve seat and a second valve closure controlling access of said engine coolant to a duct for returning said engine coolant to said engine, and means responsive to said engine coolant temperature to move said first valve closure into engagement with said first valve seat at ambient temperature of said engine coolant, and to move said second valve closure into engagement with said second valve seat at a predetermined temperature above ambient of said engine coolant.

4,214,444

EXHAUST MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE

Yasuo Fujioka, Toyota, and Kenichi Nakano, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 6, 1978, Ser. No. 883,865
Claims priority, application Japan, Aug. 1, 1977, 52-92820
Int. Cl.[2] F01N *7/00*
U.S. Cl. 60—322 **6 Claims**



1. In an internal combustion engine for an automobile having a cylinder head, an exhaust manifold having a flange, and a gasket sandwiched between the flange and the cylinder, the improvement comprising:

a bolt, one end of which is screwed into said cylinder head, said bolt extending through said flange and said gasket;

means, on the other end of said bolt, for tightening the flange, the gasket and the cylinder head together;

a washer assembly sandwiched between said tightening means and said flange, said assembly comprising at least two flat ring-shaped metallic washers and a flat ring-shaped low frictional member between and in contact with the metallic washers; and

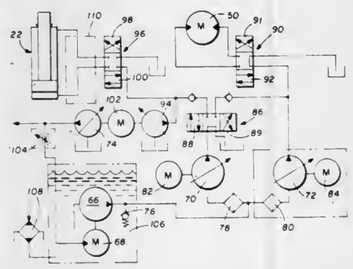
said assembly, said flange, and said gasket each having a fitting hole defined therethrough through which the bolt extends, each of said fitting holes being of larger transverse cross-sectional area than the bolt to define an annular clearance between the bolt and each of the assembly, the flange and the gasket to prevent the exhaust manifold from contacting the bolt even when the exhaust manifold thermally expands.

4,214,445

HYDRAULIC CIRCUITRY FOR RAISE DRILL APPARATUS

Jack O. Winsor, Seattle, and Neville Thompson, Federal Way, both of Wash., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 14, 1979, Ser. No. 38,955
Int. Cl.[2] F15B *11/16, 13/09*
U.S. Cl. 60—486 **7 Claims**



1. A hydraulic system for a drilling apparatus which includes means for transmitting torque to drill pipe, a plurality of thrust cylinders for moving the torque transmitting means back and forth along the drill pipe axis, and a hydraulic motor for supplying torque to the torque transmitting apparatus, comprising:

(a) a first drive pump connected to the motor and thrust cylinders;

(b) a first valve between the first drive pump and motor for selectively controlling the direction of fluid flowing to the motor;

(c) a second valve between the first drive pump, on one side, and the thrust cylinders and motor, on the other side, for selectively diverting fluid flow from the first pump either to the thrust cylinders or the motor;

(d) a second pump for supplying fluid to the thrust cylinders;

(e) a third valve connected between the first and second pumps, on one side, and the thrust cylinders, on the other side, for selectively controlling the direction of fluid flowing to the thrust cylinders;

(f) a charge pump connected to the inlet of the first drive pump for supplying fluid thereto at a positive pressure for overcoming pressure losses in the system.

4,214,446

PRESSURE-FLOW COMPENSATED HYDRAULIC PRIORITY SYSTEM PROVIDING SIGNALS CONTROLLING PRIORITY VALVE

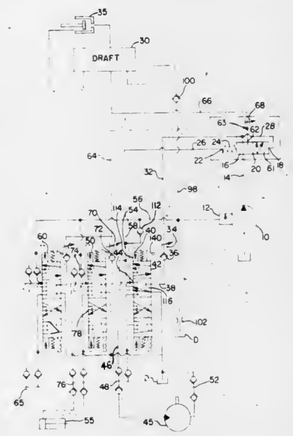
Leonard A. Bettin, Lyons, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1979, Ser. No. 5,048
Int. Cl.[2] F15B *11/16*
U.S. Cl. 60—420 **9 Claims**

1. For use in a pressure-flow compensated circuit path in combination with a restricted orifice (**34**) providing downstream pressure in a flow supply line included in said path and leading from the restricted orifice to a downstream priority load (**45,45***a*):

a priority valve (**20**) upstream in said path provided with opposing servo chamber means for sensing the pressure drop across the posterior restricted orifice, and servo positioned thereby in an activated position for cutting off

an auxiliary flow to an auxiliary motor load (**35,55,65,65***a*) and continuing to supply the restricted orifice and line therefrom to the priority load when the downstream pressure is at a lower stage high pressure, and alternatively for being deactivated and opening the auxiliary flow to the auxiliary motor load whenever pressure to the opposing servo chamber means is deactivated; and



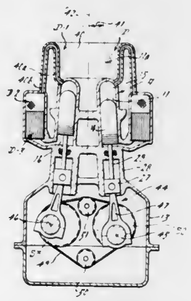
control means (**40,40***a*) sensitive to downstream pressure hydraulically disposed in said line and connected and arranged in response to a sensed upper stage high pressure to deactivate the servo chamber means and priority valve by disconnecting the opposing servo chamber means from the downstream pressure and venting the opposing servo chamber means by reconnecting same to drain.

4,214,447

DUAL-CRANK STIRLING ENGINE WITH QUAD CYLINDER ARRANGEMENT

David W. Barton, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 17, 1978, Ser. No. 906,812
Int. Cl.[2] F02G *1/04*
U.S. Cl. 60—525 **5 Claims**



1. In a Stirling engine having a reciprocating apparatus consisting of a crankcase, a plurality of cylinders adjacent said crankcase, double-acting pistons in each of said cylinders, each piston having a piston rod extending into said crankcase, a crankshaft means within said crankcase, crank arm means drivingly connecting each of said piston rods with said crankshaft means, thermodynamic cycling means for said pistons, the improvement comprising:

(a) said crankshaft means having at least one pair of spaced parallel arranged crankshafts,

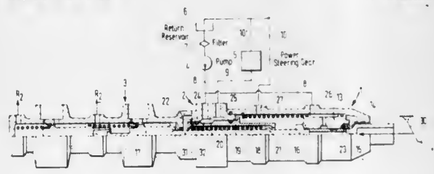
(b) said cylinders being four in number and having the upper extremities of said cylinders spaced equi-distantly in a quad-cluster about a central engine axis transverse to said crankshafts, the longitudinal extent of all of the cylinders forming zero or negative angles with respect to said central engine axis.

4,214,448

HYDRAULIC BRAKE BOOSTER

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,632
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734471
Int. Cl.[2] B60T *13/00*
U.S. Cl. 60—547 R **7 Claims**



1. A hydraulic brake booster comprising:

a housing having a longitudinal axis;

a booster piston disposed in and slidably sealed to an inner surface of said housing coaxial of said axis, one end of said booster piston adjacent a brake pedal providing a boundary for a booster chamber;

a valve spool disposed within and slidably sealed to an inner surface of said booster piston, said valve spool being slidable by said brake pedal to provide alternate connection of said booster chamber with a source of pressure-transmitting fluid and an unpressurized return reservoir, said source of pressure-transmitting fluid being a pump circulating a brake fluid;

a static master cylinder having a master piston disposed within said housing coaxial of said axis spaced from the other end of said booster piston, said master piston being activated by said booster piston through a push rod disposed within said housing coaxial of said axis; and

a controlled flow-control valve disposed within said housing coaxial of said axis between said booster piston and said master cylinder, said flow control valve including

a valve member disposed within said housing and coaxially around said push rod, said push rod causing said valve member to be displaced mechanically in a direction towards said master piston to obtain throttling of said pump-circulated fluid.

4,214,449

THERMAL ENERGY CONVERSION SYSTEM UTILIZING EXPANDITES

Jens O. Sorensen, P.O. Box 2274, Rancho Santa Fe, Calif. 92067

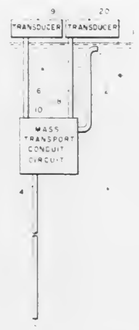
Filed Apr. 2, 1979, Ser. No. 25,800
Int. Cl.[2] F03G *7/00*
U.S. Cl. 60—641 **46 Claims**

1. A thermal energy conversion system, comprising:

a mass of expandites that change density in response to changes in temperature at a given pressure to thereby change buoyancy with respect to a surrounding fluid;

a mass transport conduit circuit for introducing the expandites to a surrounding fluid at different combinations of temperature and pressure and transporting the expandites and the surrounding fluid in response to pressure differen-

tials created by density changes of the expandites and concomitant buoyancy changes of the expandites as the expandites are exposed to the surrounding fluid at different combinations of pressure and temperature; and



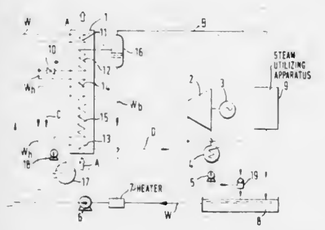
a transducer for converting the pressure of the fluid transported by the circuit to a useful form of energy.

4,214,450

APPARATUS FOR RECOVERING HEAT FROM EXHAUST GASES OF MARINE PRIME MOVERS

Kiyoshi Nagashima, Yokohama, and Tsugutoshi Yamada, Kashiwa, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1978, Ser. No. 886,583
Claims priority, application Japan, Apr. 19, 1977, 52-45032
Int. Cl.[2] F01K *17/00*
U.S. Cl. 60—648 **3 Claims**



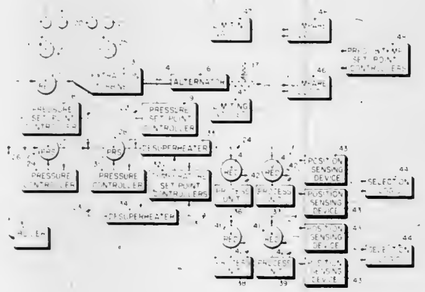
1. Apparatus for recovering heat from the exhaust gases of marine prime movers comprising a feed water line; an exhaust gas economizer for effecting heat exchange between the exhaust gases discharged from the prime mover and feed water supplied from a feed water tank; said exhaust gas economizer having a high pressure steam generator section for receiving high pressure feed water and generating high pressure steam for use in driving a steam turbine, and a low pressure steam generator section for receiving low pressure feed water for generating general purpose steam for use for purposes other than driving said steam turbine; a pressure regulator device connected between said feed water line and said low and high pressure steam generator sections for regulating the pressure of said feed water to provide relatively low pressure and high pressure feed water to the respective steam generator sections; a low pressure steam separator device connected at the outlet of said low pressure steam generator section for separating water from said general purpose steam; and a primary feed water preheater in said feed water line and connected to said low pressure steam separator device for mixing the water separated from said general purpose steam by said low pressure steam separator device and the feed water supplied to said exhaust gas economizer and thereby preheating said feed water.

4,214,451

ENERGY COGENERATION SYSTEM

Graham E. Coombes, Sunnyvale, and Hiranya S. Rao, Palo Alto, both of Calif., assignors to Systems Control, Inc., Palo Alto, Calif.

Filed Nov. 13, 1978, Ser. No. 960,063
Int. Cl.[2] F01K *17/00*
U.S. Cl. 60—648 **13 Claims**



1. A method of controlling an energy cogeneration system which includes means to convert the heat energy contained in steam to mechanical energy, a header for distributing steam under pressure to at least one processing means having a need which varies over time for steam, and a steam supply means common to both said conversion means and said header, comprising the steps of:

monitoring over a period of time the requirements of said processing means for steam distributed by said header; and

changing in response to said monitoring means indicating that said processing means needs at any given time a different amount of steam than that represented by the steam pressure delivered to said header, the pressure so delivered to said header to a pressure which more closely corresponds to that steam pressure which is so needed.

4,214,452

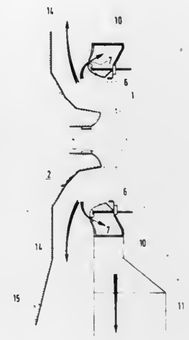
EXHAUST DEVICE FOR A CONDENSABLE-FLUID AXIAL-FLOW TURBINE

Gilbert Riollet, and Gerard Franconville, both of Paris, France, assignors to Alsthom-Atlantique, Paris, France

Filed Aug. 9, 1978, Ser. No. 932,383
Claims priority, application France, Aug. 25, 1977, 77 25939
Int. Cl.[2] F01D *25/30*
U.S. Cl. 60—697 **9 Claims**

1. An exhaust device for a condensable-fluid axial-flow turbine leading to a multi-zone condenser, said exhaust device comprising an annular diffuser with an axial input open to the output of the last stage of the turbine and a substantially radial output leading to the condenser which is divided into two zones in one of which the pressure is lower than in the other, the radially outer wall of the diffuser with respect to the input flow into the duct having a circumferential suction slot which connects to the lower pressure port of the condenser to remove a fraction of the flow in the diffuser towards the lower-

pressure part of the condenser and said radially outer wall further having a shape such that the pressure gradient measured at its surface in the flow direction is negative or zero at all points.

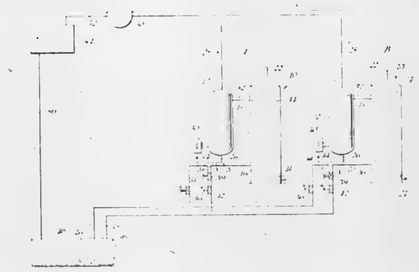


4,214,453

INJECTOR COOLER CONTROLS

Billy E. Barrow, 2434 Funston St., Hollywood, Fla. 33020

Filed Feb. 9, 1979, Ser. No. 10,804
Int. Cl.[3] F25D *17/02*
U.S. Cl. 62—118 **4 Claims**



4. A method for using a single low side critical refrigeration loop including at least one common compressor, a common evaporative condensor, and a common receiver, to flow refrigeration simultaneously through a plurality of injector coolers, comprising the steps of:

discharging liquid refrigerant from said common receiver and causing said liquid refrigerant to flow through a liquid refrigerant line associated with each cooler to said cooler, each associated liquid refrigerant line having a control valve and an injector nozzle connected to one of said coolers,

extracting liquid refrigerant by venturi action from a surge tank means for injection into said cooler when refrigerant from said receiver flows through said injector nozzle, said liquid refrigerant vaporizing while flowing through said cooler and returning to said surge tank, whereby refrigerant vapor flows to said compressor while liquid refrigerant is drawn out said injector nozzle,

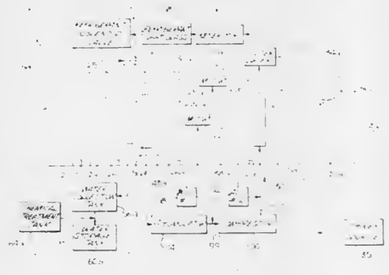
discharging vaporized refrigerant from said common receiver through a vapor refrigeration line having a control valve upon receipt of a high liquid level signal from said surge tank to said control valve in said vapor refrigeration line, said vapor refrigeration line, said vapor refrigeration line connected from said common receiver to said liquid refrigeration line upstream of said injector nozzle, said liquid refrigerant line control valve securing flow therethrough while a high liquid level signal is present in said surge tank.

4,214,454

WATER RECOVERY SYSTEM

James C. Taylor, #8 Tribute Ct., Newport Beach, Calif. 92663

Filed Feb. 1, 1978, Ser. No. 874,234
Int. Cl.[2] F25B *29/00*
U.S. Cl. 62—173 **12 Claims**



1. An apparatus for removing water vapor from the atmosphere and converting it into liquid water, comprising:

precipitating chamber means having an input opening, through which air may enter the precipitating chamber means and an output opening through which air may leave the precipitating chamber means;

heat transfer means including a fluid stream in a refrigeration circuit having an energy absorbing element located in the precipitating chamber means and an energy discharging element located outside the precipitating chamber means for conveying heat energy from the energy absorbing element to the energy discharging element;

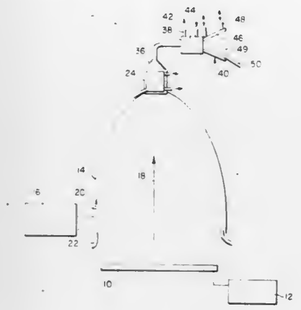
mixing chamber means having an intake opening connected to the output opening of the precipitating chamber means through which air may enter the mixing chamber means from the precipitating chamber means and an exhaust opening through which air may leave the mixing chamber means, the exhaust opening being located with respect to the energy discharging element so that the air passing through the exhaust opening is directed toward the energy discharging element and including an air vent opening for allowing atmospheric air to enter the mixing chamber without having to enter the input opening of the precipitating chamber means;

outside air louvre means located in the vicinity of the air vent opening for regulating the volume of air capable of entering the air vent opening;

coil louvre means located between the precipitating chamber means and mixing chamber means for regulating the volume of air passing through the output opening of the precipitating chamber means; and

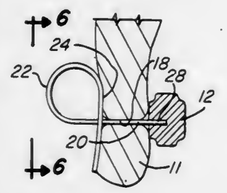
command means operably connected to said heat transfer means and also operably connected to both of said louvre means for sensing a condition in the fluid stream of the refrigeration circuit and for controlling the opening and closing of both of said louvre means in response to changes in the condition in the fluid stream to thereby regulate the airflow through said louvre means.

4,214,455
HOOD WITH A COOLING DEVICE AND A PRECIPITATOR
Stephen Wyden, 16 Court St., Brooklyn, N.Y. 11241
Filed May 8, 1978, Ser. No. 904,039
Int. Cl.[2] F25B *33/00*
U.S. Cl. 62—467 R **5 Claims**



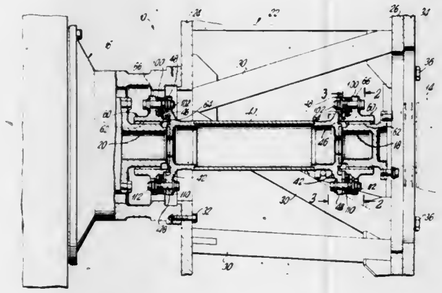
1. A hood, comprising:
a hood,
a cooling device attached to a first end of the hood,
an electrostatic precipitator connected to an interior aerosol stream contacting surface in the cooling device,
an air jet interiorly attached to the hood to direct an air jet driven laminar flow along a wall of the hood,
whereby the aerosol stream may be driven into contact with the electrostatic precipitator surface with minimal hood contamination.

4,214,456
EARRING WITH UNITARY FASTENER
Evelyn J. Hannum, 3880 S. Hillcrest, Denver, Colo. 80237
Filed Aug. 4, 1978, Ser. No. 930,892
Int. Cl.[2] A44C *7/00*
U.S. Cl. 63—12 **16 Claims**



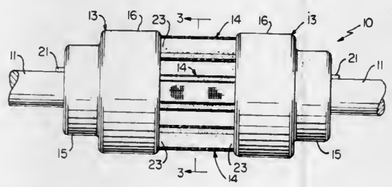
14. An earring for an ear with a lobe having a pierced opening therethrough, said earring comprising:
an ornament;
a one-piece fastener for securing said ornament to said ear lobe, said fastener having a substantially straight shank portion attached at one end to said ornament and extending away from said ornament, a generally arcuately shaped, spring clip-like, intermediate portion formed continuously with said shank portion and looped away from and then back toward said shank portion through an angle of approximately 270°, and an ear contact portion formed continuously with said spring clip portion and extending therefrom along an axis substantially perpendicular to, intersecting and continuing beyond said shank portion and disposed generally opposite and parallel to a back surface of said ornament and spaced away from said back surface a distance less than the thickness of the ear whereby said shank portion may be placed through the pierced opening with the ear lobe compressed between said ear contact portion and said back surface under spring pressure from said intermediate portion.

4,214,457
FLEXIBLE COUPLING APPARATUS
James Wade, Stratford, and Charles S. Jewett, Lyme, both of Conn., assignors to Avco Corporation, Stratford, Conn.
Filed Apr. 18, 1979, Ser. No. 31,047
Int. Cl.[3] F16D *3/78*
U.S. Cl. 64—4 **12 Claims**



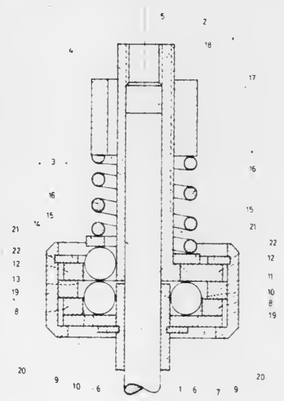
1. Flexible coupling apparatus for interconnecting a splined shaft extending from an engine and a splined shaft extending from a testing device comprising:
a shaft member having flange parts on opposite ends thereof, each flange being formed to define one portion of a bayonet connection;
two hub members each formed to define a cooperating portion of a bayonet connection and respectively connected to the flange parts of said shaft member, each hub having a splined central portion for receiving the splined shaft extending from the engine or the testing device; and
a flexible joint connecting each flange part to its associated hub whereby axial misalignment between the splined shaft of the engine and testing device are accommodated by the splined interconnections between said shafts and the hub members, while lateral misalignments between said shafts are compensated by the flexible joint connections.

4,214,458
FLEXIBLE COUPLING AND METHOD OF MAKING SAME
Robert C. Philleo, Centerville, Ohio, assignor to Dayco Corporation, Dayton, Ohio
Filed Dec. 11, 1978, Ser. No. 968,540
Int. Cl.[3] F16D *3/64*
U.S. Cl. 64—11 R **14 Claims**



1. In a flexible coupling for transmitting rotary power comprising opposed end structures and flexible coupling members disposed between said end structures the improvement wherein said coupling members consist solely of a plurality of rectilinear members having opposite end positions thereof supported by said end structures, said rectilinear members being defined primarily of polymeric material, said rectilinear members being substantially identical and comprising predetermined belt lengths of power transmission belt structure, and each of said belt lengths having a uniform cross-sectional configuration throughout its length.

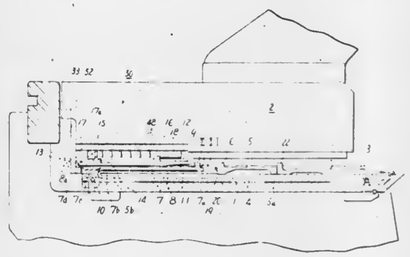
4,214,459
TORQUE TRANSMISSION CLUTCH
Kajetan Leitner, Am Winacker 18, 8170 Bad Tölz, Fed. Rep. of Germany
Filed Aug. 23, 1978, Ser. No. 935,950
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739489
Int. Cl.[3] F16D *43/20*
U.S. Cl. 64—29 **7 Claims**



1. A torque transmission clutch comprising coaxial driving and driven shafts which are located axially and which are generally hollow, two rings of equal-sized balls, each ring of balls containing the same number of balls and being held in apertures in a respective ball-retaining disc having a thickness equal to the ball radius, the discs being alike, a sleeve in which the discs are maintained apart by spacer means a distance equal to the ball radius, one of said discs being mounted on the drive shaft to rotate with it and the other of said discs being mounted on the driven shaft to rotate with it, one ring of balls being located axially by a first thrust disc to project from the disc by a distance equal to the ball radius towards the other disc, the other ring of balls being spring urged through a second thrust disc to project from its respective disc to interengage between the balls of the said one ring and, an aligning member extending co-axially into said driving and driven shafts and being secured to one of said shafts.

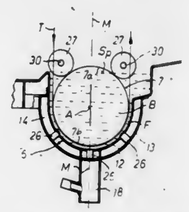
4,214,460
FLAT KNITTING MACHINE
Masahiro Shima, Wakayama, Japan, assignor to Shima Idea Center Co., Ltd., Wakayama, Japan
Filed Nov. 2, 1978, Ser. No. 957,171
Claims priority, application Japan, Nov. 8, 1977, 52-134484
Int. Cl.[2] D04B *7/00, 15/66*
U.S. Cl. 66—75.2 **10 Claims**

1. A flat knitting machine having needle jacks which are longitudinally movably disposed in the needle tricks, behind needles, the butts of said needle jacks being depressible into the tricked needle bed, wherein the improvement comprises: selector jacks disposed in the needle tricks, behind and at a higher level than the needle jacks and adapted to be selectively moved back and forth by electromechanical needle selector means on the carriage, means acting on said needle jacks to depress the butts thereof into the needle tricks, which means comprise pushers provided longitudinally movably in the needle tricks, behind the butts of the needle jacks and between the needle jacks and the selector jacks, each of said pushers having its front portion disposed pivotally movably in the needle trick and having a butt on the top of said front portion thereof and a surface adapted to depress the needle jack at the underside of said front portion, means acting on the pushers to depress, through the pushers, the butts of the needle jacks into the needle bed, which means comprise retractable pusher cams provided on the carriage to exert depressing force upon the top of said pusher butts, means for moving forward the pushers from their rearward position to their forward position, which means comprise said selector jacks disposed longitudinally



movably in the needle tricks, behind the pusher butts and above the pushers, and having their front end adapted to strike the back of the pushers as the selector jacks move forward, means for moving back the pushers from their forward position into which the pushers have been moved by the selector jacks, which means comprise retractable cams provided on the carriage, said retractable cams including pusher restoring cams adapted to move the pushers back from their forward position to their rearward position and pusher half-restoring cams adapted to move back the pushers from said forward position to intermediate position.

4,214,461
DEVICE FOR WET TREATING, ESPECIALLY DYEING AND IMPREGNATING, TEXTILE WEBS IN A CONTINUOUS MANNER
Günter Schiffer, Krefeld; Klaus Meisen, Tönisvorst; Rudolf Sunnen, and Klaus Heidan, both of Krefeld, all of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany
Filed Nov. 21, 1978, Ser. No. 962,626
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2752011
Int. Cl.[2] D06B *3/22*
U.S. Cl. 68—158 **8 Claims**



1. A device for wet treating, especially dyeing and impregnating, a textile web, which includes in combination: a vat having a lower section and a bottom to receive and contain a nominal quantity of treating liquid for treating the textile web to be treated, a deviating roller rotatably located in said vat and having axle journal-free end faces including marginal end zones, said deviating roller floating in the liquid in said vat, the lower section of which and said deviating roller being spaced from each other to receive therebetween successive textile web sections fed to the deviating roller in said lower section of said

vat, and rotatable rolls arranged in pairs on both sides above said deviating roller and engaging marginal end zones only of said deviating roller, the rotatable rolls of each side of said deviating roller being spaced from each other.

4,214,462

DEVICE FOR PRE-TREATING AND POST-TREATING A TEXTILE WEB

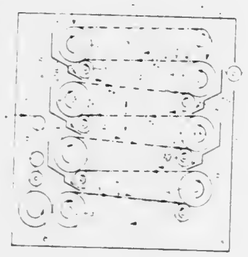
Klaus Meisen, Tönisvorst, Fed. Rep. of Germany, assignor to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Nov. 21, 1978, Ser. No. 962,625

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2751995

Int. Cl.² D06B *1/02*

U.S. Cl. 68—205 R **9 Claims**



1. A device for pre-treating and post-treating a textile web, especially knitted goods, which includes in combination: two at least nearly vertical rows of deviating drums arranged one above the other in each row and adapted to recieve and convey the textile web to be treated along a zigzag path from below in upward direction, the drums of one row being offset as to height relative to the drums of the other row by substantially the diameter of a deviating drum, rotatable endless belts respectively arranged below the textile web path between each two successive deviating drums along the zigzag path of the textile web to be treated, and a plurality of guiding rolls respectively drivingly connected with said deviating drums, each of said endless belts being looped around a deviating drum and the respective guiding roll following the last mentiond deviating drum along the path of movement for the textile web to be treated, spray means and deflecting plates respectively arranged in a chamber laterally of and below said deviating drums, the lower end of said plates at at least the approximate level of the next lower deviating drum extending between the path of movement for the textile web to be treated and the next higher endless belt.

4,214,463

DECORATIVE KEY RING AND METHOD FOR MAKING SAME

Roy Blumhof, Montvale, N.J., assignor to Joy Insignia, Inc., Guttenberg, N.J.

Division of Ser. No. 887,073, Mar. 16, 1978, Pat. No. 4,149,305. This application Jan. 15, 1979, Ser. No. 3,232

Int. Cl.² A47G *29/10*

U.S. Cl. 70—456 R **4 Claims**

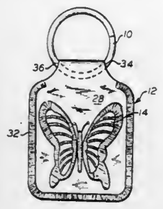
1. A decorative attachment for a key ring comprising,

(a) a panel comprising a pair of sections in mirror symmetrical relation separated by a neck section of narrower width than the width of said panel sections,

(b) said panel being folded midway of said neck sections whereby said panel sections are in juxtaposed relation,

(c) the peripheral edges of said juxtaposed panel sections being secured by overedging for the entire extents thereof but leaving the neck section peripheral edges unsecured to define a passageway at said neck section for insertion therein of a key ring, and

(d) at least one of said panel sections having a decorative design embroidered thereon,



(e) said panels being unsecured to each other inwardly of said overedgingly secured peripheral edges.

4,214,464

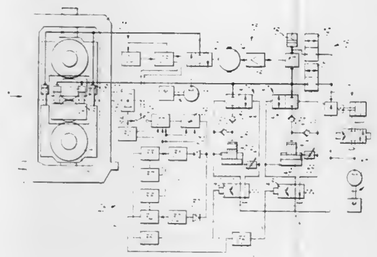
APPARATUS FOR CONTROLLING THE THICKNESS OF ROLLED PRODUCTS

Alim I. Chabanov, ulitsa Uritskogo, 12, kv. 73; Valery V. Danilyuk, ulitsa Revoljutsii, 6, kv. 46; Dzhavit K. Valeev, ulitsa Bljukhera, 20, kv. 26; Alfrid G. Bauer, ulitsa Petukhova, 46, kv. 73; Boris N. Petrov, ulitsa Deputatskaya, 26, kv. 16; Sergei N. Tropin, ulitsa Udarnaya, 1/2, kv. 52; Dmitry I. Chuguev, ulitsa Nemirovicha-Danchenko, 6, kv. 13; Ivan V. Ivanov, ulitsa Kostycheva, 8, kv. 7; Georgy A. Braun, ulitsa Nemirovicha-Danchenko, 135-b, kv. 68, and Valery M. Alexandrov, Tsvetnoi prospekt, 7, kv. 41, all of Novosibirsk, U.S.S.R.

Filed Dec. 28, 1978, Ser. No. 973,732

Int. Cl.² B21B *37/02, 37/08*

U.S. Cl. 72—8 **4 Claims**



1. An apparatus for controlling the thickness of a product rolled on a mill including a working stand which is fitted with work and backup rolls, which comprises hydraulically-operated cylinders controlling said work rolls connected one to another so as to form a closed-circuit hydraulic system during rolling, hydraulically-operated cylinders controlling the backup rolls, a rolled product thickness regulator connected to the hydraulically-operated backup roll controlling cylinders so as to change the roll-setting force depending on the fluctuations of the work roll gap specified, a differential pressure transducer reacting to the changes in the pressure in the closed-circuit hydraulic system and producing a signal to change the roll-setting force so as to stabilize the work roll gap, a gauge measuring the thickness of rolled product on the exit side of the stand and producing signals which change the work roll gap depending on the signal amplitude, a hydraulic volume compensator serving to control the volume of fluid in the closed-circuit hydraulic system of work roll gap control, a logic module for the control of said compensator, which is connected thereto with its output and to the thickness gauge with one of the inputs and is arranged so as to produce an output signal depending on the amplitude of the corrective signal indicating a discrepancy between the actual thickness of the rolled product and the specified gauge, said output signal determining the degree of hydraulic volume compensation, a

thickness gauge transportation lag unit which is coupled to the logic module and serves to clear or block the passage of the corrective signal therefrom to the hydraulic volume compensator.

4,214,465

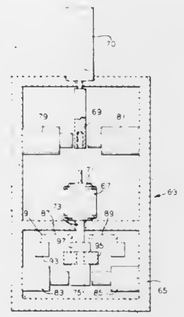
TOLERANCE COMPENSATING DEFORMING PRESS

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

Filed Nov. 25, 1977, Ser. No. 854,484

Int. Cl.² B21B *31/34*

U.S. Cl. 72—36 **6 Claims**



1. A press for forming an annular spacing element in a workpiece to an optimum height for that workpiece including a press frame for supporting the workpiece, a first press ram engageable with the workpiece to force the workpiece against the press frame, a second press ram engageable with a part of the workpiece distinct from the workpiece portions engaged by the press frame and first press ram, the annular spacing element being disposed between the distinct workpiece part and a workpiece portion engaged by at least one of the press frame and first press ram, and means for moving the second press ram to deform the annular spacing element.

4,214,466

APPARATUS FOR THE WINDING OF HELICAL SPRINGS

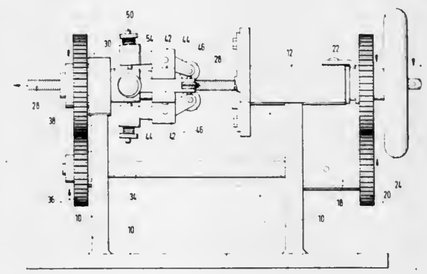
Jakob Lassche, Dunningen, Fed. Rep. of Germany, assignor to Hugo Kern und Liebers & Co., Schramberg, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,725

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743309

Int. Cl.² B21F *3/04*

U.S. Cl. 72—142 **10 Claims**



1. An apparatus for the winding of spring wire from a stationary supply spool into a helical or spiral spring, said apparatus comprising a rotationally driven winding mandrel having a forward end and being provided with a radial slot at its forward end for receiving and securing therein an end of the spring wire to be wound, said mandrel being axially movable, with the increasing length of a helical or spiral spring, being wound thereon, from a withdrawn or forward initial position into a projecting final position; and means for withdrawing said spring from the forward end of said mandrel in its projecting final position comprising: a transfer head, having a guide channel, positioned adjacent to the final position of the mandrel, said guide channel in the transfer head being in coaxial alignment with the mandrel for receiving the wound spring being withdrawn from said forward end of said mandrel for the passage of the spring therethrough; and at least one roller biased against the forward end of said mandrel and the end of the wound spring thereon in the final position of said mandrel for removing the wound spring from the mandrel, said one roller being rotatable in a plane passing through the rotational axis of said mandrel, and said one roller and said transfer head are mounted for rotation coaxially and synchronously with said mandrel whereby a spring of any desired length can be wound regardless of the length of said mandrel.

4,214,467

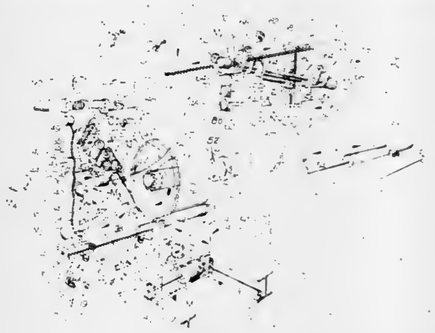
METAL COIL HANDLING SYSTEM

Subbiah Sankaran, Walnut Creek, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Mar. 5, 1979, Ser. No. 17,880

Int. Cl.² B21C *47/16*

U.S. Cl. 72—183 **41 Claims**



1. A system for unwrapping a coil of metal and threading the leading edge of said coil through rolling mill entry rolls or the like comprising a moveable coil support means, coil strip peeler means insertable between the leading edge of the metal coil and the remainder of the coil for disengaging and freeing said leading edge of the coil from the remainder of the coil, selectively operable mandrel and strip clamp means for successively piercing said coil and then engaging the leading edge of the coil after the coil strip peeler means has separated the leading edge of the coil from the remainder of the coil, means for rotating the coil on the coil support means so as to effect a feeding of the leading edge of the coil to said strip clamp means, means for actuating said strip clamp means to grip the leading edge of the coil, means for selectively rotating said strip clamp means while the leading edge of the coil is gripped by said strip clamp means simultaneously with said coil so as to align said leading edge of the coil with additional coil edge handling means after the strip clamp means has engaged and gripped the leading edge of the coil and means for operating and synchronizing the movements of all of said means.

4,214,468

HOT ROLLING PILGER MILL

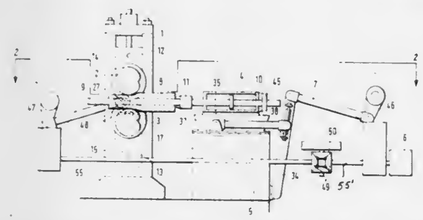
Emil Vorbach, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 26, 1978, Ser. No. 954,829

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1977, 2749102

Int. Cl.[2] B21B *1/42*

U.S. Cl. 72—189 **8 Claims**



1. In a hot pilger rolling mill, having a pair of grooved, contoured pilger rolls and means coupled to the rolls for transmitting motion upon them, further having a feeder with a carriage and a mandrel rod holding the hollow to be rolled, the improvement comprising:

a first crank;

first linkage means, including rod means connecting the first crank to the means for transmitting motion to thereby drive the pilger rolls;

a second crank;

second linkage means, including rod means connecting the second crank to the feeder carriage to reciprocate the carriage during rolling;

means connected for driving the first and second cranks in synchronism to each other; and

means operatively connected for alternately superposing a relative, retarding component of movement and a relatively advancing component of movement between the rolls and the feeder to relieve the rolls by, relatively, advancing the feeder during a rolling pass and by retarding it towards the end of the pass.

4,214,469

PROCESS AND DEVICE FOR THE PRODUCTION OF A COMPOSITE SECTION

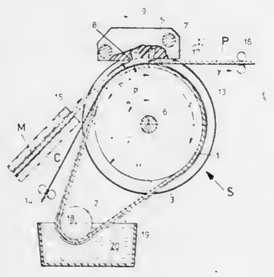
Alfred Wagner, Steisslingen, and Adolf Ames, Hilzingen-Duchtlingen, both of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 21, 1978, Ser. No. 898,659

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720122

Int. Cl.[3] B21C *23/22, 23/24, 33/00*

U.S. Cl. 72—258 **5 Claims**



1. A process for the continuous extrusion of a composite metal section comprising a beam like section and a facing strip of another material which forms at least part of the surface of the beam like section, the beam like section of said composite is produced by extruding a metal matrix through a shape-giving opening in a stationary extrusion die, wherein said strip is fed to said stationary die at a first rate and said metal matrix is fed to said stationary die at a second rate less than said first rate by one endless face which moves continuously toward said stationary die so as to form said composite section.

4,214,470

METHOD AND APPARATUS FOR COOLING DRAWN WIRE

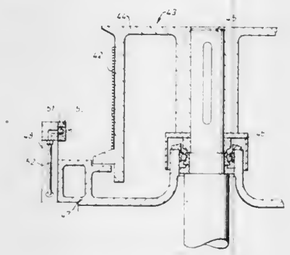
Michael J. Hurst, Southampton, England, assignor to Hi-Draw Machinery Ltd., Romsey Hampshire, England

Filed Jan. 12, 1978, Ser. No. 868,913

Claims priority, application United Kingdom, Jan. 14, 1977, 1578/77; Mar. 28, 1977, 12952/77

Int. Cl.[3] B21C *9/00*

U.S. Cl. 72—286 **5 Claims**



1. Apparatus for cooling elongate material after it has been drawn through a die comprising:

spray means including at least two atomizer spray nozzles located downstream of the die at a predetermined spacing therefrom for supplying liquid coolant onto said elongate material, and

means for controlling the quantity of said coolant supplied by said spray nozzles,

the spaced relationship between said spray nozzles and said die being such as to allow the material to reach a desired temperature before the material reaches said first nozzle, which relationship in combination with the quantity of coolant controlled by said control means assures that all or substantially all of said sprayed liquid coolant applied to said elongate material is evaporized and the latent heat of evaporation of said liquid coolant serves to cool said elongate material.

4,214,471

TRIPLE ACTION CONTAINER DRAWING AND REDRAWING APPARATUS

Joseph D. Bulso, Jr., and William R. Lewers, both of Canton, Ohio, assignors to Redicon Corporation, Canton, Ohio

Filed Feb. 13, 1978, Ser. No. 877,292

Int. Cl.[2] B21D *22/28*

U.S. Cl. 72—349 **5 Claims**

1. Container drawing and redrawing apparatus for use with a double acting press having inner and outer rams operated in relatively time reciprocal fashion with the outer ram preceding the inner ram in the operating cycle, comprising;

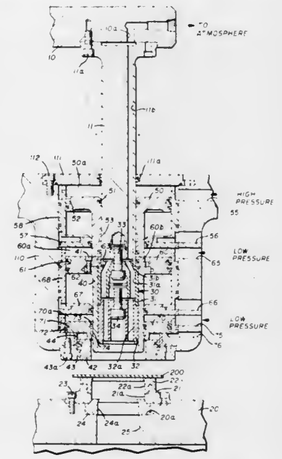
(A) pneumatically activated drawing means operatively connected to said outer ram and being movable toward the container;

(B) redrawing means operatively connected to said inner ram;

(C) said drawing means including a pressure piston system disposed around said redrawing means and including pneumatically actuated first and second pressure pistons

arranged in stacked relationship with the lower most piston having a radially inwardly extending lip;

(D) said redrawing means being slidably received within said drawing means and including a redraw horn assembly having a radially inwardly offset shoulder underlying and automatically engaging said lip of said lowermost pressure piston throughout a portion of the travel of said inner and



outer rams to retard movement of said drawing means; and

(E) said redrawing means being movable away from said drawing means and said shoulder thereof being movable out of underlying engagement with said lip of said pressure piston system upon completion of the movement of said drawing means during a further portion of the travel of said inner and outer rams for redrawing purposes.

4,214,472

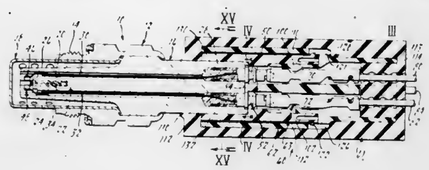
EXHAUST GAS OXYGEN SENSOR AND ELECTRICAL CONNECTOR ARRANGEMENT

Mary E. Maxwell, Livonia, Mich., and Ronald F. Froats, Windsor, Canada, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 22, 1979, Ser. No. 5,424

Int. Cl.[2] G01N *27/04*

U.S. Cl. 73—23 **8 Claims**



1. An exhaust gas oxygen sensor and electrical connector arrangement for electrically connecting the oxygen sensor to an electronic device capable of utilizing an electrical signal produced by the oxygen sensor, the oxygen sensor and electrical connector in combination comprising:

(a) an exhaust gas sensor having means to facilitate its mounting in the exhaust conduit of an engine, a ceramic metal-oxide oxygen-sensing element, at least one electrical conductor coupled to the oxygen-sensing element, a member of generally cylindrical shape through which the electrical conductor passes, and an oxygen sensor electrical terminal affixed to the cylindrically-shaped member and electrically connected to the conductor coupled to the oxygen-sensing element;

(b) at least one lead wire for use in coupling the oxygen-sensor terminal to the electronic device;

(c) a connector assembly for providing electrical connection of the lead wire to the oxygen-sensor terminal affixed to the cylindrically-shaped member and to provide a leak-proof contact with the cylindrically-shaped member for the protection of the electrical connection, the connector assembly comprising a grommet and a sleeve received within the grommet, the grommet being formed from elastomeric material and the cylindrically-shaped member of the oxygen sensor being partially received within the grommet, the grommet forming a leak-proof contact with the surface of the cylindrically-shaped member;

(d) cooperating means, associated with the oxygen sensor cylindrically-shaped member with the sleeve of the connector assembly, for forming a latching connection therebetween; and

(e) connector terminal means, mounted within the sleeve of the connector assembly, for electrically connecting the lead wire to the oxygen-sensor terminal when the sleeve of the connector assembly and the cylindrically-shaped member of the oxygen sensor are latched together with their cooperating means.

4,214,473

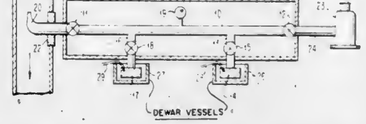
GASEOUS TRACE IMPURITY ANALYZER AND METHOD

David Edwards, Jr., Bellport, and William Schneider, Setauket, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 18, 1978, Ser. No. 970,842

Int. Cl.[2] G01N *25/02*

U.S. Cl. 73—23 **10 Claims**



7. Apparatus for analyzing a cryogenic gas for trace impurities which comprises a metal vessel having a small branch portion which can be chilled to a low temperature while said vessel is heated uniformly to an elevated temperature by heating means, means for evacuating said vessel, means for introducing a sample of said gas into said vessel, means for chilling and then gradually warming said branch portion, a pressure gauge for measuring the pressure in said vessel, and a temperature gauge for measuring the temperature of said branch portion during the gradual warming thereof.

4,214,474

DENSITY MONITORING APPARATUS

Rolf Bleidt; Joachim Nasterlack, both of Hanau; Kurt Neubeck, Miltenberg, and Achim Gareus, Amorbach, all of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland and Alexander Wiegand GmbH Co., Klingenberg, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,473

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744549

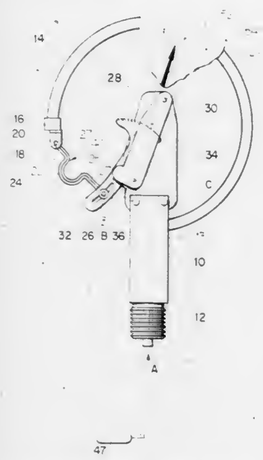
Int. Cl.[2] G01N *9/26*

U.S. Cl. 73—30 **7 Claims**

1. Apparatus for monitoring density of gas in a pressurized container comprising:

pressure response means including a Bourdon tube for sensing the pressure of the gas and providing pressure-related movement;

indicating means including a segment lever, operable in response to the pressure-related movement of the Bourdon tube for providing a visual indication of the pressure-related movement; and



thermal compensating means connected between the pressure responsive means and the segment lever of the indicating means, being the mechanical connection for transmitting pressure-related movement of the Bourdon tube to the indicating means, and operable to equalize the pressure-related movement attributable to changes in gas temperature such that the indicating means indicates gas density.

4,214,475

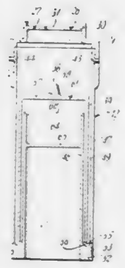
ADAPTER FOR A SENSITIVE VISCOMETER

Walter H. Carter, Houston, Tex.; Charles A. Christopher, Broken Arrow, Okla., and Karl-Heinz Grodde, Celle, Fed. Rep. of Germany, assignors to Texaco Inc., White Plains, N.Y. and Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jun. 30, 1978, Ser. No. 920,940

Int. Cl.[2] G01N *11/14*

U.S. Cl. 73—59 **8 Claims**



1. In a rheometer for measuring low viscosities at low shear rates, an improved adapter for a sensitive viscometer, comprising

a cylindrical stationary container for holding a predetermined quantity of fluid to be measured, and

a cylindrical inverted cup shaped rotor adapted for free rotation within said stationary container and for cooperating with said container and fluid to create drag related to said viscosity,

said stationary container having an annular shape comprising a coaxial inner cylinder having an outside diameter less than the inside diameter of said rotor and a smoothly rounded surface joining it with said stationary cylindrical container at the bottom to reduce eddy currents in said fluid,

said stationary container annular shape providing reaction surfaces on both the inner and outer surfaces of said rotor,

said stationary container also having a reservoir for receiving overflow of said fluid above a predetermined level within said rotor for metering the effective quantity of said fluid to be measured, and

said cylindrical rotor having a rounded bottom edge to complement said smoothly rounded surface.

4,214,476

TESTING DEVICE FOR INJECTION PUMPS

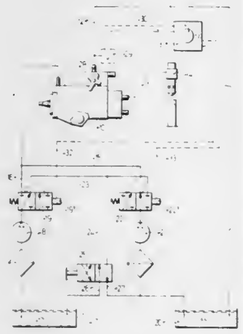
Claus Köster, Ditzingen; Joachim Siegert, Leonberg, and Heinz Nothdurft, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 9, 1979, Ser. No. 37,453

Claims priority, application Fed. Rep. of Germany, May 11, 1978, 2820542

Int. Cl.[3] G01M *19/00*

U.S. Cl. 73—119 A **4 Claims**



1. A device for testing injection pumps having a flow-return port with an overflow valve, an intake port and a test port, comprising a pair of containers for storing respectively a test liquid at different temperatures; a pair of delivery pumps assigned to said containers; a pair of directional control valves connected for alternately supplying the liquid from said containers to said intake port; and a control device having a temperature measuring input element arranged at the outlet of said overflow valve and an output conduit for delivering an actuation signal to said directional control valves for switching over their portions and thus changing the temperature of the supplied test liquid.

4,214,477

FLANGELESS ELECTROMAGNETIC FLOWMETER

Roy F. Schmoock, Yardley, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Division of Ser. No. 811,276, Jun. 29, 1977, Pat. No. 4,098,118. This application Dec. 7, 1978, Ser. No. 967,138

The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.

Int. Cl.[2] G01F *1/58*

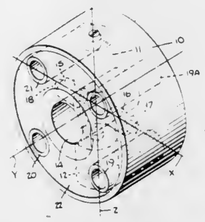
U.S. Cl. 73—861.12 **5 Claims**

1. A flangeless electromagnetic flowmeter insertable between upstream and downstream pipes which have the same internal diameter, the adjacent ends of said pipes having like

annular flanges, each provided with a like series of holes which lie in a circle, said flowmeter comprising:

A a cylindrical flowmeter body interposed between the flanged ends of the pipes, said body being provided with an annular pressure vessel formed of insulating material to define a central flow passage having a diameter matching the internal diameter of the pipe whereby the flowmeter functions to meter the flow rate of fluid passing through said pipes and said passage along a longitudinal axis extending therethrough;

B a pair of cylindrical electromagnetic coils embedded in said insulating material at diametrically-opposed positions with respect to said passage to establish a magnetic field



therein whose lines of flux are substantially perpendicular to said longitudinal axis;

C a pair of electrodes embedded in said insulating material at opposed positions with respect to said passage, said electrodes lying along a transverse axis at right angles both to said lines of flux and said longitudinal axis; said insulating material having bores extending longitudinally therethrough which lie on a circle concentric with said central flow passage and which avoid said coils and said electrodes; and

D means bridging said flanged ends to clamp said flowmeter body therebetween, said means being formed by bolts passing through said flange holes and the bores in registration therewith.

4,214,478

SYSTEM AND METHOD FOR ELIMINATING ERRORS IN AIRFLOW MEASUREMENT APPARATUS

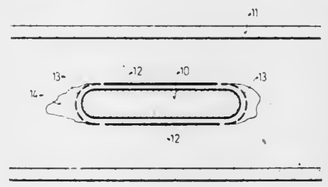
Heinz Lauterbach, Esslingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 946,966

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751196

Int. Cl.[3] G01F *1/68*

U.S. Cl. 73—204 **10 Claims**



1. In airflow measuring apparatus having a support carrier (**10**, **10'**) located in said airflow, a temperature-varying resistance sensor layer (**12**) on said carrier and supported thereby whereby the resistance sensor layer (**12**) will be in thermal transfer relation with respect to both said airflow and said carrier, and regulator means (**16**) for varying the current through said temperature-varying resistance sensor layer in such a manner that the temperature, and hence resistance of said temperature-varying resistance sensor layer remains substantially constant at a predetermined operating temperature, independent of the amount of airflow therealong,

the improvement comprising a substantially temperature independent heating means (**13**) positioned in heat-conductive relation with respect to said support carrier (**10**, **10'**) and electrically insulated from the temperature-varying resistance sensor layer (**12**) on said carrier to heat said carrier to a carrier temperature corresponding to said operating temperature, whereby errors in measurement resulting from heating and cooling of said carrier are substantially decreased.

4,214,479

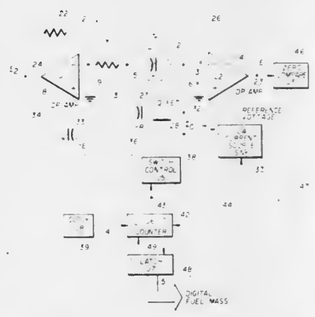
CAPACITIVE TYPE FUEL PROBE COMPENSATION CIRCUIT

Lawrence C. Maier, Middlebury, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed May 21, 1979, Ser. No. 42,252

Int. Cl.[2] G01F *23/26*

U.S. Cl. 73—304 C **9 Claims**



1. A full height compensation circuit for a capacitive type probe for a fuel tank comprising, in combination, a probe capacitor for a fuel tank having a capacitance which varies with the level of fuel in said tank, means for supplying a current to said probe capacitor, means for controlling said current supply means, means for producing a current corresponding to the capacitance of said fuel tank in an empty state, means for summing the current corresponding to the capacitance of said fuel tank and the current from said probe capacitor, means for producing an output voltage corresponding to the current from said summing means, means for integrating said output voltage and means for converting said integrated output voltage to a digital number proportional to the mass of fuel sensed by said probe capacitor.

4,214,480

INTEGRATED SMOKE TESTER

Anthony W. Butera, 112 Tuthill St., Port Jefferson, N.Y. 11777

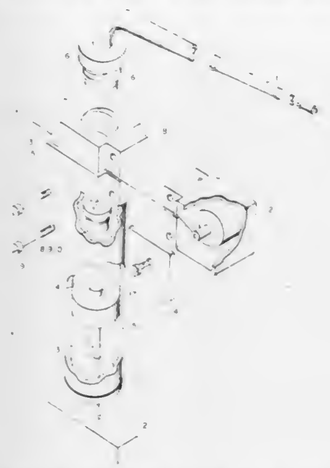
Filed Sep. 13, 1978, Ser. No. 941,956

Int. Cl.[2] G01N *1/24*

U.S. Cl. 73—421.5 A **5 Claims**

1. An integrated smoke tester for use in sampling and testing the smoke of flue gasses of an oil burner and for determining the smoke content and smoke spot number of said flue gasses by withdrawing a predetermined sample of flue gasses from an oil burner flue pipe with said tester comprising: a sampling test probe, a hand operated vacuum pump containing a longitudinal bore housing and a valve, a built-in test strip material dispenser and cover for containing a roll of strip material for rotation about an axis, said dispenser being attached to a slotted housing attached to said pump housing and containing a cutting edge, a clamping assembly for securing said strip material between a sealing surface of said slotted housing and a parallel movable sealing surface of said clamping device, the rotational axis of said roll being located laterally and perpendicular to the

longitudinal axis of the bore of said pump, said dispenser containing a slot located adjacent said slot in said slotted housing whereby a continuous slot is provided running from the dispenser, between the surface of said clamping assembly and



sealing surface of said slotted housing to the cutting edge of said slotted housing, said cutting edge being perpendicular to said bore axis and spaced laterally and at the extremity of said slot at an opposite end of said slotted housing from said dispenser.

4,214,481

METHOD AND DEVICE FOR APPLYING A DETECTABLE REFERENCE MARK ON A BODY TO BE BALANCED

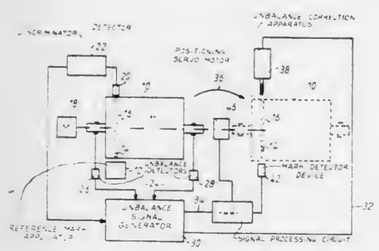
Wolf-Dieter Reutlinger, Novalisstrasse 5, D-6100 Darmstadt, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,518

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839819

Int. Cl.[3] G01M *4/26*

U.S. Cl. 73—462 **21 Claims**



1. A method for balancing a body having an axis and a peripheral ferromagnetic portion thereabout and comprising the steps of:

(a) applying a detectable reference mark on the body,

(b) rotating the body about the axis at an unbalance measuring rotary speed,

(c) while the body is so rotating detecting the reference mark and generating therefrom a reference signal for measuring the unbalance position,

(d) while the body is so rotating measuring the unbalance of the body as to amount and unbalance position making use of the reference signal,

(e) thereafter detecting the reference mark and positioning the body relative to unbalance correcting apparatus in accordance with this detecting and with the unbalance position measured relative to the reference mark, and

(f) while the body is so positioned correcting the measured unbalance,

characterized in that the application of the reference mark comprises the steps of:

magnetic homogenizing said peripheral portion to define a rotating track of the body of substantially magnetic homogeneity; and

thereafter generating a substantially instantaneous magnetic pulse of high intensity at a location immediately adjacent the rotating track for generating a locally limited permanent magnetization serving as said reference mark.

4,214,482

INERTIAL INSTRUMENT

John R. Bouchard, Canton, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 2, 1979, Ser. No. 26,332

Int. Cl.[1] G01C *19/08, 19/34, 19/42*

U.S. Cl. 73—504 **6 Claims**

1. A gyrocompass for indicating the direction of true north comprising:

a gyroscope rotor;

a permanent magnet motor adapted to spin said rotor about a spin axis at varying angular rates;

gimbal means to support said rotor for angular rotation about said spin axis and to allow angular rotation of said rotor from a null position about an output axis perpendicular to said spin axis;

torquing means to maintain said rotor at said null position about said output axis;

measuring means to produce a first signal indicating the torque supplied by said torquing means at one of said rotor angular rates and to produce a second signal indicating the torque supplied by said torquing means at a different one of said rotor angular rates; and

signal processing means to operate upon said first and second signals to provide an indication of true north.

4,214,483

APPARATUS FOR MEASURING ANGULAR SPEED

Niels O. Young, VanHornesville, N.Y., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Aug. 10, 1978, Ser. No. 932,472

Int. Cl.[2] G01P *3/22*

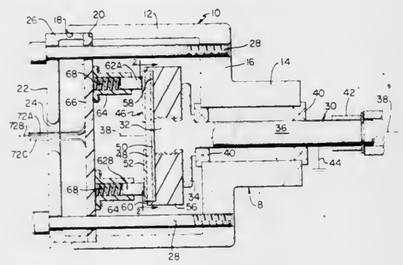
U.S. Cl. 73—518 **27 Claims**

1. Apparatus for measuring the angular speed of a rotating shaft, said apparatus comprising:

capacitive charge storage means for storing charge, said charge storage means including a disk mounted on and rotatable with said shaft, said disk defining at least one capacitor rotatable about the rotation axis of said shaft at an angular velocity related to the speed of said shaft;

charging means in contact with said charge storage means for charging said charge storage means at a first predetermined angular position of the latter;

discharging means in contact with said charge storage means for discharging said charge from said charge storage means at a second predetermined angular position of the



latter angularly displaced from said first position, said charging and discharging means being electrically isolated from one another so that the injection of charge through said charging means into said charge storage means and the subsequent discharge thereof through said discharge means following rotation of said shaft through the angular displacement between said first and second angular positions will produce an electrical signal having a value linearly related to the speed of said shaft.

4,214,484

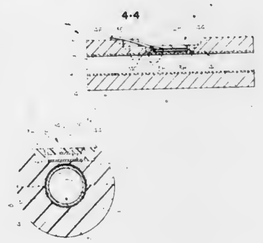
ULTRASONIC PARTICULATE SENSING

Leigh R. Abts, Providence, R.I., assignor to Rhode Island Hospital, Providence, R.I.

Filed Oct. 16, 1978, Ser. No. 951,614

Int. Cl.[2] G01N *29/02*

U.S. Cl. 73—632 **14 Claims**



1. A pulse echo device for obtaining information about matter discontinuities in a flowing fluid comprising:

a transmitter-receiver lens with a concave surface positioned to direct ultrasonic energy transversely to the direction of fluid flow and to a focal region and

a damping means integral with said lens and positioned on the side opposite said concave surface for supporting an acoustical transducer, said damping means including a ridge spaced apart from a conduit containing the flowing fluid, said ridge surrounding and defining a blind hole, said hole being for receiving said acoustical transducer and having a bottom surface which forms a second surface of said lens opposite said concave surface,

whereby ultrasonic energy directed toward said lens is focused and energy directed toward said ridge is damped.

4,214,485

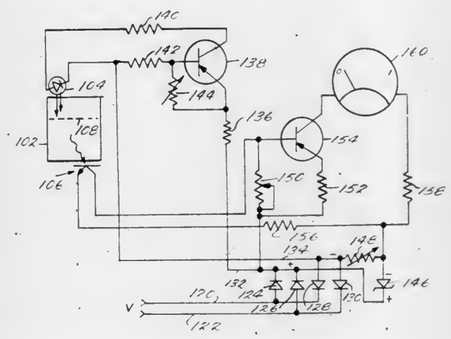
ELECTRO-MECHANICAL TRANSDUCER

Paul J. Berger, 200 Northern Lights Blvd., Kalispell, Mont. 59901, and Ronald F. Shane, Kalispell, Mont., assignors to Paul J. Berger, Kalispell, Mont.

Filed Jun. 7, 1978, Ser. No. 913,517

Int. Cl.[2] G01H *3/12*

U.S. Cl. 73—655 **91 Claims**



1. An electro-mechanical transducer comprising:

a container;

a liquid partially filling said container thereby defining a liquid surface therewithin;

a source of electromagnetic radiation mounted with respect to said container so as to illuminate at least a portion of the interior thereof;

an electromagnetic radiation detection means responsive to said source, mounted with respect to said container so as to detect radiation after interaction with said liquid surface within said container, movement of said container causing the output of said detection means to vary as a result of the changing transmissive and refractive properties of said liquid surface; and

means for directing the radiation from said source so that substantially all of the radiation passes at least once through said liquid surface before impinging on said detection means.

4,214,486

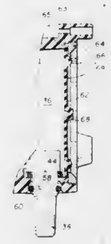
SEALED CASING FOR PRESSURE GAUGE

Joseph E. Gorgens, Trumbull; Frederick M. Kipp, Fairfield, and Robert D. Bissell, Orange, all of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 767,093, Feb. 9, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,895

Int. Cl.[2] G01D *11/26;* **G01L** *7/04*

U.S. Cl. 73—738 **16 Claims**

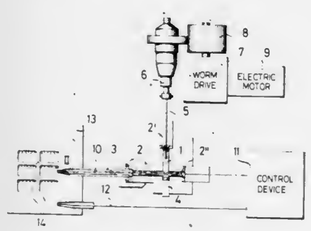


1. A gauge instrument comprising in combination:

(a) a condition responsive element operative to produce a predictable displacement in response to exposed condition changes to which it is sensitive;

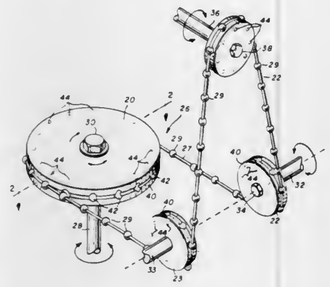
(b) output means operably connected to said condition responsive element for reflecting the displacement position thereof;
(c) a gauge case substantially containing said condition responsive element and defining an opening for exposing said condition responsive element to the case exterior;
(d) mounting means extending about said gauge case opening having a mounting structure commonly receptive for one at a time mounting of selectively different closure plates selected from among a first closure plate suitably adapted when supported in said mounting means for effecting a dust-tight sealing relation about said opening and a second closure plate suitably adapted when supported in said mounting means for effecting a pressure relieving liquid-tight sealing relation about said opening; and
(e) a closure plate of said selective suitability adapted when received in said mounting means to cooperate with the mounting structure of said mounting means for closing said opening.

4,214,487
APPARATUS FOR MEASURING THE PRESSURE IN A VERY SMALL VOLUME
Dieter Hüsken, Jülich; Ernst Steudle, Aachen, and Ulrich Zimmerman, Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany
Filed Oct. 10, 1978, Ser. No. 949,965
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745437
Int. Cl.[2] G01L *9/00*
U.S. Cl. 73—753 **3 Claims**



1. An apparatus for measuring the pressure in a very small volume, especially capillary vessels and biological cells, in a fluid, which apparatus comprises:
a pressure-tight chamber fillable with a nearly incompressible medium;
a microcapillary tube for penetrating said volume, both ends of said tube being open, one end communicating with said chamber;
a device communicating with said chamber for converting pressure therein to electrical values;
means extending into said chamber and movable for partially displacing medium therein;
a first electrode arranged within said microcapillary tube and having a tip end extending nearly to the other open end of said tube;
a second electrode in the form of a reference electrode;
a control device electrically connected to both of said electrodes for regulating an interface, located in said microcapillary tube during measurement, between said medium and fluid penetrating said tube from said volume, said control device effecting said regulation of the interface by moving said medium-displacing means within said chamber as a function of electrical resistance between said electrodes and a predetermined rated resistance value; and
means operatively connected to said control device for effecting said movement of said medium-displacing means.

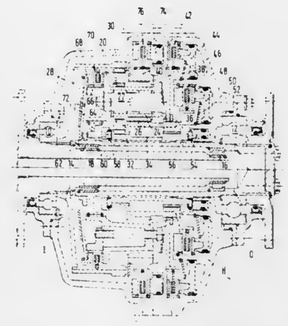
4,214,488
POSITIVE DRIVE SYSTEM
René A. Conrad, Woodside, Calif., assignor to Dynaloc Corporation, San Mateo, Calif.
Filed Oct. 27, 1977, Ser. No. 845,929
Int. Cl.[2] F16G *1/28*
U.S. Cl. 474—148 **18 Claims**



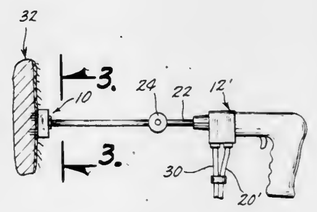
1. A positive drive system for rotatably coupling a drive means to a driven means, said drive system comprising:
a drive sheave having a groove formed around its curved surface and a plurality of cylindrically-shaped pockets formed along said groove means, said pockets being separated from adjacent pockets by a distance defining the pitch of the sheave and having a depth beneath the bottom of said groove greater than one-half of the cylindrical diameter thereof;
means for driving said first sheave;
a first drive cable disposed to engage said sheave including;
a single length of flexible 7×19 preformed and lubricated multistrand cable having its ends attached to each other to form a continuous, endless loop, said cable having an outside diameter less than the width of said groove;
a plurality of nodules each consisting of a mass of material formed into a regular, geometric spherical solid having a diameter slightly less than the diameter of said pockets, said nodules being swagedly attached to said cable in regular, spaced apart disposition, the distance between adjacent nodules being substantially equal to the pitch of said sheaves, such that at any point in time a plurality of adjacent nodules engage a corresponding plurality of adjacent pockets on said sheave;
means linking said drive cable to said driven means;
whereby motion of said drive sheave is transferred to said driven means by said drive cable.

4,214,489
MULTI-SPEED PLANETARY GEAR
Karl G. Ahlen, Bromma; Per-Olof Bergström, Ektorp, and Joseph Supanich, Stockholm, all of Sweden, assignors to S.R.M. Hydromekanik Aktiebolag, Stockholm-Vallingby, Sweden
Filed Aug. 13, 1976, Ser. No. 714,287
Claims priority, application United Kingdom, Jan. 29, 1976, 3572/76; Fed. Rep. of Germany, Apr. 30, 1976, 2619011
Int. Cl.[2] F16H *57/10*
U.S. Cl. 74—761 **37 Claims**

1. A multi-speed planetary gear comprising, a casing, a primary shaft and a secondary shaft, each of said shafts being journalled with respect to the casing, a planet carrier drivingly connected to one of said shafts, at least one planet gear rotatively mounted on said planet carrier, said planet gear having at least two gear surfaces of different diameters, at least three annular gears, one of said annular gears being a drive annular gear in the form of a ring gear engaged with the shaft other than the shaft with which the planet carrier is drivingly connected, each of the remaining annular gears being engageable with one of the planet gear surfaces, such that each gear surface has at least one annular gear engageable therewith, coupling means associated with each of said remaining annular gears for connecting it against rotation relative to the casing, and a coupling means for connecting the primary and secondary shafts together for direct drive, and including servo-motor means for connecting each of the said coupling means, each of said servo-motor means being mounted in the casing against rotation relative to the casing.



4,214,490
METHOD AND MEANS FOR PLACING AN IDENTIFICATION MARK ON A HOG
Franklin J. Chizek, 500 Shannon Rd., Papillion, Nebr. 68046
Filed Jun. 12, 1978, Ser. No. 914,599
Int. Cl.[3] B43K *5/00*
U.S. Cl. 81—9.22 **6 Claims**



1. The method of placing an identification mark on a hog comprising the steps of:
(1) providing a power head in communication with a source of marking fluid;
(2) providing an identification indicia support means which is in fluid communication with said power head and which includes a plurality of injection openings;
(3) placing the identification indicia support means into engagement with at least the exterior surface of the skin of the hog;
(4) pressurizing marking fluid in said power head; and
(5) selectively supplying the pressurized marking fluid from said power head to said identification indicia support means under sufficient pressure for injecting said fluid through said injection openings and through the hog's skin to leave an identification mark on the hog at least under the hog's skin so that the said mark will be visible upon subsequent removal of the skin from the hog.

4,214,491
QUICKLY ADJUSTABLE RATCHET WRENCH
Werner W. Martinmaas, 650 South Rock Blvd., Unit 3, Reno, Nev. 89502
Continuation of Ser. No. 909,104, May 24, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,892
Int. Cl.[3] B25B *13/14*
U.S. Cl. 81—134 **23 Claims**

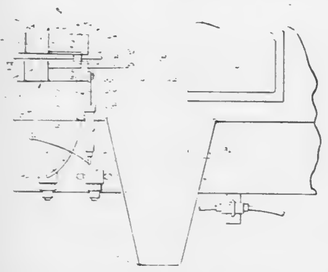


1. A quickly adjustable ratchet wrench for rotating objects which have angularly related flat surfaces surrounding an axis of rotation, said wrench comprising, in combination:
a fixed jaw member having a jaw element;
a movable jaw member having a jaw element and an elongated engaging surface;
means mounting said movable jaw member for linear translatory movement of the fixed jaw member between closed and open positions of said jaw elements;
a jaw spring lightly biasing said movable jaw member toward closed position so that said fixed and movable jaw elements normally close lightly upon an object between them;
locking means supported on the fixed jaw member including a locking face which is selectively engageable with said engaging surface to lock the jaw elements closed upon an object between them; and
a lever on the fixed jaw member which constitutes the sole means for engaging and disengaging said engaging surface and said locking face, said lever having a forward part which is channel-like with side webs flanking the fixed jaw member, a transverse pivot pin extending through the side webs to pivot the lever on said fixed jaw member, and a transverse web which bears on a part of the fixed jaw member when the engaging surface and the locking face are engaged so that manual force applied to the lever is transmitted through the fixed jaw member to rotate an object upon which the jaws are closed, and which pivots away from said part of the fixed jaw member to disengage said engaging surface and locking face and thereby release the movable jaw member for free linear movement against the bias of the spring, said lever being so related to the fixed jaw member that a user may manually grip the lever with one hand while leaving the fixed jaw member free, whereby the movable wrench jaw may be alternately locked solely by rotation of the lever in one direction to grip opposite flat surfaces of an object between the jaw elements to rotate said object and released solely by rotation of the lever in the other direction for free rotation of the jaw elements around angles between adjacent flat surfaces of the object without rotating said object.

4,214,492
METHOD AND APPARATUS FOR CUTTING CLIPS OFF OF THE ENDS OF SAUSAGES AND THE LIKE
Thomas M. Hoffman, 2147 S. 18th St., Manitowoc, Wis. 54220
Filed Dec. 26, 1978, Ser. No. 972,976
Int. Cl.[2] B26D *5/04, 5/12, 11/00*
U.S. Cl. 83—24 **16 Claims**

1. An apparatus for cutting clips off of the ends of adjacent pairs of sausages or the like, the clips being located between adjacent sausage ends, said apparatus comprising a pair of clippers having cutters, means for permitting relative movement of said pair of clippers between a first position wherein

the cutters of said clippers are positioned in mutually adjacent relation and a second position wherein said cutters engage the ends of the adjacent sausages and are positioned between said clips and said ends, means for actuating said clipper moving means to cause said cutters to move from said first position to



said second position, and means for automatically actuating said pair of clippers when said cutters engage said ends and causing said cutters to cut through the outer skin at the adjacent ends of the sausages to effect removal of the clip or clips therebetween.

4,214,493

CIRCULAR SAW

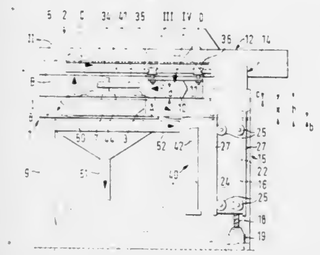
Friedrich W. Elhaus, Hofkamp 140, D-5600 Wuppertal 1, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 877,919

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706336

Int. Cl.³ B23D *47/02, 47/10;* **B27B** *5/18*

U.S. Cl. 83—100 **12 Claims**



1. A circular saw for industrial use in sawing elongated bars or billets of metallic material comprising:

a rotatable saw blade;

means attached to said saw blade, for guiding said saw blade horizontally, said horizontal guide means being positioned on a cantilevered beam element;

means for vertically guiding said cantilevered beam element, said vertical guide means engaging a vertical support member and one end of said cantilevered beam element, whereby the other end of said cantilevered beam element is unsupported, thereby providing free access for handling the material and for controlling saw movement from an area adjacent said other end of said cantilevered beam element;

automatic drive means for movement of said saw blade horizontally along said horizontal guide means and for movement of said cantilevered beam element vertically along said vertical guide means in a predetermined sequence of horizontal and vertical movements.

4,214,494

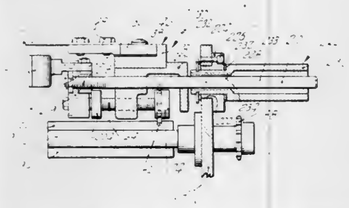
APPARATUS FOR STRAIGHT LINE SHEARING

Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Division of Ser. No. 876,086, Feb. 8, 1978. This application Feb. 21, 1979, Ser. No. 13,091

Int. Cl.² C03B *5/38*

U.S. Cl. 83—150 **6 Claims**



1. In an apparatus for use with a feeder for shearing gobs from a column of plastic material and including at least one set of oppositely disposed upper and lower shear blades movable in a straight line toward and away from each other and a drop guide positioned under said upper blade and movable therewith, the improvement comprising means mounting said drop guides for movement with said upper blade, means for moving said drop guide in the direction of travel of said shear blades relative to said shear blade, and means for pivoting said drop guide about a vertical axis.

4,214,495

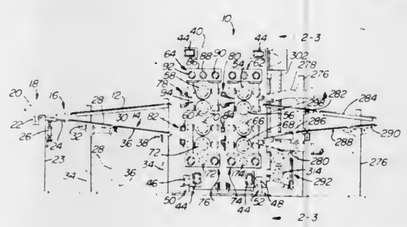
SLITTER SCORER APPARATUS

Robert E. Coburn, Warminster, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,560

Int. Cl.² B26D *3/08, 11/00*

U.S. Cl. 83—425.4 **8 Claims**



1. A slitter scorer for processing a moving web comprising:

(a) first and second upright side frames, each side frame having an upstream end and a downstream end,

(b) an upper pair of rotatable slitter shafts downstream from an upper pair of scorer shafts, a lower pair of rotatable slitter shafts downstream from a lower pair of scorer shafts, each of said pairs of shafts being supported by said side frames, a plurality of mating pairs of tools on each of said pairs of shafts, said upper pairs of shafts defining an upper web path, said lower pairs of shafts defining a lower web path,

(c) a tool positioner for each of said pairs of shafts, the tool positioners for the upper pairs of shafts being guided for reciprocation parallel with the axes of said pairs of shafts at an elevation above the elevation of their respective pairs of shafts, each tool positioner for the lower pairs of shafts being guided for reciprocation parallel with the axes of said pairs of shafts at an elevation below the elevation of their respective pairs of shafts, each tool positioner being arranged to simultaneously shift a pair of tools axially along its associated pair of shafts, each tool positioner having a parking position adjacent one of said side frames,

(d) a motor supported by said first side frame and coupled to said pairs of shafts for selectively driving all pairs of shafts, or only the upper pairs of shafts, or only the lower pairs of shafts, and clutch means associated with each of the upper and lower pairs of shafts whereby the latter may be selectively driven by said motor, and

(e) motor means supported by said second side frame for reciprocating the upper tool positioners or the lower tool positioners.

4,214,496

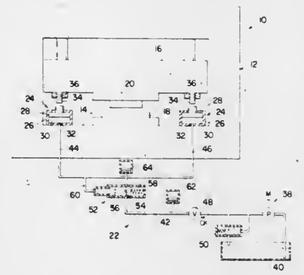
SHOCK DAMPENING SYSTEMS FOR PRESSES

Louis F. Carrieri, LaGrange Park, Ill., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Continuation-in-part of Ser. No. 765,981, Feb. 7, 1977, abandoned. This application Oct. 6, 1978, Ser. No. 949,273

Int. Cl.² B26D *5/12*

U.S. Cl. 83—617 **68 Claims**



1. In a hydraulic shock dampening system for a shearing press having frame means including bed means and supporting reciprocable slide means and wherein material is severed between cooperable shearing means supported by said bed and slide means, said system including hydraulic fluid receiving variable volume chamber means between said bed means and slide means and connected to a source of hydraulic fluid under pressure, said chamber means being operable under compression in response to breakthrough of material being sheared by said shearing means supported by said slide means to restrain the resulting accelerated movement of said slide means, the improvement comprising: shutoff valve means in fluid flow communication with said chamber means, said valve means having opened and closed modes, and means completely closing said valve means in response to said accelerated movement of the press slide to prevent any fluid flow from said chamber means.

4,214,497

APPARATUS FOR STRAIGHT LINE SHEARING

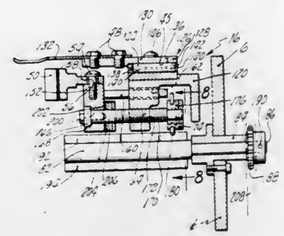
Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Division of Ser. No. 876,086, Feb. 8, 1978, Pat. No. 4,174,647. This application Feb. 21, 1979, Ser. No. 13,483

Int. Cl.² C03B *5/38*

U.S. Cl. 83—640 **3 Claims**

1. In an apparatus for use with a feeder for shearing gobs from a column of plastic material and including at least one set of oppositely disposed shear blades movable in a straight line toward and away from each other, the improvement comprising mounting means for mounting at least one of said blades, said mounting means including a blade holder to which said one blade is attached and having a lower surface, a support member having an upper surface disposed under said lower surface of said blade holder, pin means positioned between said upper and lower surfaces and having an axis extending in the direction of movement of said blades to permit said blade holder to pivot about said axis relative to said support member, and means for securing said blade holder to said support member after said blade holder has been pivoted to the desired position.



4,214,498

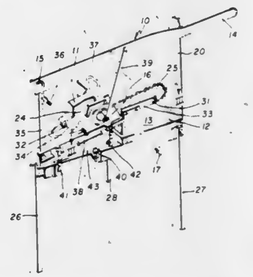
WOOD CUTTING APPARATUS

Peter W. Zukas, and William Zukas, both of Smithville Rd., Spencer, Mass. 01562

Filed Oct. 13, 1978, Ser. No. 951,186

Int. Cl.² B27B *17/02*

U.S. Cl. 83—796 **7 Claims**



1. Wood cutting apparatus, comprising:

(a) a table providing a horizontal surface at a working height,

(b) a vertical post extending upwardly from the table,

(c) an elongated primary arm pivotally mounted to the upper end of the post for hinged motion about a horizontal axis extending through an end of the arm at one side of the surface and having its other end located at the other side of the table, said primary arm including a handle position,

(d) a secondary arm pivoted to the lower part of the post,

(e) a link pivotally connected to the primary and secondary arms to hold them in spaced parallel relationship,

(f) means for fastening a chain saw to the secondary arm so that downward pivotal motion of the primary and secondary arms causes the saw to engage a piece of wood supported on said horizontal surface, and

(g) a spring for maintaining the primary and secondary arms in an upper inoperative position.

4,214,499

CUTTER TOOL WITH A PLURALITY OF HARD CUTTING TEETH

Glynn A. Ellis, Canal St., Long Eaton, Nottingham, Nottinghamshire, England

Filed Apr. 17, 1978, Ser. No. 897,284

Claims priority, application United Kingdom, Apr. 16, 1977, 15903/77

Int. Cl.² B27B *33/02*

U.S. Cl. 83—855 **9 Claims**

1. A planar cutter blade including a body having oppositely

presented flat parallel lateral faces and having an edge region with a series of regularly spaced gullet forming notches provided therein, each such notch being shaped to provide a workpiece cutter tip insert receiving region located, in relation to the direction of intended cut of the blade, at the rear of the notch; a cutter tip secured in each said region of the gullets each tip presenting a rear face and a bottom face towards the tip receiving region of the notch and having a front face and a



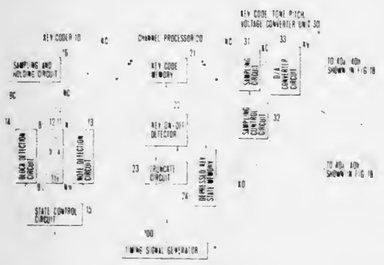
top face which are inclined to each other to define the workpiece cutting edge of the tip, and two opposed side faces which are inclined towards each other both in the direction front face towards the rear face and in the direction top face towards the bottom face, with each of said side faces also being dished in such manner that the lines of intersection of the two side faces with the front face are curved inwards to each other whereby the narrowest width region of the front face is intermediate the top face and the bottom face.

4,214,500

ELECTRONIC MUSICAL INSTRUMENTS

Takeshi Adachi, Hamamatsu, and Eisaku Okamoto, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 5, 1978, Ser. No. 912,868
Claims priority, application Japan, Jun. 10, 1977, 52-67821; Sep. 24, 1977, 52-114983
Int. Cl.² G10H *1/02*
U.S. Cl. 84—1.01 **11 Claims**



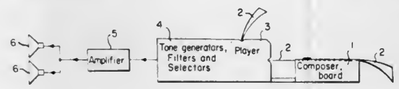
1. In an electronic musical instrument of the type comprising a keyboard having a plurality of keys; a plurality of musical tone generating channels each for producing a musical tone having pitch, tone color and envelope elements, the number of said channels being less than that of said keys; a circuit for generating key codes that identify depressed keys of said keyboard; a channel assigner circuit for assigning, in a substantially irregular manner, each of said key codes to a channel ready for receiving them; and means for generating, in response to each of said key codes, a first signal for designating the pitch of musical tones to be generated, and a second signal for determining the timing of the generation of said musical tones; the improvement which comprises musical tone element control means for producing a musical tone element control signal which modifies at least one of said pitch, tone color, and envelope of the musical tone generated by at least one channel differently from the pitch, tone color, and envelope of the musical tone generated by another channel.

4,214,501

MUSICAL COMPOSER INSTRUMENT AND ELECTRONIC PLAYER (ELECTRONIC COMPOSER)

Miklos von Kemenczky, 112 Warrenville Rd., Green Brook, N.J. 08812

Filed Oct. 19, 1978, Ser. No. 952,646
Int. Cl.² G10F *5/04;* **B43L** *13/24;* **G06K** *7/06*
U.S. Cl. 84—1.03 **21 Claims**



1. Apparatus for reading markings on a moving elongated flexible strip comprising:

an insulating member having a substantially flat surface;

a plurality of thin elongated conductive members permanently affixed to and arranged in closely spaced parallel fashion upon the flat surface of said member;

each of said conductive members being separated into associated first and second conductor portions having spaced apart adjacent ends defining a gap exposing the surface of said member;

said strip being slidable in a predetermined direction along said flat surface of said insulating member with the surface of said strip bearing said markings engaging said flat surface of said insulating member;

said elongated conductive members being in alignment with the direction of movement of said strip;

resilient means positioned to urge said strip into ultimate engagement with said gap region and the ends of the conductor portions in the immediate region of said gap region;

said markings being formed with an electrically conductive material; and

means for coupling electrical power to said first conductor portions, whereby electrical power is conducted to said second conductor portions when a marking on said strip bridges the gap between associated first and second conductor portions.

15. Apparatus for composing a pattern of parallel lines controlled upon an elongated strip having at least one straight longitudinal edge, comprising:

a composing board having a main recess for receiving and supporting said strip, said recess having one upright side for locating and aligning the said one longitudinal edge of said strip;

an elongated slidable rule extending across said recess;

a pair of transverse recesses arranged on said board and located on opposite sides of the strip moving along said main recess for aligning and slidably receiving said rule, the depths of said grooves extending substantially to the surface of the main recess so that the underside of said slidable rule engages the strip positioned upon said recess and is aligned perpendicular to said one upright side;

said rule having a narrow elongated slot extending substantially parallel to said one upright side;

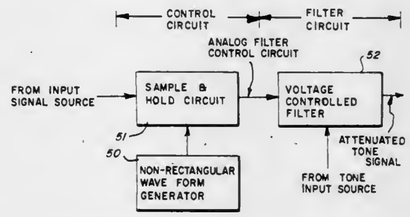
detent means for releasably securing said slidable rule at a plurality of equispaced discrete positions to enable said elongated slot to be moved to a plurality of equispaced discrete positions to facilitate the drawing of straight line upon said strip only said equispaced discrete positions by insertion of the tip of a marking instrument into said slot.

4,214,502

SPECIAL EFFECTS CIRCUIT FOR AN ELECTRONIC ORGAN

Robert J. Holpuch, Palatine; Robert G. Mathias, Brookfield, and Alan C. Young, Park Ridge, all of Ill., assignors to Marmon Company, Chicago, Ill.

Continuation of Ser. No. 697,468, Jun. 18, 1976, abandoned. This application Feb. 7, 1978, Ser. No. 875,847
Int. Cl.² G10H *1/02*
U.S. Cl. 84—1.24 **3 Claims**



1. A special effects circuit for an electronic musical instrument comprising:

a tone signal source having a tone output signal;

an input signal source having an enable output signal;

non-rectangular waveform generator means for producing a continuously varying non-rectangular waveform output signal;

sample and hold circuit means having a control output signal and receiving said continuously varying non-rectangular waveform output signal of said non-rectangular waveform generator means and said enable output signal of said input signal source for sampling the instantaneous signal value of said continuously varying non-rectangular waveform output signal in response to said enable output signal and for holding said sampled instantaneous signal value as said control output signal; and

filter circuit means receiving said tone output signal of said tone signal source and said control output signal of said sample and hold circuit means and having bandpass characteristics dependent upon the value of said control output signal for filtering said tone output signal producing an attenuated tone output signal.

4,214,503

ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC LOUDNESS COMPENSATION

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Mar. 9, 1979, Ser. No. 19,318
Int. Cl.² G10H *1/02*
U.S. Cl. 84—1.27 **9 Claims**



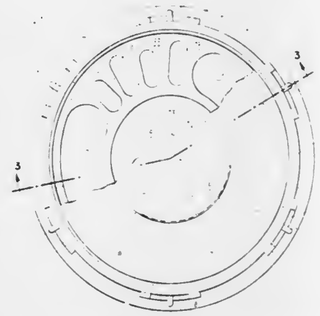
1. An electronic musical instrument comprising: at least one tone generator for generating a musical tone, a keyboard having keys for setting the pitch and initiating a musical tone from the tone generator by operating selected keys, a memory means storing a plurality of data sets, each set comprising a plurality of data values corresponding to the relative amplitudes of points on the constant loudness level curve for the human ear over the frequency range of the instrument, there being a unique value in each set for each key on the keyboard, means including loudness controlling means for selecting one of said sets in the memory means, means responsive to operation of a key on the keyboard for selecting and reading out a corresponding one of said data values from the selected set of values, and means setting the amplitude of the tone generator output in proportion to said data value from memory, said loudness controlling means including switch means for selecting the desired loudness level of the tone generator by selecting one of said sets of values.

4,214,504

COMPOUND DRUM

Leslie A. Rex, 2036 Chestnut St., Philadelphia, Pa. 19103

Filed Apr. 27, 1978, Ser. No. 900,808
Int. Cl.² G10D *13/02*
U.S. Cl. 84—411 R **10 Claims**



1. A drum comprising:

a cylindrically-shaped housing, one end thereof terminating as a truncated frustroconical-shaped end, comprising a contiguous plurality of percussion chambers whereof:

a first circularly-shaped percussion chamber extends longitudinally through said housing, having an opening onto the flat portion of said truncated frustroconical end;

a pair of kidney-shaped percussion chambers each extend logitudinally through said housing, oppositely positioned about the periphery of said first circularly-shaped chamber, each having an opening thereof onto the tapered portion of said truncated frustroconical end;

a plurality of oblong-shaped percussion chambers extend logitudinally through said housing, each having an opening thereof grouped onto said tapered portion of said truncated frustroconical end, peripherally about said first circularly-shaped percussion chamber, and between said pair of kidney-shaped chambers;

a plurality of small circularly-shaped percussion chambers extending longitudinally through said housing, each having an opening thereof grouped into said tapered portion of said truncated frustroconical end, about the periphery of said first circularly-shaped percussion chamber opposite said plurality of oblong-shaped percussion chambers; and

a single drum head completely covering said housing truncated frustroconical-shaped end.

4,214,505

BUSH FOR ANCHORING PANEL FASTENERS

Michele Aimar, Turin, Italy, assignor to ITW Fastex Italia S.p.A., Turin, Italy

Filed Sep. 13, 1978, Ser. No. 942,000
Claims priority, application Italy, Sep. 26, 1977, 22354/77[U]
Int. Cl.[2] F16B *15/02, 19/00*
U.S. Cl. 85—55 **1 Claim**



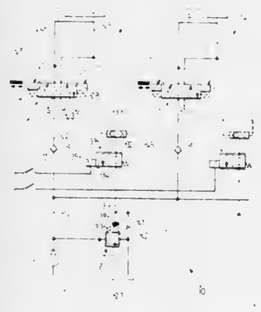
1. A bush adapted for anchoring panel fasteners in foamed or semi-foamed plastic panels, characterized in that the bush comprises a cup-shaped portion with a flange at one end of said portion and having a bottom provided with a hole adapted for anchoring the head of a panel fastener and a cover portion adapted to engage by snap action the open mouth of said cup-shaped portion so as to provide a seal, said cup-shaped portion being provided with a plurality of axially extending peripherally spaced ribs on its side wall which taper inwardly from their juncture with said flange to a line spaced from but adjacent the bottom end of said cup-shaped portion whereby said flange and ribs interlock with said foam material to prevent axial and rotational movement of said bush.

4,214,506

HYDRAULIC CONTROL ARRANGEMENT WITH AT LEAST ONE MULTIPLE POSITION VALVE

Wolfgang Bernhardt, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,879
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757660
Int. Cl.[3] F15B *11/16, 13/04*
U.S. Cl. 91—527 **10 Claims**



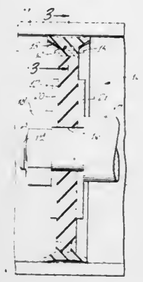
1. A hydraulic control arrangement for at least one hydraulic consumer having a pair of consumer conduits, said hydraulic control arrangement comprising a source of pressure fluid; a tank; a multiple position valve connected to said consumer conduits; an inlet conduit connected by a pressure conduit to said source of pressure fluid and leading to said multiple position valve; an outlet conduit connecting said multiple position valve with said tank, said multiple position valve having a valve slide movable between a plurality of positions and proportional drive means for controlling the positions of said valve slide and therewith the direction and magnitude of flow of pressure fluid from said source to a respective one of said consumer conduits and from the other of said consumer conduits to said tank; an overpressure valve connected upstream of said multiple position valve between said pressure conduit and said return conduit and having a valve member reciprocatable in a valve chamber connected at one end to said pressure conduit so that the fluid pressure of said source acting on one end of said valve member biases the latter to an open position and a spring acting on the other end of said valve member and biasing the latter to a closed position; control conduit means for transmitting the maximum load pressure in a respective one of said consumer conduits to the other end of said valve chamber of said overpressure valve to support the action of said spring; a pair of one-way valves in said control conduit means for preventing flow of fluid from said one consumer conduit to the other of said consumer conduit; a stop valve movable between an open and a closed position in said control conduit means between said one-way valves and said other end of said valve chamber of said overpressure valve; a throttle; a conduit connecting said throttle to said control conduit means between said stop valve and said other end of said valve chamber of said overpressure valve and to said return conduit; and means controlling the position of said stop valve depending on the position of the valve slide of said multiple position valve.

4,214,507

ONE-PIECE PLASTIC PISTON

Jules M. Hock, 16056 Arbela Dr., Whittier, Calif. 90603, and Donald S. de Vries, Jr., 106 Pearl Ave., Balboa Island, Calif. 92662

Filed Aug. 24, 1977, Ser. No. 827,425
Int. Cl.[2] F16J *9/00, 9/08*
U.S. Cl. 92—254 **9 Claims**



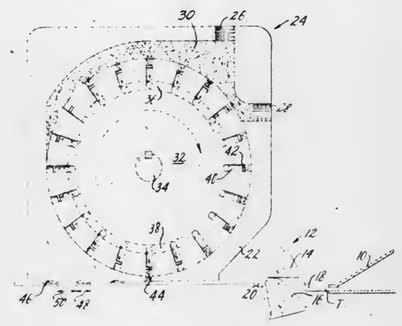
1. A unitary piston comprising:
a core molded from a rigid thermoplastic material, said core consisting of a disc-shaped member having opposite sides and a radially extending flange at the perimeter thereof spaced axially inwardly from said sides, said flange having a plurality of holes extending therethrough; and
a seal element made from a flexible thermoplastic material molded on said core, on at least opposite sides of said flange and on said perimeter, the material of said seal element extending through said holes in said flange to connect the material on said opposite sides to form a mechanical bond between said seal element and said core,
there being no adhesion or chemical bond between said core and said seal element, said mechanical bond being the only means for holding said seal element on said core.

4,214,508

METHOD AND APPARATUS FOR MAKING CIGARETTE FILTERS OF FILAMENTARY MATERIAL

James M. Washington, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 13, 1977, Ser. No. 841,804
Int. Cl.[2] A24C *5/50;* **D02J** *1/22*
U.S. Cl. 93—1 C **21 Claims**



1. A method for providing an article of manufacture comprised of elongate filamentary material, including the steps of:
(a) continuously longitudinally advancing said material through an issue location;
(b) continuously longitudinally advancing said material through a take-up location spaced from said issue location; and
(c) while continuously transporting said material from said issue location to said take-up location, longitudinally stretching selected mutually spaced first portions of said material and simultaneously retaining second portions of said material longitudinally successive to such first portions to prevent stretching of said second portions thereof.

4,214,509

METHOD AND APPARATUS FOR MANUFACTURING BAGS OF A CONTINUOUS WEB OF A THERMOPLASTIC SYNTHETIC SHEET MATERIAL

Leonard Van der Meulen, Immeuble Saadi El Menzah, Appt. 22a, 6*ième* Etage, Tour A, Tunis, Tunisia

Filed May 25, 1978, Ser. No. 909,578
Claims priority, application Netherlands, May 31, 1977, 7705977
Int. Cl.[2] B31B *1/64, 27/60*
U.S. Cl. 93—35 R **42 Claims**



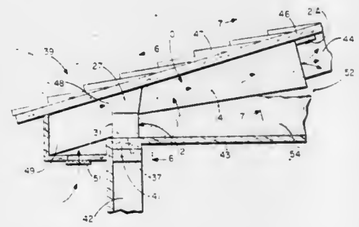
1. A method for the continuous manufacture of bags from a tubular web of synthetic sheet material comprising continuously supply said web to a bag producing zone at a first rate, clamping said web at regular intervals along its length at a clamping zone on said web at a point within said bag producing zone, said web being clamped between first and second pairs of clamping bars travelling along a pair of first paths juxtaposed on opposite sides of said web at a second rate, the relationship between said first rate and said second rate being such that tension in said web is avoided between said pairs of clamping bars, maintaining said web clamped between said pairs of clamping bars as said pairs of clamping bars travel along clamping path portions of said first paths parallel to said web, said clamping path portions having a first predetermined length, perforating said web at a first location on said web proximate to said clamping zone, and heat sealing said web at a second location on said web proximate to said clamping zone by contacting said web with heat sealing means travelling along a heat sealing path portion of a second path parallel to said web, said heat sealing path portion of said second path having a second predetermined length, said second predetermined length being less than said first predetermined length, so that said heat sealing path portion of said second path is contained entirely within and terminates before said clamping path portions of said first paths.

4,214,510

VENT AND BAFFLE UNIT

Bruce K. Ward, 2904 Virginia Ave. South, Minneapolis, Minn. 55426

Filed Sep. 14, 1978, Ser. No. 942,462
Int. Cl.[2] F24F *7/00*
U.S. Cl. 98—37 **34 Claims**



1. A vent and baffle unit for use with a structure having adjacent roof rafters extended from a top plate to support roof structure and an opening between the adjacent roof rafters connecting the soffit and attic comprising: a one-piece sheet member having a vent section providing an air passage between the soffit and the attic and a baffle section closing the opening between the adjacent roof rafters at the forward end of the vent section, except for the air passage, said vent section including a bottom wall having opposite sides and a forward edge, said bottom wall has a generally triangular shape with opposite sides thereof diverging away from the baffle means, side walls articuately joined to the opposite sides of the bottom wall, a first flange articuately joined to one side wall, a second flange articuately joined to the other side wall, said baffle section including a transverse baffle means articuately joined to the forward edge of the bottom wall, said side walls of the vent section being angularly related to the bottom wall to form the vent passage and said first and second flanges being attachable to the roof structure, said baffle means of the baffle section being extended downwardly from the forward edge of the bottom wall to close the opening between adjacent roof rafters below the forward edge of the bottom wall.

4,214,511

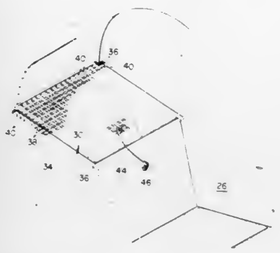
BREAK-AWAY VENT FOR GRAIN STORAGE BINS

Gary E. Mueller, P.O. Box 366, 507 Williams St., Reynolds, Ill. 61279

Filed Jun. 4, 1979, Ser. No. 45,462
Int. Cl.[3] F24F *7/00*
U.S. Cl. 98—37 **10 Claims**

1. In a building structure including an enclosure having a wall provided with an opening and a screen disposed over the opening to afford a vent through which air is caused to flow by the existence of a pressure drop across the vent of a predetermined value resulting from a pressure differential between the interior of the structure and the outside atmosphere, the improvement comprising means for connecting the screen to the

wall for holding the screen in place under conditions at pressure drop at and about the aforesaid value, said means being releasable to release the screen from its position across the opening under conditions in which the screen accumulates



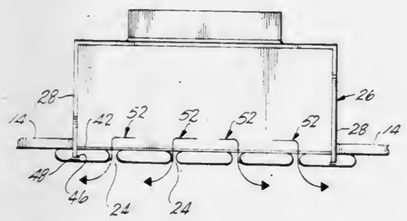
air-borned and like material to such extent as to cause clogging of the screen sufficient to result in a pressure drop across the vent of a value substantially below the aforesaid predetermined value.

4,214,512

DROP CEILING AIR DIFFUSER WITH HORIZONTAL DISCHARGE PATTERN

Francis L. McCall, Hacienda Heights, Calif., assignor to Specified Ceiling Systems, Alhambra, Calif.

Filed Sep. 11, 1978, Ser. No. 941,223
Int. Cl.[2] F24F *13/06*
U.S. Cl. 98—40 D **7 Claims**



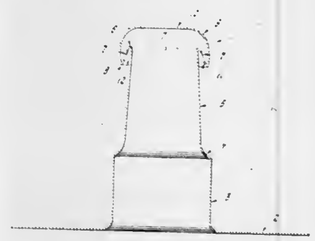
1. An air diffuser assembly comprising a plurality of ceiling panels arranged parallel to each other, each ceiling panel being formed of a flat longitudinal strip of sheet material with both longitudinal edges being turned upwardly in an arc to form arcuate edge surfaces, means supporting the flat ceiling panels in a common plane with gaps providing longitudinal slots between the longitudinal edges of adjacent members, a hood positioned on top of the ceiling panels forming a plenum chamber with the panels into which air is admitted under pressure, the air escaping through from the plenum chamber through the slots, and air deflector members positioned inside the plenum chamber and mounted on one of said longitudinal edges of the ceilng panels, each air deflector member being formed of sheet material formed in cross-section as two planar surfaces joined by an arcuate cylndrical surface, each of the air deflector members being mounted on the respective ceiling members with one planar surface of each deflector member terminating along one edge in tangential relationship to the arcuate edge surface of the associated ceiling panel on which it is mounted, the concave side of the cylindrical surface and the other planar surface of each of the deflection members extending substantially above the slot between the ceiling panels on which it is mounted and the next adjacent ceiling panel and extending in spaced apart but overlapping relation to the next adjacent ceiling panel, whereby air from the plenum chamber passes between the underside of a deflector member and the top of a ceiling panel, around the concave side of the cylindrical surface into tangential flow along the surface of the panel on which it is mounted.

4,214,513

ONE-PIECE ROOF VENT DEVICE AND METHODS OF CONSTRUCTING AND UTILIZING SAME

James W. Ballard, 34934 Elmira, Livonia, Mich. 48150, and Larry R. Ballard, 18633 Negaunee, Redford Township, Marquette County, Mich. 48240

Filed Dec. 11, 1978, Ser. No. 968,192
Int. Cl.[2] F24F *13/08*
U.S. Cl. 98—42 R **8 Claims**



1. A one-piece ventilation apparatus comprising:
a substantially horizontal flat annular base portion;
a generally tubular portion extending integrally upwardly from said base portion;
a first bend portion extending integrally outwardly and downwardly from the upper end of said tubular portion;
a vent-hole portion extending integrally downwardly from said first bend portion;
a second bend portion extending integrally upwardly from said vent-hole portion;
an arcuate cap side portion extending integrally upwardly from said second bend portion;
a substantially horizontal cap top portion extending integrally above said arcuate cap side portion;
said vent-hole portion having a plurality of vent holes provided therein;
said apparatus being entirely integrally and unitarily formed from a single piece of deformable material; and said generally tubular portion comprises:
a lower substantially cylindrical portion extending integrally upwardly from said base portion;
an intermediate arcuate transition portion; and
an upper substantially truncated conical portion.

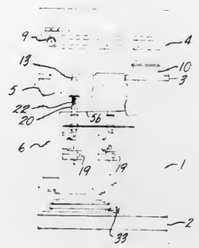
4,214,514

COOKER FOR INDIVIDUAL PORTIONS OF PARTICULATE FOODSTUFF

Peter Contino, 32-64 33rd St., Astoria, Long Island City, N.Y. 11106, and Nicholas M. Stiglich, 215-8th St., Cresskill, N.J. 07626

Filed Feb. 7, 1979, Ser. No. 10,126
Int. Cl.[2] A47J *27/00*
U.S. Cl. 99—330 **13 Claims**

1. Cooker for foodstuff in particulate form in particular pasta, comprising a tank, a plurality of pots in said tank, said pots being individually movable vertically between an upper position and a lower position and being removable from said tank, each of said pots being of a size to receive an individual portion of foodstuff and having an apertured bottom and an apertured side wall, a reservoir for water for use in cooking said foodstuff, means for heating said water to a selected cooking temperature, a water circuit for supplying hot water from said reservoir to said pots under pressure, jet means receiving hot water under pressure from said water circuit and directing it into said pots when in lower position to cook foodstuff therein and to stir said foodstuff by circulation of said hot water in said pots as said foodstuff is being cooked, said water draining from said pots into said tank during cooking of said



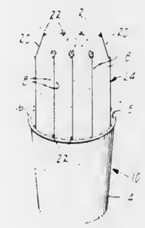
foodstuff, and means for returning said water from said tank to said reservoir to keep the water level in said tank below that in said pots.

4,214,515

DISPOSABLE STRUCTURE FOR USE IN MICROWAVE COOKING

James F. Kubiatowicz, 1630 Rice Creek Rd., Minneapolis, Minn. 55432

Filed Feb. 21, 1979, Ser. No. 14,307
Int. Cl.[2] A47J *37/00*
U.S. Cl. 99—400 **8 Claims**



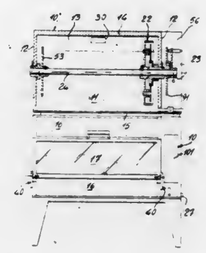
1. A structure adapted for cooking in a microwave oven strips of food such as bacon that give off liquids in the process, said structure comprising:
a nonmetallic base portion having a top surface and a cavity recessed from said top surface of a size adapted to at least contain liquid released from the strips; and
a plurality of nonmetallic support portions having narrow support surfaces and parallel edges disposed at right angles to their support surfaces and joined to each other along said parallel edges to form an assembly adapted to be folded along said edges into a pleated assembly and to be supported on said base portion with said narrow support surfaces generally horizontal and positioned over and spaced from the bottom of the cavity at a distance of at least about one half the length of the strips of food so that strips of food may be hung over said support surfaces with their end portions generally vertically disposed and extending toward said cavity to cause liquid released in the cooking process to be directed into and contained in said cavity.

4,214,516

BARBECUE OVEN

V. L. Friedl, 389-35th Ave., Lachine, Quebec, and B. Mascetti, 8146 Giguere, Lasalle, Quebec, both of Canada

Filed Feb. 8, 1979, Ser. No. 10,608
Int. Cl.[3] A47J *37/04*
U.S. Cl. 99—421 P **13 Claims**



1. A barbecue oven comprising a barbecue compartment defined by vertical spaced apart side walls, a back wall, top and bottom walls and a front wall; a door hingedly mounted in a door opening in said front wall and spaced from said top and bottom walls, a heating unit in said barbecue compartment having an elongate heat radiating surface disposed intermediate said side walls and positioned between a top edge of said door opening and said top wall to radiate heat downwardly towards said spit turret, a spit turret drivingly secured in said compartment between said side walls and disposed in the path of radiation of said radiating surface, drive means to rotate said turret, a liquid collecting tray in at least a portion of said bottom wall below said spit turret to collect hot liquids dripping from foodstuff supported by said spit turret, said spit turret having a rotatable drive shaft having a skewer support disc secured adjacent one end thereof, a disc-shaped drive drum secured adjacent the other end thereof, said drive drum having a plurality of skewer engaging sockets therein disposed in a circumferential axis of a front face thereof with their long axis parallel to said drive shaft; each said socket being secured to a planetary gear rotatably driven by a drive gear secured to said rotatable drive shaft to cause rotation of said sockets, said drive drum housing said drive and planetary gears therein; each said socket being secured in a pressure seal bearing arrangement.

4,214,517

BREAD COOKING DEVICE

Oscar D. Caldwell, 2420 SW. 32 St., Oklahoma City, Okla. 73119

Filed Mar. 3, 1978, Ser. No. 882,973
Int. Cl.[3] A21B *5/02*
U.S. Cl. 99—428 **10 Claims**



1. A bread cooking device for making a bun from breadstuff, comprising:
a base having an upper surface and a depression formed in the upper surface for receiving breadstuff, a portion of the

depression intersecting the upper surface of the base and the depression having a length, a width and a depth; and

a die having a portion positionable within a portion of the depression formed in the base in a cooking position of the bread cooking device, the die comprising:

a cavity forming member positionable within a portion of the depression formed in the base in the cooking position of the bread cooking device, the cavity forming member having opposite ends, a length extending generally between the opposite ends, a width extending generally transverse with respect to the length and a depth, the length of the cavity forming member being less than the length of the depression formed in the base and the length of the cavity forming member extending generally parallel with respect to the length of the depression in the cooking position of the bread cooking device, the width of the cavity forming member being less than the width of the depression formed in the base and the width of the cavity forming member extending generally parallel with respect to the width of the depression formed in the base in the cooking position of the bread cooking device, the depth of the cavity forming member being less than the depth of the depression formed in the base and the depth of the cavity forming member extending generally parallel with respect to the depth of the depression formed in the base in the cooking position of the bread cooking device;

a slot forming member connected to the cavity forming member and extending a distance therefrom and being positionable within a portion of the depression formed in the base in the cooking position of the bread cooking device, the slot forming member having opposite ends, a length extending generally between the opposite ends, a width extending generally transverse with respect to the length and a depth, the length of the slot forming member being less than the length of the depression formed in the base and the length of the slot forming member extending generally parallel with respect to the length of the cavity forming member, the width of the slot forming member being less than the width of the cavity forming member extending generally parallel with respect to the width of the cavity forming member, the depth of the slot forming member extending generally parallel with respect to the depth of the cavity forming member; and

a die support for supporting the cavity forming member and the slot forming member in a predetermined position disposed within a portion of the depression formed in the base in the cooking position, a portion of the slot forming member being connected to the die support and extending a distance from the die support and the cavity forming member being connected to a portion of the slot forming member generally opposite the portion of the slot forming member connected to the die support, the die support positioning the cavity forming member within a portion of the depression formed in the base with the cavity forming member being spaced a distance from the portion of the base formed via the depression in the base and with the slot forming member being spaced a distance from the portions of the base formed via the depression in the base, the breadstuff being disposable within the space between the cavity forming member and the portions of the base formed via the depression in the base and within the space between the slot forming member and the portions of the base formed via the depression in the base in the cooking position of the bread cooking device for forming a bun with a cavity formed via the cavity forming member in a generally central portion of the bun and with a slot formed via the slot forming member extending through a portion of the bun, the slot in the bun intersecting a portion of the bun and extending a distance through a portion of the bun and intersecting a portion of the cavity in the bun, thereby forming a bun with closed ends wherein each closed end extends a distance along one surface of the bun toward the slot formed by the slot forming member.

4,214,518

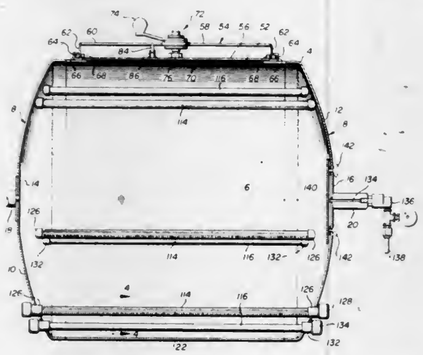
MEAT TUMBLER

Lee E. Petsche, Hickory Hills, Ill., assignor to Foldenauer Equipment Co., Inc., Bridgeview, Ill.

Filed Sep. 15, 1975, Ser. No. 613,056

Int. Cl.[2] E05C *19/18*; B26D *3/08*

U.S. Cl. 99—535 **9 Claims**



1. Meat tumbling apparatus comprising a drum rotatable about a substantially horizontal axis, said drum having an opening therein, a door for closing said opening to permit loading and unloading of pieces of meat into and from the drum, means on the drum providing a multiplicity of teeth exposed to the inside of the drum, and means for raising pieces of meat in the drum above said axis and then allowing the meat to drop downwardly onto said teeth as the drum is rotated about said axis; said teeth being of such size and configuration as to form a mass of small cuts in the surfaces of the pieces of meat sufficient to increase significantly the exposure of myosin protein at the surfaces of the meat, said means for providing said multiplicity of teeth and said means for raising the pieces of meat comprising members that are radially outwardly of said axis and located to provide circumferentially spaced groups of teeth and meat raising elements, the teeth of each group being presented generally toward said axis, the circumferential disposition of the groups of teeth and of said meat raising elements extending over a full circle of rotation and with the spacing from group to group being less than 180° and such that pieces of meat are raised and dropped downwardly in the order of one-half a revolution of drum rotation, and in which the members comprise rods that extend generally parallel to said axis.

4,214,519

HORIZONTAL FRUIT PRESS AND PROCESS FOR PRESSING FRUIT

Hubert C. Stollenwerk, and Hubert F. Stollenwerk, both of Darnstadt Ave., Egg Harbor City, N.J. 08215

Continuation-in-part of Ser. No. 789,729, Apr. 21, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,402

Int. Cl.[3] A47J *19/02*; B30B *5/00*

U.S. Cl. 100—37 **6 Claims**

1. An apparatus for deliquifying compression material comprising:

(a) a frame;

(b) a rigid cage fixidly mounted on said frame;

(c) said cage comprising a pair of sides a bottom, vertically extending parallel open front and back ends and a slidable, sealable top providing an opening for the introduction of compressible material;

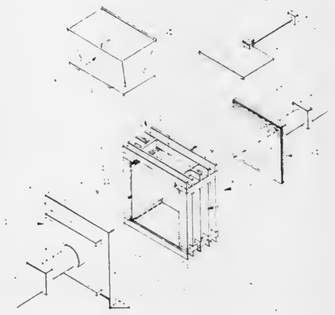
(d) a first press platen substantially sealingly and slidably mounted in one end of said cage and adapted to be displaced to the other end of said cage;

(e) a second backup platen substantially sealingly, slidably mounted in the other end of said cage and adapted to be displaced out of and away from said cage in opposition to said first platen;

(f) each of said platens having an inner face;

(g) at least one of said platens having a plurality of alternating movable and non-movable members comprising said inner face and defining a liquid channel therebetween, said liquid channel extending through said platen to permit drainage of liquid into and away from said platen;

(h) means for displacing said movable portion of said platen with respect to said non-movable portion during a part of the cycle of movement of said platen, whereby said movement has the effect of self-cleaning of any solid material which may become entrapped in said channel.



4,214,520

PUNCH FOR PUNCHING MARKINGS INTO ROLLED MATERIAL

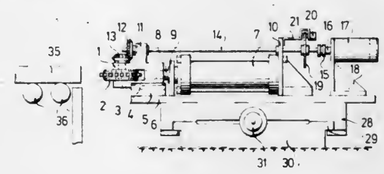
Horst E. Eissel, Solingen, Fed. Rep. of Germany, assignor to Stommel & Voos Stahlstempelfabrik, Solingen, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,415

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731849

Int. Cl.[2] B41J *1/38*; B41F *17/24*

U.S. Cl. 101—4 **4 Claims**



1. A punch for punching a succession of different markings into rolled material such as bars, ingots, billots or slabs, comprising

(a) a tool holder;

(b) a substantially vertical rotatable drive shaft mounted on said tool holder;

(c) a punch plate mounted on said drive shaft for rotation therewith and having a plurality of punch types thereon;

(d) first support means mounting said tool holder for movement along a substantially horizontal path;

(e) controlled means for reciprocating said tool holder along said substantially horizontal path between punching and rest positions;

(f) rotary stepping drive means on said first support means;

(g) a substantially horizontal rotatable drive shaft extending from said stepping drive means to said tool holder;

(h) a pair of meshing bevel gears, one mounted on said substantially vertical drive shaft and the other mounted on said substantially horizontal drive shaft for rotation therewith and adapted to freely move axially along said horizontal drive shaft with movement of said tool holder along said horizontal path;

(i) second support means mounted on said first support means for movement along a path transverse to said substantially horizontal path of said tool holder;

(j) means for moving said first support means along said transverse path; and

(k) control means for operating said means for moving said first support means an incremental distance along said transverse path each time said tool holder returns from said punching position to said rest position;

(l) whereby said punch plate may be rotated by said rotary stepping drive means and advanced laterally by said means for moving said first support means after each punching operation to punch a succession of different markings into said rolled material.

4,214,521

ROLLING PARALLEL PRINTER

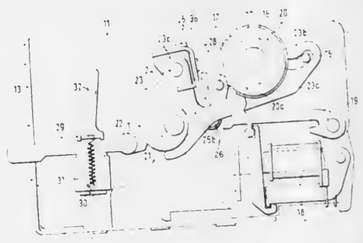
Helmut Gelling, Wangen, Switzerland, assignor to Firma Precisa AG Rechenmaschinenfabrik, Zurich, Switzerland

Filed Feb. 2, 1978, Ser. No. 874,555

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705435

Int. Cl.[2] B41J *1/44*

U.S. Cl. 101—96 **9 Claims**



1. In a rolling parallel printer of the type comprising a frame, a first shaft mounted to said frame, a plurality of type wheels mounted on said first shaft in side-by-side fashion, said first shaft being rotatable to displace types on said type wheels to specific positions, a pressure element including a curved pressure segment mounted on said frame and adapted for connection to drive means to be driven through one periodic swiveling motion each printing cycle for pressing a paper strip and ribbon against a line of the types on said type wheels, the improvement wherein said pressure element comprises a bridge including lever legs extending from both sides thereof; a pair of rocking arms; each leg connected to one of said rocking arms by a first pivot coupling located adjacent said bridge; a drive shaft mounted on said frame and adapted for connection to the drive means to be rotated one revolution each printing cycle, a pair of crank members mounted on said drive shaft, each rocking arm being mounted to one of said crank members; a crossbar mounted on said frame, each rocking arm including a slot which receives said crossbar, the length of said slot being about twice the length of said crank member and arranged to guide said rocking arm as the latter is displaced by said crank member toward a foremost position in which said pressure segment rolls off said line of types, a pair of levers each pivoted at one end to said frame and at another end to one of said legs at a location spaced from said first pivot coupling; said crank member, rocking arm, leg, and lever defining linkage means for displacing said pressure segment in an elliptical

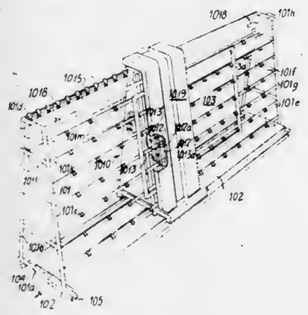
path of travel toward and away from the type wheels wherein said pressure segment is oriented parallel to the line of types throughout travel of said segment in said elliptical path and rolls off a line of types when the rocking arm is in said foremost position.

4,214,522

DEVICE FOR MANUFACTURING A STENCIL

Dag Bille, Särö, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

Filed Apr. 25, 1978, Ser. No. 899,859
Claims priority, application Sweden, May 16, 1977, 7705695
Int. Cl.[2] B41C *1/14*
U.S. Cl. 101—128.4 **19 Claims**



1. An apparatus for treating a stencil intended for use in a silkscreen printing machine which has been light-treated to transfer a design to a pre-treated net or film, said stencil being subjected to a water-treatment process to rinse the stencil to develop said pattern, comprising:

at least two vertically extending pipes having mutually facing nozzles and arranged on a displaceable holder in a manner such that one of said at least two pipes passes on the rear side of the stencil and the other of said at least two pipes passes on the forward side of said stencil,

means for supporting a stencil between the two vertical pipes and means for supporting said holder for substantially horizontal movement such that each side of the stencil will be respectively traversed by said pipes, and

means for supplying water to said pipes to treat a stencil supported on said supporting means.

4,214,523

INK AND MOISTURE CONTROL WITH MASTER CONDITION COMPENSATION

Saied A. Mabrouk, 9176 Shepard Rd., Macedonia, Ohio 44056; Edward T. Morgan, 8330 Westmoor Rd., Mentor, Ohio 44060, and James W. Davis, 624-B Corkhill Rd., Apt. 612, Bedford, Ohio 44146

Continuation of Ser. No. 820,825, Aug. 1, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,522
Int. Cl.[2] B41F *7/24;* **B41L** *25/00, 27/00*
U.S. Cl. 101—148 **3 Claims**

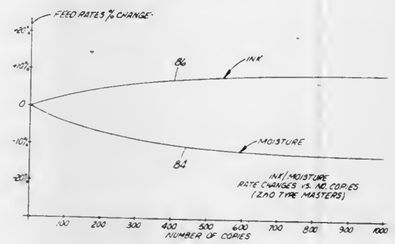
1. In a lithographic duplicator for printing copies from a sequence of masters, each inserted in turn on a master cylinder of the duplicator, which duplicator includes moisture supply means for supplying moisture to a master on the cylinder and ink supply means for supplying ink to a master on the cylinder, and in which the masters inserted upon the master cylinder are of a nature such that they gradually absorb moisture with continued use, whereby the moisture condition of the surface of each master is subject to progressive change during a printing run, a control system comprising:

moisture control means for providing an underlying moisture feed rate control signal, said moisture control means being connected with the moisture supply means and controlling the same via said signal,

means for sensing the introduction of a new master and generating a first signal indicative of that effect,

means for generating a second signal indicative of the number of copies which have been printed since the initiation of the printing run with each master, and

circuit means responsive to said first and second signals for generating a taper compensation signal generally indicative of the predicted moisture condition of the surface of the master as a result of the duration of the printing run in progress,



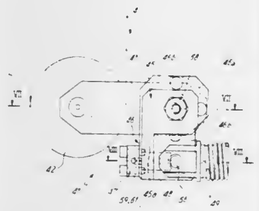
said moisture control means being responsive to said compensation signal to automatically adjust the moisture feed rate control signal delivered by it to said moisture supply means in a manner to gradually decrease the moisture feed rate of the moisture supply means as the number of copies printed during the printing run in progress increases, at least within a predetermined copy limit.

4,214,524

SYSTEM FOR COMPENSATING FOR ERRORS IN REGISTRATION BETWEEN COLORS PRINTED IN MULTI-COLOR PRINTING MACHINE

Louis G. Corse, Chaumont-sur-Tharonne, France, assignor to Machines Chambon S.A., Orleans, France

Continuation of Ser. No. 710,205, Jul. 30, 1976, abandoned. This application Aug. 24, 1978, Ser. No. 936,198
Claims priority, application France, Aug. 8, 1975, 75 24771
Int. Cl.[2] B41F *5/06, 5/16*
U.S. Cl. 101—181 **4 Claims**



1. In a multi-color printing machine including a series of printing units through which a web successively passes for successively printing on the web with different colors, a system for maintaining printing of different colors on the web in registration, comprising: compensating means responsive to a control signal for adjusting the relative position of the web and one of said printing units to compensate for registration error between printing by said one printing unit and printing by another printing unit; means for detecting the registration error and for applying the control signal to said compensating means in response to the detected registration error to operate said compensating means to compensate for the detected registration error; and tension limiting means effective for limiting a tension in the web to an upper tension limit and a lower tension limit when the tension in the web tends to exceed these limits, said tension limiting means comprising a horizontal roll movable in a vertical direction with the web passing under the roll, a support mounting said roll for rotation thereon and movable in a vertical direction with said roll, means defining a movable stop having a lower position and movable in an upward vertical direction when an upwardly directed force exceeding a certain value is applied thereto for engaging said support when said support is moved vertically upwardly with said roll by the web having an increasing tension tending to exceed the upper tension limit to maintain the web tension at the upper tension limit, and means defining a fixed stop for engaging said movable stop at its lower position to allow said support to disengage from said movable stop when said support moves below the lower position of said movable stop as said roll and said support together drop vertically as the tension in the web tends to decrease below the lower tension limit to maintain the tension at the lower limit determined by the weight of said roll and said support bearing on the web beneath said roll.

4,214,525

BELT-TYPE PRINTING MACHINE WITH SERPENTINE BELT SUPPORT

Charles Aaron, West Caldwell, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation of Ser. No. 836,130, Sep. 23, 1977, abandoned, which is a continuation of Ser. No. 679,930, Apr. 26, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 960,220
Int. Cl.[3] B41F *5/06, 5/16, 17/02*
U.S. Cl. 101—181 **4 Claims**



1. A belt printing machine which is especially adapted for multi-tone printing on a single web and has a plurality of horizontally spaced printing stations spaced progressively along a substantially horizontal path which the web travels through the machine, comprising:

an impression cylinder disposed at each station vertically below said path;

a plate cylinder disposed in close proximity to each impression cylinder and vertically spaced above said path;

a separate printing belt for each station comprising a continuous flexible belt of non-stretchable synthetic polymeric material reeved at least partially around each plate cylinder and extending therefrom, each belt carrying a plurality of printing plates for printing on the web as it passes between the impression cylinder and plate cylinder at each station;

separate printing belt supporting apparatus at each station in overhead relation to said path and plate cylinders comprising, (i) rotatable cylindrical means supported along a plurality of parallel axes located in horizontally parallel passes of a belt of consecutively reversed turns along a portion of a complete circuit for its respective belt within a box-shaped region spaced vertically above said path and plate cylinders, and (ii) other rotatable cylindrical means supported along a plurality of parallel axes defining another portion of said complete circuit surrounding a peninsular region projecting substantially vertically from said box-shaped region toward said path and terminating distally at each plate cylinder, the peninsular region being located and sized relative to the box-shaped region such that a dihedral region is formed therebetween to accommodate an ink train and personnel;

positive belt-driving means in coaxial adjacent relation with said plate cylinders at opposite ends of said plate cylinders in positive drive relation with opposite edges of the belt; and

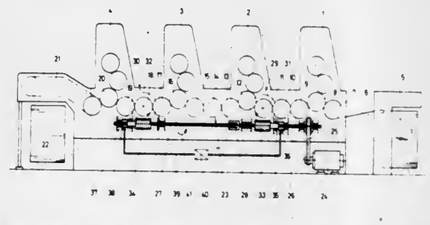
common drive means for all of said belt-driving means and said impression cylinders effecting accurate synchronization of the belt speeds and the web speed.

4,214,526

DRIVE FOR SHEET-FED ROTARY PRINTING PRESSES WITH AT LEAST TWO TANDEM-MOUNTED PRINTING UNITS

Willi Jeschke, Heidelberg-Boxberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Division of Ser. No. 496,169, Aug. 9, 1974, Pat. No. 4,112,842. This application Jun. 30, 1978, Ser. No. 921,080
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1973, 2340263
Int. Cl.[2] B41F *5/02*
U.S. Cl. 101—183 **2 Claims**



1. Drive for sheet-fed rotary printing machines with at least two tandem-mounted printing units driven by a closed gear train and including a drive motor comprising a drive train driven by the motor and extending parallel to the closed gear train, the closed gear train having at least two force input locations at which the closed gear train is connected to said drive train, said drive train comprising a first displaceably mounted transmission unit connected to the closed gear train at one of said force input locations, a second transmission unit corresponding to said first unit connected to the closed gear train at the other of said force input locations, and transmission means connecting said first transmission unit to said second transmission unit, said drive train being constructed as a bipartite main drive shaft, both parts of said main drive shaft being coupled to one another so as to be displaceable relative to one another in axial direction, said transmission units including a worm respectively secured to each part of said main drive shaft and a worm gear respectively meshing with each of said worms at a respective force input location, each of said main drive shaft parts being mounted in respective bearings so as to be axially displaceable.

4,214,527

MOUNTING ARRANGEMENT FOR A PLATE CYLINDER AND FORM ROLLERS

Hiroyoshi Kamota, Kashiwa, Japan, assignor to Kormori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1979, Ser. No. 672
Int. Cl.[2] B41F *31/34, 13/14, 13/28;* **B41L** *27/36*
U.S. Cl. 101—247 **4 Claims**

1. A printing press comprising:

a pair of spaced frames;

a supporting member having a portion whose outer surface is rotatably supported by one of said frames and being

provided with a shaft hole formed eccentrically with respect to said outer surface;

a plate cylinder having a concentric shaft rotatably supported at one end in the shaft hole of said supporting member and the other end in a sleeve secured to the other frame;

means for rotating said supporting member so that the axis of said plate cylinder may be skewed;

vibrating rollers journalled in the frames;

form rollers engageable with said plate cylinder and said vibrating rollers;

pairs of roller holders swingably mounted around both end portions of said vibrating rollers, each of said form rollers being journalled in respective one of said pairs of roller holders;

means attached to each of said roller holders for urging said roller holder in the direction to press its form roller against said plate cylinder;



a pair of cam bases one of which is rotatably supported by said supporting member and the other is rotatably supported by said sleeve, said cam bases being operatively connected with each other;

arcuate cams provided on each cam base, rotatable therewith and equal in number to the number of said form rollers, each of said cams being swingably supported at one end to said cam base, having a cam surface adapted to be engaged with a portion of respective one of said roller holders and being adjustably fixed at the other end to said cam base, each of said cam surfaces including a crest and an arcuate root with which said portion of each roller holder is engaged during printing operation; and

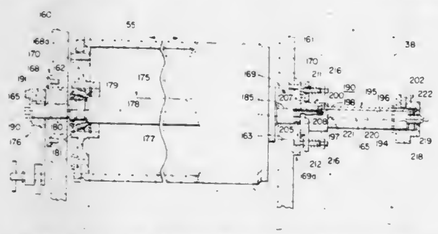
means for simultaneously rotating said pair of cam bases so that said portion of each of said roller holders is engaged by said crest of respective one of said cams, whereby said form rollers are simultaneously thrown-off from said plate cylinder.

4,214,528

PLATE CYLINDER SIDE REGISTER ADJUSTMENT

George Mirow, Worcester, Mass., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Aug. 25, 1978, Ser. No. 936,825
Int. Cl.³ B41F *7/08, 13/14, 31/30*
U.S. Cl. 101—248 **8 Claims**



1. In an offset printing press having a cylinder rotatable on a generally nonrotative axially movable shaft concentric with the cylinder and mounted on a mainframe, a mechanism for adjusting the axial position of the shaft and the cylinder which rotates on it, comprising:

an elongated rotatable spindle having a shaft engaging end and an operator-accessible distal end, the shaft engaging end of the spindle being threaded to mate with a corresponding threaded end of the nonrotative axially movable shaft, the spindle being generally translationally nonmovable along its axis of rotation, the spindle and the shaft extending along generally separate lengths of a common longitudinal axis;

a circumferential flange extending radially from the spindle, the circumferential flange providing a first annular area rotative surface concentric with the axis of rotation of the spindle and generally in a plane perpendicular to the spindle axis of rotation;

a ringlike member mounted to the mainframe and adjacent the flange and concentric relative to the spindle, the member providing a second annular area nonrotative surface concentric with the axis of rotation of the spindle and generally in a plane perpendicular to the spindle axis of rotation, the first and second surface being frictionally engaged; and

biasing means for maintaining a predetermined degree of friction between the surfaces, the friction being limited to permit resistive rotational movement of the first surface relative to the nonrotative second surface, rotation of the spindle causing translational movement of the nonrotating shaft along its axis.

4,214,529

CONSTANT PRESSURE PRINTING MECHANISM FOR HAND LABELER

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Jul. 3, 1978, Ser. No. 921,247
Claims priority, application Japan, Jul. 15, 1977, 52-084203
Int. Cl.² B41J *5/00*
U.S. Cl. 101—291 **15 Claims**



1. A constant pressure printing mechanism for use with a hand labeler which is operative to print a label, comprising:

a frame;

a hand lever mounted on said frame for movement between a released position and a squeezed position;

a printing platen having a printing surface; said platen being mounted to said frame for movement between a normal biased position, which occurs when said hand lever is at said released position and is moving toward said squeezed position thereof, and an awaiting position at which said platen is moved such that its said printing surface is awaiting the printing operation, which occurs when said hand lever is moved into the vicinity of said squeezed position thereof; platen biasing means for biasing said platen to said biased position thereof;

a printing head connected to said hand lever and movable thereby between an inoperative position, which is apart from said platen when said platen is at said biased position and when said hand lever is at said released position, and a printing position, at which said printing head is abutting said platen when said platen is at said awaiting position and when said hand lever is in the vicinity of said squeezed position;

constant pressure means responsive to the operation of said hand lever for moving said platen toward said printing head against the bias of said platen biasing means as said hand lever approaches said squeezed position; said constant pressure means including overridable means carried by said platen and further including overriding means carried by said hand lever and being engageable with said overridable means when said hand lever is moving toward said squeezed position thereof; said overriding means comprising an element which is normally spring biased to a side of said hand lever with respect to the path of motion of said hand lever between said squeezed and said released positions thereof; as said hand lever is being moved toward said squeezed position thereof, said overriding means element abutting said overridable means; said element being biased to a position at which said element prevents bypassage of said overridable means; said overridable means including a first taper surface formed on said platen which tapers in a direction such that as said hand lever moves toward said squeezed position thereof, said first taper surface urges said element to move in a direction which increases the spring bias thereupon;

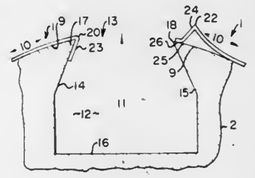
spring biasing means for biasing said overriding means element to its said position at which it prevents bypassage of said overridable means; said pring biasing means being adapted to exert sufficient spring biasing force for causing said platen to be moved to said awaiting position thereof as said hand lever is moved toward said squeezed position after said overriding means has engaged said overridable means, instead of said spring biasing means permitting said element to simply move past said first taper surface; said overridable means being shaped and positioned to move said overriding means out of said position for blocking their bypassage, such that further such motion of said hand lever toward said squeezed position moves said overriding means to apply pressure to said overridable means until the applied pressure is sufficient to cause said overridable means to shift said platen to said awaiting position against the bias of said platen biasing means, and continued such motion of said hand lever to said squeezed position moving said overriding means to ride over said overridble means; said overriding means and said overridable means being respectively so shaped and positioned that said ride over occurs simultaneously as said printing head comes into abutment contact with said platen at said platen awaiting position, whereby the printing pressure to be applied by said printing head to said platen is determined at a constant level in terms of the force which is required to be applied to said hand lever for said ride over.

4,214,530

METAL PRINTING PLATE

John A. Signorelli, 12348 Bennington, St. Louis, Mo. 63141, and Gary C. Glanzner, 5083 Town Center Dr., St. Louis, Mo. 63128

Filed Feb. 23, 1978, Ser. No. 880,459
Int. Cl.² B41F *27/12*
U.S. Cl. 101—415.1 **11 Claims**



1. In a plate lock up for a thin metal printing plate including a plate cylinder having at least one axially extending radial slot formed in the surface thereof, said slot being defined by a first surface, and a second surface oppositely opposed to said first surface, said cylinder having a cylinder peripheral dimension between a first edge and a second edge of said slot, the improvement comprising a preformed printing plate of metallic material having a leading edge and a trailing edge, the leading edge having an inwardly directed bend at least as great as ninety degrees so as to seat said first bend against said first surface, said trailing edge having a second inwardly directed bend at an axial distance from said first bend corresponding to the peripheral dimensions of said cylinder, said second bend being at least as great as ninety degrees so as seat said second bend against said second surface, and a third bend outboard of said second bend and formed in a direction opposite to said second bend, the portion of said plate outboard of said third bend defining a lead in for said plate permitting said plate to be snap locked into position on said cylinder, said lead in of said plate being spaced from said second surface while the entire remaining portion of said plate abuts some portion of said cylinder in the running condition of said cylinder, the distance between said first bend and said second bend being no greater than the peripheral dimension of said cylinder between the first and second edges of said slot, said first, second and third bends of said plate and the distance between said first and said second bends defining first means for locking said plate to said cylinder, said plate being snap locked in position on said cylinder and positionally locked thereto by the snap lock provided by said printing plate construction, said first locking means being effective to prevent axial movement of said plate with respect to said cylinder in the normal operation of said cylinder.

4,214,531

METHOD OF TREATING IMAGE-BEARING LITHOGRAPHIC PLATES

Walter L. Garrett, Freeland, and Czerepinski, Ralph G., Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 763,262, Jan. 27, 1977, which is a continuation-in-part of Ser. No. 586,455, Jun. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 565,915, Apr. 7, 1975, abandoned. This application May 25, 1979, Ser. No. 42,643
Int. Cl.² G03F *7/02;* **B41N** *1/00;* **B41M** *5/00*
U.S. Cl. 101—451 **9 Claims**

1. A method for the treatment of a developed image-bearing lithographic printing plate to render hydrophilic the non-image areas of the plate, comprising applying to the image-bearing plate an emulsion having an aqueous phase comprising water and an active polymer component selected from the group consisting of:

(a) a polyacrylamide-based polymer wherein from about 5 to about 70 percent of the carbonyl sites are carboxyl groups and the balance of said sites are amide moieties;

(b) a physical blend comprised of from about 95 to about 30 weight percent polyacrylamide and from about 5 to about 70 weight percent polyacrylic acid or an alkali metal or ammonium salt thereof;

(c) a physical blend comprised of polyacrylamide, or polyacrylic acid or an alkali metal or ammonium salt thereof, and at least one polyacrylamide-based polymer as described in (a), said polymers being employed in proportions such that of the total carbonyl sites present in the blend, from about 5 to about 70 percent are carboxyl groups and the balance are amide moieties;

(d) a mixture of any two or more of the foregoing (a)–(c); the weight average molecular weight of each of said polyacrylamide-based polymer, polyacrylamide, and polyacrylic acid or salt thereof being in the range of from about 10,000 to about 500,000; and

(e) a co-mixture of one or more of the foregoing (a)–(d) with up to 30 weight percent hydroxypropyl methylcellulose based on the total weight of the co-mixture, said hydroxypropyl methylcellulose being of a type which produces a

2 weight percent aqueous solution having a viscosity of from about 1 to about 100 cP when measured according to ASTM Method D 2363-72;

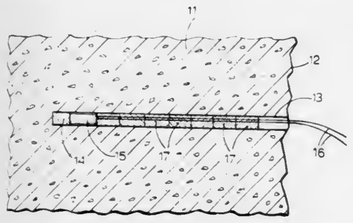
said solution being applied in an amount sufficient to render substantially all the non-image areas hydrophilic.

4,214,532

STEMMING

Bryon T. Oulsnam, Stoke-on-Trent, England, assignor to Coreplugs Limited, Stoke-on-Trent, England

Filed May 15, 1978, Ser. No. 905,949
Int. Cl.[2] F42D *1/08*
U.S. Cl. 102—30 **7 Claims**



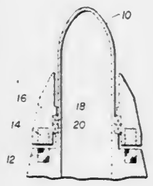
1. A method of stemming comprising the steps of forming a stemming plug of a self-supporting body consisting at least principally of sand bound with the aid of sodium silicate, adding water to the stemming plug to weaken the same prior to its insertion into a shot hole, inserting said weakened plug into said shot hole and thereafter crushing or disintegrating said weakened plug in said shot hole.

4,214,533

ANNULAR ALTERNATOR FOR ARTILLERY

Jonathan E. Fine, Silver Spring, Md., and Clinton J. Sewell, Beloit, Kans., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 2, 1978, Ser. No. 911,750
Int. Cl.[3] F42C *11/04*
U.S. Cl. 102—209 **5 Claims**



1. The combination of a projectile of relatively small diameter and power generating means capable of providing electrical power of at least 15 watts to a circuit of the projectile, the combination comprising;

a stator means secured to a stationary portion of said projectile, said stator comprising an annular coil and a high magnetic permeable toroid surrounding said coil,

said toroid having a substantially rectangular cross section at any circumferential portion thereof, two opposed sides of said cross section comprising two continuous annular walls of high permeable magnetic material, a third side of said cross section comprising a third continuous annular wall of high permeable magnetic material which connects said two opposed sides along a first edge of each, and a fourth side of said cross section comprising discontinuous wall portions of high permeable magnetic material spaced about the circumference thereof, said discontinuous wall portions being attached to said two opposed sides of said cross section along a second edge of each said opposed side, alternate discontinuous portions being attached to opposite ones of said opposed sides,

rotating means secured to said projectile,

impeller means on said rotating means to impart rotary motion thereto in response to air flow over the surface of the projectile, and

a rotor on said rotating means comprising an annular keeper composed of high permeable magnetic material,

individual permanent magnets embedded in said annular keeper and spaced from one another in a circumferential direction, said magnets each having one pole thereof facing said fourth side of said toroid of said stator, wherein alternate magnets along the circumference of said keeper having opposite poles facing said toroid,

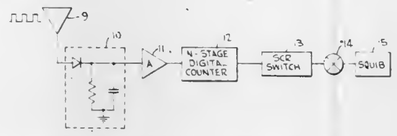
whereby rotation of said rotor relative to said stator in response to air flow over the surface of said projectile during flight thereof is sufficient to generate at least 15 watts of electrical power.

4,214,534

COMMAND FUZING SYSTEM

Arnold A. Richter, Kensington, and Charles E. H. Edwards, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 30, 1969, Ser. No. 839,797
Int. Cl.[2] F42C *11/06*
U.S. Cl. 102—215 **3 Claims**



1. A command fuzing system comprising:

(a) A weapon capable of firing projectiles:

(b) a pulse radar transmitter having a variable pulse rate and located adjacent said weapon for transmitting pulses along the trajectory of said projectiles;

(c) projectiles capable of being fired from said weapon;

(d) means in said projectiles to count each of said pulses and to cause detonation upon receipt of a predetermined number of said pulses; and

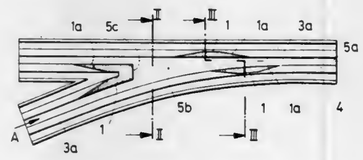
(e) a bar handle located on said weapon for adjusting the pulse repetition frequency of said radar transmitter in order to change the point along the trajectory at which detonation occurs.

4,214,535

SWITCH FOR A SUSPENDED RAILWAY VEHICLE

Thomas Gerhard, Viersen, Fed. Rep. of Germany, assignor to Waggonfabrik Uerdingen A.G., Krefeld, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 946,448
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743316
Int. Cl.[2] E01B *25/26*
U.S. Cl. 104—91 **8 Claims**



1. A switch for a suspended railway vehicle having two

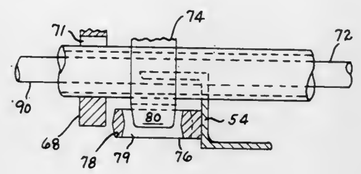
elastic wheels, comprising a first, second, third and fourth rail, said first and second rails together forming a first double-rail path whereas said first rail with said third rail and said second rail with said fourth rail form second and third double-rail paths, respectively, which branch off from said first path, said four rails having contact surfaces and together bounding a gap so that during running of the vehicle on the switch from one to another path one wheel of the vehicle enters the gap and runs without support and after passing said gap the one wheel engages with a portion of one rail of the other path; a plurality of ramps each arranged on a respective one of said portions and having a contact surface provided with means for increasing surface contact of a wheel of the vehicle with each ramp, said surface contact increasing means including, on the contact surface of each ramp, a section which is inclined in a direction transverse to the direction of elongation of the respective rail so that when the one wheel after passing said gap runs onto a respective one of said ramps it is raised onto said contact surface of the one rail of the other path, said surface contact increasing means further including, on the contact surface of each ramp, a transitional portion merging into the respective rail with a transverse inclination which decreases proceeding in the direction along which the transitional portion merges into the respective rail.

4,214,536

HOPPER OUTLET HAVING VERTICALLY MOVABLE DOOR BEARING

Jerry D. Waddell, O'Fallon; John J. Scheeter, and David A. Stoller, both of St. Charles, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 26, 1977, Ser. No. 845,603
Int. Cl.[2] B61D *7/20, 7/22, 7/26*
U.S. Cl. 105—282 P **6 Claims**



1. A hopper outlet comprising:

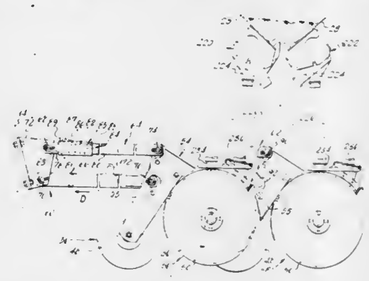
inner and outer outlet end walls joining opposite ends of transversely spaced outlet side walls; at least one fixed rack located adjacent said outer outlet end wall and extending longitudinally away from the outlet; at least one door bearing attached to a generally horizontally movable outlet gate movable below said outer outlet end wall to open position; ramp means including an inclined cam surface located below said inner outlet end wall which support said gate in closed position; a transversely extending pinion shaft movable generally in a horizontal plane between open and closed positions of said gate and including at least one pinion which rides upon said rack during movement of said gate, said pinion shaft extending through a door bearing slot in said door bearing; said door bearing slot being elongated vertically to allow vertical movement of the door bearing relative to the pinion shaft as the gate is ramped in its movement between closed and open positions, downwardly into open position and upwardly into closed position.

4,214,537

GRAIN DRILL FURROW OPENING ASSEMBLY

Alfred J. Bailey, Berkswell, and Ronald S. Sargent, Kenilworth, both of England, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Mar. 16, 1978, Ser. No. 887,389
Claims priority, application United Kingdom, Mar. 29, 1977, 13058/77; Oct. 21, 1977, 42951/77
Int. Cl.[2] A01C *5/06*
U.S. Cl. 111—85 **2 Claims**



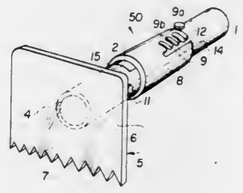
1. A grain drill including a frame, a drawbar mounted on the frame and extending forwardly therefrom, a hopper mounted on the frame, a plurality of furrow opening assemblies mounted on the frame, each furrow opening assembly including a coulter body structure, an upper link pivotally attached to the frame at one end and to the coulter body structure at the other end for pivotal movement about axies that are generally transverse to the direction of forward movement of the grain drill, a lower link substantially the same length as the upper link pivotally attached at one end to the frame below the upper link and at the other end to the coulter body structure, a first soil-engaging assembly including a slit opening disk attached to the coulter body structure, a second soil-engaging assembly including two slit-widening disks attached to the coulter body assembly for engaging the soil to the rear of the first soil-engaging assembly and adjustment means for adjusting the length of at least one of the links to adjust the soil penetration depth of the first soil-engaging assembly relative to the second soil-engaging assembly, and load means attached to the frame and to each furrow opening assembly for applying a downward force on each furrow opening assembly.

4,214,538

THREE WAY GARDEN TOOL

Barry S. Druskin, 397 Wildrose Ave., Bergenfield, N.J. 07621; Robert A. Stumpp, 59 Old Chimney Rd., Upper Saddle River, N.J. 07458, and Nora M. Muccio, 130 Grand Ave., Palisades Park, N.J. 07650

Filed Jun. 21, 1978, Ser. No. 917,558
Int. Cl.[2] A01C *5/02*
U.S. Cl. 111—95 **5 Claims**



1. A hand held garden tool for excavating, seeding and tamping an area comprising, a hollow handle having an aperture therein, a substantially flat trowel and tamping member

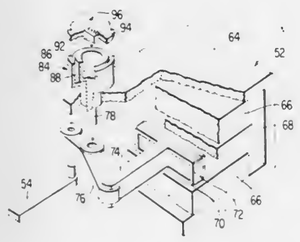
having a plurality of digging teeth connected to and closing one end of said hollow handle, said hollow handle being closed at its end opposite from said trowel and tamping member and defining a seeding space, a sleeve slidable over said hollow handle adjacent said aperture positionable in a first position for closing said aperture and said seed space, a second position spaced from said aperature for opening said aperture and at least one third position intermediate said first and second positions and partially covering said aperture for defining a seeding slot, and seeding slot adjustment means connected between said sleeve and said hollow handle for placing said sleeve in said first, second and third positions whereby seeds and the like can be loaded into said hollow handle through said aperture when said sleeve is in said second position, the seed and the like can be retained within said hollow handle when said sleeve is in said first position and the seed and the like can be dispensed when said sleeve is in said at least one third position, and whereby said trowel and tampering member can be used to excavate an area, the seed and the like can be dispensed onto said area, and said trowel and tamping member can be used to flatten and tamp the area after seeding, said seeding slot adjustment means comprising a first raised rivet spaced from one end of said aperture on said hollow handle, a second raised rivet spaced from an end of said aperture opposite said first raised rivet, said sleeve including an L shaped slot at its one end adjacent said first raised rivet engageable with said first raised rivet for placing said sleeve into said first position, said sleeve further including an elongated slot on its side opposite from said L shaped slot engageable with said second raised rivet for placing said sleeve into its second position, said sleeve being positionable into said at least one third position by abutting the end of said sleeve adjacent said elongated slot against said second raised rivet, said elongated slot extending substantially parallel to the major axis of said sleeve and includes a plurality of finger shaped slot portions disposed along the major axis of said sleeve and extending circumferentially thereof, said second raised rivet being selectively engageable into one of said finger shaped slot portions for determining the size of said seeding slot and positioning said sleeve into additional third positions.

4,214,539

POSITION SENSING DEVICE FOR ELECTRONIC SEWING MACHINE

John A. Herr, Garwood, and Wolfgang Jaffe, Roselle Park, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Sep. 21, 1978, Ser. No. 944,539
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 E **8 Claims**



1. In a sewing machine, the combination including a linear motor, a stitch controlling instrumentality, linkage means connecting the motor with the stitch controlling instrumentality for positioning said stitch controlling instrumentality in accordance with the operation of the motor, a position sensor including an associated ring magnet and linear output Hall effect sensor one of which is fixed in the machine and the other of which is connected to the linkage means for angular displacement about the axis of the ring, the Hall effect sensor being suspended within the ring magnet to produce an output voltage which is proportional to said angular displacement and therefor to displacement of the stitch controlling instrumentality by the motor acting through the linkage means.

4,214,540

VARIABLE PRESSER BAR PRESSURE CONTROL ARRANGEMENT

Albert N. Cook, Madison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed May 30, 1979, Ser. No. 43,779
Int. Cl.[2] D05B *29/00*
U.S. Cl. 112—235 **13 Claims**



1. In a sewing machine comprising a body, a feed mechanism for incrementally advancing a work piece to produce a series of stitches, and a presser bar with a presser foot attached thereto for urging said work piece into engagement with said feed mechanism, variable presser bar pressure control means comprising:

a rigid lever, said presser bar operatively engaging said lever at a first point on said lever;

means for applying a predetermined force to a second point on said lever spaced from said first point;

a shiftable fulcrum for said lever; and

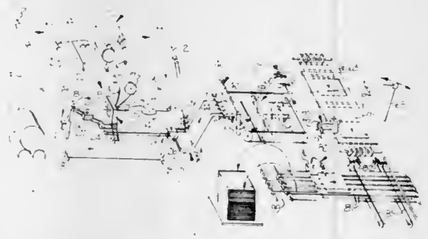
means for shifting said fulcrum along said lever to vary the mechanical advantage of said lever to control the pressure applied to said presser bar.

4,214,541

METHOD FOR MANUFACTURING PILLOWCASES

George E. Zeigler, Jr.; Charles B. Sumpter, Jr., and Carl A. Wortham, all of Eden, N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Filed Dec. 29, 1977, Ser. No. 865,731
Int. Cl.[2] D05B *1/00, 97/00*
U.S. Cl. 112—262.3 **12 Claims**



1. A method of continuously manufacturing pillowcases having an attached hem along the mouth of the pillowcase, said method comprising

advancing along a predetermined path from a supply source an indeterminate length relatively narrow width fabric web for forming a hem while longitudinally folding the web about the midpoint of its width so that the longitudinal edge portions thereof are positioned in opposing relation to one another, and while simultaneously

advancing from another supply source an indeterminate length relatively wider fabric web for forming the body portion of a pillowcase and positioning one longitudinal edge thereof between the opposing longitudinal edge portions of the folded hem-forming web, and while

directing the thus associated hem-forming and body-forming webs through a sewing station and sewing the opposing edge portions of the folded hem-forming web to the portion of the body-forming web positioned therebetween to thereby form an attached hem along one longitudinal edge of the body-forming web, while also

directing the hemmed body-forming web from the sewing station to a cutting station and cutting the web into individual pieces of predetermined length, while

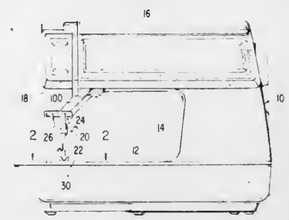
successively folding the cut pieces along a transversely extending fold line located medially of the cut edges to position the cut edges of each successive piece in opposing relation to one another and with the hemmed longitudinal edges in substantial alignment with one another, and while successively advancing the folded pieces to a side seaming station and sewing along the cut edges thereof to form a seam therealong, directing the successive pieces from the side seaming station to an end station, and advancing the pieces successively through the end seaming station and sewing along the edge located opposite the hem to form a seam therealong and thereby closing the end of the piece to complete the pillowcase.

4,214,542

LOW BOBBIN THREAD DETECTION SYSTEM INCLUDING PHOTODETECTOR HOLDER SHIELDED WITH PLASTIC LENS

Charles R. Odermann, Montville, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 4, 1979, Ser. No. 45,539
Int. Cl.[2] B65H *63/02*
U.S. Cl. 112—278 **9 Claims**



1. In a low bobbin thread detection system for a sewing machine including a light source, a photodetector to receive light from said source when bobbin thread is about to be depleted, and a warning device operable by the photodetector, the combination comprising a holder in which the photodetector is situated and which has an aperture therein to permit light from the light source to pass to the photodetector, and a plastic collar on the holder extending over the aperture and shaped opposite the aperture as a lens to focus light from the light source on the photodetector.

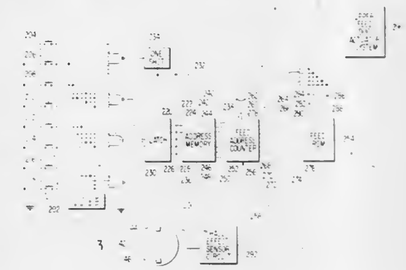
9. The method of forming a lens over the light admitting aperture of the photodetector holder of a low bobbin detector system for a sewing machine comprising the steps of forming a planar surface on the holder to include the aperture, forming a collar from plastic tubing of uniform cross-section, and stretching said collar around a portion of the holder including the planar surface to form a plano-convex lens opposite the aperture.

4,214,543

ELECTRONICALLY CONTROLLED TOP FEED ARRANGEMENT FOR A SEWING MACHINE

Stephen A. Garron, Elizabeth; Robert Sedlatschek, Bridgewater, and John J. Sudano, Paterson, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 5, 1979, Ser. No. 55,136
Int. Cl.[2] D05B *27/04*
U.S. Cl. 112—320 **3 Claims**



1. An electronically controlled top feed arrangement for a sewing machine comprising:

memory means for storing feed data, said feed data including for each stitch a first data portion for a feed stroke and a second data portion for a return stroke;

an upper feed dog adapted to alternately apply and relieve pressure upon a work fabric, the application of pressure occurring when the sewing machine needle is out of said work fabric;

a presser foot adapted to alternately apply and relieve pressure upon said work fabric, the relief of pressure occurring when said upper feed dog is applying pressure to said work fabric;

timing means for supplying a first timing signal during the period when the sewing machine needle is out of said work fabric and a second timing signal during the period when the sewing machine needle is penetrating said work fabric;

means operative during formation of a stitch for extracting from said memory means said feed data for said stitch;

an actuator coupled to reciprocate said upper feed dog along a feed line in response to control signals applied thereto; and

control means responsive to said first timing signal for utilizing said extracted first data portion to provide a control signal for said actuator so as to move said upper feed dog for said feed stroke, and responsive to said second timing signal for utilizing said extracted second data portion to provide a control signal for said actuator so as to move said upper feed dog for said return stroke.

4,214,544

BOAT THRUSTER

Stanley A. Dashew, Santa Monica, and Charles D. Sutton, Woodland Hills, both of Calif., assignors to Omnithruster Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 664,871, Mar. 8, 1976, Pat. No. 4,056,073, which is a continuation-in-part of Ser. No. 491,797, Jul. 25, 1974, abandoned. This application Oct. 31, 1977, Ser. No. 847,222
The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.
Int. Cl.[2] B63H *25/46*
U.S. Cl. 114—151 **10 Claims**

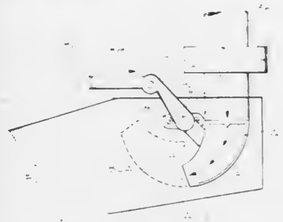
9. In combination with a boat having a hull with bow and stern portions, the improvement comprising:

pump means mounted in said hull for pumping water; and

thruster means having a common passage coupled to said pump means, for receiving the water pumped thereby,

said common passage connecting to two thruster outlet means opening to the sea at either side of the hull for discharging water into the sea thereat;

primary nozzle means mounted in each of said thruster outlet means for discharging a water flow through an exit area A sidewardly substantially perpendicular to the longitudinal axis of said hull;



secondary nozzle means mounted in each of said thruster outlet means for discharging a water flow through an exit area equal to approximately one-half A in a direction having a component parallel to said longitudinal axis; and

valve means for selectively directing the flow from said pump means to discharge the flow to the sea through said primary nozzle means or through said secondary nozzle means.

4,214,545

ANCHOR STOWING ARRANGEMENT

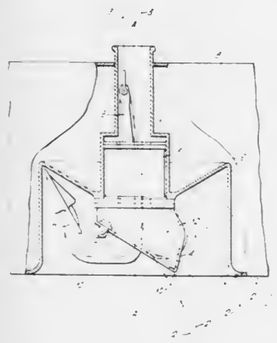
Ivar Krogstad, Arendal; Harry S. Sandøy, Kolbjornsvik, and Thor O. Haavie, Oslo, all of Norway, assignors to A/S Pusnes Mekaniske Verksted, Arendal, Norway

Filed Jun. 5, 1978, Ser. No. 912,867

Claims priority, application Norway, Jun. 6, 1977, 771972; Apr. 19, 1978, 781379

Int. Cl.[2] B63B *21/24*

U.S. Cl. 114—294 **5 Claims**



1. An arrangement for stowing an anchor having a shank and flukes in a vessel, of the type employing a recess in the bottom of the vessel into which the anchor may be pulled by an anchor winch on the vessel, comprising:

a fairlead arranged in said recess for receiving the anchor line and anchor shank;

said fairlead comprising a roller fairlead having at least one sheave for bending of the anchor line, a bracket for supporting said at least one sheave, said bracket being pivotable about a pivot axis approximately coinciding with the direction of pull on the anchor line by the anchor winch, said pivot axis generally coinciding with the axis of said recess;

the lower part of said bracket being provided with guide edges extending entirely around said pivot axis except for an area corresponding to the width of said at least one sheave, said guide edges extending from the lower point thereof upward to said area,

said fairlead having transverse and lengthwise dimensions sized to receive the anchor shank and to permit the anchor shank to be drawn upwardly into the fairlead until the anchor flukes engage said guide edges,

said guide edges cooperating with the anchor flukes upon further upward movement of the anchor to cause relative rotation between the anchor shank and the bracket for orienting the anchor in the recess in said vessel.

4,214,546

CONVERTIBLE AMPHIBIOUS VEHICLE

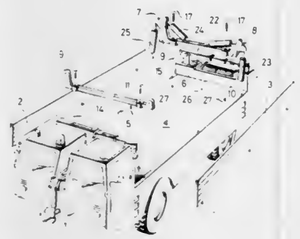
Friedrich Jochum, Kaiserslautern, and Heinz Glaser, Pflaumheim, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,870

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2709948

Int. Cl.[2] B60F *3/00*

U.S. Cl. 114—270 **6 Claims**



1. An amphibious vehicle comprising a platform; a hydraulic driving system; and means for converting the amphibious vehicle into a pontoon or ferry vehicle and actuated by said hydraulic driving system, said converting means having two floats movable between an inoperative position in which said floats are folded and stacked on said platform and an operative position in which said floats are unfolded and the top surfaces of said floats are in alignment with the top surface of said platform, said converting means further having means for connecting said floats to said platform and moving the former between said inoperative and operative positions, said connecting and moving means including a pair of elongated support members arranged to extend transversely to the longitudinal axis of the vehicle, triangular guiding members each hinged at one apex thereof to an assigned end of the support members for rotation in a plane perpendicular to said support member, and four pairs of hydraulic cylinders hinged respectively between end surfaces of said floats, the free apexes of said triangular guiding members and a center point of said support members to provide articulated links expandable and retractable for unfolding and folding said floats, respectively, said elongated support members being detachably connectable to said platform so as to readily move between a first position in which said support members are unfastened and together with said guiding members and said hydraulic cylinders removed from said platform so that the vehicle serves as an amphibious vehicle, and a second position in which said support members are fastened to said platform and together with said guiding members and hydraulic cylinders are held on the latter to fold and unfold said floats so that the vehicle serves as a pontoon or ferry vehicle.

4,214,547

RIDER PROPELLED BOAT

Philip R. Hetland, 915 River Dr., Moorhead, Minn. 56560

Filed Jul. 31, 1978, Ser. No. 929,351

Int. Cl.[2] B63H *1/30, 5/00*

U.S. Cl. 440—13 **5 Claims**



1. A pleasure craft for an operator comprising a bouyant hull having an upper surface and bottom surface portions which taper from a center keel portion upwardly toward the outer edges adjacent the rear of said hull, a framework supported on said hull and including a single strap fixed to the center keel and extending laterally with respect to the hull and having upwardly extending portions adjacent and fastened to the outer edges of the hull to form generally laterally extending portions under each of the bottom surface portions of the hull and spaced therefrom, a pair of planar flexible fin members nonrotatably attached to each of said laterally extending portions, said fin members having a forward edge supported along said laterally extending portions substantially the entire length thereof from the outer edges of the framework to the center of the hull, said fin members extending rearwardly from said laterally extending portions, said fin members being of substantially homogeneous plastic material throughout and of sufficient flexibility to bend along a hinge axis where they join the respective laterally extending portions when the hull is rocked about its longitudinal axis while in the water and to store energy to aid in the propulsion of the hull as the fins tend to return to their normal position.

4,214,548

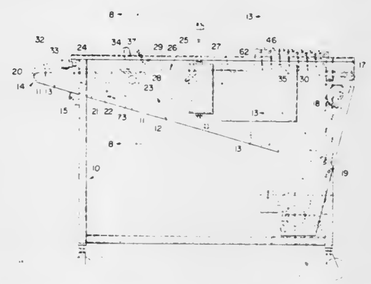
APPARATUS FOR PRE-DUSTING FOOD PRODUCTS

Raymond E. Booth, Sandusky, and Michael E. Miller, Bellevue, both of Ohio, assignors to Sam Stein Associates, Inc., Sandusky, Ohio

Filed Aug. 25, 1978, Ser. No. 936,705

Int. Cl.[2] B05C *3/00*

U.S. Cl. 118—18 **11 Claims**



1. Apparatus for providing a very light pre-dusting coating on a food piece intended for batter-coating, comprising a frame having parallel longitudinally extending side frame members, a movable wire mesh conveyor belt on said frame having a generally horizontal coating run across said frame, means for driving said conveyor belt, a flat slider plate on said frame beneath a first product-piece-receiving portion of said run, means for depositing a layer of pre-dusting breading material on said belt above said slider plate, drag plate means pivotally mounted on said frame above said first portion of said run and near the downstream end of said slider plate, the length of said drag plate means from its pivotal axis to its free swinging lower end being less than the distance from said drag plate means pivotal axis to said conveyor belt, and the width of one plate of said drag plate means transverse to the belt being preferably less than said length, whereby with a layer of predetermined thickness of said pre-dusting breading material on said first portion of said run, said drag plate means will hold back a standing wave of said pre-dusting breading material after which a food product piece on said layer will be carried through said wave to cover the top surface of said product piece.

4,214,549

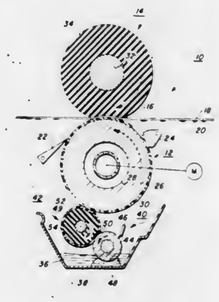
ROLL FUSER APPARATUS AND RELEASE AGENT METERING SYSTEM THEREFOR

Rabin Moser, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 28, 1978, Ser. No. 920,110

Int. Cl.[3] G03C *13/20*

U.S. Cl. 118—60 **4 Claims**



1. In a contact fuser apparatus having a heated roll structure cooperating with a backup roll structure to form a nip through which copy substrates carrying toner images pass with said toner images contacting the heated fuser roll, wherein a release agent contained in a sump is applied to the surface of the heated roll structure to minimize offset of toner thereto and facilitate separation of the substrate from the heated fuser roll, the improvement comprising a rotatably supported donor roll contacting said heated roll structure and a smooth metal-surfaced rotatably supported metering roll supported for contact with said donor roll and said release agent in said sump, and a metering blade contacting said metering roll for metering said release agent to a predetermined thickness thereon, said donor roll comprising a deformable surface capable of having a pair of nips formed therein through pressure contact with said heated roll structure and said metering roll, and further comprising means coupled to said heated roll structure for effecting rotation of said structure and, in turn, rotation of said rolls by said heated roll structure.

4,214,550

APPARATUS FOR THE DEPOSITION OF A MATERIAL FROM A LIQUID PHASE

Frank Z. Hawrylo, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 41,087

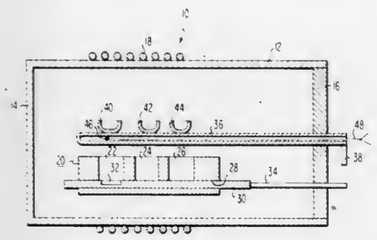
Int. Cl.[2] H01L *21/208;* **B05C** *3/18*

U.S. Cl. 118—712 **6 Claims**

1. In an apparatus for epitaxially depositing at least one layer of a material on a substrate from a liquid phase which includes a furnace boat having at least one well for containing a deposition solution, the improvement comprising:

a container for containing an additive for the deposition solution,

support means supporting said container over the well of the furnace boat and adapted to move said container to a



position whereby the additive can enter the well in the furnace boat, and

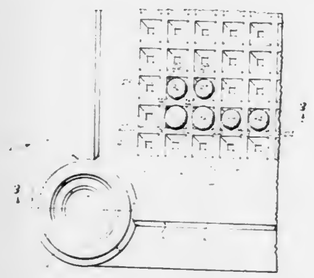
means in said support means for measuring the temperature of the additive in the container and the deposition solution in the adjacent well.

4,214,551

FISH EGG SUPPORTING SYSTEM

William J. McNeil, and Richard F. Severson, both of Eugene, Oreg., assignors to Oregon Aqua-Foods, Inc., Springfield, Oreg.

Filed Jul. 10, 1978, Ser. No. 922,884
Int. Cl.² A01K *61/00*
U.S. Cl. 119—3 **4 Claims**



1. A system for supporting fish eggs comprising:

a supporting member having upper and lower surfaces;

said upper surfaces formed with perforations to define a waffle pattern of egg supporting apertures;

said apertures including egg contacting means for discontinuously engaging a portion of an egg's surface and permitting the flow of gases and fluids within said aperture and around said egg through the passageways between said discontinuous engagement of said egg by said contacting means;

each of said apertures being sized to retain only one egg;

said apertures being spaced a distance from one another to maintain a gap between eggs supported in adjacent apertures; and

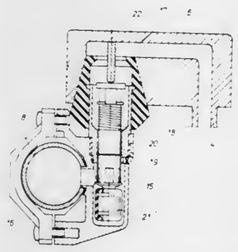
said apertures each define an opening from said upper surface to said lower surface of a size large enough to permit the flow of gases and fluid but small enough to prevent the passage of alevin through said opening.

4,214,552

VALVE COUPLING FOR VACUUM LINE

Karl E. Olander, Sodertalje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Sep. 20, 1978, Ser. No. 944,128
Claims priority, application Sweden, Oct. 14, 1977, 7711584
Int. Cl.² A01J *7/00*; **F16L** *37/28*
U.S. Cl. 119—14.01 **3 Claims**



1. In combination with an external object and a vacuum line, a coupling device comprising a first connection means with which said external object is provided, and a valve including a housing having an outlet adapted to communicate with said vacuum line and also having an inlet, a second connection means forming said inlet and which is adapted to be coupled with said first connection means, said housing forming a passage from said inlet to said outlet, the valve also including a valve body in said housing and a spring urging the valve body to a first position for closing said passage, said first connection means having a member operable to move the valve body to a second position for opening said passage when the two connection means are coupled together, one of said connection means having a contact surface in the form of a truncated cone engageable with a complementary surface of the other connection means, at least one of the connection means being made of an elastic material, the two connection means being releasably held together, with their respective said surfaces engaging each other, by the pressure difference between the vacuum in the valve housing and the ambient atmosphere when the two connection means are coupled together, said second connection means being made of a rubber material in the form of a pierced truncated cone which tapes in a direction away from the valve housing, said truncated cone having a substantially vertical axis of symmetry and at its upper portion forming said inlet.

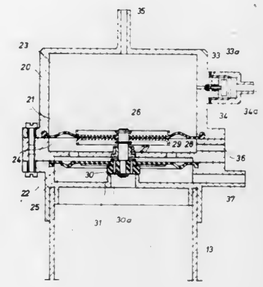
4,214,553

PNEUMATIC TIME DELAY DEVICE

Karl E. Olander, Södertälje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Nov. 28, 1978, Ser. No. 964,182
Claims priority, application Sweden, Dec. 6, 1977, 7713804
Int. Cl.² A01J *5/00*
U.S. Cl. 119—14.08 **5 Claims**

1. Apparatus for controlling the operation of a pneumatically activated device, comprising means forming first and second closed chambers, a vacuum source connected to said second chamber, means connecting said second chamber to said pneumatically activated device, valve means associated with said second chamber and having a first position for preventing access of the pneumatically actuated device to said vacuum source while connecting said device to atmosphere, said valve means having a second position for permitting access of the pneumatically actuated device to said vacuum source while disconnecting said device from atmosphere, an adjustable throttling valve, and a control unit connected to said first chamber and operable to draw air therefrom through said throttling valve to reduce the pressure in the first chamber, after a time delay, sufficiently to move said valve means from its first position to its second position, the extent of said



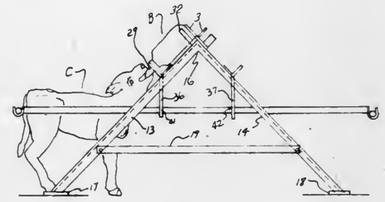
time delay being adjustable by adjustment of said throttling valve.

4,214,554

FEEDING APPARATUS FOR NURSING ANIMALS

James L. Smith, Jr., 5742 Wilkins Ave., Oakdale, Calif. 95361

Filed Sep. 6, 1978, Ser. No. 940,022
Int. Cl.² A01K *9/00*
U.S. Cl. 119—71 **6 Claims**



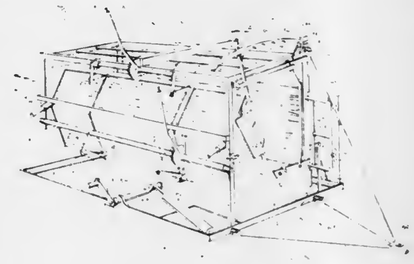
1. A feeding apparatus for nursing animals such as calves or the like comprising, in combination, a frame including a pair of end supports and a plurality of longitudinally extending, centrally disposed frame members supported at each end in an elevated position on said end supports, a plurality of rod members supported on said frame members in spaced-apart, parallel relationship, said rod members extending laterally outward on both sides of said frame, each adjacent pair of said rod members defining oppositely disposed stall areas for said nursing animals, a plurality of nursing bottle retainer means mounted on said frame members for removeably supporting a nursing bottle having a nipple in a downwardly inclined inverted nursing position in association with each of said stall areas to thereby provide access to said nursing bottle by a nursing animal in said stall area including a longitudinally extending retaining bar removeably mounted on the outer ends of said rod members on each side of said frame for preventing backward movement of said nursing animals from said stall areas wherein said plurality of nursing bottle retaining means are arranged on said frame members in longitudinally spaced pairs with the retaining means in each of said pairs in oppositely disposed relationship and wherein said end supports are A-shaped in configuration having an apex and including a pair of angularly disposed end frame members interconnected at said apex and a bracing member connected at each end to one of said end frame members.

4,214,555

CATTLE VISE

Ken Sawby, P.O. Box 520, Maple Creek, Saskatchewan, Canada

Filed Apr. 14, 1978, Ser. No. 896,284
Claims priority, application Canada, Feb. 1, 1978, 614867
Int. Cl.² A61D *3/00*
U.S. Cl. 119—103 **11 Claims**



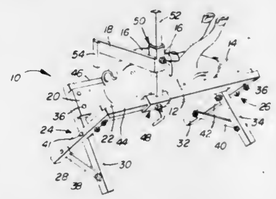
1. A cattle vise comprising a frame having width at least sufficient to accommodate an animal, having an open bottom, and a lower edge adapted for stable positioning on the ground, a pair of side panels facing each other within the frame for clamping the animal therebetween, each panel having a lower section inclined with its lower edge inwardly of the frame and an upper section abutting the lower section and forming a wide obtuse angle with the lower section facing inwardly of the frame, means for supporting said side panels in the frame, said supporting means including means for guiding one of the panels for relative horizontal movement with respect to the other of the panels, means behind and linked to the lower section of said one panel for moving said lower section horizontally toward the lower section of the other panel with said animal disposed therebetween so as to exert both squeezing and lifting force to said animal, independent means behind and linked to the upper section for moving the upper section of said one panel toward the upper section of the other panel to complete the clamping of said animal, and means for supporting said moving means relative to the frame.

4,214,556

DEVICE FOR IMMOBILIZING ANIMALS

Harry D. Knox, R.R. #1, Barfield Rd., Murfreesboro, Tenn. 37130, and James P. Summar, R.R. #2, Box 385, Readyville, Tenn. 37149

Filed Jul. 3, 1978, Ser. No. 922,169
Int. Cl.² A61D *3/00*
U.S. Cl. 119—103 **3 Claims**



1. A device for immobilizing an animal comprising a supporting framework, panels attached to said framework, an adjustable muzzle cone for securing the head of said animal, and attached to one of said panels and retaining means fastened by adjustable means to said framework, said retaining means being movable on said framework in the longitudinal direction of said animal to apply longitudinal force on the animal toward said muzzle cone, wherein said animal rests in a supine position on said panels and said adjustable means comprises a horizontal

retaining bar, a horizontal adjusting means, and a vertical adjusting means, wherein said framework comprises two parallel pairs of upright crossed legs connected together to each other at the crossing, the pairs being connected by longitudinal frame members attached to the corresponding upper end of each leg, a pair of said panels being attached to said crossed legs in a V-shaped configuration, wherein said horizontal adjusting means comprises a horizontal sleeve capable of being tightened slidably on one of said longitudinal frame members, an upwardly projecting post being attached to said horizontal sleeve, and wherein said vertical adjusting means comprises a vertical sleeve capable of being tightened slidably on said post, said horizontal retaining bar being attached to said vertical sleeve for applying said longitudinal force, said horizontal sleeve being tightened on said longitudinal member by a set screw, said vertical sleeve being tightened on said post by a second set screw, and a vertically depending extension attached to the end of said horizontal retaining bar remote from said vertical sleeve, one of said panels being slotted and located on said framework to leave a gap between said slotted panel and one of said longitudinal frame members, said muzzle cone comprising flexible belting attached by attaching means at one end to said slotted panel and passing beneath said slotted panel and through the slot of said slotted panel, thence through said gap.

4,214,557

PIVOTING WALL TYPE, FOUR STROKE, INTERNAL COMBUSTION, ROTARY ENGINE

Corbett D. Beach, Jr., Rte. 1, Box 218, Mannington, W. Va. 26582

Filed Aug. 15, 1978, Ser. No. 933,840
Int. Cl.² F02B *53/00*
U.S. Cl. 123—18 R **4 Claims**



1. A four cycle rotary engine providing intake, compression, power, and exhaust phases of operation comprising:

a housing defining a first chamber, the walls of the first chamber having the configuration of a wedge in cross-section, and a second chamber, the walls of the second chamber having the configuration of a segment of a circle in cross-section, the chambers being disposed adjacent one to the other;

wall means pivotally mounted within said housing common to the first and second chambers for moving into and out of the chambers including a cam follower disposed within the second chamber;

a rotatable drive shaft extending into the second chamber;

an elongated rotor having a pair of opposed peripheral extensions mounted on said drive shaft within the second chamber;

seal means mounted on the periphery of each of the extensions of said rotor for engaging adjacent wall portions of the second chamber;

cam means defined by the external surface of said rotor for engaging the follower on said wall means for pivoting said wall means into and out of the first and second chambers as said drive shaft rotates said cam means permitting said wall means to open into the second chamber and place said first and second chambers in communication only during the exhaust phase of operation;

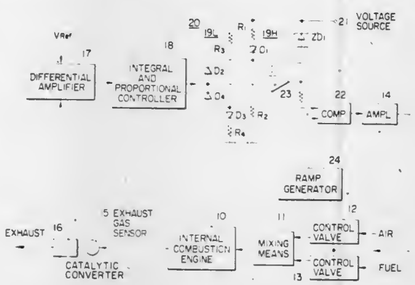
means for admitting fuel to the first chamber, ignition means extending into the first chamber, and means for exhausting said chambers carried by said housing.

4,214,558

FUEL CONTROL METHOD AND SYSTEM WITH A CIRCUIT FOR OPERATING VALVE IN EFFECTIVE WORKING RANGE

Tetsuji Nishioka, Yokohama; Masaharu Asano; Makoto Anzai, both of Yokosuka, and Akio Hosaka, Mori, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 23, 1977, Ser. No. 836,014
Claims priority, application Japan, Sep. 24, 1976, 51-113613
Int. Cl.² F02B *3/00*
U.S. Cl. 123—489 **7 Claims**



1. In a fuel control system for an internal combustion engine of a type having air-fuel mixing means including electromagnetic control valve means effective to open and close in response to electrical pulses applied thereto, said pulses requiring durations and separations corresponding respectively to a minimum effective opening period and a minimum effective closure period of said valve means, and exhaust means including a catalytic converter effective when supplied with exhaust gases containing air and fuel in a certain ratio to accelerate simultaneously the oxidation of unburned fuel and the reduction of nitrogen oxides, comprising:

means for generating a first signal indicative of the concentration of a predetermined constituent of the gases in said exhaust means;

means for generating a second signal representative of the deviation of said first signal from a predetermined value representing a desired air-fuel ratio; and

means responsive to said second signal for generating control pulses for operating said air-fuel mixing control valve means;

wherein there is a tendency for hesitation and resultant time lag in control valve operation to occur caused by application thereto of control pulses having variable durations and separations that extend below said minimum required periods of said required pulses,

a system for reducing the hesitation and time lag, comprising:

means for generating periodically occurring electrical waveforms with a magnitude varying as a function of time between first and second constant levels;

means for limiting the magnitude of said second signal to a first value lower than said first constant level of said periodic waveforms corresponding to one of said minimum open and closure periods of said valve means and for limiting the magnitude of said second signal to a second value higher than said second constant level of said periodic waveforms corresponding to the other one of said

minimum open and closure periods of said valve means; and

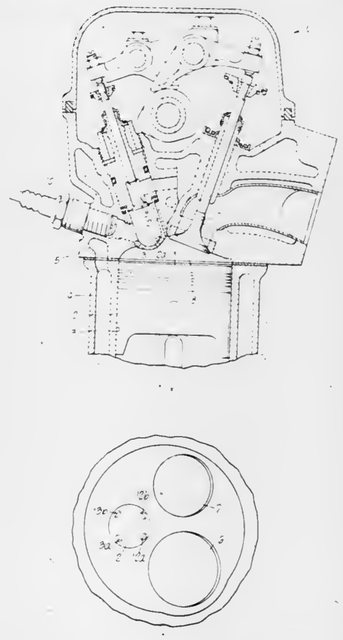
means for comparing the magnitude of said periodic waveforms with the magnitude of an output signal from said limiting means to generate a binary, valve operating signal depending on the magnitude of said periodic waveforms relative to the magnitude of said output signal from said limiting means, the operating signal thereby having a minimum duration no larger than a value corresponding to the minimum open period of said valve means and a minimum interval between successive ones of said operating signal no larger than a value corresponding to said minimum closure period of said valve means.

4,214,559

ORIENTATION OF TORCH OPENINGS FOR PRECHAMBER ENGINE

Toru Hatanaka, Urawa, and Yoshitoku Iizuka, Toda, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 780,318, Mar. 23, 1977, Pat. No. 4,144,848. This application Jan. 22, 1979, Ser. No. 5,314
Claims priority, application Japan, Apr. 1, 1976, 51-35182
Int. Cl.² F02B *23/06*
U.S. Cl. 123—293 **3 Claims**



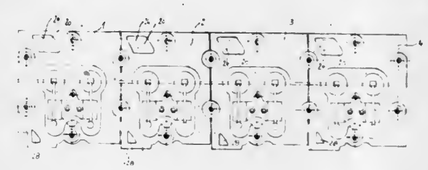
1. In an internal combustion engine, the combination of walls including a movable piston forming a main combustion chamber, said main combustion chamber having a wedge shaped apex near the extended axis of said piston, an intake valve and an exhaust valve each having a head portion projecting into said main combustion chamber, walls forming an auxiliary combustion chamber, said auxiliary combustion chamber being positioned within said engine adjacent said main combustion chamber apex and the bottom wall of said auxiliary combustion chamber projecting into said main combustion chamber, at least three torch openings in said bottom wall establishing communication between said chambers, means for igniting a mixture in said auxiliary combustion chamber to cause flames to project through said torch openings to ignite a mixture in said main combustion chamber, the first of said torch openings being positioned to direct a flame near said intake valve, the second of said torch openings being positioned to direct a flame near said exhaust valve, the third of said torch openings being positioned opposite said first and second torch openings to direct a flame toward a region of said main combustion chamber remote from said valves, all of said torch openings being provided in the bottom wall of said auxiliary combustion chamber, the total cross sectional areas of said torch openings being from 0.04–0.20 square centimeters for each cubic centimeter of volume of said auxiliary combustion chamber, and the total cross sectional area of the first and second torch openings being larger than that of third torch opening.

4,214,560

CYLINDER HEAD IMPROVEMENT, PARTICULARLY FOR A DIESEL ENGINE

Jean M. Nikly, 2 Rue Le Royer, Lyons, France (7)

Filed May 4, 1978, Ser. No. 902,717
Claims priority, application France, May 4, 1977, 77 14305
Int. Cl.² F01P *3/14, 3/16*
U.S. Cl. 123—41.77 **10 Claims**



1. a cylinder head for a diesel engine, comprising:

an inlet manifold and an exhaust manifold;

rocker arms;

an injector;

said inlet manifold and said exhaust manifold being disposed on the same side of said cylinder head, opposite to said rocker arms and said injector;

said cylinder head being affixed to an engine block by an arrangement of six bolts;

each of said six bolts defining, when viewed from above, one of the points of a regular hexagon, two sides of said hexagon being perpendicular to the central longitudinal plane of the engine;

said inlet manifold opening onto the upper face of said cylinder head;

said exhaust manifold opening onto a lateral face of said cylinder head;

said injector being fixed directly into a seating in said cylinder head in an inclined position relative to the central longitudinal plane of the engine and parallel to the axis of a cylinder of the engine, so as to extend above a relatively short one of said bolts which fixes said head to the engine block; and

said injector being fixed in the seating thereof between two rocker arm push-rods.

4,214,561

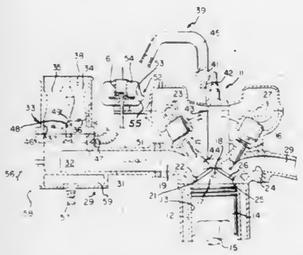
INDUCTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hiromitsu Matsumoto, and Ryuichi Yamashita, both of Hamamatsu, Japan, assignors to Yamaha Hatsukoki Kabushiki Kaisha, Shizuoka, Japan

Filed Jun. 1, 1978, Ser. No. 911,402
Claims priority, application Japan, Sep. 9, 1977, 52-108489
Int. Cl.² F02D *39/02*
U.S. Cl. 123—432 **13 Claims**

1. In an internal combustion engine having a variable volume chamber in which combustion occurs, a main intake passage communicating with said chamber through a main intake port for delivering a charge thereto, a sub-intake passage communicating with said chamber through a sub-intake port, said sub-

intake passage having an effective cross-sectional area substantially less than the effective cross-sectional area of said main intake passage for causing a given mass flow charge through the said sub-intake passage to enter said chamber at a significantly greater velocity, and throttle valve means for controlling the ratio of the communication of said ports with said chamber during a given cycle of operation of said engine, said



throttle valve means including at least one throttle valve for throttling the flow through at least one of said intake passages, the improvement comprising the intake of said sub-intake passage being exposed to the unthrottled pressure existing on the upstream side of said one throttle valve during at least a portion of the low-load operation of said engine and only to a pressure on the downstream side of said one throttle valve during another portion of the operation of the engine.

4,214,562

VALVE CONTROL ARRANGEMENTS

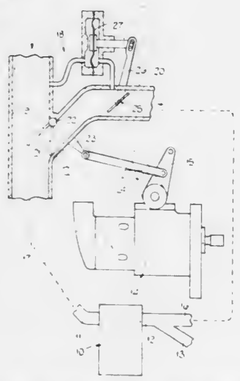
Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 28, 1978, Ser. No. 919,975

Claims priority, application United Kingdom, Jul. 8, 1977, 28820/77

Int. Cl.² F02M *25/00*

U.S. Cl. 123—568 **4 Claims**



1. An internal combustion engine provided with a system for controlling the flow of exhaust gas from an exhaust manifold to an air inlet of the internal combustion engine, said system comprising a first conduit portion forming part of the air inlet system of the engine, a second conduit portion joined to said first conduit portion, a flow control valve comprising a flap valve hinged at the upstream portion of said first conduit at its juncture with said second conduit and operable by means associated with the engine in response to the fuel requirements thereof, a butterfly valve disposed in said second conduit portion and means responsive to the pressure drop across said flap valve for adjusting the butterfly valve so that the pressure drop across the flap valve is substantially zero, said second conduit portion being connected to the exhaust manifold of the engine.

4,214,563

EXHAUST GAS TEMPERATURE DETECTION BY INJECTION OF TIME-VARYING CURRENT

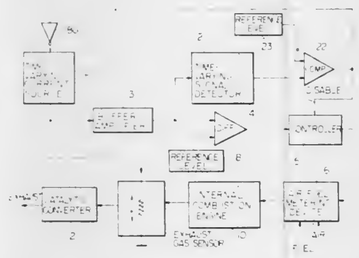
Akio Hosaka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 19, 1978, Ser. No. 971,082

Claims priority, application Japan, Dec. 21, 1977, 52-152837

Int. Cl.² F02B *3/08*

U.S. Cl. 123—437 **12 Claims**



1. A mixture control system for an internal combustion engine including an exhaust gas sensor for generating a signal indicative of the concentration of a predetermined constituent of the exhaust gases from said engine, means for deriving a signal representative of the deviation of the concentration indicative signal from a reference value representing a desired air-fuel ratio, and means for supplying mixture of air and fuel to said engine at a variable ratio in response to the deviation of said concentration, said exhaust gas sensor having an internal impedance varying as an inverse function of the temperature of said exhaust gases, said control system comprising: **1** a source of injecting a time-varying current with a magnitude varying periodically between two constant values to said exhaust gas sensor to generate a voltage signal which is the product of the injected current and the internal impedance thereof plus said concentration indicative signal;

a detector for detecting the difference between high and low levels of said voltage signal; and

a comparator for comparing said detected voltage signal with a reference level corresponding to an operating temperature of said exhaust gas sensor to generate an output signal indicating that the temperature of said gas sensor is lower than said operating temperature for disabling said feedback control signal.

4,214,564

FUEL INJECTION PUMPING APPARATUS

Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 20, 1977, Ser. No. 862,506

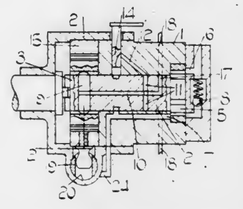
Claims priority, application United Kingdom, Dec. 17, 1976, 52939/76

Int. Cl.² F02D *1/16*

U.S. Cl. 123—502 **3 Claims**

1. A fuel injection pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising an injection pump operable in use, in timed relationship with an associated engine, a feed pump for supplying fuel to the injection pump, valve means for controlling the output pressure of the feed pump so that it varies in accordance with the speed at which the apparatus is driven in use, the injection pump including cam means movable to adjust the timing of delivery of fuel by the injection pump and a fluid pressure operable piston for adjusting the setting of said cam means resilient means for biasing said piston

the setting of said fluid pressure operable piston being dependent upon the outlet pressure of the feed pump, an axially movable pin engageable with said piston between a first position and a second position, said pin when in said first position maintaining said cam means in a position such that the delivery of fuel is advanced, further resilient means biasing said pin to said first position, a temperature sensitive device responsive in use, to the temperature of



the associated engine and means operatively coupling said device and said pin comprising a Bowden cable having an inner member and an outer member whereby as the engine becomes warm the pin is moved against the action of the further resilient means from the first position to the second position, said cam means when said pin is in said second position being free to move under the control of said fluid pressure operable piston.

4,214,565

FUEL INJECTION APPARATUS

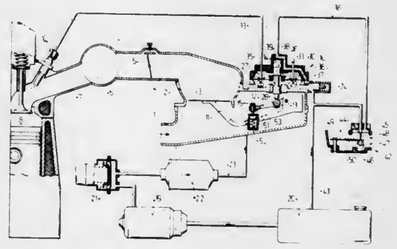
Heinrich Knapp, Leonberg; Thomas Wilfert, Markgröningen; Alfred Grässle, Ludwigsburg, and Paul Füssner, Sindelfingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,882

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744733

Int. Cl.² F02M *39/02, 1/00*

U.S. Cl. 123—179 L **4 Claims**



1. A fuel injection apparatus for mixture-compressing, externally ignited internal combustion engines with an induction tube in which an air flow rate member and an arbitrarily actuatable throttle valve are arranged in seriatim and the air flow rate member is moved against a return force in accordance with the quantity of air flowing therethrough, thus adjusting a control slide embodied as a movable part of a metering and distribution assembly arranged in the fuel supply line in order to effect the apportionment of a quantity of fuel proportional to the air quantity, characterized in that transmission means including a compression spring are provided between said control slide and said air flow rate meter and wherein the control slide of the metering and distribution assembly opposite the air flow rate member is displaceable in accordance with temperature.

4,214,566

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

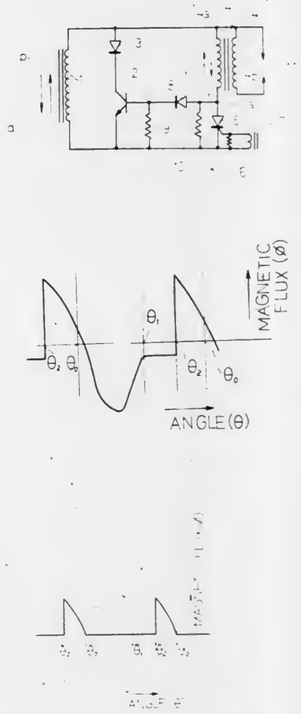
Hirotoshi Nanjo, Susono, and Katsuo Murakami, Numazu, both of Japan, assignors to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Sep. 1, 1978, Ser. No. 938,887

Claims priority, application Japan, Sep. 14, 1977, 52-123847[U]

Int. Cl.² F02P *1/00*

U.S. Cl. 123—594 **7 Claims**



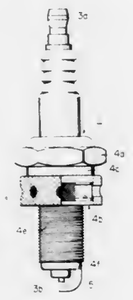
1. An ignition system for an internal combustion engine, comprising: an ignition coil having a primary winding and a secondary winding wound upon a magnetic core having magnetic retentivity, an exciter coil producing an AC voltage in synchronism with rotation of the engine and connected to said primary winding of said ignition coil to supply the AC voltage to said primary winding, a primary current control switch connected in parallel with the exciter coil and the primary winding of the ignition coil and adapted to be made conductive immediately when an output of the exciter coil changes to a given polarity to permit a current to flow therethrough and changed from conductive state to nonconductive state at the ignition angle to cause a sudden increase in the primary winding current to induce a high voltage in said secondary winding, thereby firing the ignition plug, characterized in that said ignition system further comprises resistor means for providing a path, when the exciter coil is of opposite polarity, for a current through said primary winding in a direction opposite to the current which flows through the primary winding at the ignition angle to reset the flux in the core, intermediate successive ignition angles, to a value below the abscissa on the B-H curve.

4,214,567

INTERNAL COMBUSTION ENGINES

Enami Goto, Yokohama, Japan, assignor to Kunihiko Miyaji, Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,201
Claims priority, application Japan, Oct. 11, 1978, 53/124798
Int. Cl.² F02B *75/02;* **F02P** *1/10;* **F01L** *13/08*
U.S. Cl. 123—169 C **6 Claims**



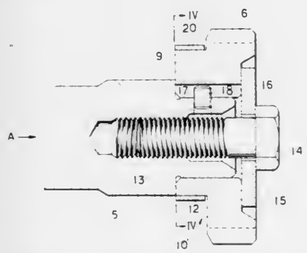
1. In an ignition plug for use with an internal combustion engine, the plug having a ceramic sleeve, a central electrode passing through the sleeve, and an outside metal casing surrounding the ceramic sleeve and having a portion thereof spaced from a lower end of the central electrode, the casing having a lower threaded portion for connecting the plug to a tapped opening defined in a cylinder cover, the improvement comprising means for defining an air passage between the threaded portion and a portion of the cylinder cover defining the opening so that ambient air can pass between the plug and cover portion, and wherein a separate ring assembly surrounds a portion of the plug, the ring assembly having passages formed therein for establishing fluid communication between the air passage and the ambient environment.

4,214,568

DRIVE UNIT FOR A DISTRIBUTOR AND A FUEL PUMP

Eiji Ito, Nagoya, and Shigeki Okaguchi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 27, 1978, Ser. No. 946,160
Claims priority, application Japan, May 26, 1978, 53-62285
Int. Cl.² F02B *77/00;* **F16H** *53/00*
U.S. Cl. 123—198 R **4 Claims**



1. A drive unit for a distributor and a fuel pump of a spark ignition internal combustion engine, the unit including a drive gear integrally formed with an axially adjacent drive cam, the integral gear and cam unit being adapted to be mounted on a camshaft of the engine with the drive gear in meshing engagement with a driven gear on a distributor drive shaft and with the cam in sliding engagement with a fuel pump actuating lever, wherein the improvement comprises:

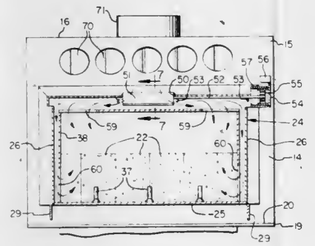
said integral drive gear and cam unit being formed of easily machineable non-heat treated material, and said unit further comprising a fully heat treated collar interference fitted onto the drive cam to provide a wear resistant surface for said cam.

4,214,569

FIREPLACE STOVE

Friedrich W. Heine, 577 Garfield, P.O. Box 10924, Eugene, Oreg. 97401

Filed Apr. 10, 1978, Ser. No. 894,554
Int. Cl.² F24C *1/14*
U.S. Cl. 126—77 **6 Claims**



1. In a fireplace stove,

a body having a door opening,

a tubular door frame of metal extending at least partially around the door opening,

a door detachably secured to the door frame,

the door frame having a draft inlet opening and a draft outlet opening spaced along the door frame from the inlet opening,

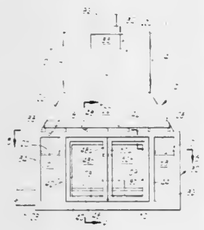
and damper means for adjustably controlling flow of air through the door frame from the inlet opening to the outlet opening.

4,214,570

HEATING SYSTEM

Kenneth Hansmeyer, 1011 W. Tecumseh Rd., Norman, Okla. 73069

Filed Mar. 23, 1978, Ser. No. 889,201
Int. Cl.² F24B *7/00*
U.S. Cl. 126—121 **13 Claims**



1. A fireplace heating system comprising:

a firebox having opposite side walls, a back wall extending between said side walls and an open front side spaced from and opposite said back wall;

an angulated stack connected to the firebox at the upper side thereof and extending generally upwardly from the firebox, said stack having a lower portion, a central portion projecting vertically from said lower portion, and an upper portion extending upwardly and rearwardly in the direction of the back wall of the firebox from said central portion;

housing means around the firebox and stack and defining with the firebox and stack an air plenum chamber, said housing means including:

an upper portion surrounding, and spaced from, the upper portion of said stack and having an upper air opening at the forward, top side of said upper portion and spaced upwardly from the open front side of said firebox, said upper air opening being positioned opposite said upper portion of said stack; and

a base portion including:

a bottom wall;

side walls spaced horizontally from the side walls of the firebox to define a portion of said air plenum chamber, one of said side walls having a hot air discharge opening therethrough adjacent and above said bottom wall, said hot air discharge opening being aligned with the lowermost portion of said firebox and adapted for connection to a forced air device; and

a back wall spaced horizontally rearwardly from the back wall of the firebox and interconnecting the side walls of said base portion, said space between said base portion back wall and the back wall of the firebox forming a portion of said air plenum chamber;

said base portion having horizontally spaced lower air openings in horizontal alignment with the open front side of the firebox and on opposite sides of said firebox opening, said lower air openings each being disposed substantially closer to said hot air discharge opening than said upper air opening, and each of said lower air openings opening in the same direction as the open front side of the firebox for receiving relatively cool air from a room into which said firebox opens; and

a central portion positioned between and interconnecting said housing means upper portion and said housing means base portion, and surrounding and spaced from said lower portion of said stack, said central portion of said housing means being disposed between said upper air opening and said hot air discharge opening;

baffle means in said air plenum chamber and disposed between said upper air opening and said hot air discharge opening for directing air entering said air plenum chamber from said upper air opening in a circuitous elongated path, including a portion of said path extending in a horizontal direction around said firebox, en route to said hot air discharge opening, said baffle means, hot air discharge opening, upper and lower air openings all cooperating to proportionately mix air from the upper and lower air openings to optimize the temperature of such mixed air at the time of its discharge through said hot air discharge opening; and

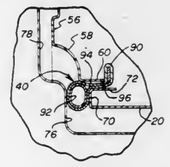
means for selectively closing to a desired degree the open front side of said firebox to control admission of combustion air to the interior of said firebox from the open front side thereof.

4,214,571

REMOVABLE OVEN PANEL AND DOOR SEALING GASKET

Richard M. Scherer, Oxford, Miss., assignor to Chambers Corporation, Oxford, Miss.

Filed Jan. 16, 1978, Ser. No. 869,765
Int. Cl.² F23M *7/00*
U.S. Cl. 126—190 **10 Claims**



1. In an oven having an open-end liner disposed within the oven in a spaced apart relationship and including an oven door movable from an open position to a closed position adjacent the oven front face, a sealing gasket comprising:

a substantially rectangular rigid hoop having a configuration corresponding to the open end of the liner;

a substantially rectangular thermal insulating band having a configuration corresponding to the liner open end, said band being disposed adjacent to and in front of the liner open end to engage the door in a closed position to form a thermal seal between the door and the liner;

thermal insulating means for attaching said hoop to said band and for supporting and securing said band adjacent to and in front of the liner open end;

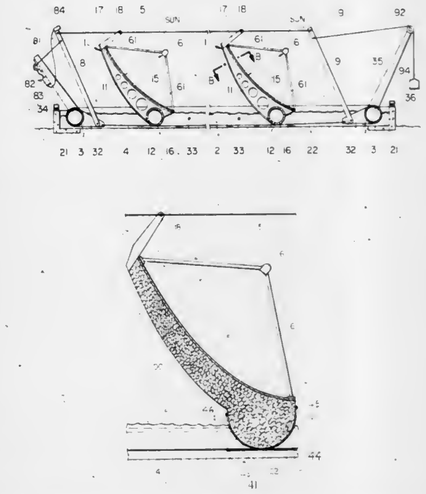
said rigid hoop and said insulating means cooperating with the front face of the oven for clamping said insulating means against the liner to secure said gasket on the liner and to provide thermally insulated support for the liner.

4,214,572

COLLECTION OF SOLAR ENERGY

Warren W. Gonder, 298 Space View Dr., Grants Pass, Oreg. 97526

Filed Jul. 12, 1978, Ser. No. 924,210
Int. Cl.² F24J *3/02;* **F03G** *7/02*
U.S. Cl. 126—425 **11 Claims**



1. Apparatus for collecting solar energy, which apparatus comprises

(a) a pool of liquid;

(b) a frame buoyantly disposed on and in contact with said pool of liquid;

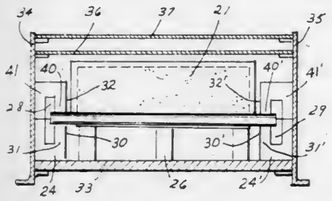
(c) a plurality of horizontal elongate parallel solar collection devices for collecting solar energy, said devices being attached to said frame and each said device comprising (i) an elongate horizontal reflector body which is buoyantly disposed on and in contact with said pool of liquid and which has a reflecting surface of generally parabolic cross-section and (ii) an elongate horizontal absorption device at the focal point of said parabolic reflecting surface;

(d) azimuthal rotation means for rotating said frame to place said solar collection devices in a desired position relative to the sun; and

(e) elevational rotation means for rotating each said horizontal reflector body about its longitudinal axis to place said solar collection devices in a desired position relative to the sun wherein each said reflector body comprises a plurality

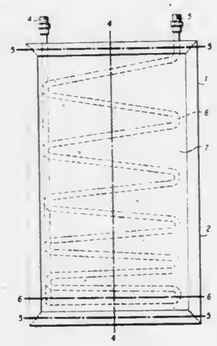
of hollow glass bodies which are connected together through randomly coalesced wall portions.

4,214,573
SOLAR ENERGY COLLECTOR
William P. Niedermeyer, 1024 Mt. Mary Dr., Green Bay, Wis. 54301
Continuation-in-part of Ser. No. 844,924, Oct. 25, 1977. This application Jul. 18, 1978, Ser. No. 925,778
Int. Cl.² F24J *3/02*
U.S. Cl. 126—438 **2 Claims**



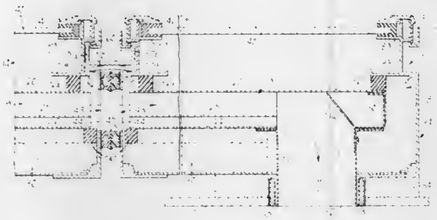
1. Apparatus for collecting, concentrating and absorbing solar rays and transferring solar energy to a heat transfer fluid, including
(a) an elongated parabolic reflector having a nadir and a focal plane
(b) the focal plane disposed above the nadir
(c) a focal area in the focal plane
(d) an absorbing means with planar sides disposed at least in part in the focal area above the nadir,
(e) a tubular conveyor affixed to an edge of the absorber and disposed above the reflector
(f) a pair of elongated fluid conducting manifolds each formed of mated upper and lower members said manifolds positioned at opposite ends of the reflector with the ends of said conveyor sealingly positioned and supported in mated recesses disposed along the length of said manifold members, wherein the fluid conducting manifolds support the tubular conveyor at each end of the reflector and conduit a heat transfer fluid to and way from the conveyors.

4,214,574
SOLAR HEAT COLLECTOR
Edward J. O'Hanlon, Assembly Point, Lake George, N.Y. 12845
Continuation of Ser. No. 717,447, Aug. 24, 1976, abandoned. This application May 14, 1979, Ser. No. 38,749
Int. Cl.² F24J *3/02*
U.S. Cl. 126—446 **7 Claims**



1. A solar heat collecting panel comprising a tray assembly having a bottom portion, a plurality of upstanding vertical sides and internal vertical partitions, said partitions having a length-wise slot, a corrugated transparent or translucent sheet having edges resting on resilient material mounted on said vertical sides, with said sheet and said resilient material held tightly within the boundaries of said tray, a darkened metallic solar heat absorbing surface arranged within said tray assembly, thermal insulating material extending between said tray and said darkened solar heat absorbing surface, said darkened surface having a tube fastened underneath thereon, said tube conveying a solar heat absorbing fluid, both ends of said tube protruding from one end of said tray, said tube serpentined within said tray, a first layer of heat insulative material positioned beneath said tube, a highly reflective surface extending beneath said first layer of heat insulative material, and a second layer of heat insulative material positioned between said reflective surface and said bottom portion of said tray.

4,214,575
SOLAR ENERGY COLLECTOR
Thomas P. Hopper, Durham, Conn., assignor to Sunworks, Inc., Guilford, Conn.
Continuation-in-part of Ser. No. 854,153, Nov. 23, 1977. This application Jan. 24, 1979, Ser. No. 6,004
Int. Cl.² F24J *3/02*
U.S. Cl. 126—450 **16 Claims**

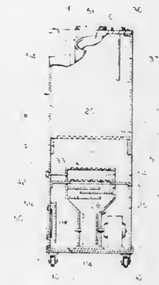


1. In a solar collector of the air heat exchange type including a housing member in which the air passes through a duct whose upper surface is an absorber, and where the air passes from one collector to another, the improvement comprising means defining an air duct in said housing out of thermal conductive contact with said housing, said housing having openings in at least one side wall thereof, said duct extending between said housing openings with the ends of the duct very close to but out of contact with the edges defining said openings, the ends of said duct being aligned with said openings, a thermally insulating resilient sealing member surrounding said openings at the edges thereof and secured to said housing, whereby when two of said collectors are joined with the openings aligned, said sealing means compressively and resiliently engages and provides an air seal about said openings and ducts in said housings are aligned and in direct communication across said openings.

4,214,576
APPARATUS FOR BODY MASSAGE USING A FLUIDIZED BED APPARATUS
Ernest J. Henley, 359 Westminster, Houston, Tex. 77024
Filed Oct. 11, 1977, Ser. No. 840,754
Int. Cl.² A61H *29/00*
U.S. Cl. 128—24.1 **16 Claims**

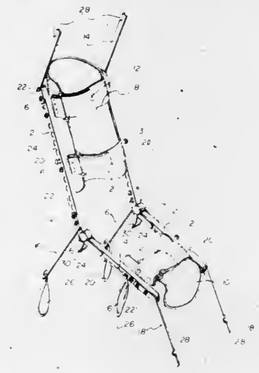
1. Apparatus for therapeutic massage of parts of the human body comprising a cabinet, a chamber in said cabinet, said chamber having a porous bottom wall and side walls together defining a space, a mass of solid particles contained in said space to constitute a bed in which the body part may be immersed, means to force gas upwardly through the porous wall and bed to create and maintain an ebullient condition of the particles, a tubular member through which the body part may be passed into the chamber for immersion in the bed, said

member extending from one of said side walls, the axis of the tubular member being at an angle upwardly from the horizontal, the highest point of the interior of the tubular member



being above the highest level of the mass when in a turbulent state to preclude escape of the particulate matter outwardly through the member.

4,214,577
ORTHOSIS FOR EXERCISING JOINT
Mansell I. Hoy, R.R. #1, Oxford Mill, Ontario, Canada
Filed Feb. 27, 1978, Ser. No. 881,664
Int. Cl.² A61H *1/02*
U.S. Cl. 128—25 R **8 Claims**

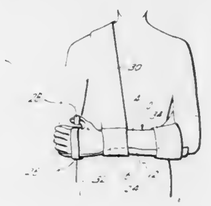


1. An orthosis for passive or active movement of a joint of a body limb comprising:
(a) spaced pairs of proximal and distal shafts for medial and lateral positioning about the proximal and distal parts of the limb at each side of the joint, cooperating proximal and distal shafts being joined at a pivot, the pivots to be juxtaposed the joint and permit pivoting of the distal shafts in a direction corresponding to the direction of movement of the distal part of the limb with lugs projecting outwardly away from the limb along the sides of the shaft;
(b) limb holding means secured between opposite proximal and opposite distal shafts for releasably securing the orthosis to proximal and to distal parts of the limb;
(c) a plurality of lever arms fixed to and extending away from portions of the proximal and distal shafts;
(d) linear biasing means to be releasably secured by and extending between selected lugs or lever arms to join proximal and distal shafts, and so secured by the lugs or lever arms that they exert either flexion or extension torque about the pivots on the proximal shafts without the necessity of repositioning the securing means, the shafts, lever arms and lugs being provided with means to permit the lever arms and lugs to be adjustably secured to the shafts at various positions along the lengths of the shafts, whereby the torque exerted by the biasing means may be adjusted.

4,214,578
ORTHOPEDIC BANDAGE HAVING IMPROVED CONFORMABILITY
Spiros Gianakakos, Highland Park, and Franklin Boardman, Englishtown, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Nov. 18, 1977, Ser. No. 852,766
Int. Cl.² A61L *15/07*
U.S. Cl. 128—90 **8 Claims**

1. An orthopedic bandage having improved conformability which comprises a cast forming composition supported on a flexible carrier, said cast forming composition including a water-soluble solid, vinyl monomer, a catalyst capable of polymerizing said monomer in the presence of water, and a 1,2 ditertiary glycol.

4,214,579
DYNAMIC SHOULDER, FOREARM, WRIST AND HAND SUPPORT
Cynthia A. Ford, 802 NW. 15, Bentonville, Ark. 72712
Continuation-in-part of Ser. No. 729,223, Oct. 4, 1976, abandoned. This application Aug. 23, 1978, Ser. No. 936,301
Int. Cl.² A61F *5/40, 5/04, 5/10*
U.S. Cl. 128—94 **4 Claims**



1. A dynamic support for supporting the shoulder, forearm, wrist and hand of a patient comprising,
a splint molded from a thermoplastic material rigid enough not to be deformable at ambient temperatures by pressures exerted by muscle bellies and volar surfaces of the forearm, the wrist and the hand, fingers and thumb, the splint having a forearm supporting portion, a wrist supporting portion, and a hand supporting portion,
the forearm supporting portion's top being open and its bottom being generally semi-circularly shaped to encircle the ulna side of the forearm and to encompass and to exert a constant pressure on the volar surface of the forearm, said forearm support having an edge extending laterally and shaped to wrap around and support the ulna, while placing no inhibiting pressure on the forearm,
the wrist supporting portion being shaped to fit against the inner surface of the wrist and support the wrist in a position of from about 9° to about 21° hyperextension,
the hand supporting portion being shaped to fit against the volar surfaces of the hand, fingers and thumb, and to support the metacarpal-phalangeal joints in a position from about 14° to about 26° flexion, to support the proximal and distal interphalangeal joints at full extension, and having a thumb supporting portion in a position from about 29° to about 41° abduction and opposition,
a first strap adapted to snugly fit about the hand supporting portion and the hand at the metacarpal joints thereby supporting the palmar arch,
a second strap adapted to fit about the thumb and thumb supporting portion, and
an elastic strap having forward and rearward elastic loops at

its lower ends disposed about each end of the forearm supporting portion, when providing support said elastic strap extends diagonally from the forward loop in front of the chest, over the shoulder opposite the arm being supported, across the back and between the upper arm and the rib cage of the patient to the rearward loop,

the elastic strap extending as described above supports the forearm, wrist and hand in a position such that the vola of the hand being supported faces toward the patient's body thus permitting the patient to move the shoulder and elbow of the arm being supported,

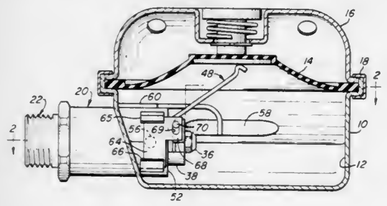
the elastic loops are provided with quick makeup and release connectors at their ends so as to be adjustably securable and thereby capable of firmly holding the forearm against the forearm supporting portion.

4,214,580

BREATHING APPARATUS

Vernon G. Pedersen, Chicago, Ill., assignor to Dacor Corporation, Northfield, Ill.

Filed May 1, 1978, Ser. No. 901,456
Int. Cl.[2] B63C *11/22*; A62B *7/04*
U.S. Cl. 128—204.26 **9 Claims**



1. Breathing apparatus for use with a source of compressed air, comprising in combination

a housing having a recess therein

a diaphragm mounted across said recess to define a chamber in said housing,

a breathing port opening through said housing into said chamber,

an air valve mounted to said housing and having an air inlet for connection to said source of compressed air and an air outlet port disposed to direct a stream of air from said outlet port into said breathing port thereby to develop a venturi action in said regulator by educting air from said chamber,

a valve element in said air valve movable between a fully open position and a fully closed position,

actuator means connected between said valve element and said diaphragm for moving said valve element between said fully closed and said fully open positions in response to the movement of said diaphragm,

baffle means mounted for sliding movement across said outlet port, and

means connecting said baffle means to said actuator means whereby said baffle is moved over said port as said valve element is moved toward said fully open position.

4,214,581

FOLDABLE FIRST-AID DRESSINGS WITH EQUAL BANDAGE AND COMPRESS WIDTHS

Bertil N. Bergman, Skogsgränd 10, S-952 00 Kalix, Sweden

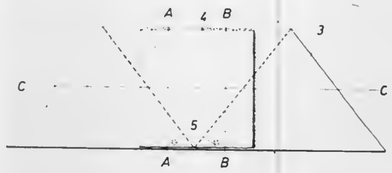
Filed May 26, 1978, Ser. No. 909,856
Claims priority, application Sweden, Jun. 15, 1977, 7706963
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—155 **6 Claims**

1. A first-aid medical dressing, comprising:

(a) a bandage member having two laterally opposite, parallel, longitudinally oriented edges, and being elastically stretchable in the longitudinal direction,

(b) a rectangular compress centrally arranged on said bandage member with opposite ones of its edges aligned with the laterally opposite edges of the bandage member, and being attached thereto along one of said aligned edges,

(c) the compress being folded over itself in the longitudinal direction of the bandage member to at least a double thickness by a fold in a first direction, and



(d) the bandage member being folded under itself in the longitudinal direction thereof to at least a double thickness in a central area thereof coextensive with said compress by a fold in a second, opposite direction,

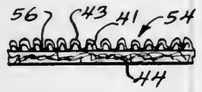
(e) whereby the bandage member and compress may be unfolded to twice their widths with the compress still extending across the full width of the bandage member.

4,214,582

SURGICAL DRESSING

Harish A. Patel, Crystal Lake, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Feb. 7, 1979, Ser. No. 10,103
Int. Cl.[3] A61L *15/00*
U.S. Cl. 128—156 **7 Claims**



1. A surgical dressing, comprising:

a first relatively nonadherent sheet comprising a nonwoven fabric having an inner layer of substantially hydrophilic fibers, and a surface layer of substantially hydrophobic fibers, said inner and surface layers being bonded together in substantially isolated highly compacted areas defining adjacent regions of substantially less compaction; and

a second relatively absorbent sheet comprising an open-mesh, bulked, multi-layered, woven fabric with threads of the fabric being distorted into sinuous and tortuous configurations, said first and second sheets being laminated together to form the dressing with the surface layer of the first sheet facing outwardly from the dressing.

4,214,583

SURGICAL WASH SYSTEM

Manoochehr Arfaa, 202 Glenwood Ave., Bel Air, Md. 21014

Filed Mar. 9, 1979, Ser. No. 19,237
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—214 F **7 Claims**

1. In a surgical wash system having a reservoir for hanging from a support such as an I.V. pole, flexible tubing for discharging fluid from the reservoir, means associated with the flexible tubing for controlling discharge of fluid from the reservoir including a nozzle for directing fluid discharged from the reservoir, the improvement comprising: the reservoir being a closed container having a flexible wall, and said means for controlling including micro-control means for varying the pressure within the closed container, said micro-control pressure varying means including penetrable valve structure in said flexible wall for admission of the needle of a hypodermic syringe for passage of fluid therethrough under urging of said a hypodermic syringe.

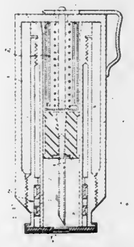


4,214,584

DEVICE FOR ADMINISTERING MEDICINAL PREPARATIONS

Boris A. Smirnov, ulitsa Borisa Galushkina, 17, kv. 28; Vyacheslav N. Mochalov, prospekt Mira, 122, kv. 174, both of Moscow; Valery P. Busygin, Krasnogorsk, Zheleznodorozhny proezd, 13, kv. 25, Moskovskaya oblast; Rustam I. Utyamyshev, prospekt Mira, 118, kv. 222, Moscow, and Alexei I. Semenov, ulitsa Mira, 26, kv. 53, Klin, all of U.S.S.R.

Filed Jan. 10, 1979, Ser. No. 2,702
Claims priority, application U.S.S.R., Jan. 11, 1978, 2567610
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—218 M **2 Claims**



1. A device for administering medicinal preparations, comprising:

a housing;

an isolated capsule movably mounted inside said housing;

a piston movably mounted inside and coaxially with said isolated capsule and providing one wall of the chamber for a first medicinal preparation accommodated within said isolated capsule;

an injection needle made fast on said piston and having a hole located at the base of the piston;

a chamber for a second medicinal preparation accommodated in said isolated capsule and arranged concentrically to said chamber for the first medicinal preparation and embracing the latter, both of said chambers getting intercommunicated upon a positive extension of said isolated capsule from said housing outwards;

a mechanical actuator of said piston made as a spring-opposed pushrod and located in said housing;

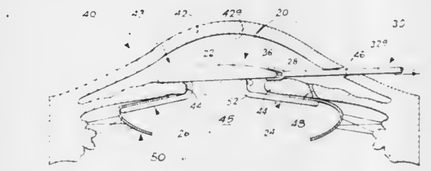
a retaining member for said spring-opposed pushrod, provided in said housing.

4,214,585

TOOL FOR SURGICAL IMPLANTATION OF AN INTRAOCULAR LENS

Paul F. Bailey, Jr., 4885 NW. Barnes Rd., Portland, Oreg. 97210

Filed May 15, 1978, Ser. No. 905,574
Int. Cl.[2] A61F *9/00, 1/16, 1/24*
U.S. Cl. 128—303 R **3 Claims**



1. An intraocular lens for surgical implantation in the eye comprising:

a lens body;

positioning means extending from said lens body for orienting said lens body in the eye's anterior chamber; and

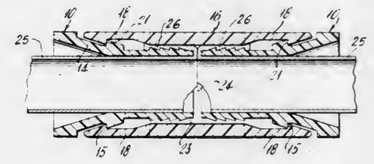
retaining means including a resilient member joined to said lens body for extending outwardly from a marginal portion thereof, said resilient member being elastically deformable away from said positioning means to a stressed condition and releasable, when said lens body is implanted, from the stressed condition so that it may move toward said positioning means and assume a predetermined orientation in a nonstressed condition extending into the iris to thereby attach the iris to said lens body.

4,214,586

ANASTOMOTIC COUPLING DEVICE

Robert W. Mericle, Bridgewater, N.J., assignor to Ethicon, Inc., Sumerville, N.J.

Filed Nov. 30, 1978, Ser. No. 965,448
Int. Cl.[2] A61B *17/04*; F16L *17/00, 19/00, 21/02*
U.S. Cl. 128—334 R **20 Claims**



1. A three-piece anastomotic coupling device for end-to-end anastomosis of tubular members comprising two adaptors and a connector, each of said adaptors comprising a cylinder having an axial bore therethrough sized to receive one tubular member with the end of said member everted over the end of said adaptor,

said connector comprising a cylinder having an axial bore therethrough sized to receive each of said adaptors and the tubular member everted thereover in opposing ends of said cylinder with the everted ends of the tubular members in abutting contact within said cylinder, and

means for interlocking said adaptors and said connector to maintain the everted ends of the tubular members in contact.

12. A three-piece anastomotic coupling device for joining the severed ends of a tubular member comprising two adaptors and an interlocking connector, each of said adaptors compris-

ing a cylinder having an axial bore therethrough terminating at one end in a plane normal to the axis of the bore and at the other end in an expanding truncated conical member, means on the exterior surface of said conical member for interlocking with corresponding means on said connector piece, and means on the exterior surface of the plane end of said cylinder for gripping a tubular member everted thereover,

said connector comprising a cylinder having an axial bore therethrough, and terminating at each end in appendages extending thereform and having means on the interior surfaces at the distal ends thereof for interlocking with corresponding means on said adaptors,

the inside diameter of the cylinder of said connector being larger than the maximum outside diameter of the cylinder of the adaptor, and the length of each adaptor being such that the ends of the adaptors are spaced apart when interlocked with said connector in the assembled coupling device,

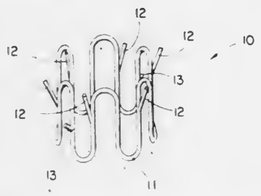
whereby each end of the tubular member to be joined may be passed through the conical member and cylinder of each adaptor and everted over the end thereof, and said ends of said adaptors and everted tubular members thereon may be inserted into opposite ends of said connector and interlocked therewith with the intimal surfaces of the everted tubular members abutting one another.

4,214,587

ANASTOMOSIS DEVICE AND METHOD

Chester Y. Sakura, Jr., 6417 Esther NE., Albuquerque, N. Mex. 87109

Filed Feb. 12, 1979, Ser. No. 11,448
Int. Cl.[2] A61B *17/04*
U.S. Cl. 128—334 R **29 Claims**



1. An anastomosis device comprising:

(a) an essentially cylindrical, radially resilient spring, the exposed surfaces of said spring comprising material that is compatible for implantation into the human body and said spring having a cylindrical diameter of not more than 1 cm. and

(b) a plurality of barbs joined to and extending outwardly from said spring.

4,214,588

FOOT WARMING DEVICE

William H. Byler, Winter Park, Fla., assignor to William H. Byler, Revocable Trust, Sarasota, Fla., William H. Byler and Thelma T. Byler, Trustees

Filed Apr. 18, 1978, Ser. No. 897,248
Int. Cl.[2] A61F *7/00*
U.S. Cl. 128—402 **10 Claims**

1. A foot warming device which comprises, in combination, a plurality of lengths of a flexible elastic tubing adapted to contain a liquid having a high specific heat capacity, each length of tubing being substantially coextensive with and disposed in parallel relation to other lengths of tubing, means for supporting each length of tubing in a disposition for contacting a substantial surface of the foot to be warmed, elastic means connected to said supporting means adapted for removable securement of said tubing in said foot contacting position, and one or more flexible bands having high heat conductivity



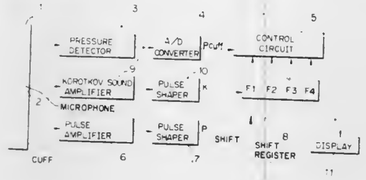
conformed about upper parts of the foot and secured in contact with the tubes by attached adjustable bands.

4,214,589

METHOD AND APPARATUS FOR BLOOD PRESSURE MEASUREMENT INCLUDING A TRUE KOROTKOV SOUND DETECTOR

Tamaki Sakamoto, Nagaokakyo, and Yasunori Ikeda, Kameoka, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 29, 1977, Ser. No. 865,449
Claims priority, application Japan, Sep. 14, 1977, 52/111136
Int. Cl.[2] A61B *5/02*
U.S. Cl. 128—680 **14 Claims**



1. A method for determining the presence of true Korotkov sounds for use in a blood pressure measurement system comprising the steps of:

detecting sequentially occurring heart pulse signals and Korotkov sounds emitted from a body,

determining when any detected heart pulse signal occurs in time synchronism with a detected Korotkov sound,

examining four successively detected heart pulse signals and any associated time synchronized detected Korotkov sounds to determine whether three or four Korotkov sounds were time synchronized with said four detected heart pulse signals, and

determining that each of the Korotkov sound signals associated with said four detected heart pulse signals is a true Korotkov sound signal when three or four time synchronized Korotkov sound signals are found in said examination.

4,214,590

METHOD AND APPARATUS FOR PROCESSING AND DISPLAYING DATA IN COMPRESSED FORM

Charles M. Patnoi, Golden; Daniel Cooper, Denver, and Robert D. Zellers, Lakewood, all of Colo., assignors to International Medical Corporation, Englewood, Colo.

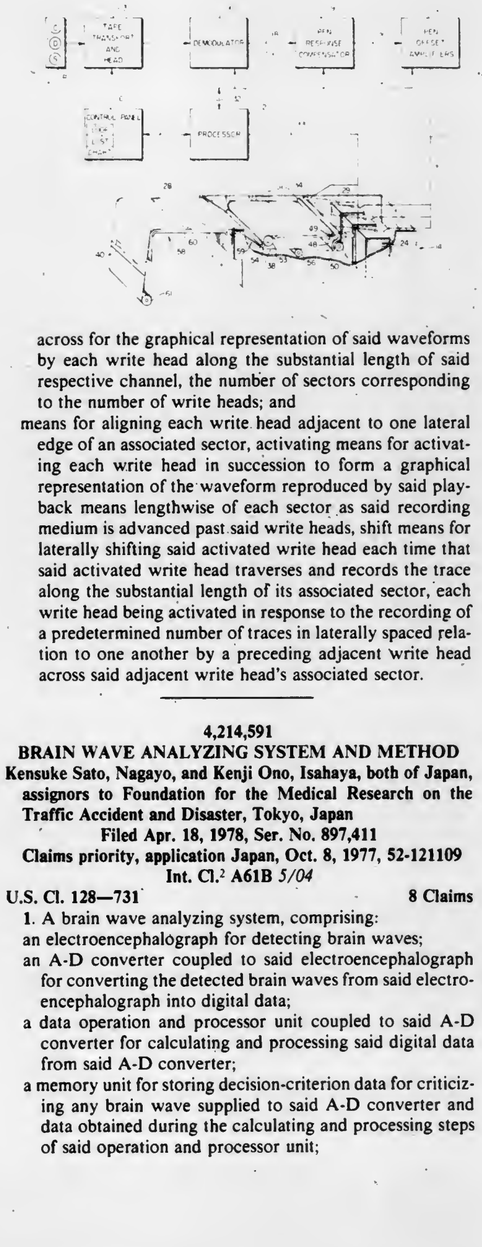
Filed Nov. 28, 1977, Ser. No. 855,210
Int. Cl.[2] A61B *5/04*
U.S. Cl. 128—710 **12 Claims**

1. In a compressed data recording system including sensing means for generating electrical signals representing the ECG level of the patient, playback means responsive to the signals

generated to reproduce waveforms of said signals at a predetermined rate of speed, a plurality of write heads, a movable recording medium associated with said write heads for recording said waveforms, and means for moving said recording medium past said write heads, said write heads being disposed at spaced intervals transversely of the movement of said recording medium past said write heads, the improvement comprising:

said recording medium defined by an elongated flexible strip of recording material having its ends joined together to form an endless loop of material;

a writing surface on said loop of material divided into a plurality of sectors, each of said sectors extending the substantial length of said loop and arranged in closely spaced, coextensive relation to one another, each sector providing a plurality of trace-recording channels there-



across for the graphical representation of said waveforms by each write head along the substantial length of said respective channel, the number of sectors corresponding to the number of write heads; and

means for aligning each write head adjacent to one lateral edge of an associated sector, activating means for activating each write head in succession to form a graphical representation of the waveform reproduced by said playback means lengthwise of each sector as said recording medium is advanced past said write heads, shift means for laterally shifting said activated write head each time that said activated write head traverses and records the trace along the substantial length of its associated sector, each write head being activated in response to the recording of a predetermined number of traces in laterally spaced relation to one another by a preceding adjacent write head across said adjacent write head's associated sector.

4,214,591

BRAIN WAVE ANALYZING SYSTEM AND METHOD

Kensuke Sato, Nagayo, and Kenji Ono, Isahaya, both of Japan, assignors to Foundation for the Medical Research on the Traffic Accident and Disaster, Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,411
Claims priority, application Japan, Oct. 8, 1977, 52-121109
Int. Cl.[2] A61B *5/04*
U.S. Cl. 128—731 **8 Claims**

1. A brain wave analyzing system, comprising:

an electroencephalograph for detecting brain waves;

an A-D converter coupled to said electroencephalograph for converting the detected brain waves from said electroencephalograph into digital data;

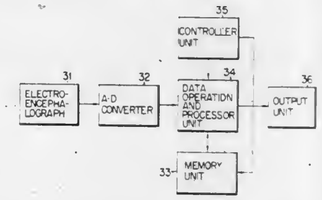
a data operation and processor unit coupled to said A-D converter for calculating and processing said digital data from said A-D converter;

a memory unit for storing decision-criterion data for criticizing any brain wave supplied to said A-D converter and data obtained during the calculating and processing steps of said operation and processor unit;

a controller unit for controlling said data operation and processor unit and said memory unit; and

an output unit coupled to said data operation and processor unit for displaying or recording the output of said data operation and processor unit;

said memory unit including means for storing, as said decision-criterion data for any brain wave to be examined, a mean vector A, a variance vector C and at least one significant level F_α obtained from F-distribution, said mean vector A being the mean value of autoregressive coefficient vectors calculated by said data operation and processor unit from respective brain waves of the standard brain wave group comprising K number of standard brain waves, said variance vector C being calculated as a function of said mean vector and said autoregressive coeffici-



ents, and said F-distribution being a distribution of a distance between said mean vector A and a row vector X obtained from a given brain wave belonging to said standard brain wave group;

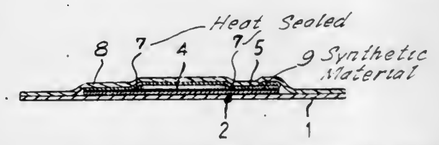
said data operation and processor unit including means for calculating an L-dimensional row vector X of the brain wave to be examined from the autoregressive coefficients of said brain wave to be examined, means for calculating the distance F_X between said row vector X and said mean vector A, means for comparing the value of said distance F_X with said significant level F_α stored in said memory unit, and means responsive to said comparing means for producing a decision output to indicate according to the result of said comparison whether or not the pattern of said brain wave to be examined has a significant level different from that of said standard brain wave group.

4,214,592

PATCH FOR SKIN TESTS

Pierre Jacquet, Tassin la Demi Lune, and Micha Roumiantzeff, Lyons, both of France, assignors to Institut Merieux, Lyons, France

Filed Dec. 29, 1977, Ser. No. 865,511
Claims priority, application France, Dec. 31, 1976, 76 39710
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—743 **17 Claims**



1. In a patch test for administration of a standardized, precise dose, of reactive material to skin to determine sensitivity to said reactive material; the improvement comprising, in combination:

a first metal foil layer laminated on the inner side thereof with a layer of synthetic impermeable material,

an absorbent disc means, containing a dose of a test substance, positioned on said layer of synthetic material spaced inwardly of the edges of said first metal foil layer,

a second metal foil layer overlying the absorbent disc means and being heat sealed to the layer of synthetic material on

said first metal foil layer by a continuous peripheral heat seal located substantially immediately adjacent the peripheral edge of the absorbent disc means, to provide a sealed pouch means for protecting the dose of test substance in the absorbent disc means from light and also against leakage of the dosage of the test substance in the absorbent disc means beyond said heat seal adjacent the absorbent disc means.

4,214,593

ESOPHAGEAL PRESSURE MONITORING DEVICE

Richard Imbruce, Norwalk, Conn., and Nelson E. Leatherman, Chapel Hill, N.C., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Sep. 18, 1978, Ser. No. 943,445
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—748 **5 Claims**



1. An esophageal pressure monitoring nasogastric tube comprising

a distal end portion that terminates in a rounded tip,

a proximal end portion that terminates in tube connector means,

a central body portion joining the distal end portion to the proximal end portion,

a major lumen extending within said tube from said tip to said tube connector means,

a plurality of side ports through said distal end portion communicating with said major lumen,

a secondary lumen extending longitudinally within said tube,

a very thin balloon cuff having a length substantially longer than the diameter thereof sealed at its ends to the outside of said central body portion of said tube, said diameter being such that said balloon cuff can be appreciably inflated with about 0.5 to 1 cc of air and it is compliant over a volume range of 0 to 4 ml.,

said secondary lumen being closed at a point positioned distally of the proximal end of said balloon cuff,

at least one port through the wall of said central body portion communicating said secondary lumen with the interior of said balloon cuff for flow of fluid from said secondary lumen into said balloon cuff,

a first opening in the wall of said proximal end portion of said tube communicating with said secondary lumen,

a first connector tube fixed to said first opening for introduction of fluid into said secondary lumen,

a tertiary lumen extending longitudinally within said tube,

said tertiary lumen opening at its distal end into said major lumen adjacent said rounded tip of said tube providing a passage to vent said tube to prevent excessive vacuum from developing when suction is applied to said major lumen,

a second opening in the wall of said proximal end portion of said tube communicating with said tertiary lumen, and

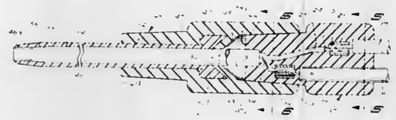
a second connector tube fixed to said second opening for introduction of fluid into said tertiary lumen.

4,214,594

TEMPORARY PACEMAKER LEAD APPARATUS

Richard L. Little, Minneapolis, Minn., assignor to Daig Corporation, Minnetonka, Minn.

Filed Oct. 6, 1978, Ser. No. 949,088
Int. Cl.[3] A61N *1/04*
U.S. Cl. 128—786 **4 Claims**



1. The combination of a temporary bipolar, bifurcated lead assembly for being inserted into a body vessel for transmitting pulses from a pulse generator to a heart and a lead introducer cannula for having the lead assembly extended therethrough and into the vessel, the lead assembly including a first and a second connector pin adapted to being electrically connected to a pulse generator, a tip electrode, a ring electrode, a junction member of electrical insulating material, a first electrical conductor portion having a first end portion electrically connected to the first pin and second end portion located within the junction member, a second electric conductor portion having a first end portion electrically connected to the second pin and a second end portion located within the junction member, an elongated third electric conductor portion having a first end portion electrically connected to the first conductor portion second end portion, an intermediate portion extending through the ring electrode and a second end portion electrically connected to the tip electrode, an elongated fourth conductor portion having a first end portion electrically connected to the second conductor portion second end portion and a second end portion electrically connected to the ring electrode, the length of the third and fourth conductor portions from the junction member to the ring electrode being many times greater than the axial length of the cannula, the cannula and junction member having cooperating engaging means for selectively releasably retaining the cannula remote from the ring electrode, the cooperating means including a frusto conical junction member cannula engageable surface portion and a frusto conical peripheral cannula surface portion for forming a friction fit with the engageable surface portion to releasably retain the cannula on the junction member surface portion.

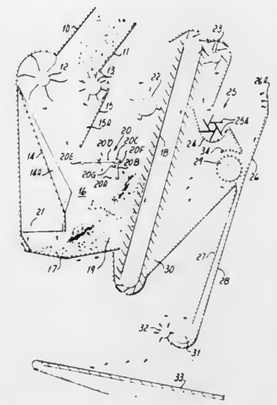
4,214,595

CIGARETTE MAKING MACHINES

Francis A. M. Labbe, Neuilly-sur-Seine, France; Jan A. Rakowicz, and Ronald A. Ahern, both of London, England, assignors to Molins Limited, London, England

Filed Jun. 2, 1977, Ser. No. 802,854
Claims priority, application United Kingdom, Jun. 3, 1976, 22902/76
Int. Cl.[3] A24C *5/18*
U.S. Cl. 131—108 **34 Claims**

1. In a hopper for a cigarette making machine comprising means defining a downwardly extending channel, means for delivering tobacco through the upper end of said channel to form a column of tobacco in the channel, means for continuously feeding tobacco from the lower end of the channel, filler forming means spaced from one side of said channel, conveyor means running below said channel and from said one side thereof towards said filler forming means for receiving the tobacco delivered from the lower end of the channel and feeding the tobacco in a direction away from said one side of said channel to said filler forming means, elevator conveyor means at said one side of said channel, said elevator conveyor means being positioned between said channel on one side of



said elevator means and a space on the opposite side of said elevator conveyor means and being arranged to deliver a metered flow of tobacco from said space on the side of said elevator conveyor means opposite said channel and into which incoming tobacco is delivered into the hopper, and means for removing tobacco from said elevator conveyor means and for delivering it to said channel.

4,214,596

PERMANENT WAVE SYSTEM USING AMMONIUM BISULFITE PREWRAP

Julius F. Kaplan, Highland Park; Norman L. Edelberg, Vernon Hills, and Chester A. Davis, Berwyn, all of Ill., assignors to Helene Curtis Industries, Inc., Chicago, Ill.

Filed Jul. 31, 1978, Ser. No. 929,326
Int. Cl.[2] A45D *7/00*
U.S. Cl. 132—7 **9 Claims**

1. In the method of treating of hair in which water-wet hair is wrapped around rollers, an aqueous mercaptan-containing solution having a pH not higher than about 6.9 is applied to the hair on the rollers to cleave disulfide bonds in said hair, and the mercaptan-wetted hair is thereafter neutralized with an oxidizing agent to reform disulfide bonds in said hair, the improvement which comprises wetting said hair, prior to said wrapping thereof, with an aqueous solution of a prewrap agent of the group consisting of alkali metal and ammonium sulfites and alkali metal and ammonium bisulfites, said prewrap agent being present in said aqueous solution at a concentration of about 0.1 Molar to about 1.0 Molar, said prewrap agent being at a strength and applied for a period such that no more than about 5% of the disulfide bonds in said hair are cleaved by said prewrap agent prior to said application of said mercaptan-containing solution and being maintained on said hair during the application of said mercaptan-containing solution.

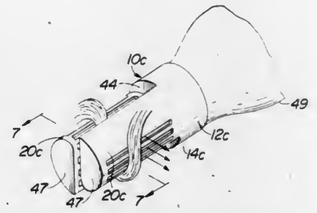
4,214,597

HAIR WAVING METHOD AND DEVICE

Geraldine Glassman, 135 E. 50th St., Apt. 6C, New York, N.Y. 10022

Filed Nov. 22, 1977, Ser. No. 853,892
Int. Cl.[2] A45D *20/00*
U.S. Cl. 132—9 **10 Claims**

1. A hair waving device comprising a connector part, a pair of spaced walls extending longitudinally of each other from one side of said connector part, said walls having their oppositely outwardly facing surfaces smoothly transversely convex, and a reversely bent convexly smooth side extension on each of said walls extending into the space between said walls and into facing spaced relation with each other, said side extensions merging smoothly with respective walls, whereby a tress of



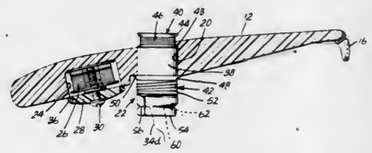
hair is adapted to extend in an S-shaped configuration along the outwardly facing surface of one wall, then along the adjacent side extension into the space between said side extensions and along the other side extension and thence along the outwardly facing surface of the other wall.

4,214,598

DENTAL FLOSS APPLICATOR

Lawrence L. Lee, c/o Dr. C. J. Gerritsma, N.V. Philips' Gloeilampenfabrieken Research Laboratory, Eindhoven, Netherlands

Filed Oct. 13, 1978, Ser. No. 951,190
Int. Cl.[3] A61C *15/00*
U.S. Cl. 132—92 R **15 Claims**



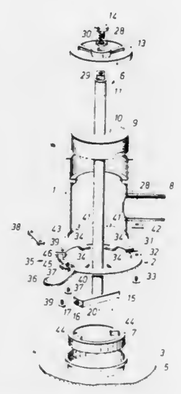
1. A dental floss applicator for use in dispensing and supporting a strand of dental floss under tension for cleaning the teeth comprising an elongated supporting frame having on one end two spaced furcations laterally extending therefrom, tips on said furcations having floss-guiding portions by means of which a floss strand may be tensioned therebetween, a capstan device mounted for rotation on said frame with supply and takeup capstan portions axially spaced thereon and a common support, floss on said frame, said take-up capstan portion being of larger circumference than said supply capstan portion, a supply of floss carried by said frame and means for guiding floss therefrom to said supply capstan portion, means for guiding said floss around said supply capstan portion in one circumferential direction when viewing said take-up capstan portion directly to and between said floss-guiding portions, back to and around said take-up portion in the opposite circumferential direction when viewing said takeup capstan portion directly, whereby rotation of said capstan device in a direction to wind floss onto said supply capstan portion causes advancement of floss between said floss-guiding portions, the difference in circumference of the supply and take-up capstan portions tensioning the floss strand between said floss-guiding portions and maintaining such tension substantially constant upon successive adjusting advancements of said floss while providing for opposed torques on said supply and take-up capstan portions which are substantially equal.

4,214,599

DEVICE FOR USE IN CONNECTION WITH TAPPING OFF FLUID FROM OR FILLING FLUID INTO A CONTAINER

Erik J. H. Åström, Kärrvägen 26, 135 00 Tyresö, Sweden

Filed Sep. 29, 1978, Ser. No. 947,091
Claims priority, application Sweden, Sep. 29, 1977, 7710928
Int. Cl.[2] F16L *55/10*
U.S. Cl. 137—15 8 Claims



7. A method of removing fluid from a container of the type having an internally threaded opening formed in the top of the container and an externally threaded generally cup-shaped plug closing the opening and having an outwardly open cavity for receiving a mechanism for rotating and removing the plug from the opening, the method using an open-ended housing having an internal passageway extending between the open-end and an opening formed in a wall of the housing, and a device having a rotatable and translatable expandable portion positionable in the housing and engageable with the wall of the plug cavity for frictionally engaging, rotating, and translating the plug, said method comprising:

releasably mounting the housing on the container with its open end surrounding the container opening;

moving the expandable portion of the device into the plug cavity;

rotating at least a portion of the device so that the expandable portion expands into contact with and frictionally engages the wall of the plug cavity;

rotating at least a portion of the device so that the frictionally engaged plug is rotated and removed from the container opening; and

translating the device so that the plug is moved into a positon permitting fluid flow between the container and housing openings.

8. A method according to claim 7, wherein the same portion of the device is rotated to both expand the expandable portion and to rotate the plug.

4,214,600

VALVE

Leonard E. Williams, Jr., and William M. Taylor, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Feb. 15, 1979, Ser. No. 12,383
Int. Cl.[2] F16K *41/02, 17/38*
U.S. Cl. 137—72 11 Claims

1. A valve, comprising

a body having a chamber open on the top and a passage extending through the body and in communication with the chamber,

a valve member movable in the chamber to open and close flow through said passage,

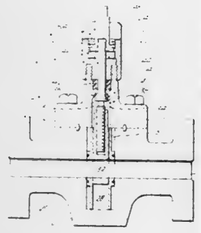
a bonnet having a central bore with a seat facing downward within said bore,

means securing the bonnet to the body around the chamber opening,

a stem extending through said bonnet bore and threadedly engaging said valve member,

an upwardly facing shoulder on the stem being normally in spaced relationship to said seat,

bearing means between the stem and the bonnet,



packing means sealing between the stem and the bonnet at a position between the seat and said bearing means,

a fusible element positioned in supporting relationship to said bearing means and normally retaining the stem shoulder spaced from the bonnet seat,

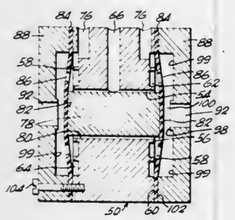
said fusible element being adapted, when heated, to relax its support of said bearing means so that the stem shoulder seats on the bonnet seat to prevent leakage around the stem whereby failure of said packing means as a result of heat does not ressult in fluid leakage around the stem.

4,214,601

SIMULTANEOUS ACTUATION SAFETY VALVE

Nicholas Sama, 19120 Bel Aire Dr., Miami, Fla. 33157

Continuation-in-part of Ser. No. 808,376, Jun. 20, 1977, Pat. No. 4,136,601. This application Jan. 29, 1979, Ser. No. 7,374
The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.
Int. Cl.[2] F16K *17/00*
U.S. Cl. 137—102 5 Claims



1. A fluid power device comprising:

a housing having an axial bore;

at least one end cap sealing the housing bore;

a piston having a left end and a right end in coaxially movable internal relationship with and of lesser axial length than the housing bore, said lesser axial length defining piston travel, left and right, with the piston containing four circumferential grooves;

four circumferential sealing means captured by the grooves and in movable sealing relationship with the housing bore, said sealing means denominating respectively a first sealing means, proximal the left piston end, a second sealing means, a third sealing means and a fourth sealing means, proximal the right piston end;

resilient urging means to urge said piston to a neutral position in the housing bore;

left and right input ports penetrating the housing, said input ports having input internal openings intersecting the bore which respectively straddle the first and fourth sealing means when the piston is in the neutral position, wherein the left input port will be separated from the right end of the piston by the first sealing means when the piston travels right, and the right input port will be separated from the left end of the piston by the fourth sealing means when the piston travels left;

an exhaust port penetrating the housing with exhaust internal opening intersecting the bore entirely between the second and third sealing means when the piston is in the neutral position; and

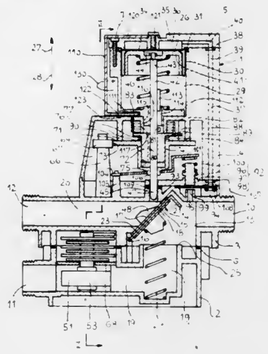
an output port penetrating the housing connected to both left and right output internal openings, said left output opening intersecting the bore entirely between the first and second sealing means when the piston is in the neutral position, but being separated from the left input port by the first sealing means when the piston travels right, said right output opening intersecting the bore entirely between the third and fourth sealing means when the piston is in the neutral position, but being separated from the right input port by the fourth sealing means when the piston travels left, at least one of said output openings not being separated by any of the sealing means from the exhaust port when the piston travels either left or right.

4,214,602

LIQUID DISTRIBUTOR, NOTABLY FOR SPRINKLING PURPOSES

Michel Pradillon, Cluses, France, assignor to Etablissements Carpano & Pons, Cluses, France

Filed Jun. 1, 1978, Ser. No. 911,321
Claims priority, application France, Jun. 6, 1977, 77 17968
Int. Cl.[2] A01G *27/00*
U.S. Cl. 137—119 24 Claims



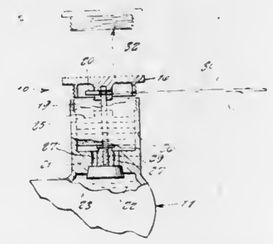
23. A distributor for controlling the dispensing of a liquid, notably for sprinkling systems and the like, of the type comprising an inlet orifice and two outlet orifices, a spring-loaded valve closing the second outlet orifice in the inoperative condition while leaving the first outlet orifice open, a volumetric metering device adapted to actuate said valve against its spring-loading for closing said first outlet orifice and simultaneously opening said second outlet orifice when a predetermined quantity of liquid has passed through said first outlet orifice, said volumetric metering device comprising a cylinder and a piston slidably fitted in said cylinder, said piston defining with its first face and the bottom of said cylinder a chamber connected via a passage to said inlet orifice and supporting with its opposite face a rod so disposed that said valve lies in the path of its axial movement, resilient means constantly urging said piston toward the bottom of said cylinder, whereby fluid entering said chamber from said inlet acts to move said piston and rod in a direction to move said valve to a position opening said second outlet orifice and closing said first outlet orifice, said volumetric metering device further comprising control means for blocking said movement of said piston and rod, a turbine inserted in the liquid circuit between said inlet orifice said first outlet orifice and driving means including speed reducing means kinematically connecting said turbine with said control means to actuate said control means, after a selected flow of liquid through said turbine, to release said piston and rod, whereupon said piston moves said rod to move said valve to a position opening said second outlet orifice and closing said first outlet orifice.

4,214,603

FILTER UNIT FOR A BASEBOARD HOT WATER HEATING SYSTEM

Jim Hall, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Aug. 5, 1977, Ser. No. 791,066
Int. Cl.[2] F16K *24/00*
U.S. Cl. 137—199 5 Claims



1. In an improved filter unit for a baseboard hot water heating system, comprising in combination, a valve housing having an intake at one end and an outlet at its other end, an upward extension on said housing having a chamber containing removable filters, an upper end of said chamber having an opening closed by a removable screw cap having a downward element on its underside supporting a downward valve shaft extending through said filters, a lower end of said valve shaft extending through a wall below said chamber and into a water course chamber therebelow where a valve head on said shaft seats in a valve seat on an underside of said wall, a lower portion of said shaft being screw threaded and engaged in a vertical, threaded opening through said wall, and said wall having a plurality of passage openings therethrough opening out on said seat and which are closeable by said head when engaged in said seat.

4,214,604

STRAIGHT THROUGH FLOW DIAPHRAGM VALVE STRUCTURES

Rollin D. Rumsey, 148 Summer St., Buffalo, N.Y. 14222

Filed Feb. 6, 1978, Ser. No. 875,744
Int. Cl.[2] F16K *7/00*
U.S. Cl. 137—375 12 Claims

1. A diaphragm valve including a body having a passage therethrough provided with substantially coaxial opposite ends of substantial diameter and means on said body at said opposite ends of the passage for securing the body in a fluent material line to be controlled by the valve, an opening intermediately in said body into the top of said passage, a passage-controlling diaphragm extending across said opening and having a marginal attachment flange, an actuator bonnet secured over said opening and securing said diaphragm flange sealingly in place on an upwardly facing surface extending about said opening, and actuator means carried by said bonnet for operating said diaphragm between retracted fully open position permitting substantially free flow of fluent material through said passage and a fully closed flow-stopping position in substantially seal-

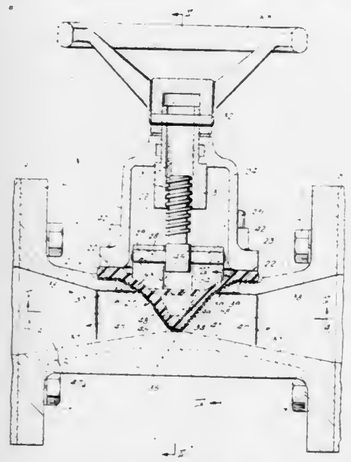
ing engagement with a closing off surface extending across said passage below said opening, the improvement comprising:

said closing off surface comprising a crest on a transverse ridge adjacent the longitudinal axis of the passage and underlying the diaphragm for flow stopping engagement by the diaphragm when driven against the crest by said actuating means;

a bottom surface in said passage sloping upwardly from said opposite ends of the passage to said crest:

top surface areas defining said passage sloping inwardly and downwardly from said opposite ends toward said opening and inner ends of said areas terminating substantially above said longitudinal axis;

and respective side surfaces defining the sides of said passage, each side surface having areas diverging from said opposite ends of the passage and joining a respective substantial length longitudinally extending generally straight side surface portion of the associated side surface adjacent to said opening, said side surface portions being



spaced apart substantially farther than said passage end diameters and having respective intermediate oblique surface areas extending divergently upwardly from the opposite ends of said crest to said upwardly facing surface and providing parts of said closing off surface and adapted to cooperate with said crest for passage-sealing engagement by said diaphragm in its fully closed position;

said side surfaces merging smoothly with said top and bottom surfaces and the spacing of said side surface portions providing increased width for the passage adjacent to said ridge;

whereby the range of control movement of the diaphragm between said fully open and said fully closed positions is minimized by said ridge, but the increased width of the passage adjacent to said ridge compensates for the vertical diminution of said passage by said ridge so that said passage provides a straight through flow path of substantially undiminished cross sectional flow area along said axis when said diaphragm is in said fully open position.

4,214,605

ACTUATOR FOR WIRELINE BLOWOUT PREVENTER

William D. Hardgrave, Carrolton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jan. 11, 1978, Ser. No. 868,482
Int. Cl.[2] E21B *33/06;* **F16K** *31/363*
U.S. Cl. 137—495 **8 Claims**

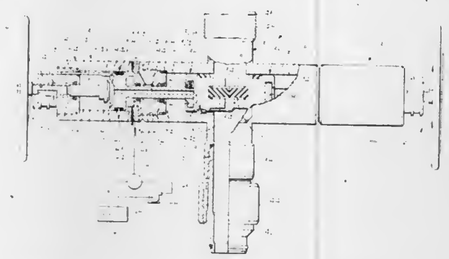
1. In a wireline blowout preventor connectable to a well head having a housing with a vertical flow path for the flow of well fluids under pressure and rams movable transversely in said housing to open and close said vertical flow path, the improvement consisting of actuators for actuating movement of said rams, each actuator comprising:

an actuator having, connectable to said wireline blowout preventor housing, having a longitudinal bore transverse to said vertical flow path,

piston means disposed in said longitudinal bore,

a portion of said longitudinal bore forming a first variable capacity pressure chamber for receiving a pressure fluid from a source outside said actuator housing wherein an increase in pressure therein causes said piston means to move said respective ram to open said vertical flow path,

port means to provide fluid communication between the exterior of said actuator housing and said first variable capacity pressure chamber,



a portion of said longitudinal bore forming a second variable capacity pressure chamber for receiving pressure from said well,

connector means connecting said piston and said ram, having a bore passageway extending therethrough in communication with a bore passageway extending through said piston, providing fluid communication between said second variable capacity pressure chamber and said vertical flow path, whereby a pressure in said well exceeding the pressure in said first variable capacity pressure chamber causes said pistons to move said rams to a position closing said vertical flow path.

4,214,606

SUBSURFACE SAFETY VALVE

Thomas M. Deaton, and Gary A. Kohn, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed May 8, 1978, Ser. No. 903,785
Int. Cl.[2] E21B *43/12;* **F16K** *31/163*
U.S. Cl. 137—495 **6 Claims**

1. A subsurface safety valve comprising:

(a) a valve body having a bore passageway therethrough,

(b) a pair of spaced apart and oppositely facing valve seats in surrounding relation to an intermediate portion of said bore passageway,

(c) a valve member having an opening therethrough and seatable between said seats for opening and closing said bore passageway upon rotation about an axis transverse to the opening therethrough,

(d) a tubular member extending from one of said valve seats, disposed in the bore passageway of said valve body, forming an annular space within the valve body,

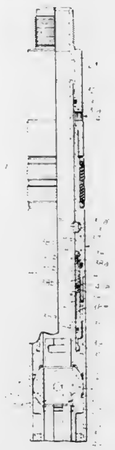
(e) a first variable capacity pressure chamber within said annular space for receiving control pressure fluid from a source external to the safety valve;

(f) a second variable capacity pressure chamber within said annular space for receiving pressure from the bore passageway of said safety valve,

(g) a control frame longitudinally movable within said annular space, responsive to the greater of pressure in the first or second variable capacity pressure chambers for rotating said valve member to the bore open positions,

(h) a piston slidably disposed between said tubular member and said control frame having seal means thereon, separating said first variable pressure chamber from said second variable capacity pressure chamber and responsive to pressure in said first variable capacity pressure chamber to allow said piston to move to a first position to coact with said control frame in rotating said valve member to a full bore open position,

(i) single conduit means for conducting control pressure fluid to said first variable capacity pressure chamber, and



(j) port means in said tubular member providing fluid communication between the bore passageway and said second variable capacity pressure chamber to allow pressure to move said piston to a second noncoacting position with said control frame, pressurization of either chamber moving said control frame allowing rotation of said valve member opening said bore passageway,

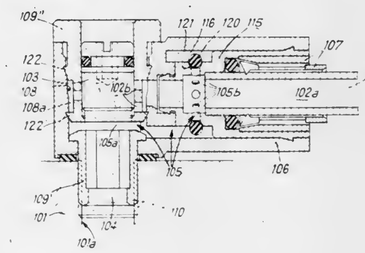
(k) resilient means for rotating said valve member closing the bore passageway upon reduction of pressure to predetermined value acting on said control frame.

4,214,607

UNIDIRECTIONAL FLOW LIMITER

Daniel Bouteille, Marnes-la-Coquette, France, assignor to Societe Anonyme: La Telemecanique Electrique, France

Division of Ser. No. 774,311, Mar. 3, 1977, Pat. No. 4,171,007.
This application Jan. 11, 1979, Ser. No. 2,604
Claims priority, application France, Mar. 5, 1976, 76 06384; Mar. 5, 1976, 76 06385
Int. Cl.[2] F16K *11/10, 15/14*
U.S. Cl. 137—499 **18 Claims**



1. A connection element for connection between a fluid pipe and a user apparatus, comprising:

first means for defining a substantially cylindrical first elongated cavity, said first means including means for connecting said first cavity to said pipe to define a flow path between said first cavity and said pipe;

second means for defining an annular chamber around said first cavity, said annular chamber being separated from said first cavity by a substantially cylindrical wall having at least one opening therein to define at least one flow path between said first cavity and said annular chamber;

third means mounted within said first means adjacent to said annular chamber and passing through said first cavity for defining a substantially cylindrical second cavity, the axis of said second cavity intersecting the axis of said first cavity at substantially right angles, said third means being exposed to said first cavity and providing at least one flow path between said first and second cavities, said third means additionally being exposed to said annular chamber and providing at least one flow path between said second cavity and said annular chamber, said third means additionally including means for connecting said second cavity to said user apparatus to define a flow path between said second cavity and said user apparatus;

fourth means mounted within said second cavity for at least partially closing said at least one flow path between said first and second cavities, said fourth means comprising a substantially cylindrical member having substantially the same radius as said second cavity; and

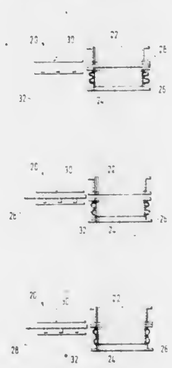
deformable annular means mounted on said substantially cylindrical wall and covering said at least one opening therein for permitting fluid flow in one direction only along said at least one flow path between said first cavity and said annular chamber.

4,214,608

APPARATUS FOR OPENING AND CLOSING A FLUID CONDUIT

Pierre Mailliet, and Leon Ulveling, both of Howald, Luxembourg, assignors to Paul Wurth, S.A., Luxembourg

Filed May 31, 1978, Ser. No. 911,188
Claims priority, application Luxembourg, Jun. 6, 1977, 77488
Int. Cl.[3] F16K *3/02, 3/10*
U.S. Cl. 137—546 **12 Claims**



1. In apparatus for delivering crude blast furnace gas to a dust collector via a conduit, at least the portion of the conduit immediately upstream of the dust collector having its axis oriented generally vertically, the dust collector removing particulate matter from fluid flowing through the conduit and including an outer wall which defines an enclosure having a cross-sectional area greater than the diameter of the conduit, improved apparatus for controlling the flow through the conduit comprising:

valve means, said valve means including a movable valve member which in a first position establishes a hermetic seal across the conduit and thereby prevents gas flow through the conduit to the dust collector and which in a

second position opens the conduit for flow therethrough; and

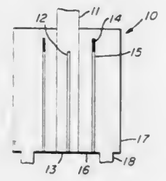
support means for said valve means, said support means including a frame extending upwardly from said dust collector outer wall, said frame being integral with and defining a prolongation of said dust collector outer wall, said frame being attached to said conduit upstream of said valve means whereby said valve means may support said conduit.

4,214,609

APPARATUS FOR DIVIDING GRAVITY FLOW LIQUID STREAM

Robert A. Wiesboeck, Stone Mountain, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1978, Ser. No. 955,857
Int. Cl.[2] A01C *23/02*
U.S. Cl. 137—573 **19 Claims**



12. An apparatus for dividing a gravity flow liquid ammonia stream at substantially atmospheric pressure into a plurality of separate streams of certain predetermined proportions comprising

(a) a substantially vertical inner liquid inlet tube with a closed end, said inner tube containing a plurality of substantially parallel vertically elongated openings beginning at such end of the tube, such openings being of such size so as to cause a partial backup of liquid traveling toward the end of the tube;

(b) a substantially vertical covering tube having a closed end and containing a plurality of substantially parallel vertically elongated openings, but offset from the vertically elongated openings of the inner tube, and wherein the space between the inner surface of the covering tube and the outer surface of the inner tube, and the size of the vertical opening of the covering tube are such that a partial backup of liquid occurs between the inner tube and the covering tube; and

(c) outlet means for collecting the liquid ammonia which passes out through the vertical openings of the covering tube into a plurality of separate streams, said apparatus being capable of handling liquid flow rates of between about 3 and about 20 gallons per minute.

4,214,610

FLOW CONTROL SYSTEM FOR CONCENTRIC ANNULAR FLUID STREAMS

Varnell L. James, Kent, and George B. Evelyn, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 25, 1977, Ser. No. 854,636
Int. Cl.[2] F02K *3/06*
U.S. Cl. 137—597 **11 Claims**

1. A flow control system for receiving first and second fluid streams wherein each of said first and second fluid streams are annular in cross-sectional geometry and said first fluid stream concentrically surrounds said second fluid stream, said flow control system being operable to discharge said first and second fluid streams as annular fluid streams wherein said second fluid stream concentrically surrounds said first fluid stream and being operable to discharge said first and second fluid streams as a single annular fluid stream, said flow control system comprising:

an axially extending annular fluid duct including a first plurality of fluid passages having inlet openings of a geometry corresponding to annular sector for receiving and containing sectorial portions of said first annular fluid stream and including a second plurality of fluid passages having inlet openings of a geometry corresponding to an annular sector of said second annular fluid stream, said inlet openings of said first plurality of fluid passages being arranged in circumferential juxtaposition with one another to collectively define an annular entrance opening commensurate with said cross-sectional geometry of said first fluid stream, said inlet openings of said second plurality of flow passages being arranged in circumferential juxtaposition with one another to collectively define an annular opening commensurate with said cross-sectional geometry of said second fluid stream, each of said fluid passages of said first plurality of fluid passages having a substantially constant cross-sectional area at each point along the axial length of said annular fluid duct, each of said fluid passages of said second plurality of fluid passages having a substantially constant cross-sectional area at each point along the axial length of said annular fluid duct, said first and second plurality of fluid passages changing in cross-sectional geometry over a first predetermined axial region of said fluid duct from said geometry of said inlet openings to a geometry corresponding to an annular sector with said first plurality of fluid passages



being circumferentially interspersed with said second plurality of fluid passages to define a sectorially segmented annular flow pattern in which portions of said first fluid stream and portions of said second fluid stream occupy alternate segments of said sectorially segmented flow pattern, said plurality of first and second fluid passages being maintained in said circumferentially interspersed sectorial cross-sectional geometry over a second axially extending region of said annular fluid duct, said plurality of first and second fluid passages changing in cross-sectional geometry over a third predetermined axial region of said fluid duct from said circumferentially interspersed segmented cross-sectional geometry to discharge openings having a geometry corresponding to an annular segment, said discharge openings of said first plurality of fluid passages being arranged in circumferentially extending juxtaposition with one another to collectively define a first annular exit opening, said discharge openings of said second plurality of fluid passages being arranged in circumferentially extending juxtaposition with one another to collectively define a second annular discharge opening to coaxially surround said first annular discharge opening; and,

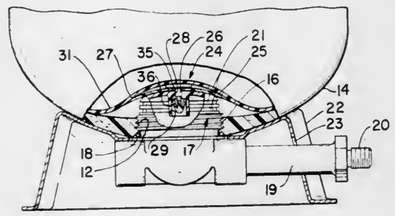
a plurality of valve means, each of said valve means associated with and mounted in a separate fluid passage of one of said first and second pluralities of fluid passages within said second axially extending region of said fluid duct, said plurality of valve means being operable to maintain fluid flow between said inlet and outlet openings of said associated fluid passages to discharge said first fluid streams from said first said annular discharge opening and to discharge said second fluid streams from said second annular discharge opening, said plurality of valve means being further operable to redirect fluid flowing through said fluid passages associated with said valve means into adjacent ones of said circumferentially interspersed fluid passages to discharge said first and second fluid streams through one of said first and second discharge openings as a single fluid stream of annular cross-sectional geometry.

4,214,611

TIE-DOWN FOR ACCUMULATOR BAGS

Robert J. Takacs, Chardon; Winfield S. Brunkhurst, Shaker Heights, and Edward T. Le Breton, Mentor, all of Ohio, assignors to Structural Fibers, Inc., Chardon, Ohio

Filed Mar. 19, 1979, Ser. No. 21,588
Int. Cl.[2] F16L *55/00*
U.S. Cl. 138—30 **4 Claims**



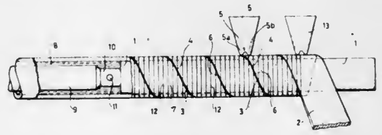
1. A pressurizing tank for a liquid dispensing system, comprising a pressure withstanding vessel, means defining a first opening in one end of the vessel, a cup-shaped strainer fitting removably mounted in said first opening and having a plurality of openings therethrough; said cup-shaped strainer fitting having an aperture therein means defining a second opening at the other end of the vessel, a flexible, inflatable, gas-tight bag within said vessel dimensioned to fit through said first opening when deflated and to cover the inner surface of said vessel when fully inflated, a bag inflating valve fixed to one end of the bag and extending through said second opening, and attaching means for fixing the other end of the bag to said strainer fitting, said attaching means comprising a disc-shaped pad having an aperture sealed at its periphery to the bottom of the bag, a pin having an enlarged head at one end and a prong at the other end, said pin extending through an aperture in said pad and having its head captured between said pad and the bottom of the bag, said prong extending through an aperture in said strainer fitting.

4,214,612

TUBE OF NON WOVEN MATERIAL FOR REVERSED OSMOSIS

Warren J. de Putter, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Continuation-in-part of Ser. No. 410,298, Oct. 29, 1973, abandoned. This application Dec. 3, 1975, Ser. No. 637,289
Int. Cl.[2] F16L *9/16*
U.S. Cl. 138—144 **4 Claims**



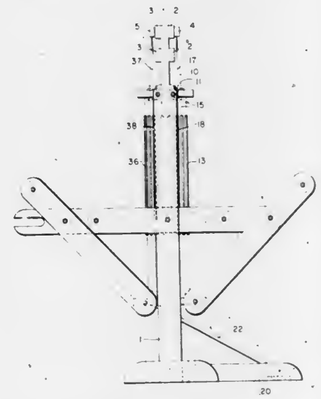
1. A tube of non-woven material, having fixed on the inner wall thereof a membrane for membrane filtration, said tube comprising a helically wound non-woven band of heat-sealable synthetic fibres with edges thereof positioned in overlapping relationship and providing overlapping portions in the inside of the tube, said overlapping portions being uniformally heated on their entire thickness and width by ultrasonic sealing vibrations, so as to completely heat-seal the overlapping parts and along their edges to avoid the formation of sharp and fibrous portions of extending fibrous ends within the inner side of the tube so that a smooth inner wall is obtained and to obtain a very uniform inner diameter whereby risk of damage of said membrane within the tube is minimized and the tube is provided with a membrane on its innerside.

4,214,613

LOOM

James S. Glessner, R.D. 2, Somerset, Pa. 15501

Filed Jan. 2, 1979, Ser. No. 27
Int. Cl.[3] D03D *29/00*
U.S. Cl. 139—33 **4 Claims**



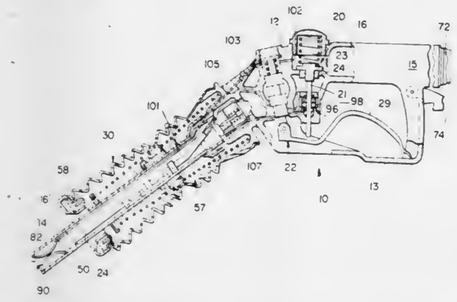
1. In a loom, an upright frame having a horizontal cross bar at its top, a lever extending lengthwise of one side of said cross bar, means pivotally connecting the central portion of the lever to the cross bar on a horizontal axis, a roller pivotally supported by one end of the lever on a horizontal axis and normally held by the lever in a predetermined central position between upper and lower positions, a lever cable hanging from the other end of said lever, a vertically movable floater suspended from the lever cable, an upper cable hanging from said roller, a pulley supported by each end of said upper cable, an intermediate cable hanging from each pulley, a set of four vertically movable parallel harnesses below the pulleys, each harness being suspended from a different end of said intermediate cables, treadles beneath the harnesses and floater, cables for connecting a treadle to two harnesses and said floater to lower those two harnesses and raise the other two, the cable connected to said floater being of a length to be pulled taut when said treadle is fully depressed to maintain said roller in said central position, other cables for connecting a treadle to the two harnesses suspended from one of said pulleys and to one of the other harnesses and said floater for lowering those three harnesses and said roller while raising the other harness, the last-mentioned cable connected to said floater being of a length to be pulled taut when the treadle connected to that cable is fully depressed to limit said lowering of said roller to a predetermined distance between its central and lower positions, and further cables for connecting a treadle to one harness and said floater for lowering that harness and the floater, whereby said other end of said lever is pulled down a predetermined distance as three harnesses are raised and the lever lifts said roller to a position between said central position and upper position.

4,214,614

VALVE MEANS FOR PREVENTING FUEL SPILLAGE FROM THE DISCHARGE SPOUT OF A FUEL DISPENSING NOZZLE

Walter R. Pyle, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 4, 1978, Ser. No. 965,980
Int. Cl.² B65B *3/26*
U.S. Cl. 141—1 **6 Claims**



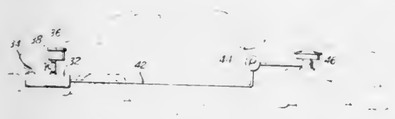
1. A fuel-dispensing nozzle, comprising: a nozzle main body portion, a discharge spout projecting from the main body portion, said discharge spout having an outlet end proportioned for ease of insertion into a fill pipe of a fuel tank, a flow passage extending through the nozzle main body portion and said discharge spout for the flow of fuel therethrough, a flow control valve in the nozzle main body portion operable to regulate the flow of fuel through said flow passage; valve means operable by a fluid pressure located in said discharge spout adjacent to the outlet end thereof for sealing the outlet end of said discharge spout to prevent the flow of fuel therethrough when said flow control valve is closed and for opening the outlet end of said discharge spout to permit flow of fuel therethrough when said flow control valve is operated to flow fuel through said flow passage, and means for supplying a fluid pressure to said valve means to close said valve means to prevent the flow of fuel out of said discharge spout when said flow control valve is closed and for removing the fluid pressure supplied to said valve means to open said valve means to permit the flow of fuel through the outlet end of said discharge spout when said flow control valve is operated to flow fuel through said flow passage.

4,214,615

DISPENSING APPARATUS FOR ADDING COLLOIDAL MAGNESIUM TO FUEL TANK

Winston Boyer, The Boyer Ranch, Savery, Wyo. 82332

Filed Feb. 27, 1978, Ser. No. 881,388
Int. Cl.² B65B *3/04*
U.S. Cl. 141—363 **2 Claims**



1. A dispensing means for dosing a liquid fuel tank for an internal combustion engine with a unit dosage of colloidal magnesium dispersed in kerosene the unit dosage for gasoline fuel being about 1.7 grams magnesium per 500 cc of kerosene, for diesel fuel being about 2.0 grams of magnesium per 1000 cc of kerosene and for jet aircraft fuel being from 3 to 4 grams magnesium per 5000 cc of kerosene, said dispensing means comprising:

a generally circular container into which the unit dosage colloidal magnesium dispersion in kerosene is poured and contained after it is opened by removing a separable cap fitting over said container top and out of which the unit dosage is metered at an outlet;

said container having a volume for holding at least one unit of 500 cc of kerosene for an automobile engine, at least one unit of 1000 cc of kerosene for a diesel engine and at least one unit of 5000 cc of kerosene for jet aircraft engine;

a separable cap fitting over the top of said container;

a metering valve located at the outlet at the bottom of said through which the unit dosage of colloidal magnesium in kerosene is metered via a delivery filler line into the fuel tank;

a curved delivery filler line for delivering said unit dosage of colloidal magnesium in kerosene from the outlet of said metering valve into the fuel tank ahead of the fuel pump or into the carburetor or air injector; and

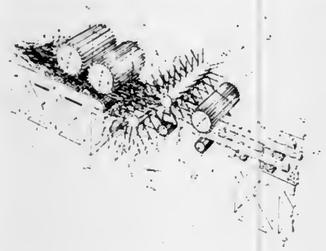
a boss which tightly mounts the bottom outlet of the metering valve into the top of the fuel tank at a location remote from the curved delivery filler line to the fuel tank.

4,214,616

TREE DELIMBING APPARATUS

Maurice J. Brisson, Laval, Canada, assignor to Forano Limitee, Plessiville, Canada

Filed May 11, 1978, Ser. No. 904,807
Claims priority, application Canada, Feb. 16, 1978, 297048
Int. Cl.² B27L *1/00*
U.S. Cl. 144—2 Z **16 Claims**



10. A tree delimbing apparatus comprising:

housing means having enclosing walls with openings therein defining an inlet for receiving a plurality trees to be delimbed, an outlet for discharging said trees delimbed and an opened base for evacuating limb debris;

means for conveying horizontally and longitudinally in a side-by-side arrangement said trees through said housing means said means for conveying including infeed means adjacent said inlet for advancing trees to said inlet, roller support means mounted inside said housing means below the feed line of said trees through said housing means for supporting and advancing said trees in said housing means, and pressure roller means mounted in said housing means and above said feed line of said trees through said housing and cooperating with said roller support means for advancing said trees through said housing means;

rotatable delimbing means, mounted in said housing means, including drum means mounted for rotation about an axis extending both horizontally and transversely to the direction of conveyance of said trees and a plurality of flexible delimbing flails attached to said drum means and extendible under centrifugal force to detach leaves and branches from said trees when conveyed through said housing means; and

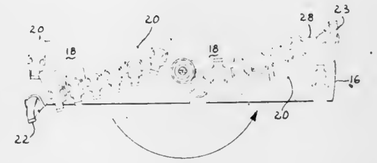
a rotatable branch folding means located outside said housing means and extending over said infeed means for folding said branches prior to entry of said trees in said housing means.

4,214,617

STUMP CUTTER

Robert J. McKenry, Windber, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Jun. 19, 1978, Ser. No. 916,154
Int. Cl.² B27C *3/00;* **A01G** *23/06*
U.S. Cl. 144—2 N **9 Claims**



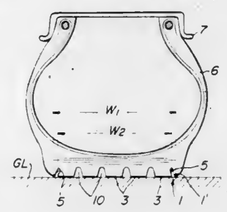
1. A stump cutter comprising: shank means rotatable about its longitudinal axis and adapted on one end to be driven in rotation; support means edge transversely attached to said shank means and having a leading edge in the direction or rotation; tool holders mounted on said support means and distributed on said support means radially outwardly from said shank means so that the cutting path of one cutter bit overlaps the cutting path of another cutter bit, said tool holders being located nearest the leading edge of the support means at the outermost radius from said shank means and progressing farther back from the leading edge as the locating radius from said shank means decreases, said tool holders adapted for receiving replaceable cutter bits; and a pilot member extending forwardly from one of said means for engagement with a stump, and means on said pilot member that urges the stump cutter into engagement with the stump when said shank is rotated.

4,214,618

HEAVY DUTY PNEUMATIC RADIAL TIRE

Hiroyoshi Takigawa; Hiroshi Ogawa; Shinichiro Ohkuni, all of Kodaira, and Mitsuhisa Yahagi, Sayama, all of Japan, assignors to Bridgestone Tire Company Limited, Kyobashi, Japan

Filed Apr. 14, 1978, Ser. No. 896,424
Claims priority, application Japan, Apr. 26, 1977, 52-48216
Int. Cl.² B60D *11/04*
U.S. Cl. 152—209 D **6 Claims**



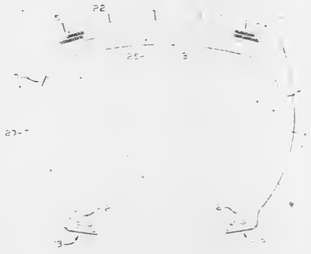
1. In a heavy duty pneumatic radial tire including a tread smoothly continuous at its round-shaped shoulders with sidewalls and formed in its substantially central circumferential surface with a plurality of main tread grooves extending circumferentially thereof, said tread being reinforced by a belt consisting of at least two metal cord layers arranged about carcass plies and between said tread and carcass plies, the improvement comprising, in an end zone of contact surfaces of said shoulders with a road surface under a standard load, a circumferentially extending narrow groove in a zigzag pattern having a width of 15–30% of that of said main tread grooves, an amplitude of said zigzag pattern of 0.5–2.0% of a tread width corresponding to a distance between ends of said contact surfaces and a pitch of said zigzag pattern of 2.0–7.0% of said tread width.

4,214,619

PUNCTURE-SEALING TIRE

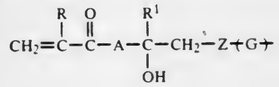
Harold H. Bowerman, Jr., Fairview Park, and Robert W. Ireland, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

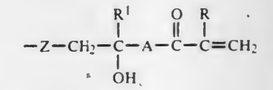
Filed Apr. 28, 1977, Ser. No. 791,759
Int. Cl.² B60C *5/14, 17/00;* **C08F** *8/32*
U.S. Cl. 152—347 **13 Claims**



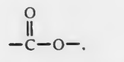
1. A puncture-sealing tubeless pneumatic tire comprising two spaced inextensible beads, a ground-contacting tread portion, a pair of individual sidewalls extending radially inward from the axial edges of said tread portion to join the respective beads, a carcass portion, and a sealant layer disposed inwardly of said carcass portion, said sealant layer comprising:

(1) at least one vinylidene-terminated polymer having the formula

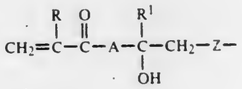




herein Z is selected from the group consisting of —S—,



and —O—, A is a bivalent radial containing 1 to 10 atoms wherein at least one of said atom is selected from the group consisting of C, O, S and N, R and R^1 are hydrogen or alkyl radicals containing 1 to 4 carbon atoms, and G is a polymeric backbone comprising carbon-carbon linkages, said vinylidene-terminated polymer containing an average of from about 1.5 to about 4



groups per molecule,

wherein said backbone comprising carbon-carbon linkages contains polymerized units of at least one vinylidene monomer having at least one terminal $CH_2=C<$ group, said monomer being selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of craboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, (e) acrylic acids and acrylates having the formula



said R^2 being hydrogen or an alkyl radical containing 1 to 3 carbon atoms and said R^3 being hydrogen, an alkyl or hydroxy alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms; and

(2) at least one amine where said amine is difunctional or polyfunctional.

4,214,620

RADIAL TIRES HAVING A SIDEWALL STIFFENING CIRCUMFERENTIAL STRUCTURE

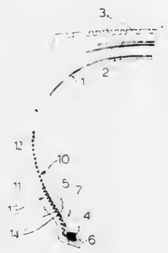
Mario Mezzanotte, Milan, Italy, assignor to Industrie Pirelli, S.p.A., Milan, Italy

Continuation of Ser. No. 476,865, Jun. 6, 1974, abandoned. This application Dec. 21, 1977, Ser. No. 862,973

Claims priority, application Italy, Jun. 12, 1973, 25181 A/73

Int. Cl.² B60C *9/08, 15/00*

U.S. Cl. 152—354 R **4 Claims**



1. In a pneumatic radial type tire for vehicle wheels having tire beads containing bead cores and comprising

only one carcass ply, said carcass ply extending from one bead to the other bead and turning up about the said cores contained in the beads from the inner side to the outer side, each bead comprising a filling of hard rubber positioned on the core,

the bead zone and the lower zone of the sidewall comprising a first strip of metal cords arranged in an axially outer position with respect to the carcass and to the turn-ups of the latter and extending radially from the core zone to a height of between 25% to 45% of the section height of said tire, said strip lying substantially on the trace of the flexional neutral axis in the lower zone of the sidewall, said metal cords being inclined at an average angle of from 5° to 15° with respect to the circumferential line of said tire,

a second strip of cords of a tension and compression resistant metal, situated in an axially outer position with respect to said first strip radially extending from the core zone, the height of said second strip being smaller than the radial height of said first strip, the cords of said second strip being inclined at an angle of substantially 90° with respect to the circumferential lines of said tire.

4,214,621

AWNING MECHANISM

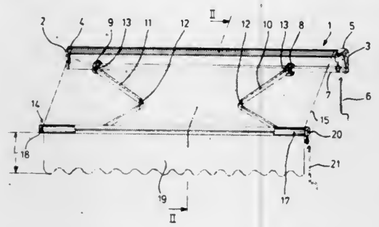
Bernhard Wessels, Rheine, and Adolf Fugger, Greven, both of Fed. Rep. of Germany, assignors to Schmitz-Werke GmbH & Co., Emsdetten, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,846

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746848

Int. Cl.² E04F *10/06*

U.S. Cl. 160—66 **5 Claims**



1. An awning mechanism, comprising frame means for attachment to a vertical surface and including:

a primary awning roller on which an awning cloth may be wound;

first drive means for imparting rotary motion to said primary roller;

extension means for supporting a drop tube at varying distances from said primary awning roller, said drop tube serving to support and hold a part of said awning cloth and further serving to hold a freely depending part of awning cloth defining a flyer of variable length; and

further comprising means within said drop tube for permitting said drop tube to hold said awning cloth at varying parts thereof, and wherein said awning cloth and said flyer are constituted by a single integral piece of material.

4,214,622

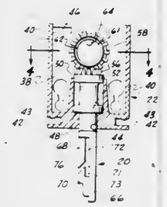
VERTICAL BLIND

Victor Debs, Staten Island, N.Y., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.

Filed Jun. 30, 1978, Ser. No. 921,048

Int. Cl.² E06B *9/30*

U.S. Cl. 160—168 A **34 Claims**



1. A vertical blind, comprising: a blind head, a plurality of carriers supported for reciprocating movement in said head, a plurality of holder means respectively supported in said carriers for pivotal movement and respectively adapted to support a plurality of vanes therefrom, and control means for controlling said reciprocating movement of said carriers and for controlling said pivotal movement of said holder means, said control means including rod means rotatably supported in said head, said rod means extending in a substantially vertical plane substantially bisecting said carriers, means for rotating said rod means, a plurality of first bevel gear means respectively rotatably supported in said carriers and mounted for rotation with said rod means in said plane, a plurality of second bevel gear means respectively connected to said holder means and respectively mounted for meshing engagement with said first bevel gear means and having substantially vertical axes of rotation located in said plane, whereby rotation of said rod means by said rotating means will rotate said holder means, each of said carriers comprising seat means for supporting the respective holder means, and also comprising bearing means for rotatably supporting the respective first bevel gear means in a position such that said first bevel gear means holds the respective holding means on said seat means.

4,214,623

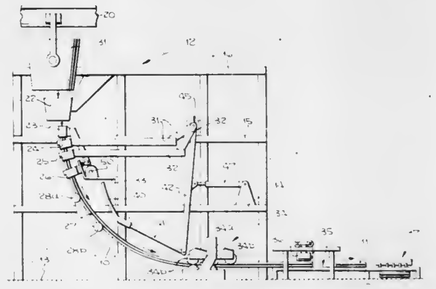
METHOD FOR CONTINUOUS CASTING OF METAL

Howard W. Jaenson, Fullerton, Calif., assignor to Witteman Steel Mills, Fontana, Calif.

Filed Jul. 5, 1978, Ser. No. 922,037

Int. Cl.² B22D *11/00, 11/124*

U.S. Cl. 164—83 **10 Claims**



1. In the art of continuous casting of metals, the method comprising the steps of:

continuously pouring metal into a vertically reciprocating mold so as to form a continuous metal casting which then moves downward underneath the mold;

placing two expansible metal shoes about the casting at two corresponding points along its length;

continuously supplying liquid coolant in heat-conductive relationship to said shoes so as to cool the casting;

each time the reciprocating mold moves upward, squeezing one of the shoes against the casting and then holding it in place so that it will act as a brake to inhibit longitudinal movement of the casting;

each time that the reciprocating mold moves downward, squeezing the other shoe against the casting so as to firmly grasp it, while concurrently releasing most but not all of the pressure with which said one shoe grips the casting, so that the casting may then slide within said one shoe; and

thereafter driving said other shoe downward in at least approximate synchronism with the movement of the mold, so as to drive the casting downward.

4,214,624

METHOD OF AND MOLD FOR DC CASTING

John J. Foye, Livermore, Calif., and Jerry F. Harris, Slidell, La., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Oct. 26, 1978, Ser. No. 954,964

Int. Cl.² B22D *11/04, 11/124*

U.S. Cl. 164—89 **9 Claims**

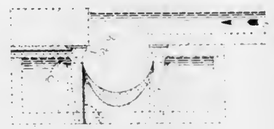
9. A method of DC casting light metal in an open ended, tubular shaped mold provided with a passageway between a feed end and a discharge end thereof, said passageway having a first chill section with an inner surface which diverges in the direction of the discharge end of the mold, followed by a second straight walled chill section concentrically disposed with respect to the first chill section, the diverging inner surface of the first chill section intersecting with the inner surface of the second chill section at an angle greater than 135°, said method comprising:

(a) continuously introducing lubricant around the inner periphery of said passageway at the feed end thereof;

(b) introducing molten metal into the first chill section;

(c) controlling the passage of molten metal stream through the first chill section so that a thin, expandable embryo of solidified metal forms adjacent to the diverging surface of the first chill section and the metal stream expands it passes through the first chill section and into the second straight walled chill section wherein the metal is solidified or partially solidified into the desired cross section, said passage avoiding the buildup or maintenance of a body of lubricant at the intersection of said first and second chill sections by the contacting of the intersection with the solidified metal embryo;

(d) withdrawing the solidified or partially solidified metal from the discharge end of the molt and applying coolant onto the surfaces of said stream to effect complete solidification thereof.



4,214,625

CONTINUOUS CASTING OF METALS

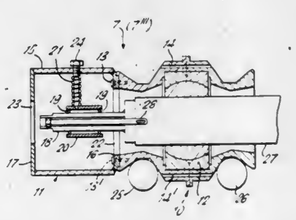
Anthony W. Hudd, Sutton Coldfield, England, assignor to IMI Refiners Limited, West Midlands, England

Filed Nov. 1, 1978, Ser. No. 956,989

Claims priority, application United Kingdom, Nov. 16, 1977, 47664/77

Int. Cl.² B22D *11/128*

U.S. Cl. 164—420 **15 Claims**



1. A roll device for use in the continuous casting of metal comprising

a roll having a rotational axis, and provided with a pair of strand accommodating spaced annular grooves formed in or on a continuous external circumferential surface thereof;

a shaft having a rotational axis;

means for mounting said roll on said shaft so that the rotational axis of said roll is tiltable relative to the rotational axis of said shaft in any plane containing the shaft rotational axis;

resilient means associated with said roll for normally maintaining said axes coaxial with one another and allowing tilting of said roll axis with respect to said shaft axis in any particular plane containing said shaft axis only upon the application of a force of at least a predetermined magnitude so that tilting will occur as a result of strands of differing diameters being received by said roll annular

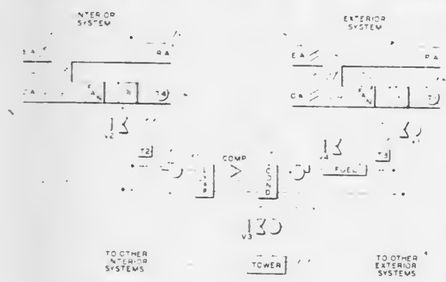
grooves, but will not occur as a result of differential throughput rates of the strands received by said roll annular grooves.

4,214,626

REJECTED HEAT AIR CONDITIONING CONTROL SYSTEM

Donald H. Spethmann, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 5, 1978, Ser. No. 939,513
Int. Cl.² F25B *29/00*
U.S. Cl. 165—29 **44 Claims**



1. A control for the air conditioning system of a building, said air conditioning system having both interior systems for the delivery of conditioned air to interior zones within said building and exterior systems for the delivery of conditioned air to exterior zones of said building, said air conditioning system including an evaporator for supplying chilled water to at least said interior systems, a condensor for supplying hot water to at least said exterior systems, and a compressor connected between said evaporator and said condensor, a cooling tower connected to said condensor, at least one outdoor air damper associated with said interior and exterior systems, and a source of fuel heat for heating said hot water supplied to said exterior systems by said condensor, said control system comprising:

first temperature sensing means for supplying a first output signal dependent upon the temperature of the air within at least one interior system;

first control means, connected to said first temperature sensing means and responsive to said first output signal, adapted to control the temperature of said chilled water in accordance with the temperature sensed by said first temperature sensing means in said at least one interior system, said first control means including an override means;

second temperature sensing means for sensing the temperature of air within at least one exterior system;

second control means connected to said second temperature sensing means for producing a second output signal;

third control means responsive to a first level of said second output signal for fully rejecting heat from said condensor through said cooling tower and to a second level of said second output signal for rejecting minimum heat through said cooling tower;

fourth control means responsive to said second output signal between a third level and a fourth level for providing a signal connected to said override means to override said first output signal to control the temperature of said chilled water to modulate rejected heat from said condensor; and

fifth control means responsive to said fourth level of said second output signal for supplying minimum fuel heat to said hot water and to a fifth level of said output signal for supplying maximum fuel heat to said hot water,

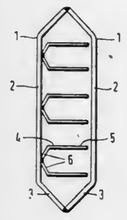
wherein said third level falls between said fourth level and said second level.

4,214,627

FIRE TUBE FOR A HEATING BOILER

Wolfgang Kunkel, Triesen, Liechtenstein, assignor to Interliz Anstalt, Vaduz, Liechtenstein

Filed Nov. 7, 1978, Ser. No. 958,854
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 7734356[U]
Int. Cl.² F28F *1/40*
U.S. Cl. 165—179 **7 Claims**



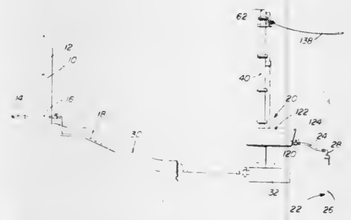
1. A fire tube for a heating boiler comprising two metal tube halves, each tube half having a base portion and two leg portions projecting at an angle from said base portion, said tube halves being disposed relative to one another such that the terminating ends of said leg portions abut one another, first welding means joining said abutting ends, a plurality of substantially U-shaped elements extending longitudinally within the fire tube, each of said U-shaped elements having a base section and projecting leg sections, and second welding means joining said base sections to said base portion of one of said tube halves, said leg sections of said U-shaped elements being parallel to one another and extending substantially across the width of said fire tube.

4,214,628

MULTIPLE-PURPOSE UNDERGROUND FLUID INJECTION SYSTEM

Elton M. Botts, 2901 Western Ave., Mattoon, Ill. 61938

Filed Jul. 11, 1978, Ser. No. 923,669
Int. Cl.² E21B *33/00*
U.S. Cl. 166—75 R **7 Claims**



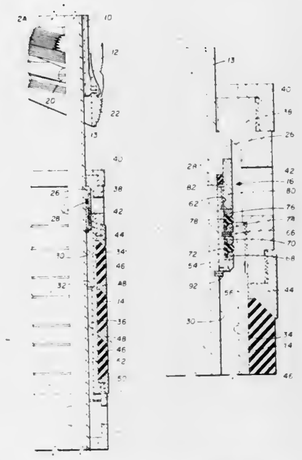
1. A multiple-purpose underground fluid injection system for discharging fluid into a desired underground strata through a well communicated with only the desired underground strata, said system including a well injector communicated with a supply of injection fluid and a well, said well injector including a vessel in low-pressure, high-volume communication with a supply of injection fluid, said vessel including a standpipe connected to the top of said vessel and extending upwardly therefrom and in communication therewith and receiving injection fluid from the vessel, and pump means mounted between the standpipe and the well and communicating directly with the standpipe and the well for controlling flow of injection fluid into the well.

4,214,629

WELL PACKER BYPASS VALVE SEAL ASSEMBLY

Thomas E. Upton, Garland, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 895,423, Apr. 12, 1978, Pat. No. 4,188,998. This application Apr. 19, 1979, Ser. No. 31,566
Int. Cl.² E21B *33/12;* **B65D** *53/02*
U.S. Cl. 166—129 **8 Claims**



8. A seal assembly for a valve in a well packer, comprising:

a tubular seal carrier assembly mountable with a packer mandrel in an interior portion of a packer valve housing, said seal carrier assembly having a pair of annular seal elements mounted in a longitudinally spaced relation around the outer periphery thereof;

a pair of grooves formed around the outer periphery of said seal carrier with said seal elements mounted therein, said grooves are each formed by a recess formed transversely around the exterior of each end portion of said tubular seal carrier;

a back-up ring is mounted in opposed sides of each said recess;

said seal elements are each cross-sectionally generally T-shaped with a longitudinally shorter portion thereof extending outward to sealingly engage a valve seat, and the other longitudinally longer portion thereof is located in a radially inner portion of said groove and said seal elements each being positioned between the associated seal retainer ring and said spacer ring; and

an inner annular seal between the inner perimeter of said seal carrier assembly and said mandrel for sealing between said seal carrier and said packer mandrel.

4,214,630

FIRE FIGHTING NOZZLE

John P. Gagliardo, Shrewsbury, Mass., assignor to Feecon Corporation, Westboro, Mass.

Filed Dec. 4, 1978, Ser. No. 966,113
Int. Cl.² A62C *35/00*
U.S. Cl. 169—18 **6 Claims**

1. Fire fighting nozzle, comprising:

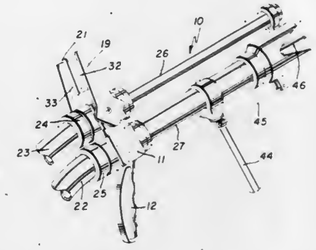
(a) a main body having an upper and a lower passage extending therethrough in spaced-parallel relationship,

(b) a ball located in each passage, each ball having a bore, the ball being mounted for rotation about a horizontal axis passing through the center of the ball perpendicular to the central axis of the bore,

(c) means including two upwardly-extending levers pivotally mounted at the upper portion of the main body for rotating each of the balls from an operative position where the bore is aligned with its passage to an inoperative position where the bore is at a right angle to the passage,

(d) means for connecting one end of each passage to one of two different pressurized agents,

(e) a tube extending from the other end of each passage, and



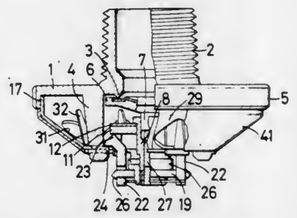
(f) a pistol grip handle extending from the lower portion of the main body, the two levers being mounted side-by-side and pivoted on a common pivotal axis extending horizontally at a right angle to the longitudinal axes of the passages, one lever being connected by a gear train to the lower ball, which gear train consists of a plurality of gears mounted on spaced, parallel axes.

4,214,631

SPRINKLER HEAD WITH HEAT SENSITIVE COVER RELEASE AND VALVE RELEASE MECHANISM

Tadashi Hattori, 15-20, 1-chome, Kamori-cho, Kishiwada-shi, Osaka-fu, Japan

Filed Dec. 1, 1978, Ser. No. 965,504
Claims priority, application Japan, Aug. 8, 1978, 53-111005[U]; Aug. 8, 1978, 53-111006[U]
Int. Cl.² A62C *37/12*
U.S. Cl. 169—57 **1 Claim**



1. A sprinkler head, comprising in combination:

(a) an externally threaded straight tube (**2**) with a fluid supply forward end for supplying fluid in the forward direction therefrom;

(b) a disc-like body (**1**) with a lower part connected to said supply end;

(c) a central portion in said body (**1**) with a water discharge valve seat (**3**) defined in said central portion;

(d) a plurality of supporting legs (**4**) formed in said lower part and extending in the forward direction from said body (**1**) outside of said valve seat and having a receiver on the inside of the forward end of each said leg;

(e) a valve (**6**) in contact with said valve seat;

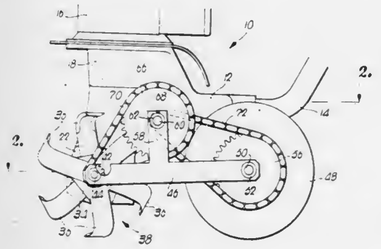
(f) heat fusible means engaging said valve through a guide sleeve to hold the valve in contact with said valve seat and being connected to said legs through lever means, said lever means engaging the receiver of each said leg;

(g) a thin deflector (**29**) with a multiplicity of small sprinkling apertures mounted on said lower part, extending radially outward of said legs in the direction of the periphery of said disc-like body (**1**) over said body;

(h) elongated projections (**32**) inside said deflector extending rearwards in the direction of said tube;
(i) a guide (**13**) mounted on said lever means through a spring guide and being held in place by said heat fusible means, said guide having catches at the forward end; and,
(j) a cover having a tapering shape to fit the outside of the deflector and having an opening in the center, the forward end of the guide being fitted into the cover opening so that the catches at the forward end of the guide engage the forward part of the peripheral edge of the opening.

4,214,632
SOIL TILLING MACHINE HAVING APPARATUS FOR AUTOMATIC NEGATIVE BRAKING AND DRIVE CONTROL

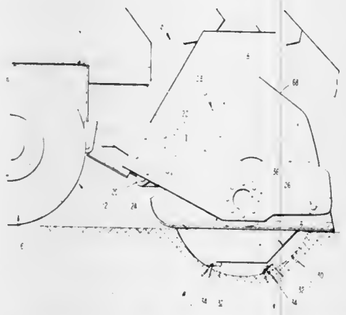
Ernest L. Brookshier, R.R. #2, Centerview, Mo. 64019
Filed Feb. 8, 1978, Ser. No. 876,116
Int. Cl.³ A01B *33/00;* **B62D** *51/04*
U.S. Cl. 172—42 **3 Claims**



1. In a self-propelled, hand maneuvered, rotating cultivator type machine for tilling soil of either a predetermined intermediate hardness, a hardness significantly less than said predetermined hardness or a hardness significantly greater than said predetermined hardness, with substantial uniformity of forward speed of the machine, tilling depth, and number of rotations of the cultivator component per unit of forward travel of the machine for all of said hardnesses of the soil being tilled:
a mobile frame having a direction of forward travel;
wheel shaft means mounted on said frame adjacent the rear of the latter;
a pair of ground engaging traction wheels mounted on said wheel shaft means for rotation about a first horizontal axis transverse to said direction of travel of said frame;
a tined, rotary, soil tilling cultivator assembly having a horizontally extending shaft part mounted on said frame adjacent the front of the latter for rotation about a second horizontal axis transverse to said direction of travel of said frame, in spaced parallelism with said first axis and disposed forwardly of the latter;
a motor assembly mounted on said frame above said cultivator assembly and having a downwardly extending, substantially vertical power output shaft;
first coupling means including a worm mounted on said output shaft and a cooperating gear mounted on said shaft part of said cultivator assembly, said worm being meshed with said gear for rotating said cultivator assembly at a predetermined rotational speed and constituting means for producing a force of magnitude for moving said machine forwardly at a predetermined and desired linear speed when said cultivator assembly is tilling soil of said predetermined intermediate hardness but of magnitude that would tend to move said machine forwardly at undesirably greater or lesser linear speeds when said cultivator assembly is tilling soils of hardness respectively greater or less than said predetermined intermediate hardness;
second coupling means including first sprocket means mounted on said shaft part of said cultivator assembly, second sprocket means connected with said drive wheels, and connecting means including chain means positively coupling said first sprocket means with said second sprocket means for driving said traction wheels at a predetermined rotational speed coordinated with the rotational speed of said cultivator assembly and said desired linear speed of said machine and constituting means for automatically exerting an extra forward propelling force upon said machine of magnitude for maintaining the speed of forward movement of said machine substantially at said desired linear speed thereof when said cultivator assembly is tilling soil of hardness less than said predetermined intermediate hardness and for automatically exerting a rearward retarding force upon said machine of magnitude for maintaining the speed of forward movement of said machine substantially at said desired linear speed thereof when said cultivator assembly is tilling soil of hardness greater than said predetermined intermediate hardness without exertion by said traction wheels of either a forward propelling or a rearward retarding force upon said machine when the latter is being moved forwardly at said desired linear speed by the rotation of said cultivator assembly,
said machine being propelled forwardly primarily by said cultivator assembly when the latter is tilling soil of at least said predetermined intermediate harness and by said traction wheels when said cultivator assembly is tilling soil of less than said predetermined intermediate hardness.

4,214,633
SOIL STABILIZER AND TOOTH HOLDER THEREFOR

Gary L. Jackson, S. Charleston, and Prabhakar B. Rao, Fairborn, both of Ohio, assignors to Koehring Company, Brookfield, Wis.
Filed Oct. 11, 1977, Ser. No. 841,015
Int. Cl.³ A01B *33/02, 33/14*
U.S. Cl. 172—123 **1 Claim**

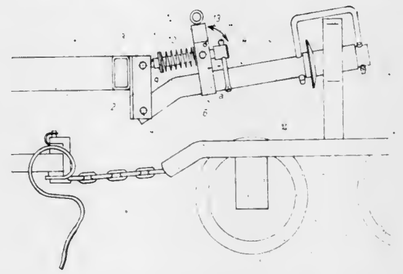


1. In a soil stabilizer of the type including a self-propelled vehicle, a rotor having a plurality of teeth and being rotatable about a horizontal axis, and drive means for rotating the rotor to pulverize soil, the improvement wherein:
said drive means includes means for rotating said rotor in opposite directions, and
said rotor includes a plurality of tooth holders, each holder having generally oppositely directed coplanar tooth-receiving sockets for selectively receiving a tooth projecting toward the direction of rotation,
said sockets and teeth being complementarily tapered to provide a friction fit therebetween, said sockets intersecting one another so that a friction-generating tapered engagement between the socket and the tooth occurs at front and rear ends of the tooth and is interrupted therebetween by the zones of intersection of said sockets so that manufacturing variations in taper of the tooth tend to be compensated for,
said sockets being rearwardly open to permit engagement of the tooth with a removal tool; and

said holder comprising two half sections that are divided along a vertical plane extending end-to-end through said sockets, said sections being connected by weld joints.

4,214,634
ARRANGEMENT FOR COUPLING A CULTIVATING ATTACHMENT TO A CULTIVATING MACHINE

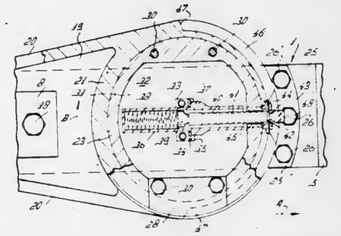
Willy Rau, Weilheim, and Christian Taus, Kirchheim, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Rau GmbH, Weilheim, Fed. Rep. of Germany
Filed Sep. 13, 1978, Ser. No. 942,894
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 7728517[U]
Int. Cl.² A01B *23/04*
U.S. Cl. 172—179 **15 Claims**



1. In a tractor-drawn cultivating machine having a main frame adapted to be fitted with leading cultivating implements and at least one roller unit trailing the main frame and the cultivating implements, in combination at least one spring suspension support means articulately coupling a respective roller unit to the main frame of the cultivating machine, including means for adjusting the relative elevations of the main frame and the roller unit of the cultivating machine while permitting limited relative vertical movement between the same, and spring means opposing such relative movement with shock-absorbing action; and means cooperating with said spring-suspension support means and movable between a blocking setting preventing said limited relative movement and an unblocking setting not preventing such limited relative movement.

4,214,635
IMPLEMENT

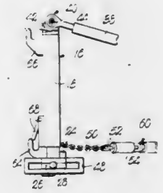
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland
Filed May 12, 1978, Ser. No. 905,438
Int. Cl.² A01B *61/04*
U.S. Cl. 172—271 **16 Claims**



1. An implement comprising a frame and a working member rigidly connected to said frame during normal operation through coupling means, said coupling means comprising a first coupling member on said frame and a second coupling member on said working member, said first member being located coaxially within the second member and the two members being circular in cross-section with a common centerline, a shear pin within said first member and said pin extending outwardly into openings in the perimeters of said two members to prevent relative pivoting until overload, said pin being shearable upon overload and said second member being pivotable about said centerline, the opening of said second member being uncovered upon pivoting to allow a fractured end portion in the opening of the second member to be discharged.

4,214,636
THREE-POINT HITCH ADAPTER

Rex R. Griffith, Rte. 2, Seneca, Kans. 66538
Filed Jul. 7, 1978, Ser. No. 922,525
Int. Cl.² A01B *59/043*
U.S. Cl. 172—450 **3 Claims**



1. An adapter for supporting an implement on a tractor having a drawbar and a three point hitch wherein the hitch includes a pair of lower, horizontally spaced drag links powered for up and down swinging movement and an upper freely swingable stabilizer link, said adapter including:
a generally horizontal crossbar for pivotally interconnecting the drag links;
a frame supported on the crossbar and extending upwardly therefrom, said frame including a continuous, polygonal loop having a pair of horizontally spaced, upright side arms, an upper horizontal crossbeam joining the arms and a lower horizontal crossbeam joining the arms and a lower horizontal crossbeam joining the arms;
means for mounting said implement on the frame, said mounting means being disposed on the arms and upper crossbeams;
a first pivot means for coupling the stabilizer link with the frame, said first pivot means being midway the ends of the upper crossbeam; and
a second pivot means; being crossbeam, interconnecting the crossbar and the frame for rendering the frame swingable relative to the crossbar about an essentially upright axis extending through said first and second pivot means.

4,214,637
ELEVATION ALTERING STRUCTURE FOR AGRICULTURAL IMPLEMENTS

Roy E. Applequist, Salina, Kans., assignor to Great Plains Manufacturing Incorporated, Salina, Kans.
Division of Ser. No. 836,719, Sep. 26, 1977, Pat. No. 4,171,022.
This application Oct. 10, 1978, Ser. No. 949,999
Int. Cl.³ A01B *63/26, 73/00*
U.S. Cl. 172—484 **7 Claims**

1. In an implement carrier of the type including means for selectively altering the elevation of ground conditioning tools carried thereby:
a transversely extending, essentially horizontal, implement supporting frame adapted to be drawn by a draft vehicle and to be maintained at an essentially fixed elevation relative to the ground;
a transversely extending, implement carrying frame adapted to have a plurality of ground conditioning tools secured thereto,
said implement carrying frame including essentially horizontal, transversely extending structure generally disposed

beneath said supporting frame and a plurality of vertically projecting mounting members attached to said horizontal structure,

said horizontal structure associated with said implement carrying frame comprising a first transversely extending frame member adapted to have a plurality of said tools attached thereto, and a second transversely extending frame member longitudinally spaced behind said first frame member, essentially parallel to the latter, and adapted to have a plurality of said tools attached thereto,

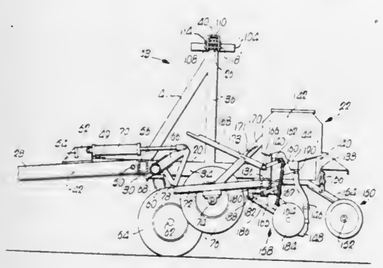
said first and second frame members being joined together by longitudinally extending support elements whereby to form a rigid unit extending in a plane essentially parallel with the ground thereunder,

said mounting members secured to corresponding one of said support elements between said first and second frame members,

said supporting frame including a plurality of guide elements secured thereto and extending longitudinally therefrom proximal to at least certain ones of said mounting members for engaging the longitudinal sides of said mounting members and restricting the lateral movement of the latter;

parallel linkage mechanism shiftably mounting said implement carrying frame upon said implement supporting frame for essentially vertical shifting of the former relative to the latter,

said linkage mechanism including a first and second parallel link element, there being further provided means for respectively pivotally connecting the opposite extremities of each said link elements to said supporting frame and to one of said mounting members,



said linkage mechanism being operable to maintain said unit essentially parallel with said ground whereby to maintain the tools associated with each of said frame members at essentially the same elevation with respect to the ground, when said lever means is in any one of said plurality of positions thereof;

manually operably lever means connected with said linkage mechanism for selectively operating the latter to shift said carrying frame to alter the elevational relationship of said tools to the ground;

a transversely extending shaft member mounted for rotation on said implement supporting frame,

one extremity of one of said links being secured to said shaft for rotation along with the latter,

said lever means having one extremity thereof also connected with said shaft,

said lever means functioning upon manual operation thereof to rotate said shaft and manuipulate said linkage mechanism whereby to provide said vertical shifting of said implement carrying frame; and

releasable retaining means connected with said lever means and said implement supporting frame, for releasably retaining said lever means in one of a plurality of positions corresponding to one of a plurality of elevational relationships of said tools to the ground.

4,214,638

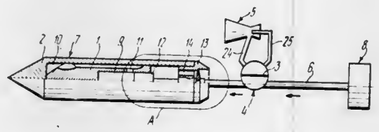
METHOD OF CONTROLLING THE REVERSING OF A DEVICE FOR DRIVING HOLES IN EARTH AND DEVICE FOR PERFORMING SAME

Boris V. Sudnishnikov, Krasny prospekt, 56, kv. 59; Khaim B. Tkach, ulitsa Gogolya, 17, kv. 49; Alexandr D. Kostylev, ulitsa Derzhavina, 19, kv.44; Veniamin V. Kamensky, ulitsa Derzhavina, 19, kv. 70; Konstantin K. Tupitsyn, Krasny prospekt, 51, korpus 3, kv. 25, and Vladimir M. Terin, Gusinobrodskoe shosse, 19, kv. 10, all of Novosibirsk, U.S.S.R.

Filed Feb. 16, 1978, Ser. No. 878,414

Int. Cl.² B25D *9/00*

U.S. Cl. 173—1 **3 Claims**



1. A method of controlling the reversing of a reversible percussive device in order to reverse the operation of the device from a forward mode for making a hole in soil to a reverse mode wherein the device is retracted from the hole and for returning the percussive device to the forward mode, the percussive device having a feed line for supplying the percussive device with compressed air, the method comprising shifting from the front mode to the reverse mode and vice versa by discontinuing supply of compressed air through the feed line, developing a suction in the device to effectively discontinue the mode in which the device is operating and establishing the other mode, and resupplying compressed air to the device through said feed line to drive the device in the selected other mode.

4,214,639

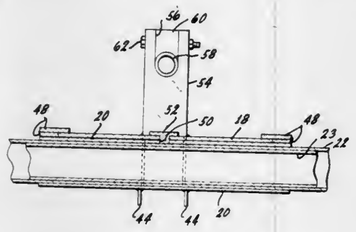
SUSPENDED DRILLING SYSTEM

Stanley J. Anderson, 10303 Channel Rd., Lakeside, Calif. 92040

Filed Apr. 4, 1979, Ser. No. 27,050

Int. Cl.² E21C *5/00, 9/00, 11/00*

U.S. Cl. 173—43 **6 Claims**



1. A suspended drill system which comprises:

a plate having means for pivotable attachment to a crane boom point;

a first tube having an other-than-round cross-section secured to said plate, said first tube adapted to assume a vertical orientation when said plate is attached to a crane boom point;

a second tube telescoped within said first tube and adapted to extend vertically above and below said first tube when said plate is attached to a crane boom point;

a frame attached to the lower end of said second tube;

means for connecting said frame to a hoisting cable of said crane whereby said cable supports said frame;

a drill stem extending downwardly of said frame for rotation relative thereto; and

engine means within said frame for rotating said drill stem;

whereby a hole may be drilled anywhere within reach of said boom point.

4,214,640

MACHINE FOR THE AUTOMATIC MANUFACTURE OF MIXTURES OF DIFFERENT KINDS OF CAOUTCHOUC INTENDED TO FORM PART OF A FILLER MIXTURE

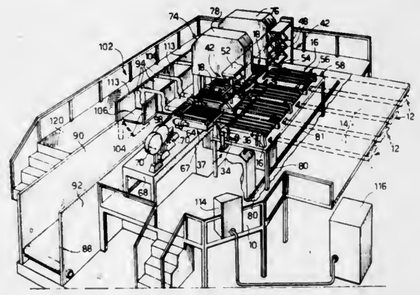
Gaetano Di Rosa, Pino Torinese, Italy, assignor to F.A.T.A.-Fabbrica Apparecchi di Sollevamento e Trasporto ed Affini S.p.A., Turin, Italy

Filed Apr. 3, 1979, Ser. No. 26,707

Claims priority, application Italy, Aug. 16, 1978, 68911 A/78

Int. Cl.² G01G *19/22, 19/04;* **B26D** *7/00*

U.S. Cl. 177—70 **10 Claims**



1. Machine for the automatic preparation of fillers of different kinds of caoutchouc intended to form part of a filler mixture, wherein the machine comprises:

a number of conveyor lines arranged side-by-side and equal in number to the number of kinds of caoutchouc, each conveyor line comprising in series a feed conveyor for caoutchouc blocks, a measuring conveyor and a weighing conveyor;

a cutting unit comprising at least one band saw having a rest position in which the cutting branch of the saw is outside the path of the caoutchouc blocks on the said conveyor lines,

means for moving the cutting unit to complete a working stroke in which said saw cuts off portions of the blocks projecting from the measuring conveyors towards the weighing conveyors, whilst said conveyors are stationary, followed by a return stroke to said rest position;

weighing means associated with the weighing conveyor of each conveyor line;

control means for controlling the operation of the weighing means and the measuring and weighing conveyors in successive measuring cycles;

a collector conveyor, movable transversely of the conveyor lines downstream of the latter, said collector conveyor being situated at a lower level than the said conveyor lines;

a storage unit disposed downstream of the conveyor lines at an intermediate level between said conveyor lines and said collector conveyor, said storage unit being adapted to store temporarily any excess portions of caoutchouc blocks delivered from the conveyor lines in a measuring cycle and to deliver said portions to the collector conveyor in the initial phase of a successive measuring cycle,

a processor including data storage means for memorising the weight of the fillers of the different kinds of caoutchouc intended to form part of the mixture, said processor being operatively associated with the control means for controlling the conveyors of each conveyor line, the cutting unit and the storage unit in dependence upon the stored data and data sent to it by the weighing means of the weighing conveyors.

4,214,641

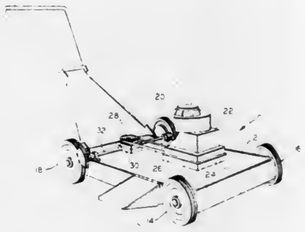
DRIVE FOR SELF-PROPELLED LAWN MOWERS

Hans Hauser, Fredericktown, Ohio, assignor to The J. B. Foote Foundry Co., Fredericktown, Ohio

Filed Jun. 14, 1978, Ser. No. 915,569

Int. Cl.² B62D *51/04;* **A01D** *35/26*

U.S. Cl. 180—19 R **4 Claims**



1. In combination, a drive shaft, a driven gear mounted on a shaft parallel to said drive shaft, a pinion gear rotatably mounted on said drive shaft and having teeth engageable with said driven gear, said pinion gear having a bore through which said drive shaft extends, an outer end of said pinion gear having diametrically-opposite shoulders on common sides thereof and having slanted surfaces on the opposite sides, a drive pin affixed to said drive shaft and extending outwardly on opposite sides thereof, said pin engaging said shoulders when said pinion gear is driving said driven gear, and said pin riding up the slanted surfaces when said pinion gear is rotating faster than said drive shaft, a coil spring located on said drive shaft and bearing against the end of said pinion gear opposite the end having the shoulders, means extending outwardly from said drive shaft backing up said coil spring to maintain it under compression, and a spring cover located around said coil spring, said cover having a substantially closed end extending between an end of said coil spring and said backup means, said cover having an open end extending over an end portion of said pinion gear and being slidably received thereon, whereby said pinion gear can move longitudinally of said drive shaft while said cover is stationary, said cover being sufficiently long to always enclose said coil spring for any position of said pinion gear.

4,214,642

POWER-ASSISTED STEERING DEVICE

Jean L. R. Dauvergne, Fosses, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Feb. 14, 1978, Ser. No. 877,769

Claims priority, application France, Feb. 14, 1977, 77 04051

Int. Cl.² B62D *5/08*

U.S. Cl. 180—132 **7 Claims**



1. A power assisted steering device comprising a rotatable steering column consisting of two aligned parts fastened respectively to a steering control means and to a steering operat-

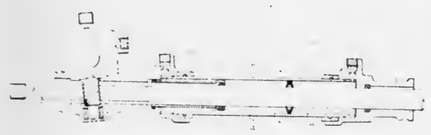
ing means, the said parts having a relative angular movability limited by abutment means and being connected to one another by a torsion bar, and assistance means operable in response to a relative movement of the said parts to act in the same direction as the steering operating means so as to assist the action thereof, characterised in that the said torsion bar is plain and cylindrical from end to end thereof and has a substantially uniform cross section along its length and has one of its ends fastened to one of the said parts in any relative angular position and the other of its ends fastened to the other said part by bonding means in a controlled angular position.

4,214,643

AUTOMOTIVE VEHICLE POWER STEERING SYSTEM

Shogo Yamanaka, Fuji, and Masanori Kouda, Atsugi, both of Japan, assignors to Atsugi Motor Parts Co., Atsugi, Japan

Filed Aug. 10, 1978, Ser. No. 932,481
Claims priority, application Japan, Jun. 13, 1978, 53-81477[U]
Int. Cl.² B62D *5/08*
U.S. Cl. 180—148 **6 Claims**



1. In a power steering system for an automotive vehicle, comprising a steering wheel shaft, a pinion gear, a vehicle wheel operating rod formed with a rack in meshing engagement with the pinion gear, and a hydraulic actuator with two hydraulic pressure chambers, selective supply of hydraulic fluid under pressure to these chambers selectively impelling the wheel operating rod in the one or the other longitudinal direction:

a control valve mechanism, fitted between said steering wheel shaft and said pinion gear so that said pinion gear is rotationally driven by rotation of said steering wheel shaft, comprising:

a housing;

a rotor journalled in said housing and coupled to said pinion gear;

a stub shaft aligned coaxially with said rotor and projecting into a hole therein;

a flange on the end of said stub shaft inside the rotor, and two spool valves formed in the rotor and actuated by relative movement of the flange and said rotor, which selectively communicate the hydraulic pressure chambers to hydraulic pressure, or drain them;

a sleeve extending from said flange coaxially with said stub shaft, on the other side of said flange from said stub shaft;

a torsion bar;

a first pin connecting said torsion bar to the part of the rotor which is attached to said pinion gear;

a second pin connecting said torsion bar to said stub shaft;

a thrust bearing disposed between said rotor and said housing;

a first annular collar fitted over that part of said rotor to which said first pin is fitted, and providing a smooth outside surface;

a first sealing ring fitted over said smooth outside surface of said first annular collar, and sealing between it and said housing;

a second annular collar fitted over said rotor and projecting over the outside of said thrust bearing, and providing a smooth outside surface;

a second sealing ring fitted over the smooth outside surface of said second annular collar, and sealing between it and said housing; and,

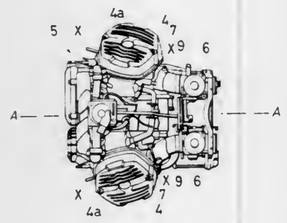
two radial bearings, one fitted between said stub shaft and said rotor, and the other fitted between said sleeve and said rotor.

4,214,644

MOTORIZED TWO-WHEEL VEHICLE HAVING A V-TYPE ENGINE WITH ANGULARLY OFFSET CYLINDER HEADS

Minoru Matsuda, Chofu, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,133
Claims priority, application Japan, Oct. 22, 1977, 52-141388[U]
Int. Cl.² B62K *11/04*; B02B *75/24*
U.S. Cl. 180—226 **3 Claims**



1. A motorized two-wheel vehicle comprising a frame, front and rear wheels mounted on said frame, a V-type engine mounted on the frame in a central portion thereof, said engine having a longitudinal axis and including at least one pair of left and right cylinders, and carburetors connected to respective cylinders and mounted rearwardly of the engine on the frame, each cylinder including a cylinder block and a cylinder head, said cylinder head having a cross-flow pattern with an axis, means mounting said cylinder head on said block in an angularly offset position such that the axis of the cross-flow pattern of the cylinder head extends inwardly towards the rear relative to the longitudinal axis of the engine and forms an angle therewith, and connecting pipes joining the carburetors with respective cylinder heads, each connecting pipe being substantially rectilinear.

4,214,645

METHOD OF AND MEANS FOR LOUDSPEAKER SOUND WAVE DISTRIBUTION

Richard G. Plourde, Ashland, Mass., assignor to Avid Corporation, East Providence, R.I.

Filed Nov. 9, 1978, Ser. No. 959,348
Int. Cl.² G10K *11/00*; H05K *5/00*
U.S. Cl. 181—148 **6 Claims**

1. A high frequency loudspeaker structure comprising a box having a front panel provided with an orifice, a face plate provided with an orifice, said face plate being secured to the face of said front panel with the orifices of said front panel and said face plate being in alignment, said face plate and said front panel each having a plurality of sides, said face plate having a smaller peripheral dimension than said front panel whereby when said face plate is secured to said front panel the sides of the face plate project forwardly from said front panel as raised edges, a forward wall having front and rear surfaces and being of a predetermined thickness and having an orifice therethrough, said forward wall having a plurality of sides equal in number to the sides of said face plate, the sides of said forward wall having strips projecting from the edges thereof whereby said strips engage with the edges of said face plate to connect said forward wall to said face plate, the orifice of said forward wall being aligned with said face plate orifice when said front wall strips are connected with said face plate edges; a speaker positioned in the opening defined by the orifices of said face plate, front panel and forward wall, said speaker having a mounting plate which includes a generally flat section over at least a portion thereof and having a central passage defined by a curved surface extending from said flat section, said mounting plate of said speaker extending forward of said face plate a distance substantially equal to the thickness of said forward wall, whereby when said forward wall is connected with said face plate the flat section of said mounting plate lays in the same plane as the front surface of said forward wall with said flat section of said mounting plate and said front surface of said forward wall providing a generally continuous and uninterupted surface.

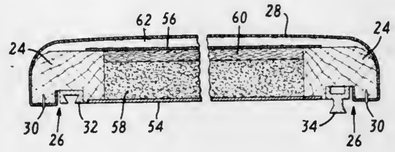


4,214,646

SPACE DIVIDER AND ACOUSTIC PANEL

Felipe Planes, High Point, N.C.; Charles A. Eckerline, Ladysmith, Wis., and Gordon A. Erickson, St. Paul, Minn., assignors to Conwed Corporation, St. Paul, Minn.

Filed Jun. 19, 1978, Ser. No. 916,496
Int. Cl.² E04B *1/343, 1/99*
U.S. Cl. 181—287 **19 Claims**



1. A free-standing space divider suitable for separation of spaces in an open office plan comprising:

(a) at least two half-panels having front and back faces, said half-panels being releasably connected together and easily separated and with at least a portion of their back faces in abutting relationship;

(b) support means operative to support said half-panels in a free-standing, substantially vertical position; and

(c) at least one said half-panel being an acoustic half-panel comprising:

(i) a frame having a front face and a back face;

(ii) a first layer affixed to said back face of the frame and a second layer affixed to said front face of the frame, a core being defined between said two layers and at least the second of said layers permitting the ingress of sound;

(iii) acoustically absorbent material in said core;

(iv) an acoustically absorbent blanket mounted on said front face exteriorly of said second layer;

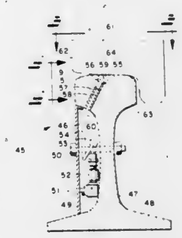
(v) a fabric cover on said front face exteriorly of said blanket.

4,214,647

AUTOMATIC RAIL GREASING APPARATUS

William M. Lutts, 3819 Valley Ridge Dr., Nashville, Tenn. 37211

Filed Feb. 24, 1978, Ser. No. 880,765
Int. Cl.² B61K *3/00*
U.S. Cl. 184—3 A **13 Claims**



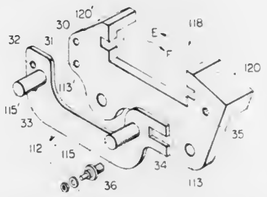
1. An automatic rail lubricating system, comprising detector means for detecting the presence of a train on such rail, said detector means comprising sensing means for sensing the wheels of a train, and lubricating means responsive to such train detection for applying a metered quantity of grease-like lubricant to such rail, said lubricating means including a pressurized supply of lubricant and valve means for delivering metered quantities of lubricant to such rail, and said detector means further including control means for operating said valve means to dispense metered quantities of lubricant in response to the sensing of a predetermined number of wheels by said sensing means.

4,214,648

VEHICLE DISC BRAKE

Toyoaki Kobayashi, Toyohashi, and Masakazu Ishikawa, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Aichi, Japan

Filed Dec. 2, 1977, Ser. No. 857,036
Claims priority, application Japan, Dec. 3, 1976, 51-145939
Int. Cl.² F16D *65/02*
U.S. Cl. 188—73.3 **7 Claims**



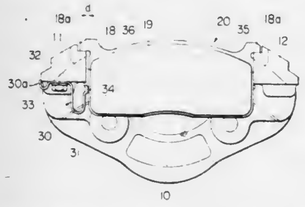
1. A disc brake which comprises a rotatable disc fixed to a rotating part of a vehicle chassis or body for rotation therewith, a pad assembly of friction material arranged on each side of said disc, a torque member fixed to a stationary part of the vehicle chassis or body and having pad assembly retaining means for supporting said pad assemblies adjacent opposite sides of said disc for axial sliding movement into engagement with said disc and preventing rotational movement thereon, an adapter being a separate and distinct part from said torque member and fixed to said stationary part in neighboring relation with the torque member so as to provide relief of clamping forces and drag forces due to normal tolerance when the brake is actuated, a caliper connected to said adapter, a pair of pilot means axially extending exclusively from and connected to one of said adapter and said caliper, said caliper being mounted for axial sliding movement over said disc as well as said pad assemblies and having means provided to effect said axial movement

of said pad assemblies into engagement with said disc, said pilot means further comprising a pair of parallel pins axially extending from one of said adapter and said caliper and a pair of bosses extending from the other of said adapter and said caliper respectively in alignment with said pins for slidably receiving therein said pins for axial movement of said caliper.

4,214,649
ANTIRATTLE SPRING FOR A DISC BRAKE OF VEHICLES

Fumio Fujimori, Anjoshi; Masatada Yokoi, Toyotashi; Masakazu Ishikawa, Toyotashi; Hiroshi Uemura, Toyotashi, and Akira Shirai, Toyoakeshi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Aichiken, Japan

Filed Jan. 9, 1978, Ser. No. 868,214
Claims priority, application Japan, Jan. 8, 1977, 52-1095
Int. Cl.[2] F16D *65/02*
U.S. Cl. 188—73.5 **6 Claims**

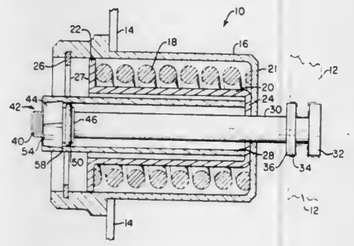


1. A disc brake having a rotor and including a pair of opposed friction faces, comprising:
a fixed torque taking member having a pair of anchoring faces extending in the direction of the axis of rotation of the rotor and circumferentially spaced so as to define a recess therebetween,
a pair of friction elements respectively disposed in a plane adjacent the opposed friction faces of the rotor,
hydraulic fluid acting means adapted to urge one of the friction elements into engagement with one of the friction faces of the rotor, wherein said torque taking member includes a pair of arms circumferentially spaced and extending in the direction of the axis of rotation of the rotor, having lower face portions, and having said anchoring faces in inner side faces thereof carrying said hydraulic fluid acting means in a sliding fitted condition on said arms in the direction of the axis of rotation of the rotor,
at least said one of the friction elements being slidably directly mounted on said arms within the recess in the direction of the axis of rotation of the rotor with a clearance formed between one of said anchoring faces and a corresponding edge of said one of said friction elements, and
antirattle means including a U-shaped resilient sheet metal middle portion located entirely outside of the clearance and disposed within the plane of said one of said friction elements with one end secured to the lower face portion of one of the arms and the other end engaging said corresponding edge of said one of the friction elements to circumferentially urge the latter towards anchoring against the opposed anchoring face of the other of said arms while maintaining said clearance due to an elastic energy prestored within said resilient sheet metal middle portion when installed, wherein the other end of the antirattle means is rounded to form an arc such that said corresponding edge of said one of said friction elements is in a plane tangent to said arc.

4,214,650
BRAKE ADJUSTER HAVING MULTI-SIDED INTERNAL BROACH

Richard L. Crossman, Tallmadge, and Robert J. French, Wadsworth, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Aug. 14, 1978, Ser. No. 933,406
Int. Cl.[3] F16D *65/54*
U.S. Cl. 188—196 R **4 Claims**

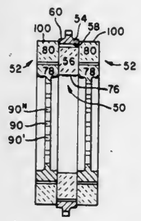


1. A brake adjuster comprising:
a casing;
a spring follower maintained within said casing and operative between first and second ends thereof;
a tube in contacting engagement with said spring follower and movable therewith;
a shaft centrally maintained within said tube, and passing through an end of said spring follower, said shaft being adapted for connection with a pressure plate;
a broach, having a plurality of cutting edges thereon, connected to said shaft and in cutting engagement with the interior surfaces of said tube; and
a guide interconnected between said broach and said shaft for centrally maintaining said shaft within said tube, said guide including a plurality of guide points positioned between adjacent cutting edges and a seal about said guide points and in contacting engagement with the interior surface of said tube.

4,214,651
FRICTION DISC FOR AN AIRCRAFT BRAKE

Joseph A. Cunningham, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 6, 1978, Ser. No. 958,214
Int. Cl.[2] F16D *65/12*
U.S. Cl. 188—251 R **10 Claims**

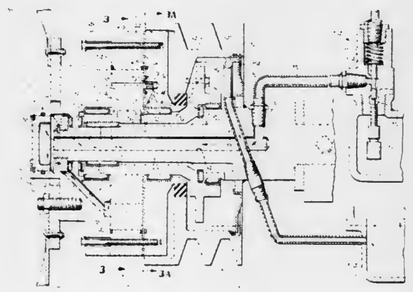


1. In a wheel and brake assembly having a series of disc members which are moved into engagement with each other to effect a brake application, each of said disc members being subjected to degradation caused by oxidation resulting from a brake application, the improvement wherein each disc member comprises:
a metallic drive ring having rubbed surfaces and non-rubbed surfaces, said drive ring having a first series of drive slots adjacent to said non-rubbed surfaces and a series of torsional keys adjacent to said rubbed surfaces; and
a carbon friction member having friction producing surfaces that extend from a first peripheral surface to a second peripheral surface, said first peripheral surface having a second series of drive slots thereon which engage said series of torsional keys to establish a coupling, said coupling having sufficient flexibility to permit said metallic drive ring and said carbon friction member to respond to temperature levels without affecting each other, said friction producing surfaces adjacent to said second peripheral surface engaging said rubbed surfaces on adjacent metallic drive rings to establish barriers which inhibit the passage of air to said coupling during a brake application and thereby prevent degradation to said first peripheral surface.

4,214,652
VARIABLE POWER TRANSMISSION AND ABSORPTION DEVICE

Raymond N. Quenneville, Suffield, Conn., assignor to The Jacobs Manufacturing Company, Bloomfield, Conn.

Filed Dec. 1, 1978, Ser. No. 965,424
Int. Cl.[2] F16D *31/00*
U.S. Cl. 192—58 R **37 Claims**



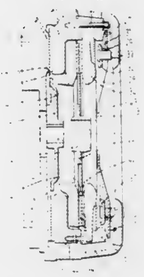
1. An apparatus comprising a first member, a second member, positive displacement pump means capable of doing work on a compressible fluid and recovering substantially all of such work during an expansion cycle and having an inlet port and an outlet port and interconnecting said first member and said second member, said positive displacement pump being adapted to pump a compressible fluid, an incompressible fluid and a mixture of a compressible fluid and an incompressible fluid, flow control means, duct means communicating between said flow control means and said inlet port of said positive displacement pump means, pressure control means communicating with said outlet port of said positive displacement pump means, and sump means containing an incompressible fluid and communicating with said flow control means.

4,214,653
FRICTION CLUTCHES

Howard Slack, Sheffield, England, assignor to GKN Transmissions Ltd., Birmingham, England

Filed Oct. 25, 1978, Ser. No. 955,122
Claims priority, application United Kingdom, Nov. 1, 1977, 45353/77
Int. Cl.[2] F16D *13/56, 21/06*
U.S. Cl. 192—48.7 **4 Claims**

1. A dual friction clutch comprising
a driving member;
a first driving friction face on the driving member;
a first driven member having two friction faces, one for engagement with the first driving face;
a first pressure plate arranged to engage the second friction face of the first driven member;
a second driving friction face on the driving member;
a second driven member having two friction faces, one for engagement with the second driving face;
a second pressure plate arranged to engage the second friction face of the second driven member;
a cover member secured to the driving member;
a first plate spring interposed between the cover member and the first pressure plate to urge the first driven member into frictional engagement with the first driving face;



a second plate spring interposed between the first pressure plate and the second pressure plate to urge the second pressure plate into frictional engagement with the second driving face, the second plate spring exerting a lower force than the first plate spring so as only partially to counteract the force of the first spring on the first pressure plate; and
release means operatively connected to retract the first pressure plate on initial release movement thereof and for also retracting the second pressure plate on further release movement thereof.

4,214,654
COIN TRANSFER MEANS FOR VENDORS

Harry H. Pryor, Crestwood, and Calvin L. Chumley, St. Louis County, both of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Dec. 22, 1977, Ser. No. 863,122
Int. Cl.[2] G07F *1/04*
U.S. Cl. 194—1 E **31 Claims**



1. A vendor comprising dispensing means, coin controlled means for controlling said dispensing means, and guide means

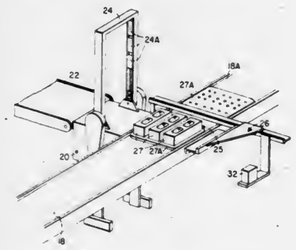
for guiding coins to said coin controlled means, said guide means having an inlet at an upper level above said coin controlled means, coins entering the guide means through said inlet gravitating down from said inlet to said coin controlled means, and coin transfer means for receiving coins at a level below said upper level, elevating them to said upper level, and entering them in said upper level inlet, said coin transfer means comprising a lower inlet for entry of coins therein at said lower level, a conveyor having a coin lifter thereon, said conveyor being movable to carry the lifter through a path extending from the lower inlet to the upper inlet, the lifter being movable with the conveyor to a starting position wherein it underlies a coin deposited for a desired vend in the coin transfer means through said lower inlet, and means for driving the conveyor for upward travel through said path for lifting of said coin by the lifter up to said upper level, said coin then moving off the lifter and passing into the upper level inlet for said desired vend.

4,214,655

ARTICLE HANDLING APPARATUS ESPECIALLY USEFUL FOR HANDLING CONCRETE BLOCKS

Robert R. Bernham, Apache Junction, and Harold Christy, Phoenix, both of Ariz., assignors to George R. Cogar, Frankfort, N.Y.

Filed Dec. 9, 1977, Ser. No. 859,044
Int. Cl.[2] B65G *37/00*
U.S. Cl. 198—374 **1 Claim**



1. A concrete block inverting machine comprising, in combination, means for stopping and positioning blocks of concrete that are moving on a conveyor, said block inverting means cooperatively associated with said stopping and positioning means for removing multiple blocks at one time from said conveyor and placing said removed blocks down in an inverted position, said block inverting means comprising a block transfer arm located on one side of said conveyor, and gripping means located within said block transfrer arm for gripping said blocks of concrete, said gripping means comprising a pair of gripping shoes, and pneumatic pressure tube means for moving each of said gripping shoes into gripping contact with said blocks of concrete said block inventing means further comprising block pushing means located on the opposite side of said conveyor from said block transfer arm for alternatively pushing said blocks off of said conveyor instead of inverting said blocks.

4,214,656

CAP ORIENTING AND FEEDING APPARATUS

Walter McDonald, Landing, and Norbert F. Seitel, Gillette, both of N.J., assignors to Norwalt Design, Inc., Whippany, N.J.

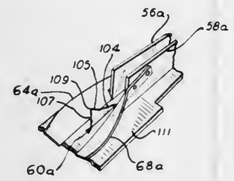
Filed Jun. 26, 1978, Ser. No. 918,773
Int. Cl.[2] B65G *47/24*
U.S. Cl. 198—380 **8 Claims**

1. Apparatus for accepting an initially presented population of randomly oriented container caps and providing an output in-line stream of said caps wherein the open ends of the caps face in an upward direction; said apparatus comprising in combination:

means for accepting said randomly oriented caps and feeding an in-line stream of said caps wherein the caps are oriented with their diameters substantially in a vertical plane;

inclined guide chute means having a base and including an input section for receiving said caps at said vertical orientation, an output section whereat said caps reside along their diameters, and a transition zone between said input and output sections whereat said caps may gravitationally tip and fall from the said vertical plane to their surfaces including said diameters; and

means for biasing the said tipping of said caps so that said caps fall with the open ends thereof facing upwardly, said means comprising a knife-edge at the bottom of said guide chute means, said edge extending longitudinally and centrally along at least the lower end of the said input section



and into said transition zone and ending in a portion sloped upwardly from said chute base and defined by first and second adjoined sections, with said second section being more steeply sloped from said chute base than said first section and terminating at an abrupt edge; guide walls being provided at the sides of the said input section for sandwiching and constraining said caps against tipping as said caps advance with the peripheries thereof riding on said knife-edge; said transition zone including diverging walls and the space immediately downstream of said abrupt edge defining a zone for unconstrained and unguided fall of said caps, whereby at said zone the caps riding on said knife-edge become unconstrained and tip and fall in the direction of their top surfaces, due to the center of gravity of said caps effecting a tipping torque about said knife-edge support in said direction, and due to the unconstrained and unguided fall of said caps upon passing said abrupt edge.

4,214,657

TOOTHBRUSH HOLDER AND STERILIZER

Billy G. Winston, 1900 E. 4th St., Fort Worth, Tex. 76102

Filed Oct. 13, 1978, Ser. No. 951,193
Int. Cl.[2] B65D *81/24*; A47K *1/09*
U.S. Cl. 206—209.1 **2 Claims**

1. A toothbrush holder and sterilizer comprising;

receptacle means comprising structure forming a plurality of side-by-side receptacles each having a cavity for receiving a toothbrush,

each of said receptacles having first and second open opposite ends,

first removable cap means comprising a single member adapted to close said first ends of said receptacles,

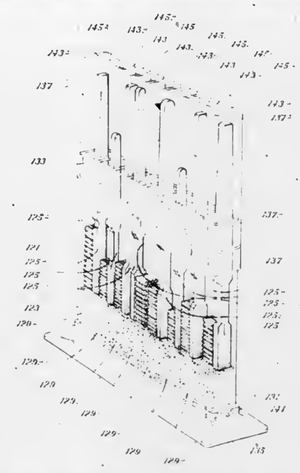
second removable cap means comprises a single member adapted to close said second ends of said receptacles, and

a plurality of removable, absorbent, sponge-like means each carrying a sterilizing fluid adapted to be inserted into said cavities of said receptacles adjacent said first cap means,

said removable, absorbent, sponge-like means each having a size sufficient to engage the walls of its cavity,

said receptacles with said removable, absorbent, sponge-like means located in said cavities and having their opposite ends closed with said first and second cap means, being adapted to enclose a toothbrush within each of said cavities,

said cavities of said receptacles being free from obstructions whereby said removable, absorbent, sponge-like means



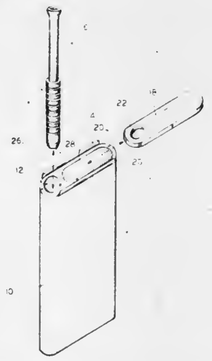
may be pushed within said cavities from said second ends to said first ends when said second cap means is removed and out of said first ends when said first caps means is removed.

4,214,658

SMOKING SYSTEM

Floyd Crow, Cresthill, Ill., assignor to Simple Pleasures, Inc., Romeoville, Ill.

Filed Aug. 21, 1978, Ser. No. 935,675
Int. Cl.[2] A24F *9/00*
U.S. Cl. 206—244 **6 Claims**



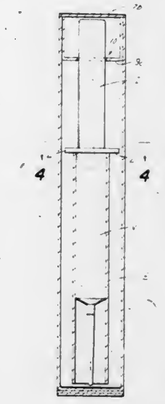
1. A smoking system comprising: a receptable having a first cavity and a second cavity therein, said second cavity being shallower than said first cavity and having a thick base; openings in said receptacle leading to each of said cavities; smoking pipe means removably disposed in said first cavity and having a bowl portion disposed on one end thereof; the length of said smoking pipe means being greater than the depth of said second cavity; smoking material disposed in said second cavity whereby said bowl portion of said smoking pipe means can be filled with said smoking material by inserting said smoking pipe means in said second cavity and tamping said bowl portion of said smoking pipe means against said thick base of said second cavity while gripping the other end of said smoking pipe means; cover means associated with said receptacle across said openings of said cavities, said cover means movable to alternatively close or expose one or both of said cavities.

4,214,659

EMERGENCY MEDICATION PACKAGE

Harold R. Jaeschke, Milwaukee, and Daniel J. Boyle, Hartland, both of Wis., assignors to Champion International Corporation, Stamford, Conn.

Filed Oct. 2, 1978, Ser. No. 947,773
Int. Cl.[2] B65D *83/10*
U.S. Cl. 206—365 **2 Claims**



1. An emergency medication package for a hypodermic syringe composed of a cylinder having an open end provided with finger engaging ears and another end provided with a projecting needle and a medication vial connected to the open end and slidable into same for dispensing of the medicine through the needle, said package being formed from a one piece foldable cardboard blank and comprising a generally tubular package body having upper and lower spaced ends; a longitudinal partition dimensioned to receive the cylinder therewithin, said longitudinal partition extending within said package body from said lower end towards but short of said upper end and wherein the distance from the upper edge of said longitudinal partition to the lower end of said package body is greater than the total length of said cylinder and said needle such that the finger engaging ears of the cylinder rests on the upper edge of said longitudinal partition, which thus spaces the needle from the lower end of the package body and arrests the syringe against movement towards the lower end, thereby reducing the likelihood of breakage of the syringe, said longitudinal partition comprising a plurality of sidewalls hingedly joined together by fold lines in said blank and forming a tubular structure within said tubular package body which circumscribes said cylinder, at least one of said side walls being hingedly connected by a fold line to said tubular package body; and a transverse partition extending across the interior of said package body in the region of said upper end and having a cut out in which a portion of the vial is receivable, said transverse partition comprising a flap member hingedly connected by a fold line in said blank to said tubular package body.

4,214,660

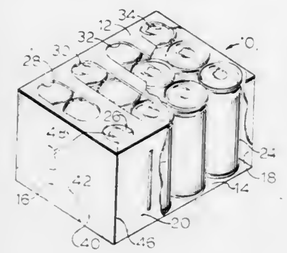
CARTON FOR BEVERAGE CANS

Letcher B. Hunt, Jr., 2325 W. Avon Rd., Rochester, Mich. 48063

Filed Mar. 19, 1979, Ser. No. 21,736
Int. Cl.[2] B65D *5/46*
U.S. Cl. 206—427 **15 Claims**

1. A carton for round cans all having the same diameter, said

carton comprising: a rectangular box having front and back panels, two end panels, a bottom panel, said front and back panels being spaced apart by approximately "n" can diameters, said end panels being spaced apart by approximately "m" can diameters, said cartons providing "n" times "m" can positions and being adapted to receive a can in each position with the can bottom and top adjacent the bottom and top panels, respectively, one of said bottom and top panels defining a matrix of inspection holes in an arrangement such that a hole boundary extends across each can position within the perimeter of each



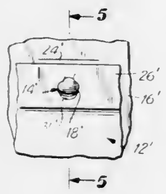
position thereby exposing a portion of each can to view and retaining each can in position, one of the other panels defining a tear line circumscribing a first portion of said other panel whereby said first portion is adapted to be removed from a second portion of said other panel to provide an access opening in said box for removing the cans from the carton and returning the cans to the interior of the carton, and an additional panel connected with one of the other panels and adapted to extend across said access opening to retain the cans which are returned to the interior of the carton.

4,214,661

POINT OF PURCHASE DISPLAY

Mark A. Turetsky, 598 Broadway, New York, N.Y. 10012, and Robert E. Robbins, 337 Garden City St., Islip Terrace, N.Y. 11752

Filed Apr. 27, 1979, Ser. No. 34,034
Int. Cl.[2] B65D *73/00*
U.S. Cl. 206—466 **14 Claims**



1. A display card for holding an article, said article having a hole therein, comprising:

a sheet comprising a tearable material;

a tab, said tab being attached at one end to said sheet, the other end of said tab being free and extending away from said sheet, at least a portion of said free end of said tab being wider than the width of at least a portion of said attached end of said tab and the width of said hole in said package, said tab being insertable through said hole, whereby, because of said width differential between said tab and said hole, said article is retained on said card after insertion of said tab through said hole, and said article may be removed from said card by pulling said article;

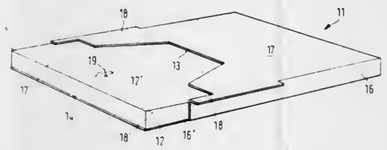
a slit in said sheet, said slit being proximate but not touching said attached tab end, said slit limiting the possible extent of any tearing of said sheet when said article is pulled in the direction of said slit for removal of said article from said display card.

4,214,662

SHEET DISPENSING DEVICE FOR USE WITH COPYING MACHINES, AND A CONTAINER FOR THE STACK OF SHEETS

Walter K. Jonas, Neuss, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 30, 1977, Ser. No. 865,942
Int. Cl.[2] B65D *85/48*
U.S. Cl. 206—555 **2 Claims**



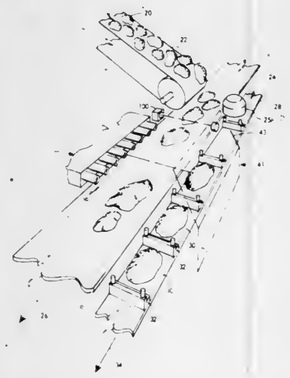
1. A container for keeping ready a stack of sheets in a sheet dispensing device for use in office machines, in particular copying machines, comprising an upper and a lower cover face parallel to the sheets in a stack of sheets, two longitudinal sides joining said upper and lower faces, a front, and a rear face, the front face of which, as well as part of the upper cover face, is removable along a parting line in said longitudinal sides and in said upper cover face for the removal along said line of a portion of said container, and a flange-like projection on said upper cover face and planar with said upper cover face, extending laterally beyond at least one longitudinal side and disposed such that said projection extends from said parting line of said longitudinal side along approximately half of the remaining portion of said upper cover face.

4,214,663

TRANSFER APPARATUS FOR SELECTIVELY TRANSFERRING OBJECTS FROM A DELIVERY CONVEYOR TO SELECTED SECTIONS OF A RECEIVING CONVEYOR

Fredrick R. Schopp, and Gordon A. Edmundson, both of Seattle, Wash., assignors to Oscar Lucks Company, Seattle, Wash.

Filed Jul. 11, 1977, Ser. No. 814,427
Int. Cl.[2] B07C *5/04*
U.S. Cl. 209—552 **20 Claims**



1. A transfer apparatus for selectively transferring objects from a delivery conveyor to selected sections of a receiving conveyor of the type having a longitudinal portion thereof juxtaposed the delivery conveyor along a portion of the delivery conveyor intermediate to its ends comprising:

(a) means for detecting the position of the objects on the delivery conveyor;

(b) means for detecting the position of the selected sections of the receiving conveyor;

(c) means for transferring objects from the intermediate portion of the delivery conveyor transversely with respect to the direction of travel of the delivery conveyor to the receiving conveyor sections; and

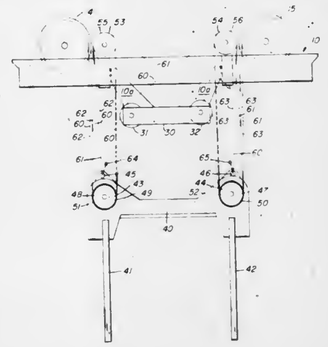
(d) means, responsive to the object detection means and the receiving section detection means, for actuating the object transfer means to effect the transfer of an object from the delivery conveyor to a section of the receiving conveyor.

4,214,664

CRANE SAFETY REEVING

Karl L. Polen, Alliance, Ohio, assignor to The Alliance Machine Company, Alliance, Ohio

Filed Aug. 24, 1978, Ser. No. 936,586
Int. Cl.[2] B66C *17/06*
U.S. Cl. 212—142.1 **10 Claims**



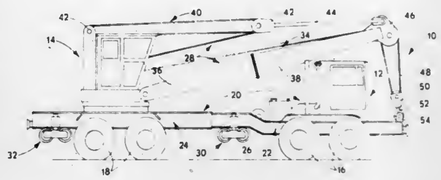
1. An overhead crane comprising a traveling trolley, spaced apart cable take-up means on said trolley, separate drive means for each cable take-up means, a lift beam suspended below and movable vertically relatively to the traveling trolley, at least four cables, two connected to be taken up by one take-up means and the other two connected to be taken up by the other take-up means, a first set of sheaves on the trolley adjacent said one take-up means, a second set of sheaves on the trolley adjacent the other take-up means, a third and a fourth set of sheaves respectively at opposite ends of the lift beam, an intermediate sheave deck depending from said trolley, a fifth and sixth set of sheaves respectively at opposite ends of said sheave deck intermediate the first and third and second and fourth sets of sheaves respectively, said two cables having one cable being reeved in part around said first and third sets of sheaves and dead ending on said lift beam adjacent said third sheaves and the other cable reeved in part around said third set of sheaves and around said second and fourth sets of sheaves to dead end on said lift beam adjacent the fourth set of sheaves, and the other two cables having one cable being reeved in part around said second and fourth sets of sheaves and dead ending on said lift beam adjacent said fourth sheaves and the other cable reeved in part around said fourth set of sheaves and around said first and third sets of sheaves whereby both ends of the lift beam are in part suspended from each of the two take-up means, each of said take-up means having an equal vertical reeving.

4,214,665

TRUCK MOUNTED RAILROAD CRANE BOOM SECTION

Timothy L. Newman, 700 N. Liberty, Jerseyville, Ill. 62050

Filed Jun. 1, 1978, Ser. No. 911,627
Int. Cl.[2] B66C *23/06*
U.S. Cl. 52—726 **5 Claims**



1. A crane boom assembly for use with a crane boom superstructure in a railroad vehicle or the like, comprising two elongated boom sections, each boom section having an enclosed exterior wall with at least two spaced cross brace elements extending substantially normal to the elongated construction of each boom section, each cross brace element having a L-shaped cross sectional shape with each cooperating pair of cross brace elements having an X-shaped configuration, interconnecting strut mmeans extending between the free ends of the X-shaped cross brace elements, and each of said X-shaped cross brace elements contacting the inner surface of the enclosed exterior wall through the interconnecting strut means in order to support each boom section against twisting or bending thereof along the elongated construction thereof.

4,214,666

TUBULAR DISCHARGE ENVELOPE COMPOSED OF A POLYCRYSTALLINE TRANSPARENT ALUMINA AND A HIGH-PRESSURE VAPOR DISCHARGE LAMP USING THE SAME

Isao Oda, Nagoya; Masayuki Kaneno, Tokoname, and Noboru Yamamoto, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Nov. 24, 1978, Ser. No. 963,397
Claims priority, application Japan, Dec. 2, 1977, 52-144035
Int. Cl.[2] H01K *1/28;* **H01J** *61/30;* **C01F** *7/02*
U.S. Cl. 220—2.1 R **3 Claims**

1. A tubular discharge envelope composed of a polycrystalline transparent alumina for a high-pressure vapor discharge lamp, characterized in that the polycrystalline transparent alumina contains 0.01 to 0.2% by weight of each of MgO, La_2O_3 and Y_2O_3 and has an average crystal grain size of 20 to 60 μm and crystal grains of not more than 20 μm occupy not more than 30% per unit area of the envelope.

3. In a high-pressure vapor discharge lamp having a tubular discharge envelope of polycrystalline transparent alumina, the improvement comprising that the polycrystalline transparent alumina contains 0.01 to 0.2% by weight of each of MgO, La_2O_3 and Y_2O_3 and has an average crystal grain size of 20-60 μm. and crystal grains of not more than 20 μm. occupying not more than 30% per unit area of said envelope.

4,214,667

SCREW MOUNTING MECHANISM FOR ELECTRICAL OUTLET BOX

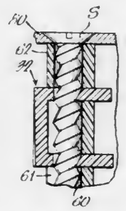
John L. Lass, Homewood, Ill., assignor to Square D Company, Palatine, Ill.

Filed Aug. 20, 1979, Ser. No. 68,314
Int. Cl.[2] F16B *39/00;* **H02G** *3/08*
U.S. Cl. 220—3.2 **22 Claims**

1. An outlet box having a plurality of substantially linear walls defining a receptacle space with at least one wall having mounting means for supporting a screw having a peripheral thread, said one wall having an elongated passage for receiving

said screw and a pair of axially spaced slots extending transversely of said elongated passage, retaining means including at least two retaining elements in the respective slots, each retaining element having an opening substantially equal to a major diameter of said thread with at least one of said openings having its center axially offset from the axis of said elongated passage so that an axis through the centers of said openings is angularly related to the axis for said elongated passage, and at least one flexible projection extending from the periphery of each opening towards the center and adapted to engage an inclined surface of said thread to retain said screw in said elongated passage.

17. Mounting means for a threaded screw having a major thread diameter and a root thread diameter comprising a screw mounting member having an elongated screw receiving passage with a pair of axially spaced slots extending transversely of said passage, a non-metallic U-shaped clip having a pair of spaced legs received into said slots with each leg having a generally circular opening therein with the center of at least



one opening being transversely offset from an axis for said elongated passage, each leg having a projection extending generally radially from the periphery of an associated opening toward the center thereof for engaging a surface of said thread to releasably retain said threaded screw in said passage.

20. A non-metallic mounting clip for use in attaching a threaded screw having a major thread diameter and a minor thread diameter to a wall, said clip being generally U-shaped and having a bite portion and a pair of generally parallel legs extending from an inner surface of said bite portion, each leg having a substantially circular opening spaced from said inner surface with the spacing of the center of one opening being greater than the spacing of the center of the other opening, each opening having an integral projection extending from the periphery thereof toward said bite portion and having an arcuate inner edge having a radius of approximately one-half said minor thread diameter, each projection having an inclined surface extending from said edge toward the periphery of said opening and each opening having a diameter substantially equal to one-half said major thread diameter.

4,214,668

ELECTRICAL BOX AND MOUNTING BRACKET ASSEMBLY

Steve W. Neff, Clinton, Iowa, and Harold T. Pate, Solon, Ohio, assignors to Indian Head Inc., New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,152
Int. Cl.² H02G *3/08;* **F16B** *2/24*
U.S. Cl. 220—3.3 **8 Claims**

1. An electrical outlet box and mounting bracket assembly comprising:

a synthetic resin box forming an open-sided enclosure having at least one side wall;

a pair of spaced channel elements on said side wall, each of said channel elements defining a respective channel space and including:

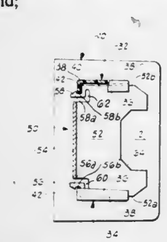
a retention plate extending substantially parallel to said side wall;

a spacer plate projecting between and interconnecting the retention plate and the side wall; and

an engaging tab projecting normal to said retention plate and to said spacer plate at one end of the respective channel space, the distance separating the engaging tabs being less than the distance separating the spacer plates; and

an L-shaped bracket including:

an engaging flange having a first edge and having side edges extending into the channel elements at a location between the box and the respective retention plates of the channel elements into which the respective side edges extend;



a mounting flange extending normal to the plane of the engaging flange and having one edge thereof connected to said first edge of said engaging flange; and

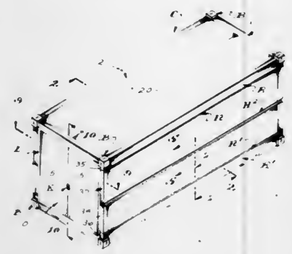
flexible, resilient tongue means connected to said engaging flange adjacent its first edge connected to said mounting flange and engaging said engaging tabs to prevent movement of said bracket in a direction normal to the plane of said mounting flange, said tongue means including undercuts receiving said engaging tabs.

4,214,669

CARGO CONTAINER

William W. McQuiston, 1664 Shattuck Ave., Berkeley, Calif. 94709

Filed Jan. 15, 1979, Ser. No. 3,406
Int. Cl.² B65D *7/26;* **B65J** *1/02*
U.S. Cl. 220—6 **9 Claims**



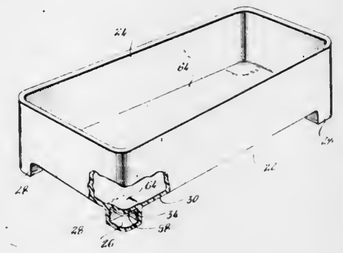
1. An elongate, box-like collapsible cargo container with rectangular top, bottom and end walls and sectional side walls, each wall having inside and outside surfaces on spaced inside and outside planes; said top and bottom walls having outer rectangular load-supporting frames including laterally extending spreaders and longitudinally extending side beams and inner panel structures closing those frames; said sectional side walls including top and bottom longitudinally extending vertical rails integrally joined with their related beams of the top and bottom walls and establishing straight, flat, downwardly and upwardly disposed edges and elongate rectangular normally vertical upper and lower panels with straight, flat upper and lower edges normally establishing flat bearing engagement with their opposing edges of the side wall structures, normally vertical load supporting sectional columns at the ends of the side walls having top and bottom sections fixed to the ends of their related rails and to the beams and spreaders of their related top and bottom wall frames and intermediate upper and lower sections fixed to their related ends of their related sections; the adjacent sections of the columns have flat normally opposing ends; a first longitudinal hinge with its axis substantially coincidental with the normal outside planes of the panels and the plane of the opposing edges thereof and fixed thereto to extend longitudinally of the panel and between their related column sections, second hinges extending longitudinally of and connecting the rails with their related panels on axes substantially coincidental with the inside planes of the panels and the planes of the opposing edges of the panels and the rails and extending between the column sections related thereto; said end walls have unitary rectangular outer frames with top, bottom and side members and inner panel closures, the outer frames normally occur within the inside ends of the top, bottom and side walls with their outside planes substantially coincidental with the end planes thereof, elongate lateral hinges with axes substantially coincidental with the inside planes of the end walls and the bottom wall and securing the end walls to their related spreaders of the frame of the bottom wall, the top and side members of the end wall frames have normally longitudinally outwardly opening channels at and coextensive with their outermost edges, the column sections at the ends of the side walls and the spreaders at the ends of the top wall have elongate longitudinally inwardly projecting flanges on planes inward of the inside planes of the top and side walls and normally slidably frictionally engaged in and establishing stopped engagement at the bottoms of the channels of their related end frame members, said channels reinforce their related flange sections and bridge between and releasably lock and hold the flanges of the top, bottom, upper and lower column sections in fixed vertical alignment with each other, and lock means engageable with and between related channels and flanges to normally releasably retain the flanges in said channels; the end walls are pivotally movable longitudinally inwardly and downwardly to a horizontal collapsed position atop the bottom wall between the lower rails of the side walls, the panels of the side walls are pivotally movable laterally inwardly and downwardly to horizontal collapsed positions atop the end walls and with the top rails supporting the top wall in a down position thereabove.

4,214,670

METHOD FOR ROTATIONALLY MOLDING A HOLLOW ARTICLE AND ARTICLE MADE THEREBY

Sidney Berger, Great Neck, and John J. Cubieta, Bayshore, both of N.Y., assignors to United Utensils Company, Inc., Port Jefferson, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,366
Int. Cl.² B65D *1/00;* **B29C** *5/04*
U.S. Cl. 220—70 **9 Claims**



1. A rotationally molded hollow rigid plastic tank having a main compartment bounded by a bottom wall and a side wall and a plurality of hollow legs extending below the tank bottom and being an integral part of the tank;

said hollow legs each having a generally flat metallic cover overlying the hollow of a leg and extending into said tank side wall;

said tank bottom wall having separator segments respectively extending over said covers to merge with said side wall in a contiguous manner to form a smooth uninterrupted bottom surface for said main compartment;

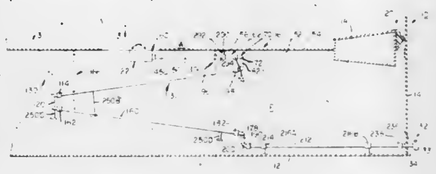
with each of said hollow legs having a leg wall which is integrally joined by rotational molding of the tank to the tank side and bottom walls with the hollow of said legs being isolated from the main compartment of said tank by the separator segments.

4,214,671

FLOATING ROOF DRAINAGE SYSTEM

Dean K. McKibbin, Warren; Richard E. Hills, Coraopolis; Joel Blackman, and Franklin A. Kuhs, both of Pittsburgh, all of Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Dec. 20, 1978, Ser. No. 971,252
Int. Cl.² B65D *87/18*
U.S. Cl. 220—219 **39 Claims**



1. A floating roof drainage system comprising:

a roof drain means on the floating roof;

a plurality of pipes including a first pipe connected to said drain means and a second pipe connected to another pipe connected to a drain on a tank associated with the floating roof;

a plurality of rigid pipe connections connecting individual pipes of said plurality of pipes to the next adjacent ones of said plurality of pipes, said connections being welded to said connected pipes to produce a welded connection between said connected pipes, said plurality of pipes being arranged to form a loop, said welded connections making said loop rigid and essentially continuous from said roof drain means to a tank drain whereby leakage in a floating roof drainage system is minimized;

said individual pipes each being prestressed to a predetermined degree; and

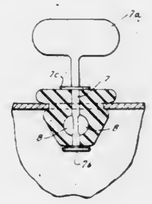
connecting means connecting selected pipes of said plurality of pipes to the floating roof.

4,214,672

CAN STOPPER

Hector Peniche, 32-55 Steinway St., Long Island City, N.Y. 11103

Filed Feb. 28, 1979, Ser. No. 15,776
Int. Cl.² B65D *53/00*
U.S. Cl. 220—234 **7 Claims**



1. A closure or stopper adapted to sealingly close an opening in the top of a beer or soda can, comprising in combination,

a closure element made of elastic material and having a cross-section of configuration and shape that mates with the configuration and shape of the opening in the top of

said can, said closure element having a bore extending theretrough;

an operating member having a shank portion which is rotatably mounted in said bore; said shank portion having at least one projection laterally extending therefrom the maximum lateral extent of which exceeds the minimum radius of said bore;

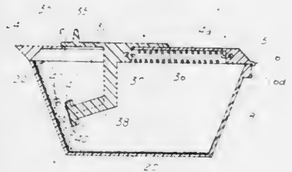
whereby when said closure element has been inserted in the can opening and the operating member is rotated a predetermined angular distance said closure element is biased against the walls of the can opening thereby sealingly closing it.

4,214,673

CUP-SHAPED COFFEE FILTER DISPENSER

Forrest D. Heath, Farmington, N. Mex., and Rodney K. Hoctor, Harlingen, Tex., assignors to Olman Heath Company, Farmington, N. Mex.

Filed Jun. 19, 1978, Ser. No. 916,595
Int. Cl.² B65H *3/02*
U.S. Cl. 221—259 **4 Claims**



1. A coffee filter dispenser for dispensing a single filter from a stack, comprising:

(a) cup-shaped filter holder means, of the general configuration of the filters, formed of an elastomeric material and provided with an outwardly sloped wall from a bottom wall to a full opening which is substantially larger than said closed bottom walls;

(b) cover means for said full opening enclosing said holder means integrally secured thereto and hingedly attached thereto by a thin section of said elastomeric material;

(c) there being a slit in said cover means directed from said hinged attachment toward and spaced from, an edge of said cover means;

(d) an arm reciprocally extending through said slit and terminating at its lower end adjacent said sloped wall, and arm handle means reciprocably seated on said cover means and secured to said arm through said slit, said arm handle means arranged to move said arm along said slot thereby moving said lower end of said arm toward and away from said sloped wall and lifting said cover as said arm moves up said sloped wall;

(e) an abrasive surface filter contacting and holding means secured to the end of said arm whereby said arm may be moved so that said contacting and holding means may contact a filter in said holder means, and,

(f) cover handle means depending outwardly from said cover means in alignment with said slot.

4,214,674

HYDRO PISTOL WITH PRESSURIZED WATER CONTAINER AND WITH VARIABLE WATER EJECTION CAPABILITY

Lawrence T. Jones, Playa Del Rey; Anson Sims, Granada Hills, and Ashley G. Howden, Los Angeles, all of Calif., assignors to California R & D Center, Culver City, Calif.

Filed May 30, 1978, Ser. No. 910,883
Int. Cl.² A63H *33/30*
U.S. Cl. 222—79 **16 Claims**



1. An improved toy water gun assembly for providing an extended projection of water comprising:

a portable container for storing water;

means for pressurizing the container to provide and maintain a supra-atmospheric pressure in the container to propel the water;

means for transporting the container in a position relative to the operator to permit pressurization of the container;

gun means fluidly connected to the container for permitting relative movement to permit discretionary aiming and for releasing a predetermined projection of water including, a housing, a flexible hose, a nozzle with an orifice limiting the water projection to a narrow stream, the hose and the nozzle being mounted in the housing, and

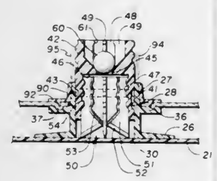
means for clamping the hose comprising a lever pivotally mounted in the housing, a first spring, the first spring continuously biasing the lever against the hose thereby clamping the same, a trigger piece pivotally mounted in the housing, the trigger piece being operatively connected to the lever, and a second spring, the second spring being mounted in the housing and urging the trigger piece away from the lever, a force exerted by the second spring capable of being overcome by a pressure pulling the trigger whereby a motion of the trigger piece is transmitted to the lever causing the lever to move away from the hose allowing flow of water therethrough.

4,214,675

LIQUID POUCH IN A CARTON WITH A POURING SPOUT

Justin M. Schmit, 126 Sea Island La., Boca Raton, Fla. 33432

Filed Feb. 27, 1978, Ser. No. 881,691
Int. Cl.² B67B *7/26, 7/28*
U.S. Cl. 222—83 **12 Claims**



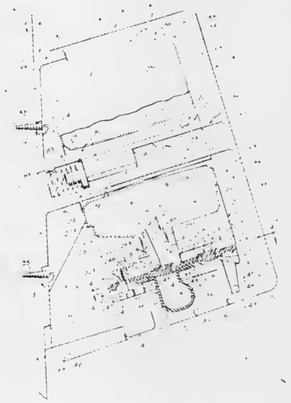
12. A container for dispensing fluids comprising: a supporting structure for a liquid containing pouch, means included in the supporting structure for mounting the pouch therein, a flexible pouch of plastic material positioned in said supporting structure, said pouch being formed of seamed edges defining sides and a top, a spout sealed to the top of the pouch, said spout being positioned through the mounting means of the supporting structure and attached thereto, a piercing element telescopically fitted within the spout to open the pouch, said piercing element being carried by a tubular member slidably positioned in the spout, means included in the mounting of the tubular member in the spout to permit the tubular member and the piercing element to advance relative to the spout to slit the pouch, and means included in the mounting of the piercing element on the tubular member to advance the piercing element further into the pouch upon relative motion between the tubular member and piercing element to fold the slit portion of the pouch.

4,214,676

DISPENSER FOR LIQUID SOAP WITH TELESCOPING HOUSING MEMBERS AND CONTAINER THEREFOR

Antonio M. Cassia, Milan, Italy, assignor to Steiner Corporation, Salt Lake City, Utah

Filed May 8, 1978, Ser. No. 903,867
Claims priority, application Italy, Nov. 25, 1977, 51941 A/77
Int. Cl.² B67B *7/28*; B67D *5/40*
U.S. Cl. 222—83.5 **22 Claims**



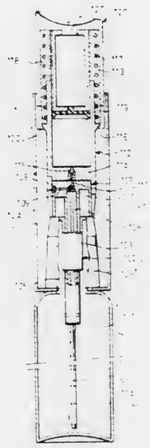
1. A dispenser for liquid soap comprising an enclosed housing including two telescoping housing members shiftable with respect to each other between a rest position and an actuating position, one of said housing members being mountable on a wall to mount the dispenser on the wall, resilient means urging said housing members to the rest positions thereof, a discharge member mounted in said housing and having a soap outlet in registration with an opening in said housing to dispense liquid soap therethrough, said discharge member including structure for removably attaching a liquid soap container thereto with the attached liquid soap container communicating with said soap outlet, said housing members being dimensioned and arranged for cooperation completely to enclose the liquid soap container when it is attached to said discharge member, pump means mounted in said housing for pumping charges of liquid soap from a liquid soap container on said discharge member and out through said soap outlet, and an actuating member on one of said housing members engaging said pump means to actuate the same upon the shifting of said housing members from the rest positions thereof to the actuating positions thereof, the housing member other than said wall-mountable housing member presenting a large area for contact by a user for shifting said housing members from the rest positions thereof to the actuating positions thereof.

4,214,677

SPRAY DISPENSING CONTAINER

Daniel Bauer, Le Raincy, and Gerard Braque, Mitry-le-Neuf, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 12, 1978, Ser. No. 923,990
Claims priority, application France, Jul. 12, 1977, 77 21443
Int. Cl.² B67D *5/54*
U.S. Cl. 222—145 **9 Claims**



1. A dispensing container for dispensing a liquid product, comprising a reciprocating product pump having an ejection duct formed in a reciprocable element of the pump, means defining a dispensing duct communicating with the ejection duct and terminating at a spray nozzle, manually operable compression means for compressing air and mounted on said reciprocable element of the product pump, conduit means for connecting said compression means to said dispensing duct upstream of said spray nozzle, said compression means including a cylinder and a piston and comprising means for moving the reciprocable element of the product pump in response to manual movement of the piston with respect to the cylinder to both dispense the product and inject compressed air into the product, said compression means including a discharge valve, and means to prevent said discharge valve from opening until the air pressure within said cylinder attains a predetermined limiting value, the reciprocating product pump being of the type having a precompression valve for dispensing a dose of the liquid product only after the pressure of this dose attains a predetermined limiting value, and wherein said means to prevent said discharge valve for the compressed air from opening is set so that its opening is affected substantially simultaneously with the opening of said precompression valve.

4,214,678

CONDIMENT DISPENSER WITH HOLE-CLEARING MEANS

Peter Patrinos, 1525 Fourth Ave., Altoona, Pa. 16602

Filed Dec. 1, 1978, Ser. No. 965,530
Int. Cl.² B67D *1/08*
U.S. Cl. 222—149 **7 Claims**

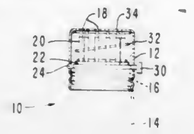
1. A condiment dispenser comprising:

a container for holding the condiment to be dispensed, said container having a plurality of dispensing openings in the top surface thereof, and a removable cap portion, said dispensing openings being located in said cap portion;

prong means mounted in said cap portion including an individual prong corresponding to, and aligned for insertion into, each of said openings;

camming bar means rotatably mounted in said cap portion for forcing said prongs into said dispensing openings to

clear the dispensing openings upon rotation of said camming bar means; and



means mounted in said cap portion for biasing said prong means away from said dispensing openings and against said camming bar means.

4,214,679

MEASURED QUANTITY DISPENSER

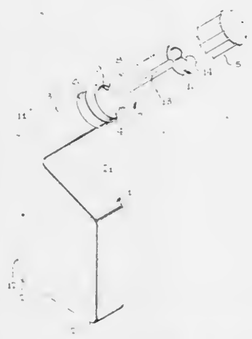
Chi-Man Whang, 134-33 Kochok-dong, Youngdungpo-ku, Seoul, Rep. of Korea

Filed May 8, 1978, Ser. No. 903,519

Claims priority, application Rep. of Korea, May 31, 1977, 3518; Jun. 7, 1977, 3649; Jun. 9, 1977, 3707

Int. Cl.[2] G01F *11/26*

U.S. Cl. 222—158 **10 Claims**



1. A measured volume liquid dispenser comprising:

a container having a body portion with a bottom for supporting the container on a surface in a vertical position and an elongated neck disposed opposite the bottom and extending at an acute angle relative to the vertical direction from the body portion to a container mouth, the container being adapted to receive and retain a cup within the neck;

the cup being removably disposed within the neck with a close fitting, mating relationship between the cup and the neck, with a closed end of the cup adjacent the container body portion and with an open end of the cup adjacent the container mouth, the neck and cup being shaped to provide a pair of grooves defined between the cup and the neck and extending along the neck between the open and closed ends of the cup in opposed relationship to provide communication therebetween from the body portion to the open end of the cup; and

a removable cap adapted to engage the neck of the container and sealingly close the mouth thereof.

4,214,680

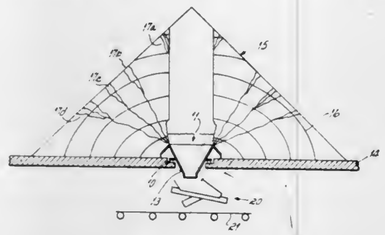
DRAWDOWN HOPPER ISOLATION SYSTEM HAVING ISOLATORS WITH FABRIC LAYS

William M. Wetherton, Louisville, Ky., assignor to Carman Industries, Inc., Jeffersonville, Ind.

Filed Sep. 25, 1978, Ser. No. 945,470

Int. Cl.[2] B65G *3/12*

U.S. Cl. 222—161 **10 Claims**



1. A drawdown hopper isolation system comprising

a drawdown hopper positioned in spaced relation from a support surface, said drawdown hopper including a vibration source adapted to induce vibration into said hopper, and

an isolation system having a plurality of isolators supporting said hopper in spaced relation from said support surface, said isolators being positioned between said hopper and said support surface so as to be subjected to a compressive loading from said hopper, each of said isolators comprising a rubber block having a series of generally parallel woven fabric lays axially spaced one from another within said block, the warp and weft directions of each of said fabric lays being rotationally oriented in generally random rotational orientation relative to the axis of said block, and relative to the warp and weft directions of the other woven fabric lays, so as to insure relatively even lateral deflection of said isolator in response to vibration of said hopper.

4,214,681

APPLICATING DEVICE

Abraham I. Levine, 26 Wilson Ave., Rowayton, Conn. 06853

Filed Sep. 22, 1978, Ser. No. 944,791

Int. Cl.[2] B05B *11/00;* **F04B** *43/12*

U.S. Cl. 222—214 **7 Claims**

1. An applicating device for applying a fluent coating material to a surface to be coated by said material comprising:

a conduit means having one end adapted to be disposed in communication with a supply of the coating material to be applied to a surface,

a dispensing means connected to the other end of said conduit,

said dispensing means including means to convey predetermined amounts of said coating material through said conduit from a supply source to said other end of said conduit whereby the material is dispensed onto a surface,

said dispensing means including a housing having a curvilinear inner wall surface,

a rotor rotatably journalled in said housing,

a plurality of radially extending arms connected to said rotor,

said arms being circumferentially spaced about said rotor,

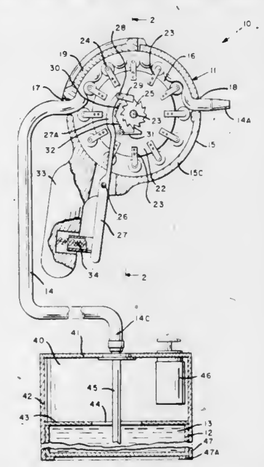
pressure rollers rotatably journalled to the extended ends of said arms,

said rollers being spaced from said inner wall surface of said housing,

said housing having an inlet opening and an outlet opening,

said conduit means being threaded through said inlet opening and outlet opening whereby said other end of said conduit means extends through said outlet opening, and the portion of said conduit means extending between said inlet and outlet openings being disposed contiguous the curvilinear inner wall of said housing and between said inner wall and adjacent rollers,

and an actuating means operatively associated with said rotor for effecting the drive of said rotor so that said rollers effect a squeezing action on said conduit means when said rotor is activated to dispense said coating material from the outlet end of said conduit means,



said actuating means including a unidirectional drive,

wherein said drive comprises a ratchet connected to said rotor,

an operating handle pivoted to said housing,

a pawl pivoted to the end of said lever opposite said ratchet,

and spring means biasing said pawl into operative engagement with said ratchet whereby said rotor is incrementally driven as said lever is actuated.

4,214,682

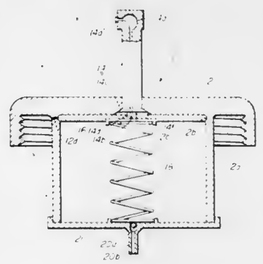
NON-LEAKING PUMP SPRAY VALVE

Thomas A. Thomas, Jr., 4100 SW. 58th Ter., Davie, Fla. 33314

Filed Jun. 23, 1977, Ser. No. 809,081

Int. Cl.[2] G01F *11/02*

U.S. Cl. 222—321 **4 Claims**



1. A non-leaking pump spray device comprising in combination:

(a) A cap portion (**12**) cooperable with the mouth of a container and having a central orifice with a lower wider portion (**12***c*);

(b) a fluid reservoir (**12***a*) depending from said cap portion (**12**) and having an upper lateral groove (**12***b*) in its wall and an air orifice (**12***d*) registerable with said groove;

(c) a pump member (**14**) extending through said cap portion (**12**) and into said reservoir (**12***a*) and comprising a central conduit, an upper outer orifice (**14***a'*), a lower lateral extension (**14***c*) registerable with said lower wider portion (**12***c*), a lower central extension (**14***d*) having an orifice (**14***b*) connecting with said central conduit and a lower terminal lateral extension (**14***f*);

(d) a flexible sealing disc (**16**) wider than the inner diameter of reservoir (**12***a*), registerable with said groove (**12***b*) so as to block orifice (**12***d*) and slidably movable on extension (**14***d*) of pump member (**14**);

(e) spring means (**18**) between the bottom wall (**20**) of said reservoir (**12***a*) and said lower terminal extension (**14***f*) of said pump member (**14**) normally urging disc (**16**) upward;

(f) a lower opening (**20***b*) in said reservoir;

(g) valve means (**20***a*) in said lower opening (**20***b*); said device being so constructed that in normal undepressed condition, said sealing disc blocks said air orifice (**12***d*) and said inlet orifice (**14***b*) from communication with the interior of said reservoir (**12***a*) but when said pump member is depressed is carries said sealing disc to unblock said air orifice (**12***d*) and said inlet orifice (**14***b*).

4,214,683

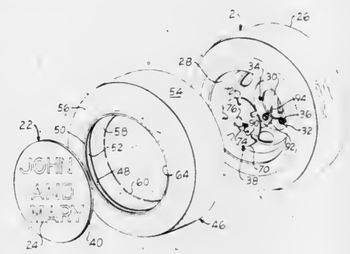
ILLUMINATED WHEEL COVER

Jack D. Wills, and Frank R. Clarkson, both of Peoria, Ill., assignors to Tale-Lite Systems, Inc., Peoria, Ill.

Continuation of Ser. No. 856,311, Dec. 1, 1977, abandoned. This application Nov. 14, 1978, Ser. No. 960,569

Int. Cl.[2] B62D *43/02*

U.S. Cl. 224—42.2 **3 Claims**



1. A cover (**20**) for a spare (**12**) mounted on the exterior of an associated vehicle (**10**), said spare (**12**) including a tire (**26**) mounted on a wheel (**28**), said vehicle (**10**) having a light source (**38**) mounted adjacent the center of wheel (**28**), comprising:

a flexible cover (**46**) including a circumferential portion (**54**) and opposed side wall portions (**56,58**), said cover (**46**) mounted on and supported by said tire (**26**) and being of a construction sufficient for covering said tire (**26**) and exposing said wheel (**28**) and said light source (**38**);

one of said sidewalls (**56**) terminating at side-by-side flaps (**50,52**) defining an opening (**64**) exposing said wheel (**28**) and said light source (**38**);

a first one of said flaps (**52**) being adjacent said tire (**26**) and a second one of said flaps (**50**) being adjacent said first flap (**52**):

a resilient bead (**66**) in said second flap (**50**), said bead (**66**) being of a construction sufficient for radially exapnding and contracting said opening (**64**); and

a light penetrable portion (**22**) covering said opening (**64**), said light penetrable portion having a peripheral edge (**40**) mounted between said flaps (**50,52**), said bead (**66**) being radially expandable for permitting edge (**40**) to be mounted in and removed from between said flaps (**50,52**), and said bead (**66**) being radially contractable for retaining edge (**40**) between said flaps (**50,52**).

4,214,684
BALL HOLDER
Dennis A. Galowitz, 1020 S. Fifth St., Stillwater, Minn. 55082
Filed Nov. 6, 1978, Ser. No. 957,792
Int. Cl.[2] B65D 61/00
U.S. Cl. 224—45 L 14 Claims



1. An apparatus for holding and transporting a plurality of balls or similar objects, which comprises:
(a) a plurality of support members;
(b) means for operatively connecting the support members together for movement as a unit with the support members being stacked on top of one another;
(c) wherein each support member has means for receiving one end of at least one ball, and wherein the ball receiving means on adjacent ones of the support members are aligned with one another such that the balls can be received in the ball receiving means in a vertical array when the adjacent support members are spaced apart;
(d) means for continuously forcing the support members towards one another to firmly retain the balls between the adjacent support members; and
(e) wherein the connecting means comprises two spaced, elongated vertical rods which extend upwardly relative to the support members to connect the support members together even when the support members are spaced apart with the balls received therebetween, and wherein at least some of the support members are both vertically movable relative to the rods and are pivotably mounted on the rods for pivotal movement about a substantially horizontal pivot axis extending between the rods against the force of the forcing means, whereby the spacing between the support members may be increased along one side of a support member by pivotting the support member about the pivot axis to allow the balls to be placed in or removed from the ball receiving means.

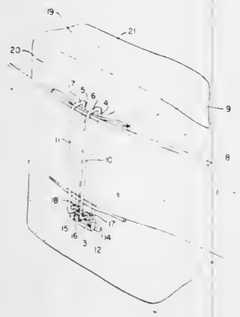
4,214,685
BACKPACK LOAD CARRYING SYSTEM FOR HIKERS
Murray J. Pletz, Mukilteo, Wash., assignor to K-2 Corporation, Vashon, Wash.
Filed Jul. 27, 1977, Ser. No. 819,477
Int. Cl.[2] A45F 3/10
U.S. Cl. 224—211 32 Claims

1. An improved load carrying pack frame for hiking comprising:
a hip portion forming the lower portion of the pack frame adapted to be connected to a wearer's hips;
a shoulder portion forming the upper portion of the pack frame adapted to be connected to a wearer's shoulders;
pivot means securely interconnecting with said hip portion and said shoulder portion at a point above said wearer's hips and below said wearer's shoulders to simultaneously interconnect said hip portion and said shoulder portion and permit said hip portion and said shoulder portion to pivot laterally with respect to each other about said pivot means without generating reactive countermovements responsive to the relative movement of said wearer's hips and shoulders such that the load carried by said hip portion dynamically follows the movement of the wearer's hips and such that the load carried by said shoulder portion dynamically follows the movement of the wearer's shoulders;



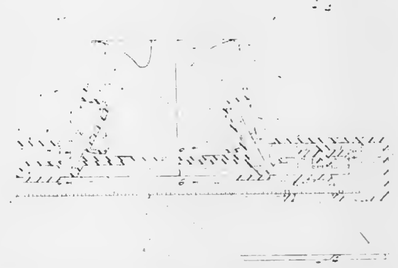
said pivot means being adapted to prevent relative rotational movement between said shoulder portion and said hip portion of said pack frame about an axis longitudinal of said pack frame.

4,214,686
KEEPER FOR LOAD CARRYING EQUIPMENT
Harry Dostourian, West Boylston, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Mar. 12, 1979, Ser. No. 19,791
Int. Cl.[2] A45F 5/02
U.S. Cl. 224—252 3 Claims



1. A keeper for detachably securing load carrying means to a service belt designed to be worn about the waist of a military person which comprises:
(a) a first elongated segment of resilient metallic wire of sufficient diameter and strength to resist being permanently bent out of its normal physical shape during the normal use of said keeper, said first segment of metallic wire being forcefully bent by means of a wire-bending tool to form therein a base leg extending approximately equidistantly a suitable distance on both sides of a point equidistant from the two free ends of said first segment of metallic wire, two substantially parallel, spaced apart, upwardly extending arms perpendicular to said base leg, two substantially parallel spaced apart loops to fit over the top of said service belt, said loops being formed as continuations of said upwardly extending arms, two substantially parallel, spaced apart, downwardly extending arms formed as continuations of said two spaced apart loops, each of said downwardly extending arms having a horizontal leg formed therein, said horizontal legs being substantially parallel to each other and spaced equidistantly above said base leg, each of said horizontal legs forming an offset of the lower portion of one of said downwardly extending arms extending generally in the direction of said upwardly extending arms, the lower portions of said downwardly extending arms being bent to form an ear at each of the two ends of said first elongated segment of metallic wire, each of said ears being located at a height above said base leg and being of a diameter and oriented in a direction such as to permit it to pass between said two upwardly extending arms when said downwardly extending arm on which it is formed is flexed inwardly with respect to said upwardly extending arms, whereby when each of said ears has passed between said upwardly extending arms, and when said downwardly extending arm is released, said keeper becomes locked; and
(b) a latching means for maintaining said downwardly extending arms in their locked positions, said latching means being formed from a second segment of resilient metallic wire, each of the two ends of said second segment of metallic wire having an eye formed therein, the metallic wire forming each of said eyes surrounding the wire of the horizontally formed legs and the downwardly extending arms, said latching means being freely slidable along said horizontally formed legs, said downwardly extending arms, and said loops to latch or to unlatch said keeper when said ears are in their locking positions.

4,214,687
VEHICLE TOP SKI RACK
Calvin J. Covell, 1111 Corning St., #305, Los Angeles, Calif. 90035
Filed Feb. 12, 1979, Ser. No. 11,609
Int. Cl.[2] B60R 9/00
U.S. Cl. 224—323 11 Claims



1. A rack for securing skis to a vehicle comprising:
(a) an elongated housing having adjustable means for securing the housing to a vehicle;
(b) at least one pair of stationary columns spaced transversely of said housing and secured to and extending upwardly from said housing;
(c) at least one pair of opposed clamps each pivotally mounted for movement about horizontal axes oriented transversely of said housing and moveable between a clamping position with said opposed clamps in proximity to said columns and a release position with said clamps located away from said columns on opposite sides thereof; and
(d) actuating means for moving said clamps between said clamping position and said release position, said actuating means comprising a pair of elongated parallel slides mounted for movement longitudinally in said housing, a pair of links respectively each having a first pivotal connection to a respective one said clamps and a second pivotal connection to a respective one of said slides whereby longitudinal movement of said slides causes said links to pivotally move said clamps between their clamping and release positions, and a rotatable drive means mounted in said housing and having connecting means thereon engageable with connecting means on each of said slides, and means for rotating said drive means to cause said parallel slides to move in opposite directions.

4,214,688
TOOL MOUNTING ASSEMBLY
Groves L. Griffin, Jr., 1370 McIntosh Rd., Douglasville, Ga. 30134
Filed Oct. 19, 1978, Ser. No. 952,696
Int. Cl.[1] A45F 5/00
U.S. Cl. 224—197 8 Claims



1. A tool mounting assembly for removably mounting and positioning a tool such as a flashlight comprising:
a base member for mounting said assembly, said base member defining a generally flat base surface thereon and including a first dimple projecting outwardly from said base surface about a first dimple axis generally normal to said base surface, said first dimple comprising a first annular shoulder projecting outwardly from said base surface concentrically of the first dimple axis and a first dimple end wall integral with that end of said first annular shoulder outwardly of said base surface, said first dimple end wall oriented generally parallel to said base surface and spaced outwardly of said base surface, said first dimple end wall defining a first hole therethrough concentrically of said first dimple axis;
a tool clip member for removably mounting said tool therein, said tool clip member defining a generally flat clip surface thereon and including a second dimple projecting outwardly from said clip surface about a second dimple axis generally normal to said clip surface, said second dimple comprising a second annular shoulder projecting outwardly from said clip surface concentrically of the second dimple axis and a second dimple end wall integral with that end of said second annular shoulder outwardly of said clip surface, said second dimple end wall oriented generally parallel to said clip surface and spaced outwardly of said clip surface, said second dimple end wall defining a second hole therethrough concentrically of the second dimple axis, said base member and said tool clip member oriented so that said first and second dimples face each other with said first and second holes coaxially aligned;
a compression coil spring having a spring axis and opposed ends oriented normal to said spring axis positioned between said base member and said tool clip member so that one end of said spring fits over said first dimple and engages said base surface and the other end of said spring fits over said second dimple and engages said clip surface, said first annular shoulder on said first dimple maintaining that end of said spring engaging said base surface concentrically of first dimple axis and said second annular shoulder on said second dimple maintaining that end of said spring engaging said clip surface concentrically of the second dimple axis; and
fastening means of a fixed length rotatably extending through said first and second holes in said dimples and through said spring, said fastening means engaging said

first and second dimple end walls to limit the movement of said base member and said clip member away from each other and keep said coil spring in compression with said first dimple spaced from said second dimple so that said coil spring resiliently forces said base member and said tool clip member toward a position with the first dimple axis coaxial with the second dimple axis and with said base surface parallel to said clip surface to positively locate said base member with respect to said tool clip member yet allows said base member to be moved with respect to said tool clip member so that said base surface and said clip surface are not parallel and so that said coil spring resiliently forces said first dimple end wall on said base member and said second dimple end wall on said tool clip member into frictional engagement with said fastening means to frictionally maintain the relative rotational position of said base member and said clip member, yet allows the relative rotational position to be manually changed by overriding the frictional engagement maintained by said spring.

4,214,689

AUTOMATIC COUNTERACTING OF TRANSVERSE SHIFT OF A LONGITUDINALLY TRANSPORTED STRIP

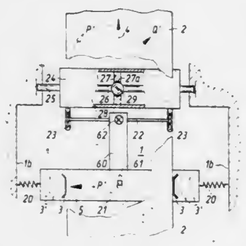
Siegfried Bartel, Gauting; Ernst Biedermann, Taufkirchen; Heinz Rapp, Munich, and Martin Müller, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,521

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734325

Int. Cl.² B65H *25/26*

U.S. Cl. 226—21 **10 Claims**



1. In an apparatus comprising means longitudinally transporting an elongated strip along a predetermined transport path, an arrangement serving to automatically counteract the development of improper transverse shift in the transported strip, the arrangement comprising, in combination, sensing means operative for sensing transverse shift in the longitudinally transported strip; and correcting means automatically operative in response to the detection of shift by the sensing means for exerting upon the major surface of the transported strip a shift-correcting force which transversely displaces the transported strip in a direction opposite to the detected transverse shift, the sensing means comprising edge-sensing means operative for sensing the position of a lateral edge of the transported strip, the correcting means comprising a pair of transport rollers located at opposite major surfaces of the transported strip and pressing the transported strip between them, means mounting the transport rollers such that the rotation axes of the rollers are normally parallel but including means mounting one of the transport rollers for swinging movement about a swing axis generally perpendicular to the rotation axis of the other transport roller, and connecting means connecting the swingable transport roller to the edge-sensing means and automatically swinging the swingable transport roller in dependence upon the transverse shift detected by the edge-sensing means in a direction causing the swingable transport roller to exert said shift-correcting force upon a major surface of the transported strip.

4,214,690

AXIAL LOCATING OF HORIZONTALLY EXTENDING TAPE DRIVE SHAFT IN CASSETTE MACHINE

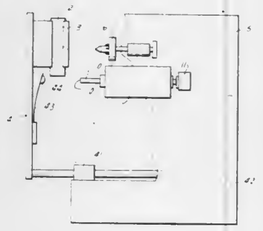
Georg Papst, St. Georgen; Volker Schlicker, Radevormwald, and Rolf Müller, St. Georgen, all of Fed. Rep. of Germany, assignors to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Oct. 27, 1978, Ser. No. 955,639

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1977, 2748805

Int. Cl.² B65H *17/18*

U.S. Cl. 226—49 **17 Claims**



1. In a magnetic-tape cassette machine of the type comprising a machine housing, a tape transport mechanism including a horizontally extending tape drive shaft, and a loading platform accommodating a cassette and designed to hold the cassette upright during tape transport, the cassette loading platform being mounted for movement between an inoperative position in which a cassette can be loaded into or unloaded from the loading platform and an operative position in which the cassette tape is engaged by the horizontally extending tape drive shaft, an arrangement for axially bearing and locating the horizontally extending tape drive shaft, the arrangement comprising in combination a first axial bearing mounted on a stationary part of the machine housing and limiting axial movement of the horizontally extending tape drive shaft in a first direction; and a second axial bearing mounted on the loading platform and operative when the loading platform is in operative position for limiting axial movement of the horizontally extending tape drive shaft in the direction opposite to the first direction.

4,214,691

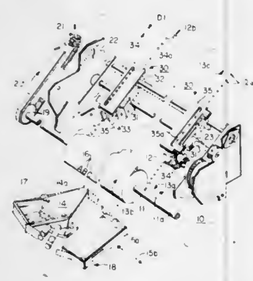
PIN-FEED ASSEMBLY

Frederik T. van Namen, Londonderry, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Dec. 15, 1978, Ser. No. 969,850

Int. Cl.² B03B *1/30;* **B65H** *12/38*

U.S. Cl. 226—74 **26 Claims**



1. A pin feed tractor assembly for advancing a web having

equispaced perforations extending along the direction of movement of the web, said assembly comprising:

a frame;

first and second sprockets rotatably mounted upon said frame at spaced intervals;

each sprocket having equispaced radially aligned teeth;

a timing belt entrained about said sprockets;

said belt having integrally joined alternating flexible and rigid belt portions, said flexible portions being thinner than said rigid portions and forming therewith notches along the interior surface of the belt, each of said notches being adapted to receive a tooth of a sprocket with sufficient clearance therebetween such that said timing belt bends at said notches as said timing belt moves about the sprockets;

the exterior surface of said timing belt having projecting pins for insertion into associated perforations in said web to advance said web; and

said projecting pins are arranged at selected positions intermediate said notches to prevent the web from being stretched or torn by said projecting pins as the timing belt moves about one of t sprockets.

4,214,692

BUTT-WELDING APPARATUS FOR ASSEMBLING AND LAYING PIPE STRINGS IN DEEP WATER

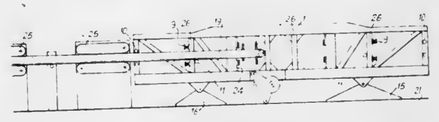
Roger J. Le Garfe, Reze; Edmond Pignal, Thonon, and Charles J. Magloire, Chatenay-Malabry, all of France, assignors to Compagnie Francaise des Petroles; Societe Nationale Elf Aquitaine (Production), both of Paris; Ateliers et Chantiers de Bretagne—A.C.B., Nantes; Etudes Petrolieres Marines; Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS), both of Paris and Compagnie Maritime d'Expertises, Marseille, all of, France

Filed Mar. 30, 1978, Ser. No. 891,782

Claims priority, application France, Mar. 30, 1977, 77 09434

Int. Cl.² B23K *19/00*

U.S. Cl. 228—44.1 R **6 Claims**



1. Apparatus for butt-welding two pipe ends comprising means for compensating for shrinkage caused by the welding operation and by the preheating of the welded ends, the compensating means being provided on said apparatus near one pipe end to urge one pipe end against the other pipe end, said compensating means comprising reciprocating actuators acting between the frame of the apparatus and a first jaw secured adjacent one of the pipe ends, a second jaw secured adjacent the other pipe end and acting on strain gauges bearing on said frame of said apparatus, said first and second jaw comprising two half-shells together forming a nut which is internally screw-threaded for engaging screw threading on the pipe ends.

4,214,693

METHOD OF MAKING WIRELINE APPARATUS FOR USE IN EARTH BOREHOLES

William D. Smith, 4217 Sarita Dr., Fort Worth, Tex. 76109

Division of Ser. No. 773,390, Mar. 2, 1977, Pat. No. 4,137,762. This application May 30, 1978, Ser. No. 910,844

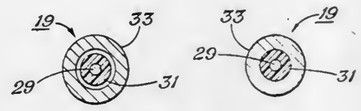
Int. Cl.² B21D *39/04*

U.S. Cl. 228—148 **20 Claims**

4. The method of making a wireline suitable for use with wireline apparatus for use in earth boreholes and wherein a wireline is utilized to suspend a downhole tool in a borehole from aboveground cable drum and winch means and to transmit electrical signals between said tool and aboveground equipment, said method comprising the steps of:

a. making a continuous piece of smooth walled metal tubing of a material the tensile strength of which can be raised by cold working and having an inside diameter such that a predetermined number of insulated conductors can be inserted into said tubing;

b. inserting while making said tubing said predetermined number of insulated conductors within said tubing;



c. swaging by means of hammering action said tubing into intimate contact with said insulated conductor or conductors, such that it or they are supported by said tubing and consequently can be of length greater than could be supported by said conductor or conductors alone; said tubing after swaging having a tensile strength above that of mild steel.

5. The method of claim 4 wherein said tubing is made from a strip of material that is formed into generally tubular shape as said conductors are inserted, then closed to tubular shape and the seam welded, all prior to the swaging step.

4,214,694

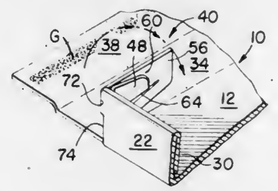
BOX COVER, BLANK THEREFOR

Glenn E. Struble, Oxford, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed Oct. 25, 1978, Ser. No. 954,687

Int. Cl.² B65D *5/22, 5/24*

U.S. Cl. 229—31 FS **13 Claims**



1. A box cover or like member of pasteboard or like material comprising a generally rectangular top panel, fold over side walls at opposite sides thereof, and fold over end walls at each end thereof, each of said side and end walls having an outer panel integral with and hingedly associated with said top panel and an inner panel integral with and extending along side a respective one of said outer panels, each of said outer side wall panels having a corner assembly tab at opposite ends thereof, each of said inner side wall panels having a floating corner reinforcement tab at opposite ends thereof, each of said corner assembly tabs including means allowing the floating corner reinforcement tab adjacent thereto and associated therewith to be nestled thereagainst and to extend generally coplanar with a substantial portion thereof.

4,214,695

ONE-PIECE REINFORCED CONTAINER

Keith A. Cooper, Elkridge, Md., assignor to International Paper Company, New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,861
Int. Cl.³ B65D 5/22, 5/46
U.S. Cl. 229—36 7 Claims



1. A one-piece cut and scored paperboard blank for making a one-piece reinforced container comprising: a generally rectangular bottom panel defined by a pair of first longitudinal scorelines and a pair of first lateral scorelines;

a pair of generally rectangular side panels, each hingedly connected to the bottom panel along one of the first longitudinal scorelines, each of the side panels being defined by one of the first longitudinal scorelines, and by a pair of second lateral scorelines which are offset from and meet said pair of first longitudinal scorelines slightly inwardly from their ends;

a pair of generally rectangular end panels, each hingedly connected to the bottom panel along one of the first lateral scorelines, each of the end panels being defined by one of the first lateral scorelines, and a pair of second longitudinal scorelines;

four generally rectangular corner members hingedly connected to: (a) the side panels along the second lateral scorelines; (b) the end panels along the second longitudinal scorelines; and (c) portions of the bottom panel along the offsets of the first longitudinal scorelines, each corner member containing a diagonal, perforated scoreline beginning at the intersection of the lateral ends of the side panel with the bottom panel, whereby the corner member is adapted to fold along this diagonal scoreline as the side panels and end panels are folded upwardly;

four connecting members, each hingedly connected to a corner member and to a locking wing along a lateral scoreline;

four locking wings, each hingedly connected to a connecting member along a lateral scoreline, the length of each locking wing being substantially equal to the width of each side panel;

a pair of generally rectangular cover flaps, each hingedly connected to an end panel along a third lateral scoreline;

four container locking assemblies, each hingedly connected to a cover flap along a fourth longitudinal scoreline, and each cut free from a corner locking wing along a first oblique cut and a first lateral cut, so that the outermost portion of each container locking assembly is a generally rectangular tab whose length is substantially equal to the width of each side panel; and

four generally trapezoidal cut-outs, each of which communicates with an end panel along a longitudinal cut, with a container locking assembly along a second lateral cut, with a connecting member along a second oblique cut, and with a cover flap along a third oblique cut, the second and third oblique cuts being in parallel relationship.

4,214,696

CONTAINER WITH INTEGRAL PARTITION

Paul R. Barton, Nashville, and Johnnie M. Welborn, Clarksville, both of Tenn., assignors to Container Corporation of America, Chicago, Ill.

Filed Jun. 27, 1979, Ser. No. 52,413
Int. Cl.³ B65D 5/48, 5/50, 81/00
U.S. Cl. 229—40 1 Claim



1. A container formed from a blank of paperboard, or the like, and having an integral, internal product separating partition, comprising:

(a) a main panel;

(b) pairs of first and second side panels foldably joined to the respective edges of said main panel and upstanding therefrom;

(c) closure flaps foldably attached to said side panels and including:

(i) inner closure flaps attached to the edges of each of said side panels of one of said pairs and having elongated slots formed therein;

(ii) outer closure flaps attached to the edges of each of said side panels of the other of said pairs and having tabs formed along the outer edges thereof;

(iii) said inner and outer closure flaps being folded in an overlapping relationship spaced from and substantially parallel to said main panel so as to close said container;

(iv) said tabs being folded normal to said main panel and being received in said slots;

(v) said tabs extending into said container and bearing against said main panel thereby forming an internal partition within said container.

4,214,697

LIQUID GABLE TOP CARTON WITH INTEGRAL CARRYING HANDLE

James F. Manning, Strongsville, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 27, 1978, Ser. No. 955,809
Int. Cl.² B65D 5/74, 5/46
U.S. Cl. 229—52 B 2 Claims

1. A reclosable gabled top container having a pour spout and integral handles comprising:

a generally tubular side wall formed from four hingedly connected side panels;

a bottom closure portion hingedly connected to the bottom edges of said tubular side wall; and

a gabled top closure formed from first and second opposed flexing panels, and first and second opposed handle panels, said opposed flexing panels being hingedly connected to the top edge of two opposed side panels of said tubular side wall, said flexing panels being formed from three hingedly connected generally triangular sections with an apex of each said triangular section being disposed at a common point, and with said opposed handle panels being hingedly connected to the top edge of the remaining two opposed side panels, with said flexing panels being flexed inwardly such that said handle panels are inclined inwardly whereby the top edges thereof meet along a line thereby forming a gabled configuration, there being a glue strip provided along said line of meeting between said handle panels to seal said carton, and with each said handle panel including a pair of handle members respectively hingedly connected along the top edge thereof, said handle members being in abutting relationship and extending vertically upwardly from said gabled top configuration, said handle members being partially adhesively connected therebetween, the adhesive connection between said handle members extending from the side edges of said handle members adjacent said first flexing panel to a point intermediate the length of said handle members, whereby said gabled top may be readily opened to form a pour spout by



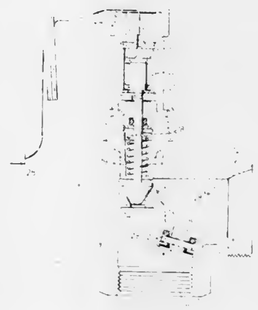
first separating the top edges of said handle panels along said glue strip, from the side edge of said handle panels adjacent said second flexing panel to a point intermediate the length thereof and thereafter outwardly flexing said second flexing panel to form the pour spout, with the portions of said handle members, adjacent said second flexing panel, which are not adhesively connected, separating to facilitate the opening of said gabled top, and wherein the adhesively connected portions of said handle members, adjacent said first flexing panel, remain sealed and in the upright vertical position to aid in pouring the contents of said carton.

4,214,698

ARRANGEMENT FOR CONTROL OF THE TEMPERATURE OF HEAT RADIATORS IN A CO-TUBE SYSTEM

Hans E. Josefsson, Trangsund, Sweden, assignor to Tour & Andersson Aktiebolag, Johanneshov, Sweden

Filed Nov. 20, 1978, Ser. No. 962,336
Claims priority, application Sweden, Nov. 21, 1977, 7713106
Int. Cl.³ G05D 23/12
U.S. Cl. 236—42 6 Claims



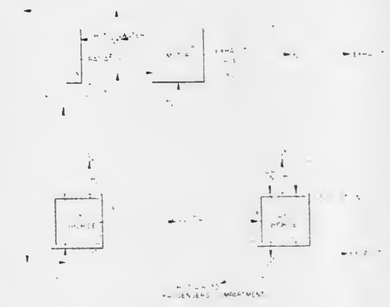
1. A heat control system for a discontinuously operated heat radiator of the co-tube type in which the steam feeder connection also acts as a return for condensed water comprising: a thermostat which is placed away from the radiator; an inlet steam valve between the steam feeder connection and the radiator; means for moving said steam valve to an open or a closed position in response to an indication from said thermostat; and a condensed water outlet valve between the steam feeder connection and the radiator, said outlet valve being of the return blocking type in which said outlet valve is normally biased closed by its own weight and the weight of any condensed water in the radiator; such that in response to an indication from said thermostat, said moving means opens said inlet steam valve allowing steam to enter the radiator from the steam feeder connection and heat a room, the condensed water in the radiator being prevented from entering the steam feeder connection by said outlet valve whereby when said inlet valve is later closed, the steam pressure in the radiator drops and the steam pressure in the steam feeder connection pushes said outlet valve open allowing the condensed water in the radiator to drain from the radiator back through the steam feeder connection.

4,214,699

PARKING HEATER AND METHOD USING HYDRIDES IN MOTOR VEHICLES POWERED BY HYDROGEN

Helmut Buchner, Wendlingen, and Helmut Säufferer, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 10, 1978, Ser. No. 894,812
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715990
Int. Cl.³ B60H 1/02
U.S. Cl. 237—12.3 C 15 Claims



1. A method for parking heating of at least the passenger compartment of motor vehicles operated at least partially on hydrogen and having a hydride reservoir, wherein the hydride reservoir is a LT/HT hydride combination, comprising supplying the heat capacity of the HT reservoir, present after the engine is shut off or produced by charging with hydrogen, at least partially to the passenger compartment.

4,214,700

METHOD AND APPARATUS FOR MAKING SNOW FOR SKI SLOPES AND THE LIKE

James B. Vanderkelen, Midland, and William E. Riskey, Whitmore Lake, both of Mich., assignors to Snow Machines, Inc., Midland, Mich.

Filed Oct. 27, 1978, Ser. No. 955,402
Int. Cl.² F25C 3/04
U.S. Cl. 239—2 S 9 Claims

1. In a snowmaking process which includes an air-water snowmaking seeder gun in combination with means for generating a substantially unidirectional high-volume air stream at substantially atmospheric pressure into which bulk water is directed from an array of bulk water nozzles, said air-water

snowmaking gun including a water source, a compressed air source, a mixing chamber and an exit orifice, the improvement which comprises the steps of:

(1) passing a pressurized flow of incoming water in a manner to surround substantially all of said mixing chamber and at least a portion of said exit orifice,



(2) supplying water to said gun by admitting a minor portion of said flow of incoming water to said gun, and

(3) thereafter flowing at least a major portion of said incoming water to said bulk water nozzles.

4,214,701

IRRIGATION VALVE DEVICE

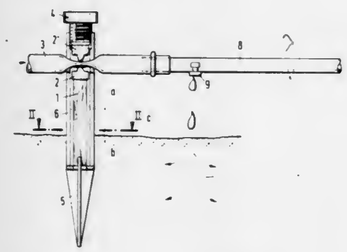
Gerhard Beckmann, Tödiweg 51, 7988 Wangen, Allgäu, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,600

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739650; Dec. 6, 1977, 2754307; Aug. 10, 1978, 2835093

Int. Cl.[2] H01G *27/00*

U.S. Cl. 239—63 **31 Claims**



1. An irrigation valve device comprising:

a valve;

a swellable member operatively associated with the valve which controls the valve is response to its moisture content and is subjected to water passing through the valve, said valve further comprising:

an insert tip extending below said swellable member for insertion into ground, at least a major portion of the surface of said swellable member being exposed above ground and the remaining portion of the surface of said swellable member directly contacting the ground in accordance with depth of insertion of the inert tip into the ground.

4,214,702

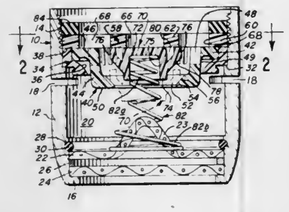
SELF-CLEANING AERATOR

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Jan. 17, 1979, Ser. No. 4,061

Int. Cl.[2] E03C *1/08*

U.S. Cl. 239—110 **14 Claims**



1. In an aerator that includes: an axially elongated tubular casing having means through which air is ingested to the interior of the casing to be mixed with fragmented liquid jets; screen means within and adjacent the downstream end of said casing through which aerated liquid is discharged; and plastic jet-defining and jet-fragmenting means, within the casing and upstream of said screen means, through which liquid to be aerated is forced under pressure consisting of:

(1) an annular guide ring with a downstream annular impingement surface defined thereon and having an upstream, annular, support edge disposed in a plane; and

(2) a cup-shaped plug member having an upper annular support flange slidingly telescoped into said guide ring and an upright side wall projecting downstream from the inner edge of said annular peripheral flange, the upstream side of said support flange lying in the same plane with the annular support edge of the guide ring, the upright side wall being provided therein with a series of axially elongated slots that extend downstream from the upstream side of said support flange and operates to provide the liquid jets required to effect aeration of the liquid;

the improvement of self-cleaning character for said aerator comprising, in combination:

(a) said plug member being formed as an annulus with a relatively large central flow opening through the downstream transverse wall of said cup-shaped member;

(b) a shape-retaining washer supported at least on the annular support edge of the guide ring; said washer having radially spaced outer and inner concentric annular lands interconnected by a plurality of radial lands, the inner annular land bounding and defining a central flow passageway, and the annulus between said outer and inner annular lands providing therethrough a plurality of circumferentially spaced primary flow passageways through which flow of liquid is initially directed downstream to scrub and dislodge, from the plug member's axially elongated slots, debris that may have lodged therein, and to flush same through the central flow opening of said plug member; and

(c) a flow-blocking valve member located downstream of the washer and resiliently biased upstream to engage the inner circular land and to initially block flow through the central flow opening of the washer, said valve member being movable downstream under force of flowing liquid to close the central flow opening of the plug member after dislodged debris has passed therethrough, and to restore normal aerating operation of the aerator.

4,214,703

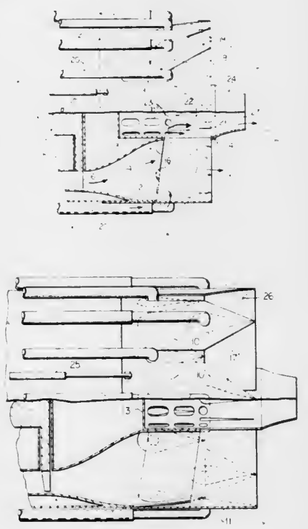
AIRCRAFT ENGINE NOZZLE

Norman E. Sorensen, Saratoga, and Eldon A. Latham, Sunnyvale, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 23, 1979, Ser. No. 23,436

Int. Cl.[3] B64D *33/04*

U.S. Cl. 239—127.3 **5 Claims**



1. A variable area exit nozzle arrangement for an aircraft engine having a substantially reduced length and weight which comprises a plurality of longitudinally movable radial vanes and a plurality of fixed radial vanes, the movable radial vanes being alternately disposed with respect to the fixed radial vanes, and means for displacing the movable radial vanes along the longitudinal axis of the engine relative to said fixed radial vanes, said radial vanes radially extending across the main exhaust flow of the engine and each having a taper in the downstream direction whereby the exit nozzle area is varied when the movable radial vanes are displaced with respect to the fixed radial vanes, said nozzle including a translating outer sleeve and a translating inner sleeve connected by said movable radial vanes and a fixed main outer body and fixed main inner body connected by said fixed radial vanes, said translating outer and inner sleeves and movable radial vanes moving as a unit relative to said fixed outer and inner bodies and said fixed radial vanes.

4,214,704

RECIPROCATOR

Masashi Nagai, Gahanna, Ohio, assignor to Rimrock Corporation, Columbus, Ohio

Filed May 8, 1978, Ser. No. 903,959

Int. Cl.[2] B05B *3/18;* **F16N** *25/00*

U.S. Cl. 239—187 **7 Claims**

1. Apparatus for automatically moving a reciprocating operating head successively through variable-speed, variable-function operating cycles that include linear extension and retraction to and from a space within which predetermined operations are to be sequentially performed, comprising:

a fixed frame,

first chain-and-sprocket drive means on said frame,

an intermediate carriage on said fixed frame operatively connected to said first chain-and-sprocket drive means and adapted to be moved linearly thereby relative to said frame between a retracted position on said frame and an extended position projecting outwardly from said frame,

second chain-and-sprocket drive means on said intermediate carriage,

rack means on said frame,

a pinion mounted on said intermediate carriage for operative engagement with said rack means, said pinion being operatively connected to said second chain-and-sprocket drive



means for driving said second chain-and-sprocket drive means in response to movement of said intermediate carriage relative to said frame, and

a head carriage on said intermediate carriage operatively connected to said second chain-and-sprocket drive means and adapted to be moved linearly thereby relative to said intermediate carriage between a retracted position on said intermediate carriage and an extended position projecting outwardly from said intermediate carriage, said operating head being mounted on said head carriage.

4,214,705

APPARATUS FOR CLEANING TANKS

Grady Watts, Vero Beach, Fla., and Michael Robinson, Malvern, England, assignors to Chemdet Sonic Systems, Inc., Port Washington, N.Y.

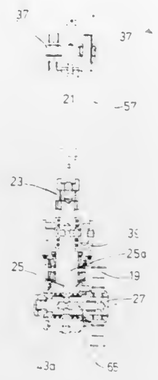
Filed Dec. 18, 1978, Ser. No. 970,555

Int. Cl.[2] B05B *3/02*

U.S. Cl. 239—227 **10 Claims**

1. In an apparatus using high pressure fluids for cleaning tanks having an elongated cylindrical housing with an upper fluid inlet portion and a lower portion having a rotating cylindrical main vertical tube journaled for rotation in said lower portion, a bevel housing gear at the lower end of said lower portion, a nozzle assembly attached to said rotating cylindrical main vertical tube including spray nozzles at the outer end of said nozzle assembly and a bevel gear coupled to said nozzle assembly in mesh with said bevel housing gear, the improvement therein wherein said nozzle assembly includes an elongated nozzle tube disposed at right angles to said rotating cylindrical main vertical tube, said spray nozzles being at one end of said nozzle tube, said nozzle assembly bevel gear being at the other end of said nozzle tube, wherein said main tube is concentric with said housing, wherein said apparatus further

comprises means symmetric with respect to said main tube for rotating said main tube and thereby rotating said nozzle assembly, and means for defining a plurality of separate passageways for feeding different types of fluids to said spray nozzles.

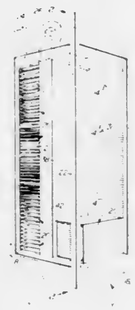


4,214,706

AIR DISTRIBUTION SYSTEM

Arthur Gee, Niagara Falls, N.Y.; Edward J. Largo, and Boris M. Plesinger, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 20, 1978, Ser. No. 971,469
Int. Cl.[2] F23D *13/44*
U.S. Cl. 239—553.3 **15 Claims**



1. An improved air distribution system comprising:

planar walls forming a plenum chamber; said plenum chamber having a pair of ends, a substantially uniform cross section, and a plane of symmetry; two of said walls being substantially parallel to said plane of symmetry;

end wall means closing one end of said chamber;

planar baffle means having a surface area positioned in the plenum chamber so that it substantially lies in the plane of symmetry of the chamber, said baffle means having a large number of substantially small openings formed through it;

air metering slots of substantially uniform size formed in the two planar walls substantially parallel to the plane of symmetry of the plenum chamber for directing air flow from within the chambers in a direction substantially normal to the wall means; and

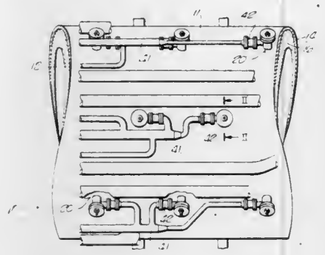
air pump means connected to the other end of the plenum chamber for forcing air into the plenum chamber.

4,214,707

TRAP-PORT FOR ROTARY KILNS

Thomas W. Flaherty, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 23, 1979, Ser. No. 59,908
Int. Cl.[2] B05B *1/14*
U.S. Cl. 239—553.5 **7 Claims**



1. A nozzle for supplying fluid to a rotary kiln having a hollow sleeve structure adapted to extend through the kiln wall from the exterior thereof into communication with the interior of the kiln;

a nozzle having an axis disposed in said sleeve adjacent the interior of the kiln;

a plurality of orifices formed in said nozzle with their axes disposed in planes parallel to the axis of said nozzle;

a labyrinth member secured to said nozzle on the side thereof remote from the interior of the kiln for entrapping particulates that enter through said orifices;

means formed in said labyrinth member to permit entry of a fluid; and,

means within said labyrinth to effect turbulent mixing of the fluid admitted to said labyrinth member with particulate material that enters the labyrinth member through the orifices of said nozzle;

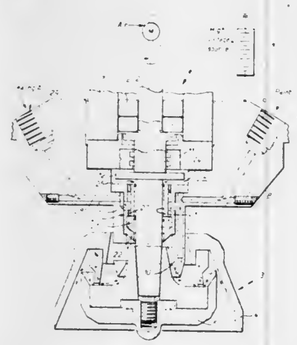
whereby the particulate material is carried out of the labyrinth member by the fluid through said nozzle and into the kiln.

4,214,708

ELECTROSTATIC PAINT SPRAY APPARATUS HAVING ROTARY SPRAY HEAD WITH AN AIR SEAL

Adrien Lacchia, Meylan, France, assignor to Air Industrie, Courbevoie, France

Filed Dec. 14, 1978, Ser. No. 969,315
Claims priority, application France, Dec. 20, 1977, 77 38363
Int. Cl.[2] B05B *5/04, 3/10;* **F16J** *15/40*
U.S. Cl. 239—703 **7 Claims**



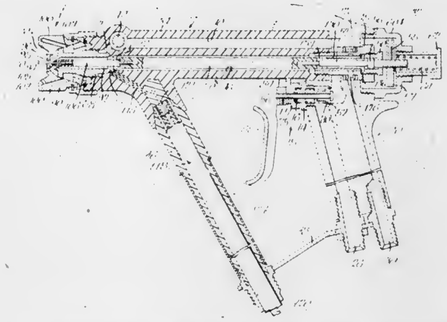
1. In an electrostatic paint spray apparatus including a body member, a shaft mounted for rotation in bearing means in the body member, a rotary spray-head mounted at one end of the shaft, an injection collar arranged around the shaft for distributing paint or solvent through a distributing ring protruding into said spray head; the improvement comprising an air seal adapted to be connected to a source of pressurized air and defining an air barrier against paint or solvent, said air seal including an air flow path running along the shaft axially intermediate the spray head and the bearing means and connected to barrier air venting means for venting barrier air to the surroundings before reaching the bearing means, and further comprising an annular air feed chamber connected to the upstream end of said air flow path which is defined between the shaft and a distribution sleeve operatively disposed between the injection collar and the spray head, an air inlet in the injection collar being adapted to be connected to said source of pressurized air and to said annular feed chamber via an annular distributing groove.

4,214,709

ELECTROSTATIC SPRAY COATING APPARATUS

Jon V. Scull, Longmont, Colo., and Patrick D. Shaffer, Prospect Heights, Ill., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Continuation of Ser. No. 837,418, Sep. 28, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,567
Int. Cl.[2] B05B *5/00*
U.S. Cl. 239—707 **13 Claims**



1. An electrostatic spray apparatus having an electrically insulating body including a material passage terminating in an outlet orifice, and a valve for opening and closing said orifice including an electrically insulating stem extending through said material passage, the improvement comprising electrically conductive material charging means on one end of said stem extending to and through said orifice without sealing said stem from said material passage, so that upon occurrence of material in said passage said stem is exposed to and contacts the material, and a power lead connected to said conductive means for causing said conductive means to charge material passing through said passage and said orifice, said conductive means being the sole electrically charged means contacted by said material and having a low capacitance or electrical energy storage capability.

4,214,710

FROTH FLOTATION OF ZINC SULFIDE

Martin Wilson, Irvine, Calif., assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Oct. 20, 1978, Ser. No. 953,140
Int. Cl.[2] B02C *17/00*
U.S. Cl. 241—24 **12 Claims**

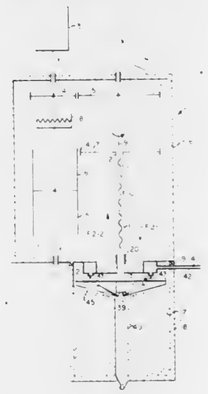
7. In the method of purification of zinc sulfide by froth flotation, the improvement which consists of carrying out said froth flotation in the presence of an effective amount of a collector for zinc sulfide and a substituted benzotrifluoride depressant, thereby depressing calcium fluoride impurities, said benzotrifluoride substituent being selected from the group consisting of hydroxy, amino and carboxylic acid.

4,214,711

EROSION DEVICE COMPRISING A HEAD WITH KNIVES AND PROCESS

Maurice Chapuis, Sayat, and Jean-Yves Machat, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Mar. 30, 1979, Ser. No. 25,392
Claims priority, application France, Apr. 11, 1978, 78 10853
Int. Cl.[3] B02C *7/12*
U.S. Cl. 241—30 **10 Claims**



1. An erosion device comprising at least one head and means for imparting to the head movements of rotation around an axis XX' and of translation along said axis, characterized by the fact that

(a) the head comprises knives which are blades of generally flat shape, each knife having an attack face, a trailing face and a median plane;

(b) the median plane of each knife, located at an equal distance from the attack face and the trailing face of this knife, passes through the axis XX', every two successive median planes forming with each other a constant angle α;

(c) each knife has several teeth; each tooth has a leading edge with a length "a", said leading edge being on the attack face of the knife; the leading edges of the teeth of the knife and their virtual extensions form a practically continuous common line, called line of attack; two adjacent teeth of the knife are separated by a spacing "b"; the length "a" and the spacing "b" being measured along the line of attack; and

(d) the teeth are capable of digging grooves in a material to be eroded, the groove corresponding to each tooth having a portion in common with at least one groove corresponding to a tooth of an adjacent knife.

4,214,712

MICRO-MILL-MIXER

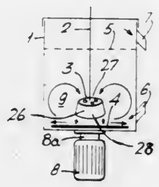
Jacques J. B. van Hoorn, 21 Rue A. Hottat, 1050 Bruxelles, Belgium

Filed Mar. 28, 1978, Ser. No. 894,238
Claims priority, application Belgium, Apr. 28, 1977, 0177082
Int. Cl.[2] B02C *23/36*
U.S. Cl. 241—46 B **5 Claims**

1. A micro-mill mixer comprising in combination:

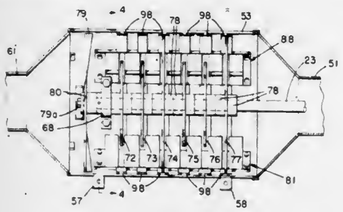
an enclosure for treating material, the material including particles carried in a fluid, the material to be accelerated in said enclosure,

an inlet means in said enclosure for introducing material to be treated into said enclosure,
an outlet means for discharging from said enclosure material for which treatment has been completed,
at least one abrasive member having at least one face provided with an abrasive coating forming hard, sharp crystalline cutting points,
at least one accelerator means for providing both centrigufal and centripetal motion to said material, said accelerator means having internal conduits ejecting the particles and fluid toward the abrasive member and means for effecting flow of material into said accelerator means, so that



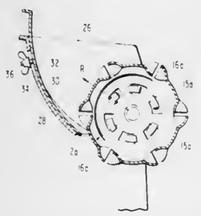
ejected material continuously re-enters the accelerator means to effect repetitive circulation,
said accelerator means and said abrasive member being positioned relative to one another so that the particles and the fluid are projected onto said abrasive member and against said abrasive coating to produce intense splitting, slicing and particle shearing as well as fluid division jointly with coating of said particles by said fluid to form an intimate mix, and said accelerator means and abrasive member being furthermore positioned so as to provide a continuous repetitive circulation of said particles and fluid over said abrasive member.

4,214,713
LAWN DEBRIS PULVERIZER
George H. Wright, 3901 Country Club Rd., Winston-Salem, N.C. 27104
Filed Jun. 16, 1978, Ser. No. 916,141
Int. Cl.³ B02C *13/10*
U.S. Cl. 241—57 **5 Claims**



1. A lawn debris pulverizer for comminuting leaves, twigs and garden residue comprising; a housing having a diverging frusto-conical inlet and a converging frusto-conical discharge openings at opposite end thereof for receiving leaves, twigs and garden residue therein, said housing having a central cylindrical member with lower and upper half-cylindrical shells cooperatively aligned and hingedly connected together for pivotally displacing the upper shell relative to said lower shell and an internal chamber and a shaft rotatably axially-supported therein, means for rotating said shaft, a debris dispersion means mounted on said shaft adjacent to said inlet in said internal chamber, a plurality of comminuting means mounted on said shaft in axial-spaced relation to said debris dispersion means and axially spaced from each other to rotate with said shaft, a series of shearing means flush mounted in said internal chamber and spaced from each other and including inverted V-shaped anvils, each of said series of shearing means having comminuting means receiving slots therebetween through which a shaft-mounted comminuting means passes to cooperate with the shearing means whereby leaves, twigs and garden residues will be comminuted progressively as they pass through said housing by the action of said comminuting means and shearing means, and means for generating a flow of air through said housing which flow of air will induce the leaves, twigs and garden residues into and through said housing for discharge therefrom.

4,214,714
APPARATUS FOR CUTTING FOOD
Elwood M. Graham, Ocean Springs, Miss., assignor to M. H. Graham Corporation, Biloxi, Miss.
Filed Aug. 15, 1978, Ser. No. 933,683
Int. Cl.² B02C *18/22*
U.S. Cl. 241—93 **8 Claims**

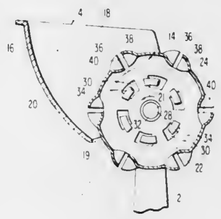


1. A rotary food cutting apparatus comprising,
a hopper for holding food to be cut, said hopper having a lower edge,
means for rotationally supporting a cutter cone at a position which extends adjacent to the lower edge of the hopper,
a set of interchangeable cutter cones including a first cutter cone and a second cutter cone each having a conical wall portion which is symmetrical with respect to a central axis, said cutter cones each being detachable from said cone-supporting means, and cutting portions projecting radially outwardly from said conical wall portion, each cutting portion providing a forwardly facing opening and a sharp forwardly facing cutting edge for cutting material in said hopper.
said wall portions of said cutter cones being substantially geometrically identical, said cutting portions of said first cutter cone projecting from their associated wall portion a distance which is less than the corresponding distance by which the cutting portions of said second cutter cone project from their respective conical wall portion, said first and second cones providing different depths of cut in that said forwardly facing openings on said first cutter cone have a height from their respective wall portion which is less than the corresponding height of the forwardly facing openings on said second cutter cone, the corresponding said cutting portions of said first and second cutter cones lying at different distances from their respective central axes,
said lower edge of the hopper being movable to vary its distance from the cutter cones, means for retaining said lower edge of the hopper at positions which lie proximate to the path of the cutting portions of the cutter cone.

4,214,715
ROTARY FOOD CUTTING APPARATUS
Elwood M. Graham, Ocean Springs, Miss., assignor to M. H. Graham Corporation, Biloxi, Miss.
Filed Aug. 15, 1978, Ser. No. 933,684
Int. Cl.² B02C *18/18*
U.S. Cl. 241—93 **4 Claims**

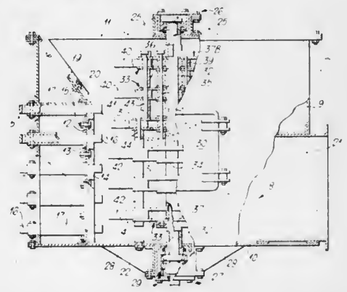
1. A rotary food cutting apparatus comprising,

a hopper for holding food to be cut, said hopper having a lower edge,
a spindle, means for supporting said spindle for rotary movement about an axis which is higher than the lower edge of the hopper, and means on said spindle for supporting a cutter cone at a position which extends adjacent to the lower edge of the hopper,
a set of interchangeable cutter cones each having a conical wall portion which is symmetrical with respect to a central axis, and cutting portions projecting radially outwardly from said conical wall portion, each cutting portion providing a forwardly facing opening and a sharp forwardly facing cutting edge for cutting material in said hopper,



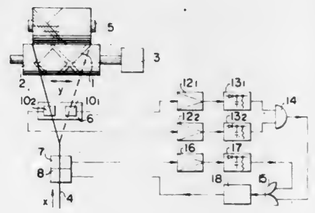
said cutter cones being constructed to provide products of different thicknesses by providing a first said cutter cone having a said wall portion which has radii which are greater than the corresponding radii of the wall portion of a second said cutter cone, said cutting portions of said first cutter cone projecting from their associated wall portion a distance which is less than the corresponding distance by which the cutting portions of said second cutter cone project from their respective conical wall portion, the corresponding said cutting portions of said first and second cutter cones lying at substantially the same distance from their respective central axes so as to lie substantially the same distance from the lower edge of the hopper.

4,214,716
PULVERIZER
Michel A. Jadouin, 4/31 William St., Rose Bay, New South Wales, Australia (2029)
Continuation-in-part of Ser. No. 845,883, Oct. 27, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,636
Claims priority, application Australia, Nov. 11, 1976, PC7948
Int. Cl.² B02C *13/282*
U.S. Cl. 241—186 R **9 Claims**



1. A pulveriser of the kind comprising a barrel having an open top for infeed of material to be pulverised and a bottom outlet for departure of pulverised material, an upright rotor rotatable within the barrel and a plurality of hammers mounted on the rotor; characterised in that a plurality of stationary blades are cantilevered to project inwardly from the barrel wall so as to be out of contact with the hammers, said barrel comprises an inner shell spaced radially from an outer shell and enclosed by the latter. a plurality of bracing tubes extend radially from one shell to the other and supported by both, and said stationary blades are at least partially housed by said bracing tubes whereby said stationary blades are braced against lateral forces.

4,214,717
FALSE REELING PREVENTING APPARATUS FOR TRAVERSE THREAD REELING MACHINES
Shozaburo Makino, Kawasaki, and Seiji Otobe, Yono, both of Japan, assignors to Nippon Seren Co. Ltd., Kawasaki, Japan
Continuation of Ser. No. 694,566, Jun. 10, 1976, abandoned. This application May 16, 1979, Ser. No. 39,552
Claims priority, application Japan, Jun. 10, 1975, 50-69115
Int. Cl.² B65H *63/00*
U.S. Cl. 242—36 **4 Claims**

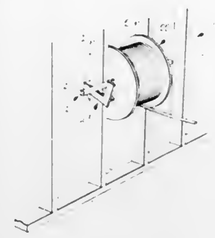


1. In a reeling machine in which a thread is traversed as it is reeled on a bobbin, the improvement comprising in combination,
two electronic sensors positioned to intercept without contact with the thread the traverse of the thread in two spaced traverse positions representative of a full traverse span across the bobbin and to produce a pulse from each sensor upon traverse of the thread across the full traverse span,
rectifier means for each sensor providing a separate d-c signal having a time constant maintaining a d-c signal when the thread is traversed at its normal traverse rate,
a single logic circuit combining the two d-c signals to produce an output signal whenever either of the separate d-c signals are missing because of an imcomplete thread traverse, and
alarm means for preventing the thread from being reeled onto said bobbin responsive to the output signal from the single logic circuit.

4,214,718
WIRE REEL SUPPORT BRACKETS
Bruce A. Silkey, Rte. 1, Box 162A, Lawrence, Kans. 66044
Filed Mar. 23, 1979, Ser. No. 23,150
Int. Cl.² B65H *49/00*
U.S. Cl. 242—129.6 **5 Claims**

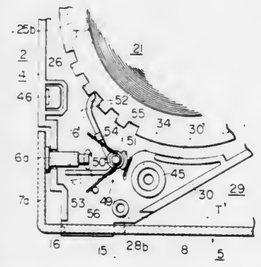
1. Structure for rotatably supporting a reel of electrical wire or the like, comprising:
a pair of spaced, upright members each presenting a pair of spaced, opposed faces;
a bracket mounted on each member respectively and including a pair of spaced, opposed, surfaces for respectively engaging said faces of the corresponding member, and an upright arm proximal to one of said faces;

an elongated, reel-supporting element spanning said members and wedged between and in engagement with each of



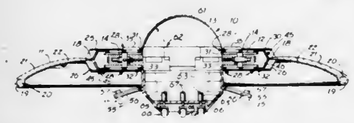
said one faces and the proximal bracket arms for securely holding said element in place.

4,214,719
TAPE CASSETTE
Shinichiro Kato, Sendai, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 12, 1979, Ser. No. 11,560
Claims priority, application Japan, Feb. 17, 1978, 53-19111[U]
Int. Cl.[2] B11B *23/10*
U.S. Cl. 242—198 **11 Claims**



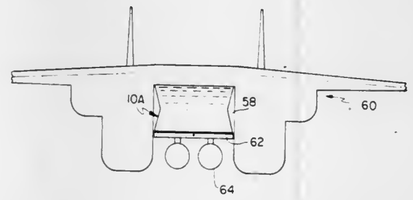
1. In a tape cassette including a cassette casing, at least one tape reel disposed inside said cassette casing, a length of tape wound on said tape reel, an opening formed in said cassette casing, at least two tape guide members, one arranged on each side of said opening for guiding said length of tape in a tape path which extends along said opening, and a brake member engagable with said tape reel to prevent said tape reel from rotating when said tape cassette is not in use; at least one of said tape guide members and said brake member being formed integrally as one body.

4,214,720
FLYING DISC
Edwin R. DeSautel, P.O. Box 1052, Richland, Wash. 99352
Filed Feb. 26, 1979, Ser. No. 15,410
Int. Cl.[3] B64C *27/20, 29/00*
U.S. Cl. 244—12.2 **24 Claims**



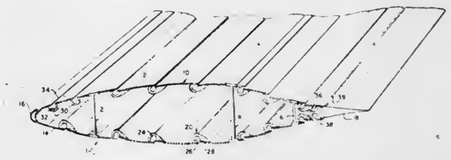
1. A flying disc, comprising:
a central support structure including an upright axis;
a discoidal wing having a convex upper surface and a concave lower surface centered about the upright axis;
bearings mounting the wing and support structure to one another for free independent rotation about the upright axis;
a first circular set of turbine blades centered on the upright axis and mounted on the wing to project upwardly on the convex upper surface thereof;
a second circular set of turbine blades centered on the upright axis and mounted on the wing to project downwardly on the concave lower surface thereof;
said turbine blades of both sets being arranged to impart rotational motion of said discoidal wing about the upright axis in response to fluid thrust directed against them from within the central support structure;
thrust means within the support structure for producing an outwardly directed thrust against the turbine blades;
means for angularly adjusting the thrust produced by the thrust means so it may be directed upwardly against the first set of turbine blades or downwardly against the second set of turbine blades, or horizontally against both sets of turbine blades equally;
thrust diverting means mounted on the central support structure and positioned between the thrust means and turbine blades for angularly deflecting thrust to cause a resultant rotation or stabilization of rotation of the central support structure relative to said discoidal wing; and
horizontal directional thrust means mounted on the central support structure for producing directional thrust to move the disc horizontally during flight.

4,214,721
AIRCRAFT COLLAPSIBLE FUEL TANK
Walter R. Burhans, Jr., Miller Place; James L. Ciccarello, Bay Shore, and Charles H. Stumpf, Commack, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Apr. 14, 1978, Ser. No. 896,456
Int. Cl.[2] B64D *37/04, 37/06*
U.S. Cl. 244—135 B **3 Claims**



1. In an aircraft whose configuration results in interior space thereof being substantially fully occupied in a first condition by only a fuel tank containing fuel, which space is occupied by equipment such as ancillary aircraft components, weapons, and stores in a second condition when said tank is emptied of fuel, a collapsible fuel tank immovably mounted on a surface defining said space, said tank comprising:
an articulated enclosure structure having a rigid top element and
a rigid bottom element spaced with respect to one another, said structure having a plurality of walls between said top and bottom elements, each of said walls comprising a rigid upper panel and a rigid lower panel with hinge means connecting the adjoining edges of said upper and said lower panels, hinge means connecting the upper edge of each of said upper panels with the associated peripheral region of said top element substantially at the edge thereof and hinge means connecting the lower edge of each of said lower panels with the associated peripheral region of said bottom element substantially at the edge thereof;
a non-vented, fuel-impervious elastomeric bladder housed in said enclosure structure and protected thereby, the outer wall of said bladder being fastened to the inside surface of said top and bottom elements and said panels, said hinged top and bottom elements and walls forming an erected substantially closed box structure when said bladder is filled with fuel, with said hinge means permitting said panels to be folded with respect to said top and bottom elements as fuel is withdrawn from said bladder;
mounting means for fixedly fastening said enclosure structure to aircraft structure;
means for pumping fuel into said bladder such that the distension thereof deploys at least said top element and said wall panels whereby in said first condition said enclosure structure is erected to thereby occupy said interior space; and
means for extracting fuel from said bladder such that said extraction of fuel causes the contraction of said bladder whereby said walls are folded and said tank is collapsed in said second condition to vacate said interior space such that it can be occupied by said equipment.

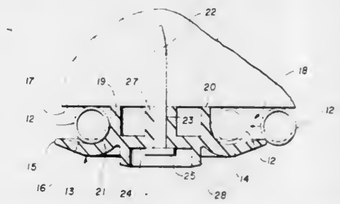
4,214,722
POLLUTION REDUCING AIRCRAFT PROPULSION
Raymond M. Tamura, 218 Lagoon Dr., Honolulu, Hi. 96819
Continuation of Ser. No. 532,646, Dec. 13, 1974, and Ser. No. 788,526, Apr. 18, 1977, abandoned, and a continuation-in-part of Ser. No. 788,528, Apr. 18, 1977. This application Nov. 15, 1978, Ser. No. 961,061
Int. Cl.[2] B64C *21/02*
U.S. Cl. 244—208 **7 Claims**



1. An aircraft pollution reducing propulsion airfoil system comprising a wing having upper and lower surfaces comprising wing skin plates extending longitudinally on the wing and being spaced one from another in chordwise directions, spars extending into the wing between the surfaces, stringer ducts extending along internal sides of the wing surfaces, the stringers having relatively rigid surface-supporting structure and having outward directed openings extending across the wing surfaces, interrupting the wing surfaces between edges of the wing skin plates, the ducts thereby forming stringer structural elements supporting the wing skin plates, the outward directed openings of the stringer ducts being arranged perpendicularly to the wing surfaces in a leading portion of the wing and tangential to the wing surfaces in a trailing portion of the wing surfaces, suction means connected to the stringer ducts with perpendicular openings for drawing gas into the ducts through those openings and blowing means connected to the ducts with tangential openings for flowing gas out of the tangential openings, combustion means connected to the suction means and to the blowing means for accelerating gas through the means.

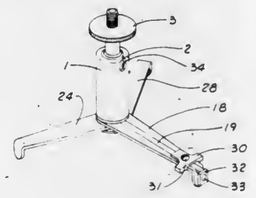
4,214,723
SUPPORT FOR TUBING OR CABLES IN BUILDINGS
James M. Voorhees, Jr., 3921 River Club Rd., Edgewater, Md. 21037
Filed Jun. 1, 1978, Ser. No. 911,301
Int. Cl.[2] F16L *3/22*
U.S. Cl. 248—68 R **1 Claim**

1. A support element for bendable tubing or electrical cables in building construction comprising a unitary support element formed of a tough resilient material having a central hub defining a wide flat end face adapted for abutment with a ceiling surface against which tubing or electrical cables are to be held, a disc-like portion joined integrally with the central hub at the end of the hub away from said flat end face and being joined to the hub by a smooth arcuate wall portion whose radius is approximately one-half the distance between a plane defined by said flat end face and the low point on the upper side of said disc-like portion during the use of the support element, the disc-like portion tapering radially outwardly from said arcuate wall portion and terminating in a comparatively thin marginal circular edge which is spaced from the plane of the flat end face a distance substantially less than the distance between the plane of the end face and said low point, whereby tubing or electrical cables to be supported can be forced laterally through a constricted space between said thin marginal circular edge and an opposing ceiling surface against which the flat end face is abutted during use of the support element, the inserted tubing or cables then engaging snugly between said



ceiling surface and said arcuate wall portion and lying substantially tangent to the periphery of the central hub, said hub being cylindrically formed, said thin marginal circular edge being disposed radially beyond the periphery of the central hub a substantially greater distance than the spacing of said edge from said plane of said flat end face of the hub and said distance also being substantially greater than said radius of the arcuate wall portion to thereby define on the upper face of the tapering disc-like portion outwardly of the arcuate wall portion an annular radially wide inclined surface portion immediately inwardly of said circular edge, and said central hub having an axial central through opening adapted to receive a driven fastener used to anchor the support element firmly against a ceiling surface in a building.

4,214,724
COLLAPSIBLE TRIPOD WITH SWIVEL LOCK
William N. Geiger, 13142 St. Thomas Dr., Santa Ana, Calif. 92705
Filed May 30, 1978, Ser. No. 910,356
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—167 **8 Claims**



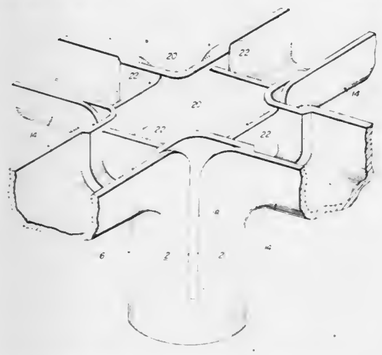
1. In a tripod, the combination comprising:
a generally hollow housing having a bottom and a top opening;
three legs, one of said legs being mounted to the bottom of said housing in fixed relation therewith, the other two of said legs being pivotally coupled to the bottom of said housing;
swivel ball mount means having a ball portion swivelly positioned within said housing and a fastening portion extending through said opening;
pressure plate means within said housing, said pressure plate

means being configured for engaging a part of said ball portion;

means normally biasing said pressure plate means into contact with said ball portion thereby restraining said ball portion from swivelling; and

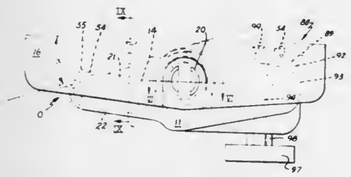
manually operable means operatively coupled to said one leg and to a trip lever within said housing, said trip lever being actuable by said manually operable means against said normally biasing means to thereby free said pressure plate means from the force of its bias for permitting swivelling of said ball portion.

4,214,725
FURNITURE BASE
Gunter F. Eberle, Dallas, Tex., assignor to Vecta Contract, Inc., Dallas, Tex.
Filed Jan. 24, 1979, Ser. No. 6,187
Int. Cl.³ A47B *91/00, 13/02*
U.S. Cl. 248—188.7 **9 Claims**



1. A furniture base comprising a cast pedestal having substantially horizontal feet radially extending from a central upwardly projecting riser, a plurality of substantially vertical open slots in said riser, each one of said slots disposed between respective ones of said feet, and an upper support mounted on said riser.

4,214,726
CHAIR CONTROL
Alexander A. Karrip, Grand Rapids; Jack R. Knoblauch, Byron Center; Charles C. Pergler, Grand Rapids, and Donald D. Korell, Ada, all of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.
Filed Nov. 6, 1978, Ser. No. 957,748
Int. Cl.² A47C *3/026*
U.S. Cl. 248—575 **28 Claims**



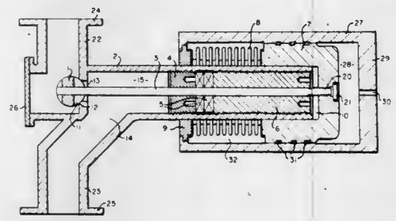
1. A housing for a chair control comprising:

an open top generally rectangular deep drawn cup having five sides for enclosing a torsional energy storage package;

means for securing a base structure to said cup and evenly distributing stresses to the walls of said cup comprising first and second generally L-shaped interlocking spindle support members, said support members being apertured for receiving a spindle and said support members forming a roughly box-shaped cup reinforcing structure welded to the bottom and three adjoining sidewalls of said cup; and

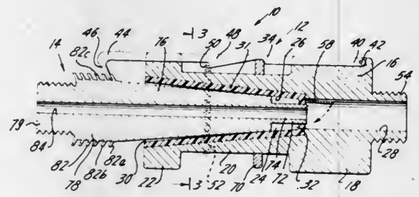
means for journaling a tilting chair member about said cup.

4,214,727
VALVE APPARATUS
Martin Baram, 13 Svanholmvej, 2660 Brondby Strand, Denmark
Filed Oct. 2, 1978, Ser. No. 948,033
Claims priority, application Denmark, Oct. 25, 1977, 4733/77
Int. Cl.² F16K *31/143*
U.S. Cl. 251—63.4 **42 Claims**



1. A valve apparatus for fluid and gaseous materials comprising a valve housing having a first port at one end and a second port, said housing further comprising a flow chamber, a pressure chamber and a core at the other end of said housing, a controllable closure member associated with said first port and connected to said second port, said valve having at its other end control organs for said closure member, said closure member being adapted for opening said first port with an outwardly directed linear movement and being fastened to one end of a linearly movable rod which extends from said first port through said flow chamber and further through said core in the other end of the housing and from there through said pressure chamber to a firm connection with an end plate of a linearly movable piston, said piston surrounding said other end of the housing in gliding mutual contact, said piston being connected at its lower end to one end of a spring pipe, said spring pipe coaxially surrounding the housing and being fastened at its other end to a flange on the housing.

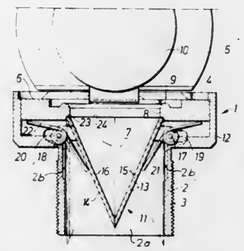
4,214,728
COUPLING DEVICE
Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424
Division of Ser. No. 659,370, Feb. 19, 1976, Pat. No. 4,108,475, which is a division of Ser. No. 479,667, Jun. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 427,149, Dec. 21, 1973, abandoned. This application Jun. 29, 1978, Ser. No. 920,405
Int. Cl.² F16L *21/00, 37/28*
U.S. Cl. 251—149.2 **13 Claims**



1. A substantially fluid-tight coupling device comprising, in combination, a socket member and a plug member adapted to be removably disposed in said socket member in a first position to form a substantially fluid-tight seal between said members, said plug member comprising a conical-like member including

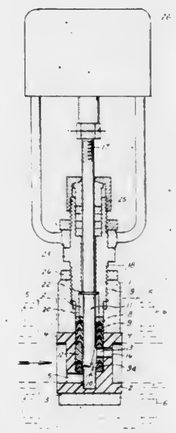
tapered outer walls, and inner walls and an end segment, said inner walls defining a bore running through said plug member, and at least two securing means, one of said securing means being disposed closer to a narrow end of said tapered outer walls than the other of said securing means, said socket member comprising a body portion including solid rigid outer walls and tapered inner walls defining a tapered passageway running through said body portion, at least one wear resistant lining disposed between said tapered outer walls of said plug member and said tapered passageway of said socket member, said tapered outer walls of said plug member being adapted to seat in an initial portion of said tapered passageway of said socket member, to define said first position and restricted to said initial position when so seated in that it cannot be moved deeper into the socket member, said plug member and socket member by means of said lining forming a substantially fluid-tight seal between said members, and only after portions of said lining have worn, said plug member is adapted to be repositioned with respect to said initial portion of said passageway of said socket member to a second portion of said passageway to define a second position and thereby form, by means of said lining, a substantially fluid-tight seal with said socket member, said socket member further including at least one securing means, a portion of which is connected to said body portion of said socket member, said at least one securing means being adapted to engage at least one of said securing means of said plug member when said plug and socket members are in their first position, and after a portion of said lining has worn and said plug member has been repositioned in said socket member to define said second position, a second of said securing means of said plug member and said at least one securing means of said socket member are adapted to be engaged in a second position relative to each other to retain said plug member in said socket member in substantially fluid-tight engagement, and movable closure means disposed in said passageway of said socket member, said closure means being in its closed position when said plug member is not seated in said socket member to close off said passageway of said socket member, and said closure means is adapted to be opened by said end segment of said plug member when said plug member is seated in said socket member.

4,214,729
CONNECTING VALVE
Rune Narfgren, Tyresö, Sweden, assignor to AB Svenska Flaktfabriken, Stockholm, Sweden
Filed Nov. 20, 1978, Ser. No. 962,467
Claims priority, application Sweden, Nov. 28, 1977, 7713443
Int. Cl.³ F16L *29/00*
U.S. Cl. 251—149.2 **3 Claims**



1. A connecting valve for connecting a tubular connecting nozzle for a vacuum cleaning equipment to a suction duct system, said nozzle having a cylindrical outer surface, said connecting valve consisting of a valve housing provided with an outer cover, and an inner shut-off device for the vacuum in the suction duct system actuated by the connecting nozzle and provided with at least two spring-prestressed flaps (**13,14**) mounted for pivotal movement on shafts in the upstream portion (**12**) of the valve housing (**1**), which flaps in closed position abut each other and thereby form a funnel-shaped closure of the mouth of the suction duct (**7**), the point end of the funnel being directed inward to the duct, each flap being formed as a portion cut out of a cylindrical pipe wall, the concave surface (**15,16**) of which agrees with the outer surface of the connecting nozzle, said shafts being mounted in grooves (**19,20**) permitting outward displacement of said shafts in the valve housing in order to bring about a combined rotation and displacing movement of the flaps upon insertion of the connecting nozzle therebetween.

4,214,730
CHEMICALLY INERT CONTROL VALVE
Hans D. Baumann, 35 Mirana Rd., Portsmouth, N.H. 03801
Filed Apr. 11, 1979, Ser. No. 29,147
Int. Cl.³ F16K *1/52, 47/04*
U.S. Cl. 251—171 **8 Claims**



1. Chemically inert control valve comprising

(a) housing having a longitudinal central bore extending throughout its lengths;

(b) inlet and outlet end formed on said housing, said inlet and out ends adapted to be coupled in a pipe line;

(c) a cylindrical insert removeably received in said central bore;

(d) a central perpendicular cross-bore intersects both said housing and said insert and containing within a tubular packing arrangement consisting of an upper and a lower portion, separated by tubular spacer means having one or more communicating passages between its inner and outer periphery;

(e) a plug slidably engaged within said packing arrangement, one lower terminating end of said plug arranged to selectively engage or disengage the lower portion of said packing arrangement;

(f) at least one lower horizontal co-passage within said cylindrical insert and located below the lower portion of said packing arrangement for communication of fluid towards the central perpendicular cross-bore;

(g) one or more upper horizontal passages within said cylindrical insert and communicating with said passages in the tubular spacer means;

(h) means to position said plug;

(i) means to compress said packing arrangement.

4,214,731

BUTTERFLY VALVE

Kazunari Oota, and Kazuhiro Yamazaki, both of Hirakata, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Apr. 3, 1978, Ser. No. 892,857
Claims priority, application Japan, Apr. 1, 1977, 52-37978; Apr. 1, 1977, 52-37979; Apr. 1, 1977, 52-37980
Int. Cl.³ F16K *1/226*
U.S. Cl. 251—306 **4 Claims**



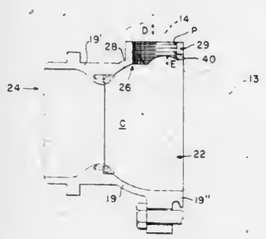
1. A butterfly valve comprising a valve case having an inner peripheral surface defining a flow passage therethrough, an annular valve seat fitting to the inner peripheral surface of the valve case and including an annular elastic seat member and an annular metal core fitting to the outer periphery of the seat member, and a valve disk fitting in the annular valve seat and supported at its upper and lower portions by stems extending through holes in the valve seat and held by an upper and a lower portion of the valve case, said holes forming the center of an elliptical planar contact face formed on the inside surface of said annular valve seat and elongated circumferentially of the seat, said valve disk having a stem bore provided with cutouts extending inward axially thereof, said cutouts being positioned in circumferential area around said bore opening, the distance between the outer extremities of said cutouts being slightly longer than the short diameter of said elliptical contact face, the butterfly valve being characterized in that when the valve is installed in a piping system with pipe flanges fitted to the valve case at the opposite ends of its flow passage, the opposed pipe flange surfaces hold the opposite side faces of the valve seat in pressing contact therewith, elastically deforming the seat member into intimate contact with the inner peripheral surface of the valve case.

4,214,732

SIDE-SPLIT BALL VALVE CONSTRUCTION

Peter G. Kindersley, Glens Falls, N.Y., assignor to Kamyr Valves, Inc., Glens Falls, N.Y.

Filed May 17, 1978, Ser. No. 906,789
Int. Cl.³ F16K *5/06*
U.S. Cl. 251—315 **7 Claims**



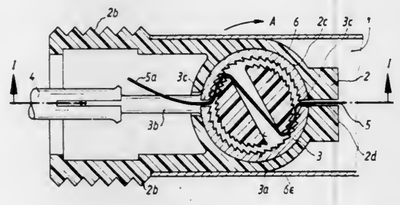
5. A ball valve assembly comprising:
a one-piece ball and shaft, said ball having a flattened portion adjacent said shaft and having a through bore;
a valve housing comprising a body defining a central chamber, and having a flow port at a first end thereof and defining an opening at a second end thereof substantially larger than said flow port; and an end cap cooperating with said body second end at a first end thereof;
means for attaching said body and said end cap together in sealing relationship so that fluid may flow through said fluid ports;
means for defining a passageway in said body for receipt of said shaft, said passageway being elongated in a direction perpendicular to said flow port, and said means including a thick wall portion that is relatively thick in the direction of elongation of said passageway, and a thin wall portion that is relatively thin in the direction of elongation of said passageway, said thick wall portion disposed toward said body first end, and said thin wall portion toward said body second end, and a scallop being formed in said thin wall portion, said scallop effecting a reduction of thickness of said thin wall portion in the direction of elongation of said passageway at a central portion thereof; said passageway being smooth-walled and said end cap being slidingly engaged with and bolted to said body;
first sealing means, associated with said body, encircling said body fluid port for cooperation with said ball,
second sealing means, associated with said end cap, encircling said end cap fluid port for cooperation with said ball,
said opening at said second end of said body being large enough to allow passageway of said one-piece ball and stem therethrough so that said stem can be passed through said scallop and then through said passageway, and said ball seated in cooperation with said first sealing means, and
bushing means for cooperating with said passageway and supporting and sealing said shaft.

4,214,733

DEVICE FOR TENSIONING CORONA-DISCHARGE WIRES

Konrad Brückl, and Georg Fryda, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,302
Int. Cl.³ A63B *61/04*
U.S. Cl. 339—274 **14 Claims**



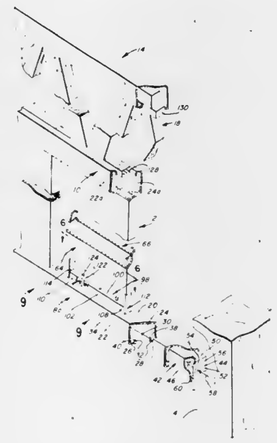
1. In a device for tensioning corona-discharge wires which are fixedly secured at one end, particularly for use in electrostatic copiers, a combination comprising an internally toothed sleeve member; and an externally toothed clamping member received within said sleeve member, each of said members having a transverse opening inclined to the longitudinal axis of said sleeve member so that, when a free end portion of a corona-discharge wire is inserted through both said openings when the same are in registry and the members are thereupon turned relative to one another, the free end portion of the wire will be drawn and become clamped between the teeth of said members under simultaneous tensioning of the wire.

4,214,734

FENCE SYSTEM

Robert T. Stafford, 5112 Forest Ave., Downers Grove, Ill. 60515

Division of Ser. No. 807,384, Jun. 17, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 930,986
Int. Cl.² E04H *17/00*
U.S. Cl. 256—24 **6 Claims**



1. A fence section adapted for disposition between adjacent fence posts comprising an upper rail and a lower rail, each rail including
a rail portion including a base panel, substantially parallel side panels joined to the base panel at opposite edges of the base panel, web portions joined to the side panels and overlying the base panel, and flanges attached to the web portions, said flanges being disposed from the web portions spaced apart from and substantially parallel to the side panels and also being disposed in substantially parallel spaced apart relationship to the base panel whereby said web portions and flanges and the distal edge portions of the side panels form parallel channels overlying and spaced apart from the base panel,
an anchor portion telescopically and slidably mounted in an end of the rail portion, said anchor portion including an end web and side webs connected to a base web, said anchor portion side webs and said anchor portion base web being disposed adjacent the side panels and the base panel respectively of the rail portion,
a plurality of fence panels disposed intermediate the upper rail and the lower rail,
the plurality of fence panels being engaged on and extending from the upper rail to the lower rail, and
the upper rail being connected to the lower rail by a beam which includes shoulders at each end abutting the webs of the upper and lower rails and a tongue at each end extending from between the shoulders and disposed between the flanges of the rails.

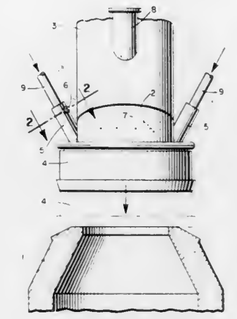
4,214,735

PRESSURE MEASUREMENT IN A HOOD ABOVE A CONVERTER FOR MANUFACTURING STEEL

Nicolaas H. M. Beentjes, Uitgeest, Netherlands, assignor to Hoogovens IJmuiden, B.V., IJmuiden, Netherlands

Filed Sep. 1, 1978, Ser. No. 938,908
Int. Cl.² C21C *5/42*
U.S. Cl. 266—99 **4 Claims**

1. In an apparatus for manufacturing steel comprising a converter, a vertical hood adapted to be connected to the mouth of the converter, at least one pressure-measuring point for determining the pressure within the hood, and at least one conduit opening downwardly in a non-vertical position into said hood for introducing secondary materials into the converter, the improvement whereby the said measuring point is located in the upper side of the said conduit.

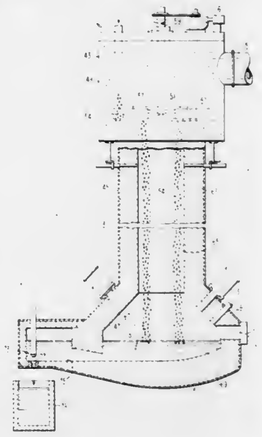


4,214,736

ARC HEATER MELTING SYSTEM

Charles B. Wolf, Irwin; Thomas N. Meyer, Murrysville; Maurice G. Fey, Plum, and Francis J. Harvey, II, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 23, 1979, Ser. No. 32,326
Int. Cl.² C21C *5/52*; H05B *7/18*
U.S. Cl. 266—200 **5 Claims**



1. Apparatus for melting metal chips comprising:
(a) a metallurgical vessel forming a melting chamber and having a wall with an aperture therethrough,
(b) an arc heater mounted on the outer surface of the wall and having an end opening communicating with the melting chamber through the aperture,
(c) the arc heater having axially spaced cylindrical electrodes forming an arc chamber,
(d) one cylindrical electrode extending beyond the outer surface of the wall and through the aperture and opening and toward the melting chamber,
(e) means for striking an electric arc in the axial space,
(f) means for rotating the arc within the arc chamber, and
(g) means for blowing gas through the space to form an elongated arc stream comprising the gas and the arc and into the melting chamber, whereby extension of the elec-

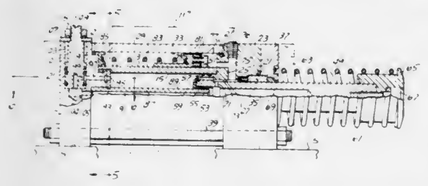
trode far enough toward the melting chamber retards errosion of the wall by the arc stream.

4,214,737

ADJUSTABLE SHOCK ABSORBER INCLUDING METERING PIN AND RESERVOIR STRUCTURE

Leland F. Blatt, 31915 Groesbeck Hwy., Fraser, Mich. 48026

Filed May 11, 1979, Ser. No. 38,256
Int. Cl.[3] F16F *9/48*
U.S. Cl. 267—8 A **5 Claims**



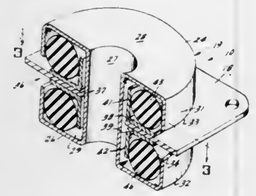
1. A shock absorber comprising an elongated body having a bore filled with liquid;
an elongated barrel, having a bore, spaced from and concentrically receiving said body, and forming a power chamber therebetween;
spaced front and rear blocks sealingly receiving and secured to the ends of said body and barrel, defining with said barrel and body said power chamber and a pressure chamber respectively and closing said bores, said pressure and power chambers being in communication;
a power piston having an axial bore and adjacent one end a plurality of radial ports communicating with said axial bore, and with one end of said power chamber, and a plurality of axial passages extending through said piston, and communicating with said pressure chamber;
said piston being movable within said body and including a piston rod having a bore filled with liquid extending through said front block and outwardly of said body;
an end cap on said rod adapted to be engaged by a moving mass toward the end of a longitudinal stroke;
a coiled spring surrounding said rod and interposed between said cap and said front block normally biasing said rod outwardly of said body;
a float valve movably mounted upon said piston, in registry with said passages closing said passages on retraction of said piston into said body and opening said passages on forward return movement of said piston;
a floating piston sealed within said power chamber and movably mounted and sealed over said body;
a coiled spring within said power chamber normally biasing said floating piston toward one end thereof;
the retraction movement of said power piston causing the flow of fluid under pressure from said body through said power piston and into said power chamber retracting said floating piston against its biasing spring;
there being a fluid return chamber in said rear block having an inlet and an outlet;
an axially apertured externally tapered metering pin at one end secured to said rear block in communicating with said outlet;
said pin extending the length of said body and axially into said power piston and piston rod bore forming an annular aperture therebetween and communicating with said ports and power chamber;
there being an elongated axial passage in said rear block communicating with said body bore and said return chamber;
retraction of said power piston over said metering pin dispersing fluid in said body through the annular aperture between said power piston and metering pin for delivery through said ports and into said power chamber;
said annular aperture decreasing in width as the pressure piston retracts due to the taper of said pin, the remaining fluid being bled into said return chamber and through said metering pin, through said ports and into said power chamber whereby said power piston with its load is decelerated and comes to a smooth stop at the end of its stroke;
a flow adjusting pin having a shank extending transversely of said barrel and rotatably mounted within said rear block and having a variable orifice communicating with said passage and with said return chamber inlet for variably selectively metering the return flow of the displaced liquid into and through said return chamber;
a retainer plate for said adjusting pin;
a calibrated scale upon said retainer plate surrounding said pin shank;
there being a marker on said shank in registry with said scale;
and friction means on said shank in operative registry with said plate for securing said adjusting pin in adjusted position;
said metering pin at its free end being spaced from the bore of said piston rod to define said annular aperture;
for receiving and directing displaced fluid to said power chamber on retraction of said power piston;
the metering pin increasing in diameter towards its opposite end, gradually closing off said annular space, so that the displaced liquid is adjustably metered through said return chamber.

4,214,738

THREE-DIMENSIONAL ISOLATION MOUNT

Russell L. Casper, Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed May 2, 1977, Ser. No. 793,010
Int. Cl.[2] F16F *15/02*
U.S. Cl. 267—141.1 **17 Claims**



1. An improved isolation mount of the type having first and second mount members connectible to respective elements susceptible to relative axial and radial vibration and having a damping means therebetween to dampen relative axial vibrations wherein the improvement comprises:
(a) a cylindrical wall extending axially from the first mount member and at least partially engaging throughout its circumference the damping means;
(b) a cylindrical wall extending axially from the second member and at least partially engaging throughout its circumference the damping means, said first mount member cylindrical wall and said second mount member cylindrical wall having said damping means disposed therebetween to dampen relative radial vibrations between the first and second mount means, and wherein said second mount member cylindrical wall limits relative axial movement between said first and second mount members to a predetermined degree.

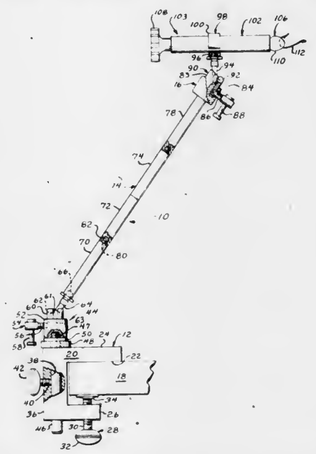
4,214,739

FLY TYING DEVICE

Gregory M. Dailey, 404 S. Governor St., Iowa City, Iowa 52240

Filed Sep. 29, 1978, Ser. No. 947,051
Int. Cl.[2] B25B *1/22*
U.S. Cl. 269—75 **12 Claims**

1. A fly tying device for securing a fishing hook during fly tying operations, said device including a collet and jaw mechanism adapted to hold said fishing hook, a shaft member, a clamp member adapted to clamp onto a surface, a first connecting means for connecting said collect and jaw mechanism to the upper terminus of said shaft member and operating to allow said collet and jaw mechanism to pivot in a completely universal manner about said upper terminus, said first connecting means including a first ball joint assembly including a first ball member having a first joint segment which projects from the outer surface thereof, bracket means connected to said first joint segment and to said collet and jaw mechanism, a first socket means for pivotally receiving said first ball member, said first socket means having recesses which extend downwardly from the top thereof for a predetermined distance, said



recesses being formed to receive said first joint segment, a first housing structure affixed to said upper terminus of said shaft member, said first socket means being supported by said first housing structure for rotation relative thereto, and a first locking means attached to said first housing structure, said first locking means operating to selectively lock said first ball member against movement within said first socket means, and a second connecting means for connectthe lower terminus of said shaft member to said clamp member, said second connecting means operating to allow said shaft member to pivot in a hemispherical manner about said lower terminus, said first and second connecting means cooperating to facilitate movement of said collet and jaw mechanism to a wide variety of positions to provide increased convenience, greater ease, and comfort for the fly tyer during the fly tying operation.

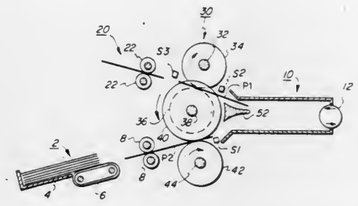
4,214,740

SHEET REVERSING MECHANISM

Thomas Acquaviva, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 2, 1978, Ser. No. 902,136
Int. Cl.[3] B65H *5/06, 29/20*
U.S. Cl. 271—3 **8 Claims**

1. Sheet reversing apparatus having
a sheet input station
a sheet output station,
a reversing station receiving a sheet from the input station for conveyance to the output station and a roller mechanism coupled to the reversing station, the roller mechanism comprising
a first roller system,
a second roller system, the first roller system engaging the second roller system, and
a third roller system, the third roller system engaging the second roller system, the second roller system having concentrically supported first and second rolls rotatable relative to one another, the diameter of the first roll being different from the diameter of the second roll, the first roller system continuously engaging the first roll for conveying sheets from the input station to the reversing station and the third roller system continuously engaging the second roll to convey sheets from the reversing station to the output station, wherein the first and second rolls are adapted for independent operation.

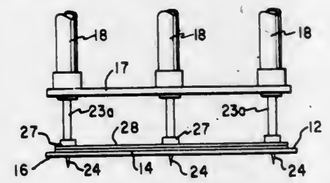


4,214,741

NEEDLE PICKUP DEVICE

Douglas J. Crawford, Waterford, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Continuation of Ser. No. 835,781, Sep. 22, 1977. This application Jun. 4, 1979, Ser. No. 44,986
Int. Cl.[3] B65H *3/22*
U.S. Cl. 271—18.3 **2 Claims**



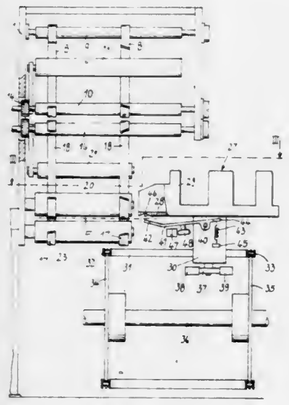
1. A device adapted to pick up and release a layer of sheet material from a loading platform comprising, a frame located in overlying relationship above said platform, a plurality of needles secured to said frame to project downwardly toward said layer from an undersurface of said frame, said needles being spaced apart lengthwise and widthwise to pierce said layer peripherally thereof, a single flat plate extending about and continuously extending between all of said needles horizontally beneath said frame, means for moving said plate toward said sheet material to press the material lying between all of said needles uniformly toward and against said platform, apertures defined by said plate for receiving said needles, means for moving said needles through said plate and through said sheet material, means for limiting movement of said needles through said plate and into said material, means for maintaining said plate and needles in a predetermined relative position while transporting said sheet material to an alternate location, and means for moving said plate upon reaching said alternate location away from said frame to withdraw said needles from said sheet material whereby said sheet material is stripped from said needles and is deposited at said alternate location.

4,214,742

DEVICE FOR FEEDING SHEETS TO BOXING MACHINES

Guglielmo Martelli, Via Gaibola, 13/3°, Bologna, Italy

Filed Oct. 30, 1978, Ser. No. 956,015
Claims priority, application Italy, Nov. 7, 1977, 3594 A/77
Int. Cl.[2] B65H *29/68*
U.S. Cl. 271—69 **5 Claims**



1. A device for feeding sheets to boxing machines, characterized in that it comprises a pair of flexible members driven with continuous motion and disposed in endless configuration about respective idle rollers in such a manner as to comprise two portions in which said flexible members are adjacent to each other to retain therebetween the sheets to be fed to the boxing machine and originating from a store, such that a part of said sheets projects laterally, one of said portions describing a path which is inclined downwards, followed by a horizontal portion which forms an obtuse angle with the inclined portion, a conveyor for the products to be fed to the boxing machine, which moves with continuous motion parallel to said horizontal portion and supports a plurality of compartments uniformly distributed on it and open transversely to the direction of movement of the conveyor, said compartments having a base substantially coplanar with said horizontal portion, a grip associated with each compartment, means for driving said flexible members at a velocity greater than that of the conveyor and such that the horizontal component of the velocity along said inclined portion is equal to that of the conveyor so as to enable the projecting part of the sheets to penetrate between the compartments without interfering therewith as the sheets pass along the inclined portion, and then to accelerate to reach the grip of the front compartment, and cam means to cause the grip to grip said projecting portion in proximity to the end of said horizontal portion.

4,214,743

APPARATUS FOR DIVIDING A CONTINUOUS STREAM OF FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS, INTO INDIVIDUAL SECTIONS

Jacques Meier, Zurich, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Oct. 10, 1978, Ser. No. 949,516
Claims priority, application Switzerland, Oct. 24, 1977, 12893/77; Nov. 25, 1977, 14462/77
Int. Cl.[3] B65H *29/66, 29/68, 33/12*
U.S. Cl. 271—182 **12 Claims**

1. An apparatus for dividing a continuous stream, especially an imbricated product stream, of flat products, preferably printed products, into individual sections, comprising:

A first conveyor device for feeding the products, said first conveyor device having a predetermined conveying direction;

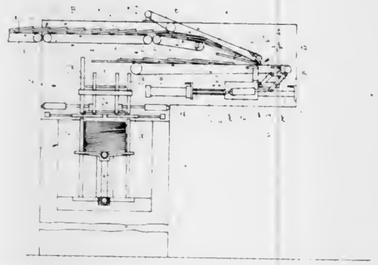
a second conveyor device arranged after the first conveyor device;

said second conveyor device and said first conveyor device coacting with one another so as to define a region of transfer for the products from the first conveyor device to the second conveyor device;

said second conveyor device, at least at the transfer region, being arranged below said first conveyor device;

said second conveyor device, at least at the transfer region, having a conveying direction opposite to the conveying direction of the first conveyor device;

a clamping device for selectively and temporarily fixedly holding at least one product;



means for moving the clamping device in the conveying direction of the second conveyor device between a starting position and an end position at a speed which is less than the conveying speed of the second conveyor device; and

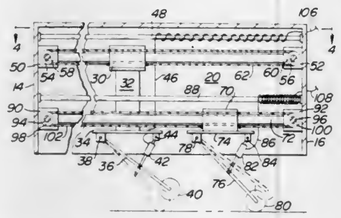
means for activating said clamping device for selectively and temporarily fixedly holding at least one product moving in the conveying direction of the second conveyor device during the movement of the clamping device thereby dividing the continuous stream into individual sections, and for subsequently deactivating said clamping device for allowing said at least one held product to be again conveyed by said second conveyor device.

4,214,744

SNUBBING APPARATUS

Donald J. Evans, Cherry Hill, N.J., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Jun. 8, 1978, Ser. No. 913,616
Int. Cl.[2] B65H *29/66*
U.S. Cl. 271—202 **11 Claims**



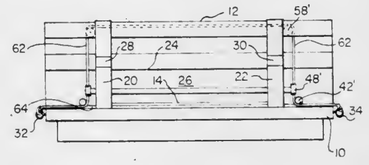
1. A snubbing apparatus for snubbing sheets on a shingling conveyor comprising a support having guide means, a plurality of sets of aligned rollers guided for movement by said guide means so as to enable each set of rollers to be positionable at different locations for snubbing different length sheets, motor means for moving each set of rollers along their respective guide means, power means connected to each roller for selectively moving the same downwardly to a snubbing position and upwardly to an inoperative position, each roller being supported by an arm, each arm being pivotably connected at its upper end to a base plate, each base plate being connected to a discrete header guided for parallel movement along said guide means, said guide means including a track for each header, and said tracks being parallel to one another.

4,214,745

SAFETY GUARD FOR SHEET FEEDING MECHANISMS

Gordon L. Morgret, Baltimore, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Aug. 14, 1978, Ser. No. 933,197
Int. Cl.[2] B65H *5/06, 9/04*
U.S. Cl. 271—272 **1 Claim**



1. In an apparatus for serially feeding sheets of material to the feed rolls of machinery adapted to further process the material, said apparatus including a table means for supporting said sheets prior to feeding and a pair of side guide means for aligning said sheets therebetween prior to feeding, the improvement comprising:

a guard means for restricting access to the nip of said rolls outward the sheets within said guide means, the guard means including:

(i) anchor means fixed to a first side of said table means,

(ii) a continuous spiral rope member fixed to said anchor means,

(iii) a plurality of rope receiving means rotatably mounted on the first one of said side guide means, said rope receiving means adapted to conduct said rope the height of said side guide means,

(iv) a plurality of rope receiving means mounted on said second side guide means, said rope receiving means on said second side guide means adapted to receive said rope from said first side guide means to conduct said rope the height of said second side guide means; and

(v) second anchor means fixed to a second side of said table means, said second anchor means adapted to fixably receive said rope; said anchor means and said rope receiving means on said guide means positioning said rope member opposite the nip outward the sheets within said guide means to restrict access to the nip.

4,214,746

SORTING APPARATUS

Thomas P. Redding, Penfield; Glenn M. Herbert, and Alistair J. Caldwell, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 15, 1979, Ser. No. 3,441
Int. Cl.[3] B65H *39/11*
U.S. Cl. 271—294 **6 Claims**

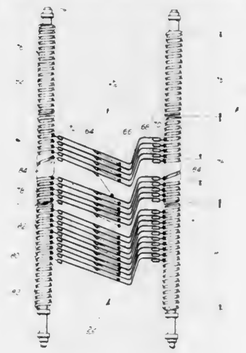
1. An apparatus for sorting sheets, including:

at least two groups of sheet receiving members, each of said two groups of sheet receiving members comprsing a series of individual sheet receiving members aranged to receive sheets, each of said two groups of sheet receiving members include a vertically extending array of closely spaced tray members;

a sheet loading station arranged to advance sheets into said individual sheet receiving members of said two groups of sheet receiving members;

at least two sheet unloading stations, one of said two sheet unloading stations being arranged to have one of said two groups of sheet receiving members positioned thereat for removing the sheets therefrom, and the other of said two sheet unloading stations being arranged to have the other of said two groups of sheet receiving members positioned thereat for removing the sheets therefrom; said one of said two sheet unloading stations being spaced from said other of said two sheet unloading stations; and

means, coupled to said two groups of sheet receiving members, for moving said one of said two groups of sheet receiving members to said one of said two sheet unloading stations with said other of said two groups of sheet receiving members being moved to said sheet loading station so as to bring said individual sheet receiving members of said other of said two groups of sheet receiving members into position for receiving sheets at said sheet loading station, said moving means being arranged to move said other of said two groups of sheet receiving members to said other of said two sheet unloading stations with said one of said two groups of sheet receiving members being moved to said sheet loading station so as to bring said individual sheet receiving members of said one of said two groups of



sheet receiving members into position for receiving sheets at said sheet loading station, thereby loading and unloading each of said two groups of sheet receiving members, said moving means comprising a frame, at least one vertically extending cam member supported by said frame, said cam member being divided into at least three independently rotatable portions with the first portion of said cam member being positioned adjacent said one of said two sheet unloading stations, the second portion of said cam member being positioned adjacent said sheet loading station, and the third portion of said cam member being positioned adjacent said other of said two sheet unloading stations, said cam member being coupled to said array of tray members of said two groups of sheet receiving members so as to move said tray members, first means for rotating the first portion of said cam member and the third portion of said cam member in unison with one another, and second means for rotating the second portion of said cam member independent of the first portion of said cam member and the third portion of said cam member.

4,214,747

MOBILE GEOMETRICAL FORM

Francis Rebajes, San Miguel, 45, Torremolinos-Malaga, Spain

Filed Apr. 7, 1978, Ser. No. 894,604
Int. Cl.[2] D04D *9/04*
U.S. Cl. 272—8 R **20 Claims**

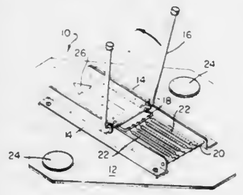
1. A mobile geometrical form comprising first and second axially extending helixes interdigitally wound into each other, each end of one of said helixes continuing into a respective twisted loop which in turn continues into an adjacent end of the other of said helixes to thereby form a unitary structure, a

tube axially extending through said helixes, and anchoring means on said tube for retaining said loops in axially spaced



apart relationship while permitting translatory movement therethrough.

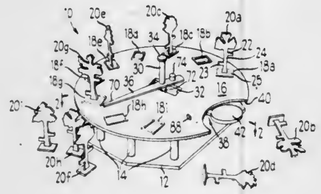
4,214,748
SPRING-BIASED EXERCISE APPARATUS
Charles V. Blackmon, Wichita, Kans., assignor to Blackmon Enterprises, Inc., Wichita, Kans.
Filed Aug. 7, 1978, Ser. No. 931,559
Int. Cl.[2] A63B *5/00*
U.S. Cl. 272—67 **7 Claims**



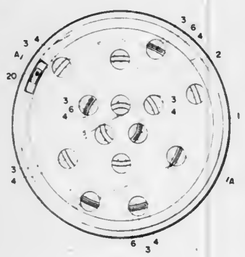
1. An exercise device comprising a base; a generally U-shaped member having arms and a base pivotally connected to the base of the device; a U-shaped bolt means having spaced arms fixedly attached directly to the base of the U-shaped member; a plane including the spaced arms of the U-shaped bolt member forming an angle of less than 90° with a plane passing through the arms of the U-shaped member; spring bias means attached to the bight portion of the U-shaped bolt member and to the base of the device so that when said U-shaped member pivots away from said spring bias means and against the tension of the spring bias means, tension is put on said U-shaped member without having the spring bias means stretch over at least one of the arms of said U-shaped member and creating a safety hazard; the arms of said U-shaped bolt member being offset from the arms of the U-shaped member along the longitudinal axis of the base of the U-shaped member.

4,214,749
TARGET GAME APPARATUS
Ralph J. Kulesza, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 10, 1978, Ser. No. 876,403
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—1 R **5 Claims**

1. A game apparatus comprising:
a platform means defining a playing surface,
target means disposed on said playing surface,
striking means movable relative to said playing surface in a plane generally parallel to the playing surface and selectively engageable with said target means,
drive means including a rotatable shaft means extending through said platform means, said striking means being slidably mounted on said shaft means and constrained to rotate with said shaft means for movement relative to said playing surface, and
a control means associated with said striking means to control the engagement of said striking means with said target means by selectively controlling the sliding movement of the striking means on the shaft means, said control means being pivotally mounted below said platform means and having one end portion engageable with said striking means and an opposite end portion, on the other side of said pivot means, for selective manual operation by the user to control the movement of said striking means along the shaft means to vary the plane of movement thereof.

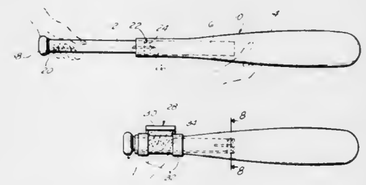


4,214,750
OCTOPUS CATCHING GAME KIT
Takeshi Shimizu, Igusadanchi 8-406, No. 377 Ohaza Igusa, Yashio-shi, Saitama-ken, Japan
Filed Jul. 31, 1978, Ser. No. 929,659
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—1 M **7 Claims**



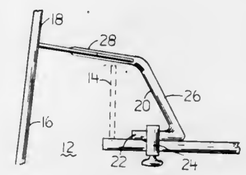
1. A game kit for simulating the sport of fishing, said kit comprising:
a generally cylindrical base having a central vertical access;
a horizontal flat circular playing surface disposed on said base, said playing surface having a plurality of cylindrical receptacles therein, each said receptacle having a center disposed on a circle concentric with said playing surface and each receptacle further having a vertical slot in a lower portion thereof, each said slot forming a segment of the circle on which said receptacle center is disposed;
a rotary board disposed beneath and concentric with said playing surface for rotation about said vertical access;
a means for rotating said rotary board;
a plurality of vertical upwardly sloping fins mounted on said rotary board, each said fin forming a segment of a circle concentric with said playing surface and disposed to move through a respective one of said slots, and each said fin terminating in a downwardly extending edge;
a plurality of magnetized playing pieces respectively slidably received in said receptacles;
a magnetized playing piece attractor which can be manipulated by a player to remove a playing piece from a receptacle by magnetic attraction therebetween, whereby rotation of said rotary board causes said fins to move through said slots to momentarily push a playing piece above said playing surface during which time the playing piece may be attracted to said playing piece attractor, and said playing piece rapidly falling below said playing surface as said downwardly extending edge of said fin passes through a slot in the receptacle containing said playing piece.

4,214,751
ADJUSTABLE BUNTING BAT WITH PROTECTIVE SHIELD
John P. Simpson, 36 Winthrop Rd., Brentwood, N.Y. 11717
Filed May 1, 1978, Ser. No. 901,344
Int. Cl.[2] A63B *59/00*
U.S. Cl. 273—26 B **6 Claims**



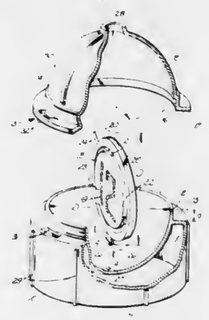
1. An adjustable standard baseball bat for reducing the length of the bat from its normal length to a reduced length for use as a training device in practicing the art of bunting a baseball, comprising:
a barrel having a cavity extending axially therein,
a handle within said cavity and movable therein from an open position to a closed position in which a substantial portion of said handle is substantially fully inserted within said cavity, and
means for locking said handle within said barrel in either said open or said closed positions,
whereby a batter may simulate the catching of a baseball while holding the barrel of said bat when said handle is in a closed position, the shape of the bat having substantially the form of the barrel when the handle is in the closed position.

4,214,752
TABLE TENNIS BALL GUARD
Harold Chanin, 5 Sheffield St., Lake Hiawatha, N.J. 07034
Filed Jul. 6, 1978, Ser. No. 922,304
Int. Cl.[2] A63B *67/04*
U.S. Cl. 273—30 **4 Claims**



1. A table tennis ball guard, for use in combination with a table-tennis table and a ball-rebounding play-back board, comprising: means defining a table-engageable mount, for replaceably mounting said ball guard onto a table-tennis table; and said guard having first and second substantially planar ball rebound surfaces, and being adapted to extend substantially the width of a standard table tennis table; said table-engaging mount being an elongated substantially planar element and when in use, being on and substantially parallel to the upper surface of a table tennis table; said first rebound surface being attached to and extending upwardly from said mount and defining an acute angle therewith, said second surface being engaged with said first rebound surface in an edge-to-edge relationship and defining an obtuse angle with respect to said first rebound surface; when in use with a table tennis table having a table tennis net attached thereto and a ball play-back board positioned on one end thereof, said guard being mountable adjacent the net on the same side thereof as a player hitting a ball, said first rebound surface adapted to extend upwardly at an angle towards the net to a height of approximately table tennis net height, said second rebound surface adapted to extend from said first rebound surface, over the net and into abutting engagement with the ball play-back board.

4,214,753
TRANSPARENT ARTICLE
Terry M. Haber, Costa Mesa, and Marlin D. Fernandez, Bloomington, both of Calif., assignors to Joseph L. Fernandez, Bloomington, Calif.
Division of Ser. No. 857,297, Dec. 5, 1977, Pat. No. 4,157,805.
This application Aug. 21, 1978, Ser. No. 935,572
Int. Cl.[3] A63B *37/00*
U.S. Cl. 273—59 R **3 Claims**



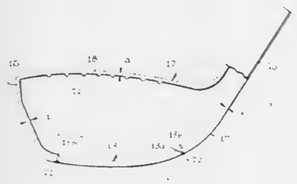
3. A product composition for a transparent polymer member with an encapsulated element positioned in the member by a holder, comprising:
(a) a transparent polyester resin member having a given index of refraction and a given density;
(b) an opaque element in said member;
(c) a holder for holding the element in said member, said holder being of thermoplastic material which is mechanically and chemically bonded with said polyester resin and which has the same index of refraction, transparency, Rockwell hardness, specific gravity and surface finishing characteristics as said polyester resin the holder being substantially invisible; and
(d) a symbol on said opaque element defined by an ink comprised of a polyester thermoplastic alloy bonded to a face of said element, the material of said opaque element being mechanically and chemically bonded with the polyester resin of said member such that surface portions of said element free of said ink become swelled slightly from extended contact with said polyester resin so that said symbol appears engraved.

4,214,754

METAL GOLF DRIVER AND METHOD OF MAKING SAME

John Zebelean, Oxnard, Calif., assignor to Pro-Patterns Inc., Ventura, Calif.

Filed Jan. 25, 1978, Ser. No. 872,092
Int. Cl.² A63B *53/04*
U.S. Cl. 273—167 H **18 Claims**



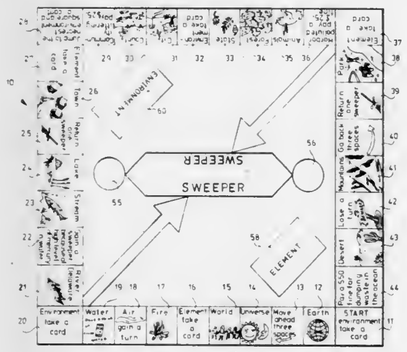
1. A golf driver comprising:
an enclosed all-metallic hollow body of preselected stainless steel shaped in the form of a golf driver head, defining a face side, a bottom, sole-defining side, and top and back sides extending from the upper end of said face side toward the rear end of said bottom side, said head further defining a heel and a hollow neck extending from said body at said heel at a preselected angle, and a toe opposite said heel, the mass of the metal forming said body being distributed so that the back side thickens from the heel toward the toe and from the top side to the sole side, and the toe thickens from the top side toward the sole side, so as to reduce the torque and the deflection of said driver when impacting a golf ball.

4,214,755

BOARD GAME APPARATUS

Peggie A. Wysocki, 1490 Wynwood Dr., Cinnaminson, N.J. 08077

Filed Aug. 31, 1978, Ser. No. 938,732
Int. Cl.² A63F *3/00*
U.S. Cl. 273—243 **5 Claims**



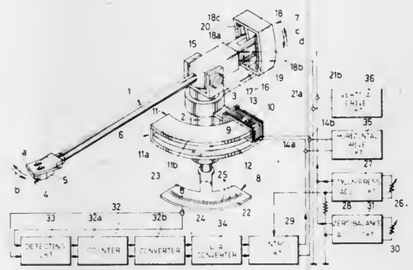
1. A board game apparatus, comprising:
a plurality of tokens, each of which represent one of the players;
a multiplicity of playing pieces representing sweepers, which are shaped as brooms and which are initially evenly distributed to each of the players;
a game board having a playing field and a multiplicity of playing spaces formed on said playing field which cooperatively define a continuous, closed path along which said tokens are movable in random increments, said multiplicity of spaces including a starting space, a first group of spaces having illustrations and designations imprinted thereon indicative of an area of environmental concern, a second group of spaces having monetary penalties specified thereon for harms committed to the environment, a third group of spaces having instructions imprinted thereon for selecting a card from a specified stack of cards, a fourth group of spaces having instructions imprinted thereon for selecting a card from another specified stack of cards, and a fifth group of spaces having indicia thereon corresponding to said multiplicity of playing pieces representing sweepers which are shaped as brooms, which spaces are indicative of a penalty or benefit assessed to the player whose token lands on one of the spaces relative to the acquisition or forfeiture of at least one playing piece representing a sweeper;
a stack of element cards associated with said third group of spaces, each of said element cards having indicia thereon representative of a benefit or penalty assessed to the player who picks the card;
a stack of environment cards associated with said fourth group of spaces, each of said environment cards having indicia thereon representative of a benefit or penalty assessed to the player who picks the card;
random number generating means for randomly determining the number of spaces a player's token will be moved during his turn;
a supply of play money of different denominations, a portion of which is distributed to each of the players; and
a plurality of sweeper receptacles mountable upon said playing field, in which said playing pieces representing sweepers are insertable.

4,214,756

RECORD PLAYER

Yoshimoto Ohmura, Mitaka, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 2, 1979, Ser. No. 26,341
Claims priority, application Japan, Apr. 3, 1978, 53-38960
Int. Cl.² G11B *3/10*
U.S. Cl. 274—23 R **6 Claims**



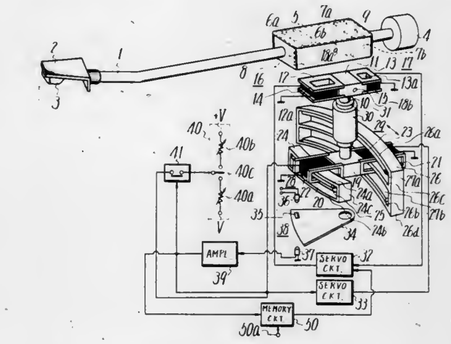
1. A record player comprising:
a tone arm movable in the horizontal direction and vertical direction with respect to a record disc and carrying a reproduction stylus at one end of said tone arm;
first electro-magnetic means coupled with said tone arm for applying a horizontal force to said tone in an amount corresponding to the magnitude of a control voltage supplied to said first electro-magnetic means;
detecting means for detecting the horizontal position of said tone arm and for supplying a detecting output which varies as said horizontal position changes;
generating means responsive to said detecting output for generating an outside force voltage, the magnitude of which varies in dependence upon the horizontal position of said tone arm; and
means for supplying said outside force voltage as said control voltage to said first electro-magnetic means, said generating means producing said outside force voltage in a magnitude sufficient, when supplied to said first electro-magnetic means, to apply a horizontal force to said tone arm that effectively cancels the inside force generated when the stylus of said tone arm rides upon a rotating record disc.

4,214,757

TONE ARM ASSEMBLY

Satoshi Kusaka, Tokyo, and Kuninori Shino, Higashimurayama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 8, 1979, Ser. No. 36,993
Claims priority, application Japan, May 8, 1978, 53-54303
Int. Cl.² G11B *3/10*
U.S. Cl. 274—23 R **2 Claims**



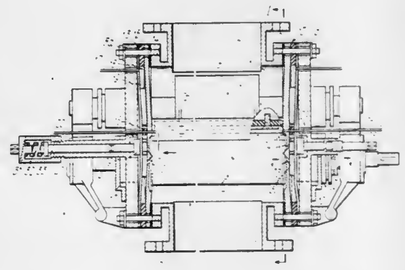
1. A tone arm assembly comprising:
a tone arm;
a first motor mechanically coupled to said tone arm for moving said tone arm in the horizontal direction with respect to a record disc;
a first motor drive means including a first servo circuit for energizing said first motor in such a manner that said tone arm is moved from an inoperative rest position to an inoperative up-position above a reproducing position of said record disc, or vice versa;
a first detecting means coupled to said tone arm for detecting the velocity of said tone arm and for generating a first electrical output in response to said velocity;
means for supplying said first electrical output to said first servo circuit;
a second detecting means coupled to said tone arm for detecting a predetermined arm position and for generating a second electrical output; and
means for applying said second electrical output to said first servo circuit;
wherein said first motor drive means further includes a biasing circuit for biasing said first servo circuit so as to energize said first motor at a predetermined velocity, and a switch means connected between said biasing circuit and said first servo circuit, said switch means being controlled with said second electrical output derived from said second detecting means so as to shut off a connection between said first servo circuit and said biasing circuit.

4,214,758

FACE SEALER DEVICE FOR ROLLER LOCK GATES

Leonid G. Gorodissky, Dmitrovskoe shosse, 153/43, kv. 106, Moscow, U.S.S.R.; Nikolai T. Romanov, deceased, late of Moscow, U.S.S.R., and by Anastasia I. Romanova, administrator, Bulatnikovsky proezd, 14, korpus 5, kv. 152, Moscow, U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,662
Int. Cl.² F16J *15/40, 15/54*
U.S. Cl. 277—12 **3 Claims**



1. A face sealer device for a roller lock gate made use of in pressure systems, featuring rubber-coated rollers arranged parallel to each other, provided with bearing journals and adapted for contacting each other; a means for regulating the mutual position of said rollers when bringing the end faces thereof in the same plane; linear sealers forced to each of the rollers along the generatrix thereof; a means for sealing the bearing journals of the rollers; a flat sealing member forced against said common face surface of the rollers, said flat sealing member being in fact a hollow membrane provided with an inlet connection for refrigerant and lubricant to feed in, a number of outlet holes for said refrigerant and said lubricant to deliver from said hollow interior space to the zone of contact with the roller end faces, and a number of holes for said lubricant and said refrigerant to withdraw from said zone; said flat sealing member having its contact portion proper shaped as a bowlike projection running from one face of said linear sealer to the other face thereof while rounding the zone of contact of the rollers, said projection featuring a triangular cross section with a sharp crest which provides for a relatively linear contact of the sealing member with the roller end faces.

4,214,759

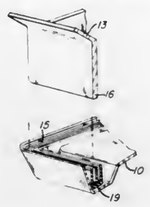
SEAL FOR RAILROAD CAR HOPPER DOORS

Donald L. Douty, Franklin Township, Allegheny County, and Robert J. Elgin, Penn Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 23, 1979, Ser. No. 32,053
Int. Cl.² F16J *15/10*
U.S. Cl. 277—12 **5 Claims**

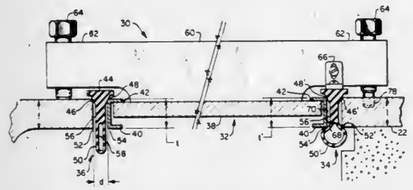
1. In a railroad hopper car which includes at least one hopper door and a door frame against which said door closes, said door and said frame providing a surface and a flange for

engaging said surface when the door is closed, the combination therewith of an improved sealing means for said door, said



sealing means comprising a preformed strip of RTV silicone rubber bonded to said surface to be abutted by said flange.

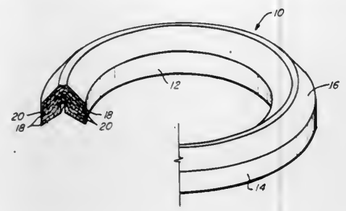
4,214,760
SEAL FOR ADJACENT PLATES
Dwaine A. Godfrey, 210 Brandon Pl., N.W., Atlanta, Ga. 30328
Filed Dec. 4, 1978, Ser. No. 965,952
Int. Cl.[2] F16J *15/46*
U.S. Cl. 277—34.3 **21 Claims**



1. In combination, the sealing arrangement comprising:
a first plate having first and second parallel edges;
a second plate in adjacent closely spaced parallel relationship to the first plate having first and second edges substantially opposite the first and second edges of the first plate;
a flexible seal disposed in the space between the first and second plates having enlarged tapered first end and an inflatable, tubular second end, the first end being in contact with and extending outward beyond the first edges of the first and second plates and the second end being adjacent to and extending outward beyond the second edges of the first and second plates; and
valve means in the seal for inflating the second end of the seal whereby the tube expands into contact with the second edges of the first and second plates thereby forming secondary sealing interfaces and drawing the first end of the seal inward toward the space between the first and second plates to form primary sealing interfaces.

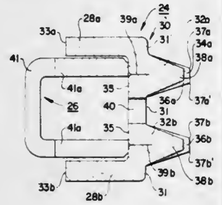
4,214,761
PACKING CONSTRUCTION
Aaron J. Pippert, Houston, Tex., assignor to Utex Industries, Inc., Houston, Tex.
Filed Jul. 31, 1978, Ser. No. 929,665
Int. Cl.[2] F16J *15/10, 15/22*
U.S. Cl. 277—123 **9 Claims**

1. A packing member comprising:
an annular body, at least a portion of which is layered, said layered portion having at least one layer comprised of fabric and another layer comprised of a binder having a fibrous filler generally uniformly disposed therein so as to form a generally homogeneous layer consisting of said



filler and said binder, the fibers of said filler being randomly oriented, said layers being bonded to one another.

4,214,762
ROLLED METAL PISTON RING
Harold E. McCormick, Ballwin; Herbert F. Prasse, Town and Country; William F. Ott, and Donald J. Mayhew, both of St. Louis, all of Mo., assignors to Ramsey Corporation, St. Louis, Mo.
Continuation of Ser. No. 672,752, Apr. 1, 1976, abandoned. This application Aug. 3, 1978, Ser. No. 930,792
Int. Cl.[2] F16J *9/06*
U.S. Cl. 277—138 **9 Claims**

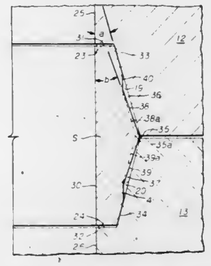


1. An oil control piston ring for location in a groove of a piston which moves in a bore in a cylinder of an internal combustion engine, said oil control ring comprising a steel strip having a split annular shape, said strip including a pair of sidewall portions and an intermediate wall portion defining a radially inwardly opening channel, said ring having at its outer periphery a pair of axially spaced cylindrical surfaces for oil scraping engagement with said cylinder bore, said cylindrical surfaces each being located at the juncture of respective radially outwardly extending portions of said strip, said respective radially outwardly extending portions extending radially outwardly with respect to said intermediate wall portion and forming a pair of axially spaced oil scraping rims, said portions having an inner apex and having confronting inner surfaces which abut, said confronting inner surfaces being in abutting relation at the inner apex and abutting continuously as they extend from said inner apex toward said intermediate wall, said abutting relation existing for at least part of the distance between said inner apex and the intermediate wall, said sidewall portions extending radially inwardly relative to said intermediate wall in a direction opposite from that of said radially outwardly extending portions, and said intermediate wall, said oil scraping rims, and said sidewalls being formed from a single steel strip.

4,214,763
BORE SEAL
Raymond E. Latham, 231 Tamerlaine, Houston, Tex. 77024
Filed Oct. 23, 1978, Ser. No. 953,406
Int. Cl.[2] F16L *23/00*
U.S. Cl. 277—167.5 **11 Claims**

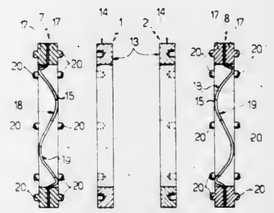
1. An annular bore seal for sealing between connected first

and second coaxially aligned and centrally bored members, each of which is provided with an internal frusto-conical seating surface tapering inwardly from the adjoining ends of said first and second members toward the bores thereof, said seal comprising:
an inner cylindrical surface;
annular end surfaces at opposite ends of said inner surface;



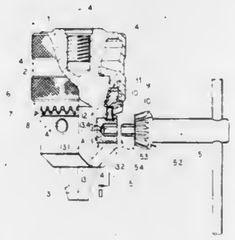
frusto-conical outer sealing surfaces adjacent each of said end surfaces and tapering outwardly therefrom at an angle, with the axis of said seal, in the range of fifteen to twenty degrees;
an outer alignment ring surface midway between said end surfaces defined by the circular intersection of a pair of cones whose axes coincide with said seal axis; and
annular relieved areas between said alignment ring surface and said frusto-conical sealing surfaces.

4,214,764
AXIAL-TYPE SEALING DEVICE ARRANGED TO PROVIDE THE SEAL BETWEEN A STATIONARY AND A ROTATABLE ELEMENT
Giulio Fava, Turin, Italy, assignor to RIV - SKF Officine di Villar Perosa S.p.A., Turin, Italy
Filed Nov. 13, 1978, Ser. No. 959,798
Claims priority, application Italy, Nov. 15, 1977, 69570 A/77
Int. Cl.[2] F16H *15/34*
U.S. Cl. 277—935 D **3 Claims**



1. A sealing device arranged to provide the seal for a fluid, in particular a liquid, between an ambient and the inside of a cavity between a stationary member and a rotating member, comprising
two annular sealing elements, each of which has a plane annular surface substantially orthogonal to the axis of rotation of the rotating member and a pair of cylindrical side surfaces each orthogonal to the adjacent plane annular surface, the cylindrical side surfaces of each of the two sealing elements being axially aligned with and having the same diameters as the corresponding two cylindrical side surfaces of the other sealing element,
a pair of thrust rings of resiliently compressible and deformable material and having transverse end surfaces, each of said thrust rings having a pair of cylindrical side surfaces aligned with and having the same diameters as the two cylindrical side surfaces of the sealing elements and each of the thrust rings being provided with lugs on each of its end faces, which lugs are arranged to enter corresponding cavities of the stationary and rotating members and of said sealing elements, and
at least a pair of metallic annular springs each of which is embedded in a respective thrust ring and is axially corrugated around the periphery thereof in such a way that a part of a first surface of the spring bears on the adjacent sealing element and a part of a second surface of the same spring bears against one of said members.

4,214,765
LOCKABLE DRILL CHUCK
Günter H. Röhm, Heinrich-Röhm-Strasse 50, 7927 Sontheim, Fed. Rep. of Germany
Filed May 18, 1979, Ser. No. 40,125
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853045
Int. Cl.[2] B23B *31/12*
U.S. Cl. 279—1 K **10 Claims**



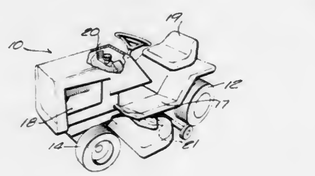
1. A drill chuck comprising:
a chuck body defining a chuck axis;
a plurality of generally angularly equispaced and radially displaceable jaws on said body;
a tightening ring rotatable on said chuck body about said axis;
means including formations between said jaws, ring, and body for radially displacing said jaws on rotation of said ring on said body about said axis;
an eccentric rotatable in said body about an eccentric axis lying in a plane transverse to said chuck axis and having an eccentric surface spaced from said ring;
a locking member axially displaceable in said body and axially simultaneously engageable in one direction with said ring and in the opposite direction with said eccentric surface; and
means for rotating said eccentric about said eccentric axis between a locking position pressing said member axially against said ring and preventing rotation thereof and a freeing position allowing said ring to rotate on said body.

4,214,766
COLLET
Gerhard Rall, Marbach, and Hermann L. Kastner, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Wilhelm Hainbuch GmbH & Co., Marbach, Fed. Rep. of Germany
Filed Jul. 20, 1978, Ser. No. 926,299
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732677
Int. Cl.[2] B23B *31/20*
U.S. Cl. 279—46 R **30 Claims**

1. A collet, comprising:
a clamping head having a front side, having interior gripping surfaces in a longitudinal zone of the clamping head for gripping a workpiece, and having an exterior surface in the form of a frustum located at least partially in the same longitudinal zone as the gripping surfaces and diverging toward the front side of the clamping head, the clamping head being divided into individual gripping jaws, at least in the longitudinal zone of the gripping surfaces, by radial-

ly- and axially-extending longitudinal slits circumferentially distributed about the clamping head;
a clamping tube separably couplable with the clamping head and having means on an end of the clamping tube facing away from the clamping head for fastening the clamping tube to an apparatus for use;
elastic means in the longitudinal slits between the gripping jaws of the clamping head; and
means for coupling together the clamping head and the clamping tube positively in the axial direction and releasably in the radial direction, the coupling means comprising circumferentially spaced first axial projections on the clamping head and circumferentially spaced second axial projections on the clamping tube, the first and second axial projections being mutually engageable in claw-like fashion, circumferential groove segments provided in the engaging first and second axial projections and forming a common circumferential groove when the first and second axial projections are mutually engaged, and a coupling ring inserted in the circumferential groove, the coupling ring being divided at at least one circumferential location.

4,214,767
FUEL TANK INCLUDING AIR ENTRAPMENT CHAMBERS
John W. Davies, III, Plymouth, Wis., assignor to Gilson Brothers Company, Plymouth, Wis.
Filed Aug. 21, 1978, Ser. No. 935,611
Int. Cl.[2] B60K *15/02*
U.S. Cl. 280—5 A **7 Claims**



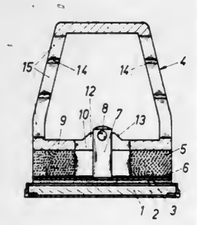
5. A lawn tractor comprising:
a frame;
wheels supporting the frame for movement on the ground;
a gasoline engine drivingly connected to the wheels for driving the wheels; and
a fuel tank connected to the gasoline engine, the fuel tank including a bottom wall, a plurality of side walls integrally connected to said bottom wall, a top wall integrally connected to said side walls, said bottom wall, side walls and top wall defining a reservoir therein, and said top wall including a pair of spaced apart outer peripheral top wall portions, an inner top wall portion spaced from said outer peripheral portions toward said bottom wall, and a pair of inner walls, one of said inner walls joining said inner top wall portion and another of said peripheral top wall portions, a generally cylindrical filling neck centrally located within said inner portion and integrally connected to said inner portion and extending away from said bottom wall and defining an opening to said reservoir, said side walls, peripheral top wall portions, and said inner wall defining at least two separate and independent mutually spaced apart gas entrapment chambers spaced from said filling neck and above said inner wall for trapping gas therein when said tank is filled and for holding fuel when said tank is tipped, one of said entrapment chamber portions positioned on one side of said filling neck and the other of said entrapment chamber portions positioned on another side of said filling neck.

4,214,768
SHIELD FOR SKATEBOARD TRUCK AXLE HOUSING
David A. Dominy, Cardiff, and Gary M. Dodds, Encinitas, both of Calif., assignors to Tracker Designs, Ltd, San Diego, Calif.
Filed Oct. 10, 1978, Ser. No. 950,271
Int. Cl.[2] A63C *3/00*
U.S. Cl. 280—809 **7 Claims**



1. In a truck for a skateboard or the like with a central depending axle housing having extending to each side thereof an axle on which a wheel is disposed and secured thereon by a nut, means to protect the bottom of said housing, comprising:
(a) a shield covering the bottom of said axle housing substantially from end to end thereof,
(b) means securing said shield in place on said housing, and
(c) the lower surface of said shield having a central depression so the depression can guide on a conrete edge surface.

4,214,769
SKI SAFETY DEVICE
Egidius Brangenberg, Riffelstrasse 46, 8100 Garmisch-Partenkirohen, Fed. Rep. of Germany
Continuation of Ser. No. 674,740, Apr. 7, 1976, Pat No. 4,135,729. This application May 11, 1978, Ser. No. 905,369
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1975, 2516194
The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.
Int. Cl.[2] A63C *5/06*
U.S. Cl. 280—817 **2 Claims**



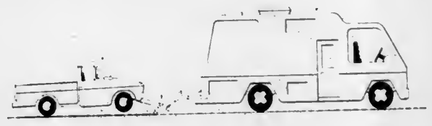
1. A device for preventing unintentional crossing of skis during skiing, comprising a support mountable on an upper surface of a ski; a frame above said support and provided with a bottom wall having a lower side facing said support and with an upper side; a member of elastically compressible material having an upper and a lower surface and being interposed between said support and said bottom wall, one of the upper and lower surfaces of said member being fixedly attached to one of said bottom wall and said support and the other of said upper and lower surfaces bearing upon the other of said bottom wall and said support; and means for detachably connecting said frame with said support with the aid of only one hand of a user, comprising an elongated opening in said bottom wall and a pair of pockets in said upper side each extending outwardly from a different longitudinal side of said opening, a non-turnable projection rigid with and extending upwardly from said support and having a terminal section extending through said opening and provided with two portions which project from said terminal section opposite one another and substantially parallel to said support and which are each receivable in one of said pockets, and portions of said frame engageable by a hand of a user for turning said frame relative to said support about an axis coinciding with the elongation of said projection for thereby effecting entry of said portions into the respective pockets in response to turning of the frame, and for effecting removal of the portions from said pockets in response to further turning of the frame, whereby to connect said frame to and disconnect it from said support, respectively, with the help of only one hand of the user.

4,214,770
SKI POLE WITH WIND AND SUN SHIELD
Bonnie G. Agins, 221 Oakcrest Rd., San Anselmo, Calif. 94960
Filed Apr. 25, 1979, Ser. No. 33,108
Int. Cl.[2] A63C *11/22*
U.S. Cl. 280—819 **6 Claims**



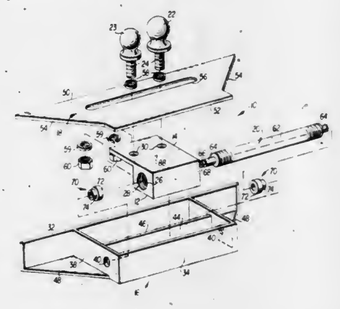
1. In a ski pole having a hollow handle, a wind and sun shield comprising;
an open end on said handle;
a guideway in said handle disposed along the axis thereof;
a rod slidable in said guideway;
a plurality of radial ribs pivoted at the end of said rod; and
a sheet fastened over said ribs; to form an umbrella type structure; means for moving said rod axially to an extended position protruding from said panel;
said ribs being free to pivot between a fully open radial position and a fully closed position along the axis of said rod when said rod is in said extended position;
said ribs and sheet being receivable in the open end of said handle when in said fully closed position.

4,214,771
COUPLING DEVICE
Lonnie L. Mason, Visalia, Calif., assignor to Vernon T. Mullican, Tulare, Calif.
Filed Nov. 13, 1978, Ser. No. 959,578
Int. Cl.[3] B60D *1/00*
U.S. Cl. 280—402 **11 Claims**



1. A device for raising from ground engagement a ground transporting portion of a vehicle to be towed while converting to an attitude for towing, the device comprising a rigid control member having a predetermined end portion; means for rigidly mounting the control member on the vehicle in fixed position relative to said ground transporting portion of the vehicle to be raised with the end portion of the control member disposed in proximity to the ground; a ramp member having opposite ends; and means for mounting the ramp member on a towing vehicle for movement from an inclined attitude, with an opposite end supported by the ground, in response to relative movement between said vehicles to cause the end portion of the control member to move upwardly along the ramp member to raise from ground engagement said ground transporting portion of the vehicle and to elevate said opposite end of the ramp member.

4,214,772
LATERALLY ADJUSTABLE TRAILER HITCH SYSTEM
Herbert F. Carr, 515 Pine Ave., and Robert W. Cooper, Marley Mill Rd., both of Ozark, Ala. 36360
Continuation-in-part of Ser. No. 880,526, Feb. 23, 1978, abandoned. This application Jul. 27, 1978, Ser. No. 928,755
Int. Cl.[2] B60D *1/06*
U.S. Cl. 280—415 A **17 Claims**



1. A vehicular hitch mounted on a towing vehicle comprising:
a trailer coupling element for selectively engaging and disengaging companion coupling elements on towed vehicles;
a main frame member for mounting and securing said vehicular hitch to the towing vehicle, said main frame member comprising end walls, a front wall, and a back wall, all of which extend substantially from a bottom plate to a top plate of said main frame member, said top plate having an aperture therein to accommodate said trailer coupling element;
a fixed guide member mounted within said main frame member intermediate said front and back walls, thereby defin-

ing a rearward track region between said back wall and said guide member and a frontward track region between said front wall and said guide member, said guide member extending from said bottom plate to near said top plate, thereby defining a gap between said guide member and said top plate;

carriage means contained within said rearward track region of said main frame member, said carriage means also having a flat plate affixed thereto, said flat plate extending approximately horizontally, when said towing vehicle is on flat pavement, through said gap and over said guide member so that said flat plate protrudes into said frontward track region, said flat plate having a vertical hole to accommodate said trailer coupling element at a vertical orientation perpendicular to said flat plate;

drive means movably mounted on said main frame member within said rearward track region for engaging said carriage means and imparting lateral motion to the carriage means and trailer coupling element mounted thereon, thereby causing the trailer coupling element to be horizontally moved along said main frame member.

4,214,773

HEEL HOLDER FOR RELEASE SKI BINDING

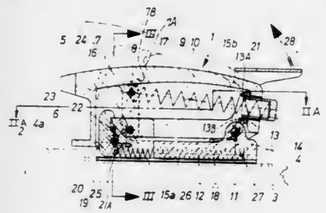
Heinz Wittmann, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Nov. 17, 1978, Ser. No. 961,484

Claims priority, application Austria, Nov. 18, 1977, 8283/77

Int. Cl.[2] A63G *9/08*

U.S. Cl. 280—631 **10 Claims**



1. A heel holder of a safety ski binding, comprising:

elongated rail means mounted on a ski;

bearing block means mounted on said rail means;

housing means pivotally secured to said bearing block means and being movable between a ski boot holding position and a ski boot releasing position about a first axis extending perpendicular to said longitudinal axis of said ski, said housing means having first means thereon for engaging the heel portion of a ski boot;

pawl means pivotally secured to said bearing block means about a second pivot axis parallel to said first axis, said pawl means having a hook thereon;

an intermediate member pivotally secured to said bearing block means and movable about a third pivot axis parallel to said first pivot axis, said intermediate member having second means thereon operatively engageable with said hook on said pawl means;

first resilient means for urging said hook on said pawl means into engagement with said second means on said intermediate member;

second resilient means for urging said intermediate member away from said pawl means about said third pivot axis in response to a release of the engagement between said hook on said pawl means and said intermediate member;

control means, including a release spring, for controlling the pivotal movement of said housing means about said first pivot axis in response to external forces applied thereto;

connecting means for operatively connecting said intermediate member to said control means for facilitating a simultaneous pivotal movement of said intermediate member and housing means about said first and third pivot axes in response to a release of the engagement between said hook on said pawl means and said intermediate member, said connecting means also permitting a pivotal movement of said housing means about said first pivot axis relative to said intermediate member in response to an external force which is sufficient to overcome said release spring and when said intermediate member remains engaged with said pawl means; and

manually operable release lever means pivotally secured to said bearing block means for manually effecting a pivoting of said pawl means against the force of said first resilient means to unlatch said hook from engagement with said intermediate member to permit said second resilient means to effect the simultaneous movement of said intermediate member and said housing means to said boot releasing position.

4,214,774

DISASSEMBLABLE BOAT CARRIER AND LAUNCHER

Ronald P. Kluge, 5902 Bustleton Ave., Philadelphia, Pa. 19149, assignor to Ronald P. Kluge, Philadelphia and Herman F. Spirk, Prospect Park, both of, Pa.

Filed Mar. 16, 1979, Ser. No. 21,286

Int. Cl.[3] B60P *3/10*

U.S. Cl. 280—652 **8 Claims**



1. A readily disassemblable manually maneuverable boat carrier, comprising:

a longitudinal tongue member comprised of a plurality of sections releasably fastened together, said longitudinal tongue member being provided with a handle at its forward end;

a transverse assembly, said transverse assembly having a transverse member with a connecting means located centrally thereon for releasably connecting with the rear of said longitudinal tongue member, a support member pivotally connected intermediate the ends thereof to each end of said transverse member, each of said support members being provided with a wheel at or near its lower end and a boat hull support means at its upper end, adjustable bracket means lockable in a position for holding said support members in a substantially vertical position during use in transporting a boat and allowing pivoting of said support members substantially parallel to said transverse member when not engaged in said use; and

support means for the forward section of the boat hull mounted on said longitudinal tongue member between said handle and the rear end of said tongue member.

4,214,775

SUSPENSION ASSEMBLIES FOR VEHICLES

Philip A. Taft, Solihull, England, assignor to Girling Limited, Birmingham, England

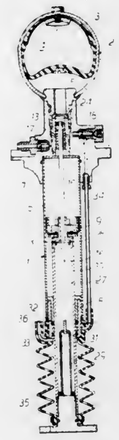
Filed Sep. 28, 1978, Ser. No. 946,583

Claims priority, application United Kingdom, Oct. 8, 1977, 41990/77

Int. Cl.[2] B60G *11/30*

U.S. Cl. 280—708 **4 Claims**

1. A vehicle hydro-pneumatic suspension assembly comprising an hydraulic suspension unit of the self-levelling type in combination with a pressure chamber containing air or other gas for supporting the load on a wheel, wherein said unit comprises a cylinder in communication with said pressure chamber, a closure for one end of said cylinder, a piston rod assembly comprising a piston adapted to work in said cylinder, and a piston-rod carrying said piston and adapted to work through said closure, an inlet port for connection to a source of high pressure liquid, an outlet port for connection to a reservoir for liquid, a spool valve responsive to the position of said piston rod assembly for controlling communication between said inlet port and said pressure chamber and between said pressure chamber and said outlet port to maintain the length of the unit at a predetermined value irrespective of the load, and damping means to delay response of said spool valve to movement of said rod assembly, wherein said spool valve comprises



a spool, and said cylinder has a bore in which said spool works, and wherein an axial rod located in said cylinder has a first end which carries said spool and a second end, spaced abutments being provided at said second end of said axial rod and at an end of said piston rod remote from said piston, retainers being located in abutment with said abutments, and a spring housed within said piston rod being engaged at opposite ends between said retainers, said spring being caged when said spool is in a neutral position in which both said ports are closed, extension of the unit from said neutral position uncaging the end of said spring which is adjacent to said spool so that said spool can be moved by said axial rod in a corresponding direction to open said outlet port in the event of a decrease in loading, and contraction of said unit from said neutral position uncaging the end of said spring remote from said spool so that said spool can be moved by said axial rod in a corresponding direction to open said inlet port in the event of an increase in loading.

4,214,776

PICK UP CONTAINER FOR THREE POINT TRACTOR HITCH

William W. Nurse, 10806 Harley Rd., Lorton, Va. 22079

Filed Oct. 10, 1978, Ser. No. 950,166

Int. Cl.[2] B60P *1/02*

U.S. Cl. 280—760 **10 Claims**

1. A transport platform for attachment to a tractor or the like comprising:

(a) a horizontal support frame having a front and a rear and comprised of outer and inner frame members;

(b) said outer frame members being joined together to form a rectangle with said inner frame members positioned within said rectangle;

(c) said outer frame member being equal and coextensive in height;

(d) a pair of vertical frame members having a top and a bottom portion with said bottom portion of said vertical frame members being securedly attached to the front of said horizontal support frame;

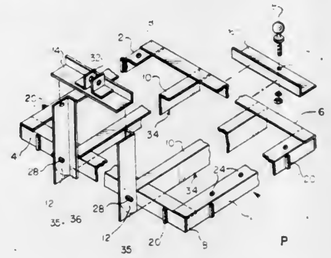
(e) said pair of said vertical frame members being coextensive and having a portion extending below said bottom portion of said outer frame members;

(f) said outer and inner frame members having inner and outer sides, and a top and bottom portion;

(g) said bottom portion of said vertical frame members having hitch engaging means positioned above said portion extending below said bottom portion of said outer frame members;

(h) said top portion of said vertical support frame having hitch engaging means;

(i) said inner frame members including a substantially parallel pair extending from said front to said rear of said horizontal support frame and having their bottom portions extending below the bottom portions of said outer frame members a distance equal to said portion of said pair of said vertical frame members extending below said bottom of said outer frame members thereby providing runners to support said platform;



(j) said horizontal support frame serving as a load support means;

(k) said pair of said vertical frame members and said pair of inner frame members being aligned from front to rear; and,

(l) said pair of said vertical and said pair of said inner frame members being positioned symmetrically with respect to the longitudinal axis of said platform so as to provide a substantial distance between each cooperating member of said pairs to provide a stable ground support.

4,214,777

SKI BRAKE

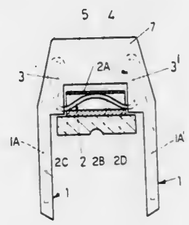
Erwin Krob, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed May 11, 1978, Ser. No. 905,023

Claims priority, application Austria, May 18, 1977, 3559/77

Int. Cl.[2] A63C *7/10*

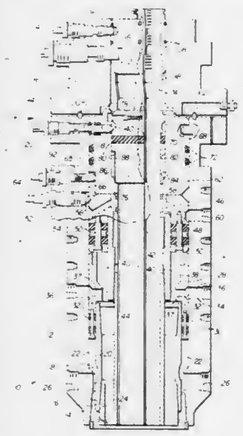
U.S. Cl. 280—605 **7 Claims**



1. In a ski brake comprising a holding plate, at least one braking member and resilient means operatively connected to

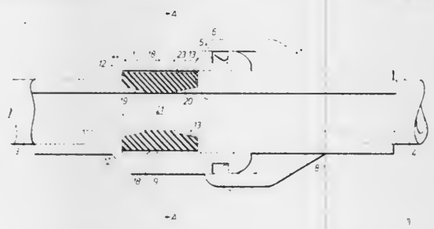
said braking member for urging said braking member into a braking position and resisting movement of said braking member into a downhill retracted position, the improvement comprising wherein said resilient means comprises a spring wire having plural segments which in a relaxed position of the spring wire lie substantially in one plane, wherein said braking member has a planar construction coplanar with said spring wire of said resilient means, and wherein said holding plate has a radially elongated bearing slot therein, the elongated axis of said bearing slot being upwardly inclined relative to an upper surface of said ski and lying in said plane of said spring wire, one segment of said spring wire having coplanar bent portions being received in said bearing slot, said coplanar relationship of said bent portions and said elongated axis of said bearing slot preventing rotary movement of said spring wire in said bearing slot to thereby effect a torsioning of said wire in response to a movement of said braking member to said retracted position.

4,214,778
HOLDDOWN MECHANISM FOR A TUBING HANGER IN A WELLHEAD
Robert J. Diehl, Vivian, La., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.
Filed Jan. 11, 1979, Ser. No. 2,508
Int. Cl.[2] F16L *35/00*
U.S. Cl. 285—39 **10 Claims**



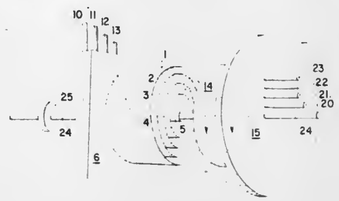
1. A wellhead assembly comprising:
a head member adapted to support at least one well casing, said head member having an axial bore and a plurality of spaced apart threaded passages extending generally horizontally from the outer surface of said head member to the bore thereof;
a hanger bowl supported in the bore of said head member and having a plurality of generally horizontal passages axially aligned with the respective passages of said head member, the passages of said hanger bowl extending from the outside surface of the bowl to a bore thereof;
a tubing hanger supported in the bore of said hanger bowl and adapted to receive at least one tubing string extending within the well casing, said tubing hanger having a groove on the outside surface thereof adjacent the inner ends of the passages in said hanger bowl, said groove presenting a camming surface located adjacent the inner ends of the passages in said hanger bowl, said camming surface being inclined from vertical and having an orientation to face generally upwardly and outwardly;
a plurality of pins received in the respective passages of said hanger bowl for axial movement therein, each pin having an outer end and an inner end providing a tapered tip extending at least partially into said groove and acting against said camming surface in camming interaction therewith to urge said tubing hanger downwardly in camming fashion;
a plurality of screw elements received in the respective passages of said head member for threaded axial movement therein, said screw elements being axially aligned with the respective pins and being accessible from the exterior of said head member to effect threaded advancement of the screw elements into the head member and against the outer ends of said pins to force said tapered tips of the pins at least partially into said groove and against said camming surface to hold down said tubing hanger.

4,214,779
COUPLING DEVICE
Ingvar E. Losell, Staffanstorp, Sweden, assignor to Gambro AB, Sweden
Filed Feb. 24, 1978, Ser. No. 880,774
Claims priority, application Sweden, Mar. 7, 1977, 7702496
Int. Cl.[2] F16L *35/00*
U.S. Cl. 285—93 **13 Claims**



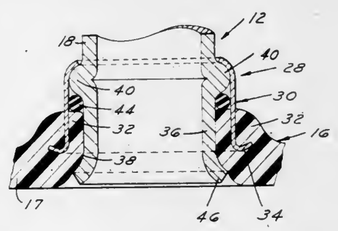
1. A coupling device for joining together two fluid conduits and for providing fluid access to the fluid in the fluid conduits, said coupling device comprising:
a first coupling member adapted to be connected to one of said fluid conduits;
a second coupling member adapted to be connected to the other of said fluid conduits, said first and second coupling members being adapted to be connected together to define an axial fluid passage through said first and second coupling members between said two fluid conduits;
an elastic member having an axial fluid opening therethrough interposed between said first and second coupling members, said axial fluid opening of said elastic member being axially aligned with said axial fluid passage defined by said first and second coupling members;
connecting means for connecting said first and second coupling members together to axially compress said elastic member between said first and second coupling members to seal said axial fluid passage without compressing said elastic member transversely of the axial direction; at least one of said first and second coupling members including an overlapping wall section overlappping said elastic member, and an opening defined in said overlapping wall section to provide access to said elastic member; into engagement with said overlapping wall section and in line with the opening in said overlapping wall section and
at least a portion of the wall of said elastic member in line with the opening in said overlapping wall section, being resealably penetrable to provide selective fluid communication with the fluid in said fluid conduits through said portion of the wall of said elastic member.

4,214,780
ROTATABLE PIPE COUPLING STRUCTURE
George A. Grace, 35 Greenbrae Circuit, Apt. 103, Scarborough, Ontario, Canada (M1H 1P8)
Filed Aug. 25, 1977, Ser. No. 828,007
Claims priority, application Canada, May 20, 1977, 278932
Int. Cl.[2] F16L *39/04*
U.S. Cl. 285—134 **16 Claims**



1. A rotatable multiple pipe coupling structure comprising a combination of a stationary outer pipe and a rotatable outer pipe rotatably sealed together at the proximal end surfaces thereof by means of a labyrinth seal, said outer pipes being rotatably coupled at the proximal outer end wall surfaces thereof with an annular hugger ring; at least one combination of a stationary inner pipe and a rotatable inner pipe rotatably sealed together at the proximal end surfaces thereof by forming at least one annular groove in the proximal end surface of one of the inner pipes and a matching annular groove in the proximal end surface of the other inner pipe and by slidably disposing an annular sealing ring within the annular cavity formed with the grooves, the combination of the stationary inner pipe and the rotatable inner pipe having a uniform transverse cross-section over the whole longitudinal length of the combination; said stationary outer and inner pipes being secured with a stationary wall at the distal ends thereof and the rotatable outer and inner pipes being secured at the distal ends thereof with a rotatable wall; and the stationary and rotatable walls being provided therethrough with at least one opening communicating with each of the passages formed with the pipes.

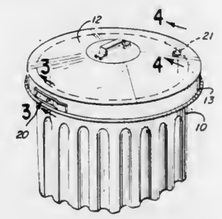
4,214,781
PIPE JOINT AND METHOD OF ASSEMBLY
A. David Joseph, North Muskegon, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.
Division of Ser. No. 882,269, Feb. 28, 1978, Pat. No. 4,129,503.
This application Sep. 5, 1978, Ser. No. 939,418
Int. Cl.[2] F16L *41/00;* **B23P** *3/00, 25/00*
U.S. Cl. 285—222 **4 Claims**



1. A pipe joint comprising a first member of molded plastic material having an aperture, a pipe having an end received into said aperture and a circumferential rib formed on an outer surface spaced from said first member, annular resilient sealing means disposed between said rib and said first member surrounding said pipe end, and a metal eyelet having one end molded into said first member and a second end rolled over said rib to capture said resilient sealing means in compression between said rib and said first member.

3. A method of forming an air-tight metal-to-plastic pipe joint comprising the steps of: (a) forming a molded plastic member having a generally cylindrical aperture and a metal eyelet having a first end molded therein and a second end extending from said member surrounding said aperture, (b) providing a metal pipe having a substantially cylindrical pipe end and a circumferential rib formed on an outer surface of said pipe spaced from said pipe end, (c) placing an annular resilient sealing ring over said pipe end, (d) inserting said pipe end into said aperture, and (e) forming said second end of said eyelet over said rib to compress said sealing ring between said rib and said plastic member.

4,214,782
COVER LATCH
Bernard Boyer, 17 Fulton Ave., Waukegan, Ill. 60085
Filed Jan. 2, 1979, Ser. No. 87
Int. Cl.[2] B65D *45/22;* **E05C** *19/06*
U.S. Cl. 292—87 **3 Claims**

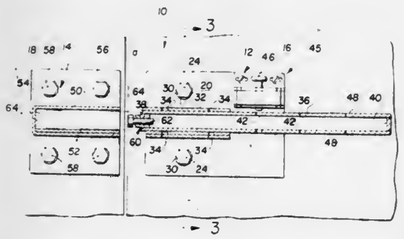


1. A releasable latch means for retaining a removable cover on a container of the type having an outwardly turned rim on the uppermost edge thereof and where the cover is of the type having a depending circumferential flange extending downwardly over the outwardly turned rim, said latch means comprising a stop element adapted to extend inwardly from said flange and engage the lower edge of said rim when the cover is moved upwardly, resilient latch means adapted to be secured to said flange in an area diametrically opposite said stop element, said latch means having a resilient latch arm adapted to extend longitudinally along the outer surface of said flange generally parallel to said flange and to being secured at one end to said flange and being provided at a point spaced from said one end with a latch element extending inwardly through said flange adapted to engage the lower edge of the rim of the container when the cover is moved upwardly and prevent accidental removal of said cover, said latch element lying in a vertical plane which is generally perpendicular to the plane of said latch arm and having an upper horizontal edge with a lower edge curved downwardly from the inner end of said latch element and outwardly to the longitudinally extending portion of said latch arm to provide a camming surface for contacting the surface of said rim and automatically moving said latch element outwardly over said rim into latching position when said cover is moved downwardly into closed position on the upper end of said container, and means associated with said resilient latch arm adapted for manually moving said latch arm outwardly in a horizontal plane away from said rim in order to move said latch element out of engagement with said rim when said cover is moved upwardly.

4,214,783
POSITIVE LOCKING DEVICE
Arthur V. Boegeman, 902 Del Paso Blvd., Space 95, Sacramento, Calif. 95815
Filed May 24, 1978, Ser. No. 908,950
Int. Cl.[2] E05C *1/04, 13/02*
U.S. Cl. 292—150 **1 Claim**

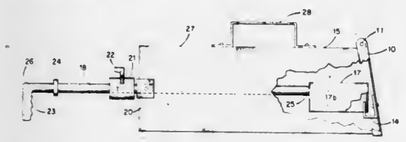
1. A locking device adapted for use with lightweight structures and doors, comprising:

a bar-locking assembly having a first back plate arranged to be mounted to the outer side of a structure; and
a first mounting plate arranged to be mounted to the inner locking side of the structure;
a bar-support sleeve affixed to said mounting plate, said bar-support sleeve including a pair of aligned holes therein, and said bar including a pair of aligned holes therein, whereby said holes of said sleeve and said holes of said bar are in respective alignment with each other when said bar is in a locked position;
a slidable, elongated, locking-bar member slidably supported in said support sleeve, said bar member including a plurality of pairs of enlarged aligned holes adjacent one end thereof;
an adjusting-head means mounted to said elongated bar to extend the length of said bar, said head means comprising a bolt member threaded to one end of said bar and having an engaging head formed thereon;



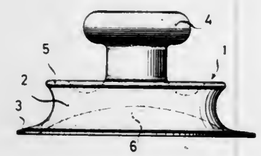
a bar-receiving frame section, including a second back-plate member adapted to be mounted to the outer side of a structure, and a second mounting plate adapted to be mounted to the inner locking side of the structure;
a keeper-sleeve member affixed and positioned on said second mounting plate in longitudinal alignment with said bar, said keeper having an open end to receive said bar and an oppositely disposed closed end defined by a wall, to limit the movement of said bar for engagement with said adjustable head means;
means comprising a plurality of bolts having tamperproof heads formed thereon, for mounting said plates to said structure, said heads being positioned on the outside of said structure;
a releasable-latching means mounted to said first mounting plate and adapted to be received into said selected enlarged pair of holes when said locking bar is in a locked position, said releasable-latching means including a releasable pin to engage said enlarged holes in said bar.

4,214,784
ASH REMOVER
Carl E. Rogalski, 40 Heights Rd., Stratham, N.H. 03885
Filed Apr. 27, 1979, Ser. No. 34,175
Int. Cl.² F23J *1/04*
U.S. Cl. 294—55 **7 Claims**



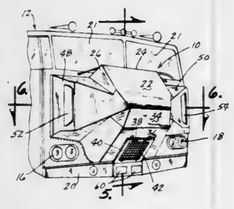
1. An ash remover comprising:
(a) a main body for carrying ashes;
(b) a cover movably connected to the main body;
(c) a bracket secured to the cover; and,
(d) an ash rake comprising:
(1) a handle which movably passes into the main body;
(2) rake means fastened at one end of said handle for raking ashes into said body and also for engaging said bracket to hold said cover in a closed position.

4,214,785
INTEGRAL MANIPULATOR, IN PARTICULAR FOR GLASS PANES, PLATES OR METAL SHEETS
Eberhard Broch, Solingen, Fed. Rep. of Germany, assignor to Josef Bohle, Solingen, Fed. Rep. of Germany
Filed Sep. 6, 1978, Ser. No. 940,048
Int. Cl.² A47G *35/00*
U.S. Cl. 294—64 R **3 Claims**



1. An integral manipulator for engaging planar or slightly curved smooth surfaces of articles such as glass panes, plates, metal sheets or the like, comprising:
(a) a base member of resilient material and comprising
(1) a cavity surrounded by an annular suction edge for engaging said surface of said article, said cavity and annular suction edge being at one side of said base member;
(2) an annular gripping edge spaced from said annular suction edge, said annular gripping edge being at the side of said base member opposite said one side thereof; and
(3) an intermediate annular section disposed between said annular suction and gripping edges, the circumference of said intermediate annular section being less than that of said annular gripping edge forming an undercut at the side of said annular gripping edge facing said annular suction edge; and
(b) a handle mounted on said opposite side of said base member;
(c) whereby said manipulator may be released from an article surface by manually engaging a portion of the undercut surface adjacent said annular gripping edge and pressing a portion of said annular gripping edge in a direction away from said article surface to draw a portion of said annular suction edge away from said article surface to release the suction within said cavity.

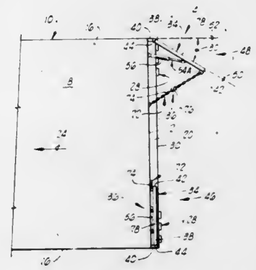
4,214,786
AIR FOIL APPARATUS
D. Jon Morrison, 1402 S. 78th St., Omaha, Nebr. 68124
Continuation-in-part of Ser. No. 927,469, Jul. 24, 1978. This application Apr. 25, 1979, Ser. No. 33,046
Int. Cl.² B62D *35/00*
U.S. Cl. 296—1 S **10 Claims**



1. In combination,

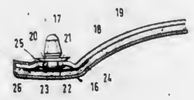
a cab-over-engine type vehicle including a cab having a forwardly presented front end portion, opposite side portions and a roof portion, said front end portion having a radiator grill means mounted therein at the lower central portion thereof, said front end portion having a windshield mounted therein at the upper end thereof,
an air deflector means mounted on said vehicle forwardly of said front end portion for deflecting air around the sides of said front end portion, over said roof portion of said front end portion, and below the lower forward end of said cab,
said air deflector means comprising a cone means having a leading portion which is spaced substantially forwardly of said front end portion, said cone means including a lower central wall which extends downwardly and rearwardly from said leading portion,
said lower central wall having an opening formed therein positioned forwardly of said radiator grill means,
a perforated door means movably positioned in said opening, said door means being pivotally movable about its upper end, front first to second positions with respect to said lower central wall,
said door means normally being in said second position when the vehicle is not moving,
said door means, when in its said second position, dwelling in substantially a vertical plane so that the lower end thereof is spaced forwardly of said opening to permit a person to enter said opening to service the vehicle,
said door means extending downwardly and rearwardly from its upper end when in its first position to enhance the deflection of air downwardly from said leading portion, the perforations in said door permitting some of the air passing over said door means to pass therethrough towards said radiator grill means,
said door means normally being positioned in said second position until sufficient wind force is encountered to move said door means to its said first position.

4,214,787
DRAG REDUCING APPARATUS
Frank Chain, Rte. 1, Box 40, Oakwood, Okla. 73658
Filed Dec. 7, 1977, Ser. No. 858,113
Int. Cl.² B62D *35/00*
U.S. Cl. 296—1 S **12 Claims**



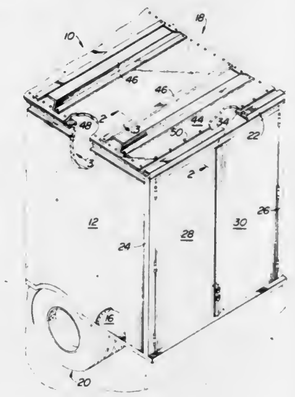
1. Drag reducing apparatus for use with a vehicle having a substantial rectangular rear end, comprising:
a trim panel having a panel leading edge and a panel trailing edge, the panel leading edge pivotally connected along and coterminous with the trailing edge of the one side of the vehicle, the trim panel positioned to extend rearwardly of said vehicle so that the panel trailing edge is positioned rearwardly of the vehicle; and
control means connected between the rear end of the vehicle and the trim panel for maintaining the trim panel in an operating position in which a forward projection of the plane tangent to the panel trailing edge intersects the rearward projection of the panel within about 30 degrees and rearwardly to the vehicle rear end.

4,214,788
LINING PART FOR THE PASSENGER COMPARTMENT OF AN AUTOMOBILE
Rainer Srock, Leonberg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Del.X
Continuation-in-part of Ser. No. 923,229, Jul. 10, 1978. This application Aug. 8, 1978, Ser. No. 931,968
Int. Cl.² B62D *25/00*
U.S. Cl. 296—39 R **8 Claims**



1. A lining part for a passenger compartment of an automobile comprising a rigid support layer, a foam padding layer, a thin flexible covering element covering the padding, and tolerance-compensating studs for securing the lining part to a vehicle body member, said studs being displaceable disposed on the support independent of the foam layer, wherein said foam padding layer is separated from said support layer in a manner forming hollow areas, said support layer being provided with openings communicating with a respective hollow area, and wherein said studs extend from a first end retained within said hollow areas through said openings to a second end extending from said support layer.

4,214,789
TRAILER CONTAINER REAR HEADER
Sol Katz, Meadowbrook; Josef Bertsch, Mohnton, and Howard J. Yurgevich, Levittown, all of Pa., assignors to Strick Corporation, Ft. Washington, Pa.
Filed Apr. 10, 1978, Ser. No. 894,794
Int. Cl.² B62D *27/02*
U.S. Cl. 296—183 **9 Claims**



1. A container adapted to be used for transporting goods comprising side walls extending upwardly from a bottom wall, corner posts at one end of said side walls, at least one door closing said one end, a rear header supported by said corner posts, said rear header having a horizontally disposed bottom surface at an elevation corresponding to the surface at the upper end of said corner posts, said header having a horizontally disposed flange adjacent said bottom surface of the

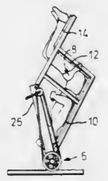
header, a roof, a rear edge of said roof being supported by said flange, said header having a portion extending upwardly and rearwardly from said one edge of said roof, said roof having reinforcements on the upper surface thereof, the side edges of said roof being secured to the top surface of discrete side rails, the top surface of each side rail being substantially coextensive with the top surface at the upper end of said corner posts, and the vertical height from the container floor to said rear header bottom surface being substantially the same as the height from said container floor to said roof.

4,214,790

ORTHOPEDIC RECLINING CHAIR

Walter P. Sieber, 5 Centre St., Elmira, Ontario, Canada (N3B 2T6)

Filed Jan. 25, 1979, Ser. No. 6,455
Int. Cl.[2] A47C *1/02;* **A61F** *5/00;* **A61H** *1/02*
U.S. Cl. 297—326 **7 Claims**



1. An orthopedic reclining chair comprising a seating unit having a back rest portion and a seat portion at a substantial angle to the back rest portion, a frame supporting said seating unit for movement between a substantially upright position and a traction position in which the seat portion is maintained at a substantial angle to the back rest portion and the body of a user would be substantially inverted with the torso inclined at an angle of at least 135° to the vertical, reclining mechanism acting between said seating unit and said frame for moving the seating unit between said positions, and a lap belt extending from said seat portion and disposed to support the thighs of a user substantially parallel to said seat portion when the chair is in said traction position.

4,214,791

METHOD FOR IMPROVING SOLUTION FLOW IN SOLUTION MINING OF A MINERAL

Thomas F. Moore, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 22, 1978, Ser. No. 972,293
Int. Cl.[3] E21B *43/28*
U.S. Cl. 299—4 **6 Claims**

1. An improved method for the solution mining of a mineral from a subterranean formation containing same in which an injection and production well are drilled and completed within said formation, leach solution and an oxidant are injected through said injection well into said formation to dissolve said mineral, and said dissolved mineral is recovered via said production well, wherein the improvement comprises pretreating said formation with an acid gas to improve the permeability thereof.

4,214,792

WHEEL ADAPTER

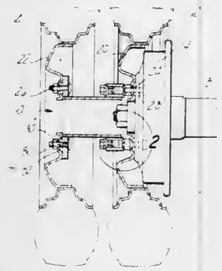
Robert L. Hardwicke, 929 Portsmouth, and John H. Ansteth, 1844 Thunderbird, both of Troy, Mich. 48084

Filed Jul. 10, 1978, Ser. No. 922,980
Int. Cl.[2] B67D *5/22*
U.S. Cl. 301—36 R **9 Claims**

8. For use in combination with a vehicle having an axle with a hub at at least one axial end, said hub having an axis of rotation, said hub having a plurality of axially outwardly extending circumferentially spaced threaded studs for attaching a wheel to the hub, a wheel adapter for securing two substantially identical wheel rims to one hub, each wheel rim having a plurality of mounting holes formed therethrough and which register with the threaded studs, said wheel adapter comprising:

an elongated housing having a first axial end and a second axial end, said housing having a plurality of tubular members at said first axial end;

a plurality of nuts, each nut being adapted to threadably engage one of said threaded studs to thereby secure said first wheel rim to said hub, each nut including an outwardly extending cylindrical portion, said cylindrical portion being axially, slidably receivable in a first end of one of said plurality of tubular members;



a plurality of bolts, each bolt being insertable through a second end of each tubular member, each of said bolts threadably engaging a threaded bore in said cylindrical bore of each nut to thereby secure said housing to said nut; and

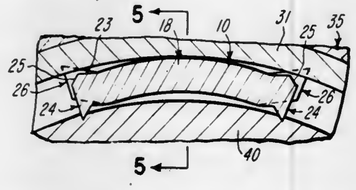
means for securing a second wheel rim to said second axial end of said housing, said securing means including means for coaxially aligning said second wheel rim with the axis of rotation of said hub.

4,214,793

CONNECTOR AND BEARING DEVICES

Robert J. Gargrave, 4717 James Hill Rd., Dayton, Ohio 45425

Filed Jul. 14, 1977, Ser. No. 815,558
Int. Cl.[2] B60B *27/02, 27/06;* **B25G** *3/28*
U.S. Cl. 301—111 **25 Claims**



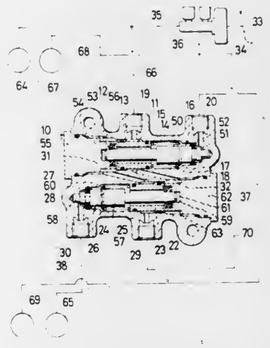
1. Apparatus for insertion between adjacent facing surface portions of separate bodies to assist in establishing a required relationship of said bodies, comprising a device including a plate segment one end of which constitutes a leading end first inserted in the application thereof between adjacent facing surface portions of separate bodies and an opposite end of which constitutes a trailing end, said segment having its remote outer faces between said leading and trailing ends adapted for respective contact with the separate bodies between which said segment is applied, side edges of said segment which extend between said leading and trailing ends being each inclusive of portions which define a series of teeth constructed to produce in the application of said segment a pressured flow of material, in its path, of the surface of at least one of the separate bodies between which it is applied, at laterally spaced locations therein, in the course of its insertion between the separate bodies, said teeth including at least a portion thereof angularly related and inclined to another portion thereof in an arrangement to facilitate the movement of the pressured flow of material displaced by said teeth over, about and to lock over and behind said teeth, as the segment is applied in use thereof.

4,214,794

BRAKE PRESSURE CONTROL APPARATUS FOR SPLIT BRAKING SYSTEM

Hiroyuki Kondo, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Aug. 28, 1978, Ser. No. 937,586
Claims priority, application Japan, Sep. 1, 1977, 52-105613
Int. Cl.[2] B60T *8/26*
U.S. Cl. 303—6 C **6 Claims**



1. A brake pressure control apparatus for a split braking system having a tandem master cylinder including two pressure generating chambers and wheel cylinders, comprising:

a body having first and second inlet ports communicating with said tandem master cylinder and first and second outlet ports communicating with said wheel cylinders;

first and second stepped cylindrical bores formed in said body, respectively;

a first stepped sleeve member positioned within said first bore to thereby define a first annular chamber on the outer periphery thereof and a first cylindrical chamber therein, said first annular chamber receiving brake fluid pressure from one of the brake pressure generating chambers of said tandem master cylinder through said first inlet port, and said first cylindrical chamber communicating with one of said wheel cylinders through said first outlet port,

a second stepped sleeve member positioned within said second bore to thereby define a second annular chamber on the outer periphery thereof and a second cylindrical chamber therein, said second annular chamber receiving brake fluid pressure from the other of the brake pressure generating chambers of said tandem master cylinder through said second inlet port, and said second cylindrical chamber communicating with the other of said wheel cylinders through said second outlet port;

said first cylindrical chamber communicating with said second annular chamber and said second cylindrical chamber communicating with said first annular chamber so that said first and second sleeve members are normally balanced by the brake fluid pressures from the brake pressure generating chambers of the tandem master cylinder, respectively;

a first brake pressure proportioning control valve assembly arranged within said first cylindrical chamber to thereby proportionally reduce increases in the brake fluid pressure within said first outlet port to increases in the brake fluid pressure within said second annular chamber, said first brake pressure proportioning control valve assembly being urged to its opening position by the movement of said first sleeve member when the braking pressure within said first annular chamber is less than the braking pressure within said first cylindrical member by a predetermined value so that said first cylindrical chamber is directly in communication with said first outlet port, and

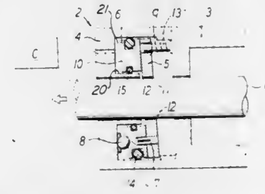
a second brake pressure proportioning control valve assembly arranged within said second cylindrical chamber to thereby proportionally reduce increases in the braking fluid pressure within said second outlet port to increases in the braking fluid pressure within said first annular chamber, said second brake pressure proportioning control valve assembly being urged to its opening position by the movement of said second sleeve member when the braking pressure within said second annular chamber is less than the braking pressure within said second cylindrical chamber by a predetermined value so that said second cylindrical chamber is directly in communication with said second outlet port.

4,214,795

PISTON BRAKING DEVICE FOR HYDRAULIC OR PNEUMATIC CYLINDERS

Tetsuo Kakuminato, Koshigaya, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 961,923
Claims priority, application Japan, Nov. 25, 1977, 52-158660
Int. Cl.[2] B60T *17/16*
U.S. Cl. 303—89 **5 Claims**



1. A braking device for a hydraulic or pneumatic cylinder comprising:

a cylindrical casing to be joined to one end of said cylinder and having an aperture in the outer end wall thereof for receiving a piston rod of said cylinder;

a sleeve fitted on said piston rod within said casing;

an annular braking plate loosely fitted on said piston rod within said casing;

a resetting piston hermetically fitted between the inner periphery of said casing and the outer surface of said sleeve in side-by-side relation with said braking plate and axially supported on a fulcrum member for rocking movement thereabout together with said braking plate;

a fluid chamber defined in said casing by said sleeve and resetting piston and connected to a pressure source;

a plate driving means mounted at a position radially opposite to said fulcrum member and acting to rock said braking plate about said fulcrum member together with said piston into a braking position tilted relative to the axis of said piston rod;

said braking plate having braking portions on the inner periphery thereof, said braking portions being brought into frictional contact with the circumference of said piston rod moving in one particular direction when said braking plate is tilted by said driving means thereby to apply to said piston rod a braking force increasing in proportion to the propelling force thereof;

said resetting piston having a pressure receiving surface within said fluid chamber; and

a brake control mechanism capable of applying pressure to said fluid chamber to push said resetting piston against said braking plate to maintain or reset said braking plate in

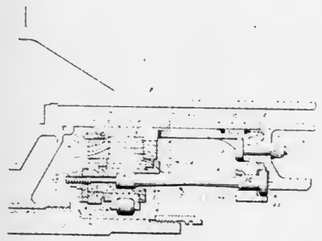
normal position perpendicular to the axis of said piston rod.

4,214,796

BEARING ASSEMBLY WITH MULTIPLE SQUEEZE FILM DAMPER APPARATUS

Fred J. Monzel, Loveland, and Melvin Bobo, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 19, 1978, Ser. No. 952,871
Int. Cl.² F16C *35/12, 39/04*
U.S. Cl. 308—26 **10 Claims**



1. An improved bearing assembly for supporting a rotating shaft, said assembly comprising:

a supporting structure;

a bearing surrounding said shaft and including an outer race, and

resilient support means, comprising axially aligned pins surrounding said shaft for resiliently connecting said outer race to said supporting structure; wherein the improvement comprises:

means surrounding said shaft and being disposed between a portion of said pins comprising said resilient support means and said supporting structure for providing a large damping force to suppress abnormally high unbalance forces and deflections within said shaft while maintaining a soft spring system during normal operation; wherein said damping means comprises a multiple squeeze film damper apparatus including:

a first and a second annular member surrounding said shaft, said members being spaced axially apart to form an annular cavity therebetween;

a plurality of nested annular sleeves surrounding said shaft and disposed within said cavity, said sleeves being of varying diameters to form annular spaces therebetween, the radially innermost of said sleeves being associated with said resilient support means and the radially outermost of said sleeves being associated with said supporting structure; and

means for supplying viscous fluid under pressure to each of said annular spaces.

4,214,797

CASE STRUCTURE

Peter A. Bórresen, Vejle, and Hans J. J. Greve, Billund, both of Denmark, assignors to A/S Modulex, Billund, Denmark

Filed Mar. 20, 1978, Ser. No. 888,363
Claims priority, application Denmark, Mar. 24, 1977, 1304/77
Int. Cl.² A47B *43/00*
U.S. Cl. 312—257 R **5 Claims**

1. An assembly for mounting a panel in a transparent case structure comprising a substantially flat and rigid base member for supporting the panel, a cover, said base member defining a pair of inwardly extending, longitudinal channels along oppositely disposed sides thereof and having downwardly projecting ledges extending lengthwise adjacent the channels, to form therewith substantially recesses which are hook-shaped in cross section, said cover comprising a rectangular plate made of a transparent, substantially rigid material and having a pair of downwardly projecting side walls along opposite sides thereof, the side walls each including a connecting member extending parallel and adjacent the lower edge of the respective side wall and having an inwardly extending, substantially hook-shaped projection adapted to interlockingly engage one



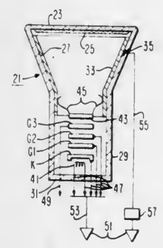
of the hook-shaped recesses in the base member, a flexible and bendable, lengthwise extending hinge member interconnecting said connecting member and the side wall of the cover whereby the cover is adapted to be detachably and hingedly connected to the base member.

4,214,798

METHOD FOR SPOT-KNOCKING THE ELECTRON-GUN MOUNT ASSEMBLY OF A CRT

Leonard F. Hopen, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 17, 1979, Ser. No. 40,054
Int. Cl.² H01J *9/00*
U.S. Cl. 316—26 **6 Claims**



1. A method for spot-knocking an electron-gun mount assembly in an evacuated cathode-ray tube, said mount assembly including a heater, a cathode, a control electrode, a screen electrode, a focus electrode and an anode, said method comprising interconnecting said heater, said cathode, said control electrode and said screen electrode, applying spot-knocking voltages between said anode and said interconnected gun elements, with said focus electrode electrically floating.

4,214,799

MOVABLE AND PRE-WIRED WALL STRUCTURE

Barton A. Biche, Binghamton, N.Y., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 929,585, Jul. 31, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,655
Int. Cl.² H02G *3/08*
U.S. Cl. 339—20 **5 Claims**

1. A movable wall structure comprising:

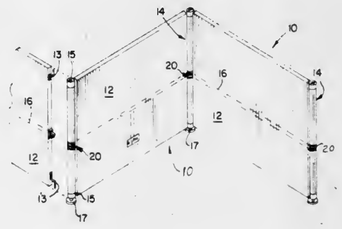
at least two prefabricated wall panels each having at least one integrally assembled electrical conductor terminating in an electrical contact element projecting from a lateral edge of the panel;

an elongated vertical support member;

means disposed adjacent the ends of the lateral edges of said wall panels for mechanically securing said panels to said support member in any one of a variety of angular orientations with said support member positioned adjacent said lateral edges of said panels, said mechanical securing means cooperating with securement elements disposed adjacent the ends of said support member; and

a feed-through connector mounted within said support member intermediate said securement elements and including a dielectric housing having a recess around its periphery and at least one conductive plate mounted within said recess, said housing having means for mounting said connector in telescopic engagement within said support member, said recess providing access to said conductive plate to electrically engage the contact elements of said wall panels, whereby the electrical conductors of said wall panels may be electrically coupled with said wall panels in any one of said variety of angular orientations;

said panel securing means and support member securement elements providing for rotation of said wall panels about said support member while maintaining said panels and said support member in mechanical engagement and while maintaining electrical circuit continuity between the panel contact elements and the connector plates.

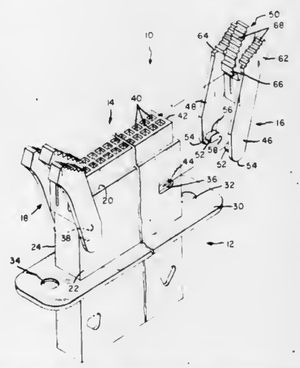


4,214,800

LATCHING-EJECTOR DEVICE

Robert D. Hollyday, Elizabethtown, and Wayne E. McKinnon, Landisville, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 8, 1979, Ser. No. 1,646
Int. Cl.² H01R *13/62*
U.S. Cl. 339—45 M **6 Claims**



1. In combination with a connector receptacle housing having a channel defined by a base and parallel sidewalls and at least two profiled apertures in opposing sidewalls, and with an elongate plug housing adapted for lateral insertion between the receptacle sidewalls into the channel and into mating relationship with the receptacle housing:

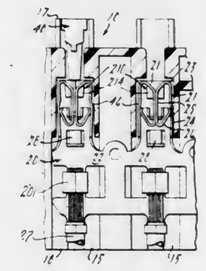
at least one latching-ejector device comprising at least one generally U-shaped rocker member having two parallel and spaced apart leg members depending from bight means into straddling engagement with the receptacle housing outside of the receptacle sidewalls, and each leg member having a transversely elongate stud extension at a distal end thereof directed inwardly through a respective one of said apertures to engagingly support a bottom surface of the plug housing along an upper elongate side of said stud extension, and said bight means having a latching projection directed toward and into latching engagement over an upper surface of the plug housing to latch the plug and receptacle housings together in said mating relationship.

4,214,801

FUSE HOLDER WITH INSERTION RAMP

Thomas M. Cairns, Birmingham; John H. Dewar, Grosse Ile, and Emmons F. Sumner, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 1, 1979, Ser. No. 16,579
Int. Cl.² H01R *11/22*
U.S. Cl. 339—59 R **5 Claims**



1. A terminal block and a fuse holder for use in said terminal block in conjunction with blade contacts of a fuse wherein said terminal block has a passage with a movable protrusion extending therein for engaging said fuse holder, said fuse being of a miniature nature with a pair of blade contacts, said fuse holder including a plurality of resilient spring clips each having a pair of opposing prongs, said fuse holder having an opening therein for receiving said protrusion;

said fuse holder having a ramp means attached to at least one of said prongs for facilitating movement of said prongs over said protrusion so that said protrusion slides over said prongs and said fuse holder continues to move into said passage and said protrusion comes to extend into said opening of said fuse holder,

the orientation of said spring clips with respect to said movable protrusion being such that said pair of opposing prongs define a blade receiving path therebetween which is in a plane generally parallel to the direction of travel of said movable protrusion;

said ramp means being an integral part of said fuse holder and adjacent the forwardmost portion of said fuse holder which enters said terminal block first, the entire fuse holder assembly being integrally formed from a single metal blank;

each of said pair of opposing prongs having an outside portion, an intermediate portion, and an end portion, there being a fold or bend between the outside portion and the intermediate portion and between the intermediate portion and end portion so that the two prongs are folded back on themselves twice, the end portion of each prong bearing resiliently against the outside portion, and the intermediate portions of the two prongs bearing against each other;

said ramp means being integrally connected to said intermediate portion at a position generally where opposing intermediate portions make contact and extending generally upward toward said bend between said outside and intermediate portions; and

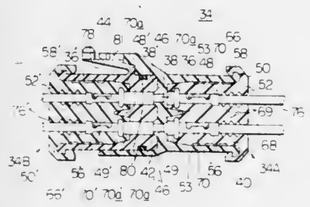
said opening being formed in a member extending between opposing ones of said outside portions.

4,214,802

WATERPROOF ELECTRIC CONNECTOR

Syuichi Otani, Tokyo, and Shinichi Kato, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 12, 1979, Ser. No. 3,065
Claims priority, application Japan, Jan. 20, 1978, 53/5514
Int. Cl.[2] H01R *13/48. 13/54*
U.S. Cl. 339—60 M **9 Claims**



1. A waterproof electric connector comprising a pair of terminal pin holding blocks which can be coupled together to provide electrical connection therebetween, each of said blocks comprising:

a housing having a chamber which is closed at one end by a partition wall and open at the other end, said partition wall being formed with at least one opening;

a plug member of resilient elastomeric material sealingly but removably disposed in said chamber of said housing, said plug member being formed with a through hole which is aligned with said opening upon final fitting of said plug member in said chamber;

a contact pin sealingly but removably disposed in said through hole of said plug member in a manner that at least a section of said contact pin is placed in said opening of said partition wall, said contact pin having at the section thereof a mating portion matable with a mating portion of a contact pin of the paired terminal pin holding block;

locking means for locking said plug member and said housing together, said locking means including a flange portion formed about said housing at the open end of the same, and a folded back portion formed about one end of said plug member, said folded back portion enclosing said flange portion upon final fitting of said plug member in said housing thereby to accomplish locking engagement between said plug member and said housing;

coupling means for coupling said housing with a housing of the paired terminal pin holding block thereby to allow said contact pin to mate with the contact pin of the paired terminal pin holding block; and

sealing means for preventing said mating portion of said contact pin from being exposed to the surrounding air when the paired housing are coupled together.

4,214,803

CONNECTOR CABLE CLAMP CONSTRUCTION

William H. McKee, and Glenn W. Plummer, both of West Covina, Calif., assignors to TRW Inc., Elk Grove Village, Ill.

Filed Jul. 24, 1978, Ser. No. 927,216
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—103 R **20 Claims**

1. A cable clamp for use with an electrical connector comprising means for anchoring said clamp to a connector end portion; opposed clamping means integrally joined with the anchor means for clampingly engaging a cable therebetween; at least one of said clamping means being deformable toward the other; each of said clamping means having spaced facing portions projecting in the general direction of the opposed clamping means; a floor portion interposed said clamping



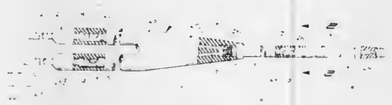
means having a projection; said spaced facing portions of each of said clamping means having portions disposed on opposite sides of and facing said projection for bending a cable between said projection and said spaced facing portions when said at least one clamping means is deformed toward the other of said clamping means.

4,214,804

PRESS FIT ELECTRICAL CONNECTION APPARATUS

Richard L. Little, Minneapolis, Minn., assignor to Daig Corporation, Minnetonka, Minn.

Filed Sep. 25, 1978, Ser. No. 945,113
Int. Cl.[2] H01R *11/32*
U.S. Cl. 339—183 **3 Claims**



1. For transmitting an electrical pulse from a pair of terminals of a pulse generator to a heart, a bipolar lead assembly comprising a first and a second connector pin adapted for being electrically connected to the terminals of a pulse generator, a tip electrode, a ring electrode having an inner surface, an elongated first electric conduit electrically connecting the first pin to the tip electrode, an elongated second electric conduit having a first end portion electrically connected to the second pin, and a second end portion extended into the ring electrode, said second end portion being a coil spring end portion, and means extending into the ring electrode in press fitting relationship thereto for retaining the coil spring end portion in electrical conductive relationship with the ring electrode, said means comprising an internal ring of electrically conductive metal having an exterior surface portion in electrically conductive relationship with the ring electrode inner surface and said coil spring end portion, the internal ring having a portion having an exterior groove opening to the ring electrode interior surface, the major part of the grooved portion being of a circular arcuate configuration and having an outer surface facing the ring electrode, the maximum radial spacing of the internal ring outer surface from the part of the ring electrode interior surface that the grooved portion open to being less than the maximum outer diameter of the helices of the coil spring end portion in a relaxed condition.

4,214,805

METHODS OF JOINING CONDUCTORS

Harry A. Faulconer, 8328 Center Dr., La Mesa, Calif. 92041

Continuation of Ser. No. 494,900, Aug. 5, 1974, abandoned, which is a division of Ser. No. 243,600, Apr. 13, 1972, Pat. No. 3,983,312, which is a continuation-in-part of Ser. No. 74,907, Sep. 23, 1970, Pat. No. 3,668,301, which is a continuation-in-part of Ser. No. 316, Jan. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 676,002, Sep. 28, 1967, abandoned, which is a continuation-in-part of Ser. No. 594,785, Nov. 16, 1966, abandoned. This application Nov. 18, 1977, Ser. No. 852,783
Int. Cl.[3] H01R *9/04*
U.S. Cl. 339—198 G **5 Claims**



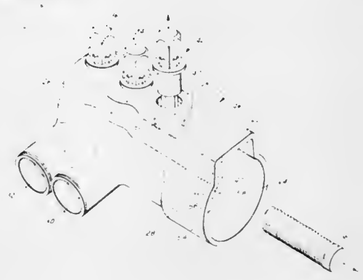
1. An array of electrical connector blocks comprising: a plurality of generally rectilinear blocks of insulative material. each said block having at least one opening in one surface thereof; a portion of an electrical conductor disposed in each of said openings; a conductive insert snugly received in each of said openings; each said insert being in electrical contact with the conductor portion therein; and means for securing said blocks in juxtaposition to one another; said securing means including a generally C-shaped clamping member retaining said blocks in juxtaposition to one another, a spring-clip of conductive material having portions contacting said conductive inserts in said openings in said blocks to establish electrical connection therebetween.

4,214,806

FAST RELEASE CONNECTOR

Russell H. Kraft, Rte. 82, R.D. No. 2, Hopewell Junction, N.Y. 12533

Filed Jul. 27, 1979, Ser. No. 61,277
Int. Cl.[3] H01R *9/10*
U.S. Cl. 339—242 **7 Claims**



1. An electrically conductive connector adapted to be releasably coupled with a stud to form an electrical connection comprising; an electrical terminal, an electrically conductive terminal aperture, the aperture having a larger diameter than the stud so as to facilitate introduction of the stud therein, a set screw threadedly mounted on the electrical terminal in position to be actuated from the exterior of the electrical terminal and to be reciprocally passed across the aperture to engage the stud inserted therein and form a fixed electrical connection between the stud and connector and release of the said screw will permit the stud to be removed from the connector, means formed in the aperture to cooperate with the set screw and stud to stabilize the interconnection therebetween particularly when subjected to forces acting other than along the axis of the set screw that otherwise could cause loosening of the interconnection between stud and connector, and at least one terminal port to facilitate electrical connection to selected conductors.

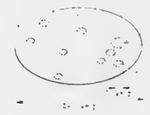
4,214,807

HOLOGRAPHIC OPTICAL SATELLITE COMMUNICATION SYSTEM

Fritz Gfeller, Adliswil, and Daniel Wild, Kilchberg, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,352
Claims priority, application Switzerland, Sep. 27, 1977, 11757/77
Int. Cl.[3] G02B *5/32*
U.S. Cl. 350—3.73 **9 Claims**





1. A satellite communication system provided with an optical carrier comprising:

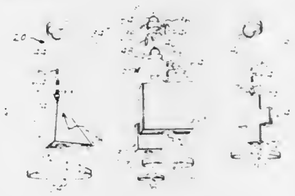
a transmitting laser for supplying at least one laser beam, a data source, modulation means responsive to the data source and the laser beam for modulating a physical characteristic of the laser beam in accordance with the data content of the data from the data source, a laser beam deflection means responsive to the modulated laser beam for deflecting said beam from a datum position in a predetermined controlled manner, and holographic means positioned in a predetermined manner with respect to said datum position for utilizing the incident laser beam as a reference radiation source to generate therefrom a predetermined multiple beam transmitter radiation pattern.

4,214,808

KALEIDOSCOPIC MOBILE

Edward A. Hampson, 4704 Harlan St., Suite 260, Denver, Colo. 80212

Filed Oct. 25, 1978, Ser. No. 954,414
Int. Cl.[2] G02B *27/08*
U.S. Cl. 350—4.1 **18 Claims**



1. In a mobile the combination comprising:

a reflective object having an exterior mirror surface; and

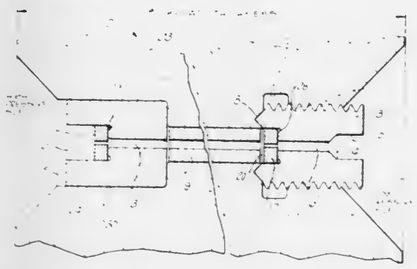
a display object having a plurality of display surfaces displaying selected visual contrasts and mounted for rotation about a rotational axis opposite said mirror surface such that images from said display surfaces are successively reflected from said mirror surface upon the rotation of said display object and appear as continuously changing visual contrasts on said mirror surface.

4,214,809

FIBER OPTIC PENETRATOR

Oswald R. Reh, Bonita, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 20, 1978, Ser. No. 926,514
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.20 **5 Claims**



1. A penetrator assembly, particularly for conveyance of an optical fiber in a fiber optic signaling arrangement across a large pressure differential, comprising:

a bulkhead member across which said pressure differential is extant between relatively high and relatively low pressure first and second surfaces thereof, respectively;

a first bore through said bulkhead of at least sufficient diameter to permit passage of a selected optic fiber axially therethrough;

first and second counterbores coaxial with said first bore but of larger diameter, each of said counterbores extending to a depth which is less than half of the thickness of said bulkhead member in the axial dimension of said bore and counterbores;

first and second pressure plugs installed in said first and second counterbores, respectively, said pressure plugs each including an optic fiber clearance axial bore coaxial with said first bore and said counterbores;

first and second jewel orifice members mounted within said first and second pressure plugs, respectively, said jewel orifice members each having a bore coaxial with said pressure plug clearance bores, a through passage being established within said penetrator assembly such that said optical fiber may be conveyed without interruption through said passage; said jewel member bores providing a closer tolerance fit against said optical fiber than provided in any other part;

and an adhesive sealant applied at least to the fit tolerance surface between said jewel orifice members and said optical fiber to provide a fluid-tight bond.

4,214,810

METHOD OF CONNECTING OPTICAL FIBRES

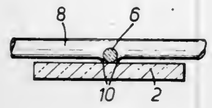
William J. Stewart, Fritwell, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jan. 31, 1978, Ser. No. 873,884
Claims priority, application United Kingdom, Feb. 1, 1977, 3983/77
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.21 **3 Claims**

1. A method of connecting an optical fibre to a piece of deformable material comprising:

positioning an optical fibre between a piece of deformable material and a non-heated tool having projections facing the material; and

pressing the tool and the piece of material together so that the projections displace material in such manner that the



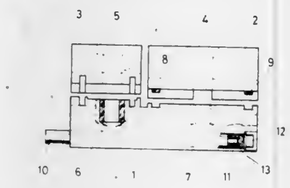
material surrounds at least the majority of the circumference of the fibre whereby the fibre becomes substantially embedded and retained in the material without additional securing means.

4,214,811

OPTICAL FIBRE CONNECTOR

Pierre A. Benoit, Boudry, and Gilbert Widmer, Bienne, both of Switzerland, assignors to Ste. d'Exploitation des Cables Electriques, Systeme Berthoud, Borel & Cie., Cortaillod; S.A. des Cableries & Trefileries de Cossonay, Cossonay-Gare and Kabelwerke, Brugg A.G., Brugg, all of, Switzerland

Continuation-in-part of Ser. No. 816,204, Jul. 15, 1977, Pat. No. 4,183,616. This application Aug. 30, 1978, Ser. No. 938,257
Claims priority, application Switzerland, Sep. 1, 1977, 10661/77
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.21 **8 Claims**



1. An optical-fibre connector for the connection of two groups of optical fibres provided with a sheath or a protective coating, the connector comprising a support piece provided with longitudinal grooves, a first locking piece and means for fixing it over a part of the length of the grooves at the connector end remote from that at which the connection is to be made to thereby retain and lock the unstripped fibres in the corresponding part of the grooves, and a second locking piece and means for fixing it over a part of the length of the grooves at the connection end of the connector to thereby retain and lock the stripped fibres in the corresponding part of the grooves, the bottom of the support piece grooves having a V-shaped cross-section at the connection end of the connector and the second locking piece comprising in its corresponding end part a comb of longitudinal bars of a shape complementary to said grooves, these bars being of a material which is deformable by pressure exerted by the fixing means of the second locking piece on the optical fibres during locking, the connector further comprising the improvements consisting of:

the support piece comprising grooves of V shape over its whole length and being provided in its part for taking up the stripped fibres with at least two transverse grooves;

the first locking piece likewise comprising longitudinal grooves;

the second locking piece comprising, over at least a part of the length of its part facing the support piece, a recess which houses a comb of longitudinal bars of deformable material with a form which is complementary to the grooves of the support piece;

the comb of bars being provided with at least two removable transverse bars, provided with a device for limiting the forces of compression of the fibres, arranged so as to penetrate during assembly into said transverse grooves of the support piece;

the support piece comprising at least two cylindrical longitudinal bores housing two spindles for assembling two similar connectors;

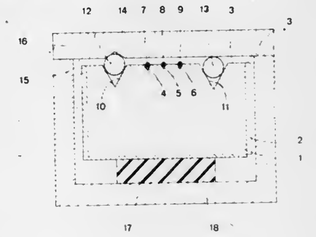
and screws for clamping the locking pieces onto the support piece and the spindles for assembling two similar connectors comprising a self-locking device for limiting the tightening force.

4,214,812

CONNECTING MODULE FOR SINGLE-STRAND OPTICAL CONDUCTORS AND A CONNECTOR INCLUDING AT LEAST ONE SUCH MODULE

Michel O. de Mendez, Montlery, France, assignor to Souriau & Cie, Boulogne-Billancourt, France

Filed Jan. 8, 1979, Ser. No. 1,476
Claims priority, application France, Jan. 19, 1978, 78 01445
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.21 **10 Claims**



1. A connecting module for a single-strand optical conductor, comprising

two carriers adapted for placement into end-to-end abutment, each said carrier including in an identical manner a planar face having an optical conductor carrying longitudinal groove of small V-shaped cross-section therein, each of said carriers being adapted for receiving a respective one of the single-strand optical conductors to be connected in said small groove therein with one end of the conductor disposed in the plane of the facing end of the respective one of the two said carriers, and each of said carriers having in the planar faces thereof a pair of alignment grooves;

a stirrup member for each said carriers, each said stirrup member including a planar face overlying the planar face of said carrier and having an alignment groove therein;

two cylindrical alignment members, each of which is received in said alignment grooves of said carriers, only one of said cylindrical alignment members being received in said alignment groove of said stirrup and the other of said alignment members being applied against said planar face of said stirrup member; and,

elastic means associated with said stirrup member and said carrier for biasing thereof towards each other.

4,214,813

PRISMATIC LIGHT BEAM EXPANDER OR COMPRESSOR MEANS

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041

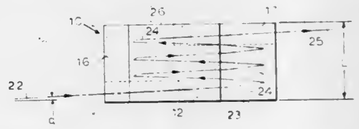
Filed Jul. 11, 1978, Ser. No. 923,709
The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.
Int. Cl.[3] G02B *5/30, 5/04*
U.S. Cl. 350—152 **8 Claims**

1. An optical system for effecting a series of individual changes in a cross sectional dimension of a beam of light directed along an optical path therein extending from an input path to an output path for said beam of light;

(a) said system including a formation of light conducting material having a predetermined cross sectional configuration and length dimension and presenting along said length dimension an array of outer surfaces of which a first plurality are representative of light reflecting surfaces and a second plurality are representative of light refracting surfaces;

(b) said array of outer surfaces each angularly oriented one in relation to the other so as to provide an optical relationship between said input and output paths, said input and output paths, respectively, at first and second ends of said length dimension;

(c) said beam of light directed along said input path at a predetermined angle of entry toward said array of surfaces and thereupon along said optical path in the direction of said length dimension toward said output path, said refracting surfaces each occupying a position along said optical path so as to effect a series of refractions of said beam of light and consequently said series of changes in a cross sectional dimension of said beam along said optical path;



(d) said optical relationship and said angle of entry allowing said beam of light to follow said optical path forming a helix of plural revolutions, the revolutions of said helix extending along said length dimension in a side-by-side relationship;

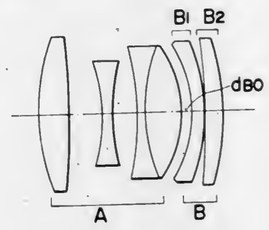
(e) said side-by-side relationship including equidistant center-to-center spacings of the revolutions of said helix and said center-to-center spacings directly related to said angle of entry of the beam of light along said input path toward said array of surfaces.

4;214,814

VARIABLE SOFT FOCUS LENS SYSTEM

Shuji Ogino, Osaka; Toshinobu Ogura, Tondabayashi; Yukio Okano, Osaka, and Akiyoshi Nakamura, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1978, Ser. No. 884,357
Claims priority, application Japan, Mar. 7, 1977, 52/24964
Int. Cl.[2] G02B *13/20, 9/60, 9/64*
U.S. Cl. 350—188 **14 Claims**



1. A variable soft focus lens system comprising:

a first lens group having an image side surface convex to the image side, and

a second lens group at the image side of the first lens group having an object side surface concave to the object side whereby a meniscus shaped airspace is created between the object side surface of the second lens group and the

image side surface of the first lens group, with at least the second lens group being movable along the optical axis relative to the first lens group for the purpose of variably adjusting a spherical aberration of the lens system, the meniscus shaped airspace being changed with the movement of the second lens group relative to the first lens group; the refractive power Φ_B of the second lens group being defined relative to the total refractive power Φ of the lens system by the following formula

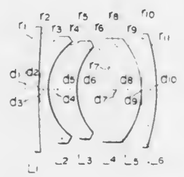
$$0.5\Phi > \Phi_B > -0.3\Phi.$$

4,214,815

SEMI-WIDE ANGLE OBJECTIVE LENS

Toshiko Shimokura, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1978, Ser. No. 913,018
Claims priority, application Japan, Jun. 23, 1977, 52-73881
Int. Cl.[2] G02B *9/60, 9/62*
U.S. Cl. 350—215 **7 Claims**



1. A semi wide angle objective lens constituting of five groups of six lens elements formed a front group having the first group of a positive meniscus single lens L_1 with its convex surface directed toward the object side, the second group of a negative meniscus single lens L_2 with its convex surface directed toward the object side and the third group of a positive meniscus single lens L_3 with its convex surface directed toward the object side, and forming a rear group having the fourth group of a negative lens L_4 with its concave surface having a large curvature directed toward the object side and of a positive lens L_5 with its convex surface having a large curvature directed toward an image side which are arranged with a mutual contact condition therebetween, and the fifth group of a positive lens L_6 characterized in that each of the following conditions, i.e.

$$1.69f < |f_2| < 1.79f \quad (1)$$

$$0.27f < r_4 < 0.29f \quad (2)$$

$$0.045f < d_4 < 0.054f \quad (3)$$

$$0.94 < r_4/r_5 < 0.096 \quad (4)$$

where,

f: the composite focal length of the entire lens system
f_2: the single focal length of the lens L_2 of the second group
r_4: the radius of curvature of the rear surface of the lens L_2 of the second group
d_4: the axial air space between the lens L_2 of the second group and lens L_3 of the third group
r_5: the radius of curvature of the front surface of the lens L_3 of the third group

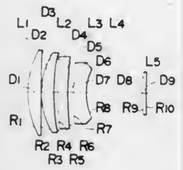
is fulfilled.

4,214,816

HIGH SPEED TELEPHOTO LENS SYSTEM

Tamikazu Yamaguchi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 21, 1978, Ser. No. 944,373
Claims priority, application Japan, Sep. 27, 1977, 52/116497
Int. Cl.[2] G02B *13/02*
U.S. Cl. 350—218 **7 Claims**



1. An improved compact high speed telephoto lens system comprising, from the object to the image side of the lens system;

a first lens of a positive meniscus shape, convex to the object side;
a second lens of a positive meniscus shape, convex to the object side;
a third lens of a negative meniscus shape, convex to the object side, the second and third lenses are positioned to form therebetween an air space of a negative refractive power;
a fourth lens of a negative meniscus shape, convex to the object side, and
a fifth lens of a positive refractive power wherein the lens system fulfills the following conditions:

$$0.2 < D_B/D_A < 0.45$$

$$-0.8/f < 1.0 - N_A/R_A + N_B \cdot 1.0/R_B < -0.1/f$$

$$N_C > 1.7$$

wherein:

D_A represents a sum of the axial distance from the object side surface of the first lens to the image side surface of the fourth lens;
D_B represents a sum of the axial distances from the image side surface of the third lens to the image side surface of the fourth lens;
R_A represents a radius of curvature of the image side surface of the second lens;
R_B represents a radius of curvature of the object side surface of the third lens;
N_A represents a refractive index of a glass material forming the image side surface of the second lens;
N_B represents a refractive index of a glass material forming the object side surface of the third lens;
N_C represents a refractive index of a glass material forming the image side surface of the four lens; and f represents the focal length of the whole lens system.

4,214,817

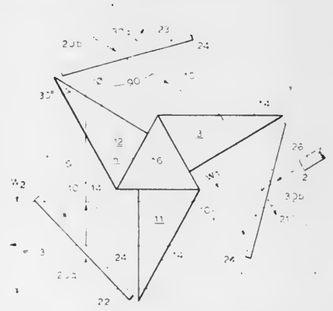
PRISMATIC LIGHT BEAM EXPANSION OR COMPRESSION SYSTEM

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041

Filed Sep. 14, 1978, Ser. No. 942,263
Int. Cl.[2] G02B *5/04*
U.S. Cl. 350—286 **3 Claims**

1. An optical system for effecting a series of individual changes in a cross sectional dimension of a beam of light directed along an optical path therein extending from a light input path to said system to a light output path from said system, comprising:

(a) at least three light refracting prisms, providing, respectively, first, second and third light refracting surfaces, and at least three light reflecting mirrors, providing, respectively, first, second and third light reflecting surfaces, each said refracting surface presenting a length dimension and said reflecting surfaces positioned along said length dimension;
(b) said first, second and third refracting surfaces and said first, second and third reflecting surfaces each angularly oriented one with respect to the other so as to provide an optical relationship between said input path and said optical path and between said optical path and said output path;
(c) whereby said beam of light is directed along said input path and thereupon along said optical path toward said output path following a predetermined angle of entry toward a predetermined one of said refracting surfaces, said angle of entry allowing the beam of light to follow said optical path forming a helix of at least one revolution, said helix extending a predetermined distance along said length dimension and said distance being directly related to said angle of entry to said beam of light;
(d) said first, second and third light refracting surfaces positioned such that each occupies a position along said optical path for effecting said series of individual changes in a cross sectional dimension of said beam of light;



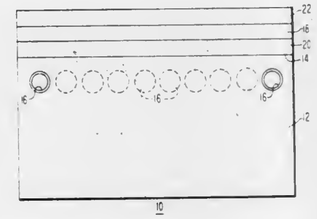
(e) a first predetermined one of said light reflecting surfaces positioned along said length dimension so as to allow a passing of said beam of light along said input path toward said incident on a first predetermined one of said light refracting surfaces;
(f) a second predetermined one of said light reflecting surfaces positioned along said length dimension so as to effect a reflecting of said beam of light, upon a refracting of said beam at said first predetermined one of said refracting surfaces, along said optical path toward and incident on a second predetermined one of said light refracting surfaces;
(g) a third predetermined one of said light reflecting surfaces positioned along said length dimension so as to effect a reflecting of said beam of light, upon a refracting of said beam at said second predetermined one of said refracting surfaces, along said optical path toward and incident on a third predetermined one of said light refracting surfaces;
(h) whereby the position said first predetermined one of said light reflecting surfaces along said length dimension allows a reflecting of said beam of light, upon a refracting of said beam at said third predetermined one of said refracting surfaces, for a continuing of said beam along said optical path, whereupon the position of a predetermined one of said light reflecting surfaces along said length dimension allows a passing of said beam of light along said output path and beyond the light reflecting limits of said one light reflecting surface.

4,214,818

HOT PRESSED SIC-HIGH POWER LASER MIRROR

Wolfgang J. Choyke, Pittsburgh, and Richard A. Hoffman, Export, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 661,921, Feb. 27, 1976, Pat. No. 4,142,006, which is a continuation-in-part of Ser. No. 481,268, Jun. 20, 1974, abandoned. This application Nov. 8, 1978, Ser. No. 959,041
Int. Cl.[2] G02B *5/08*
U.S. Cl. 350—310 **7 Claims**



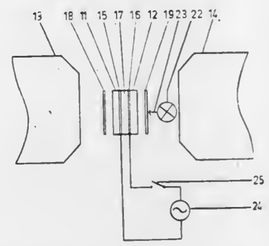
1. A laser mirror comprising a refractory composition substrate having an optical finish on one surface thereof, said substrate having a high thermal conductivity of at least 2 watts/cm° K., a low coefficient of thermal expansion of less than about 5×10^{-6}/° C. and a hardness of at least 9 MOH, said optical finish having a roughness within the range between about 7 and 10 angstroms RMS, a metal film having a high thermal conductivity disposed to cover the optical finish and having a thickness not in excess of 8000 angstroms and a protective transparent dielectric film disposed to cover the metal film and having a thickness of less than 2000 angstroms.

4,214,819

ELECTRO-OPTICAL MODULATOR

Ludwig Pohl, Darmstadt; Rudolf Eidenschink, Dieburg; Joachim Krause, Darmstadt-Eberstadt, and Georg Weber, Erzhausen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 27, 1978, Ser. No. 955,288
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748738
Int. Cl.[2] G02F *1/13*
U.S. Cl. 350—334 **13 Claims**



1. An electro-optical modulator comprising:

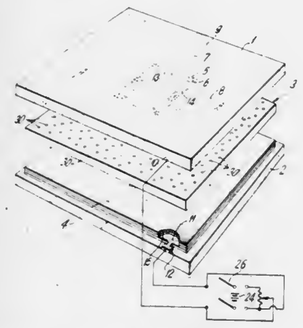
(a) a liquid crystal cell having a thin layer of liquid crystal material with a positive DKA and a negative DMA positioned between two transparent electrode layers across which a potential difference establishes in the liquid crystal layer an electric field perpendicular to the electrode layers;
(b) crossed polarizers sandwiching the cell; and
(c) means for establishing a magnetic field in the liquid crystal layer having a predetermined direction relative to the direction of the electric field.

4,214,820

ELECTROCHROMIC DISPLAY HAVING ENHANCED NIGHT VIEWABILITY

Marshall Leibowitz, Ridgefield; Alan Willis, Stamford, and Douglas George, Waterbury, all of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Sep. 15, 1978, Ser. No. 942,725
Int. Cl.[2] G02F *1/17*
U.S. Cl. 350—357 **10 Claims**



1. In an electrochromic display comprising a first substrate with selectively actuable transparent electrodes and image-forming electrochromic layers thereon, a second spaced substrate with a counter-electrode and an ion-conducting layer therebetween, the improvement which comprises:

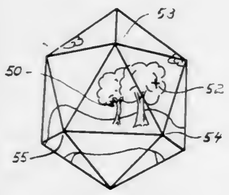
self luminous light means disposed within the ion-conducting layer at such locations behind the image-forming electrochromic layers that sufficient back lighting of said layers for enhanced night viewability is achieved, said light means including radioactive emitter means and radioluminescing means in cooperative relationship within said ion-conducting layer.

4,214,821

TOTAL ENVIRONMENT PHOTOGRAPHIC MOUNT AND PHOTOGRAPH

Richard A. Termes, Rt. 2, Box 435B, Spearfish, S. Dak. 57783

Filed Oct. 30, 1978, Ser. No. 956,031
Int. Cl.[2] G03B *37/00*
U.S. Cl. 352—70 **4 Claims**



1. A method of manufacturing a total environment photograph comprising:

exposing a plurality of photographs in reference to each of the plurality of faces upon a camera mount in the form of a polyhedron;

printing said photographs to a size suitable for the finished assembly;

determining and marking upon the face of said prints the geometric center of each print;

placing two of the said prints which were exposed from adjacent faces of said camera mount so that the images are up and overlapping;

constructing a line between the geometric centers of said overlapped prints;

constructing a perpendicular bisector to said line between said geometric center points;

rotating the line segment between the geometric center point, of the upper print, and the perpendicular bisector one hundred and twenty degrees both clockwise and counter clockwise about the geometric center point on the upper print;

constructing lines perpendicular to said rotated line segments creating a equilateral triangle on the upper print;

constructing a template, from a thin material, of the same size and configuration as said equilateral triangle constructed upon the upper print, said template provided with a central reference point coincident with the geometric center point of said equilateral triangle, said template provided with tabs extending outwardly from the midportion of each of the three sides of said equilateral triangle, said tabs being of sufficient length to contain the geometric center points of adjacent overlapped prints, the location of said geometric center points of adjacent overlapped prints lying upon reference lines extending from said central reference point and perpendicular to each of the sides of said equilateral triangle and at a distance from said central reference point equal to twice the distance from said central reference point to the point where said reference lines intersect the sides of said equilateral triangle;

placing two of the said prints which were exposed from adjacent faces of said camera mount so that the images are up and overlapping;

placing said template upon the upper print so that said central reference point coincides with the geometric center point of said upper print;

rotating said template about said central reference point until the geometric center point contained in one of the outwardly extended tabs coincides with the geometric center point of the lower overlapped prints;

transferring the trim lines to the said upper overlapped print from the edges of the equilateral triangle portion of said templates;

determining the trim lines of the remaining plurality of prints by using the said template as previously described;

trimming the prints by using the said trim lines;

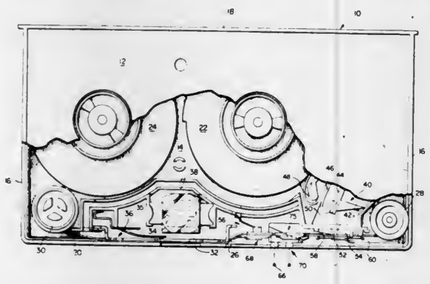
bonding together the edges of adjacently exposed prints resulting in a polyhedron body whereby the photographic image across the transition of adjacent edges of said trimmed prints is continuous.

4,214,822

MULTIPURPOSE FILM CASSETTE HAVING ONE-PIECE ROTATING PROCESS MODE SWITCH

Donald E. Moodie, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 6, 1979, Ser. No. 63,672
Int. Cl.[2] G03B *23/02*; G03C *11/00*
U.S. Cl. 352—78 R **9 Claims**



1. A photographic film cassette for use with other apparatus, said cassette configured for depositing a coating of processing fluid on a moving run of a cassette retained photographic film strip to develop viewable images thereon, said cassette comprising:

a cassette housing;

means responsive to a drive arrangement of the other apparatus for advancing the film along a given path within said housing;

means actuatable in accordace with a predetermined processing operation of said cassette for depositing processing fluid on the advancing film strip;

means for indicating to the other apparatus the processed or unprocessed condition of the film strip, said indicating means comprising an indicating element mounted within said housing for rotation about a fixed axis from a first position wherein said indicating element will operatively engage a signal generating arrangement carried by the other apparatus when said cassette is in operative engagement with said other apparatus, thereby indicating a given process condition of the film in the cassette, to a second position wherein said indicating element will not operatively engage the signal generating arrangement of the other apparatus when the cassette is in operative engagement with the other apparatus thereby indicating another different process condition of the film in the cassette; and

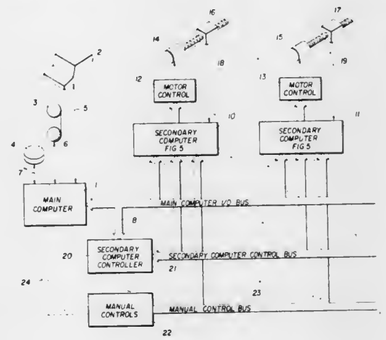
selectively operable means responsive to said predetermined processing operation of said cassette for engaging and rotating said indicating means about said fixed axis from its said first position to its said second position thereby indicating said change in said process condition from said given to said other condition.

4,214,823

ANIMATION STAND CONTROL SYSTEM

Eric K. Pritchard, 1702 Plymouth Ct., Bowie, Md. 20716

Filed May 22, 1979, Ser. No. 41,376
Int. Cl.[3] G03B *21/32*
U.S. Cl. 352—87 **13 Claims**



1. In an animation stand having a camera, a support means for positioning an object relative to said camera, and drive means for moving said camera and support means relative to each other in response to driver command signals, the improvement comprising:

means for producing input command signals in response to non-numeric manual manipulations and

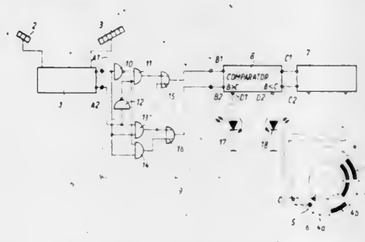
computing means for calculating driver command signals in response to said input command signals, storing said calculated driver command signals and outputing driver command signals to said driver means to move said object and camera relative to each other.

4,214,824

PHOTOGRAPHIC-CAMERA FOCUSSING SYSTEM WITH COMPARATOR RECEIVING REQUIRED-AND ACTUAL-SETTING DATA

Otto Stemme, Munich; Peter Lermann, Narring; Eduard Wagensonner, Ascheim, and Istvan Cocron, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1979, Ser. No. 3,809
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1978, 2801747
Int. Cl.[3] G03B *13/02*
U.S. Cl. 354—23 D **4 Claims**



1. In a focusing system of a photographic camera of the type provided with an exposure objective, a focus adjuster device for changing the subject-distance setting of the exposure objective, means generating coded digital actual-setting signals dependent upon the setting of the focus adjuster device, and means for automatically generating coded digital required-setting signals dependent upon the true distance from the camera to the subject to be photographed, the coded digital actual-setting signals and the coded digital required-setting signals representing subject-distance setting information using two different digital encoding schemes, a comparator having a first input connected to receive the actual-setting signals and having a second input and having an output and producing at its output signals dependent upon the relationship between the signals applied to its first and second inputs; and a code-conversion stage having an input connected to receive the coded digital signals from one of said means and having an output connected to one input of the comparator and comprising a plurality of interconnected logic gates operative for transforming the coded digital signals from the one to the other of said two different encloding schemes, whereby the comparator can perform simple and direct comparisons between actual-setting and required-setting signals.

4,214,825

SHUTTER CONTROL MEANS WITH AUTO STROBO FOR ELECTRICAL SHUTTER CAMERA

Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1977, Ser. No. 844,802
Claims priority, application Japan, Dec. 3, 1976, 51-162609[U]
Int. Cl.[2] G03B *15/05*
U.S. Cl. 354—33 **6 Claims**

1. An auto strobo unit for use with the electrical shutter circuit of a camera, said electrical shutter circuit including X contacts for triggering operation of the auto strobo unit upon initiation of a photographing operation and exposure control means for operating said electrical shutter circuit to a shutter closing condition when light reflected from the object being photograped reaches a sufficient level, said auto strobo unit comprising:

a flash lamp;

a trigger circuit responsive to closure of X contacts for energizing said flash lamp;

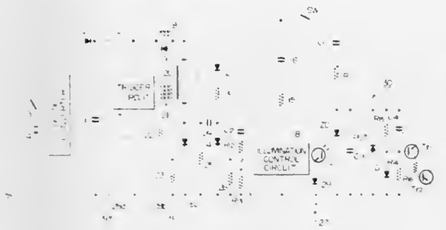
illumination control means responsive to light reflected from the object being photographed to extinguish the flash

lamp when the reflected light reaches a predetermined level;

delay means operative responsive to energization of said flash lamp for establishing a fixed time delay interval;

switching means responsive to said delay means for applying a shutter closing signal to said electrical shutter circuit upon the end of said delay interval;

control means responsive to the flash lamp extinguishing condition of said illumination control circuit to prevent said delay means from operating said switching means whereby said electrical shutter circuit is operated to said



shutter closing condition responsive only to said exposure control means;

said delay means being adapted to establish a delay interval which terminates immediately after termination of the illumination of the flash lamp in the absence of a flash lamp extinguishing condition by said illumination control circuit whereby the electrical shutter circuit is operated by said delay means in the presence of an insufficient exposure condition and is operated by said exposure control means in the presence of a sufficient exposure condition.

4,214,826

METHOD AND DEVICE FOR CONTROLLING THE EXPOSURE OF A CAMERA WHEN PHOTOGRAPHING AN OBJECT OF WHICH LUMINANCE IS DIFFERENT ON EACH SURFACE SECTION THEREOF

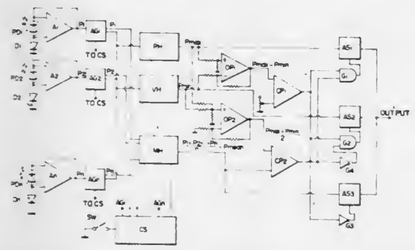
Yasuo Uchida; Kazuo Shiozawa, and Kiziro Suzuki, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 706,070, Jul. 16, 1976. This application May 4, 1978, Ser. No. 906,329

Claims priority, application Japan, Jul. 21, 1975, 50-89484

Int. Cl.² G03B *7/08*

U.S. Cl. 354—31 **2 Claims**



1. A method of controlling exposure of a camera comprising the steps of:

measuring the luminance of a scene to be photographed by a plurality of photoelectric elements which are arranged on a substantially image-forming plane to receive light from respective portions of said scene;

obtaining the maximum and minimum values of the outputs of said photoelectric elements;

determining whether the difference between said maximum and minimum values is greater than a predetermined value or not;

obtaining the mean value of the outputs of said photoelectric elements;

and deriving information for exposure from said maximum, minimum and mean values so that said information is equivalent to said mean value when said difference is smaller than said predetermined value and so that said information is equivalent to either one of said maximum and minimum values when said difference is larger than said predetermined value.

4,214,827

AUTOMATIC FOCUS CONTROL CAMERA

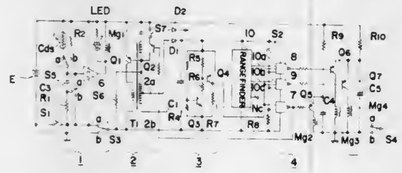
Shinji Tominaga; Toshinori Imura; Seiji Yamada, all of Sakai, and Yasuzi Kogure, Kawanishi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 17, 1978, Ser. No. 961,505

Claims priority, application Japan, Nov. 22, 1977, 52-140180

Int. Cl.² G03B *13/20, 15/05, 17/38*

U.S. Cl. 354—127 **10 Claims**



1. An automatic focus control camera comprising a camera objective lens; driving means for driving said camera objective lens along the optical axis thereof to change the focusing of the same; distance detecting means for generating a distance signal representative of the distance from the camera to an object to be photographed, regardless of the axial position of said camera objective lens; arresting means for arresting said driving means during its operation and determining the axial position of said camera objective lens in accordance with said distance signal; a camera shutter mechanism; shutter release means operable in association with the operation of said driving means for actuating said camera shutter mechanism subsequent to the position determination of said objective lens; actuation means for actuating said driving means; power supply means for supplying electric power to at least said distance detecting means; voltage checker means for generating a first output signal when the voltage of said power supply means is higher than a predetermined level; a manual member for generating a second output signal in response to manual operation thereof; gate means responsive to said first and second output signals for allowing the transmission of said distance signal from said distance detecting means to said arresting means in response to application of both said first and second output signals thereto; and response means responsive to said first and second output signals for actuating said actuation means in response to application of both said first and second output signals thereto.

4,214,828

WEB CASSETTE WITH CARTRIDGE LOAD

Donald J. Axelrod, Glenview, Ill., assignor to Bell & Howell Company, Chicago, Ill.

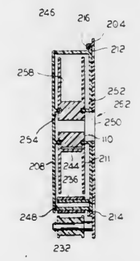
Continuation of Ser. No. 793,621, May 4, 1977, Pat. No. 4,153,361. This application Feb. 16, 1979, Ser. No. 12,623

Int. Cl.² G03B *17/26*

U.S. Cl. 354—275 **7 Claims**

1. A light-tight cartridge for either containing, supporting, and supplying unexposed film or for taking-up, supporting and containing exposed film responsive to a demand for delivery of film by a camera containing said cartridge, said cartridge comprising an integrally molded structure forming a light-tight

enclosure defined by two relatively large side panels having surfaces held in a spaced parallel relationship by at least one closed wall interrupted by a slot, said wall being upstanding upon and projecting outwardly from one of said side panels, means formed around the perimeter of the other of said side panels for light-tight sealing against the outwardly projecting edges of said upstanding wall to form a light-tight seal between said perimeter and said projecting edges, at least one somewhat V-shaped recess formed in said upstanding wall to be captured by a cooperating detent formed in said camera, means associated with said one side panel for rotatably receiving a wound coil of film within the light-tight enclosure, the axis of said received coil being generally perpendicular to the surface of said one side panel, said slot being formed in said upstanding



wall at a position which enables said rotatably mounted film to be drawn from or into said cartridge responsive to said film delivery demand by said camera, light-sealing means at said slot for enabling a passage of said film while precluding passage of light through said slot, and means formed on the outside of said cartridge for enabling said cartridge to be supported in either a film supply position or a film take-up position within said camera, whereby a cartridge loaded with unexposed film may be positioned at a supply position within said camera until the film loaded into said cartridge is substantially exhausted and then said exhausted cartridge may be moved to a take-up position in said camera for receiving exposed film after it is drawn from a freshly loaded cartridge in said supply position.

4,214,829

PHOTOGRAPHIC CAMERA WITH BUILT-IN OPTICAL CONVERTER

Saichiro Ohashi, Kyoto, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 1, 1978, Ser. No. 911,541

Claims priority, application Japan, Jun. 1, 1977, 52-64355

Int. Cl.² G03B *3/00, 13/02*

U.S. Cl. 354—197 **6 Claims**

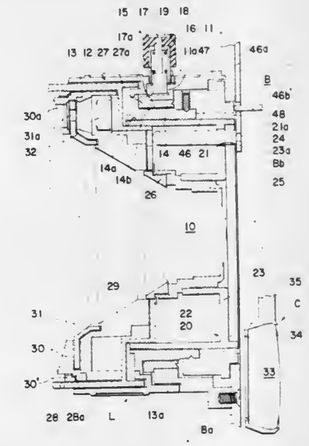
1. A photographic camera comprising, in combination:

a camera body including a front wall having an opening therein at a position opposed to a focal plane within the camera body where a photosensitive film, when loaded in the camera, is positioned;

an objective lens assembly including a fixed barrel having one end secured to the camera body in alignment with the opening in said front wall of the camera body, an objective lens means providing a principal optical system of a first predetermined focal length, a lens mount means for supporting the objective lens means for movement together therewith, a focusing barrel means positioned on one side of the fixed barrel remote from the camera body, in alignment with any one of the fixed barrel and the optical axis of the objective lens means, said focusing barrel means being supported by said fixed barrel for rotation about the optical axis of the objective lens means through first and second predetermined focusing angles, and a motion translating barrel means positioned substantially internally of the fixed barrel and the focusing barrel means and externally of said lens mount means for transmitting rotary motion of said focus adjusting barrel means to said lens mount means to move the latter in an axial direction parallel to the optical axis of the objective lens means, said force adjusting barrel means, when rotated through the first predetermined focusing angle, rendering the principal optical system operable to take a photographic picture of a target object to be photographed and said focus adjusting barrel means, when rotated through the second predetermined focusing angle, rendering another optical system of a second predetermined focal length, different from said first predetermined focal length of said principal optical system, operable to take a photographic picture of a target object to be photographed;

a converter lens means;

means for supporting said converter lens means for movement between an operative position, in which the converter lens means is exactly in alignment with the optical axis of the objective lens means to provide said another optical system in cooperation with said objective lens means, and an inoperative position in which the converter lens means is out of alignment with the optical axis of the objective lens means; and



means for causing said supporting means to move from the inoperative position to the operative position in response to change from the capability of rotation of the focus adjusting barrel means within the range of the first predetermined focusing angle to the capability of rotation of the focus adjusting barrel means within the range of the second predetermined focusing angle, and vice versa, said supporting means comprising a pivotably supported, elongated arm member having one end rigidly carrying the converted lens means and the other end carrying an engagement element, means for biasing said arm member toward the operative position and wherein said causing means comprises cam means operatively coupled to the focus adjusting barrel means, said cam means having a cam in constant engagement with said engagement element under the influence of the biasing force of said biasing means and said cam being shaped such that, so long as the focus adjustment barrel means is rotated within the range of the first predetermined focusing angle, the supporting means is held in the operative position, and so long as the focus adjusting barrel means is rotated within the range of the second predetermined focusing angle, the supporting means is held in the inoperative position.

4,214,830

CONDUCTING BATTERY COMPARTMENT CLOSURE THAT ALSO LOCKS FILM DOOR

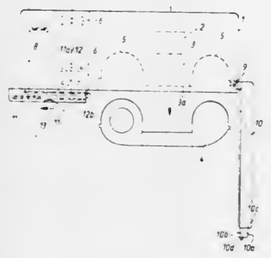
Rolf Schröder, Baldham, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 5, 1978, Ser. No. 966,598

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 7738283[U]; Oct. 13, 1978, 2844728

Int. Cl.[2] **G03B** *17/02;* **H01R** *33/06*

U.S. Cl. 354—202 **13 Claims**



1. In a camera, particularly a still camera, a combination comprising a housing having a film chamber and a battery compartment; a first cover hinged to said housing and movable to and from a first position in which it closes said film chamber; and a second cover slidably mounted on said housing for movement between a second position in which it closes said battery compartment and makes electrical contact with batteries in said battery compartment while arresting said first cover in said first position thereof, a latched third position in which it at most partially exposes said battery compartment and breaks said electrical contact while disengaging said first cover for movement of the same from said first position, and a fourth position in which said second cover fully exposes said battery compartment for access to the batteries therein.

4,214,831

APPARATUS FOR PRODUCING DUPLEX COPIES

Jorgen Reesen, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,287

Int. Cl.[2] **G03G** *15/00*

U.S. Cl. 355—3 R **9 Claims**



1. Apparatus for producing simplex or duplex images on a copy sheet, said apparatus comprising:

a movable photoconductive member;

means for forming unfixed transferable toner images on said photoconductive member;

first and second toner image transfer stations located in transferable relationship with said photoconductive member for transferring said images from said photoconductive member to a copy sheet;

means for moving a copy sheet along a copy sheet path located between said first and second transfer stations and including a plurality of vacuum rollers including at least a first roller located adjacent to said photoconductive member and a guide member associated with said vacuum rollers;

said vacuum rollers being operable in synchronism with said movable photoconductive member and being rotatable when duplex images are produced on a copy sheet in a first direction for attracting by vacuum a copy sheet separating from transfer relationship with said photoconductive member and to one side of which copy sheet a first transferable image has been transferred at said first transfer station, and for moving said copy sheet over said guide member along said path away from said photoconductive member and being rotatable in a second opposite direction after said copy sheet has been separated from said photoconductive member so as to invert said copy sheet while said first image is unfixed to move said copy sheet over said guide member along said path toward said photoconductive member for bringing the second side of said copy sheet into transferable relationship with said second image on said photoconductive member at said second transfer station and when a simplex image is produced on a copy sheet in said second direction to move a copy sheet over said guide member toward said photoconductive member to bring a side of said copy into transferable relationship with an image on said photoconductive member at said second image transfer station.

4,214,832

ELECTROSTATIC COPYING MACHINE COMPRISING IMPROVED DOCUMENT SCANNING MEANS

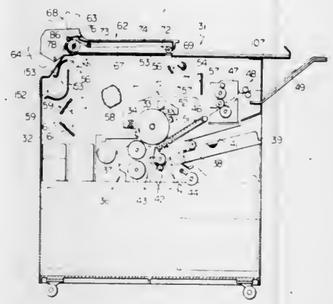
Masao Kono; Tatsuo Tani; Toshiyuki Ogawa, and Kenzo Ariyama, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 27, 1977, Ser. No. 864,548

Claims priority, application Japan, Dec. 25, 1976, 51-157158; Dec. 25, 1976, 51-157159

Int. Cl.[2] **G03G** *15/28;* **G03B** *27/52, 27/50*

U.S. Cl. 355—8 **27 Claims**



1. An electrostatic copying machine comprising:

a transparent platen for supporting an original document;

a moving photoconductive member;

optical means having a movable scan member for focussing a light image of the original document onto the photoconductive member to form an electrostatic image;

conveyor means movable over the platen surface for conveying the original document across the platen;

control means for selectively controlling the optical means and conveyor means in a first scan mode in which the document is maintained stationary in a scan position on the platen and the movable scan member is moved relative thereto, a second scan mode in which the movable scan member is held stationary and the document is moved by the conveyor means at a scan speed, and a third scan mode in which the document is moved by the conveyor means from an insertion position to the scan position at a feed speed which is higher than the scan speed and the movable scan member is moved relative thereto;

the movable scan member being held stationary in the second scan mode in a position such as to focus a light image of a linear portion of the document on an exposure portion of the platen onto the photoconductive member, the conveyor means comprising an endless belt, first and second rollers spaced on opposite sides of the exposure portion respectively for pressing the belt and document against the platen and a third roller spaced between the first and second rollers over the exposure portion, the third roller holding the belt away from the exposure portion, the conveyor means further comprising a white guide means disposed between the third roller and the exposure portion, the document being moved between the guide means and the platen.

4,214,833

OPERATION TIMING CONTROL SYSTEM FOR MECHANICAL APPARATUS OPERABLE UNDER PROGRAM CONTROL

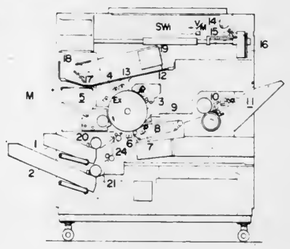
Tateomi Kono, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

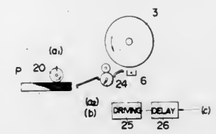
Filed Mar. 22, 1979, Ser. No. 23,091

Claims priority, application Japan, Apr. 10, 1978, 53-42314

Int. Cl.[2] **G03G** *15/00*

U.S. Cl. 355—14 C **5 Claims**





1. In a mechanical apparatus having a plurality of mechanisms each of which is independently operable, means for driving the respective mechanisms, and mechanism starting means for starting the operation of at least one of the mechanisms in the midst of an operation of the mechanical apparatus, a means for controlling the timing of operation of said one of said mechanisms, said controlling means comprising:

a program controlling device for said mechanical apparatus having a timer means set for a predetermined time which is set in the program of said program controlling device as a numerical data and which is such as to end at a time earlier than the time for the proper operation of said mechanism starting means;

apparatus starting means for starting the operation of the mechanical apparatus;

timer starting means connected between said apparatus starting means and said timer means for starting the operation of said timer means at the time of the start of operation of the mechanical apparatus;

starting signal generating means forming part of said program controlling device and operated by said timer for generating a starting signal for said one of the mechanisms when said predetermined time has elapsed; and

delay means connected between said starting signal generating means and said mechanism starting means for receiving said starting signal for starting the operation of said mechanism starting means and supplying it to said mechanism starting means after a time delay, said delay means including an adjusting means for adjusting the delay time.

4,214,834

PHOTOGRAPHIC COPYING MACHINE

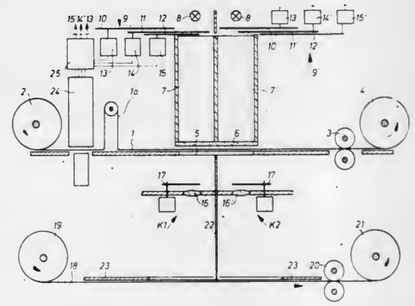
Günter Findeis, Sauerlach; Wolfgang Zahn, Munich, and Klaus Weber, Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,116

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840049

Int. Cl.[2] **G03B** *27/44*

U.S. Cl. 355—46 **7 Claims**



1. A photographic copying machine for a strip of photographic originals, comprising means transporting the strip of originals along a predetermined transport path; plural copying stations located along the transport path for concurrent copying of respective ones of plural originals of the transported strip; means transporting copying medium along a predetermined transport path such that originals located at the plural copying stations are concurrently imaged onto the copying medium; and automatic exposure control means operative for effecting concurrent exposure of plural originals located at respective ones of the plural copying stations.

4,214,835

SPECTROMETER SEQUENTIAL READOUT SYSTEM

Cees J. Roos, 'S Gravenzande, Netherlands, assignor to Baird Corporation, Bedford, Mass.

Continuation-in-part of Ser. No. 803,617, Jun. 6, 1977, Pat. No. 4,140,394. This application Jan. 2, 1979, Ser. No. 150

Int. Cl.[2] **G01J** *3/38*

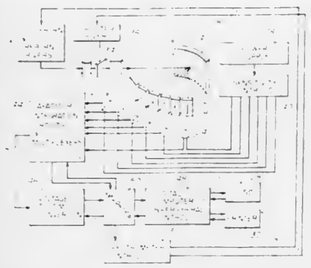
U.S. Cl. 356—306 **10 Claims**

1. In a direct reading spectrometer for dispersing light from an excited specimen into its characteristic spectrum, an apparatus for generating data signals related linearly to the concentration of elements in said specimen, said apparatus comprising:

(a) a plurality of photocells mounted on said spectrometer for receiving different portions of said spectrum, each of said photocells converting light energy from a selected portion of the spectrum into electrical energy;

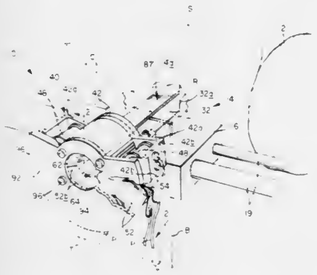
(b) a plurality of storage means operatively connected to said photocells for storing an unknown electrical charge corresponding to the intensity of the monitored spectrum portion, each one of said storage means being connected to only one of each of said photocells, one of said storage means operatively connected to one of said photocells at a

reference position for storing a charge corresponding to the intensity of a reference portion of said spectrum;
(c) a measuring capacitor;
(d) first means for controlling the sequence of operation of the parts of the apparatus;
(e) first switching means controlled by said first means and connected between said storage means and said measuring capacitor for sequentially transferring said stored charge on said storage means to said measuring capacitor; and



(f) second means for discharging said measuring capacitor to a predetermined level;
(g) said measuring capacitor is discharged to said predetermined level after each said transfer of said stored charge on each said storage means to said measuring capacitor by said first switching means, the time period during which said measuring capacitor is discharged for each said storage means is the discharge time period for the element associated with that storage means.

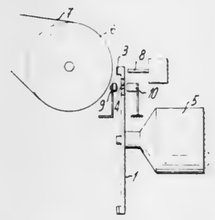
4,214,836
IMPACT PRINT HEAD
Cheng H. Wang, Newton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Mar. 24, 1978, Ser. No. 889,886
Int. Cl.[2] B41J *3/12*
U.S. Cl. 400—124 **10 Claims**



1. An impact print head for a matrix printer of the type including a housing, a set of print wires extending along the housing, means for slidably positioning the print wires in the housing, a set of actuators mounted on a frame assembly for moving the print wires between respective extended and retracted positions, each actuator including a solenoid connected to the frame assembly and a spring arm positioned opposite the solenoid and being connected to the frame assembly, said frame assembly, spring arm and solenoid comprising an electromagnetic circuit, the improvement wherein means are provided for preloading each spring arm toward its associated solenoid and a permanent magnet is associated with each spring arm and positioned outside the electromagnetic circuit including that spring arm for biasing each preloaded spring arm away from its associated solenoid so as to create a gap between said arm and said solenoid, the polarities of the magnetic pole and solenoid pole on opposite sides of each spring arm upon energization of the solenoid being of the opposite sense so as to maximize the magnetic flux density in said air gap whereby the energized solenoid exerts maximum pulling force on the spring arm which force is supplemented by the force due to the preloading of that spring arm.

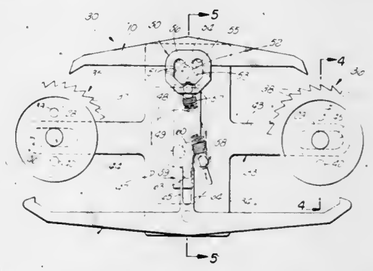
10. An impact print head for a matrix printer of the type including an elongated housing, one end of said housing constituting the working end of the head, a multiplicity of elongated print wires positioned in the housing, corresponding first ends of said wires being arranged in a selected configuration at said one end of the housing, each said wire being slidable individually between a first position wherein its said first end is retracted into said one housing end and a second position wherein its said first end projects from said one housing end, means in the housing associated with the opposite ends of said wires for moving said wires between their said positions, said moving means including an array of solenoids mounted in the head, the number of solenoids corresponding to the number of print wires, a set of armatures made of ferromagnetic material, each armature having one end secured to the head adjacent a solenoid and its opposite end positioned opposite said opposite end of a print wire, an intermediate portion of each armature spanning and being spaced from its adjacent solenoid core end so that when the solenoid is energized momentarily, the spanning armature is pulled toward the solenoid so as to urge the associated print wire momentarily to its second position, the improvement wherein magnetic shunt means are spaced from each armature on the opposite side thereof from the associated solenoid for concentrating the magnetic field produced by said solenoid when energized so that a maximum number of flux lines are intercepted by the armature spanning said solenoid whereby the solenoid pulls the armature toward it with maximum pulling force thereby imparting maximum printing energy to the associated print wire.

4,214,837
DISC PRINTERS
Eric Bacher, Yverdon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland
Continuation of Ser. No. 803,942, Jun. 6, 1977, abandoned, which is a continuation of Ser. No. 619,826, Oct. 6, 1975, abandoned. This application Aug. 4, 1978, Ser. No. 931,268
Claims priority, application Switzerland, Oct. 16, 1974, 13848/74
Int. Cl.[2] B41J *1/32*
U.S. Cl. 400—144.3 **13 Claims**



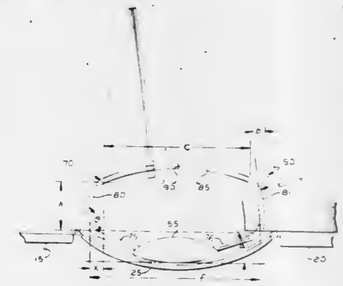
1. In a disc printer having a type character supporting disc rotatably mounted about an axis, type character supporting arms on said disc and extending radially about said disc and having type character supporting portions at their outer ends supporting type characters in relief, said characters having widths and sizes ranging from small to large, the outer ends of all of said character supporting portions being equally spaced apart around the entire disc, said character supporting portions being of varying widths, said widths being proportional to the widths of the type characters, whereby the size and inertia of the disc are reduced to a minimum, and hammer means for striking individual ones of said type characters against a printing surface for printing, indicating means associated with said support disc for indicating the angular printing position of each said type character, and reading means for reading said indicating means and for providing therefrom a signal to said hammer means for controlling the printing of each character so as to obtain a uniform distribution of the printed characters on the printed copy, said indicating means associated with each said type character and comprising means for indicating at least one printing characteristic of the associated said type character for causing printing that is dependent on said printing characteristic, said printing characteristic being the force, dependent on the area of each type character, with which said hammer means are to strike a respective said type character, said indicating means comprising an indicating structure formed on each arm, each indicating structure having a predetermined size responsive to said reading means which said reading means senses to thereby send signals to control the corresponding hammer force provided by said hammer means.

4,214,838
ADVANCE AND TRANSFER MECHANISM FOR INKED RIBBON OR THE LIKE
Jerzy R. Gassowski, Burbank, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 28, 1978, Ser. No. 937,047
Int. Cl.[3] B41J *33/48*
U.S. Cl. 400—220.1 **14 Claims**



1. In a printer or the like, the combination comprising: a base; a member guided to reciprocate on said base; first and second pins having axes, said pins being fixed relative to said base in a manner such that a plane through said axes is approximately normal to said base and approximately parallel to said reciprocatory movement of said member; first and second ratchet wheels mounted on said first and second pins and rotatable about the respective axes thereof; first and second spools releasably fixed relative to said first and second ratchet wheels, respectively; a ribbon having first and second end portions wound in opposite directions around said first and second spools, respectively, said ribbon having an intermediate portion, said base having means to guide said ribbon intermediate portion; a first arm pivoted from said member spanning a first side of said ratchet wheels; a second arm pivoted from said member spanning a second side of said ratchet wheels; first pawls on respective ends of the first and second arms for selectively engaging and turning said first ratchet wheel; second pawls on the opposite ends of said first and second arms for selectively engaging and turning said second ratchet wheel; means mounted between said base and said member to reciprocate said member; transfer means linking said first and second arms and being responsive to reciprocation of said member during increased tension on said ribbon for determining which of said first and second ratchet wheels is turned by spreading the first pawl on each of said arms out of contact with said first ratchet wheel and for placing said second pawls in position to engage said second ratchet wheel in response to said increased tension being caused when the spool fixed relative to said second ratchet wheel runs out of ribbon and by spreading the second pawl on each of said arms out of contact with the second ratchet wheel and for placing said first pawls in position to engage said first ratchet wheel in response to said increase in tension being caused when the spool fixed relative to said first ratchet wheel runs out of ribbon; and means responsive to reciprocation of said member to cause one of said ratchet wheel engaging pawls on each of said arms to engage the appropriate ratchet wheel alternately to rotate the ratchet wheel step-by-step in successive increments in the same direction therearound, one of said ratchet pawls always being in contact therewith.

4,214,839
LOOSE LEAF BINDER
Robert F. Sheehan, Granby, and Raymond T. Cassidy, Ashfield, both of Mass., assignors to National Blank Book Company, Inc., Holyoke, Mass.
Filed Nov. 6, 1978, Ser. No. 958,024
Int. Cl.[2] B42F *3/04*
U.S. Cl. 402—31 **8 Claims**



1. A loose leaf binder of the type having a back panel and a pair of cover panels hingedly connected to the opposite edges of said back panel and with a ring mechanism disposed within said back panel and including longitudinally spaced pairs of mating ring segments movable for opening and closing said ring mechanism, said ring segments when closed defining non-circular rings comprising: a pair of leg portions each extending outwardly and upwardly from said back panel to a point adjacent a separate one of said opposite edges of said back panel; a pair of arms of unidirectional slope extending upwardly and inwardly from the outer ends of each of said leg portions and an arcuate rail bridging the upper ends of said arms, a straight line disposed between points of connection of said rail and said arms defining the loose leaf holding capacity of said binder.

4,214,840
QUICK-RELEASE COUPLER
John H. Beales, Langley, Canada, assignor to J. H. Beales Steel Fabricators, Ltd., Langley, Canada
Filed Jan. 18, 1979, Ser. No. 4,373
Int. Cl.[3] F16D *3/30*; F16L *17/00*
U.S. Cl. 403—31 **9 Claims**

1. A coupler for removably coupling a tool attachment at an end of a supporting arm, said coupler comprising:
(a) a body member;
(b) first and second pivot pin means carried by said body member for pivotally supporting said body member at said end of said arm, said first pivot pin means being disposed at one end of said body member and extending transversely between opposed sides of said body member, said second pivot pin means being disposed intermediate said one end and a second end of said body member and extending between said opposed sides of said body member parallel to said first pivot pin; and,
(c) latch means for removably latching said coupler to said tool attachment, said latch means including:
(i) a latch member pivotally supported by said body mem-

ber by pivot pin means disposed towards said second end of said body member and extending between said opposed sides of said body member parallel to said first and second pivot pin means, said latch member for latchingly engaging said tool attachment in an engaged position such that when said body member tends to pull away from said tool attachment the latch member acts in tension to restrain such movement; and,

(ii) latch retention means for normally retaining said latch member in the engaged position, said latch retention means including compression spring biasing means carried by said body member for biasing said latch member in the engaged position and being responsive to an applied force for disengaging said latch member from said engaged position thereby permitting coupling and decoupling of said tool attachment from said supporting arm.

4,214,841

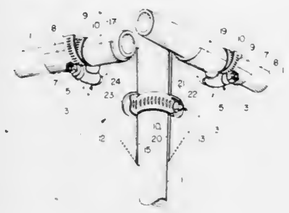
CLAMP-CONNECTOR FOR JOINING THREE TUBULAR MEMBERS AT CORNERS

Henry T. Hayashi, 2373 Abreu Rd., Union City, Calif. 94587

Continuation-in-part of Ser. No. 808,044, Jun. 20, 1977, Pat. No. 4,136,984. This application Dec. 18, 1978, Ser. No. 970,558

Int. Cl.[2] F16B *9/02*

U.S. Cl. 403—188 **2 Claims**



1. A structural system comprising:

a. three structural circular elongated tubular members (**1**);

b. a bracket member including:

1. a first triangular web member (**12**) formed with a straight first inner edge (**6**) and a straight first edge (**16**) positioned at right angles to one another and also formed with a first opening (**24**) adjoining said straight first edge (**16**) and a second opening (**23**) adjoining said first inner edge (**6**),

2. a second triangular web member (**13**) formed with a straight second inner edge (**11**) and a straight second edge (**18**) positioned at right angles to one another and also formed with a third opening (**12**) adjoining said straight second edge (**18**) and a fourth opening (**22**) adjoining said second inner edge (**11**),

3. a first circular quarter-arc elongated curved portion (**14**) for receiving one of said tubular members (**1**) having a straight outer edge (**15**) connected to first inner edge (**6**) of said first web member (**12**) and also having a second inner edge (**20**) joined to said second inner edge (**11**) of said second web member (**13**) so that said first and second web member are connected at right angles to one another,

4. a second elongated circular curved arc portion (**17**) for receiving another of said tubular members (**1**) and connected along an edge to said first edge (**16**) of said straight first web member (**12**) and positioned at right angles to said first curved portion (**14**),

5. a third elongated circular curved arc portion (**19**) for receiving still another of said tubular members (**1**) and connected along an edge to said straight second edge (**18**) of said second web member (**13**) and positioned at right angles to said first and second curved portions (**14**), (**17**),

6. said curved portions are positioned with respect to said web members so that said structural circular tubular members cradled in said second and third curved portions intersect but said structural tubular member cradled in said first curved portion is not intersected by either of said structural tubular members in said second or third curved portions.

c. a plurality of clamp members (**3**), each including:

1. a strap member (**10**) formed with a plurality of slite (**9**) and inserted through said openings (**21-24**) and encircling said curved portions (**14**), (**17**), (**19**) and said tubular members (**1**) cradled therein.

2. a housing (**5**) formed with a U-shaped member for receiving and holding said strap (**10**),

3. a worm gear (**4**) journaled for rotation within said housing (**5**) for engaging said slits (**9**) in said strap (**10**) and also formed with a tool engaging head for manual rotation of said worm gear;

d. said clamp members are selected so that a hand tool is capable of pulling said straps (**10**) in such close fitting frictional engagement around said tubular members (**1**) and said curved portions (**14**), (**17**), (**19**) that said structural tubular members cannot move with respect to said bracket member.

4,214,842

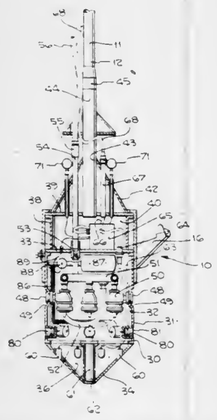
REMOTELY CONTROLLED MANEUVERABLE TOOL MEANS AND METHOD FOR POSITIONING THE END OF A PIPE STRING IN OFFSHORE WELL OPERATIONS

Neal S. Franks, Huntington Beach, Calif., assignor to Deep Oil Technology, Inc., Irvine, Calif.

Filed Apr. 27, 1978, Ser. No. 900,500

Int. Cl.[2] E21B *7/12*

U.S. Cl. 405—191 **6 Claims**



1. A maneuverable tool means for attachment to the end of a pipe string to maneuver the position of the pipe string end during lowering to and for alignment with a well part, comprising

a tool body member adapted to be connected to the end of a pipe string and having a wall defining a chamber;

thrust means including thrust valve means within said chamber, said thrust means having a discharge nozzle externally of said wall and directed radially laterally of the body member;

fluid pressure means in communication with the thrust means for selectively imparting thrust forces to move the tool body member and the end of the pipe string;

and remote control means for said fluid pressure means and operation of said thrust valve means at said tool body member.

4,214,843

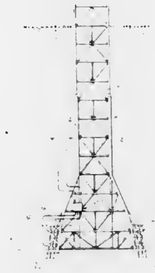
SUBSEA GROUT DISTRIBUTOR

Heinz K. Rohde, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Jan. 3, 1979, Ser. No. 759

Int. Cl.[2] E02B *17/02*

U.S. Cl. 405—225 **21 Claims**



1. A grout distributor for supply grout sequentially to a plurality of subsea grout-receiving locations from a primary grout supply conduit means, said distributor comprising:

a plurality of secondary grout supply conduit means having inlet ends and outlet ends communicable with respective ones of said grout receiving locations,

a movable carriage,

receiver means movably mounted on said carriage and being communicable with an outlet end of the primary grout supply conduit means,

means for moving said carriage to sequentially position said receiver means adjacent said inlet ends of said secondary grout supply conduit means, and

means for moving said receiver means:

toward an inlet end of a respective one of said secondary grout supply conduit means to enable grout to be transferred to the latter from said primary grout supply conduit means, and

away from said last-named inlet end, to enable said carriage to be displaced relative thereto.

4,214,844

DISPENSING DEVICES

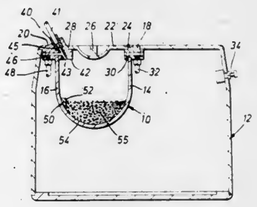
David J. Cockayne, Sutton Coldfield, England, assignor to Modular Automation Limited, West Midlands, England

Filed Apr. 17, 1978, Ser. No. 897,135

Claims priority, application United Kingdom, Apr. 19, 1977, 16119/77; Aug. 10, 1977, 33630/77

Int. Cl.[2] B65G *51/02*

U.S. Cl. 406—123 **16 Claims**



1. A compressed air operated dispenser device for separating and dispensing helical coil springs, said dispenser device comprising:

(a) a dispensing chamber into which a quantity of the coil springs can be introduced, so as to lie loosely in the bottom part thereof,

(b) air supply means for blowing compressed air intermittently into the dispensing chamber thereby to create turublence effective to agitate and carry upwards at least some of the coil springs therein,

(c) outlet means in the upper part of the chamber comprising at least one outlet aperture defined by an exposed open end of an outlet passage facing inwardly into the chamber of such size as to permit individual coil springs entrained in the air flow to pass successively in single file therethrough in relative endwise oriented and aligned relationship to discharge together with the compressed air, and

(d) abutment means disposed within said dispensing chamber and against which said coil springs are forcibly directed while entrained in the air flow,

(e) said dispensing chamber is formed by a trough having opposite side walls and a bottom section which extends between said side walls and which provides an interior bottom surface,

(f) said air supply means comprises inlet means adapted and arranged to introduce the compressed air into the dispensing chamber in the form of jets,

(g) said jets of compressed air being directed into said bottom part within a first localized region so as to pass through a bed of said coil springs lying loosely therein and to impinge against at least a portion of said interior bottom surface such that the compressed air is caused to sweep over said bottom surface and to be deflected thereby into an upwardly directed air stream which emerges from said bottom part within a second localized region,

(h) the outlet means being disposed directly in the path of said upwardly directed air stream.

4,214,845

THROW AWAY INSERTS

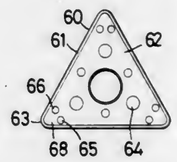
Yoshikatsu Mori, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Aug. 7, 1978, Ser. No. 931,442

Claims priority, application Japan, Aug. 5, 1977, 52-105388[U]; Aug. 24, 1977, 52-113578[U]

Int. Cl.[2] B23B *27/22*; **B26D** *1/00*

U.S. Cl. 407—114 **5 Claims**



1. A polygonal throw away insert comprising:

an insert body having two opposite, parallel major surfaces and a plurality of sides joining said major surfaces, adjacent said sides joining each other to form rounded corners;

cutting edges being formed along lines where each of said sides join each of said surfaces;

a ramp extending from each of said cutting edges downwardly towards the center of at least one of said two major surfaces of said insert body;

a pair of first chip breaking projection means extending upwardly from said ramp adjacent each said corner of said insert body in a symmetrical relationship with respect to a bisector of said corner; and

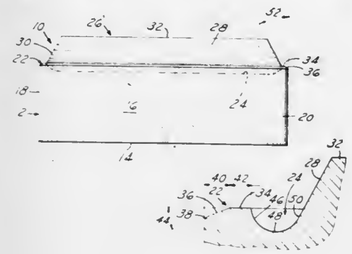
second chip breaking projection means separate from said first projection means and extending upwardly from said ramp at a position on said bisector and further spaced from said corner than said pair of first projection means.

4,214,846

HEAVY DUTY INSERT

Rolf H. Kraemer, Gurnee, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Sep. 26, 1978, Ser. No. 946,031
Int. Cl.² B26D 1/12
U.S. Cl. 407—114 **18 Claims**



1. A cutting insert comprising a unitary body of a hard wear resistant material having a bottom, upstanding side walls, end walls, and rounded corners in a generally rectangular configuration, cutting edges adjacent to and extending around the periphery of said side walls and rounded corners, a mesa spaced inwardly of said cutting edges and said walls, and a chip breaker groove extending generally longitudinally of each side wall between each of said cutting edges and said mesa, each said cutting edge having a land immediately adjacent its associated groove and extending generally transversely to its associated side wall, a face between and inclined to both said land and its associated side wall, and a generally arcuate surface interconnecting said face and its said associated side wall, each said groove in cross-section having a first portion immediately adjacent the land of its associated cutting edge and extending generally inwardly and downwardly thereof below the plane of such land and a second portion inwardly of said first portion extending generally inwardly and upwardly from the bottom of such groove, and said mesa having a wall inclined inwardly from an associated groove and extending upwardly to at least the plane of the land of the cutting edge associated with such groove.

4,214,847

INSERT FOR RAILROAD TOOLS

Rolf H. Kraemer, Gurnee, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Dec. 14, 1978, Ser. No. 969,462
Int. Cl.² B26D 1/00
U.S. Cl. 407—114 **2 Claims**



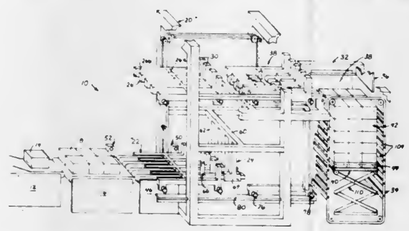
1. A cutting insert for light duty machining of railroad axles and the like which comprises a flat, wafer-like, insert body having a substantially diamond shape with flat, parallel, upper and lower surfaces joined by side edges perpendicular to said surfaces, and a rounded nose portion connecting the sides merging toward the low angle corners of the diamond shape, and a shallow, elongate, narrow chip breaker groove formed into at least one of the flat surfaces of said insert originating inside said nose portion and extending along one side of said insert away from said nose portion and parallel to but spaced from a straight side diverging from said nose portion to leave a flat land between said groove and said one side, said groove extending from said nose portion along said side about one-fifth the length of said side.

4,214,848

PALLETIZER

William G. A. Verwey, Phoenix, and Stephen Stanton, Baltimore, both of Md., assignors to Precision Industries, Inc., Baltimore, Md.

Filed Feb. 25, 1977, Ser. No. 772,143
Int. Cl.² B65G 57/09
U.S. Cl. 414—77 **51 Claims**



1. Apparatus for organizing and arranging layers of one or more bundles into stacks, comprising:

means responsive to a first control signal for supplying a layer of bundles to a transfer station at a loading elevation;

means for elevating and transferring said layer of bundles from said transfer station to a delivery station at a transferring elevation which is greater than the maximum elevation of the stack to be formed, said elevating and transferring means maintaining said layer substantially horizontally disposed during said elevating and transferring operation, said elevating and transferring means being operable to supply said first control signal to said supplying means to supply said layer of bundles to said transfer station;

stack-forming means adjacent said transferring means including a movable platform for sequentially receiving said layers from said delivery station to form a stack of layers on said movable platform, said platform being responsive to a second control signal to move between a receiving position and a discharge position;

first actuating means for supplying said second control signal to said platform to move said formed stack to said discharge position so that said formed stack may be discharged; and

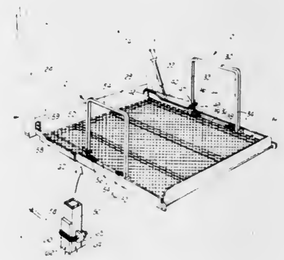
said first actuating means also operating to supply a third control signal to said supplying means and a fourth control signal to said transferring means to interrupt the operation of said supplying means and said transferring means until said platform returns to said receiving position and is ready to receive the next layer of bundles from said delivery station.

4,214,849

RETRACTABLE RAIL FOR A VEHICLE LIFT

Harold A. Downing, Hutchinson, Kans., assignor to Collins Industries, Inc., Hutchinson, Kans.

Filed Nov. 13, 1978, Ser. No. 959,760
Int. Cl.² B60P 1/46
U.S. Cl. 414—545 **7 Claims**



1. A retractable rail for a vehicle lift, the lift having a platform disposed substantially in a vertical position in a door opening of a vehicle, the platform used for loading objects thereon when the platform is lowered into a horizontal position adjacent the door opening or to a position on the ground surface adjacent the vehicle, the rail comprising:

a first hand support for gripping when the platform is lowered into a horizontal position;

a first post having an upper end portion attached to said first hand support and a lower end portion pivotally attached to the platform;

retraction means attached to said first post and the platform for lowering said first post and said first hand support on the platform when the platform is raised into a vertical position in the door opening; and

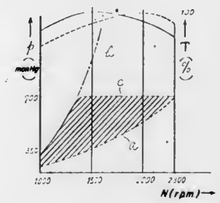
extension means attached to said first post and the lift for raising said first post and said first hand support upwardly above the platform when the platform is lowered into a horizontal position.

4,214,850

VARIABLE-CAPACITY RADIAL TURBINE

Shojiro Sato, Yokohama, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,707
Claims priority, application Japan, Oct. 12, 1977, 52-121488; Apr. 11, 1978, 53-41736
Int. Cl.² F01D 17/08, 17/12
U.S. Cl. 415—49 **4 Claims**



1. Variable capacity radial turbine apparatus for driving a rotary blower or the like, comprising

(a) a hollow casing containing

(1) a central chamber having an axially arranged outlet;

(2) a generally helical scroll-shaped chamber arranged concentrically about said central chamber, said scroll-shaped chamber having a tangentially arranged inlet; and

(3) means defining an opening between said chambers, whereby pressure fluid from said scroll-shaped chamber may be introduced into said central chamber for driving an impeller arranged therein;

(b) control means pivotally connected with said casing for pivotal movement about an axis normal to the longitudinal axis of said central chamber for controlling the effective cross-sectional area of said opening; and

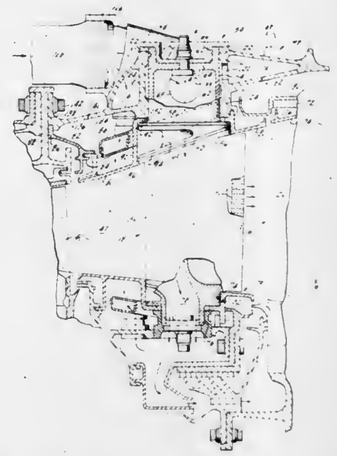
(c) pressure-responsive piston-motor means for adjusting the position of said control means to throttle said opening, whereby the size of said opening may be regulated as a function of the inlet pressure of said turbine.

4,214,851

STRUCTURAL COOLING AIR MANIFOLD FOR A GAS TURBINE ENGINE

Eugene N. Tuley, Hamilton; Delmer H. Landis, Jr., Loveland, and Paul W. Lozier, North Bend, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 20, 1978, Ser. No. 898,060
Int. Cl.² F01D 5/18, 9/04
U.S. Cl. 415—115 **11 Claims**



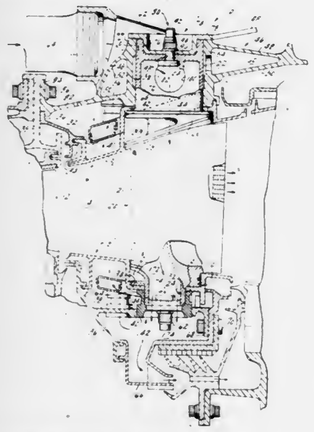
11. A gas turbine engine comprising a fan for pressurizing a quantity of air; a compressor for further pressurizing air from said fan; a high pressure turbine drivingly connected to said compressor, a low pressure turbine drivingly connected to said fan, said low pressure turbine including a row of variable angle stator vanes each having a hollow airfoil portion connected to a trunnion; a cooling air manifold generally surrounding said low pressure turbine and easily cast as a generally annular, integral unit having an internal, generally annular plenum formed between two concentric walls, means for supporting said vane trunnions with both of said walls thereby providing unencumbered radial access to said vane trunnions for control of said stator vanes; means for routing air from said compressor to said manifold plenum, and means for routing air from said plenum and into said airfoils.

4,214,852

VARIABLE TURBINE VANE ASSEMBLY

Eugene N. Tuley, Hamilton; Delmer H. Landis, Jr., Loveland, and Paul W. Lozier, North Bend, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 20, 1978, Ser. No. 898,248
Int. Cl.[2] F01D *5/18, 9/04*
U.S. Cl. 415—115 **4 Claims**



1. A turbine assembly comprising:
a vane having a trunnion on one end of a first diameter;
a band which is inserted around the trunnion to define a flow path through said turbine;
a structural frame spaced radially from the end of the trunnion, said frame having a hole therethrough of a second diameter in general alignment with said trunnion; and
a generally cylindrical trunnion extension having an inner diameter substantially equal to said first diameter and into which the trunnion is inserted, and having an outer diameter substantially equal to said second diameter, and which is journaled for rotation within said structural frame hole; and
means for attaching said extension to the trunnion;
said trunnion being a cylinder having an inner wall and two ends, the end remote from the vane being provided with two internal, spaced-apart webs each having a shoulder proximate the midspan of the web;
said trunnion extension being a generally hollow cylinder having a pair of projecting lugs, each provided with a hole in general alignment with the space between the two webs outwardly of said shoulders; and
said attaching means comprising a pair of bolts, each having a flat-sided head which abuts said shoulders to prevent turning thereof and a shank which passes through the space between the two webs and through a hole in one of the lugs, and nuts which are threaded onto said bolts to capture the webs and lugs therebetween.

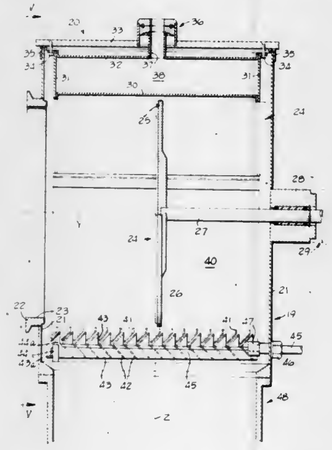
4,214,853

EVACUATION APPARATUS WITH CRYOGENIC PUMP AND TRAP ASSEMBLY

Gunard O. B. Mahl, San Francisco, Calif., assignor to CHA Industries, Menlo Park, Calif.

Filed May 15, 1978, Ser. No. 905,652
Int. Cl.[2] F04F *9/06*
U.S. Cl. 417—154 **30 Claims**

1. An evacuation apparatus comprising
a vessel defining a vacuum chamber therein,
vacuumizing means communicating with an opening to said vacuum chamber for selectively drawing a vacuum therein comprising cryogenic pump means disposed closely adjacent to said opening and defined by substantial cryogenically cooled trap surfaces for freezing-out water vapor from air evacuated from said vacuum chamber, said opening being common to said vacuum chamber and to said cryogenic pump means,
valve means for selectively opening or closing the opening to said vacuum chamber and movable from a first position within said cryogenic pump means closing said opening to a second position within said cryogenic pump means directly exposing said vacuum chamber to said cryogenic pump means, through said opening,
baffle means disposed closely adjacent to the opening to said vacuum chamber for providing substantial open communication to said vacuum chamber and for substantially preventing ingress of contaminants into said vacuum chamber, said baffle means being positioned to provide an optically dense view of said opening when viewed from a downstream side of said baffle means, and
a plurality of longitudinally spaced and cryogenically cooled



fins mounted in nested relationship within said baffle means and disposed in out-of-contact relationship therewith, said fins being positioned to provide an optically dense view of the downstream side of said baffle means when viewed from said openings.

22. A cryogenic pump adapted for use in an evacuation apparatus comprising
a housing defining an opening to a vacuum chamber,
a plurality of metallic plates defining a first chamber therein communicating with said vacuum chamber through said opening and further defining a second chamber at least partially surrounding said first chamber and adapted to be at least partially filled with a cryogenic liquid, said plates disposed in spaced-apart relationship relative to said housing, and
a cover attached to said plates and disposed in sealing relationship on said housing whereby said cover and plates, defining both said first and second chambers, may be removed from said housing as a unit.

4,214,854

HYDRAULICALLY ACTUATED PUMP ASSEMBLY HAVING MECHANICALLY ACTUATED VALVE MEANS

George K. Roeder, P.O. Box 4335, Odessa, Tex. 79761

Division of Ser. No. 689,576, May 24, 1976, Pat. No. 4,118,154.
This application Sep. 11, 1978, Ser. No. 941,222
Int. Cl.[2] F04B *17/00, 35/00;* **F01L** *15/12;* **F01B** *7/18*
U.S. Cl. 417—402 **11 Claims**

1. In a downhole, fluid-actuated pump assembly having an engine and a production pump, with the production pump having a formation fluid inlet and a produced fluid outlet; and, with the engine having a power fluid inlet and a spent power fluid outlet; said engine having a cylindrical bore, an engine piston reciprocatingly received within said cylindrical bore and dividing said cylindrical bore into upper and lower engine chambers; said engine piston having an axial bore; a control rod, a valve element, said control rod being reciprocatingly and concentrically received within said engine piston and within said valve element; said valve element being reciprocatingly received within said axial bore of said engine piston such that said valve element can move between alternate positions; the improvement comprising:
spaced abutment means positioned at opposed ends of said cylindrical bore, means by which opposed ends of said control rod are arranged to contact said spaced abutment means to shift said control rod respective to said engine piston between an upper and a lower position as said engine piston reciprocates within said cylindrical bore;
means on said control rod and said valve element by which power fluid causes said valve element to shift from one to another of said alternate positions in response to said control rod being shifted from one to another of said upper and lower positions;

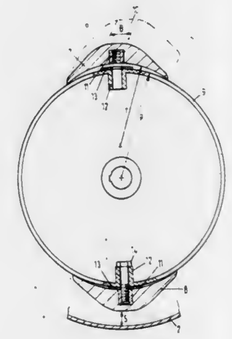
said production pump includes a production barrel, a production piston reciprocatingly received within said barrel, a hollow rod connecting said production piston to said engine piston, said production piston dividing said barrel into upper and lower production chambers; means connecting said upper production chamber directly to said production outlet;
means forming a flow passageway in said engine piston which extends from said lower engine chamber to said valve element, means directly connecting the power fluid inlet to said lower engine chamber; means forming a spent power fluid flow passageway from said valve element, through said hollow rod, and into said upper production chamber;
a passageway formed in said engine piston by which said upper engine chamber is connected to said valve element to provide for reciprocating said piston in a downward direction within said cylindrical bore; whereby:
said lower engine chamber is always connected to said power fluid source to thereby enable the engine piston to reciprocate the production piston in an upward direction when said upper engine chamber is connected to said lower engine chamber.

4,214,855

PERISTALTIC TYPE PUMP

Jan W. Gerritsen, Raadhuisstraat 75, Alphen an der Rijn, Netherlands

Filed Jun. 29, 1978, Ser. No. 920,489
Claims priority, application Netherlands, Dec. 21, 1977, 7714189
Int. Cl.[2] F04D *43/12;* **F24B** *45/08*
U.S. Cl. 417—477 **4 Claims**



1. A peristaltic type pump comprising:
a pump housing;
a circular supporting track mounted within said housing;
a pump hose positioned within said track; and
a pumping member rotatably mounted within said housing, said pumping member having a substantially elliptical shape and being formed at two diametrically opposite points with sliding pieces having radial dimensions which are substantially equal to the internal radius of said supporting track reduced by the thickness of said pump hose in the squeezed shut condition, said sliding pieces having flattened bearing surfaces adapted to squeeze said pump hose shut, said bearing surfaces being substantially perpendicular to the ends of the major axis of said substantially elliptical shaped member, the circumferential lengths of said bearing surfaces being substantially equal to the internal diameter of said pump hose, bearing surfaces being adapted for sliding movement over said pump hose when said pumping member rotates, said pumping member comprising:
a circular disc having a radius substantially equal to the internal radius of said supporting track minus the outer diameter of said pump hose, said sliding pieces being individual sickle-shaped elements mounted on said disc in diametrically opposed relationship, said flattened bearing surfaces being disposed on the convex exterior surface of each said sliding piece, the surface of each said sliding piece facing said disc having a radius of curvature which is smaller than that of said disc;
at least one spacer sheet positioned between said disc and said facing surface of said sliding piece, the thickness of said sheet being variable;
an internally threaded bush mounted in said sliding piece; and
a bolt engaging said disc and threadedly engaging said bush in said sliding piece and holding said sliding piece and said spacer sheet onto said disc.

4,214,856

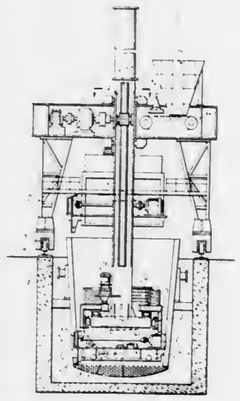
APPARATUS FOR LINING LADLES

Serafim V. Kolpakov, ulitsa Ryazanskaya, 12; Zinovy L. Gurkov, ulitsa Parkovaya, 4, kv. 42; Oleg L. Bondarenko, ulitsa M. Gorkogo, 13/2, kv. 1; Vladimir V. Valtsov, ulitsa Anosova, 2, kv. 25; Alexandr M. Pozhivanov, ulitsa Zhelyabova, 16, kv. 8; Eduard D. Gugnin, ulitsa Gagarina, 167, kv. 8; Stanislav V. Radilov, ulitsa Tereshkovoi, 38b, kv. 34, and Alexandr A. Bogdanov, ulitsa Parkovaya, 6, kv. 4, all of Lipetsk, U.S.S.R.

Division of Ser. No. 691,079, May 28, 1976, Pat. No. 4,094,938, which is a continuation of Ser. No. 449,466, Mar. 8, 1974, abandoned. This application Apr. 7, 1978, Ser. No. 894,387

Int. Cl.² F27D *1/16*

U.S. Cl. 425—60 **9 Claims**



1. Apparatus for the high-density lining of inner spaces, confined by the inner surface of a ladle and by a back shaping element therein, with a refractory mass along the inner circumferential perimeter of the ladle wall surface and along the entire height thereof, comprising:

at least one blasting means, and means for rotating said blasting means and simultaneously and continuously moving said blasting means radially with respect to the surfaces being lined, together with said back shaping element to thereby obtain a continuous filling of the lining along the ladle wall surface being lined;

feeding means for feeding the refractory mass into spaces confined between the inner surface of said ladle and said back shaping element;

said feeding means including said blasting means and means to apply the fed-in mass to the inner surface with said at least one blasting means in close proximity to the inner ladle perimeter with a force which is applied perpendicularly to the upper surface of the lining layer as the lining is applied;

means to position said back shaping element initially at a distance equal to the initial thickness of the lining in the bottom of the ladle and behind said blasting means free of physical contact from the inner perimeter of said ladle to ensure a predetermined narrow gap being filled with the refractory mass along the ladle wall being lined into said space between said ladle wall and said shaping element;

means for imparting to said blasting means and said back shaping element a continuous circular and continuous vertical movement along the inner perimeter and parallel thereto and along the entire height of said ladle as the lining is completing the perimeter, said back shaping element and said blasting means being moved upwards together and continuously, in addition to and simultaneously with its continuous circular movement along the inner ladle perimeter, to thereby obtain the continuous and a successive filling of the lining along a helical line over the ladle wall surface being lined;

said positioning means including means for maintaining the distance between said blasting means and the upper surface of the lining constant during the vertical movement to create identical conditions for the passage of the refractory mass applied by said blasting means; and,

means for sensing deviations in the level of the upper surface of the lining as the fed-in mass is applied, and means to maintain the distance between said blasting means and the upper surface of the lining constant.

4,214,857

MULTI-ROLL CALENDER

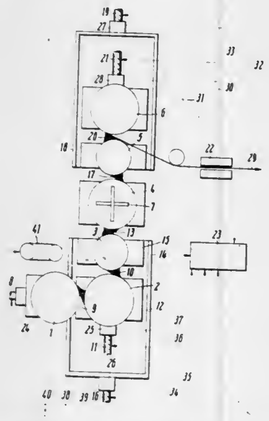
Willi Woeckener; Werner Pawelczyk, and Klaus-Dieter Marquardt, all of Hanover, Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Fed. Rep. of Germany

Division of Ser. No. 727,529, Sep. 28, 1976, Pat. No. 4,110,387. This application Oct. 13, 1977, Ser. No. 841,706

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1975, 2543738

Int. Cl.² B29D *7/14*

U.S. Cl. 425—141 **10 Claims**



1. A multi-roll calender for producing a sheet of elastomeric material, comprising:

(a) a calender frame;

(b) a series of rolls, and means mounting the ends thereof in said calender frame, said rolls including an intake roll and a series of vertically superimposed rolls, said intake roll being spaced from the lowermost roll of said series of rolls so as to provide a roll gap, all of said superimposed rolls likewise being spaced from vertically adjacent rolls so as to provide variable roll gaps between each adjacent pair of rolls, said roll gaps following one after another in the direction of sequential movement of said sheet during formation thereof;

(c) means associated with said rolls for sensing the pressure of the material in each roll gap of the calender;

(d) means on opposite ends of certain of said rolls responsive to said sensing means for adjusting the width of each roll gap formed by adjacent rolls to cause the difference between the pressures in said gaps to be as small as is practicable, and

(e) means for maintaining such pressures substantially constant.

4,214,858

INJECTION APPARATUS

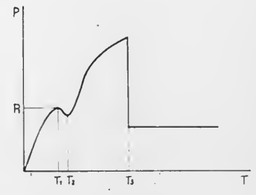
Kazumitsu Omori, Handa, Japan, assignor to Kabushiki Kaisha Meiki Seisakusho, Aichi, Japan

Filed Jun. 4, 1979, Ser. No. 46,001

Claims priority, application Japan, Jun. 15, 1978, 53-72750

Int. Cl.² B29F *1/06*

U.S. Cl. 425—145 **3 Claims**



1. In an injection apparatus having a screw which advances to inject a plasticized charge of material from an injection barrel into a mold cavity and retracts while rotating to accumulate a plasticized charge, an injection apparatus providing a monitoring system comprising a pressure transducer which converts a hydraulic pressure in a hydraulic cylinder for injection into a voltage, a means detecting a peak pressure in the hydraulic cylinder while injecting, a means measuring a time from a moment of injection start to a moment of occurrence of said peak, and a means comparing said peak pressure and said time with a respectively predetermined value.

4,214,859

APPARATUS FOR REGULATING THE OUTPUT OF A SINGLE OR TWIN SCREW EXTRUDER FOR PROCESSING PLASTICS MELTS

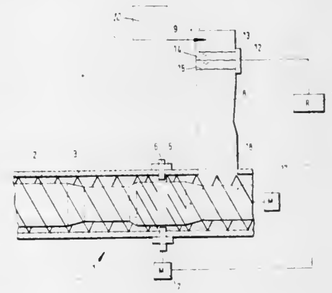
Dietmar Anders, Hannover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,591

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758266

Int. Cl.² B29F *3/06*

U.S. Cl. 425—147 **1 Claim**



1. Apparatus for regulating the output of an extruder for processing plastics melt, said extruder having an extruder cylinder; an extruder screw disposed in said cylinder; a melt intake opening in said cylinder; a melt container disposed at said intake opening; filling level measuring means for said melt container; a polymerisation system to supply melt to said melt container; a discharge opening for said cylinder; a flow restrictor disposed in said cylinder between said melt intake opening and said discharge opening, said flow restrictor being formed by pins which are radially movable through the wall of said cylinder towards said screw; means for moving said pins; and control means operatively connected between said filling level measuring means and said means for moving said pins, whereby the means for moving said pins and thus the depth of plunge of said pins towards said screw is controlled by said control means in response to the filling level of the material in said melt container, said extruder being so dimensioned with regard to its output capacity that when said flow restrictor is fully open at least the maximum output capacity of the polymerisation system can be processed.

4,214,860

APPARATUS FOR BLOW MOLDING HOLLOW ARTICLES, IN PARTICULAR BOTTLES

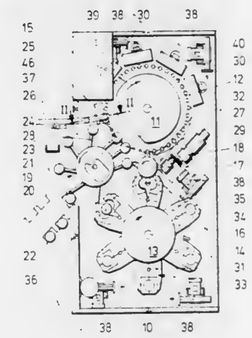
Günter Kleimenhagen; Otto Rosenkranz; Peter Albrecht, all of Hamburg; Hans Conow, Hamburg-Norderstedt; Holger Köther, Hamburg; Dieter Schmidt, Hamburg, and Klaus Vogel, Hamburg, all of Fed. Rep. of Germany, assignors to Gildemeister Corpoplast, Hamburg, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,715

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2742693

Int. Cl.² B29C *17/07*

U.S. Cl. 425—149 **13 Claims**



1. An apparatus for making hollow articles, in particular bottles from a plurality of parisons of thermoplastic material having a cavity, said apparatus comprising:

a base frame;

a first rotary member rotatably mounted to said base frame;

first support means mounted to the periphery of said first rotary member for rotatably supporting said plurality of parisons;

a plurality of transfer mandrels interposed said first support means and said plurality of parisons, each of said plurality of mandrels having an end portion adapted to receive one of said plurality of parisons, each end portion including seal means for sealing internally of said one of said plurality of parisons, each of said plurality of mandrels further having an opposite end portion and a central bore therethrough, said opposite end portion of each of said mandrels terminating in a gripping portion adapted to communicate with said first support means for a predetermined rotatable movement with said first rotary member;

means for heating said plurality of parisons, said heating means fixed to said base frame and surrounding the periphery of the first rotary member for a predetermined sector, said first rotary member rotably moving said plurality of mandrels and parisons mounted thereon past said means for heating such that said plurality of parisons are heated, each of said plurality of parisons further having a central axis parallel to the central axis of said first rotary member when passing through said predetermined sector;

a second rotary member mounted to said base frame in spaced relationship to said first rotary member, said second rotary member comprising:

an axis of rotation parallel to the axis of rotation of said first rotary member;

second support means mounted to the periphery of said second rotary member to support said plurality of transfer mandrels and parisons;

blow mold means having a plurality of multiple-part blow molds, each of said blow molds radially extending from said central axis of the second rotary member for carrying each of said plurality of said transfer mandrels; and

a plurality of movable expanding mandrel means mounted to said second rotary member for movement therewith, each of said plurality of movable expanding mandrels means having seal means for sealing against each of said plurality of transfer mandrels carried by said plurality of blow mold means, said movable expanding mandrel means each further having a stretching member with a central axis axially aligned with the central axis of the central bore of each of said plurality of transfer mandrels carried by said plurality of blow mold means, said stretching member further being extendable through the central bore of each of said plurality of transfer mandrels into said cavity of each of the plurality of parisons, said stretching member and cavity of each of said parisons defining a space to deliver a blow medium into the cavity of each the parisons;

means for transferring said plurality of transfer mandrels from said first rotary member to said second rotary member;

means for blowing a fluid medium into said space surrounding said stretching member such that each of said plurality of parisons cooperate with each of said plurality of multiple-part blow molds to provide a finished article blown in each of said blow molds;

rotary output means mounted adjacent said plurality of blow mold means for remaining said finished articles from said plurality of blow mold means and further removing said finished articles from said plurality of mandrels; and

input means mounted in spaced relationship to said first rotary member for receiving a plurality of parisons and transferring each of said plurality of parisons to one of said plurality of transfer mandrels respectively as said plurality of transfer mandrels are rotated about the periphery of said first rotary member.

4,214,861

METHOD OF AND AN APPARATUS FOR MAKING PREFORMS FROM A POURABLE SUBSTANCE

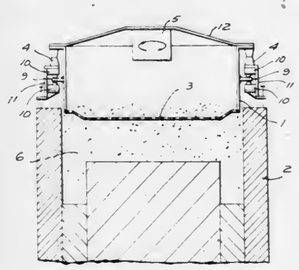
Edmund Munk, and Hermann Henke, both of Oberstenfeld, Fed. Rep. of Germany, assignors to Werzalit-Pressholzwerk J.F. Werz Jr. KG, Oberstenfeld, Fed. Rep. of Germany

Division of Ser. No. 790,615, Apr. 25, 1977, abandoned. This application May 10, 1978, Ser. No. 904,561

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1976, 2618599; May 15, 1976, 2621717; Mar. 4, 1977, 2709467

Int. Cl.[2] B29J *5/02*

U.S. Cl. 425—199 **22 Claims**



1. An apparatus for making preforms from a pourable but at most limitedly flowable substance for subsequent use in producing three-dimensional articles, comprising a mold element having a cavity and an open top; a container element for accommodating a substance, located above said mold element and having a shaped perforated screen arranged on the container element defining a substantially closed forming space between said screen and the mold cavity; and means for vibrating said container element relative to the mold element so that the substance advances through perforations of said screen of said container element into the cavity of the mold element and distributes substantially uniformly in the cavity.

4,214,862

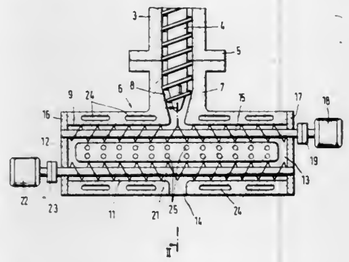
SCREW EXTRUDER FOR THE CONTINUOUS EXTRUSION OF THERMOPLASTIC MATERIALS

Klaus-Dieter Kolossow, Hambuhren, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 3, 1978, Ser. No. 936,789

Int. Cl.[2] B29F *3/02*

U.S. Cl. 425—204 **2 Claims**



1. A screw extruder for the continuous extrusion of thermoplastic materials, comprising:

(a) a main extruding screw rotatably mounted in a housing therefor, said thermoplastic material being fed to and mixed by said main extruder screw, said housing defining an outlet feed passage at the bottom of said main screw;

(b) a first cylindrical chamber extending transversely to the axis of said main screw and communicating with said outlet feed passage;

(c) a first transverse screw mounted in said first cylindrical chamber, said screw having conveying screw lands formed thereon which extend laterally outwardly from said outlet feed passage so as to convey said material laterally away from said feed passage to an outer end of said chamber;

(d) means adjacent said first cylindrical chamber for cooling said material as it is mixed and laterally conveyed;

(e) a second cylindrical chamber extending transversely to the axis of said main screw and spaced from said first chamber, said second chamber communicating with an extrusion outlet orifice positioned generally below said outlet feed passage;

(f) a second transverse screw mounted in said second chamber and having screw lands formed thereon which extend laterally outwardly from said extrusion outlet orifice, the pitch of said screw lands being such as to convey material delivered to an outer end of said second cylindrical chamber toward said outlet orifice;

(g) means adjacent said second cylindrical chamber for cooling said material as it is mixed and conveyed toward said outlet orifice, and

(h) connecting passage means intercommunicating the outer ends of said first and second cylindrical chambers,

whereby said material is thoroughly mixed and conveyed from said main extruding screw, laterally outwardly through said first chamber, through said connecting passage means and said second chamber to said outlet orifice.

4,214,863

ROTARY PAN PELLETIZERS

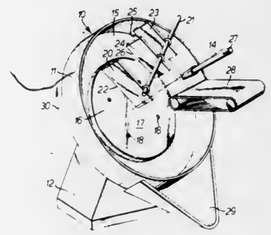
John S. Nixon, Appley Bridge, Near Wigan, England, assignor to Pilkington Brothers Limited, St. Helens, England

Filed Apr. 25, 1979, Ser. No. 33,072

Claims priority, application United Kingdom, Apr. 27, 1978, 16812/78

Int. Cl.[2] B29B *1/03*

U.S. Cl. 425—222 **5 Claims**



1. A rotary pan pelletizer comprising a circular pan with a circumferential rim, mounted for rotation about an inclined axis, means for feeding material to be pelletized into the pan, and means for feeding a binder liquid on to a central area of the bottom surface of the pan, wherein the bottom surface of the pan is provided with a central circular portion which is raised above the level of the annular portion around the said central portion and which extends radially substantially as far from the pan axis as the area on to which the binder liquid can be fed, and the pelletizer also comprises a stationary central plough disposed so as to operate over the whole area of the raised central portion of the bottom surface of the pan, with the lower surface of the central plough in close proximity to the raised central portion, and one or more further ploughs or scrapers disposed so as to operate over the whole area of the annular portion around the said central portion and having their lower surfaces in substantially the same plane as that of the central plough.

4,214,864

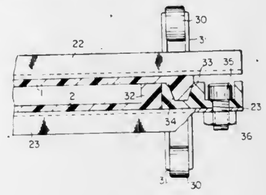
CONTINUOUS MOLDING APPARATUS WITH COVER BELT

Charles P. Tabler, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed Jun. 12, 1978, Ser. No. 914,740

Int. Cl.[2] B29D *27/00*

U.S. Cl. 425—329 **12 Claims**



1. Apparatus for the continuous molding of a product, comprising:

a first endless rigid molding conveyor and a second opposed endless rigid molding conveyor having adjacent runs through a molding zone;

an endless side dam traveling between each side margin respectively, of the molding conveyors along the adjacent runs in the molding zone so as to close the sides of the molding zone and form a moving pressure mold adapted to receive a material to be molded at its entrance end and confine the material within the pressure mold until it is expelled at the exit end of the mold;

an endless flexible cover belt passing between the first and second rigid conveyors along the adjacent runs so as to overline and separate the product from one of the rigid conveyors, and said cover belt, along one of its longitudinal sides, with respect to the conveying direction, having a first cam means;

a second cam means carried by the other of said endless conveyors along one of its longitudinal sides in opposition to said first cam means at least along said adjacent runs for engaging said first cam means, moving relatively toward said first cam means and thereby wedging said first cam means laterally outward from the central longitudinal axis of the mold as the endless conveyors approach each other at the entrance of the mold to thereby tightly hold the top cover belt in a fully extended position throughout the molding zone;

said cover belt, along the other of its longitudinal sides, with respect to the conveying direction, having first fixing means; and

second fixing means carried by at least one of said endless conveyors along the other of its longitudinal sides in opposition to said first fixing means at least along said adjacent runs for engaging said first fixing means as the endless conveyors approach each other at the entrance of the mold to thereby fix the other longitudinal side of said cover belt during the engagement of said first and second cam means.

4,214,865

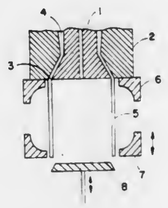
APPARATUS FOR MAKING BLOW MOLDED GENERALLY TIRE SHAPED ARTICLES

Tyler K. Olcott, Valentines, Va., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 685,567, May 12, 1976, Pat. No. 4,075,187. This application Dec. 22, 1977, Ser. No. 863,631

Int. Cl.[2] B29D *23/03*

U.S. Cl. 425—532 **4 Claims**



1. Apparatus for blow molding an article from a molten tubular parison sealed at both ends, comprising:

means for extruding a molten tubular parison downwardly;

two mold sections, one of said mold sections being vertically reciprocable toward and into engagement with the other mold section to define a cavity;

means for sealing the open end of the tubular parison, said means for sealing being vertically reciprocable into and out of said one of said mold sections and the open end of said tubular parison whereby said open end is pinched between said means for sealing and said one of said mold sections;

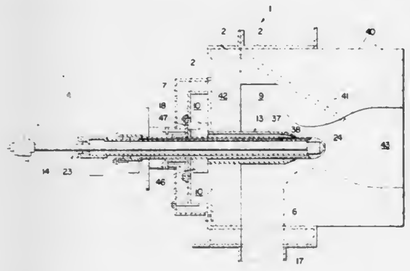
means for sealing the upper end of the tubular parison;

means for moving one of said mold sections vertically toward and into engagement with the other mold section to totally enclose said parison; and,

means for injecting fluid into said parison to expand the parison

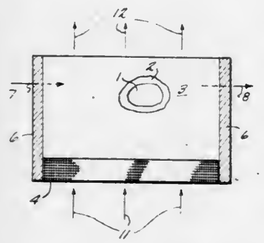
into the mold cavity to form the article.

4,214,866
BURNER FOR HIGH TEMPERATURE COMBUSTION AIR
Arvind C. Thekdi; Klaus H. Hemsath, both of Sylvania, Ohio, and Frank J. Vereecke, Palmyra, Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed Dec. 6, 1978, Ser. No. 966,873
Int. Cl.[3] F27D *17/00;* F27B *3/22*
U.S. Cl. 432—12 **20 Claims**



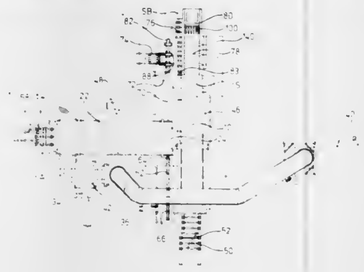
1. A burner which comprises:
a housing;
a burner block mounted on the housing having a combustion chamber;
a primary high pressure combustion air inlet to the housing;
a low pressure chamber in the housing in communication with the primary air inlet;
a secondary air inlet to the low pressure chamber;
a jet pump means through which the primary air inlet communicates to the low pressure chamber, the jet pump means being directed to cause primary air to flow into the combustion chamber;
a fuel feed means to feed fuel into the combustion chamber;
a means to ignite the combustion air and fuel brought to the combustion chamber.

4,214,867
METHOD AND APPARATUS FOR CATALYTIC HEAT EXCHANGE
James B. Hunter, Newtown Square, and George McGuire, West Chester, both of Pa., assignors to Matthey Bishop, Inc., Malvern, Pa.
Filed Jul. 18, 1978, Ser. No. 925,862
Int. Cl.[2] F24J *1/00*
U.S. Cl. 432—29 **7 Claims**



1. A process for catalytic heat exchange which comprises providing a first and second zone, separated by a ceramic coated metal heat transfer membrane having two sides at least one of which is coated with a catalyst, flowing a first gas through the first zone over the catalytic side of the ceramic coated metal heat transfer membrane to generate heat, and flowing a second gas through the second zone and over the opposite side of the membrane whereby heat is transferred from the first gas passing through the first zone to the second gas passing through the second zone.

4,214,868
METHOD OF AND AN APPARATUS FOR SOAKING STEEL PIECES
Seigo Tabuchi, Narashino, Japan, assignor to ITOH Iron & Steel Works Co. Ltd., Tokyo, Japan
Filed Nov. 27, 1978, Ser. No. 963,829
Claims priority, application Japan, Jun. 21, 1978, 53-75220
Int. Cl.[3] F27B *9/14*
U.S. Cl. 432—124 **9 Claims**

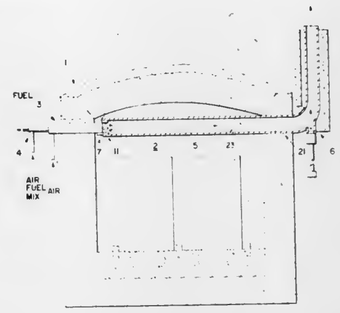


1. An apparatus for soaking steel pieces comprising a heated soaking furnace having an inlet, an outlet and troughs for guiding the pieces through said furnace, a chamber for preheating cold steel pieces, means for transferring at least a portion of the heat from said furnace to said chamber, said chamber having an inlet for receiving cold pieces, means for moving the cold pieces through said chamber to preheat the same and an outlet in communication with the inlet of said furnace, and means for conveying the preheated pieces from the outlet of said chamber to the inlet of said furnace, whereby said pieces are introduced in preheated condition to said furnace including feed means for cross-feeding said cold pieces to said chamber, normally of the direction of said soaking furnace, means for effecting a translatory change in direction of said cold pieces of 90° on to said means for moving said cold pieces through said chamber, and means for effecting a second translatory change in direction of said cold pieces of 90° from said means for moving said cold pieces on to said conveying means for introduction into said furnace.

4,214,869
FURNACE WITH RADIANT BURNDOWN TUBE
Arvind C. Thekdi; Klaus H. Hemsath, both of Sylvania; James G. Conybear, Toledo, all of Ohio; Frank J. Vereecke, Palmyra, Mich., and Steven H. Verhoff, Toledo, Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed May 31, 1978, Ser. No. 911,550
Int. Cl.[2] F27B *3/20, 11/08*
U.S. Cl. 432—31 **25 Claims**

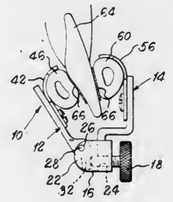
17. A method of burning combustible gas atmosphere in a furnace having at least one radiant burndown tube, the furnace having a furnace wall, a sealed furnace chamber, a conduit through the furnace wall, and the radiant burndown tube having a tube portion within the furnace chamber, the tube portion having a burner end and an exhaust end, an exhaust means connected to the exhaust end, a burner leg connected to the burner end, the burner leg having an ignition means and an air nozzle, comprising the steps of:
locating the burner end so that there is an annular space inlet between the burner end and the conduit;
introducing air from the air nozzle into the burner end of the tube portion of the radiant burndown tube;
drawing the combustible gas from the furnace chamber through the inlet into the tube portion;

mixing the air and the combustible gas within the tube portion;
igniting the air and combustible gas mixture within the tube portion;



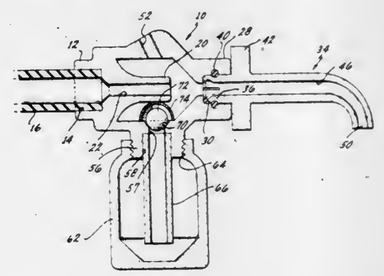
controlling the flow of air through the air nozzle to insure entrainment of the combustible gas in the air within the tube portion for uniform burning with a relatively low temperature spread along the length of the tube portion;
exhausting the contents of the tube portion to an exhaust means.

4,214,870
DENTAL CLAMP
Jacob Fagelman, 1022 E. 23rd St., Brooklyn, N.Y. 11210
Filed Nov. 1, 1978, Ser. No. 956,694
Int. Cl.[3] A61C *5/12;* A61F *5/04*
U.S. Cl. 433—40 **2 Claims**



1. A dental instrument for tooth restoration comprising, in combination, a clamp including a channel shaped bracket armed with a web and two flanges, a pair of spaced arms carried by said bracket, means for pivotally mounting one of said arms on said bracket, means for rigidly securing the other arm to said bracket, an upper portion and a lower portion on said one arm, said lower portion being offset from said upper portion, said one arm having an opening therethrough intermediate sais portions, said pivotal means including a pin loosely disposed in said one arm opening and having its ends secured in said bracket flanges, a finger on each of said arms, means for longitudinally adjusting positions of said fingers along said arms, a resilient element at a free end of each of said fingers, and means for adjusting the relative position of said one arm with respect to the other arm, whereby said spaced resilient elements may be adjustably disposed for tooth restoration.

4,214,871
METHOD AND APPARATUS FOR CLEANING TEETH AND REMOVING PLAQUE
Carter H. Arnold, 317 Rocky Point Rd., Palos Verdes, Calif. 90274
Filed Jan. 23, 1978, Ser. No. 871,203
Int. Cl.[2] A61C *3/02;* A61K *5/00*
U.S. Cl. 433—216 **12 Claims**



1. A method of removing plaque from teeth including the steps of generating a controlled stream of liquid which can be discharged into the mouth, forming particles in pellet form and of a material which has a delayed solubility in said liquid and sufficient mass in pellet form so as to have kinetic energy when moving at the velocity of the stream of liquid, entraining the particles in the stream of liquid and jetting the stream with the entrained pellets into the mouth and against the teeth for removing plaque, whereby said delayed soluble pellets will dissolve if lodged under the gum line.

4,214,872

DISPERSING AGENTS FOR FINELY DIVIDING AND STABILIZING DYESTUFFS, PIGMENTS AND OPTICAL BRIGHTENERS AS WELL AS THE DISPERSIONS THEREBY OBTAINED

Heinz Uhrig, Steinbach; Karl-Hermann List, Frankfurt am Main, and Reinhold Deubel, Altenhain, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 608,896, Aug. 29, 1975, abandoned. This application Mar. 15, 1977, Ser. No. 777,860

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1974, 2442514

Int. Cl.[3] D06P *1/62*

U.S. Cl. 8—589 8 Claims

1. A process for dispersing dyestuffs, pigments and optical brighteners which comprises agitating said dyestuff, pigment or brightener in water with a condensation product of mono- or dimethyl naphthalene sulfonic acid and formaldehyde, said condensation products having been obtained by reacting 0.8 to 1.3 mols of formaldehyde with one mol of naphthalene containing 1 to 2 methyls and 0.5 to 2 sulfo groups per naphthalene nucleus.

4,214,873

TRIS(N-CARBALKOXYLAMINOMETHYL)PHOSPHINE OXIDES AND SULFIDES

Arlen W. Frank, Slidell, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 964,852, Nov. 29, 1978. This application Apr. 30, 1979, Ser. No. 34,878

Int. Cl.[2] D06M *13/28, 1/00*

U.S. Cl. 8—116 P 2 Claims

1. A process for imparting a flame retardant character to a cellulosic textile which comprises:

(a) impregnating the cellulosic textile with an aqueous solution containing a methylolated tris(N-carbalkoxylaminomethyl)phosphine oxide and a catalyst selected from acid and base;

(b) drying the impregnated cellulosic textile;

(c) curing the dried cellulosic textile at about 160° C.; and

(d) rinsing the cured cellulosic textile to remove watersoluble by-products.

4,214,874

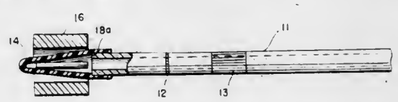
COMBINATION AND METHOD FOR MIXING THE CONTENTS OF A BLOOD COLLECTION TUBE AND THEREAFTER REMOVING THE MIXING ELEMENT

Fred K. White, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 8, 1979, Ser. No. 10,234

Int. Cl.[2] G01N *33/16;* B01F *13/08*

U.S. Cl. 23—230 B 19 Claims



1. A method for mixing blood with anticoagulant in a collection tube and thereafter safely removing the mixing element therefrom, said method involving the preliminary steps of drawing blood into a collection tube containing anticoagulant, introducing a magnetic element into said tube, sealing the ends of the tube, and thereafter moving a magnet back and forth along the outside of the tube to shift the magnetic element within the tube and thereby mix the blood and anticoagulant together, wherein the improvement comprises

utilizing an elongated tubular resilient cap as the means for sealing at least one end of said tube, said cap providing an elongated cavity having a mouth portion sealingly and removably receiving an end of said tube and having a main cavity portion extending beyond said tube, moving said magnet to shift said element into said cavity of said cap after said blood and anticoagulant have been mixed in said tube, and thereafter removing and discarding said cap with the blood-coated magnetic element captured therein.

4,214,875

COATED COAL PILES

Robert V. Kromrey, Burke, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Continuation of Ser. No. 794,577, May 6, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,618

Int. Cl.[3] C08L *91/06;* C10L *5/00*

U.S. Cl. 44—6 60 Claims

1. A process for protecting coal piles comprising: applying a coating composition to surface of the pile exposed to atmosphere, said coating composition prior to said application being in at least semi-fluid state, being capable of solidifying after application of said coating, and being a substantially uniform mixture consisting essentially of a minor proportion of an orgainic binder, which is wax, tar, asphalt, pitch, or mixtures thereof, and a major proportion of a filler consisting essentially of particulate organic solid distributed substantially uniformly throughout said bihder.

4,214,876

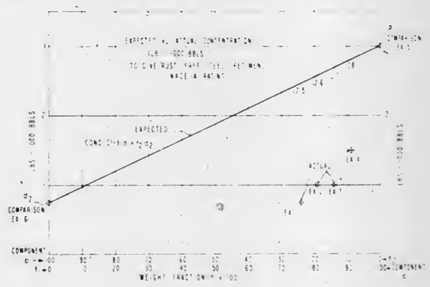
CORROSION INHIBITOR COMPOSITIONS

Bruce H. Garth, Newark, and Francis H. Schmidt, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 657,583, Feb. 12, 1976, abandoned. This application Dec. 12, 1978, Ser. No. 968,850

Int. Cl.[2] C10L *1/18*

U.S. Cl. 44—66 12 Claims



1. A corrosion inhibitor composition for hydrocarbon fuels consisting essentially of, by weight,

(a) about 75% to 95% of at least one polymerized unsaturated aliphatic monocarboxylic acid, said unsaturated acid having 16 to 18 carbons per molecule, and

(b) about 5% to 25% of at least one monoalkenylsuccinic acid in which the alkenyl group has 8 to 18 carbons.

4,214,877

FINE GRIT ABRASIVE

Raymond E. Pemrick, Schenectady, N.Y., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 785,899, Apr. 8, 1977, abandoned. This application Dec. 19, 1978, Ser. No. 971,839

Int. Cl.[2] B24D *11/02*

U.S. Cl. 51—295 2 Claims

1. A fine grit flexible coated abrasive sheet having a heat calendered cloth backing woven of polyester yarn, said backing, exclusive of coatings, having a weight of 3.5-9.5 oz./sq.yd. a stretch profile in the warp direction of ≦6% at 50 lbs. ≦9%

at 100 lbs. and $<15\%$ at 200 lbs. tensile strength and having on the side to which the maker coat is applied, a fabric surface which is defined by a surface roughness reduction from uncalendered heatstretched cloth of from 55 to 85%, a thickness reduction of 20 to 35%, and a peel strength adhesion reduction of $\leqq 40\%$.

4,214,878

FILTERING APPARATUS AND METHODS OF EXCHANGING PARTICULATE FILTER MATERIALS

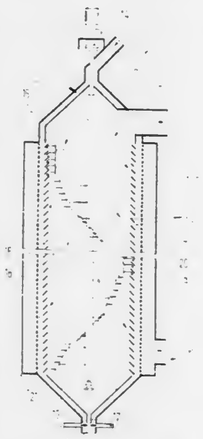
Viktor Weiss, Grillparzerstrasse 21, Graz, Austria

Filed May 25, 1978, Ser. No. 909,484

Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723885; May 11, 1978, 2820650

Int. Cl.² B01D *41/02, 46/30*

U.S. Cl. 55—96 **12 Claims**



1. A method for exchanging particulate filter material in a gas cleaning plant which includes means defining a gas-permeable filter compartment within which said filter material is contained, said compartment being defined with a crude gas side and a clean gas side, and means for passing gas to be cleaned through said filter compartment from said crude gas side to said clean side, said method comprising the steps of: periodically mechanically removing from said crude gas side of said filter compartment a layer comprising a portion of the particulate filter material contained in said filter compartment and discharging the removed portion through a discharge opening of said plant; introducing into said filter compartment from a supply compartment of said plant a supply of filter material to replace said portion removed from said crude gas side thereof; periodically emptying said filter compartment by discharging through a discharge opening of said plant the entire quantity of filter material contained within said filter compartment; passing through said filter compartment, from said clean gas side thereof in a direction counter to the direction of flow therethrough of gas to be cleaned, an air current during each said periodic emptying to prevent entry of dust through the filter compartment into the clean gas side thereof; and regenerating said filter material removed from said filter compartment and thereafter returning regenerated material to said filter compartment for recycling therethrough.

8. A gas cleaning plant including filter apparatus comprising: inner and outer generally vertical coaxial gas-permeable walls defining therebetween an annular filter compartment containing therein particulate filter material, said filter compartment being adapted to have radially passed therethrough gas to be cleaned by said gas cleaning plant; means for introducing particulate filter material into said filter compartment; said inner wall being defined by a plurality of generally vertically aligned annular lamellar elements which are arranged to extend at an angle generally upwardly and inwardly of said gas cleaning plant; means for removing particulate filter material from said filter compartment comprising a plurality of cleaning elements adapted to be moved along said lamellar elements; resilient arms having said cleaning elements supported thereon and holding said cleaning elements in operative relationship relative to said lamellar elements; and a drive shaft having said resilient arms mounted thereof for operatively moving said cleaning elements relative to said lamellar elements; said cleaning elements being arranged to project to between said lamellar elements and to extend at least partially into filter material contained within said filter compartment to effect removal therefrom of a layer of said filter material.

4,214,879

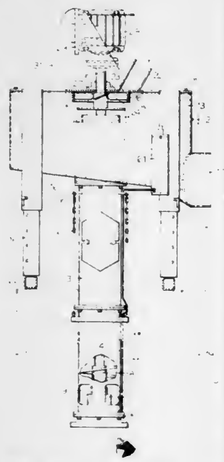
DEGASSING APPARATUS

James A. Whetstone, Cloverdale, Calif., and George W. Tillett, 50 Zahner Way, Cloverdale, Calif. 95425, assignors to George W. Tillett, Cloverdale, Calif.

Filed Dec. 26, 1978, Ser. No. 973,524

Int. Cl.² B01D *45/14*

U.S. Cl. 55—191 **11 Claims**



1. A degasser apparatus comprising:

a conduit having an inlet adapted for mounting in and formed to receive drilling mud to be recycled and an open mud discharge end;

a positive displacement rotary screw impeller mounted in said conduit adjacent said inlet and a drive shaft connected to said impeller and extending longitudinally through said conduit and from said discharge end;

motive means connected to and for driving said shaft for inducting mud into said inlet and for driving said mud longitudinally through said conduit around said shaft and for hurling said mud from said discharge end; and

a mud deflector wall mounted in surrounding relation to said shaft and in a plane substantially perpendicular thereto and in spaced relation to said end for intercepting said mud and causing said mud to fan out in a thin sheet for liberation of gas entrapped therein.

4,214,880

LIQUID SEAL SYSTEM, E.G. FOR A FLARE STACK

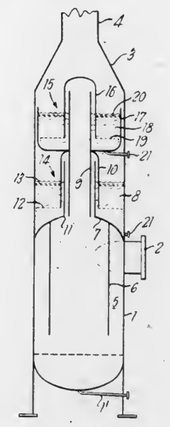
Hendrik A. Kamphorst, Groeneweg 8, 1861 PH Bergen NH, Netherlands

Filed May 2, 1978, Ser. No. 902,215

Claims priority, application United Kingdom, May 3, 1977, 18467/77

Int. Cl.² B01D *47/02, 45/12*

U.S. Cl. 55—204 **10 Claims**



1. A stack for venting and firing a combustible gas comprising a chimney portion and a columnar base portion,

the base portion being formed as a hollow supporting structure for the chimney portion, with an interior columnar chamber,

there being located in the columnar chamber a liquid sealing system comprising at least two liquid sealing devices utilizing separate respective bodies of liquid, disposed one above the other and each having a surface extending substantially across the whole width of the chamber,

means for directing incoming gas through the sealing devices into the chimney portion,

a common inlet, the inlet communicating with inner and outer co-axial ducts centrally located along the axis of the chamber, the outer duct leading to the first sealing device closest to the inlet and the inner duct leading centrally through the first sealing device to the second sealing device,

the first sealing device being above the second, the outer co-axial duct leading vertically into the liquid of the first sealing device and the inner co-axial duct leading from a level above the liquid level of the first sealing device directly into the liquid of the second sealing device.

8. A stack in accordance with claim 1 including a centrifugal separator for removing liquid entrained with the gas.

4,214,881

DEVICE FOR CLEANING HOT GASES

Peter Filss, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

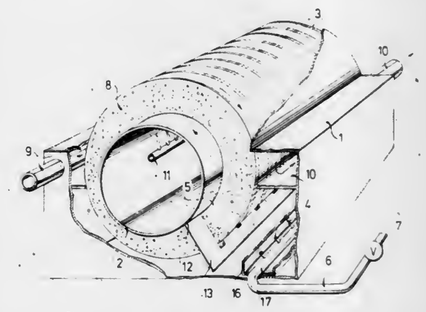
Filed Mar. 20, 1978, Ser. No. 888,002

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712216

Int. Cl.² B01D *47/06*

U.S. Cl. 55—228 **6 Claims**

1. A device for purifying a hot gas, especially industrial waste gas, which includes in combination: a housing, a tubular member rotatably arranged in said housing, a plurality of circular plates fixedly connected and arranged in spaced relationship to each other on said tubular member for rotation with the latter, gas feeding means arranged on one side of said tubular member and extending substantially parallel to the axis of said tubular member for feeding a hot gas to be purified into the spaces respectively defined by each two adjacent plates, gas discharge means arranged on and extending along the other side of said tubular member opposite said gas feeding means and communicating with the space between said plates for withdrawing gas having passed between said plates, scraper means for cleaning said plates, said scraper means respectively extending into the spaces between each two adjacent plate means and stopping short of the outer periphery of said tubular member, a feeding line adapted to be connected to a supply of spray liquid, a plurality of spray nozzles arranged within said housing and connected to said feeding line for respectively spraying spray liquid into the space between said plates, said last mentioned space defining an effective spray zone arranged past the respective scraper when looking in the direction of



rotation of said plates, supporting means arranged within said housing and supporting said scraper means directly below the spraying zone while forming partition means impeding the flow of gas to be cleaned which flows only in the upper region of the housing near said spray zone and extending up to the wall of said housing in an arrangement to avoid removed particles being taken by the flow of gas, said feeding line having a section extending within said housing and substantially parallel to the axis of said tubular member, said section supporting said spray nozzles, and a vat likewise arranged within said housing and having said section with said nozzles arranged therein, said vat being dimensioned to receive liquid to a fluid level completely covering up said nozzles to a depth sufficient to avoid blockage thereof by particle deposits while maintaining said effective spray zone.

4,214,882

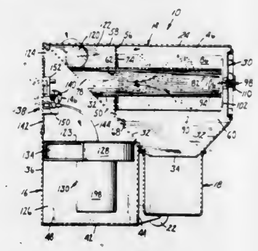
PORTABLE AIR FILTER ASSEMBLY WITH PULSE JET SELF-CLEANING FILTERS

David L. Brenholt, Dundas, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Aug. 8, 1978, Ser. No. 932,003

Int. Cl.² B01D *45/18*

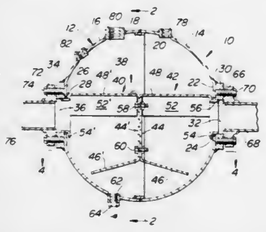
U.S. Cl. 55—302 **10 Claims**



1. A portable air cleaner comprising:

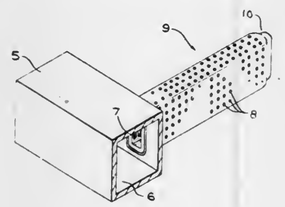
(a) a housing having a dust-laden air inlet and a clean air outlet;
(b) a first partition mounted within said housing dividing the interior thereof into a first generally vertically elongated chamber and a second generally horizontally elongated chamber, said partition lying in an oblique plane at an angle with respect to the elongation axes of said first and second chambers, said partition having an opening therein providing fluid communication between said first and second chambers with said air inlet opening into second chamber and said air outlet opening into said first chamber;
(c) means within said housing for drawing air through said housing from said dust-laden air inlet to said clean air outlet;
(d) an elongated filter member mounted within said second generally horizontally elongated chamber having a horizontally disposed elongation axis, said filter member having an inner axial passageway along said elongation axis and a filter element providing filtered fluid communication between said inner axial passageway and said second chamber; said filter member mounted to said first partition such that said opening in said partition provides fluid communication between said inner axial passageway and said first vertically elongated chamber, and
(e) means mounted within said housing for periodically and automatically cleaning said filter member, said cleaning means further comprising:
(i) valve means mounted within said first chamber for directing pulses of compressed cleaning air through said opening in said partition and into said inner passageway of said filter member whereby dust is dislodged from said filter element;
(ii) means for controlling the opening and closing of said valve means; and
(iii) means for connecting said valve means to a source of compressed air.

4,214,883
LIQUID-GAS SEPARATOR
LeRoy J. Raseley, Saylorsburg; Samuel J. Collier, Easton, and Henry G. McCarty, Wind Gap, all of Pa., assignors to Ecolaire Incorporated, Malvern, Pa.
Filed Feb. 12, 1979, Ser. No. 11,479
Int. Cl.[2] B01D *45/08*
U.S. Cl. 55—426 **9 Claims**



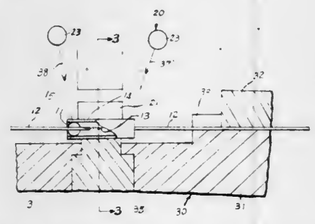
1. A liquid gas separator comprising a generally spherical housing having a liquid-gas inlet opening coaxial with a gas outlet opening, a liquid outlet drain in said housing below the elevation of said openings, said housing having flat portions at diametrically opposite locations, each of said openings being in one of said flat portions, a discrete plate welded to the outer peripheral surface of said housing at each of said flat portions, each plate having a bore coaxial with the opening on the adjacent flat portion, a baffle in said housing, said baffle being suspended within said housing by said openings, said baffle including two identical modules, means connecting said modules end-to-end and said modules having side edges mating with juxtaposed surfaces in said housing.

4,214,884
AIR FIN COOLERS FOR GLASS FIBER FORMING APPARATUS
Walter L. Martin, Jr., Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 14, 1978, Ser. No. 969,529
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—12 **2 Claims**



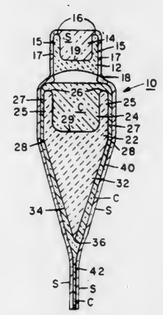
1. In a glass fiber forming apparatus in which glass fibers are attenuated from orifices in a bushing and in which a fin cooler assembly having a plurality of fins is employed to cool the glass fibers as they are drawn from the bushing by positioning the fins between the orifices or rows of orifices and wherein the fins are constructed of a porous material to permit fluid to be passed therethrough to provide a fluid for cooling the improvement comprising having fins constructed of solid nickel in tubular form, each of said fins being provided with a plurality of precisely sized apertures, each of said apertures being the same size, a solid nickel closure at one end of each of said fins to effectively seal one end of said fins thereby rendering the ends impervious to fluid flow and the said fins being open at the other end, for said open end being mounted on a manifold, means to pass gaseous fluid through said fins from said manifold, said solid nickel being between 0.0052 to 0.01 inch (0.005 to 0.025 centimeter) in thickness with the apertures ranging in size between 0.015 to 0.017 inch in diameter (0.0381 to 0.0432 centimeter).

4,214,885
METHOD FOR PRODUCING MINIATURE LAMPS
Hideo Nishi, 919 Shimosakunobe, Takatsu-Ku, Kawasaki-City, Kanagawa-Prefecture, Japan
Filed Mar. 1, 1978, Ser. No. 882,653
Int. Cl.[2] C03C *27/02*
U.S. Cl. 65—42 **1 Claim**



1. Method for producing miniature lamps comprising the steps of heating a glass bead of a stem by radiation such as infrared rays, the glass bead being heated up to the melted state thereof by the internal reflection of the infrared rays, melting the inner periphery of the glass tube around the glass bead, said heating being performed in the vacuum atmosphere, and at the same time shielding the other part of the glass tube that does not contact the glass bead and cooling said other part of the glass tube by the radiation between the other part of the glass tube and the block for enclosure.

4,214,886
FORMING LAMINATED SHEET GLASS
George C. Shay, Corning, N.Y., and Raphael A. Simon, Avondale Estates, Ga., assignors to Corning Glass Works, Corning, N.Y.
Filed Apr. 5, 1979, Ser. No. 27,497
Int. Cl.[2] C03B *17/00*
U.S. Cl. 65—121 **12 Claims**

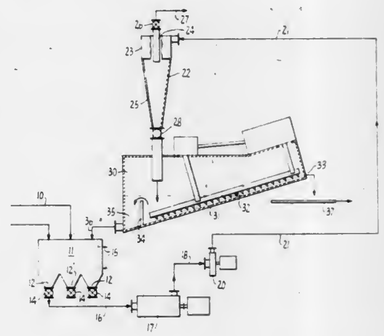


1. A method of forming laminated sheet glass which comprises, supplying a first molten glass of one composition to a first overflow channel, supplying a second molten glass of another composition to a second overflow channel, overflowing the first glass from said first channel into two separate downwardly converging sheet-like flow paths, overflowing the second glass from the second channel downwardly into two separate sheet-like flow paths and onto the outer surface of the downwardly flowing sheet-like paths of said first glass to form a pair of downwardly converging laminated flows while said glasses are in a molten condition, uniting said converging pairs of laminated flows into a single composite and drawing a sheet of laminated glass therefrom, and maintaining the outer surface of said second glass free from contact with distributing or forming means so as to provide a laminated glass sheet of fire polished quality.

9. Apparatus for forming laminated sheet glass which comprises, first overflow means for forming opposed sheetlike flows of molten glass having substantially uniform thickness across the width thereof, forming means positioned below said first overflow means for converging and uniting said opposed sheet-like flows into a single drawn sheet flow, second overflow means positioned above said first overflow means for overflowing second sheet-like flows of molten glass of substantially uniform thickness downwardly upon outer surfaces of said opposed sheet-like flows of said first overflow means, means for separately feeding molten glass to said first overflow means and said second overflow means, said first and second overflow means having longitudinally extending upper overflow surface portions, and means for longitudinally tilting said upper surface portions of said first and second overflow means with respect to the horizontal.

4,214,887
SEWAGE AND WASTE WATER TREATMENT
Arthur van Gelder, San Diego, Calif., assignor to Ozodyne, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 829,917, Sep. 1, 1977, abandoned. This application Nov. 8, 1978, Ser. No. 958,741
Int. Cl.[2] C05F *7/00;* **C02B** *3/08*
U.S. Cl. 71—9 **8 Claims**

1. A method of treating an effluent composed of raw sewage and other waste waters containing grit, suspended solids, semi-colloids and solids in solution, which comprises:
(a) separating the grit, and suspended solids having a particle size greater than about 20 microns, from the effluent;
(b) introducing ozone gas at a negative pressure from an ozone generator into the resulting effluent by premixing said ozone gas and said effluent with an eductor;
(c) atomizing said ozone-treated effluent to form a mist in an enclosed chamber through which ozone is flowing whereby the droplets of mist are intimately contacted with the ozone;



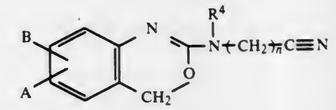
(d) condensing the mist to a liquid by causing the mist droplets to fall through said chamber by gravity whereby to form a liquid in the bottom zone of said chanber; and
(e) separating from said liquid particles having a size greater than about 5 microns.

4,214,888
FOLIAR FERTILIZATION METHOD AND COMPOSITION
Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Jun. 5, 1978, Ser. No. 912,527
Int. Cl.[2] C05C *9/00;* **C05B** *15/00*
U.S. Cl. 71—28 **12 Claims**

1. As a composition of matter in aqueous urea solution for foliar fertilization having low ammonia partial pressure, phytotoxicity and corrosivity, improved toxicity stability, and a pH of at least about 6 and less than about 7.6, comprising a nitrogen source consisting essentially of urea in an amount corresponding to at least about 1 weight percent nitrogen, and at least about 0.005 and not in excess of about 0.1 molar equivalents per mole of said urea of a pH buffer having a buffer point between about pH 6 and 7.6, sufficient to maintain (a) the pH of said solution between about 6 and about 7.6 and (b) a low free ammonia content corresponding to an ammonia concentration in the gas phase in equilibrium with said solution at a temperature of 20° C. and atmospheric pressure below about 40 ppm.

4,214,889
BENZOXAZINE HERBICIDES
Stewart W. Myers, Morristown, and Homer K. Spencer, Randolph, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.
Division of Ser. No. 840,227, Oct. 7, 1977, Pat. No. 4,164,407. This application Apr. 16, 1979, Ser. No. 30,346
Int. Cl.[2] C07D *265/18;* **A01N** *9/22*
U.S. Cl. 71—88 **14 Claims**

1. A compound which is a free base of the formula:



wherein

each of A and B is independently, a hydrogen atom or halo having an atomic weight of from about 34 to 80, provided that A and B are not both hydrogen atoms; and
R_4 is alkyl having from 1 to 3 carbon atoms, and
n is 1 or 2;
or an acid addition salt thereof.

14. A herbicidal composition comprising a compound of claim **1**, in association with a herbicidal carrier or diluent.

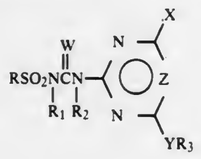
4,214,890

HERBICIDAL PYRIMIDINE AND TRIAZINE SULFONAMIDES

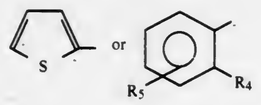
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 27, 1978, Ser. No. 946,176
Int. Cl.[2] **A01N** *9/12*
U.S. Cl. 71—90 **27 Claims**

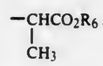
1. A compound, or an agriculturally acceptable salt thereof, which has the formula:



wherein
R is



R_1 and R_2 are independently H or CH_3;
R_3 is $-CH_2CF_3$, $-CH_2CH_2OR_6$, $-CH_2CO_2R_6$,



$-CH_2CH_2-CH_2OR_6$ or $-CH_2CH_2CO_2R_6$;
R_4 is Cl, Br, F, NO_2, CH_3, $-OCH_3$, CF_3, or



R_5 is H, Cl, Br, F, CH_3 or $-OCH_3$;
R_6 is CH_3 or CH_2CH_3;
n is 0, 1 or 2;
X is CH_3 or $-OCH_3$;
W and Y are independently O or S; and
Z is CH or N;
provided that
(a) when R_3 is $-CH_2CF_3$, Y is O; and
(b) when R_3 is $-CH_2CH_2OCH_3$ and either or both of R_1 and R_2 is CH_3, Y is S.

19. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim **1**.

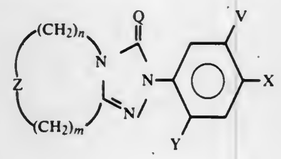
4,214,891

TRIAZOLONE HERBICIDES

Anthony D. Wolf, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 823,204, Aug. 9, 1977, Pat. No. 4,139,634. This application Jul. 19, 1978, Ser. No. 926,120
Int. Cl.[2] **A01N** *9/22;* **C07D** *239/00*
U.S. Cl. 71—92 **18 Claims**

1. A compound of the formula



where
V is hydrogen, fluorine, chlorine, bromine, methyl or OR where R is alkyl of 1–4 carbon atoms;
X is hydrogen, fluorine, chlorine, bromine, cyano, methyl, methoxy, or nitro;
Y is hydrogen, fluorine, chlorine, bromine, or methyl;
n, m is 0, 1, 2, 3, or 4;
Q is oxygen or sulfur;
Z is NR′;
p is 0, 1, or 2 and
R′ is alkyl of 1–3 carbon atoms
with the proviso that
(1) n+m=2, 3, or 4; and
(2) if n+m=2 or 4 then Y, X≠H

4,214,892

SUBLIMABLE HERBICIDAL COMPOSITIONS CONTAINING TRIISOPROPYL-OR TRITERTIARY-BUTYL-S-TRIOXANE CARRIERS

Yasuhiko Ueno, Kawanishi; Yoshito Saeki, Suita; Takuya Akiyama, Nagaokakyo, and Masao Fujita, Amagasaki, all of Japan, assignors to Ogawa & Co., Ltd., Osaka, Japan

Division of Ser. No. 737,196, Oct. 29, 1976, Pat. No. 4,123,525, which is a continuation-in-part of Ser. No. 463,176, Apr. 22, 1974, abandoned. This application Aug. 7, 1978, Ser. No. 931,443
Claims priority, application Japan, Jun. 15, 1973, 48-68013; Jun. 15, 1973, 48-68014
Int. Cl.[2] **A01N** *9/22*
U.S. Cl. 71—93 **11 Claims**

1. In a sublimable herbicidal composition in the form of rough grains, pulverized powders or tablets consisting essentially of an effective amount of at least one herbicide and a carrier therefor, said herbicide being intimately mixed with the carrier, the improvement wherein the carrier is triisopropyl-s-trioxane having a melting point of 62.5° C. or tritertiarybutyl-s-trioxane having a melting point of 92.0° C.

4,214,893

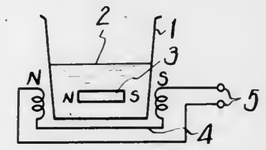
METHOD OF MAKING A MAGNETIC POWDER

Kunihiro Tsuganezawa; Teruo Kobayashi; Shigehisa Harada; Yoichi Nishizawa, and Tomoya Kusunose, all of Kawasaki, Japan, assignors to Nippon Columbia Kabushikikaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 547,541, Feb. 6, 1975, abandoned. This application Nov. 7, 1977, Ser. No. 849,327
Int. Cl.[2] **H01F** *1/02*
U.S. Cl. 75—0.5 AA **16 Claims**

1. In a method for the catalytic reduction of cobalt ions in aqueous solution, the improvement which comprises the step of heating a solution at a temperature ranging from about 20° C. below such solution's boiling point up to its boiling point for a time at least sufficient to form a precipitate of magnetizable particles, such solution comprising on a 100 weight percent total solution basis:

(A) from about 0.5 to 10 weight percent of at least one water soluble dissolved cobalt salt, selected from the group consisting of cobalt sulfate, cobalt chloride, cobalt bromide, and cobalt sulfonate,
(B) from about 0.5 to 10.0 weight percent of at least one water soluble dissolved reducing agent selected from the group consisting of alkali metal hypophosphites, hydrazine hydrate, hydrazine hydrochloride, and hydrazine sulfate,
(C) from about 0.0001 to 0.02 weight percent of at least one water soluble dissolved metal salt catalyst wherein the metal is selected from the class consisting of Group VIII-B and Group I-B of the Periodic Table of the Elements,
(D) from about 0.1 to 3.0 weight percent of at least one water soluble dissolved globular protein selected from the group consisting of albumin and hemoglobin,
(E) sufficient water soluble dissolved base alkali metal hydroxide to produce in said solution a pH ranging from about 7.0 to 13.5, and
(F) from about 65 to 95 weight percent water, the weight ratio of dissolved cobalt to all other dissolved metals in such solution being in the range from about 1:10 to 1:1, said heating being conducted in the presence of a magnetic field having a field strength of from about 50 to 5000



oersteds, such solution having been prepared by the steps of
(a) preparing a first solution comprising on a 100 weight percent total first solution basis:
(1) from about 0.5 to 10 weight percent of said cobalt salt,
(2) from about 0.5 to 10.0 weight percent of said reducing agent,
(3) from about 0.1 to 3.0 weight percent of said protein,
(4) sufficient of said alkali metal hydroxide to produce in said first solution said pH, and
(5) from about 65 to 95 weight percent of said water,
(b) preparing a second solution comprising on a 100 weight percent total second solution basis:
(1′) from about 0.01 to 10 weight percent of said metal salt catalyst, and
(2′) from about 65 to 95 weight percent of said water, and
(c) admixing said first solution with said second solution and adding to the resulting solution sufficient of said alkali metal hydroxide to produce said pH in such resulting solution, the relative ratio of said first solution to said second solution being such as to produce in such resulting solution a composition corresponding to such solution.

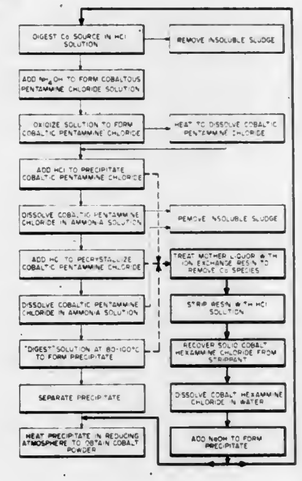
4,214,894

METHOD FOR PRODUCING COBALT METAL POWDER

Joseph E. Ritsko; Richard G. W. Gingerich, and Howard L. Acla, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 14, 1979, Ser. No. 38,968
Int. Cl.[2] **C22B** *23/04*
U.S. Cl. 75—0.5 AA **14 Claims**

1. An improved method for producing cobalt metal powder, the basic method comprising: digesting a cobalt source in an HCl solution, adding ammonium hydroxide to form cobaltous pentammine chloride in solution; oxidizing the solution to form cobaltic pentammine chloride; digesting the solution to form a cobalt-containing precipitate; and heating the precipitate in a reducing atmosphere to obtain cobalt metal powder;
characterized by the improvement comprising:
(a) treating the mother liquor remaining after formation of the cobalt-containing precipitate with an ion exchange resin to remove residual cobalt species from the mother liquor;
(b) stripping the resin with a stripping solution of hydrochloric acid;



(c) removing solid cobalt hexammine chloride from the stripping solution;
(d) forming an aqueous solution of cobalt hexammine chloride; and
(e) adding a hydroxide selected from the group consisting of alkali metal and and alkaline earth metal hydroxides to the solution of cobalt hexammine chloride to form a cobalt-containing precipitate.

4,214,895

METHOD FOR PRODUCING COBALT METAL POWDER

Richard G. W. Gingerich; Clarence D. Vanderpool, both of Towanda; Mary A. Fedorchak, Rome; Joseph E. Ritsko, Towanda, and Michael J. Cheresnowsky, Towanda, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 14, 1979, Ser. No. 38,971
Int. Cl.[2] **C22B** *23/04*
U.S. Cl. 75—0.5 AA **14 Claims**

1. A method for producing fine cobalt metal powder comprising treating an aqueous solution of a soluble cobaltic ammine halide with a sufficient amount of a soluble metallic hydroxide to form a cobalt containing precipitate, separating the cobalt containing precipitate from the resulting solution, reducing said cobalt containing precipitate to form fine particles of cobalt.

4,214,896

PROCESS FOR PRODUCING COBALT METAL POWDER

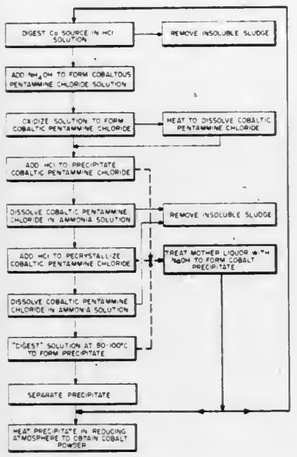
Michael J. Cheresnowsky, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 14, 1979, Ser. No. 38,973
Int. Cl.[2] **C22B** *23/04*
U.S. Cl. 75—0.5 AA **10 Claims**

1. An improved method for producing cobalt metal powder, the basic method comprising: digesting a cobalt source in a HCl solution; adding ammonium hydroxide to form cobaltous pentammine chloride in solution; oxidizing the solution to form cobaltic pentammine chloride; digesting the solution to form a

cobalt-containing precipitate; and heating the precipitate in a reducing atmosphere to obtain cobalt metal powder;

characterized by the improvement comprising:



(a) adding a hydroxide selected from the group consisting of alkali metal and alkaline earth metal hydroxides to the mother liquor remaining after formation of the cobalt-containing precipitate and containing residual cobalt species in solution to form a cobalt-containing precipitate.

4,214,897

PROCESS FOR THE EXTRACTION OF NON-FERROUS METALS FROM SLAGS AND OTHER METALLURGICAL BY-PRODUCTS

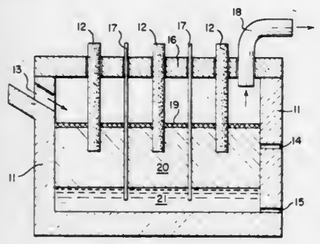
Dirk E. V. Verhulst, Edegem; Robert H. Maes, Hove, and Luc M. Fontainas, Antwerp, all of Belgium, assignors to Metallurgie Hoboken Overpelt, Hoboken, Belgium

Filed Jan. 9, 1979, Ser. No. 2,228

Claims priority, application Luxembourg, Jan. 13, 1978, 78869; Nov. 10, 1978, 80506

Int. Cl.² C21C *5/52*; C21B *3/04*

U.S. Cl. 75—11 **13 Claims**



1. A process for the extraction of non-ferrous metals from slag material comprising heating these materials by resistance to a molten state in an electric furnace with submerged electrodes, placing a layer of solid reducing agent above the molten slag material, and injecting a non-oxidizing gas into the molten slag material in a manner to produce efficient stirring of the material, the non-oxidizing gas being injected at a flow rate of between about 0.5 and about 10 Nm3/h/ton of material being treated.

4,214,898

PROCESS FOR PREVENTING THE REPHOSPHORIZATION OF ELECTRIC STEEL

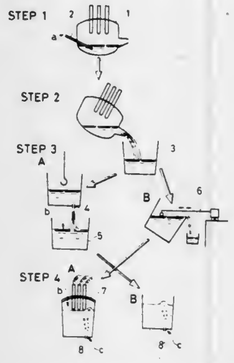
Yoshiyuki Iwanami; Masaru Fukumoto, and Mitsunori Funazaki, all of Muroran, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,231

Claims priority, application Japan, Mar. 24, 1978, 53-32999

Int. Cl.² C21C *5/52, 7/00*

U.S. Cl. 75—12 **3 Claims**



1. A process for preventing the rephosphorization of killed steel being produced in a basic electric furnace, which process comprises subjecting the melt to a refinement treatment in the electric furnace by means of oxygen decarburization, pouring the resulting decarburized melt and slag into a ladle, separating said slag substantially completely from said decarburized melt, and then deoxidizing the melt in the said ladle.

4,214,899

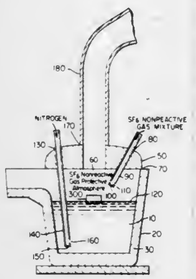
METHOD FOR THE ADDITION OF A REACTIVE METAL TO A MOLTEN METAL BATH

Ronald H. Radzilowski, Youngstown, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,158

Int. Cl.² C21C *7/02*

U.S. Cl. 75—58 **14 Claims**



1. A method for the addition of a reactive metal to a molten metal bath which comprises:

(a) providing a bath of molten metal;

(b) establishing a gaseous atmosphere above the surface of said bath consisting essentially of a nonreactive gas containing from about 100 to 3000 parts per million SF_6;

(c) establishing said bath of molten metal at a temperature at which a selected reactive metal exhibits a vapor pressure exceeding the total ambient pressure of the gaseous atmosphere above the surface of said bath;

(d) depositing said selected reactive metal on the surface of said bath for dissolution therein.

4,214,900

PRODUCTION OF NONFERROUS METALS WITH LOW SELENIUM CONTENTS

Ranko Crnojevich, Gretna; Edward I. Wiewiorowski, New Orleans, and Peter H. Yu, Harvey, all of La., assignors to Amax Inc., Greenwich, Conn.

Filed Aug. 8, 1979, Ser. No. 64,689

Int. Cl.² C22B *23/04*

U.S. Cl. 75—109 **10 Claims**

1. A process for precipitating selenium from solutions of nonferrous metals wich comprises contacting a solution of at least one nonferrous metal selected from the group consisting of cobalt, copper and nickel with a semimetallic chromous precipitant of the nonferrous metal which has a nonferrous metal to chromium ratio between about 10:1 and about 200:1 and which has a metallic content between about 50% and about 90% to precipitate selenium from the solution as a selenide of the nonferrous metal.

4,214,901

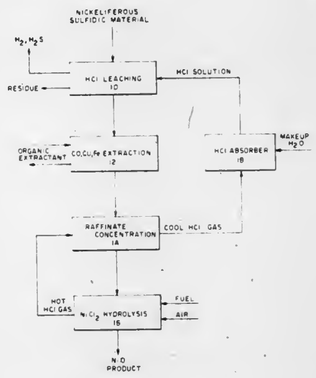
HYDROMETALLURGICAL REFINING OF NICKELIFEROUS SULFIDES

Eugene J. Michal, Golden; Simon O. Fekete, Arvada, both of Colo., and H. Jan Roorda, Ryswyk, Netherlands, assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 16, 1979, Ser. No. 12,774

Int. Cl.² C22B *23/02, 23/04, 15/00*

U.S. Cl. 75—119 **36 Claims**



1. A process for recovering nickel from a nickeliferous sulfidic material containing at least one other metal selected from the group consisting of cobalt, copper and iron which comprises leaching the sulfidic material with an at least about 3 N hydrochloric acid solution to provide a pregnant nickel chloride solution; contacting the pregnant nickel chloride solution with an organic extractant to extract the other metal and to provide a nickel chloride raffinate; concentrating the nickel chloride raffinate; feeding the concentrated nickel chloride raffinate to a high temperature hydrolysis unit wherein the concentrated nickel chloride raffinate is oxidized to a nickel oxide product and a hot gaseous effluent containing hydrogen chloride; recycling the hot gaseous effluent from the high temperature hydrolysis unit through the nickel chloride raffinate to concentrate the raffinate and to produce a cooled gaseous effluent containing hydrogen chloride; and passing the cooled gaseous effluent through a water absorber to generate hydrochloric acid for leaching fresh nickeliferous sulfidic material.

4,214,902

HIGH TOUGHNESS-HIGH STRENGTH IRON ALLOY

Joseph R. Stephens, Berea, and Walter R. Witzke, Seven Hills, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 803,822, Jun. 6, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 7,083

Int. Cl.² C22C *39/02*

U.S. Cl. 75—124 **9 Claims**

1. An iron alloy possessing high strength and high toughness characteristics at cryogenic temperatures consisting of

about 10 to 16 percent by weight nickel,

about 0.1 to 1.0 percent by weight aluminum,

about 0.5 to about 3 percent by weight copper

the balance being essentially iron.

4,214,903

BISMUTH-TIN-INDIUM ALLOY

Hideki Murabayashi, Kawasaki; Katsuhiko Kawakita, Yokosuka; Kisaku Nakamura, Funabashi, and Sadao Kobatake, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

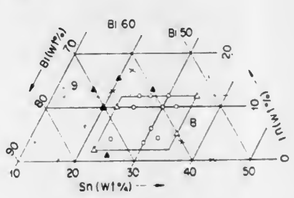
Continuation of Ser. No. 668,448, Mar. 19, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,267

Claims priority, application Japan, Mar. 20, 1975, 50-32937

The portion of the term of this patent subsequent to Apr. 11, 1995, has been disclaimed.

Int. Cl.² C22C *12/00*

U.S. Cl. 75—134 D **2 Claims**



1. A substantially lead free low melting point, sealing alloy of bismuth, tin and indium which consists essentially of 53 to 76 weight percent bismuth, 22 to 35 weight percent tin and 2 to 12 weight percent indium, said alloy being substantially resistant to atmospheric oxidation at temperatures up to 150° C.

4,214,904

GOLD-TIN-SILICON ALLOY FOR BRAZING SILICON TO METAL

Donald R. Kitchen, Griffiss AFB, N.Y., and Loren A. Jacobson, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 12, 1978, Ser. No. 968,873

Int. Cl.² H05K *1/04*; C22C *5/00*

U.S. Cl. 75—165 **4 Claims**

1. A braze alloy for brazing silicon to a metal substrate, said alloy consisting essentially of about 19 to 21 weight percent tin and about 0.6 to 0.8 weight precent silicon, the balance being gold.

4,214,905

METHOD OF MAKING BEARING MATERIAL

Harold E. Sliney, Parma, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 616,528, Sep. 25, 1975, abandoned, which is a division of Ser. No. 513,611, Oct. 10, 1974, Pat. No. 3,953,343. This application Jan. 31, 1977, Ser. No. 764,245

Int. Cl.[2] B22F *3/26*

U.S. Cl. 75—200 **7 Claims**

1. A method for fabricating a self-lubricating, oxidation-resistant composition of matter comprising the steps of

pressing metal powders into a body and sintering the same to form a porous, metal body,

initially infiltrating said porous metal body with glass to partially fill the pores thereof whereby the walls of the pores are coated by wetting action of the glass, and

subsequently infiltrating the resulting partially filled porous, metal body with a fluoride salt.

4,214,906

METHOD OF PRODUCING AN ARTICLE WHICH COMPRISES A FIRST ZONE OF A NONOXIDE CERAMIC MATERIAL AND A SECOND ZONE OF A SOFTER MATERIAL

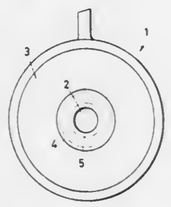
Manfred Langer, Fallersleben, and Johann Siebels, Wolfsburg, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Nov. 26, 1975, Ser. No. 635,399

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1974, 2456453

Int. Cl.[2] F16H *13/00*

U.S. Cl. 75—208 R **16 Claims**



1. A method of producing an article, such as a turbine blade including a first zone of nonoxide ceramic material and a second zone of a different material, which is softer than the nonoxide ceramic material, comprising the steps of introducing powders of a first material, which is at least capable of forming nonoxide ceramic material, and powders of a second material, which is different from and softer than the first material, into respective portions of a mold corresponding, respectively, to the first and second zones of the article; mingling powders of the first material with powders of the second material to form a transition region between the introduced powders of the first and second materials; and molding, by at least the common application of pressure, the introduced powders of the first and second materials, including the mingled powders, into a solid article having a first zone of a nonoxide ceramic material formed from the first material, a second zone of a different, softer material formed from the second material and a transition layer formed between the first and second zones from the mingled powders in the transition region for bonding the first zone to the second zone.

4,214,907

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY HAVING A POLYVINYL CARBAZOLE DERIVATIVE, PHTHALOCYANINE, AND AN ELECTRON-ACCEPTOR

Toru Nakazawa, Osaka; Keiichi Nagahashi, Kaizuka, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Jan. 5, 1978, Ser. No. 867,302

Int. Cl.[2] G03G *5/14, 5/06*

U.S. Cl. 430—82 **4 Claims**

1. A laminated photosensitive material for electrophotography which comprises an electrically conductive substrate, an intermediate layer formed on said substrate and a top layer laminated on said intermediate layer wherein said intermediate layer comprises (A) polyvinyl carbazole or a nuclear substitution derivative thereof and (B) an electron-acceptable polycyclic aromatic nitro compound selected from the group consisting of trinitrofluorenone and tetranitrofluorenone at an (A)/(B) weight ratio of from 1/1.7 to 1/2.2 and has a thickness of 0.1 to 10 microns and said top layer comprises, incorporated in a binder, (C) phthalocyanine or a phthaloycanine derivative and (B) said electron-acceptable polycyclic aromatic compound at (C)/(B) weight ratio of from 10/8 to 10/20 and has a thickness of 0.1 to 30 microns.

4,214,908

DURABLE ANTI-FOGGING COMPOSITION

Katsuhiko Deguchi, Sakura; Junryo Mino, Kamagaya, and Kaoru Tsujii, Sakura, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

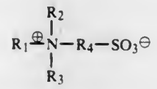
Filed Oct. 27, 1977, Ser. No. 845,973

Claims priority, application Japan, Nov. 8, 1976, 51-134514

Int. Cl.[2] C09K *3/18*

U.S. Cl. 106—13 **6 Claims**

1. A durable anti-fogging composition consisting essentially of 0.05 to 30% by weight of at least one sulfonic acid type amphoteric surface active agent having the formula (I):



wherein R_1, R_2 and R_3 each is alkyl, hydroxyalkyl or benzyl, the sum of the number of carbon atoms of R_1, R_2 and R_3 is in the range of from 16 to 38 and one of R_1, R_2 and R_3 is alkyl or hydroxyalkyl having at least 14 carbon atoms, and R_4 is alkylene or hydroxyalkylene having 2 to 4 carbon atoms; 0.01 to 20% by weight of at least one member selected from the group consisting of inorganic salts and acetates having the formulae MeSCN, $MeNO_3$, MeX and $MeOOCCH_3$ in which Me is a cation selected from the group consisting of Na, K, Li, NH_4, $\frac{1}{2}$Ca and $\frac{1}{2}$Mg and X is halogen; up to 30% by weight of alkanol having 2 or 3 carbon atoms; and the balance is water.

4,214,909

AQUATIC ANTIFOULING METHOD

Shizuo Mawatari, Tokyo, and Takashi Nishida, Kurashiki, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

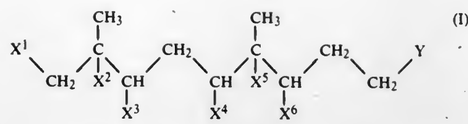
Filed Dec. 15, 1977, Ser. No. 860,723

Claims priority, application Japan, Dec. 17, 1976, 51-152369

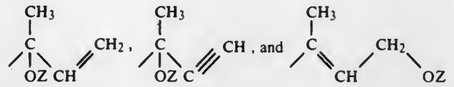
Int. Cl.[2] C09D *5/14*

U.S. Cl. 106—16 **39 Claims**

1. A method for rendering structures exposed to an aqueous environment resistant to fouling by barnacles, algae, bryozoa, slime, hydrozoa, mussels, oysters, and ascidiacea organisms in said environment, comprising contacting said structures with an effective antifouling amount of a sesquiterpene compound of the general formula (I):



wherein X^1, X^2 and X^3 each is a hydrogen atom, or one of X^1 and X^3 is a hydrogen atom with the other and X^2 representing a double bond in the carbon chain of the compound; X^4, X^5 and X^6 each is a hydrogen atom, or one of X^4 and X^6 is a hydrogen atom with the other and X^5 representing a double bond in the carbon chain of the compound; and Y is a group selected from the group consisting of:



wherein Z is a hydrogen atom or



where R is a hydrogen atom or a hydrocarbon group which may optionally be substituted; or mixtures thereof.

4,214,910

PROCESS FOR THE PRODUCTION OF PRODUCTS FROM NATURALLY-OCCURRING MAGNESIUM ORTHOSILICATE-RICH ROCKS

Wolfgang Baumgart, Heidelberg, Fed. Rep. of Germany, assignor to Dynamidon-Koppers Industriekeramik GmbH, Düsseldorf-Heerdt, Fed. Rep. of Germany

Filed Nov. 16, 1978, Ser. No. 961,312

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2836050

Int. Cl.[2] C04B *35/04*

U.S. Cl. 106—58 **15 Claims**

1. In a process for the production of products from naturally-occurring magnesium orthosilicate-rich rock with fine-grained addition of a magnesium oxide-containing substance and optionally of a chromium oxide-containing substance, then introduced into the formed body as a granular mixture and then calcined at sintering temperatures, the improvement comprising adding the magnesium orthosilicate-rich starting material in an amount such that the product obtained has a mole ratio of magnesium oxide to silicon dioxide of 1.64:1 to 1.85:1, and sintering the product sufficiently to achieve a gross density of more than 2.80 g./cc.

4,214,911

METHOD OF PRODUCTION OF CELLULAR CONCRETE

Janina Siejko, and Hanna Jatymowicz, both of Warsaw, Poland, assignors to Centralny Osrodek Badawczo-Rozwojowy Przemyslu Betonow "Cebet", Warsaw, Poland

Filed Jun. 28, 1978, Ser. No. 920,118

Claims priority, application Poland, Jul. 5, 1977, 199385

Int. Cl.[2] C04B *21/02, 31/06*

U.S. Cl. 106—87 **3 Claims**

1. A method for producing cellular concrete comprising the steps of mixing a filler, consisting essentially of a sandy fraction obtained as a waste material from the combustion of brown coal and having an SiO_2 content of 80–90%, with a binder consisting essentially of lime and cement, dry grinding the mixture of filler and binder, adding water at a temperature of about 50° C. and a pore-producing agent to said mixture and allowing the resulting mixture to set.

4,214,912

DEACETYLATED BORATE-BIOSYNTHETIC GUM COMPOSITIONS

Joseph S. Racciato, San Diego, and Ian W. Cottrell, Solana Beach, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 891,575, Mar. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 871,279, Jan. 23, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,493

Int. Cl.[2] C08L *5/00*

U.S. Cl. 106—208 **19 Claims**

1. A deacetylated borate-biosynthetic gum having enhanced dispersibility in water and which contains from about 0.5% to about 20% by weight of a borate compound.

4,214,913

PROCESS FOR PRODUCING RUTILE TIO_2

Hans H. Glaeser, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 5, 1979, Ser. No. 17,342

Int. Cl.[2] C01G *23/04*

U.S. Cl. 106—300 **11 Claims**

1. In a process for manufacturing rutile titanium dioxide by reacting $TiCl_4$ and oxygen or a gas containing oxygen in a reaction chamber in the presence of $AlCl_3$ and PCl_3 wherein the $AlCl_3$ and PCl_3 are added to the reactor together, the amount of $AlCl_3$ is sufficient to form 2–4% Al_2O_3 in the TiO_2 and the amount of PCl_3 is sufficient to form 0.5–3% P_2O_5 in the TiO_2, the improvement wherein rutile TiO_2 is produced comprising adding sufficient PCl_3 to form 0.1–0.5% P_2O_5 in the TiO_2 separately at a later point in the reactor than where $AlCl_3$ is added where the $TiCl_4$ is at least 80% converted to TiO_2, said $AlCl_3$ being present in an amount sufficient to form 0.1–1.5% Al_2O_3 in the TiO_2.

4,214,914

METHOD FOR PRODUCING MINERAL FILLERS CONTAINING GRAFT HYDROPEROXIDE GROUPS FOR USE WITH POLYMERS

Sergei S. Ivanchev, ulitsa Nalichnaya, 36/3, kv. 97, Leningrad; Nikolai S. Enikolopov, Kutuzovsky prospekt, 26, kv. 245, Moscow; Boris V. Polozov, prospekt Smirnova, 20/3, kv. 32, Leningrad; Anatoly A. Syrov, ulitsa III Internatsionala, 52, kv. 51, Leningrad; Oleg N. Primachenko, Suzdalsky prospekt, 38/1, kv. 13, Leningrad, and Zorislav N. Polyakov, ulitsa Petra Smorodina, 18, kv. 8, Leningrad, all of U.S.S.R.

Filed Nov. 20, 1978, Ser. No. 962,191

Claims priority, application U.S.S.R., Dec. 6, 1977, 2546852

Int. Cl.[2] C09C *1/28*

U.S. Cl. 106—308 Q **1 Claim**

1. A method for producing mineral fillers for polymers, said fillers containing graft hydroperoxide groups, whereby mineral fillers are dried to a constant weight and treated at a temperature of 50° to 150° C. and a pressure of 1 mm Hg to 4 atm with organosilicon compounds selected from the group consisting of compounds of the general formula:

$$R_{4-y}SiX_y,$$

where

R is selected from the group consisting of vinyl, allyl and norbornyl;

X is selected from the group consisting of chlorine, alkoxy and acyloxy;

$y = 1-3$;

or from the group consisting of compounds of the general formula:

$$R'R_{3-z}SiX_z,$$

where
R is selected from the group consisting of vinyl, allyl and norbornyl;
X is selected from the group consisting of chlorine, alkoxy and acyloxy;
$z=1-2$;
R′ is selected from the group consisting of methyl, ethyl and propyl,
whereupon the mineral filler containing graft unsaturated groups is separated from the reaction mixture, dried and ozonized with ozone-oxygen mixture containing 4 to 6 percent by volume of ozone at a temperature of $-20°$ C. to $+20°$ C. in a reactant medium selected from the group consisting of aliphatic saturated monohydric alcohols and aliphatic saturated monohydric acids and the mineral filler containing graft hydroperoxide groups is recovered.

4,214,915

METHOD AND COMPOSITION FOR CLEANING OVENS

Alan Dillarstone, Bramhall; Norman C. Lowe, Flixton, and Edwin Cropper, Shaw, all of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 745,753, Nov. 29, 1976, abandoned.
This application Aug. 7, 1978, Ser. No. 931,783
Int. Cl.² B08B *3/08, 3/10*
U.S. Cl. 134—19 **11 Claims**

1. A method of cleaning a surface which is subjected to heat and is soiled, or liable to soiling, by baked-on organic food deposits, which comprises applying to the surface, before and/or after the deposition of the deposits thereon, an aqueous solution of a mixture of 1 to 2% by weight sodium bicarbonate and 14 to 17% by weight potassium bicarbonate in a weight ratio of 1:7 to 1:17 respectively.

4,214,916

THIN FILM PHOTOVOLTAIC CONVERTER AND METHOD OF PREPARING SAME

Hal C. Felsher, 360 Dawson La., Jericho, N.Y. 11753; Fred H. Pollak, 531 Main St., Roosevelt Island, N.Y. 10044, and Arthur Bradley, 146 Beech St., Floral Park, N.Y. 11001

Filed Feb. 5, 1979, Ser. No. 9,645
Int. Cl.² H01L *31/06*
U.S. Cl. 136—89 SJ **13 Claims**



1. A photovoltaic device comprising in combination:
an electrode comprising a substrate essentially transparent to light;
a thin film in intimate contact with said electrode substrate consisting essentially of a lattice of stacked carbon chains having alternating single and double bonds containing between zero and one hydrogen atom per carbon, degraded from a highly oriented organic polymer, the interface between said film and said electrode substrate constructed to act as a source of photo-induced voltage;
wherein said lattice of stacked carbon atoms consists essentially of a conjugated carbon or carbon-hydrogen structure, plus an electron-attracting additive which causes an internal separation of the charges on said stacked carbon atoms by attracting electrons from the pi-bonds of said conjugated carbon structure; and
wherein said electron-attracting additive consists essentially of phthalocyanine or one of its metal salts.

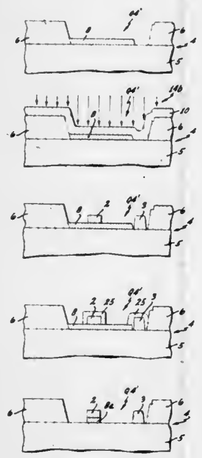
5. The method of fabricating a photovoltaic device which comprises the steps of:
depositing a film of highly oriented organic polymer on a transparent electrically-conducting substrate;
subjecting said film in situ to controlled degradation by chemical, thermal or radiation treatment to form a condensed aromatic or otherwise highly conjugated carbon macromolecule system with a high population of mobile pi-electrons;
wherein the step of subjecting said film in situ to controlled degradation is carried out in the presence of an electron-attracting compound, to form chains of indefinite length by charge transfer complexes with the condensed aromatic or highly conjugated carbon macromolecule system; and
wherein said electron-attracting compound is a metallic salt of phthalocyanine formed in situ by thermal reaction of an inorganic salt and a nitrogen-containing derivative.

4,214,917

PROCESS OF FORMING A SEMICONDUCTOR MEMORY CELL WITH CONTINUOUS POLYSILICON RUN CIRCUIT ELEMENTS

Kenneth L. Clark, Pocatello, Id.; George S. Leach, and Robert W. Howard, both of Phoenix, Ariz., assignors to EMM Semi, Tempe, Ariz.

Filed Feb. 10, 1978, Ser. No. 876,726
Int. Cl.² H01L *21/26, 21/283, 29/78*
U.S. Cl. 148—1.5 **9 Claims**



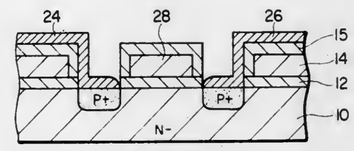
1. The process of forming a plurality of polysilicon runs on the surface of a semiconductor substrate, at least one of the polysilicon runs having a resistor formed therein, in a predetermined portion thereof, and at least one of the polysilicon runs forming the conductive gate electrode of a self-aligned insulated silicon gate field effect device, said process comprising the steps of:
establishing a first adherent layer of a single type of insulating material of predetermined thickness on the surface of the semiconductor substrate, said first layer of insulating material having reduced thickness regions above predetermined first areas of the substrate;
depositing a layer of polysilicon directly on said first adherent layer of a single type of insulating material to overlie both the predetermined thickness regions of the first insulating layer and the reduced thickness regions of the first insulating layer;
implanting dopant ions in the layer of polysilicon to establish a first conductivity of the polysilicon corresponding in conductivity to resistor material;
removing portions of the polysilicon layer to define a plurality of polysilicon runs, at least one of the polysilicon runs traversing across a central portion of a reduced thickness region of the first insulating layer to overlie and protect the reduced thickness insulating material immediately therebeneath;
forming a second adherent layer of insulating material over at least the surface of the polysilicon runs;
removing insulating material simultaneously from the surface of both the first layer of insulating material and the second layer of insulating material, to remove from the first layer the insulating material of its reduced thickness regions to expose the substrate of said first areas where such insulating material is not protected by an immediately overlying polysilicon layer, and to remove the second layer of insulating material to define a remaining resistor mask area of insulating material which overlies and protects the predetermined portion of a polysilicon run in which a resistor is to be formed; and
applying dopant to render the unprotected portions of the polysilicon runs highly conductive relative to the protected predetermined portion thereof underlying said resistor mask area of insulating material, and to simultaneously dope the exposed portions of the first areas of the substrate;
whereby the protected masked predetermined portion of a polysilicon run defines a resistor of first conductivity resistive material formed in a relatively highly conductive polysilicon run, and the polysilicon run which traverses across and protects underlying reduced thickness insulating material in a central portion of a first area of the substrate defines the conductive gate electrode of a self-aligned insulated silicon gate field effect device.

4,214,918

METHOD OF FORMING POLYCRYSTALLINE SEMICONDUCTOR INTERCONNECTIONS, RESISTORS AND CONTACTS BY APPLYING RADIATION BEAM

Arnon Gat; Levy Gerzberg, both of Stanford, and James F. Gibbons, Palo Alto, all of Calif., assignors to Stanford University, Stanford, Calif.

Filed Oct. 12, 1978, Ser. No. 950,828
Int. Cl.² H01L *21/263*
U.S. Cl. 148—1.5 **16 Claims**



1. The method of forming a low resistance circuit interconnection on a dielectric layer on a substrate comprising the steps of forming a polycrystalline semiconductor layer on said dielectric layer, doping said polycrystalline layer with a conductivity determining impurity, and applying a radiation beam to said doped polycrystalline layer thereby increasing the grain size and conductance of said doped polycrystalline layer.

4,214,919

TECHNIQUE OF GROWING THIN SILICON OXIDE FILMS UTILIZING ARGON IN THE CONTACT GAS

William C. Young, Ramona, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 28, 1978, Ser. No. 973,928
Int. Cl.² H01L *21/31, 21/469*
U.S. Cl. 148—1.5 **9 Claims**

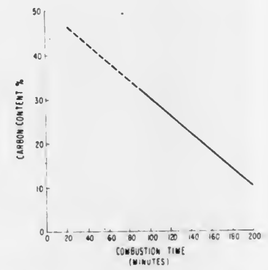
1. In an improved process for forming thin oxide film, on the order of several hundred A° thick or less, on hot integrated circuit substrates, the substrates including silicon and/or compounds thereof, and wherein the hot substrates are contacted by a prescribed "contact gas" during treatments just before and/or just after the sequence during which the oxide film is grown, the improvement comprising:
reducing nitrogenous materials in the "contact gas", and replacing at least a portion of said materials with Argon gas so as to discourage and abate the formation of "micro-defects" which lead to "shorts" or to reduced breakdown-voltage across the oxide film.

4,214,920

METHOD FOR PRODUCING SOLAR CELL-GRADE SILICON FROM RICE HULLS

James A. Amick, Princeton, N.J.; John V. Milewski, Los Alamos, N. Mex., and Franklin J. Wright, Watchung, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 23, 1979, Ser. No. 23,300
Int. Cl.² H01L *21/04;* **C04B** *31/00*
U.S. Cl. 148—1.5 **31 Claims**



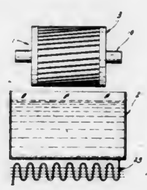
1. A process for producing solar grade high purity silicon from common rice hulls comprising:
leaching the rice hulls in acid and in water,
coking the leached rice hulls to produce a composite of carbon and silica,
adjusting the carbon to silica ratio of the coked rice hulls to less than about 2:1,
thermally reducing the adjusted carbon and silica mixture to produce elemental silicon.

4,214,921

METHOD OF MANUFACTURING A CORROSION RESISTANT ROTOR ASSEMBLY

David L. Henderson, O'Fallon, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 920,663, Jun. 30, 1978, which is a division of Ser. No. 663,146, Mar. 2, 1976, Pat. No. 4,113,518.
This application Mar. 30, 1979, Ser. No. 25,356
Int. Cl.² H02K *15/02*
U.S. Cl. 148—6.35 **9 Claims**



1. A method of fabricating a corrosion resistant rotor assembly, the latter having a core made from a stack of plate-like laminations of suitable ferro-magnetic material, said core having a central bore therethrough for the shrink fit reception of a rotor shaft, said method comprising the steps of:
heating said core to a predetermined elevated temperature

which is sufficient to cause at least some oxidation of said laminations;

inserting said shaft in said bore;

quenching said heated core and said shaft in an oil bath maintained at approximately ambient or room temperature; and

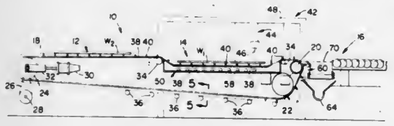
removing said rotor assembly from said oil bath so as to form a dry film on said rotor assembly capable of inhibiting the formation of corrosion on at least certain surfaces of said rotor assembly for long periods of time, particularly when said rotor assembly is installed in a dynamoelectric machine operated in a high moisture environment.

4,214,922

CONVEYOR INSTALLATION AND METHOD FOR HANDLING WORKPIECES

Timothy J. Ritchie, Chillicothe, and Ralph E. White, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 12, 1978, Ser. No. 923,841
Int. Cl.[2] B23K *7/00*
U.S. Cl. 148—9.5 **27 Claims**



1. An installation (**10**) for handling a workpiece (W_1), comprising:

(a) a first station means (**12**) for loading a workpiece (W_1);

(b) a second station means (**14**) for working on the workpiece (W_1) including means (**42–48**) for cutting the workpiece (W_1);

(c) a third station means (**16**) for unloading the workpiece; and

(d) means (**18–24, 34, 36**) for transporting the workpiece (W_1) from said first station means (**12**) to said second station means (**14**), including a first conveyor (**18**) movable in a closed loop about said first station means (**12**) and said second station means (**14**), said third station means (**16**) being adjacent said second station means (**14**) so that said first conveyor (**18**) delivers the workpiece (W_1) from said second station means (**14**) to said third station means (**16**).

19. A method of handling workpieces, comprising:

(a) loading one of the workpieces (W_1) on a conveyor (**18**) at a first station (**12**);

(b) moving the conveyor (**18**) to transport the one workpiece to a second station (**14**);

(c) stopping the conveyor (**18**) when the one workpiece is at the second station (**14**);

(d) lowering a portion (**18***a*) of the conveyor at the second station (**14**) into a water tank (**50**);

(e) moving a tool (**44**) over the one workpiece and operating on the workpiece with the tool (**44**);

(f) removing the tool (**44**) from the one workpiece after operating on the one workpiece;

(g) raising the portion (**18***a*) of the conveyor (**18**) out of the water tank after operating on the workpiece;

(h) loading another workpiece (W_2) on the conveyor (**18**) at the first station (**12**) when the one workpiece is at the second station (**14**); and

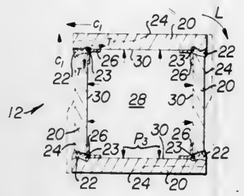
(i) moving the conveyor (**18**) to transport the one workpiece operated on to a third station (**16**) while transporting the other workpiece to the second station (**14**).

4,214,923

METHOD FOR TREATING METAL

Robert J. Price, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 4, 1978, Ser. No. 948,371
Int. Cl.[2] C23C *38/00*
U.S. Cl. 148—12 R **9 Claims**



1. A method for controllably treating metal of a preselected area (**23**) of an element (**12**) having a chamber (**28**), sidewalls (**20**) and welds (**22**) each having a root area (**23**) and each joining respective sidewalls (**20**) on to the other, said preselected area (**23**) being defined by said root areas (**23**) of said welds (**22**), comprising:

heating said element (**12**) and pressurizing said chamber (**28**) to preselecting values;

controllably stressing the metal of said preselected area (**23**) of the element (**12**) beyond the elastic limit of said metal maintaining said chamber (**28**) at a preselected pressure (P_1) for a preselected period;

controllably stress relieving said element (**12**) by maintaining said element (**12**) at a preselected temperature while said metal of the preselected area (B) is stressed beyond the elastic limit of said metal; and

controllably creating residual stresses in said preselected area (**23**) of the element (**12**) by controllably cooling said element (**12**) and depressurizing said chamber (**28**).

4,214,924

METHOD OF IMPROVING SURFACE CHARACTERISTIC OF HEAT-TREATED METAL

Joseph A. Piucci, Royersford, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 27, 1978, Ser. No. 955,252
Int. Cl.[2] C21D *1/56;* **C10M** *1/22*
U.S. Cl. 148—18 **8 Claims**

1. A method for reducing the residue of non-volatile carbonaceous thermal decomposition products of a metal-treating composition resulting from the high-temperature processing of a steel substrate treated with said composition, comprising

(a) modifying said metal-treating composition by incorporating therein an aliphatic monoacetylenic alcohol containing one or two hydroxy groups in the amount of from about 0.1% to about 10% by weight of said metal-treating composition;

(b) treating the metal substrate with said modified composition; and

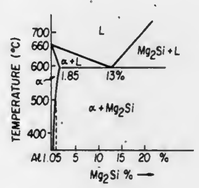
(c) processing the treated metal at tempertures above about 1200° F. whereby the ensuing residue of thermal decomposition product is substantially less than would be the residue of the unmodified metal-treating composition.

4,214,925

METHOD FOR FABRICATING BRAZED ALUMINUM FIN HEAT EXCHANGERS

Koji Arita, Kobe; Masahiro Chiji, Akashi; Takayoshi Asami, Otsu; Yasuhumi Karaki, Hyogo, and Toshihiko Endo, Akashi, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Oct. 17, 1978, Ser. No. 952,160
Claims priority, application Japan, Oct. 25, 1977, 52-128878
Int. Cl.[2] B23P *15/26;* **B27C** *1/00*
U.S. Cl. 148—127 **11 Claims**



1. A method for fabricating a brazed aluminum fin heat exchanger which essentially comprises a pair of brazing sheets each consisting of a core sheet and a cladding of brazing material disposed on either side of said core sheet and a corrugated fin member interposed between brazing sheets constituting said pair and brazed thereto comprising:

making at least said fin member of a heat-treatable aluminum alloy in an Al-Mg-Si system containing 0.15–0.4% copper,

assembling the fin with said brazing sheets into a brazed aluminum fin heat exchanger unit,

maintaining said heat exchanger unit at a temperature between 500° C. and 570° C. for a time from 30 minutes to 4 hours,

quenching the solution-treated unit to room temperature under conditions which provide a cooling rate of 2.8° C./min to 50° C./min down to 200° C. and,

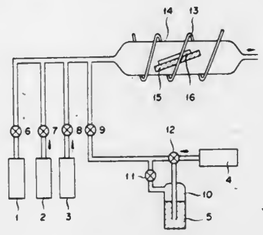
thereafter, age-hardening the quenched unit.

4,214,926

METHOD OF DOPING IIB OR VIB GROUP ELEMENTS INTO A BORON PHOSPHIDE SEMICONDUCTOR

Nagano Katsuto, Yokohama; Sasa Syozo, Ichikawa; Nakada Takeshi, Tokyo, and Asakawa Yukio, Chiba, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 810,097, Jun. 27, 1977, abandoned. This application Dec. 20, 1978, Ser. No. 971,440
Claims priority, application Japan, Jul. 2, 1976, 51/78726; Jul. 2, 1976, 51/78727
Int. Cl.[2] H01L *21/205, 29/207*
U.S. Cl. 148—175 **7 Claims**



1. A method of doping IIb group elements into a boron phosphide semiconductor on a single crystal silicon substrate comprising heating the substrate at a temperature between about 850° C. and 1100° C.; passing a gas containing boron compounds selected from the group consisting of boron hydrides and boron halides, and phosphorus compounds selected from the group consisting of phosphorus hydrides and phosphorus halides into contact with said substrate; adding organic compounds of IIb group elements to said gas, the mol ratio of said IIb group organic compounds to said boron compounds being about 5.0, said IIb group organic compounds having the general formula:



wherein M is zinc, cadmium or mercury, R is a hydrocarbon radical, and R′ is halogen or the same as R.

4,214,927

GRANULAR PROPELLANT

Kazuhiro Inoue, Aichi, and Fumio Matsui, Handa, both of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 964,040
Claims priority, application Japan, Nov. 30, 1977, 52-143603
Int. Cl.[2] C06B *45/00*
U.S. Cl. 149—2 **1 Claim**

1. A globular or flat double-base granular propellant consisting mainly 5–80 parts by weight of nitroglycerine and 90–15 parts by weight of nitrocellulose, said nitrocellulose being formed into a three-dimensional structure by the crosslinking reaction of 2–20 parts by weight of a polyfunctional isocyanate.

4,214,928

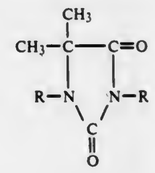
DIMETHYL HYDANTOIN BONDING AGENTS IN SOLID PROPELLANTS

John P. Consaga, Waldorf, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

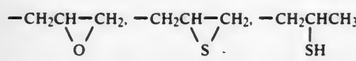
Continuation-in-part of Ser. No. 514,332, Oct. 9, 1974, abandoned. This application Nov. 29, 1976, Ser. No. 745,519
Int. Cl.[3] C06B *45/10*
U.S. Cl. 149—19.9 **7 Claims**

1. In combination with a composition which is selected from the group consisting of a propellant and an explosive and wherein said composition comprises a polymeric binder selected from the group consisting of epoxy terminated polybutadiene, carboxyl terminated polybutadiene, hydroxyl terminated polybutadiene, mercaptyl terminated polybutadiene, episulfide terminated polybutadiene, epoxy terminated polyether, carboxyl terminated polyether, hydroxyl terminated polyether, mercaptyl terminated polyether, episulfide terminated polyether, and liquid copolymer systems selected from the group consisting of polybutadiene-styrene and polybutadiene-acrylonitrile having functional groups selected from the group which consists of epoxy terminal groups, carboxyl terminal groups, hydroxyl terminatal groups, mercaptyl terminal groups, and episulfide terminal groups, and an oxidizer selected from the group consisting of ammonium nitrate, potassium perchlorate, ammonium perchlorate, cyclotetramethylene tetranitramine (HMX) and cyclotrimethylene trinitramine (RDX), wherein the improvement comprises:

means for preventing dewetting of said composition by the addition of a dimethylhydantoin bonding agent of the formula



wherein R is selected from the group consisting of $-CH_2CH_2OH$,



$-CH_2CH{=}CH_2$, and $-CH_2CH_2COOH$ and wherein, said bonding agent prevents dewetting by complexing with said binder and said oxidizer.

4,214,929

LIQUID MONOPROPELLANTS CONTAINING DISSOLVED COMBUSTION MODIFIERS

Albert T. Camp, Welcome; Kurt F. Mueller, and George W. Nauflett, both of Oxon Hill, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 14, 1975, Ser. No. 559,186
Int. Cl.³ C06B *43/00*
U.S. Cl. 149—109.4 **18 Claims**

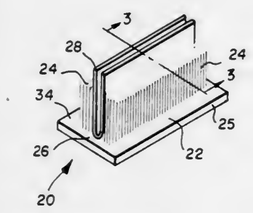
1. In a liquid propellant having at least one ballistic modifier therein, the improvement comprising a substantially single phase solution of the liquid propellant and a combustion modifier solution wherein the ballistic modifier is dissolved in at least one solvent selected from the group consisting of an alkoxypolyethyleneglycol ether and a bis alkoxy formal.

4,214,930

WEATHERSTRIP AND METHOD FOR SEALING A GAP

Allen J. Burrous, Hemlock, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Filed May 29, 1979, Ser. No. 42,999
Int. Cl.² D04H *11/00*; E06B *7/22*
U.S. Cl. 156—1 **14 Claims**



1. A weatherstrip for sealing a gap between members movable relative to one another between non-aligned and aligned positions, said weatherstrip comprising:

A. a backing strip for securing said weatherstrip to one of said members;

B. at least one sealing body having one surface portion thereof fixed to one face of said backing strip and extending longitudinally thereof and cooperating therewith for forming a sealing assembly, said sealing body extending from said face toward the other of said members to substantially close said gap between said members; and

C. A flexible film fixed adjacent one edge portion thereof to said sealing assembly with said film transverse to said one face, the opposite free edge portion of said film extending beyond said opposite free surface portion of said sealing body for a substantial distance whereby said free edge portion of said film is bent over at least a part of said free surface portion of said sealing body when said members are moved to said aligned position.

4,214,931

METHOD AND APPARATUS FOR FORMING AND PROCESSING ROVING

Stanley P. Wojciechowski, Narragansett, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 740,581, Nov. 10, 1976, abandoned. This application Jun. 23, 1978, Ser. No. 918,625
Int. Cl.² D02G *3/40*
U.S. Cl. 156—169 **15 Claims**



1. The method of producing a wound strand package comprising advancing the strand into an enclosure, winding the strand into a package within the enclosure, enlarging the enclosure as the package increases in size, and heating the package in the enclosure during winding of the package.

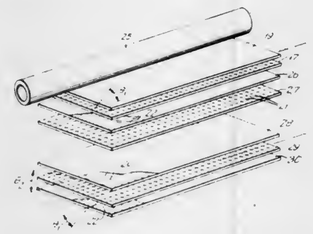
8. Apparatus for producing a wound strand package comprising an enclosure, rotatable means for winding the strand into a package within the enclosure, a relatively movable wall of the enclosure mounted for automated movement to enlarge the enclosure as the package increases in size, and means for heating the package within the enclosure at it is being wound.

4,214,932

METHOD FOR MAKING COMPOSITE TUBULAR ELEMENTS

Richard L. Van Auken, Bridgewater, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 801,028, May 27, 1977. This application May 17, 1979, Ser. No. 39,781
Int. Cl.² B65H *81/06*; F16L *9/14, 9/16*
U.S. Cl. 156—187 **9 Claims**



1. A method for fabricating a composite tubular shaft for transmitting forces and for sustaining axial and torque bearing forces, said shaft having a tubular metal core encased in a sheath of fiber reinforced resin, said method comprising:

coating the periphery of said tubular core with a structural metal adhesive in an amount ranging from about 0.020 to 0.040 lb/ft^2;

forming a plurality of quadrangular laminated plies of sheet material having a length greater than the width and having a first woven fiberglass cloth layer and a second resin impregnated continuous unidirectional reinforcing fiber layer, said sheet material having a width at least twice the diameter of said core and only in whole multiples thereof, the fibers in said fiberglass cloth layer oriented at about 0° and about 90° with respect to the length of said sheet material, and the continuous fibers in said reinforcing fiber layer being oriented at an angle of 5° to about 12° with respect to the length of said sheet material;

arranging each successive ply with respect to the preceding ply so that the continuous fibers in each reinforcing fiber layer are in opposite directional orientation with respect to the continuous fibers in the reinforcing fiber layer of the preceding ply;

wrapping the so arranged plies around the adhesive coated core to form an assembly; and;

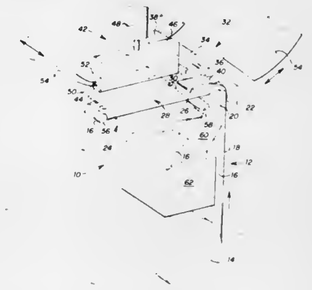
heating the assembly at a temperature sufficient to cause the resin to cure.

4,214,933

APPARATUS FOR AND METHOD OF DEPOSITING ADHESIVE STRIPS

Joseph W. A. Off, Irving; Judson H. Early, Dallas, and William B. Greer, Grand Prairie, all of Tex., assignors to Haggar Company, Dallas, Tex.

Filed Oct. 25, 1977, Ser. No. 845,450
Int. Cl.² B32B *31/00*; C09J *5/06*
U.S. Cl. 156—238 **11 Claims**



7. Apparatus for depositing adhesive strips on a length or piece of material, which comprises:

a driven roller for advancing a ribbon along a predetermined input path;

said ribbon including a backing layer and a layer of activatible adhesive, and being oriented so that the adhesive layer faces the material;

means including an idler roller in engagement with the driven roller for measuring the length of ribbon advanced therebetween along the input path;

said driven roller being responsive to the measuring means to advance predetermined lengths of ribbon along the input path;

structure located along the input path for supporting the adhesive ribbon adjacent the side of material on which adhesive strips are to be deposited;

cutting means responsive to the measuring means and located along the input path prior to the supporting structure for selectively effecting substantial crosswise separations in the adhesive layer of the ribbon to form strips of adhesive carried on the backing layer;

said cutting means comprising a rotary milling cutter mounted for displacement across the input path to provide separations of substantial width only in the adhesive layer of the ribbon between successive adhesive strips;

head means located adjacent the input path opposite the supporting structure and responsive to the measuring means for selectively engaging each strip of adhesive, the material and at least a portion of the supporting structure; and

means for activating the adhesive during engagement between the ribbon and material to attach the adhesive strip to the material.

11. A method of depositing onto a length or piece of material adhesive strips formed from an elongate ribbon including a layer of activatible adhesive and a backing layer, comprising the steps of:

feeding the ribbon along a predetermined input path with the adhesive layer facing the material;

advancing the ribbon past cutter means a distance corresponding to the desired length of adhesive strip;

interrupting movement of the ribbon;

actuating the cutter means between advancements of the ribbon to provide a substantial crosswise separation in the adhesive layer of the ribbon thereby forming successive adhesive strips carried on the backing layer;

said cutting step being carried out by a rotary milling wheel selectively traversing the ribbon to provide a substantial gap across the adhesive layer thereof so that successive strips of adhesive remain well defined during the engaging step;

activating each adhesive strip;

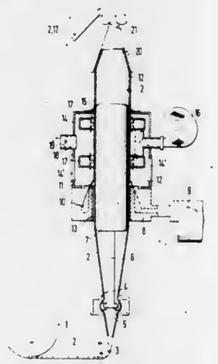
engaging the material and ribbon to effect deposition of each activated strip thereon without stringing between successively deposited strips; and subsequently disconnecting the backing layer from each deposited adhesive strip.

4,214,934

PROCESS FOR COATING WOVEN TUBING OF FIBRILLATED TAPE WITH SYNTHETIC THERMOPLASTICS

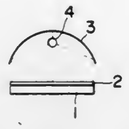
Hartmut Upmeier, Lengerich of Westphalia; Horst Schmidt, Kattenvenne, and Hans-Joachim Brauner, Bad Iburg, all of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Fed. Rep. of Germany

Continuation of Ser. No. 772,130, Feb. 25, 1977, abandoned. This application Jul. 27, 1978, Ser. No. 928,560
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2608455
Int. Cl.² B29D *23/05*
U.S. Cl. 156—244.11 **4 Claims**



1. A process for coating woven thermoplastic tubing of fibrillated tape with synthetic thermoplastic material, comprising continuously advancing and opening woven tubing; providing backing for the open tubing from the inside; forming a superatmospheric pressure chamber surrounding the opened tubing; extruding, orienting and cooling plastics material tubing within the superatmospheric pressure chamber, the plastics material tubing, when extruded, surrounding the woven tubing and having a larger diameter than the woven tubing; forcing the extruded, oriented and cooled plastics material tubing in a soft condition against the woven tubing; and cooling the combined woven tubing and plastics material.

4,214,935
PROCESS FOR FUSION-BONDING OF RESINS
Kazuyoshi Nagai, 17-6, Kumisawa-Cho, Totsuka-Ku Yokohama City, Kanagawa Pref., Japan
Filed Apr. 5, 1979, Ser. No. 27,170
Int. Cl.[2] B05D *3/06;* **B29C** *27/02*
U.S. Cl. 156—272 **1 Claim**

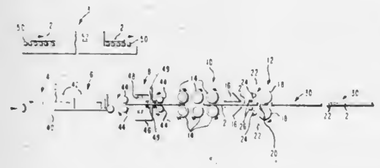


1. A process for fusion-bonding of resins, which comprises applying a layer of a powdery of filmy thermoplastic resin having a light transmittance lower than 20% and a melting point of 40° to 250° C. to a substrate and fusion-bonding the resin layer to the substrate by emission energy of a flash discharge lamp, wherein the electric input energy J (joule) of the flash discharge lamp is controlled so that the following relation to the weight of the resin layer is established:

$$4000 \geqq J/(\frac{NG}{\Sigma S}) \geqq 380$$

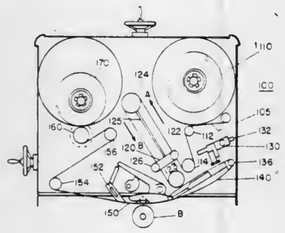
wherein J stands for the electric input (joule) necessary for one radiation, N stands for the area (cm^2) of the radiation region by one radiation, G stands for the total weight (g) of the resin layer in the radiation region by one radiation, and ΣS stands for the total radiation area (cm^2) of the resin layer in the radiation region by one radiation.

4,214,936
LAMINATION PROCESS
Matthew A. Del Bianco, Audubon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 24, 1978, Ser. No. 954,086
Int. Cl.[2] B32B *31/20, 31/10;* **C23F** *1/02*
U.S. Cl. 156—302 **9 Claims**



1. A process for laminating a thermoplastic polymeric film to each element in a succession of elements, by which the amount of interconnecting film between the laminated elements is uniformly small, comprising the sequential steps of
(a) gripping the leading element of the succession of elements between continuously moving surfaces, at least one of which is heated, to preheat at least one face the element and continuously advancing the element to a nip formed between converging surfaces, at least one of which is heated,
(b) supplying a continuous length of polymeric film to the upstream side of the nip without contact with the converging surfaces and advancing the film through the nip in response to movement of the converging surfaces of the nip, within which the film is heated by contact with a heated converging surface,
(c) in response to advancement of the preheated element a fixed distance immediately upstream of the nip, initiating movement of the converging surfaces to grip and advance the preheated element through the nip with pressure contact between the heated film and the heated face by which the polymeric film is laminated to the element, the linear speed of the element and film passing through the nip being higher than the linear speed of advancement of the element to the nip,
(d) discontinuing the movement of the converging surfaces in response to passage of the element a fixed distance immediately downstream of the nip, and
(e) repeating steps (a) through (d) for remaining elements in the succession of elements.

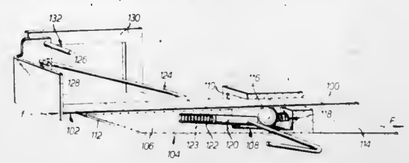
4,214,937
APPLICATION OF INDICIA TO ARTICLES
Friedrich H. H. Geurtsen, Holliston, Mass., and Waldeman Kebbel, Bremen, Fed. Rep. of Germany, assignors to Dennison Manufacturing Company, Framingham, Mass.
Filed Jun. 8, 1978, Ser. No. 913,775
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—361 **5 Claims**



1. In a device for transferring labels from a carrier web to articles comprising a turret for rotating the articles past a site of label transfer and a carrier web transport for directing the carrier web along a prescribed route at a desired speed, which prescribed route includes the site of label transfer,
an improved carrier web transport comprising:
web dispensing and collecting means;
a capstan web drive near the web collecting means for pulling the carrier web through the prescribed route during a period of label transfer, which capstan web drive exerts no pull on the web during interim periods between the periods of label transfer;
a dancer roll which is movable in a slot and is subjected to a force toward one end of the slot, which force is less than the pull exerted in the opposite direction by the capstan web drive during periods of label transfer; and
a double gate at the other end of said slot including first and second jaws which alternately clamp the carrier web, the first jaw only during periods of label transfer and the second jaw only during interim periods;
wherein said prescribed route comprises respectively the web dispensing means, the first jaw, the dancer roll, the second jaw, the site of label transfer, the capstan web drive, and the web collecting means;
whereby the double gate and dancer roll collect a carrier web surplus from said web dispensing means during interim periods and release this surplus past the labelling site under the influence of the capstan web drive during periods of label transfer.

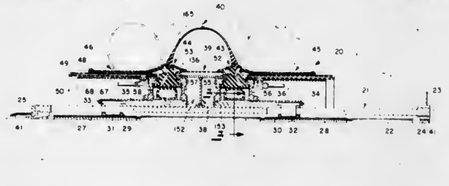
4,214,938
SENSING AND LOCKING DEVICES
Anthony V. J. Figg, Spalding, England, assignor to Norprint Limited, England
Filed Dec. 15, 1978, Ser. No. 969,965
Claims priority, application United Kingdom, Dec. 17, 1977, 52599/77
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—361 **10 Claims**

1. A sensing and locking device for controlling the operation of a mechanism in response to a force generated by an article movable by the mechanism, said device comprising
a sensing member movable on contact with an article,
means defining a wedge surface, and



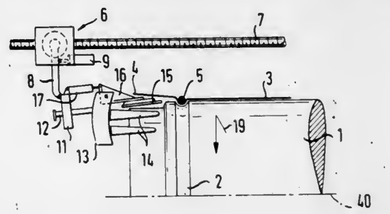
at least one rollable member arranged to co-operate with the wedge surface to lock a part of the mechanism as a result of a force applied to the sensing member being transmitted to the rollable member so that the rollable member is displaced to co-operate in generating an arresting force on the said part of the mechanism.

4,214,939
TIRE BUILDING MACHINE
George E. Enders, Salem, Ohio, assignor to NRM Corporation, Akron, Ohio
Filed Mar. 15, 1978, Ser. No. 886,742
Int. Cl.[2] B29H *17/12, 17/26*
U.S. Cl. 156—398 **58 Claims**



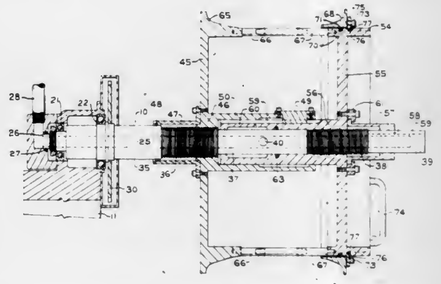
1. A tire building machine comprising a radially expanding annular elastomeric bead lock, an annular shaping bladder integral with said bead lock, and passage means in said bead lock for inflating said bladder through said bead lock.

4,214,940
WRAPPING-OVER DEVICE FOR A TIRE ASSEMBLY DRUM
Harry Rost, Munich, Fed. Rep. of Germany, assignor to Metzeler Kautshuk AG, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 802,525, Jun. 1, 1977, abandoned. This application May 16, 1978, Ser. No. 906,618
Int. Cl.[2] B29H *17/22*
U.S. Cl. 156—402 **16 Claims**



1. A wrapping over device for a rotatable solid body tire assembly drum having an axial centerline for wrapping over the tire body edges projecting beyond a bead when the assembly drum is expanded and pressed in position, said wrapping over device comprising:
an arcuate support;
at least three conical finger means mounted on said support and defining a curve, and each of said conical finger means being positioned in the direction of rotation of the tire assembly drum, closer to the tire assembly drum axial center line for applying an increased pressure on said tire body projecting edge in the direction of rotation, an extension of said finger means meeting at a common point wherein each successive said finger means exert an increasing force on the body edges;
a plate shaped pressing roller rotatably mounted on said support at a position between said conical finger means;
a pivot drive means pivotally mounting said support for rotation about an axis disposed at right angles to the assembly drum axial centerline, said pivot drive means including a first work cylinder for pivoting said support about said axis at right angles at the assembly drum; and
parallel drive means mounting said pivot drive means for movement in a direction parallel to the tire assembly drum axial centerline.

4,214,941
TIRE DRUM SUPPORT
Arthur N. Horr, Uniontown, and Clifford A. Landsness, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Oct. 2, 1978, Ser. No. 948,059
Int. Cl.[2] B29H *17/16*
U.S. Cl. 156—414 **7 Claims**



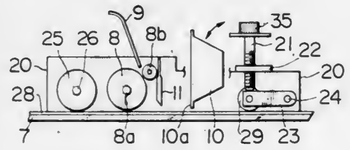
1. A power driven machine for rotatably supporting a tire carcass in an inflated condition for the application of tread rubber, said machine has a central rotatable shaft, a pair of laterally spaced tire-bead supporting rings mounted on said shaft in an air-tight manner, said pair of rings supporting a tire and cooperative therewith to define an inflatable chamber, means for adjusting the axial spacing of said rings, means for supplying compressed air to said chamber for inflation, means for rotating said rings in unison, one of said rings being removably mounted, a locking device mounted on said one ring for locking said one ring into position, a passageway extending through said one ring and through said locking device for connecting said chamber to atmosphere, said locking device operative in a first position to secure said one ring in a locked condition to close said passageway to atmosphere to permit inflation of said chamber and operative in a second position to open said passageway to atmosphere.

4,214,942

APPARATUS FOR PRODUCING A PHOTO-POLYMER PLATE HAVING RELIEF IMAGE AREAS THEREON

Michio Inoko, Koganei; Shinichi Kawatsuji, Fuji; Toshiie Matsui, Mitaka, and Shuu Yoshida, Kiyose, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 908,776, May 23, 1978, abandoned.
This application Apr. 16, 1979, Ser. No. 30,638
Claims priority, application Japan, May 24, 1977, 52-60338
Int. Cl.² B32B *31/00*
U.S. Cl. 156—500 **12 Claims**



1. In an apparatus for producing a photo-polymer plate having relief image areas thereon, including a photo-polymerizable material layer forming station comprising a substantially horizontal flat surface, and a carriage reciprocally movable through said station, said carriage having mounted thereon means for pouring said photo-polymerizable material onto a first sheet material placed on said flat surface of said station, thereby forming a layer of said photo-polymerizable material on said first sheet material, a doctor for levelling and preliminarily reducing the thickness of the photo-polymerizable material layer, means for feeding a second sheet material onto said photo-polymerizable material layer to form a laminated assembly of said first and second sheet materials with said photo-polymerizable material layer sandwiched therebetween, and a laminating cylinder disposed in rolling engagement with said second sheet material of said laminated assembly to finally reduce said photo-polymerizable material layer to a predetermined thickness, the improvement comprising support means having said laminating cylinder mounted thereon, and level adjusting means coupled to said support means for tilting said support means, together with said doctor and laminating cylinder relative to said horizontal flat surface of said station, whereby the spacing between said laminating cylinder and said flat surface and the spacing between said doctor and said flat surface are simultaneously adjusted by said level adjusting means, and wherein said doctor, said laminating cylinder, said support means and the level adjusting means are positioned relative to each other such that the amount of the adjustment of the spacing between said laminating cylinder and said flat surface is smaller than that of the spacing between said doctor and said flat surface.

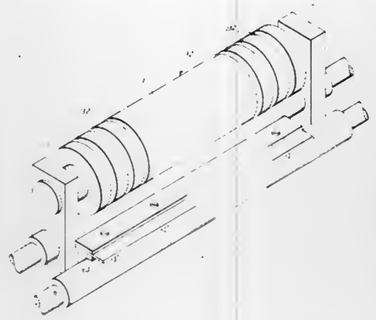
4,214,943

PASTER ROLLER FOR HIGH SPEED WEB HANDLING EQUIPMENT

Nathan Stern, W. Caldwell, N.J., assignor to Bobst-Champlain, Inc., Roseland, N.J.

Division of Ser. No. 661,768, Feb. 26, 1976, Pat. No. 4,151,594.
This application Jun. 1, 1978, Ser. No. 911,360
Int. Cl.² B65H *19/18*
U.S. Cl. 156—504 **6 Claims**

1. A paster roller for use on high speed web handling equipment of the type having a support upon which a feed roll and a new roll are mounted, variable torque brakes associated with each roll exhibiting a substantially constant coefficient of friction at all web speeds and splicing means for splicing the web of the feed roll onto the web from the new roll, said splicing means comprising means for engaging the web from the feed roll and means for moving said engaging means to a position adjacent the periphery of the new roll to cause contact between the web from the feed roll and the web on the periphery of the new roll, said engaging means comprising a substantially cylindrical paster roller having means thereon adapted to conform to the curvature of the periphery of the new roll, said



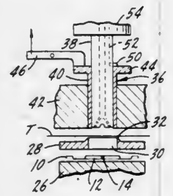
conforming means comprising a deflectable outer surface with annular grooves situated thereon.

4,214,944

ADHESIVE BONDING OF ASSEMBLY PARTS

Harold C. Lemke, Grayslake, Ill., assignor to American Can Company, Greenwich, Conn.

Filed May 23, 1978, Ser. No. 908,752
Int. Cl.² B32B *31/00*; B65D *17/26*
U.S. Cl. 156—518 **3 Claims**



1. Apparatus for separating an adhesive patch from an adhesive strip and for applying the patch to an opener key on a container lid, comprising:

an indexable turret having an anvil for supporting the lid;

a template for locating the key on the lid;

a coaxial piercing punch and bonding punch supported for movement independently of one another above the turret, each punch having a working end respectively for separating the patch and applying the patch to the key on the lid;

a die member opposed to the piercing punch and having an aperture therein presenting a cutting edge for separating a patch from an adhesive strip positioned between the die member and the working ends of the punches, the patch being so sized to straddle and overlap the key on the lid;

means for actuating the piercing punch to separate said so sized patch from said strip with the cooperation of said cutting edge;

said bonding punch having passages supplied with negative atmospheric pressure to hold the separated patch in holding position on the end of the piercing punch until the patch is transferred to the key by the bonding punch;

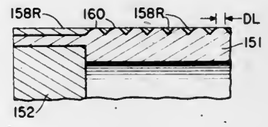
and means for actuating the bonding punch independently of the piercing punch to advance the working end thereof through said aperture to force and transfer the separated patch from its holding position on the piercing punch into bonding contact with the key on the anvil-supported lid.

4,214,945

METHOD OF MAKING A PERFORATED TUBULAR MEMBER

Malcolm B. Lucas, and H. Robert Van Coney, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 733,961, Oct. 19, 1976, Pat. No. 4,151,240.
This application Feb. 9, 1979, Ser. No. 10,575
Int. Cl.² B32B *31/00*
U.S. Cl. 156—634 **6 Claims**



1. A method of making a perforated tubular member having a relatively thin tubular wall of a metal which wall is perforated by an array of radially inwardly tapered apertures, said method comprising the steps of:

forming a pattern cylinder having a cylindrical surface and a multiplicity of protruberances extending radially outwardly from said cylindrical surface, said protruberances being tapered radially outwardly and having a radially extending height greater than the thickness of said wall, said protruberances being so spaced and shaped that they comprise an inside-out negative pattern for said array of apertures and so that the composite of the spaces intermediate said protruberances comprise an inside-out negative pattern for said member;

covering said cylindrical surface and filling said spaces with a coherent mass of said metal to provide a coating;

converting said coating into an inside-out said tubular member by machining the radially outwardly facing areas of said coating and said protruberances to truncate said protruberances to uniform heights equal to the thickness of said wall and to cause said coating to have a thickness equal to the desired thickness of said tubular wall;

disassociating said inside-out tubular member from said pattern cylinder;

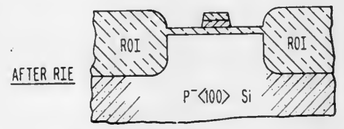
converting said inside-out tubular member into said tubular wall by longitudinally slitting it, reverse rolling it into its ultimate tubular shape, and seaming the slitting-formed-edges together in abutting relation.

4,214,946

SELECTIVE REACTIVE ION ETCHING OF POLYSILICON AGAINST SiO_2 UTILIZING SF_6-CL_2-INERT GAS ETCHANT

Lawrence E. Forget, Poughkeepsie; Robert A. Gdula, Pleasant Valley, and Joseph C. Hollis, Poughquag, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,696
Int. Cl.² H01L *21/308*
U.S. Cl. 156—643 **5 Claims**



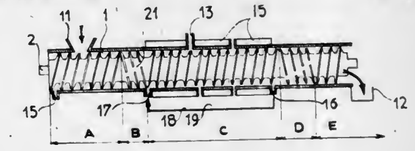
1. An improved technique of selective reactive ion etching of polysilicon against silicon dioxide, said technique being characterized by the employment of a plasma derived from a gas mixture consisting essentially of x parts of SF_6, y parts of Cl_2, and z parts of inert gas and wherein x+y+z is essentially one hundred, x+y is approximately ten, and x and y are respectively greater than zero.

4,214,947

PROCESS FOR THE CONTINUOUS IMPREGNATION OF A CELLULOSIC MATERIAL

Pierre Berger, Saint-Etienne, France, assignor to Creusot-Loire, Paris, France

Filed Feb. 6, 1979, Ser. No. 9,839
Claims priority, application France, Feb. 27, 1978, 78 05495
Int. Cl.² D21C *1/00*
U.S. Cl. 162—18 **4 Claims**



1. A process for the continuous impregnation of a cellulosic material in the form of chips, comprising passing said material continuously through apparatus comprising two parallel meshing screws having identical threads and which are rotated in the same direction inside a sheath which envelops them, said threads of said screws possessing successive zones of different pitch, wherein said material is passed continuously and in succession through a first zone of said screws for feeding and carrying said material downstream, a first braking zone of reverse pitch to the feeding and carrying zone which causes a first compression of said material, at least one subsequent zone for carrying said material downstream, in which, said material is brought into contact with a reagent introduced into said sheath, and a second braking zone of reverse pitch to the feeding and carrying zone which causes a second compression of said material, the braking zones possessing threads provided with apertures for the passage of the material downstream, during each said compression, said material passing through a series of alternate stages of increases in pressure, the relative magnitude of which increases gradually, and of drops in pressure, the relative magnitude of which decreases gradually, and the passage of said material through each braking zone causing a simple separation of said chips, which can assist the squeezing of the chips into said threads without decreasing the length of the fibers, said first compression causing the expulsion, in the upstream direction, of water present in said material, and each subsequent compression causing the expulsion of any spent reagent and of residual liquors present in said material, the overall impregnation treatment causing at least a partial deligrification of said material to eliminate substantially completely the effect of shear on the chips.

4,214,948

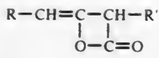
METHOD OF SIZING PAPER

Emil D. Mazzarella, Mountainside; Leonard J. Wood, Jr., Berkeley Heights, and Walter Maliczyszyn, Piscataway, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 535,442, Dec. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 493,311, Jul. 31, 1974, abandoned. This application Feb. 9, 1976, Ser. No. 656,408
Int. Cl.² D21H *3/08*
U.S. Cl. 162—158 **2 Claims**

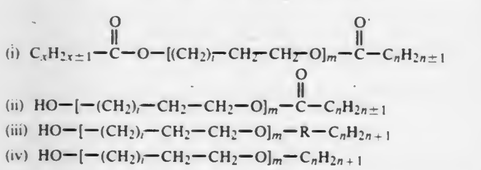
1. In a method for the internal sizing of paper products with a sizing emulsion consisting essentially of:

(a) from 80 to 97 parts by weight of a higher organic ketene dimer of the formula:



wherein R and R' are independently chosen from the group consisting of saturated and unsaturated alkyl radicals having at least eight carbon atoms, cycloalkyl radicals having at least six carbon atoms, aryl, aralkyl and alkaryl radicals;

(b) from 3 to 20 parts of a polyoxyalkylene alkyl or polyoxyalkylkene alkyl-aryl ether or the corresponding mono- or di-ester selected from the group consisting of:



wherein x and n are integers in the range of 8 to 20; R is an aryl radical; m is an integer in the range of 5 to 20; and i is 0 or 1; and

(c) water;

the improvement which comprises adding a mixture of components (a) and (b) to a paper stock system, in an amount sufficient to provide a concentration of ketene dimer of from 0.01 to 2.0%, based on dry fiber weight, whereby the sizing emulsion is formed in situ within the paper stock system at not more than about 25° C.

4,214,949

SUPPORTING DEVICE FOR A STRAINER BELT

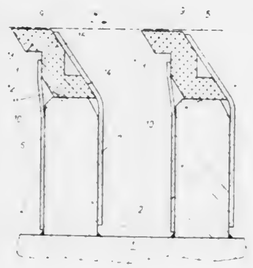
Christian Schiel, and Hans Flamig, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 969,815

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2756994

Int. Cl.² D21F *1/54*

U.S. Cl. 162—352 **13 Claims**



1. A supporting device for a strainer belt in a paper making machine comprising:

a support element including a bearing surface,

a wear strip having a wear surface suitable, in use, for facing and supporting the strainer belt, and a bearing surface resting on and being supported by the support element bearing surface,

said support element including spring clamp means for clamping said wear strip to said support element bearing surface,

said wear strip having a symmetrical shape such that said strip bearing surface is substantially the same as said wear surface so that said strip bearing surface and said wear surface may be disposed interchangeably either to face the support element bearing surface or to face away from the support element bearing surface,

said strip bearing surface and said strip wear surface being on opposite sides of said strip,

said spring clamp means comprising first and second spring means being attached to the support element,

said strip including a front face and a rear face each of which is disposed at an angle to said wear surface, both spring means clampingly engaging the rear and front faces, respectively, whereby an end of the spring means engaging the front face is accommodated in a recess provided in said front face,

said rear face being also provided with a recess positioned and shaped such that said rear face recess may accommodate the end of the first named spring means after the strip is inserted such that its bearing surface becomes its wear surface.

4,214,950

STEEL FOR NUCLEAR APPLICATIONS

Jury F. Balandin, ulitsa Basseinaya, 117, kv.85, Leningrad; Vladimir I. Badanin, ulitsa Gagarina, 12, kv.21, Gatchina Leningradskoi oblasti; Igor V. Gorynin, ulitsa Gromova, 16, kv.50, Leningrad; Lev Y. Gluskin, ulitsa Grafova, 2, kv.37, Leningrad; Jury I. Zvezdin, Kostromskoi prospekt, 42, kv.23, Leningrad; Vladimir A. Nikolaev, ulitsa Radischeva, 14, kv.16, Gatchina Leningradskoi oblasti; Anatoly M. Parshin, prospekt Annikova, 11/1, kv.43, Leningrad; Nikolai N. Zorev, ulitsa Novinki, 6, korpus 2,kv.23, Moscow; Anatoly A. Astafiev, Sharikopodshipnikovskaya ulitsa, 2, kv.34, Moscow; Vladimir S. Dub, ulitsa Festivalnaya, 14, korpus 3, kv.372, Moscow; Oleg M. Vishkarev, ulitsa Sakhalinskaya, 4, kv.72, Moscow; Sergei I. Markov, ulitsa Ferganskaya, 28/7, kv.262, Moscow; Jury V. Sobolev, Novgorodskaya ulitsa, 16, korpus 2, kv.13, Kolpino Leningradskoi oblasti, and Valentin I. Kozlov, prospekt Lenina, 41, kv.56, Kolpino Leningradskoi oblasti, all of U.S.S.R.

Filed Nov. 2, 1977, Ser. No. 847,799

Int. Cl.² C22C *38/42, 38/44, 38/46*

U.S. Cl. 176—87 **7 Claims**

1. Steel consisting of the following components, in % by weight:

carbon	0.12–0.20
silicon	0.15–0.37
manganese	0.3–0.8
chromium	1.6–2.7
nickel	0.8–2.0
molybdenum	0.5–1.0
vanadium	0.05–0.15
cerium	0.002–0.08
copper	0.01–0.10
antimony-	0.0005–0.009
tin	0.0005–0.009
sulphur	0.001–0.02
phosphorus	0.002–0.02
iron	96.246–92.862.

4,214,951

METHOD AND APPARATUS FOR DETERMINING CRITICAL TEMPERATURES FOR CORROSION

Sven-Olof Bernhardsson, Västerled 108B, and Stig A. Alfredsson, Trollstigen 3, both of 811 00 Sandviken, Sweden

Filed Jun. 9, 1978, Ser. No. 914,178

Claims priority, application Sweden, Jun. 10, 1977, 7706789

Int. Cl.² G01N *27/46*

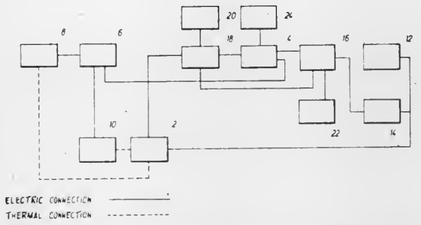
U.S. Cl. 204—1 T **14 Claims**

10. A method of determining critical temperatures for corrosion wherein

the temperature of an electrolyte in which test, counter, and reference electrodes are submerged, is adjusted to a predetermined value;

whereafter the potential difference between the test and reference electrodes or the current intensity between the test and counter electrodes at constant potential difference between the test and reference electrodes is measured and compared with a preset reference voltage or current value,

said measuring and comparison process being interrupted when the measured potential difference or the current reaches the reference value;



whereupon the temperature of the electrolyte is altered and the measuring and comparison process is again carried out;

the preceding steps being repeated until the temperature is such that the measuring potential difference or the current does not reach said reference value during a predetermined time interval;

the temperature of the electrolyte then being recorded as the critical temperature.

4,214,952

ELECTROCHEMICAL TREATMENT PROCESS

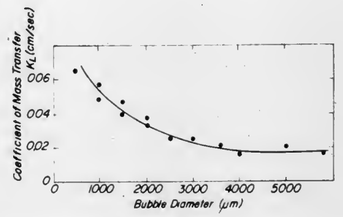
Mitsuhiro Sato, Aichi, and Noboru Kasahara, Ohbu, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jul. 31, 1978, Ser. No. 929,448

Claims priority, application Japan, Feb. 28, 1978, 53-22586

Int. Cl.² C25C *1/00*; C25D *5/00, 11/02*; C25F *3/00*

U.S. Cl. 204—14 R **17 Claims**



1. An anodizing process in which a current density of 3–170 A/dm^2 is applied while forming bubbles in a treating solution at a temperature of 0°–100° C., which comprises containing 2–60 V/V% of dispersed bubbles having first quartile diameter being not more than 2,000 μm in the treating solution.

4,214,953

PROCESS FOR MAKING SEMICONDUCTOR DEVICES PASSIVATED BY AN INTEGRATED HEAT SINK

Greco Giovanni, via Monte Senario 41, Rome, Italy (00141), and Maurizio Tomassini, via Cassia 1020, Rome, Italy (00189)

Filed Nov. 16, 1977, Ser. No. 852,156

Claims priority, application Italy, Nov. 16, 1976, 52207 A/76

Int. Cl.² C25D *5/02*; C23C *15/00*; C25D *7/12*

U.S. Cl. 204—15 **5 Claims**

1. Process for making a semiconductor device passivated by an integrated heat sink comprising:

(a) providing a silicon N stratum and depositing boron by a thermal process onto a face of said stratum so to obtain a strongly doped P+ stratum

(b) depositing on the said P+ stratum a first silicon nitride stratum

(c) laying down by vaporization of a first doped multicrystalline silicon stratum on the said first silicon nitride stratum

(d) depositing a second silicon nitride stratum on the said first doped multicrystalline silicon stratum

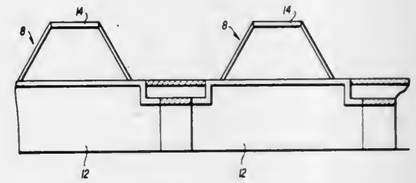
(e) growing in thickness a multicrystalline silicon stratum

(f) chemically thinning the said silicon N stratum on the side opposite to that on which the said boron deposit has been carried out

(g) depositing a third silicon nitride stratum on the said thinned side of the said silicon N stratum

(h) masking and etching the said third silicon nitride stratum to delineate the geometry of the device and then etching the silicon N stratum to form a plate having a Mesa structure

(i) subjecting the plate to a thermal cycle in an oxidizing atmosphere to cause boron diffusion in the silicon with the formation of a P+/N bond and at the same time the oxidation of the surfaces of the said Mesa structure



(j) glueing the said plate with a bonding agent to a working support

(k) masking and etching the said multicrystalline silicon stratum and the said second silicon nitride stratum to delineate a growth seat for a dissipator

(l) removing through masking and etching the said first multicrystalline silicon stratum and the said first silicon nitride stratum inside the said growth seat over an area that is slightly smaller than that of the said growth seat

(m) evaporating a metallic sheet for the contact on the said P+ stratum and then photoengraving it only for the lining of the growth seat

(n) carrying out electrolytic growth of a silver thermal dissipator

(o) removing the said working support and the bonding agent

(p) masking and etching the areas of the said third silicon nitride stratum up to expose a surface of the silicon N and

(q) evaporating a metallic sheet to contact of the said silicon and subsequently removing said sheet through photoengraving so to leave a sheet portion only on the said exposed silicon N surface.

4,214,954

PLATED METALLIC CATHODE WITH POROUS COPPER SUBPLATING

Han C. Kuo, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

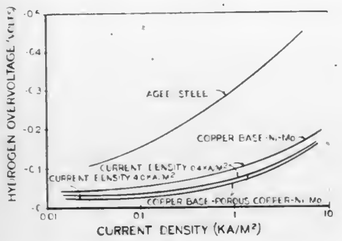
Division of Ser. No. 901,897, May 1, 1978, Pat. No. 4,152,240, which is a continuation-in-part of Ser. No. 892,554, Apr. 3, 1978, Pat. No. 4,162,204. This application Dec. 4, 1978, Ser. No. 965,314

Int. Cl.² C25D *3/56, 3/38*

U.S. Cl. 204—32 R **4 Claims**

1. An improved method of making a hydrogen evolution, low overvoltage cathode for use in an electrolysis cell, which comprises the steps of:

(a) cleaning a conductive metal substrate;
(b) depositing upon said cleaned metal substrate a porous subcoating of from about 50 to about 200 microns thick-



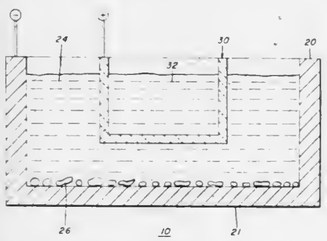
ness of dendritic copper so as to increase the surface area of said cathode; and
(c) depositing upon said porous copper subcoated substrate a coating of a low overvoltage metal alloy.

4,214,955

ELECTROLYTIC PURIFICATION OF METALS

Kenneth A. Bowman, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 2, 1979, Ser. No. 522
Int. Cl.² C25C *3/00, 3/02, 3/04, 3/06*
U.S. Cl. 204—67 **10 Claims**



1. A method of electrolytically removing impurities from metal comprising the steps of:
(a) providing a metal containing impurities in a molten state in a container having a porous membrane therein, the membrane having a porosity greater than 50% and up to about 97% and being capable of containing the molten metal and being permeable by a molten electrolyte; and
(b) electrolytically transferring metal through said membrane to a cathode in the presence of the electrolyte thereby substantially removing the impurities from the metal.

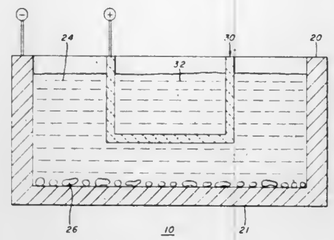
4,214,956

ELECTROLYTIC PURIFICATION OF METALS

Kenneth A. Bowman, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 2, 1979, Ser. No. 523
Int. Cl.² C25C *3/00, 3/02, 3/04, 3/06*
U.S. Cl. 204—67 **8 Claims**

1. A method of electrolytically removing impurities from metal comprising the steps of:
(a) providing a metal containing impurities in a molten state in a container having a porous membrane therein, the membrane having a thickness of less than 0.1 inch and having a porosity greater than 50% and up to about 97% and being capable of containing the molten metal and being permeable by a molten electrolyte; and
(b) electrolytically transferring metal through said membrane to a cathode in the presence of the electrolyte,



thereby substantially removing the impurities from the metal.

4,214,957

SYSTEM FOR ELECTROLYSIS OF SODIUM CHLORIDE BY ION-EXCHANGE MEMBRANE PROCESS

Shinsaku Ogawa, and Tsutomu Kanke, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1979, Ser. No. 8,187
Claims priority, application Japan, Feb. 15, 1978, 53-15383
Int. Cl.² C01B *1/34, 1/02*
U.S. Cl. 204—98 **2 Claims**



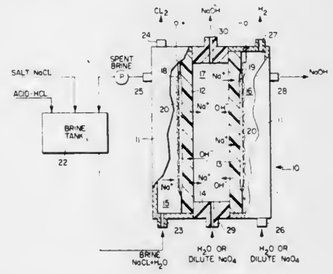
1. A method for the electrolysis of sodium chloride in an electrolytic cell divided by a cation exchange membrane into an anode chamber and a cathode chamber wherein an aqueous sodium chloride solution is introduced into said anode chamber, which comprises
(1) synthesizing hydrogen chloride gas from the chloride gas and the hydrogen gas generated in said electrolytic cell, utilizing an excessive amount of chlorine gas;
(2) absorbing the hydrogen chloride gas thus synthesized and the excess chlorine gas into the feed aqueous sodium chloride solution and/or the dilute aqueous sodium chloride solution, thereby dissolving the chlorine gas therein and controlling the hydrochloric acid concentration in the absorbing solution at 0.1 to 20 wt.%; and
(3) concentrating the dilute aqueous sodium chloride solution and/or the aqueous sodium hydroxide solution produced in the cathode chamber by utilizing the reaction heat and the absorption heat of the hydrogen chloride gas and the heat generated from the electrolytic cell.

4,214,958

ELECTROLYSIS OF ALKALI METAL HALIDES IN A THREE-COMPARTMENT CELL WITH A PRESSURIZED BUFFER COMPARTMENT

Thomas G. Coker, Waltham; Anthony B. LaConti, Lynnfield; Edward N. Balko, Wilmington, and George B. McGray, Wakefield, all of Mass., assignors to General Electric Company

Filed May 14, 1979, Ser. No. 38,812
Int. Cl.² C25B *1/34, 9/00*
U.S. Cl. 204—98 **26 Claims**



1. A process for producing halogens which comprises electrolyzing an aqueous alkali metal halide anolyte between anode and cathode electrodes separated by at least two ion transporting, membranes forming anode, cathode and buffer compartments, the electrochemically active elements of at least one of said electrodes being physically bonded to one of said membranes at a plurality of points to form a unitary electrode-membrane, applying potential from a potential source to said bonded electrode by an electron current conductor in contact with the bonded electrode, introducing a catholyte to the cathode chamber, introducing a pressurized aqueous feed to the buffer compartment to maintain a positive pressure differential between the buffer and the other compartments to force said membranes outward and maintain firm contact between the electrochemically active bonded electrode and the electron current conductor structure.

4,214,959

METHOD FOR ADJUSTING ANODES

Thomas L. Cummings, Ocoee, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 26, 1979, Ser. No. 33,657
Int. Cl.² C25B *1/36*
U.S. Cl. 204—99 **19 Claims**

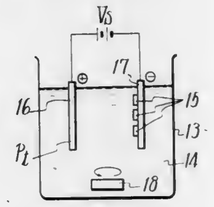
1. In a method for adjusting the anode-cathode space between electrodes in an electrolytic cell containing an electrolyte decomposable by electric current, said electrolyte being in contact with said electrodes, said electrodes being comprised of at least one anode set which is adjustable with respect to a liquid cathode in a spaced relationship, wherein said anode set has at least one electrode and a plurality of anode posts, and wherein a voltage is applied across said cathode and said anode set to develop an electric current flow through said electrolyte to effect decomposition thereof and said cell having operably connected to said adjustable anode set a motor drive means attached to raise and lower said adjustable anode set, wherein a series of N current and a series of N voltage measurements to said adjustable anode set is taken and an average current through and an average voltage across said anode set is calculated, the improvement which comprises, in combination,
(a) calculating a voltage coefficient, V_c, for said anode set,
(b) adjusting said anode-cathode space after a comparison of the calculated voltage coefficient, V_c, with a previously determining standard voltage coefficient, S, shows that said V_c exceeds a standard deviation range k_1, from said S,
(c) further adjusting said anode-cathode space where a current analysis of said anode set shows that further adjustment is required,
(d) balancing the current to said anode set by adjusting selected anode post in said anode set when a measurement of current, I_S, to said anode set exceeds the deviation range k_2, from an average current, I_{SA}, to said anode set.

4,214,960

METHOD OF ELECTROLYTICALLY ETCHING FERRITE

Tomio Kobayashi, Tagajo, and Hidesuke Miyairi, Rihu, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 6, 1978, Ser. No. 912,994
Claims priority, application Japan, Jun. 14, 1977, 52-70231
Int. Cl.² C25F *3/02, 3/14*
U.S. Cl. 204—129.65 **15 Claims**



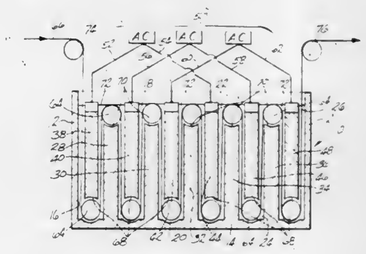
1. A method of electrolytically etching a ferrite body which comprises:
immersing said body in an acid etching electrolyte capable of etching said body and having a concentration of from 0.005 to 10 mols per liter of solution, positioning an electrode in said electrolyte in spaced relation to said body,
the ratio of exposed surface area of the ferrite body and the surface area of said electrode being less than 10, and applying a unidirectional voltage of 3 to 20 volts between the ferrite body and said electrode, said ferrite body being at a negative voltage relative to said electrode.

4,214,961

METHOD AND APPARATUS FOR CONTINUOUS ELECTROCHEMICAL TREATMENT OF A METAL WEB

William H. Anthony, Manchester, Mo., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

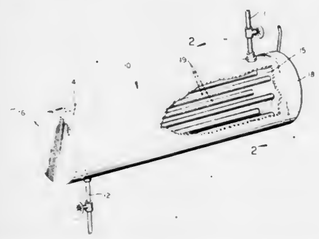
Filed Mar. 1, 1979, Ser. No. 16,120
Int. Cl.² C25F *3/00;* **C25D** *17/00*
U.S. Cl. 204—140 **18 Claims**



1. A method for the continuous electrochemical treatment of a metal web wherein said web is the chief current carrier and current paths between neighboring treatment cells are minimized, comprising the steps of:
(A) providing an electrochemical treatment cell;
(B) dividing said electrochemical treatment cell into a plurality of treatment cells by divider means comprising a first plurality of electrodes positioned in said treatment cell;

(C) filling said treatment cells with an electrolyte solution to a height substantially equal to the height of said divider means;
(D) providing a second plurality of electrodes in the electrolyte solution;
(E) passing current to said first and said second plurality of electrodes; and
(F) guiding said web through said plurality of treatment cells such that said web is continuously immersed in said electrolyte wherein said web is the chief current carrier and the electrolyte conductor path between said treatment cells is restricted by said divider means thereby minimizing electrical power loss.

4,214,962
ACTIVATED OXYGEN PRODUCT AND WATER TREATMENT USING SAME
Andrew J. Pincon, 1819 Grand Ave., Chicago, Ill. 60602
Continuation-in-part of Ser. No. 645,363, Dec. 30, 1975, Pat. No. 4,124,467. This application Jul. 21, 1978, Ser. No. 927,140
Int. Cl.[2] A61L *1/00*; B01J *1/00, 1/10*; C02B *3/08*
U.S. Cl. 204—157.1 R **14 Claims**

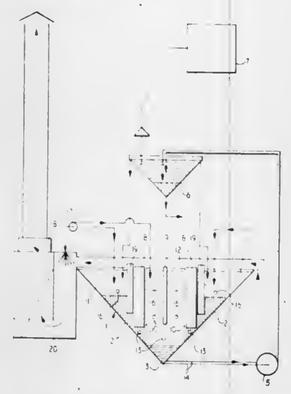


2. A method of disinfecting water, comprising the steps of:
irradiating oxygen using a source of electromagnetic radiation having predominant wavelengths less than about 155 nm to form an activated oxygen product, said product having the properties of:
reducing the surface tension of said water;
having an ultraviolet spectrum, measured following irradiation in a polyvinyl chloride enclosure and subsequent dissolving of the product in sulfuric acid at a pH of 1.5, including absorbtion at 195 nanometers and at 254 nanometers;
being negatively charged;
having a greater oxidation potential than ozone; and
forming manganese dioxide with sea water; and
mixing said activated oxygen product with said water.

4,214,963
PROCESS FOR THE PREPARATION OF SUBSTITUTED 4H-PYRAN-4-ONES
Jose R. Blanco, Las Arenas, and Aurelio O. Venero, Lejona, both of Spain, assignors to Javier Garcia de Lama, Vecino de Bilbao, Spain
Filed Nov. 27, 1978, Ser. No. 963,688
Claims priority, application Spain, Dec. 6, 1977, 464809
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—158 R **10 Claims**

1. Process for obtaining substituted 4H-pyran-4-ones, wherein a substituted 2.3-dihydro-4H-pyran-4-one reacts in a solvent with N-bromosuccinimide in the presence of light and the illumination is effected with lamps having an emission spectrum between 250 nm and 800 nm in order to form a substituted 4H-pyran-4-one.

4,214,964
ELECTROLYTIC PROCESS AND APPARATUS FOR THE RECOVERY OF METAL VALUES
John F. Cannell, 55, Boddington Rd., Byfield, Daventry, Northamptonshire, England
Filed Mar. 12, 1979, Ser. No. 19,618
Claims priority, application United Kingdom, Mar. 15, 1978, 10250978
Int. Cl.[2] C25C *1/100*
U.S. Cl. 204—105 R **9 Claims**



1. A process for electrolytically recovering metal values from a solid concentrate which remains in the form of coarse particles or lumps when added to a liquid, characterised in that the concentrate is introduced into an electrolytic cell containing an aqueous electrolyte so that the concentrate is retained in proximity to the or each anode and kept out of contact with the or each cathode, and energising the cell so that electrolysis takes place and acid is released at the or each anode, which acid dissolves the said metal values to form cations which are discharged at the or each cathode, and insoluble impurities in the concentrate are released at the or each anode as fine particles which are separated by screening from the unreacted concentrate and accumulate in the bottom of the cell, and in that further concentrate is periodically or continuously added to the cell in the vicinity of the or each anode, the solid impurities are periodically and continuously removed from the cell bottom, and the water produced in the electrolytic reaction is removed by evaporation.

4,214,965
POLYMERS AND PROCESS FOR THEIR PREPARATION
William Rowe, Westfield, N.J., assignor to Polychrome Corporation, Yonkers, N.Y.
Continuation of Ser. No. 600,653, Jul. 21, 1975, abandoned, which is a continuation of Ser. No. 328,678, Feb. 1, 1973, abandoned. This application Jan. 11, 1979, Ser. No. 2,647
Int. Cl.[2] C08F *8/00*
U.S. Cl. 204—159.15 **15 Claims**

1. A photopolymerizable composition which is comprised of an admixture of:
I. a polymer which is substantially comprised of the reaction product of:
A. an organic, active hydrogen containing compound, which compound has an average active hydrogen functionality in the range of from 2.0 to about 2.2 with
B. an excess of an organic polyisocyanate so as to form an isocyanate terminated prepolymer, said prepolymer having been subsequently reacted with
C. an organic, active hydrogen containing compound, which compound has exactly one active hydrogen; said polymer having a molecular weight of from 5,000 to 50,000 with 0% free isocyanate groups; and

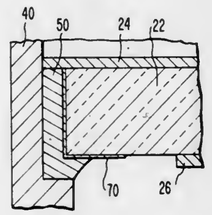
II. a polymerization initiator activatable by actinic light; and
III. a polymerizable ethylenically unsaturated component capable of forming a polymer by photoinitiated polymerization in the presence of said initiator.

4,214,966
PROCESS USEFUL IN THE FABRICATION OF ARTICLES WITH METALLIZED SURFACES
Gerard E. Mahoney, Branchburg, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 20, 1979, Ser. No. 22,186
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 E **10 Claims**



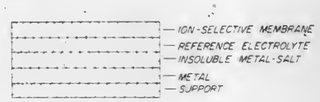
1. A process for depositing metallic material to form a metallic layer on a prescribed area of a substrate comprising the steps of masking the regions of said substrate bounding said area with a delineating material, depositing said metallic material, and removing said delineating material with its coating of said metallic material from said substrate CHARACTERIZED IN THAT the method of removing said delineating material comprises the step of removing at least a portion of said metallic material deposited on said delineating material by ion milling said deposited metallic material at an acute angle to said substrate such that said metallic layer on said prescribed area is substantially unaffected.

4,214,967
TECHNIQUE FOR REDUCING SOLID ELECTROLYTE CELL DRIFT
Alfred R. Pebler, Penn Hills, and Roswell J. Ruka, Churchill Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 8, 1977, Ser. No. 849,590
Int. Cl.[2] G01N *27/58*
U.S. Cl. 204—195 S **3 Claims**



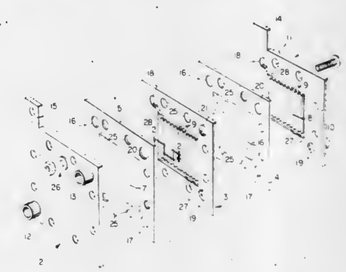
1. A method of securing a disc-shaped oxygen ion conductive solid electrolyte electrochemical cell within a tubular metal support member to minimize cell drift as a result of cell electrode deterioration, comprising the steps of:
disposing an oxygen transfer barrier in contact with the edge of said disc-shaped oxygen ion conductive solid electrolyte electrochemical cell, said barrier being a thin ceramic layer exhibiting negligible oxygen ion conductivity;
brazing said cell with a noble metal braze within said metal tubular support member, said oxygen transfer barrier substantially preventing the transfer of oxygen between said noble metal braze and said solid electrolyte electrochemical cell to prevent said noble metal braze from functioning as a cell electrode, said thin ceramic layer being of a material exhibiting a thermal expansion coefficient similar to that of the solid electrolyte electrochemical cell and being chemically inert with respect to said noble metal braze and said solid electrolyte electrochemical cell.

4,214,968
ION-SELECTIVE ELECTRODE
Charles J. Battaglia; Jack C. Chang, and Daniel S. Daniel, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 687,966, May 19, 1976, abandoned. This application Apr. 5, 1978, Ser. No. 893,656
Int. Cl.[2] G01N *27/30, 27/46*
U.S. Cl. 204—195 M **30 Claims**



1. A dry-operative ion-selective electrode comprising:
(a) a dried internal reference electrode comprising the dried residue of a solution of a salt and a hydrophilic polymeric binder in a solvent for the polymer and the salt; and
(b) in contact with said reference electrode a hydrophobic ion-selective membrane of predetermined uniform thickness in regions thereof intended for contact with a sample for analysis, said membrane comprising a hydrophobic binder having distributed therein an ion carrier dissolved in a carrier solvent.

4,214,969
LOW COST BIPOLAR CURRENT COLLECTOR-SEPARATOR FOR ELECTROCHEMICAL CELLS
Richard J. Lawrance, Hampstead, N.H., assignor to General Electric Company, Wilmington, Mass.
Filed Jan. 2, 1979, Ser. No. 489
Int. Cl.[2] C25B *9/04, 15/08*; H01B *1/04*; H01M *2/14*
U.S. Cl. 204—255 **13 Claims**



1. A bipolar current collecting, fluid distributing, cell separating element for electrochemical cells for conducting current from the anode electrode of one cell unit to cathode electrode of the adjacent cell unit comprising:
(a) a pressure molded aggregate of electrically conductive carbon/graphite particles and thermoplastic fluorocarbon

polymer resin particles in a weight ratio of 2.5:1 to 16:1 whereby said molded aggregate has a bulk resistivity which is less than 4×10^{-3} ohm/inch,

(b) said molded aggregate having a fluid impervious main body, at least one recessed chamber on one side of said main body and a plurality of spaced, conductive projections extending from the base of said chamber for contacting and permitting current flow between the electrode of adjacent cell unit,

(c) means communicating with said recessed chambers to permit introduction and removal of fluids.

4,214,970

NOVEL ELECTROCATALYTIC ELECTRODES

Placido M. Spaziante, Lugano, Switzerland, and Antonio Nidola, Milan, Italy, assignors to Diamond Shamrock Technologies, S.A., Geneva, Switzerland

Filed Jan. 15, 1979, Ser. No. 3,729

Int. Cl.² C25B *9/00, 11/03, 11/06;* **B01J** *23/40*

U.S. Cl. 204—265 **18 Claims**

1. An electrocatalyst consisting of essentially of (A) at least one metal selected from the group consisting of silver and a platinum group metal and (B) a hydrated oxide of at least one metal selected from the group consisting of nickel and manganese.

4,214,971

ELECTRODE COATING PROCESS

Henrik R. Heikel, and James J. Leddy, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 787,418, Apr. 14, 1977, Pat. No. 4,112,140. This application Aug. 14, 1978, Ser. No. 933,303

The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.

Int. Cl.² B05D *5/12*

U.S. Cl. 204—290 F **39 Claims**

1. A method to produce an electrode comprising sequentially:

(a) contacting at least a portion of a valve metal substrate with a first solution containing, as a solute, ruthenium in an amount of from about 0.25 to about 50 milligrams per milliliter of the first solution and a valve metal in an amount of from about 0.06 to about 50 milligrams per milliliter of the first solution, the weight ratio of the valve metal to ruthenium being about 1:4 to about 2:1; at least one solvent suitable to dissolve the ruthenium and valve metal values; and a sufficient amount of an acid to maintain the solute in solution;

(b) heating at least a portion of the contacted surface sufficiently to form a coating containing oxides of ruthenium and the valve metal on the substrate;

(c) contacting at least a portion of the oxide coated surface with a second solution containing, as a solute, ruthenium in an amount of from about 0.25 to about 25 milligrams per milliliter of the second solution and a valve metal in an amount of from about 1 to about 100 milligrams per milliliter of the second solution, the weight ratio of the valve metal to ruthenium being from about 20:1 to about 2:1 and greater than the valve metal to ruthenium ratio of the first solution; at least one solvent suitable to dissolve the ruthenium and valve metal values; and a sufficient amount of an acid to maintain the solute in solution;

(d) heating at least a portion of the contacted surface sufficiently to form a coating containing the oxides of ruthenium and the valve metal on the substrate.

4,214,972

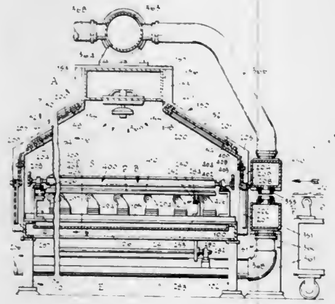
SHEET HANDLING APPARATUS

Eugene Shintock, Allen Park, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Continuation of Ser. No. 822,736, Aug. 8, 1977, abandoned, which is a continuation of Ser. No. 674,911, Apr. 8, 1976, abandoned. This application Jul. 19, 1978, Ser. No. 925,939

Int. Cl.² C23C *15/00*

U.S. Cl. 204—298 **1 Claim**



1. The combination with apparatus for cathodically sputtering thin films of a selected coating material from a cathode onto the upper surface of glass sheets in a coating chamber containing a low pressure ionized gas atmosphere, and a metal platen having a major upper supporting surface on which the glass sheet is freely supported horizontally in contact therewith during the coating of said glass sheet, the improvement which comprises a horizontally elongated substanially closed housing having an entrance end for receiving the glass sheets and an exit end positioned in line with and contiguous to the entrance end of said sputtering apparatus, one side wall of said housing being provided with a horizontally elongated opening through which the platens are introduced horizontally into said housing, a first conveyor means extending longitudinally within said housing for receiving the platens horizontally thereon and for delivering them through the exit end of said housing directly into the entrance end of said sputtering apparatus, means positioned exteriorly of and in close proximity to said opening in the side wall of said housing for cleaning the entire major supporting surface of said platens as said platens pass into said housing through said opening in the side wall thereof and before they are received on said conveyor means, a second conveyor means located in said housing for receiving the glass sheets to be coated horizontally thereon as they enter the entrance end thereof, said second conveyor means being located above said first conveyor means in spaced parallel relation thereto and terminating at its inner end short of the inner end of said first conveyor means, and means for driving the first and second conveyor means forwardly at substantially the same speed such that as the major portion of the leading end of the glass sheet passes beyond said second conveyor means it will drop onto the platen and when the trailing end of the glass sheet leaves the second conveyor means it will also drop onto said platen and be carried forwardly to said coating apparatus.

4,214,973

BLOOD SERUM APPLICATOR FOR USE IN CATAPHORETIC APPARATUS

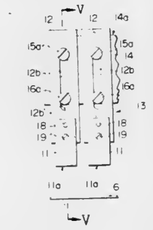
Kazuhiko Nakamura, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1978, Ser. No. 963,324

Claims priority, application Japan, Dec. 15, 1977, 52-167689[U]

Int. Cl.² G01N *27/28*

U.S. Cl. 204—299 R **9 Claims**



1. A serum applicator for use in a cataphoretic apparatus, comprising:

a plurality of penpoints, each of said penpoints comprising a plate member having a generally planar serum applying surface on its lower end;

a plurality of penpoint support members, each of said support members comprising a plate member having a respective one of said penpoints mounted on its lower end and having a hook formed on its upper end, each of said penpoint support members having a planar side surface;

a support arm in the form of a plate member having planar side and top surfaces;

a plurality of coupling means equal in number to the number of penpoints, each of said coupling means for slidably coupling a respective said penpoint support member to said support arm such that said planar side surface of its respective penpoint support member lies adjacent said planar support surface of said support arm and such that said respective penpoint support member is freely slidable with respect to said support arm in a direction perpendicular to said planar top surface of said support arm between an uppermost position and a lowermost position; said hook contacting said top surface of said support arm when said penpoint support member is in said lowermost position and orienting said planar serum applying surface of said penpoint in a plane generally parallel to said top surface of said support arm, each of said coupling means coupling its respective penpoint support member to said support arm in such a manner that its respective penpoint support member is pivotable with respect to said support arm independently of the remaining said penpoint support members, whereby the orientation of said planar serum applying surface of each penpoint may change slightly when said serum applying surface is placed in contact with a serum bearing member.

4,214,974

PROCESS FOR HYDROGENATION OF COAL

Helmut Wurfel, Zur Wolfsfels 21, 6653 Blieskastel, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 850,204, Nov. 10, 1977, abandoned. This application Sep. 13, 1978, Ser. No. 941,945

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1976, 2651253

Int. Cl.² C10G *1/06*

U.S. Cl. 208—10 **11 Claims**

1. In a process for the hydrogenation of coal wherein a finely divided coal-oil slurry is pumped under pressure through preheating means and into a hydrogenation reactor wherein the slurry is hydrogenated in the presence of hydrogen and a hydrogenation catalyst, the improvement which comprises subjecting the hydrogenation products from said reactor to a first phase separation to obtain a first liquid fraction and a first gaseous fraction, separating from said first gaseous fraction a second liquid fraction at an elevated temperature having a boiling range between about 200° C. and about 500° C., and preheating said slurry by directly mixing at least a portion of said second liquid fraction with said slurry under pressure.

4,214,975

SOLVENT RECOVERY PROCESS FOR PROCESSING OF HYDROCARBONS

Hyman R. Davis, Glen Ridge; Wagih I. Nasr, Belleville; Siegfried M. Roethlin, Glen Rock, and Harold D. Sherwood, Oradell, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed May 10, 1978, Ser. No. 904,710

Int. Cl.² C10G *21/28*

U.S. Cl. 208—33 **13 Claims**



1. In a process for refining a petroleum hydrocarbon fraction selected from the group consisting of a vacuum gas oil, a deasphalted residual oil, and an asphalt-containing residual oil comprising undesirable components of cyclic, naphthenic, olefinic, aromatic, nitrogenous, and sulfurous compounds, or mixtures of any of such compounds wherein undesirable components are separated from said petroleum hydrocarbon fraction by a selective solvent selected from the group consisting of furfural, phenol, N-methyl pyrollidone, nitrobenezene and mixtures thereof and wherein said selective solvent is recovered by evaporation techniques from a solvent-enriched extract phase including said extracted undesirable components, an improved process for recovering said selective solvent from said solvent-enriched phase, which comprises:

(a) heating said solvent-enriched phase and introducing the heated solvent-enriched phase into a first flash zone to effect flashing thereof to form a first vapor stream comprising solvent and a first bottom stream comprising substantially solvent and said undesirable components:

(b) heating said first bottom stream and introducing the heated bottom stream into a second flash zone to effect flashing thereof to form a second vapor stream comprising solvent and a second bottom stream comprising substantially solvent and said undesirable components, said second flash zone being operated at above atmospheric pressure;

(c) heating said second bottom stream;

(d) introducing the heated second bottom stream into a third flash zone to effect flashing thereof to form a third vapor stream and a third bottom stream comprising said undesirable components, said first, second, and third flash zones being operated at incrementally increased ranges of temperatures and pressures whereby the vapor from any successive flash zone is used as a source of heat in the preceding flash zone to effect vaporization in said preceding flash zone; and

(e) recovering said selective solvent from said vapor streams.

4,214,976

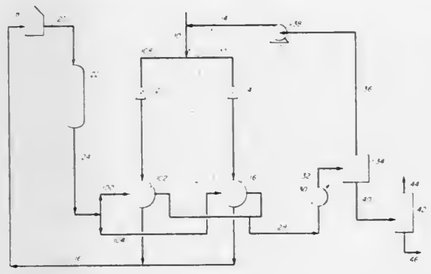
METHOD FOR REMOVING CORONENE FROM HEAT EXCHANGERS

Walter S. Kmak, Scotch Plains, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 2, 1979, Ser. No. 9,228

Int. Cl.[2] C10G *9/16, 39/00;* **C07C** *15/12*

U.S. Cl. 208—48 R **8 Claims**



1. A method for removing a coronene deposit in a reforming process which comprises the steps of:

(a) contacting a hydrocarbonaceous feedstock with a catalyst in the presence of added hydrogen at reforming conditions in a reforming zone;

(b) splitting the total reforming zone effluent into a first stream and a second stream;

(c) passing said first stream into a first train of heat exchangers arranged in parallel with a second train of heat exchangers;

(d) passing said second stream into said second train of heat exchangers, said reforming zone effluent comprising coronene, at least a portion of which deposits in said heat exchangers;

(e) separating the heat exchanged total reforming zone effluent into a hydrogen-rich gaseous phase and a liquid hydrocarbon phase comprising normally liquid hydrocarbons and normally gaseous hydrocarbons, the improvement which comprises reducing the flow of said first stream in said first train of heat exchangers to produce a temperature sufficient to condense at least a portion of said reformer effluent therein such that the resulting condensate contacts said coronene deposit, and simultaneously increasing the flow of said second stream in said second train of heat exchangers.

4,214,977

HYDROCRACKING OF HEAVY OILS USING IRON COAL CATALYST

Ramaswami Ranganathan, Ottawa; Jean-Marie D. Denis, Munster, and Barry B. Pruden, Ottawa, all of Canada, assignors to Energy Mines and Resources Canada, Ottawa, Canada

Division of Ser. No. 951,013, Oct. 13, 1978, abandoned. This application Mar. 14, 1979, Ser. No. 20,505

Claims priority, application Canada, Oct. 24, 1977, 289320

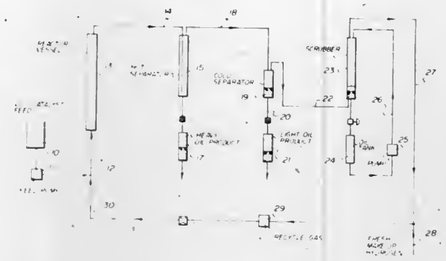
Int. Cl.[2] C10G *13/04, 9/16, 1/06;* **B01J** *23/70*

U.S. Cl. 208—108 **14 Claims**

1. A process for hydrocracking a heavy hydrocarbon oil, a substantial proportion of which boils above 524° C. which comprises:

(a) passing a slurry of said heavy hydrocarbon oil and an iron-coal catalyst in the presence of 500–50,000 s.c.f. of hydrogen per barrel of said hydrocarbon oil through a confined hydrocracking zone, said hydrocracking zone being maintained at a temperature between about 400° and 490° C., a pressure above 500 psig and a space velocity between about 0.5 and 4.0 volumes of heavy hydrocarbon oil per hour per volume of hydrocracking zone capacity,

(b) removing from said hydrocracking zone a mixed effluent containing a gaseous phase comprising hydrogen and vaporous hydrocarbons and a liquid phase comprising heavy hydrocarbons, and



(c) separating said effluent into a gaseous stream containing hydrogen and vaporous hydrocarbons and a liquid stream containing heavy hydrocarbons.

4,214,978

CATALYTIC CRACKING

James V. Kennedy, Westfield, and Lawrence B. Dight, High Bridge, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Menlo Park, N.J.

Division of Ser. No. 958,550, Nov. 8, 1978, Pat. No. 4,171,286, which is a continuation of Ser. No. 757,828, Jan. 10, 1977, abandoned. This application May 29, 1979, Ser. No. 42,918

Int. Cl.[2] C10G *11/04;* **B01J** *8/24, 23/64*

U.S. Cl. 208—120 **2 Claims**

1. In a process for the continuous cyclic fluid catalytic cracking of hydrocarbons with a zeolitic cracking catalyst in the absence of added hydrogen in a reaction zone to produce lower boiling hydrocarbons wherein cracking results in the deposition on the fluid cracking catalyst particles of a solid deposit of combustible hydrocarbons, the catalyst particles containing said deposit are regenerated in a regeneration zone by oxidation in the presence of air at elevated temperature to burn off said deposit, and the catalyst is recycled to said reaction zone where it is used to crack hydrocarbons in the absence of added hydrogen,

the improvement which comprises cycling said particles of cracking catalyst through said reduction and regeneration zones in physical admixture with a minor amount relative to the quantity of said particles of cracking catalyst of fluidizable particles consisting essentially of calcined spray dried microspheres of kaolin clay impregnated with a minor amount of a platinum compound, said platinum compound being present in amount sufficient to promote the oxidation of carbon monoxide to carbon dioxide in a said regeneration zone, said impregnated microspheres having a low surface area as measured by the B.E.T. nitrogen absorption method.

4,214,979

METHOD OF THERMALLY CRACKING HEAVY PETROLEUM OIL

Hajime Nakanishi, Fujisawa; Kiyoji Ozaki, Yokohama; Toshio Shinozuka, Kamakura; Masato Izumi, Yokohama; Takaaki Aiba, Ichihara; Hisatsugu Kaji, Ichihara; Yutaka Sumida, Ichihara, and Takao Ishihara, Ichihara, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi and Chiyoda Chemical Engineering & Construction Co., Yokohama, both of, Japan

Filed Feb. 3, 1978, Ser. No. 874,948

Claims priority, application Japan, Feb. 4, 1977, 52/010632

Int. Cl.[2] C10G *9/36, 9/12, 9/16*

U.S. Cl. 208—128 **3 Claims**

1. In a method of thermally cracking a heavy petroleum oil by heating said heavy petroleum oil to a temperature of 450° to 520° C. in a first furnace and introducing the thus heated heavy petroleum oil into a reactor wherein said heated heavy petroleum oil is brought into contact with an unreactive gas at a temperature of 400° to 2,000° C., thereby thermally cracking said heated heavy petroleum oil at a reaction temperature of 400° to 440° C., the improvement comprising:

(a) using two or more of said reactors;

(b) heating a portion of said heavy petroleum oil to a temperature of 300° to 350° C. in a second furnace;

(c) precharging alternatively each reactor with the heated oil from step (b), said portion of oil in step (b) corresponding to 3 to 30% by weight of said heavy petroleum oil to be thermally cracked within said reactor, prior to the introduction of said heated heavy petroleum oil at a temperature of 450° to 520° C., and keeping the thus precharged heavy petroleum oil at a temperature of 300° to 350° C. within said reactor; and

(d) alternatively feeding said heated heavy petroleum at a temperature of 450° to 520° C. from said first furnace into said reactors containing said precharged portion of said heavy petroleum oil kept at a temperature of 300° to 350° C., and switching the feed from the first reactor to the second reactor when the introduction of said heated heavy petroleum oil at a temperature of 450° to 520° C. into said first reactor is completed, whereby the formation of coke as a byproduct and the rupture of the reactor as a result of a radical temperature rise are prevented.

4,214,980

CATALYTIC HYDROREFORMING PROCESS

Jean-François Le Page, Rueil-Malmaison; Germain Martino, Poissy, and Jean Miquel, Paris, all of France, assignors to Societe Francaise des Produits pour Catalyse, Rueil-Malmaison, France

Filed Dec. 9, 1977, Ser. No. 858,971

Claims priority, application France, Dec. 9, 1976, 76 37413

Int. Cl.[2] C07C *35/08*

U.S. Cl. 208—139 **42 Claims**

1. A process for reforming hydrocarbons or producing aromatic hydrocarbons at a temperature from 510° to 600° C. under a pressure from 1 to 18 kg/cm^2, at an hourly space velocity of from 1 to 10 volumes of liquid charge per volume of catalyst, the molar ratio hydrogen/hydrocarbon being from 5 to 20, said process being conducted in the presence of a catalyst comprising an alumina carrier and, expressed by weight with respect to alumina:

(a) from 0.05 to 0.6% of platinum,

(b) from 0.01 to 2% of rhenium,

(c) from 0.05 to 3% of thallium or indium, and

(d) from 0.1 to 10% of halogen.

4,214,981

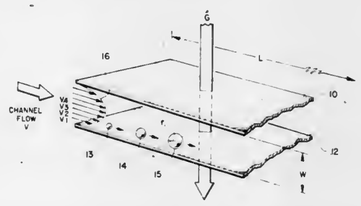
STERIC FIELD-FLOW FRACTIONATION

John C. Giddings, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Oct. 23, 1978, Ser. No. 953,655

Int. Cl.[2] B03B *5/00*

U.S. Cl. 209—155 **15 Claims**



1. In a field-flow fractionation system including a flow channel formed between opposing surfaces of channel walls and a force field disposed across said channel with a field gradient in a direction of one of said wall surfaces which operates as a restraining wall, the improvement comprising a method for steric field-flow fractionation including the step of applying a force field in sufficient relative strength with respect to particles contained within said channel to cause migration of a given class of said particles toward and against said restraining wall such that the mean Brownian displacement of said particles from the restraining wall is approximately equal to or less than the mean radius of said class of particles.

4,214,982

PROCESS AND DEVICE FOR REMOVING PRINTER'S INK FROM A FIBER SUSPENSION

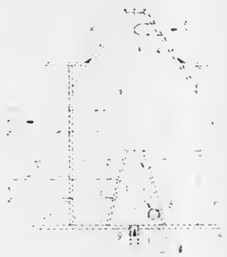
Lothar Pfalzer, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,259

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 2738782

Int. Cl.[2] B03D *1/02, 1/14*

U.S. Cl. 209—164 **22 Claims**



1. A process for removing ink from a fiber suspension, which suspension was made from pulped inked paper, wherein the suspension was made by the addition of chemicals to the pulped inked paper, comprising the steps of:

introducing the suspension into a container relatively nearer to the bottom of the container; flowing the suspension rotationally around the container, for causing the ink and chemicals to form a foam that separates from the suspension;

removing the suspension, from which the foam has separated, from the container relatively nearer to the top of the container; and

discharging the floating foam from the container in the vicinity of the axis of rotation of the suspension around the container and in the area of the axis of the container near the top of the container and above the removal of the suspension.

4,214,983

RECOVERY OF COPPER FROM COPPER OXIDE MINERALS

William T. Rule, Hibbing, Minn., assignor to The Hanna Mining Company, Cleveland, Ohio

Filed Jan. 16, 1979, Ser. No. 3,878

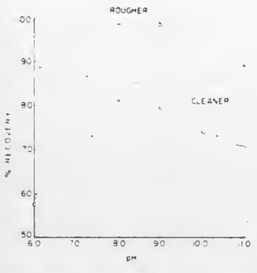
Int. Cl.[2] B03D *1/02*

U.S. Cl. 209—166 **11 Claims**

1. In the method of recovering copper from ores containing copper as atacamite/paratacamite by froth flotation of the copper, the improvement comprising using as a promoter collector, compounds having the formula

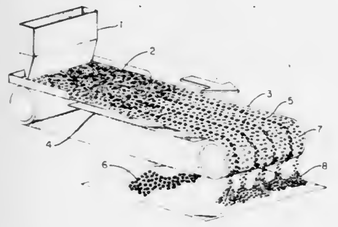
$$RC(OH)=N-O^{\ominus}H_2N^{\oplus}R^1R^2$$

wherein R is an aliphatic group containing from about five to ten carbon atoms or an aromatic group containing from six to



about ten carbon atoms, and R^1 and R^2 are each independently alkyl groups containing from one to about five carbon atoms.

4,214,984
MAGNETIC SEPARATION
Robert C. MacElvain, 725 N. Randolph Ave., Eufaula, Ala. 36027
Filed Jul. 15, 1977, Ser. No. 816,029
Int. Cl.² B03C *1/22*
U.S. Cl. 209—214 **81 Claims**



1. A process for effecting a magnetic separation of a material comprising a relatively more magnetic material and a relatively less magnetic material comprising passing the material, by means of a nonmagnetic force, through a plurality of regions, each of which comprise a relatively more magnetic segment and an adjacent relatively less magnetic segment having a width of at least 0.05 times the width of the magnetic segment, such that the plurality of regions are arranged so as to comprise alternating relatively more magnetic and relatively less magnetic segments, thereby creating a resultant magnetic force, which regions are aligned at an angle of other than 90° in the plane of the surface of the regions to the direction of the result of nonmagnetic force, and wherein the material being processed is maintained in substantially one plane while being passed through the plurality of regions.

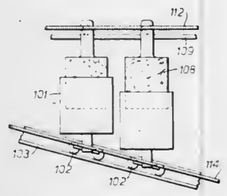
4,214,985
METHOD FOR SEWAGE TREATMENT WITH BACTERIA
Bonnie J. Bodenrader, 11 Castle Heights Rd., Andover, Mass. 01810
Filed Nov. 27, 1978, Ser. No. 963,675
Int. Cl.² C02C *1/02*
U.S. Cl. 210—11 **23 Claims**

1. A method for the treatment of sewage sludge which treatment renders the sludge environmentally acceptable which includes:

inoculating the sludge with Lactobacillus the sludge per se containing the nutritional requirements for the lactobacilli; and

admixing a fermentable carbohydrate in an effective amount with the sludge, the Lactobacillus inoculated and the carbohydrate admixed in an amount sufficient to lower the pH of the sludge to below 4.5 to render the sludge substantially free of coliform, and pathogenic bacteria.

4,214,986
MAGNETIC SEPARATOR FOR SEPARATING MAGNETIZABLE PARTICLES FROM A FLUID, METHOD AND APPARATUS
James H. P. Watson, St. Austell, and James P. E. Jones, Par, both of England, assignors to English Clays Lovering Pochin & Company, Limited, Cornwall, England
Continuation of Ser. No. 792,015, Apr. 28, 1977, abandoned.
This application Oct. 12, 1978, Ser. No. 950,543
Claims priority, application United Kingdom, Apr. 29, 1976, 17567/76
Int. Cl.² B01D *35/06*
U.S. Cl. 210—42 S **16 Claims**



1. A method of separating magnetisable particles from a fluid utilizing a plurality of interconnected open-topped tanks and a plurality of fluid-permeable masses of magnetisable material, which method comprises performing the following operations on each tank;

(a) at least partially filling the tank, with the associated mass of magnetisable material therein, with fluid containing magnetisable particles such that the fluid and magnetisable particles contact the mass of magnetisable material, the fluid and particles being prevented from escaping from the tank during filling;

(b) either before, during or after filling, moving the tank into a separating zone in which a magnetic field is established;

(c) holding the fluid containing the magnetisable particles, within the tank, substantially stationary with respect to the mass of magnetisable material for a finite period of time after completion of steps (a) and (b);

(d) providing relative movement between the tank and the mass of magnetisable material as the tank passes through the separating zone until the mass of magnetisable material is outside the tank, such that the tank and mass of magnetisable material move vertically apart from one another whereby the fluid is drained from the mass of magnetisable material;

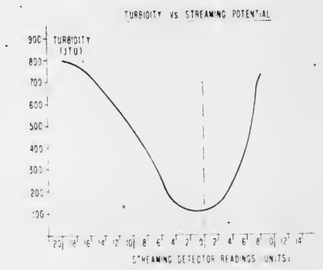
(e) after draining, moving the tank out of the separating zone; and

(f) removing magnetisable particles which have been retained within the mass of magnetisable material by magnetic attraction; wherein the tanks are moved one after another into and out of the separating zone.

4,214,987
TWO STAGE WASTEWATER FLOTATION
Ogden A. Clemens, Downers Grove, Ill., assignor to Dravo Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 752,907, Dec. 21, 1976, abandoned.
This application Oct. 25, 1978, Ser. No. 954,360
Int. Cl.² B03D *1/00*; C02C *5/02*
U.S. Cl. 210—44 **11 Claims**

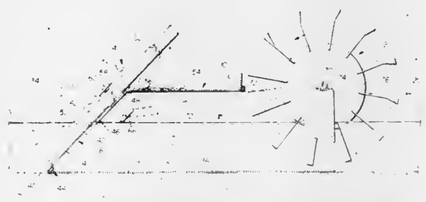
1. A method for removing particulates from wastewater, wherein said particulates comprise proteins, fats, oil or minerals by flotation, to produce readily recoverable skimmings,

comprising: a first stage, said first stage including adjusting the streaming potential of a wastewater to approximately zero, in the absence of any added trivalent metal coagulant compound and by the use of an inorganic acid or base, forming a flow path of the thus adjusted water to a confined location, supplying dense quantities of small bubbles within said confined location, entering overflow from the confined location into a long flotation zone, forming a buoyant first floc in the long flotation zone, and separating the first floc from a first treated wastewater; and a second stage including adding a metal coagulant to



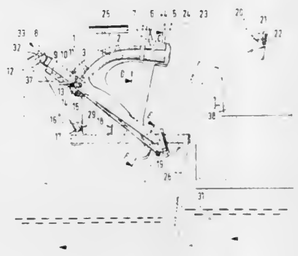
said first treated wastewater, introducing the wastewater and coagulant into a compact and dense zone of fine bubbles originating from a bubble supply, churning the first treated wastewater with said bubbles to form aggregates of bubbles, coagulant and particulates, said aggregates remaining unseparated from the wastewater flow, flowing substantially all of the wastewater flow together with the unseparated aggregates out of said zone, introducing the aggregates and wastewater into a second flotation zone to permit the aggregates to rise to the surface of the wastewater and form a second buoyant floc, and separating the second flock from the wastewater.

4,214,988
DITCH WATER CLEANING APPARATUS
John D. Naffziger, Rte. 1, P.O. Box 34, Loma, Colo. 81524
Filed Apr. 27, 1978, Ser. No. 900,417
Int. Cl.² B01D *35/16*
U.S. Cl. 210—159 **5 Claims**



1. In a ditch water cleaning apparatus of the type including an open ended frame having an intake end mountable in the ditch effective to channel the water therethrough, and an upwardly and rearwardly inclined screen located at the intake end of the frame sized and adapted to remove solid debris from the ditch water, the improved means for constantly removing the debris collected on the screens which comprises: a shaft journalled for rotation adjacent the top of the screen in substantially perpendicular relation thereto, at least two brushes fastened to the shaft for rotation therewith and extending radially outward therefrom in position to successively sweep the surface thereof with a wiping action, brush drive means connected to the brushes and operative to rotate the latter, said brushes being positioned to move off of said screen during a portion of said brush rotation to move debris off of said screen, and stationary brush cleaning means positioned adjacent one edge of said screen to intercept said brushes just prior to said brushes moving back onto said screen to remove debris from said brushes prior to said brushes moving back onto said screen.

4,214,989
APPARATUS FOR CLEANING A SCREEN DISPOSED IN A WATER CHANNEL
Siegfried Rudolph, Hanover, and Josef Nöring, Burgwedel, both of Fed. Rep. of Germany, assignors to Schreiber-Klaranlagen, Dr.-Ing. Aug, Schreiber GmbH & Co. KG, Langenhagen, Fed. Rep. of Germany
Filed Feb. 22, 1979, Ser. No. 14,103
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807574
Int. Cl.² B01D *35/16*
U.S. Cl. 210—159 **15 Claims**



1. An apparatus for cleaning liquids such as sewage which comprises

means forming a longitudinal liquid flow channel having a rectangular cross-section;

a screen positioned across said flow channel, said screen comprising spaced-apart vertically oriented bars;

a single elongated rake arm means;

a screen comb means pivotally connected to one end of said elongated rake arm means, said screen comb means being pivotable around a horizontal axis;

an elongated support arm, one end of which is pivotally connected to the end of said elongated rake arm means opposite the end to which is attached the screen comb means, the pivotal connection therebetween having a horizontal pivot axis, and the other end of which is pivotally connected to a fixed supporting structure located on the rear side of said screen and positioned across said flow channel through which liquid such as sewage flows;

a driving mechanism for moving said rake arm means such that by directly moving said rake arm means along a pathway and as a result of constrained movement of the end of said rake arm means due to pivotal attachment with said elongated support arm, said screen comb means will engage with the bottom of said screen and move upwardly so as to remove material from between the bars thereof, said driving mechanism including a fixedly mounted curved guide track means defining said pathway, a number of fixedly mounted rotatable sprocket wheels, an endless chain means fixedly and pivotally connected at one point to said rake arm means at a point along the length thereof and mounted over a portion of each of said rotatable sprockets wheels to pass along said curved guide track means and follow said pathway, and a driving means connected to one of said rotatable sprocket wheels to cause said one sprocket wheel to rotate and cause said endless chain means to move in one direction along said guide track means;

wherein the pivotal connection between said endless chain means and said rake arm means includes a pin means which extends laterally from said endless chain means to extend beyond said guide track means on which said

endless chain travels, and a single rotatable support roll mounted on said laterally extending pin means between the point where the endless chain means is connected thereto and the point where the rake arm means is connected thereto, said single rotatable support roll being mounted for contact with said guide track means such that said rake arm means is supported in cantilever fashion with respect to said guide track means, and

wherein said guide track means, said pin means, and said support roll are mounted such that said support roll rotates along and in contact with said guide track means concentrically with respect to a longitudinal central plane passing through said flow channel, and wherein the cross-sectional vertical central planes defined by said guide track means and said rake arm means are essentially equidistant from the longitudinal vertical central plane passing through said flow channel.

4,214,990

HOLLOW-FIBER PERMEABILITY APPARATUS

Yasushi Joh, Yokohama, Japan, assignor to Nippon Zeon Co. Ltd., Tokyo, Japan

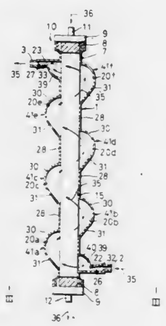
Division of Ser. No. 707,513, Jul. 22, 1976, Pat. No. 4,124,510. This application Jan. 27, 1978, Ser. No. 872,884

Claims priority, application Japan, Jul. 28, 1975, 50/91716; Jul. 30, 1975, 50/92902

The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.

Int. Cl.² B01D *31/00*

U.S. Cl. 210—194 **4 Claims**



1. In a hollow-fibre permeability apparatus, comprising:

a housing defining an interior including a permeating region;

a bundle of permeable-wall hollow fibres disposed at least in said permeating region of said housing;

a first inlet and means for causing a first fluid to flow into said first inlet and through said housing adjacent the exterior wall surfaces of said fibres;

a first outlet for passage of said first fluid out of said housing;

a second inlet and means for causing a second fluid to flow into said second inlet and through said housing inside said fibres such that materials selectively permeate through the walls of said fibres; and

portions of said housing in said permeating region being of enlarged cross-section relative to said bundle to define spaces between said bundle and a wall of said housing into which at least part of said first fluid passes during its passage from said first inlet to said first outlet, the shape of said enlarged cross-section portions promoting cross-flow of said first fluid relative to the length of said fibres,

the improvement comprising means for imparting a lamelliform flow to said first fluid comprising a plurality of circular openings defining said first inlet, said openings through which said first fluid must pass extending transversely across one side of a cross-section of said permeating region in a direction substantially perpendicular to the length direction of said fibres, said circular openings being defined in the outer wall of one of said enlarged cross-section portions whereby the lamelliform flow of said first fluid first engages only the portion of said bundle exposed to said one enlarged cross section portion and said lamelliform flow progresses from said one portion of enlarged cross section through said bundle, then into a second said enlarged cross section portion, then cross-flows through the bundle, and thereafter progresses to said first outlet.

4,214,991

TUBE PRESSURE FILTERS

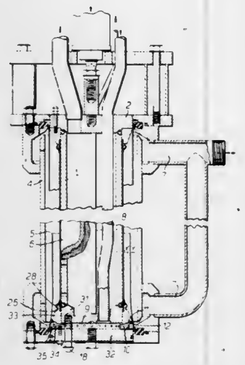
Bernard H. Broad, St. Austell, England, assignor to English Clays Lovering Pochin & Company, Limited, St. Austell, England

Filed Dec. 19, 1978, Ser. No. 970,974

Claims priority, application United Kingdom, Dec. 19, 1977, 52808/77

Int. Cl.² B01D *29/10, 35/00*

U.S. Cl. 210—232 **4 Claims**



1. In a tube pressure filter of the kind which is adapted for high pressure operation and comprises (a) a pair of generally coaxial inner and outer tubular bodies arranged one within the other and adapted to be supported in a generally upright position, the inner tubular body including a cylindrical central section, and upper and lower end sections, each of which end sections includes a portion of greater diameter than the cylindrical central section and a fairing mounted on or adjacent to said portion so as to extend around an end of the cylindrical central section, (b) an impermeable elastic sleeve disposed within and secured to the outer tubular body, (c) a filter element disposed around and supported by the inner tubular body, the filter element comprising a filter cloth sleeve, (d) first outlet means for the discharge from the interior of the inner tubular body of filtrate which has passed through the filter element and through apertures in the inner tubular body, (e) second outlet means for the discharge from the tube pressure filter of particulate solid, and (f) means for displacing the tubular bodies axially relative to one another between a first position and a second position; the arrangement being such that in the first position of said tubular bodies they cooperate with each other to define a closed chamber of annular cross section which is divided into generally coaxial and non-intercommunicating inner and outer compartments by said impermeable elastic sleeve, the inner compartment including an inlet for feed material comprising a mixture of a liquid and a particulate solid to be pressure filtered and the outer compartment including an inlet for a hydraulic fluid under pressure, and in the second position of said tubular bodies said chamber is open to enable the particulate solid material to be discharged from the inner compartment; the improvement which comprises constructing each of the fairings and the ends of the filter cloth sleeve so that each end of the filter cloth sleeve is or can be

secured to the outwardly facing surface of one of said fairings, each fairing having an annular groove formed in its outwardly facing surface to enable an end of the filter cloth sleeve to be secured to said outwardly facing surface; said improvement enabling said filter cloth sleeve to be fitted during replacement of a said filter cloth without completely removing said inner tubular body from said outer tubular body, thereby reducing the time consumed in replacing said filter cloth sleeve.

4,214,992

WATER COLLECTING AND DISTRIBUTING APPARATUS DISPOSED IN A LOWER PORTION OF HIGH SPEED FILTER BASIN

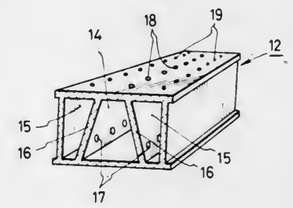
Kenji Sasano, Chiba, and Ichiro Shiramasa, Tokyo, both of Japan, assignors to Mitsui Engineering and Shipbuilding Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1978, Ser. No. 931,429

Claims priority, application Japan, Aug. 12, 1977, 52-107841[U]

Int. Cl.² B01D *23/16, 23/20*

U.S. Cl. 210—274 **5 Claims**



1. A water collecting and distributing apparatus to be disposed in a lower portion of a high speed filter basin, said apparatus comprising a plurality of blocks positioned and aligned in the lower portion of the filter basin, a gravel layer formed on the blocks, a filter medium formed on the gravel layer, a water collecting dam for collecting filtrate passing through said blocks, an air introducing means for feeding air to the filter basin through said blocks and a water introducing means for feeding water to the filter basin through said blocks, wherein each said block has a flow passage for air and water formed in the central portion thereof, at least one water dispersing chamber formed adjacent to said flow passage, at least one first communication hole means formed in a partition wall between said flow passage and dispersing chamber, at least one second hole means for jetting air and/or water, formed in the top wall of said flow passage, and at least one third hole means for jetting only water, formed in the top wall of said dispersing chamber.

4,214,993

APPARATUS FOR SEPARATING FLUIDS

Jesse G. Forsythe, Jr., Media, Pa.; Donald R. Johnson, Wilmington, and Linda M. St. Onge, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 3, 1978, Ser. No. 892,507

Int. Cl.² B01D *27/02*

U.S. Cl. 210—282 **12 Claims**

1. Apparatus for processing fluids comprising, in combination,

an extraction cartridge having an enlarged middle portion, tapered inward toward its lower end, adapted to receive said fluids and a tubular lower portion communicating with said middle portion,

separating column material disposed in said lower portion, the bottom end of said lower portion defining a nozzle for fluids passing through said lower portion,

a first container, the interior lower end of said container defining longitudinal interiorly extending radial guides for positioning said lower portion of said extraction cartridge and protecting said nozzle,

the top portion of each of said extraction cartridge and said first container defining enlarged sections of equal inside diameter,

a closure member insertable into the top end of either said extraction cartridge or said first container,



said extraction cartridge middle portion and said first container each formed to have a mating taper to permit the nesting and sealing of said cartridge in said container, whereby said separating column material and said nozzle are protected and sealed when said closure member is inserted in said cartridge and said cartridge is nested in said first container.

4,214,994

REVERSE OSMOSIS MEMBRANE

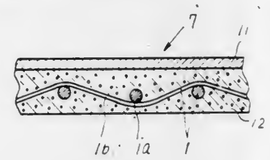
Motoi Kitano, Kawanishi; Isao Sumita, Toyonaka, and Yukio Sakamoto, Mino, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 14, 1977, Ser. No. 861,191

Claims priority, application Japan, Dec. 20, 1976, 51-153834; Mar. 10, 1977, 52-026823; Apr. 4, 1977, 52-038811; Apr. 4, 1977, 52-038812; Apr. 5, 1977, 52-039256; Apr. 25, 1977, 52-048179

Int. Cl.² B01D *25/04*

U.S. Cl. 210—490 **11 Claims**



1. An asymmetric high flux reverse osmosis membrane of the Loeb-type comprising, in sequential combination,

(1) a thin active layer in contact with liquid supplied to said membrane structure;

(2) a high polymer gel layer carried on and supporting said active layer; and

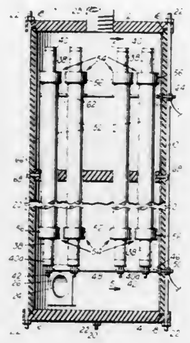
(3) at least one porous non-elastic sheet contained within and surrounded on all sides by said gel layer and spearated from said active layer for increasing the flux of said membrane.

4,214,995

OZONE GENERATOR

Laurence M. Saylor, 4968 Rickman Rd. NE., Salem, Oreg. 97303

Filed Nov. 1, 1976, Ser. No. 737,216
Int. Cl.² B01K *1/00*; C01B *13/11*
U.S. Cl. 250—539 **2 Claims**



1. An ozone generator comprising:
(a) an elongated hollow housing closed at both ends,
(b) an air inlet adjacent one end of the housing,
(c) an ozone outlet adjacent the opposite end of the housing,
(d) a plurality of elongated electrode assemblies in the housing extending longitudinally therein and spaced apart from each other, and
(e) an electrically non-conductive air barrier wall disposed transversely within the housing intermediate the ends of the housing and electrode assemblies, forming a seal about the inner wall of the housing and the outer surfaces of the outer electrodes of the electrode assemblies for preventing the passage of air between the spaced electrode assemblies from the air inlet to the ozone outlet,
(f) each electrode assembly comprising:
(1) elongated inner and outer electrodes of tubular form disposed concentrically with respect to each other and arranged for connection across a source of high voltage,
(2) an elongated insulator member of dielectric material of tubular form disposed concentrically between the inner and outer electrodes and forming with one of said electrodes an elongated passageway therebetween communicating at one end with the air inlet end of the housing and at the opposite end with the ozone outlet end of the housing, and
(3) a multiplicity of spaced protrusions on the surface of one of the electrodes facing the other electrodes, forming a multiplicity of electrical discharge points between said electrodes.

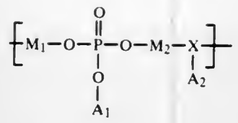
4,214,996

MINERAL ENRICHMENT COMPOSITION AND METHOD OF PREPARING SAME

Bruce D. Buddemeyer; William A. Neville; Nancy A. Rozzo, and Richard G. Bourne, all of Kansas City, Mo., assignors to R.G.B. Laboratories, Inc., Kansas City, Mo.

Filed Dec. 19, 1978, Ser. No. 970,935
Int. Cl.² A23L *1/30*
U.S. Cl. 252—1 **19 Claims**

1. A composition of matter which includes a moiety of the generalized formula



wherein M_1 and M_2 are polyvalent and respectively taken from the group consisting of calcium, magnesium, iron, copper, boron, manganese, molybdenum, nickel, and zinc,
A_1 and A_2 are respectively taken from the group consisting of hydrogen and the alkali metals, and
X is an organic acid moiety having at least three carboxyl groups therein.

10. A method of synthesizing metal-containing products having a high degree of dispersibility in aqueous media, comprising the steps of:
forming an admixture by admixing in an aqueous medium respective quantities of:
(1) a cation source selected from the group consisting of compounds of calcium, magnesium, iron, copper, boron, manganese, molybdenum, nickel, and zinc,
(2) an alkali metal phosphate source selected from the group consisting of alkali metal dihydrogen phosphate, dialkali metal phosphate, trialkali metal phosphate, and a mixture of an alkali metal source and phosphoric acid; and
(3) an organic acid having at least three carboxyl groups therein,
the molar ratios of said reactants being such that the ratio for phosphate ion to acid is from about 0.5:1 to 3:1; for alkali metal ions to phosphate ions, from about 1:1 to 6:1; for non-alkali metal cations to phosphate, from about 0.5:1 to 3:1; for non-alkali metal cations to acid, from about 1:1 to 5:1; and for alkali metal ions to acid, from about 0.5:1 to 7:1;
heating said admixture for a sufficient period of time and at a temperature to yield said products.

4,214,997

SOIL-RELEASE COMPOSITIONS

Ronald M. Morris, Wirral, and Stuart K. Pratley, Birkenhead, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,818
Claims priority, application United Kingdom, Oct. 26, 1977, 44580/77
Int. Cl.² C11D *3/26*; D06M *15/30*
U.S. Cl. 252—8.8 **5 Claims**

1. A soil-release composition comprising an aqueous solution of acid pH containing a dissolved complex of from 0.1 to 10% by weight of the composition of a water-soluble polycarboxylate polymer having at least 40% of carboxylic acid group by weight and whose units essentially have the structure $-C(R)(COX)CH_2-$; where R is H, methyl or ethyl, X is OH, NH_2 or a C_1 to C_8 alkoxy group, and where X is OH in sufficient numbers of those units to make the polymer water-soluble and from 0.1 to 1.2 molar equivalents of a polyoxyalkylene nonionic detergent having an HLB of from 11 to 15 and contains an average of from 5 to 15 ethenoxy groups for each carboxylic acid group of the polymer, and sufficient of an insolubilising organic cationic quaternary ammonium surfactant compound to precipitate the complex when the aqueous solution is diluted with water at 20° C. of pH in the range from 6 to 8 to a 0.005% concentration of the polymer.

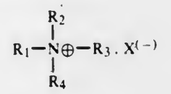
4,214,998

QUATERNARY AMMONIUM COMPOUNDS USEFUL AS FABRIC SOFTENING AGENTS

David R. Joy, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 7, 1979, Ser. No. 10,597
Claims priority, application United Kingdom, Feb. 24, 1978, 7461/78
Int. Cl.² D06M *13/46*
U.S. Cl. 252—8.8 **8 Claims**

1. A composition comprising a mixture of quaternary ammonium compounds having the formula:



in which X represents a quaternary anion; R_1 and R_2, which may be the same or different within a molecule, are long chain alkyl groups containing from 13 to 15 carbon atoms in each group, the groups being both straight chain and branched, 65 to 75% C_{13} groups with 35 to 25% C_{15} groups, the percentages being calculated on the total of long chain alkyl groups, with 40 to 55 wt % straight chain and 60 to 45 wt % 2-alkyl branched chain where the 2-alkyl group is predominantly methyl; and R_3 and R_4, which may be the same or different within a molecule, are short chain alkyl groups containing one to four carbon atoms in each group.

4,214,999

SURFACTANT FLOODING OIL RECOVERY PROCESS

Joseph T. Carlin, Houston, Tex.; James W. Ware, Tulsa, Okla.; Melvin E. Mills, Jr., Salem, Ill., and Timothy N. Tyler, Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 746,642, Dec. 1, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,444
Int. Cl.² E21B *43/22*
U.S. Cl. 252—8.55 D **3 Claims**

1. A method of recovering petroleum from a subterranean petroleum-containing formation penetrated by at least one injection well and by at least one spaced apart production well, said wells being in fluid communication with the formation, comprising:
(a) injecting into the formation via the injection well an aqueous, saline fluid having a salinity greater than 20,000 parts per million total dissolved solids and containing a surfactant comprising petroleum sulfonates whose average equivalent weight is from 350 to 400, from 15 to 35 percent of said petroleum sulfonates having equivalent weights of 350 or less, from 30 to 50 percent of said petroleum sulfonates having equivalent weights greater than 350 and less than 500, and from 10 to 40 percent of said petroleum sulfonates having equivalent weights of 500 and above and a solubilizing co-surfactant selected from the group consisting of ethoxylated alkanols, ethoxylated alkylphenols, alkyl or alkylaryl polyethoxy sulfates, alkyl or alkylaryl polyalkoxyalkyl sulfonates, and mixtures thereof, said surfactant fluid displacing petroleum toward the production well; and
(b) recovering petroleum displaced by the surfactant fluids from the formation and via the production well.

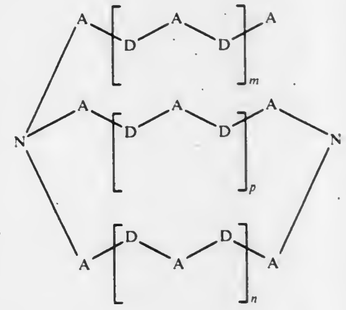
4,215,000

DISSOLVING BARIUM SULFATE SCALE WITH AQUEOUS SOLUTIONS OF BICYCLIC MACROCYCLIC POLYETHERS AND ORGANIC ACID SALTS

Feike De Jong; David N. Reinhoudt, and Gerridina J. Torny-Schutte, all of Amsterdam, Netherlands, assignors to Shell Development Company, Houston, Tex.

Filed Oct. 16, 1978, Ser. No. 951,701
Claims priority, application United Kingdom, Apr. 20, 1978, 15674/78
Int. Cl.² C09K *3/00*
U.S. Cl. 252—8.55 B **14 Claims**

1. A process for dissolving barium sulphate solid from a remote location into which fluid can be flowed which process comprises:
flowing into said remote location and into contact with the barium sulphate an aqueous liquid consisting essentially of water, a bicyclic macrocyclic polyether, an alkali metal salt of a polycarboxylic organic acid in a proportion which is not more than that of said polyether but is sufficient to catalytically increase the rate at which barium sulphate is dissolved and enough dissolved alkaline inorganic alkali metal or ammonium material to provide a solution pH of at least about 8;
using as the bicyclic macrocyclic polyether a compound of the formula:



wherein (a) A represents a hydrocarbon radical having up to 12 carbon atoms and D represents a member of the group consisting of oxygen atoms, sulfur atoms, hydrocarbon radicals having up to 12 carbon atoms and $=N-R^2$ groups in which R^2 represents a hydrogen atom, hydrocarbon radical having up to 12 carbon atoms, a hydrocarbonsulfonyl radical having up to 12 carbon atoms, an alkoxycarbonyl radical having fewer than 5 carbon atoms, an alkoxycarbonyl-methylene radical having fewer than 5 carbon atoms or a carboxymethylene radical, (b) at least two of the D's represents a member of the group consisting of sulphur atom or $=N-R^2$ group, (c) m, n and p are integers from 0 to 5 inclusive, and (d) the bicyclic macrocyclic polyether contains an intramolecular cavity which is preferentially receptive to the cations of the alkaline earth metals.

4,215,001

METHODS OF TREATING SUBTERRANEAN WELL FORMATIONS

Eugene A. Elphingstone; Marvin D. Misak, and James E. Briscoe, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 871,725, Jan. 23, 1978, abandoned. This application Oct. 20, 1978, Ser. No. 953,287
Int. Cl.² E21B *43/27*, *43/26*
U.S. Cl. 252—8.55 C **25 Claims**

1. A method of fracturing a subterranean well formation comprising the steps of:

combining an aqueous solution of acid other than hydrofluoric acid with an aqueous alkali metal silicate solution having a pH of greater than about 11 in an amount sufficient to lower the pH of the resulting mixture to a level in the range of from about 7.5 to about 8.5 thereby forming a polymerized alkali metal silicate gel;

shearing said gel to thereby obtain a highly viscous thixotropic fracturing fluid; and

introducing said fracturing fluid into said subterranean formation at a flow rate and pressure sufficient to produce a fracture therein.

4,215,002

WATER-BASED PHOSPHONATE LUBRICANTS

Richard S. Fein, Poughkeepsie, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,374

Int. Cl.[2] C10M *1/46*

U.S. Cl. 252—32.5 **3 Claims**

1. A water-based lubricating composition suitable for metal cutting, grinding, and forming operations and as a hydraulic fluid, comprising an emulsion containing from 0.5 to 4.0 percent of a C_6 to C_{18} alkylphosphonate or an amine adduct thereof and an ethoxylate of an acid or an alcohol containing from 3 to 20 ethoxy groups, balance water.

4,215,003

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Joseph H. Finley, Metuchen, and John H. Blumbergs, Highland Park, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 20, 1978, Ser. No. 962,501

Int. Cl.[2] C11D *3/34, 3/28, 7/54*; D06L *5/20*

U.S. Cl. 252—99 **13 Claims**

7. A bleaching composition consisting of essentially a peroxygen bleaching compound and as a peroxygen activator therefor an effective amount of an heterocyclic sulfonate ester wherein the heterocyclic moiety includes a 5 to 6 membered heterocyclic ring containing 1 to 3 hetero atoms selected from the class consisting of —N—, —O— and —S— and the sulfonic acid is selected from the class consisting of an alkanesulfonic acid of 1 to 18 carbon atoms and an arenesulfonic acid of the benzene and naphthalene series.

8. The composition according to claim 7 wherein the peroxygen compound is sodium perborate tetrahydrate.

4,215,004

SLURRIED LAUNDRY DETERGENT

James F. Borgerding, and Robert T. Claus, both of Cincinnati, Ohio, assignors to Chemed Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 18,292, Mar. 6, 1979, abandoned. This application Mar. 28, 1979, Ser. No. 24,800

Int. Cl.[2] C11D *7/06*

U.S. Cl. 252—156 **3 Claims**

1. A slurry detergent consisting essentially of:

Components	Wt. %
Water	45.0–73
Water dispersible cross-linked interpolymer of a monomeric mixture consisting essentially of a monomeric polymerizable alpha-beta monoolefinically unsaturated lower aliphatic carboxylic acid, and a polyether of a polyol selected from the class consisting of oligo saccharides, reduced derivatives thereof in which the carbonyl group is converted to an alcohol group, and pentaerythritol, the hydroxyl groups of said polyol which are modified being etherified with allyl groups, said polyol having at least two allyl ether groups per polyol molecule	0.3–1.3
NaOH or KOH, dry basis	5.5–19.5
Non-ionic surfactant	2.0–8.0
Polyphosphate selected from the group consisting of alkali metal pyrophosphates, sodium hexametaphosphate, and sodium tripolyphosphate	0.0–20.0
Sodium polyacrylate, dry basis	0.2–2.0
Alkyl aryl sulfonic acid	0.5–4.0
Optical brightener	0.0–0.35
Sodium aluminosilicate	0.0–25.0
Sodium carboxymethylcellulose	0.0–1.5

4,215,005

ORGANIC STRIPPING COMPOSITIONS AND METHOD FOR USING SAME

John E. Vander Mey, Stirling, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 729,515, Oct. 4, 1976, Pat. No. 4,165,295. This application Jan. 30, 1978, Ser. No. 873,340

Int. Cl.[2] C11D *7/08, 7/32, 7/34, 7/50*

U.S. Cl. 252—153 **20 Claims**

1. In an improved organic stripping composition for removing polymeric organic substances from aluminized inorganic substrates comprising at least one organic sulfonic acid of the formula

$$R—SO_3H$$

wherein R is an organic radical selected from the group consisting of alkyl containing 1 to 18 carbon atoms, monohydroxyalkyl containing 1 to 18 carbon atoms, aryl containing 6 to 10 carbon atoms, monoalkylaryl wherein the alkyl group contains 1 to 14 carbon atoms, dialkylaryl wherein each alkyl group contains 1 to 4 carbon atoms, monohydroxyaryl containing 6 to 10 carbon atoms, monoalkyl-hydroxyaryl containing 7 to 11 carbon atoms and monochloro-hydroxyaryl containing 6 to 10 carbon atoms, and at least one organic solvent, the improvement which comprises incorporating a hydrogen fluoride complex comprising HF at about 5 to about 300 ppm by weight of fluoride per weight of composition and at least about 0.1 mols per mol of HF of an organic complexing agent having a nitrogen with an unshared electron pair selected from the group consisting of heterocyclic aromatic and heterocyclic saturated compounds containing a cyclic nitrogen with an unshared electron pair, N-substituted and unsubstituted amides and substituted and unsubstituted anilines.

4,215,006

2-AND 3-CYCLOTETRADECEN-1-ONE TO AUGMENT OR ENHANCE THE AROMA OF SOLID OR LIQUID DETERGENTS

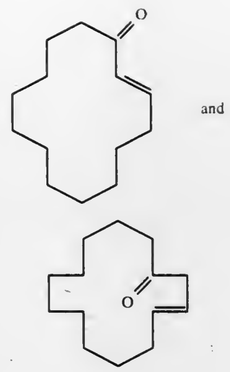
Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Manfred H. Vock, Locust; Domenick Luccarelli, Jr., Ocean; Frederick L. Schmitt, Holmdel; Gilbert Stork, Englewood, all of N.J.; Timothy Macdonald, Nashville, Tenn., and Arthur L. Liberman, Highlands, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 973,093, Dec. 26, 1978, Pat. No. 4,183,965. This application Jun. 27, 1979, Ser. No. 52,830

Int. Cl.[2] C11D *3/50, 9/44*

U.S. Cl. 252—174.11 **4 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid ionic, cationic or nonionic detergent consisting of the step of intimately admixing with a solid or liquid detergent base from 0.05% up to 5% of said detergent base of one or more 2- and 3-cyclotetradecen-1-ones having a structure selected from the group consisting of:



and

4,215,007

PROCESS FOR THE MANUFACTURE OF LOW-PHOSPHORUS OR PHOSPHORUS-FREE DETERGENTS CONTAINING ALUMINOSILICATES

Peter Krings, Krefeld; Josef Huppertz, Dusseldorf-Holthausen; Herbert Latka, Neuss; Gerhard Sperling, Hilden; Milan J. Schwuger, Haan, and Heinz Smolka, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 592,924, Jul. 3, 1975, abandoned. This application Oct. 3, 1978, Ser. No. 948,219

Claims priority, application Austria, Jul. 4, 1974, 5522/74

Int. Cl.[2] C02B *1/44*; C11D *3/12, 11/00, 11/02*

U.S. Cl. 252—174.25 **8 Claims**

1. A process for the manufacture of a low phosphorus or phosphorus-free spray dried detergent powder containing less than 6% by weight calculated as phosphorus, of phosphorus-containing compounds, from 5% to 30% by weight of at least one surface-active compound selected from the group consisting of anionic surface-active compounds, non-ionic surface-active compounds and zwitterionic surface-active compounds of which from 29.5% to 100% by weight of said surface-active compounds are nonionic surface-active compounds, from 15% to 90% by weight of water-soluble builder salts, from 0 to 50% by weight of other detergent powder additives, and from 5% to 50% by weight of at least one finely-dispersed water-insoluble silicate compound containing at least some combined water and having primary particles in the size range of from 100μ to 0.1μ and a calcium binding powder when measured at 22° C. by the Calcium Binding Power Test Method set out in the specification, of from 100 to 200 mg CaO/gm of anhydrous active substance and the formula on the anhydrous basis

$$(M_{2/n}O)_x \cdot Me_2O_3 \cdot (SiO_2)_y$$

where M is a cation of the valence n, selected from the group consisting of sodium and potassium, x is a number from 0.7 to 1.5, Me is a member selected from the group consisting of aluminum and boron, and y is a number from 0.8 to 6, comprising the steps of spraying an aqueous slurry of at least 50% by weight of the total solids of the final spray dried detergent, of detergent ingredients, into a fall space while passing a large volume of air therethrough at an inlet temperature in excess of 150° C. and simultaneously injecting into said fall space, a powder comprising at least 25% by weight of the total amount of said silicate compound, at a rate in proportion to the rate of said spraying whereby the desired total solids ratio of ingredients in said spray dried detergent powder is maintained, and recovering said spray dried detergent powder.

4,215,008

RARE EARTH-CONTAINING ALLOYS AND METHOD FOR PURIFICATION OF HYDROGEN GAS THEREWITH

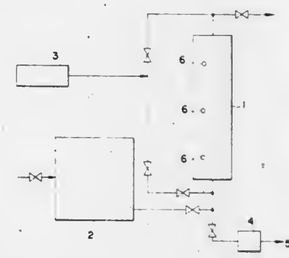
Zenzi Hagiwara, Kusatsu; Sigeo Matsui, Kobe; Susumu Sakaguchi, Yokohama, and Yoshio Yamanaka, Takefu, all of Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo and Osaka Oxygen Industries Ltd., Osaka, both of, Japan

Continuation of Ser. No. 688,422, May 20, 1976, abandoned. This application Jun. 27, 1978, Ser. No. 919,715

Claims priority, application Japan, May 26, 1975, 50/62621; May 28, 1975, 50/64674

Int. Cl.[2] B01D *15/08*

U.S. Cl. 252—184 **1 Claim**



1. A method for purifying impure hydrogen gas comprising

(a) introducing a powder composed of an alloy with the composition expressed by the formula $R(M_{1-x}{}^1M_x{}^2)_z$ where R is a rare earth metal, M^1 is a metal selected from the group consisting of nickel and cobalt, M^2 is a metal selected from the group consisting of iron, copper and chromium, x is 0 or a positive number not exceeding 0.5 and z is a positive number from 2 to 9, both inclusive, said powder having a particle size distribution ranging from 20 to 325 mesh by Tyler standard;

(b) heating the alloy powder at a temperature from 100° to 250° C. in a vacuum or at a temperature from 90° to 250° C. in an atmosphere of hydrogen gas;

(c) introducing hydrogen gas into the vessel containing the alloy powder to a pressure from 10 to 50 kg/cm^{2}G;

(d) evacuating or heating the vessel;

(e) introducing a quantity of impure hydrogen into the vessel to a hydrogen partial pressure of from 1 to 30 kg/cm^{2}G;

(f) purging the vessel of the impure hydrogen gas by means of a high purity hydrogen gas; and

(g) evacuating or heating the vessel so that hydrogen absorbed in the alloy is released and recovered as purified hydrogen gas.

4,215,009

PURIFICATION METHOD

Placido M. Spaziante, Lugano, Switzerland; Luigi Giuffre; Aldo Castoldi, both of Milan, Italy, and Giancarlo Sioli, Cernobbio, Italy, assignors to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Sep. 7, 1978, Ser. No. 940,273

Claims priority, application Italy, Jun. 2, 1978, 24141 A/78

Int. Cl.[2] B01D *11/02, 17/00*

U.S. Cl. 252—184 **19 Claims**

1. A process for reducing metal ion concentration in aqueous alkali metal halide brines to a level below 0.2 mg/l comprising contacting an aqueous alkaline alkali metal halide brine having a pH of 10.5 to 12 and containing metal ion impurities with a water-immiscible organic solvent containing an effective amount of at least one complexing agent of the group consisting of 1-aryl-3-methyl-4-acylpyrazol-5-one wherein the acyl is derived from an organic carboxylic acid of 1 to 18 carbon atoms and a thenoyl-substituted keto compound and a complexing additive selected from the group consisting of trialkylphosphine oxides and trialkylphosphates.

11. A composition for reducing metal ion content of aqueous alkaline solutions comprising a solution of an water-immiscible organic solvent containing (a) 0.1 to 0.001 M of at least one complexing agent of the group consisting of 1-aryl-3-methyl-acyl-pyrazol-5-one wherein the acyl is derived from an organic carboxylic acid of 1 to 18 carbon atoms and a thenoyl-substituted keto compound and (b) 0.1 to 5% by volume of a complexing additive selected from the group consisting of trialkyl phosphine oxides and trialkylphosphates.

4,215,010

PHOTOCHROMIC COMPOUNDS

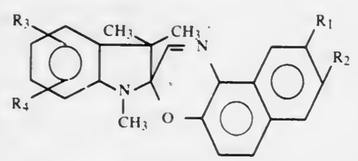
Richard J. Hovey, Sturbridge; Nori Y. C. Chu, Southbridge; Peter G. Piusz, Longmeadow, all of Mass., and Charles H. Fuchsman, Bemidji, Minn., assignors to American Optical Corporation, Southbridge, Mass.

Filed Sep. 8, 1978, Ser. No. 940,535

Int. Cl.[2] G02B *5/23, 1/04;* **C07D** *265/38*

U.S. Cl. 252—300 **14 Claims**

1. A compound having the formula:



wherein one of R_1 and R_2 is halogen or lower alkoxy, and the other is hydrogen, and R_3 and R_4 are hydrogen, lower alkyl, lower alkoxy, or halogen.

10. A photochromic optical element comprising, (A) a transparent plastic host and (B) an effective amount of photochromic compound selected from the group consisting of 1,3,3-trimethyl-9'-methoxy-; 1,3,3-trimethyl-9'-ethoxy-; 1,3,3-trimethyl-8'-bromo-; 1,3,3,5-tetramethyl-9'-methoxy-; 1,3,3,6-tetramethyl-9'-methoxy-; 1,3,3,7-tetramethyl-9'-methoxy-; 1,3,3,4,5-pentamethyl-9'-methoxy; 1,3,3,5,6-pentamethyl-9'-methoxy-; 1,3,3,4,7-pentamethyl-9'-methoxy-; 1,3,3,5,7-pentamethyl-9'-methoxy-; 1,3,3,6,7-pentamethyl-9'-methoxy-; 1,3,3-trimethyl-5,9'-dimethoxy-; 1,3,3-trimethyl-4,7,9'-trimethoxy-; 1,3,3-trimethyl-5-chloro-9'-methoxy-; 1,3,3,4,5-pentamethyl-8'-bromo-; 1,3,3,5,6-pentamethyl-8'-bromo-spiroindolinenaphthooximes and mixtures thereof.

4,215,011

CATALYST SYSTEM FOR SEPARATING ISOBUTENE FROM C_4 STREAMS

Lawrence A. Smith, Jr., Houston, Tex., assignor to Chemical Research and Licensing Company, Houston, Tex.

Continuation-in-part of Ser. No. 928,397, Jul. 27, 1978. This application Feb. 21, 1979, Ser. No. 13,730

Int. Cl.[2] B01J *31/08, 35/02*

U.S. Cl. 252—426 **7 Claims**

1. A catalyst system for use in a reaction-distillation column comprising a plurality of closed cloth pockets containing a particulate catalytic material, arranged and supported in said reaction-distillation column by wire mesh intimately associated with said closed cloth pockets.

4,215,012

CATALYST FOR INCREASING THE TENSILE STRENGTH AND CORE HARDNESS OF A SAND MOLD OR CORE

Khe-Bing J. Kho, and Patrick H. Stewart, both of Danville, Ill., assignors to C L Industries, Inc., Danville, Ill.

Division of Ser. No. 809,546, Jun. 23, 1977. This application Mar. 28, 1978, Ser. No. 891,137

Int. Cl.[2] C08G *2/06;* **C08K** *5/11*

U.S. Cl. 252—429 R **6 Claims**

1. A sulfur-free catalyst composition for the polymerization of a thermosetting acid hardenable resin, said catalyst consisting essentially of a Lewis or Brönsted acid and 3-50% wt., based on said acid, of a dialkyl ester of the formula:

$$R_1OOC(CH_2)_nCOOR_2$$

wherein R_1 and R_2, which may be the same or different, are selected from alkyl of 1 to 20 carbon atoms and n is 2, 3 or 4, undiluted or in solution.

3. The catalyst of claim 1 wherein said Lewis acid is ferric chloride.

4,215,013

PROCESS FOR THE POLYMERIZATION OF 1-ALKENES

Jacobus A. Loontjens, Meerssen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Oct. 31, 1978, Ser. No. 957,003

Claims priority, application Netherlands, Nov. 1, 1977, 7711974

Int. Cl.[2] C08F *4/02, 4/64*

U.S. Cl. 252—429 B **14 Claims**

1. An improved catalyst system for the polymerization and copolymerization of 1-alkenes which contains a titanium halogenide component supported on a magnesium halogenide material and an organoaluminum component containing a complex of an organic aluminum compound with an ester of a carboxylic organic acid, and wherein the magnesium halogenide has at most about 0.2% H_2O by weight and at most about 0.1 mgeq magnesium oxide per g of magnesium halogenide, and which has been prepared by heating a magnesium halogenide containing water and/or magnesium oxide in a gaseous flow of a carbon halogenide vapor and/or of a mixture of carbon monoxide and a halogen.

4,215,014

$T_nMR'_{-}$COCATALYSTS

Arthur W. Langer, Jr., Watchung, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 890,324, Mar. 28, 1979, abandoned. This application Jun. 18, 1979, Ser. No. 49,086

Int. Cl.[2] C08F *4/64*

U.S. Cl. 252—429 B **15 Claims**

1. An improved catalyst composition which comprises a mixture of:

(a) a Group IVB to VIII transition metal halide;

(b) at least one alkyl metal cocatalyst having the formula $TnMR'_{3-n}$ wherein n=1 or 2, T is R_3DCH_2, D being selected from the group consisting of Si, Ge and Sn, M being selected from the group consisting of Al, Ga and In, R being a methyl or ethyl group and R' is selected from the group consisting of C_1–C_8 primary alkyl or aralkyl groups including unhindered branched groups, a molar ratio of said alkyl metal cocatalyst to said transition metal halide being about 0.5:1 to about 50:1; and

(c) at least one Lewis base in sufficient amounts, said Lewis base does not cause excessive cleavage of metal-carbon bonds or loss of active sites.

4,215,015

HIGH OCTANE FCC CATALYST

Hosheng Tu, Shorewood, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 2, 1979, Ser. No. 8,823

Int. Cl.[2] B01J *37/02, 29/08*

U.S. Cl. 252—453 **14 Claims**

1. A catalytic composite comprising a zeolitic crystalline aluminosilicate dispersed in a silica-alumina matrix and having pore sizes in the intermediate range of about 100 to about 275 Angstroms in diameter, said composite having been manufactured by:

(a) dispersing a zeolitic crystalline aluminosilicate in water to prepare a slurry;

(b) preparing a gelation product by mixing together in an aqueous medium an inorganic aluminum salt, a water soluble anionic polyacrylamide and an alkali-metal silicate;

(c) adding said slurry to said gelation product to obtain a slurry gel; and

(d) spray drying said slurry gel at a temperature sufficient to decompose said organic polymer.

4,215,016

EXCHANGED FAUJASITE ZEOLITE CATALYST CONTAINING SAME AND PROCESS FOR PRODUCING SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 808,268, Jun. 20, 1977, Pat. No. 4,164,483, which is a continuation-in-part of Ser. No. 718,166, Aug. 27, 1976, Pat. No. 4 ,085,069, and a continuation-in-part of Ser. No. 718,167, Sep. 8, 1976, Pat. No. 4,058,484. This application Feb. 3, 1978, Ser. No. 874,754

Int. Cl.[2] B01J *29/04, 29/08*

U.S. Cl. 252—455 Z **8 Claims**

1. A method of producing an exchanged zeolite of the faujasite type which comprises mixing a sodium zeolite of the faujasite type with a solution of a salt of a member of the group consisting of ammonium and the metals of the groups 1b, 2a, 2b, 3a, 6b, and 7b, of the periodic system, and two or more thereof, the quantity of the zeolite, and the concentration of the cations, being in quantity sufficient to establish a ratio of the equivalents of cation in the solution at super atmospheric pressure, per equivalent of Na cation in the zeolite in the mixture in excess of about 1, heating the solution to a temperature in the range of about 300° F. and up but less than about 500° F. for a period of time to reduce the sodium content of the zeolite, expressed as Na_2O, to less than about 0.1 equivalents per gram atom of Al in the exchanged zeolite, and washing the zeolite substantially free of anions of the salt in solution.

4,215,017

CATALYST FOR DISPROPORTIONATION/DOUBLE-BOND ISOMERIZATION OF OLEFINS

Robert E. Reusser, and William B. Hughes, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 878,537, Feb. 16, 1978, Pat. No. 4,180,524. This application Dec. 28, 1978, Ser. No. 973,980

Int. Cl.[2] B01J *29/00, 23/13, 23/84*

U.S. Cl. 252—458 **18 Claims**

1. An activated calcined homogenous catalyst composition consisting essentially of a support/uranium/and at least one of tungsten and rhenium, wherein said composition contains about 0.1 to 25 weight percent total uranium, tungsten, and rhenium, each calculated as the metal; and a weight ratio of uranium:at least one of tungsten and rhenium of about 2:1 to 0.1:1; and wherein said activated catalyst composition is prepared by steps which comprise forming a homogenous composite, calcining said homogenous composite in a molecular oxygen-containing atmosphere at elevated temperatures, and subsequently activating said calcined homogenous composite under reducing conditions at elevated temperatures.

2. The catalyst composition according to claim 1 wherein said total of uranium, tungsten, and rhenium is about 1 to 15 weight percent.

3. The catalyst composition according to claim 2 wherein said ratio of uranium:at least one of tungsten and rhenium is about 2:1 to 0.5:1.

4. The catalyst composition according to claim 3 wherein said support is alumina, silica, silica-alumina, zirconia, titania, thoria, aluminum phosphate magnesium silicate, zinc aluminate, or mixture.

5. The catalyst composition according to claim 4 wherein said support is silica.

4,215,018

STEAM DEALKYLATION CATALYST AND A METHOD FOR ITS ACTIVATION

Tansukhlal G. Dorawala, Wappingers Falls, and Russell R. Reinhard, Hopewell Junction, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 850,120, Nov. 10, 1977, Pat. No. 4,136,129, which is a continuation of Ser. No. 610,806, Sep. 5, 1975, abandoned. This application Sep. 5, 1978, Ser. No. 939,512

Int. Cl.[2] B01J *21/04, 23/78*

U.S. Cl. 252—466 J **12 Claims**

1. The method of activating a supported catalyst containing oxides of a Group VIII metal and of a Group I A metal which comprises

heating said catalyst at a rate of 10°–500° F./hr to a temperature of 650° F.–1400° F. in a hydrogen atmosphere;

maintaining said heated catalyst in a hydrogen atmosphere at 650° F.–1400° F. for 2–30 hours thereby forming a hydrogen-treated catalyst; and

maintaining the hydrogen-treated catalyst in a steam-hydrogen atmosphere at 650° F.–1400° F. for 2–20 hours thereby forming a steamed hydrogen-treated catalyst.

4,215,019

RUTHENIUM-COBALT-GOLD CATALYST FOR HYDROGENATION OF UNSATURATED DINITRILES

Charles A. Drake, and Timothy P. Murtha, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 14, 1978, Ser. No. 960,798

Int. Cl.[2] B01J *21/04, 23/46, 23/52, 23/74*

U.S. Cl. 252—466 B **6 Claims**

1. A catalyst suited for hydrogenation of compounds essentially comprising ruthenium, cobalt and gold.

4,215,020

ELECTRICAL RESISTOR MATERIAL, RESISTOR MADE THEREFROM AND METHOD OF MAKING THE SAME

Richard L. Wahlers, Churchville, and Kenneth M. Merz, Gladwyne, both of Pa., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 3, 1978, Ser. No. 892,693

Int. Cl.[2] H01B *1/06*

U.S. Cl. 252—519 **42 Claims**

1. A vitreous enamel resistor material comprising a mixture of glass frit, and finely divided particles of tin oxide and of an additive, said additive being selected from the group consisting of the oxides of manganese, nickel, cobalt and zinc, the particles of tin oxide and the additive being present in an amount of 20 to 90% by volume, and the additive being present in an amount of about 0.07 to 18.5% by volume.

4,215,021

COATING RUBBER COMPOSITION FOR TIRE CORDS

Masaki Ogawa, Sayama; Tamio Araki, Masashino, and Shinji Yamamoto, Ichihara, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo and Ube Industries, Ltd., Ube, both of, Japan

Filed Apr. 5, 1979, Ser. No. 27,415

Claims priority, application Japan, Apr. 6, 1978, 53-39679

Int. Cl.[2] C08K *5/00;* **C09L** *7/00*

U.S. Cl. 260—5 **4 Claims**

1. A coating rubber composition for tire cords, obtained by an unvulcanized rubber composition comprising 3–40 parts by weight of short fibers of syndiotactic-1,2-polybutadiene having a maximum diameter of not more than 10μ and an average diameter of less than 1μ and 30–120 parts by weight of carbon

black, on a basis of 100 parts by weight of a rubber selected from natural rubbers, synthetic rubbers and blends thereof in an optional blending ratio; said composition having a swelling value of not more than 140% in the extrusion at 100° C.

4,215,022

ISOBUTYLENE CYCLODIOLEFIN COPOLYMERS AND TERPOLYMERS

Donald J. Buckley, Plainfield; Warren A. Thaler, Matawan, both of N.J., and Joseph P. Kennedy, Akron, Ohio, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 803,596, Jun. 6, 1977, which is a continuation-in-part of Ser. No. 631,444, Nov. 13, 1975, Pat. No. 4,031,300, which is a continuation-in-part of Ser. No. 457,109, Apr. 1, 1975, Pat. No. 3,928,297, which is a continuation-in-part of Ser. No. 151,108, Jun. 8, 1971, Pat. No. 3,808,177. This application Oct. 16, 1978, Ser. No. 952,241

Int. Cl.² C08F *8/34*

U.S. Cl. 260—5 **27 Claims**

1. A vulcanizable composition which comprises:

(a) a substantially gel free copolymer consisting of a major portion of an isoolefin having about 4 to about 10 carbon atoms and about 8 to about 45 mole % of one cyclic conjugated diene of about 5 to about 9 carbon atoms, wherein said cyclic conjugated diene is selected from the group consisting of cyclopendadiene and methylcyclopentadiene, said copolymer having an Mn of about 30,000 to less than 90,000;

(b) a vulcanizing amount of sulfur donor; and

(c) a delayed action accelerator.

4,215,023

URETHANE ENAMEL COATING COMPOSITION

Clifford H. Strolle, Springfield, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1978, Ser. No. 960,014

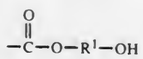
Int. Cl.² C08L *91/00*

U.S. Cl. 260—22 CB **13 Claims**

1. A curable coating composition comprising 10–70% by volume of a polymer blend and a solvent for the polymer blend wherein the polymer blend consists essentially of:

(a) 15–50% by weight, based on the weight of the blend, of an organic polyisocyanate;

(b) 10–70% by weight, based on the weight of the blend, of a polymer having a backbone of (i) polymerized ethylenically unsaturated monomers and (ii) polymerized ethylenically unsaturated ester units that form ester groups, attached to the backbone, of the formula



wherein R^1 is a saturated hydrocarbon radical having 2–10 carbon atoms and wherein the primary-hydroxyl content of the polymer is 0.5–4.4% by weight, based on the polymer, and;

(c) 15–40% by weight, based on the weight of the blend, of an alkyd resin plasticizer which is the reaction product of a glyceride of a saturated fatty acid, a dihydric alcohol, and a derivative of a dicarboxylic acid selected from the group consisting of anhydrides, dialkyl esters, and mixtures of these, wherein the reaction product has a primary-hydroxyl content of 1.0–4.4% by weight, based on the reaction product, and

wherein the coating composition is curable at ambient temperatures.

4,215,024

MOLDING COMPOSITIONS AND PROCESS FOR PREPARING SAME

I. Luis Gomez, Longmeadow, and Edward F. Tokas, West Hatfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 2, 1978, Ser. No. 957,301

Int. Cl.² C08L *91/00*

U.S. Cl. 260—23 S **12 Claims**

1. A molding composition comprising a blend of a nitrile polymer containing at least about 10 weight percent based on total polymer weight of polymerized acrylonitrile and about 0.005 to about 2% by weight based on the weight of the polymer of an unsaturated fatty acid compound, said blend being free of rubber containing impact modifiers.

4,215,025

WATER SOLUBLE ADHESIVE COATING FOR MOUNTING COMPONENTS TO PRINTED WIRING BOARDS

Marvin Packer, Broomall, Pa., and Otis D. Black, Willingboro, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,624

Int. Cl.² C08L *23/26, 61/26, 79/04*

U.S. Cl. 260—29.2 R **11 Claims**

1. A sprayable, non-flowing water soluble composition comprising 100 parts by weight of a water soluble polymeric compound(s) which can be dissolved in water to give greater than about a 45% by weight solids content and a viscosity range of about 8 to about 12 poises at about 25° C., about 10 to about 40 parts by weight of a water soluble mono-, di- or polyhydric alcohol, about 10 to about 40 parts by weight of water, about 1 to about 4 parts by weight of a wetting agent, and about 0.01 to about 6 parts by weight of a water soluble organic acid having a keto oxygen group within 4 carbon atoms of the carboxylic acid group.

4,215,026

AQUEOUS DISPERSION OF A BRANCHED POLYESTER

Robert B. Login, Woodhaven, Mich., assignor to BASF Wyandotte Corp., Wyandotte, Mich.

Division of Ser. No. 891,209, Mar. 29, 1978, Pat. No. 4,158,083, which is a division of Ser. No. 702,043, Jul. 15, 1976, abandoned. This application Jan. 2, 1979, Ser. No. 129

Int. Cl.² C08G *63/12;* **C08L** *67/00;* **D02G** *3/00*

U.S. Cl. 260—29.2 E **6 Claims**

1. An aqueous dispersion of a branched water-dispersible polyester comprising water and the polycondensation reaction product of:

(a) at least one polycarboxylic acid, anhydride or ester thereof,

(b) at least one diol or polyglycol, and

(c) an organic reactant,

wherein said polyester is a branched water-dispersible polyester containing repeating carbonyl-oxy units wherein said units are an integral part of the polymer chain, said organic reactant containing an alkali metal salt of a sulfonic acid attached to an aromatic nucleus through an aliphatic or cycloaliphatic chain and ester linkage which is capable of rendering said polyester water-dispersible and which is present in the proportions of from about 5 mole percent to about 50 mole percent, based upon the sum of the theoretical mole percentages of the other carboxylic acid components of said polyester, wherein said organic reactant consists of the at least monofunctional reaction product of an aromatic polycarboxylic acid anhydride and an aliphatic or cycloaliphatic hydrocarbon hydroxysulfonic acid alkali metal salt.

4,215,027

AQUEOUS THERMOSETTABLE COATING COMPOSITIONS COMPRISING AQUEOUS COPOLYMER LATEX, AMINE NEUTRALIZED COPOLYMER AND MELAMINE-FORMALDEHYDE RESIN

Robert L. Heppolette, Islington, Canada; Hamid I. Khan, Rawalpindi, Pakistan, and Ian H. McEwan, Kleinburg, Canada, assignors to Canadian Industries Limited, Montreal, Canada

Continuation of Ser. No. 593,242, Jul. 7, 1975, abandoned. This application Sep. 7, 1977, Ser. No. 831,292

Claims priority, application United Kingdom, Jul. 16, 1974, 31427/74

Int. Cl.² C08L *61/28*

U.S. Cl. 260—29.4 UA **20 Claims**

1. An aqueous thermosetting coating composition, the polymeric binder of which comprises a blend having a pH in the range of from about 6–9 of

(1) from about 40 parts to about 90 parts by weight of a latex of a copolymer made by emulsion polymerization techniques and having a reduced viscosity in the range of from about 0.2 to about 0.8 dl/g measured at 25° C. in ethylene dichloride/ethanol (95/5) at 0.5 g copolymer per 100 ml solvent, the copolymer comprising from about 93% to about 75% by weight, based on the total weight of copolymer, of one or more main monomers selected from the group consisting of styrene, α-methyl styrene, alkyl acrylates, alkyl methacrylates, alkyl itaconates, alkyl maleates and alkyl fumarates wherein the alkyl group contains from 1 to 12 carbon atoms, from about 7% to about 25% by weight, based on the total weight of copolymer of reactive monomers, the reactive monomers comprising from about 5% to about 15% by weight, based on the total weight of copolymer of a hydroxy-alkyl acrylate or hydroxyalkyl methacrylate, wherein the alkyl group contains from 2 to 4 carbon atoms and from about 2% to about 10% by weight, based on the total weight of copolymer, of an α,β-ethylenically unsaturated carboxylic acid;

(2) from about 5 parts to about 40 parts by weight of a dissolved, compatible amine-neutralized copolymer having a reduced viscosity in the range of from about 0.12 to about 0.50 dl/g measured at 25° C. in ethylene dichloride/ethanol (95/5) at 0.5 g. copolymer per 100 ml solvent, the copolymer comprising from about 5% to about 25% by weight, based on the total weight of copolymer, of a hydroxyalkyl acrylate or hydroxyalkyl methacrylate, wherein the alkyl group contains from 2 to 4 carbon atoms, from about 2% to about 15% by weight based on the total weight of copolymer, of an α,β-ethylenically unsaturated carboxylic acid; and from about 93% to about 60% by weight, based on the total weight of copolymer, of one or more monomers selected from the group consisting of styrene, alkyl acrylates, alkyl methacrylates, alkyl itaconates, alkyl maleates, and alkyl fumarates, wherein the alkyl group contains from 1 to 12 carbon atoms; and

(3) from about 8 parts to about 40 parts by weight of a water soluble or water dispersible melamine-formaldehyde resin;

with the sum of components (1), (2) and (3) totaling 100 parts by weight.

4,215,028

THERMOSETTING RESIN, AND ITS PRODUCTION AND USE

Ryuzo Mizuguchi, Tondabayashi; Atushi Takahashi, Kyoto; Shinichi Ishikura, Takatsuki, and Akimitsu Uenaka, Suita, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

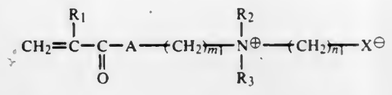
Continuation-in-part of Ser. No. 722,330, Sep. 10, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,038

Claims priority, application Japan, Jun. 24, 1976, 51-75102

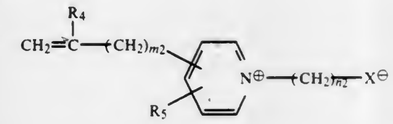
Int. Cl.² C08F *220/04, 220/06*

U.S. Cl. 260—29.6 TA **6 Claims**

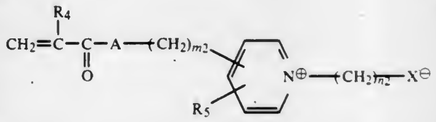
1. A process for preparing a thermosettable resin of self cross-linking type, which comprises polymerizing (1) 0.5 to 30% by weight of at least one polymerizable monomer having an ionic structure selected from the group consisting of (i) a compound of the formula:



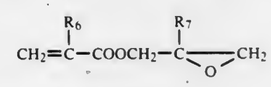
wherein R_1 is hydrogen or methyl, R_2 and R_3 are each C_1–C_6 alkyl, A is —O— or —NH—, m_1 and n_1 are each an integer of 1 to 12 and $X^\ominus$ is $SO_3^\ominus$, $SO_4^\ominus$ or $CO_2^\ominus$, (ii) a compound of the formula:



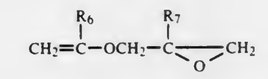
and (iii) a compound of the formula:



wherein, the formulae (II) and (III), R_4 is hydrogen or methyl, R_5 is hydrogen or C_1–C_3 alkyl, m_2 is zero or an integer of 1 to 6, n_2 is an integer of 1 to 6 and A and $X^\ominus$ are each as defined above, (2) 1 to 25% by weight of at least one polymerizable monomer containing an oxirane group selected from the group consisting of a compound of the formula:



and a compound of the formula:



wherein, in formulae (IV) and (V), R_6 and R_7 are each hydrogen or methyl, and (3) 45 to 98.5% by weight of at least one ethylenically unsaturated polymerizable monomer other than said polymerizable monomer having an ionic structure and said polymerizable monomer containing an oxirane group, said polymerization being carried out in the presence of 0.05 to 5% by weight of a polymerization initiator, based on the total weight of the monomers to be polymerized, with the proviso that the polymerizable monomer component (3) includes a carboxyl group-containing polymerizable monomer selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, a monoester of maleic acid, itaconic acid, a monoester of itaconic acid, fumaric acid and a monoester of fumaric acid, of which the amount is from 2 to 20% by weight based on the total weight of the monomers to be polymerized

said thermosettable resin of self cross-linking type having a property such that if an aqueous dispersion of said resin in a concentration of 50% by weight is applied to a tin plate and dried to obtain a film having a thickness of 10 to 15μ, and said film is baked at 160° C. for 10 minutes to obtain a hardened film, said hardened film will have an acetone-insoluble solid content of not less than 50% by weight.

4,215,029

CROSSLINKABLE POLYMER COATING COMPOSITIONS AND PROCESS FOR PREPARING THE SAME USING TETRACHLOROETHYLENE OR 1,1,1-TRICHLOROETHYLENE SOLVENT

Frank L. Saunders, and Victor E. Meyer, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1978, Ser. No. 956,952
Int. Cl.² C08K *5/02*
U.S. Cl. 260—33.8 UA **8 Claims**

1. In the process for preparing a lacquer from crosslinkable polymers, the improvement wherein a monomer composition consisting essentially of (1) from about 1 to 15 weight percent of an alpha,beta-olefinically unsaturated carboxylic acid; (2) from about 10 to 25 weight percent of a hydroxyalkyl acrylate or methacrylate wherein the hydroxyalkyl group has from 2 to 4 carbon atoms in the alkyl group and; (3) the remainder needed to make 100 weight percent of at least one comonomer selected from the group consisting of an alkenyl aromatic monomer, an alkyl acrylate having from 1 to 8 carbon atoms in the alkyl group and mixtures thereof, is dissolved in tetrachloroethylene, 1,1,1-trichloroethane or mixtures thereof and subjected to thermal and catalytic inducement of free radical polymerization, and thereafter a crosslinking agent having at least 2 functional moieties reactive with the hydroxyalkyl groups or the carboxyl groups is dissolved in the solution of the interpolymer.

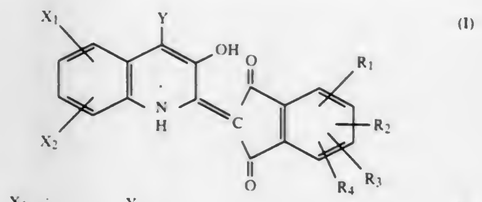
4,215,030

PHOTOGRAPHIC POLYESTER FILM SUPPORT

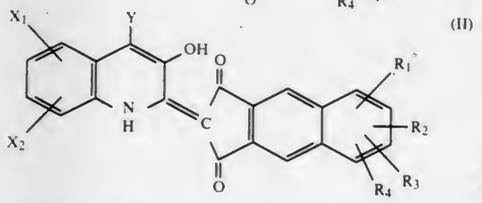
Tsutomu Okita; Masami Satou; Noburo Hibino, all of Fujinomiya; Kazunobu Katoh, Minami-ashigara, and Hiroshi Sawaguchi, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 30, 1978, Ser. No. 938,162
Claims priority, application Japan, Aug. 31, 1977, 52-104401
Int. Cl.² C08K *5/08, 5/34*
U.S. Cl. 260—40 R **10 Claims**

1. A photographic polyester film support comprising a polyester dope-dyed with (a) a dye which has a main absorption peak in the wavelength range of about 530 to about 570 nm, (b) a dye which has a main absorption peak in the wavelength range of about 640 to about 680 nm and (c) a dye which has a main absorption peak in the wavelength range of about 420 to about 460 nm and represented by the following formula (I) or (II):



(I)



(II)

wherein R_1, R_2, R_3 and R_4, which may be the same or different, each represents —H, —OH, —NH_2, —NHR_5, —NR_5R_6, —Cl, —Br, an alkyl group having 4 or less carbon atoms or an alkoxy group having 4 or less carbon atoms; R_5 and R_6, which may be the same or different, each represents an alkyl group having 4 or less carbon atoms or an aryl group; X_1 and X_2, which may be the same or different, each represents —H, —Cl, —Br or an alkyl group having 4 or less carbon atoms; and Y represents —H, —Cl or —Br, with the proviso that R_1, R_2, R_3 and R_4 in the formula (I) are not simultaneously —H.

4,215,031

THICKENING ADDITIVES FOR UNSATURATED POLYESTER RESINS

Charles C. Payne, Chicago, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Feb. 14, 1979, Ser. No. 11,838
Int. Cl.² C08K *9/04*
U.S. Cl. 260—40 R **5 Claims**

1. An unsaturated polyester resin which contains at least 0.3% by weight of silica particles having an ultimate particle size within the range of 4–70 millimicrons, which particles have their surface coated with a quaternary ammonium salt which contains at least 1 organic radical of at least 6 carbon atoms in chain length.

4,215,032

POLYESTER COMPOSITION

Shigeo Kobayashi; Nori Yoshihara; Kiyoji Nanbu, and Yukio Goto, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed May 9, 1979, Ser. No. 37,334
Claims priority, application Japan, May 18, 1978, 53-59646
Int. Cl.² C08L *67/02*
U.S. Cl. 260—40 R **16 Claims**

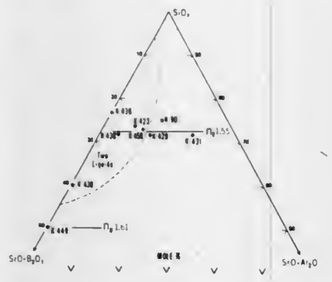
1. A polyester composition composed of solid polyethylene terephthalate or a solid polyester containing at least 80 mol % ethylene terephthalate repeating units and 0.1 to 15 weight %, based on the polyester, of an organic crystallization promoting agent added thereto having a polyoxyalkylene chain and at least one epoxy group.

4,215,033

COMPOSITE DENTAL MATERIAL

Rafael L. Bowen, Gaithersburg, Md., assignor to American Dental Association Health Foundation, Washington, D.C.

Continuation of Ser. No. 764,448, Jan. 31, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,597
Int. Cl.² A61K *5/06;* **C03C** *15/00;* **C08K** *3/40;* **C08L** *33/12*
U.S. Cl. 260—42.15 **22 Claims**



1. In a dental resin composite comprising a resin and a non-toxic filler, the improvement which comprises employment of a filler comprising a substantially transparent inorganic glass material which is a two-phase vitreous mixture of silicon dioxide (SiO_2), boron oxide (B_2O_3), aluminum oxide (Al_2O_3) and at least one oxide selected from the group consisting of strontium oxide (SrO), calcium oxide (CaO) and zinc oxide (ZnO), and which is substantially free of monovalent elements, wherein the refractive indexes of the phases are within the range of 1.45 to 1.75; wherein the morphologies of the phases are two continuous, interpenetrating networks of submicroscopic dimension which interlock and twist one phase through the other; and wherein one of the phases is partially removed at the surface to define pores.

19. Substantially transparent glass particles less than 5.0 millimeters in diameter consisting essentially of 51.4 mole % silicon oxide (SiO_2), 15.2 mole % boron oxide (B_2O_3), 9.1 mole % aluminum oxide (Al_2O_3) and 24.3 mole % calcium oxide (CaO), said particles having as a morphology a two phase interpenetrating, twisting and interlocking network of submicroscopic dimension, with the low silica phase etched to a depth of less than 10,000 Angstroms, and suitable for use in a dental composite.

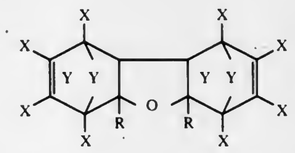
4,215,034

FLAME RETARDANT POLYMERIC COMPOSITIONS CONTAINING HALOGENATED DIELS-ALDER ADDUCTS WITH FURAN

Harry W. Marciniak, Tonawanda; Richard D. Carlson, Grand Island, both of N.Y., and James L. Dever, Brunswick, Ohio, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 190,271, Oct. 18, 1971, Pat. No. 3,991,011, which is a continuation-in-part of Ser. No. 157,627, Jun. 28, 1971, abandoned, which is a continuation of Ser. No. 847,430, Aug. 4, 1969, abandoned. This application Nov. 8, 1976, Ser. No. 739,875
The portion of the term of this patent subsequent to Nov. 9, 1993, has been disclaimed.
Int. Cl.² C08K *5/15*
U.S. Cl. 260—45.8 A **7 Claims**

1. A fire retardant polymeric composition comprising a thermoplastic elastomer selected from the group consisting of a polyurethane, a co-polyester elastomer, a polyisobutylene elastomer, and an effective fire retardant proportion of a compound of the formula:



wherein X is selected from the group consisting of fluorine, chlorine, and bromine, Y is selected from the group consisting of fluorine, chlorine, bromine, alkyl, haloalkyl, alkoxy and haloalkoxy and each R is individually selected from the group consisting of hydrogen and alkyl.

4,215,035

THERMALLY STABLE SULFUR DIOXIDE-ETHYLENE-VINYL ESTER TERPOLYMERS AND PROCESS FOR PREPARING SAME

Leroy J. Memering, and Lorrin W. Pyle, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Apr. 11, 1979, Ser. No. 28,958
Int. Cl.² C08K *5/36, 3/34, 3/26, 3/24*
U.S. Cl. 260—45.75 W **20 Claims**

1. A sulfur dioxide-ethylene-vinyl ester terpolymer having improved thermal stability observed as a reduction in the level of malador of the terpolymer and/or an improvement in the color stability of the terpolymer, said terpolymer containing substantially uniformly distributed therein a thermal stability imparting amount of at least one inorganic oxygen-containing metal compound in which the metal is an alkali metal, alkaline earth metal or zinc.

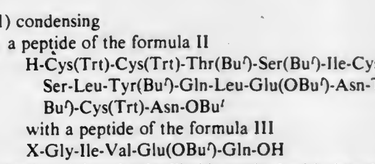
4,215,036

MODIFIED GRASS POLLEN ANTIGENS

Arthur Malley, Beaverton, Oreg., assignor to Research Corporation, New York, N.Y.

Filed Aug. 15, 1978, Ser. No. 933,907
Int. Cl.² C08H *1/00;* **A61K** *39/36*
U.S. Cl. 260—112 R **12 Claims**

1. A method for modifying the antigenic properties of a quercitin moiety containing grass pollen antigen or fragment thereof having the structure:



wherein:

G represents glucose, and

T represents threonine or a poly-peptide linked to said structure through a threonine molecule;

comprising subjecting said antigen to oxidative conditions such that the said dihydroxy aromatic rings undergo rearrangement and ring scission without substantially modifying said threonine or polypeptide to yield a product substantially devoid of antigenic properties but capable of activating T-cells and inducing T_s cells.

4,215,037

PARTIALLY PROTECTED HUMAN INSULIN-A-CHAIN AND PROCESS FOR ITS MANUFACTURE

Wolfgang König, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,128
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740406
Int. Cl.² C07C *103/52*
U.S. Cl. 260—112.5 R **3 Claims**

1. A process for the preparation of the peptide of the formula I as claimed which comprises:

H-Gly-Ile-Val-Glu(OBu^t)-Gln-Cys(Trt)-Cys(Trt)-Thr-(Bu^t)-Ser(Bu^t)-Ile-Cys(Trt)-Ser-Leu-Tyr(-Bu^t)Gln-Leu-Glu(OBu^t)-Asn-Tyr(Bu^t)-Cys(Trt)-Asn-OBu^t

(1) condensing

a peptide of the formula II

H-Cys(Trt)-Cys(Trt)-Thr(Bu^t)-Ser(Bu^t)-Ile-Cys(Trt)-Ser-Leu-Tyr(Bu^t)-Gln-Leu-Glu(OBu^t)-Asn-Tyr(-Bu^t)-Cys(Trt)-Asn-OBu^t

with a peptide of the formula III

X-Gly-Ile-Val-Glu(OBu^t)-Gln-OH

by the dicyclohexylcarbodiimide method with the addition of N-hydroxy compounds, in said formula III, X is an amino protective group capable of being split off with 5% trifluoroacetic acid in methylene chloride and

(2) selectively splitting off the amino protective group X from the obtained peptide with about 5% strength trifluoroacetic acid in methylene chloride.

4,215,038

PEPTIDES WHICH INHIBIT GONADAL FUNCTION

Jean E. F. Rivier; Catherine L. Rivier, and Wylie W. Vale, Jr., all of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 855,837, Nov. 30, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 950,301

Int. Cl.[2] **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 LH **16 Claims**

1. A peptide which is effective to inhibit release of steroids by the gonadotropins of mammalians, said peptide having the formula:

$$R_1\text{-}R_2\text{-}R_3\text{-Ser-Tyr-}R_4\text{-}R_5\text{-Arg-}R_6$$

wherein R_1 is selected from the group consisting of D-pGlu, D-Pro, D-Trp, D-His, D-Arg, D-Leu, formyl D-Pro, acetyl D-Pro, benzoyl D-Pro and β-Ala, R_2 is selected from the group consisting of D-Phe, D-His and D-Trp; R_3 is selected from the group consisting of D-Trp, D-Phe, and D-His; R_4 is selected from the group consisting of D-Trp, D-Phe and D-Tyr; R_5 is selected from the group consisting of Leu and N^{α} Me-Leu; and R_6 is selected from the group consisting of Pro—Gly—NH_2 and Pro—NH—CH_2—CH_3.

4,215,039

SOMATOSTATIN ANALOGUES

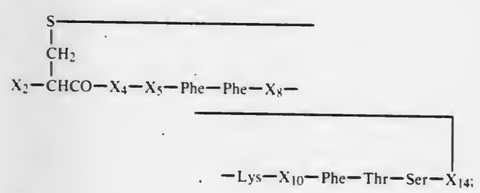
Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Feb. 15, 1979, Ser. No. 12,430

Int. Cl.[2] **C07C** *103/52;* **C07G** *7/00*

U.S. Cl. 260—112.5 S **7 Claims**

1. A compound of the formula:



$$\begin{array}{l} S\text{—} \\ | \\ CH_2 \\ | \\ X_2\text{—}CHCO\text{—}X_4\text{—}X_5\text{—Phe—Phe—}X_8\text{—} \end{array}$$

$$\text{—Lys—}X_{10}\text{—Phe—Thr—Ser—}X_{14}$$

its linear precursor intermediates or non-toxic acid addition salts thereof in which

X_2 is H, NH_2, Ala—Gly—, Ala—D—Ala, Gly—Gly—, lower alkanoyl or benzoyl;

X_4 is Arg, His or Lys;

X_5 is His, Tyr or Glu;

X_8 is Trp or D—Trp;

X_{10} is Val, α—Abu, Leu, Phe or Tyr; and

X_{14} is Cys, D—Cys or —NH(CH_2)$_2$—S—.

4,215,040

DENSITY SEPARATION PROCESS

Douglas F. Hager, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 22, 1978, Ser. No. 972,631

Int. Cl.[2] **A23J** *1/14*

U.S. Cl. 260—123.5 **14 Claims**

13. A process for recovering protein granules from vegetable seed materials comprising:

(1) prewashing comminuted vegetable seed material with an alcohol/water mixture containing from about 50 to about 90 parts of alcohol by weight, and from about 50 to about 10 parts of water by weight to reduce the level of natural sugars in said seed material;

(2) separating the seed material from the alcohol/water mixture;

(3) suspending the seed material recovered from step (2) in an aqueous solution of a toxicologically-acceptable alkali metal salt of an organic carboxylic acid, said solution having a density of from about 1.20 to about 1.45 gm/ml and a water activity of from about 0.4 to about 0.85; and

(4) isolating the protein granules from the balance of the seed materials.

4,215,041

DIAZO SUBSTITUTED AMINO-BENZENE SALTS AND LITHOGRAPHIC PLATE COMPRISING SAME

Georges A. Phlipot, Paris; Jacques R. G. Haeck, Bonneuil-Sur-Marne, and Simone J. Kempen, Orly, all of France, assignors to Eastman Kodak Company, Rochester, N.Y.

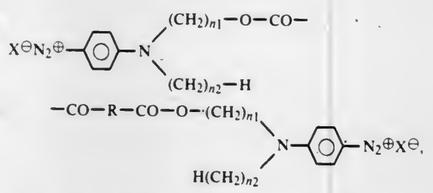
Filed Jul. 12, 1978, Ser. No. 924,107

Claims priority, application France, Aug. 9, 1977, 77 24471

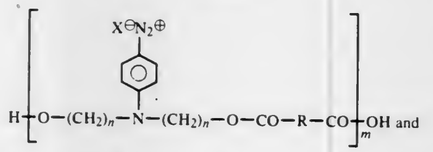
Int. Cl.[2] **C07C** *113/04;* **G03C** *1/54;* **G03F** *7/08*

U.S. Cl. 260—141 **5 Claims**

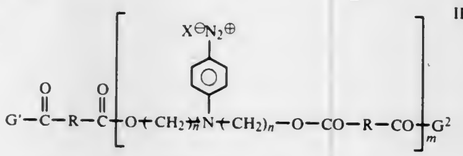
1. A diazonium compound corresponding to one of the following formulas:



I.

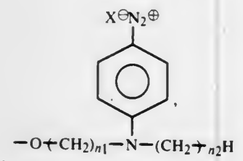


II.



III.

wherein G′ and G[2] are the same or different and are either OH or



R represents (a) alkylene having 1 to 12 carbon atoms, arylene having 6 to 10 carbon atoms, alkylarylene or alkylarylalkylene having 8 to 16 carbon atoms, (b) a photocrosslinkable moiety containing ethylenic unsaturation and having from 4 to 30 carbon atoms, or (c) a group containing an azide,

m is a number between 2 and 5,

n, n_1 and n_2 are the same or different and are whole numbers from 1 to 4, and

$X^{\ominus}$ is an anion.

4,215,042

COPPER, AND NICKEL COMPLEXES OF AZO DYESTUFFS

Arthur Bühler, Rheinfelden, and Hans U. Schütz, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

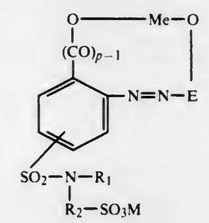
Continuation of Ser. No. 589,963, Jun. 24, 1975, abandoned. This application May 9, 1978, Ser. No. 904,358

Claims priority, application Switzerland, Jul. 16, 1974, 9764/74; May 27, 1975, 6750/75

Int. Cl.[2] **C09B** *45/14*

U.S. Cl. 260—151 **5 Claims**

1. A copper or nickel complex dye of the formula



wherein

p is 1 or 2,

Me is copper or nickel,

R_1 is hydrogen or lower alkyl,

R_2 is lower alkylene or arylene,

M is hydrogen, an alkali metal or NH_4, and

E is ortho-coupled phenylene substituted by lower dialkylamino, lower alkylamino, or alkyl of 1 to 5 carbon atoms; and where arylene is napthylene or phenylene which is unsubstituted or substituted by chloro, lower alkyl or lower alkoxy.

4,215,043

BICYCLOMYCIN DERIVATIVES

Takashi Kamiya, Suita; Shizuo Maeno, Osaka, and Yoshihiko Kitaura, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 15, 1976, Ser. No. 732,930

Claims priority, application United Kingdom, Oct. 20, 1975, 42912/75

Int. Cl.[2] **C07D** *498/06*

U.S. Cl. 260—239.3 B **2 Claims**

1. 2′,3′-O,O-isopropylidenebicyclomycin.

2. 5,11-dibromo-5,11-dihydrobicyclomycin.

4,215,044

SYNTHESIS OF α-FLUOROCARBONYL COMPOUNDS

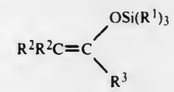
William J. Middleton, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 23, 1979, Ser. No. 32,347

Int. Cl.[2] **C07D** *243/24*

U.S. Cl. 260—239.3 D **14 Claims**

1. Process for preparing an organic compound of the formula $R^2R^2CFC(O)R^3$, which process comprises contacting and reacting in a reaction mixture which includes an inert solvent, at a temperature of −40° C. to −100° C., ROF and



R is polyfluoroperhaloalkyl of 1-6 carbon atoms or $FOCF_2$;

R^1 is hydrocarbyl of 1-6 carbon atoms;

each R^2 is selected from H, alkyl of 1-17 carbon atoms, cycloalkyl of 3-6 carbon atoms, aryl, heteroaryl and such alkyl, cycloalkyl, aryl and heteroaryl substituted by halogen or alkoxy of 1-6 carbon atoms;

R^3 is selected from H, alkyl and haloalkyl of 1-16 carbon atoms, cycloalkyl of 3-10 carbon atoms, aryl and haloaryl, $OSi(R^1)_3$, OH, NH_2, alkoxy of 1-6 carbon atoms, aryloxy, NHR^1 and NR^1_2 wherein R^1 is alkyl of 1-6 carbon atoms, N-arylamino and nitrogen or sulfur heterocyclic of 4-5 carbon atoms;

R^3 and one R^2 taken together is a diradical which with the C=C group is carbocyclic, heterocyclic or haloheterocyclic, and recovering from the reaction mixture the compound of the formula $R^2R^2CFC(O)R^3$

4,215,045

^{123m}TE-LABELED BIOCHEMICALS AND METHOD OF PREPARATION

Furn F. Knapp, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 29, 1978, Ser. No. 920,411

Int. Cl.[2] **C07J** *9/00*

U.S. Cl. 260—397.2 **31 Claims**

1. A process for preparing a ^{123m}Te-labeled organic compound of the formula R-^{123m}Te-CH_2-R′, R being alkyl, substituted alkyl, aryl or substituted aryl and R′ being a steroidal side chain, alkyl amino acid or amino acid group, said process comprising the steps of:

(a) reacting a ^{123m}Te-symmetric diorgano ditelluride, $R_2{}^{123m}Te_2$, R being alkyl, substituted alkyl, aryl or substituted aryl, with a hydride reducing agent and a source of alkali metal ions to form an alkali metal organo telluride M-^{123m}Te-R;

(b) reacting said alkali metal organo telluride with a primary halogenated organic compound R_a′-X, R_a′ being a 17-alkyl steroid group having 1-4 carbon atoms in said alkyl group, an alkyl amino acid group, or a group hydrolyzable to an alkyl amino acid group.

4,215,046

ROOM TEMPERATURE CURED ELASTOMER

Eugene C. Martin, and Arnold Adicoff, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 781,098, Mar. 25, 1977, Pat. No. 4,124,657. This application Aug. 24, 1978, Ser. No. 936,433

Int. Cl.[2] **C07D** *207/44*

U.S. Cl. 260—326.26 **2 Claims**

1. The bismaleimide of dimer diamine.

2. A process for forming the bismaleamide of dimer diamine comprising the steps of:

A. pretreating dimer diamine by (1) dissolving it in heptane and washing the resulting solution with a sodium chloride solution containing sodium hydroxide to form an emulsion; (2) washing in aqueous sodium chloride and ethanol to break up the emulsion; and (3) drying;

B. reacting the thus pretreated dimer diamine with maleic anhydride to form a bismaleamic acid; and

C. cyclizing the bismaleamic acid into said bismaleimide by adding magnesium acetate tetrahydrate, acetic anhydride and triethylamine and heating at 94° C. for about one hour.

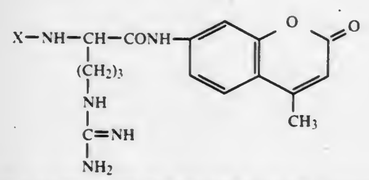
4,215,047

7-(ARGINYLAMINO)-4-METHYLCOUMARINS

Shumpei Sakakibara, Suita, Japan, assignor to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Jun. 5, 1978, Ser. No. 912,851
Claims priority, application Japan, Jun. 6, 1977, 52-66517; Jun. 8, 1977, 52-67718; Jun. 8, 1977, 52-67719
Int. Cl.[2] C07D *405/12, 311/20*
U.S. Cl. 260—326.34 **25 Claims**

1. A compound having the formula:



wherein X is a substituent selected from the group consisting of glycyl, prolylglycyl, glutamyl-glycyl, isoleucyl-glutamyl-glycyl, seryl-glycyl, valyl-seryl-glycyl, leucyl-glycyl, valyl-leucyl-glycyl, phenylalanyl, prolyl-phenylalanyl, prolyl, valyl-prolyl, and acid addition salts thereof.

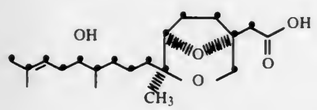
4,215,048

TOTAL SYNTHESIS OF (1RS, 4SR, 5RS)-4-(4,8-DIMETHYL-5-HYDROXY-7-NONENYL)-4-METHYL-3,8-DIOXABICYCLO[3.2.1]OCTANE-1-ACETIC ACID

Robert H. K. Chen, Belle Mead, and Zoltan G. Hajos, Princeton, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed May 18, 1979, Ser. No. 40,345
Int. Cl.[2] C07D *319/00*
U.S. Cl. 260—340.6 **12 Claims**

1. The process for the preparation of a compound of the formula



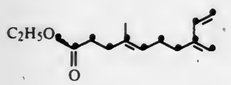
which comprises reacting a compound of the formula



with a compound of the formula

$LiCH_2CO_2C_2H_5$

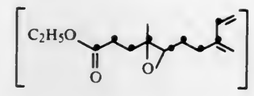
to form a triene ester of the formula



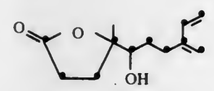
reacting the triene ester with

m-chloroperbenzoic acid

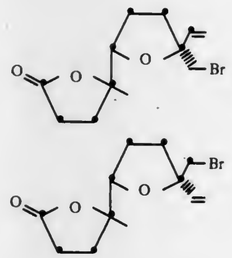
to form an intermediate of the formula



reacting the intermediate first with an aqueous base followed by reaction with acid to form a compound of the formula

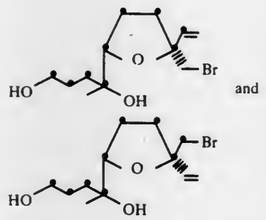


brominating the compound to form epimeric bromides of the formula



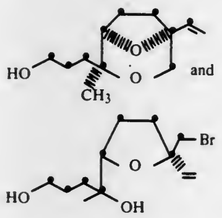
and

treating the mixture of lactones with lithium aluminum hydride to form a mixture of bromo diols of the formula



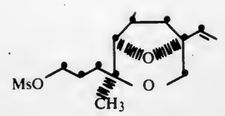
and

reacting the mixture of bromo diols with sodium hydride to form a mixture of cyclized and uncyclized compounds of the formula

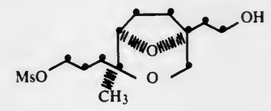


and

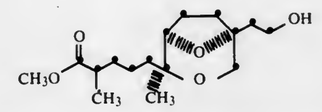
reacting the cyclized compound with methanesulfonyl chloride in the presence of a base to form a compound of the formula



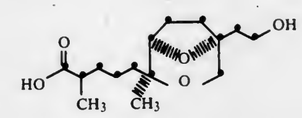
reacting the product formed with diborane followed by oxidation with hydrogen peroxide to give a primary alcohol of the formula



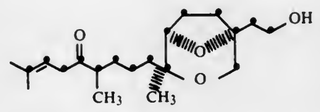
reacting the product with $LiCH(CH_3)CO_2CH_3$ to form a methyl ester of the formula



hydrolyzing the ester with base followed by acidification to form an acid of the formula

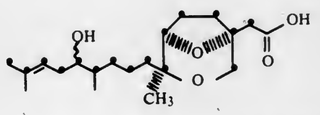


reacting the acid with lithium hydride followed by reaction with 3-methyl-2-butenyl lithium to give a ketone of the formula

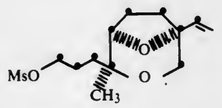


oxidizing the compound followed by reduction with sodium borohydride, wherein X is chloro or bromo, and Ms is a mesyl group.

8. The process for the preparation of a compound of the formula



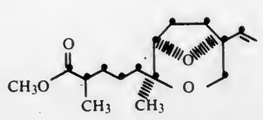
which comprises reacting a compound of the formula



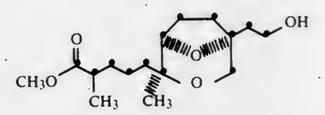
with a compound of the formula

$LiCH(CH_3)CO_2CH_3$

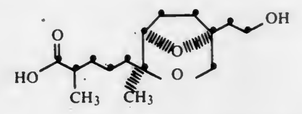
to form a compound of the formula



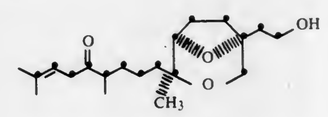
reacting the compound formed with diborane followed by oxidation with hydrogen peroxide to form a compound of the formula



hydrolyzing the ester to form an acid of the formula

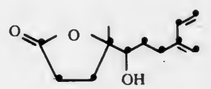


reacting the acid with lithium hydride followed by reaction with 3-methyl-2-butenyl lithium to form a compound of the formula

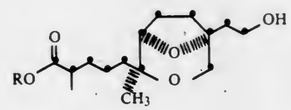


and reacting the keto-alcohol formed with an oxidizing agent followed by reduction with sodium borohydride, wherein Ms is a mesyl group.

11. A compound of the formula



12. A compound of the formula



wherein R is hydrogen or methyl.

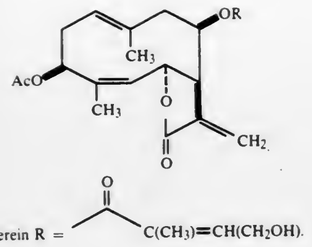
4,215,049

-ANTITUMORIGENIC LACTONE DERIVATIVE

Takeyoshi Takahashi, Tokyo; Hirozumi Eto, Yokohama, and Osamu Yoshioka, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1978, Ser. No. 874,945
Claims priority, application Japan, Feb. 10, 1977, 52/13654
Int. Cl.[2] C07D *307/93*
U.S. Cl. 260—343.3 R **1 Claim**

1. Hiyodorilacton-B having the formula:



4,215,050

PREPARATION OF HALOGENOVINYL-γ-BUTYROLACTONES

Reinhard Lantzsch, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

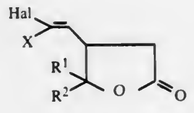
Filed Oct. 6, 1978, Ser. No. 949,356

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747824

Int. Cl.[2] C07D *307/32*

U.S. Cl. 260—343.6 **14 Claims**

1. A process for the preparation of a halogenovinyl-γ-butyrolactone of the formula

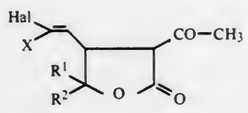


in which

Hal is F, Cl or Br,

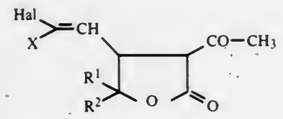
X is H, F, Cl or Br and

R^1 and R^2 each independently is C_{1-4}-alkyl or R^1 and R^2, together with the adjacent C atom, form a cycloaliphatic ring with up to 7 C atoms, comprising deacetylating an acetyl lactone of the formula



with a hypohalite at a temperature from −20° to 100° C.

13. An acetyl lactone of the formula



in which

Hal is F, Cl or Br,

X is H, F, Cl or Br and

R^1 and R^2 each independently is C_{1-4}-alkyl or R^1 and R^2 together with the adjacent C atom, form a cycloaliphatic ring with up to 7 C atoms.

4,215,051

FORMATION, PURIFICATION AND RECOVERY OF PHTHALIC ANHYDRIDE

Hobe Schroeder, Warrenville, and David A. Palmer, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,624

Int. Cl.[2] C07D *307/89*

U.S. Cl. 260—346.7 **7 Claims**

1. A process for the formation, purification and recovery of phthalic anhydride from a mixture comprising on a weight basis from 70 up to 90 percent o-phthalic acid, from 1.5 up to 21 percent water, from 0.3 up to 13 percent benzoic acid, from 0.2 up to 2 percent o-toluic acid, from 0.1 up to 2 percent phthalide, from 0.2 up to one percent 2-carboxybenzaldehyde, and from 1.3 up to 10 percent higher boiling compounds; which process comprises subjecting said mixture as a liquid to the sequential steps of (a) rapid dehydration of o-phthalic acid to its anhydride under conditions for rapid evaporation of said anhydride wherein a mixture of vapors of said anhydride, water, and the oxygen-containing aromatic compounds comprising benzoic acid, o-toluic acid, phthalide and 2-carboxybenzaldehyde is formed; (b) separating water vapor from said mixture of vapors by contacting in a fractionation zone such mixture of vapors in countercurrent flow with a reflux liquid at a temperature below the boiling temperature of said anhydride which liquid is inert to the components of said mixture of vapors, a solvent for said anhydride at a temperature between its freezing point and its melting point, remains liquid at and below the freezing point temperature of said anhydride, and boils at a temperature below the boiling point temperature of said anhydride; (c) removal of phthalide from the resulting water free mixture of said anhydride and said oxygen-containing aromatic compounds by heating to a temperature above 200° C. such mixture of said anhydride and oxygen-containing aromatic compounds in the presence of an alkali metal hydroxide having a molecular weight of at least 56 until the presence of phthalide is no longer detectable; (d) fractionation of the mixture resulting from step (c) to remove: as a first fraction substantially all of the benzoic acid, o-toluic acid and 2-carboxybenzaldehyde; as a second fraction product phthalic anhydride and leave as a third fraction the compounds boiling higher than phthalic anhydride; and (e) contacting said product fraction and 0.25 to 0.5 weight percent water vapor with a solid noble metal catalyst to remove bromine therefrom.

4,215,052

PRODUCTION OF LIQUID ORTHO-PHTHALIC ACID AND ITS CONVERSION TO HIGH PURITY PHTHALIC ANHYDRIDE

Hobe Schroeder, Warrenville; David A. Palmer, Naperville; George E. Kuhlmann, Naperville; Houssam M. Naim, Naperville, and Nicholas C. Huie, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,663

Int. Cl.[2] C07D *307/89*

U.S. Cl. 260—346.7 **8 Claims**

1. A process for the preparation of liquid o-phthalic acid from liquid o-xylene, the conversion of said o-phthalic acid to impure phthalic anhydride, the purification of said anhydride, and the recovery of it as a high purity product by the cooperating sequential steps of:

(a) the continuous neat oxidation of liquid o-xylene with air in a stirred oxidation zone operated at a temperature of from 160° C. up to 200° C. and a gauge pressure of from 21 up to 29 kg/cm^2 in the presence of catalysis provided by cobalt, manganese and bromine in the amounts based on one gram mole of o-xylene of from 0.25 up to 10 milligram atoms of cobalt, from 0.5 up to 5 milligram atoms of manganese and from 0.5 up to 40 milligram atoms of bromine and in the presence of from 0.2 up to 7 weight percent water in the reaction medium, with a ratio of air to xylene fed to provide 2 to 15 volume percent oxygen in the spent air exiting from the oxidation zone at a residence time sufficient to maintain a liquid reaction medium mixture containing from 8 to 40 weight percent o-phthalic acid and from 6 up to 30 weight percent o-xylene;

(b) the continuous introduction of said liquid reaction medium mixture and air into a second stirred oxidation zone operated at a temperature of from 210° C. up to 230° C. and a gauge pressure of from 26.7 up to 32 kg/cm^2 in the presence of from 1 up to 7 weight percent water in the reaction medium with a ratio of air to said liquid reaction medium to provide from 5 up to 10 volume percent oxygen in the spent air exiting the second oxidation zone and in the presence of additional catalyst components which provides at least one additional milligram atom of cobalt per 1.0 gram mole of xylene charged to the first oxidation zone for a residence time sufficient to provide a liquid reaction effluent containing from 85 up to 92 weight percent o-phthalic acid in addition to liquid water and impurity amounts of benzoic acid, o-toluic acid, 2-carboxybenzaldehyde, phthalide, and higher boiling compounds including bromine-containing compounds;

(c) the continuous introduction of the liquid reaction effluent from the second oxidation zone into a combination dehydration-evaporation zone wherein o-phthalic acid is rapidly dehydrated to its anhydride and rapidly evaporated to a mixture of phthalic anhydride water, benzoic acid, o-toluic acid, 2-benzaldehyde and bromine containing compound vapors together with entrained phthalide vapors;

(d) the continuous introduction of said mixture of vapors into and through a bed of particles containing a noble metal whereby bromine contamination is removed;

(e) the continuous introduction of said mixture of vapors into a fractionation system whose reflux liquid is inert to the components in said vapor mixture, boils at a temperature below the boiling temperature of phthalic anhydride which is a liquid at the freezing point temperature of said anhydride and dissolves it at a temperature between its freezing and melting temperatures wherein liquid water is removed as one fraction and liquid partially purified phthalic anhydride is removed as a second fraction;

(f) the continuous introduction of said liquid partially purified phthalic anhydride and potassium hydroxide in an amount thereof of from 1.0 up to 10 milligram moles per 1.0 gram mole of phthalic anhydride into a heating zone operated at a temperature of from 250° C. up to a temperature of 350° C. for a residence time of from 2 up to 8 hours whereby a substantially phthalide-free liquid mixture forms; and

(g) the continuous introduction of said phthalide-free liquid mixture into a second fractionation system wherefrom compounds boiling below the boiling point temperature of phthalic anhydride are removed as a first fraction, phthalic anhydride product is removed as a second fraction and compounds boiling higher than phthalic anhydride are removed as a liquid residue fraction.

4,215,053

PRODUCTION OF ORTHO-PHTHALIC ACID AND ITS CONVERSION AND RECOVERY OF PHTHALIC ANHYDRIDE

David A. Palmer; George E. Kuhlmann; Houssam M. Naim; Nicholas C. Huie, all of Naperville, and Hobe Schroeder, Warrenville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,664

Int. Cl.[2] C07D *307/89*

U.S. Cl. 260—346.7 **6 Claims**

1. A process for the preparation of liquid o-phthalic acid from liquid o-xylene, the conversion of said o-phthalic acid to impure phthalic anhydride, the purification of said anhydride, and the recovery of it as a high purity product by the cooperating sequential steps of

(a) the continuous neat oxidation of liquid o-xylene with air in a stirred oxidation zone operated at a temperature from 160° C. up to 200° C. and a gauge pressure of from 21 up to 29 kg/cm^2 in the presence of catalysis provided by cobalt, manganese and bromine in the amounts based on one gram mole of o-xylene of from 0.25 up to 10 milligram atoms of cobalt, from 0.5 up to 5 milligram atoms of manganese and from 0.5 up to 40 milligram atoms of bromine and in the presence of from 0.2 up to 7 weight percent water in the reaction medium, with a ratio of air to xylene fed to provide 2 to 15 volume percent oxygen in the spent air exiting from the oxidation zone at a residence time sufficient to maintain a liquid reaction medium mixture containing from 8 to 40 weight percent o-phthalic acid and from 6 up to 30 weight percent o-xylene;

(b) the continuous introduction of said liquid reaction medium mixture and air into a second stirred oxidation zone operated at a temperature of from 210° C. up to 230° C. and a gauge pressure of from 26.7 up to 32 kg/cm^2 in the presence of from 1 up to 7 weight percent water in the reaction medium with a ratio of air to said liquid reaction medium to provide from 5 up to 10 volume percent oxygen in the spent air exiting the second oxidation zone and in the presence of additional catalyst components which provides at least one additional milligram atom of cobalt per 1.0 gram mole of xylene charged to the first oxidation zone for a residence time sufficient to provide a liquid reaction effluent containing from 85 up to 92 weight percent o-phthalic acid in addition to liquid water and impurity amounts of benzoic acid, o-toluic acid, 2-carboxybenzaldehyde, phthalide, and higher boiling compounds including bromine-containing compounds;

(c) the continuous introduction of the liquid reaction effluent from the second oxidation zone into a combination dehydration-evaporation zone wherein o-phthalic acid is rapidly dehydrated to its anhydride and rapidly evaporated to a mixture of phthalic anhydride, water, benzoic acid, o-toluic acid, 2-carboxybenzaldehyde and bromine-containing compounds' vapors together with entrained phthalide vapors;

(d) the continuous introduction of said mixture of vapors into a fractionation system whose reflux liquid is inert to the components in said vapor mixture, boils at a temperature below the boiling temperature of phthalic anhydride which is a liquid at the freezing point temperature of said anhydride and dissolves it at a temperature between its freezing and melting temperatures wherein liquid water is removed as one fraction and liquid partially purified phthalic anhydride is removed as a second fraction;

(e) the continuous introduction of said liquid partially purified phthalic anhydride and potassium hydroxide in an amount thereof from 1.0 up to 10 milligram moles per 1.0 gram mole of phthalic anhydride into a heating zone operated at a temperature of from 250° C. up to a temperature of 350° C. for a residence time of from 2 up to 8 hours whereby a substantially phthalide-free liquid mixture forms; and

(f) the continuous introduction of said phthalide-free liquid mixture into a second fractionation system wherefrom compounds boiling below the boiling point temperature of phthalic anhydride are removed as a first fraction, phthalic anhydride product is removed as a second fraction, and compounds boiling higher than phthalic anhydride are removed as a liquid residue fraction.

4,215,054

PRODUCTION OF LIQUID ORTHO-PHTHALIC ACID AND ITS CONVERSION TO HIGH PURITY PHTHALIC ANHYDRIDE

Hobe Schroeder, Warrenville; George E. Kuhlmann, Naperville; Sydney G. Horsfield, Wheaton, and David A. Palmer, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,827
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.7 **4 Claims**

1. A process for preparing high purity phthalic anhydride which comprises the combination of the sequential continuous steps of (a) single-step neat oxidation of liquid o-xylene with air or air enriched to 50 volume percent oxygen with oxygen gas in a stirred oxidation zone operated at a temperature of from 200° C. up to 235° C. under a gauge pressure of from 23 up to 31 kg/cm^2 and for a residence time therein of from 90 up to 120 minutes, in the presence of from 2 up to 21 weight percent water and based on 1.0 gram mole of o-xylene in the presence of from 5 up to 20 grams of benzoic acid, from 0.5 up to 20 milligram atoms of cobalt, from 0.15 up to 20 milligram atoms of manganese and from 0.225 up to about 60 milligram atoms of bromine whereby a liquid mixture containing from 70 up of 85 weight percent o-phthalic acid is formed containing phthalide as one impurity; (b) rapid dehydration of o-phthalic acid content of said liquid mixture to phthalic anhydride at a pressure of from one atmosphere down to 0.05 atmosphere and a temperature of from 180° C. to 250° C. to rapidly vaporize said anhydride and water from the liquid mixture; (c) removal of bromine by contacting said vapor mixture with a noble metal catalyst; (d) separation of water vapor from said vaporized phthalic anhydride by direct contact in a fractionating system between the vapor mixture and a water immiscible and inert heat exchange liquid which boils at a temperature below the boiling temperature of said anhydride, is a liquid at a temperature below the freezing temperature of said anhydride, and is a solvent for said anhydride at a temperature between its freezing point and melting point wherefrom a water-free liquid impure phthalic anhydride at a temperature of from 200° C. up to 250° C. is removed as a bottom fraction from said fractionating system; (e) removal of phthalide from said liquid impure phthalic anhydride by heating it to a temperature of from 250° C. up to 350° C. in the presence of from 1.0 up to 10 milligram moles of potassium hydroxide; and (f) fractionation of said phthalide-free impure phthalic anhydride at a pressure of from 0.026 up to 1.0 atmosphere to remove a first fraction containing all of the benzoic acid, a second fraction comprising the phthalic anhydride product and a third fraction comprising materials boiling higher than phthalic anhydride.

4,215,055

PRODUCTION OF LIQUID ORTHO-PHTHALIC ACID AND ITS CONVERSION TO HIGH PURITY PHTHALIC ANHDYRIDE

David A. Palmer; George E. Kuhlmann, both of Naperville; Sydney G. Horsfield, Wheaton, and Hobe Schroeder, Warrenville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,828
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.7 **4 Claims**

1. A process for preparing high purity phthalic anhydride which comprises the combination of the sequential continuous steps of (a) single-step neat oxidation of liquid o-xylene with air or air enriched to 50 volume percent oxygen with oxygen gas in a stirred oxidation zone operated at a temperature of from 200° C. up to 235° C. under a gauge pressure of from 23 up to 31 kg/cm^2 and for a residence time therein of from 90 up to 120 minutes, in the presence of from 2 up to 21 weight percent water and based on 1.0 gram mole of o-xylene in the presence of from 5 up to 20 grams of benzoic acid, from 0.5 up to 20 milligram atoms of cobalt, from 0.15 up to 20 milligram atoms of manganese and from 0.225 up to about 60 milligram atoms of bromine whereby a liquid mixture containing from 70 up to 85 weight percent o-phthalic acid is formed, containing phthalide as one impurity; (b) rapid dehydration of o-phthalic acid content of said liquid mixture to phthalic anhydride at a pressure of from one atmosphere down to 0.05 atmosphere and a temperature of from 180° C. to 250° C., and to rapidly vaporize said anhydride and water from the liquid mixture; (c) separation of water vapor from said vaporized phthalic anhydride by direct contact in a fractionating system between the vapor mixture and a water immiscible and inert heat exchange liquid which boils at a temperature below the boiling temperature of said anhydride, is a liquid at a temperature below the freezing temperature of said anhydride, and is a solvent for said anhydride at a temperature between its melting point and freezing point wherefrom a water-free liquid impure phthalic anhydride at a temperature of from 200° C. up to 250° C. is removed as a bottom fraction from said fractionating system; (d) removal of phthalide from said liquid impure phthalic anhydride by heating it to a temperature of from 250° C. up to 350° C. in the presence of from 1.0 up to 10 milligram moles of potassium hydroxide; and (e) fractionation of said phthalide-free impure phthalic anhydride at a pressure of from 0.026 up to 1.0 atmosphere to remove a first fraction containing all of the benzoic acid, a second fraction comprising the phthalic anhydride product and a third fraction comprising materials boiling higher than phthalic anhydride.

4,215,056

FORMATION, PURIFICATION AND RECOVERY OF PHTHALIC ANHYDRIDE

Hobe Schroeder, Warrenville, and David A. Palmer, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,625
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.7 **6 Claims**

1. A process for the formation, purification and recovery of phthalic anhydride from a mixture comprising on a weight basis from 70 up to 90 percent o-phthalic acid, from 1.5 up to 21 percent water, from 0.3 up to 13 percent benzoic acid, from 0.2 up to 2 percent o-toluic acid, from 0.1 up to 2 percent phthalide, from 0.2 up to one percent 2-carboxybenzaldehyde, and from 1.3 up to 4 percent higher boiling compounds; which process comprises subjecting said mixture as a liquid to the sequential steps of (a) rapid dehydration of o-phthalic acid to its anhydride under conditions for rapid evaporation of said anhydride wherein a mixture of vapors of said anhydride, water and the oxygen-containing aromatic compounds comprising benzoic acid, o-toluic acid, phthalide and 2-carboxybenzaldehyde is formed; (b) separating water vapor from said mixture of vapors by contacting in a fractionation zone such mixture of vapors in countercurrent flow with a reflux liquid at a temperature below the boiling temperature of said anhydride, which liquid is inert to the components of said mixture of vapors, a solvent for said anhydride at a temperature between its freezing point and its melting point, remains liquid at and below the freezing point temperature of said anhydride, boils at a temperature below the boiling point temperature of said anhydride, is substantially immiscible with water, and does not form an azeotrope with said anhydride; (c) removal of phthalide from the resulting water-free mixture of said anhydride and said oxygen-containing aromatic compounds by heating to a temperature above 250° C. such mixture of said anhydride and oxygen-containing aromatic compounds in the presence of an alkali metal hydroxide having a molecular weight of at least 56 until the presence of phthalide is no longer detectable; and (d) fractionation of the mixture resulting from step (c) to remove: as a first fraction substantially all of the benzoic acid, o-toluic acid and 2-carboxybenzaldehyde; as a second fraction product phthalic anhydride and leave as a third fraction the compounds boiling higher than phthalic anhydride.

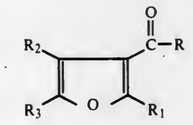
4,215,057

PROCESS FOR THE PRODUCTION OF SUBSTITUTED FURANS

Rudolf Kaufmann, Burghausen; Hermann Bräunling, Munich; Norman Häberle, Munich, and Reinhard Müller, Munich, all of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,645
Claims priority, application Fed. Rep. of Germany, May 1, 1978, 2800502
Int. Cl.[2] C07D *307/46, 307/68*
U.S. Cl. 260—347.5 **6 Claims**

1. A process for the production of substituted furans of the general formula



wherein R is a member of the group consisting of alkoxy radicals with 1-6 C-atoms, a substituted aryloxy radical, an unsubstituted aryloxy radical, and an alkyl radical, R_1 is an alkyl or aryl radical with 1-6 C-atoms, R_2 and R_3 respectively, or both, represent an alkyl radical with 1-6 C-atoms, and hydrogen, by reacting a β-dicarbonyl compound with an α-chlorocarbonyl compound in the presence of a compound capable of combining with hydrochloric acid formed, the process being characterized in that the reaction is carried out in water at pH values between 2 and 7 with addition of equimolar amounts of an alkaline earth carbonate and wherein to the reaction mixture 0.1-20 mols % are added of a substituted or unsubstituted mononitrogen compound calculated on the β-dicarbonyl compound.

4,215,058

PROCESS OF EPOXIDATION OF OILS

Eric Jourdan-Laforte, Ecully, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Brevets Georges Claude, Paris, France

Filed Aug. 29, 1978, Ser. No. 937,873
Claims priority, application France, Sep. 13, 1977, 77 27563
Int. Cl.[2] C07D *301/16*
U.S. Cl. 260—348.27 **7 Claims**

1. In a process for the epoxidation of soybean oil by the action of a lower aliphatic peracid, the improvement wherein the epoxidation reaction is performed in the presence of an amount sufficient to improve the stability of the resultant epoxidized soybean oil of a complexing agent, selected from the group consisting of diethylenetriaminopentacetic acid and alkali and alkaline-earth salts thereof, said amount being between 5 and 100 mg per kg of said oil.

4,215,059

BORIDE CATALYST FOR EPOXIDIZING OLEFINIC COMPOUNDS

Robert M. Gipson, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 565,004, Apr. 4, 1975, Pat. No. 4,038,290.
This application Jun. 25, 1976, Ser. No. 699,837
Int. Cl.[2] C07D *301/20*
U.S. Cl. 260—348.29 **7 Claims**

1. A method for the liquid phase epoxidation of an olefin having from about 2 to about 60 carbon atoms with an organic hydroperoxide comprising the step of:

intimately contacting said olefin with said organic hydroperoxide at lower temperatures of about 25° C. to about 200° C. and pressures sufficient to maintain the product and reactants substantially in liquid phase in the presence of a catalytically effective amount of a binary boride of boron and a metal selected from the group consisting of tungsten, molybdenum and chromium.

4,215,060

BORIDE CATALYST FOR EPOXIDIZING OLEFINIC COMPOUNDS

Robert M. Gipson, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 565,004, Apr. 4, 1975, Pat. No. 4,038,290.
This application Jul. 9, 1976, Ser. No. 703,868
Int. Cl.[2] C07D *301/20*
U.S. Cl. 260—348.29 **7 Claims**

1. A method for the liquid phase epoxidation of an olefin having from about 2 to about 60 carbon atoms with an organic hydroperoxide comprising the step of:

intimately contacting said olefin with said organic hydroperoxide at lower temperatures of about 25° C. to about 200° C. and pressures sufficient to maintain the product and reactants substantially in liquid phase in the presence of a catalytically effective amount of a binary boride of boron and a metal selected from the group consisting of vanadium, niobium and tantalum.

4,215,061

BORIDE CATALYST FOR EPOXIDIZING OLEFINIC COMPOUNDS

Robert M. Gipson, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 565,004, Apr. 4, 1975, Pat. No. 4,038,290.
This application Jul. 9, 1976, Ser. No. 703,869
Int. Cl.[2] C07D *301/20*
U.S. Cl. 260—348.29 **2 Claims**

1. A method for the liquid phase epoxidation of an olefin having from about 2 to about 60 carbon atoms with an organic hydroperoxide comprising the step of:

intimately contacting said olefin with said organic hydroperoxide at lower temperatures of about 25° C. to about 200° C. and pressures sufficient to maintain the product and reactants substantially in liquid phase in the presence of a catalytically effective amount of a binary boride of boron and zirconium.

4,215,062

ANTHRACYCLINE SYNTHESIS

Lester A. Mitscher, Lawrence, Kans., assignor to University of Kansas Endowment Association, Lawrence, Kans.

Filed May 22, 1978, Ser. No. 908,256
Int. Cl.[2] C07C *87/10, 49/74*
U.S. Cl. 260—365 **30 Claims**

1. A process for producing 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-2,6,11-trioxonaphthacene from aloe-emodin comprising

a. halogenating aloe-emodin to produce 1,8-dihydroxy-3-halomethyl-9,10-anthraquinone;

b. reacting 1,8-dihydroxy-3-halomethyl-9,10-anthraquinone with a dialkyl-2-carbalkoxysuccinate in which the alkyl and alkoxy groups contain up to about 6 carbon atoms, to produce 1,8-dihydroxy-3-(2,2,3-trialkoxycarbonylpropyl)-9,10-anthraquinone;

c. saponifying 1,8-dihydroxy-3-(2,2,3-trialkoxycarbonylpropyl)-9,10-anthraquinone to produce 1,8-dihydroxy-3-(2,2,3-tricarboxypropyl)-9,10-anthraquinone;

d. decarboxylating 1,8-dihydroxy-3-(2,2,3-tricarboxypropyl)-9,10-anthraquinone to produce 1,8-dihydroxy-3-(2,3-dicarboxypropyl)-9,10-anthraquinone;

e. reducing 1,8-dihydroxy-3-(2,3-dicarboxypropyl)-9,10-anthraquinone to 1,8 dihydroxy-3-(2,3-dicarboxypropyl)-9,10-(H)-anthr-9-one;

f. cyclizing 1,8 dihydroxy-3-(2,3-dicarboxypropyl)-9,10-(H)-anthr-9-one to produce 6,8-dihydroxy-1,2,3,4,7,12-hexahydro-1,7-dioxo-[1,2]-benzanthracene-3-carboxylic acid;

g. oxidizing 6,8 dihydroxy-1,2,3,4,7,12-hexahydro-1,7 dioxo-

[1,2]-benzanthracene-3-carboxylic acid to produce 6,8-dihydroxy-1,2,3,4,7,12-hexahydro-1,7,12-trioxo-[1,2]-benzanthracene-3-carboxylic acid;

h. subjecting 6,8-dihydroxy-1,2,3,4,7,12-hexahydro-1,7,12-trioxo-[1,2]-benzanthracene-3-carboxylic acid to Baeyer-Villiger oxidization to produce 1,4,5-trihydroxy-2-(2,3-dicarboxypropyl)-9,10-anthraquinone;

i. reducing 1,4,5-trihydroxy-2-(2,3-dicarboxypropyl)-9,10-anthraquinone to produce 1,4,8-trihydroxy-3-(2,3-dicarboxypropyl)-9,10-(H)-anthr-9-one;

j. condensing 1,4,8-trihydroxy-3-(2,3-dicarboxypropyl)-9,10-(H)-anthr-9-one to produce 5,7-12-trihydroxy-1,2,3,4,6,11-hexahydro-4,6-dioxonaphthacene-2-carboxylic acid;

k. oxidizing 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-4,6-dioxonaphthacene to produce 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-4,6,11-trioxonaphthacene-2-carboxylic acid;

l. reducing 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-4,6,11-trioxonaphthacene-2-carboxylic acid to produce 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene-2-carboxylic acid;

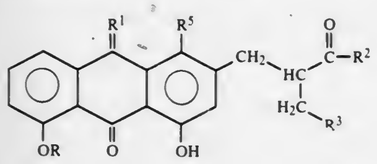
m. alkylating 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-6,11-naphthacene-2-carboxylic acid to produce 2-methylcarbonyl-5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene;

n. oxidizing 2-methylcarbonyl-5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene to produce 5,7,12-trihydroxy-2-acetoxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene;

o. hydrolyzing 5,7,12-trihydroxy-2-acetoxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene to produce 2,5,7,12-tetrahydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene; and

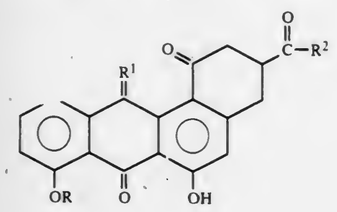
p. oxidizing 2,5,7,12-tetrahydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene to produce 5,7,12-trihydroxy-1,2,3,4,6,11-hexahydro-2,6,11-trioxonaphthacene.

3. A compound having the formula:



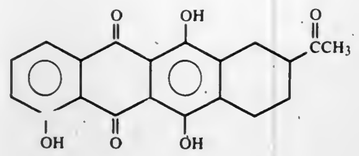
wherein:
R is H or R^4;
R^1 is O or H_2;
R^2 is OH or OR^4;
R^3 is COOH or $COOR^4$;
R^4 is a C_1 to C_6 alkyl group; and
R^5 is H or OH.

15. A compound having the formula:



wherein:
R is H or R^3;
R^1 is O or H_2;
R^2 is OH or OR^3;
R^3 is a C_1 to C_6 alkyl group.

23. A compound having the formula:



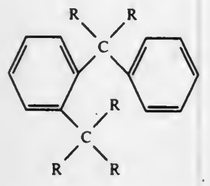
4,215,063

OXIDATION CATALYST AND USE IN THE PRODUCTION OF ANTHRAQUINONE

Joseph L. Schmitt, Jr., Bethel, and Hiei Ando, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 3, 1979, Ser. No. 35,664
Int. Cl.[2] C09B *1/00*
U.S. Cl. 260—369 **15 Claims**

1. In a process for the manufacture of anthraquinone by oxidation of diphenylmethane derivatives of the formula:



wherein each R may be the same or different and is selected from hydrogen or an aliphatic radical, by means of oxygen in the gas phase in the presence of a catalyst at an elevated temperature, the improvement comprising using a catalyst which is comprised of vanadium, calculated as vanadium pentoxide, and a second metal selected from the group consisting of ruthenium, rhenium, cerium, niobium and rhodium in a weight ratio of about 2:1 to 50:1.

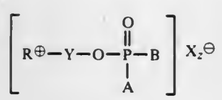
4,215,064

PHOSPHOBETAINES

Martin K. O. Lindemann, Bridgewater; Raymond L. Mayhew, Summit; Anthony J. O'Lenick, Jr., Fairlawn, and Robert J. Verdicchio, Succasunna, all of N.J., assignors to Johnson & Johnson, New Brunswick and Mona Industries, Inc., Paterson, both of, N.J.

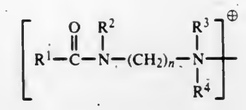
Filed Nov. 30, 1978, Ser. No. 965,461
Int. Cl.[2] A23J *7/00;* **C07F** *9/02;* **C11C** *3/00*
U.S. Cl. 260—403 **19 Claims**

1. Phosphobetaine compounds of the formula



(I)

wherein
A is selected from O^-, OM, and $-O-Y-R^+$
B is selected from O^- and OM'
X^- is an anion
z is an integer from 0 to 2
with the proviso that only one of A and B can be O^- and z is of a value necessary for charge balance;
R is an amidoamine reactant moiety of the formula



wherein
R^1 is alkyl, alkenyl, alkoxy, or hydroxyalkyl of from 5 to 22 carbon atoms each, or aryl or alkaryl of up to 20 carbon atoms,
R^2 is hydrogen or alkyl, hydroxyalkyl or alkenyl of up to 6 carbon atoms each or cycloalkyl of up to 6 carbon atoms, preferably of from 2 to 5 carbon atoms, or polyoxyalkalene of up to 10 carbon atoms,
R^3 and R^4, which may be the same or different, are selected from alkyl, hydroxyalkyl, carboxyalkyl of up to 6 carbon atoms in each alkyl moiety, and polyoxyalkylene of up to 10 carbon atoms; in addition, R^3 and R^4 taken together with the nitrogen to which they are attached, may represent an N-heterocycle, e.g., a morpholino structure, in which the Y radical is bonded to a ring atom of said N-heterocycle other than the nitrogen of the R moiety;
n is an integer from 2 to 12; Y is alkylene, optionally interrupted by up to 3 oxygen atoms, of up to 12 carbon atoms, which alkylene chain may optionally be substituted with lower alkyl, alkoxy, hydroxy or hydroxyalkyl, e.g. of not more than 10 carbon atoms each;
M and M', which may be the same or different, are (a) hydrogen, (b) an organic radical selected from alkyl or hydroxyalkyl of up to 6 carbon atoms, polyhydroxyalkyl of up to 10 carbon atoms, glyceryl, cycloalkyl of up to 6 carbon atoms, aryl or arylalkyl of up to 10 carbon atoms, or (c) a salt radical selected from alkali metals, alkaline earth metals, and mono-, di-, or tri-ethanolamine, provided that when either M or M' is an organic radical (b), the other M and M' must be hydrogen or a salt radical (c).

4,215,065

ACID SEPARATION

A. John Solodar, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1979, Ser. No. 451
Int. Cl.[2] C11C *1/04, 3/02*
U.S. Cl. 260—415 **16 Claims**

8. The method of preparation and separation for obtaining separate high and low normal content fractions of carbonylation products which comprises hydroesterifying a mixed olefin feed containing both linear and branched molecules and varying in molecular weight over at least a three-carbon range by reacting such olefin feed with carbon monoxide and alcohol over a catalyst at elevated temperature and pressure hydroesterification conditions to obtain a hydroesterification product, and subjecting such hydroesterification product to partial hydrolysis thereby hydrolyzing more of the normal esters than of the branched esters, and separating the esters from the resulting acids to provide acids having enriched content of normal acids and esters enriched in content of branched esters.

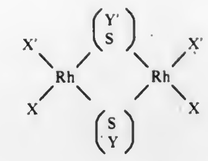
4,215,066

BINUCLEAR RHODIUM COMPLEX AS A HYDROFORMYLATION AND HYDROGENATION CATALYST

Philippe Kalck, Auzeville; Rene Poilblanc, Castenet Colosan, and Antoine Gaset, Toulouse, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Nov. 13, 1978, Ser. No. 960,001
Claims priority, application France, Nov. 10, 1977, 77 33865
Int. Cl.[2] C07F *15/00*
U.S. Cl. 260—429 R **5 Claims**

1. A hydroformylation and hydrogenation catalyst having the formula:



wherein X and X' can be the same or different; when X and X' are the same they are organic tertiary phosphite groups and when different X is a CO group and X' is an organic tertiary phosphite group or an aromatic phosphine group, and SY and SY' are thiolat groups.

4,215,067

PROCESS FOR THE PREPARATION OF ZINC SALTS OF DIHYDROCARBYLDITHIOPHOSPHORIC ACIDS

Cecil G. Brannen, West Chicago, and Nicolas C. Petrellis, Lisle, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 29, 1978, Ser. No. 974,327
Int. Cl.[2] C07F *3/06*
U.S. Cl. 260—429.9 **12 Claims**

1. A process for the production of substantially haze-free zinc dihydrocarbyl dithiophosphate comprising reacting a dihydrocarbyl dithiophosphoric acid and zinc oxide in the presence of a surface active agent.

4,215,068

PREPARATION OF 1,3-DICYANOCYCLOPENTANE

Ching-Yong Wu, O'Hara Township, Allegheny County, and Harold E. Swift, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 854,665, Nov. 25, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,005
Int. Cl.[2] C07C *120/02, 121/46*
U.S. Cl. 260—464 **9 Claims**

1. A method of hydrocyanating 2-cyanocyclopentene to a product mixture predominant in 1,3-dicyanocyclopentane which comprises contacting a composition comprising 2-cyanocyclopentene with hydrogen cyanide at a temperature from about −25° C. to about 200° C. in the presence of

(a) a zero valent nickel complex, free of CO, having the formula $Ni(A^1)(A^2)(A^3)(A^4)$ where A^1, A^2, A^3 and A^4 are neutral ligands which may be the same or different and have the formula P (X) (Y) (Z) wherein X and Y are selected from the class consisting of R and OR, and Z has the formula OR, wherein the three R's may be the same or different and wherein R is selected from the class consisting of alkyl and aryl groups containing up to 18 carbon atoms; and

(b) a promoting amount of a compound containing a metal selected from the group consisting of zinc, cadmium, beryllium, aluminum, gallium, indium, silver, titanium, zirconium, hafnium, germanium, tin, vanadium, niobium, scandium, chromium, molybdenum, tungsten, manganese, rhenium, palladium, thorium, erbium, iron and cobalt; wherein

(1) the molar ratio of said promoter to the nickel complex is from about 1:16 to 50:1; and

(2) the molar ratio of the composition comprising 2-cyanocyclopentene to the nickel complex is from about 10:1 to 2,000:1.

9. The compound 1,3-dicyanocyclopentane.

4,215,069

ARYLTHIOVINYLCYCLOPROPANECARBOXYLATE INTERMEDIATES

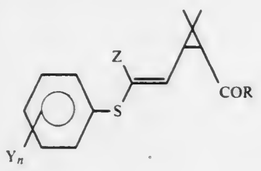
John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 872,413, Jan. 26, 1978. This application Jun. 18, 1979, Ser. No. 50,011

Int. Cl.[2] C07C *149/40, 149/415*

U.S. Cl. 260—465 D **1 Claim**

1. A compound of the formula



wherein

Y is independently halogen, cyano, lower alkyl, lower haloalkyl, lower alkoxy or lower alkylthio,

n is 0, 1, 2, or 3,

Z is hydrogen, halogen, cyano or lower alkyl, and

R is halogen, hydroxy or lower alkoxy.

4,215,070

N-(PHOSPHONOACETYL)-L-ASPARTIC ACID COMPOUNDS AND METHODS FOR THEIR PREPARATION

Robert J. Schultz, Amherst, and Fred W. Starks, Kenmore, both of N.Y., assignors to Starks Associates, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 932,501, Aug. 10, 1978, which is a continuation-in-part of Ser. No. 851,382, Nov. 14, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,579

Int. Cl.[2] C07F *9/38*

U.S. Cl. 260—502.5 **1 Claim**

1. A compound which is N-(phosphonoacetyl)-L-aspartic acid, disodium salt.

4,215,071

PROCESS FOR THE PREPARATION OF SULPHONIC ACID CHLORIDES

Heinz U. Blank, Odenthal, and Theodor Pfister, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

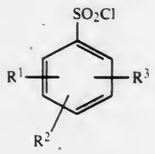
Filed Sep. 8, 1978, Ser. No. 941,099

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743542

Int. Cl.[2] C07C *143/26*

U.S. Cl. 260—543 R **5 Claims**

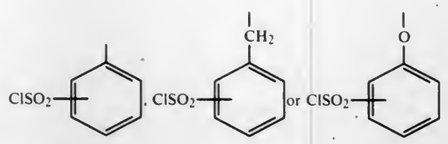
1. In a process for the preparation of sulphonic acid chloride of the formula



(I)

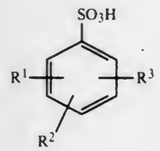
wherein

R^1, R^2 and R^3 are identical or different and denote hydrogen, a lower alkyl radical or a cycloalkyl radical, halogen, nitro, aryl, aralkyl, aryl ether or a radical



or wherein

adjacent radicals R^1 and R^2 are linked to form a cycloaliphatic or aromatic carbocyclic ring which is optionally substituted by a sulphonic acid chloride group, by contacting a sulphonic acid of the formula



(II)

wherein

R^1, R^2 and R^3 have the above-described meanings with phosgene in the presence of N,N-dialkylcarboxylic acid amide catalyst, the improvement which comprises carrying out the process in the presence of a sulphonating agent.

4,215,072

DIPHOSPHA-S-TRIAZINES

Kazimiera J. L. Paciorek, Corona Del Mar; Reinhold H. Kratzer, Irvine; Jacquelyn Kaufman, Costa Mesa; Thomas I. Ito, and James H. Nakahara, both of Fountain Valley, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 7, 1979, Ser. No. 10,092

Int. Cl.[2] C07F *9/65, 9/28*

U.S. Cl. 260—551 P **5 Claims**

1. A diphospha-s-triazine having the following structural formula:



where R_f is a perfluoroalkyl or perfluoroalkylether group, and R' and R'' are each the same or different aryl group.

4,215,073

PROCESS FOR THE PRODUCTION OF DIAMINES

Boy Cornils, Dinslaken; Werner Konkol, Oberhausen; Gerhard Diekhaus, Oberhausen, and Ernst Wiebus, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,949

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824423

Int. Cl.[2] C07C *85/08*

U.S. Cl. 260—563 D **8 Claims**

1. A process for the production of an aliphatic or cycloaliphatic diamine having 4 to 18 carbon atoms which comprises the steps of:

A. in a first stage contacting an aliphatic or cycloaliphatic dialdehyde with a monoamine at atmospheric pressure and at a temperature up to 100° C. to form the corresponding diazomethyne; and

B. in a subsequent stage contacting said diazomethyne with a mixture of ammonia and hydrogen at a temperature of 60° to 200° C. and at a pressure of 50 to 300 bars in the presence of a hydrogenation catalyst.

4,215,074

PROCESS FOR PREPARING CIS-BICYCLOOCTYLAMINES

David C. Horwell, Farnborough, and Graham H. Timms, Camberley, both of England, assignors to Lilly Industries Limited, London, England

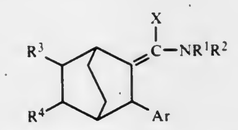
Filed Jun. 18, 1979, Ser. No. 49,672

Claims priority, application United Kingdom, Jul. 15, 1978, 29988/78

Int. Cl.[2] C07C *83/00*

U.S. Cl. 260—563 P **5 Claims**

4. A compound of formula (II):



(II)

where R^1 and R^2 are C_{1-3} alkyl, Ar is a phenyl group optionally substituted by up to two halogen atoms, R^3 and R^4 are hydrogen or taken together represent a single bond, and X is hydrogen, bromine or chlorine.

4,215,075

KETOXIME CARBAMATES

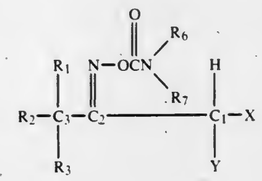
Thomas A. Magee, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 786,974, Apr. 13, 1977, Pat. No. 4,128,581, Ser. No. 786,974, Apr. 13, 1977, Pat. No. 4,128,581, Continuation-in-part of Ser. No. 553,648, Feb. 27, 1975, Ser. No. 553,648, Feb. 27, 1975, Continuation-in-part of Ser. No. 229,207, Feb. 24, 1972, Pat. No. 3,875,232, Ser. No. 229,207, Feb. 24, 1972, Continuation-in-part of Ser. No. 132,584, Apr. 8, 1971, abandoned. This application Dec. 4, 1978, Ser. No. 966,390

Int. Cl.[2] C07C *131/00*

U.S. Cl. 260—566 AC **10 Claims**

1. A composition of matter having the formula:



where:

R_1=hydrogen, R_2-R_3 or X;

R_2-R_3=lower alkyl, lower alkenyl, or lower alkynyl, with the proviso that R_2 and R_3 may be connected to form a cycloaliphatic ring;

R_6-R_7=hydrogen, lower alkyl, lower akenyl, or lower alkynyl;

X-Y=X and Y may be the same or different and each is selected from the group consisting of SR_8, $S(O)R_8$, SO_2R_8, OR_8, OSO_2R_8, NR_8R_9, NO_2, CN, SCN, N_3, or halogen;

R_8=hydrogen, lower alkyl, lower akenyl, lower alkynyl, or aryl, and

R_9=hydrogen or lower alkyl.

4,215,076

SURFACTANT-PROMOTED ALDOL REACTIONS

Kenneth C. Stueben, Bridgewater, and Mary L. Deem, Bernardsville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 23, 1976, Ser. No. 679,714

Int. Cl.[2] C07C *47/02*

U.S. Cl. 568—461 **15 Claims**

1. In the method of condensing aliphatic aldehydes or ketones in the presence of an aqueous base as catalyst to produce an aldol reaction product, the improvement which comprises using as a co-catalyst a neutral or cationic surfactant at a molar concentration of about 10^{-4} to about 10^{-1} based on the mole of said aliphatic aldehydes or ketones.

4,215,077

HYDROFORMYLATION OF OLEFINS

Mitsuo Matsumoto, and Masuhiko Tamura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 29, 1979, Ser. No. 7,660

Claims priority, application Japan, Feb. 9, 1978, 53/14410; Apr. 14, 1978, 53/44611

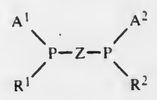
Int. Cl.[2] C07C *45/10*

U.S. Cl. 568—454 **18 Claims**

1. In a process for producing aldehydes by hydroformylating a lower olefin which comprises ethylene, propylene, 1-butene, isobutene, 1-pentene, allyl alcohol or allyl methyl ether at a temperature within the range of from about room temperature to 130° C., in an organic solvent in the presence of a rhodium complex having the general formula

$$HRh(CO)(PR_3)_3$$

wherein R is alkyl or aryl, or a rhodium carbonyl cluster, employed at a concentration of from 0.1 to 25 mg atoms/l of reaction mixture, and a trisubstituted phosphine in an amount of from 10 to 500 equivalents per rhodium atom, while maintaining a carbon monoxide partial pressure within the range of 0.1 to 2.5 atmospheres during the progress of the reaction and a ratio of hydrogen partial pressure to that of the carbon monoxide within the range of 1:2 to 5:1, the improvement which comprises adding to the reaction system a diphosphino alkane represented by the general formula



(I)

in an amount of 0.20 to 2.5 equivalents per gram atom of the rhodium present in said rhodium complex, wherein, in the formula, A^1 and A^2 are each aryl, R^1 and R^2 are each aryl or a saturated hydrocarbon residue containing one or more carbon atoms, the aryl groups being selected from the group consisting of unsubstituted phenyl and napthyl groups and phenyl and napthyl groups substituted with lower alkyl groups, and Z is an alkylene radical whose principal chain contains 2 to 5 carbon atoms, said alkylene radical being selected from the group consisting of unsubstituted alkylenes and alkylenes substituted with at least one lower alkyl radical.

4,215,078

PROCESS FOR MANUFACTURING CHLOROPRENE AND 2,3-DICHLOROBUTADIENE-1,3

Chester A. Hargreaves, II, Wilmington, Del.; Alexander T. Harris, Metairie, La., and Robert A. Schulze, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 2, 1979, Ser. No. 26,202
Int. Cl.[2] C07C *21/20*
U.S. Cl. 260—655 **8 Claims**

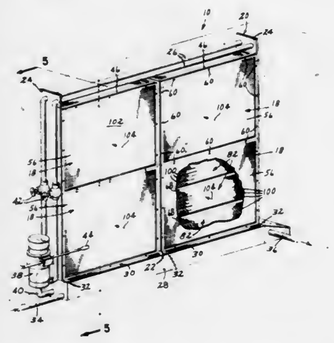
1. In a process for the dehydrochlorination of 3,4-dichlorobutene-1 to chloroprene or of 2,3,4-trichlorobutene-1 or 1,2,3,4-tetrachlorobutane to 2,3-dichlorobutadiene-1,3, the improvement of carrying out the dehydrochlorination with an aqueous solution of a mixture of sodium hydroxide and sodium chloride having the composition of chlor/alkali cell liquor; separating the reaction product mixture into an organic phase and an aqueous phase; recovering the desired product, chloroprene or 2,3-dichlorobutadiene-1,3, from the organic phase; electrolyzing the aqueous phase, consisting essentially of sodium chloride brine, in a chlor/alkali cell to a liquor consisting essentially of an aqueous solution of a mixture of sodium hydroxide and sodium chloride; and recycling the chlor/alkali cell liquor to the dehydrochlorination step.

4,215,079

METHOD AND APPARATUS FOR CONTACTING LIQUIDS AND GASES

Steve Christophersen, Richfield, and Raymond G. Neaman, St. Louis Park, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Mar. 22, 1978, Ser. No. 888,995
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—36 R **22 Claims**



1. A liquid and gas contact apparatus comprising:
(a) a contact body having a plurality of pleated porous media elements, each element being formed in a generally zig-zag configuration with pleats and upper and lower tips;
(b) air passages formed between said pleats, each air passage extending generally in a single straight line direction from an air inlet side to an air outlet side of said contact body;
(c) screen means for supporting said elements one above another in a generally horizontal disposition with all of said air passages being parallel to one another; and
(d) means for supplying water to an uppermost element to saturate all of said elements with water and to establish a downward flow of water through said elements; and
(e) said screen support means leaving a major portion of the generally horizontal cross-section area of said media elements open to permit water flow directly between adjacent vertically spaced media elements directly through substantially the entire cross-section of each media element and each of said media elements having a porosity sufficient to enable substantially all of the water supplied to an uppermost element by said water supply means which flows to a lowermost element to flow directly through the materials of said media elements through substantially the entire cross-section of each media element.

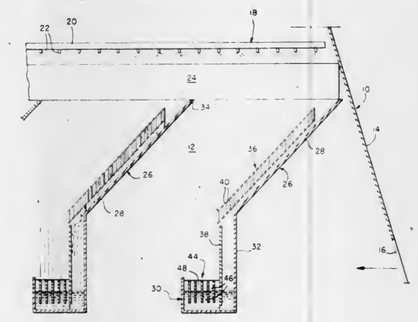
4. A method of cooling and moisturizing air comprising the steps of:
(a) arranging a plurality of pleated porous media elements having pleats and upper and lower tips one above the other with each of said elements being substantially parallel to the other of said elements to create a plurality of parallel passages each of which extends in a generally single straight line direction from an air inlet side to an air outlet side of said elements and with vertically adjacent media elements being substantially open to one another;
(b) supplying water to an uppermost element of said elements to saturate all of said elements with water;
(c) establishing a flow of water from said uppermost element to a lowermost element through each of said elements such that substantially all of the water flowing from the uppermost element to the lowermost element flows directly through substantially the entire cross-section of each element by flowing directly from substantially the entire cross-section area of each one of said media elements directly downward to the one of said media elements supported directly below without creating a film flow of water over and between the elements; and
(d) passing air between the pleats of said elements from an air inlet side to an air outlet side of the elements to evaporate the water saturated in the elements in order to cool and moisturize the air.

4,215,080

LIQUID COLLECTING DEVICE AND USE THEREOF IN LIQUID-GAS CONTACTING APPARATUS

Jean G. Ribier; Maurice J. Dorsemaine, and Bernard J. Sauvage, all of Brussels, Belgium, assignors to Hamon-Sobelco, S.A., Brussels, Belgium

Filed Sep. 20, 1978, Ser. No. 944,178
Claims priority, application France, Oct. 26, 1977, 77 32243
Int. Cl.[2] F28C *1/06*
U.S. Cl. 261—111 **3 Claims**



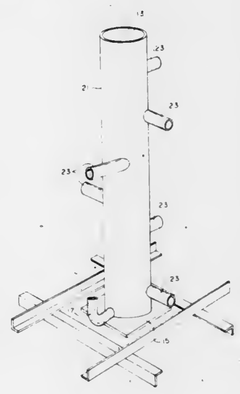
1. A device for placing a liquid in contact with a gas, including a chamber, at least one gas inlet opening in the lower part of said chamber and at least one gas outlet opening in its upper part, a liquid-distributing system within said chamber, means for placing the liquid in direct contact with the gas, positioned under the distribution system, liquid receiving devices arranged under said contact means to collect the liquid falling therefrom in the form of droplets or the like, each said receiving device including a vertically inclined wall and a duct extending along the lower edge of the wall, said receiving devices being arranged substantially parallel to one another and slightly overlapping horizontally to prevent any liquid from the contacting means from dropping directly down into said chamber, characterized by the fact that each receiving device includes a splash-trapping panel positioned slightly above said inclined wall, and covering the major portion of its inclined surface, said panels consisting of vertical partitions delimiting passages therebetween, which are open in the vertical direction;
said receiving device further characterized by the fact that said panel is constituted by a criss-cross system of longitudinal partitions extending substantially parallel to said duct and by transverse partitions extending along the slope of said wall, that said partitions define a plurality of quadrangular structures each open at the top and bottom; that
said panel projects beyond the lower edge of the wall and over said duct; and
that a substantially vertical deflecting plate extends between the lower edge of the panel and a short distance from the bottom of the duct.

4,215,081

LIQUID AERATOR

Kirtland H. Brooks, 1082 Laurel Dr., Lafayette, Calif. 94549

Filed Jan. 24, 1979, Ser. No. 6,008
Int. Cl.[2] B01D *47/02*
U.S. Cl. 261—122 **7 Claims**



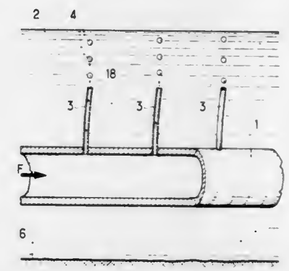
1. An apparatus for aerating a liquid comprising
a tube having an open upper end and submerged substantially vertically in said liquid and filled therewith,
a gas inlet to permit the injection of gas proximate the bottom end of said tube whereby gas bubbles emanating from said gas inlet mix with and rise through said liquid within said tube and cause said liquid therein to also rise through said tube and be discharged out of the upper end thereof, and
means to allow liquid to be continuously drawn into said tube through the sidewall thereof, said means being formed to cause the indrawn liquid to swirl around inside said tube as it mixes with the rising gas bubbles whereby the gas bubble-liquid mixture swirls as it rises through the tube thereby enhancing the aeration of the liquid by prolonging the period of contact between the rising gas bubbles and the liquid and causing greater agitation of the mixture.

4,215,082

DEVICE FOR INJECTING A GAS INTO A LIQUID

François Danel, Uriage, France, assignor to Societe Anonyme dete: Alsthom-Atlantique, France

Filed Feb. 6, 1976, Ser. No. 655,901
Claims priority, application France, Feb. 25, 1975, 75 05792; Dec. 22, 1975, 75 39259
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—124 **9 Claims**



1. Apparatus for injecting a gas into a quantity of liquid to provide the treated liquid with a given quality, comprising means for supplying gas to the liquid at a predetermined pressure and having at the place where the injection of the gas is to be effected a wall portion provided with a plurality of holes, a plurality of pipes mounted at one end in the holes of said wall portion and having substantially the remainder of their lengths surrounded by liquid with the other free ends thereof submerged in the quantity of liquid, each of said pipes being thin-walled with a small inside diameter, less than 2 mm, and having a length at least 20 times that of said diameter, the pressure of the gas supplied to said pipes forming at the free ends of said pipes bubbles of a given size, and the flexibility of said submerged pipes being such that the gas supplied therethrough to form the bubbles on the free ends of said pipes imparts to each such free submerged pipe end a slight movement causing the detachment of such bubble from said free pipe end, the gas pressure and the pipe flexibility causing the bubbles to form and be detached regularly and preventing spurious particles adhering to such free ends of the pipes, whereby said pipes regularly and evenly bring the gas into close contact with the treated liquid in the form of discrete gas units of given size.

4,215,083

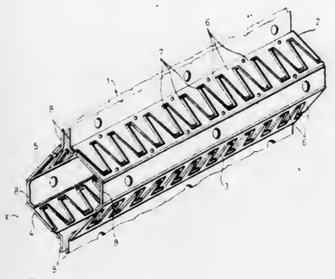
PACKING OF EQUIPMENT FOR THE PURPOSE OF CONTACTING MAINLY GASEOUS AND LIQUID MEDIUMS

György Fabry, and Istvan Takacs, both of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Mar. 31, 1978, Ser. No. 892,258
Claims priority, application Hungary, Apr. 27, 1978, RI 628
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—155 **12 Claims**

1. A column or tower packing adapted to be traversed by at least one fluid which comprises a stack of generally horizontal cells spaced apart vertically and horizontally, each of said cells being formed by two packing members extending transversely to the direction of flow of said fluid, each of said packing members comprising a pair of walls inclined to one another and joined by a third wall, the walls of each pair being dentate and formed with a multiplicity of spaced-apart vibratile elements

interdigitating with but spaced from corresponding vibratile elements of the other member of the respective cell, said ele-



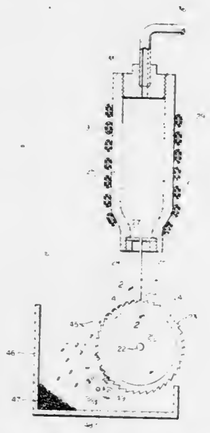
ments being dimensioned to be set into vibration by the passage of said fluid through the packing.

4,215,084

METHOD AND APPARATUS FOR PRODUCING FLAKE PARTICLES

Robert E. Maringer, Worthington, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio

Filed May 3, 1978, Ser. No. 902,358
The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.
Int. Cl.[2] B01J *2/02*; B22D *23/08*
U.S. Cl. 264—8 **17 Claims**



1. A method of producing flake particles from molten material, comprising:

(a) rotating a heat-extracting drum having a serrated periphery, with each serration comprising surfaces that meet in an edge substantially parallel to the axis of rotation;

(b) projecting upon said serrated periphery a stream of molten material to form a discrete flake particle on each serration while removing heat from the particle and at least partially solidifying said particle on said serration;

(c) releasing said particle from said serration; and

(d) cooling said particle in a surrounding atmosphere.

4,215,085

PROCESS FOR PREPARING EXTRUDED PELLETED PRODUCTS FROM MOLDING COMPOSITIONS

I. Luis Gomez, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 6, 1978, Ser. No. 957,882
Int. Cl.[2] B29C *23/00*
U.S. Cl. 264—15 **9 Claims**

1. A process for preparing an extruded pelleted molding composition which comprises:

(a) dry blending a nitrile copolymer containing free acrylonitrile monomer with about 0.005 to about 2% by weight based on the weight of the copolymer of a compound selected from the group consisting of unsaturated fatty acid aldehydes, and esters formed by the reaction of a short chain olefinic alcohol with a fatty acid or cyanuric acid, wherein the nitrile copolymer comprises at least about 10% by weight of polymerized acrylonitrile;

(b) melting and extruding the resulting blend; and then

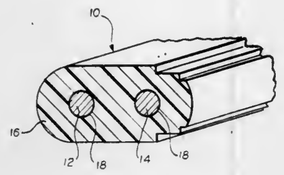
(c) pelletizing the extrudate.

4,215,086

METHOD OF MAKING FLAME RETARDANT EPR UNIPASS TELEPHONE DROP WIRE

Manuel A. Durakis, Brooklyn, N.Y., and John R. Reiser, Piscataway, N.J., assignors to General Cable Corporation, Greenwich, Conn.

Continuation of Ser. No. 831,474, Sep. 8, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,332
Int. Cl.[3] B29F *3/10*
U.S. Cl. 264—135 **8 Claims**



7. The method of making a telephone drop wire, including advancing a plurality of electric conductors along parallel paths spaced from one another and through guides in an extruder, extruding simultaneously over both of the conductors a semi-crystalline, low molecular weight ethylene-propylene diene terpolymer insulation with top and bottom surfaces of the insulation between the conductors having generally flat top and bottom surfaces substantially parallel to a center transverse center line through the axes of the conductors of the character described, and passing the plurality of conductors and their extruded covering through a continuous vulcanizer to cure and cross-link the extruded insulation polymer to a thermo-set condition.

4,215,087

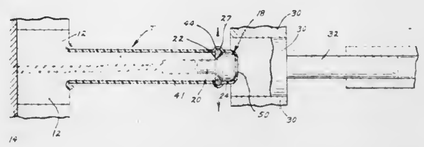
DEVICE AND METHOD FOR FORMING AN ANNULAR RAISED RIB ON A TUBULAR MEMBER

Donald W. Mathison, Minneapolis, Minn., assignor to Product Design and Engineering, Inc., Minneapolis, Minn.

Division of Ser. No. 792,356, Apr. 29, 1977, Pat. No. 4,102,623. This application Jan. 16, 1978, Ser. No. 869,510
Int. Cl.[2] B29C *17/00*
U.S. Cl. 264—320 **1 Claim**

1. The method of forming an annular raised rib on a tubular member consisting in providing a fixed primary mandrel and a secondary mandrel having a frusto-conical formation thereon, then slidably mounting said secondary mandrel on one end of said primary mandrel with the frusto-conical formation in juxtaposition to the one end of the primary mandrel, then

positioning a flexible ring between the frusto-conical formation and the one end of said primary mandrel, then positioning a tubular plastic member upon said primary and secondary mandrels, then heating said primary mandrel, then moving said secondary mandrel toward said primary mandrel to cause said



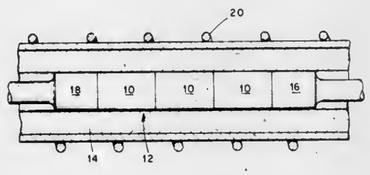
frusto-conical formation to expand the flexible ring radially outwardly of the end of the primary mandrel and against the tubular member to expand the same and form an annular raised rib thereon, then withdrawing the secondary mandrel from the primary mandrel whereby the ring contracts and then ejecting the tubular member from the primary and secondary mandrels.

4,215,088

METHOD FOR FABRICATING BORON CARBIDE ARTICLES

Zane L. Ardary, Oak Ridge, and Carl D. Reynolds, Clinton, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 31, 1978, Ser. No. 956,317
Int. Cl.[2] C04B *35/56, 35/64*
U.S. Cl. 264—332 **3 Claims**



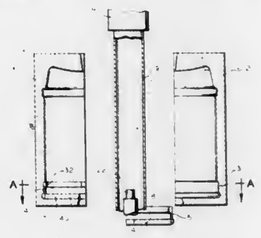
1. A method for fabricating an essentially uniformly dense boron carbide article of a length-to-diameter or width ratio greater than 2 to 1 comprising the steps of providing a plurality of article segments to be joined together to form the article with each of said article segments having a length-to-diameter or width ratio less than 1.5 to 1 and each being fabricated by hot pressing a composition consisting of boron carbide powder at a pressure and temperature effective to provide the article segment with a density greater than about 85% of theoretical density, providing each article segment with parallel planar end surfaces, placing a plurality of said article segments in a hot-pressing die in a line with the planar surfaces of adjacent article segments being disposed in intimate contact, and hot pressing the aligned article segments at a temperature and pressure effective to provide said article with a density over the length thereof in the range of about 94 to 98 percent theoretical density and greater than the density provided in the discrete hot pressing of each of the article segments and to provide a bond between adjacent article segments with said bond being at least equivalent in hardness, strength and density to a remainder of said article.

4,215,089

METHOD FOR BLOW MOLDING HOLLOW ARTICLE WITH INTEGRALLY BONDED ATTACHMENT

Albert R. Uhlig, and Andrew J. Stoll, III, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 821,690, Aug. 4, 1977, Pat. No. 4,140,236. This application Jul. 20, 1978, Ser. No. 926,181
Int. Cl.[2] B29C *17/07*
U.S. Cl. 264—516 **7 Claims**



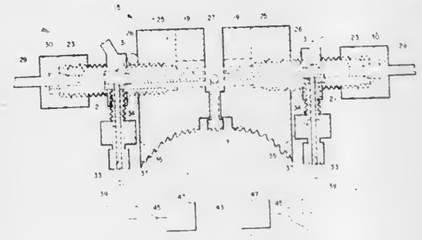
1. In a method for molding into the outer wall of a hollow plastic article a member positioned to surround the periphery of said article, which member has a full ring shape in cross-section, said method inserting such ringshaped member between the facing halves of a blow mold, inserting a hollow parison of soft thermoplastic material between said mold halves, closing said mold halves around said parison and blowing said parison to form a final hollow article having said ring-shaped member peripherally bonded thereto, the improvement which comprises (1) inserting into the halves of the blow mold, separate halves of the ring-shaped member, which halves are adapted to engage each other to form a full ring and (2) forming said full ring during the step of closing said blow mold halves, during which closing the ends of the halves of said ring-shaped member become lockingly engaged to form said full ring.

4,215,090

FLAME IONIZATION DETECTOR

Jack B. Dixon, Georgetown, Tex., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Dec. 18, 1978, Ser. No. 971,941
Int. Cl.[2] G01N *31/12, 25/22, 31/06*
U.S. Cl. 422—54 **15 Claims**



1. A flame ionization detector for a liquid chromatography device having a transport disc within a transport housing with the peripheral portion of the disc being adapted to carry eluents to be detected, said detector comprising:

flame jet means for applying a flame jet toward said peripheral portion of said transport disc within said transport housing at a detection area; and

electrical means connected with said flame jet means to cause current flow through said flame jet for detecting the flame ionization response when compounds to be detected are carried by said disc within said detection area.

4,215,091

METHOD OF DETERMINING THE MASS OF LIQUIDS

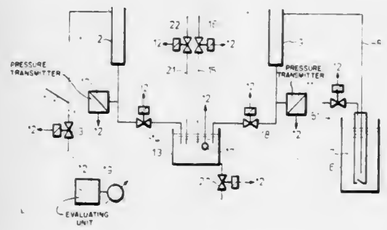
Otto Petersen, Krefeld, and Franz Kersten, Toenisvorst, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 891,103

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1977, 2716468

Int. Cl.² G01N *31/16*

U.S. Cl. 422—75 **4 Claims**



1. An apparatus for analyzing the concentration of a solution comprising: at least two calibrated precision tubes each having an inlet, an outlet and a precision pressure transmitter disposed at the bottom thereof, one tube receptive of a given amount of solution to be analyzed and the other tube receptive of a titration solution; a titration vessel including means for determining the point of titration therein; means coactive with the pressure transmitter in the one tube for introducing a predetermined mass of solution to be analyzed from the one tube into the titration vessel; and means for introducing titration solution from the other tube into the titration vessel until the point of titration is reached; whereby determination of the concentration of the solution to be analyzed is effected as a function of the output of the pressure transmitter in the other tube.

4,215,092

APPARATUS FOR LIQUID PORTIONING AND LIQUID TRANSFERRING

Osmo Suovaniemi, Armas Lindgrenint.15, 00570 Helsinki, Finland, and Mikko Leskinen, Vantaa, Finland, assignors to Osmo A. Suovaniemi, Helsinki, Finland

Continuation-in-part of Ser. No. 764,170, Jan. 31, 1977, abandoned. This application Jul. 11, 1978, Ser. No. 923,534

Claims priority, application Finland, Apr. 8, 1976, 760957; Fed. Rep. of Germany, Jan. 4, 1977, 2700096; German Democratic Rep., Apr. 6, 1977, 198281; Finland, May 9, 1977, 771459; Japan, Mar. 1, 1977, 52-22141; United Kingdom, Jan. 28, 1977, 3491/77; U.S.S.R., Mar. 25, 1977, 2463804

Int. Cl.² B01L *3/02*

U.S. Cl. 422—100 **5 Claims**

1. A tip container element which is detachably connectable to the cone tips of a multichannel pipette, said element comprising

a plurality of hollow truncated conical tip containers, which are linked together in a linear configuration, each of said tip containers having a base portion which is detachably connectable to one of the tip cones of said multichannel pipette; and

connecting means linking said tip containers, said connecting means including two substantially parallel strip-like connecting members of a flexible material and a plurality of cross members extending between said connecting members, the bases of said tip containers being connected



to and extending outwardly respectively from said cross members.

4,215,093

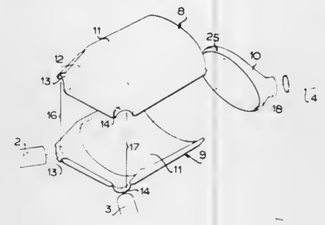
CATALYTIC CONVERTER

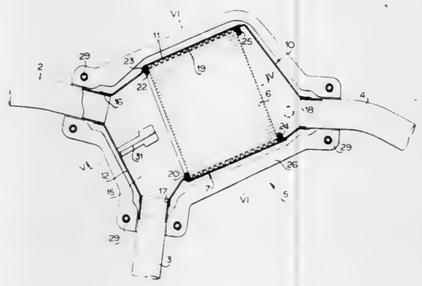
Hiroki Yasuda, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1978, Ser. No. 908,387

Int. Cl.² B01J *35/04, 8/02*; F01N *3/15*

U.S. Cl. 422—179 **3 Claims**





1. A catalytic converter for purifying the exhaust gases of internal combustion engine comprising a shell, said shell comprising a pair of half shells, each of said half shells having an inlet shell and a body shell, said body shells forming a catalyst chamber and said inlet shells forming a tapered inlet chamber, and a funnel-like outlet shell forming an outlet chamber, said outlet shell having a flange projecting radially and axially inwardly at an inner end thereof, a monolithic catalyst element in said catalyst chamber, resilient mounting means disposed on the periphery of said monolithic catalyst element in said catalyst chamber, said body shells form a shoulder adjacent said inlet shells, said shoulder comprising an annular inwardly directed portion integrally connecting said body shell with said inlet shell of each of said half shells, an annular rim having a substantially L-shaped cross-section disposed at a front end of said monolithic catalyst element and including a radial portion between said resilient mounting means and first resilient means and an axial portion, the latter defining an inlet for the exhaust gases into said monolithic catalyst element, first resilient means disposed between said radial portion of said annular rim and said shoulder of said body shells, second resilient means disposed between a rear end of said monolithic catalyst element and said flange of the outlet shell, said inlet shells defining a pair of inlet ports of said inlet chamber adapted to communicate with upstream exhaust pipes, and said outlet shell forming an outlet port of said outlet chamber adpated to communicate with a downstream exhaust pipe, said outlet shell being engaged with a rear end of said body shells, said flange being engaged with said second resilient means and the rear end of said monolithic catalyst element pressing the latter against said annular rim and said annular rim against said first resilient means, said first resilient means and said annular rim constituting sealing means for sealing a gap between the monolithic catalyst element and said body shells.

4,215,094

METHOD FOR THE REMOVAL OF ORGANIC SUBSTANCES FROM ALKALI METAL ALUMINATE SOLUTION

Jun-ichi Inao; Koichi Yamada; Takuo Harato, and Hisakatsu Kato, all of Niihama, Japan, assignors to Sumitomo Aluminum Smelting Company, Ltd., Osaka, Japan

Filed Feb. 12, 1979, Ser. No. 11,568

Claims priority, application Japan, Feb. 17, 1978, 53/17904

Int. Cl.² C01F *7/06, 7/46*

U.S. Cl. 423—123 **11 Claims**

1. A method for removing organic substances from an alkali aluminate solution in the production of alumina from alumina-containing ores by the Bayer process or improved processes thereof, characterized by contacting the alkali aluminate solution containing organic substances with molecular oxygen gas or a molecular oxygen-containing gas of at least an amount corresponding to an oxygen amount necessary for oxidizing a required amount of organic substances contained in said aluminate solution under a pressure of 20 to 150 kg/cm² and under such conditions that at least a pair of said aluminate solution is maintained in a liquid state and at a temperature of 180° to 300° C. in the presence of at least 100 mg/l, based on the amount of said aluminate solution of copper ions, thereby oxidizing the organic substances, adding to the resultant aluminate solution a chemical substance, which reacts with the copper ions to form a water-insoluble precipitate, precipitating the water-insoluble precipitate and separating the produced preciptate from the aluminate solution, and recycling the separated precipitate as a copper source to the above oxidation step.

4,215,095

PROCESS FOR THE INCINERATION OF CHLORINATED ORGANIC MATERIALS

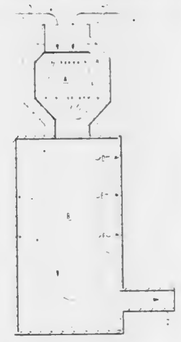
Alexander T. Harris, Metairie, La., and Charles R. Putman, New Albany, Ind., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 23, 1978, Ser. No. 954,297

Int. Cl.² B01D *53/34*

U.S. Cl. 423—240 **7 Claims**

1. A process for the incineration of chlorinated organic materials containing about 20–70% of chlorine, wherein air and said materials are continuously introduced into the combustion zone of an incinerator whose walls are maintained at a temperature of about 800°–1500° C.; the gaseous combustion products are introduced into a quench zone which is cooled by aqueous hydrochloric acid spray; and at least one C_1–C_4 hydrocarbon gas is injected into the guench zone at one or more points where the temperature is within the range of approximately 450°–1000° C.; the amount of air introduced into the combustion zone being such that there is an excess of oxygen of about 1–40% over the theoretical quantity required to fully burn the organic materials by converting all carbon atoms to carbon dioxide, allowing all chlorine atoms and sufficient hydrogen atoms to combine to hydrogen chloride, and converting all hydrogen atoms remaining after formation of hydrogen chloride to water; and the amount of hydrocarbon that is injected into the quench zone is expressed by the equation $Z-Y\cdot m/n$, where Z is the volume percent of the hydrocarbon based on the volume of air fed into the combustion zone, and Y is an empirical value, within the range of 0.2 to 2.0; m is the volume percent of oxygen in the quench zone based on all the gases present in the quench zone but excluding water vapor and hydrogen chloride gas; and n is the number of atoms of hydrogen in the hydrocarbon molecule.



4,215,096

REMOVAL OF ACIDIC CONTAMINANTS FROM GAS STREAMS BY CAUSTIC IMPREGNATED ACTIVATED CARBON

Rabindra K. Sinha, Coraopolis; Charles K. Polinsky, Pittsburgh; S. David Cifrulak, Oakdale, and Norman J. Wagner, Pittsburgh, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Nov. 9, 1978, Ser. No. 959,137

Int. Cl.² B01D *53/34*

U.S. Cl. 423—241 **2 Claims**

1. A process for the removal of chlorine from gas streams which comprises contacting the gas stream with activated carbon impregnated with about 0.5 to about 20 percent by weight sodium hydroxide and about 4 to about 50 percent by weight of moisture.

4,215,097

PROCESS FOR THE MANUFACTURE OF SODIUM PERBORATE MONOHYDRATE AND PRODUCT THEREOF

Jean Brichard, Vilvoorde, and Jean-Claude Colery, Brussels, both of Belgium, assignors to Interox, Brussels, Belgium

Continuation-in-part of Ser. No. 737,686, Nov. 1, 1976, Pat. No. 4,115,519. This application Apr. 10, 1978, Ser. No. 895,273

Claims priority, application Luxembourg, Apr. 8, 1977, 77094

The portion of the term of this patent subsequent to Apr. 19, 1995, has been disclaimed.

Int. Cl.² C01B *15/12*

U.S. Cl. 423—279 **15 Claims**

1. Process for the production of sodium perborate monohydrate in granular form and resistant to abrasion, in which an

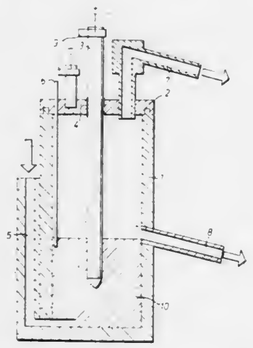
aqueous solution containing hydrogen peroxide and an aqueous solution containing sodium metaborate are introduced simultaneously into a fluidized bed dryer containing seeds of dimensions smaller than the granules which are to be obtained, and the excess water present in the said aqueous solutions is evaporated by means of a fluidizing gas which is introduced into the fluidized bed dryer, comprising: introducing at least one surface active agent into at least one of the aqueous solutions containing hydrogen peroxide and sodium metaborate.

4,215,098

PURIFICATION OF WET PROCESS PHOSPHORIC ACID

Edward J. Lowe; Arthur Wilson, both of Stourbridge, and Michael W. Minshall, Wombourne, all of England, assignors to Albright & Wilson Limited, West Midlands, England

Filed Apr. 26, 1978, Ser. No. 899,896
Int. Cl.² C01B *25/40, 25/16;* B01D *1/00*
U.S. Cl. 423—305 **25 Claims**



1. A method for the production of phosphatic derivatives of wet process phosphoric acid which comprises heating wet process phosphoric acid in carbon apparatus to evaporate water therefrom to leave a concentrated acid by direct electrical resistance heating by passing an alternating current through said wet process acid, until the concentration of said concentrated acid is above 80% by weight P_2O_5, precipitating solid impurities from said concentrated acid and separating the precipitated impurities.

4,215,099

AMMONIA SYNTHESIS PROCESS

Alwyn Pinto, and Stanley A. Ward, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 7, 1977, Ser. No. 849,359
Claims priority, application United Kingdom, Nov. 15, 1976, 47450/76
Int. Cl.² C01C *1/04*
U.S. Cl. 423—360 **6 Claims**

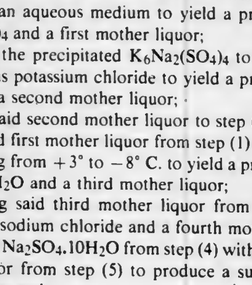
1. A process for carrying out the gas phase catalytic synthesis of ammonia utilizing a reactor having a first catalyst zone within a plurality of tubes around which there is a coolant circulation space, and having immediately downstream of that first catalyst zone an adiabatic catalyst zone; said process comprising the step of:

(a) disposing an ammonia synthesis catalyst in the reactor first catalyst zone;

(b) passing a gas mixture containing nitrogen and hydrogen and residual ammonia through the reactor coolant circulation space so as to heat the gas to a temperature in the range 350°–430° C.;

(c) passing the thus heated gas through the first zone, reacting it therein to produce ammonia, and controlling the rate of feed of the gas mixture containing nitrogen and hydrogen through the space so that the temperature in the first zone (i) rises to a temperature which is 540°–580° C. when the residual ammonia content is 3% v/v, 400°–450° C. when the residual ammonia content is 20% and at corresponding interpolated levels between these residual ammonia contents and (ii) falls as that the reacted gas leaves the said first zone at under 400° C.;

(d) passing the effluent of the first catalyst zone into the



adiabatic catalyst zone and reacting it therein so as to produce further ammonia and increase the temperature to 420°–480° C.; and

(e) passing the effluent of the said adiabatic zone, without any further catalytic ammonia synthesis or heat exchange, through a high grade heat recovery zone affording an external heat recovery of steam at a pressure over 30 atm. abs.

4,215,100

METHOD OF PRODUCING POTASSIUM SULFATE

Igor D. Sokolov, Zanevsky prospekt, 32, kv. 200; Vera A. Ostanina, ulitsa Morisa Toreza, 20, kv. 61; Jury S. Safrygin, ulitsa Dekabristov, 29, kv. 36; Tatyana I. Rutkovskaya, ulitsa Artilleriiskaya, 1, kv. 684; Nina V. Antonova, ulitsa Chekistov, 44, kv. 103, and Rakhil E. Naginskaya, ulitsa Sofiiskaya, 26, kv. 32, all of Leningrad, U.S.S.R.

Filed May 18, 1978, Ser. No. 907,284
Int. Cl.² C01D *5/08*
U.S. Cl. 423—552 **1 Claim**

1. A cyclic method of producing potassium sulfate consisting of the steps of

(1) subjecting sodium sulfate to conversion with potassium chloride in an aqueous medium to yield a precipitate of $K_6Na_2(SO_4)_4$ and a first mother liquor;

(2) subjecting the precipitated $K_6Na_2(SO_4)_4$ to conversion with aqueous potassium chloride to yield a precipitate of K_2SO_4 and a second mother liquor;

(3) returning said second mother liquor to step (1);

(4) cooling said first mother liquor from step (1) at temperatures ranging from $+3°$ to $-8°$ C. to yield a precipitate of $Na_2SO_4.10H_2O$ and a third mother liquor;

(5) evaporating said third mother liquor from step (4) to obtain solid sodium chloride and a fourth mother liquor;

(6) mixing said $Na_2SO_4.10H_2O$ from step (4) with said fourth mother liquor from step (5) to produce a suspension of $K_6Na_2(SO_4)_4$; and

(7) returning the suspension of $K_6Na_2(SO_4)_4$ from step (6) to the aqueous medium in step (1).

4,215,101

METHOD AND APPARATUS FOR PERFORMING CHEMICAL AND/OR PHYSICAL TREATMENTS

Ernst Kriegel; Dietrich Radke, both of Essen; Hans Klein, and Carlos Arbeletche, both of Beckum, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,225
Int. Cl.² B01D *53/34*
U.S. Cl. 423—659 **19 Claims**



1. In a method of performing a treatment of a dust cloud, including the successive steps of generating the dust cloud from a gas and from solid particles, passing the dust cloud through a reaction zone, separating the dust cloud into its gaseous and solid components in a separator and reintroducing at least one part of at least one separated component into the dust cloud; the improvement comprising the step of introducing, prior to the dust cloud generating step, the solid particles into a height-adjustable solids column which seals the separator from the gas used in the dust cloud generating step and which, dependent from its height, controls the concentration of solids in the dust cloud.

4,215,102

CYTOCHEMICAL AGENTS AND METHODS FOR THE DETECTION OF STEROID HORMONE RECEPTORS IN HUMAN TISSUES

Sin H. Lee, 53 Milan Rd., Woodbridge, Conn. 06525

Continuation-in-part of Ser. No. 947,700, Sep. 29, 1978, abandoned, and a continuation-in-part of Ser. No. 876,564, Feb. 10, 1978, abandoned. This application Jan. 5, 1979, Ser. No. 1,205
Int. Cl.² C07G *7/00, 15/00*
U.S. Cl. 424—3 **17 Claims**

1. An agent useful for the detection of steroid hormone receptor malignant cells consisting essentially of a molecular conjugate of the formula

[hormone]—[A]—[carrier]—[fluorochrome]

wherein

(a) said [hormone] is a steroidal molecular unit covalently-bonded to —A—,

(b) said —A— is a covalently-bonded chemical linkage, and

(c) said carrier is a polyamino or polyhydroxyl hydrophylic molecular unit capable of covalent-bonding to respectively one or more of the [hormone]—A— entities and also one or more of the fluorochrome dyestuff entities, and

(d) said [fluorochrome] represents at least one dyestuff unit covalently-bonded to said carrier and capable of exhibiting visually observable color under light excitation,

and wherein the average molecular ratio of said fluorochrome dyestuff to said hormone is between about 2:1 and 1:50, and said [hormone] component of said conjugate has a concentration of about at least 10^{-2} M to 10^{-5} M in an aqueous solution at a physiological pH.

17. A method for the detection and identification of suspected carcinoma tissue cells having steroidal hormone receptor characteristics, which tissues have been excised, frozen and dried in section and maintained in a chemically-unfixed condition, which method consists essentially in

(1) treating said tissue section by rehydration in a phosphate-buffered substantially isotonic saline solution, having an approximately physiological pH range;

(2) coating said thus treated tissue section with a molecular conjugate of the formula

(hormone)—(A)—(carrier)—(fluorochrome)

wherein

(a) said (hormone) is a steroidal molecular unit covalently-bonded to —A—,

(b) said —A— is a covalently-bonded chemical linkage, and

(c) said carrier is a polyfunctional hydrophilic molecular unit capable of covalent-bonding to respectively one or more of the (hormone)—A— entities and also one or more of the fluorochrome dyestuff entities, and

(d) said (fluorochrome) represents at least one dyestuff unit covalently-bonded to said carrier and capable of exhibiting visually observable color under light excitation,

and wherein the average molecular ratio of said fluorochrome dyestuff to said hormone is between about 2:1 and 1:50, and the conjugately-bound steroid hormone can have a concentration of about 10^{-2} M to 10^{-5} M in an aqueous solution of a physiological pH;

(3) thereafter removing said molecular conjugate coating from said tissue specimen, and rinsing the same in a phosphate-buffered substantially isotonic saline solution having an approximately physiological pH range; and thereafter examining the thus-processed tissue specimen for the presence of appearance of fluorescent dye staining of the cells therein.

4,215,103

METHOD FOR PRODUCING A PREPARATION FOR DIAGNOSTIC RADIOLOGY AND APPARATUS THEREFOR

Arthur R. Millington, Blackburn, England, assignor to Linton Medical Services Limited, Blackburn, England

Filed Feb. 1, 1978, Ser. No. 874,154
Claims priority, application United Kingdom, Feb. 2, 1977, 4319/77
Int. Cl.² B61K *29/02;* A67D *5/62*
U.S. Cl. 424—4 **9 Claims**

1. A method of producing a preparation for diagnostic radiology, the preparation, when taken into the body of a user, releasing a gas that expands within the body of a user, comprising:

placing a mixture containing a radio opaque substance and a carrier in a pressure vessel, the radio opaque substance being present in a quantity sufficient for diagnostic radiology;

adding a non-toxic gas to the pressure vessel; and

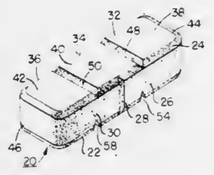
cycling the gas and mixture for a period of time sufficient to obtain a predetermined level of dissolved gas within the mixture, the level being sufficient to cause release of the gas within the body of a user.

4,215,104

MULTI-FRACTIONABLE TABLET STRUCTURE

Michael K. Ullman; Stephen T. David, and Claude E. Gallian, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Mar. 26, 1979, Ser. No. 24,139
Int. Cl.[2] A61K *9/44*
U.S. Cl. 424—15 **15 Claims**



1. A tablet structure which comprises, an approximately rectangularly-shaped unitary body having oppositely disposed first and second planar surfaces being joined respectively by oppositely disposed vertical end walls relative to a front wall surface and a rear wall surface; said planar surfaces each containing two transverse score markings approximately oppositely positioned and defining approximately equal trisectional dosage units; said front and rear wall surfaces each containing one vertical score marking; each of said vertical score markings being disposed intermediate said two transverse score markings and approximately opposite to each other; whereby the unitary body may be fractured into at least bisectional or trisectional units for consumption.

4,215,105

ANTICALCULUS ORAL COMPOSITION

Abdul Gaffar, and Hollandra P. Niles, both of Somerset, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,558
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.[2] A61K *7/16, 7/18*
U.S. Cl. 424—57 **8 Claims**

1. An oral composition comprising an orally acceptable vehicle containing in an effective amount as an anticalculus agent phosphonoacetic acid or an orally acceptable salt thereof.

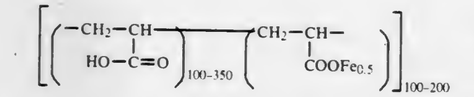
4,215,106

LOCAL HEMOSTATIC

Mikhail G. Voronkov, ulitsa Lermontova, 315, kv. 32; Ada T. Platonova, ulitsa Lermontova, 313, kv. 31; Vladislava Z. Annenkova, ulitsa Maratova, 29, kv. 16; Galina M. Kononchuk, ulitsa Yakobi, 26, kv. 1; Valentina B. Kazimirovskaya, ulitsa Lermontova, 289, kv. 56; Galina S. Ugrjumova, ulitsa Lermontova, 303, kv. 48, and Valentina M. Annenkova, ulitsa Lermontova, 289, kv. 43, all of, Irkutsk, U.S.S.R.

Filed Apr. 7, 1978, Ser. No. 894,248
Int. Cl.[2] A61K *31/78, 31/295*
U.S. Cl. 424—81 **2 Claims**

1. A local hemostatic composition comprising, as active ingredient, a hemostatically effective amount of a water soluble incomplete salt of a polyacrylic acid of the formula



said salt prepared by polymerizing acrylic acid in the presence of an reduction-oxidation system, $FeSO_4.(NH_4)_2SO_4.6H_2O/K_2S_2O_8$, to yield a salt having an iron content of 0.1–0.3%, said active ingredient being present in an amount of from 1 to 2% by weight in a pharmaceutical carrier.

4,215,107

PARAINFLUENZA VIRUS VACCINE AND ITS PREPARATION

Eugene B. Buynak, North Wales, and Maurice R. Hilleman, Lafayette Hill, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 817,955, Jul. 22, 1977, abandoned. This application Dec. 29, 1978, Ser. No. 974,396
Int. Cl.[2] A61K *39/12*
U.S. Cl. 424—89 **13 Claims**

1. A process of preparing a live, attenuated parainfluenza virus types 1 or 3 comprising isolating and adapting the virus by at least 1 passage in monkey kidney cell culture and serially passaging the virus at least 3 times in human diploid lung fibroblasts for type 1 or at least 3 times in chick embryo cell culture for type 3.

4,215,108

LOBSTER GAFFKEMIA VACCINE

James H. Rittenburg, Stillwater, and Robert C. Bayer, Orono, both of Me., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 969,078, Dec. 13, 1978, abandoned. This application May 18, 1979, Ser. No. 40,296
Int. Cl.[2] A61K *39/02*
U.S. Cl. 424—92 **10 Claims**

1. A method for preparing a vaccine suitable for use in protecting lobsters against gaffkemia, which comprises:

(a) culturing a logarithmic growth phase of the bacteria *Aerococcus viridans* (var. *homari*) in a suitable growth medium containing sources of assimilable complete nutrients for said bacteria;

(b) adding a sublethal, replication-inhibiting amount of an antibiotic effective against said bacteria to said culture and incubating the resultant admixture for a period of time sufficient to accumulate antigens therein protective against gaffkemia infections; and

(c) recovering said protective antigens to form a vaccine containing an immunologically effective amount of said antigens 100% free of said living bacteria and substantially free of in vivo effective amounts of said antibiotic.

4,215,109

MEDICAMENTS FOR THE SUPPRESSION OF PATHOLOGICAL PROCESSES

Gerhard Ruhenstroth-Bauer, Gräfelfing, and Reiner Scherer, Munich, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,442
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722769; Nov. 15, 1977, 2750920
Int. Cl.[2] A61K *37/00*
U.S. Cl. 424—177 **4 Claims**

1. A method of suppressing an inflammatory process in a mammal suffering from said process, wherein the inflammatory process is characterized in part by a higher than normal concentration of fibrinogen in the blood plasma of the suffering mammal, which comprises; administering to said mammal an effective amount of a blood plasma protein selected from the group consisting of fibrinogen, fibrinopeptide A and fibrinopeptide B.

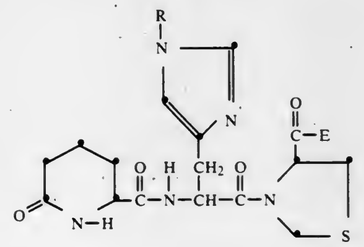
4,215,110

METHOD OF TREATING HYPERTENSION

Victor J. Lotti, Royat, France, and Clement A. Stone, Blue Bell, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 822,127, Aug. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 739,685, Nov. 8, 1976, abandoned. This application Sep. 22, 1978, Ser. No. 944,956
Int. Cl.[2] A61K *37/00*
U.S. Cl. 424—177 **11 Claims**

1. A method of treating hypertension which comprises administration, to a hypertensive patient, of an antihypertensive amount of a tripeptide, having the formula:



wherein -

R is selected from H, $—CH_3$ and $—CH_2—COOH$; and

E is $—NH_2$ and $—OCH_3$ or a pharmaceutically acceptable salt thereof.

4,215,111

PEPTIDES HAVING UBIQUITIN-LIKE ACTIVITY

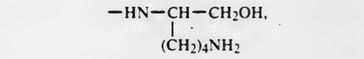
Gideon Goldstein, Short Hills, and George Heavner, Flemington, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Mar. 14, 1979, Ser. No. 20,157
Int. Cl.[2] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 **19 Claims**

1. A peptide possessing ubiquitin-like activity having the formula:

A-B

wherein A is a member selected from the group consisting of deamino GLN, GLN, and $(SAR)_n$-GLN; n is an integer from 1 to 4; and B is a member selected from the group consisting of LYS-OH, LYS-NH_2, decarboxy-LYS,



LYS-SAR-OH and LYS-SAR-NH_2, provided that when A is GLN, B is other than LYS-OH, and the pharmaceutically-acceptable acid addition salts thereof.

4,215,112

TRIPEPTIDES AND METHODS

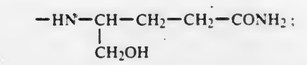
Gideon Goldstein, Short Hills, and George Heavner, Flemington, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Mar. 14, 1979, Ser. No. 20,159
Int. Cl.[2] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 **16 Claims**

1. A polypeptide having the capability of inducing the differentiation of both Th-1^+ T-lymphocytes and Bu-1^+ B-lymphocytes, said polypeptide having the formula:

A—X—B

wherein A is deamino-LYS or LYS; X is a suitable neutral aliphatic amino acid residue selected from the group consisting of SER, ALA, 2-Me-ALA, GLY, LEU, THR, D-SER, D-ALA, D-THR, allo-THR, D-LEU, and SAR; B is GLN-R', decarboxy-GLN, or



R' is a member selected from the group consisting of OH, NH_2, NHR'', $N(R'')_2$, OR'', GLY, GLY—GLY, GLY—GLY—SER, and GLY—GLY—SER—ASN; and R'' is a member selected from the group consisting of C_1-C_7 alkyl, C_6-C_{12} aryl, C_6-C_{20} alkaryl, C_6-C_{20} aralkyl, C_2-C_7 alkenyl, and C_2-C_7 alkynyl; and the pharmaceutically acceptable salts thereof.

4,215,113

METHOD FOR COMBATING VIRUS INFECTIONS

Bertil F. H. Eriksson, Södertälje; Ake J. E. Helgstrand, Enhörna; Alfons Misiorny, Bandhagen; Göran B. Stening, and Stig-Ake A. Stridh, both of Södertälje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Södertälje, Sweden

Filed Jun. 20, 1977, Ser. No. 807,783
Claims priority, application Sweden, Jul. 1, 1976, 7607496
Int. Cl.[2] A61K *31/66*
U.S. Cl. 424—212 **17 Claims**

1. A method for the selective treatment of virus infections in an animal or human host comprising administering to said host so infected an amount effective to treat said virus infection of phosphonoformic acid or a physiologically acceptable salt thereof.

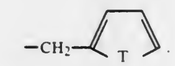
4,215,114

ANALGESIC N-[2-(FURYL-METHYLAMINO AND 2-THIENYLMETHYLAMINO)CYCLOALIPHATIC]BENZAMIDES

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 906,271, May 15, 1978, Pat. No. 4,153,717, which is a division of Ser. No. 741,467, Nov. 12, 1976, Pat. No. 4,098,904. This application Mar. 5, 1979, Ser. No. 17,679
Int. Cl.[2] A61K *31/34, 31/38*; C07D *307/54, 333/24*
U.S. Cl. 424—275 **8 Claims**

1. A compound of the formula

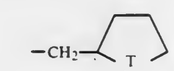


wherein the wavy line (~) at the 1-position of the cycloaliphatic ring denotes trans-stereoconfiguration of the 1-position substituent with respect to the substituent in position 2 of the same cycloaliphatic ring; n is 1 to 8;

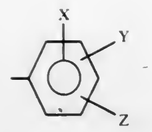
R is hydrogen or C_1 to C_3-alkyl;

R_1 is hydrogen or C_1 to C_3-alkyl; and

R_2 is a group of the formula



wherein T is -O- or -S-; and Q is the radical



wherein one of X, Y and Z is hydroxy, C_1 to C_3-alkyloxy or [C_3 to C_4] C_3 to C_6-(allylic)alkenyloxy and the remainder of X, Y and Z is hydrogen, nitro or halogen having an atomic number of from 9 to 35, and when R is hydrogen and n is 2, and the Q moiety is distributed, X is hydrogen, and Y and Z cannot be any combination of C_1 to C_3-alkyloxy, nitro or hydroxy, and when R is hydrpgen and n is 2, and Q is monosubstituted, X and Y are hydrogen and Z is [C_3 to C_4] C_3 to C_6-(allylic)alkenyloxy and when X is hydroxy, at least one of Y and Z is a halogen having an atomic number of from 9 to 35, and when n is 1, R must be C_1 to C_3-alkyl, and the pharmacologically acceptable salts thereof.

7. A method for alleviating pain in a warm-blooded animal which comprises administering to the warm-blooded animal suffering pain a compound of claim 1 in an amount effective to relieve the pain.

4,215,115

NEMATICIDAL PHOSPHORODITHIOATE

Carmine P. DiSanzo, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Filed Nov. 24, 1976, Ser. No. 744,535
Int. Cl.² A01N *9/36*
U.S. Cl. 424—216 **1 Claim**

1. A method of combating nematodes which comprises applying to the locus where nematodes are to be controlled a nematicidally effective amount of O,O-diethyl S-(tert-butylthiomethyl) phosphorodithioate.

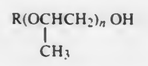
4,215,116

PROPOXYLATE TOXICANTS

Myron J. Lover, Mountainside; Arnold J. Singer, S. Orange, and Donald M. Lynch, Waldwick, all of N.J., assignors to Block Drug Company Inc., Jersey City, N.J.

Filed Jun. 30, 1978, Ser. No. 920,808
Int. Cl.² A01N *9/00, 9/24, 9/36*
U.S. Cl. 424—217 **11 Claims**

1. A method of controlling ectoparasites or their ova which comprises applying to a host in need of such control an effective toxic amount of at least one polyoxypropylene glycol derivative selected from the group consisting of; ethers of the formula



wherein R is a 1 to 18 carbon atom alkyl group and n is a number such that the propoxy groups constitute 40 to 90% of said ether and the phosphates of said ethers.

4,215,117

STABLE PHARMACEUTICAL FORMULATIONS

Ashok C. Shah, and Edward P. Strzelinski, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed May 26, 1978, Ser. No. 909,924
Int. Cl.² A61K *31/535*
U.S. Cl. 424—248.4 **4 Claims**

1. A stable solid oral pharmaceutical composition in capsulated unit dosage form useful for combating anxiety which comprises:

(1) an amount of ketazolam effective for combating anxiety in a patient to whom said composition is administered; and

(2) powdered, edible vegetable oil, characterized as follows:

(a) said oil is neutral, exhibiting an acid value of less than 0.4 percent;

(b) said oil is low in ash content;

(c) said oil is without metal contamination;

(d) said oil contains less than 0.1 percent moisture and other volatiles; and

(e) said oil will pass through a screen of 325 mesh to the extent of about 95 percent.

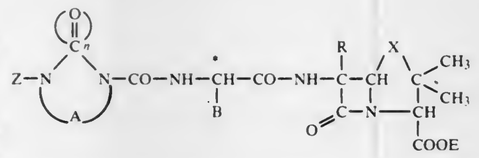
4,215,118

2-HETERO-ACETAMIDO-PENICILLANATES AND CEPHALOSPORINATES

Michael Preiss; Hans-bodo König; Karl G. Metzger, all of Wuppertal, and Peter Feyen, Mettmann, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,518
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732283
Int. Cl.² A61K *31/535;* **C07D** *499/44*
U.S. Cl. 424—248.4 **18 Claims**

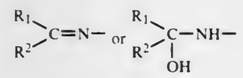
1. A compound of the formula



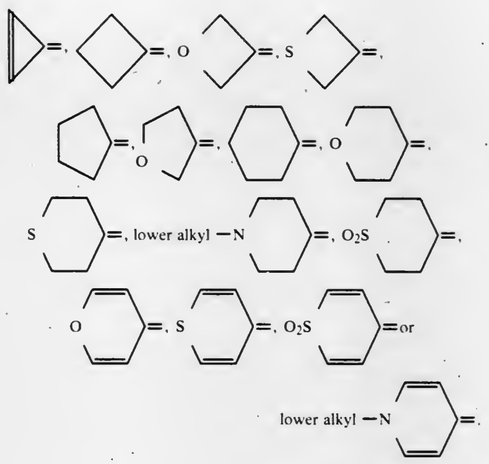
a pharmaceutically usable salt thereof or a hydrate thereof, in which

R is hydrogen or lower alkoxy,

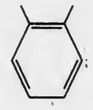
Z is



R_1 and R_2 each independently is hydrogen; alkyl or alkenyl with up to 6 carbon atoms; cycloalkyl, cycloalkenyl or cycloalkadienyl with up to 10 carbon atoms; phenyl—C_{1-4}—alkyl; phenyl; naphthyl; phenyl or naphthyl substituted by halogen, C_1—C_4—alkyl, C_1-C_4—alkoxy, nitro, cyano, C_1-C_4—alkylsulphonyl or CH_3COO; heterocyclyl selected from the group consisting of thienyl, furyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, pyrrolyl, imidazolyl, pyrazolyl, oxdiazolyl, thiadiazolyl, triazolyl, oxtriazolyl, thiatriazolyl, tetrazolyl, pyridyl, pyrazinyl, pyrimidinyl, tetrahydrofuranyl, dioxanyl, pyrrolidinyl, piperidinyl, morpholinyl, pyron-2-yl and pyron-4-yl, the heterocyclyl being unsubstituted or substituted by lower alkyl, trifluormethyl, halogen, amino, lower alkyl-amino, di-lower alkylamino, formylamino, acetylamino, CH_3O-CONH, C_2H_5OCONH, CH_3SO_2NH, hydroxyl, methoxy, ethoxy, methylthio, ethylthio, CH_3SO_2, CH_3SO, HOOC, HO_3S, HCO, lower alkyl-CO, lower alkoxy-CO or CN attached to a carbon atom of the ring, or substituted by lower alkyl, CN, CHO, lower alkyl-COO, NH_2-CO, lower alkyl-NH-CO, lower-alkyl-CO attached to a nitrogen atom of the ring; carboxyl; methoxycarbonyl; ethoxycarbonyl; cyano; nitro; lower alkylcarbonyl; $CONH_2$; $CONHCH_3$; $CON(CH_3)_2$; SO_2NH_2; SO_2-$NHCH_3$ or $SO_2N(CH_3)_2$; or R_1 and R_2 together with the carbon atom to which they are bonded form a ring of the formula



A is $—CH_2—CH_2—$; $—CH_2—CH_2—CH_2—$ or



n is 1 or 2;

B is a heterocyclic radical selected from the group consisting of pyrazolyl, imidazolyl, oxazolyl, oxdiazolyl, 2-amino- and 2-oxo-Δ^4-thiazolinyl, tetrazolyl, sudnonyl, furylthienyl, pyrrolyl, thiazolyl, isothiazolyl, isoxazolyl, and thiadiazolyl, said hetero-cyclic radical being unsubstituted or substituted by halogen, C_1-C_6-alkyl, cyano, sulpho or methylsulfonyl;

X is S, O, SO, SO_2 or CH_2; and

E is hydrogen, a pharmaceutically usable salt-forming cation or a conventional protective group.

15. A method of combating bacterial diseases in human and non-human animals which comprises administering to the animals an antibacterially effective amount of a compound according to claim 1.

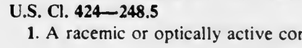
4,215,119

AMINOALKYL-SUBSTITUTED BENZIMIDAZOLIDIN-2-ONES

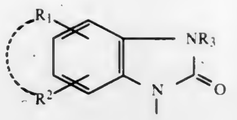
Anton Mentrup, Mainz-Kastel; Kurt Schromm, Ingelheim; Ernst-Otto Renth, Ingelheim; Richard Reichl, Ingelheim; Werner Traunecker, Münster-Sarmshein, and Wolfgang Hoefke, Budenheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 773,394, Mar. 2, 1977, Pat. No. 4,154,829. This application Apr. 3, 1979, Ser. No. 26,608
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1976, 2609645
Int. Cl.² A61K *31/535, 31/415;* **C07D** *235/26*
U.S. Cl. 424—248.5 **6 Claims**

1. A racemic or optically active compound of the formula



wherein Q is



where

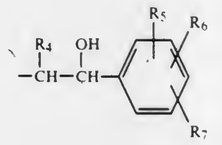
R_1 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl or amino,

R_2 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or trifluoromethyl,

R_1 and R_2, together with each other, are methylenedioxy or ethylenedioxy, and

n is an integer from 2 to 6, inclusive, and

R is hydrogen, benzyl or



where

R_4 is hydrogen, methyl or ethyl,

R_5, R_6 and R_7, which may be identical to or different from each other, are each hydrogen, halogen, hydroxymethyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro, cyano, $—CONHR_3$, —CONHOH, $—COOR_3$, R_8O—, methylsulfonylmethyl or, when one or two of the R_5 through R_7 are other than halogen or trifluoromethyl, also $—NR_3R_9$,

where

R_3 has the meanings defined above,

R_8 is hydrogen, alkanoyl of 1 to 20 carbon atoms, alkyl of 1 to 4 carbon atoms or benzyl, and

R_9 is hydrogen, lower alkanoyl, methanesulfonyl, carbamoyl, dimethylsulfamoyl, or alkoxycarbonyl of 2 to 5 carbon atoms, and

R_5 and R_6, together with each other, are $—O—CH_2—O—$, $—O—CH_2—CH_2—O—$, $—CH=CH—CH=CH—$, $—O—CH_2—CONH—$, $—CH_2—CH_2—CONH—$ or $—O—CO—NH—$,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

6. The method of dilating the blood vessels or relieving depression in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective vasodilating or anti-depressant amount of a compound of claim 1.

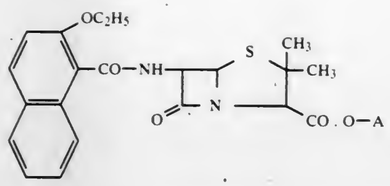
4,215,120

PENICILLIN ESTERS AND THEIR PREPARATION

Harry Ferres, Epsom, England, assignor to Beecham Group Limited, England

Filed Jul. 10, 1978, Ser. No. 922,978
Claims priority, application United Kingdom, Jul. 14, 1977, 29583/77
Int. Cl.² A61K *31/50, 31/43;* **C07D** *499/44*
U.S. Cl. 424—250 **9 Claims**

1. An ester of formula (II) or a pharmaceutically acceptable acid addition salt thereof:



(II)

wherein A is a C_1-C_6 alkylene group substituted with one or two groups of formula $—NR^1R^2$ and optionally further substituted with one or more methyl or ethyl groups, wherein R^1 and R^2 are the same or different and each is a C_1-C_6 alkyl group or R^1 and R^2 together with the nitrogen atom to which they are attached form a saturated 5- or 6-membered heterocyclic ring.

9. An antibacterial pharmaceutical composition comprising a pharmaceutical carrier or excipient together with an antibacterially effective amount of a compound as claimed in claim **1**.

4,215,121

PYRAZINE SUBSTITUTED UREAS

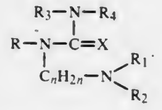
William A. Bolhofer, Frederick, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 769,475, Feb. 17, 1977, Pat. No. 4,144,338. This application Nov. 8, 1978, Ser. No. 959,021

Int. Cl.[2] **C07D** *241/26;* **A61K** *31/495*

U.S. Cl. 424—250 **5 Claims**

1. A compound having the formula:



wherein R is a pyrazine ring, which may be optionally substituted with from 1 to 3 of loweralkyl, halo, hydroxy, amino, mono or di-loweralkylamino, loweralkoxy or phenylloweralkoxy;

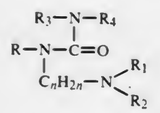
R_1 and R_2 are independently loweralkyl;

R_3 and R_4 are independently hydrogen or loweralkyl;

X is oxygen or sulfur; and

n is an integer of from 2 to 6, such that the direct linkage between the nitrogen atoms is either two or three carbon atoms, and the pharmaceutically acceptable acid addition salts thereof.

5. A composition for the inhibition of gastric acid secretion which comprises an inert carrier and an effective amount of a compound having the formula:



wherein R is a pyrazine ring which may be optionally substituted with from 1 to 3 of loweralkyl, halo, hydroxy, amino, mono or di-loweralkylamino, loweralkoxy, or phenyl loweralkoxy; and

R_1 and R_2, are independently loweralkyl;

R_3 and R_4 are independently hydrogen or loweralkyl; and

n is an integer of from 2 to 6, such that the direct linkage between the nitrogen atoms is either two or three carbon atoms, and the pharmaceutically acceptable acid addition salt thereof.

4,215,122

4-ALKYL- AND 4-ALLYL-MERCAPTO-, -SULFINYL- AND -SULFONYL-METHYL-2-AMINO-6-N,N-DIMETHYL-CARBAMOYLOXY-PYRIMIDINES, PROCESSES FOR PRODUCING THEM, COMPOSITIONS CONTAINING THESE PYRIMIDINES, AND THE USE THEREOF FOR CONTROLLING INSECT PESTS

Jozef Drabek, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsely, N.Y.

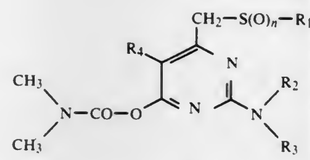
Filed Jul. 2, 1979, Ser. No. 54,195

Claims priority, application Switzerland, Jul. 7, 1978, 7424/78; Jun. 7, 1979, 5308/79

Int. Cl.[2] **A01N** *9/22;* **C07D** *239/48*

U.S. Cl. 424—251 **11 Claims**

1. A compound of the formula I



(I)

wherein R_1 is C_1-C_4-alkyl or allyl, R_2 is hydrogen, methyl, or ethyl, R_3 is methyl, ethyl or cyclopropyl, R_4 is hydrogen or methyl and n is zero or the integer 1 or 2.

9. An insecticidal composition comprising an insecticidally effective amount of a compound as claimed in claim **1**, together with an inert, solid or liquid diluent or carrier therefor.

4,215,123

ANTISECRETORY 4-OXY-3-CARBOXY OR CYANO-1,2-DIHYDRO-2-OXO-1,8-NAPHTHYRIDINE DERIVATIVES

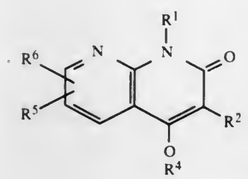
Anthony C. Scotese, King of Prussia, and Arthur A. Santilli, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,921

Int. Cl.[2] **A61K** *31/435*

U.S. Cl. 424—256 **17 Claims**

1. A process for treating peptic ulcer disease which comprises orally or parenterally administering to a mammal in need thereof an anti-secretory amount of a compound of the formula:



in which

R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, aralkyl of 7 to 9 carbon atoms, or alken-(3,4,5 or 6)-yl of 3 to 6 carbon atoms;

R^2 is hydrogen, alkoxycarbonyl of 2 to 7 carbon atoms; carboxy, carbamyl, N-alkylcarbamyl of 2 to 7 carbon atoms, N-alkoxyethylcarbamyl of 4 to 9 carbon atoms, hydrazido or cyano;

R^4 is hydrogen, alkyl of 1 to 6 carbon atoms;

R^5 and R^6 are independently hydrogen or alkyl of 1 to 6 carbon atoms

or a pharmaceutically acceptable alkali metal salt thereof.

4,215,124

6 SUBSTITUTED AMINO-2-SUBSTITUTED-PEN-2-EM-3-CARBOXYLIC ACID

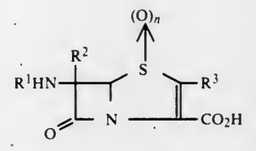
Burton G. Christensen, Metuchen, and Frank P. DiNinno, Old Bridge, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 852,274, Nov. 17, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 948,712

Int. Cl.[2] **A61K** *31/43;* **C07D** *277/02, 499/44*

U.S. Cl. 424—263 **3 Claims**

1. A compound having the structural formula:



and the pharmaceutically acceptable salts and conventional penicillin esters thereof wherein R^2 is hydrogen or methoxyl and R^1 is hydrogen or a conventional penicillin acyl group; n is 0 or 1; and R^3 is hydrogen —R, —OR, —SR, $—NR_2$; wherein R is substituted or unsubstituted: alkyl having 1-6 carbon atoms, phenyl, phenylalkyl having 7-12 carbon atoms, heterocyclyl and heterocyclylalkyl wherein the alkyl has 1-3 carbon atoms and the heterocycle has 1-4 hetero atoms selected from O, N and S; and wherein the chain or nuclear substituent on R is selected from amino, mono-, di- and trialkylamino (each alkyl having 1-6 carbon atoms, mercapto, alkylthio having 1-3 carbon atoms, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano and carboxyl; when R^2 is hydrogen and n=0, R^3 is not hydrogen or R; when n=1, R^3 is not —SR.

3. An antibiotic pharmaceutical composition comprising an antibacterially effective compound according to claim **1** and a pharmaceutically acceptable carrier therefor.

4,215,125

PYRIDYL UREAS, THIOUREAS AND GUANIDINES

Graham J. Durant, and Charon R. Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

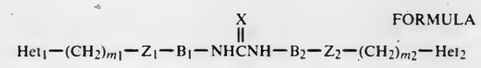
Division of Ser. No. 770,538, Feb. 22, 1977, which is a division of Ser. No. 640,525, Dec. 15, 1975, Pat. No. 4,025,527, which is a continuation-in-part of Ser. No. 481,716, Jun. 21, 1974, abandoned. This application Jan. 22, 1979, Ser. No. 5,052

Claims priority, application United Kingdom, Jul. 13, 1973, 33428/73; Nov. 12, 1975, 46732/75

Int. Cl.[2] **C07D** *401/12;* **A61K** *31/44*

U.S. Cl. 424—263 **18 Claims**

1. A compound of the formula:



FORMULA I

wherein Het_1 and Het_2, which may be the same or different, are pyridine which is optionally substituted by lower alkyl, hydroxyl, halogen or amino; Z_1 and Z_2 are sulphur or a methylene group; B_1 is $(CH_2)_{n1}$ and B_2 is $(CH_2)_{n2}$; m_1 and m_2 are 0, 1 or 2 and n_1 and n_2 are 2 or 3, provided that the sum of m_1 and n_1 and the sum of m_2 and n_2 are from 2 to 4; and X is sulphur, oxygen or NY wherein Y is hydrogen, cyano, $CONH_2$ or SO_2R_1 wherein R_1 is lower alkyl or phenyl, provided that when X is NH, at least one of Z_1 or Z_2 is sulphur, or a pharmaceutically acceptable acid addition salt thereof.

18. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in an effective amount to inhibit said receptors a compound of claim **1**.

4,215,126

ALKOXY PYRIDINE COMPOUNDS

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and George S. Sach, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, Great Britain

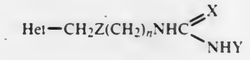
Division of Ser. No. 869,075, Jan. 13, 1978, Pat. No. 4,154,838, which is a division of Ser. No. 704,877, Jul. 13, 1976, Pat. No. 4,083,983. This application Feb. 21, 1979, Ser. No. 13,579

Claims priority, application United Kingdom, Jul. 31, 1975, 31970/75

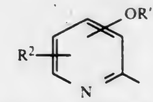
Int. Cl.[2] **C07D** *213/63;* **A61K** *31/44*

U.S. Cl. 424—263 **16 Claims**

1. A compound of the formula:



wherein Het is a grouping of the formula:



wherein R′ is lower alkyl or $—(CH_2)_pA$ where p is 2 to 4 and A is hydroxy, lower alkoxy or dimethylamino; R^2 is hydrogen, lower alkyl, lower alkoxy, amino, halogen or methylamino; or —OR′ and R^2 can together form a $—O(CH_2)_qO—$ group attached to adjacent carbon atoms on the pyridine ring, where q is 1 to 4; Z is sulphur or methylene; n is 2 or 3; X is $CHNO_2$; Y is hydrogen, lower alkyl or 2-hydroxyethyl; or a pharmaceutically acceptable acid addition salt thereof.

16. A method of blocking histamine H_2-receptors which comprises administering orally or parenterally to an animal in need of blocking of said receptors in an effective amount to block said receptors a compound of claim **1**:

4,215,127

SUBSTITUTED 1-PHENOXY-1-TRIAZOLYL-2-BUTANONE COMPOUNDS AND THEIR USE AS FUNGICIDES

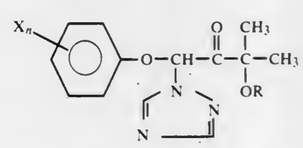
Richard B. Rogers, Concord; Chrislyn M. Carson, and Robert J. Ehr, both of Pittsburg, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1978, Ser. No. 956,956

Int. Cl.[2] **A01N** *9/22;* **C07D** *249/08*

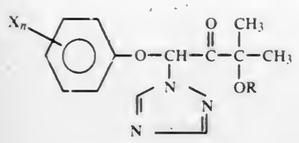
U.S. Cl. 424—269 **24 Claims**

1. A substituted 1-phenoxy-1-triazolyl-2-butanone compound corresponding to the formula



wherein each X independently represents chloro, bromo, iodo, nitro, methyl, methoxy, or methylthio; n represents an integer of 0 to 3; and R represents methyl or ethyl.

17. A method for controlling fungi that attack plants which comprises applying to plants, plant parts, or soil a composition containing as the active ingredient, a fungicidally effective amount of a substituted 1-phenoxy-1-triazolyl-2-butanone compound corresponding to the formula



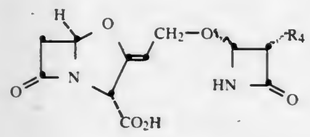
wherein each X independently represents chloro, bromo, iodo, nitro, methyl, methoxy, or methylthio; n represents an integer of 0 to 3; and R represents methyl or ethyl, in intimate admixture with an inert carrier therefor.

4,215,128
CLAVULANIC ACID DERIVATIVES THEIR PREPARATION AND USE

Thomas T. Howarth, Reigate, England, assignor to Beecham Group Limited, England

Filed Sep. 14, 1978, Ser. No. 942,410
Claims priority, application United Kingdom, Sep. 20, 1977, 39040/77; Sep. 21, 1977, 39251/77; Aug. 25, 1978, 34593/78
Int. Cl.[2] C07D *498/04*
U.S. Cl. 424—272 **78 Claims**

1. A compound of the formula (IV):



(IV)

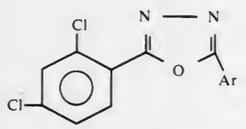
or a pharmaceutically acceptable salt or in vivo hydrolyzable ester thereof wherein R_4 is hydrogen or NH.CO.R_5 wherein R_5 is lower alkyl, lower alkoxy, lower alkyl, aryl, aralkyl, aryloxyalkyl or aryloxy.

4,215,129
METHOD FOR THE CONTROL OF MANURE-BREEDING INSECTS

Jack P. Arrington, Clayton, Calif., and Luke L. Wade, Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1978, Ser. No. 965,546
Int. Cl.[2] A01N *9/22, 9/28;* **A61K** *31/42*
U.S. Cl. 424—272 **4 Claims**

1. A method for controlling manure-breeding insects which comprises contacting the manure with an insecticidally-effective amount of an active compound corresponding to the formula



wherein Ar represents phenyl, 2-chlorophenyl, 4-fluorophenyl, 4-(trichloromethyl)phenyl, 4-methylphenyl, 4-cyanophenyl, 2,4-dichlorophenyl or 3,5-dichlorophenyl and an inert adjuvant therefor.

4,215,130
ANTIHYPERTENSIVE COMPOSITIONS OF N-(2,6-DICHLOROPHENYL)-4,5-DIHYDRO-1H-IMIDAZOL-2-AMINE AND N-(2-CHLOROETHYL)-N-(1-METHYL-2-PHENOXYETHYL)-BENZENEMETHANAMINE

Albert Sjoerdsma, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed May 31, 1977, Ser. No. 802,027
Int. Cl.[2] A61K *31/135, 31/415*
U.S. Cl. 424—273 R **6 Claims**

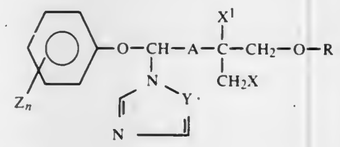
1. An antihypertensive composition in dosage unit form comprising from 0.05 to 2 mg of N-(2,6-dichlorophenyl)-4,5-dihydro-1H-imidazol-2-amine and from 1 to 25 mg of N-(2-chloroethyl)-N-(1-methyl-2-phenoxyethyl)benzenemethanamine having an enhanced antihypertensive effect, or each of their pharmaceutically acceptable salts, and a pharmaceutically acceptable carrier.

4,215,131
ANTIMICROBIAL AGENTS

Wolfgang Krämer; Karl H. Büchel; Manfred Plempel, and Ingo Haller, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 819,645, Jul. 27, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 21,295
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1976, 2635665
Int. Cl.[2] A01N *9/00, 9/22*
U.S. Cl. 424—273 R **6 Claims**

1. A pharmaceutical composition for oral or parenteral use, free from pathogenic microorganisms which could be harmful to warm-blooded animals, comprising, as an active ingredient, an antimicotically effective amount of at least one compound of the formula



(I)

in which
R represents hydrogen, -CO-R^1 or -SO_2-R^2, wherein
R^1 represents a straight-chain or branched alkyl with 1 to 18 carbon atoms, which is unsubstituted or substituted by halogen, amino, acetylamino, alkoxy with 1 to 4 carbon atoms or by alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl part; alkenyl or alkinyl with 2 to 6 carbon atoms; cycloalkyl with 5 to 7 carbon atoms; phenyl, phenylalkyl or phenoxyalkyl having in each case, 1 to 4 carbon atoms in the alkyl part and being unsubstituted or substituted in the phenyl part by halogen, amino, cyano, nitro or alkyl with 1 to 2 carbon atoms; alkylamino or dialkylamino with 1 to 4 carbon atoms in each alkyl part; or phenylamino which is unsubstituted or substituted by halogen, nitro or cyano;
R^2 represents straight-chain or branched alkyl with 1 to 4 carbon atoms; or phenyl group unsubstituted or substituted by halogen, amino, cyano, nitro or by alkyl with 1 to 2 carbon atoms;
A represents a keto group or a —CH(OH)— grouping,
X represents hydrogen or an —OR grouping, wherein R is as defined above,
X^1 represents alkyl with 1 or 2 carbon atoms or phenyl which is unsubstituted or substituted by halogen, or alkyl with 1 to 2 carbon atoms;
Y represents —CH— or a nitrogen atom,
Z represents halogen; straight-chain or branched alkyl with 1 to 4 carbon atoms; cycloalkyl with 5 to 7 carbon atoms;

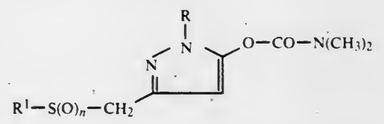
halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms; alkoxy or alkylthio with 1 or 2 carbon atoms in each case; alkoxycarbonyl with 1 to 5 carbon atoms; amino; cyano; nitro; phenyl or phenoxy each unsubstituted or substituted by halogen, amino, cyano, nitro or alkyl with 1 to 2 carbon atoms; phenylalkyl with 1 or 2 carbon atoms in the alkyl part, unsubstituted or substituted in the alkyl part by alkylcarbonyl with up to 3 carbon atoms and in the phenyl part by halogen, nitro or cyano; and
n represents 0 or an integer from 1 to 5, or a salt thereof in admixture with a sterile pharmaceutical carrier.

4,215,132
COMBATING ARTHROPODS WITH N,N-DIMETHYL-O-(3-SUBSTITUTED-PYRAZOL-5-YL)-CARBAMIC ACID ESTERS

Fritz Maurer, Wuppertal; Hans-Jochem Riebel, Selters; Rolf Schröder, Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 18, 1979, Ser. No. 31,096
Claims priority, application Fed. Rep. of Germany, May 6, 1978, 2819932
Int. Cl.[2] C07D *231/20;* **A01N** *9/22*
U.S. Cl. 424—273 P **9 Claims**

1. An N,N-dimethyl-O-(3-substituted- pyrazol-5-yl)-carbamic acid ester of the formula



in which
R is hydrogen, alkyl with 1 to 8 carbon atoms or cyanoethyl,
R^1 is alkyl with 1 to 5 carbon atoms, and
n is 1 or 2.

8. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim **1**.

4,215,133
2-[N-(2'-CHLORO-4'-METHYL-THIENYL-3')-N-(CYCLOPROPYL-METHYL)-AMINO]-2-IMIDAZOLINE AND SALTS THEREOF

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, Fed. Rep. of Germany; Walter Kobinger, Vienna, Austria; Christian Lillie, Vienna, Austria, and Ludwig Pichler, Vienna, Austria, assignors to Boehringer Ingelheim GmbH, Ingelheim an Rhein, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,850
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830279
Int. Cl.[2] A61K *31/415;* **C07D** *409/12*
U.S. Cl. 424—273 R **3 Claims**

1. 2-[N-(Cyclopropyl-methyl)-N-(2'-chloro-4'-methyl-thienyl-3')-amino]-2-imidazoline or a non-toxic, pharmacologically acceptable acid addition salt thereof.

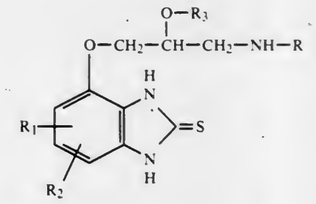
3. The method of slowing the heart rate of a warm-blooded animal in need thereof, which comprises perorally or parenterally administering to said animal an effective bradycardiac amount of a compound of claim **1**.

4,215,134
4-HYDROXY-2-BENZIMIDAZOLINE-THIONE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Carl H. Ross, Viernheim; Walter-Gunar Friebe, Darmstadt; Wolfgang Kampe, Heddesheim; Wolfgang Bartsch, Viernheim, and Egon Roesch, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jan. 9, 1979, Ser. No. 2,129
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2801980
Int. Cl.[2] A61K *31/415;* **C07D** *235/28*
U.S. Cl. 424—273 B **20 Claims**

1. 4-Hydroxy-2-benzimidazoline-thione compound of the formula



(I)

wherein
R is lower alkyl of up to 6 carbon atoms;
R_1 and R_2, which can be the same or different, are hydrogen or lower straight-chained or branched alkyl of up to 6 carbon atoms or
R_1 and R_2 together represent alkylene of 2 to 4 carbon atoms; and
R_3 is alkanoyl of up to 6 carbon atoms, or aroyl up to 7 carbon atoms;
and the pharmacologically acceptable salts thereof.

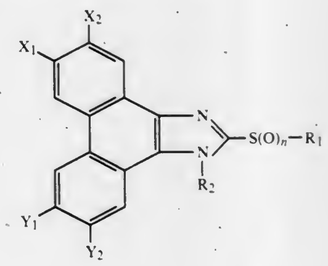
16. Method of treating circulatory and cardiac diseases which method comprises applying to an afflicted subject a therapeutically effective amount of a 4-hydroxy-2-benzimidazoline-thione compound as claimed in claim **1**.

4,215,135
ANTIINFLAMMATORY 2-SUBSTITUTED-1H-PHENANTHRO[9,10-D]IMIDAZOLES

Saul C. Cherkofsky, Wilmington, Del., and Thomas R. Sharpe, Fort Salonga, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

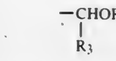
Continuation-in-part of Ser. No. 948,035, Oct. 2, 1978, abandoned. This application Jun. 8, 1979, Ser. No. 45,671
Int. Cl.[2] A61K *31/415;* **C07D** *235/28*
U.S. Cl. 424—273 B **21 Claims**

1. A compound of the formula

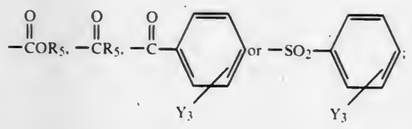


wherein
n=0–2

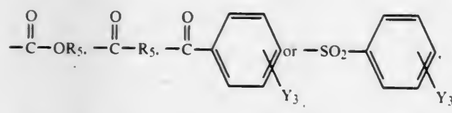
R_1=—CF_2H, —CF_3 or —$CF_2CH_mF_{3-m}$ in which m=0–3
R_2=—H,



2-tetrahydropyranyl, 2-tetrahydrofuranyl,



provided when R_2=



then n=0;
R_3=—H or —CH_3;
R_4=C_{1-3} alkyl, benzyl, —$CH_2CH_2OCH_3$ or



R_5=C_{1-4} alkyl or benzyl;
X_1 and Y_1 are independently selected from the group consisting of —H, —F, —Cl, dimethylamino and C_{1-2} alkoxy;
X_2 and Y_2 are independently selected from the group consisting of —H, —F and —Cl;
Y_3 is —H, —F, —Cl, —Br, C_{1-4} alkyl, C_{1-4} alkoxy or —NO_2; and,
when R_2=—H, a pharmaceutically suitable acid salt when n=0 or pharmaceutically suitable metal salts when n=1–2.

15. A method for reducing inflammation in mammals comprising administering to the mammal an amount of a compound of claim **1** sufficient to provide anti-inflammatory activity therein.

4,215,136
INSOLUBLE METAL SALTS OF N-ACETYL-TRYPTOPHANE AND USE THEREOF
Jean P. Durlarch, Paris, France, assignor to Cooperation Pharmaceutique Francaise, Melun, France
Filed May 23, 1977, Ser. No. 799,532
Claims priority, application France, May 26, 1976, 76 16121
Int. Cl.[2] **A61K** *31/405;* **C07D** *209/20*
U.S. Cl. 424—274 **6 Claims**

1. A compound of the formula:

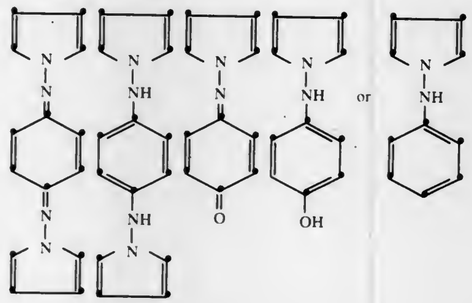
(1)

in which:
M represents an atom of aluminium, of titanium or of bismuth of valency m,
p and q are whole numbers at least equal to 1,
r is 0 or a whole number at least equal to 1, with m×qq=p+r,
n is 0 or a whole or fractional number.

6. A medicament useful as an anti-ulcer agent characterized by the fact it comprises as an active substance, an effective amount of at at least one compound according to claim **1** and a material selected from the group consisting of adjuvants and excipients.

4,215,137
METHOD OF ALLEVIATING DISEASES BY CELL-MEDIATED IMMUNE MODULATION
Richard A. Dobson, Schodack, and John R. O'Connor, Cohoes, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.
Filed Jun. 26, 1978, Ser. No. 919,224
Int. Cl.[2] **A61K** *31/40*
U.S. Cl. 424—274 **14 Claims**

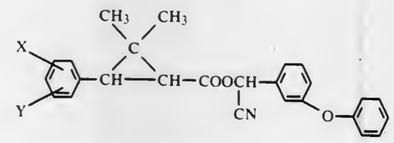
1. A method for alleviating diseases in animals, susceptible to treatment by modulation of the cell-mediated immune response system, selected from viral, inflammatory, hyperglycemic and hypertensive diseases which comprises administering orally to a diseased animal an effective amount of a compound having one of the formulas:



as the immuno modulating agent.

4,215,138
INSECTICIDAL COMPOUNDS OF PHENYLCYCLOPROPANE CARBOXYLIC ACID ESTERS
Kiyomi Ozawa; Shigeru Ishii, both of Funabashi; Mamoru Hayashi, Shiraoka; Masayoshi Hirose, Shiraoka, and Ryoichi Nonaka, Shiraoka, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan
Filed Dec. 15, 1978, Ser. No. 969,866
Claims priority, application Japan, Dec. 27, 1977, 52/156381; Apr. 3, 1978, 53/38968
Int. Cl.[2] **A01N** *9/28, 9/06;* **C07D** *317/44;* **C07C** *121/64*
U.S. Cl. 424—282 **7 Claims**

1. An insecticidal compound of phenylcyclopropane carboxylic acid ester having the formula



(I)

wherein X and Y are the same or different and represent a hydrogen or a halogen atom, methyl group, a lower alkoxy group, trifluoromethyl group, phenoxy group or X and Y form

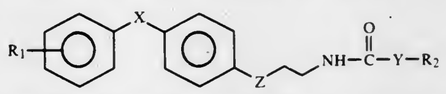


group; with the proviso, that X and Y are not both hydrogen atoms.

5. An insecticidal composition which comprises an insecticidally effective amount of a compound of phenylcyclopropane carboxylic acid ester having the formula (I), according to claim **1**, and an adjuvant in a form of a solution, a dispersion, an emulsion, an oil spray, a wettable powder, a dust, a granule, a tablet, a pellet, a paste or an aerosol.

4,215,139
CARBAMIC ACID DERIVATIVES
Ulf Fischer, Frenkendorf; Fernand Schneider, Basel, and Rene Zurflueh, Bülach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Mar. 6, 1979, Ser. No. 18,026
Claims priority, application Switzerland, Mar. 17, 1978, 2929/78
Int. Cl.[2] **C07C** *149/437, 125/06;* **A01N** *9/30, 9/24*
U.S. Cl. 424—300 **33 Claims**

26. A insecticidal composition comprising inert carrier material and, as the active ingredient, a pesticidally effective amount of one or more compounds of the formula



(I)

wherein R_1 is hydrogen, fluorine, chlorine, alkyl of from one to six carbons, trifluoromethyl, hydroxy or methoxy, X is oxygen, carbonyl methylene, sulphur or sulphonyl, Z is oxygen, methylene, or sulphur, Y is oxygen or sulphur and R_2 is alkyl of from one to six carbons.

4,215,140
CYANOMETHYL ALKYL TRITHIOCARBONATES AS INSECTICIDAL AGENTS
Julian A. Otto, deceased, late of Stockholm, N.J., and Ermalinda O. Cooke, administratrix, Ferguson, Mo., assignors to Allied Chemical Corporation, Morristown, N.J.
Filed Sep. 15, 1978, Ser. No. 942,589
Int. Cl.[2] **A01N** *9/12;* **C07C** *154/02*
U.S. Cl. 424—301 **8 Claims**

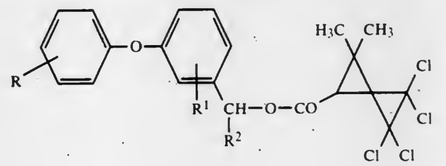
1. A compound of the formula:

R—S—CS—SCH_2—CN

wherein R is alkyl C_1–C_8.

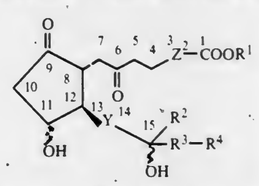
4,215,141
COMBATING INSECTS AND ACARIDS WITH 4,4,5,5-TETRACHLORO-2,2-DIMETHYL-SPIROPENTANE-1-CARBOXYLIC ACID 3-PHENOXY-BENZYL ESTERS
Rainer Fuchs, Wuppertal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed May 21, 1979, Ser. No. 41,222
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825314
Int. Cl.[2] **A01N** *9/20, 9/24;* **C07C** *69/74, 121/66*
U.S. Cl. 424—304 **9 Claims**

1. A 4,4,5,5-tetrachloro-2,2-dimethyl-spiropentane-1-carboxylic acid 3-phenoxy-benzyl ester of the formula



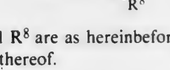
4,215,142
PROSTAGLANDIN ANALOGUES
Masaki Hayashi; Katsuichi Shimoji, and Yoshinobu Arai, all of Takatsuki, Japan, assignors to Ono Pharmaceutical Co. Ltd., Osaka, Japan
Filed Sep. 8, 1978, Ser. No. 940,685
Claims priority, application Japan, Sep. 16, 1977, 52-110504
Int. Cl.[2] **C07C** *177/00;* **A61K** *31/14, 31/215*
U.S. Cl. 424—305 **15 Claims**

1. A prostaglandin E_1 analogue of the general formula:



(IV)

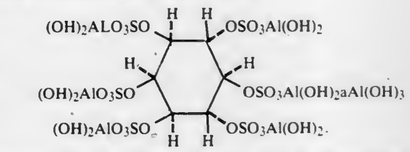
and cyclodextrin clathrates of such acids and esters and, when R^1 represents a hydrogen atom or a group —$C_mH_{2m}COOR^5$ in which R^5 represents a hydrogen atom and m is as hereinbefore defined, non-toxic salts thereof and, when R^1 represents a group



in which n, R^7 and R^8 are as hereinbefore defined, non-toxic acid addition salts thereof.

4,215,143
ANTI-ULCER PHARMACEUTICAL COMPOSITION CONTAINING INOSITOL HEXASULFATE ALUMINUM OR SODIUM ALUMINUM SALT AS ACTIVE INGREDIENT
Zen-ichi Henmi, Mobara; Akira Kotaki, Tokyo, and Takafumi Kitano, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
Filed Sep. 7, 1978, Ser. No. 940,205
Claims priority, application Japan, Feb. 24, 1978, 53-19770
Int. Cl.[2] **A61K** *31/185*
U.S. Cl. 424—315 **2 Claims**

1. An anti-ulcer pharmaceutical composition comprising as an active ingredient a therapeutically effective amount of a compound selected from the group consisting of inositol hexasulfate aluminum salt of the formula:



wherein "a" is an integer of from 0 to 6 and contains 6–12 molecules of water of crystallization and inositol hexasulfate sodium aluminum salt of the formula

$C_6H_6(OSO_3Na)_c(OSO_3Al(OH)_2)_d{\cdot}aAl(OH)_3$

wherein "a" is an integer of from 0 to 6, "c" is an integer of from 1 to 5, "d" is an integer of from 1 to 5, and the sum (c+d) is equal to 6, the composition containing 6 to 12 molecules of

water of crystallization and a pharmaceutically acceptable carrier.

4,215,144

METHOD OF TREATING AND CONTROLLING GINGIVITIS

Geraldine H. Thiele, New Oxford, Pa., assignor to Oxford Hill Ltd., New Oxford, Pa.

Continuation of Ser. No. 755,400, Dec. 29, 1976, Pat. No. 4,097,064, which is a continuation-in-part of Ser. No. 890,239, Mar. 27, 1978, which is a continuation of Ser. No. 642,114, Dec. 18, 1975, which is a continution-in-part of Ser. No. 724,942, Sep. 20, 1976, which is a continuation-in-part of Ser. No. 724,943, Sep. 20, 1976, which is a continuation-in-part of Ser. No. 113,362, Feb. 8, 1971, Pat. No. 3,741,204, which is a continuation-in-part of Ser. No. 123,830, Mar. 12, 1971, Pat. No. 3,767,812, which is a continuation-in-part of Ser. No. 283,662, Aug. 25, 1972, Pat. No. 3,805,776, which is a continuation-in-part of Ser. No. 283,663, Aug. 25, 1972, Pat. No. 3,828,772, which is a continuation-in-part Ser. No. 369,236, Jun. 12, 1973, Pat. No. 3,924,000, and a continuation-in-part of Ser. No. 483,010, Jun. 25, 1974, Pat. No. 3,982,017, said Ser. No. 890,239, is a continuation of said Ser. No. 724,943, which is a continuation of said Ser. No. 483,010, which is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830, and a continuation-in-part of Ser. No. 113,362, said Ser. No. 755,400 is a continuation of said Ser. No. 642,114, which is a continuation-in-part of said Ser. No. 483,010, which is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830, and a continuation-in-part of Ser. No. 113,362, said Ser. No. 724,943 which is a continuation of said Ser. No. 483,010, which is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830, and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 724,942 is a continuation-in-part of said Ser. No. 483,010, which is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of Ser. No. 123,830, and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 642,112, which is a continuation-in-part of said Ser. No. 483,010, which is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830, and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 483,010 is a continuation-in-part of said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830, and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 369,236, which is a continuation-in-part of said Ser. No. 283,663, which is a continuation-in-part of said Ser. No. 283,662, which is a continuation-in-part of said Ser. No. 123,830 and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 283,663 is a continuation-in-part of said Ser. No. 123,830 and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 283,662 is a continuation-in-part of said Ser. No. 123,830 and a continuation-in-part of said Ser. No. 113,362, said Ser. No. 123,830 is a continuation-in-part of said Ser. No. 113,362.

The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.

Int. Cl.[2] **A61K** *31/20, 31/45*

U.S. Cl. 424—318 **2 Claims**

1. The method of treating and controlling gingivitis and related periodontal diseases of the gingival tissue which comprises contacting the diseased gingival tissue with a liquefied composition comprised of a therapeutically effective amount of a non-necrotic fatty acid compound prepared from an unsubstituted, unsaturated fatty acid having at least one double bond, a liquid carrier, a buffering agent and ethanol, the pH of said liquefied composition being between 8 and 11.

4,215,145

MITICIDAL, FUNGICIDAL, AND OVICIDAL SULFENAMIDES

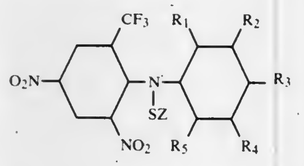
Gary D. Grantham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1978, Ser. No. 966,591

Int. Cl.[2] **A01N** *9/20;* **C07C** *145/02;* **A01N** *9/12*

U.S. Cl. 424—324 **50 Claims**

1. A compound of the formula



wherein

R_1, R_3 and R_4 independently are H, F, Cl, Br, NO_2, CF_3, OCF_3 or OCF_2CF_2H;

R_2 is H, F, Cl, Br, NO_2 and CF_3;

R_5 is H or F;

Z is CCl_3, CCl_2F, CCl_2CCl_2H or CCl_2CFCl_2;

provided that when R_1 is NO_2 or CF_3, then R_3 must be H or F;

provided that no more than two of the substituents R_1, R_2, R_3 and R_4 are simultaneously Cl, Br, NO_2, CF_3, OCF_3 or OCF_2CF_2H and when two NO_2 groups are present, they are not ortho to each other.

21. A method for control of mites, fungus disease of a plant or insect eggs which comprises applying to a locus to be protected a miticidally, fungicidally or ovicidally effective amount of a compound of claim 1.

4,215,146

ANTIVIRAL AMINE DERIVATIVES OF GLYCEROL AND PROPANEDIOLS

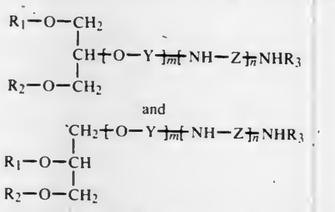
Allen R. Kraska, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 825,535, Aug. 18, 1977, Pat. No. 4,166,132. This application Feb. 15, 1979, Ser. No. 12,504

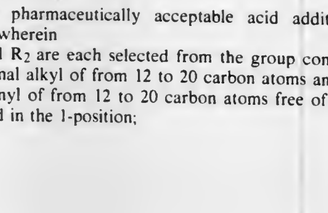
Int. Cl.[2] **A01N** *9/24;* **C07C** *91/22*

U.S. Cl. 424—330 **20 Claims**

1. A compound selected from the group consisting of



I

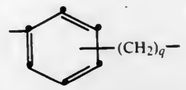


II

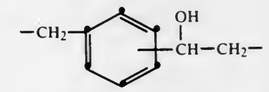
and the pharmaceutically acceptable acid addition salts thereof, wherein

R_1 and R_2 are each selected from the group consisting of normal alkyl of from 12 to 20 carbon atoms and normal alkenyl of from 12 to 20 carbon atoms free of a double bond in the 1-position;

Y is selected from the group consisting of ortho-, meta- and para-phenylenedimethylene;



wherein q is an integer of from 1 to 3, and the left bond is connected to O; and



wherein the left bond is connected to O;

Z is selected from the group consisting of ortho-, meta- and para-phenylenedimethylene;

R_3 is selected from the group consisting of hydrogen, alkyl of from 2 to 4 carbon atoms and ω-hydroxy(normal alkyl) of from 2 to 4 carbon atoms; and

m and n are each 0 or 1, the sum of m and n being 1, and R_3 being hydrogen when m is 0.

19. A method of prophylactically controlling a viral infection in a mammal which comprises administering to said mammal an amount of a compound of claim 1 which is effective to prophylactically control said viral infection.

4,215,147

ACROLEIN COMPOSITION AND METHOD OF ENHANCING EFFECTIVE LIFE THEREOF IN AN AQUEOUS MEDIUM

Charles L. Kissel, Anaheim, and Frederick F. Caserio, Jr., Laguna Beach, both of Calif., assignors to Magna Corporation, Santa Fe Springs, Calif.

Filed Jun. 16, 1978, Ser. No. 916,417

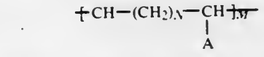
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.[2] **A01N** *9/24*

U.S. Cl. 424—333 **17 Claims**

1. A method of enhancing the effective life of acrolein in an aqueous medium, comprising the steps of: (A) introducing into said aqueous medium a predeterminable amount of acrolein; and (B) adjusting the pH of the aqueous medium having acrolein present therein to from between about pH 6 and about pH 2.

15. A method of effectively reducing aerobic, anaerobic or sulfate-reducing bacteria in an aqueous medium comprising the steps of: (A) introducing into said aqueous medium a predetermined amount of acrolein; (B) adjusting the pH of the aqueous medium having acrolein present therein by contacting said medium with an effective pH-reducing amount of an organic acid, an inorganic acid or mixtures thereof selected from the class consisting of: (1) H_xA_y, wherein H is hydrogen, A is an inorganic radical, and x and y each are positive integers whereby H and A are valence balanced; (2) RA, wherein R is one of hydrogen, an alkyl or an aryl group, and A is one of CO_2H, OPO_3H_2, PO_3H_2, OSO_3H, and SO_3H; and (3)



wherein N is zero or a positive integer from one through three, M is a positive integer of at least one, and A is a member selected from the class consisting of CO_2H, OPO_3H_2, PO_3H_2, OSO_3H, and SO_3H, said pH thereby being adjusted and reduced to between about pH 6 and about pH 2; and (C) contacting said aerobic, anaerobic or sulfate-reducing bacteria with an effective bacteria reducing amount of said acidic aqueous medium.

4,215,148

ACROLEIN BUFFERING COMPOSITION AND METHOD OF ENHANCING EFFECTIVE LIFE OF ACROLEIN IN AN AQUEOUS MEDIUM

Charles L. Kissel, Anaheim, and Frederick F. Caserio, Jr., Laguna Beach, both of Calif., assignors to Magna Corporation, Santa Fe Springs, Calif.

Filed Jun. 16, 1978, Ser. No. 916,418

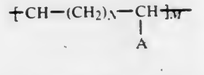
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.[2] **A01N** *9/24*

U.S. Cl. 424—333 **15 Claims**

1. A method of enhancing the effective life of acrolein in an aqueous medium comprising the steps of: (A) introducing into said aqueous medium a predetermined amount of acrolein; and (B) adjusting the pH of the aqueous medium having acrolein present therein by contacting said medium with an effective pH-reducing amount of a buffered acid solution, whereby said aqueous medium having acrolein present therein is reduced to from between about pH 6 and about pH 2.

14. A method of effectively reducing aerobic, anaerobic or sulfate-reducing bacteria in an aqueous medium comprising the steps of: (A) adjusting the pH of the aqueous medium by contacting said medium with an effective pH-reducing amount of a buffered organic acid, a buffered inorganic acid or mixtures thereof, selected from the class consisting of: (1) H_xA_y, wherein H is hydrogen, A is an inorganic radical, and x and y each are positive integers whereby H and A are valence balanced; (2) RA, wherein R is one of hydrogen, an alkyl or an aryl group, and A is one of CO_2H, OPO_3H_2, PO_3H_2, OSO_3H, and SO_3H; and (3)



wherein N is zero or a positive integer from one through three, M is a positive integer of at least one, and A is a member selected from the class consisting of CO_2H, OPO_3H_2, PO_3H_2, OSO_3H, and SO_3H, said pH thereby being adjusted and reduced to between about pH 6 and about pH 2; (B) introducing into said aqueous medium a predetermined amount of acrolein; and (C) contacting said aerobic, anaerobic or sulfate-reducing bacteria with an effective bacteria-reducing amount of said buffered acidic aqueous medium.

4,215,149

PROCESS FOR IMPROVING THE PALATABILITY OF PET FOOD

Thomas J. Majlinger, Wilton, Conn., assignor to Standard Brands Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 853,013, Nov. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 670,028, Mar. 24, 1976, abandoned. This application Nov. 17, 1978, Ser. No. 961,571

Int. Cl.[2] **A23K** *1/00*

U.S. Cl. 426—292 **5 Claims**

1. A process for maintaining the palatability of pet food which has been stored consisting essentially of extruding a moisturized mixture of pet food ingredients to form particulates, drying the particulates to a moisture content of less than about 15 percent, coating the dried particulates with fat, applying to the fat coated surface of the particulates from about 0.5 to about 2 percent, by weight, of an intact salt selected from the group consisting of monoalkali metal and monoalkaline earth metal salts of phosphoric acid and storing the salt coated pet food for about two months at 85° F. thereby enhancing the flavor of the food and increasing the acceptance thereof by cats.

4,215,150

PROCESS FOR THE REMOVAL OF UNDESIRABLE CONSTITUENTS FROM RAW COFFEE BEANS.

Hans-Albert Kurzhals, Hambergen-Heissenbüttel, and Klaus F. Sylla, Bremen, both of Fed. Rep. of Germany, assignors to decofa Kaffee-Bearbeitungs-GmbH, Bremen, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 902,004

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720204

Int. Cl.[2] A23F *1/04*

U.S. Cl. 426—430 **14 Claims**

1. Process for the removal of constituents from raw coffee beans which contribute to the presence of undesired stimulants in roasted coffee without a substantial loss in the original caffeine content comprising treating the raw coffee beans at an elevated temperature of 40° to 120° C.; with an ester of low-molecular weight alkanoic acid containing 1 to 5 carbon atoms with a C_1-C_5 alkanol in combination with a ketone selected from the group consisting of acetone, butanone-2, pentanone-2, pentanone-3, methyl isopropyl ketone, and mixtures thereof, wherein the concentration of the ketone based upon the total of the ester and ketone is 0.05 to 50 percent by weight; wherein the weight ratio of the combination of ester and ketone to the raw coffee beans is 0.2:1 to 20:1; and separating ester and ketone from the coffee beans to at least the extent that the amount of ester and ketone remaining in the treated coffee after roasting are no greater than that in untreated roasted coffee.

4,215,151

PROCESS FOR ROASTING AN AGRO-FOOD PRODUCT IN A FLUIDIZED BED OF INERT PARTICLES

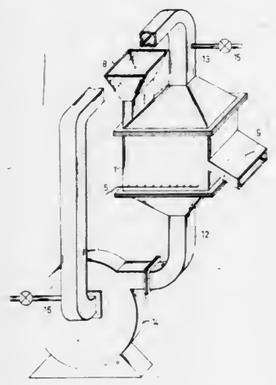
Gilbert M. Rios, Mauguio; Henri Gibert; Jean Crouzet, both of Montpellier, and Jean-Claude Vincent, Saint-Clement la-Riviere, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed May 11, 1978, Ser. No. 905,014

Claims priority, application France, May 11, 1977, 77 15007

Int. Cl.[2] A23F *1/02;* **F26B** *3/08, 3/10*

U.S. Cl. 426—467 **10 Claims**



1. A process for roasting grains of an agro-food product of a type such as will swell and lose weight during heat treatment comprising:

placing chemically inert particles in fluid suspension in an enclosure by means of a flowing carrier gas having a velocity greater than the minimum fluidization velocity of said particles so as to form a fluidized bed of said particles, said bed having a thickness of at most about 30 times the mean diameter of said grains and an apparent mean volume mass of about 1.2 to 4 times the initial volume of the grains to be roasted,

bringing said bed to an elevated roasting temperature,

introducing said grains into said bed so that said grains are in fluid suspension in said bed and allowing said grains to remain in said bed for a time sufficient to dry and to roast said grains, wherein during said drying and roasting the grains become lighter and rise to the top of the bed, and

removing the roasted and dried grains from the top surface of said bed by overflow.

4,215,152

STARCH FOR INSTANT PUDDING

Joseph D. O'Rourke, Dover, Del., assignor to General Foods Corporation, White Plains, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,219

Int. Cl.[2] A23L *1/187*

U.S. Cl. 426—579 **11 Claims**

1. A process for making a dry pregelatinized starch product suitable for use in an instant pudding comprising: mixing an aqueous slurry of ungelatinized starch in water with a protein and an emulsifier, the amount of emulsifier and protein being effective to impart the resultant pregelatinized starch when reconstituted with creamy, smooth, viscous and glossy characteristics suitable for use in an instant pudding mix. thereafter gelatinizing and drying the slurry in a drum drier.

4,215,153

METHOD FOR THE PRODUCTION OF FISH MEAT POWDER RETAINING FUNCTIONAL CHARACTERISTICS OF FRESH FISH MEAT

Fumindo Kai, Tachikawa; Eitaro Kumazawa, Sayama; Yozo Ishioka, Higashikurume, and Kazuyoshi Ishida, Kawagoe, all of Japan, assignors to Snow Brand Milk Products Co., Ltd, Sapporo, Japan

Continuation-in-part of Ser. No. 716,561, Aug. 23, 1976, abandoned. This application Mar. 31, 1978, Ser. No. 892,012

Int. Cl.[2] A22C *25/00*

U.S. Cl. 426—643 **12 Claims**

1. A method of making a fish meat powder retaining the functional characteristics of fresh fish meat which comprises:

(a) mincing and kneading a fresh raw fish meat at a temperature of not more than 30° C. to yield a product retaining ATPase activity and at least 50% by weight undernatured myofibril proteins;

(b) forming a fish meat sol having fine air bubbles uniformly distributed therein by subjecting at a temperature of not more than 30° C. said product of step (a) to a colloid mill treatment;

(c) foaming said fish meat under a vacuum of from 4.6 Torr to 30 Torr whereby there is obtained a porous mass; and

(d) drying said porous mass at a temperature of not more than 30° C.

4,215,154

PROCESS FOR PRODUCING SEMICONDUCTOR MATERIALS AND METALS OF HIGHEST PURITY

Gerhard Behensky, and Josef Waldinger, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,644

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753567

Int. Cl.[2] B05D *5/12, 3/14*

U.S. Cl. 427—50 **4 Claims**

1. A process for producing high purity silicon semiconductor materials and metals by thermal decomposition of a gaseous compound containing the silicon semiconductor material or metal passing over the carrier bodies, comprising the steps of:

arranging the silicon carrier bodies into branches in a multiphase delta electrical connection during the start of the deposition process;

passing an equal amount of electrical current through each of the branches of the delta connection, so as to heat the carrier bodies to deposition temperature;

regulating the current in each of the delta branches by means of current-controlled regulator circuits, so that the same current flows through each delta branch;

switching over said multiphasedelta connection to a multiphase Y connection after the carrier bodies reach a predetermined resistance after being heated, so that the branch current decreases by $\sqrt{n}$ and the line voltage increases by $\sqrt{n}$ where n equals the number of phases in the line; and

passing a gaseous compound containing the semiconductor material or metal over the carrier bodies.

4,215,155

METHOD OF PREPARING MODIFIED TITANIUM DIOXIDE PHOTOACTIVE ELECTRODES

Howard McKinzie, Framingham, and Elizabeth A. Trickett, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 22, 1978, Ser. No. 918,001

Int. Cl.[2] C25B *11/04, 11/10*

U.S. Cl. 427—74 **5 Claims**

1. A method of preparing polycrystalline thin film photoactive semiconductor electrodes utilizable in photoelectrochemical cells and photoassisted oxidation-reduction reactions comprising sequentially the steps of:

providing a suspension of finely divided electrode coating material in a volatile solvent selected from the group consisting of water, low molecular weight alcohols, esters, ketones, and mixtures thereof, wherein the material consists of a uniform mixture of titanium dioxide and at least one oxide of a metal selected from the group consisting of the d-electron transition metals excluding titanium, the metal exhibiting an oxidation state other than +4 in the oxide,

applying the suspension of electrode coating material to the surface of a conductive body to form a thin film of the electrode coating material thereon, and

heating the coated conductive body at an elevated temperature for a period of time sufficient to sinter the electrode coating to the body.

4,215,156

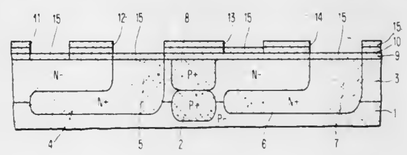
METHOD FOR FABRICATING TANTALUM SEMICONDUCTOR CONTACTS

Hormazdyar M. Dalal, Wappingers Falls; Majid Ghafghaichi, Poughkeepsie; Lucian A. Kasprzak, Hopewell Junction, and Hans Wimpfheimer, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1977, Ser. No. 827,912

Int. Cl.[2] H01L *21/443, 21/477*

U.S. Cl. 427—84 **20 Claims**



2. A method for fabricating a tantalum contact on a silicon semiconductor substrate comprising:

preparing the surface of at least a portion of said substrate so as to prevent the formation of amorphous silicon by cleaning said surface in a dilute HF etchant solution under conditions in which there is no substantial amount of light shorter than the wavelength of 5000 A;

depositing tantalum atop said portion of said substrate in a vacuum chamber at a low pressure and substrate temperature so as to avoid oxidation of said tantalum; and

sintering said substrate at a sufficient temperature and time to remove interfacial charges and films from between said substrate and said tantalum.

4,215,157

PROCESS FOR PREPARING POLYETHERIMIDE COATINGS

Edith M. Boldebuck, Schenectady, and Eugene G. Banucci, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 778,858, Mar. 18, 1977, Pat. No. 4,157,996. This application Nov. 30, 1978, Ser. No. 965,192

Int. Cl.[2] B05D *5/12*

U.S. Cl. 427—116 **26 Claims**

1. A process for coating a substrate, which comprises (I) applying to the substrate a highly concentrated homogeneous coating solution of monomeric bis(ether dicarboxylic acid) and diamine reactants comprising

(1) at least one aromatic bis(ether dicarboxylic acid) selected from the group consisting of 2,2-bis[4-(3,4-dicarboxyphenoxy)phenyl] propane; 2,2-bis[4-(2,3-dicarboxyphenoxy)phenyl] propane, 4-(2,3-dicarboxyphenoxy)-4'-(3,4-dicarboxyphenoxy)diphenyl-2,2-propane; and mixtures thereof;

(2) at least one organic diamine selected from the group consisting of 4,4'-methylenedianiline, 4,4'-oxydianiline, m-phenylenediamine, and mixtures thereof; and

(3) an organic solvent selected from the group consisting of monoalkyl ethers of ethylene glycol having from 1 to 4 carbon atoms in the alkyl group, monoalkyl ethers of diethylene glycol having from 1 to 4 carbon atoms in the alkyl group, dipolar aprotic organic solvents selected from the group consisting of N-methyl-2-pyrrolidone, N,N-dimethylacetamide, dimethylsulfoxide, tetramethylurea, and mixtures thereof;

said bis(ether dicarboxylic acid) and said diamine being dissolved in said organic solvent in a combined amount of at least 0.67 part by weight per one part by weight of said organic solvent,

said diamine being dissolved in an amount from about 0.5 to about 2.0 moles per mole of said bis(ether dicarboxylic acid), said solution remaining homogeneous for at least one week when stored at about 20° C. to 30° C. in a tightly stoppered glass container; and thereafter (II) heating the applied solution at a temperature and for a time effective to form a polyetherimide coating on said substrate.

4,215,158

MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCING THE SAME

Seizi Hattori, Nishiibaragi; Takehiko Nakagawa, Kawasaki; Kazuo Kobayashi, Koza; Koichi Makino, Yokohama, and Wakatake Matsuda, Zama, all of Japan, assignors to Fujitsu Limited and Nippon Telegraph and Telephone Public Corporation, both of, Japan

Filed Mar. 2, 1977, Ser. No. 776,591

Claims priority, application Japan, Mar. 3, 1976, 51-22209

Int. Cl.[2] H01F *1/10*

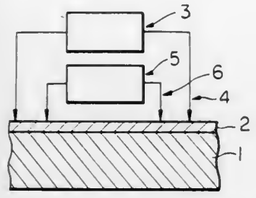
U.S. Cl. 427—130 **13 Claims**

1. A process for producing a magnetic recording medium of a thin film of ferrite, said process comprising the steps of:

forming a thin film of α-Fe_2O_3, wherein said α-Fe_2O_3 film comprises niobium in an amount from 0.1 to 10 percent based on the total number of the metallic atoms in said ferrite film;

reducing said thin film of α-Fe_2O_3 to Fe_3O_4 by heating said α-Fe_2O_3 containing said niobium at a temperature of from

325° to 400° C. under an atmosphere containing a hydrogen gas; and,



oxidizing said Fe_3O_4 to γ-Fe_2O_3 by heating said Fe_3O_4 containing niobium at a temperature from 150° to 450° C. in an atmosphere which contains oxygen.

4,215,159

CAVITY FILLING WITH A HOT MELT ADHESIVE COMPOSITION

Donald D. Donermeyer, Springfield, and Joseph G. Martins, Ludlow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 4, 1978, Ser. No. 948,450
Int. Cl.² B23P *7/00*
U.S. Cl. 427—142 **17 Claims**

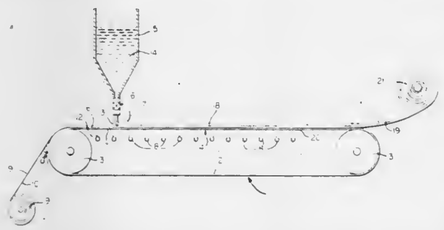
1. A method of filling a cavity in a substrate which comprises applying excess adhesive composition as a hot melt into the cavity, spreading the adhesive composition to fill the cavity, cooling the adhesive composition below its crystallization temperature and sanding the adhesive composition to provide a surface even with the surrounding substrate, wherein the adhesive composition comprises a block copolymer, a particulate mineral reinforcing agent and glass fiber, wherein the block copolymer is selected from the group consisting of copolyesters, copolyamides, copoly(esteramides) and copoly(ether-esters) melting at a temperature of above about 150° C., having from about 30 to about 70 weight percent of hard segments and from about 70 to about 30 weight percent of soft segments; wherein the weight ratio of block copolymer to particulate mineral reinforcing agent and glass fiber is in the range of about 3:7 to about 3:2, wherein the weight ratio of block copolymer to glass fiber is at least about 3:4 and wherein the weight ratio of particulate mineral reinforcing agent to glass fiber is in the range of about 1:3 to about 9:1.

4,215,160

METHOD OF FORMING WATERPROOFING MATERIAL

Arnold M. Rosenberg, Potomac, and James M. Gaidis, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 851,065, Nov. 14, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,241
Int. Cl.² B05D *3/04, 3/12*
U.S. Cl. 427—177 **9 Claims**



1. A method of forming a sheet-like, laminate waterproofing structure of a flexible sheet-like polymeric member having a first major side thereof substantially non-adherent to bituminous compositions and having a second major side thereof coated with a flexible membrane layer of adhesive bituminous composition comprising

supplying a forming member having a forming and a non-forming surface;

placing a flexible sheet-like polymeric member on the forming surface of the forming member with its first major side facing the forming surface, said first major side being substantially non-adherent to the bituminous compositions;

applying a semi-fluid adhesive bituminous composition having a temperature above the melting point of the polymeric member to a second major side of the polymeric member in an amount sufficient to form a membrane thereof of said composition of from about 0.025 to 0.2 inch thick while simultaneously cooling the forming surface at a rate sufficient to maintain the polymeric member below its melting point and having said forming surface support said polymeric member during application of the bituminous composition and the cooling; and

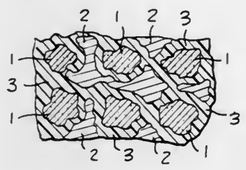
continuously cooling the forming surface at least until the bituminous composition of said structure has a temperature below the melting point of the polymeric member.

4,215,161

FIBER-RESIN-CARBON COMPOSITES AND METHOD OF FABRICATION

Robert W. Seibold, Santa Monica; Haig S. Parechanian, Fountain Valley; William T. Weatherill, La Palma, and Robert E. Lowe, Santa Ana, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 531,662, Dec. 11, 1974, Pat. No. 4,100,322. This application Mar. 20, 1978, Ser. No. 890,647
Int. Cl.² B32B *7/00;* **B05D** *3/02, 3/12*
U.S. Cl. 427—228 **22 Claims**



1. The process for producing a plastic composite having improved elevated temperature strength and good heat resistance, which consists essentially of impregnating fibrous reinforcement material with a resin, curing said resin, pyrolyzing the resulting fiber-resin composite, reimpregnating the resulting pyrolyzed composite with additional resin and curing said additional resin, said resin reimpregnated composite forming a bimatrix fiber-resin-carbon composite composed of a mixture of pyrolyzed and non-pyrolyzed carbon and resin matrices reinforced with fibrous reinforcement material.

4,215,162

PROCESS OF COATING METAL SURFACES

Jan Kunnen, Noordwijkerhout, and Abraham C. van der Schee, Oegstgeest, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 689,958, May 25, 1976, abandoned. This application Oct. 28, 1977, Ser. No. 846,360
Claims priority, application Netherlands, May 30, 1975, 7506412
Int. Cl.² B05D *1/18*
U.S. Cl. 427—435 **6 Claims**

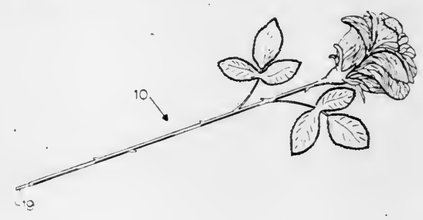
1. In an autodeposition process of applying a coating of film-forming material to an acid-etchable metal, the metal surface being contacted with an aqueous dispersion of the film-forming material, which contains a metal-etching acid, followed by drying the coating, the improvement which comprises cationically dispersing the film-forming material in a cationic dispersion which contains the carboxylic acid radical derived from acrylic acid, methacrylic acid or an oligomer thereof and a cationic surfactant in an amount of at least 0.1% by weight.

4,215,163

ARTIFICIAL FLOWERS AND METHOD FOR THEIR MANUFACTURE, UNISTEM

Bobby L. Lee, 5, Mok Cheong St., ground flr., block C, Kowloon, Hong Kong

Continuation-in-part of Ser. No. 790,016, Apr. 22, 1977. This application Jul. 18, 1978, Ser. No. 925,705
Int. Cl.² A41G *1/00*
U.S. Cl. 428—24 **8 Claims**



1. An artificial flower assembly, including in combination:

a plastic stem unitarily molded as one piece around a reinforcing wire core with fully developed side petioles as integral parts of said stem and wherein said petioles are provided with a reinforcing wire core having a portion lying within said stem and a calyx as an integral part thereof with a stud as an integral part thereof extending through said calyx said stud having an enlarged terminal portion,

fabric leaves adhered to said petioles and wherein said petioles are generally round in cross-section with a flat upper surface for support and attachment of said leaves and

a subassembly of fabric petals having a tubular central plastic member on which the petals are loosely mounted and by which they are retained, said tubular central member being mounted on and around said stud with said enlarged terminal portion lying beyond said central member and consequently preventing accidental removal of said subassembly.

4,215,164

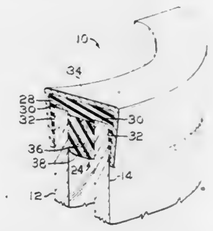
MULTIPLE GLAZED UNIT

George H. Bowser, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 411,882, Nov. 1, 1973, abandoned, which is a continuation-in-part of Ser. No. 232,411, Mar. 7, 1972, Pat. No. 3,791,910, which is a continuation-in-part of Ser. No. 49,779, Jun. 25, 1970, abandoned. This application Jun. 9, 1975, Ser. No. 584,793
The portion of the term of this patent subsequent to Feb. 12, 1991, has been disclaimed.
Int. Cl.² B32B *17/10;* **E06B** *3/24*
U.S. Cl. 428—34 **13 Claims**

1. A multiple glazed unit comprising a pair of spaced, parallel glass sheets separated by a marginal edge spacer and a room temperature cured sealant adhered to said spacer and said glass sheets to hermetically seal the unit, said sealant being substantially solvent-free, having a consistency of about 500 to 700 metergrams at 250° F., a tensile strength of about 65 to 100 pounds per square inch, and consisting essentially of, in admixture, a rubbery polymeric component and a non-polymeric filler and reinforcing component, said polymeric component consisting essentially of:

(a) 18 to 65 percent by weight of the total sealant of butyl rubber cured by cross-linking butyl rubber polymers which, prior to curing, have a viscosity average molecular



weight between 300,000 and 500,000 and 0.6 to 2.2 mole percent unsaturation;

(b) 15 to 65 percent by weight of the total sealant of polybutene; and

(c) 8 to 60 percent by weight of the total sealant of polyisobutylene.

4,215,165

METHOD FOR COATING OF GLASS SURFACES

Rainer Gras, and Horst Schnurbusch, both of Herne, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,171
Int. Cl.² B65D *23/08, 11/16*
U.S. Cl. 428—35 **19 Claims**

1. A method for the coating and protection of a glass surface which comprises:

treating said glass surface with an aqueous or an alcoholic solution of a silane reagent in order to provide a skim coat thereon;

drying the resulting silane-coated surface;

coating the dried silane-coated surface with a paste comprising (1) an aliphatic or cycloaliphatic diisocyanate, a mixture thereof, or a reaction product thereof with water, wherein the mole ratio of said diisocyanate to water is 2:≦1 ;**l and** (2) a hydroxy-group containing polyester, derived from a ω-hydroxy carboxylic acid or a lactone therefrom, with a triol; wherein said acid or lactone contains at least 4 carbon atoms; and

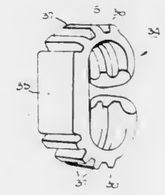
hardening said paste.

4,215,166

FOAMABLE THERMOPLASTIC STICK AND FOAMED ELEMENT MADE THEREFROM

Harry Bussey, Jr., P.O. Box 115 Serpentine Rd., Navesink, N.J.

Filed Mar. 13, 1978, Ser. No. 886,075
Int. Cl.² B32B *3/00, 3/30*
U.S. Cl. 428—159 **8 Claims**



1. A foamed thermoplastic element having at least one curvilinear portion of substantially uniform cross-section shape

disposed along a longitudinal axis, and further having a plurality of spaced apart spines projecting from at least one surface of said portion along a common line, said spines being angularly disposed relative to said longitudinal axis with a transverse component of direction.

4,215,167

INK AND COATING COMPOSITIONS AND METHOD

George W. Borden, East Lyme, Conn.; Oliver W. Smith, South Charleston, W. Va., and David J. Trecker, Old Lyme, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 343,695, Mar. 22, 1973, which is a division of Ser. No. 103,912, Jan. 4, 1971, abandoned. This application May 22, 1975, Ser. No. 580,018

Int. Cl.[2] **B05D** *3/06*

U.S. Cl. 428—203 **6 Claims**

1. The method of coating or printing comprising the steps of:

(A) coating or printing on a substrate with a composition comprising,

(I) a liquid vehicle polymerizable to a solid upon exposure to actinic radiation comprising the reaction product of epoxidized soybean oil and acrylic acid, having at least two acrylate groups per mole of product,

(II) a photosensitizer for said vehicle,

(III) a pigment,

(B) exposing the coated or printed substrate to an amount of actinic radiation effective to polymerize said vehicle to form a solid coated or printed surface.

4,215,168

LAMINATED MULTILAYER SHEET STRUCTURE AND ITS UTILIZATION

Utami Yonemura, Hino; Kiyoshi Chiba, Niiza; Kunio Itoh; Yuji Mitani, both of Hino, and Shigenobu Sobajima, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 27, 1978, Ser. No. 919,697

Claims priority, application Japan, Jun. 30, 1977, 52-77196

Int. Cl.[2] **B32B** *7/02, 15/04*

U.S. Cl. 428—215 **12 Claims**

1. A laminated multilayer sheet structure comprising (A) an opaque flexible sheet layer, and (B) a flexible layer laminated on the surface of layer (A) and composed of a transparent thermic ray reflecting layer (B_1) bonded to a transparent synthetic resin layer (B_2),

said layer (B_1) being a transparent thermic ray reflecting layer composed of (i) a layer of a metal having a thickness of about 50 to about 600 A, said metal being selected from the group consisting of gold, silver, copper, aluminum and a mixture or alloy of at least two of said metals, and (ii) a high refractive substance layer having a thickness of about 50 to about 600 A, of an oxide of titanium derived from a layer of an organic titanium compound of the formula

$$Ti_lO_mR_n$$

where R is alkyl of 1-20 carbon atoms,

$l = 1-30$,

$m = 4+3(l-1)$, and

$n = 4+2(l-1)$,

and containing the organic residual moiety of the organic titanium compound, the amount of said organic residual moiety being 0.1 to 30% by weight based on the weight of the high refractive substance layer; or said layer (B_1) being a transparent semiconductive layer having a thickness of about 500 to about 5,000 A and being composed of a compound selected from the group consisting of indium oxide, tin oxide, cadmium oxide, antimony oxide, copper iodide, and a mixture of at least two of said compounds.

9. A method for heat-insulating a room, which comprises applying to the surface of a floor, wall, ceiling or partition, in the room, a laminated multilayer sheet structure comprising (A) an opaque flexible sheet layer, and (B) a flexible layer laminated on the surface of layer (A) and composed of a transparent thermic ray reflecting layer (B_1) bonded to a transparent synthetic resin layer (B_2),

said layer (B_1) being a transparent thermic ray reflecting layer composed of (i) a layer of a metal having a thickness of about 50 to about 600 A, said metal being selected from the group consisting of gold, silver, copper, aluminum and a mixture or alloy of at least two of said metals, and (ii) a high refractive substance layer having a thickness of about 50 to about 600 A, of an oxide of titanium derived from a layer of an organic titanium compound of the formula

$$Ti_lO_mR_n$$

where R is alkyl of 1-20 carbon atoms,

$l = 1-30$,

$m = 4+3(l-1)$, and

$n = 4+2(l-1)$,

and containing the organic residual moiety of the organic titanium compound, the amount of said organic residual moiety being 0.1 to 30% by weight based on the weight of the high refractive substance layer; or said layer (B_1) being a transparent semiconductive layer having a thickness of about 500 to about 5,000 A and being composed of a compound selected from the group consisting of indium oxide, tin oxide, cadmium oxide, antimony oxide, copper iodide, and a mixture of at least two of said compounds,

said applying being carried out in such a manner that the layer (A) side of the sheet structure is in contact with said surface.

4,215,169

MELT-EXTRUDABLE COLD WATER SOLUBLE FILMS

Robert D. Wysong, Talleyville, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 936,746, Aug. 25, 1978, abandoned, which is a division of Ser. No. 739,280, Nov. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 525,446, Nov. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 430,554, Jan. 3, 1974, abandoned. This application May 3, 1979, Ser. No. 35,704

Int. Cl.[2] **B32B** *27/06, 27/30*

U.S. Cl. 428—220 **14 Claims**

1. A melt-extruded cold-water soluble film 0.5-10 mils thick consisting essentially of 5 to 20 parts by weight of a polyethylene glycol, having an average molecular weight in the range between 325 and 550 (based upon measurement of the hydroxyl content thereof obtained by esterification of said glycol with phthalic anhydride/pyridine), in 100 parts by weight of a low molecular weight polyvinyl alcohol which is about 85 to about 90 mol % hydrolyzed (determined by saponification) and has a viscosity in the range between about 3 and about 10 cps as measured on a 4% aqueous solution at 20° C. (determined by the Hoeppler Falling Ball Method ASTM-D 1343-56, Part 8).

4,215,170

METALLIZATION PROCESS

D. Entique Vilaprinyo Oliva, Barcelona, Spain, assignor to Eurographics Holding, N. V., Curacao, Netherlands Antilles

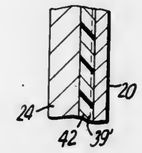
Continuation-in-part of Ser. No. 640,392, Dec. 12, 1975. This application Feb. 28, 1978, Ser. No. 882,162

The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.

Int. Cl.[2] **B44C** *1/10;* **B32B** *31/12, 15/02*

U.S. Cl. 428—328 **17 Claims**

1. A process for the metallization of a substrate employing a reusable transfer agent comprising the steps of; depositing on the transfer agent a film of metal particles of the order of magnitude of substantially less than 1000 Angstroms in thickness; coating a portion of at least one of said substrate and said metallized transfer agent with varnish; laminating said substrate and said transfer agent together before said varnish is cured so that said metal particles are embedded in said varnish; curing said varnish; separating said transfer agent from said substrate, whereupon said substrate is provided with said film of metallic particles which film permits some light transmission, appears continuous and smooth and exhibits a specular



metallic finish; and reusing said transfer agent in the metallization process.

13. A specular metallic coated article of manufacture comprising a substrate, a coating of cured varnish on at least a portion of said substrate, a metallic film in the form of particles embedded in said varnish, said film being on the order of magnitude of less than 1000 Angstroms in thickness such that said film permits some light transmission, appears continuous and smooth and exhibits a specular finish.

4,215,171

ELASTOMER MODIFIED TEXTILE MATERIAL AND METHOD OF PRODUCING SAME

Francis W. Marco, Pauline, and Hans H. Kuhn, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 753,367, Dec. 22, 1976, abandoned. This application Jun. 2, 1978, Ser. No. 912,122

Int. Cl.[2] **B32B** *7/00*

U.S. Cl. 428—245 **15 Claims**

1. A method for producing an elastomer modified textile material having improved adhesion properties which consists essentially of coating the textile substrate with from about 1 to about 50 weight percent of an amine substituted natural or synthetic rubber elastomer, said elastomer having an average of at least two amine moieties substituted onto the elastomer backbone and further characterized as having an average molecular weight in the range of from about 100 to about 500,000, curing the resulting elastomer coated substrate, and thereafter recovering said elastomer modified textile material.

4,215,172

NOVEL RESINOUS COATING COMPOSITIONS

Glenn A. Pearson, 1311 Delaware, SW., Washington, D.C. 20024

Division of Ser. No. 794,548, May 6, 1977, Pat. No. 4,119,598, which is a continuation-in-part of Ser. No. 606,842, Aug. 22, 1975, abandoned. This application Sep. 19, 1978, Ser. No. 943,624

Int. Cl.[2] **B32B** *23/08, 21/08, 27/10, 15/08*

U.S. Cl. 428—264 **5 Claims**

1. As an article of manufacture, a substrate selected from the group consisting of wood, paper, metal and textiles, coated with a resinous solution comprising the reaction product of (a) about 65-80 moles of formaldehyde, (b) about 20-30 moles of urea, and (c) about 15-25 moles of phosphoric acid, said solution being formed by initial mixing of said formaldehyde and said urea followed by the addition of said phosphoric acid, whereby upon addition of said phosphoric acid, an exothermic reaction occurs leading to a substantially immediate and complete exothermic reaction to form a viscous, syrupy, water-white, aqueous resinous solution, the solution being a stable solution having a good shelf life and forming flexible, waterproof and non-burning films.

4,215,173

BONDED JOINTS AND METHOD AND MATERIAL FOR FORMING SAME

Dolph E. Hubbard, San Jose, Calif., assignor to Pacer Technology and Resources, Campbell, Calif.

Filed Aug. 7, 1978, Ser. No. 931,479

Int. Cl.[2] **B32B** *5/16, 23/08;* **C09J** *5/04*

U.S. Cl. 428—331 **9 Claims**

1. A joint or bond securing opposed substrates of porous materials firmly together, comprising a highly polymerized layer of alphacyanoacrylate resin and having particles of a solid chalkable accelerator intervening between the resin and parts of the adjacent surface of substrate, while parts of said resin extend into the pores of the substrate between particles of said solid accelerator, said solid accelerator comprising 0.5 to 9.5 parts by weight of a basic reacting solid selected from the group which consists of sodium hydroxide, potassium hydroxide and sodium borosilicate hollow microspheres combined with 9.5 to 0.5 parts by weight of an inert chalkable calcareous binder, said solid accelerator having the property of accelerating polymerization of the resin to prevent it soaking unduly into pores of the substrate.

3. A method of bonding together substrates of porous materials, such as open grained wood which are normally poorly bonded by resinous polymeric alphacyanoacrylates, which comprises, in combination, the steps of:

(a) applying to the substrates to be joined a light open or porous precoating of a chalkable solid accelerator composed of 0.5 to 9.5 parts by weight of a basic reacting solid material selected from the group which consists of sodium hydroxide, potassium hydroxide and sodium borosilicate hollow microspheres;

(b) thereafter applying a coating of polymerizable monomeric alphacyanoacrylate to at least one of the surfaces of substrate to overlie and partially penetrate through the accelerator coating into pores of the substrate; and

(c) holding the substrates with their bonding surfaces facing under pressure while the alphacyanoacrylate polymerizes to high molecular weight.

4,215,174

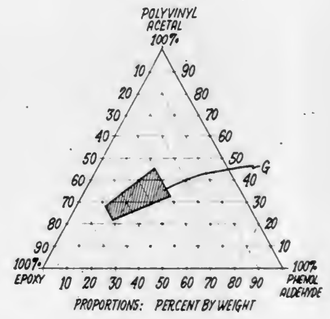
INSULATING COATING FOR TRANSFORMER WIRES

Ralph G. Flowers, Pittsfield, Mass., assignor to General Electric Company

Filed Mar. 24, 1978, Ser. No. 889,889

Int. Cl.[2] **B32B** *15/02*

U.S. Cl. 428—375 **5 Claims**



1. An improved insulating coated transformer wire of the type consisting of a wire having an insulating coating of phenol aldehyde resin, polyvinyl acetal resin and epoxy resin wherein the improvement comprises the composition defined within the accompanying triaxial diagram of FIG. 5.

2. A method for coating transformer wire with an insulating coating comprising the steps of:

preparing a composition consisting of 30 to 60 weight percent epoxy resin, and a ratio of from 1.10 to 1.90 polyvinyl acetal resin to phenol aldehyde resin;

applying the composition to the transformer wire; and

heating the coated transformer wire to a first temperature to fuse the coating; and

heating the coated wire to a second temperature to cause the coating to react.

4,215,175

NON-WOVEN FIBERS COATED WITH A POLYMER OF ETHYLENICALLY UNSATURATED BLOCKED AROMATIC DIISOCYANATES

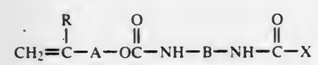
Harold A Tucker, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 904,128, May 8, 1978, abandoned, which is a division of Ser. No. 734,916, Oct. 22, 1976, Pat. No. 4,101,491, which is a division of Ser. No. 550,627, Feb. 18, 1975, Pat. No. 4,008,247, which is a division of Ser. No. 412,325, Nov. 2, 1973, abandoned. This application Mar. 30, 1979, Ser. No. 25,625

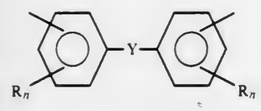
Int. Cl.² C08L *35/02;* **D02E** *3/00*

U.S. Cl. 428—375 **1 Claim**

1. An article comprising (1) a nonwoven fiber coated or impregnated with (2) a polymer comprising from about 0.1 percent to 100 percent by weight of polymerized units of an ethylenically unsaturated blocked aromatic diisocyanate of the formula



wherein R is hydrogen or a methyl or ethyl radical; A is a carbonyloxyalkylene radical containing 2 to about 8 carbon atoms or an aralkylene radical containing 7 to about 12 carbon atoms; B is a bivalent aromatic radical selected from the group consisting of arylene, naphthalene, and the structure



where R is defined as above; Y is O, S, or $-CH_2)_n$; n=0 to 3; and X is the radical fragment remaining after a hydrogen atom is removed from the nitrogen atom of an oxime, benzimidazole, pyrazole, benzotriazole, caprolactam, thiocaprolactam, or p-nitroaniline, and up to 99.9 percent by weight of polymerized units of a copolymerizable vinylidene monomer.

4,215,176

POLYAMIDE LAMINATES

Harold W. Tuller, Long Valley, and Stephen R. Schulze, Gillette, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 5, 1978, Ser. No. 939,592

Int. Cl.² B32B *27/36*

U.S. Cl. 428—412 **35 Claims**

28. A laminate structure comprised of:

(a) at least one layer of a polyamide containing amine and acid terminal groups, wherein at least 1:5 times as many amine end groups than acid end groups are present; and

(b) at least one layer comprised of polyethyleneterephthalate or a polycarbonate of bisphenol A, wherein said polymers, have been melt blended to provide pendant functional groups selected from the group consisting of carboxylic acid and carbonate and wherein at least one polyamide layer is contiguous to at least one polyethyleneterephthalate or polycarbonate layer.

30. A laminate structure comprised of:

(a) at least one layer comprised of at least 50 wt.%, based on the total weight of the layer, of a polyamide containing amine and acid terminal groups, wherein at least 1.5 times as many amine end groups than acid end groups are present, and

(b) at least one other layer comprised of one or more polymers wherein said layer contains an effective amount of pendant functional groups selected from the group consisting of acid groups, metal salts of said acids wherein the metal is selected from Groups I, II, III, IV-A and VII of the Periodic Table of the Elements, acid anhydrides, and mixtures thereof; and

wherein at least one polyamide containing layer is contiguous to at least one said other layer.

4,215,177

PROCESS FOR TREATING POLYVINYL FLUORIDE AND LAMINATES PREPARED THEREFROM

Albert Strassel, Oullins, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Jan. 25, 1978, Ser. No. 872,254

Claims priority, application France, Mar. 4, 1977, 77 06392

Int. Cl.² B32B *27/38, 27/40*

U.S. Cl. 428—413 **9 Claims**

1. A process for treating polyvinyl fluoride surfaces to enhance adhesion of other polymers thereto comprising applying to at least one surface thereof a solution consisting essentially of a thermoplastic coating polymer selected from a polyurethane or an alkyl polymethacrylate and at least one aprotic polar solvent in which said polymer is soluble, and exposing said surface to a temperature of from about 120° C. to 230° C. for a time sufficient to evaporate said solvent.

4,215,178

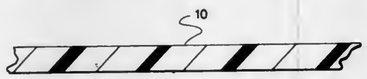
NON-STICK RUBBER LINER

Theodore O. Martin, Jr., Wadsworth, Ohio, assignor to Chloeta F. Martin, Wadsworth, Ohio, a part interest

Filed Apr. 28, 1978, Ser. No. 901,249

Int. Cl.² B32B *25/04, 25/12, 27/08*

U.S. Cl. 428—421 **22 Claims**



1. A non-stick rubber liner directly applied to metal equipment, comprising:

a blend, said blend having thoroughly mixed therein 100 parts by weight of a rubber elastomer, said rubber elastomer selected from the group consisting of (a) natural rubber, (b) a polymer made from diene monomers having from 4 to 12 carbon atoms, (c) a copolymer made from diene monomers having from 4 to 12 carbon atoms, and (d) a copolymer made from vinyl substituted aromatic monomers having from 8 to 12 carbon atoms and diene monomers having from 4 to 12 carbon atoms;

from about 10 to about 30 parts by weight of a fluorine-containing polymer, 90% of said fluorine-containing polymer having a particle size of 100 microns or less; and

from about 5 to about 20 parts of an oil compound compatible with said rubber elastomer, so that said mixed blend while directly applied to the metal equipment resists gypsum build-up.

4,215,179

COATING CONCRETE WITH LATEX POLYMERS

Sidney Melamed, Elkins Park; Ronald W. Novak, Hatfield, and Clarence J. Neyhart, Harleysville, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 30, 1979, Ser. No. 25,429

Int. Cl.² B05D *1/38, 3/04;* **B32D** *13/12*

U.S. Cl. 428—451 **20 Claims**

1. In the method of painting concrete with a latex paint wherein a primer is used, the improvement comprising priming the concrete with an aqueous solution of a salt of an oxidatively curable resin selected from (A) water reducible alkyds and (B) a linear acrylic addition polymer having pendant groups derived from drying oil fatty acids, oxidatively curing the primer coating, applying a latex paint coating to the primed surface, and drying the latex paint.

4,215,180

OXIDE-COATED CATHODES FOR ELECTRON TUBES

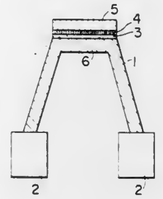
Akira Misumi; Yukio Suzuki, and Kazuo Sunahara, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 18, 1979, Ser. No. 4,573

Claims priority, application Japan, Apr. 24, 1978, 53-47789

Int. Cl.² H01J *1/15*

U.S. Cl. 428—553 **13 Claims**



1. An oxide-coated cathode for electron tubes which comprises a base metal plate made of an alloy comprising nickel as a main component and 2% by weight or more of at least one high-melting point metal, an oxide layer, which is coated on the base metal plate, comprising at least one oxide of a reducing element, a carbon coating layer which is coated on the oxide layer, and an electron emissive alkaline earth oxide layer coated on the carbon coating layer.

13. A process for producing an oxide-coated cathode for electron tubes which comprises coating an oxide layer of at least one oxide of a reducing element of 50 to 1000 A in thickness on a base metal plate made of an alloy comprising nickel as a main component and 2% by weight or more of at least one high-melting point metal, coating a carbon coating layer of 50 to 700 A in thickness on the oxide layer, and coating an alkaline earth oxide layer capable of emitting electrons on the carbon coating layer.

4,215,181

FRETTING FATIQUE INHIBITING METHOD FOR TITANIUM

Robert K. Betts, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 11, 1978, Ser. No. 904,847

Int. Cl.² F16B *5/00, 7/04*

U.S. Cl. 428—591 **2 Claims**

1. A pair of relatively movable titanium-base alloy members having pressure face surfaces in opposed relationship, and a copper shim insert positioned between and in contact with said pressure face surfaces thereby inhibiting the effects of fretting fatigue caused by the differential strain occurring in said surfaces during movement of said relatively movable members.

4,215,182

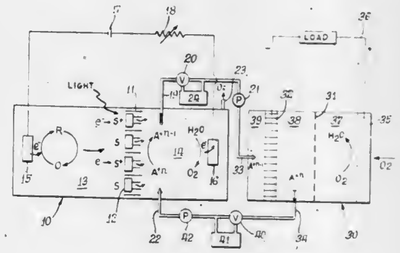
CONVERSION OF SOLAR ENERGY TO CHEMICAL AND ELECTRICAL ENERGY

Peter G. P. Ang, and Anthony F. Sammells, both of Naperville, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed May 29, 1979, Ser. No. 43,144

Int. Cl.² H01M *8/18, 6/30*

U.S. Cl. 429—15 **43 Claims**



1. A process for conversion of solar energy to electrical energy by using a photoelectrochemical membrane cell to regenerate a redox anolyte of a redox-oxygen cell for production of electrical energy comprising in combination:

A. in a photoelectrochemical membrane cell:

illuminating photosensitizers with solar energy thereby producing excited sensitizers and electrons, said sensitizers being located in a redox electrolyte comprising R/O couples adjacent an electron transferring membrane separating said redox electrolyte from a redox aqueous anolyte comprising A^{+n}/A^{+n-1} couples, said redox electrolyte couples having a redox potential more negative than the decomposition potential of said sensitizers and said redox anolyte couples having redox potential more positive than the excited state level of the sensitizers or the flat-band potential of a semiconductor sensitizer,

passing said electrons through said membrane oxidizing said sensitizers and reducing said redox anolyte couples,

regenerating the oxidized sensitizers by reduction in said redox electrolyte producing oxidized redox electrolyte couples,

electrochemically regenerating oxidized redox electrolyte couples at the surface of a negative electrode in electronic communication with said redox electrolyte and in electronic communication through an external bias circuit with a positive electrode in electronic communication with said redox aqueous anolyte, and venting oxygen produced at said positive electrode,

B. passing said reduced redox aqueous anolyte couples to a redox-oxygen cell;

C. in said redox-oxygen cell;

passing said reduced redox anolyte couples in contact with a porous flowthrough anode thereby oxidizing said couples to a condition suitable for recycle to said photoelectrochemical membrane cell as electron acceptor redox anolyte couples,

passing oxygen through a diffusion cathode to a catholyte of said redox-oxygen cell to form water,

withdrawing electrical energy from said redox-oxygen cell by an external load circuit in electronic communication between said porous anode and said diffusion cathode, an ionically conductive separator between the redox-oxygen cell catholyte and anolyte completing the circuit; and

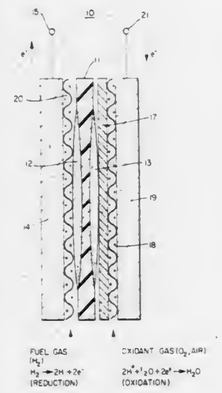
D. recycling said oxidized redox anolyte couples to the anolyte side of said photoelectrochemical membrane cell.

4,215,183

WET PROOFED CONDUCTIVE CURRENT COLLECTOR FOR THE ELECTROCHEMICAL CELLS

Edward N. MacLeod, Boston, Mass., assignor to General Electric Company, Wilmington, Mass.

Filed Jan. 2, 1979, Ser. No. 490
Int. Cl.[2] H01M *8/10*
U.S. Cl. 429—30 **7 Claims**



1. In an electrochemical cell in which one of the electrodes is exposed to water, the combination comprising
(a) a housing
(b) a fluid impervious ion transporting membrane separating said housing into anode and cathode chamber
(c) a catalytic anode electrode bonded to the side of said membrane facing the anode chamber and adapted to be exposed to a fuel gas
(d) a catalytic cathode electrode bonded to the other side of said membrane facing the cathode chamber adapted to be exposed to an oxidant gas and to water
(e) an electrically conductive, porous, carbon paper sheet in contact with the cathode electrode bonded to said membrane over a substantial portion thereof said carbon paper including a hydrophobic polymer dispersed therein for wet proofing said carbon paper sheet to prevent formation of a water film adjacent to said bonded electrode and interruption of the conductive path between said bonded electrode and said conductive carbon paper sheet.
(f) a conductive screen in contact with the wet proofed carbon paper on the side remote from the cathode electrode bonded to the membrane,
(g) conductive plate means in contact with said screen and an output terminal to permit axial current flow from the surface of the bonded cathode electrode to said terminal.

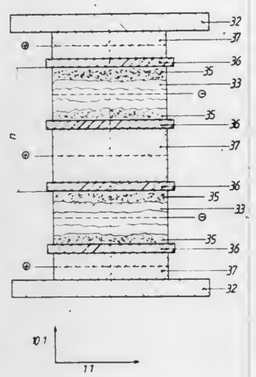
4,215,184

NICKEL-OXIDE/HYDROGEN BATTERY CELLS

Günter Gutmann, Esslingen, and Gabor Benczur-Ürmössy, Stuttgart, both of Fed. Rep. of Germany, assignors to Firma Deutsche Automobilgesellschaft mbH, Hanover, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 63,745
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835503
Int. Cl.[2] H01M *12/06*
U.S. Cl. 429—101 **10 Claims**

1. A nickel-oxide/hydrogen battery cell including a pressure housing, and disposed in said housing a plurality of elements including positive nickel-oxide electrodes, negative hydrogen electrodes containing Raney nickel serving to catalyze hydrogen consumption or production, there being disposed between each two negative electrodes a diffusion element for the transport of hydrogen to and from the negative electrodes, said plurality of elements being configured as a stack in which each positive electrode is adjacent to two negative electrodes and said positive and negative electrodes are separated by separators and wherein the improvement comprises:



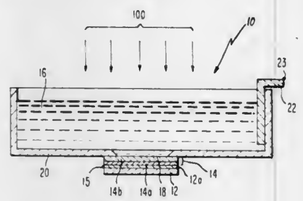
said negative electrodes are structurally integral with said diffusion elements and said diffusion elements consist of a metallically conducting substrate and also serve as current collecting support structures for said negative electrodes.

4,215,185

LIQUID JUNCTION SCHOTTKY BARRIER SOLAR CELL

Richard Williams, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 24,065
Int. Cl.[2] H01L *31/06*
U.S. Cl. 429—111 **9 Claims**



1. In a liquid junction Schottky barrier solar cell including an electrically conductive substrate and a semiconductor body of hydrogenated amorphous silicon having opposed major surfaces with a first major surface contacting said electrically conductive substrate and a second major surface contacting a liquid Schottky barrier material, the improvement which comprises employing as the Schottky barrier material an electrolyte solution comprising ceric and cerous ions.

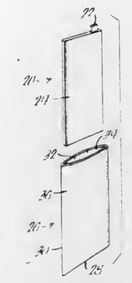
4,215,186

BATTERY PLATE SEPARATOR AND BATTERY CONTAINING THE SAME

Ben E. Jaeger, Rt. 2, Box 49, Plano, Ill. 60545

Filed Feb. 26, 1979, Ser. No. 15,472
Int. Cl.[2] H01M *2/16*
U.S. Cl. 429—139 **17 Claims**

1. An improved battery plate separator, comprising an open ended pouch of plastics filter media material for closely receiving a battery plate therein, said plastics filter media material being a needled polypropylene fabric formed of a plurality of



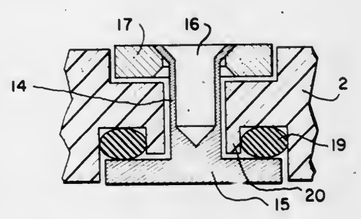
polypropylene fibers randomly placed into and on opposite sides of a central grid.

4,215,187

GAS-TIGHT GALVANIC CELL

Bernd Gnida, Hofheim; Gerhard Simon, Kelkheim; Eckart Buder, Kriftel, and Hans-Jürgen Schwartz, Hemer, all of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 2, 1978, Ser. No. 930,358
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742869; Dec. 17, 1977, 7738507
Int. Cl.[2] H01M *2/26*
U.S. Cl. 429—161 **6 Claims**



1. A gas-tight galvanic alkaline small battery cell having a synthetic plastic housing, and with sinter-foil electrodes, comprising:
electrodes and separators in the form of a plate package,
a housing enclosing the plate package and formed of a bottom portion and a lid,
the housing bottom having at least one housing post and and the plate package having apertures for receiving the housing post,
the tip of the housing post being welded to the housing lid, and
the housing lid having a pole lead-through for each polarity, said pole lead-through including a rivet having a plate-shaped rivet head, and an elastically deformable sealing ring pressed against the inside of the lid by the head.

4,215,188

RECHARGEABLE ELECTROCHEMICAL CELL

Deidrich J. Saathoff, Eagan, and Hanumanthiyna V. Venkatasetty, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 13, 1979, Ser. No. 66,155
Int. Cl.[2] H01M *10/40*
U.S. Cl. 429—194 **5 Claims**

1. An electrolyte for use in rechargeable electrochemical cells having a lithium and a depolarizer, comprising:
an electrochemically active amount of $LiAsF_6$ dissolved in dimethyl sulfite and a rechargeability improving amount of Li_2CO_3 contained therein to form an electrolyte solution, said solution being capable of passing through a molecular sieve on less than 5 Angstroms.

4,215,189

ELECTROCHEMICAL BATTERY EMPLOYING A LATEX BONDED LEAD DIOXIDE ELECTRODE

Bernard C. Bergum; Alf M. Bredland, and John W. Paulson, all of Madison, Wis., assignors to ESB Inc., Philadelphia, Pa.

Filed May 31, 1979, Ser. No. 44,148
Int. Cl.[2] H01M *4/56*
U.S. Cl. 429—217 **7 Claims**

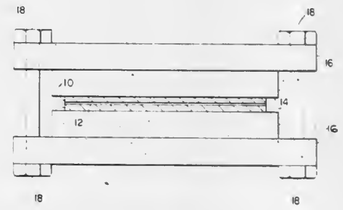
1. An improvement in an electrochemical primary battery of the reserve type comprising
an anode,
an electrolyte,
a separator,
and a cathode, containing a lead dioxide material
wherein the improvement is the material being comprised of a mixture of lead dioxide, carbon black, and butyl rubber latex.

4,215,190

LIGHTWEIGHT BATTERY ELECTRODE

William A. Ferrando, 3615 N. Vacation La., Arlington, Va. 22206, and Raymond A. Sutula, 6301 Kaybro St., Laurel, Md. 20810

Filed Jun. 8, 1979, Ser. No. 46,976
Int. Cl.[2] H01M *4/24, 4/74*
U.S. Cl. 429—222 **13 Claims**



1. An electrode grid comprising:
a mat of graphite fibers wherein the graphite fibers are coated with a mixture of from about 85 to less than 100 weight percent nickel and from more than zero to about 15 weight percent phosphorous, the density of the graphite being greater than 1.8 gm/cm^3.

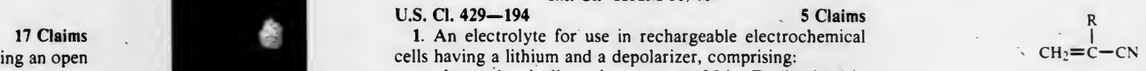
4,215,191

LIGHT-SENSITIVE VESICULAR RECORDING MATERIALS AND PROCESS OF USING

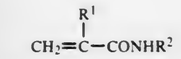
John C. Kwok, Sarnia, Canada, assignor to Bexford Limited, London, England

Continuation of Ser. No. 810,729, Jun. 28, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,506
Claims priority, application United Kingdom, Mar. 1, 1977, 8533/77; May 5, 1977, 18859/77
Int. Cl.[2] G03C *1/60, 1/76, 5/34*
U.S. Cl. 430—152 **25 Claims**

1. A recording material suitable for vesicular imaging which comprises a polymeric vehicle and dispersed uniformly therein a sensitising agent which releases a vesicle-forming nitrogen gas upon exposure to light, said polymeric vehicle comprising a copolymer derived from 62 to 95 mole % of a comonomer having the formula:

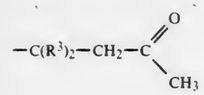


wherein R represents hydrogen or an alkyl group having from 1 to 5 carbon atoms, and another comonomer having the formula:



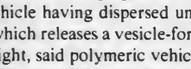
(2)

wherein R^1 represents hydrogen or an alkyl group having from 1 to 5 carbon atoms and R^2 represents hydrogen, an alkyl group having from 1 to 5 carbon atoms, $-CH_2OH$ or



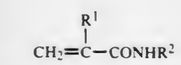
wherein R^3 is an alkyl group having from 1 to 5 carbon atoms, said copolymer having a nitrogen permeability constant in the range 1×10^{-15} to 1×10^{-10} and being softenable upon heating above its glass transition temperature to permit the gas released by the sensitising agent in the light-struck areas to form light-scattering or reflecting vesicles therein said recording material being in the form of a recording layer applied to a carrier sheet or film.

13. A process for the production of a recording material suitable for vesicular imaging which comprises producing a polymeric vehicle having dispersed uniformly therein a sensitising agent which releases a vesicle-forming nitrogen gas upon exposure to light, said polymeric vehicle comprising a copolymer derived from 62 to 95 mole % of a comonomer having the formula:



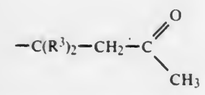
(1)

wherein R represents hydrogen or an alkyl group having from 1 to 5 carbon atoms and another comonomer having the formula:



(2)

wherein R^1 represents hydrogen or an alkyl group having from 1 to 5 carbon atoms and R^2 represents hydrogen, an alkyl group having from 1 to 5 carbon atoms, $-CH_2OH$ or



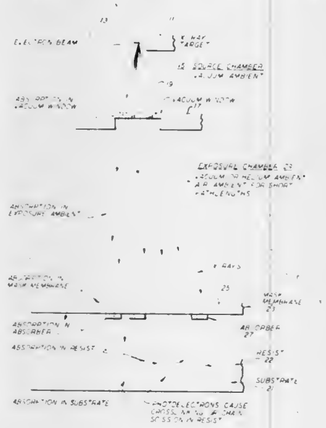
wherein R^3 is an alkyl group having from 1 to 5 carbon atoms, said copolymer having a nitrogen permeability constant in the range 1×10^{-15} to 1×10^{-10} and being softenable upon heating above its glass transition temperature to permit the gas released by the sensitising agent in the light-struck areas to form light-scattering or reflecting vesicles therein, and applying a recording layer comprising the polymeric vehicle and the sensitising agent to a carrier sheet or film.

4,215,192

X-RAY LITHOGRAPHY APPARATUS AND METHOD OF USE

William D. Buckley, Easton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 16, 1978, Ser. No. 869,541
Int. Cl.² B05D *3/06*
U.S. Cl. 430—270 **16 Claims**



1. A method of performing x-ray lithography comprising:
(a) coating the substrate on which the lithography is to be carried out with a resist;
(b) disposing an x-ray apparatus having a target means capable of generating M-line x-ray radiation having a wavelength in the range of between about 4 and about 14 angstroms so as to generate radiation which will impinge on and expose said coated substrate;
(c) operating said x-ray source so as to generate the M-line radiation;
(d) disposing a mask between said source and said substrate; and
(e) exposing said substrate to said radiation.

13. An improved method of developing a COP resist which as been exposed to x-ray radiation comprising the steps of first developing said resist in a developing solution having a concentration of approximately 5:1.8, the concentration being the ratio of MEK developer to an ethanol solvent for a short period of time and then developing said resist in a lower concentration of approximately 5:2.7 until development is completed.

4,215,193

DRY TONER PROCESS WITH IMPROVED TONING UNIFORMITY FOR COLOR DEVELOPING AN IMAGED TACKY AND NONTACKY SURFACE

Charles W. Manger, Middletown; Michael G. Fickes, Matawan, and John W. Long, Freehold, all of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 22, 1978, Ser. No. 963,083
Int. Cl.² G03C *5/24*
U.S. Cl. 430—291 **9 Claims**

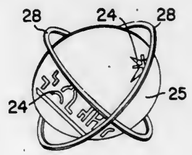
1. In a method for color development of a surface having imagewise tacky and nontacky image areas by depositing and distributing dry toner particles on the surface by means of a toner applicator apparatus comprising a housing for containment of toner, at least one moving component within the housing for agitating the toner, means to release toner from the housing, and at least one pad mounted on the apparatus whereby the distributed toner particles become imagewise adhered to the tacky image areas, the improvement wherein the toner particles consist essentially of an intimate mixture of: (A) 25 to 75% by weight of substantially colorless, inert, nonelectroscopic spheroidal shape polymer particles having size distribution in the range of greater than 5 to less than 60 micrometers, not more than 15% of the polymer particles being less than 10 micrometers and not more than 15% of the polymer particles being greater than 50 micrometers of equivalent spherical diameter, and (B) 75 to 25% by weight of colorant particles having a size distribution within the range of 0.2 to 30 micrometers and not more than 50% of the colorant particles being less than 1 micrometer particle size.

4,215,194

METHOD FOR FORMING THREE-DIMENSIONAL OBJECTS FROM SHEET METAL

Stephan C. Shepherd, Winnetka, Ill., assignor to Masterwork, Inc., Chicago, Ill.

Filed Feb. 21, 1978, Ser. No. 880,022
Int. Cl.² G03C *5/00*
U.S. Cl. 430—323 **5 Claims**



1. A method for forming three-dimensional metallic objects from sheet metal comprising the steps of:
(a) preparing first and second films of a desired design;
(b) applying a light sensitive resist material to opposite sides of the sheet metal;
(c) retouching said first film by eliminating a selected line on said first film, placing said first film over a first side of the sheet metal, placing said second film over a second side of the sheet metal;
(d) registering said first film with said second film to assure proper alignment of the design on the sheet metal;
(e) securing said first and second films in the registered position to form a masked assembly;
(f) exposing said masked assembly to light of a wavelength which will render said resist material insoluble;
(g) removing said first and second films;
(h) washing unexposed resist material from said masked assembly with a rinse agent;
(i) drying the exposed masked assembly;
(j) applying an etchant to said exposed masked assembly in a controlled manner thereby forming openings in the sheet metal corresponding to said desired design and forming score lines on said second side of the sheet metal;
(k) washing said etchant from said masked assembly;
(l) removing said exposed resist material from said sheet metal; and
(m) bending portions of said etched metal to different planes to form a crease along said score lines whereby an object incorporating design portions in different planes is formed, said adjacent design portions being joined to one another by said crease.

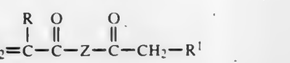
4,215,195

POLYMERS OF AMIDE COMPOUNDS USEFUL IN PHOTOGRAPHIC MATERIALS

Ignazio S. Ponticello, Rochester; Kenneth R. Hollister, Pittsford, and Richard C. Tuites, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,463
Int. Cl.² G03C *1/72*
U.S. Cl. 430—496 **15 Claims**

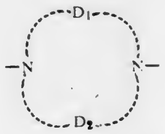
1. A radiation sensitive element comprising a support having thereon at least one radiation sensitive layer and a crosslinkable polymer of at least about 0.1 percent, by weight, of at least one polymerizable compound of formula (1):



wherein R is hydrogen or methyl; R^1 is cyano or



wherein R^2 is alkyl; Z is $-X-R^3-X-$ or



wherein each $-X-$ is $-O-$ or $-NR^4-$, provided at least one $-X-$ is $-NR^4-$, wherein R^4 is hydrogen or alkyl, R^3 is divalent hydrocarbon and D_1 and D_2 together are the carbon atoms necessary to complete a 5 to 7 membered ring.

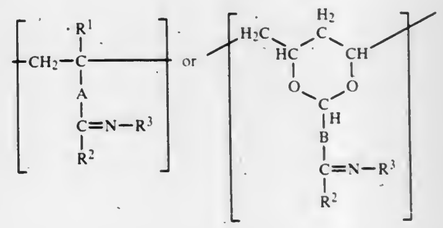
4,215,196

PHOTOGRAPHIC ELEMENTS IN WHICH GELATIN SILVER HALIDE LAYERS CONTAIN POLYMERS WITH SEMICARBAZONE OR ALKOXY CARBONYL HYDRAZONE GROUPS

Walter F. De Winter, 's-Gravenwezel; Daniël M. Timmerman, Mortsel; Arthur H. De Cat, Mortsel, and Godfried A. Kockelbergh, Mortsel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

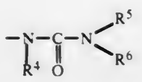
Filed Jun. 14, 1977, Ser. No. 806,523
Claims priority, application United Kingdom, Jun. 29, 1976, 27053/76; Jan. 19, 1977, 2149/77
Int. Cl.² G03C *1/72*
U.S. Cl. 430—627 **3 Claims**

1. A photographic element comprising a support and at least one radiation-sensitive gelatin silver halide emulsion layer comprising a polymeric compound containing at least 5 mole % of recurring units with semicarbazone or alkoxy carbonyl hydrazone groups in the side-chain, wherein said recurring units correspond to one of the formulae:



wherein:
A is a single bond or a bivalent organic group, taken from —CONH-alkylene-, —COO-alkylene-, and phenylene.

B is a single bond or alkylene,
R^1 is hydrogen or methyl,
R^2 is hydrogen, phenyl or lower alkyl (1–4 carbon atoms),
R^3 stands for -NH-COOR or



wherein R is a lower alkyl (1–4 carbon atoms), and each of R^4, R^5 and R^6 is hydrogen or lower alkyl (1–4 carbon atoms);
and wherein at least 5% by weight of said polymeric compound is present with respect to the gelatin content of the radiation-sensitive emulsion layer.

4,215,197
TEST MEANS AND METHOD FOR CREATININE DETERMINATION
Peter N. Tarbutton, Houston, Tex., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Aug. 4, 1978, Ser. No. 931,030
Int. Cl.[2] G01N *31/14*
U.S. Cl. 435—18 **28 Claims**

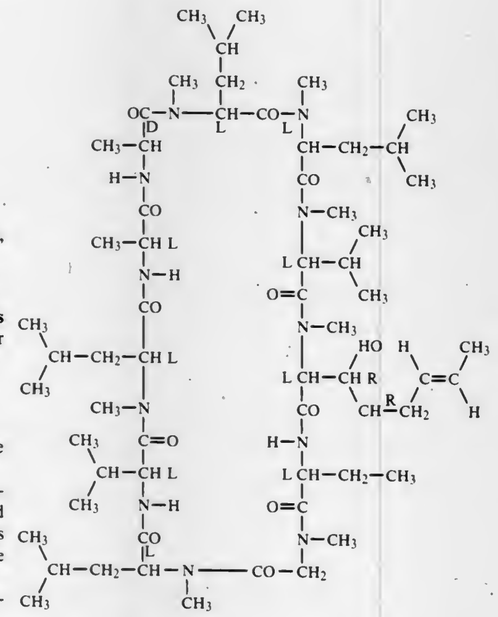
1. A composition for the detection of creatinine in a sample to be tested, which composition comprises a creatinine amidohydrolase, creatine amidinohydrolase, sarcosine dehydrogenase and a tetrazolium indicator.

4,215,198
STERILITY TESTING UNIT
Maurice R. Gordon, 15 Stuyvesant Cir. W., South Setauket, N.Y. 11733
Filed Sep. 15, 1978, Ser. No. 942,612
Int. Cl.[2] C12Q *1/22*
U.S. Cl. 435—31 **5 Claims**

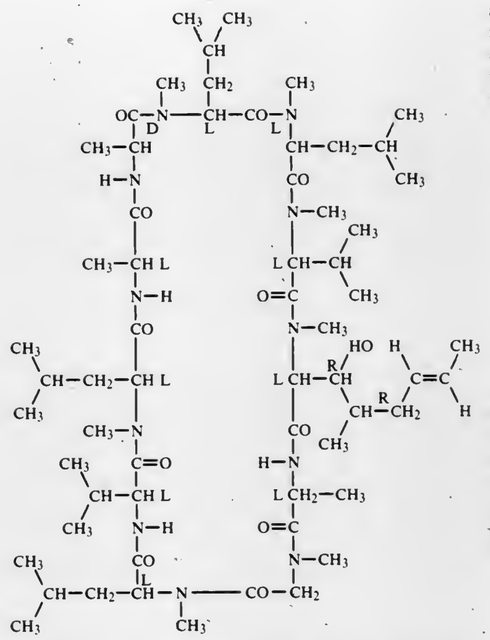
1. A disposable filtration and incubation sterility test unit for testing the sterility of filterable liquids which comprises:
a transparent container having upper and lower ends,
an inlet port at the upper end,
an outlet port at the lower end,
a cap hingeably connected at the upper end to tightly close the inlet port,
a perforated grid having an upper and lower surface positioned within the container proximate its lower end and secured to the walls thereof to ensure that liquid can pass from the inlet port to the outlet port only through the grid,
a membrane filter attached to the upper surface of the perforated grid,
a funnel-shaped outlet port located at the lower end of the container attached to the lower surface of the grid to assure that liquid can pass from the grid only through the outlet port,
means positioned within the container between the outlet port and the grid for sealing said port comprising an inert resilient ball confined within the space between the funnel-shaped outlet port and grid and means for restraining the ball at a position remote from the outlet port until closure of the port is desired,
means provided at the lower end of said container permitting vertical stacking of the filtration and incubation sterility test unit comprising a housing surrounding the outlet.

4,215,199
ANTIBIOTIC PRODUCTION
Eugen Härri, Therwil, and Artur Rüegger, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
Division of Ser. No. 781,722, Mar. 28, 1977, Pat. No. 4,117,118, which is a continuation-in-part of Ser. No. 721,836, Sep. 9, 1976, which is a continuation-in-part of Ser. No. 604,941, Aug. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 528,474, Nov. 29, 1974, abandoned. This application Jun. 5, 1978, Ser. No. 912,180
Int. Cl.[2] C12P *21/04*
U.S. Cl. 435—71 **9 Claims**

1. A process for the production of S7481/F-1 of formula I,



or S7481/F-2 of formula II,



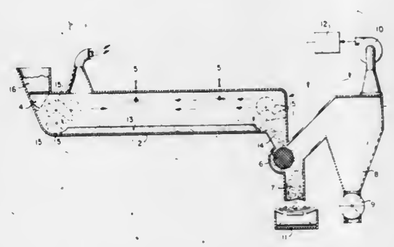
or S7481/F-1 and S7481/F-2, which comprises cultivating a S7481/F-1; S7481/F-2, or S7481/F-1 and S7481/F-2 producing strain of the fungus species, *Cylindrocarpon lucidum* Booth or *Trichoderma polysporum* (Link ex Pers.) Rifai (now referred to as *Tolypocladium inflatum* Gams) in contact with a nutrient medium and isolating S7481/F-1; S7481/F-2 or S7481/F-1 and S7481/F-2.

4,215,200
CHEMICALLY AND ENZYMATICALLY MODIFIED COLLAGEN HEMOSTATIC AGENT
Teruo Miyata, Tokyo, Japan; Kurt H. Stenzel, and Albert L. Rubin, Englewood, both of N.J., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.
Continuation-in-part of Ser. No. 916,885, Jun. 19, 1978, abandoned, which is a continuation of Ser. No. 782,062, Mar. 28, 1977, abandoned. This application Oct. 2, 1978, Ser. No. 948,003
Int. Cl.[2] C07G *7/00*; C08L *89/06*
U.S. Cl. 435—273 **9 Claims**

1. An improved collagen hemostatic agent comprising enzyme-solubilized telopeptide-poor, crosslinked, polymeric collagen of regularly staggered quaternary structure having a minimum molecular length of 7000 A°, a minimum molecular diameter of 20 A°, a minimum periodicity of 670–700 A° and whose residual lysyl and carboxyl groups have been subjected respectively to at least one reaction selected from the group consisting of guanidination, esterification and guanidination-esterification to greatly enhance the net positive electrostatic charge of the collagen polymer.

4,215,201
PLANT FOR TRANSFORMING TOWN SOLID WASTE INTO A FERTILIZER
Manlio Cerroni, Via Bruxelles 53, Rome, Italy
Filed Jul. 12, 1978, Ser. No. 923,772
Claims priority, application Italy, Jul. 19, 1977, 50351 A/77
Int. Cl.[2] C12B *1/00*
U.S. Cl. 435—290 **8 Claims**

1. A plant for transforming organic substances, contained in town solid waste, into a fertilizer or compost comprising in combination, a basin which is provided with a supporting plane along which said waste is disposed, a container about the basin retaining a confined atmosphere above ambient temperature accelerating fermentation of said waste, a reel driven along said plane with a continuous rotary motion about its own axis and a translation motion along the previously mentioned plane



and having vanes which contact, crush, mince, crumble, and displace the waste along said plane in the single direction of travel of waste along said plane, charging means for entering onto said plane the material to be treated replacing material discharged after treatment, and discharging means for removing from the plane the treated material including means separating fermented compost from contaminating agents.

4,215,202
SOFT ETHYLENIC POLYMER BLEND FOAMS
Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Filed Feb. 22, 1979, Ser. No. 14,019
Int. Cl.[2] C08J *9/14*
U.S. Cl. 521—81 **18 Claims**

1. A method for making soft ethylenic polymer resin blend foams having substantially closed-cell structure, dimensional stability, and flexural modulus less than about 150 psi which comprises forming under heat and pressure a flowable gel composition of an ethylenic polymer resin blend having low stiffness less than about 20,000 psi of from about 40 to about 90 percent by weight of a copolymer consisting essentially of of ethylene and monoethylenically unsaturated carboxylic acid, containing no salts thereof having from about 3 to about 15 percent by weight of carboxylic acid in admixture with from about 10 to about 60 percent by weight of a copolymer consisting essentially of ethylene and at least one monoethylenically unsaturated non-ionic comonomer having from about 5 to about 45 percent by weight of non-ionic comononer and at least one fluorocarbon blowing agent selected from fluorocarbons having normal boiling point between −30° to 30° C., from 2 to 4 carbon atoms in its molecular structure, and a value for the critical quantity $T_b - 0.5V_c$ of between 110 to 145 where T_b is the normal boiling point temperature of the fluorocarbon in degrees Kelvin and V_c is its critical volume in cubic centimeters per gram-mole, there being up to about 0.35 gram-mole of such blowing agent per 100 grams of resin blend in the flowable gel, and extruding the gel to ambient air atmosphere whereby the blowing agent separates from the gel and forms gas cells in the polymer resin blend.

4,215,203

PROCESS FOR THE PRODUCTION OF POLY(AMINE ALLYL HALIDE) COPOLYMER AND THEIR REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 862,020, Dec. 19, 1977, which is a continuation-in-part of Ser. No. 757,239, Jan. 6, 1977, Pat. No. 4,069,391, which is a continuation-in-part of Ser. No. 622,525, Oct. 15, 1975, Pat. No. 4,020,259. This application Oct. 30, 1978, Ser. No. 956,053

Int. Cl.[2] **C08G** *77/04, 77/24;* **C08J** *9/16*

U.S. Cl. 521—189 **8 Claims**

1. The process for the production of allyl halide-halohydrinamine copolymers by the following steps:

(a) admixing an allyl halide and an amine compound in ratio of 1 mol of the amine to 0.5 to 6 mols of the allyl halide with an oxidated silicon compound in the ratio of 1 part by weight of the oxidated silicon compound to 1 to 3 parts by weight of the allyl halide;

(b) agitating said mixture for 10 to 60 minutes at a temperature between ambient temperature and the boiling point of the reactants;

(c) adding a halohydrin to said mixture in the ratio of 0.5 to 2 mols of the halohydrin to one mol of the organic amine compound;

(d) agitating the mixture at a temperature between ambient and 70° C. for 10 to 60 minutes, thereby

(e) producing a liquid thermosetting resinous product;

(f) heating the liquid resinous product between 80° C. and 120° C. for 10 to 60 minutes, thereby

(g) producing a solid or cellular solid resinous product.

4,215,204

COATING COMPOSITIONS INCLUDING OLIGOMERIC HYDROXY PHOSPHATE CATALYST-D

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1978, Ser. No. 973,418

Int. Cl.[2] **C08L** *63/00, 61/20*

U.S. Cl. 525—161 **17 Claims**

1. In a thermosetting coating composition comprising a film forming component and an amine aldehyde crosslinking agent, which composition cures by reaction between said amine aldehyde crosslinking agent and hydroxy functionality present on said film forming material, the improvement comprising including in said composition a catalyst for said reaction comprising at least one oligomeric hydroxy functional organophosphate ester having the formula:

$$(R-O\xrightarrow{}_{n}P(OH)_{3-n}$$

wherein n = 1 to 2 and R is selected from the group consisting of mono- or dihydroxy radicals containing one or more ester linkages and having a molecular weight of between about 120 and about 1500.

4,215,205

FLUOROALIPHATIC RADICAL AND CARBODIIMIDE CONTAINING COMPOSITIONS FOR FABRIC TREATMENT

Dennis P. Landucci, Lake Elmo Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 554,420, Mar. 3, 1975, Pat. No. 4,024,178, which is a division of Ser. No. 380,702, Jul. 19, 1973, Pat. No. 3,896,251, which is a continuation-in-part of Ser. No. 232,186, Mar. 6, 1972, abandoned. This application Jan. 12, 1977, Ser. No. 758,586

Int. Cl.[2] **C08F** *8/30*

U.S. Cl. 525—331 **1 Claim**

1. A blend in volatile aqueous or non-aqueous medium of a total of at least 0.3% by weight of

(A) fluoroaliphatic radical-containing substantially linear vinyl polymer containing from 10 to 60 percent by weight thereof of fluorine in the form of fluoroaliphatic radicals terminating in CF_3 radicals, said fluoroaliphatic radicals containing at least three fully fluorinated carbon atoms, and

(B) a carbodiimide consisting essentially of from 1 to a plurality of carbodiimide groups, terminal organic radicals free from isocyanate-reactive hydrogen atoms connected to carbodiimide and, when two or more carbodiimide groups are present, polyvalent organic linking groups, which are residues of polyisocyanates, between successive carbodiimide groups;

the ratio A to B respectively being from about 10:90 to 95:5.

4,215,206

FURAN BINDER COMPOSITION

Richard F. Hanesworth, Delaware; Young D. Kim, and Gary A. Tolhurst, both of Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 16, 1978, Ser. No. 887,087

Int. Cl.[2] **C08L** *45/00*

U.S. Cl. 525—441 **12 Claims**

1. A thermosetting foundry hot box binder composition comprising a furan resin and an aromatic polyester polyol, said furan resin comprising a reaction product of (1) an acidic condensation product of urea and formaldehyde and (2) furfuryl alcohol and said aromatic polyester polyol comprising a transesterification product of a dialkyl terephthalate and an aliphatic glycol.

4,215,207

PROCESS FOR THE POLYMERIZATION AND COPOLYMERIZATION OF ETHYLENE, USING A GAS INJECTION DEVICE

Pierre Durand, Neuilly sur Seine; Pierre Charlon, Paris, and Guy Jouffroy, Lillebonne, all of France, assignors to Societe Chimique des Charbonnages-CdF Chimie, Paris, France

Filed Jun. 3, 1976, Ser. No. 692,380

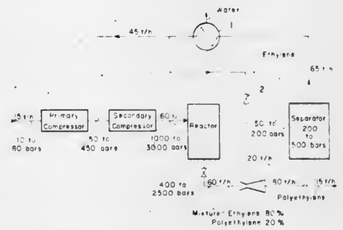
Claims priority, application France, Jun. 3, 1975, 75 17317

Int. Cl.[2] **C08F** *10/02*

U.S. Cl. 526—64 **10 Claims**

1. In a process for the polymerisation or copolymerisation of ethylene in a reactor at a pressure greater than 1,000 bars, which process includes cooling the reactor effluent comprising a mixture of polymer and monomer between a pressure-reduction valve located downstream from the reactor and a separator operating at 200 to 500 bars, separating polymer from monomer in the separator and recycling separated monomer to the reactor, the improvement comprising:

(A) injecting fresh monomer into the reactor effluent between the valve and the separator at a temperature lower than that of the reactor effluent and at a pressure below that of the separator using a gas injection device comprising at least one assembly comprising (1) a convergent ejection nozzle of throat cross-section S_1 substantially at the downstream end of said nozzle, through which arrives at a flow rate Q, motive fluid consisting of reactor effluent; (2) a convergent mixing zone which said fluid enters after passing through said ejection nozzle to be mixed with the monomer injected, which is supplied at a flow rate q, said mixing zone at its upstream end having a larger cross-section than S_1; and (3) a diffuser of throat cross-section S_3 constituting the downstream end of said mixing zone, wherein the ratio Q/S_1 is between 0.20 and 1.35 t/hr.mm^2



and the ratio $(q+Q)/S_3$ is between 0.1 and 0.3 t/hr.mm^2, the pressure of said fluid entering said ejection nozzle being higher than the pressure of said separator and between about 400 and 2,500 bars and the pressure of said injected monomer being not greater than 180 bars whereby the pressure of the fluid is brought down to the pressure of the separator; and

(B) substantially all of said fresh monomer for the polymerization process being supplied by its injection into the reactor effluent using said gas injection device.

4,215,208

THERMOCHROMIC POLYACETYLENES CONTAINING URETHANE GROUPS

Kwok C. Yee, Randolph; Anthony F. Preziosi, Ledgewood; Gordhanbhai N. Patel; Ronald R. Chance, both of Morris Plains; Granville G. Miller, Morristown, and Ray H. Baughman, Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 5, 1977, Ser. No. 839,678

Int. Cl.[2] **C08L** *49/00*

U.S. Cl. 526—285 **14 Claims**

1. A thermochromic polyacetylene composition selected from the group consisting of

(1) polydiacetylenes obtained by polymerizing monomers having the following formula:

(A) $RHNOCO-(CH_2)_n-C\equiv C-C\equiv C-(CH_2)_n-OCONHR'$ wherein

(a) n is 4 and R and R′ can be the same or different and are isopropyl, n-octadecyl, linear C_1-C_4 p- or m-alkylphenyl, o- or m-chlorophenyl or linear C_1-C_4 monochloroalkyl;

(b) n is 3 and R and R′ can be the same or different and are, linear C_1-C_4 m-alkylphenyl, m- or p-chlorophenyl;

(c) n is 2 and R and R′ can be the same or different and are linear C_1-C_4 m-alkylphenyl, p-methoxyphenyl or linear C_1-C_4 m-alkoxyphenyl;

(2) polyacetylenic network polymers obtained by 1,4-addition of crosslinkable polyacetylenes having the following formulas:

(B) $[OCONH(CH_2)_6-NHOCO(CH_2)_n-C\equiv C-C\equiv C-(CH_2)_2-C\equiv C-C\equiv C-(CH_2)_n]_x$ wherein x is large and n is an integer from 2-6;

(C) $\{OCONH\text{-}(CH_2)_6-NHOCO(CH_2)_n-[C\equiv C-C\equiv C-(CH_2)_2]_2C\equiv C-C\equiv C-(CH_2)_n\}_x$ wherein x is large and n is 3; and copolymers formed of the above formulas (B), and (C) where n is 3;

(3) partially polymerized acetylenic compounds containing from about 0.1 to about 50 weight percent polymer obtained by polymerizing acetylenic compositions having the following formulas:

(C) $\{OCONH-(CH_2)_6-NHOCO(CH_2)_n[C\equiv C-C\equiv C-(CH_2)_2]_2C\equiv C-C\equiv C-(CH_2)_n\}_x$ wherein x is large and n is 2 or 4;

(D) $RNHOCO(CH_2)_n-C\equiv C-C\equiv C-(CH_2)_n-OCONHR'$ wherein

(a) n is 4 and R and R′ are p-chlorophenyl,

(b) n is 3 and R and R′ can be the same or different and are linear C_4-C_{18} alkyl, linear C_1-C_4 o-alkoxyphenyl or linear C_1-C_4 o-alkylphenyl;

(c) n is 2 and R and R′ can be the same or different and are linear C_2-C_{18} alkyl, alkoxy- or m-chlorophenyl;

(d) n is 1 and R and R′ can be the same or different and are linear C_6-C_{18} alkyl;

(E) $RNHOCO-(CH_2)_n-C\equiv C-C\equiv C-(CH_2)_2-C\equiv C-C\equiv C-(CH_2)_n-OCONHR'$ wherein

(a) n is 4 and R and R′ can be the same or different and are linear C_1-C_{18} alkyl;

(b) n is 3 and R and R′ can be the same or different and are linear C_1-C_{18} alkyl;

(c) n is 2 and R and R′ can be the same or different and are linear C_2-C_{18} alkyl;

(F) $RNHOCO-(CH_2)_n-[C\equiv C-C\equiv C-(CH_2)_2]_2-C\equiv C-C\equiv C-(CH_2)_n-OCONHR'$ wherein

(a) n is 4 and R and R′ can be the same or different and are linear C_2-C_{18} alkyl;

(b) n is 3 and R and R′ can be the same or different and are linear C_1-C_{18} alkyl;

(c) n is 2 and R and R′ can be the same or different and are linear C_1-C_{18} alkyl or phenyl; and

(G) $[HO-(CH_2)_n-C\square C-C\equiv C-(CH_2)_2-C\equiv C]_2$ wherein n is 2 or 3.

4,215,209

ANAEROBIC CURING COMPOSITION AND PROCESS FOR PREPARING SAME

Dilip K. Ray-Chaudhuri, Bridgewater, and Eric A. Meier, North Brunswick, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jun. 22, 1979, Ser. No. 50,988

Int. Cl.[2] **C08F** *22/14*

U.S. Cl. 526—292 **14 Claims**

1. In a process for preparing an anaerobic curing composition of the type wherein a homogeneous mixture is formed consisting essentially of at least one polymerizable acrylate ester, a free-radical inhibitor, a chelator and an accelerator system, and wherein said mixture is maintained at a temperature of at least about 20° C. for a period of time sufficient to provide said composition with anaerobic curing properties and with at least 25 ppm. of active oxygen, the improvement which comprises incorporating in the composition as the accelerator system therefor at least an effective amount of an aromatic tertiary amine and an N-substituted sulfonamide of the general formula:

$$R-SO_2-NH-SO_2-R$$

wherein the R groups independently represent an unsubstituted or substituted hydrocarbon radical.

4,215,210

NOVEL α-GLYCOL RESIN COMPOSITION AND PROCESS FOR ITS PREPARATION

Kiyoaki Okayama, and Yojiro Yamamoto, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Jun. 9, 1978, Ser. No. 914,161

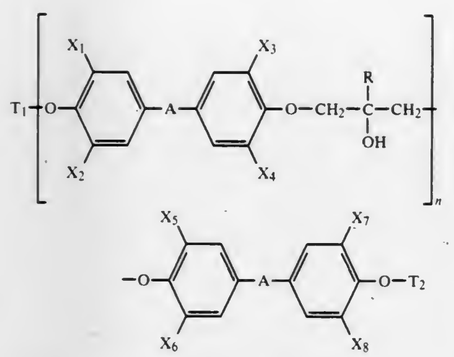
Claims priority, application Japan, Jun. 13, 1977, 52/68926

Int. Cl.[2] **C08G** *65/28, 59/06*

U.S. Cl. 528—93 **19 Claims**

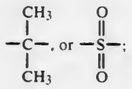
1. A process for preparing an α-glycol resin composition having a viscosity, measured at 25° C. by the Gardner-Holdt

method for a 40% by weight solution in butyl carbitol of C to Z_8 and expressed by the following formula

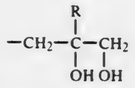


(I)

wherein A represents the group $-CH_2-$,

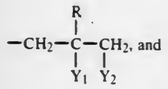


R represents a hydrogen atom or a methyl group; X_1, X_2, X_3, X_4, X_5, X_6, X_7 and X_8 are identical or different and each represent a hydrogen, chlorine or bromine atom; T_1 and T_2 represent terminal groups which are identical or different and are atoms or atomic groupings selected from the group consisting of

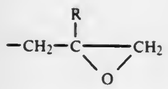


(T-1)

(T-2) a hydrogen atom (—H),

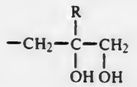


(T-3)

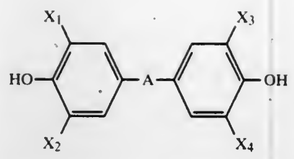


(T-4)

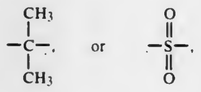
in which R is as defined above, one of Y_1 and Y_2 represents a hydroxyl group and the other represents a chlorine or bromine atom; and n represents the average degree of polymerization of the resin which is a positive number greater than 0, and at least 40 mole% of its entire terminal groups (the sum of T_1 and T_2) consists of α-glycol groups of the following formula



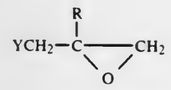
which comprises reacting a dihydric phenol compound expressed by the following formula



wherein A represents the group $-CH_2-$,



and X_1, X_2, X_3 and X_4 are identical or different and each represent a hydrogen, chlorine or bromine atom, an epihalohydrin of the following formula



wherein R represents a hydrogen atom or a methyl group and Y represents a chlorine or bromine atom, and at least 4 moles, per mole of the epihalohydrin, of water in the presence of an etherification catalyst for the dihydric phenol compound and epihalohydrin, and reacting the resulting product with an alkali metal hydroxide.

4,215,211

POLYMERIZATION OF 2-PYRROLIDONE WITH CO_2/SO_2

Mitchell Danzik, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 749,854, Dec. 13, 1976, abandoned, which is a continuation of Ser. No. 575,917, May 9, 1975, abandoned. This application Jan. 23, 1978, Ser. No. 871,272

Int. Cl.[2] **C08G** *69/24*

U.S. Cl. 528—313 **2 Claims**

1. A process for the polymerization of 2-pyrrolidone to produce a polymer capable of being formed into filaments suitable for making textiles, which process comprises contacting the 2-pyrrolidone under substantially anhydrous conditions with a catalyst system consisting essentially of an alkali metal pyrrolidone, carbon dioxide and sulfur dioxide and wherein the combined mol percent carbon dioxide plus sulfur dioxide is 0.02–30, based on 2-pyrrolidone, and the mol ratio of carbon dioxide to sulfur dioxide is in the range of about 1:0.3–0.5.

4,215,212

REGENERATED CELLULOSE CONTAINING CROSS LINKED SODIUM LIGNATE OR SODIUM LIGNOSULFONATE

Neal E. Franks, Suffern, N.Y., assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 887,793, Mar. 17, 1978, which is a continuation-in-part of Ser. No. 706,995, Jul. 20, 1976, abandoned. This application Apr. 9, 1979, Ser. No. 27,977

Int. Cl.[2] **C08B** *15/10, 16/00;* **D01F** *2/00*

U.S. Cl. 536—57 **6 Claims**

1. A regenerated cellulose product containing from about 1% by weight to about 40% by weight, based on the weight of cellulose, of a sodium lignate cross linked with at least about 3.8% by weight of formaldehyde, a sodium lignosulfonate cross linked with at least about 10 % by weight of formaldehyde, an aliphatic ether of the said cross linked products, or mixtures thereof which is substantially insoluble in the bath used to regenerate the cellulose from viscose wherein said sodium lignate or said sodium lignosulfonate contains not more than about 5% sulfur.

4,215,213

PROCESS FOR PRODUCING A GLYCOLIPID ESTER

Shigeo Inoue, Saitama; Yoshiharu Kimura, Ichikawa, and Manzo Kinta, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

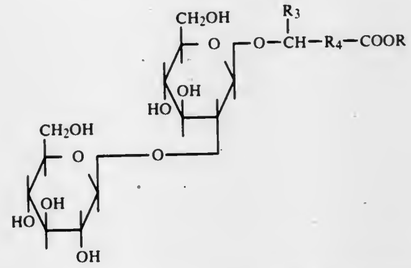
Filed Nov. 21, 1978, Ser. No. 962,693

Claims priority, application Japan, Feb. 17, 1978, 53-17400

Int. Cl.[2] **C07H** *15/06, 3/04*

U.S. Cl. 536—115 **10 Claims**

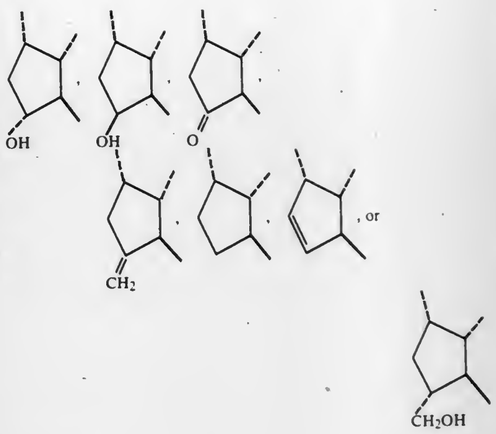
1. A process for producing a glycolipid ester represented by the formula,



wherein R_3 represents hydrogen or methyl, R_4 represents a saturated or unsaturated hydrocarbon group having 12 to 16 carbon atoms when R_3 is a hydrogen atom, or R_4 represents a saturated or unsaturated hydrocarbon group having 11 to 15 carbon atoms when R_3 is a methyl group, and R represents a saturated or unsaturated alkyl group having 2 to 20 carbon atoms, which comprises: subjecting Sophorolipid to methanolysis and methylation by reacting said Sophorolipid with methanol in the presence of a strong acid thereby forming an ester mixture of methyl 1-[(2'-O-β-D-glucopyranosyl-β-D-glucopyranosyl)oxy]-alkanoate and -alkenoate; and subjecting said mixture to ester interchange by reacting said ester mixture with an alcohol represented by the formula

ROH

wherein R is the same as defined above.



wherein L is

(1) $-(CH_2)d-C(R_2)_2-$

(2) $-CH_2-O-CH_2-Y-$ or

(3) $-CH_2CH=CH-$

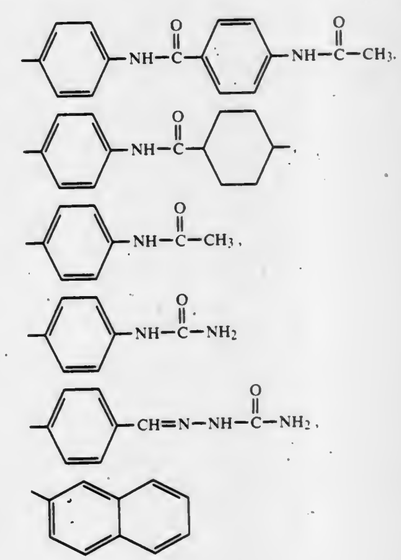
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $-CH_2-$, or $-(CH_2)_2-$,

wherein Q is



wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_3 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,



(g)

(h)

(i)

(j)

(k)

(l)

4,215,214

ENLARGED-HETERO-RING PROSTACYCLIN ANALOGS WITH 5-HALO FEATURE

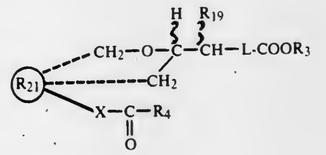
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,941, Jul. 28, 1977, Pat. No. 4,124,599, which is a continuation-in-part of Ser. No. 725,547, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,771, Aug. 23, 1976, abandoned. This application Aug. 21, 1978, Ser. No. 935,300

Int. Cl.[2] **C07D** *311/02*

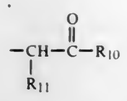
U.S. Cl. 542—426 **25 Claims**

1. A compound of the formula



wherein is

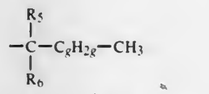
-continued



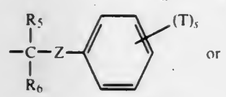
(m)

wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_{11} is hydrogen or benzoyl, or (n) a pharmacologically acceptable cation,

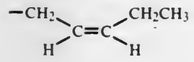
wherein R_4 is



(1)



(2)



(3)

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6- and the phenyl ring;

wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7-$ wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;

wherein R_{10} is chloro, bromo, or iodo; and

wherein X is

(1) trans—CH=CH—

(2) cis—CH=CH—

(3) —C≡C— or

(4) $-CH_2CH_2-$

and wherein wavy line ~ indicates attachment in alpha or beta configuration.

4,215,215

9-PHENYL-NONATE TRAENE COMPOUNDS

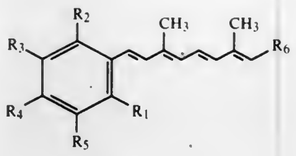
Werner Bollag, Basel; Rudolf Ruegg, Bottmingen, and Gottlieb Ryser, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 903,438, May 8, 1978, abandoned, which is a division of Ser. No. 714,170, Aug. 13, 1976, Pat. No. 4,105,681, which is a continuation-in-part of Ser. No. 601,148, Aug. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 454,007, Mar. 22, 1974, abandoned. This application Jul. 6, 1979, Ser. No. 55,437

Int. Cl.[2] **C09F** *5/00;* **C11C** *3/00;* **C09F** *5/08;* **C07D** *207/04*

U.S. Cl. 542—427 **30 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are lower alkyl; R_3 is hydrogen, lower alkyl, lower alkoxy, lower alkenyloxy, nitro, amino, lower alkylamino, lower alkanoylamino or N-heterocyclyl; R_4 is lower alkoxy; R_5 is hydrogen, lower alkyl, lower alkenyl, lower alkoxy, lower alkenyloxy, nitro, amino, lower alkanoylamino, lower alkylamino or N-heterocyclyl; and R_6 is alkanoyloxymethylene, alkenyloxycarbonyl, alkynyloxycarbonyl, carbamoyl, mono(lower alkyl)-carbamoyl, di(lower alkyl)-carbamoyl, N-heterocyclylcarbonyl, or alkoxycarbonyl where its alkoxy moiety is unsubstituted or substituted with alkylamino, morpholino, piperdyl, pyridyl, alkyl substituted piperidyl or alkyl substituted pyridyl,

or pharmaceutically acceptable salts thereof.

4,215,216

7,8-DIHYDRO-2,5,8-TRISUBSTITUTED-7-OXO-PYRIDO[2,3-D]PYRIMIDINE-6-CARBOXYLIC ACID DERIVATIVES

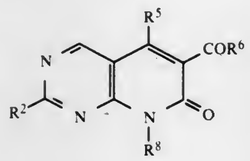
Anthony C. Scotese, King of Prussia; Robert L. Morris, Devon, and Arthur A. Santilli, Havertown, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 18, 1979, Ser. No. 31,256

Int. Cl.[2] **C07D** *471/04*

U.S. Cl. 544—117 **29 Claims**

1. A compound of the formula:



in which

R^2 is hydrogen, hydroxy, alkyl of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, phenyl, 4-methoxyphenyl, 4-chlorophenyl, 1-pyrrolidinyl or methylphenylamino;

R^5 is hydroxy, alkylamino of 1 to 6 carbon atoms, 2-hydroxyethylamino, 2-alkoxyethylamino of 3 to 8 carbon atoms, dialkylamino wherein each alkyl group contains from 1 to 6 carbon atoms, 4-methyl-1-piperazinyl, 4-morpholinyl or 1-pyrrolidinyl when R^2 is other than alkylthio and R^8 is other than alkyl, or amino when R^8 is other than alkyl;

R^6 is alkoxy of 1 to 6 carbon atoms, 2-hydroxyethylamino, 2-alkoxyethylamino of 3 to 8 carbon atoms or 2-(dialkylamino)ethylamino in which each alkyl group contains from 1 to 6 carbon atoms; and

R^8 is hydrogen, alkyl of 1 to 6 carbon atoms, 2-alkoxyethyl of 3 to 6 carbon atoms, allyl, propargyl, phenyl, 4-methoxyphenyl, 4-chlorophenyl, benzyl, 4-methoxybenzyl, 4-chlorobenzyl, 4-(4-morpholinyl)phenyl or piperonyl.

4,215,217

PROCESS FOR PREPARING 4-SUBSTITUTED IMIDAZOLE COMPOUNDS

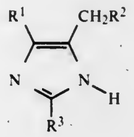
Joseph J. Lewis, and Robert L. Webb, both of West Chester, Pa., assignors to SK&F Lab Co., Carolina, P.R.

Division of Ser. No. 771,044, Feb. 22, 1977, Pat. No. 4,119,781, which is a continuation-in-part of Ser. No. 626,948, Oct. 29, 1975, abandoned. This application Jun. 14, 1978, Ser. No. 915,497

Int. Cl.[2] **C07D** *233/64, 233/84, 401/06, 413/06*

U.S. Cl. 544—139 **6 Claims**

1. A process for preparing a compound of the formula:



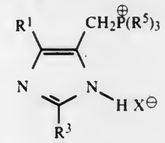
in which:

R^1 is hydrogen or lower alkyl;

R^2 is $-NR^6R^7$ where R^6 and R^7 are each hydrogen, lower alkyl, or together with the nitrogen atom to which they are attached form a piperidine, pyrrolidine or morpholine ring; and

R^3 is hydrogen, lower alkyl, trifluoromethyl, benzyl, amino or $-SR^4$ where R^4 is lower alkyl, phenyl, benzyl or chlorobenzyl,

comprising reacting a compound of the formula:



in which:

R^1 and R^3 are defined as above;

R^5 is lower alkyl or phenyl; and

X is halo,

with a compound of the formula R^2—H where R^2 is defined as above in an organic solvent under basic conditions.

4,215,218

DIRECT REACTION OF ANILINES WITH OLEFINS

Steven E. Diamond, Randolph, and Frank Mares, Whippany, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 19, 1977, Ser. No. 834,640

Int. Cl.[2] **C07D** *215/06;* **C07C** *87/62*

U.S. Cl. 546—162 **3 Claims**

1. Process of producing N-ethylaniline and quinaldine by direct reaction of aniline and ethylene, consisting essentially of heating in liquid phase in the presence or absence of a solvent selected from tetrahydrofuran, isopropanol and benzene, the reactants aniline, ethylene dissolved in the liquid phase, and a dissolved complex formed between said aniline and rhodium.

4,215,219

REAGENTS FROM PHENOLIC AND 8-HYDROXYQUINOLINIC ALDEHYDE OXIMES

Avraham Patchornik, Ness-Ziona; Abraham Warshawsky, Rehovot; Matityahu Fridkin, Cholon, and Rami Kalir, Rehovot, all of Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

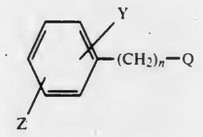
Division of Ser. No. 545,220, Jan. 29, 1975, Pat. No. 4,085,261. This application Jun. 2, 1977, Ser. No. 802,897

Claims priority, application Israel, Feb. 8, 1974, 44168

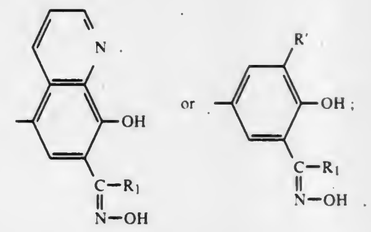
Int. Cl.[2] **C07D** *215/14;* **C07C** *119/00*

U.S. Cl. 546—179 **4 Claims**

1. A chelating agent of the formula



wherein Z is alkyl or aralkyl, the aliphatic portion of which being long-chain alkyl and the aryl portion of which being terminal phenyl; Q is



R_1 is H, alkyl or aryl; R' is H, alkyl, aralkyl, hydrogen, nitro, carbonyl or carboxaldehyde; n is an integer of from 1-15; and Y is H.

4,215,220

1-(2-OXYSUBSTITUTED-3-ANILINOPROPYL)-IMIDAZOLES

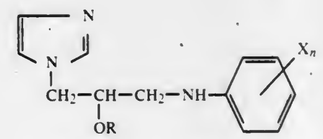
Carl Richter, and Georg Feth, both of Schaffhausen, Switzerland, assignors to Cilag-Chemie A.G., Schaffhausen, Switzerland

Filed Sep. 11, 1978, Ser. No. 940,911

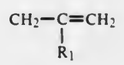
Int. Cl.[2] **C07D** *233/60*

U.S. Cl. 548—341 **22 Claims**

1. A compound selected from the group consisting of a 1-(2-oxysubstituted-3-anilinopropyl)-imidazole having the formula:

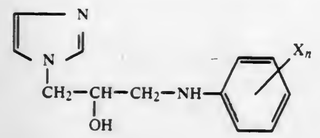


and the therapeutically active acid addition salts thereof wherein n is an integer from zero to 3, X is halo and R is a member selected from the group consisting of loweralkyl, benzyl, mono-, di- and trihalobenzyl, and



in which R_1 is a member selected from the group consisting of hydrogen and halo.

16. A compound selected from the group consisting of 1-(2-hydroxy-3-anilinopropyl)-imidazole having the formula:



and the alkali metal salts thereof wherein n is an integer from zero to 3 and X is a member selected from the group consisting of hydrogen and halo.

4,215,221

FLUORINATION PROCESS

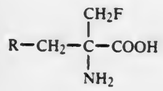
Janos Kollonitsch, Westfield, and Stephen Marburg, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 802,389, Jun. 1, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 939,032

Int. Cl.[2] **C07D** *233/64, 209/20;* **C07C** *101/72, 101/77*

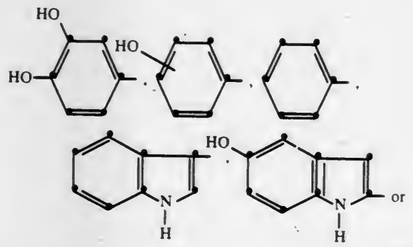
U.S. Cl. 548—344 **6 Claims**

1. In a process for preparing compounds having the formula

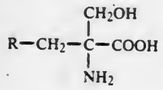


(I)

wherein R is



by reacting a compound having the formula



(II)

with SF_4 in liquid HF at temperatures ranging from about −80° C. to about 20° C., the improvement which comprises adding $AlCl_3$ to the reaction system.

4,215,222

6-KETO PROSTAGLANDIN DERIVATIVES

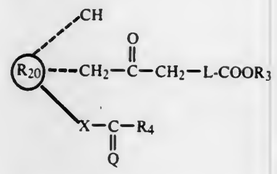
Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,857, Jul. 28, 1977, Pat. No. 4,158,667, which is a continuation-in-part of Ser. No. 725,548, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,972, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 655,110, Feb. 4, 1976, abandoned. This application Nov. 9, 1978, Ser. No. 959,400

Int. Cl.[2] **C07C** *177/00*

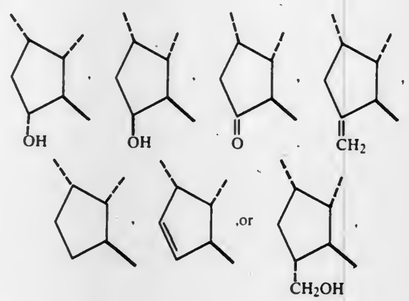
U.S. Cl. 560—53 **145 Claims**

1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof

wherein R_{20} is



wherein L is

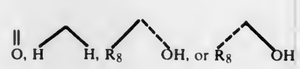
(1) $-(CH_2)_d-C(R_2)_2-$

(2) $-CH_2-O-CH_2-Y-$ or

(3) $-CH_2CH=CH-$

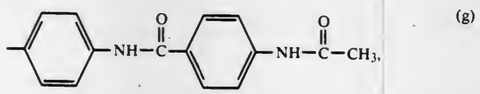
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $-CH_2-$ or $-(CH_2)_2-$,

wherein Q is



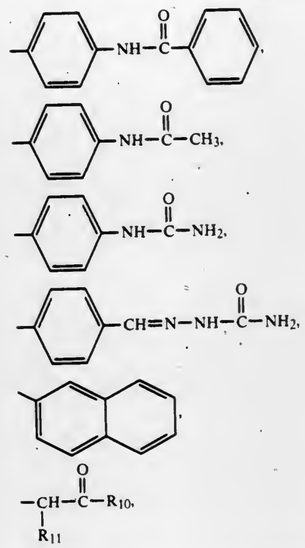
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_3 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,



(g)

-continued



(h)

(i)

(j)

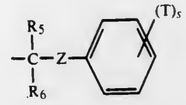
(k)

(l)

(m)

wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_{11} is hydrogen or benzoyl, or (n) a pharmacologically acceptable cation,

wherein R_4 is



wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6- and the phenyl ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_7—$ wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and wherein X is

(1) trans-CH=CH-

(2) cis-CH=CH-

(3) -C≡C- or

(4) $-CH_2CH_2—$;

including the lower alkanoates thereof.

4,215,223

PROCESS FOR THE PREPARATION OF D(-)αPHENYLGLYCINE

Gerard Kessels, Slekkerstraat 8, Echt (L.), Netherlands

Filed Oct. 16, 1978, Ser. No. 951,483

Claims priority, application Netherlands, Oct. 18, 1978, 7711396

Int. Cl.[2] **C07B** *20/00*

U.S. Cl. 562—401 **4 Claims**

1. A process for the resolution and preparation of D (−)α-phenylglycine, which comprises:

(a) providing a first resolution mixture of D,L-α-phenylglycine in aqueous solution with D(+) camphorsulfonic acid;

(b) resolving the D,L-α-phenylglycine in the provided mixture, in the presence of a strong acid;

(c) precipitating the acid salt of the strong acid and D(−)α-phenylglycine in the resolution mixture obtained in step (b);

(d) separating the precipitated salt from the resolution mixture, leaving an aqueous residue which comprises L(+)α-phenylglycine in solution with D(+) camphorsulfonic acid;

(e) dissolving the separated salt in water, obtained as specified in step (i) below;

(f) hydrolysing the dissolved salt, to obtain D(−)α-phenylglycine;

(g) separating the D(−)α-phenylglycine obtained in step (f) from the product hydrolysis reaction mixture obtained in step (f), leaving a residue which comprises the salt of D(−) camphorsulfonic acid in aqueous solution;

(h) racemizing the L(+)α-phenylglycine in the residue solution left from step (d), to obtain the salt of D,L-α-phenylglycine in solution, in the presence of a base selected from the group consisting of sodium and potassium hydroxide;

(i) stripping water from the aqueous residue of step (d) while carrying out the racemization of step (h) and using the stripped water to dissolve the salt in step (e) above;

(j) separating potassium or sodium sulfite from the racemization reaction mixture obtained after steps (h) and (i), leaving an aqueous residue mixture which comprises in solution the salt of D,L-α-phenylglycine and the salt of D(+) camphorsulfonic acid;

(k) combining the residue solution obtained in step (j) with the residue solution obtained in step (g), to form a second resolution mixture;

(l) supplementing the second resolution mixture, as needed, with additional D,L-α-phenylglycine, to provide another first resolution mixture to be used in step (m) below;

(m) repeating steps (b)–(m), inclusive, a plurality of times to obtain the desired D(−)α-phenylglycine in the step (g).

4,215,224

REMOVAL OF DISSOLVED DISODIUM TEREPHTHALATE FROM AQUEOUS SOLUTION ALSO CONTAINING SODIUM HYDROXIDE

Franklin D. Wallace, and John C. Carr, both of Decatur, Ala., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,507

Int. Cl.[2] **C07C** *51/42*

U.S. Cl. 562—485 **6 Claims**

1. A method for the recovery of sodium hydroxide for reuse in removing terephthalic acid adhering to inner walls of elements of apparatus used in the production of terephthalic acid including catalytic liquid phase air oxidation of p-xylene through drying of the terephthalic acid product wherein such removal of adhering terephthalic acid is accomplished by washing the walls with an aqueous solution containing 5 to 6 weight percent sodium hydroxide used in an amount to dissolve terephthalic acid in the wash liquor as its disodium salt in a 2 to 3 weight percent concentration and which leaves some sodium hydroxide unreacted; which sodium hydroxide recovery method comprises adding sodium hydroxide to the wash liquor to increase its sodium hydroxide content to 12 to 14 weight percent whereat from 94 percent up to substantially all of the disodium terephthalate precipitates, separating the aqueous solution containing 12 to 14% sodium hydroxide from the precipitate, dividing the separated solution containing 12 to 14 weight percent sodium hydroxide into a major portion comprising more than 65% of such separated solution and a minor portion comprising less than 35% of such separated solution, diluting the minor portion of such separated solution with water to a sodium hydroxide content in the range of from 5 up to 6 weight percent, recycling said diluted minor portion of such separated solution to the washing of terephthalic acid

adhering on inner walls of production apparatus, concentrating the major portion of such separated solution of 12 to 14 percent sodium hydroxide to increase its concentration to 50 weight percent.

4,215,225

PROCESS FOR PREPARING AMMONIUM SALTS OF ALKANOIC ACIDS

Andrew B. Funk, and Max B. Williams, both of Memphis, Tenn., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 745,840, Nov. 29, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 929,080

Int. Cl.² C07C *51/52*

U.S. Cl. 562—606 **7 Claims**

1. In a process for preparing an ammonium alkanoate by reacting, in an aqueous medium ammonia and an alkanoic acid having about 1-10 carbon atoms per molecule, the improvement comprising continuously:

(a) feeding a first admixture comprising water, ammonia, and an excess of the alkanoic acid into a tubular reaction zone,

(b) forming a second admixture comprising an aqueous solution of the ammonium alkanoate and unreacted alkanoic acid by passing the first admixture through the tubular reaction zone, said first admixture having a temperature of from about 60° to 140° F. as it enters said reaction zone, said second admixture having a temperature of from about 160° to 260° F. at the exit end of said reaction zone;

(c) passing the second admixture exiting the tubular reaction zone through a tubular cooling zone and cooling the second admixture to a temperature of from about 100° to 180° F.; and

(d) recovering the cooled second admixture.

4,215,226

SELECTIVE HYDROGENATION OF NITROAROMATIC ACETYLENES OVER AN UNSUPPORTED RUS_2 CATALYST

Anatoli Onopchenko, Monroeville; Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 6, 1978, Ser. No. 958,163

Int. Cl.² C07C *79/22, 85/11, 85/24*

U.S. Cl. 568—705 **12 Claims**

1. A process for the production of an aromatic amino compound containing an acetylene group directly connected to an aromatic ring carbon atom which comprises:

contacting a charge stock comprising an aromatic nitroacetylene compound containing (i) at least one nitro group directly connected to an aromatic ring carbon atom and (ii) at least one acetylenic group having at least two carbon atoms, wherein the acetylene group is directly connected to an aromatic ring carbon atom, and wherein the aromatic portion of said aromatic nitro acetylene compound is selected from the group consisting of benzene, naphthalene, bibenzyl, diphenyl, diphenyl oxide, diphenyl sulfide and benzophenone, in an inert solvent with an unsupported catalyst consisting essentially of ruthenium sulfide and in the added presence of free molecular hydrogen under reaction conditions such that:

(a) the aromatic nitroacetylene and solvent are maintained substantially in the liquid phase;

(b) the weight percent of the aromatic nitroacetylene in the inert solvent is from one to about six weight percent;

(c) the reaction temperature is from 60° C. to 140° C.; and

(d) the conversion of said nitroaromatic acetylene is greater than 50 weight percent.

4,215,227

RECOVERY OF PARA-NITROSODIUM PHENOLATE

Richard E. Bockrath, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1978, Ser. No. 955,505

Int. Cl.² C07C *79/26*

U.S. Cl. 568—706 **6 Claims**

1. In the process for preparing alkali metal salts of para-nitrophenol by contacting (1) a feed stream of para-chloronitrobenzene and (2) a feed stream of aqueous caustic solution selected from the group consisting of sodium hydroxide and potassium hydroxide at a temperature of from 180°-250° C. and at autogeneous pressure in a time interval of from 30 seconds to 10 minutes at a mole ratio of caustic to chloronitrobenzene of from 2:1-4:1, the caustic concentration in said aqueous solution being maintained at from 5-20% and at a power input into the feed streams of the reaction system of at least 2.3 horsepower per 1,000 gallons of reaction volume, and filtering and washing the alkali metal salt of para-nitrophenol, the improvement wherein from 5-45% by weight, based on the combined aqueous caustic solution, filtrate and washing solution from said process for the preparation of said salts, of the filtrate and washing solution containing from 5-20% by weight based on the solution of alkali metal salts is present in the feed stream of aqueous caustic solution.

4,215,228

2-FLUORO-2-NITROPROPANEDIOL

Kurt Baum, Pasadena, and Philip T. Berkowitz, Santa Ana, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1978, Ser. No. 933,365

Int. Cl.² C07C *79/16*

U.S. Cl. 568—712 **5 Claims**

1. A process for the production of 2-fluoro-2-nitropropanediol comprised of the steps of:

combining diethyl fluronitromalonate with a compound selected from the group of formaldehyde solutions and paraformaldehyde, in the presence of an alkali metal hydroxide between 10° and −10° C. and separation of the product.

4,215,229

PROCESS FOR ALKYLATING PHENOLIC COMPOUNDS TO PRODUCE ORTHO- AND PARA-MONOALKYLATED PHENOLS AND 2,4- AND 2,6-DIALKYLATED PHENOLS

Nicholas P. Greco, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 15, 1978, Ser. No. 915,715

Int. Cl.² C07C *37/20*

U.S. Cl. 568—804 **16 Claims**

1. Process for alkylating phenolic compounds having an available hydrogen in at least the para position to produce a mixture containing predominantly para-monoalkylated phenols with a smaller quantity of ortho-monoalkylated phenols and dialkylphenols, comprising:

(a) reacting the phenolic compound with a saturated aliphatic aldehyde having one to about ten carbon atoms and a secondary amine having one to about ten carbon atoms and having a basic dissociation constant of less than around 3.6, wherein the amount of the aldehyde and the secondary amine are in stoichiometric amounts and the amount of the phenolic compound is in a stoichiometric or excess of the stoichiometric amount, and in the liquid phase and at a temperature in the range of around 0° C. to around 20° C. to produce a mannich base type aminoalkylated phenol;

(b) contacting the mannich base type aminoalkylated phenol with hydrogen at a pressure no higher than around 150 psig in a glass-lined vessel at a temperature in the range of about 120° to about 140° C. in the presence of a noble metal catalyst selected from the group consisting of palladium, platinum, rubidium, rhodium and iridium or a mixture thereof to produce a mixture containing predominantly para-monoalkylated phenol, with smaller amounts of ortho-monoalkylated phenol and dialkylated phenols and the secondary amine;

(c) separating the secondary amine from the mixture to produce a mixture containing predominantly para-monoalkylated phenol with smaller amounts of ortho-monoalkylated phenol and dialkylated phenols.

4,215,230

PRODUCTION OF IONONES AND IRONES BY THERMAL REARRANGEMENT OF PROPARGYLIC ALCOHOLS

Takashi Ohnishi; Yoshiji Fujita; Michihiro Ishiguro, and Takashi Nishida, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

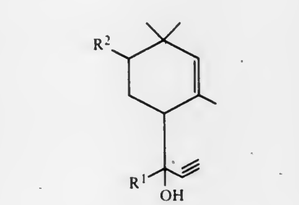
Filed May 23, 1978, Ser. No. 908,818

Claims priority, application Japan, May 23, 1977, 52-60112; May 23, 1977, 52-60113

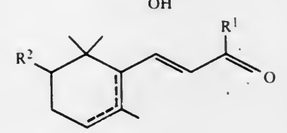
Int. Cl.² C07C *45/00, 33/05, 33/04, 33/02*

U.S. Cl. 568—341 **8 Claims**

1. A method for the preparation of ionones and irones which comprises thermally rearranging a propargylic alcohol of the structural formula (II) to obtain a compound of the structural formula (I):



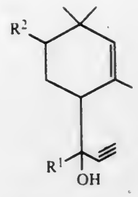
(II)



(I)

wherein R^1 is lower alkyl; R^2 is a member selected from the group consisting of hydrogen and methyl; and the dotted line in the structural formula (I) denotes that a double bond exists in either one or the other of the positions indicated.

7. A propargylic alcohol of the structural formula (II):



(II)

wherein R^1 is lower alkyl; and R^2 is a member selected from the group consisting of hydrogen and methyl.

4,215,231

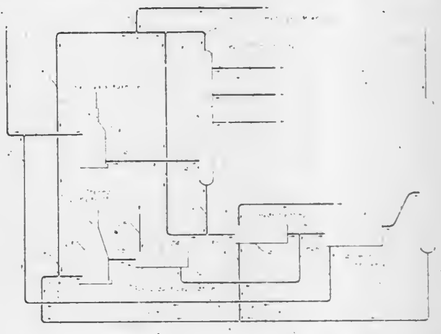
CO-PRODUCTION OF ETHYLENE AND BENZENE

Robert F. Raymond, Arlington Hts., Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 894,264, Apr. 7, 1978, Pat. No. 4,167,533. This application May 29, 1979, Ser. No. 43,210

Int. Cl.² C07C *3/30*

U.S. Cl. 585—251 **14 Claims**



1. A process for the co-production of ethylene and benzene from a hydrocarbonaceous feedstock which comprises:

(a) charging said feedstock to a thermal cracking zone at conditions selected to convert paraffinic hydrocarbons into lower boiling, normally vaporous, hydrocarbons;

(b) introducing the thermal cracking zone effluent into a first separation zone and separating a hydrogen-rich vaporous phase, ethylene, and a normally liquid phase containing aromatic hydrocarbons;

(c) recovering the separated ethylene;

(d) introducing said normally liquid phase into a second separation zone, concentrating the aromatic hydrocarbons therein, and separating unconverted non-aromatic hydrocarbons;

(e) introducing said aromatic hydrocarbons into a third separation zone and separating benzene and alkylaromatic hydrocarbons therein;

(f) recovering the separated benzene;

(g) reacting said alkylaromatic hydrocarbons in admixture with at least a portion of said hydrogen-rich vaporous phase in a dealkylation reaction zone at conditions selected to convert said alkylaromatic hydrocarbons into benzene; and,

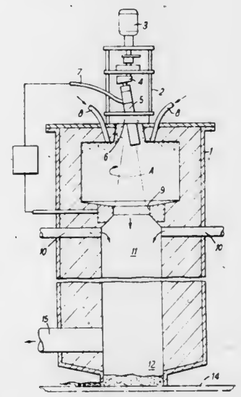
(h) introducing the dealkylation zone effluent into said second separation zone in combination with the aforesaid normally liquid phase introduced thereto.

4,215,232

PRODUCTION OF HYDRAULIC CEMENTS AND CEMENT-FORMING MATERIALS

Jozef K. Tylko, Faringdon, England, assignor to The Rugby Portland Cement Company Limited, Rugby, England

Division of Ser. No. 848,031, Nov. 3, 1977, Pat. No. 4,152,169.
This application Feb. 8, 1979, Ser. No. 10,427
Claims priority, application United Kingdom, Nov. 4, 1976, 45839/76; Jul. 9, 1977, 28881/77
Int. Cl.[2] H05H *1/00, 1/24*
U.S. Cl. 13—2 P **2 Claims**



1. Apparatus for the production of hydraulic cements and pozzolanic materials comprising means for mixing and blending a calcareous material and a carbonaceous material containing silica, means for drying and grinding such blend to a comminuted condition, means for supplying hot gas to said drying and grinding means, a plasma reactor of the type in which at least one plasma gun orbits about a substantially vertical axis and is directed obliquely to said vertical axis and towards an opposed counter-electrode, said reactor including means for supplying a curtain of comminuted material to a cone of expanded precessive plasma developed within said plasma reactor, a feed preheater arranged between said drying and grinding means and said supplying means, granulating means for granulating material emerging from said plasma zone, means for passing a stream of air successively through said granulating means, said feed preheater and said feed drying and grinding means, a waste-heat boiler for recovery of heat energy released in the combustion of the calorific values of the carbonaceous material and means for generating electricity by use of the recovered thermal energy.

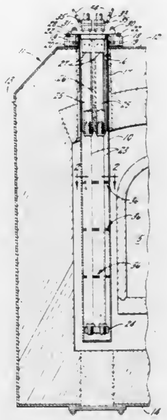
4,215,233

HEATING ASSEMBLY WITH VIBRATION DAMPENING SHIPPING SUPPORTS FOR GRAPHITE HEATING ELEMENTS

William W. Kastilahn, Caledonia, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Dec. 29, 1978, Ser. No. 974,308
Int. Cl.[2] H05B *3/62;* **F27D** *11/02*
U.S. Cl. 13—25 **5 Claims**

1. A heating assembly comprising a closed tube, and an elongated rigid electrical resistance heating element disposed in and secured to said tube and having terminals adapted to be connected across a voltage source so as to energize said heating element and raise said heating element to a high temperature, the improvement in said heating assembly comprising, a support member for bracing said heating element against said tube to dampen the vibration of said element during shipment of said assembly thereby preventing damage to said element, said support member comprising a disc telescoped snugly over said heating element and telescoped snugly into said tube, said



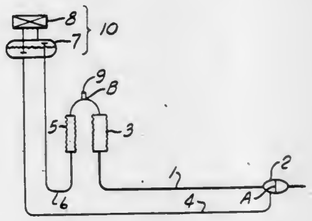
disc being made of a material which reduces to ash when said heating element is energized to a high temperature.

4,215,234

NATURAL CIRCULATION TYPE EVAPORATIVE COOLING POWER CABLE LINE

Hiroaki Hayashi; Kiyoshi Fukuda, both of Tokyo; Hiroshi Kubo, Osaka; Noriyasu Yoshikawa, Osaka, and Hiroshi Takada, Osaka, all of Japan, assignors to The Tokyo Electric Power Company, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Jul. 21, 1978, Ser. No. 926,907
Int. Cl.[2] H01B *7/34*
U.S. Cl. 174—15 C **9 Claims**



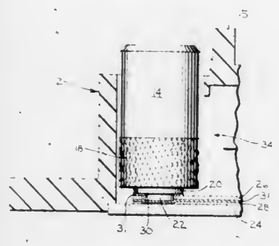
1. A circulation system for a cooling medium in a natural circulation type evaporative cooling electric power cable line wherein a cooling medium passage within the electric power cable line has an inlet and an outlet respectively connected with a cooling unit positioned at a level higher than the cooling medium passage inlet of said electric power cable by means of a feeding pipe and a return pipe and having sealed therein a liquefiable gas cooling medium, and which is characterized by at least a riser portion of the return pipe leading to the cooling unit installed below the level of the cooling medium return passage outlet of said electric power cable and said return pipe provided with means for boosting circulation force to make the cooling medium circulate even in a low load current region not exceeding the current allowable without cooling for that cable.

4,215,235

LEAD FRAME TERMINAL

Lance R. Kaufman, 131 White Oak Way, Mequon, Wis. 53092

Filed Nov. 21, 1978, Ser. No. 962,586
Int. Cl.² H05K 1/12
U.S. Cl. 174—52 PE 3 Claims



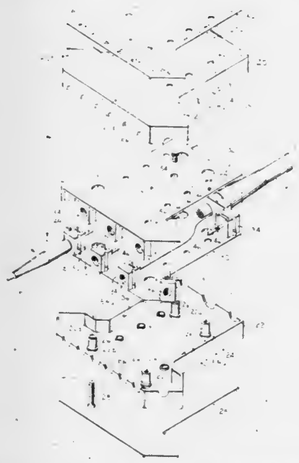
1. A lead frame terminal, comprising an electrically non-conductive heat dissipating substrate, a lead frame element connected to said substrate through a thick film circuit, a terminal stud having means for mounting said stud to said lead frame element, said mounting means including a mounting member and an axially extending projection located at an axial end of said stud adjacent said lead frame element with said mounting member supported by said lead frame element and said axial projection snugly located within a mating opening within said lead frame element, and reflowable electrically conductive material bonding said mounting member to said lead frame element and said axial projection to said substrate and providing a sturdy inter-connection with good heat transfer to said substrate.

4,215,236

JUNCTION BOX FOR ELECTROCARDIOGRAPHIC LEADS

Gerald J. Reiser, Milwaukee, Wis., assignor to Marquette Electronics, Inc., Milwaukee, Wis.

Filed Mar. 24, 1978, Ser. No. 889,635
Int. Cl.² H05K 5/04
U.S. Cl. 174—59 11 Claims



1. A junction box for a plurality of electrocardiographic leads comprising:

a pair of opposed plates having a generally T-shaped configuration, said plates being spaced apart by a plurality of lead connector blocks positioned along the periphery of the plates, said connector blocks each being fastened to only one of the plates, said plates being identically formed with respect to shape and the location of the connector blocks on said plates so as to permit internesting of the connector blocks of each of said plates when said plates are brought into the spaced opposed condition, said lead connector blocks having means for receiving said electrocardiographic leads and for making electrical connections therewith;

a multi-conductor cable connected to said connector blocks and exiting said junction box adjacent said plates; and

a housing covering said pair of plates and having openings permitting connection of the leads to the connector blocks;

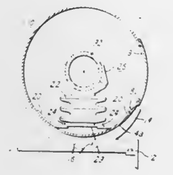
said connector blocks have first and second opposing surfaces abutting said opposing plates, a third surface normal to said first and second surfaces containing said means for receiving said electrocardiographic leads to attach same to the junction box, and a fourth surface having means for establishing a connection between said electrical leads and said cable.

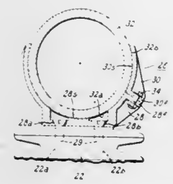
4,215,237

BUS CONDUCTOR SUPPORT SYSTEM

Thomas C. Burtnett, Woodlyn, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Feb. 27, 1978, Ser. No. 881,330
Int. Cl.² H02G 5/06; H01B 17/18
U.S. Cl. 174—99 B 7 Claims





1. A bus conductor support system comprising:

(a) a hollow tubular enclosure,

(b) platform means for supporting said enclosure in a fixed position,

(c) a tubular bus conductor disposed within said enclosure in substantially parallel relationship therewith and electrically insulated therefrom,

(d) an insulator assembly disposed within said tubular enclosure supporting said bus conductor and extending radially of said tubular enclosure along a predetermined diameter of said enclosure,

(e) a side-located access opening in said tubular enclosure disposed at one side of said insulator assembly,

(f) insulator assembly securing means removably securing an end portion of said insulator assembly in a fixed position with respect to said enclosure, said insulator assembly securing means being in proximate relation to said side-located access opening;

(g) bus conductor mounting means removably mounting said bus conductor on an opposing end portion of said insulator assembly without requiring any holes in said bus conductor, said mounting means being in abutting relation with at least a portion of an outer surface of said bus conductor for applying restraining forces to said bus conductor at points distributed over greater than one half of the perimeter of said outer surface, said mounting means including:

(g_1) a first mounting member which is detachably secured to said opposing end portion of said insulator assembly, said first mounting member including an arcuate restraining surface which is in abutting relation with at least a portion of the outer surface of said bus conductor, said first mounting member including a flanged portion extending from said arcuate surface, said first mounting member providing at least some support for said bus conductor;

(g_2) a second mounting member including a restraining surface which is in abutting relation with another portion of the outer surface of said bus conductor, said second mounting member including a flanged portion extending from its restraining surface in juxtaposition to said flanged portion of said first mounting member;

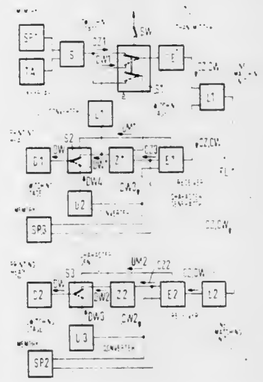
(g_3) means for securing said second mounting member to said first mounting member, said securing means for said mounting members being located in its entirety at one side only of said bus conductor and in proximate relation to said side-located access opening, said latter securing means extending between said flanged portions.

4,215,238

METHOD OF AND APPARATUS FOR PRINTED CHARACTER TRANSMISSION AND RECEPTION

Joachim Heinzl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 942,915
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748218
Int. Cl.² B41J 5/00; G06K 15/02; H04L 15/24
U.S. Cl. 178—23 R 12 Claims



1. A method of transmitting printed characters from a transmitting station to a receiving station, comprising the steps of:

storing binary character sequences at the receiving station in a character generator;

transmitting data words assigned to the characters from the transmitting station to the receiving station;

receiving and applying the data words to the character generator to produce printing commands;

applying the printing commands to a printing head in the receiving station which has at least one printing element;

storing in a character generator in the transmitting station binary character sequences of characters which at least partially differ from those characters whose binary character sequences are stored in the character generator of the receiving station;

reading binary character sequences from the character generator in the transmitting station;

converting the read binary character sequences into code words;

transmitting the code words in place of the data words from the transmitting station to the receiving station;

receiving and reconverting the code words into binary character sequences;

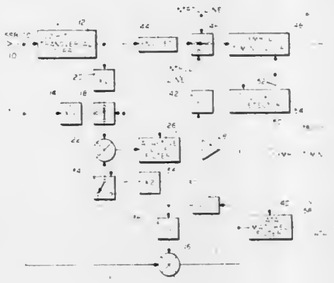
applying the binary character sequences reconverted from the code words to the printing head as printing commands.

4,215,239

APPARATUS FOR THE ACQUISITION OF A CARRIER FREQUENCY AND SYMBOL TIMING LOCK

Robert S. Gordy, Largo, and David E. Sanders, St. Petersburg, both of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Dec. 5, 1977, Ser. No. 857,754
Int. Cl.² H04B 1/66
U.S. Cl. 375—114 12 Claims



1. Apparatus for the acquisition of a carrier frequency and symbol timing lock, comprising in combination:

carrier recovery means operable in an acquisition mode and data recovery mode and being responsive to an input signal including data bits, a data preamble with symbol timing bits in the data preamble for generating an output frequency locked to the carrier frequency,

symbol timing means operable in an acquisition mode and a data recovery mode and being connected to said carrier recovery means for generating a symbol timing signal that is locked in synchronism with the symbol timing bits of the data preamble, said symbol timing means being responsive in the acquisition mode to an envelope of the input signal to generate the symbol timing signal,

means for detecting a symbol timing lock between the symbol timing signal and the symbol timing bits of the data preamble and for generating a control signal in response thereto, and

control means responsive to the control signal for switching said carrier recovery means and said symbol timing means from the acquisition mode to the data recovery mode.

4,215,240

PORTABLE VOICE SYSTEM FOR THE VERBALLY HANDICAPPED

Carl L. Ostrowski, Sterling Heights, Mich., assignor to Federal Screw Works, Detroit, Mich.

Filed Nov. 11, 1977, Ser. No. 850,669
Int. Cl.² G10L 1/00
U.S. Cl. 179—1 SM 14 Claims

1. In a portable artificial voice system for the verbally handicapped, including first memory means having prestored therein digital data identifying phonemes phonetically defining a vocabulary of words, input means for randomly selecting

words from said vocabulary, second memory means for temporarily storing said word selections in the order entered, computer means for reading the selections stored in said second memory means and retrieving from said first memory means the digital data identifying the phonemes phonetically defining said word selections, and synthesizer means responsive to the digital data retrieved by said computer means for synthetically speaking the words identified by said selections by integrating the phonemes identified by said data into intelligible sounding human speech; the method of generating synthesized speech including the steps of: entering via said input means a plurality of encoded word selections into said second memory means,



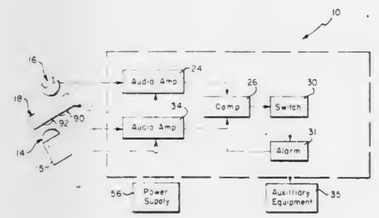
and activating said computer means to repetitively perform the following sequence of steps until the entire message entered via said input means has been synthetically spoken; (1) reading the first (next) encoded word selection stored in said second memory means, (2) accessing the appropriate memory address location(s) in said first memory means by first accessing the intermediary memory address location in said first memory means identified by said encoded word selection, reading the address data contained in said intermediary address location, and then accessing the memory address location(s) identified by said address data, (3) reading the digital data stored in said memory address location(s), and (4) providing said digital data to said synthesizer means.

4,215,241

SOUND OPERATED CONTROL DEVICE

Harry D. Pinkney, Jr., Gardena, Calif., assignor to Frank L. Eppenger, Ojai, Calif.

Filed Oct. 16, 1978, Ser. No. 951,341
Int. Cl.[2] H04M *9/00*
U.S. Cl. 179—1 VC **10 Claims**



1. A sound-operated electrical control device adapted to receive predetermined sounds to activate switching means connected to electrical auxillary equipment upon receipt of predetermined sounds comprising:

a first circuit having first receptor means to receive a predetermined sound and generate a corresponding first electrical signal which is classified to a first polarity with first polarizing means; and,

a second circuit in parallel with said first circuit having second receptor means to receive ambient sound and generate a corresponding second electrical signal which is classified to a second polarity with second polarizing means; and,

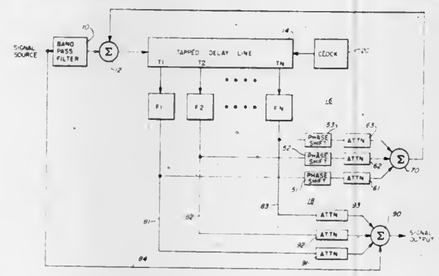
switching means interconnecting said first and second circuits allowing either one or the other of said first and second signals to pass and activate the auxillary equipment, said first and second polarizing means comprising oppositely-poled diodes.

4,215,242

REVERBERATION SYSTEM

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Lincolnwood, Ill.

Filed Dec. 7, 1978, Ser. No. 967,265
Int. Cl.[2] G10H *1/04*
U.S. Cl. 179—1 J **25 Claims**



1. A reverberation sound producing apparatus comprising:

an input terminal and at least one output terminal;

a delay line having an input coupled to said input terminal and a plurality of output taps;

a feedback path coupling selected irregularly spaced taps of said delay line to said delay line input; and

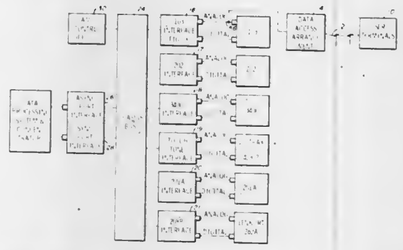
an output path coupling said selected taps to said output terminal.

4,215,243

AUTOMATIC MODEM IDENTIFICATION SYSTEM

Ronald K. Maxwell, Palo Alto, Calif., assignor to Racal-Vadic Inc., Sunnyvale, Calif.

Continuation of Ser. No. 752,205, Dec. 20, 1976, abandoned.
This application Nov. 17, 1978, Ser. No. 961,849
Int. Cl.[2] H04M *11/00*
U.S. Cl. 179—2 DP **11 Claims**



1. The method of identifying a particular modem type from a plurality of modem types having common access to a port over a telephone line, wherein said modem types include at least a first and a second modem type, comprising the steps of:

(a) answering all the incoming calls received over said telephone line with an answering modem of said first type by transmitting for a first time period an answer mark carrier of a frequency which is not only unique to an answering modem of said first type but is also compatible with any other of said modem types;

(b) monitoring said telephone line during said first time period to detect an originate mark carrier of a frequency unique to a calling modem of said first type;

(c) maintaining communication with said calling modem of said first type upon the condition that the originate mark carrier detected within said first time period is of a frequency unique to a calling modem of said first type;

(d) if no originate mark carrier is detected during said first time period, transmitting an answer mark of a frequency unique to an answering modem of said second type for a second time period;

(e) monitoring said telephone line during said second time period to detect an originate mark carrier of a frequency unique to a calling modem of said second type; and

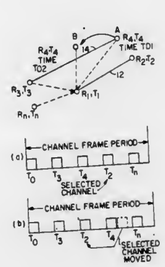
(f) maintaining communication with said calling modem of said second type upon the condition that the originate mark carrier detected within said second time period is of a frequency unique to a calling modem of said second type.

4,215,244

SELF-ADAPTIVE MOBILE SUBSCRIBER ACCESS SYSTEM EMPLOYING TIME DIVISION MULTIPLE ACCESSING

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 18, 1978, Ser. No. 970,608
Int. Cl.[2] H04J *3/14*
U.S. Cl. 370—116 **9 Claims**



1. In a mobile multiple subscriber access system, the combination therewith of:

first means at a given one of said subscribers for receiving desired communications signals from a desired subscriber during a selected time interval in a frame period;

second means at said given subscriber for detecting the presence of extraneous communications signals from undesired subscribers tending to produce interference with said desired signals from said desired subscriber during said selected time interval as individual subscribers move about in said mobile access system; and

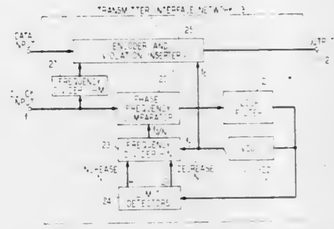
third means at said given subscriber responsive to the presence of said extraneous communications signals which exceed a predetermined signal level to control the timing of said desired communications signals from said desired subscriber to select a different, unused time interval within said frame period for transmission of said desired communications signals.

4,215,245

VARIABLE RATE SYNCHRONOUS DIGITAL TRANSMISSION SYSTEM

Jules A. Bellisio, Wall Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1978, Ser. No. 974,375
Int. Cl.[2] H04L *7/02*
U.S. Cl. 370—84 **3 Claims**



1. A synchronous digital transmission system (**12**) adapted to operate over a prescribed range of bit rates and to interface with data sources having different data rates,

CHARACTERIZED IN THAT said system comprises:

a transmitter interface network (**13**) including:

means (**20, 21, 23, 24**) for phase-locking an integral subharmonic of a variable frequency local oscillator (**22**) to the clock signal frequency, f_1, of an input data stream, where the range of frequencies of said oscillator falls within the prescribed range of bit rates of said system; and

means (**25, 27**) for encoding said data stream for operation at a bit rate equal to the frequency of said oscillator and including one code violation at a rate related to the clock signal frequency;

and a receiver interface network including:

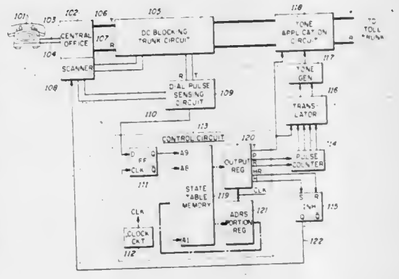
means (**31, 32**) for decoding said encoded data stream and for recovering the original input data stream and clock signal.

4,215,246

DIAL PULSE SIGNALING ARRANGEMENT

Albert J. Sawyer, Lisle, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 8, 1978, Ser. No. 958,699
Int. Cl.[2] H04M *3/42*
U.S. Cl. 179—18 B **10 Claims**



1. A communication system comprising a communication path comprising two signaling conductors, signaling means for generating sequences of dial pulses by periodically changing the conduction state between said two signaling conductors and scanning means responsive to the conduction state between said two signaling conductors for altering said commu-

nication path characterized in that said communication system further comprises:

dial pulse detection means responsive to predetermined changes in the conduction state between said two signaling conductors for generating inhibit signals in response to the first dial pulse of each dial pulse sequence generated by said signaling means; and

inhibiting means responsive to said inhibit signals for inhibiting said scanning means from detecting the conduction state between said two signaling conductors.

4,215,247

DIGITAL CONFERENCING APPARATUS

Donald L. Lambert, Terrell, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 13, 1978, Ser. No. 960,491
Int. Cl.² H04M *3/00*
U.S. Cl. 179—18 BC **6 Claims**



6. Apparatus for combining a plurality of nonlinear delta modulated digital signals into a single nonlinear signal comprising, in combination:

a first plurality of means for supplying nonlinear delta modulated signals to be combined;

a second plurality of means, each connected to a given one of said first plurality, for converting nonlinear delta modulated signals to linear differential PCM signals at output means thereof;

summing means, connected to said output means of said second means, for providing at an output thereof a composite linear differential PCM signal; and

digital integrating means, connected to said output means of said summing means, for providing at an output thereof a linear summed PCM signal.

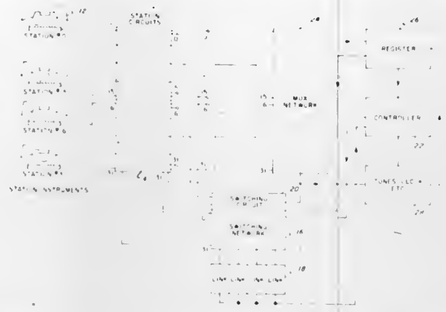
4,215,248

TELEPHONE INTERCOM CIRCUIT

Larry S. Shannon, Jr., Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 26, 1978, Ser. No. 946,030
Int. Cl.² H04M *9/06*
U.S. Cl. 179—99 A **5 Claims**

1. A solid state intercom circuit for a telephone system in which there are a plurality of stations each of which has selective intercom access to the remaining stations of said system, comprising a sequence controller responsive to sensed conditions at said stations for initiating cycles directed toward completing calls from respective calling stations to called stations over a plurality of intercom links, a solid state switching matrix for interconnecting said calling and called stations over intercom links, a register for storing dialled digits representing a station being called, a system control circuit memory with a location for each station of said system and means for storing in said memory the status of said station and the address of a link associated with such station during an in-use condition of said station, means for scanning stations of said system, said sequence controller responsive to a station being found off-hook by said scanning means for initiating a sequence to examine the memory location associated with said off-hook station to determine its prior status and, in response to a determination that



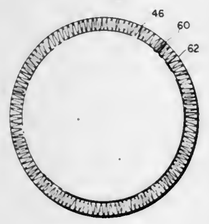
said prior status was idle, for advancing said sequence through a plurality of steps to complete a call initiated by said station.

4,215,249

METHOD AND DEVICE FOR CONTROLLING WRINKLES IN A VIBRATILE DIAPHRAGM

John M. Reynard, Framingham; Thomas N. Carignan, Danvers; Richard Paglia, Carlisle, and Joseph F. Rich, Danvers, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 25, 1978, Ser. No. 900,016
Int. Cl.² H04R *7/14, 19/00*
U.S. Cl. 179—111 R **17 Claims**



1. A method for mounting a diaphragm in an electroacoustical transducer assembly of the type having a housing member with an opening in at least one side thereof and a pliant, relatively inelastic, vibratile, electrostatic diaphragm material, comprising the steps of:

placing vibratile electrostatic diaphragm material adjacent said housing member such that said diaphragm material extends across said housing opening;

applying uniform, radially outward forces to said diaphragm material for the purpose of temporarily maintaining at least the inner region of said diaphragm in a generally wrinkle free, planar orientation;

applying a force to a portion of the inner region of said diaphragm material, in excess of said radial forces, for the purpose of offsetting said inner diaphragm region from its said planar orientation to thereby increase the total amount of said diaphragm material extending across said housing opening over that extending across said housing opening before the application of said inner region offsetting force, said offsetting force overcoming said radial forces thereby enabling additional amounts of said diaphragm material to move uniformly inward as said inner diaphragm region is being so offset;

securing an outer region of said diaphragm in a fixed position with respect to said housing member while said inner diaphragm region is in its said offset condition; and

removing said inner diaphragm region offsetting force from said diaphragm material, said diaphragm material forming

wrinkles throughout its said inner diaphragm region as said inner diaphragm region offsetting force is removed due to the said increased amount of diaphragm material extending across said housing opening after said inner diaphragm region has been so offset and said outer region of said diaphragm has been so secured.

4,215,250

MICROPHONE SUPPORT WITH SIMULTANEOUS ADJUSTMENT OF PLURAL DEGREES OF FREEDOM

Baird E. Resener, Warren, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,277
Int. Cl.² H04R *1/00*
U.S. Cl. 179—149 **9 Claims**



1.

A microphone support comprising an elongated member (12) having a microphone (11) mounted on one end thereof, said member being flexible in a first direction perpendicular to the longitudinal axis of said member and essentially rigid in the opposite colinear direction and in both directions perpendicular to the first direction in a plane perpendicular to said axis, the improvement in said support comprising

said member being formed from an unarticulated strip of material configured to produce the aforementioned flexibility characteristic,

means for removably housing (10) said member with said one end being positioned for first removal,

means for guiding (13) said member during removal from a home position in said housing, and

means, responsive to at least partial removal of said member from said housing, for resiliently urging (37) said member back into its home position in said housing.

4,215,251

SWITCHING APPARATUS SELECTIVELY UTILIZING A REGENERATIVE REPEATER

Takeo Fukuda; Kazuhiko Hanawa, both of Yokohama, and Kiyoshi Urui, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation-in-part of Ser. No. 768,428, Feb. 14, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,850
Claims priority, application Japan, Feb. 16, 1976, 51/14958
Int. Cl.² H04B *3/36*
U.S. Cl. 179—170 R **5 Claims**

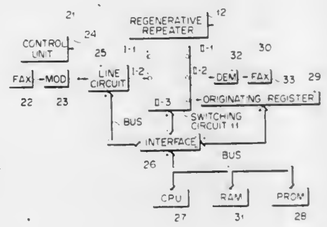
1. A switching apparatus comprising:

a switching circuit provided with a plurality of input terminals and a plurality of output terminals;

at least one regenerative repeater connected between selected input and output terminals of the switching circuit, the number of the regenerative repeaters provided in the switching apparatus being less than the number of circuits signal paths through which a data signal of high error rate is expected to pass;

a first signal-conducting means for conducting a call signal supplied from a calling terminal device through said switching circuit to an originating register which interprets a terminal device-designating signal included in said call signal so as to determine a number allotted to a called terminal device;

random access memory means coupled to said switching circuit and to said originating register for storing a signal denoting a decision with respect to the error rate of a data signal transmitted through each of the signal paths connected between said calling and called terminal devices through said switching circuit, said random access memory means being addressed according to the particular signal path being utilized;



CPU means coupled to said switching circuit, to said originating register, and to said random access memory means for determining if a regenerative repeater is to be used according to the contents of said random access memory and for issuing a prescribed switching instruction to said switching circuit according to the result of the determination; and

a second signal-conducting means for conducting a data signal between said calling and called terminal devices through said switching circuit and through said regenerative repeater selectively connected in said second signal-conducting means.

4,215,252

VIDEO TELECONFERENCE AUDIO ECHO CONTROL UNIT

Michael Onufry, Jr., Brookeville, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 27, 1978, Ser. No. 946,298
Int. Cl.² H04B *3/20;* **H04M** *9/08*
U.S. Cl. 179—170.2 **8 Claims**



1. In a video teleconference system of the type including a four-wire transmission circuit having a receive line and a transmit line connected to a loud-speaker and microphone, respectively, an echo suppression apparatus comprising:

(a) first threshold means for generating a first threshold level signal;

(b) means for detecting the level of speech signal activity on said receive line and comparing it to said threshold level signal and, when said detected level exceeds said threshold level, for providing an output signal after a first delay period $Supp_{Atk}$ determined by the distance between the loudspeaker and microphone, said delay period given by:

$0.005 \text{ sec} < \text{Supp}_{4/k} \leqq 0.005 + d/c \text{ sec}$

where

d = the minimum microphone to audio speaker distance in feet; and

c = the velocity of sound propagation in air in feet/second;

(c) a normally closed suppression switch in said transmit line openable by a control signal; and

(d) means responsive to said detection means output for supplying said control signal to said suppression switch and for maintaining said control signal for a second delay period t after termination of said detection means output signal.

4,215,253

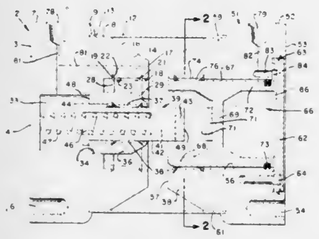
HIGH DIRECT AND ALTERNATING CURRENT SWITCH

Ted N. Tilman, 3538 Telegraph Dr., San Jose, Calif. 95132

Filed Dec. 28, 1978, Ser. No. 974,061

Int. Cl.² H01H *35/38*

U.S. Cl. 200—82 R **37 Claims**



1. An electric switch structure designed to make, break and carry high levels of electrical current in the order of at least 25,000 amperes, comprising:

(a) a pair of axially aligned and spaced electrically conductive cylindrical terminal members each having at least one set of contact bars thereon;

(b) a cylindrical sleeve disposed between said terminal members to retain them in spaced electrical isolation and therewith forming an enclosed envelope;

(c) an electrically conductive bridge member slidably disposed within the envelope and selectively movable in one direction to directly mechanically and electrically connect the terminal members to increase the level of electrical current capable of being carried therebetween and selectively movable in the opposite direction to mechanically and electrically disconnect a portion of the bridge member from one of said terminal members to decrease the capacity for carrying the flow of high level electrical current between said terminal members; and

(d) electrically conductive movable contact means disposed within said envelope and responsive to movement of said bridge member to make or break an electric circuit between said terminal members.

4,215,254

PRESSURE SWITCH WITH RESILIENTLY MOUNTED CONTACT

Nobuyoshi Ohki, Tokyo, Japan, assignor to Niles Parts Co., Ltd., Japan

Filed Dec. 6, 1978, Ser. No. 967,022

Claims priority, application Japan, May 4, 1978, 53-60975

Int. Cl.² H01H *35/32*

U.S. Cl. 200—83 C **6 Claims**

1. A pressure switch comprising:

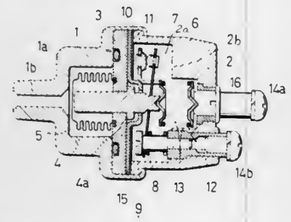
a member movable in response to pressure applied to the switch;

a fixed contact;

a substantially solid contact piece swingable to engage and disengage said fixed contact in response to the movement of the movable member;

a post;

said swingable contact piece having two ends, contact means being mounted adjacent one end and said swingable contact piece being slidably mounted adjacent its other end on said post; and



means for biasing said swingable contact piece toward an end of said post, whereby said swingable contact piece is swingable about its said other end; and further comprising a bellows for transmitting to the moveable member the pressure applied to the switch.

4,215,255

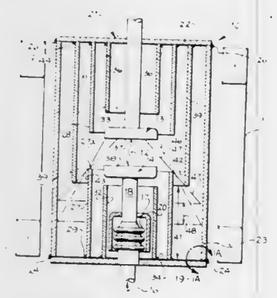
VACUUM ARC SWITCHING DEVICE WITH INTERNAL SHIELDING

Clive W. Kimblin; Joachim V. R. Heberlein; Paul G. Slade, all of Pittsburgh; Roy E. Voshall, New Alexandria, and Francis A. Holmes, Monroeville, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jan. 5, 1978, Ser. No. 867,103

Int. Cl.² H01H *33/66*

U.S. Cl. 200—144 B **3 Claims**



1. In a vacuum arc current switching device of a type having means forming a sealed enclosure of insulating material for providing a vacuum environment, a first electrode carried from one end of said enclosure, a second electrode carried from the other end of said enclosure to be disposed in spaced arc current transfer relation therebetween, said enclosure and electrodes being adapted to be disposed within a magnetic field for modulating said arc current between said electrodes, a first plurality of elongate cylinders of insulating material carried by one end of said enclosure in coaxial relation to one of said electrodes, and a second plurality of elongate cylinders of insulating material carried by the other end of said enclosure and disposed coaxially of the other electrode, the cylinders of each of said pluralities extending axially to different degrees relative to the disposition of their associated electrode for shielding a sufficiently extensive portion of said side and end wall surfaces of the interior of said enclosure from vacuum deposition of electrode material to maintain an electrical gap at least substantially as great as the maximum electrode separation to inhibit development of secondary arc terminals on surfaces within said enclosure in response to vapor deposition thereon of a conductive layer of electrode material.

4,215,256

GAS-INSULATED SWITCHGEAR APPARATUS

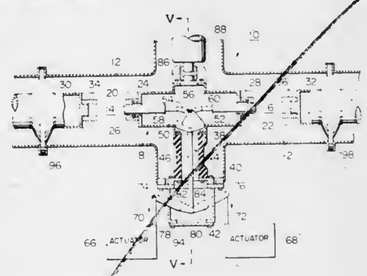
Minoru Sakaguchi; Kazuaki Oishi; Seizo Nakano, and Tuneo Kishi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 692,337, Jun. 3, 1976. This application Apr. 17, 1978, Ser. No. 897,058

Claims priority, application Japan, Jun. 18, 1975, 50-73864

Int. Cl.² H01H *33/88*

U.S. Cl. 200—148 D **5 Claims**



1. Gas-insulated switchgear apparatus comprising:

a. a sheath filled with an insulating gas and kept at ground potential;

b. a device located in said sheath and providing a first disconnect gap and a second disconnect gap, said device comprising a first movable contact and a second movable contact adapted to open and close said first disconnect gap and said second disconnect gap respectively, a hollow conductor slidably housing said first and second movable contacts and electrically connecting said first movable contact to said second movable contact, said hollow conductor being provided with a feeder contact thereon:

c. a feeder conductor located in said sheath and electrically connected to said hollow conductor through said feeder contact;

d. a device insulatingly supporting said hollow conductor with respect to said sheath; and

e. a device for individually actuating said first movable contact and said second movable contact, said device comprising a pair of actuating rods made of an insulating material and operatively connected through respective link mechanisms to said first movable contact and said second movable contact respectively, and a pair of actuators, each actuator operatively connected to a respective one of said pair of actuating rods for individually and independently actuating said first movable contact and said second movable contact through the medium of said pair of actuating rods respectively, said pair of actuating rods disposed adjacent and extending parallel to said insulating support device, said link mechanisms being housed in said hollow conductor, and said actuators being located outside said sheath.

4,215,257

PRECISION TOGGLE SWITCH

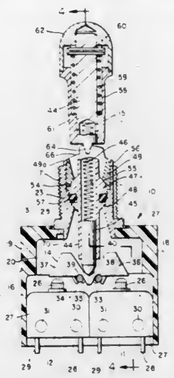
Thomas J. Repplinger, Cary, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.

Filed Nov. 20, 1978, Ser. No. 961,954

Int. Cl.² H01H *23/30*

U.S. Cl. 200—153 T **4 Claims**

1. A toggle switch comprising a casing having a pair of spaced-apart walls, a pair of pushbutton switches mounted in the casing between the walls, a pair of parallel pivot pins extending between the walls and mounted therein, an actuator supported by the pivot pins, the actuator being pivotable in one direction about one of the pivot pins for engaging the pushbuttons of one of the switches and being pivotable in the opposite direction about the other pivot pin for engaging the pushbutton of the other switch, and a toggle lever pivotally mounted in the casing and engaging the actuator for pivoting the actuator about the pivot pins.



4,215,258

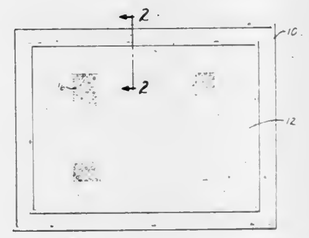
MICROWAVE OVEN WINDOW CONSTRUCTION

Alfred D. Nelson, Stillwater, and Merlin R. Jahnke, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 758,121, Jan. 10, 1977, abandoned. This application Dec. 9, 1977, Ser. No. 859,117

Int. Cl.² H05B *6/64*

U.S. Cl. 219—10.55 D **8 Claims**



5. In a microwave oven window comprising a metal frame and a pair of transparent panels adhesively bonded to a microwave-blocking screen which is coextensive with the panels, the improvement comprising:

a transparent, thermoplastic adhesive which has zero creep at 65° C., remains transparent after prolonged exposure to heat, light and microwave radiation, has a viscosity of less than two million centipoises at 175° C., and substantially completely fills the space between the panels including the openings in the screen so that the window is substantially void-free and hence transparent except to the extent of the masking effect of the screen,

the space between the two transparent panels which is filled by said thermoplastic adhesive is 0.01 to 0.2 mm greater than the thickness of the screen,

the thickness of the interior of the two panels does not exceed 0.25 mm, and

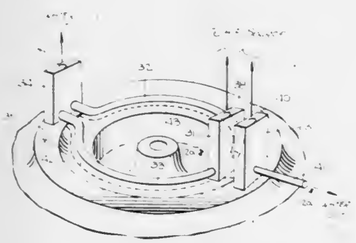
the thinness of the interior panel plus adjacent adhesive constricts the microwave-transmitting path therethrough to minimize microwave leakage.

4,215,259

SURFACE HARDENING OF METALS USING ELECTRIC CURRENTS

Wallace C. Rudd, New Canaan, and Humfrey N. Udall, Darien, both of Conn., assignors to Thermatool Corporation, Stamford, Conn.

Filed Jul. 12, 1978, Ser. No. 923,776
Int. Cl.² H05B 5/00, 9/00; B23K 9/04; C22F 3/02
U.S. Cl. 219—10.43 26 Claims



1. A method of modifying the properties of an area of the surface of a metal part along a path thereon which is narrow relative to its length and which is narrower than the surface so that there is metal of different properties at at least one lateral side thereof, said part being made of structurally continuous metal which changes its properties with heating to a transformation temperature and subsequent cooling, said method comprising:

contacting said metal part with a first contact means at one end of said path and with a second contact means at the opposite end of said path thereby to define the length of said path;

rapidly heating the metal of said path to a temperature at least equal to said transformation temperature by supplying electrical current having a frequency of at least 3000 Hz to both said contact means, and hence, to said metal part, said current being supplied to at lest one of said contact means through relatively long and narrow proximity conductor means which overlies at least most of the length of said path between said contact means, which is spaced from the surface of said path by not more than two times the width of said proximity conductor means in the direction substantially parallel to the surface of said path and perpendicular to said length of said path, and which is connected to said contact means so that the current therein, at any instant, flows oppositely to the flow of current in said metal part to cause the current to concentrate in a said path as close as possible to said conductor, the duration, frequency and magnitude of said current and said width of said proximity conductor means being selected to heat metal in a said path narrower than said surface to at least to said temperature to which it is to be heated prior to the time that the metal adjacent at said side of said path reaches a temperature which will prevent self-quenching of the metal of said path when the current is discontinued; and

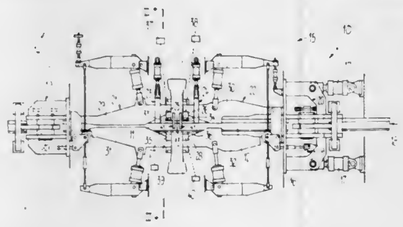
discontinuing the supply of said current to said path when at least said transformation temperature is reached and before said temperature which will prevent self-quenching is reached whereby the metal of said path is rapidly cooled and an area conforming to the surface of said path and at the surface of said metal part having surface properties different from metal adjacent thereto is formed.

4,215,260

APPARATUS FOR WELDING TWO PROFILE OR SECTION RODS BY MEANS OF RESISTANCE WELDING, ESPECIALLY FOR WELDING TWO RAILS

Hans-Rudolf Zollinger, Geroldswil, Switzerland, assignor to H. A. Schlatter AG, Schlieren, Switzerland

Filed Aug. 28, 1978, Ser. No. 937,559
Claims priority, application Switzerland, Sep. 9, 1977, 11042/77
Int. Cl.² B23K 11/02
U.S. Cl. 219—53 10 Claims



1. An apparatus for welding two section members by means of electrical resistance welding, especially for welding together two rails, comprising:

a respective clamping device provided for each section member;

each of said clamping devices having contact electrode means for the infeed of a welding current;

means for relatively displacing the clamping devices with respect to one another in the direction of the section members in order to exert a pressure force at a welding joint between the section members to be welded together;

a centering device arranged between the clamping devices and capable of being brought into engagement with both adjoining ends of the section members to be welded together, in order to retain in mutual alignment during the welding operation and a subsequent cooling time the profiles of both ends of the section members which directly neighbour the welding joint;

said centering device comprising two pivotal arms;

means mounting said pivotal arms for pivotal movement about an axis essentially parallel to the lengthwise direction of the section members;

each of the pivotal arms being operatively associated with one end of a related one of the section members;

each of the pivotal arms having a free end possessing a centering mouth.

4,215,261

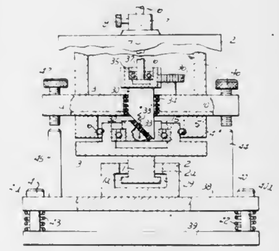
EDM APPARATUS FOR CUTTING A GROOVE IN A RECESS IN A WORKPIECE

Jean-Paul Briffod, Monnetier-Mornex, France, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Apr. 28, 1978, Ser. No. 900,976
Claims priority, application Switzerland, May 6, 1977, 5680/77
Int. Cl.² B23P 1/12
U.S. Cl. 219—69 V 7 Claims

1. In an apparatus for machining by electrical discharges an electrode workpiece by means of an electrode tool wherein said apparatus has a stationary table and said electrodes are displaced one relative to the other in translation in a plane perpendicular to a longitudinal axis of penetration of the electrode tool into the electrode workpiece, said apparatus comprising a reciprocable member displaced along said axis by means of a servo-motor such as to maintain predetermined machining conditions in a machining zone between said electrodes, a first movable platen supporting one of said electrodes mounted on said reciprocable member, means for displacing said first movable platen along two axes perpendicular to said

first axis, and means for controlling the amplitude of displacement of said first movable platen as a function of said displacement of said reciprocable member, the improvement comprising a second movable platen supporting the other of said electrodes, means for displacing by way of said reciprocable member said second movable platen along said first axis, biasing



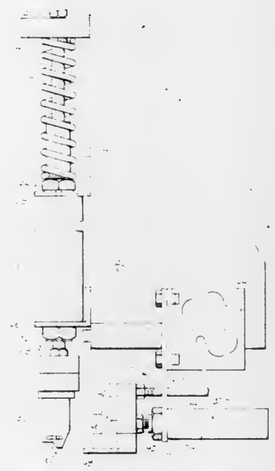
means disposed between said second movable platen and said apparatus table, said biasing means providing a force which opposes the displacement of said second movable platen along said first axis, and at least one adjustable abutment for driving said second movable platen by means of said reciprocable member in the direction of said axis from an initial axial position of said reciprocable member and second movable platen.

4,215,262

AUTOMATIC PERCUSSION WELDING APPARATUS WITH STUD FEED

Carl H. Brastow, Foxboro, Mass., assignor to Conceptual Engineering, Foxboro, Mass.

Filed Mar. 6, 1978, Ser. No. 883,816
Int. Cl.² B23K 9/22; B23B 31/00
U.S. Cl. 219—95 27 Claims



1. Apparatus for welding an element to a work piece comprising a support, a ram member mounted on the support and adapted for rectilinear motion between a first position away from a work piece station and a second position adjacent the work piece station, pneumatic means for causing the ram to move from its first to its second position and return spring means urging the ram toward its first position, the ram is vertically disposed and has two opposite ends and a bore extends therebetween, chuck means, for clampingly engaging the element, mounted on a portion of the ram closest to the work piece station, the chuck comprising a stationary clamp member having a clamping surface in alignment with the bore in the ram, a movable clamp member adapted for movement toward and away from the stationary clamp member effectively closing and opening the bore, spring means urging the movable clamp member toward the stationary clamp member and actuating means to move the movable clamp member away from the stationary clamp member to permit an element to be received in the chuck, and means for creating an electric field between the element and the work piece.

19. In a welding apparatus having work piece holding means and means to hold an element to be welded to the work piece and move it into engagement with the work piece to effect welding therebetween an improved chuck to hold the element comprising a housing having opposed side walls, a transversely extending slot formed in the opposed side walls, a stationary clamp member mounted in the housing having a clamping surface, a movable clamp member adapted for movement toward and away from the stationary clamp member, two pins projecting from the movable clamp member and extending through respective slots, spring means urging the movable clamp member toward the stationary clamp member, and actuator means to move the movable clamp member away from the stationary clamp member to permit an element to be received between the stationary and movable clamp members, the actuator means to move the movable clamp includes an actuator comprising a pair of pusher blocks adapted for movement into engagement with respective pins forcing them and concomitantly the movable clamp member to move against the bias of the spring means away from the stationary clamp member.

26. Apparatus for welding an element to a work piece comprising a support, a ram member mounted on the support and adapted for rectilinear motion between a first position away from a work piece station and a second position adjacent the work piece station, pneumatic means for causing the ram to move from its first to its second position and return means for returning the ram to its first position, chuck means for clampingly engaging an element, means for feeding an element to the chuck means, the chuck means having a mouth and being mounted on a portion of the ram closest to the work station, means for creating an electric field between the element and the work piece, and a platform movable to a position in alignment with the mouth of the chuck spaced a selected distance therefrom, said platform serving as a stop for elements fed to said chuck means.

4,215,263

DRAWING OPTICAL WAVEGUIDES BY HEATING WITH LASER RADIATION

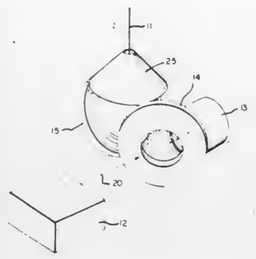
David S. Grey, Lexington, Mass., and Robert A. Wey, Horseheads, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,900
Int. Cl.² B23K 9/00
U.S. Cl. 219—121 L 10 Claims

1. Apparatus for heating a blank to the drawing temperature of the materials thereof comprising:

a source of laser radiation;

means for splitting said radiation into beams which do not intersect the axis of said blank;



means for forming said laser radiation into beams having a prescribed radial power density distribution in relation to said blank; and

means for drawing said blank along the axis thereof.

4,215,264

TELESCOPING HAIR CURLER

Michael W. Hetherington, Markham, Canada, assignor to Appliance Design Probe Inc., Scarborough, Canada

Filed Aug. 21, 1978, Ser. No. 934,709

Int. Cl.[2] **A45D** *2/24, 1/04;* **H05B** *3/06;* **H01R** *11/02*

U.S. Cl. 219—225 **5 Claims**



1. A hand-held hair curler comprising:

an elongated housing defining an internal elongated slide chamber with a barrel opening in one end and a wire opening in the other end,

an electrical swivel coupling including a non-rotary portion adapted to reciprocate in said slide chamber but being restrained against rotation with respect to said housing, and a swivelling portion adapted to rotate with respect to said non-rotary portion, but being restrained against longitudinal movement with respect to said non-rotary portion, said swivelling portion including an electrical wire, whereby the wire can swivel with respect to the housing and can reciprocate along said housing as said non-rotary portion reciprocates, the wire extending out through said wire opening and being slidable therein,

and hair-heating means connected to said non-rotary portion and projecting therefrom remote from said wire, the hair-heating means including a barrel which can project through said barrel opening.

4,215,265

METHOD AND APPARATUS FOR PRODUCING CERAMIC WARE

Philip D. White, 286 Pleasant St., Marblehead, Mass. 01945

Continuation-in-part of Ser. No. 740,800, Nov. 11, 1976, abandoned. This application Dec. 14, 1977, Ser. No. 860,476

Int. Cl.[2] **H05B** *3/66*

U.S. Cl. 219—390 **6 Claims**

1. A reducing kiln for producing ceramic ware, said kiln comprising:

(a) a housing having

an interior, at least substantially sealable, chamber for receiving ceramic wire;

an opening in said chamber for introducing ceramic ware into said chamber;

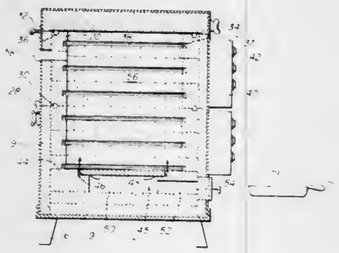
a cover for said opening;

an inner refractory lining;

a floor formed with a second opening; and

a plate member mounted on said floor and covering said opening;

(b) a compartment accessible from an exterior wall of said housing through a closeable access opening and communicating with said sealable chamber, said compartment configured to receive a reducing agent, at least a portion of said compartment being disposed below said plate, and said plate and said floor cooperating to prevent solid particulate from entering said chamber from said compartment;



(c) said plate member and said floor further cooperating to allow gas to seep from said compartment to said chamber for providing a substantially uniform gaseous environment in said chamber;

(d) electrical heating wire elements mounted to said housing within said chamber, said heating wire elements being subject to damage in a reduction atmosphere, and exposed to a central portion of said chamber, said electrical heating elements having an energized and a deenergized state, said chamber being heated when said electrical heating elements are energized;

(e) control means for controlling the state of said electrical heating elements; and

(f) means operatively connected to said heating elements and said control means for supplying power to said heating elements.

4,215,266

BAKING OVEN

Gilbert L. Smith, 1355 Reber St., Green Bay, Wis. 54308; Gilbert Trick, 888 St. Charles Dr., Green Bay, Wis. 54301, and David L. Swanson, 6718 Revere Ave., Wauwatosa, Wis. 53213

Filed Dec. 21, 1978, Ser. No. 971,799

Int. Cl.[2] **H05B** *3/00*

U.S. Cl. 219—413 **3 Claims**

1. A baking oven comprising:

a baking chamber encased in a cabinet including top, bottom and back walls and a front wall having a front access opening and a door for closing said access opening,

a top deck defining the upper side of said chamber and a bottom deck defining the bottom side thereof,

each of said decks comprising upper and lower horizontally disposed plates in spaced relation forming an enclosed space therebetween and each deck having means adjacent said access opening to form a relatively narrow vent across the width thereof providing controlled air flow access to said space,

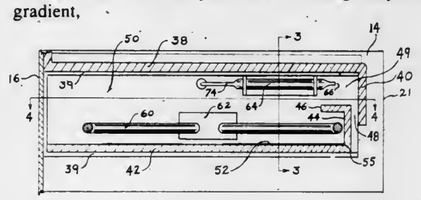
an electrical heating element located between said plates of each of said decks and extending across the extent thereof so as to provide substantially uniform heating thereacross,

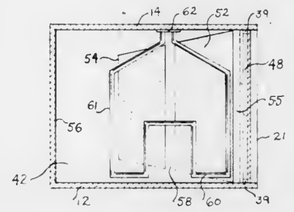
a temperature sensing means located within said space of each deck near to a said wall thereof with its sensing tip

being located substantially at said vent and a thermostat including a switch associated with each of said decks operatively connected to said sensing means and to said heating element,

the bottom plate of said top deck being partially blackened on its upper surface in a configuration so as to provide an unblackened portion extending generally in the form of an arc increasing in area from front to back of said chamber,

the heating element of said top deck being operative to uniformly heat the upper portion of said baking chamber through said blackened plate to a browning temperature gradient,





the heating element of said bottom deck being operative to heat the lower portion of said baking chamber to a lesser predetermined baking temperature gradient,

said sensing tips of said top and bottom deck sensing means being operative to sense both the deck temperature in which it is contained and the ambient air temperature entering said decks through said vents and said sensing means of each of said decks being operative to actuate said thermostat switch means associated therewith to maintain said temperature gradients and being promptly responsive to cooler air entering said vents to maintain said temperature gradients when said door is opened.

4,215,267

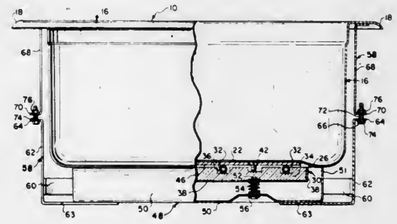
FOOD WARMER WITH A HEATING ELEMENT ASSEMBLY MOUNT

Johannes W. Kaebitzsch, Algonquin, Ill., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Jul. 19, 1978, Ser. No. 926,081

Int. Cl.[2] **F27D** *11/08*

U.S. Cl. 219—439 **11 Claims**



1. A built-in well type food warmer comprising:

an upwardly opening food well having a heat conductive bottom wall;

a heating assembly including a thermal insulation means, a heating element supported by said thermal insulation means, a mounting member, resilient mounting means, and a thermally conductive member which is resiliently mounted by the resilient mounting means to the mounting member and which is sufficient to receive heat from said heating element, said thermally conductive member positioned to be brought into heat conducting engagement with the bottom wall of said food well when an upward force is applied to said heating assembly through the resilient mounting means, and

supporting means secured to said food well at points romote from said heating assembly, said supporting means supporting said mounting member in engagement with the heat conductive bottom wall of said food well, said supporting means further imparting an upward force to said thermally conductive member through said resilient mounting means to bring said thermally conductive member into heat conducting relationship with the heat conductive bottom wall of said food well.

4,215,268

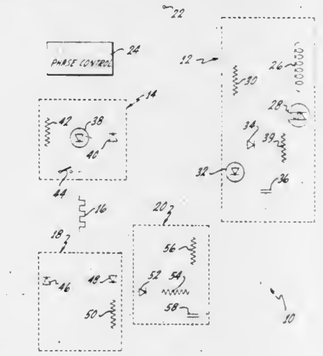
CIRCUITS PRIMARILY INTENDED FOR USE IN DESOLDERING TOOLS

Ernst J. Dinkel, Cerritos, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.

Filed Mar. 31, 1978, Ser. No. 892,428

Int. Cl.[2] **H03R** *17/00;* **H01B** *1/02*

U.S. Cl. 219—507 **7 Claims**



1. In a load operation circuit having a load connected in series with a switch means for controlling current flow through said load across AC current terminals the improvement which comprises:

said switch means comprising a bidirectional solid state switch responsive to an applied electric signal to pass a current,

another solid state switch located in parallel with said load and said bidirectional solid state switch, said other switch being capable of passing a current in one direction in response to an applied signal,

a diode and a capacitor connected in series with one another in a network connected in parallel around said other switch,

a connection between said diode and said capacitor with said bidirectional switch for supplying a signal to said bidirectional switch so as to control the operation of said bidirectional switch,

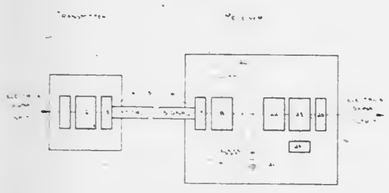
an operating circuit connected in parallel with said coil operation circuit,

said operating circuit including in series a current control

means for passing either a full wave or a half wave AC current, another load and a detection circuit means for detecting whether a full or a half wave AC current is passing through said load,

coupling circuit means for supplying a signal to said other switch when a full wave AC current is passing in said operating circuit so as to actuate said other switch so that it is capable of passing a current, said coupling circuit means connecting said detection means and said other switch.

4,215,269
FIBER OPTIC MODEM/DATA SET
Loughrey R. Kuhn, 950 Norwood Rd., Silver Spring, Md. 20904
Filed Jun. 9, 1978, Ser. No. 914,134
Int. Cl.[2] H04B *9/00*
U.S. Cl. 455—612 **1 Claim**



1. A data set fo translating signals from standard electronic digital computer signal to a signal suitable for transmission on an optic fiber and translating said optical signal to a standard electronic signal comprising in combination:

(a) means to detect and translate said computer signal into a square wave optic signal, which optic signal is transmitted by and degraded in an optic fiber, yielding a degraded square wave optic signal,

(b) means to detect and translate said degraded square wave optic signal to an electronic signal,

(c) means to amplify said electronic signal including means to impress on the initial portion of said signal an oscillation characteristic of the signal itself at the point said signal ceases to rise,

(d) means to detect said imposed oscillations which are characteristic of the data signal alone,

(e) means to translate said detected signal into the standard electronic signal output.

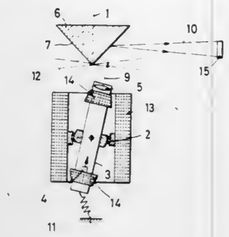
4,215,270
VARIABLE OPTICAL TRANSMITTER
Kurt Eichweber, Hamburg, Fed. Rep. of Germany, assignor to Precitronic Gesellschaft fur Feinmechanik und Electronic mbH, Fed. Rep. of Germany
Filed Feb. 27, 1978, Ser. No. 881,625
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714177
Int. Cl.[2] G01J *1/20*
U.S. Cl. 250—201 **11 Claims**

1. A variable optical transmitter, comprising:

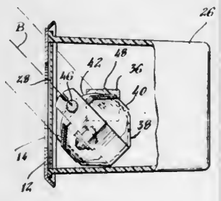
means to project a light beam along a vertical axis;

means to deflect said light beam in any desired direction from said vertical axis; and

a transmitting reflector coaxial with said vertical axis and substantially symmetrical about said axis, said reflector adapted to reflect the light beam in a substantially horizontal direction corresponding in azimuth angle to the direction of deflection of said light beam.



4,215,271
ADJUSTABLE MIRROR MOUNT FOR PHOTOELECTRIC INTRUSION DETECTOR
Philip H. Mudge, New Fairfield; Richard Settanni, Bethel, and William G. Kahl, Jr., Brookfield, all of Conn., assignors to Arrowhead Enterprises, Inc., New Milford, Conn.
Filed Nov. 6, 1978, Ser. No. 957,730
Int. Cl.[2] H01J *3/14*
U.S. Cl. 250—216 **7 Claims**



1. In a photoelectric intrusion detector of the type including a housing, a radiation window defined by said housing, a collimating lens in said housing having its focal point on a radiation element within said housing, and an angled mirror mounted within said housing to direct radiation between said lens and said window, the improvement which comprises: a mount supporting both of said mirror and lens for selective translation about an axis of rotation passing through said focal point, the optical axis of said lens describing a conical surface about said axis of rotation while maintaining a fixed distance between the center of the lens and said radiation element during said translation.

4,215,272
TIMER CIRCUIT WITH MULTIPLE TIME DELAY OUTPUTS
Paul A. Corbero, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 25, 1978, Ser. No. 936,940
Int. Cl.[2] H03K *5/13*
U.S. Cl. 250—293 **4 Claims**

1. A timer circuit comprising:

an output circuit,

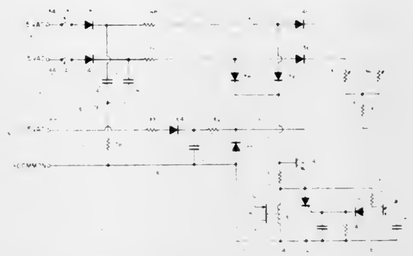
an energizing signal input circuit,

a current control means connected between said output circuit and said input circuit for selectively controlling a current flow therebetween in response to a control signal,

time period measuring means for producing an output signal following a predetermined time period,

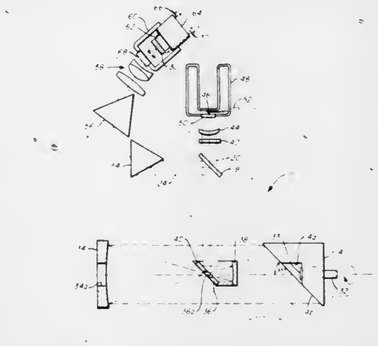
control signal means for selectively applying a control signal to said current control means and to said time period measuring means to initiate a measurement of said time period and

current bypass means connected across said load circuit means and responsive to said output signal for providing a current bypass path in parallel with said load circuit means, said time period measuring means including a plurality of separate time period measuring circuits and



said control signal means including a plurality of separately and selectively actuable control circuits connected to respective ones of said time period measuring circuits wherein said time period measuring means each include an RC circuit for developing said output signal dependent on the RC time constant and a unijunction transistor arranged to be triggered into conduction by said RC circuit to produce said output signal.

4,215,273
MULTISPECTRAL SCANNER OPTICAL SYSTEM
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Roy C. Stokes, Alvin, and Norman G. Koch, Houston, both of Tex.
Filed Mar. 29, 1979, Ser. No. 25,163
Int. Cl.[2] G01J *1/00*
U.S. Cl. 250—347 **28 Claims**



14. A multispectral scanner optical system comprising:

(a) scanning means for gathering electromagnetic radiation to be detected;

(b) reflective telescope means for receiving such radiation gathered by said scanning means and collimating said radiation into a beam;

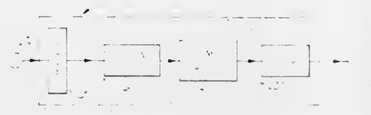
(c) beam splitting means for receiving and separating said collimated beam into a long wavelength band collimated radiation beam and a short wavelength band collimated radiation beam;

(d) prism spectrometer means for dispersing said short wavelength band collimated radiation beam;

(e) a plurality of short wavelength band radiation detectors wherein each such detector is operable for sensing radiation of wavelength over a corresponding detection band at least a portion of which band is included within the wavelength limits of the dispersed short wavelength radiation band; and

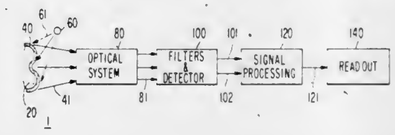
(f) long wavelength band radiation detector means operable for sensing radiation of wavelength over a band at least a portion of which band is included within the wavelength limits of the long wavelength radiation band.

4,215,274
X-RAY DETECTOR WITH PICOSECOND TIME RESOLUTION
Stephen B. Segall, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.
Filed Dec. 23, 1977, Ser. No. 863,941
Int. Cl.[2] G01T *1/20*
U.S. Cl. 250—361 R **42 Claims**



1. An x-ray detector comprising, a plurality of cathodes each adapted to emit electrons when irradiated by x-rays, an electron accelerator for accelerating electrons emitted by each of said cathodes to a relativistic velocity, a Cherenkov emitter associated with each of said cathodes and receiving electrons from its associated cathode after the electrons have been accelerated by said electron accelerator and emitting light, and an optical system associated with each of said Cherenkov emitters for collecting and focusing at least part of the light from its associated Cherenkov emitter on a photodetector, and a photodetector for detecting at least part of the light collected by said optical systems from said Cherenkov emitters.

4,215,275
OPTICAL TEMPERATURE MEASUREMENT TECHNIQUE UTILIZING PHOSPHORS
Kenneth A. Wickersheim, Palo Alto, Calif., assignor to Luxtron Corporation, Santa Clara, Calif.
Continuation-in-part of Ser. No. 751,366, Dec. 16, 1976, Pat. No. 4,075,493. This application Feb. 15, 1978, Ser. No. 877,977
Claims priority, application United Kingdom, Dec. 7, 1977, 51006/77
Int. Cl.[2] G01N *21/38*
U.S. Cl. 250—459 **21 Claims**



1. A method of determining the temperature of an object, comprising the steps of:

providing a length of optical fiber,

positioning over one end of the optical fiber a sleeve having a heat conductive end, said heat conductive end having a layer of phosphor on an inside surface thereof, said phosphor being characterized by emitting, when excited, electromagnetic radiation within optically isolatable bandwidths at at last two distinct wavelength ranges and with relative intensities therein that vary as a known function of the phosphor temperature,

placing said probe cover in contact with said object,

exciting said phosphor to cause emission of said at least two wavelength bands,

directing said phosphor emission through said optical fiber

to a detecting station at another end of the optical fiber, and

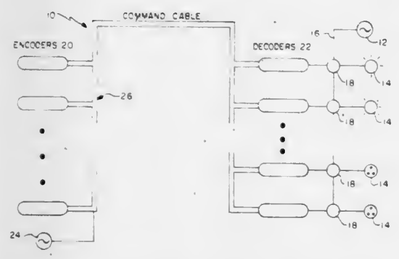
detecting at the detecting station the relative intensities of said at least two distinct wavelength radiation bands, whereby said relative intensity is an indication of the temperature of the phosphor layer and related thereto by said known temperature emission function.

4,215,276

REMOTE CONTROL OF ELECTRICAL POWER DISTRIBUTION SYSTEM AND METHOD

William F. Janeway, 427 Webster St., Palo Alto, Calif. 94301

Filed Mar. 20, 1978, Ser. No. 888,302
Int. Cl.² H02J 3/00; H04Q 9/00
U.S. Cl. 307—40 **22 Claims**



1. In a building structure, an electrical power distribution system for controlling the supply of electrical power to a plurality of outlets located at selected locations in the walls and ceiling of said structure, said system comprising:

(a) a source of AC power of predetermined frequency and amplitude producing a 110 volt AC power signal at 60 Hz;

(b) power conductors extending from said source of electrical power along specific power paths through the walls and ceiling of said structure to said selected locations for providing electrical power to said outlets;

(c) a switching device disposed at each of said locations and responsive to a predetermined switching signal for connecting the power conductor at its location to an associated outlet for applying said electrical power thereto;

(d) a plurality of control stations disposed at selected locations in the walls of said building structure remote from said outlets and away from said power paths, whereby said control stations are free of any of said power conductors;

(e) encoding means located at each of said control stations for generating a code signal when actuated, each of the generated code signals being different from the others;

(f) decoding means located at each of said outlets and connected to an associated switching device, each of said decoding means being responsive to a corresponding code signal for generating said predetermined switching signal to its connected switching device;

(g) means for producing a continuous pulsating clock signal of predetermined frequency and amplitude for synchronizing and coordinating the operation of said encoding means and decoding means, said clock signal producing means being connected to said source and including means for transforming down and rectifying said power signal to produce a rectified, low voltage pulsating clock signal having the same frequency as said power signal or a multiple thereof, said clock signal including successive pulse trains, each of which includes a fixed number of pulses of equal amplitude, said pulse trains being provided for synchronizing said coded signals and being separated by single pulses which are of different amplitude than said fixed pulses and which are adapted to initiate said coded signals; and

(h) a common control cable separate from said power conductors and extending through the walls and ceiling of said structure between said control stations and said outlets so as to define an overall control path different than any of said power paths, said cable including

(i) a command conductor connected between all of said encoding and decoding means for carrying said code signals from each of said encoding means to all of said decoding means, and

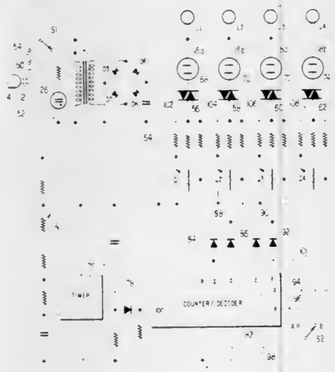
(ii) a clock-signal conductor connected to said clock signal producing means and all of said encoding and decoding means for carrying said clock signal to each of said encoding means and said decoding means in synchronism with said coded signals.

4,215,277

SEQUENCING LIGHT CONTROLLER

Robert I. Weiner, 4 Chartwell Ct., Owings Mills, Md. 21117, and W. Roger Sauter, Baltimore, Md., assignors to Robert I. Weiner, Towson, Md.

Filed Feb. 9, 1979, Ser. No. 10,796
Int. Cl.² H05B 37/00
U.S. Cl. 307—41 **24 Claims**



10. A device for sequentially energizing a plurality of electrical outlet receptacles adapted for connection to conventional light means comprising:

first and second power buses;

means for connecting said buses to a power source;

a plurality M of outlet receptacles each having first and second terminals, all of said first terminals being electrically connected to one of said buses;

a solid state switching device for each receptacle, each said switching device having a pair of main terminals and a gating terminal, one of said main terminals being electrically connected to the second terminal of the corresponding one of said outlet receptacles and the other of said main terminals being electrically connected to the other of said buses;

gating circuit means associated with each said solid state switching device for furnishing a gating signal to said gating terminal in response to an enabling signal to said gating circuit means;

timing circuit means for generating timing pulses at uniformly spaced time intervals;

stepping circuit means having an input terminal receiving said timing pulses, a reset signal input terminal, and a plurality N of output terminals, N being greater than M, said stepping circuit means being operable to energize a single output terminal during the interval between successive timing pulses, beginning with a first output terminal and progressing to successive ones of said output terminals at successive timing pulses, the Nth output terminal being connected to said reset signal input terminal to cause said stepping circuit to revert to said first output terminal following the Nth timing interval; and

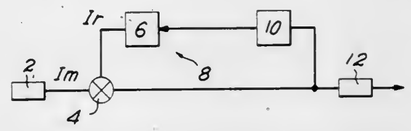
connecting circuit means including a manually operable switch and providing signal paths for connecting the first N-1 output terminals of said stepping circuit means to said gating circuit means for furnishing enabling signals thereto, at least certain of said signals paths extending through said manually operable switch whereby different ones of said signal paths are energized in accordance with the setting of said manually operable switch.

4,215,278

DETECTOR FOR ABNORMAL PHENOMENA

Daniel Barbier, Echirolles; Jean C. Lancre, Antony; Bernard Lauwick, Montrouge, and Robert Poujois, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris and Compagnie Centrale SICLI, Le Blanc Mesnil, both of, France

Continuation of Ser. No. 689,617, May 24, 1976, abandoned. This application Jul. 12, 1978, Ser. No. 924,109
Claims priority, application France, Jun. 2, 1975, 75 17163
Int. Cl.² H01H 35/00; H01L 31/00
U.S. Cl. 307—116 **17 Claims**



1. A detector for abnormal phenomena, and comprising:

a transducer for converting to an electrical signal a physical quantity which is representative of an abnormal phenomenon;

a comparator having two inputs and an output;

a delay circuit having an input and an output;

means connecting the output of said transducer to one of the inputs of said comparator;

means connecting the output of said comparator to the input of said delay circuit;

an electrical signal generator having an output and a control input;

means connecting the output of said delay circuit to the control input of said generator for causing said output of said generator to deliver a signal which is representative of said electrical signal corresponding to said physical quantity, but provided with a delay introduced by said delay circuit;

means connecting the output of said generator to the other input of said comparator, whereby the electrical signal at the output of said comparator is representative of the time-dependent variations of the electrical signal from said transducer.

4,215,279

APPARATUS FOR CONTROLLING THE OPERATION OF POWER TRANSISTORS IN A SWITCHING MODE

Philippe W. R. M. G. Lataire, Olympiadelaan 8, 1800 Vilvoorde; Gaston Magetto, Avenue Depage 27, Bte 8, 1050 Brussels, and Jean-Louis Van Eck, Avenue du Saphir, 5, 1420, Braine-l+Alleud, all of Belgium

Filed Mar. 7, 1978, Ser. No. 884,302
Claims priority, application Belgium, Mar. 7, 1977, 0175563
Int. Cl.² H03K 17/00
U.S. Cl. 307—254 **6 Claims**

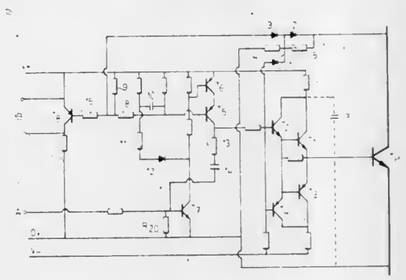
1. An apparatus for controlling the base current of a power transistor operating in a switching mode, said power transistor being fed through power stage means from a voltage source, the apparatus comprising logic means including:

(a) a first transistor (T_5) having its collector electrode connected to the input of said power stage means;

(b) a second transistor (T_6) having its collector electrode coupled to the emitter electrode of the first transistor;

(c) a third transistor (T_7) having its collector electrode coupled to the base electrode of the second transistor, said third transistor having its base electrode connected to a control signal input terminal;

(d) first circuit means connected between the base electrode of the first transistor and the collector electrode of the third transistor for driving the first transistor into a conductive state during a predetermined time to allow the collector-emitter voltage of the power transistor to reach a level lower than a predetermined threshold;



(e) second circuit means comprising resistor means (**8**) serially connected with at least one diode (**2, 3**) between the base electrode of the first transistor and the collector electrode of the power transistor to detect the collector-emitter voltage of the power transistor reaching a critical level at turn-on; and

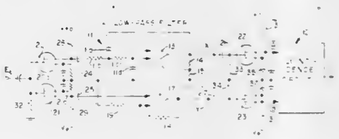
(f) third circuit means comprising an impedance connected between the collector electrodes of the first transistor and the base electrode of the third transistor to establish a minimum conducting time for the third transistor and hence for the power transistor.

4,215,280

PHASE RESPONSIVE FREQUENCY DETECTOR

Joseph Mahig, 701 SW. 91st St., Gainesville, Fla. 32601

Filed Sep. 1, 1978, Ser. No. 939,048
Int. Cl.² H03K 1/16, 3/72
U.S. Cl. 307—295 **13 Claims**



1. A detector for detecting the presence of selected frequency components of an input signal comprising:

two separate signal paths each delivering an output signal:

an input circuit operative to receive the input signal and to deliver similar signal components into each of said signal paths;

frequency responsive means in at least one of the signal paths, the frequency responsive means having a cross-over point in its frequency characteristic, the frequency responsive means being operative to deliver output such that for input signal components having frequencies on one side of the cross-over point the output of the frequency responsive means in said one path will comprise output frequency components which are substantially in phase with the output signal components of the other path, but for input signal components having frequencies on the other side of the cross-over point the output of the frequency responsive means in said one path will comprise output frequency components which are substantially out of phase with the output signal components of the other path; and

a coincidence circuit having two inputs respectively con-

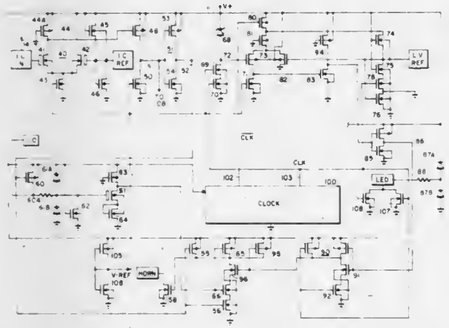
nected to receive the output signal components of said separate paths, the coincidence circuit being operative to compare the instantaneous phases of the output components and to generate output at a first level when said output signals components have coincident phase and to generate output at a second different level when said output signals components have non-coincident phase.

4,215,281

DETECTION CIRCUIT AND STRUCTURE THEREFOR

Robert L. Chao, Sunnyvale, Calif., assignor to Supertex, Inc., Sunnyvale, Calif.

Filed Feb. 22, 1978, Ser. No. 880,035
Int. Cl.² H03K *3/353, 5/153*
U.S. Cl. 307—304 **7 Claims**



1. An alarm system operated in response to an alarm condition for providing an output signal representative of such condition including, in combination, on a single integrated circuit chip:

input terminal means for receiving input alarm condition signals;

single comparator means having an input connected directly to said input terminal means and circuit components constructed to provide a high input impedance to said input alarm condition signals presented at said input terminal means for comparing said input alarm condition signals with a reference signal and producing an alarm signal on an output thereof in response to a predetermined relationship between said input alarm condition signals and the reference signal;

driver circuit means having an input coupled to the output of said comparator means for supplying output signals to a load in response to said alarm signal generated by said comparator means when said comparator means receives an input alarm condition signal; and

transistor circuit means having a low input impedance relative to the input impedance of said comparator means for providing a higher gain per unit area of the integrated chip used than said comparator means, said transistor means interconnecting the output of said comparator means with the input of said driver circuit means for controlling the output of said driver circuit means in response to the output of said comparator means.

4,215,282

TEMPERATURE COMPENSATED SENSE AMPLIFIER FOR PROMS AND THE LIKE

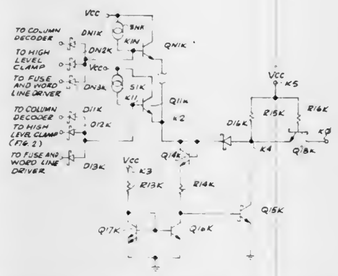
George W. Brown, San Jose, and Thomas L. Reynolds, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 3, 1978, Ser. No. 930,512
Int. Cl.² H03K *5/153*
U.S. Cl. 307—364 **9 Claims**

1. A sense amplifier for sensing high and low logic levels derived from the blown and unblown conditions of fuses in a programmable read only memory array, comprising:

a transistor switch having two conduction states and being connected to receive high and low logic levels indicative of blown and unblown fuse conditions, respectively, and to switch between said two conduction states;

sense amplifier circuit means disposed for establishing a



threshold level relative to said logic low voltage by creating a voltage across said sense amplifier means so that said threshold level increases relative to said logic low level with increasing temperature; and,

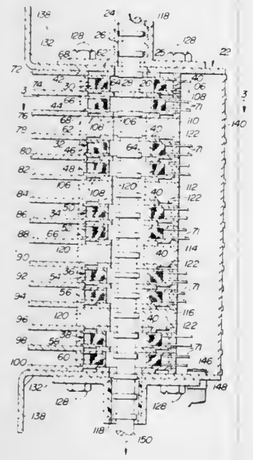
clamping circuit means disposed for establishing said logic high level, said clamping circuit means having a high-level voltage characteristic with respect to said threshold level which increases with increasing temperature.

4,215,283

LINEAR STEPPING MOTOR

Walter E. Hinds, 1358 Schulyer Rd., Beverly Hills, Calif. 90210

Filed May 3, 1978, Ser. No. 902,477
Int. Cl.² H02K *37/00*
U.S. Cl. 310—14 **13 Claims**



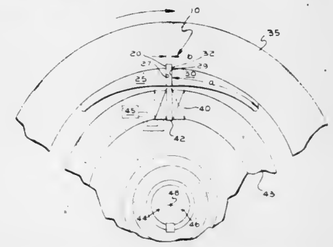
1. A linear stepping motor comprising a stator defining a central passageway extending longitudinally therethrough, a secondary in the form of an elongated, cylindrical member disposed longitudinally within said passageway, said stator comprising a plurality of coil groups, each group including at least one hollow coil winding disposed between a pair of magnetic stator plates and within a magnetic coil housing, each of said stator plates having an opening therein aligned with the hollow interior of said coil winding, said coil groups being disposed co-axially, with immediately adjacent groups being separated by respective hollow non-magnetic spacer members aligned co-axially with said coil groups to form said central passageway, each coil group and an associated spacer forming one pitch of the stator, which pitch is a predetermined value, b, said cylindrical member including a plurality of annular rings of magnetic material disposed at predetermined spaced locations along said member, each annular ring and the portion of the cylindrical member between the ring and the next ring forming one pitch of the secondary, which pitch is a predetermined value, λ, the width of each annular ring being a predetermined value t_w, said coil groups being arranged to be pulsed by electrical energy in a predetermined sequency to effect the stepwise movement of the member along the passageway, with the minimum length of each step which the cylindrical member makes being equal to λ/n, wherein n equals the number of coils groups and wherein the length of the spacer member is equal to $b=2\lambda-t_w$.

4,215,284

POLE-SHOE MAGNET GROUP FOR MAGNETOMOTIVE DEVICE

Richard B. Zentmeyer, Jr., Westfield, Mass., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Oct. 16, 1978, Ser. No. 951,972
Int. Cl.² H02K *11/00;* **F02P** *3/08*
U.S. Cl. 310—70 A **3 Claims**



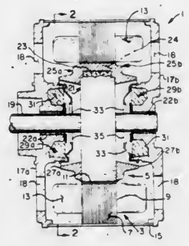
1. Magnetomotive device for use with a breakerless ignition system including a solid state switching element comprising a trigger coil disposed on a core, means electrically connecting said trigger coil to said switching element and a pole-shoe magnet group rotatable relative to said trigger coil, said group including a high strength permanent magnet having the side surfaces thereof of opposite polarity, a pair of pole-shoes abutting said side surfaces of the magnet and extending circumferentially in opposite directions therefrom, the length of each of said pole-shoes in said circumferential directions being at least 8–10 times greater than the corresponding dimension of said permanent magnet and having a surface defined by a radius of curvature eccentric to the center of rotation of said magnet and pole-shoe group so that between said surface of each of said pole-shoes and the core of said trigger coil the air gap decreases from a position at which the outer end of the pole-shoe is opposite the core and another position at which the inner end of the same pole-shoe is opposite said core so that the flux pattern generated by said magnet is spread over substantially the length of said pole-shoes whereby upon relative rotation of the magnet group and trigger coil in one direction a trigger voltage of one polarity is generated in said coil substantially greater in amplitude than the breakdown voltage of said switching element, any other pulses induced in said coil being substantially less than said trigger voltage and said breakdown voltage, relative rotation of said magnet group and trigger coil opposite said one direction generating no voltage pulse of said one polarity having an amplitude equal to said breakdown voltage whereby said breakerless ignition system will not operate on reverse rotation of said device.

4,215,285

SPLASH SHIELD FOR ELECTRIC MOTOR

John G. Lewis, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 31, 1978, Ser. No. 929,516
Int. Cl.² H02K *7/08*
U.S. Cl. 310—90 **4 Claims**



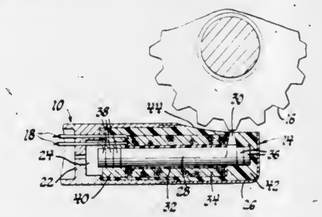
1. In an electric motor comprising a stator assembly including a stator core, a bore through said core, an end shield operatively attached to each end of said stator assembly, a rotor assembly including a rotor shaft and a rotor affixed to and rotatable with said shaft, said rotor being rotatable with the bore of said stator core, bearing means supported by said end shields for journalling said rotor shaft, and a lubricant reservoir adjacent at least one of said bearing means and surrounding said rotor shaft for supplying lubricant to said one bearing means, wherein the improvement comprises: means for inhibiting water splashed into said motor from entering said lubricant reservoir, said splash inhibiting means including a continuous flange carried by said rotor at one end thereof and facing toward said one bearing means, said flange being concentric with said rotor shaft, being disposed on the outside of said lubricant reservoir, and extending endwise from said rotor a distance sufficient to surround and to substantially overlie said lubricant reservoir.

4,215,286

VARIABLE RELUCTANCE ELECTROMAGNETIC PICKUP

Michael W. Ornee, Goleta, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1978, Ser. No. 959,989
Int. Cl.² H02K *21/38*
U.S. Cl. 310—155 **2 Claims**



1. A variable reluctance pulse generator for sensing the rotation of a rotary member comprising

a toothed member of magnetic material driven by the said rotary member,

an elongated core member of magnetic material having first and second ends,

a coil around the core member between the ends,

a pole piece of magnetic material extending from the first end of the core member and positioned close to the toothed member and periodically aligned with the teeth thereof during rotation,

a first magnet adjacent the second end of the core member to provide a magnetic flux through the core member, the pole piece and the toothed member, the said flux varying between a high value and a low value as the teeth of the toothed member are aligned and nonaligned, respectively, with the pole piece, whereby an emf is induced in the coil as the flux varies, and

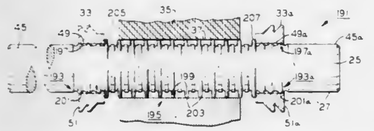
a second magnet adjacent the first end of the core member arranged in opposition to the first magnet for bucking the low value flux in the core when the pole piece is non-aligned with the teeth of the toothed member to effectively reduce the low value flux from the first magnet whereby the flux variation is increased and the induced emf is increased.

4,215,287

PRIME MOVER ROTOR SHAFT HAVING RAISED RIDGES

Charles W. Otto, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 24, 1978, Ser. No. 889,963
Int. Cl.[2] H02K *1/06*
U.S. Cl. 310—217 **34 Claims**



1. A prime mover comprising a stator having a pair of opposite faces, a bore in said stator intersecting with said opposite faces thereof; winding means associated with said stator and adapted for excitation upon energization of the prime mover; a pair of opposite supporting components of the prime mover arranged generally in axial relation with said stator adjacent said opposite faces thereof, respectively, said component pair including a pair of opposed thrust surfaces and a pair of lubrication systems, respectively; a rotatable shaft extending through said stator bore; a pair of opposite end portions on said shaft, said opposite end portions being rotatably supported in said component pair and arranged in lubricated association with said lubrication system pair, respectively; a peripheral surface on said shaft between said opposite end portions thereof; a plurality of generally annular axially spaced apart ridges integrally deformed from said shaft between said opposite end portions thereof with at least some of said ridges of said ridge plurality extending in part generally radially outwardly beyond said peripheral surface of said shaft; a pair of opposite generally annular thrust devices disposed about said shaft in gripping engagement with said at least some ridges of a pair of groupings thereof and arranged in predetermined axial spaced relation with said thrust surface pair of said component pair for thrust-taking engagement therewith; a rotor disposed at least in part within said stator bore and having another pair of opposite faces; another bore in said rotor intersecting with said opposite another faces thereof and disposed about said shaft in gripping engagement with said at least some ridges in another grouping thereof interposed between said first named grouping pair.

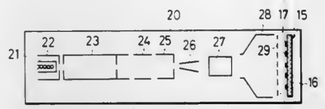
4,215,288

STORAGE TARGET FOR SCAN CONVERTER TUBES

Takefumi Kato, Hinode, and Hajime Takita, Hino, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1978, Ser. No. 890,495
Claims priority, application Japan, Apr. 14, 1977, 52-47591[U]
Int. Cl.[2] H01J *29/41*
U.S. Cl. 313—394 **1 Claim**

1. A scan converter tube, comprising an evacuated envelope, electron beam generation means, electron beam deflection means and a storage target, said storage target comprising a storage substrate fabricated from a single crystal of aluminum oxide having a purity of more than 99.9% and a collector



electrode on one face of said storage substrate, the collector electrode being in the form of a metal film having a plurality of regularly patterned openings formed therein with a pitch of about 10 to 50 microns, and the electrode density of the storage target being in the range of from about 0.1 to 0.4.

4,215,289

LUMINESCENT MATERIAL, LUMINESCENT SCREEN PROVIDED WITH SUCH A MATERIAL AND LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP PROVIDED WITH SUCH A SCREEN

Johannes T. W. De Hair, and Gert M. Boogerd, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,638
Claims priority, application Netherlands, Mar. 10, 1978, 7802632; Jul. 5, 1978, 7807274
Int. Cl.[2] C09K *11/46*
U.S. Cl. 313—486 **4 Claims**

1. A luminescent material having a hexagonal apatite crystal structure characterized in that the material is a silicate defined by the formula $La_{14-x-y-z}Gd_xPb_yTb_zSi_9O_{39}$, where

$$0.30 \leqq x \leqq 14-y-z$$

$$0.005 \leqq y \leqq 1.5$$

$$0.05 \leqq z \leqq 3.5$$

and wherein Pb and Tb are in the bivalent state and trivalent state, respectively; said luminescent material absent Tb emitting the characteristic line emission of Gd in the range from 310 to 315 nm when excited by ultraviolet radiation having a predominent wavelength of 255 nm.

2. A luminescent material having a monoclinic crystral structure, characterized in that the material is a silicate defined by the formula $Ba_{1-x}Sr_xY_{4-y-z-a-b}Gd_yPr_zSm_aDy_bSi_5O_{17}$, where

$$0 \leqq x \leqq 0.50$$

$$0.1 \leqq y \leqq 4-z-a-b$$

$$0.001 \leqq z \leqq 0.1$$

$$0 \leqq a \leqq 0.1$$

$$0 \leqq b \leqq 0.1$$

$$0.001 \leqq a+b$$

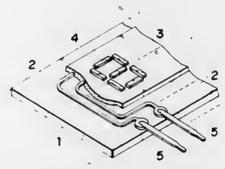
and wherein Pr, Sm and Dy are in the trivalent state; said luminescent material absent Sm and Dy emitting the characteristic line emission of Gd in the range from 310 to 315 nm when excited by ultraviolet radiation having a predominant wavelength of 254 nm.

4,215,290

THICK-FILM CIRCUIT DEVICE

Chuichi Hikida; Takao Kishino; Tadashi Mizohata, and Tatsuo Yamaura, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Chiba, Japan

Filed Nov. 7, 1978, Ser. No. 958,392
Claims priority, application Japan, Nov. 10, 1977, 52-134077; Jun. 16, 1978, 53-72240
Int. Cl.[2] H01J *5/10, 5/52, 63/02*
U.S. Cl. 313—496 **6 Claims**



1. A thick-film circuit device comprising a substrate of insulating material such as sheet glass containing alkali components, a first crossover made of non-alkali type glass and formed on said substrate, wiring conductors formed on said first crossover according to a predetermined circuit pattern, and a second crossover made of glass and formed on said first crossover so that it covers said wiring conductors.

4,215,291

COLLECTIVE PARTICLE ACCELERATOR

Moshe Friedman, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1979, Ser. No. 8,820
Int. Cl.[2] H01J *25/10*
U.S. Cl. 315—5.41 **10 Claims**



1. A method of accelerating charged particles by means of an IREB comprising the steps of:

propagating an annular IREB within a longitudinal drift tube and density modulating said beam to obtain a plurality of longitudinally spaced ring-shaped bunches of electrons;

forming a rippled magnetic field with a desired wavelength within said tube;

passing said modulated beam through said rippled magnetic field to alternately compress and expand said rings of electron bunches in the radial direction;

generating forward and backward electric field waves within said beam; and

injecting charged particles into said beam, said charged particles having a component of velocity in the longitudinal direction for capture and acceleration of said charged particles by said beam.

7. A particle accelerator which comprises:

longitudinal drift tube means having a uniform inner diameter;

means for generating an annular IREB and injecting said annular beam into said longitudinal drift tube;

means for modulating said beam to obtain bunches of longitudinally spaced rings of electrons;

means for forming a longitudinal, rippled magnetic field in axial alignment with said means for modulating said beam and coaxial with said drift tube;

means for generating forward and backward electric field waves within said beam; and

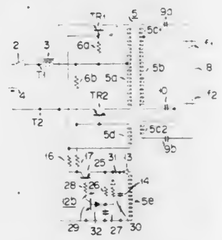
means for injecting charged particles into said beam, said charged particles having a component of velocity in the longitudinal direction for capture and acceleration of said charged particles by said beam.

4,215,292

APPARATUS FOR OPERATING A GASEOUS DISCHARGE LAMP

Kenichi Inui, Yokohama; Hisao Kolayashi, Fujisawa, and Nanjou Aoike, Yokohama, all of Japan, assignors to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,262
Claims priority, application Japan, Apr. 26, 1978, 53/48705
Int. Cl.[2] H05B *41/29, 41/42*
U.S. Cl. 315—98 **11 Claims**



1. An apparatus for operating a gaseous discharge lamp which comprises a D.C. power source; a transistor inverter which is provided with input terminals connected to the D.C. power source through a switch, an output transformer and at least one inverter transistor, the collector-emitter circuit of said inverter transistor being connected between one end of the primary winding of the output transformer and one of the input terminals of said transistor inverter; a discharge lamp energized by an output from the output transformer and provided with a pair of electrodes heated by part of said output; and base current control means which is coupled to the transistor inverter and holds the base current of the inverter transistor at a level lower than a first level capable of starting the discharge lamp by an output from the transformer for a specified length of time after the switch is closed, and, after lapse of said specified length of time, holds the base current of the inverter transistor at said first level.

4,215,293

CADENCE SCANNED FLAT IMAGE DISPLAY DEVICE

Thomas O. Stanley, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 1, 1977, Ser. No. 783,655
Int. Cl.[2] H01J *29/70, 29/72*
U.S. Cl. 315—366 **8 Claims**

1. An image display device comprising

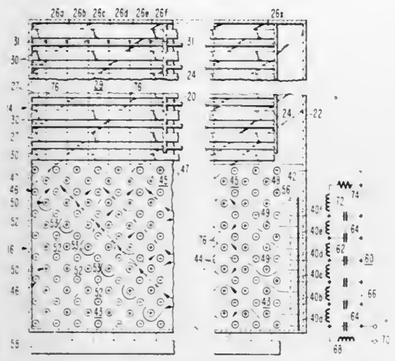
an evacuated envelope having a front and a back wall;

a screen comprising a plurality of cathodoluminescent elements on the inner surface of the front wall;

a set of first electron beam guides between the back wall and the screen for guiding an electron beam in a given path, each first guide including means for deflecting the electron beam toward the screen to excite a cathodoluminescent element;

a set of second electron beam guides at the end of the first set of beam guides and angularily disposed with respect to said first set of beam guides for guiding an electron beam in a given path;

a source of electrons for injecting a plurality of electron beams into the second set of guides; and



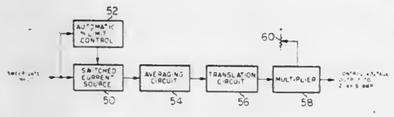
means for directing the electron beams from the second guides into the first guides so as to excite each cathodoluminescent element with a plurality of beams.

4,215,294

AUTOMATIC INTENSITY CONTROL CIRCUIT FOR AN OSCILLOSCOPE

John E. Taggart, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 23, 1978, Ser. No. 954,065
Int. Cl.² H01J *29/52*
U.S. Cl. 315—383 **8 Claims**



1. An automatic intensity control circuit for an oscilloscope, comprising:

means for receiving at least one periodic signal and producing an electrical average value which is proportional to the duty cycle of said periodic signal;

means responsive to said average value for producing a control signal which is proportional to the reciprocal of said duty cycle of said periodic signal; and

means for coupling said control signal to a cathode ray tube to control the beam current thereof.

4,215,295

DEFLECTION CIRCUIT FOR A PICTURE TUBE

Fumio Inoue, Yokohama, and Nobuyuki Suzuki, Kamakura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

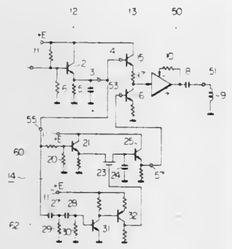
Filed Sep. 6, 1978, Ser. No. 940,008
Claims priority, application Japan, Sep. 9, 1977, 52-107792
Int. Cl.² H01J *29/70, 29/76*
U.S. Cl. 315—408 **8 Claims**

1. In a deflection circuit comprising a deflection coil, a sawtooth wave voltage source for generating a sawtooth wave voltage a D.C. level of which varies in accordance with a deflection frequency thereof, and transmitting means for transmitting said sawtooth wave voltage therethrough and outputting a sawtooth wave current representative of the thus transmitted sawtooth wave voltage, which sawtooth wave current is to be supplied to said deflection coil, the improvement which comprises:

shift means provided in said transmitting means for shifting the D.C. level of the sawtooth wave voltage transmitted through said transmitting means in accordance with a control signal applied to said shift means,

sampling means for extracting from said deflection circuit a sampled signal having a varying component which varies in accordance with the change of the D.C. level of said sawtooth wave voltage, and

control means connected between said sampling means and said shift means for detecting the varying component of said sampled signal to produce the control signal representative of the detected varying component, said control signal being of a sufficient magnitude to cause the shift of the D.C. level of said transmitted sawtooth wave voltage due to said control signal to cancel the change of a D.C. level of said sawtooth wave current due to the change of the D.C. level of said sawtooth wave voltage.

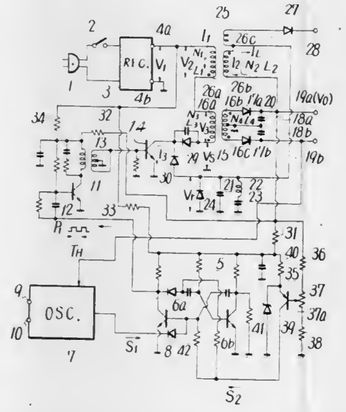


4,215,296

TELEVISION DEFLECTION CIRCUIT

Ichiro Mitamura, Tokyo, and Masayuki Yasumura, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,720
Claims priority, application Japan, Dec. 19, 1977, 52-152609
Int. Cl.² H01J *29/70*
U.S. Cl. 315—408 **3 Claims**



1. A television horizontal deflection circuit comprising:

means for delivering an input voltage;

means for switching between alternately conductive and non-conductive states;

a switching regulator transformer having a switching regulator primary winding connected in series between said input voltage delivering means and said switching means and having a switching regulator secondary winding;

means for receiving power from said switching regulator secondary winding and for supplying a regulated D.C. voltage;

a resonant circuit receiving power from said means for supplying a regulated D.C. voltage and connected to a reference potential through said means for switching, said resonant circuit including a damper diode, a resonant capacitor, a deflection coil and a series-connected capacitor; and

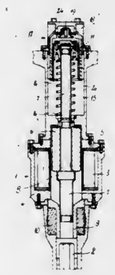
a flyback transformer including a flyback primary winding connected in series with said switching regulator primary winding between said input voltage delivery means and said switching means, and a flyback secondary winding for deriving a high voltage for use in the high voltage anode of a television picture tube, said flyback transformer, said switching regulator transformer being substantially magnetically independent of each other.

4,215,297

ELECTROMAGNETIC PERCUSSION APPLIANCE

Georges Jacquemet, 9, Chemin du Vallon, Caluire (Rhone), France

Filed Jun. 28, 1977, Ser. No. 810,757
Claims priority, application France, Jun. 28, 1976, 76 20184
Int. Cl.² H02K *33/00*
U.S. Cl. 318—130 **8 Claims**



1. In a percussion instrument provided with a reciprocable ram coupled with an armature of an electromagnetic coil and a circuit arrangement for intermittently energizing said coil from a current supply to displace said ram unidirectionally against the force of a restoring spring,

the improvement wherein said circuit arrangement comprises:

capacitive means for storing electrical energy, said capacitive means being provided with a charging circuit including said current supply and a discharging circuit including said coil;

a first thyristor in said charging circuit provided with a first gate;

a second thyristor in said discharging circuit provided with a second gate;

a source of control pulses; and

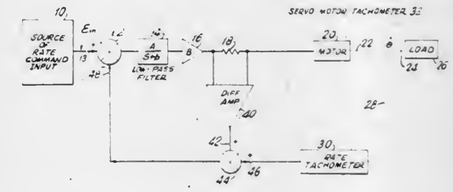
circuitry connected between said source and said thyristors for converting each of said control pulses into first and second firing pulses respectively fed at different instants to said first and second gates for charging and discharging said capacitive means, said circuitry including a first coupling circuit connected to said first gate, a second coupling circuit connected to said second gate and delay means in one of said coupling circuits for relatively staggering said first and second firing pulses by a time interval independent of the recurrence rate of said control pulses.

4,215,298

SERVOMECHANISM RATE CONTROL SYSTEM WITH COMPENSATION FOR MOTOR-TACHOMETER RESONANCE

Bigley William J., Scotch Plains, and Vincent J. Rizzo, Basking Ridge, both of N.J., assignors to Lockheed Electronics Co., Inc., Plainfield, N.J.

Continuation-in-part of Ser. No. 866,394, Jan. 6, 1978. This application Jun. 16, 1978, Ser. No. 916,299
Int. Cl.² H02P *5/00*
U.S. Cl. 318—327 **3 Claims**



1. A servo system comprising first summing means comprising a first input receiving a rate control signal, a second input, and an output; a drive motor operatively connected to the output of said first summing means; a tachometer operatively coupled to the drive shaft of said motor and effective to produce a signal corresponding to the rate of rotation of said drive shaft; said tachometer output signal being continuous for all motor conditions; said tachometer and said motor each including winding means having inductive electromagnetic coupling therebetween; means operatively connected between the output of said first summing means and said motor for sensing the current drawn by said motor and for producing a motor drive signal proportional to the motor current, said motor drive signal being continuous for all motor conditions and changing in a direction inverse to the change in said tachometer output signal at resonance for said electromagnetic coupling between said winding means for said motor and said tachometer; and second summing means having a first input operatively connected to said current-sensing means, a second input operatively connected to said tachometer, and an output operatively connected to said second input of said first summing means, said second summing means including means for summing said continuous tachometer and motor drive signals to thereby provide a motor speed signal at said output of said second summing means which is compensated for said electromagnetic resonance.

4,215,299

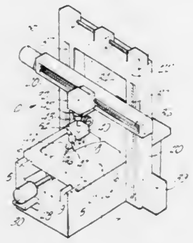
ADAPTIVE PATH FOLLOWING MOTION CONTROL SYSTEM FOR WELDING HEAD ASSEMBLY

Allan I. Edwin, and Harold W. Katz, both of Ann Arbor, Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 452,914, Mar. 20, 1974, abandoned. This application May 2, 1975, Ser. No. 573,898
Int. Cl.² B23K *9/12;* **G05B** *19/22*
U.S. Cl. 318—574 **10 Claims**

1. A position control system for the head of a machine supported for motion along a pair of perpendicular axes and for rotation about an axis normal to said perpendicular axes, operative to move a workpiece and the head relative to one another along a path on the workpiece, comprising: first motor means for moving the workpiece and the head relative to one another along one of said perpendicular axes; second motor means for moving the workpiece and the head relative to one another along the second of said perpendicular axes; third motor means for rotating the head about the axis normal to said perpendicular axes; a sensor operatively supported on the head; means for moving the sensor in a regular pattern to cause the sensor to traverse the path on the workpiece in advance of the motion of

the head relative to the workpiece; and electronic means for receiving the outputs of the sensor, for generating a plurality of sets of electrical signals representative of desired incremental movements of the operating head relative to the workpiece along the two perpendicular axes, for providing said signals to said first and second motor means, for generating a control signal representative of the required incremental rotation of the head about said axis normal to said perpendicular axes in order to maintain the direction of motion of the head relative to the workpiece tangential to the path at each instantaneous



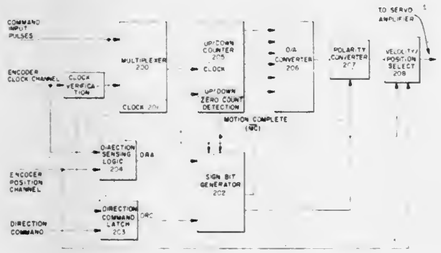
point, and for applying said last control signal to said third motor means, said electronic means including means for generating a set of signals representing the coordinates of the path point traversed by the sensor relative to the position of the head at the time of traverse, memory means for storing a plurality of said coordinate sets, and means for modifying said coordinate sets as the head moves along the path to maintain the coordinates representative of the distances between the instantaneous position of the head and said point traversed by the sensor.

4,215,300

ERROR CORRECTING SERIAL INPUT POSITIONING SYSTEM

Robert H. Schmidt, Minnetonka, Minn., assignor to Data Card Corporation, Minnetonka, Minn.

Filed Aug. 21, 1978, Ser. No. 935,647
Int. Cl.² G05B *19/28*
U.S. Cl. 318—603 **4 Claims**



1. A closed loop error correcting serial input positioning system for varying at a controlled incremental rate the position of the shaft of a motor in dependance upon a plurality of serial command pulses, comprising:

an encoder means, mechanically coupled to said motor shaft, for providing a plurality of encoder pulses in response to the angular position of said motor shaft;

a multiplexer means operatively coupled to said encoder means for providing a plurality of output pulses, selected from one of either said input command pulses and said encoder pulses;

an up/down counter means, operatively coupled to said multiplexer means for counting said output pulses of said multiplexer means in dependance upon the angular position of said motor shaft;

a digital to analog converter means, operatively coupled to said up/down counter means, for converting the digital output of said up/down counter means into a representive analog signal;

a servo amplifier, operatively coupled to said digital to analog converter means and said motor for amplifying and conditioning said analog signal and electrically driving said motor with said amplified and conditioned analog signal;

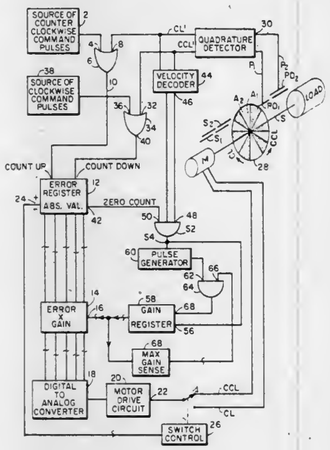
wherein the controlled incremental rate of the varying of the position of the shaft of the motor is directly related to the pulse repetition rate of said serial input command pulses.

4,215,301

DIGITAL SERVO POSITIONING CIRCUIT

Martin K. Mason, West Newbury, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 10, 1978, Ser. No. 949,481
Int. Cl.² G05B *19/28*
U.S. Cl. 318—603 **5 Claims**



1. A servo system for moving a member at a given position,

a source of command signals indicative of the amount by which said member is to be moved,

means for providing a position signal indicating the amount by which said member is moved,

means for deriving an error signal indicative of the difference between the amount by which the member is to be moved in accordance with the command signals and the amount by which is has moved as indicated by the position signal,

multiplying means for multiplying the value of the error signal by a given factor,

means responsive to the multiplied error signal for applying a force to said member that is proportional to the value of the multiplied error signal,

means for producing a velocity signal indicative of the velocity of said member,

means for increasing the factor by which the said multiplying means multiplies said error signal when said error signal is other than zero and said velocity signal indicates that the velocity of the member is less than a predetermined amount, and

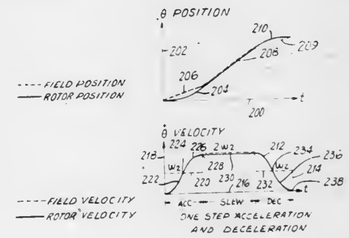
means for reducing the factor by which the said multiplying means multiplies said error signal to a predetermined operating value in response to the error signal reaching a value representing zero error or the velocity signal having a value indicating that the velocity of said member is greater than a predetermined amount.

4,215,302

CONTROL SYSTEM FOR STEPPING MOTORS, A METHOD OF OPERATING STEPPING MOTORS, AND A METHOD FOR SELECTING CURRENT PATTERNS FOR STEPPING MOTORS

David Chiang, Dix Hills, N.Y., assignor to MCC Associates, Ronkonkoma, N.Y.

Filed Jan. 26, 1978, Ser. No. 872,656
Int. Cl.² H02K *37/00*
U.S. Cl. 318—696 **20 Claims**



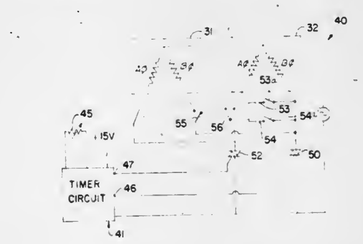
1. A method of establishing current forms for windings of a multi-phase stepping motor, having a rotor and characterized by a plurality of detent positions, to provide a uniform revolving field, said windings being operative in sequentially effective pairs to control the rotor of the motor, said method comprising, for each of said pairs, driving one winding of the pair with maximum running current and measuring rotor stiffness at the resultant detent position, next passing a relatively small current through the other winding of the pair and reducing the current through said one winding to displace said rotor a relatively small fraction of the distance towards the next detent position, adjusting the latter two said currents to obtain a rotor stiffness equal to the first said rotor stiffness while maintaining rotor position, and sequentially displacing the rotor in steps towards the next detent position by passing the currents through the windings of the pair while adjusting the currents to maintain rotor position and stiffness, the magnitudes of the thusly adjusted current defining current curves for the windings to provide a uniform revolving field.

4,215,303

WASHING MACHINE MOTOR CONTROL SYSTEM

Claude M. Brimer, Bryan, Ohio, assignor to Linear International, Rancho La Costa, Calif.

Filed Oct. 7, 1977, Ser. No. 840,160
Int. Cl.² H02P *1/44*
U.S. Cl. 318—752 **11 Claims**



1. A system for adjustably controlling the rate of output shaft rotation reversal of an induction electric motor of the type including upper and lower stators therein with each stator having at least two phase windings thereon, said system comprising:

an astable multivibrator;

a control circuit electrically connected to said astable multivibrator for generating a cyclic control effect therefrom having a variable cycle time length; and

means establishing an electric circuit serially including a pair of gate-controlled semi-conductors alternately responsive to said cyclic control effect between said windings and said astable multivibrator, and

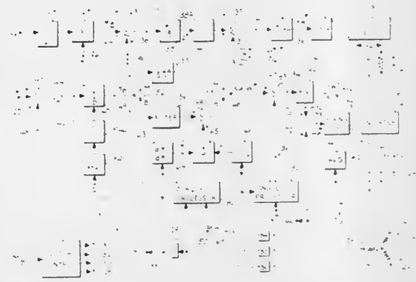
a phase shifting capacitance electrically connected in parallel with said windings.

4,215,304

MOTOR/BRAKE TRANSITIONING FOR AN INVERTER DRIVEN A-C INDUCTION MOTOR

John D. D'Atre, Ballston Lake, N.Y., and Dennis F. Williamson, Kingston, Canada, assignors to General Electric Company, Erie, Pa.

Filed Oct. 2, 1978, Ser. No. 948,193
Int. Cl.² H02P *5/40*
U.S. Cl. 318—758 **7 Claims**



1. In a control system for an a-c electric motor comprising a stator and a rotor and provided with a source of excitation comprising electric power conversion apparatus that supplies a-c power of variable frequency and magnitude to the stator, the motor being capable of developing electromagnetic torque tending to move the rotor relative to the stator due to interaction of current and flux in the motor when excited, the control system including a first control loop for controlling the frequency of the a-c power in response to a command signal and a second control loop for controlling the magnitude of the a-c power, the improvement comprising means operative when the motor is in an electrical braking mode for varying the gain of the first control loop as a direct function of the rate of change of flux magnitude in the motor and as an inverse function of the magnitude of torque developed by the motor.

4,215,305

EXCITATION COMMANDING FOR CURRENT FED MOTOR DRIVES

John D. D'Atre, Ballston Lake, and Allan B. Plunkett, Scotia, both of N.Y., assignors to General Electric Company, Erie, Pa.

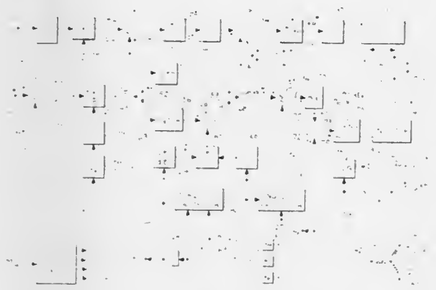
Filed Oct. 2, 1978, Ser. No. 948,194
Int. Cl.² H02P *5/40*
U.S. Cl. 318—803 **8 Claims**

1. In an a-c electric motor control system including a source of excitation comprising electric power conversion apparatus that supplies a-c power of variable frequency and magnitude via electric conductors to a stator of the motor in order to effect movement of a rotor of the motor relative to the stator due to interaction of current and flux in the motor when excited, the system including a first control loop responsive to a torque command signal for regulating the frequency of the a-c power to attain the commanded torque and a second control

loop responsive to an excitation command signal for adjusting the magnitude of the a-c power, the improvement comprising:

(a) first means coupled to said motor for deriving a flux feedback signal representative of the magnitude of air-gap flux in the motor;

(b) second means coupled to the electric conductors for deriving a current feedback signal representative of the magnitude of stator current in the motor;



(c) third means coupled to said motor for deriving a velocity feedback signal representative of the angular velocity of the rotor of the motor;

(d) fourth means connected for modifying said flux feedback signal as a predetermined function of said velocity feedback signal to derive a flux balancing signal; and

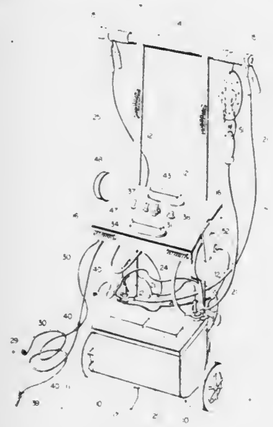
(e) means connected for summing said flux balancing signal and said current feedback signal to derive the excitation command signal.

4,215,306

ELECTRICAL TESTING APPARATUS

Richard W. Mace, Granger, Utah, assignor to John W. Ramseyer, Granger, Utah, a part interest

Filed Jan. 15, 1979, Ser. No. 3,297
Int. Cl.[2] G01R *15/12*
U.S. Cl. 320—2 **16 Claims**



1. Apparatus for analyzing operation of the electrical supply system of an automobile and for starting an automobile having a discharged battery, said apparatus comprising:

a mobile cart;

a battery mounted on said cart;

a jumper cable attached at one end thereof to one of the terminals of the battery, with means on the other end of said jumper cable for attachment to the corresponding terminal of the discharged battery in said automobile;

a relay switch, having a pair of normally open contacts, with one of its contacts connected to the other terminal of said battery on said cart;

a second jumper cable attached at one end thereof to the other contact of said relay switch with means on the other end of said second jumper cable for attachment to the other terminal of the discharged battery in said automobile;

a first circuit comprising a switch and a resistor connected in series between said other terminal of said battery and a first test probe;

a second circuit comprising a switch and the coil of said relay switch connected in series between said other terminal of said battery and ground potential;

a shunt switch connected in parallel with the switch in said second circuit; and

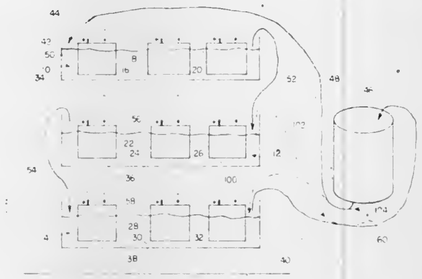
a second test probe connected to said second circuit between the switch and coil in said second circuit.

4,215,307

TEMPERATURE CONTROLLED, AUTO TIMED, VARIABLE AMPERAGE CASCADING-WATER FURMATION METHOD FOR USE WITH HIGH ANTIMONY AND MAINTENANCE FREE LEAD-ACID BATTERIES

Lawrence Windisch, Selma, Ala.; John Nees, and Harry Channing, both of Wyomissing, Pa., assignors to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 821,527, Aug. 3, 1977, Pat. No. 4,117,387. This application May 30, 1978, Ser. No. 910,942
Int. Cl.[2] H02J *7/00;* **H01M** *10/50*
U.S. Cl. 320—2 **7 Claims**



1. A method for producing batteries having plastic cases comprising the steps of:

(a) separating a plurality of batteries into a plurality of sets, said separating comprising sorting batteries which are at a similar stage of formation into a single set, said separating further comprising the step of sorting a plurality of unformed batteries of a preselected cranking capacity immediately into sets after filling with "one shot" formation electrolyte;

(b) providing a plurality of container means for holding a plurality of battery sets;

(c) placing said sets of batteries into said container means, one set for each container means and electrically interconnecting said batteries in each set for connection to a separate rectifying means for each set;

(d) stacking said plurality of container means at a plurality of positions at different heights above a forming room floor;

(e) connecting each set of said batteries to said separate rectifying means for charging said plurality of batteries in each set;

(f) continuously providing cooling fluid to maintain each of said plurality of container means at a predetermined level, and to circulate said cooling fluid therethrough by causing said cooling fluid to overflow from said container means; and

(g) forming said sets with said rectifying means while maintaining said cooling fluid within each of said container means at a temperature of between 100° to 125° F., said step of maintaining said cooling fluid at said temperature further comprising the steps of:

(i) conveying said overflow cooling fluid from said container means to a heat removing means for removing heat from said cooling fluid; and

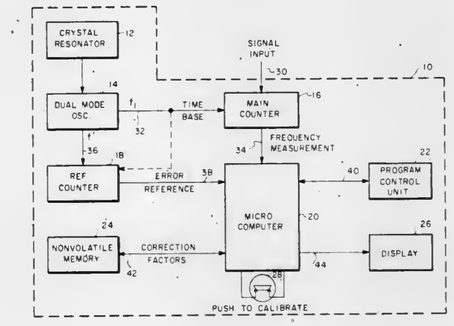
(ii) returning said cooling fluid from said heat removing means to said container means.

4,215,308

SELF CALIBRATING CRYSTAL CONTROLLED FREQUENCY COUNTER METHOD AND APPARATUS

John A. Kusters, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 30, 1978, Ser. No. 955,735
Int. Cl.[2] G01R *23/02*
U.S. Cl. 324—78 D **14 Claims**



1. A method of calibrating a crystal controlled frequency counter, said method comprising the steps of:

a. applying a signal having a preselected frequency to the counter;

b. initiating a calibration mode of said counter;

c. varying the temperature environment of said counter through a selected range of temperatures;

d. generating and separating a first and a second frequency signal, one of said first and second frequency signals having a frequency value that is single-valued with respect to the operating temperature of the counter;

e. measuring the frequency of the signal of step a. using one of said first and second frequency signals as a time-base signal;

f. measuring the frequency of other of said first and second frequency signals;

g. algebraically combining the measured frequency value of step e. and a prestored value that is equivalent to the preselected frequency value of the signal applied to the counter in step a., the calculated value being representative of a frequency correction factor for errors introduced by the crystal controlled frequency counter at the then operating temperature of the counter;

h. calculating the correction factor from the calculated value of step g. and storing that correction factor in a memory location by the measured frequency value of step f. as a pointer thereto; and

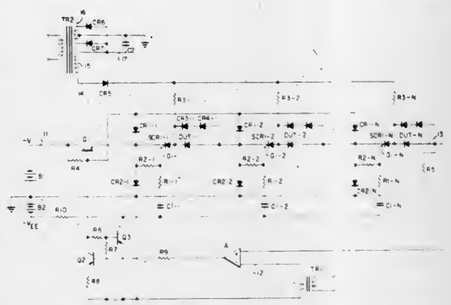
i. repeating steps g. and h. at selected intervals to create a set of correction factors and corresponding memory location pointers over the selected range of temperatures of step c.

4,215,309

HIGH EFFICIENCY SWITCHING CIRCUIT

Raymond A. Frey, 4465 Pacific Coast Hwy., #B-209, Torrance, Calif. 90505

Filed Nov. 17, 1977, Ser. No. 852,294
Int. Cl.[2] G01R *31/22*
U.S. Cl. 324—158 D **48 Claims**



1. A circuit for simultaneously testing a plurality of semiconductor devices which comprises:

(a) means for coupling said semiconductor devices in series;

(b) means for passing a predetermined forward current through said series coupled devices;

(c) means for decoupling said devices from said series connection and for coupling said devices in a parallel configuration; and

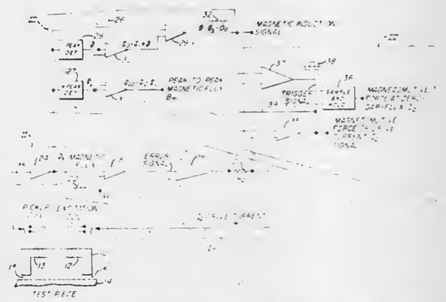
(d) means for applying a predetermined reverse bias voltage to said devices while coupled in parallel, said forward current and said reverse bi s voltage being applied alternately.

4,215,310

MAGNETIC TESTING METHOD AND APPARATUS HAVING PROVISION FOR ELIMINATING INACCURACIES CAUSED BY GAPS BETWEEN PROBE AND TEST PIECE

Frederick C. Schwerer, III, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jul. 10, 1978, Ser. No. 916,638
Int. Cl.[2] G01R *33/00*
U.S. Cl. 324—225 **9 Claims**



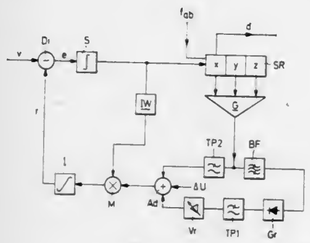
1. In magnetic testing wherein a test probe carrying excitation and pickup coils is placed against a test piece of magnetic material forming magnetic circuits which comprise the probe, the test piece, flux leakage paths and gaps between the poles of the probe and the surface of the test piece, a-c voltage is applied to said excitation coil to provide a drive current, and an a-c voltage is induced in said pickup coil, an improved method of measuring magnetic and electrical properties of the test piece, comprising controlling the drive current to produce in

the circuit a magnetic flux cycle of a predetermined wave form which becomes zero at points within the cycle, and analyzing the drive current at the zero points in the cycle.

4,215,311
ADAPTIVE DELTA-MODULATION SYSTEM

Ludwig Kittel, Heroldsberg, and Dieter Schwarz, Nuremberg, both of Fed. Rep. of Germany, assignors to Te Ka de Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Dec. 8, 1977, Ser. No. 858,819
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2656975
Int. Cl.² H03K *13/22*
U.S. Cl. 375—5 **9 Claims**

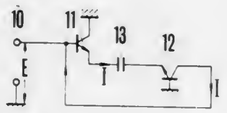


5. In an adaptive-delta-modulation transmission system, in combination, means furnishing a data-signal-modulated input signal v the different values of which constitute the symbols to be transmitted and having a symbol transmission rate of f_s symbols per second; controllable-step-size delta-modulating means operative for receiving the input signal v and utilizing the latter as a modulating signal producing a delta-modulated output signal d; means operative for deriving from said delta-modulated output signal d an f_s spectral component and generating an evaluation signal dependent upon the amplitude of that spectral component; and means operative in dependence upon said evaluation signal for varying the quantization step size of the delta-modulating means.

4,215,312
RADIO RECEIVER

Kazuo Takayama, Kobe, Japan, assignor to Fujitsu Ten Limited, Kobe, Japan

Filed Jun. 14, 1978, Ser. No. 915,570
Claims priority, application Japan, Jun. 16, 1977, 52-71408; Jun. 16, 1977, 52-71409
Int. Cl.² H04B *1/18*; **H03H** *11/00*
U.S. Cl. 455—284 **6 Claims**



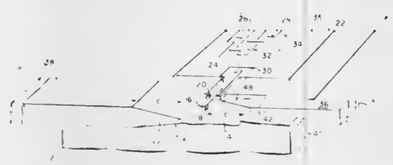
1. In a radio receiver having an antenna circuit represented by an equivalent circuit consisting of an antenna electromotive force, an antenna capacitance in series with said electromotive force and a cable capacitance in parallel therewith and a tuning circuit for the selection of stations upon receiving the output of said antenna circuit, the improvement comprising:

a negative capacitance circuit comprising a capacitor and a control circuit including one or two transistors said negative capacitance circuit, upon receiving an input voltage corresponding to the antenna electromotive force on an input terminal thereof, applies said input voltage or a voltage in proportion thereto to said capacitor thereby providing a current determined by the reactance of said capacitor to said input terminal, said negative capacitance at least partially cancelling the cable capacitance and the antenna capacitance.

4,215,313
DIELECTRIC IMAGE GUIDE INTEGRATED HARMONIC PUMPED MIXER

Yu-Wen Chang, Ranchos Palos Verdes, and Jeffrey A. Paul, Torrance, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 31, 1979, Ser. No. 44,782
Int. Cl.² H04B *1/06*
U.S. Cl. 455—326 **8 Claims**



1. A millimeter wave integrated mixer circuit comprising:

(a) a substrate having a cavity therein, said substrate providing an image plane for said circuit and said cavity providing an area therein for the mixing of local oscillator (LO) and radio frequency (RF) signal energy;

(b) a first dielectric waveguide member of chosen height and width corresponding to the frequency or frequency range of RF input signals received at one end thereof and having its other end tapered in a predetermined impedance matching configuration where it extends into said cavity;

(c) a second dielectric waveguide member of a chosen height and width corresponding to the frequency or frequency range of LO signals received at one end thereof and having its other end tapered in a predetermined impedance matching configuration where it extends into said cavity region, said frequency of said LO signals being substantially one-half that of said RF signals;

(d) first and second reverse poled mixer diodes connected in parallel in said cavity region and positioned adjacent said tapered ends of said dielectric waveguide members to receive both RF and LO signals from said first and second dielectric image guides respectively, and operative to generate an intermediate frequency (IF) signal which is approximately equal in frequency to the RF input signal frequency less twice the frequency of the local oscillator signal.

(e) means adjacent said substrate and said mixer diodes and conductively coupled to said mixer diodes for conducting IF signal currents away from said mixer cavity.

4,215,314
DEPHASER CIRCUIT

Francis Addor, Neuchatel, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

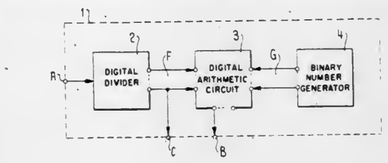
Filed Dec. 2, 1977, Ser. No. 857,182
Claims priority, application Switzerland, Dec. 21, 1976, 16066/76
Int. Cl.² H03K *5/18*
U.S. Cl. 328—55 **8 Claims**

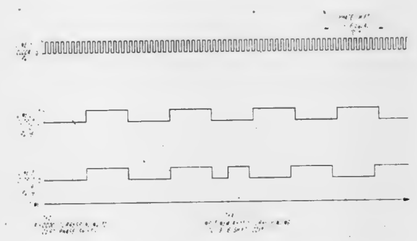
1. A phase-shifting circuit adapted to receive a first periodic signal of frequency f_o comprising:

a digital counter having N stages for cyclically counting the number of periods of the signal of frequency f_o and delivering in response thereto a second periodic signal of frequency $f_o/2^N$ represented by a binary number M;

a number generator for providing a selectable binary number K;

digital adder means connected to said counter and said number generator for receiving said number M and said number K and instantaneously delivering a binary number M+K equal at all times to the true sum of said number M



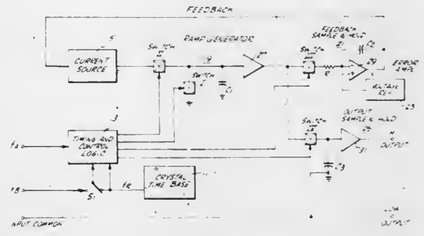


and said number K, said number M+K corresponding to a third periodic signal equal in frequency to said second periodic signal and having a phase shift therebetween of an amount determined by said number K.

4,215,315
LOW FREQUENCY SIGNAL PERIOD OR RATIO (PERIOD)-TO-VOLTAGE CONVERTER

Dennis L. Lambert, Bothell, and Paul R. Lantz, Seattle, both of Wash., assignors to John Fluke Mfg. Co., Inc., Mountlake Terrace, Wash.

Filed Oct. 13, 1978, Ser. No. 951,114
Int. Cl.² H03K *9/06, 13/02, 13/32*
U.S. Cl. 328—140 **18 Claims**



1. A converter for converting signal period information into analog voltage form comprising:

a ramp generator including a capacitor and a switch means, said switch means connected to said capacitor for controlling the charging and discharging of said capacitor;

a current source connected to said ramp generator for supplying current to said ramp generator for charging said capacitor of said ramp generator;

feedback means connected to said current source for controlling the magnitude of current produced by said current source;

a feedback switch means connected between the output of said ramp generator and said feedback means;

output means for storing information in analog voltage form;

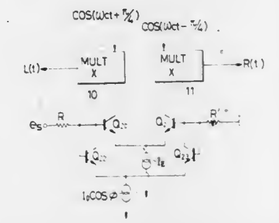
output switch means connected between the output of said ramp generator and said output means; and,

control means for receiving signals whose period information is to be converted into analog voltage form and, in accordance therewith, controlling: (a) said switch means of said ramp generator such that said capacitor of said ramp generator is alternately charged and discharged in a cyclical manner; and, (b) said feedback switch means and said output switch means such that at the end of each charging cycle of said capacitor of said ramp generator the output of said ramp generator is alternately applied to said feedback means and to said output means.

4,215,316
AM STEREO SIGNAL DEMODULATION CIRCUIT

Tadahiro Yamaguchi, and Koki Aizawa, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 5, 1978, Ser. No. 948,834
Claims priority, application Japan, Oct. 12, 1977, 52-122179
Int. Cl.² H03D *1/02*
U.S. Cl. 329—50 **15 Claims**

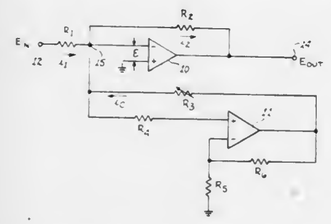


4,215,317

COMPENSATED OPERATIONAL AMPLIFIER CIRCUIT

Robert J. Traynor, Tempe, Ariz., assignor to Omni Spectra, Inc., Tempe, Ariz.

Filed Nov. 27, 1978, Ser. No. 964,259
Int. Cl.[2] H03F *3/45, 1/30*
U.S. Cl. 330—256 **14 Claims**



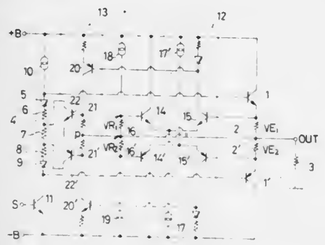
1. A compensated operational amplifier circuit which comprises:
(a) a first operational amplifier having first and second input terminals and an output terminal;
(b) means for coupling the first input terminal to an input signal source;
(c) a first impedance coupled between the output terminal of said first amplifier and one of said input terminals;
(d) means for coupling the second input terminal of said amplifier to a reference potential; and
(e) current generating means coupled between said first input terminal and the reference potential for sensing the internal voltage difference of said first operational amplifier therebetween and supplying a compensating current to one of said input terminals which is a function of said voltage difference.

4,215,318

PUSH-PULL AMPLIFIER

Yoshihiro Kawanabe, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 7, 1978, Ser. No. 967,534
Claims priority, application Japan, Dec. 8, 1977, 52-147645
Int. Cl.[2] H03F *3/21*
U.S. Cl. 330—268 **4 Claims**



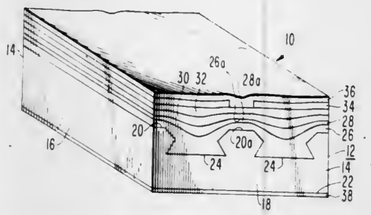
1. In a push-pull amplifier of the type including a pair of output transistors and a pair of emitter resistors, a respective resistor connected to the emitter of a respective output transistor at one terminal, the other terminals of the emitter resistors being commonly connected to an output point, the improvement comprising:
(a) a comparison circuit for comparing the voltages across each of said emitter resistors with a predetermined voltage, said comparison circuit comprising a pair of differential circuits, one of said differential circuits including a pair of first transistors having emitters commonly connected and a first constant current source for controlling the emitter current of said pair of first transistor, the other of said differential circuits including a pair of second transistors having emitters commonly connected and a second constant current source for controlling the emitter current of said pair of second transistors;
(b) a bias circuit connected in series between the bases of said pair of output transistors, said bias circuit comprising a resistor element; and
(c) short circuit means for selectively shorting said resistor element responsive to an output of said comparison circuit.

4,215,319

SINGLE FILAMENT SEMICONDUCTOR LASER

Dan Botez, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 929,776, Jul. 31, 1978, abandoned. This application Jan. 17, 1979, Ser. No. 4,143
Int. Cl.[2] H01S *3/19*
U.S. Cl. 331—94.5 H **21 Claims**



1. A semiconductor laser comprising:
a body of semiconductor material including a substrate having a surface and a pair of spaced, substantially parallel dove-tailed shaped grooves in said surface, said body having a pair of end surfaces between which said grooves extend, said end surfaces being reflective to light with at least one of said end surfaces being partially transparent to light
a first epitaxial layer over said surface of the substrate and the surfaces of the grooves, said first epitaxial layer having a flat surface portion over the portion of the substrate surface between the grooves,
a thin second epitaxial layer over said first epitaxial layer,
a third epitaxial layer over said second epitaxial layer,
said first and third epitaxial layers being of opposite conductivity types and the second epitaxial layer being the active recombination region of the laser with the light being generated therein in the vicinity of the portion which is over the flat surface portion of the first epitaxial layer, and
a pair of contacts on said body with one contact being over said third epitaxial body and the other being on said substrate.

4,215,320

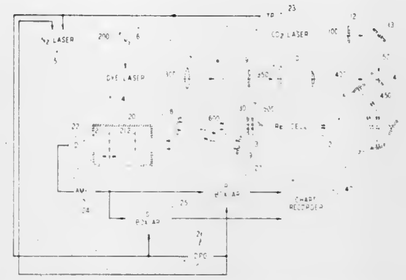
FAR-INFRARED LASER TUNED BY THE DYNAMIC STARK EFFECT

Tao-Yuan Chang, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 27, 1978, Ser. No. 890,263
Int. Cl.[2] H01S *3/22*
U.S. Cl. 331—94.5 G **7 Claims**

1. A tunable far-infrared laser comprising:
a material having at least one lowest energy level and three other levels, and further having a laser transition existing between an upper transition level and a lower transition level from said three other levels;
pump means for creating a population inversion between said upper transition level and said lower transition level of said laser transition;

characterized in that said laser further includes means for illuminating said material by radiation whose energy is



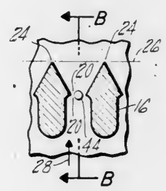
near the energy difference between said lower transition level and the other one of said three other levels; and means for varying the intensity of said radiation.

4,215,321

METHOD FOR OBTAINING HIGH BEAM QUALITY IN A GAS DYNAMIC LASER

Edward A. Pinsley, North Palm Beach, and Richard A. Schmidtke, Tequesta, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 5, 1978, Ser. No. 893,906
Int. Cl.[2] H01S *3/22*
U.S. Cl. 331—94.5 G **6 Claims**



1. In a flowing gas laser system for the production of an optical beam and including a channel having a flow axis in a direction along which the velocity of a gaseous working medium is increased to permit stimulated emission of radiation from the energy levels of the medium, nozzle means for aerodynamically expanding the medium to supersonic velocity, an optical region for extracting optical power from the flowing gas stream, and means disposed within the nozzle means for perturbing the flow of the gaseous working medium to produce a density disturbance to oppose flow density disturbances produced by shock waves or expansion waves emanating from nozzle-wall intersections.

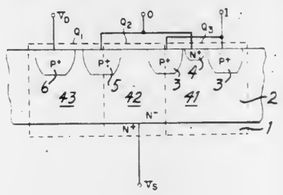
4,215,322

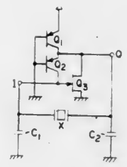
HIGH FREQUENCY OSCILLATING CIRCUIT USING AT CUT QUARTZ CRYSTAL VIBRATOR

Eiichi Iwanami, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Aug. 11, 1978, Ser. No. 933,093
Claims priority, application Japan, Aug. 29, 1977, 52/103394
Int. Cl.[2] H03B *5/36;* **H03F** *3/16*
U.S. Cl. 331—116 FE **2 Claims**

1. An oscillating circuit for use in a timepiece and the like comprising: a semiconductor substrate of one conductivity type having a high impurity concentration; an epitaxial semiconductor layer of the same conductivity type as said substrate formed on said substrate and having a low impurity concentration; a first region of the same conductivity type as the substrate formed in a surface portion of said epitaxial layer; a second region of the opposite conductivity type formed in a surface portion of said epitaxial layer around said first region and having a high impurity concentration; a third region of the same conductivity type as said second region formed in a surface portion of said epitaxial layer a short distance from said second region; a fourth region of the same conductivity type as said second region formed in a surface portion of said epitaxial layer a short distance from said third region;
said substrate, first region, the portion of said epitaxial layer under said first region, and second region forming respectively the source, drain, channel and gate regions of a longitudinal junction field effect transistor;
said second region, third region and the portion of said epitaxial layer between said second and third regions





forming respectively the collector, emitter and base regions of one lateral transistor; and
said fourth region, third region and the portion of said epitaxial layer between said third and fourth regions forming respectively the emitter, collector and base regions of another lateral transistor; a quartz crystal vibrator operable at a high oscillating frequency of more than several MHz; means including first and second capacitors connected to said vibrator for adjusting the vibrator oscillating frequency; an input terminal connected to said second region; a common output terminal connected to said first and third regions; means connecting said first capacitor between said input terminal and said substrate; and means connecting said second capacitor between said output terminal and said substrate.

4,215,323

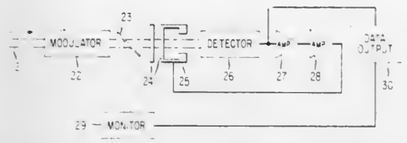
INSTABILITY AND REGENERATIVE PULSATION IN OPTICAL CAVITIES

Samuel L. McCall, Jr., Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 13, 1978, Ser. No. 869,368
Int. Cl.[2] H01S *3/10*
U.S. Cl. 332—7.51 **25 Claims**

1. An optical cavity enclosing a medium substantially free of amplifying inverted transitions, whose medium and/or cavity characteristics are adjusted so that the equation $F(\gamma)=0$ has a

root with a positive real part and so that the associated dynamic input/output properties include regenerative pulsation



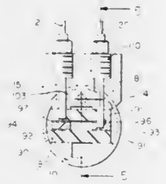
in the positive slope steady-stated regions of the characteristic input/output curve.

4,215,324

SPATIAL ENCODING OF A LASER BEAM BY MEANS OF A STARK CELL MODULATOR

Richard L. Abrams, Pacific Palisades, and David M. Henderson, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 1, 1978, Ser. No. 930,108
Int. Cl.[2] H01S *3/10*
U.S. Cl. 332—7.51 **10 Claims**



1. Apparatus for spatially encoding a laser beam across at least one dimension of said beam in a manner indicative of position in said beam, said encoding being determined by the relative amplitude and frequency of first and second modulation potentials, said apparatus comprising:

a housing;

a pair of endcaps optically transmissive to said laser beam and affixed to respective ends of said housing to form a gas-tight structure;

a molecular absorbing gas disposed within said structure;

a plurality of electrodes disposed parallel and coextensive with each other, positioned symmetrically about a central longitudinal axis of said housing, a first pair of said electrodes being coextensive and lying in the same plane and offset from said central longitudinal axis in one direction, and a second pair of said electrodes being coextensive and lying in the same plane and offset from the central longitudinal axis in the opposite direction from said first pair of said electrodes respective ones of said first pair of said electrodes being oppositely disposed from respective ones of said second pair of said electrodes; and

connector means extending through said housing for applying said first and second modulation potentials across respective opposed electrodes.

4,215,325

MINIMAL DISTORTION VIDEO BANDPASS FILTER

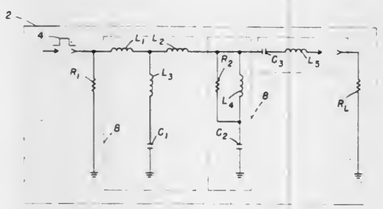
Francis N. Sansone, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 9, 1979, Ser. No. 19,039
Int. Cl.[2] H03H *7/08, 7/14, 7/04*
U.S. Cl. 333—20 **4 Claims**

1. A bandpass filter having a mark-and-space format RF rectangular pulse input and producing a sinusoidal output in response to the rectangular pulse input, comprising, in combination:

a first state comprising a resistance connected to the ground at one end and to the pulse input at the other,

a second stage, in parallel with the first stage, comprising an M-derived filter,



a third stage, connected to the second stage, comprising a notch filter, and

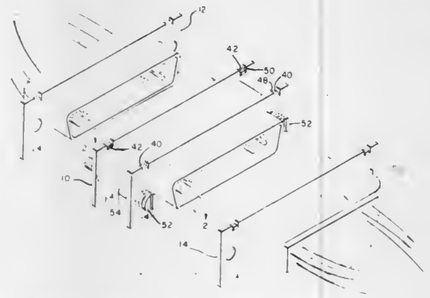
a fourth stage, connected to the third stage, comprising means for blocking out d.c. signal components and peaking the output response at a desired frequency in the prescribed bandwidth.

4,215,326

FILTERED ADAPTER

Robert D. Hollyday, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 16, 1978, Ser. No. 869,550
Int. Cl.[2] H03H *7/04;* **H01R** *33/80, 13/66*
U.S. Cl. 333—182 **8 Claims**



1. A filtered adapter for retrofitting existing electrical connectors of known configurations to provide RFI/EMI filtering, comprising:

a housing member having an overall profile matable with a known electrical eonnector and having oppositely directed mating sides, an outwardly directed flange extending from the periphery of each said mating side, said flanges being spaced substantially parallel to each other, a ground plane secured to and extending across said member substantially intermediate the mating sides thereof, said ground plane having a plurality of apertures therein each aligned with a respective terminal of said known electrical connector;

a like plurality of filter sleeves each secured in a respective one of said apertures of said ground plane;

a like plurality of terminals each mounted in a respective one of said filter sleeves, each said terminal having a pin configuration on a first end and socket configuration on the opposite end;

a profiled shell secured to and extending outwardly from each said mating side of said housing member and providing a profile for mating with said known electrical connector;

an outwardly directed flange extending from the periphery of each said profiled shell abutting against said flange of a corresponding said mating side, each said mating side flange and said shell flange thereagainst having at least one aperture therethrough in alignment with said at least one aperture of said opposite mating side and said shell flange and,

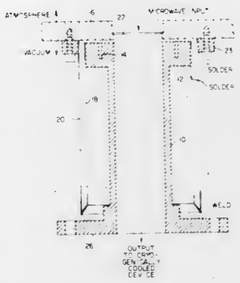
securing means extending through said apertures to secure said profiled shells to said housing member flanges and connect said ground plane to ground.

4,215,327

SUPPORT ASSEMBLY FOR CRYOGENICALLY COOLABLE LOW-NOISE CHOKED WAVEGUIDE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Frank E. McCrea, Arcadia, Calif.

Filed Aug. 31, 1978, Ser. No. 938,293
Int. Cl.[2] H01P *1/08, 5/00, 1/04, 1/16*
U.S. Cl. 333—252 **15 Claims**



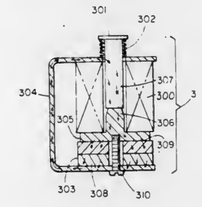
1. A support for a low-noise choked waveguide coupling into a cryogenically cooled device microwave energy passing through a mounting flange at one temperature, said support comprising coaxial low thermal conduction tubes of different diameter surrounding said waveguide, said tubes being connected in cascade, one to another at only one end of the one adjacent to another, to form one single conductive path through tubes thus connected in cascade from said mounting flange to a second flange, said second flange having a quarter wavelength choke at a lower temperature for connection to said device, and a vacuum seal at each connection of one tube to another, thereby to provide a long thermal conduction path folded into a small space, said cascade connected tubes also serving to form a vacuum enclosure for said waveguide.

4,215,328

CIRCUIT BREAKER HAVING AN ELECTRONIC FAULT SENSING AND TRIP INITIATING UNIT

Ferdinand E. Chabot, and James P. McGinnis, both of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.

Filed Apr. 17, 1978, Ser. No. 886,692
Int. Cl.[2] H01H *71/24, 9/20*
U.S. Cl. 335—6 **3 Claims**



1. A circuit protective device to detect fault conditions in an electrical power circuit and protect said power circuit against such fault conditions, comprising:

circuit interruption means operable to interrupt said power circuit on occurrence of a fault condiditon,

solid state interruption initiating means to detect the occurrence of a fault condition in said power circuit and to thereupon initiate interruption of said power circuit,

delatching means operatively associated with said solid state interruption initiating means operated by said solid state means upon receipt of an electrical signal from said solid state interruption initiating means,

said delatching means including an annular coil, a unitary one piece, U-shaped magnet frame having spaced legs and receiving said coil between said legs with the axis of said coil extending toward said legs, an armature positioned along the axis of said coil adjacent one end of said coil and extending through one leg of said frame and the respective coil end for movement in one direction along said axis toward said coil to a reset position and movable in the opposite direction along said axis from said coil to a delatching position,

a spring to bias said armature from said coil for movement toward said delatching position, a magnet located adjacent the opposite end of said coil and between said coil and the other leg of said frame to hold said armature in said reset position when said armature is moved to said reset position, said coil being connected to said solid state trip initiating means for operation by said solid state means to generate a field opposite to the field of said magnet to attenuate the attraction of force of said magnet on said armature upon occurence of a fault condition, whereby said spring moves said armature to said delatching position, and

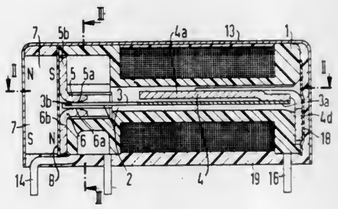
a flux concentrator having a boundary located within the boundary of said magnet to minimize flux leakage to said frame and located between said magnet and the opposite end of said coil, said concentrator having a portion of reduced area extending into said coil toward said armature to provide an area of high flux concentration between said portion and a portion of said armature for retaining said armature in said reset position against the bias of said spring in response to movement of said armature toward said reset position to place said portions in adjacent positions.

4,215,329

POLARIZED ELECTROMAGNETIC MINIATURE RELAY

Ulrich Kobler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

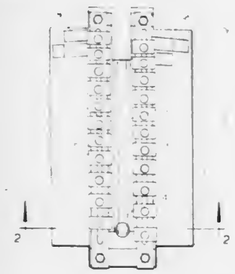
Filed May 12, 1978, Ser. No. 905,229
Claims priority, application Fed. Rep. of Germany, May 23, 1977, 2723220
Int. Cl.[2] H01H *51/22*
U.S. Cl. 335—78 **18 Claims**



1. Polarized electromagnetic miniature relay with a tongue armature which is arranged within the coil body approximately along the coil axis and is mounted at one end, and the free end of which is arranged between two yoke plates located

opposite one another which also each form a pole shoe which is coupled to a permanent magnet arrangement arranged on one end of the coil body, said permanent magnet arrangement being designed with four poles with two polarization directions which are opposite to one another and parallel to said coil axis, the coupling surfaces between said two pole shoes and in each case of two unlike pole faces of said permanent magnet arrangement being at right angles to said coil axis.

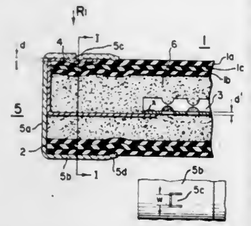
4,215,330
PERMANENT MAGNET PROPULSION SYSTEM
Emil T. Hartman, Detroit, Mich., assignor to Ethel Hartman, Richmond, Ind. and Charles Helin, Estate of, Detroit, Mich., Detroit Bank and Trust Company, executor, part interest to each
Filed Dec. 20, 1977, Ser. No. 862,344
Int. Cl.[2] H01F *7/02*
U.S. Cl. 335—306 **15 Claims**



1. A propulsion system wherein an ordered arrangement of permanent magnets provides the propulsion force comprising: a base structure; a pair of tracks mounted on top of said base structure, said tracks being in spaced parallel relationship to each other; a first row of permanent magnets mounted on top of said base structure, directly outboard from and adjacent to one of said tracks, with all of the north seeking poles of said row of magnets pointed towards said tracks and all of the south seeking poles pointed away from said track; a second row of permanent magnets mounted on top of said base structure, directly outboard from and adjacent to the other of said tracks, with all of the south seeking poles of said second row of magnets pointed towards said other track and all of the north seeking poles pointed away from the other said track; at least one ball positioned between and supported by said tracks, said ball being constructed from a ferro-magnetic material whereby the magnetic field of said first and second row of magnets propels said ball along said tracks; and a clamping means for positioning and retaining each of the magnets of said first and second rows onto said base structure.

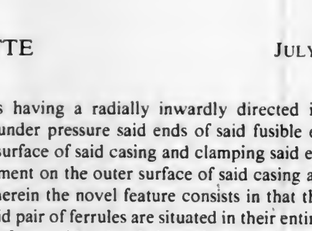
4,215,331
PRESSURE CONTACT BETWEEN FERRULES AND FUSIBLE ELEMENT OF ELECTRIC FUSES
Frederick J. Kozacka, South Hampton, N.H., assignor to Gould Inc., Rolling Meadows, Ill.
Filed Feb. 7, 1979, Ser. No. 10,164
Int. Cl.[2] H01H *85/16*
U.S. Cl. 335—252 **12 Claims**

1. In an electric fuse comprising a deformable tubular casing of a synthetic resin having a pair of rims on the ends thereof, a pulverulent arc-quenching filler inside said casing, a fusible element embedded in said arc-quenching filler and having ends bent around said pair of rims from the inside of said casing to the outer surface thereof, a pair of ferrules mounted on said casing over said ends of said fusible element on the outer surface of said casing, and said ends of said fusible element on the outer surface of said casing and said pair of ferrules being conductively connected by solderless means, each of said pair of ferrules having a radially inwardly directed indentation engaging under pressure said ends of said fusible element on the outer surface of said casing and clamping said ends of said fusible element on the outer surface of said casing against said casing, wherein the novel feature consists in that the end surfaces of said pair of ferrules are situated in their entirety axially outwardly from said pair of rims of said casing and do not



re-enter into said casing, and in that a pair of tabs is formed by the metal of the lateral wall of each of said pair of ferrules, each of said pair of tabs being hingedly supported on the axially inner end thereof by said lateral wall of said pair of ferrules and slanting from said axially inner end axially outwardly and radially inwardly into firm engagement with one of said ends of said fusible element on the outer surface of said casing.

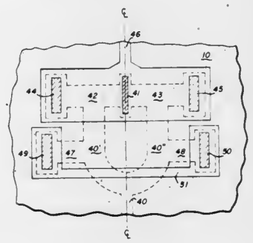
4,215,332
PROBE THERMOSTAT WITH SWIVEL
Gerald R. Wharton, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio
Filed Nov. 20, 1978, Ser. No. 962,072
Int. Cl.[2] H01H *37/36*
U.S. Cl. 337—394 **9 Claims**



1. In a thermostat including body means, a switch on said body means including a member movable relative to the body means to cause opening and closing of said switch, a thermally responsive probe assembly including first and second elements movable relative to each other in response to temperature changes, first and second swivels respectively connecting said first element to said body means and said second element to said member for pivotal movement about first and second centers, relative movement between said elements causing relative movement between said centers and operation of said

switch, the improvement comprising a substantially spherical first seat on said body means, and a substantially spherical second seat on said movable member each forming a part of one of said swivels, said body means and said member each being formed with a passageway extending from an edge to its spherical seat along which said second element is laterally moved to its assembled position during the assembly of said thermostat, said passageways and said swivels being formed so that said passageways do not affect the action of said swivels after assembly of said thermostat, portions of said switch being aligned with and substantially adjacent to one end of said probe preventing easy axial installation of said second element into its associated seat.

4,215,333
RESISTOR TERMINATION
Jen-Yen Huang, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Oct. 2, 1978, Ser. No. 947,667
Int. Cl.[2] H01C *1/14*
U.S. Cl. 338—322 **7 Claims**

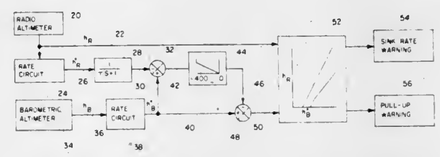


1. An integrated circuit element comprising an elongated body of material having substantial electrical resistance and conductive end contacts for connecting said body to metallization associated with said integrated circuit, at least one of said end contacts comprising:

an enlarged end portion of said body terminating an elongated portion thereof, said elongated portion being contoured to provide a preponderance of the resistance of said elongated body, said end portion being configured to create a first pair of resistance regions extending perpendicular to the centerline of said elongated portion and to have mirror symmetry about said centerline; and

metal contact means connected to the ends of said first pair of resistance regions that extend away from said elongated portion, said metal contact means being extended to connect to said metallization.

4,215,334
AIRCRAFT EXCESSIVE DESCENT RATE WARNING SYSTEM
Charles D. Bateman, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.
Filed Feb. 9, 1978, Ser. No. 876,305
Int. Cl.[2] G01C *5/00*; G01S *9/04*
U.S. Cl. 340—27 AT **33 Claims**

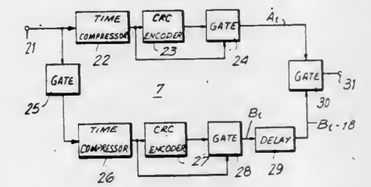


1. In a system for warning of an excessive rate of aircraft descent, having means for generating a signal representing the rate of descent of the aircraft, means for generating a signal representing altitude of the aircraft above ground, means for comparing long-term components of the descent rate signal with the altitude signal and for detecting a predetermined relationship between said signals to initiate an excessive descent rate warning, an improvement comprising:

means for generating a terrain altitude rate signal representing the aircraft's rate of change of altitude with respect to the ground; and

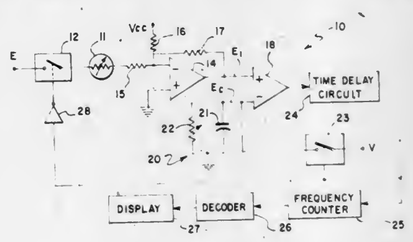
means, responsive to said terrain altitude rate signal, for varying the predetermined relationship between the long-term components of the descent rate and the altitude signals required to initiate the warning as a function of said terrain altitude rate signal.

4,215,335
DIGITAL SIGNAL TRANSMISSION METHOD
Toshitada Doi, Yokohama, and Takashi Ito, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 28, 1977, Ser. No. 865,200
Int. Cl.[2] G06F *11/00*; G08C *25/00*
U.S. Cl. 371—69 **25 Claims**



1. A method of reducing errors in processing digital signals grouped into digital words and which comprise first multi-bit signals, said method comprising the steps of: selecting a predetermined group of each digital word group of said first multi-bit signals to comprise second multi-bit signals by selecting by part of the digital signals of each of said digital words, each digital word group and said predetermined group thereof comprising related signal groups; delaying one of said signal groups relative to another of said groups; and combining the delayed signal groups in interleaved sequence with subsequent, relatively undelayed signal groups to form composite, sequential signals.

4,215,336
APPARATUS AND METHOD FOR STABILIZATION OF A THERMISTOR TEMPERATURE SENSOR
Thomas W. Smith, Fort Myers Beach, Fla., assignor to McNeil-Akron, Inc., Akron, Ohio
Filed Apr. 17, 1978, Ser. No. 896,974
Int. Cl.[2] G01K *7/22*; G01N *7/24*; G06G *7/20*
U.S. Cl. 340—177 CA **41 Claims**



1. An apparatus for use with a semiconductor temperature sensor having electrical response characteristics that vary non-linearly with temperature, a material constant, beta, that

varies with temperature, and providing an output signal indicative of ambient temperature comprising:

means for generating a time dependent signal having a configuration that offsets the non-linear temperature dependence of the sensor output signal;

means for comparing the sensor output signal with said offsetting signal and generating an output signal whenever the sensor output signal at least equals that of said offsetting signal; and

means for reducing the effective value of the material constant so as to yield a sensor output signal that is substantially reduced from what it otherwise would have been, thereby substantially extending the range of linear output from the sensor without the deleterious effects of self-heating.

4,215,337

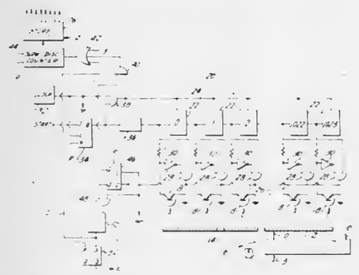
DUAL-DISC SHAFT POSITION ENCODER

Stanley J. Blanchard, Danbury, Conn., assignor to Unimation Inc., Danbury, Conn.

Continuation of Ser. No. 933,828, Aug. 15, 1978, abandoned. This application Apr. 2, 1979, Ser. No. 25,935

Int. Cl.[2] G06F *3/00*

U.S. Cl. 340—347 P **12 Claims**



1. A shaft position encoder including mechanism having a fast shaft and a slow shaft coupled together by gearing, said mechanism including the shaft whose position is to be encoded, said fast and slow shafts having a fast selector and a slow selector, respectively, a fast succession of elements and a slow succession of elements arranged in circles opposite the paths of said selectors, respectively, at least the slow succession of elements being distributed with uniform center-to-center distances and the gear ratio of said mechanism being such that the fast shaft causes its selector to traverse its succession of elements during the advance of the slow selector one center-to-center distance along the slow succession of elements, each of said selectors being proportioned to cooperate with at least one said element in all positions along its related succession of elements and therefore cooperating with more than one of said elements in certain of its positions, a fast counter and a slow counter related respectively to said fast and slow shafts, respective fast and slow means controlled by said fast and slow successions of elements and the fast and slow selectors in cooperation therewith for causing operation of the counters in accordance with the number of elements between one end of each said succession of elements and a said element cooperating with its related selector, and means at least partially controlled by said fast counter for determining unambiguously the number of pulses to be registered by the slow counter.

4,215,338

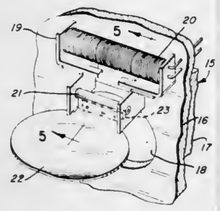
MODULE FOR PRESENTING ALPHA NUMERIC INFORMATION

Guenther Selig, 2138 Rugen Rd., Glenview, Ill. 60025

Continuation of Ser. No. 806,999, Jun. 16, 1977. This application Feb. 12, 1979, Ser. No. 11,203

Int. Cl.[2] G08B *5/26*

U.S. Cl. 340—373 **3 Claims**



1. A module for presenting alpha-numeric information comprising a frame, a plurality of shutter elements mounted on said frame and arranged in rows and columns to define an alpha-numeric module, a plurality of said modules being arranged in horizontal side-by-side relation with the shutters thereof positioned on the front of each module, illuminating means positioned behind the module arrangement, and means associated with each element for pivoting the shutter thereof to provide a part of a preselected piece of information, said means including an electromagnet, a permanent magnet on each shutter and actuating means remote from said module for actuating said electromagnet, each electromagnet being mounted on the front of said frame adjacent its associated shutter and equipped with pole-pieces arranged in close proximity to the permanent magnet of said associated shutter to oppose the magnetic field of said permanent magnet and pivot said associated shutter.

4,215,339

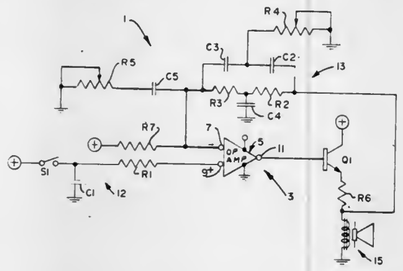
ELECTRONIC CHIME

John E. Durkee, Hemlock, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 23, 1979, Ser. No. 32,709

Int. Cl.[2] G08B *1/00*

U.S. Cl. 340—384 E **28 Claims**



1. An electronic chime adapted to be connected to a source of power for sounding a chime-like aural signal whose amplitude decays at a predetermined rate while the frequency of said aural signal remains substantially constant, said electronic chime comprising:

an oscillator including an amplifier having an input and an output;

means for generating an input voltage signal for said oscillator, said input voltage signal decaying from an initial value;

feedback means connected to said amplifier input and responsive to the output of said amplifier for impressing a desired frequency upon said voltage input signal; and

a speaker responsive to the output of said oscillator.

4,215,340

PROCESS FOR THE AUTOMATIC SIGNALLING OF FAULTS OF A STATIC AUTOMATIC MODULE AND A MODULE FOR REALIZING THE PROCESS

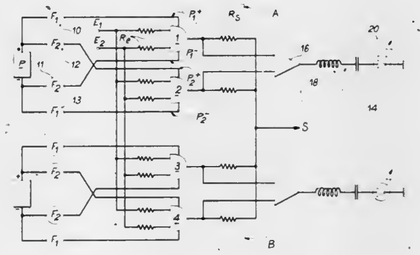
Jean Lejon, Choisel, France, assignor to Controle Bailey, Clamart, France

Filed Mar. 17, 1978, Ser. No. 887,469

Claims priority, application France, Apr. 1, 1977, 77 09909

Int. Cl.[2] G08B *29/00*

U.S. Cl. 340—507 **10 Claims**



1. A process for the automatic signalling of faults of an automatic static safety module comprising at least one pair of identical parallel logic circuits and having a first positive continuous supply connection and a second negative continuous supply connection, whereby the output of each logic circuit can have one or another of two logic states depending on whether it is connected to the first or second supply connection, wherein a.c. voltages of different frequencies are superimposed on the d.c. voltages, the presence of beats between the a.c. voltages appearing at the outputs is detected, and as a function of the presence or absence of said beats cases of non-agreement of the logic states of the circuits are signalled.

4,215,341

INTRUSION OR MOVEMENT DETECTOR

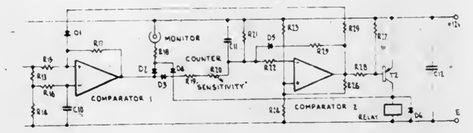
Martin T. Cole, 3 David St., East Bentleigh, Victoria, Australia

Filed Jan. 18, 1978, Ser. No. 870,603

Claims priority, application Canada, Jan. 19, 1977, 270056

Int. Cl.[2] G08B *13/24*

U.S. Cl. 340—552 **5 Claims**



1. An intrusion movement detector comprising an oscillator means for generating a radio signal, an antenna means coupled to said oscillator means for transmitting a radio signal into an area to be surveyed by said detector, said antenna means exhibiting an initial radiation resistance relative to the position of objects (if any) in the area to be surveyed and a variable radiation resistance relative to the movement of an object in the area surveyed exclusive of reflected doppler signals resulting in a variable loading on said oscillator means, means for monitoring said variable loading such that when said variations in loading reach a predetermined threshold level, said monitoring means activates a signal or alarm means indicating detection of an intrusion or relocation of an object in the area surveyed.

4,215,342

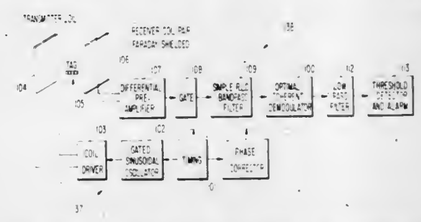
MERCHANDISE TAGGING TECHNIQUE

Peter Horowitz, Silver Spring, Md., assignor to Intex Inc., Bethesda, Md.

Filed Mar. 31, 1978, Ser. No. 892,283

Int. Cl.[2] G08B *13/24*

U.S. Cl. 340—572 **2 Claims**



1. A system for indicating the presence of a passive electronic tag transponder, which is a self-resonant structure with non critical sharpness-of-resonance and center frequency values that produces magnetic oscillations when excited of sufficiently low frequency to penetrate metal, which comprises:

(a) transmitting means which by a pulsed magnetic field of fixed repetition rate excites the passive electronic tag transponder, whereby magnetic oscillations are produced which form lightly damped sinusoidal magnetic field bursts in repetitive coordination with the transmitting means excitations; and

(b) receiver module means which detects the magnetic oscillations produced by the excited passive electronic tag transponder during the residence time of the transponder in the portion of said field which is received by said receiver means, said receiver means coherently accumulating the received spectral energy of each tag burst of any received signal amplitude during the residence time of the transponder within the portion of said field which is received by said receiver means.

4,215,343

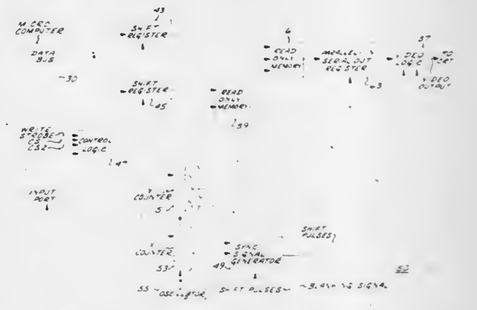
DIGITAL PATTERN DISPLAY SYSTEM

Masakazu Ejiri, and Hirotada Ueda, both of San Jose, Calif., assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1979, Ser. No. 12,800

Int. Cl.[2] G06K *15/20*

U.S. Cl. 340—711 **15 Claims**



1. A pattern display system for use with a cathode ray tube, comprising:

a keyboard having selectively actuable key switches, each of said switches representing a predetermined symbol or function;

processing means responsive to said keyboard switches for storing information representative of symbols corresponding to the symbols represented by actuated symbol key

switches, and for performing predetermined functions corresponding to functions represented by actuated function key switches, said processing means further providing as an output pattern display information representative of the individual patterns necessary for the display of said symbols; and

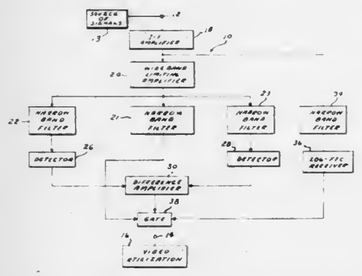
video circuitry responsive to said processing means for generating video signals indicative of the patterns represented by said pattern display information, said video circuitry including first and second read-only memories which are accessed as a function of said pattern display information and the vertical scan of the cathode ray tube, said second read-only memory containing display information for each horizontal line segment of all patterns utilized by the pattern display system and said first read-only memory controlling said second read-only memory.

4,215,344

MULTIPLE CHANNEL ELECTRONIC COUNTERMEASURES RADAR RECEIVER

Calvert F. Phillips, Jr., Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 15, 1963, Ser. No. 324,138
Int. Cl.[2] G01S *7/36*
U.S. Cl. 343—18 E **4 Claims**



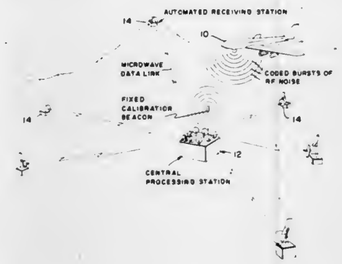
1. A multiple channel electronic countermeasures radar receiving system comprising: source means for supplying periodic echo pulses beat to the intermediate frequency of the system and combined with jamming noise of variable frequency distribution, first receiver means fed by said source means and having a predetermined bandwidth centered on the intermediate frequency or limiting sharply to a fairly constant level signals from said source means which exceed a given amplitude, second receiver means fed by said source means and tuned to said intermediate frequency for limiting according to a logarithmic expression signals from said source means which exceed said given amplitude, frequency selective means included in said first receiver means for generating a first voltage defining random noise distribution at frequencies extending over the range of said bandwidth and generating a second voltage defining random noise distribution at frequencies offset from said intermediate frequency by a predetermined amount, video utilization means, and gate means controlled by said frequency selective means for gating the output of said first receiver means to said video utilization means in response to said first voltage and gating the output of said second receiver means to said video utilization means in response to said second voltage.

4,215,345

INTERFEROMETRIC LOCATING SYSTEM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Peter F. MacDoran, Pasadena, Calif.

Filed Aug. 31, 1978, Ser. No. 938,581
Int. Cl.[2] G01S *3/02*
U.S. Cl. 343—112 R **8 Claims**



5. A method for locating a target that emits radio waves, comprising:

detecting the same emitted radio waves originating from the target, at a first pair of stations that are spaced apart and located at known geographic positions;

measuring the difference in time of arrival of said waves at said first pair of stations;

detecting the same emitted radio waves originating from said source, at a second pair of stations that are spaced apart and located at known geographic positions;

measuring the difference in time of arrival of said waves at said second pair of stations;

detecting the same emitted radio waves orginating from the target at a third pair of stations that are positioned at widely space altitudes;

measuring the difference in time of arrival of said waves at said third pair of stations;

calculating the geographic location and altitude of a point which is located a different distance from the two stations of each pair wherein each difference distance is equal to the time difference in wave arrival times the speed of light; and wherein

said steps of detecting each comprise detecting a train of wideband noise-like signals at each station of the pair, and cross correlating the signals detected by each pair of stations to determine the amount of delay of one train of noise signals relative to the other, at which the trains are matched.

4,215,346

NAVIGATION UNIT HAVING TIME SHARED OPERATION

Frank P. Smith, 2nd., Dresher, Pa., assignor to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed Feb. 8, 1978, Ser. No. 876,094
Int. Cl.[2] G01S *5/02*
U.S. Cl. 343—113 R **11 Claims**

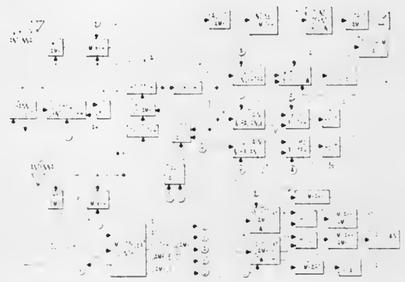
1. A navigational receiver having a time-shared mode of operation for simultaneously receiving a plurality of different navigational signals, comprising:

means for receiving each said different signal;

RF means associated with said receiving means for RF amplifying and RF mixing each said different signal;

IF means for processing each said different signal by time-shared operation, said IF means being connected to said RF means, wherein said time-shared operation is on a multiplex basis of alternately processing first one of said

different signals then another involving a processing dead time; and



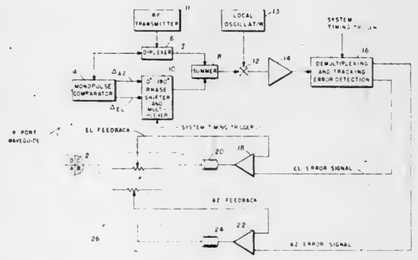
output means, being responsive to said IF means, for providing a display of navigational information.

4,215,347

TARGET SEEKER SIMULATOR

Edward C. Jarrell, Damascus; Donald R. Marlow, Highland; Howard B. Tetens, Rockville, and Joseph F. Gulick, Clarksville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 15, 1978, Ser. No. 960,991
Int. Cl.[2] G01S *3/22*
U.S. Cl. 343—117 R **6 Claims**



1. A target seeker simulator system comprised of:

a drone missile having means for transmitting an output signal, and

means for directing the output signal of the transmitting means at the target while the drone missile is in flight, wherein the output signal directing means comprises:

means, located proximate to the target, for generating a beacon signal aimed at the drone missile,

means, provided on the drone missile, for receiving the beacon signal,

an antenna comprising the transmitting means and beacon signal receiving means, and

means for reorienting the antenna in response to the received beacon signal, and

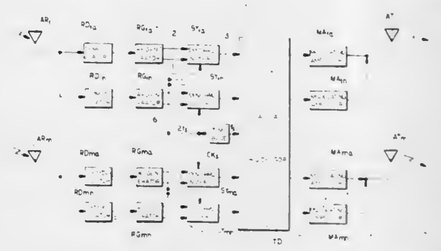
diplexer means for simultaneously transmitting the output signal and receiving the beacon signal.

4,215,348

METHOD OF AND SYSTEM FOR SYNCHRONIZING DATA RECEPTION AND RETRANSMISSION ABOARD COMMUNICATION SATELLITE

Giovanni Cordaro, Milena; Cristiano Dall'Olio, Turin; Duccio Di Pino, Turin, and Eugenio Guarene, Turin, all of Italy, assignors to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Mar. 27, 1979, Ser. No. 24,445
Claims priority, application Italy, Apr. 4, 1978, 67729 A/78
Int. Cl.[2] H04L *7/00*
U.S. Cl. 370—97 **8 Claims**



1. A method of timing the reading of data bits in a stream of digital signals intermittently received by a relay station from a remote transmitting station, said digital signals arriving with a bit cadence f_g close to a clock frequency f_s available at said relay station, comprising the steps of:

(a) generating a square wave of frequency $2f_s$;

(b) extracting a timing signal corresponding to said bit cadence f_g from a signal stream of limited duration detected at said relay station;

(c) sampling said square wave, in response to said timing signal, at an instant substantially coinciding with the midpoint of an initial bit period of the detected signal stream, said bit period having a length $1/f_g$ approximately equaling a clock cycle $1/f_s$;

(d) selecting, on the basis of the sample obtained in step (c), one of two mutually interleaved trains of synchronizing pulses each having a cadence corresponding to said clock frequency f_s, the first synchronizing pulse so selected occurring in one of the two middle quarters of a bit period;

(e) reading the bits of the detected signal stream at the instants of occurrence of the synchronizing pulses of the selected train; and

(f) organizing the bits to read into a data frame in step with said clock frequency f_s.

4,215,349

REMOTE CONTROL SYSTEM FOR AN ELECTRICAL APPARATUS

Robert Reiner, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,003
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809796
Int. Cl.[2] H04B *7/00*
U.S. Cl. 340—695 **6 Claims**

1. A remote control system for operating an electrical apparatus by means of transmitted binary coded information comprising:

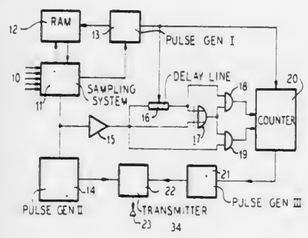
a sampling system having a plurality of user actuated input means which produce binary coded commands, said sampling system producing binary coded commands associated with respective inputs;

a first pulse generator controlled by said sampling system which provides a sampling pulse for said sampling system;

a second pulse generator and associated control means for

producing a termination signal upon de-actuation of any of said inputs;

a transmitter connected to said first and second pulse generators for transmitting respective pulses produced by each said generator corresponding to input commands and said termination signal;



a receiver associated with said transmitter for receiving said commands and said termination signal;

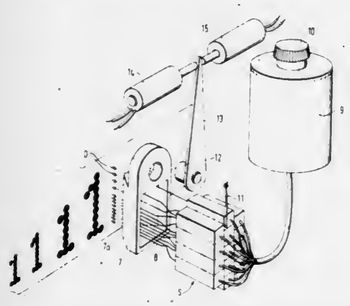
a decoder means for discriminating between said command information and said terminal signal which operates to control said apparatus in accordance with respective received commands and which terminates operation of said receiver when said termination signal is received.

4,215,350

INK JET PRINTING APPARATUS WITH TWO DIFFERENT JET SPACINGS

Klaus H. Mielke, and Ulf H. Mielke, both of 82, Radavägen, S-435 00 Mölnlycke, Sweden

Filed Apr. 19, 1979, Ser. No. 31,517
Claims priority, application Sweden, Apr. 19, 1978, 7804496
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **5 Claims**



1. In ink jet printing apparatus comprising a plurality of ink jet nozzles, means for supporting said nozzles in a row in which the axes of the nozzles define a common plane, a solenoid valve for controlling the supply of pressurized ink to each of said nozzles, a control circuit for each of said solenoid valves, and a pattern generator having a plurality of output leads connected to said control circuits, said pattern generator being arranged successively to select predetermined output leads or combinations of output leads and to cause an operating pulse to be transmitted through said selected output leads and control circuits to the respective solenoid valves controlled thereby,

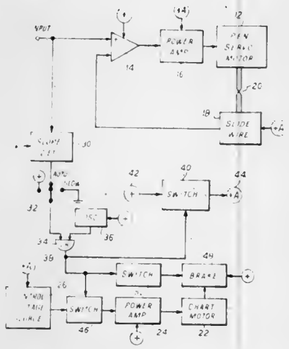
the improvement comprising electric switch means arranged in a first position to connect each of said output leads to a respective one of the control circuits of a first group of said solenoid valves controlling the ink supply to a first group of nozzles in said row arranged at a uniform pitch, and in a second position to connect each of said output leads to a respective one of the control circuits of a second group of solenoid valves controlling the ink supply to a second group of nozzles in said row arranged at a pitch equal to twice the pitch of said first group of nozzles and including nozzles within said first group as well as nozzles outside of said first group.

4,215,351

CHART RECORDERS

David J. Lowe, Sheffield, England, assignor to National Research Development Corporation, London, England

Filed Sep. 21, 1978, Ser. No. 944,559
Claims priority, application United Kingdom, Oct. 5, 1977, 41486/77
Int. Cl.[2] G01D *15/24, 9/00, 15/16*
U.S. Cl. 346—136 **17 Claims**



1. A chart recorder, comprising:

an input terminal for receiving an electrical input signal a value of which is to be recorded;

first drive means for relatively moving a length of record medium past a recording member at a selectable controlled rate; and

second drive means connected to said input terminal for relatively moving the recording member across the record medium to a position dependent upon the said value of said input signal;

wherein the improvement comprises means which at least in one mode of operation of the recorder connects said first drive means to said input terminal such that said first drive means is responsive to said input signal, for making said rate, at which the record medium is relatively moved past the recording member, automatically dependent upon the slope of said input signal.

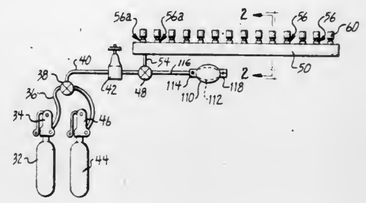
4,215,352

INKING SYSTEM WITH SATURATION CONTROL MEANS FOR MULTI-PEN RECORDERS

William C. Corwin, La Grange, Ill., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 9, 1978, Ser. No. 914,089
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—140 R **9 Claims**

1. A non-clogging inking system comprising a non-pressurized ink supply including a dye in a suitable solvent, a movable recording pen element in engagement with a medium to which ink is to be supplied, a first flexible tubular member connected to said ink supply and having relatively little evaporation of said solvent through the walls thereof, and a second flexible tubular member connected between said first tubular member and said recording pen, said second member being relatively permeable to said solvent and having a length such that evaporation of said solvent through said second member is substantially balanced by diffusion of dye along the length of said second member as said evaporated solvent is replaced by ink in said first tubular member.

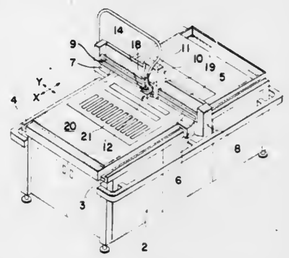


4,215,353

INK JET RECORDING APPARATUS WITH TRIAL RUN AT SIDE

Shozo Kaieda, Yokohama; Masayuk Mutoh, Kawasaki, and Kuniaki Kamimura, Atsugi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Sakai, Japan

Division of Ser. No. 783,031, Mar. 30, 1977. This application Mar. 23, 1979, Ser. No. 23,235
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R **7 Claims**



1. An ink jet recording apparatus comprising:

at least one ink tank for containing therein a substantial amount of ink;

a nozzle connected to said ink tank for discharging the ink within the ink tank to the outside of said ink tank;

an acceleration electrode supported in position in spaced relation to said nozzle;

means connected to said nozzle for moving the nozzle relative to a recording medium with the tip of the nozzle spaced a predetermined distance from the recording medium;

means connected to said ink tank and said nozzle and responsive to a command signal for applying a jetting force to the ink to effect the jetting of the ink from the nozzle towards the recording medium in accordance with a command signal;

means for generating a return signal and connected to said moving means for supplying a return signal to said moving means to cause the ink tank together with the nozzle to move to a predetermined position other than where ink is to be deposited for recording; and

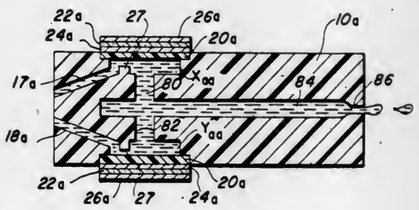
means connected to said ink tank and said nozzle for forcing droplets of ink to be jetted from the nozzle when said ink tank together with the nozzle has been moved to said predetermined position, whereby after the ink tank together with the nozzle has been moved to the predetermined position by the operation of the return signal generating means, droplets of ink are successively jetted on a trial basis independently of the jetting of ink resulting from the application of the command signal.

4,215,354

SUPPRESSION OF CROSS-COUPLING IN MULTI-ORIFICE PRESSURE PULSE DROP-EJECTOR SYSTEMS

Stig-Göran Larsson, Carrollton, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1978, Ser. No. 963,475
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R **3 Claims**



1. A multiple ink jet assembly comprising:

a fluid reservoir for containing a fluid;

a plurality of compressible chamber means for holding fluid and including means for rapidly decreasing the volume of said chamber means in response to a predetermined signal, said chamber means being connected by fluid passages to said fluid reservoir; and

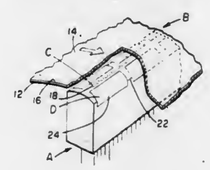
a plurality of orifices, each of said orifices being connected to at least two chamber means by fluid passages wherein each of said chamber means is adapted to restrict the passage of a pressure pulse therethrough.

4,215,355

IMPROVED ELECTROGRAPHIC RECORDING APPARATUS EMPLOYING AN IMPROVED DRIVE CIRCUIT

Chad Z. Moore, Brecksville, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 24, 1978, Ser. No. 963,404
Int. Cl.[2] G03G *15/044;* **G01D** *15/06*
U.S. Cl. 346—155 **20 Claims**



1. An electrographic recording apparatus for charging the surface of a record medium having a charge retentive surface with latent electrostatic image, said apparatus comprising:

a plurality of recording electrodes, each recording electrode mounted with an area thereof in close proximity to the charge retentive surface;

a plurality of complementary electrodes mounted with an area of each in electrical cooperative relationship with the record medium, each complementary electrode mounted adjacent at least one of said recording electrode;

means for applying a first voltage of one polarity to at least one selected recording electrode and a second voltage of opposite polarity to at least one complementary electrode adjacent to the at least one selected recording electrode;

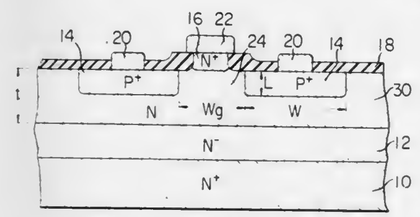
said voltage applying means including at least one driver circuit comprising: a current branch; current control means for controlling current flow through said current branch, said current control means operatively connected with said current branch; electrical storage means operatively connected at a first end with said current branch and with said current control means; switching means comprising at least first and second controlled leads and a switch control means for controlling current flow between said first and second controlled leads, said switch control means operatively connected with a second end of said electrical storage means, said first controlled lead operatively connected with a high voltage supply, said second controlled lead operatively connected with said current branch; first diode means for operatively connecting said current branch with a reference potential when said first diode is forward biased; and electrode connecting means for connecting said current branch with at least one of said electrodes.

4,215,356

JUNCTION FIELD EFFECT TRANSISTOR

Mari Kato, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1978, Ser. No. 897,775
Claims priority, application Japan, Apr. 27, 1977, 52/49273
Int. Cl.[2] H01L *29/80*
U.S. Cl. 357—22 **5 Claims**



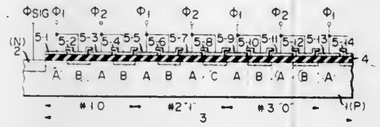
1. A vertical type junction field effect transistor comprising:
a first semiconductor layer of a first type conductivity and having a low resistivity, said first semiconductor layer having first and second surfaces;
a second semiconductor layer of said first type conductivity and having a resistivity higher than that of said first semiconductor layer, said second semiconductor layer having a first surface disposed on said second surface of said first semiconductor layer and a second surface;
a third semiconductor layer of said first type conductivity and having a resistivity lower than that of said second semiconductor layer, said third semiconductor layer having a first surface disposed on said second surface of said second semiconductor layer and a second surface;
gate regions of a second type conductivity selectively disposed in regions of said third semiconductor layer and extending from said second surface thereof to positions spaced between said first and second surfaces thereof;
adjacent said gate regions defining therebetween at least one channel region in a first portion of said third semiconductor layer; and
a second portion of said third semiconductor layer, defined between each said gate region and said second surface of said second semiconductor layer, having a thickness not smaller than one-half of the width of said channel region, defined between said adjacent gate regions.

4,215,357

CHARGE TRANSFER DEVICE STORED WITH FIXED INFORMATION

Susumu Kohyama, Kawasaki, and Nobuhisa Kubota, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 825,067, Aug. 16, 1977, abandoned.
This application Mar. 23, 1979, Ser. No. 23,184
Claims priority, application Japan, Aug. 16, 1976, 52-97022
Int. Cl.[2] H01L *29/78;* **G11C** *19/28;* **H03K** *5/00;* **H01L** *29/04*
U.S. Cl. 357—24 **5 Claims**



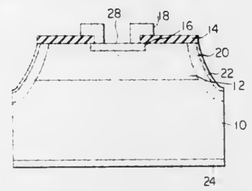
1. A charge transfer device, comprising:
a charge supplying source section;
a charge transfer section coupled at one end to said charge supplying source section and including a semiconductor substrate of a first conductivity type, an insulation layer provided on said semiconductor substrate and a plurality of charge transfer electrodes provided on said insulation layer, each adapted to be supplied with a gate signal;
an output section coupled to the other end of said charge transfer section;
said charge transfer section including a plurality of first semiconductor regions in which first fixed information is stored, and a plurality of second semiconductor regions in which second fixed information is stored, each of said first and second semiconductor regions being serially disposed upon said semiconductor substrate between said source section and said output section;
each of said first semiconductor regions including a first pair of subregions and a second pair of subregions disposed adjacent to said first pair of subregions, each of said first and second pairs of subregions including a first type subregion and a second type subregion disposed adjacent to said first type subregion with each said subregion having a discrete charge transfer electrode disposed thereover;
each of said second semiconductor regions including a third pair of subregions and a fourth pair of subregions disposed adjacent to said third pair of subregions, each of said third pair of subregions including a first type subregion and a second type subregion disposed adjacent to said first type subregion, each of said fourth pair of subregions including a first type subregion and a third type subregion disposed adjacent to said first type subregion, each of said first, second, and third type subregions having a discrete charge transfer electrode disposed thereover;
each of said discrete charge transfer electrodes disposed over said first and third pairs of subregions adapted to be supplied with a first gating signal voltage, and each of said discrete charge transfer electrodes disposed over said second and fourth pairs of subregions adapted to be supplied with a second gating signal voltage;
each of said subregions exhibiting a gate voltage-surface potential characteristic curve such that the characteristic curves for said first type subregion and for said third type subregion are approximately parallel and the characteristic curve of said second type subregion is such that it intersects with the characteristic curves of said first and said third type subregions.

4,215,358

MESA TYPE SEMICONDUCTOR DEVICE

Manabu Wataze; Kazuhisa Takahashi; Saburo Takamiya, and Shigeru Mitsui, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1977, Ser. No. 846,492
Claims priority, application Japan, Nov. 1, 1976, 51/131396
Int. Cl.[2] H01L *29/06*
U.S. Cl. 357—56 **6 Claims**



1. A mesa type semiconductor device comprising:
a first semiconductor layer of one type conductivity having a mesa portion;
a second semiconductor layer of the opposite type conductivity disposed on said mesa portion of said first semiconductor layer having a top surface opposite said mesa portion of said first semiconductor layer and forming a first PN junction with said first semiconductor layer, said first PN junction having a circumferential portion disposed at the circumference of said mesa portion of said first semiconductor layer; and
a third semiconductor layer having the same type conductivity as said first semiconductor layer covering the edges of said first and second semiconductor layers at said circumferential portion of said first PN junction forming a second PN junction with said second semiconductor layer extending to said top surface of said second semiconductor layer.

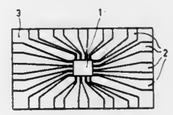
4,215,359

SEMICONDUCTOR DEVICE

Gijsbertus J. H. Schermer, and Paul Breuning, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,769
Claims priority, application Netherlands, Dec. 13, 1977, 7713758
Int. Cl.[2] H01L *23/48*
U.S. Cl. 357—70 **7 Claims**





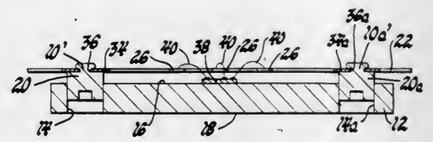
1. A semiconductor device comprising an insulating flexible foil having conductors on one side of the foil extending from the edge towards the center, and a semiconductor element having contacts which are connected to the ends of the conductors at the central portion of the foil, characterized in that a reinforcement member is provided on the side of the foil remote from the conductors which is present at least near the edges of the foil, said reinforcement member being connected to the foil in an adhering manner and having a pre-shaped contour so as to bend the foil in such manner that the surface of the semiconductor element remote from the foil and the ends of the conductors situated near the ends of the foil are situated substantially in the same plane.

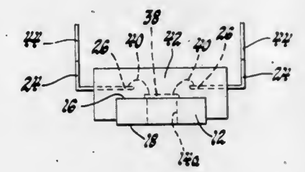
4,215,360

POWER SEMICONDUCTOR DEVICE ASSEMBLY HAVING A LEAD FRAME WITH INTERLOCK MEMBERS

Charles T. Eytcheson, Macy, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1978, Ser. No. 959,340
Int. Cl.[2] H01L *23/48, 29/44, 29/52*
U.S. Cl. 357—70 **7 Claims**





7. A semiconductor device heat sink for assembly with a lead frame strip wherein said substrate has a recess therein in predetermined location with respect to a chip mounting area on said substrate, and movable lead frame interlock means within said opening for locating said lead frame with respect to said chip mount area, movement of said interlock means in said recess confined to only one plane to permit plural predetermined heat sink-lead frame positions with respect to that plane, and said interlock means frictionally retained in said recess to maintain a predetermined heat sink-lead frame disposition in said plane, once so moved, whereby plural temporary predetermined heat sink-lead frame dispositions are obtained.

4,215,361

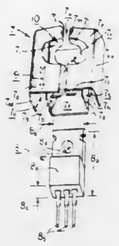
WINGED SELF-FASTENED HEAT SINKS FOR SEMICONDUCTOR DEVICES

Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.

Filed Sep. 12, 1978, Ser. No. 941,550
Int. Cl.[2] H01L *23/02, 23/48, 29/44*
U.S. Cl. 357—81 **4 Claims**

1. A resilient sheet-metal unitary heat sink unit comprising an open-ended channel-shaped body portion of substantially rectangular cross-section closed at the bottom and having upstanding parallel sides along spaced edges thereof and having top wall surfaces including two top wall parts extending from the sides toward but short of each other, leaving a slot therebetween, means projecting downwardly from said top wall parts toward the interior of said channel-shaped body portion in position to develop a resilient interference fit with part of an electronic semiconductor package of predetermined size when the latter is disposed within said body portion, and

cooling-fin means extending upwardly in integral continuation of said top wall surfaces and thence flaring laterally substantially parallel with said top wall surfaces and in spaced relation thereto.

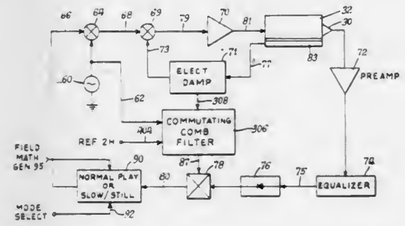


4,215,362

TRACK SELECTION METHOD AND APPARATUS

Raymond F. Ravizza, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 23, 1978, Ser. No. 889,461
Int. Cl.² G11B *21/08, 5/55, 5/56*
U.S. Cl. 358—8 **22 Claims**



1. In a recording and/or reproducing apparatus having transducing means operatively supported by rotation means for scanning a magnetic tape along a plurality of adjacent discrete tracks on the tape, the rotation means including movable means carrying the transducing means and effecting movement of the transducing means in opposite directions along a path generally transverse to the direction of said tracks in response to signals being applied thereto, a circuit for automatically selecting the proper one of said discrete tracks, said circuit comprising:

means responsive to the scan of a track by the transducing means and a track reference signal for generating a first signal indicative of said transducing means scanning a wrong one of said tracks relative to said track reference signal;

means for producing a second signal indicative of the position of said movable means; and,

means responsive to said first and said second signals for relatively positioning said transducing means to tape position to thereby register said transducing means on the proper track.

4,215,363

GATED, VARIABLE-GAIN AMPLIFIER

David J. Borlaug, Elba, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 26, 1978, Ser. No. 973,790
Int. Cl.² H04N *9/537*
U.S. Cl. 358—21 R **10 Claims**

1. A gated, variable gain circuit comprising:

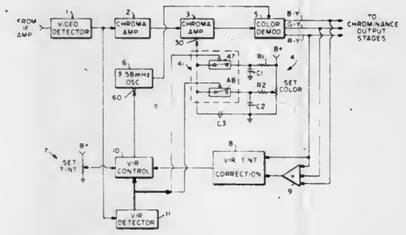
a gain-controlled amplifier having an input coupled to a source of signals and having a gain-control terminal, the amplifier gain being determined by the control signal applied to the gain-control terminal;

a first source of substantially constant gain-control signal;

a second source of variable gain-control signal;

gain switching means coupled to the gain-control terminal and to the first and second sources of gain-control signal and responsive to a signal indicative of a prescribed operating condition so that under the prescribed operating condition the gain-control terminal is coupled to the first source of gain-control signal and under other operating conditions the gain-control terminal is coupled to the second source of gain-control signal.

7. A chrominance circuit responsive to a VIR signal, said circuit comprising:



a variable-gain amplifier having an input coupled to a chrominance signal including a VIR component and having a gain-control terminal;

gain selecting means having an output coupled to the gain-control terminal for selectively establishing the gain of the variable-gain amplifier in response to a signal indicating the presence or absence of the VIR signal;

a first source of gain-control signal coupled to a first input of the gain-selecting means; and

a second source of gain-control signal coupled to a second input of the gain-selecting means, whereby during the absence of a VIR signal the first source is coupled through the gain-selecting means to the gain-control terminal and during the presence of the VIR signal the second source is coupled through the gain-selecting means to the gain-control terminal.

4,215,364

COLOR TELEVISION SIGNAL GENERATING APPARATUS

Itsuo Takanashi; Shintaro Nakagaki; Tadayoshi Miyoshi, all of Yokohama; Koichiro Motoyama, Ninomiya; Kenichi Miyazaki, Sagamihara, and Sumio Yokokawa, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 28, 1979, Ser. No. 16,092
Claims priority, application Japan, Mar. 3, 1978, 53-23590
Int. Cl.² H04N *9/07*
U.S. Cl. 358—47 **10 Claims**

1. A color television signal generating apparatus comprising:

a color-resolving striped filter comprising a plurality of groups of filter stripes, said groups being disposed parallelly and consecutively in sequentially repeated arrangement, each of said groups comprising at least three filter stripes from among

a first filter stripe having a light transmission characteristic such as to transmit the light of one of the three primary colors of an addition mixture color,

a second filter stripe having a light transmission characteristic such as to transmit the light of a mixed color of the primary color transmitted through said first filter stripe and one of the other two primary colors, and

a transparent third filter stripe transmitting white light,

said at least three filter stripes being arranged parallelly and consecutively in a specific sequence;

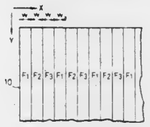
a camera tube provided with said color-resolving striped filter disposed on the front surface thereof and operating to send out as an output signal a superimposed signal comprising, in superimposition,

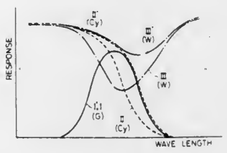
a direct wave signal containing signals of the three primary colors of said addition mixture color and

a high-band component signal comprising a group of modulated color signals representable as signals resulting from the amplitude modulation respectively of a carrier wave of a frequency equal to a space frequency determined by the number of said groups of filter stripes and carrier wave components of frequencies having higher harmonic relationships to the frequency of said carrier wave by the signals of two primary colors other than the primary color of the light transmitted through said first filter stripe;

separation means for separating said direct wave signal from the output signal of said camera tube;

high-band component signal producing means for obtaining said high-band component signal or a signal equivalent thereto from the output signal of said camera tube;





first envelope detection means for producing as output a demodulated signal in accordance with an envelope resulting from a successive connection of peak values of the positive wave of the output signal of said high-band component signal producing means;

second envelope detection means for producing as output a demodulated signal in accordance with an envelope resulting from a successive connection of peak values of the negative wave of the output signal of said high-band component signal producing means; and

operational means for obtaining three primary-color signals by operating the output signals of said separation means and first and second envelope detection means,

at least two of the filter stripes of said first, second, and third filter stripes of said color-resolving striped filter having transmission characteristics which have been so selected that graphical curves indicating said transmission characteristics mutually intersect.

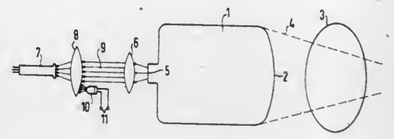
4,215,365

X-RAY DIAGNOSTICS INSTALLATION COMPRISING AN ELECTRONIC TRANSMISSION CHANNEL FOR THE X-RAY IMAGE

Joerg Haendle, and Hartmut Sklebitz, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 793,138, May 2, 1977. This application Feb. 21, 1979, Ser. No. 13,683
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1976, 2651307
Int. Cl.² H04N *5/32*
U.S. Cl. 358—111 **3 Claims**

1. An x-ray diagnostics installation comprising an electronic transmission channel, transmitting the x-radiation issuing from the patient, with a television pickup tube, characterized in that for the purpose of avoiding signal compression in the dark image regions an illumination device is arranged in the optical path of rays in front of said television pickup tube, for the weak, diffuse, illumination of the target of said television



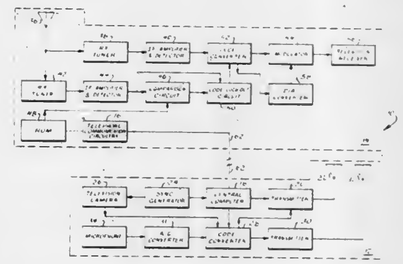
pickup tube, and means comprising said illumination device for preventing negative charging of the light sensitive layer of the target during scanning of the target in the absence of an input light signal.

4,215,366

SUBSCRIBER-LIMITED RECEPTION TELEVISION BROADCAST SECURITY ENCODER-DECODER SYSTEM

Richard A. Davidson, Deerfield, Ill., assignor to Feature Film Services, Skokie, Ill.

Continuation of Ser. No. 843,740, Oct. 19, 1977, abandoned. This application Apr. 24, 1979, Ser. No. 33,020
Int. Cl.² H04N *7/16*; H04K *1/04*
U.S. Cl. 358—124 **64 Claims**



1. A subscription television system for scrambling and unscrambling of standard television signals having horizontal scan lines that include horizontal synchronizing signals, vertical synchronizing signals, and video signals, and accompanying audio signals to enable reception of the video and audio signals in an intelligible manner only by authorized subscribers, said system comprising:

(1) transmitting means comprising:

(a) means for scrambling video signals by inversion of the video portion of some horizontal scan lines in a line-by-line fashion on a pseudo-random basis to produce a picture having some video signals inverted and others not inverted which produces a substantially unintelligible visual display;

(b) means for scrambling audio signals;

(c) means for generating a plurality of discrete pulse coded control signals serving to identify individual subscribers which are authorized to unscramble the scrambled video and audio signals and to provide decoding pulses;

(d) means for transmitting the scrambled video and audio signals together with the control signals, said control signals being transmitted separately and simultaneously during transmission of each of the horizontal scan lines on a separate pre-selected frequency distinct from the video signals to determine whether or not the video portions of the next successive horizontal scan lines is are to be inverted; and

(2) receiving means comprising:

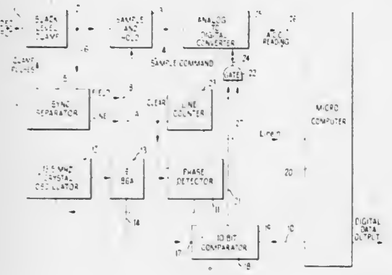
(a) means for receiving the transmitted scrambled video and audio signals together with the control signals;

(b) means for storing a unique subscriber identity code;
(c) means for comparing each of the discrete pulse coded control signals with the stored identity code
(d) unscrambling means converting said control signals into decoding pulse and responsive to said comparing means when there is a code match for unscrambling of the video and audio signals by means of said decoding pulse in the same sequence as used for scrambling to provide restored video and audio signals without degradation in picture and sound qualities; and
(3) controlling means responsive to said plurality of control signals for continuously enabling each of the individual unscrambling means at a particular subscriber's receiving means on a selective basis so that if the comparing means fails to produce a code match for an individual subscriber identity code before a pre-selected time interval has elapsed the unscrambling means is automatically disabled.

4,215,367
TELEVISION SYSTEMS

Jeffrey Schaffer, London, and John E. Moore, Harrow, both of England, assignors to Independent Broadcasting Authority, London, England

Filed Oct. 28, 1975, Ser. No. 626,453
Claims priority, application United Kingdom, Nov. 1, 1974, 47330/74
Int. Cl.[2] H04N *7/02*
U.S. Cl. 358—139 **9 Claims**

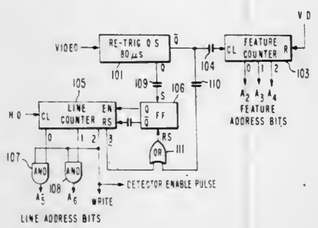


1. Apparatus for deriving a television quality parameter from an insertion test signal line inserted into a television signal which is repeated at regular intervals during field blanking periods of the television signal, said apparatus comprising means for receiving a test signal line inserted into a television signal; a sampling system which, when actuated, provides a digital amplitude signal representing the instantaneous amplitude at a sampling position of the received test line, controllable actuating means for actuating the sampling system and a computer having means for
(a) calculating the quality parameter from a plurality of digital amplitude signals, corresponding with instantaneous amplitudes at different sampling positions on the test line, and provided by the sampling system,
(b) providing the calculated quality parameter as output, and
(c) responding to timing origins carried by the television signal and control the actuating means at times, so related to the timing origins that the signals of said plurality of signals are provided in turn, at a low average rate,
and means for providing a readout of said derived television quality parameter.

4,215,368
MEMORY ADDRESSING SYSTEM FOR AUTOMATIC SETUP TV CAMERA SYSTEM

Robert E. Flory, Princeton, and Mark R. Nelson, Stratford, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,851
Int. Cl.[2] H04N *7/02, 5/14*
U.S. Cl. 358—139 **6 Claims**



1. In an automatic setup unit for a television camera providing video signals when viewing a test pattern having features thereon, said unit including a digital memory for storing data indicative of measured values of the camera video according to memory addresses, a system for generating these memory addresses, comprising:
means for detecting signal features for providing feature detection signals,
means responsive to camera sync signals for providing first gating signals and first binary address signals indicative of a first horizontal width portion of the television raster and a second gating signal and a second binary address signal indicative of a second horizontal width portion of the television raster,
means responsive to said first gating signal and said feature detection signals for generating third binary address signals corresponding to the order of the features detected in said first width portion of the television raster,
means responsive to said second gating signal and said feature detection signals for generating fourth binary address signals corresponding to the order of the features detected in said second width portion of the television raster, and
means responsive to said first and second gating signals and said binary addresses for applying to said memory said first and third binary address signals during said first gating signal and for applying to said memory said second and fourth binary address signals during said second gating signals.

4,215,369
DIGITAL TRANSMISSION SYSTEM FOR TELEVISION VIDEO SIGNALS

Yukihiko Iijima, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 970,051
Claims priority, application Japan, Dec. 20, 1977, 52-153920; Dec. 20, 1977, 52-153932; Mar. 28, 1978, 53-36335
Int. Cl.[2] H04N *7/08*
U.S. Cl. 358—146 **11 Claims**

1. In a digital transmission system for television video signals, which comprises a transmitter and a receiver, said transmitter comprising a plurality of input terminals for receiving respective television video signals to be transmitted, a plurality of encoding units for encoding said respective television video signals into digitized video signals, and a multiplexer for multiplexing said respective digitized video signals in a time division manner; and said receiver comprising a demultiplexer for receiving the multiplexed video signal transmitted from said multiplexer and for separating the same into said digitized video signals, and a plurality of decoding units for decoding said respective digitized video signals given from said demulti-

plexer into said respective television video signals, the improvement wherein:
each of said encoding units comprises a synchronization pulse separator for separating synchronization pulses in said television video signal, an encoder responsive to the separated synchronization pulses for encoding said television video signal into predetermined codes, a generator for generating video-frame-synchronization codes each indicative of the end of one picture frame of said television video signal, first means for multiplexing said video-frame-synchronization codes and the encoded codes of said encoder, a first buffer memory for temporarily storing the multiplexed codes given from said first means, a first read/write controller for supplying write-in and read-out address signals to said first buffer memory and for measuring a buffer-occupancy state of said first buffer memory to produce a buffer-occupancy code, second means for measuring a time interval from a time point when said video-frame-synchronization code is written into said first buffer memory to a time point when read out from the first buffer memory and for producing a first time-indicating code



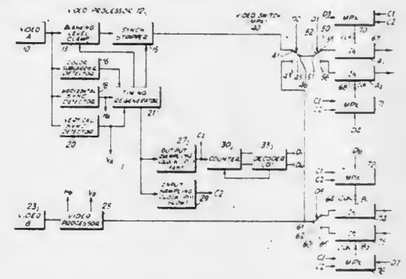
representative of said time interval, and third means for multiplexing the codes read out from said first buffer memory and said first time-indicating code and for supplying the output therefrom to said multiplexer; and
each of said decoding units comprises a second buffer memory for temporarily storing said digitized video signal supplied from a corresponding encoding unit, a second read/write controller for producing write-in address signals for writing said multiplexed codes and said time-indicating code into said second buffer memory and for producing read-out address signals for reading out the codes stored in said second buffer memory, fourth means for detecting said first time-indicating code in said digitized video signal, fifth means for measuring a time interval from a time point when said video-frame-synchronization code is written into said second buffer memory to a time point when read out of the second buffer memory and for producing a second time-indicating code, and a buffer memory controller for comparing said first and said second time-indicating codes and for controlling said read-out address signals based on the comparison operation.

4,215,370
SATELLITE VIDEO MULTIPLEXING COMMUNICATIONS SYSTEM

Donald Kirk, Jr., St. Petersburg, Fla., assignor to Digital Communications, Inc., St. Petersburg, Fla.

Filed Feb. 22, 1978, Ser. No. 879,861
Int. Cl.[2] H04N *7/08*
U.S. Cl. 358—146 **26 Claims**

1. In combination in a video transmission system for communicating two video programs via a single communications channel, a transmitter including means for supplying first and second television signals each including successive lines of video information separated by horizontal synchronizing pulse periods, first and second storage means for storing successive lines of said first television signal, third and fourth storage means for storing successive lines of said second television signal, first demultiplexing means for loading said first and second television signals into said first and second, and said third and fourth storage means therefor, respectively, means for generating a digital synchronizing word, and first multi-

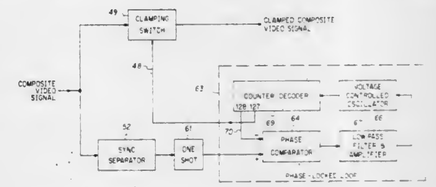


plexing means for cyclically supplying said synchronizing word, one line of said first television signal read out from an alternating one of said first and second storage means, and one line of said second television signal read out from an alternating one of said third and fourth storage means.

4,215,371
FRONT PORCH CLAMPING CIRCUIT

Richard S. Baggett, Plano, and Carl E. Bumpas, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 21, 1978, Ser. No. 972,180
Int. Cl.[2] H04N *5/18*
U.S. Cl. 358—172 **6 Claims**



1. A circuit for establishing a reference level in a video signal having repetitive features including a sync tip characterized by the signal assuming a first level, a front porch wherein the signal assumes a second level just preceding the sync tip, and a leading edge connecting the front porch and sync tip, the occurrence of said sync tip outside of a vertical blanking interval establishing a horizontal line period and rate, said circuit comprising:
means, responsive to said video signal, for synchronizing with a period of time in said front porch before the leading edge of the sync tip, and
means, actuated by the synchronizing means, for clamping said video signal to a selected level during said period of time.

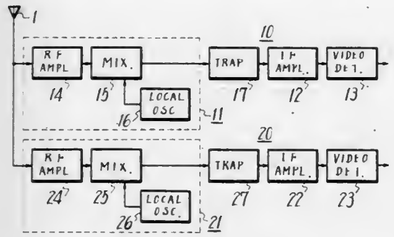
4,215,372
TELEVISION SIGNAL INTERFERENCE ELIMINATION CIRCUIT INCLUDING A TRAP CIRCUIT

Sadao Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 15, 1978, Ser. No. 942,693
Claims priority, application Japan, Sep. 28, 1977, 52-130253[U]
Int. Cl.[2] H04B *1/16;* **H04N** *5/44*
U.S. Cl. 358—188 **12 Claims**

1. Television signal processing circuit for connection to an antenna comprising:

(a) an RF tuner having an IF output and an RF input for connection to said antenna.
(b) an IF amplifier coupled to the output of said RF tuner, and
(c) a frequency responsive trap connected to a signal path of



said IF amplifier for rejecting an undesirable signal applied from a local oscillator of another tuner connected to said antenna and having a frequency in the vicinity of an IF signal so as to prevent a beat signal from being caused by mutual interference between said IF signal and said undesirable signal.

4,215,373

TELEVISION SET PROJECTOR

Max Goldenberg, and David A. Goldenberg, both of 1215 S. Fairlawn Ave., Evansville, Ind. 47714

Filed Oct. 19, 1978, Ser. No. 952,688
Int. Cl.[2] H04N 5/74
U.S. Cl. 358—237 **8 Claims**



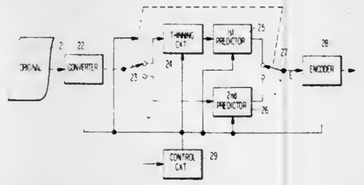
1. A device for projecting and magnifying a picture image from a screen of a television set comprising:
a light-storage housing removably mountable to said television set, said housing having a proximal end portion extending continuously and peripherally around said screen to receive all light rays emitted by said screen and defining a first tunnel extending outwardly from said screen in a straight direction;
a light-reflecting housing having a distal end portion and an inner end portion with said inner end portion slidably mounted to said storage housing and being aligned therewith, said reflecting housing defining a second tunnel extending in the same direction as said first tunnel with said first tunnel and said second tunnel cooperatively forming an obstruction-free passage for light rays emitted from said screen in said straight direction;
first means provided on said reflecting housing at said distal end portion and extending across said passage having an aperture to receive a lens and operable to allow a portion of light rays from said screen to pass through said aperture; and
an image lens mounted on said means at said aperture to magnify and project light rays pasing therethrough from said screen upon a forward viewing surface facing said lens and located remotely from said television set;
said storage housing includes a light-absorbent inner surface extending around said first tunnel to absorb at least a portion of light rays emitted from said screen in a direction other than said straight direction;
said reflecting housing includes a light-reflective inner surface extending around said second tunnel to reflect light rays through said lens.

4,215,374

ENCODING DEVICE COMPRISING PREDICTORS FOR THINNED AND UNTHINNED PATTERNS

Shoji Mizuno, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Mar. 1, 1979, Ser. No. 16,635
Claims priority, application Japan, Mar. 2, 1978, 53-24095
Int. Cl.[2] H04N 7/12
U.S. Cl. 358—260 **4 Claims**



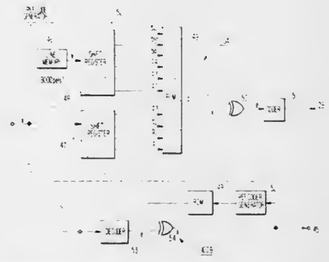
1. A device for encoding an original pattern and a first area into an encoded signal, said pattern being printed on a surface of a pattern carrying medium with said area left on said surface as a background of said pattern, said pattern and said area being substantially of a first and a second tone, respectively, said device comprising:
sampling means for scanning said surface substantially along rectilinear and parallel scanning lines in succession and for sampling at predetermined sampling instants sequential picture elements along the respective scanning lines from said pattern and said area to produce substantially at the respective sampling instants successive sample pulses representative of the picture elements of said pattern and said area with a first and a second level, respectively;
thinning means responsive to said sample pulses for carrying out, in effect, thinning of said original pattern into a thinned pattern having less picture elements than said original pattern and thereby widening of said first area into a second area having accordingly increased picture elements as compared with said first area to produce substantially at the respective sampling instants successive pre-processed pulses representative of the picture elements of said thinned pattern and said second area with a third and a fourth level, respectively;
first predicting means responsive to a first reference set of picture elements for predicting, in effect, a first predicted picture element for a first actual picture element in accordance with a first prediction rule to produce a first prediction error pulse representative of an error between said predicted and said actual picture elements, said actual picture element being represented by the pre-processed pulse produced by said thinning means at each of said sampling instants, the picture elements of said reference set being represented by the pre-processed pulses produced by said thinning means at those of said sampling instants which are selected therefrom according to a first predetermined rule and include the sampling instant next preceding said each sampling instant, said first predicting means thereby producing a sequence of first prediction error pulses as at least a portion of an output signal thereof;
second predicting means responsive to a second reference set of picture elements for predicting, in effect, a second predicted picture element for a second actual picture element in compliance with a second prediction rule, different from said first prediction rule, to produce a second prediction error pulse representative of an error between said second predicted and actual picture elements, said second actual picture element being represented by the sample pulse produced by said sampling means at each of said sampling instants, the picture elements of said second reference set being represented by the sample pulses produced by said sampling means at those of said sampling instants which are selected therefrom complying with a second predetermined rule and include the sampling instant next previous to the sampling instant at which the sample pulse representative of said second actual picture element is produced, said second predicting means thereby producing a sequence of second prediction error pulses as at least a portion of an output signal thereof;
selecting means for selecting one of said first and said second predicting means to produce a selection code indicative of the selected predicting means; and
encoding means for encoding the output signal of said selected predicting means into said encoded signal with said selection code placed therein.

4,215,375

DIGITAL FACSIMILE TRANSMISSION SYSTEM FOR SCREENED PICTURES

Touru Usubuchi, and Kazumoto Iinuma, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,508
Claims priority, application Japan, Feb. 23, 1978, 53-20457; Sep. 19, 1978, 53-115357; Oct. 17, 1978, 53-127485
Int. Cl.[2] H04N 1/00
U.S. Cl. 358—261 **6 Claims**



1. A digital facsimile system adapted to transmit picture signals representative of newspapar pages and the like having a printed character portion and a screened picture portion, said system having a transmitter and a receiver, wherein said transmitter comprises: an input terminal for receiving a digitized facsimile signal in the form of a train of pel codes formed by scanning a picture to be transmitted including black and white pels and digitizing the output of said picture scanning; a first reference code generator including first means for providing from the present pel code first pel codes contiguous to said present pel code, second means for providing a second pel code spaced by the pitch of said screened picture from said present pel code, and third means for providing third pel codes near said second pel code, said first reference code generator producing a first reference code including said first to third pel codes; means for producing a first prediction code for said present pel code on the basis of said first reference code; fourth means for providing a prediction error code from said first prediction code and said present pel code; and means for run-length coding the prediction error signal consisting of a plurality of said first prediction error codes successively delivered from said fourth means; and wherein said receiver comprises: means for decoding the coded signal transmitted from said transmitter to reproduce said prediction error signal; means responsive to the output of said decoding means for producing said present pel code from said each prediction error code of said prediction error signal; means responsive to the output of said present code generating means for producing a second reference code corresponding to said first reference code; and means responsive to said second reference code for producing a second prediction code corresponding to said first prediction code and for applying said second prediction code to said present pel code generating means.

4,215,376

CIRCUIT ARRANGEMENT FOR THE DIGITAL CORRECTION OF TIME BASE ERRORS OF A TELEVISION SIGNAL USING VARIABLE ADDRESSING OF A MEMORY

Helmut Mach, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,733
Claims priority, application Austria, Feb. 22, 1977, 1171/77
Int. Cl.[2] H04N 5/04
U.S. Cl. 360—36 **5 Claims**



1. A circuit arrangement for the digital correction of time base errors of a television signal, said circuit comprising an analog to digital converter for converting said television signal into digital television signals with a specific clock frequency, a random access memory device with a given number of addresses coupled to said converter, a digital to analog converter coupled to said memory for reconverting said digital signals into an analog television signal, an address circuit coupled to the memory device for writing the digital television signals into the addresses of the memory device with the clock frequency and for reading at times in between the times of said writing the memory device addresses with the clock frequency, the addresses that are read being selected in accordance with the magnitude and sign of the time base error; an identification circuit for determining the time base error comprising a phase discriminator to which a comparison signal derived from the television signal is applied, said comparison signal being compared with a desired signal; said identification circuit having output means for supplying digital time base error output signals which occur at a given time interval, the ratio of the time interval which is defined by the clock frequency to the given time interval for the formation of the digital time base error signals being an integer, said output means being coupled to the address circuit for controlling the selection of the memory device addresses to be read depending on the number of time intervals contained in the digital time base error signals and defined by the clock frequency with respect to the number of memory device addresses.

4,215,377

MULTI-SPEED TAPE CASSETTE SYSTEM

Elwood G. Norris, 1520 Canterbury Dr., Salt Lake City, Utah 84108

Filed Oct. 10, 1978, Ser. No. 949,752
Int. Cl.[2] G11B *15/46, 15/00*
U.S. Cl. 360—73 **10 Claims**



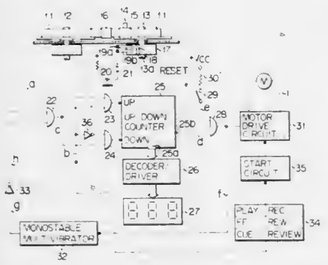
1. A multi-speed tape cassette system comprising
a tape player operable to play back information contained on a tape cassette at least at two speeds, said tape player including
means for receiving and holding a tape cassette;
control switch means for assuming a first condition when a tape cassette having a switch operate member is placed in said receiving and holding means, and for assuming a second condition when a tape cassette lacking said switch operate member is placed in said receiving and holding means,
means responsive to the first condition of said switch means for operating a tape cassette placed in the receiving and holding means at a first speed, and responsive to the second condition of said switch means for operating a tape cassette placed in the receiving and holding means at a second speed, and
a tape cassette including a removable switch operate member for controlling operation of said control switch means when the cassette is placed in said receiving and holding means with either side up.

4,215,378

AUTOMATIC STOP DEVICE FOR A TAPE RECORDER

Masanobu Sato, and Kenzi Furuta, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1978, Ser. No. 958,620
Claims priority, application Japan, Nov. 25, 1977, 52-141320
Int. Cl.[2] G11B *15/48*
U.S. Cl. 360—74.1 **6 Claims**



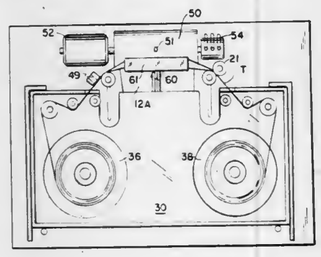
1. An automatic tape recorder-stopping device which comprises a motor for driving a tape reel, a motor drive circuit for driving the motor, first signal-generating means for issuing a pulse signal at a frequency proportional to the rotation number of a tape reel, second signal-producing means for detecting the normal and backward rotations of the tape reel and issuing the normal and backward rotation signals, a counter circuit which counts up and down in response to one of said normal and backward rotation signals from said second signal-producing means which denotes the normal and backward rotations of the tape reel, carries out addition or subtraction in synchronization with the pulse signal from the first signal-generating means, and sends forth an output signal in accordance with the counted contents, means for deenergizing the motor drive circuit in response to the output signal from the counter circuit, and holding means connected to the counter circuit for sustaining the contents of the counter circuit in response to the output signal therefrom.

4,215,379

CARTRIDGE MAGNETIC RECORDER

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Dec. 15, 1977, Ser. No. 860,685
Int. Cl.[2] G11B *15/66*
U.S. Cl. 360—85 **9 Claims**



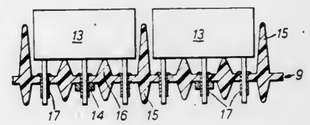
1. Magnetic transducing apparatus comprising in combination:
a support,
a magazine containing magnetic recording tape including supply means for said tape and a take-up reel rotationally supported within said magazine, an opening in said magazine,
means for supporting and prepositioning said magazine on said support,
a drum rotationally supported on said support for rotation about its longitudinal axis, transducing means supported by said drum for rotation therewith,
a motor supported by said support and operatively connected to said drum for rotating said drum at constant speed,
first tape manipulation means supported by said support and operable to engage a portion of the tape in said magazine and to withdraw a loop formation thereof through said opening and out of said magazine and to dispose said tape between said magazine and said drum with the longitudinal axis of said tape extending parallel to the longitudinal axis of said drum,
second tape manipulation means, means for moving said second tape manipulation means into engagement with said portion of said tape disposed between said drum and said magazine by said first tape manipulation means to cause said tape to conform to a portion of the length of said drum whereby, when said drum is rotated by said motor, the transducing means supported by said drum will transversely scan said tape,
tape drive means supported adjacent the portion of said tape drawn from said magazine and operable to drive said tape longitudinally along said drum as said drum rotates and therefrom into said magazine,
means supported by said support for operating said takeup means to take up the tape driven into said magazine by said tape drive means whereby tape may be constantly driven towards and away from said drum so that the transducing means supported by said drum transversely scans said tape as said tape in driven longitudinally along the surface of said drum.

4,215,380

CARRIERS FOR MOUNTING LIGHTNING PROTECTORS

Alan W. Massey, Radlett, England, assignor to Post Office, London, England

Filed Aug. 30, 1977, Ser. No. 830,018
Claims priority, application United Kingdom, Sep. 1, 1976, 36183/76
Int. Cl.[2] H02H *3/22*
U.S. Cl. 361—119 **18 Claims**



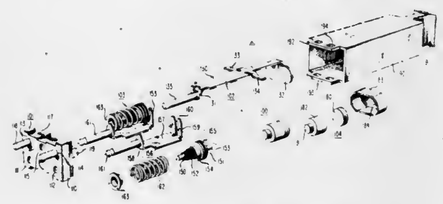
1. A lightning protector carrier comprising a lamellar element made of electrically-insulating material and having a plurality of sets of holes extending directly therethrough from a front face to a rear face of the element, a respective set of electrically-conducting terminals for each of said sets of holes, each terminal being accommodated in a respective one of the holes and extending therethrough from the front face to the rear face of the element whereby each set of terminals provides, at the front face of the element, a socket to receive a respective lightning protector device and, at the rear face of the element, means for making electrical connections from the socket to conductors, and at least one busbar interconnecting preselected ones of said terminals at the rear face of the element, at least one of the said faces of the element being formed with integral protruding portions interposed between said holes to separate the terminals of a set from each other.

4,215,381

PROTECTOR MODULE FOR TELEPHONE CIRCUITS

Robert F. Heisinger, Parsippany-Troy Hills Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 25, 1978, Ser. No. 945,445
Int. Cl.[2] H02H *9/02, 7/20*
U.S. Cl. 361—124 **6 Claims**



1. An electrical protector assembly for protecting a circuit against excessive voltages and excessive currents including:
an insulative base subassembly;
a ground plate subassembly slidably coupled to said base subassembly;
a heat coil subassembly for sensing said excessive currents, this subassembly including a spool having a first conductive flange on one end, windings of resistance wire about an outer surface, and a pin affixed to an inner surface by a thin coating of solder; and
means, axially aligned with said heat coil subassembly, for conducting said excessive voltages from said heat coil subassembly pin to said ground plate subassembly characterized in that said heat coil subassembly further includes
a second conductive flange spaced apart and isolated from said first flange by an insulative member, one end of said resistance wire windings being connected to said spool and an opposite end of said resistance wire windings being connected to said second flange; and
means, surrounding a portion of said heat coil subassembly and in contact with said second flange, for urging said heat coil subassembly first flange from a first position spaced apart from said ground plate subassembly to a second position in contact with said ground plate subassembly upon passage of said excessive currents through said resistance wire windings.

4,215,382

GROUNDING ARRANGEMENT FOR MICROELECTRONIC SPRINKLER CONTROL

Wayne E. Davis, Fresno, Calif., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Jun. 15, 1978, Ser. No. 915,845
Int. Cl.[2] H01H *43/00*
U.S. Cl. 361—166 **8 Claims**



1. In a sprinkler system having a plurality of normally closed sprinkler valves, a solenoid for operating each sprinkler valve and an a-c power source to energize the solenoids, the improved circuit for operating the solenoids for the sprinkler valves in predetermined timed sequence comprising
an earth-grounded power line connecting one side of the a-c power source to each solenoid;
a non-grounded power line connecting the other side of the a-c power source to each solenoid;
switch means for each solenoid in at least one of said earth-grounded and non-grounded power lines for selectively energizing said solenoid;
rectifier means for rectifying a portion of the output of the a-c power source; and
microelectronic control means supplied with power from the rectifier means and connecting as a voltage reference only the non-grounded power line for operating each switch means in predetermined timed sequence.

4,215,383

CURRENT REGULATOR FOR DC MOTORS INCLUDING SENSITIVITY CONTROL MEANS THEREFOR

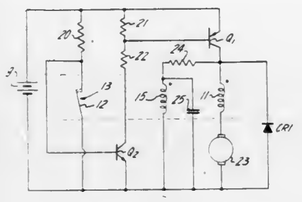
Robert L. Boyd, Woodcliff Lake, and Joseph W. Fleming, Ramsey, both of N.J., assignors to Ramsey Controls, Inc., Rahway, N.J.

Filed Feb. 16, 1978, Ser. No. 878,621
Int. Cl.[2] H01H *47/04, 47/06*
U.S. Cl. 361—210 **1 Claim**

1. A device for current regulation, and sensitivity control means therefore, said device including a load through which the current to be regulated normally passes comprising:
(a) a normally open electro-magnetically actuated relay including an armature movable in response to a magnetic field generated by current flow through a load coil actuated by its proximity to said load in order to sense a predetermined current level therein;
(b) means for adjusting said predetermined current level, including a second coil, bias wound with respect to said load coil, to vary the current required to produce a magnetic field of sufficient strength to move the armature of the relay to a closed position, and a capacitor in parallel connection with said coil to provide an averaging of the

inductive motor current through said second coil and to obtain fine sensitivity control over armature actuation, said means electrically connected to said relay; and

(c) electronic switching means connected to said electro-magnetically actuated relay, said switching means comprising means for closing said relay and thereby cutting off



the load current when said predetermined current level is sensed by said electro-magnetically actuated relay;

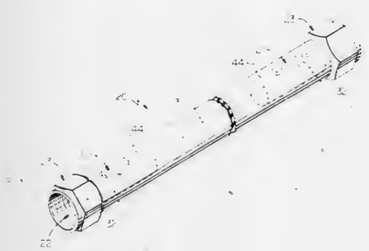
so that the load current will be restored when said current decays sufficiently to enable the armature of said electro-magnetically actuated relay to return to its normally open position.

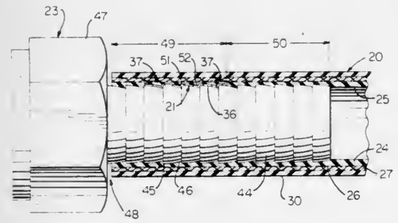
4,215,384

HOSE CONSTRUCTION WITH ELECTRICAL CONDUCTOR FOR DISSIPATING STATIC ELECTRICITY AND METHOD OF MAKING SAME

Arthur M. Elson, Budd Lake, N.J., assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 9, 1978, Ser. No. 884,793
Int. Cl.² F16L *11/12*; H05F *3/02*
U.S. Cl. 361—215 **3 Claims**





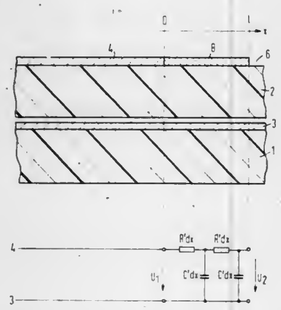
1. In a hose construction having an inside surface defining a passage for conveying a fluid under pressure and an electrical conductor disposed along the hose construction and having a pair of spaced terminal ends adapted to be placed in electrical communication with said passage for dissipating static electricity caused by fluid flow through said passage, a pair of hose connectors connected to opposed end portions of said hose construction with each hose connector having an undulating outside surface engaging said inside surface at an associated end portion of said hose construction, the improvement comprising a pair of electrically conductive metal clips with each clip being connected to an associated terminal end of said electrical conductor and having a portion thereof sandwiched between said inside surface and the outside surface of an associated hose connector to provide an electrical connection therebetween, each clip being made of a flat strip of an easily bendable metal with said portion thereof having an undulating configuration conforming to the outside surface of its associated hose connector, said portion of each clip being a main elongate portion having a central longitudinal axis disposed parallel to the longitudinal axis of said hose construction and each clip further comprising a pair of L-shaped end portions extending from opposite ends of said main portion, said main and L-shaped portions defining each clip as a single-piece structure, said L-shaped portions engaging and self holding each clip on said hose construction, one of said L-shaped portions of each clip having said electrical conductor connected thereto, and said easily bendable metal defining each clip assuring that each main portion thereof conforms to the undulating outside surface of its associated hose connector.

4,215,385

REGENERABLE ELECTRIC CAPACITOR

Reinhard Behn; Gerhard Hoyler, and Walter Voelkl, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 23, 1977, Ser. No. 863,794
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703636
Int. Cl.² H01G *1/017*
U.S. Cl. 361—273 **1 Claim**



1. In a regenerable electric capacitor, in particular for a.c. voltage applications, of the type in which wound layers of synthetic foils carry metal coatings and capacitor plates and wherein metal-free edge strips are arranged on the longitudinal sides of the foils, the improvement wherein

said metal coatings comprise an alloy of aluminum and at least one metal whose oxide has a specific resistance

$$\rho < 10^9 \Omega cm,$$

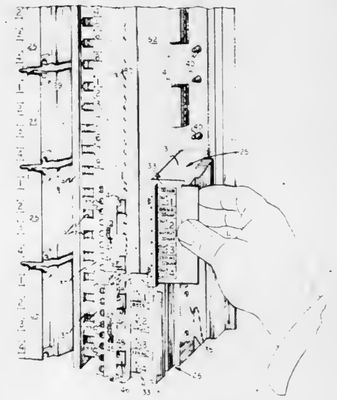
wherein said at least one metal is copper.

4,215,386

MODULAR PANEL CONSTRUCTION FOR PROGRAMMABLE CONTROLLER

Jay M. Prager, Hudson, N.H.; Joseph F. Sadlow, North Reading, Mass.; John E. Farrand, Nashua, N.H.; Thomas A. Boissevain, Bedford, and Roman Y. Gonzales, Andover, both of Mass., assignors to Modicon Division, Gould Inc., Andover, Mass.

Filed Mar. 3, 1978, Ser. No. 883,277
Int. Cl.² H05K *5/00*
U.S. Cl. 361—394 **20 Claims**



1. An input/output assembly interconnected with a central processor to form a machine controller for receiving information from and providing operating instructions to external devices, comprising:

(A) an interconnecting support member incorporating means for communication with the central processor;

(B) at least one housing member incorporating

(a) a central frame supportingly mounted to the support member,

(b) electronic circuitry mounted to the frame and communicating with the communicating means of the support member,

(c) connector assemblies, electronically interconnecting said electronic circuitry to an electronic module, and

(1) being removably supportingly retained on the central frame in rigid, non-pivoting positions, and

(2) comprising a plurality of flexible, resiliently deformable pin members for solderless, removable electronic engagement with both said circuitry and said electronic module, thereby assuring flexible, resiliently deformable receipt of mating connectors at any laterally offset angular relationship thereto, and

(d) a terminal strip mounted to the frame and incorporating a plurality of contact lines for electronic interconnection with the external devices; and

(C) an electronic module removably mounted to the housing member and incorporating

(a) a first connector for interconnected engagement with the connector assembly in a plurality of laterally offset insertion angles, and

(b) a second connector for interconnected engagement with the contact lines of the terminal strip;

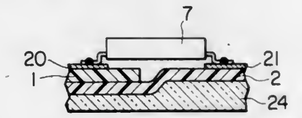
whereby, the electronic module is securely and easily mounted to the support frame of the housing member as well as electrically connected between the external devices and the central processor by simply engaging the first connector of the module with a connector assembly in any desired laterally offset insertion angle and then moving the module sideways for electronic engagement of the second connector with the terminal strip contacts.

4,215,387

MULTI-LAYER FLEXIBLE PRINTED CIRCUIT BOARD ASSEMBLY

Kiyoshi Negishi, Asaka, and Katsuhiko Miyata, Omiya, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1978, Ser. No. 946,916
Claims priority, application Japan, Oct. 6, 1977, 52-134538[U]
Int. Cl.² H02B *1/04*
U.S. Cl. 361—398 **5 Claims**



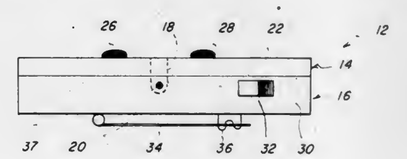
1. A multi-layer flexible printed circuit board assembly comprising: at least two substantially flat flexible printed circuit boards, each of said circuit boards having an electrically conductive layer secured to the top surface thereof; said boards being stacked on top of each other with the conductive layers aligned with each other and facing in the same direction; a portion of the upper board in the stack having an opening therein uncovering a portion of the lower board; the uncovered portion of the lower board being bent upwardly into said opening so that the conductive layers on the upper board and uncovered portion of the lower board are co-planar; and an electrical component having two leads, one of which is connected to the conductive layer on the upper board, and the other of which is connected to the conductive layer on the lower board so that the plane of the connected electrical component is parallel to the plane of the co-planar conductive layers.

4,215,388

NOVELTY BUTTON

Roman M. Reimann, 2717 Titus Ave., Rochester, N.Y. 14622

Filed Nov. 9, 1978, Ser. No. 959,347
Int. Cl.² F21L *15/08*
U.S. Cl. 362—104 **3 Claims**



1. A novelty facial design button comprising:

(a) a printed circuit board having mounted thereon

(1) a light emitting diode flasher circuit comprising a LM 3909 linear integrated circuit manufactured by National Semiconductor Corporation and a capacitor,

(2) a 1.5 volt battery,

(3) a switch, said battery and said switch being connected to the input terminals of said integrated circuit, and

(4) at least first and second light-emitting diodes connected to the output terminals of said integrated circuit; and

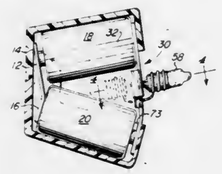
(b) a housing enclosing said printed circuit board, said housing having means defining at least first and second apertures, therein, and a facial design on at least one external surface, said printed circuit board being arranged within said housing so that said first and second diodes extend through said first and second apertures, respectively, and form at least a portion of said facial design.

4,215,389

BATTERY OPERATED LIGHT

Fernando M. Colangelo, 1315 E. Camelback, Phoenix, Ariz. 85014

Filed Dec. 12, 1977, Ser. No. 859,791
Int. Cl.² F21L 7/00
U.S. Cl. 362—199 6 Claims



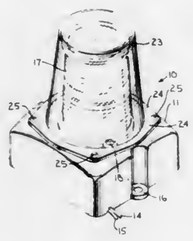
1. A flashlight for use with at least two battery cells each having terminals at opposite first and second ends comprising:
(a) a frame for securing the said batteries in a generally side-by-side relationship defining a space therebetween, said frame including a first conductive element extending between a first set of battery terminals at the first end of said batteries, second conductor means extending from one of the battery terminals at said second end into said space and third conductor means extending from the other of said battery terminals at said second end into said space;
(b) switch means having an outer conductive body section, said conductive body section forming an electrical connection with said second conductor means;
(c) bulb holder means having an arm and a bulb receiving portion for receiving the terminal portion of a bulb, said bulb holder means being in electrical contact with said third conductor, said bulb receiving portion being adjacent said switch member and being rotatable about said third conductor whereby said bulb holder means is rotative from a second position placing said bulb terminal portion out of contact with said conductive body section and generally positioned in the space between said batteries to a first energized position placing said bulb terminal portion in electrical contact with the conductive body section thereby completing an electrical circuit.

4,215,390

WARNING LIGHT

Ivan L. Brandt, Milwaukee, Wis., assignor to J. W. Speaker Corporation, Milwaukee, Wis.

Filed Dec. 26, 1978, Ser. No. 972,813
Int. Cl.² F21V 3/00
U.S. Cl. 362—311 10 Claims



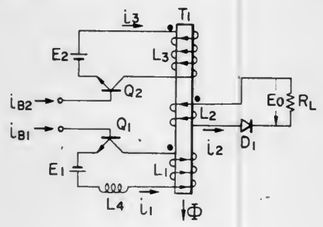
1. A lens especially adapted for increasing the effective light output of a flashing strobe light, said lens being formed of a plastic material which has incorporated therein an effective amount of a fluorescent material which converts the radiation emitted by the flashing strobe light to the wavelength of the fluorescent material.

4,215,391

POWER CONVERSION DEVICE

Kazuo Kameya, Tsurugashima, Japan, assignor to Toko Inc., Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,889
Claims priority, application Japan, Jul. 29, 1977, 52-91085
Int. Cl.² H02M 3/335
U.S. Cl. 363—25 10 Claims



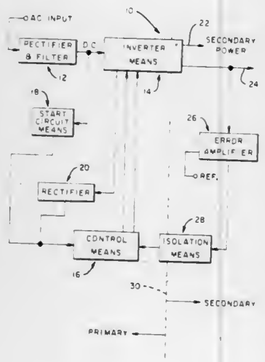
1. A power control circuit comprising:
(a) at least one DC power source;
(b) a transformer including a primary winding, a secondary winding and an excitation winding;
(c) an excitation coil connected in series with said primary winding;
(d) first switching means for connecting said transformer in a first series circuit including said primary winding, said DC power source and said excitation coil;
(e) second switching means for connecting said transformer in a second series circuit including said excitation winding and said DC power source;
(f) a rectifier circuit connected with driving a load; and
(g) said first and second switching means operative for alternately connecting said first and second series circuits wherein energy stored in said excitation winding during connection of said second series circuit induces a current in said secondary winding during connection of said first series circuit , said induced current superimposed on a current induced by said primary winding on said secondary winding during operation of said second series circuit, said superimposed current rectified by said rectifier circuit.

4,215,392

INVERTER POWER SUPPLY

Paul M. Rhoads, Orlando, Fla., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 19, 1978, Ser. No. 971,141
Int. Cl.² H02M 7/00
U.S. Cl. 363—49 6 Claims



1. A circuit comprising:

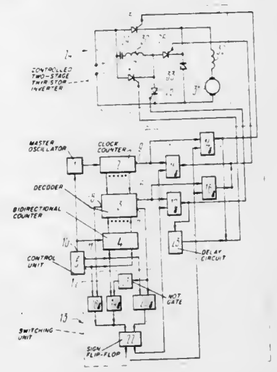
a transforming means having a primary and a secondary with said secondary having a first winding and at least one second winding, and also having means coupling said second winding to supply a D.C. output voltage to a load;
D.C. input means;
means operatively coupled to said D.C. input means for switching a current through said primary in response to first and second signals applied thereto to produce an alternating voltage across said first winding and said second winding;
control means having an input thereto which is operatively coupled to said D.C. output voltage and also generating said first and second signals to maintain a constant voltage at said load;
rectifier means operatively coupled to said first winding to provide power to said control means; and
start-up means operatively coupled to said D.C. input means to provide start-up power for said control means until said rectifier means supplies said power thereto; said start-up means including a resistor and a control element, said resistor being of a size which enables it to act as a fuse in the event that said control element is biased into conduction for a predetermined amount of time.

4,215,393

APPARATUS FOR NUMERICAL CONTROL OF THYRISTOR INVERTER

Anatoly Y. Kalinichenko, Orekhovo-Zuevsky proezd, 6, kv. 16, Moscow, U.S.S.R.

Filed Sep. 5, 1978, Ser. No. 939,339
Int. Cl.² H02M 7/515
U.S. Cl. 363—124 1 Claim



1. An apparatus for numerical control of a thyristor inverter incorporating main, dropping, recharging and additional thyristors, comprising:
a master oscillator having an input and an output;
a clock counter having an input connected to the output of said master oscillator, a control pulse output and a group of outputs;
a bidirectional counter having a reset input, an add input, a subtract input and a group of outputs;
a decoder having groups of inputs respectively coupled to said groups of outputs of said bidirectional counter and of said clock counter, a control pulse output, a first regulation step switching pulse output, and a second regulation step switching pulse output;
a control unit having a reset output coupled to said reset input of said bidirectional counter and to the input of said master oscillator, an add output coupled to said add input of said bidirectional counter, and a subtract output coupled to said substract input of said bidirectional counter; and
a switching unit comprising first, second, third, fourth, fifth, sixth and seventh AND gates, a NOT gate, a sign flip-flop, and a delay circuit; wherein
said first AND gate of said switching unit has a first input coupled to said control pulse output of said clock counter, a second input, and an output coupled to gate electrodes of said main and recharging thyristors of said thyristor inverter;
said second AND gate of said switching unit has a first input coupled to said control pulse output of said clock counter, a second input, and an output coupled to a gate electrode of said dropping thyristor;
said third AND gate of said switching unit has a first input coupled to said control pulse output of said decoder, a second input, and an output coupled to the gate electrode of said dropping thyristor;
said fourth AND gate of said switching unit has a first input coupled to said control pulse output of said decoder, a second output, and an output coupled to a gate electrode of said additional thyristor;
said fifth AND gate of said switching unit has a first input coupled to said subtract output of said control unit, a second input coupled to said second regulation step switching pulse output of said decoder, and an output;
said sixth AND gate of said switching unit has a first input coupled to said add output of said control unit, a second input, and an output;
said seventh AND gate of said switching unit has a first input coupled to said add output of said control unit, a second input coupled to said first regulation step switching pulse output of said decoder, and an output;
said NOT gate of said switching unit has an input coupled to said first regulation switching pulse output of said decoder, and an output coupled to the second input of said sixth AND gate;
said sign flip-flop of said switching unit has a first input coupled to the outputs of said fifth and sixth AND gates, a second input coupled to the output of said seventh AND gate, a first output coupled to the second inputs of said second and fourth AND gates, and a second output coupled to the second inputs of said first and third AND gates; and
said delay circuit of said switching unit has an input coupled to the output of said fourth AND gate, and an output coupled to the gate electrode of said recharging thyristor.

4,215,394

CONTROL LOGIC FOR AN INVERTER RIPPLE CONTROLLED POWER SYSTEM

James H. Galloway, New Baltimore, and Alby M. Berman, Oak Park, both of Mich., assignors to Oxy Metal Industries Corp., Warren, Mich.

Filed Jun. 29, 1978, Ser. No. 920,482
Int. Cl.² H02M 7/515
U.S. Cl. 363—137 14 Claims



1. In a load management system for providing an audio frequency signal onto a three phase electrical line the improvement comprising: solid state inverter means actuable to one condition for providing a three phase signal from a d-c source and to another condition for not providing said three phase

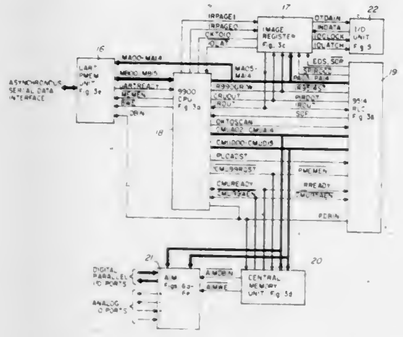
signal and comprising a plurality of unidirectional current controlled conduction solid state load devices, a three phase isolation transformer connecting said inverter means to the electrical line, control means including at least two of said controlled conduction solid state devices for providing a low impedance path for backfeed current from the electrical line during said another condition.

4,215,395

DUAL MICROPROCESSOR INTELLIGENT PROGRAMMABLE PROCESS CONTROL SYSTEM

Michael L. Bunyard, Lubbock, and Bobby G. Burkett, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1978, Ser. No. 936,533
Int. Cl.[2] G06F *15/16, 15/46*
U.S. Cl. 364—101 **36 Claims**



1. An intelligent programmable process control system for controlling a process, said system comprising:

(a) at least one analog-to-digital converter means for generating a digital output corresponding to an analog voltage input signal from an analog sensor device located along said process;

(b) at least one digital-to-analog converter means for generating an analog voltage output signal corresponding to a digital input to control a controllable analog device located along said process;

(c) first microprocessor means coupled to the digital output of said analog-to-digital converter means and coupled to provide the digital input to said digital-to-analog converter means, said first microprocessor means controlling at least one analog loop control function of said process via said analog-to-digital converter means and said digital-to-analog converter means;

(d) second microprocessor means for scanning and executing a sequence of boolean logic functions, said first microprocessor means and said second microprocessor means normally operating asynchronously with respect to each other;

(e) image register means for storing input bits representative of the on/off states of sensors located along said process and output bit representative of the on/off states of controllable devices located along said process, said second microprocessor means being coupled to said image register means for executing said sequence of boolean logic functions in accordance with the states of said input bits to generate said output bits;

(f) a random access memory, said first and second microprocessors being coupled to said random access memory to provide a first coupling therebetween to communicate with each other via selectively addressed memory locations of said random access memory; and

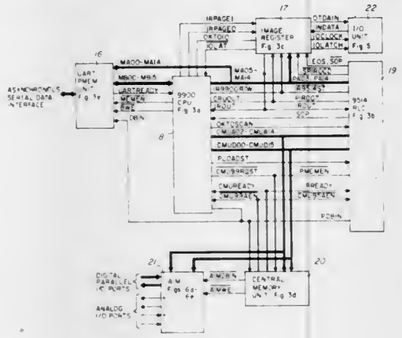
(g) other means coupling said second microprocessor to said first microprocessor whereby said second microprocessor signals said first microprocessor to perform digital operations and arithmetic computations for said second microprocessor in addition to controlling said analog loop control functions.

4,215,396

INTELLIGENT PROGRAMMABLE PROCESS CONTROL SYSTEM

Raymond W. Henry, Dallas; Bobby G. Burkett, Richardson, and Michael L. Bunyard, Lubbock, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1978, Ser. No. 936,538
Int. Cl.[2] G06F *15/16, 15/46*
U.S. Cl. 364—101 **6 Claims**



1. An intelligent programmable process control system for controlling a process, said system comprising:

(a) at least one analog-to-digital converter means for generating a digital output corresponding to an analog voltage input signal from an analog sensor device located along said process;

(b) at least one digital-to-analog converter means for generating an analog voltage output signal corresponding to a digital input to control a controllable analog device located along said process;

(c) digital processor means coupled to the digital output of said analog-to-digital converter means and coupled to provide the digital input to said digital-to-analog converter means, said digital processor means controlling at least one analog loop control function of said process via said analog-to-digital converter means and said digital-to-analog converter means;

(d) boolean processor means for scanning and executing a sequence of boolean logic functions;

(e) image register means for storing input bits representative of the on/of states of sensors located along said process and output bits representative of the on/off states of controllable devices located along said process, said boolean processor means being coupled to said image register means for executing said sequence of boolean logic functions in accordance with the states of said input bits to generate said output bits;

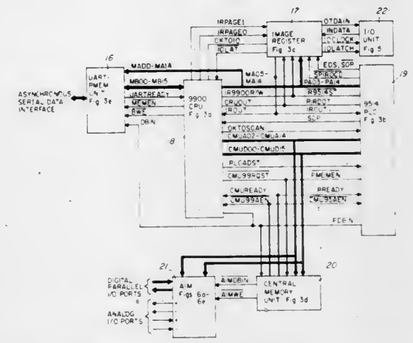
(f) selectively addressable memory means; and communication means including a direct path and a path through selectable addresses of said selectively addressable memory means coupling said digital processor means to said boolean processor means to communicate instructions and data between said digital processor means and said boolean means, said digital processor means and said boolean processor means normally operating independently and asynchronously with respect to each other.

4,215,397

AUTOMATIC END-OF-SCAN CONTROL SYSTEM FOR A PROGRAMMABLE PROCESS CONTROLLER WITH EXPANDABLE MEMORY

Gim P. Hom, Sharon, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1978, Ser. No. 936,547
Int. Cl.[2] G06F *15/16, 15/46*
U.S. Cl. 364—101 **10 Claims**



1. An intelligent programmable process control system responsive to the states of sensors located along the process for controlling the states of controllable devices located along said process, said system comprising:

(a) addressable memory means for storing a sequence of boolean logic instructions for controlling said process;

(b) microprocessor means coupled to said memory means for sequentially scanning said memory means to execute said sequence of boolean logic instructions, said microprocessor means including first means for generating an end-of-scan signal upon execution of the last instruction of a sequence contained in said memory means;

(c) image register means coupled to said microprocessor means for storing input bits representative of the states of said sensors and output bits representative of the states of said controllable devices as computed by said microprocessor means in accordance with said sequence of boolean logic instructions;

(d) receptor means adapted to receive extended addressable memory means, said extended addressable memory means being effective when positioned in said receptor means to store additional instructions of said sequence of boolean logic instructions, said receptor means including means for detecting the presence or absence of said extended addressable memory means in said receptor means and providing an indicator signal indicative thereof, and

(e) second means coupled to said receptor means and responsive to said indicator signal for generating an end-of-scan signal whenever said microprocessor means attempts to address said extended memory means and said indicator signal indicates that said receptor does not contain said extended memory means.

4,215,398

DUAL MICROPROCESSOR INTELLIGENT PROGRAMMABLE PROCESS CONTROL SYSTEM WITH COMMUNICATION LINK

Bobby G. Burkett, Richardson, and Michael L. Bunyard, Lubbock, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1978, Ser. No. 936,422
Int. Cl.[2] G06F *15/46, 15/16*
U.S. Cl. 364—101 **34 Claims**

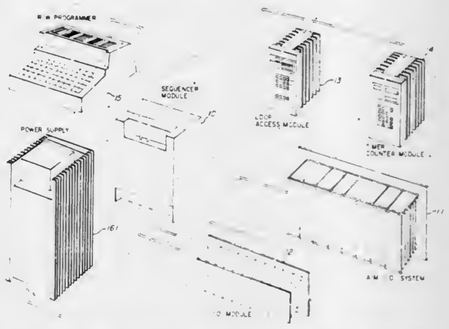
1. An intelligent programmable process control system responsive to the on/off states of sensors located along a process for controlling the on/off states of controllable devices located along said process comprising:

(a) a first microprocessor for performing digital operations and arithmetic computations;

(b) a second microprocessor for scanning and executing a sequence of boolean logic functions asynchronously with respect to the processing of said first microprocessor;

(c) a random access memory, said first and second microprocessor each being coupled to said random access memory to provide a first coupling therebetween to communicate with each other via selectively addressed memory locations of said random access memory;

(d) an image register for storing input bits representative of the on/off states of said sensors and output bits representative of the on/off states of said controllable devices, said



second microprocessor being coupled to said image register for executing said sequence of boolean logic functions in accordance with the states of said input bits to generate said output bits; and

(e) other means coupling said second microprocessor to said first microprocessor whereby said second microprocessor signals said first microprocessor to perform digital operations and arithmetic computations for said second microprocessor, the results of operations and computations for said second microprocessor being communicated to said second microprocessor via said random access memory and said second microprocessor generating output bits for controlling the on/off states of controllable devices along said process based upon the results of the operations and computations performed by said first microprocessor for said second microprocessor.

4,215,399

SPECIAL FUNCTION CONTROL SYSTEM FOR A DUAL MICROPROCESSOR PROGRAMMABLE PROCESS CONTROL SYSTEM

Mark J. Pavicic, and Jack L. Mahaffey, II, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

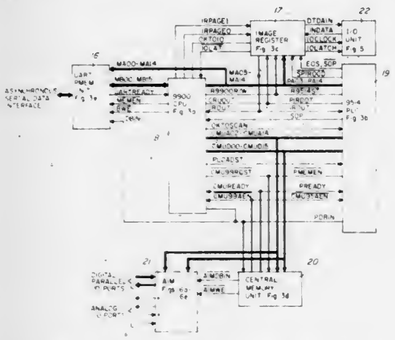
Filed Aug. 24, 1978, Ser. No. 936,532
Int. Cl.[2] G06F *15/16, 15/46*
U.S. Cl. 364—101 **26 Claims**

10. An intelligent programmable process control system responsive to the states of sensors located along a process for controlling the states of controllable devices located along said process, said system comprising:

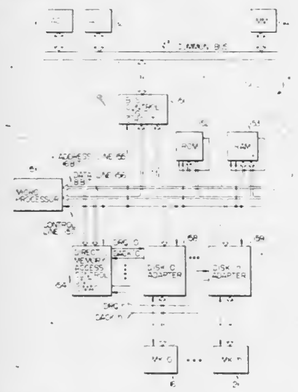
(a) first microprocessor means for scanning and executing a sequence of boolean logic functions;

(b) second microprocessor means for performing relatively complex operations including arithmetic computations beyond the capabilities of said first microprocessor means, said first microprocessor means being coupled to an interrupt request input means of said second microprocessor means for transmitting interrupt requests to said second microprocessor means for execution of selection of said complex operations;

(c) addressable memory means, said first and second microprocessor means being coupled to said addressable memory means to communicate with each other via selectively addressed memory locations of said memory means; and
(d) flag bit register means settable by said second microprocessor means and detectable by said first microprocessor means for indicating to said first microprocessor means that a requested complex operation has been completed by said second microprocessor means, wherein;
(e) said first microprocessor means includes means responsive to the encountering of a complex operation in said sequence of boolean logic functions for checking said flag bit register means to determine whether a queued-up complex operation has been completed by said second microprocessor means, said first microprocessor means continuing to scan and execute its sequence of boolean logic functions asynchronously with respect to the operation of said second microprocessor means until said flag bit register means indicates that execution of a requested complex operation has been completed by said second microprocessor means.

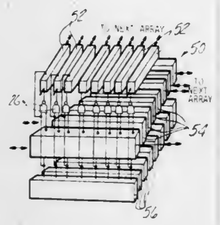


4,215,400
DISK ADDRESS CONTROLLER
Masatoshi Denko, Oume, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co. Ltd., Kawasaki, Japan
Filed Nov. 10, 1977, Ser. No. 850,146
Claims priority, application Japan, Nov. 17, 1976, 51-138174
Int. Cl.[2] G06F *13/04, 3/06, 7/38*
U.S. Cl. 364—200 **7 Claims**



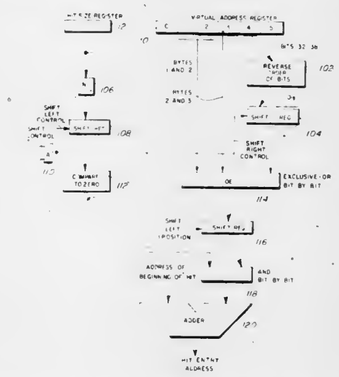
1. A disk address controller being connected between a plurality of processing units, a main memory, and at least one disk unit being accessible by the plurality of processing units via a bus, and controlling the accesses of the processing units upon receipt of disk output instructions issued from the processing units said disk unit having a storing area including a plurality of accessible area portions allotted to said processing units, respectively, comprising:
base register means for storing the lower limit address of an accessible area portion allotted each processing unit to one disk unit;
limit register means for storing the upper limit address of said accessible area portion;
a direct memory access control unit for executing data transfer between the disk unit and a main memory which are connected to each other via address lines, data lines and control lines;
means in which, when one of the processing units issues a disk input/output instruction, the disk address specified by said disk input/output instruction and the lower limit address of said base register means corresponding to said processing unit having issued said disk input/output instruction are summed to produce an real disk address;
means for comparing said real disk address with the upper limit address of said limit register means corresponding to said processing unit having issued said disk input/output instruction; and
means, in which, when said real disk address is smaller than the upper limit address, a command is given to said direct memory access control unit to perform data transfer between the disk unit and said main memory using said real disk address, while, when said real disk address is larger than said upper limit address, an error interruption is made into said processing unit having issued said disk input/output instruction.

4,215,401
CELLULAR DIGITAL ARRAY PROCESSOR
Wlodzimierz Holsztynski, and Stephen S. Wilson, both of Ann Arbor, Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.
Filed Sep. 28, 1978, Ser. No. 946,588
Int. Cl.[2] G06F *7/00*
U.S. Cl. 364—200 **20 Claims**



1. A rectangular digital processing array comprising: a plurality of processor cells each including a multi-bit memory having an input and an output, a first, input, single bit accumulator, a processing element having two inputs, one connected to receive the output of the multibit memory and the other connected to receive the output of the single bit accumulator; a second accumulator; first interconnections between the first accumulator of each cell and the first accumulators of two neighboring cells; second interconnections between the second accumulator of each cell and two neighboring cells which are different from the neighboring cells to which the first accumulator of each such cell is interconnected; and a controller connected to all of the cells in the array operative to control the transfer of data within each cell and through the interconnections between the cells.

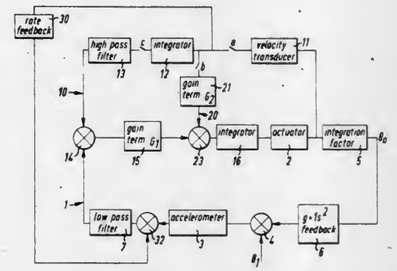
4,215,402
HASH INDEX TABLE HASH GENERATOR APPARATUS
Glen R. Mitchell, Pine Island, and Merle E. Houdek, Rochester, both of Minn., assignors to International Business Machines Corporation, Rochester, Minn.
Filed Oct. 23, 1978, Ser. No. 953,675
Int. Cl.[2] G06F *9/20, 13/00*
U.S. Cl. 364—200 **8 Claims**



1. Apparatus for generating an entry address into a table from a virtual address in a data processing system, the data processing system having a main store, the virtual address having (1) a first group of bits for addressing within an object and (2) a second group of bits for addressing a particular object, where the size of the table is variable and is dependent upon the size of the main store, the main store having a plurality of objects, comprising:
first register means for storing a virtual address;
indicating means for indicating the number of entries in the table;
alignment means for aligning the first group of bits relative to the second group of bits based upon the number of entries in the table as indicated by said indicating means;
EXCLUSIVE-OR means connected to receive the first and second groups of bits after they have been aligned by said alignment means and operable to generate a result having a number of bits sufficient to represent the maximum number of entries in the table; and
bit eliminating means for eliminating bits from the result produced by said EXCLUSIVE-OR means based upon the number of entries in the table indicated by said indicating means.

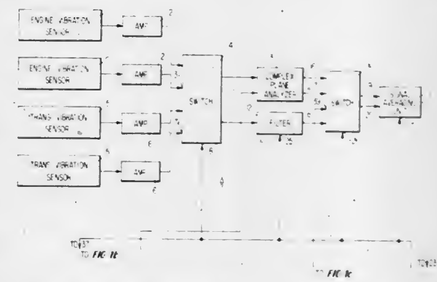
4,215,403
ACTIVE SUSPENSIONS FOR VEHICLES
Maurice G. Pollard, and Roger M. Goodall, both of Derby, England, assignors to British Railways Board, London, England
Filed Aug. 23, 1978, Ser. No. 936,305
Claims priority, application United Kingdom, Oct. 25, 1977, 44274/77
Int. Cl.[2] B60G *25/00;* **G05B** *11/40*
U.S. Cl. 364—424 **5 Claims**

1. An active suspension system for a vehicle comprising:
(a) a main control loop including a suspension actuator, said loop including first comparator means for receiving an input signal representative of a suspension demand and a feed back signal representative of the response of said actuator to said demand, said input and feed back signals being compared in said first comparator means to provide a deficiency signal indicative of the deficiency between said demand and the response of said actuator, and a low-pass filter in said main control loop through which said deficiency signal passes, and
(b) a second control loop providing a restraining signal for restraining operation of said actuator, said second loop comprising means for deriving said restraining signal from a suspension parameter which varies with operation of said actuator, and a high pass filter in said second control loop through which said restraining signal is passed and which is substantially complementary to said low-pass filter, and



(c) second comparator means coupled to said main control loop and to said second control loop for comparing said deficiency signal and said restraining signal after said signals have passed through said low-pass and high-pass filters respectively, and operative in response to said comparison to provide a resultant signal for controlling said actuator.

4,215,404
AUTOMATIC DEVICE FOR DIAGNOSTIC CHECKUP OF VEHICLES
Ivan D. Bukhtiyarov, dom 3, kv. 157; Veniamin G. Potanin, dom 3, kv. 12; Viktor V. Alt, dom 3, kv. 13; Evgeny A. Rakhmanin, dom 3, kv. 149; Vladimir M. Lyzlov, dom 19, kv. 5; Viktor B. An, dom 3, kv. 5; Valery P. Anikin, dom 11, kv. 4; Vladimir G. Koshevoi, dom 18, kv. 12, all of r/p Krasnoobsk Novosibirskoi oblasti; Nikolai G. Timonin, ulitsa Filatova, 10, kv. 114, Novosibirsk; Gennady P. Zhdanov, ulitsa Chrnyakhovskogo, 41, kv. 48, s. Baryshevo Novosibirskoi oblasti; Alfred I. Gibert, dom 7, kv. 167, and Vladimir M. Kolesnikov, dom 7, kv. 188, both of r/p Krasnoobsk Novosibirskoi oblasti, all of U.S.S.R.
Filed Sep. 12, 1978, Ser. No. 941,593
Int. Cl.[2] G01M *15/00*
U.S. Cl. 364—431 **3 Claims**



1. An automatic device for diagnostic checkup of vehicles having an engine with at least one engine unit, the device comprising:
at least one vehicle engine vibration sensor, having an output;
at least one vehicle transmission vibration sensor, having an output;
a first switch having a first input electrically connected to said output of said engine vibration sensor, a second input electrically connected to said output of said transmission

vibration sensor, a control input and first and second outputs;

a computer;

a control unit having an input whereto a control signal is applied from said computer and an output, the output being connected to said control input of said first switch;

a variable bandwidth filter having an input connected to said first output of said first switch, a control input connected to said output of said control unit, and an output;

a complex plane analyzer of a vibration signal of a vehicle unit being diagnosed, having an input connected to said second output of said first switch, a second input, an amplitude output, and a phase output;

a second switch having a first input and a second input, which are respectively connected to said amplitude output and said phase output of said complex plane analyzer of a vibration signal of the engine unit being diagnosed, a third input whereto said output of said variable bandwidth filter is connected, a control input connected to said output of said control unit, a fifth input, and two outputs;

a signal averaging unit having two inputs connected to said outputs of said second switch, a control input connected to said output of said control unit, and from whose output a signal is applied to an input of said computer;

a synchronization unit having a control input connected to said output of said control unit, an output connected to said second input of said complex plane analyzer of a vibration signal, a group of inputs, and a group of outputs;

a vehicle engine shaft angular position sensor having an output connected to a first input of said group of inputs of said synchronization unit;

a transmission shaft angular position sensor having an output connected to a second input of said group of inputs of said synchronization unit;

at least one ignition sensor having an output connected to a fourth input of said group of inputs of said synchronization unit;

at least one sensor of fuel injection to vehicle engine cylinders, having an output connected to a fourth input of said goup of inputs of said synchronization unit;

a first output of said group of outputs of said synchronization unit being connected to said second input of said complex plane analyzer, to said fifth input of said second switch and wherefrom a signal is also applied to said computer;

an engine operational parameter measuring unit having an output signal applied to said computer, having an input connected to said output of said control unit, a second input, a third input and a fourth input, which are connected respectively to second, third and fourth outputs of said group of outputs of said synchronization unit, and having a group of inputs;

an engine oil temperature sensor having an output connected to a first input of said group of inputs of said engine operational parameter measuring unit;

an engine oil pressure sensor having an output connected to a second input of said group of inputs of said engine operational parameter measuring unit;

an engine liquid coolant temperature sensor having an output connected to a third input of said group of inputs of said engine operational parameter measuring unit;

an engine fuel consumption sensor having an output connected to a fourth input of said group of inputs of said engine operational parameter measuring unit;

at least one engine combustion chamber gas pressure sensor having an output connected to a fifth input of said group of inputs of said engine operational parameter measuring unit;

a spark plug voltage shape sensor having an output connected to a sixth input of said group of inputs of said engine operational parameter measuring unit;

an engine shaft rotational frequency adjustment unit having a control input connected to said output of said control unit, an information input connected to said fourth output of said group of outputs of said synchronization unit, and an output; and

an actuator for controlling fuel supply to engine cylinders, having an input connected to said output of said engine shaft rotational frequency adjustment unit.

4,215,405

METHOD AND APPARATUS FOR SECURING THE INTERMEDIATE TIME DURATIONS IN STREET TRAFFIC SIGNAL SYSTEMS

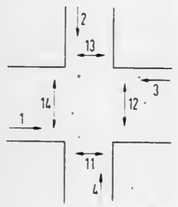
Heinrich Brunner, Rottach-Egern, and Karin Fischer, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,409

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739616

Int. Cl.[2] **G06F** *15/48;* **G08G** *1/07*

U.S. Cl. 364—436 **3 Claims**



1. A method for securing the intermediate protective time periods at an intersection in a street traffic signal system to provide adequate safety protection between respective traffic flows, comprising the following steps:

(a) with the end of the duration of the green light time period of each individual signal of the respective traffic flows to be independently controlled, adding the time elapsing thereafter, representing an actual time value,

(b) comparing such actual time value with predetermined theoretical protective time values for traffic flows antagonistic to the green light signal to be connected, and upon attaining and/or exceeding the predetermined values, releasing an associating connect command to said lastmentioned green light signal,

(c) adding, at interrogation intervals somewhat smaller than those corresponding to the time rhythm of the traffic signal, all of said theoretical time values employed in (b), with the total thereof thus constituting an additional actual total time value, and comparing the latter with a predetermined theoretical total time value therefor, and in the event an error is ascertained by said comparing operations, effecting corresponding safety precautions.

4,215,406

DIGITAL COMPUTER MONITORED AND/OR OPERATED SYSTEM OR PROCESS WHICH IS STRUCTURED FOR OPERATION WITH AN IMPROVED AUTOMATIC PROGRAMMING PROCESS AND SYSTEM

John W. Gomola; Theodore C. Giras; William G. Wood; Richard E. Putman; Rodney E. Gilbreath, all of Pittsburgh, Pa.; John S. Deliyannides, Wilmington, Del.; Terry B. Cullen, Pittsburgh, Pa.; F. David Jones, Pittsburgh, Pa.; Warren A. Edblad, Pittsburgh, Pa., and Frank E. Wallace, Irwin, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 22, 1972, Ser. No. 281,472

Int. Cl.[2] **B21B** *37/00*

U.S. Cl. 364—468 **8 Claims**

7. An automated system in which the execution of system operations is carried out under the joint control of computer programs and job definitions written out in the language of a systems engineer and containing references to system signals by name, said system comprising:

means for implementing system operations;

sensor means for generating signals indicative of the state of the system;

a memory containing a plurality of addressable storage locations;

means for maintaining within said memory a record of the state of said signals;

means for establishing within said memory a first table relating the addresses of memory locations containing signal state records to names for the corresponding signals;

means having access to said first table for converting job definitions written out in the language of a systems engineer and referring to signals by name into compact data files that refer to signals by address;

means for loading said compact data files and also conventional computer programs into said memory;

means for establishing within said memory a second table relating the addresses of data files and computer programs within said memory to identifiers for each data file and

4,215,407

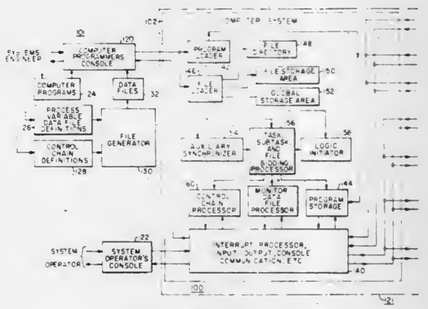
COMBINED FILE AND DIRECTORY SYSTEM FOR A PROCESS CONTROL DIGITAL COMPUTER SYSTEM

John W. Gomola; William G. Wood; F. David Jones, all of Pittsburgh; Frank E. Wallace, Irwin, and Ross T. Marano, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

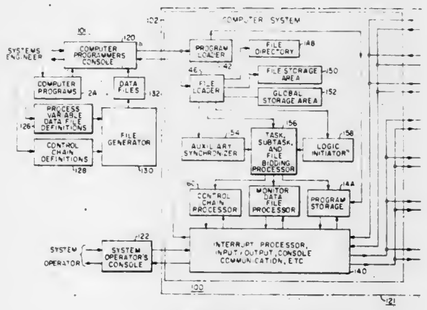
Filed Aug. 22, 1972, Ser. No. 281,618

Int. Cl.[2] **B21B** *37/00*

U.S. Cl. 364—468 **8 Claims**



PROCESS CONTROL SYSTEM



PROCESS CONTROL SYSTEM

program, and also distinguishing data file addresses from program addresses;

first means for interpreting and carrying out system operations called for by a data file when supplied with the data file address;

second means for executing a computer program when supplied with the computer program address;

means for initiating the execution or interpretation of any data file or computer program when supplied with an identifier of the data file or program, said means including

means having access to said second table for determining whether a supplied identifier corresponds to a data file or to a computer program,

means for obtaining from said table the address of the data file or program corresponding to a supplied identifier, and

means for supplying said address to said first means in the case of a data file and to said second means in the case of a computer program; and

means associated with both said first and second means for transferring an identifier from any computer program or data file to said means for initiating.

7. An automated system in which job definitions and system variables (including signals) are assigned and are referred to by alphanumeric names, said system comprising:

a memory containing a plurality of addressable storage locations including at least one file storage area in which variable-length data files may be stored, at least one directory storage area in which entries containing an alphanumeric name and a memory address may be stored, at least one variable status data storage area in which may be stored data defining the status of variables including signals, an empty file pointer location, and an empty directory pointer location;

at least one linkage interconnecting all locations in the file storage area not containing data files to said empty file pointer location;

at least one linkage interconnecting all locations in the directory storage area not containing entries to said empty directory pointer location;

loader means for loading job definitions into said file storage area as files, said loader means including means for maintaining said linkage of unused file storage locations;

directory establishment means for loading job definition names and memory addresses, and also variable names and memory addresses, into said directory storage area as entries, said directory establishment means including means for maintaining said linkage of unused directory storage locations;

means for establishing and maintaining a plurality of hash-code linkages of directory entries containing names having some common property;

means having access to said directory through said hash-code linkages for replacing references within job definitions to job definitions and variables by name with the addresses of the corresponding job-definition files and variable-status-data storage locations;

means for generating a plurality of incoming signals;

means for adjusting the status data in selected locations within said variable-status-data storage area to correspond with the status of the incoming signals;

means for generating a plurality of outgoing signals;

means for adjusting the status of said outgoing signals to correspond with the status data in selected locations within said variable status data storage locations;

means for carrying out the system operations called for by said stored job definitions, including the alteration of the

status of variables including signals as a function of the status of other variables including signals and also including the triggering of the execution of system operations defined by other job definitions, where all references to variables and job definitions are by address; and

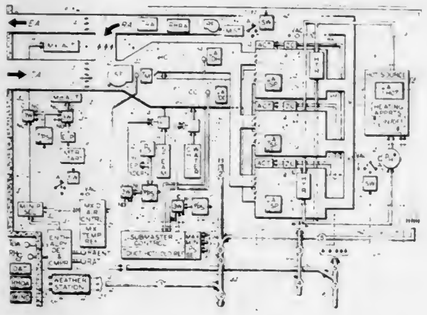
an operating system or process connecting to said incoming and outgoing signals.

4,215,408

TEMPERATURE CONTROL OF UNOCCUPIED LIVING SPACES

John E. Games, Granby, and William W. Bitterli, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1977, Ser. No. 860,026
Int. Cl.² G06F *15/20;* F24F *3/00*
U.S. Cl. 364—505 **16 Claims**



1. Apparatus for controlling, in combination during unoccupied periods, the operation of an HVAC and perimeter heating system providing temperature regulation in a living space having occupied and unoccupied periods, the HVAC output including hot air from an air handler heating apparatus which modulates the discharge temperature in dependence on a space temperature error signal presented thereto at a magnitude equal to the temperature difference between an actual space temperature signal and a space heat reference temperature signal, the air handler including a fan for forcing the hot air into the space, the perimeter heating system providing hot fluid from a hot source at a determined discharge temperature, the hot fluid being presented to heaters in the space by a pump, the fan and pump each energized through connection to a voltage source, the apparatus comprising:

temperature sensor means, for providing sensed temperature signals including, an actual hot air discharge temperature signal, an actual hot fluid discharge temperature signal, and an actual space temperature signal;

electronic processing means, providing an actual time of day signal, and having means for storing signals including real time signals establishing a plurality of real time intervals, each interval representative of an associated one of the space occupied and unoccupied periods, said processing means comparing said actual time of day signal with said real time intervals for providing an unoccupied signal manifestation in response to said actual time of day signal indicating a present unoccupied period, said means for storing signals further including a perimeter heat actuating temperature signal, said processing means being responsive to said sensed temperature signals for comparing said actual space temperature signal with said perimeter heat actuating temperature signal for providing, in the presence of said unoccupied signal manifestation, a perimeter heat pump off gate signal in response to said actual space temperature signal indication of a space temperature higher than said perimeter heat actuating temperature signal; and

pump switch means, interconnected between the voltage source and the pump, and responsive to said pump off gate signal presented at a gate input thereof, said switch means providing a connection of the pump to the voltage source in the absence of said pump off gate signal, said switch means not providing the connection in the presence of said pump off gate signal.

4,215,409

FLOW CONTROL SYSTEM FOR ANESTHESIA APPARATUS

Robert J. Strowe, Summerville, S.C., assignor to McKesson Company, North Charleston, S.C.

Filed Mar. 13, 1978, Ser. No. 886,132
Int. Cl.² G05D *11/00;* A61M *17/00*
U.S. Cl. 364—510 **19 Claims**



1. Analgesia/anesthesia apparatus comprising in combination the following:

separate gas flow lines and associated means for connection of said lines to separate supplies of at least two gases;

means, in each said line, for varying the rate of gas flow through said line;

encoder means, coupled to said gas flow rate varying means, for encoding the state thereof;

first means for visual display responsive to the output of said encoder means;

calculator means, coupled to said gas flow rate varying means, for generating signals representative of the ratio of one of said rates of gas flows to the total gas rate of flow; and

separate second means for visual display of said ratio responsive to said generated signals.

4,215,410

SOLAR TRACKER

Jerome H. Weslow, Rte. 4, St. Pat's Dr., Green Bay, Wis. 54303, and James A. Rodrian, Menomonee Falls, Wis., assignors to Jerome H. Weslow; Harold J. Weslow; Thomas A. Weslow, all of Green Bay; Paul R. Netzow and Roland Weslow, both of Hartland, all of, Wis.

Filed Feb. 9, 1979, Ser. No. 10,660
Int. Cl.² G06F *15/46;* F24J *3/02;* G05D *1/12*
U.S. Cl. 364—516 **16 Claims**

2. A controller for causing a solar energy utilizing device, which has motor means for angulating it about first and second axes, to be directed toward the sun as the sun moves across the sky, said controller comprising:

means for providing data representative of the time of the day, the day of the year and the latitude at which said device is used,

processor means and means for storing a program for controlling the functions of said processor means,

memory means for storing first positional data representative of the angular positions of said device about said first and second axes at the prevailing time,

said processor means being controlled by said program to use said data to calculate second positional data representative of the angular positions to which said device is required to be angulated about said axes for said device to be directed toward the sun at the end of a predetermined interval beginning with the prevailing time,

said program further controlling said processor to calculate data representative of the amount of movement required for said solar energy utilizing device to move about said axes to said required angular positions,

said program further controlling said processor to modify said first positional data for it to represent the positional data resulting from movement of said device about said axes, and

means responding to said data representative of said amount of movement by controlling said motor means to turn said device about said axes toward an angular position corresponding with said second positional data.

12. An open loop controller for use with a solar energy utilizing device comprising means for mounting said device for angulating on azimuth and altitude axes to keep said device directed toward the sun as it moves across the sky, azimuth and altitude drive motor means for turning said device on said axes, respectively, said controller comprising:

central processor means including memory means, said memory means storing data corresponding with the declination of the sun for the day, the hour angle of the sun, the longitude at which said device is installed and the latitude at which said device is installed, said processor means

having a program stored in said memory means for using said data to calculate data representative of the azimuth and altitude axes angles required for said device to be directed toward the sun at the prevailing time of the day,

said memory means also storing positional data representative of the present angular positions of said device about said azimuth and azimuth axes,

said program controlling said processor means to produce second positional data representative of the required angular positions of said device about said azimuth and altitude axes at the end of a predetermined interval for said device to be directed toward the sun,

said program further controlling said processor means to determine data representative of the rate of movement required for said solar energy utilizing device to move about said axes to said required angular positions,

said program further controlling said processor means to modify said first positional data to the new instantaneous values resulting from movement of said device about said axes at the rate of movement which has been determined, and

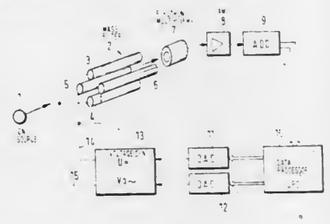
means responding to said data representative of said rate of movement by controlling said motor means to turn said device about said azimuth and altitude axes toward an angular position corresponding with said second positional data.

4,215,411

METHOD AND APPARATUS FOR THE COMPARATIVE DETERMINATION OF AN UNKNOWN MASS

Jochen Franzen, Wildeshausen, Fed. Rep. of Germany, assignor to Varian Mat GmbH, Bremen, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 933,921
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737199
Int. Cl.² G06F *15/52;* B01D *59/44;* H01J *39/50*
U.S. Cl. 364—527 **5 Claims**



1. Apparatus for accurately determining the mass of an unknown substance, the apparatus including an ion source for emitting ions of at least two known masses with one mass being larger than the other mass and ions of the unknown substance comprising: said ion source providing an input to a quadrapole mass filter, detector means positioned on the output side of the quadrapole mass filter for producing a control signal in accordance with ions of differing masses for controlling the production of a DC voltage and an AC voltage coupled to the quadrapole mass filter, an arithmetic unit of a data processing device (**10**) coupled to the output of the detector means. the arithmetic unit first producing an electrical signal representing the difference between a signal representing one of the larger known masses (**m2**) and a signal representing one of the smaller known masses (**m1**) and multiplying the difference signal (**m2–m1**) thus produced by q quotient signal (**x1a/x12**) of which the dividend signal (**x1a**) is formed by an electrical signal corresponding to the distance between a mass line (**18**) of the unknown mass (ma) and the mass line of the known mass (**m1**) and of which the divisor signal (**x12**) is formed by an electrical signal corresponding to the distance between the mass line (**16**) of the smaller known mass (**m1**) and the mass line (**17**) of the larger known mass (**m2**), the arithmetic unit adding the thus-formed product signal to the electrical signal corresponding to the smaller known mass (**m1**) to form a sum signal which represents the size of the unknown mass (ma), and voltage generating means receiving control signals from said data processing device and generating a feedback voltage to said quadrapole mass filter to shift the transmission range thereof for obtaining said mass lines.

4,215,412

REAL TIME PERFORMANCE MONITORING OF GAS TURBINE ENGINES

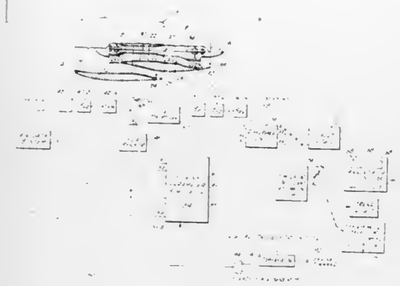
Joseph L. Bernier, Issaquah, Wash., and Peter W. Kamber, Hawi, Hi., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 13, 1978, Ser. No. 923,950
Int. Cl.² G06F *15/20, 15/32*
U.S. Cl. 364—551 **16 Claims**

1. A system for monitoring at least one performance parameter of a gas turbine engine installation comprising:

first sensor means for supplying a signal representative of the current value of each monitored performance parameter;

second sensor means for supplying a first plurality of signals representative of the current values of an associated plurality of operating parameters of the engine installation being monitored, said plurality of signals being selected so that a signal



$$y = \sum_{i=1}^{m} x_i c_i$$

provides a current estimate of each monitored performance parameter where y denotes the estimated value of each monitored performance parameter, x_i denotes a series of m independent performance parameters each having a current value dependent on the current value of selected ones of said plurality of signals supplied by said second sensor means and c_i denotes a set of m scalar simulation coefficients;

first signal processing means responsive to said plurality of signals supplied by said second sensor means, said first signal processing means including means for supplying a second plurality of signals representative of the current value of each of said independent performance parameters x_i, means for supplying a third plurality of signals representative of each of said simulation coefficients c_i and means for combining predetermined signals of said second and third plurality of signals to supply a signal representative of the current value of each estimate y of said monitored performance parameters; and,

second signal processing means responsive to each of said signals representative of the current value of each estimate y of said monitored performance parameters and responsive to each of said signals supplied by said first sensor means for supplying a difference signal representative of the difference between the actual current value of each of said monitored performance parameters and the current estimated value of that same performance parameter.

4,215,413

MEASURING DEVICE FOR INTEGRAL VALUES FORMED OVER A TIME SPAN

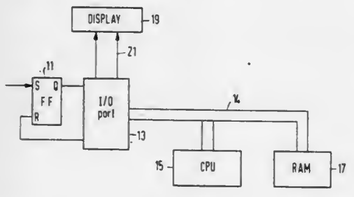
Reinhard Stark, and Günter Steinmüller, both of Nuremberg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,253

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729617

Int. Cl.³ G06M *3/14*; G01F *1/00*

U.S. Cl. 364—570 **2 Claims**



1. A measuring device for integral values formed over a constant time span which is constantly updated, said device receiving, as inputs, pulses representing a fixed quantity of a parameter being measured, comprising:

(a) a filp-flop having as setting inputs, the pulses representing a fixed quantity; and

(b) a microcomputer having at least a central processing unit and a random access memory and having the output of said flip-flop as an input, said central processing unit programmed to sequentially address the memory cells of said random access memory for equal time intervals which are shorter than the shortest possible interval between said pulses and to reset said flip-flop before addressing the following one of said memory cells, all of said memory cells being consecutively accessed in a period equal to said fixed time span, whereafter the sequence of the accessing is repeated, said central processing unit further programmed to write a "1" into said memory cell being accessed for each arriving pulse sensed at said flip-flop, said central processing unit further programmed to add, to a memory location representing an instantaneous value, a "1" for each pulse received and at the same relative time to subtract from said memory location, the value that was stored in said memory cell being accessed during the preceding period.

4,215,414

PSEUDOGAUSSIAN VIDEO OUTPUT PROCESSING FOR DIGITAL DISPLAY

Kenneth A. Huelsman, Carlsbad, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 7, 1978, Ser. No. 884,325

Int. Cl.³ G06F *3/14*; H04N *5/14*

U.S. Cl. 364—515 **4 Claims**



1. In a system having a memory for storing video data for display in an interlaced manner such that all odd lines are first displayed in a frame, and then all even lines, one line at a time, a method for generating a pseudogaussian characteristic in the display of video data comprising the steps of reading out two adjacent lines L and L+1 from memory during the same line readout time interval, delaying line L+1 one line interval for presentation as line L−1 in the processing when a subsequent set of lines L and L+1 are read from memory for display of the next line L, reading out said subsequent set of lines L and L+1 from memory during the same readout time interval, summing the value of each picture element of the next line L readout of said memory for display with a predetermined fraction of the sum of the values of the diametrically opposite picture elements in at least immediately adjacent subsequent lines L+1 and L−1, and summing the value of each picture element P of the next line L thus processed with a predetermined fraction of the sum of the values of similarly processed picture elements of the same next line L utilizing at least immediately adjacent picture elements P−1 and P+1.

4,215,415

RECURSIVE DIGITAL FILTER COMPRISING A CIRCUIT RESPONSIVE TO FIRST SUM AND FEEDBACK SIGN BITS AND SECOND SUM SIGN AND INTEGER BITS FOR DETECTING OVERFLOW IN THE SECOND SUM

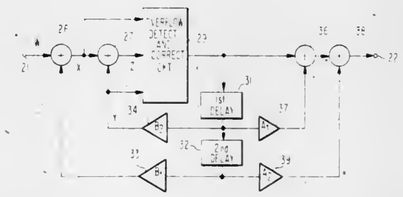
Akira Kanemasa, and Hisashi Sakaguchi, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Sep. 19, 1978, Ser. No. 943,836

Claims priority, application Japan, Sep. 19, 1977, 52-113097; Sep. 22, 1977, 52-114845

Int. Cl.³ G06F *15/34, 7/48*

U.S. Cl. 364—724 **9 Claims**



1. In a recursive digital filter comprising a first adder responsive to each of input data words and a first feedback data word for producing a first sum data word, a second adder responsive to said first sum data word and a second feedback data word for producing a second sum data word, an overflow detect and correct circuit for detecting overflow in said second sum data word and producing a first of overflow-free data words by correcting, when overflow is detected, the detected overflow, a first and a second feedback device responsive to said first and all other overflow-free data words for producing said first and said second feedback data words, respectively, and means responsive to all said overflow-free data words for producing output data words, all said data words being given by two's complement representation in a common word format comprising a sign bit, an integer bit, and a predetermined number of fraction bits, each of all said data words thus having corresponding bits in others of all said data words, said first adder, said second feedback device, and said second adder substantially simultaneously producing the corresponding bits of the respective ones of said first sum, said second feedback, and said second sum data words in bit series, the improvement wherein said overflow detect and correct circuit comprises:

first means responsive to the sign bits of said first sum, said second feedback, and said second sum data words and the integer bit of said second sum data word for producing an overflow detect pulse indicative of presence and absence of the overflow and a first polarity decision pulse indicative at least when said overflow detect pulse indicates presence of overflow, of polarities of the sign, the integer, and the fractional bits of said first overflow-free data word;

second means responsive to said overflow detect and said first polarity decision pulses for producing, only when said overflow detect pulse indicates presence of overflow, the sign, the integer, and the fractional bits of said first overflow-free data word with polarities decided by said first polarity decision pulse; and

third means responsive to said overflow detect pulse and said second sum data word for producing, only when said overflow detect pulse indicates absence of overflow, the sign, the integer, and the fractional bits of said first overflow-free data word with polarities determined by the corresponding bits of said second sum data word.

4,215,416

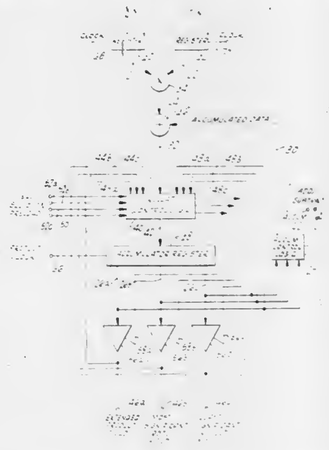
INTEGRATED MULTIPLIER-ACCUMULATOR CIRCUIT WITH PRELOADABLE ACCUMULATOR REGISTER

John J. Muramatsu, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Mar. 22, 1978, Ser. No. 888,980

Int. Cl.² G06F *7/48*

U.S. Cl. 364—736 **9 Claims**



7. An integrated digital multiplier-accumulator circuit comprising:

a digital multiplier circuit;

an accumulator register having input terminals and output terminals;

a set of data terminals for the application of externally supplied input data to said accumulator register;

a summing circuit connected to receive input signals from said multiplier circuit and from said accumulator register and to provide an output signal indicative of the sum of the input signals; and

preload control means, including means for selecting between data derived from said summing circuit and data supplied through said data terminals, and transmitting such selected data to said accumulator register, said preload control means being connected to receive inputs from said data terminals and from said summing circuit output signal, and to provide outputs to said accumulator register;

and wherein said preload control means effects preloading of said accumulator register with selected data when said preload control means selects data supplied through said data terminals, and effects accumulation of data from said multiplier circuit in said accumulator register, when said preload control means selects data derived from said summing circuit.

4,215,417

TWO-TERM VECTOR MULTIPLIER

Takao Nishitani, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,707

Claims priority, application Japan, Jan. 27, 1978, 53-8546

Int. Cl.² G06F *7/38*

U.S. Cl. 364—736 **1 Claim**

1. A two-term vector multiplier for calculating AX+BY, comprising: first and second minimal-representation generating circuit means for separately converting first and second variables A and B, respectively, into standard type-minimal representation codes; a control circuit means responsive to the minimal representation codes of said first and second variables

for generating a selection signal and an addition-subtraction control signal; a selection circuit means responsive to third and fourth variables X and Y and to said selection signal for selecting one of the values X, Y, Y/2, and 0; and an accumulator



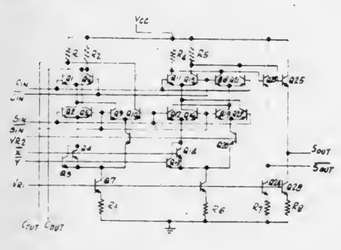
means connected to said selection circuit and responsive to said addition-subtraction control signal for adding or subtracting between $\frac{1}{2}$ of the accumulated value and the output of said selective circuit to produce a new accumulated value.

4,215,418

INTEGRATED DIGITAL MULTIPLIER CIRCUIT USING CURRENT MODE LOGIC

John J. Muramatsu, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jun. 30, 1978, Ser. No. 920,776
Int. Cl.² G06F *7/50, 7/52*
U.S. Cl. 364—757 **8 Claims**



1. For use in a monolithic integrated multiplier circuit, the combination of:

a plurality of NPN transistors and resistors fabricated in accordance with a high-density triple diffusion process allowing for use of a two-micron minimum geometry, and correspondingly small junction depths, to provide a very high packing density and a corresponding low defect rate and low production cost; and

circuit means for connecting said transistors and resistors to operate in current mode logic, to provide a circuit with fewer and smaller resistors, and a desirably low speed-power product.

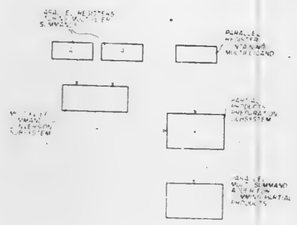
4,215,419

METHOD FOR BINARY MULTIPLICATION OF A NUMBER BY A SUM OF TWO NUMBERS AND A DIGITAL SYSTEM FOR IMPLEMENTATION THEREOF

Stanislaw Majerski, 43/9 Zamoyskiego Str., Warsaw, Poland

Continuation of Ser. No. 802,187, May 31, 1977, abandoned. This application Dec. 14, 1978, Ser. No. 969,264
Int. Cl.² G06F *7/52*
U.S. Cl. 364—760 **4 Claims**

1. Method of binary multiplication of a number by a sum of two numbers comprising the steps of: converting in parallel a multiplier expressed by two numbers-summands presented in binary form, without performing effective addition of said summands, into bit groups representing the integers from the range -2^{g-1} to $+2^{g-1}$ said integers being the digits of the multiplier expressed in a redundant positional form with the basis 2^g, where g is an integer from the range from 1 to 4; forming partial products being the multiplicand multiples shifted with respect to each other, said multiples being determined by the bit groups representing said integers from the range -2^{g-1} to $+2^{g-1}$; adding said partial products to obtain a full product of the number by the sum of two numbers; said converting step being performed so that bits being identically



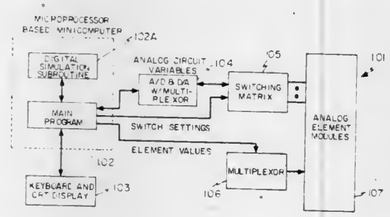
grouped in both multiplier summands into g position groups are processed so that, for determining one number from the range -2^{g-1} to 2^{g-1}, use is made of bits belonging to a maximum of three position groups of each of said multiplier summands and/or using sign bits.

4,215,420

PARITY SIMULATOR

John G. Kassakian, Newton, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 13, 1978, Ser. No. 886,222
Int. Cl.² G06G *7/63*
U.S. Cl. 364—802 **20 Claims**



1. A simulator for modeling an electrical network that comprises, in combination:

a plurality of synthetic electrical elements interconnected to simulate the electrical network, said synthetic elements having electrical terminals and having physical voltages between terminals and physical currents flowing through the terminals that correspond respectively to scaled values of actual physical terminal voltages and scaled values of actual physical terminal currents in said electrical network, the synthetic elements being interconnected to produce a model which is topologically equivalent to the modeled network.

4,215,421

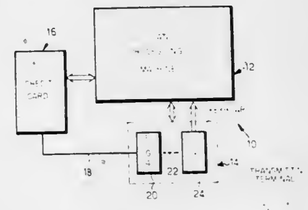
DATA-PROCESSING SYSTEM WHICH PROTECTS THE SECRECY OF CONFIDENTIAL DATA

Georges J. L. Giraud, Le Vesinet, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Jun. 5, 1978, Ser. No. 912,855
Claims priority, application France, Jun. 7, 1977, 77 17436
Int. Cl.² G06F *1/00;* **H04L** *9/02;* **G08B** *29/00*
U.S. Cl. 364—900 **15 Claims**

1. A data processing system comprising a data-processing machine having means associated therewith, via a transmission line, for transmitting data, said data being of the type which includes confidential data, and a plurality of first members

auxiliary to the machine, each said members being adapted to receive at least the said confidential data from the said transmitting means via the same transmission line and to process this data, said transmitting means being connected to a plurality of second auxiliary members corresponding to respective ones of the first auxiliary members, each pair of corresponding first and second auxiliary members including respective generators for generating first and second code keys, generator means for generating a reference signal for bringing one of the said first



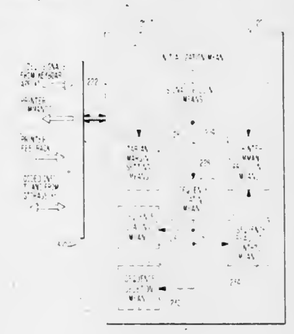
code keys into correspondence with one of the said second code keys, and one of the pair of said corresponding first and second auxiliary members including modulating means to mix at least the said confidential data with the code key corresponding to the said auxiliary member of that pair to form a combined signal, while the other auxiliary member includes a demodulating means which reacts to the key brought into correspondence from the said member to the said combined signal to reconstitute the said confidential data.

4,215,422

SELECTIVELY MODIFIABLE PHRASE STORAGE FOR A TYPEWRITER

William R. McCray, and Edward V. Rutkowski, Jr., both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1978, Ser. No. 908,596
Int. Cl.² G06F *3/10, 7/02*
U.S. Cl. 364—900 **8 Claims**



1. A code storage system for a typewriter of the kind having printing apparatus controlled by coded command signals and having keyboard apparatus for producing coded keyboard signals according to operator key and switch actuations, which coded keyboard signals correspond to various typewriter functional and printing operations, said storage system comprising:

means, actuable by the operator, for producing at least one signal to establish a sequence storage interval and for designating a code sequence identity from a preselected set thereof,

a read/write storage having an ordered series of addressable locations defining a storage area which extends from a leading end to a trailing end,

a means for initially storing, toward the leading end of said storage area, delimeters corresponding to the respective sequence identifiers of said preselected set thereof,

means responsive to said sequence identifying signal for loading codes corresponding to keyboard signals into a storage area of said read/write storage during a storage interval, said loading means including

(1) means, responsive to stored sequence delimeters, for progressively accessing and for examining the contents of storage locations in one reference direction to identify the addresses of the two end storage locations of a corresponding sequence in the storage area,

(2) means for shifting in the leading direction any sequence codes residing in locations trailing such identified locations, the source and destination addresses for such codes being defined by logic means that increments the end point addresses of the identified sequence iteratively,

(3) means responsive to said interval establishing means for receiving codes from the keyboard apparatus during a sequence storage interval and storing such codes in locations adjacent to any shifted code and toward said trailing end, and

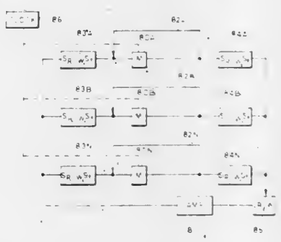
(4) means for including a delimiter at a preselected end of each sequence that is stored, each delimiter including a code individualized to a respective sequence identity.

4,215,423

FAST ACCESS CHARGE COUPLED DEVICE MEMORY ORGANIZATIONS FOR A SEMICONDUCTOR CHIP

Satish L. Rege, Piscataway, N.J., and Beng-Yu Woo, San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 881,434, Feb. 27, 1978, Pat. No. 4,156,287, which is a division of Ser. No. 734,351, Oct. 20, 1976, Pat. No. 4,112,504. This application Oct. 2, 1978, Ser. No. 947,556
Int. Cl.² G11C *21/00*
U.S. Cl. 365—77 **1 Claim**



1. A charge coupled device memory organization comprising:

a plurality of storage loops each containing a return path;

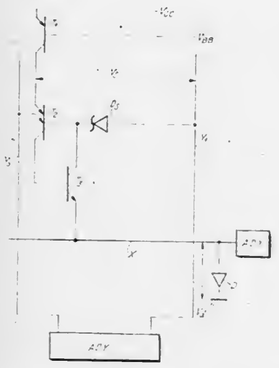
a read/write station;

a plurality of pairs of read and write switches, each pair for each storage loop to selectively couple that respective storage loop to said read/write station for reading and writing operations;

a refresh amplifier coupled between said read/write station and said plurality of write switches; and

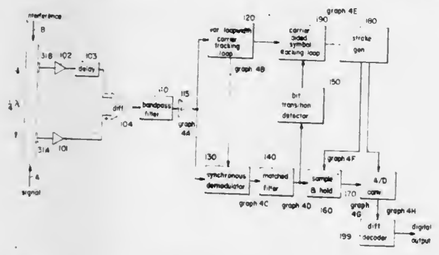
clock means simultaneously coupled to all of said storage loops to supply clocking signals to shift all of said storage loops at the same time.

4,215,424
DESCRIPTIVE RESUME RANDOM ACCESS STATIC MEMORY ELEMENT
Ngu T. Pham, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Jan. 10, 1979, Ser. No. 2,308
Claims priority, application France, Jan. 13, 1978, 78 00933
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—174 **10 Claims**



1. A random access memory element comprising a first and a second complementary transistor, integrated upon the same substrate, and having respective collectors, bases and emitters, said collector of said first transistor and said base of said second transistor being constituted by a first semiconducting region, said base of said first transistor and said collector of said second transistor, being constituted by a second semiconducting region forming a rectifying junction with said first region, said first transistor having a further emitter having connection means to constant current and being at a distance from said collector substantially higher than that of said emitter, said emitter of said first transistor having connection means to a first Y addressing device, and said emitter of said second collector having connection to a first Y addressing device.

4,215,425
APPARATUS AND METHOD FOR FILTERING SIGNALS IN A LOGGING-WHILE-DRILLING SYSTEM
William N. Waggener, Sarasota, Fla., assignor to Sangamo Weston, Inc., Norcross, Ga.
Filed Feb. 27, 1978, Ser. No. 881,459
Int. Cl.[2] G01V *1/40*
U.S. Cl. 367—83 **23 Claims**



14. A logging-while-drilling apparatus for obtaining subsurface measurements during drilling in a fluid-filled borehole and for communicating the measurements to the surface of the earth, comprising:
a downhole sensing and transmitting subsystem including
means mountable on a drill string for obtaining measurement information;
means for generating acoustic carrier waves at a nominal frequency in the borehole fluid;
means for PSK modulating the generated acoustic carrier waves in accordance with digital data representative of said measurements by momentarily unidirectionally either decreasing or increasing the frequency of said acoustic carrier waves; and
an uphole receiving subsystem including
transducer means for converting the modulated acoustic carrier waves to electronic signals; and
filter means for selectively filtering said electronic signals, said filter means having a bandpass characteristic which is skewed in the direction of said unidirectional decrease or increase of frequency.

4,215,426
TELEMETRY AND POWER TRANSMISSION FOR ENCLOSED FLUID SYSTEMS
Frederick Klatt, 36 Ripley Rd., Medford, Mass. 02155
Filed May 1, 1978, Ser. No. 901,459
Int. Cl.[2] G01V *1/40*
U.S. Cl. 367—83 **21 Claims**

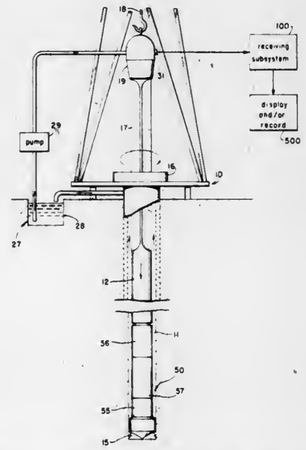


1. A power and communication transmission system for an enclosed liquid filled conduit means comprising;
parameter communication means disposed at a bottom end of the conduit means and for sending communication signals to the top of the conduit means,
transmission line means associated with said fluid conduit means extending between top and bottom ends thereof for electrically transmitting signals from the parameter communication means to the top of the conduit means,
liquid pump means at a top of the conduit means for pumping liquid therethrough toward the bottom thereof,
acoustic energy generating means within the conduit means, defining a through passage having a cross-sectional area at least on the order of the cross-sectional area of the conduit means to permit free flow of liquid therethrough, disposed at the top of the conduit means for establishing a substantially unidirectional oscillatory acoustic pressure wave in the pressurized liquid, said pressure wave propagating in the fluid toward the bottom end of the conduit means,
at least one acoustic energy converting means disposed at the bottom of the conduit means in communication with the pumped liquid pressure wave for absorbing at least a part of the energy of said pressure wave and converting said energy to a corresponding electric power signal,
and means for coupling the power signal to the parameter communication means to provide operating power for communication signal transmission via the transmission line means.

4,215,427
CARRIER TRACKING APPARATUS AND METHOD FOR A LOGGING-WHILE-DRILLING SYSTEM
William N. Waggener, and Gene F. Schroeder, both of Sarasota, Fla., assignors to Sangamo Weston, Inc., Norcross, Ga.
Filed Feb. 27, 1978, Ser. No. 881,461
Int. Cl.[2] G01V *1/40*
U.S. Cl. 367—83 **23 Claims**

8. A logging-while-drilling apparatus for obtaining subsurface measurements during drilling in a fluid-filled borehole and

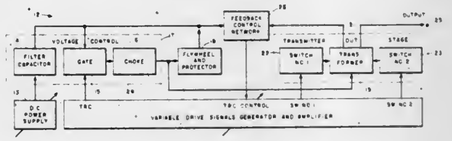
for communicating the measurements to the surface of the earth, comprising:
a downhole sensing and transmitting subsystem including
means mountable on a drill string for obtaining measurement information;
means for generating acoustic carrier waves at a nominal frequency in the borehole fluid;
means for PSK modulating the generated acoustic carrier waves in accordance with digital data representative of said measurements by momentarily unidirectionally either decreasing or increasing the frequency of said acoustic carrier signal; and
an uphole receiving subsystem including
transducer means for converting the modulated acoustic carrier waves to an input electronic signal; and
a carrier tracking loop circuit which includes a controlled



oscillator having a control terminal, the frequency of said oscillator being determined by a signal applied to said control terminal; comparator means for generating a control signal by comparing the phase of a signal derived from said input signal to the phase of a signal derived from the output of said controlled oscillator; means for applying said control signal to the control terminal of said oscillator; and means responsive to transitions in said input signal for compensating the signal applied to said control terminal to account for the difference between the nominal frequency of said carrier and the average frequency of the input signal which results from the unidirectional nature of the carrier modulation; and
means for recovering the digital data by demodulating said input signal with a signal derived from the output of said controlled oscillator.

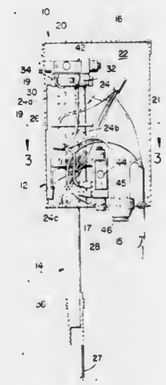
4,215,428
TIME RATIO CONTROLLED INVERTER
Charles W. Van Marter, Syracuse; Raymond L. Rofini, Liverpool, and Laurence D. Smith, North Syracuse, all of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 3, 1971, Ser. No. 120,410
Int. Cl.[3] H04B *1/02*
U.S. Cl. 367—137 **10 Claims**

1. A transmitter, comprising in combination:
a power supply for producing a B+ voltage at the output thereof;
a power transformer having a center tapped primary winding and a pair of secondary windings, with one of said pair of secondary windings constituting the output of said transmitter;
a control signal generator means for producing a pair of switch drive signals and a time-ratio-control signal, the duration of which is inversely proportional to an input signal supplied thereto, at a trio of outputs thereof, respectively;
a first transistorized switch means connected between one of the switch drive signal outputs of said control signal generator means and one of the terminals of the primary winding of said power transformer for effecting the closing thereof in response to one of said switch drive signals;



a second transistorized switch means connected between the other switch drive signal output of said control signal generator means and the other terminal of the primary winding of said power transformer for effecting the closing thereof in response to the other of said switch drive signals; and
means connected between the B+ output of said power supply, the time-ratio-control signal output of said control signal generator means, and the center tap of the primary winding of said power transformer for varying the current thereto an amount that is proportional to the duration of the time-ratio-control signal received from said control signal generator means.

4,215,429
RODENT-REPELLING DEVICE
George Riach, 10424 Cary Cir., Cypress, Calif. 90720
Filed Dec. 29, 1978, Ser. No. 363
Int. Cl.[2] G08B *13/22;* **H04B** *11/00*
U.S. Cl. 367—139 **4 Claims**



1. A rodent-repelling device adapted to be supported within the ground and comprising:
a housing defined by side walls, a top cover, and a bottom wall having an enlarged opening disposed therein;
vibrating means located within said housing and comprising at least two solenoid coil units, each being independently and randomly activated;
probe means comprising a first probe member and a second probe member, said first probe member defined by a metal bar member having said solenoid coils supported and

affixed thereto, with one end of said bar extending outwardly through said enlarged opening in said housing, said second probe member having one end secured to said metal bar member and the opposite end thereof adapted to be received in said ground;

means connected to said solenoid coil units to supply electrical energy thereto, whereby a plurality of signals are generated between said coil units and said first and second probes so as to be transmitted into said ground;

means therein to cause intermittent current flow from said electrical energy to said coil units; and

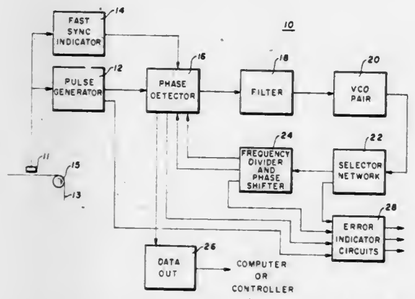
means within said housing to provide movement between said housing and said probe members, said movement means comprising a bracket fixedly mounted to one wall of said housing and adapted to movably support one end of said probe-bar member, whereby said probe-bar member moves independently from said housing, whereby said probe bar member engages said bottom wall.

4,215,430

FAST SYNCHRONIZATION CIRCUIT FOR PHASE LOCKED LOOPED DECODER

Allan L. Johnson, Jr., Wayzata, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Sep. 26, 1978, Ser. No. 945,990
Int. Cl.[2] H04L 7/04; H03D 3/24
U.S. Cl. 375—111 **12 Claims**



1. In data processing apparatus adapted to receive a data signal and to process the data signal using a clocking signal having a clocking frequency dependent upon a clocking voltage, said apparatus including a phase detector for generating an output to control said clocking voltage and thereby establish and maintain synchronization between said data and clocking signals, the improvement wherein:

said phase detector includes coincidence means having, as inputs, a preamble input active during the preamble of said data signal, first and second data inputs each derived from said data and clocking signals, wherein said second data input is the inverse of said first data input, and first and second timing inputs each derived solely from said clocking signal; said coincidence means generating a first phase detector output signal having a pulse width dependent upon the length of time during which said preamble, first data and first timing inputs are simultaneously high, and a second phase detector output signal having a pulse width dependent upon the length of time during which said preamble, second data and second timing inputs are simultaneously high;

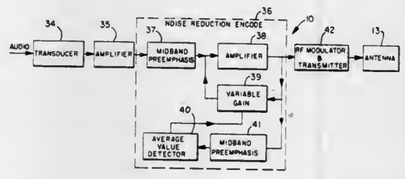
wherein the pulse width of each phase detector output signal is a selected width whenever the data and clocking signals are synchronized; and wherein said phase detector, in response to a condition other than synchronization, generates at least one of said phase detector output signals at a pulse width other than its selected width to change said clocking voltage, the resulting change in clocking frequency tending to synchronize the clocking signal with said data signal.

4,215,431

WIRELESS TRANSMISSION SYSTEM

John Nady, 1250 Rose St., Berkeley, Calif. 94702

Continuation-in-part of Ser. No. 842,152, Oct. 14, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,574
Int. Cl.[3] H04B 1/62
U.S. Cl. 455—43 **8 Claims**



5. A wireless, portable, self-contained transmission system for use with at least one of microphone transducers and musical instrument transducers receiving an audio input and providing a transduced audio signal, said transmission system comprising a portable, battery powered, self-contained transmitter means for transmitting compressed signals to a remote receiving means, said transmitter means including noise reduction compression means responsive only to the transduced audio signal for compressing the transduced audio signal and providing a compressed output signal to a transmission means for transmission to said remote receiving means, said remote receiver means receiving the transmitted compressed signals and supplying a compressed transduced audio signal to noise reduction expansion means corresponding to said noise reduction compression means of said transmitter means, said noise reduction expansion means expanding the transmitted compressed signals for providing an audio output signal with an improved signal to noise ratio to a utilization means whereby substantially noise-free transmission is effected, said noise reduction expansion means including a variable gain means for receiving the transmitted compressed signals, average value detector means for controlling the gain of said variable gain means and being driven by a preemphasis means receiving the transmitted compressed signals.

DESIGNS

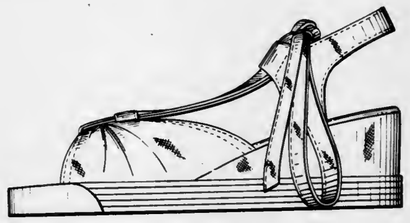
JULY 29, 1980

256,064

SHOE

Jonas Senter, 910 Fifth Ave., New York, N.Y. 10021

Filed Jun. 2, 1978, Ser. No. 912,107
Term of patent 14 years
Int. Cl. D2—04
U.S. Cl. D2—286

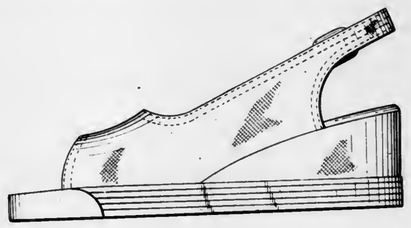


256,065

SHOE

Jonas Senter, 910 Fifth Ave., New York, N.Y. 10021

Filed Jun. 2, 1978, Ser. No. 912,108
Term of patent 14 years
Int. Cl. D2—04
U.S. Cl. D2—291

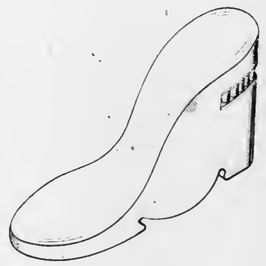


256,066

SOLE FOR FOOTWEAR

Vernon A. Hagg, 5245 Heritage Hills Dr., Bloomington, Minn. 55437, and Phillip W. Trask, 18300-32nd Ave. No., Wayzata, Minn. 55391

Filed Aug. 7, 1978, Ser. No. 931,830
Term of patent 14 years
Int. Cl. D2—04
U.S. Cl. D2—322



256,067

SOLE BODY FOR FOOTWEAR

Vernon A. Hagg, 5245 Heritage Hills Dr., Bloomington, Minn. 55437, and Phillip W. Trask, 18300-32nd Ave. No., Wayzata, Minn. 55391

Filed Aug. 7, 1978, Ser. No. 931,831
Term of patent 14 years
Int. Cl. D2—04
U.S. Cl. D2—322

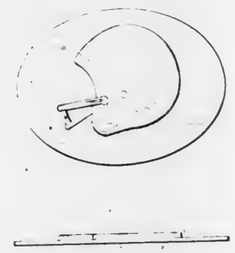


256,068

FACE PLACE FOR A BELT BUCKLE

Alfred W. Danat, Madison, Ala., and John L. Schaefer, Alexandria, Va., assignors to Sallet, Inc.

Filed Apr. 7, 1978, Ser. No. 894,624
Term of patent 14 years
Int. Cl. D02—99
U.S. Cl. D2—431

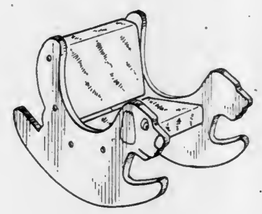


256,069

ROCKING CHAIR

Ronald W. Johnson, 4002 Burningtree La., Garland, Tex. 75042

Filed Jan. 5, 1978, Ser. No. 867,377
Term of patent 14 years
Int. Cl. D6—01
U.S. Cl. D6—11



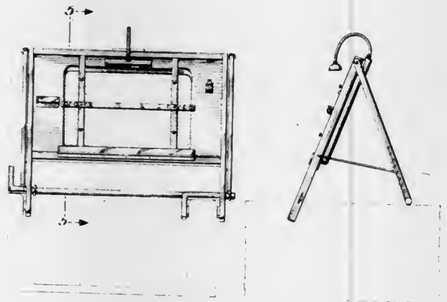
256,070
ROCKING CHAIR
T. William Fejer, Oak Park, and Stuart L. Koch, West Chicago, both of Ill., assignors to Plastofilm Industries, Inc., Wheaton, Ill.
Filed May 12, 1978, Ser. No. 905,221
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



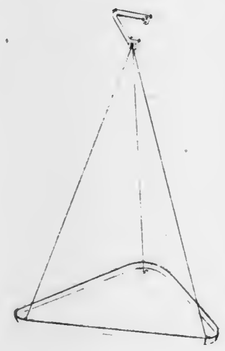
256,071
CHAIR
William J. Hershberger, Cincinnati, Ohio, assignor to Formica Corporation, Wayne, N.J.
Filed Nov. 7, 1977, Ser. No. 848,951
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



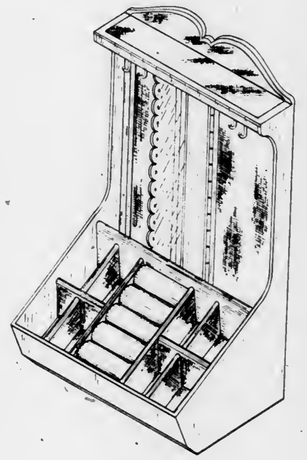
256,072
COMBINED LAMP AND BATHTUB BOOK SUPPORT
Kelly Parker, Clifton Park Apartments, Apt. 2, Bldg. 26, Wilmington, Del. 19802
Filed Nov. 29, 1978, Ser. No. 964,467
Term of patent 14 years
Int. Cl. D6—*04*; D26—*05*
U.S. Cl. D6—86



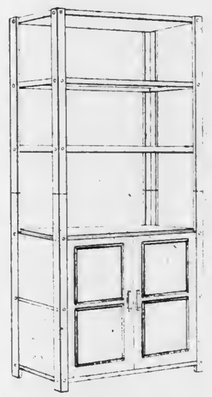
256,073
SERVING TRAY
Claus J. Caroee, Kirsebaerbakken 8, 3070 Snekkersten; Ole Frederiksen, Poppelvej 4, 3600 Frederikssund, and Boerge J. R. Christensen, Soendersoe park 29, 3500 Vaerloese, all of Denmark
Filed Nov. 15, 1978, Ser. No. 961,475
Claims priority, application Denmark, May 16, 1978, 397/78
Term of patent 14 years
Int. Cl. D6—*06*; D7—*99*
U.S. Cl. D6—113



256,074
WALL MOUNTED JEWELRY ORGANIZER
Kurt F. Gruenewald, Utica, N.Y., assignor to Mele Manufacturing Co., Inc.
Filed Mar. 8, 1978, Ser. No. 884,717
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



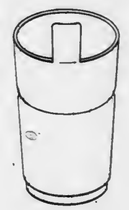
256,075
COMBINED CABINET AND SHELF UNIT
Milton E. Handler, Northbrook, and Richard Sylvan, Glenview, both of Ill., assignors to Hirsh Company
Filed Oct. 5, 1977, Ser. No. 839,512
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

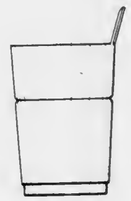


256,076
HEAD RAIL MEMBER FOR FOLDING BED
Melvin P. Spitz, Beverly Hills, and Peter C. Wilson, Long Beach, both of Calif., assignors to Kinematic Industries, Inc., Whittier, Calif.
Filed Nov. 6, 1978, Ser. No. 958,464
Term of patent 14 years
Int. Cl. D6—*01, 06*
U.S. Cl. D6—198

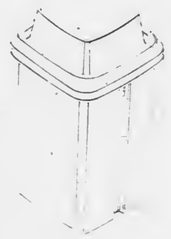


256,077
CUP WITH TONGUE DEPRESSOR
Raymond G. Brockman, and William C. Nadeau, 2623 Queenston Rd., Cleveland Heights, Ohio 44118, assignors to William C. Nadeau
Filed Mar. 13, 1978, Ser. No. 885,547
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—6

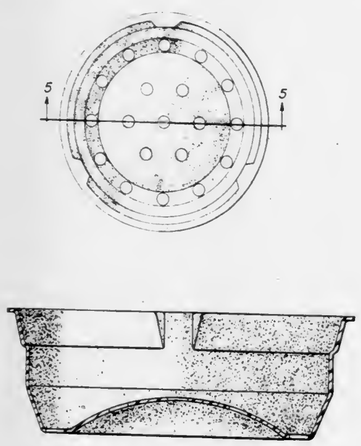




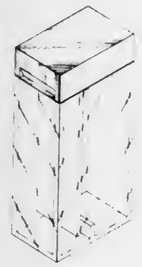
256,078
STORAGE AND SERVING CONTAINER OR THE LIKE
Jack V. Croyle, North Providence, and Robert F. Bateman, Greenville, both of R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 11, 1978, Ser. No. 933,004
Term of patent 14 years
Int. Cl. D07—*01, 07*
U.S. Cl. D7—16



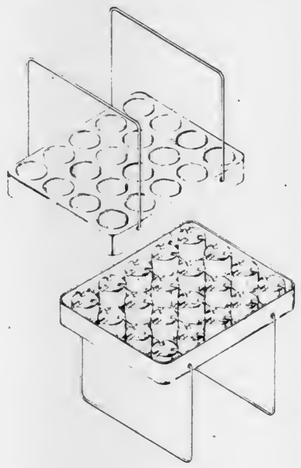
256,079
COFFEE FILTER HOLDER
J. D. Moncrief, 3139 Woodmark Ct., Sacramento, Calif. 95821
Filed May 1, 1978, Ser. No. 901,733
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—47



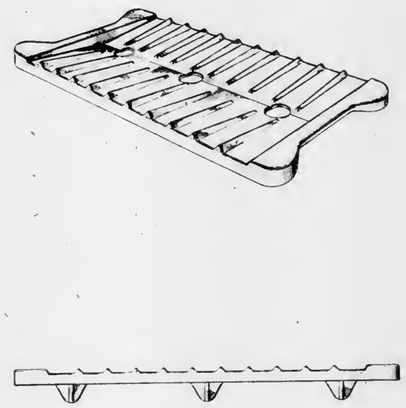
256,080
SUGAR DISPENSER
William E. Bounds, 23790 Hawthorne Blvd., Torrance, Calif. 90505
Filed Sep. 18, 1978, Ser. No. 943,246
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—52



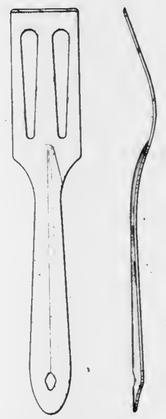
256,081
BEVERAGE CARRYING TRAY
Tom A. Patterson, 8689 W. 84th Cir., Arvada, Colo. 80005, and Bernard E. Quirk, 7054 Newland Ave., Arvada, Colo. 80003
Filed Mar. 29, 1978, Ser. No. 891,485
Term of patent 14 years
Int. Cl. D07—*99;* D09—*03*
U.S. Cl. D7—71



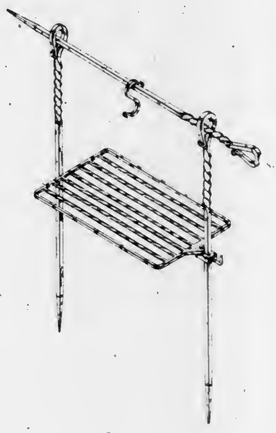
256,082
RACK FOR ROASTING FOOD ITEMS
Albert E. Colato, and James F. Pomroy, both of St. Paul, Minn., assignors to Plastics, Inc., St. Paul, Minn.
Filed Sep. 25, 1978, Ser. No. 945,180
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—85



256,083
CAKE TURNER OR SIMILAR ARTICLE
Clyde E. Ott, c/o Pace Precision Tool & Die Co., Ohio Ave., DuBois, Pa. 15801
Filed Jun. 7, 1976, Ser. No. 693,884
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—102



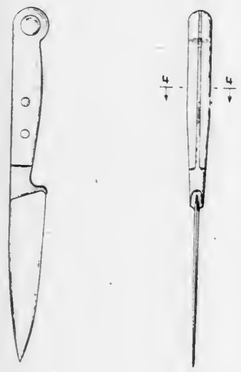
256,084
SUPPORT FOR POSITIONING COMESTIBLES OVER A FIRE
Robert E. Lepper, 5809 Arapahoe, Boulder, Colo. 80303
Filed Sep. 5, 1978, Ser. No. 939,559
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107



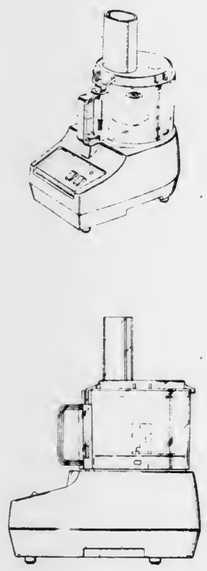
256,085
COOKING POT LID
Eleanor K. Tuggy, 447 Lemon Grove La., Santa Barbara, Calif. 93108
Filed Apr. 17, 1978, Ser. No. 896,783
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—131



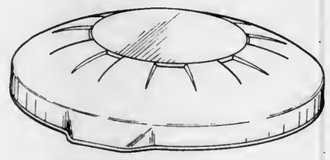
256,086
KNIFE OR SIMILAR ARTICLE OF CUTLERY
Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.
Filed Apr. 10, 1978, Ser. No. 895,215
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—151



256,087
FOOD PROCESSOR
Toshitada Minami, Tokyo, Japan, assignor to Koshinsha Co., Ltd., Tokyo, Japan
Filed Jul. 31, 1978, Ser. No. 929,901
Claims priority, application Japan, Apr. 30, 1978, 53-1748178
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—153



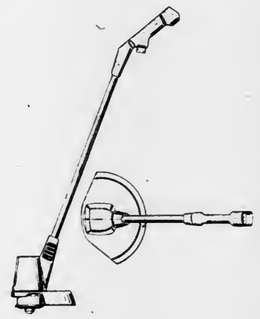
256,088
LID FOR A COMPOST BIN
Laurence R. Gedye, Doncaster East, Australia, assignor to L. R. & N. R. Gedye Pty. Limited, Doncaster East, Australia
Filed Oct. 31, 1977, Ser. No. 846,998
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194



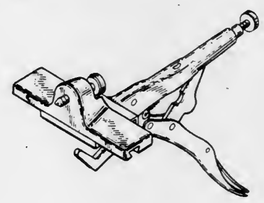
256,089
RECEPTACLE CONTAINER
Gerald J. Adamson, Toronto, Canada
Filed Mar. 20, 1978, Ser. No. 888,263
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—194



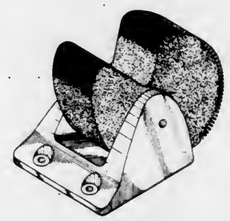
256,090
VEGETATION TRIMMER
Darrell W. Hinklin, and Randall A. Beihoffer, both of Richfield, Minn., assignors to The Toro Co., Minneapolis, Minn.
Filed Feb. 21, 1978, Ser. No. 880,027
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—08



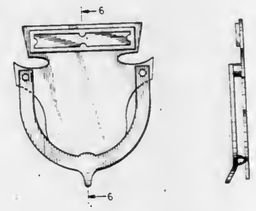
256,091
CLAMP-ON GRINDING WHEEL DRESSING TOOL
William E. Fernandes, 211-A S. Whisman Rd., Mountain View, Calif. 94041
Filed Mar. 28, 1978, Ser. No. 891,163
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—51



256,092
SNUBBER FOR A RETRACTABLE BOAT DAGGER BOARD
Noel W. Stewart, Jr., P.O. Box 426, Ione, Calif. 95640
Filed May 24, 1978, Ser. No. 908,824
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



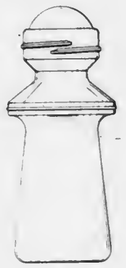
256,093
DOOR KNOCKER
Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to RB Toy Development Co., Skokie, Ill.
Filed Jun. 27, 1977, Ser. No. 810,605
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D8—401



256,094
BOTTLE
Gunnar Friso, Plaisir, France, assignor to Richardson-Merrell, Inc., Wilton, Conn.
Filed Aug. 14, 1978, Ser. No. 933,774
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—115



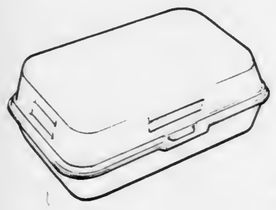
256,095
BOTTLE
James L. Sandonato, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 20, 1978, Ser. No. 888,581
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—147



256,096
PACKAGING CONTAINER
Elsie M. Ganz, 268 Curtis Point Dr., Mantoloking, N.J. 08738
Filed May 13, 1977, Ser. No. 796,540
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



256,097
PACKAGING CONTAINER FOR FOOD OR THE LIKE
Christopher P. Amberg, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jun. 10, 1977, Ser. No. 805,389
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

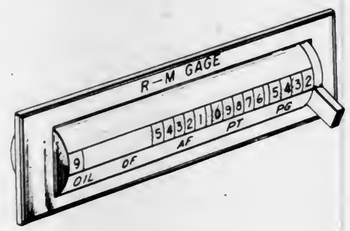


256,098
COMBINED CLOCK AND BANK
Frank H. Green, Rushville, Ind., assignor to J. A. F. E., Inc., Indianapolis, Ind.
Continuation-in-part of Ser. No. 616,546, Sep. 25, 1975, abandoned. This application Jun. 6, 1977, Ser. No. 804,182
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2

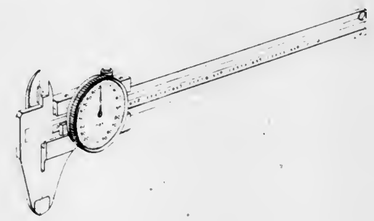


256,099
DENSITOMETER
Helmut Schmidt, Mannheim, Fed. Rep. of Germany, assignor to Labora Mannheim GmbH für Labortechnik, Mannheim, Fed. Rep. of Germany
Filed May 12, 1978, Ser. No. 905,488
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 1134
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46

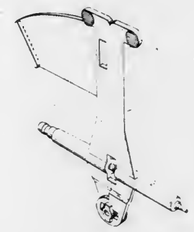
256,100
MILEAGE REMINDER
Conrad J. Baril, 34801 Chateau Way, Barstow, Calif. 92311
Filed May 23, 1978, Ser. No. 908,902
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—46



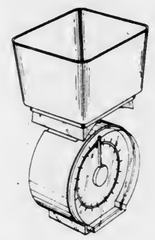
256,101
CALIPER
Takasi Kobasi, Utsunomiya, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed Aug. 3, 1978, Ser. No. 930,510
Claims priority, application Japan, Feb. 7, 1978, 53/3843
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73



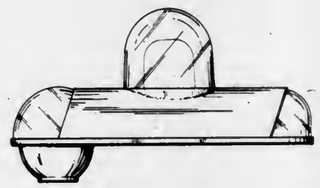
256,102
VOLTAGE METER
William K. Hayward, 27 Guildford Rd., Farnborough, Hampshire GU14 6PS, England
Filed Nov. 10, 1977, Ser. No. 850,427
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



256,103
DIETARY SCALE
Dana W. Mox, Elk Grove Village, Ill., assignor to Hanson Limited, Sligo, Ireland
Filed Jun. 19, 1978, Ser. No. 916,806
Claims priority, application United Kingdom, Mar. 8, 1978, 982666/78
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91



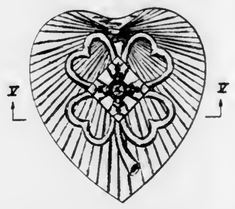
256,104
AIRCRAFT WARNING LIGHT
Robert A. Ferenc, Middletown, and Jack E. Gretta, Chester, both of Conn., assignors to Whelen Engineering Company, Inc., Deep River, Conn.
Filed Jun. 28, 1978, Ser. No. 919,868
Term of patent 14 years
Int. Cl. D10—*06*; D26—*06*
U.S. Cl. D10—114



256,105
BRACELET
Alfred J. Durante, Forest Hills, N.Y., assignor to Cartier, Inc., New York, N.Y.
Filed Jun. 7, 1978, Ser. No. 915,254
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—4



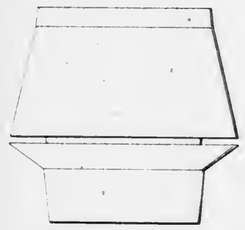
256,106
JEWELRY FINDING
Josiah R. Jones, Waukegan, Ill., assignor to J. Russell's of Illinois Inc.
Filed Nov. 16, 1977, Ser. No. 851,890
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—56



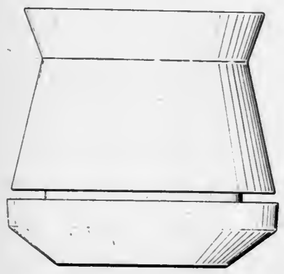
256,107
COLLAPSIBLE CONTAINER FOR PLANTS
Milton J. R. Mitchener, 1305 1/2 N. McCadden Pl., Hollywood, Calif. 90028
Filed Apr. 2, 1979, Ser. No. 25,771
Term of patent 3½ years
Int. Cl. D11—*02;* D7—*07*
U.S. Cl. D11—148



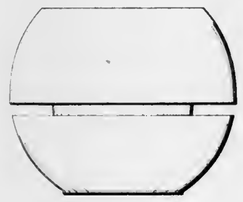
256,108
COMBINED FLOWER POT AND SAUCER OR THE LIKE
Stafford D. Collie, Severna Park, Md., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jul. 12, 1979, Ser. No. 57,062
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152



256,109
COMBINED FLOWER POT AND SAUCER OR THE LIKE
Stafford D. Collie, Severna Park, Md., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jul. 12, 1979, Ser. No. 57,063
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152



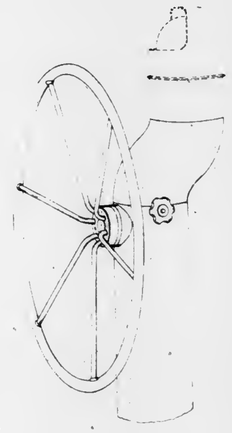
256,110
COMBINED FLOWER POT AND SAUCER OR THE LIKE
Donald Dunbar, Elgin; Evan W. Bell, Hoffman Estates, and Ted Dziewulski, Des Plaines, all of Ill., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 23, 1979, Ser. No. 14,470
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—153



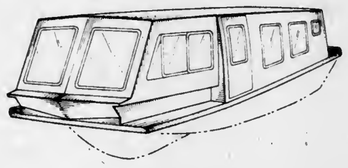
256,111
SKI VEHICLE
James J. Wagner, Venetia, Pa., assignor to SWECO, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 894,984, Apr. 10, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 33,879
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—9



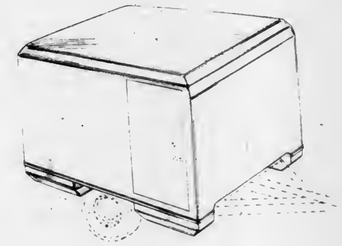
256,112
COMBINED BOAT STEERING WHEEL AND SUPPORT COLUMN
Mario Cura', Turin, Italy, assignor to A.T.N. S.p.A., Turin, Italy
Filed Nov. 10, 1977, Ser. No. 850,527
Claims priority, application Italy, May 17, 1977, 53170 B/77; May 17, 1977, 53171 B/77
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—70



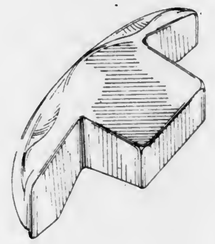
256,113
HOUSEBOAT DECK
Frank J. Fortier, 600 Railroad Ave., Pittsburg, Calif. 94565
Filed Jun. 19, 1978, Ser. No. 917,026
Term of patent 14 years
Int. Cl. D12—*06, 99*
U.S. Cl. D12—70



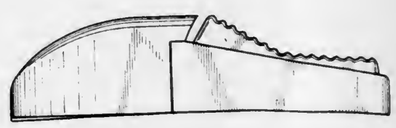
256,114
UTILITY LOAD BODY
George G. Bell, Jr., 3527 Edmar Pl., Jackson, Mich. 39216
Filed Jul. 24, 1978, Ser. No. 927,057
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102



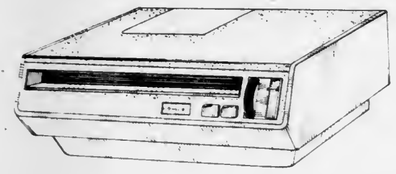
256,115
ACCESSORY CONSOLE FOR MOTORCYCLES
Tommy W. Dixson, 1509 W. Willetta, Phoenix, Ariz. 85007
Filed Jun. 28, 1978, Ser. No. 920,019
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



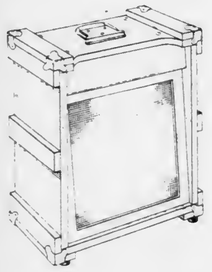
256,116
REMOTE CONTROL SWITCH
Norman Hunt, Leamington Spa, England, assignor to Associated Engineering Limited, England
Filed Jul. 19, 1978, Ser. No. 925,931
Claims priority, application United Kingdom, Feb. 2, 1978, 093157/78
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—37



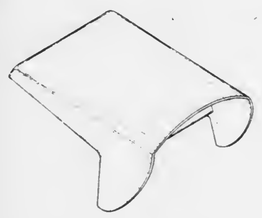
256,117
VIDEO DISC PLAYER
Marlan H. Polhemus, Chicago, and Andrew L. Alger, Wilmette, both of Ill., assignors to RCA Corporation, New York, N.Y.
Filed Jan. 3, 1978, Ser. No. 866,607
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—2



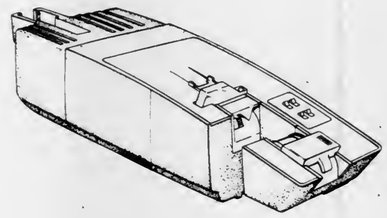
256,118
SOUND AMPLIFIER CABINET
Eugene Kornblum, Clayton, Mo., assignor to St. Louis Music Supply Company, Inc., St. Louis, Mo.
Filed Jan. 5, 1979, Ser. No. 1,147
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33



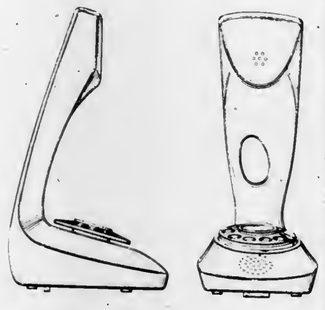
256,119
HOOD FOR COMPUTER CATHODE-RAY TERMINAL
Francis L. Klemm, P.O. Box 586, Wrightsville Beach, N.C. 28480
Filed Mar. 31, 1978, Ser. No. 892,219
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—40



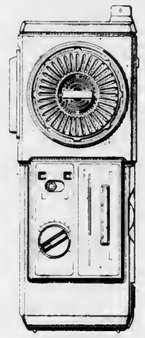
256,120
COMBINED PUNCH AND READER FOR PERFORATED TAPE
Robert E. Arko, Mt. Prospect; Joseph A. Bellino, Arlington Heights, and Richard A. Hein, Skokie, all of Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed May 4, 1978, Ser. No. 903,646
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—49



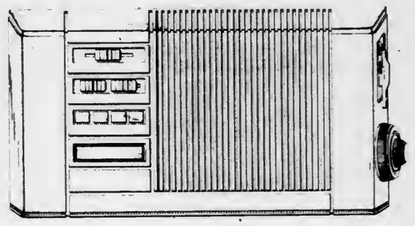
256,121
TELEPHONE SET
Takao Konto, No. 12-6, Minamiaoyama 7-chome, Minato-ku, Tokyo, Japan
Filed Mar. 30, 1979, Ser. No. 25,545
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

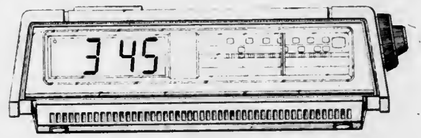


256,122
COMBINED RADIO AND WALKIE TALKIE OR SIMILAR ARTICLE
Richard Culbertson, Manlius, N.Y., assignor to General Electric Company
Filed May 8, 1978, Ser. No. 903,985
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68

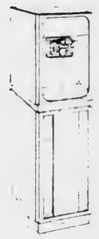


256,123
CLOCK RADIO OR SIMILAR ARTICLE
John T. Houlihan, Fayetteville, N.Y., assignor to General Electric Company
Filed Jul. 24, 1978, Ser. No. 927,738
Term of patent 14 years
Int. Cl. D14—*03;* D10—*01*
U.S. Cl. D14—73





256,124
SOFT SERVE MACHINE
Lee E. Adamson, Roscoe, Ill., and Robert B. Hauger, Beloit, Wis., assignors to Beatrice Foods Co., Chicago, Ill.
Filed Dec. 11, 1978, Ser. No. 967,998
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—82



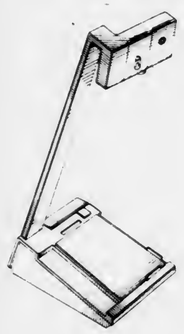
256,125
BEVERAGE DISPENSING HEAD
James W. Erickson, Appleton, Wis., assignor to The Cornelius Company, Anoka, Minn.
Filed Jun. 26, 1978, Ser. No. 919,527
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D15—120



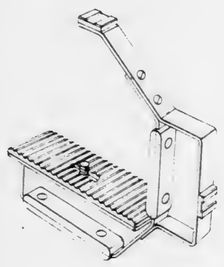
256,126
VACUUM PRESS
Lyle D. Hemperly, Jr., Naugatuck; Larry C. Ayer, Manchester, and David H, Trout, Woodbury, all of Conn., assignors to Seal Incorporated, Naugatuck, Conn.
Filed Jul. 28, 1978, Ser. No. 928,992
Term of patent 14 years
Int. Cl. D15—*99;* D18—*02*
U.S. Cl. D15—146



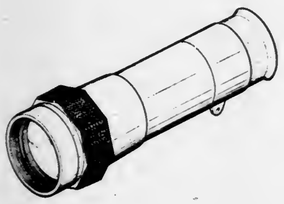
256,127
MICROFILM CAMERA
John W. Overman, Phoenix, Ariz., assignor to Bell & Howell Company, Chicago, Ill.
Filed Feb. 13, 1978, Ser. No. 877,218
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—02



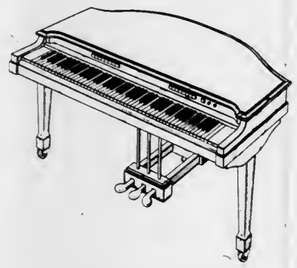
256,128
FLASH ATTACHMENT BRACKET FOR A CAMERA
Paul H. Borisoff, 7726 Burnet Ave., Van Nuys, Calif. 91405
Filed Feb. 21, 1978, Ser. No. 879,680
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—47



256,129
MONOCULAR
Genzo Mitsui, Tokyo, Japan, assignor to Specwell Corporation, Tokyo, Japan
Filed Dec. 1, 1977, Ser. No. 856,470
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—60



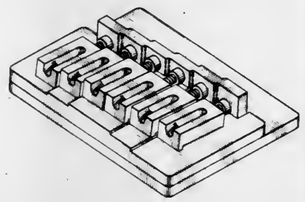
256,130
ELECTRIC PIANO, OR THE LIKE
Kunio Ohta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Aug. 2, 1978, Ser. No. 930,591
Claims priority, application Japan, Apr. 17, 1978, 53-15198
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—7



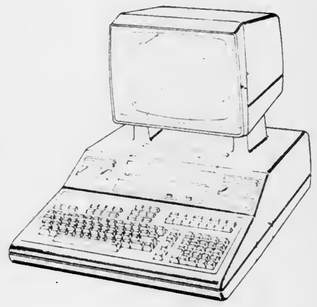
256,131
MUTE FOR BRASS INSTRUMENTS
Joseph Alessi, 15 Anchorage Ct., San Rafael, Calif. 94903
Continuation of Ser. No. 732,717, Oct. 15, 1976. This application Dec. 7, 1978, Ser. No. 967,438
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D17—13



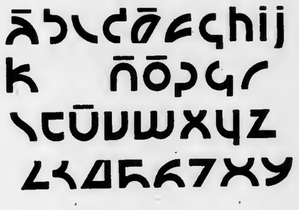
256,132
BRIDGE FOR GUITARS
Gregg Wilson, Irvine, Calif., assignor to CBS Inc., New York, N.Y.
Filed Apr. 11, 1978, Ser. No. 895,505
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—21



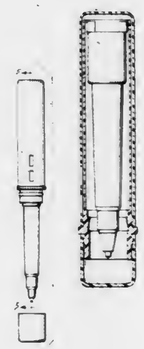
256,133
CASING FOR AN ELECTRONIC CALCULATOR
LeRoy J. LaCelle, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 27, 1978, Ser. No. 881,489
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



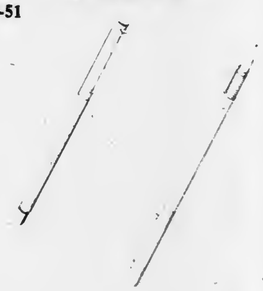
256,134
TYPE FONT OF ALPHABET AND NUMERALS
Antonio DiNunzio, Artesa de Segre, 12, Madrid, Spain
Filed Jun. 15, 1978, Ser. No. 915,776
Claims priority, application Spain, Dec. 28, 1977, 14953
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24



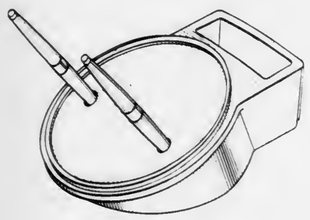
256,135
RETRACTABLE SAFETY WRITING INSTRUMENT
Bobby D. Storms, Rte. #2, Box 427, Bladenboro, N.C. 28320
Filed Sep. 25, 1978, Ser. No. 945,938
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—43



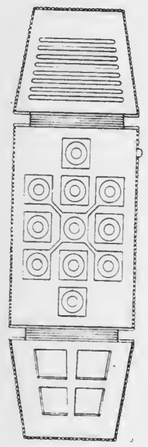
256,136
FOUNTAIN PEN
Gerd A. Müller, Eschborn, Fed. Rep. of Germany, assignor to C. Joseph Lamy GmbH, Heidelberg, Fed. Rep. of Germany
Filed Mar. 3, 1978, Ser. No. 883,341
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1977, 166
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51



256,137
DESK SET AND PLANTER
Raymond E. Cross, Lake Forest, Ill., assignor to Federal Research Corporation, Chicago, Ill.
Filed Jul. 3, 1978, Ser. No. 921,355
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75



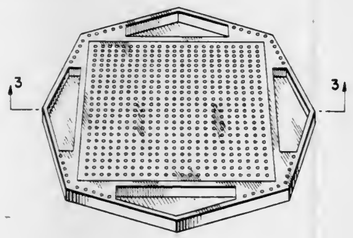
256,139
ELECTRONIC GAME CASING
Arthur P. Venditti, Peabody; Samuel T. Kjellman, Framingham, and Robert O. Doyle, Cambridge, all of Mass., assignors to CPG Products Corp.
Filed Sep. 14, 1978, Ser. No. 942,395
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—1



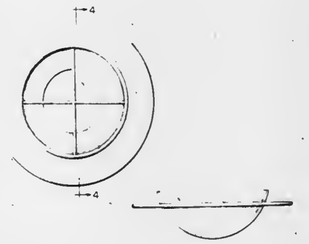
256,138
PORTABLE EXHIBIT SYSTEM
Ian A. Tesar, 53 River Rd., Cos Cob, Conn. 06807
Filed Mar. 13, 1978, Ser. No. 885,692
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—10



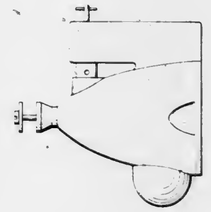
256,140
GAME BOARD
Warren H. Riley, Sr., P.O. Box 9, Agra, Okla. 74824
Filed Jul. 5, 1978, Ser. No. 922,260
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—17



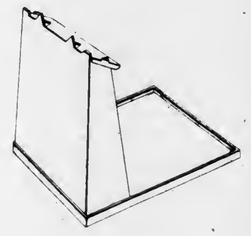
256,141
ROCKING TOY
Louise A. Lubbe, 101 Eureka Dr., Manlius, N.Y. 13104
Filed Nov. 9, 1977, Ser. No. 849,843
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—66



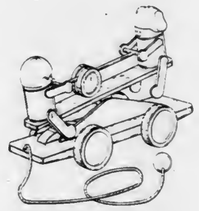
256,142
GAS PRESSURE MOTOR FOR MODEL AIRPLANE
Roy Lever, Tildesley, England, assignor to Harden Associates Limited, Bury, England
Filed Jul. 27, 1977, Ser. No. 819,266
Claims priority, application United Kingdom, Feb. 2, 1977, 978736/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—91



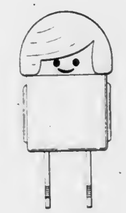
256,143
COLLAPSIBLE TOY BUILDING
Melvyn Birnkrant, Beacon, N.Y., assignor to Colorforms, Norwood, N.J.
Filed Mar. 14, 1978, Ser. No. 886,567
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114



256,144
TETHERED ACTION TOY
John A. Pape, Clifton, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Mar. 22, 1978, Ser. No. 889,128
Claims priority, application United Kingdom, Dec. 28, 1978, 982740/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



256,145
TOY FIGURE
Dennis G. Wyman, Broadstairs, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Jan. 24, 1978, Ser. No. 872,351
Claims priority, application United Kingdom, Dec. 2, 1977, 982468/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166



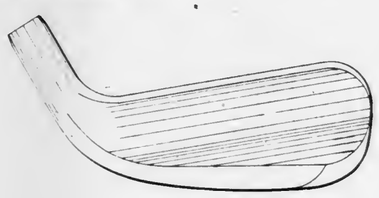
256,146
STUFFED TOY ANIMAL FIGURE
Dora Holdaway, Ontario, Canada
Filed Apr. 25, 1977, Ser. No. 790,691
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—187



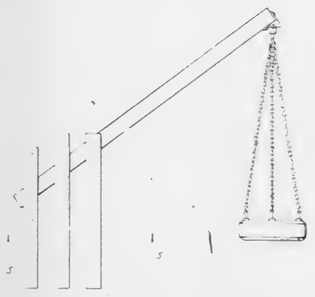
256,147
GOLF CLUB HEAD
Philippe M. Jeghers, avenue Leon Souguenet 23, 4050 Esneux, Belgium
Filed Apr. 19, 1978, Ser. No. 897,948
Claims priority, application Benelux, Jan. 9, 1978, 783665-02
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—214



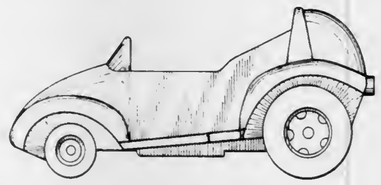
256,148
GOLF CLUB HEAD
Philippe M. Jeghers, avenue Leon Souguenet 23, 4050 Esneux, Belgium
Filed Apr. 19, 1978, Ser. No. 897,949
Claims priority, application Benelux, Jan. 9, 1978, 783665-01
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—220



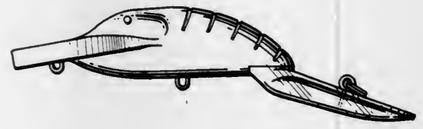
256,149
RECREATION SWING
Frank W. Beller, Aurora, Ill., assignor to Recreation Systems Co., North Aurora, Ill.
Filed Jul. 31, 1978, Ser. No. 929,827
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246



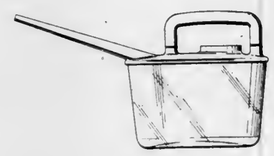
256,150
DUNE BUGGY CAR SHAPED SEAT FOR PLAYGROUND APPARATUS
Steven A. Lofton, Litchfield, and David C. Mulligan, Blissfield, both of Mich., assignors to Game Time, Inc., Fort Payne, Ala.
Filed Aug. 23, 1978, Ser. No. 936,074
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—250

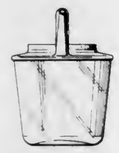


256,151
FISHING LURE
Randall L. Hunter, W. Jackson Pike Rte. #1, Box 193, Yorktown, Ind. 47396
Filed Oct. 25, 1978, Ser. No. 954,561
Term of patent 14 years
Int. Cl. D22—*28*
U.S. Cl. D22—28

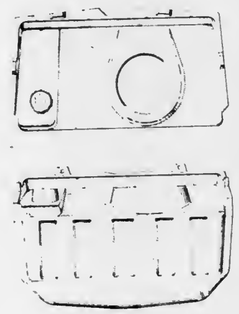


256,152
WATERING PITCHER
Arne P. Darnell, Karlshamn, Sweden, assignor to Perstorp AB, Perstorp, Sweden
Filed May 17, 1978, Ser. No. 907,248
Claims priority, application Sweden, Dec. 16, 1977, 772609
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—11

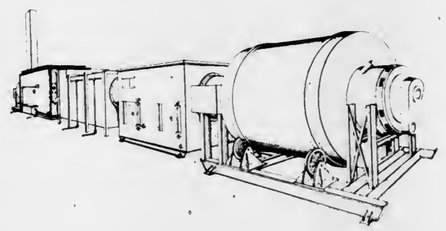




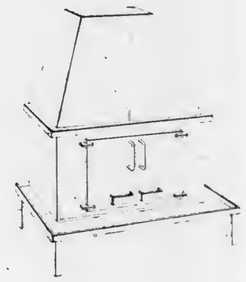
256,153
PORTABLE CHEMICAL TOILET TANK
Phillip R. Juaire, Brooklyn Center, and Leo F. Wildgen, Bloomington, both of Minn., assignors to Satellite Industries, Inc.
Filed Jul. 3, 1978, Ser. No. 921,478
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



256,154
WASTE INCINERATION INSTALLATION
Wayne Wills, North Palm Beach, Fla., assignor to The United Corporation, Topeka, Kans.
Filed Dec. 30, 1977, Ser. No. 865,885
Term of patent 14 years
Int. Cl. D23—*99*; D25—*03*
U.S. Cl. D23—85



256,155
FIREPLACE
Niilo H. Teeri, Korppaantie 8 D, SF-00300 Helsinki 30, Finland
Filed Apr. 25, 1978, Ser. No. 900,024
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



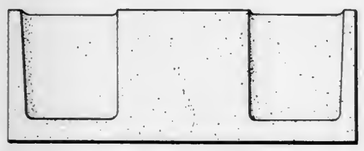
256,156
AIR INTAKE HOOD FOR A FURNACE VENTING SYSTEM
John F. Garritson, Mahtomedi, Minn., assignor to Basic Energy Conservation Services, Inc., St. Paul, Minn.
Filed Oct. 23, 1978, Ser. No. 953,974
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



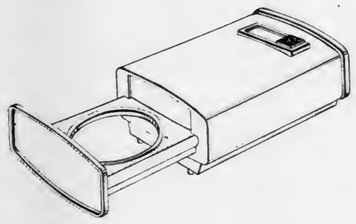
256,157
COMBINED VENT AND BAFFLE
Bruce K. Ward, St. Louis Park, Minn., assignor to Diversified Insulation, Inc., Hamel, Minn.
Division of Ser. No. 749,834, Dec. 13, 1976, Pat. No. Des. 249,704. This application Mar. 22, 1978, Ser. No. 888,947
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



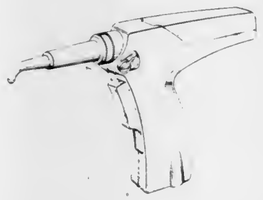
256,158
BLOCKING BAFFLE
Bruce K. Ward, St. Louis Park, Minn., assignor to Diversified Insulation, Inc., Hamel, Minn.
Filed Mar. 22, 1978, Ser. No. 889,059
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



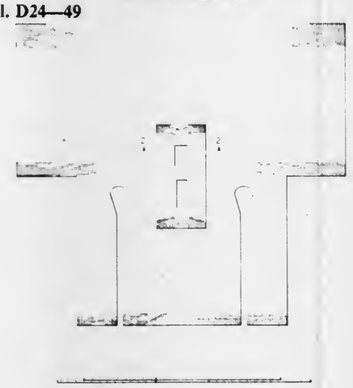
256,159
STERILIZER UNIT
Michael D. Thomas, Arab, Ala., and Francis E. Ryder, Barrington, Ill., assignors to Ryder International Corporation, Hanover Park, Ill.
Filed Mar. 3, 1978, Ser. No. 883,343
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—9



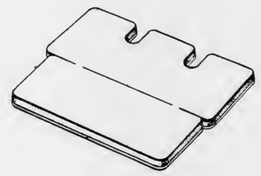
256,160
DENTAL IMPRESSION INSTRUMENT
Roy K. Fujitaki, Altadena, and Masao Morisaku, Monterey Park, both of Calif., assignors to Jack D. Rasmussen, Upland, Calif.
Filed Dec. 2, 1977, Ser. No. 857,049
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



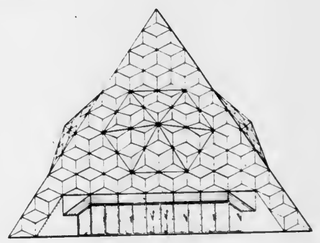
256,161
SURGICAL DRAPE
Don W. Oliver, Memphis, Tenn., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 21, 1977, Ser. No. 862,792
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—49



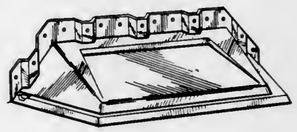
256,162
PAD FOR ANCHORING AN INFUSION NEEDLE AND THE TUBING CONNECTED THERETO TO THE SKIN OF A PATIENT
Raymond H. Haerr, Cincinnati, and Warren Bielke, Loveland, both of Ohio, assignors to Xomed, Inc.
Filed Apr. 6, 1978, Ser. No. 893,892
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—52



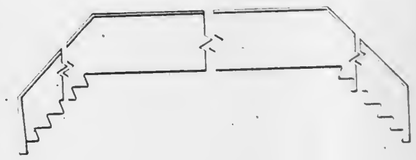
256,163
THEATER BUILDING
Ivan Dryer, 6911 Hayvenhurst Ave., Van Nuys, Calif. 91406
Filed Feb. 7, 1978, Ser. No. 875,877
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—26



256,164
DOOR CANOPY
Marcus C. Phillips, Marietta, Ga., assignor to Plastech Corporation
Filed Jun. 7, 1978, Ser. No. 913,490
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—57



256,165
STILE
Andrew Green, Houston, Tex., assignor to Composite Technology, Inc., Fort Worth, Tex.
Filed Jun. 5, 1978, Ser. No. 912,941
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



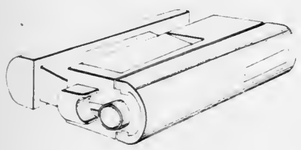
256,166
BUILDING BLOCK
Anthony N. Iannarelli, 345 N. Washington St., Belchertown, Mass. 01007
Filed Mar. 16, 1978, Ser. No. 887,195
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—87



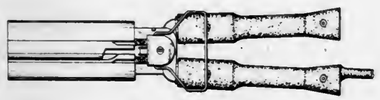
256,167
PORTABLE FLUORESCENT LAMP
Ernest F. Thomson, Fairfield, Conn., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Oct. 3, 1977, Ser. No. 838,787
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—42



256,168
CIGARETTE MAKING MACHINE
Kevin Thompson, and David Crisp, both of London, England, assignors to Rizla Limited, Pontypridd, Wales
Filed Jun. 14, 1978, Ser. No. 916,005
Claims priority, application United Kingdom, Dec. 23, 1977, 982730/77
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D27—51

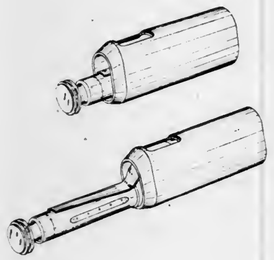


256,169
HAIR TREATMENT IRON
John Cusenza, 9660 Lurline Ave., Chatsworth, Calif. 91311
Filed Feb. 27, 1978, Ser. No. 881,886
The portion of the term of this patent subsequent to Oct. 23, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35

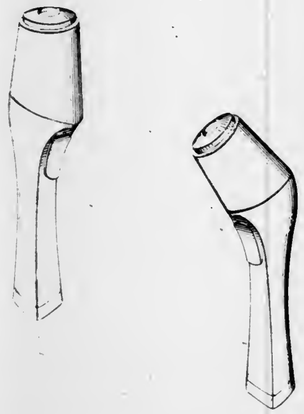




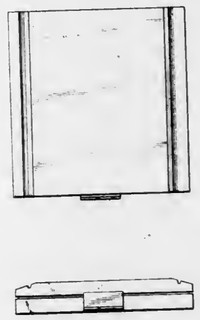
256,170
HAIR CURLING TONG
Wilhelmus G. E. Janssens, Drachten, Netherlands, assignor to U.S. Philips Corporation, Tarrytown, N.Y.
Filed Jul. 17, 1978, Ser. No. 925,406
Claims priority, application Benelux, Feb. 14, 1978, 5249200
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35



256,171
HOLDER FOR MANICURING IMPLEMENT, BRUSH OR SIMILAR ARTICLE
Patrick M. Tomaro, Maplewood, N.J., assignor to Conair Corporation, Edison, N.J.
Filed Apr. 14, 1978, Ser. No. 896,789
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—58

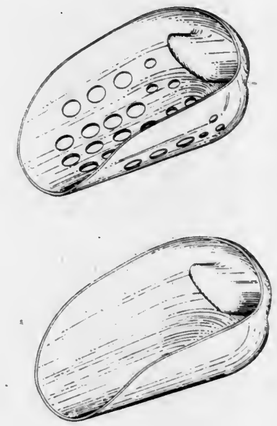


256,172
COSMETIC BOX
Alain Chevassus, Sceaux, France, assignor to Lefebure Isolants Reunis, Chevilly Larue, France
Filed Oct. 23, 1978, Ser. No. 953,778
Claims priority, application France, Apr. 24, 1978, 78 41309
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—83

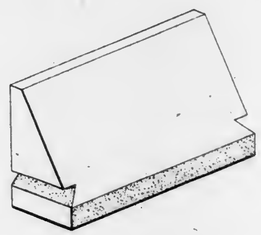




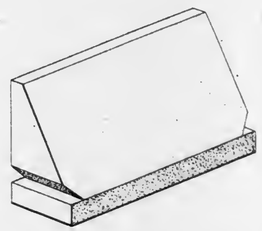
256,173
LITTER SCOOP
Jack C. Rigney, 50 Calle Del Ribera, Stinson Beach, Calif. 94970
Filed Mar. 30, 1978, Ser. No. 891,771
Term of patent 14 years
Int. Cl. D30—*99*; D7—*99*
U.S. Cl. D30—99



256,174
COMBINED SLANT MARKER AND BASE
John Buttura, Sr., Meadowcrest La., Barre, Vt. 05641
Filed Jun. 29, 1978, Ser. No. 920,473
Term of patent 14 years
Int. Cl. D99—*17*
U.S. Cl. D99—17



Pat 256,175
COMBINED SLANT MARKER AND BASE
John Buttura, Sr., Meadowcrest La., Barre, Vt. 05641
Filed Jun. 29, 1978, Ser. No. 920,474
Term of patent 14 years
Int. Cl. D99
U.S. Cl. D99—17



LIST OF PATENTEES

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Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert, to Commissariat a l'Energie Atomique; and Compagnie Centrale SICLI. Detector for abnormal phenomena. 4,215,278, Cl. 307-116.000.
Barrow, Billy E. Injector cooler controls. 4,214,453, Cl. 62-118.000.
Bartel, Siegfried; Biedermann, Ernst; Rapp, Heinz; and Muller, Martin, to AGFA-Gevaert, A.G. Automatic counteracting of transverse shift of a longitudinally transported strip. 4,214,689, Cl. 226-21.000.
Barton, David W., to Ford Motor Company. Dual-crank Stirling engine with quad cylinder arrangement. 4,214,447, Cl. 60-525.000.
Barton, Paul R.; and Welborn, Johnnie M., to Container Corporation of America. Container with integral partition. 4,214,696, Cl. 229-40.000.
Bartsch, Wolfgang: *See—*
Ross, Carl H.; Friebe, Walter-Gunar; Kampe, Wolfgang; Bartsch, Wolfgang; and Roesch, Egon, 4,215,134, Cl. 424-273.00B.
Barylski, Gary S. Panel holder and fastener for home, commercial and industrial use. 4,214,412, Cl. 52-169.120.
BASF Wyandotte Corp.: *See—*
Login, Robert B., 4,215,026, Cl. 260-292.00E.
Bateman, Charles D., to Sundstrand Data Control, Inc. Aircraft excessive descent rate warning system. 4,215,334, Cl. 340-27.0AT.
Battaglia, Charles J.; Chang, Jack C.; and Daniel, Daniel S., to Eastman Kodak Company. Ion-selective electrode. 4,214,968, Cl. 204-195.00M.
Battelle Development Corporation, The: *See—*
Maringer, Robert E., 4,215,084, Cl. 264-8.000.
Battle, Dick M.: *See—*
Battle, Dick R.; and Battle, Dick M., 4,214,421, Cl. 54-79.000.
Battle, Dick R.; and Battle, Dick M. Horse blanket and hood apparatus. 4,214,421, Cl. 54-79.000.
Bauer, Alfrid G.: *See—*
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.
Bauer, Daniel; and Braque, Gerard, to L'Oreal. Spray dispensing container. 4,214,677, Cl. 222-145.000.
Baughman, Ray H.: *See—*
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,215,208, Cl. 526-285.000.
Baum, Kurt; and Berkowitz, Philip T., to United States of America, Navy. 2-Fluoro-2-nitropropanediol. 4,215,228, Cl. 568-712.000.
Baumann, Hans D. Chemically inert control valve. 4,214,730, Cl. 251-171.000.
Baumgart, Wolfgang, to Dynamidon-Koppers Industriekeramik GmbH. Process for the production of products from naturally-occurring magnesium orthosilicate-rich rocks. 4,214,910, Cl. 106-58.000.
Bayer Aktiengesellschaft: *See—*
Blank, Heinz U.; and Pfister, Theodor, 4,215,071, Cl. 260-543.00R.
Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, 4,215,141, Cl. 424-304.000.
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; and Haller, Ingo, 4,215,131, Cl. 424-273.00R.
Lantzsch, Reinhard, 4,215,050, Cl. 260-343.600.
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Homeyer, Bernhard, 4,215,132, Cl. 424-273.00P.
Petersen, Otto; and Kersten, Franz, 4,215,091, Cl. 422-75.000.
Preiss, Michael; Konig, Hans-bodo; Metzger, Karl G.; and Feyen, Peter, 4,215,118, Cl. 424-248.400.
Bayer, Robert C.: *See—*
Rittenburg, James H.; and Bayer, Robert C., 4,215,108, Cl. 424-92.000.
BBC Brown, Boveri & Co., Ltd.: *See—*
Bleidt, Rolf; Nasterlack, Joachim; Neubeck, Kurt; and Gareus, Achim, 4,214,474, Cl. 73-30.000.
Romeyke, Norbert; and Kalbfuss, Richard, 4,214,436, Cl. 60-39.09R.
Beach, Corbett D., Jr. Pivoting wall type, four stroke, internal combustion, rotary engine. 4,214,557, Cl. 123-18.00R.
Beales, John H., to J. H. Beales Steel Fabricators, Ltd. Quick-release coupler. 4,214,840, Cl. 403-31.000.
Beard, James H., to Production Engineering Research Association of Great Britain. Gripping means. 4,214,362, Cl. 29-726.000.
Beaston, Bud A. Hoof alignment tool. 4,214,370, Cl. 33-195.000.
Beckman Instruments, Inc.: *See—*
Corwin, William C., 4,215,352, Cl. 346-140.00R.
Beckmann, Gerhard. Irrigation valve device. 4,214,701, Cl. 239-63.000.
Beecham Group Limited: *See—*
Ferres, Harry, 4,215,120, Cl. 424-250.000.
Howarth, Thomas T., 4,215,128, Cl. 424-272.000.
Beentjes, Nicolaas H. M., to Hoogovens IJmuiden, B.V. Pressure measurement in a hood above a converter for manufacturing steel. 4,214,735, Cl. 266-99.000.
Behensky, Gerhard; and Waldinger, Josef, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for producing semiconductor materials and metals of highest purity. 4,215,154, Cl. 427-50.000.
Behn, Reinhard; Hoyler, Gerhard; and Voelkl, Walter, to Siemens Aktiengesellschaft. Regenerable electric capacitor. 4,215,385, Cl. 361-273.000.
Belart, Juan, to ITT Industries, Inc. Hydraulic brake booster. 4,214,448, Cl. 60-547.00R.
Belkin, Nathan L., to Superior Surgical Mfg. Co., Inc. Surgical gown - and method of donning gown. 4,214,320, Cl. 2-114.000.
Bell & Howell Company: *See—*
Axelrod, Donald J., 4,214,828, Cl. 354-275.000.
Bell Telephone Laboratories, Incorporated: *See—*
Bellisio, Jules A., 4,215,245, Cl. 370-84.000.
Chang, Tao-Yuan, 4,215,320, Cl. 331-94.50G.
Heisinger, Robert F., 4,215,381, Cl. 361-124.000.
Kahng, Dawon, 4,214,359, Cl. 29-571.000.
Mahoney, Gerard E., 4,214,966, Cl. 204-192.00E.
McCall, Samuel L., Jr., 4,215,323, Cl. 332-7.510.
Sawyer, Albert J., 4,215,246, Cl. 179-18.00B.
Bellisio, Jules A., to Bell Telephone Laboratories, Incorporated. Variable rate synchronous digital transmission system. 4,215,245, Cl. 370-84.000.
Bemis Company, Inc.: *See—*
Lieder, Gaylerd M., 4,214,417, Cl. 53-371.000.
Benczur-Urmossy, Gabor: *See—*
Gutmann, Gunter; and Benczur-Urmossy, Gabor, 4,215,184, Cl. 429-101.000.
Bendix Corporation, The: *See—*
Cunningham, Joseph A., 4,214,651, Cl. 188-251.00R.
Benoit, Pierre A.; and Widmer, Gilbert, to Ste. d'Exploitation des Cables Electriques, Systeme Berthoud, Borel & Cie.; S.A. des Cableries & Trefileries de Cossonay; and Kabelwerke, Brugg A.G. Optical fibre connector. 4,214,811, Cl. 350-96.210.
Berger, Paul J.; and Shane, Ronald F., to Berger, Paul J. Electromechanical transducer. 4,214,485, Cl. 73-655.000.
Berger, Pierre, to Creusot-Loire. Process for the continuous impregnation of a cellulosic material. 4,214,947, Cl. 162-18.000.
Berger, Sidney; and Cubieta, John J., to United Utensils Company, Inc. Method for rotationally molding a hollow article and article made thereby. 4,214,670, Cl. 220-70.000.
Bergman, Bertil N. Foldable first-aid dressings with equal bandage and compress widths. 4,214,581, Cl. 128-155.000.
Bergstrom, Per-Olof: *See—*
Ahlen, Karl G.; Bergstrom, Per-Olof; and Supanich, Joseph, 4,214,489, Cl. 74-761.000.
Bergum, Bernard C.; Bredland, Alf M.; and Paulson, John W., to ESB Inc. Electrochemical battery employing a latex bonded lead dioxide electrode. 4,215,189, Cl. 429-217.000.
Berkowitz, Philip T.: *See—*
Baum, Kurt; and Berkowitz, Philip T., 4,215,228, Cl. 568-712.000.
Berman, Alby M.: *See—*
Galloway, James H.; and Berman, Alby M., 4,215,394, Cl. 363-137.000.
Bernham, Robert R.; and Christy, Harold, to Cogar, George R. Article handling apparatus especially useful for handling concrete blocks. 4,214,655, Cl. 198-374.000.
Bernhardsson, Sven-Olof; and Alfredsson, Stig A. Method and apparatus for determining critical temperatures for corrosion. 4,214,951, Cl. 204-1.00T.
Bernhardt, Wolfgang, to Robert Bosch GmbH. Hydraulic control arrangement with at least one multiple position valve. 4,214,506, Cl. 91-527.000.
Bernier, Joseph L.; and Kamber, Peter W., to Boeing Company, The. Real time performance monitoring of gas turbine engines. 4,215,412, Cl. 364-551.000.
Bertsch, Josef: *See—*
Katz, Sol; Bertsch, Josef; and Yurgevich, Howard J., 4,214,789, Cl. 296-183.000.
Bettin, Leonard A., to International Harvester Company. Pressure-flow compensated hydraulic priority system providing signals controlling priority valve. 4,214,446, Cl. 60-420.000.
Betts, Robert K., to United States of America, Air Force. Fretting fatique inhibiting method for titanium. 4,215,181, Cl. 428-591.000.
Bexford Limited: *See—*
Kwok, John C., 4,215,191, Cl. 430-152.000.
Biche, Barton A., to Bunker Ramo Corporation. Movable and prewired wall structure. 4,214,799, Cl. 339-20.000.
Biedermann, Ernst: *See—*
Bartel, Siegfried; Biedermann, Ernst; Rapp, Heinz; and Muller, Martin, 4,214,689, Cl. 226-21.000.

Bigley William J.; and Rizzo, Vincent J., to Lockheed Electronics Co., Inc. Servomechanism rate control system with compensation for motor-tachometer resonance. 4,215,298, Cl. 318-327.000.

Bille, Dag, to Svecia Silkscreen Maskiner AB. Device for manufacturing a stencil. 4,214,522, Cl. 101-128.400.

Binks Manufacturing Company: *See—*
Scull, Jon V.; and Shaffer, Patrick D., 4,214,709, Cl. 239-707.000.

Bissell, Robert D.: *See—*
Gorgens, Joseph E.; Kipp, Frederick M.; and Bissell, Robert D., 4,214,486, Cl. 73-738.000.

Bitterli, William W.: *See—*
Games, John E.; and Bitterli, William W., 4,215,408, Cl. 364-505.000.

Black, Otis D.: *See—*
Packer, Marvin; and Black, Otis D., 4,215,025, Cl. 260-29.20R.

Blackman, Joel: *See—*
McKibbin, Dean K.; Hills, Richard E.; Blackman, Joel; and Kuhs, Franklin A., 4,214,671, Cl. 220-219.000.

Blackmon, Charles V., to Blackmon Enterprises, Inc. Spring-biased exercise apparatus. 4,214,748, Cl. 272-67.000.

Blackmon Enterprises, Inc.: *See—*
Blackmon, Charles V., 4,214,748, Cl. 272-67.000.

Blanchard, Stanley J., to Unimation Inc. Dual-disc shaft position encoder. 4,215,337, Cl. 340-347.00P.

Blanco, Jose R.; and Venero, Aurelio O., to Garcia de Lama, Javier. Process for the preparation of substituted 4H-pyran-4-ones. 4,214,963, Cl. 204-158.00R.

Blank, Heinz U.; and Pfister, Theodor, to Bayer Aktiengesellschaft. Process for the preparation of sulphonic acid chlorides. 4,215,071, Cl. 260-543.00R.

Blatt, Leland F. Adjustable shock absorber including metering pin and reservoir structure. 4,214,737, Cl. 267-8.00A.

Bleidt, Rolf; Nasterlack, Joachim; Neubeck, Kurt; and Gareus, Achim, to BBC Brown, Boveri & Co., Ltd.; and Alexander Wiegand GmbH Co. Density monitoring apparatus. 4,214,474, Cl. 73-30.000.

Block Drug Company Inc.: *See—*
Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., 4,215,116, Cl. 424-217.000.

Blount, David H. Process for the production of poly(amine allyl halide) copolymer and their reaction products. 4,215,203, Cl. 521-189.000.

Blumbergs, John H.: *See—*
Finley, Joseph H.; and Blumbergs, John H., 4,215,003, Cl. 252-99.000.

Blumhof, Roy, to Joy Insignia, Inc. Decorative key ring and method for making same. 4,214,463, Cl. 70-456.00R.

Boardman, Franklin: *See—*
Gianakakos, Spiros; and Boardman, Franklin, 4,214,578, Cl. 128-90.000.

Bobard, Charles E.; Dalaunay, Just M.; and Darcy, Raymond M., to Establissments Bobard Jeune. Mechanical grape harvesting device. 4,214,427, Cl. 56-330.000.

Bobo, Melvin: *See—*
Monzel, Fred J.; and Bobo, Melvin, 4,214,796, Cl. 308-26.000.

Bobst-Champlain, Inc.: *See—*
Stern, Nathan, 4,214,943, Cl. 156-504.000.

Bockrath, Richard E., to Du Pont de Nemours, E. I., and Company. Recovery of para-nitrosodium phenolate. 4,215,227, Cl. 568-706.000.

Bodenrader, Bonnie J. Method for sewage treatment with bacteria. 4,214,985, Cl. 210-11.000.

Boegeman, Arthur V. Positive locking device. 4,214,783, Cl. 292-150.000.

Boehme, Herman F.; Srivastav, Avadhesh N. L.; and Lochridge, Joe C., to Brown & Root, Inc. Trenching apparatus and method. 4,214,387, Cl. 37-195.000.

Boehringer Ingelheim GmbH: *See—*
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; Traunecker, Werner; and Hoefke, Wolfgang, 4,215,119, Cl. 424-248.500.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,215,133, Cl. 424-273.00R.

Boehringer Mannheim GmbH: *See—*
Ross, Carl H.; Friebe, Walter-Gunar; Kampe, Wolfgang; Bartsch, Wolfgang; and Roesch, Egon, 4,215,134, Cl. 424-273.00B.

Boeing Company, The: *See—*
Bernier, Joseph L.; and Kamber, Peter W., 4,215,412, Cl. 364-551.000.
James, Varnell L.; and Evelyn, George B., 4,214,610, Cl. 137-597.000.

Bogdanov, Alexandr A.: *See—*
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A., 4,214,856, Cl. 425-60.000.

Bohle, Josef: *See—*
Broch, Eberhard, 4,214,785, Cl. 294-64.00R.

Boissevain, Thomas A.: *See—*
Prager, Jay M.; Sadlow, Joseph F.; Farrand, John E.; Boissevain, Thomas A.; and Gonzales, Roman Y., 4,215,386, Cl. 361-394.000.

Boldebuck, Edith M.; and Banucci, Eugene G., to General Electric Company. Process for preparing polyetherimide coatings. 4,215,157, Cl. 427-116.000.

Bolhofer, William A., to Merck & Co., Inc. Pyrazine substituted ureas. 4,215,121, Cl. 424-250.000.

Bollag, Didier. Outerwear garment article. 4,214,319, Cl. 2-108.000.

Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, to Hoffmann-La Roche Inc. 9-Phenyl-nonate traene compounds. 4,215,215, Cl. 542-427.000.

Bondarenko, Oleg L.: *See—*
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A., 4,214,856, Cl. 425-60.000.

Boogerd, Gert M.: *See—*
De Hair, Johannes T. W.; and Boogerd, Gert M., 4,215,289, Cl. 313-486.000.

Booth, Raymond E.; and Miller, Michael E., to Sam Stein Associates, Inc. Apparatus for pre-dusting food products. 4,214,548, Cl. 118-18.000.

Borden, George W.; Smith, Oliver W.; and Trecker, David J., to Union Carbide Corporation. Ink and coating compositions and method. 4,215,167, Cl. 428-203.000.

Borgerding, James F.; and Claus, Robert T., to Chemed Corporation. Slurried laundry detergent. 4,215,004, Cl. 252-156.000.

Borlaug, David J., to GTE Products Corporation. Gated, variable-gain amplifier. 4,215,363, Cl. 358-21.00R.

Borresen, Peter A.; and Greve, Hans J. J., to A/S Modulex. Case structure. 4,214,797, Cl. 312-257.00R.

Botez, Dan, to RCA Corporation. Single filament semiconductor laser. 4,215,319, Cl. 331-94.50H.

Botts, Elton M. Multiple-purpose underground fluid injection system. 4,214,628, Cl. 166-75.00R.

Bouchard, John R., to Northrop Corporation. Inertial instrument. 4,214,482, Cl. 73-504.000.

Bourne, Richard G.: *See—*
Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., 4,214,996, Cl. 252-1.000.

Bouteille, Daniel, to Societe Anonyme: La Telemecanique Electrique. Unidirectional flow limiter. 4,214,607, Cl. 137-499.000.

Bowen, Rafael L., to American Dental Association Health Foundation. Composite dental material. 4,215,033, Cl. 260-42.150.

Bowerman, Harold H., Jr.; and Ireland, Robert W., to B. F. Goodrich Company, The. Puncture-sealing tire. 4,214,619, Cl. 152-347.000.

Bowman, Kenneth A., to Aluminum Company of America. Electrolytic purification of metals. 4,214,955, Cl. 204-67.000.

Bowman, Kenneth A., to Aluminum Company of America. Electrolytic purification of metals. 4,214,956, Cl. 204-67.000.

Bowser, George H., to PPG Industries, Inc. Multiple glazed unit. 4,215,164, Cl. 428-34.000.

Boyd, Robert L.; and Fleming, Joseph W., to Ramsey Controls, Inc. Current regulator for DC motors including sensitivity control means therefor. 4,215,383, Cl. 361-210.000.

Boyer, Bernard. Cover latch. 4,214,782, Cl. 292-87.000.

Boyer, Winston. Dispensing apparatus for adding colloidal magnesium to fuel tank. 4,214,615, Cl. 141-363.000.

Boyle, Daniel J.: *See—*
Jaeschke, Harold R.; and Boyle, Daniel J., 4,214,659, Cl. 206-365.000.
Patmore, Thomas R.; and Boyle, Daniel J., 4,214,400, Cl. 43-121.000.

Bradley, Arthur: *See—*
Felsher, Hal C.; Pollak, Fred H.; and Bradley, Arthur, 4,214,916, Cl. 136-89.0SJ.

Bradley, Ross. Animal trap. 4,214,399, Cl. 43-66.000.

Brandt, Ivan L., to J. W. Speaker Corporation. Warning light. 4,215,390, Cl. 362-311.000.

Brangenberg, Egidius. Ski safety device. 4,214,769, Cl. 280-817.000.

Brannen, Cecil G.; and Petrellis, Nicolas C., to Standard Oil Company (Indiana). Process for the preparation of zinc salts of dihydrocarbyldithiophosphoric acids. 4,215,067, Cl. 260-429.900.

Braque, Gerard: *See—*
Bauer, Daniel; and Braque, Gerard, 4,214,677, Cl. 222-145.000.

Brastow, Carl H., to Conceptual Engineering. Automatic percussion welding apparatus with stud feed. 4,215,262, Cl. 219-95.000.

Braun, Georgy A.: *See—*
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.

Brauner, Hans-Joachim: *See—*
Upmeier, Hartmut; Schmidt, Horst; and Brauner, Hans-Joachim, 4,214,934, Cl. 156-244.110.

Braunling: *See—*
Kaufmann, Rudolf; Braunling; Haberle, Norman; and Muller, Reinhard, 4,215,057, Cl. 260-347.500.

Bredland, Alf M.: *See—*
Bergum, Bernard C.; Bredland, Alf M.; and Paulson, John W., 4,215,189, Cl. 429-217.000.

Brenholt, David L., to Donaldson Company, Inc. Portable air filter assembly with pulse jet self-cleaning filters. 4,214,882, Cl. 55-302.000.

Breslow, Jeffrey D.: *See—*
Kulesza, Ralph J.; and Breslow, Jeffrey D., 4,214,749, Cl. 273-1.00R.

Breuning, Paul: *See—*
Schermer, Gijsbertus J. H.; and Breuning, Paul, 4,215,359, Cl. 357-70.000.

Brichard, Jean; and Colery, Jean-Claude, to Interox. Process for the manufacture of sodium perborate monohydrate and product thereof. 4,215,097, Cl. 423-279.000.

Bridgestone Tire Company Limited: *See—*
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,215,021, Cl. 260-5.000.
Takigawa, Hiroyoshi; Ogawa, Hiroshi; Ohkuni, Shinichiro; and Yahagi, Mitsuhisa, 4,214,618, Cl. 152-209.00D.

Briffod, Jean-Paul, to Ateliers des Charmilles S.A. EDM Apparatus for cutting a groove in a recess in a workpiece. 4,215,261, Cl. 219-69.00V.

Brimer, Claude M., to Linear International. Washing machine motor control system. 4,215,303, Cl. 318-752.000.

Briscoe, James E.: *See—*
Elphingstone, Eugene A.; Misak, Marvin D.; and Briscoe, James E., 4,215,001, Cl. 252-8.55C.

Brisson, Maurice J., to Forano Limitee. Tree delimbing apparatus. 4,214,616, Cl. 144-2.00Z.

British Railways Board: *See—*
Pollard, Maurice G.; and Goodall, Roger M., 4,215,403, Cl. 364-424.000.

Broad, Bernard H., to English Clays Lovering Pochin & Company, Limited. Tube pressure filters. 4,214,991, Cl. 210-232.000.

Broch, Eberhard, to Bohle, Josef. Integral manipulator, in particular for glass panes, plates or metal sheets. 4,214,785, Cl. 294-64.00R.

Brooks, Kirtland H. Liquid aerator. 4,215,081, Cl. 261-122.000.

Brookshier, Ernest L. Soil tilling machine having apparatus for automatic negative braking and drive control. 4,214,632, Cl. 172-42.000.

Brown, George W.; and Reynolds, Thomas L., to Advanced Micro Devices, Inc. Temperature compensated sense amplifier for PROMs and the like. 4,215,282, Cl. 307-364.000.

Brown & Root, Inc.: *See—*
Boehme, Herman F.; Srivastav, Avadhesh N. L.; and Lochridge, Joe C., 4,214,387, Cl. 37-195.000.
Rohde, Heinz K., 4,214,843, Cl. 405-225.000.

Browning, Joe L.; and Adams, Crestus L., to United States of America, Navy. Multi component propulsion system and method. 4,214,439, Cl. 60-216.000.

Bruce, Walter J.: *See—*
Bruce, Wayne M.; and Bruce, Walter J., 4,214,431, Cl. 57-22.000.
Bruce, Wayne M.; and Bruce, Walter J. Method and apparatus for rigging marine vessels. 4,214,431, Cl. 57-22.000.

Bruckl, Konrad; and Fryda, Georg, to AGFA-Gevaert, A.G. Device for tensioning corona-discharge wires. 4,214,733, Cl. 339-274.000.

Brunkhurst, Winfield S.: *See—*
Takacs, Robert J.; Brunkhurst, Winfield S.; and Le Breton, Edward T., 4,214,611, Cl. 138-30.000.

Brunner, Heinrich; and Fischer, Karin, to Siemens Aktiengesellschaft. Method and apparatus for securing the intermediate time durations in street traffic signal systems. 4,215,405, Cl. 364-436.000.

Buchel, Karl H.: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; and Haller, Ingo, 4,215,131, Cl. 424-273.00R.

Buchner, Helmut; and Saufferer, Helmut, to Daimler-Benz Aktiengesellschaft. Parking heater and method using hydrides in motor vehicles powered by hydrogen. 4,214,699, Cl. 237-12.30C.

Buckley, Donald J.; Thaler, Warren A.; and Kennedy, Joseph P., to Exxon Research & Engineering Co. Isobutylene cyclodiolefin copolymers and terpolymers. 4,215,022, Cl. 260-5.000.

Buckley, William D., to Perkin-Elmer Corporation, The. X-ray lithography apparatus and method of use. 4,215,192, Cl. 430-270.000.

Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., to R.G.B. Laboratories, Inc. Mineral enrichment composition and method of preparing same. 4,214,996, Cl. 252-1.000.

Buder, Eckart: *See—*
Gnida, Bernd; Simon, Gerhard; Buder, Eckart; and Schwartz, Hans-Jurgen, 4,215,187, Cl. 429-161.000.

Buhler, Arthur; and Schutz, Hans U., to Ciba-Geigy Corporation. Copper, and nickel complexes of azo dyestuffs. 4,215,042, Cl. 260-151.000.

Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M. Automatic device for diagnostic checkup of vehicles. 4,215,404, Cl. 364-431.000.

Bulova Watch Company, Inc.: *See—*
Sutter, Hans-Rudolf, 4,214,434, Cl. 368-71.000.

Bulso, Joseph D., Jr.; and Lewers, William R., to Redicon Corporation. Triple action container drawing and redrawing apparatus. 4,214,471, Cl. 72-349.000.

Bumpas, Carl E.: *See—*
Baggett, Richard S.; and Bumpas, Carl E., 4,215,371, Cl. 358-172.000.

Bunker Ramo Corporation: *See—*
Biche, Barton A., 4,214,799, Cl. 339-20.000.

Bunyard, Michael L.; and Burkett, Bobby G., to Texas Instruments Incorporated. Dual microprocessor intelligent programmable process control system. 4,215,395, Cl. 364-101.000.

Bunyard, Michael L.: *See—*
Burkett, Bobby G.; and Bunyard, Michael L., 4,215,398, Cl. 364-101.000.
Henry, Raymond W.; Burkett, Bobby G.; and Bunyard, Michael L., 4,215,396, Cl. 364-101.000.

Burhans, Walter R., Jr.; Ciccarello, James L.; and Stumpf, Charles H., to Grumman Aerospace Corporation. Aircraft collapsible fuel tank. 4,214,721, Cl. 244-135.00B.

Burkett, Bobby G.; and Bunyard, Michael L., to Texas Instruments Incorporated. Dual microprocessor intelligent programmable process control system with communication link. 4,215,398, Cl. 364-101.000.

Burkett, Bobby G.: *See—*
Bunyard, Michael L.; and Burkett, Bobby G., 4,215,395, Cl. 364-101.000.
Henry, Raymond W.; Burkett, Bobby G.; and Bunyard, Michael L., 4,215,396, Cl. 364-101.000.

Burroughs Corporation: *See—*
Rege, Satish L.; and Woo, Beng-Yu, 4,215,423, Cl. 365-77.000.
Young, William C., 4,214,919, Cl. 148-1.500.

Burrous, Allen J., to Schlegel Corporation. Weatherstrip and method for sealing a gap. 4,214,930, Cl. 156-1.000.

Burtnett, Thomas C., to General Electric Company. Bus conductor support system. 4,215,237, Cl. 174-99.00B.

Bush, Benjamin F. Device for illuminating reticles in optical instruments. 4,214,371, Cl. 33-241.000.

Bussey, Harry, Jr. Foamable thermoplastic stick and foamed element made therefrom. 4,215,166, Cl. 428-159.000.

Busygin, Valery P.: *See—*
Smirnov, Boris A.; Mochalov, Vyacheslav N.; Busygin, Valery P.; Utyamyshev, Rustam I.; and Semenov, Alexei I., 4,214,584, Cl. 128-218.00M.

Butera, Anthony W. Integrated smoke tester. 4,214,480, Cl. 73-421.50A.

Buynak, Eugene B.; and Hilleman, Maurice R., to Merck & Co., Inc. Parainfluenza virus vaccine and its preparation. 4,215,107, Cl. 424-89.000.

Byler, William H., to Byler, William H., Revocable Trust, William H. Byler and Thelma T. Byler, Trustees. Foot warming device. 4,214,588, Cl. 128-402.000.

Byler, William H., Revocable Trust: *See—*
Byler, William H., 4,214,588, Cl. 128-402.000.

C L Industries, Inc.: *See—*
Kho, Khe-Bing J.; and Stewart, Patrick H., 4,215,012, Cl. 252-429.00R.

Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., to Ford Motor Company. Fuse holder with insertion ramp. 4,214,801, Cl. 339-59.00R.

Caldwell, Alistair J.: *See—*
Redding, Thomas P.; Herbert, Glenn M.; and Caldwell, Alistair J., 4,214,746, Cl. 271-294.000.

Caldwell, Benjamin P., Jr. Lever assemblies. 4,214,395, Cl. 43-18.00R.

Caldwell, Oscar D. Bread cooking device. 4,214,517, Cl. 99-428.000.

Calgon Corporation: *See—*
Sinha, Rabindra K.; Polinsky, Charles K.; Cifrulak, S. David; and Wagner, Norman J., 4,215,096, Cl. 423-241.000.

California R & D Center: *See—*
Jones, Lawrence T.; Sims, Anson; and Howden, Ashley G., 4,214,674, Cl. 222-79.000.

Camacho, Carlos J., to Forminfan, S.A. Dismountable frame for children's furniture. 4,214,325, Cl. 5-99.00B.

Cameron Iron Works, Inc.: *See—*
Williams, Leonard E., Jr.; and Taylor, William M., 4,214,600, Cl. 137-72.000.

Camp, Albert T.; Mueller, Kurt F.; and Nauflett, George W., to United States of America, Navy. Liquid monopropellants containing dissolved combustion modifiers. 4,214,929, Cl. 149-109.400

Campbell, John W.; and Campbell, Lawrance W. Fishhook. 4,214,398, Cl. 43-43.160.

Campbell, Lawrance W.: *See—*
Campbell, John W.; and Campbell, Lawrance W., 4,214,398, Cl. 43-43.160.

Campbell, Thomas C., to General Electric Company. Method for reducing nitrous oxide emissions from a gas turbine engine. 4,214,435, Cl. 60-39.050.

Canadian Industries Limited: *See—*
Heppolette, Robert L.; Khan, Hamid I.; and McEwan, Ian H., 4,215,027, Cl. 260-29.4UA.

Cannell, John F. Electrolytic process and apparatus for the recovery of metal values. 4,214,964, Cl. 204-105.00R.

Caraway, Robert O. Raking and baling machine. 4,214,428, Cl. 56-341.000.

Carignan, Thomas N.: *See—*
Reynard, John M.; Carignan, Thomas N.; Paglia, Richard; and Rich, Joseph F., 4,215,249, Cl. 179-111.00R.

Carlin, Joseph T.; Ware, James W.; Mills, Melvin E., Jr.; and Tyler, Timothy N., to Texaco Inc. Surfactant flooding oil recovery process. 4,214,999, Cl. 252-8.55D.

Carlson, Richard D.: *See—*
Marciniak, Harry W.; Carlson, Richard D.; and Dever, James L., 4,215,034, Cl. 260-45.80A.

Carman Industries, Inc.: *See—*
Wetherton, William M., 4,214,680, Cl. 222-161.000.

Carr, Herbert F.; and Cooper, Robert W. Laterally adjustable trailer hitch system. 4,214,772, Cl. 280-415.00A.

Carr, John C.: *See—*
Wallace, Franklin D.; and Carr, John C., 4,215,224, Cl. 562-485.000.

Carrieri, Louis F., to Gulf & Western Manufacturing Company. Shock dampening systems for presses. 4,214,496, Cl. 83-617.000.

Carson, Chrislyn M.: *See—*
Rogers, Richard B.; Carson, Chrislyn M.; and Ehr, Robert J., 4,215,127, Cl. 424-269.000.

Carter, Walter H.; Christopher, Charles A.; and Grodde, Karl-Heinz, to Texaco Inc.; and Deutsche Texaco Aktiengesellschaft. Adapter for a sensitive viscometer. 4,214,475, Cl. 73-59.000.

Caserio, Frederick F., Jr.: *See—*
Kissel, Charles L.; and Caserio, Frederick F., Jr., 4,215,147, Cl. 424-333.000.
Kissel, Charles L.; and Caserio, Frederick F., Jr., 4,215,148, Cl. 424-333.000.

Casio Computer Co., Ltd.: *See—*
Terao, Hiroyuki, 4,214,433, Cl. 368-28.000.

Casper, Russell L., to General Electric Company. Three-dimensional isolation mount. 4,214,738, Cl. 267-141.100.

Cassia, Antonio M., to Steiner Corporation. Dispenser for liquid soap with telescoping housing members and container therefor. 4,214,676, Cl. 222-83.500.

Cassidy, Raymond T.: *See—*
Sheehan, Robert F.; and Cassidy, Raymond T., 4,214,839, Cl. 402-31.000.

Castoldi, Aldo: *See—*
Spaziante, Placido M.; Giuffre, Luigi; Castoldi, Aldo; and Sioli, Giancarlo, 4,215,009, Cl. 252-184.000.

Caterpillar Tractor Co.: *See—*
Price, Robert J., 4,214,923, Cl. 148-12.00R.
Ritchie, Timothy J.; and White, Ralph E., 4,214,922, Cl. 148-9.500.

Centralny Osrodek Badawczo-Rozwojowy Przemyslu Betonow "Cebet": *See—*
Siejko, Janina; and Jatymowicz, Hanna, 4,214,911, Cl. 106-87.000.

Centronics Data Computer Corp.: *See—*
van Namen, Frederik T., 4,214,691, Cl. 226-74.000.

Cerroni, Manlio. Plant for transforming town solid waste into a fertilizer. 4,215,201, Cl. 435-290.000.

CHA Industries: *See—*
Mahl, Gunard O. B., 4,214,853, Cl. 417-154.000.

Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M. Apparatus for controlling the thickness of rolled products. 4,214,464, Cl. 72-8.000.

Chabot, Ferdinand E.; and McGinnis, James P., to Square D Company. Circuit breaker having an electronic fault sensing and trip initiating unit. 4,215,328, Cl. 335-6.000.

Chain, Frank. Drag reducing apparatus. 4,214,787, Cl. 296-1.00S.

Chambers Corporation: *See—*
Scherer, Richard M., 4,214,571, Cl. 126-190.000.

Chambersburg Engineering Company: *See—*
Rickrode, Jack A.; and Frame, Charles W., 4,214,363, Cl. 29-802.000.

Champion International Corporation: *See—*
Jaeschke, Harold R.; and Boyle, Daniel J., 4,214,659, Cl. 206-365.000.
Manning, James F., 4,214,697, Cl. 229-52.00B.
Patmore, Thomas R.; and Boyle, Daniel J., 4,214,400, Cl. 43-121.000.

Chance, Ronald R.: *See—*
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,215,208, Cl. 526-285.000.

Chang, Jack C.: *See—*
Battaglia, Charles J.; Chang, Jack C.; and Daniel, Daniel S., 4,214,968, Cl. 204-195.00M.

Chang, Tao-Yuan, to Bell Telephone Laboratories, Incorporated. Far-infrared laser tuned by the dynamic Stark effect. 4,215,320, Cl. 331-94.50G.

Chang, Yu-Wen; and Paul, Jeffrey A., to Hughes Aircraft Company. Dielectric image guide integrated harmonic pumped mixer. 4,215,313, Cl. 455-326.000.

Chanin, Harold. Table tennis ball guard. 4,214,752, Cl. 273-30.000.

Channing, Harry: *See—*
Windisch, Lawrence; Nees, John; and Channing, Harry, 4,215,307, Cl. 320-2.000.

Chao, Robert L., to Supertex, Inc. Detection circuit and structure therefor. 4,215,281, Cl. 307-304.000.

Chapuis, Maurice; and Machat, Jean-Yves, to Compagnie Generale des Etablissements Michelin. Erosion device comprising a head with knives and process. 4,214,711, Cl. 241-30.000.

Charlon, Pierre: *See—*
Durand, Pierre; Charlon, Pierre; and Jouffroy, Guy, 4,215,207, Cl. 526-64.000.

Charter, Kenneth F., to Owens-Corning Fiberglas Corporation. Weatherproof joint cover for fabric roofs. 4,214,407, Cl. 52-63.000.

Chattha, Mohinder S., to Ford Motor Company. Coating compositions including oligomeric hydroxy phosphate catalyst-d. 4,215,204, Cl. 525-161.000.

Chemdet Sonic Systems, Inc.: *See—*
Watts, Grady; and Robinson, Michael, 4,214,705, Cl. 239-227.000.

Chemed Corporation: *See—*
Borgerding, James F.; and Claus, Robert T., 4,215,004, Cl. 252-156.000.

Chemical Research and Licensing Company: *See—*
Smith, Lawrence A., Jr., 4,215,011, Cl. 252-426.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Gras, Rainer; and Schnurbusch, Horst, 4,215,165, Cl. 428-35.000.

Chen, Robert H. K.; and Hajos, Zoltan G., to Ortho Pharmaceutical Corporation. Total synthesis of (1RS, 4SR, 5RS)-4-(4,8-dimethyl-5-hydroxy-7-nonenyl)-4-methyl-3,8-dioxabicyclo[3.2.1]octane-1-acetic acid. 4,215,048, Cl. 260-340.600.

Cheresnowsky, Michael J., to GTE Products Corporation. Process for producing cobalt metal powder. 4,214,896, Cl. 75-0.5AA.

Cheresnowsky, Michael J.: *See—*
Gingerich, Richard G. W.; Vanderpool, Clarence D.; Fedorchak, Mary A.; Ritsko, Joseph E.; and Cheresnowsky, Michael J., 4,214,895, Cl. 75-0.5AA.

Cherkofsky, Saul C.; and Sharpe, Thomas R., to Du Pont de Nemours, E. I., and Company. Antiinflammatory 2-substituted-1H-phenanthro[9,10-d]imidazoles. 4,215,135, Cl. 424-273.00B.

Chevron Research Company: *See—*
Danzik, Mitchell, 4,215,211, Cl. 528-313.000.
Pyle, Walter R., 4,214,614, Cl. 141-1.000.

Chiang, David, to MCC Associates. Control system for stepping motors, a method of operating stepping motors, and a method for selecting current patterns for stepping motors. 4,215,302, Cl. 318-696.000.

Chiba, Kiyoshi: *See—*
Yonemura, Utami; Chiba, Kiyoshi; Itoh, Kunio; Mitani, Yuji; and Sobajima, Shigenobu, 4,215,168, Cl. 428-215.000.

Chiji, Masahiro: *See—*
Arita, Koji; Chiji, Masahiro; Asami, Takayoshi; Karaki, Yasuhumi; and Endo, Toshihiko, 4,214,925, Cl. 148-127.000.

Chiyoda Chemical Engineering & Construction Co.: *See—*
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.

Chizek, Franklin J. Method and means for placing an identification mark on a hog. 4,214,490, Cl. 81-9.220.

Choyke, Wolfgang J.; and Hoffman, Richard A., to Westinghouse Electric Corp. Hot pressed SiC-high power laser mirror. 4,214,818, Cl. 350-310.000.

Christensen, Burton G.; and DiNinno, Frank P., to Merck & Co., Inc. 6 Substituted amino-2-substituted-pen-2-em-3-carboxylic acid. 4,215,124, Cl. 424-263.000.

Christopher, Charles A.: *See—*
Carter, Walter H.; Christopher, Charles A.; and Grodde, Karl-Heinz, 4,214,475, Cl. 73-59.000.

Christophersen, Steve; and Neaman, Raymond G., to Donaldson Company, Inc. Method and apparatus for contacting liquids and gases. 4,215,079, Cl. 261-36.00R.

Christy, Harold: *See—*
Bernham, Robert R.; and Christy, Harold, 4,214,655, Cl. 198-374.000.

Chu, Nori Y. C.: *See—*
Hovey, Richard J.; Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., 4,215,010, Cl. 252-300.000.

Chuguev, Dmitry I.: *See—*
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.

Chumley, Calvin L.: *See—*
Pryor, Harry H.; and Chumley, Calvin L., 4,214,654, Cl. 194-1.00E.

Chupik, John M. Four-way double door frame. 4,214,405, Cl. 49-382.000.

Ciba-Geigy Corporation: *See—*
Buhler, Arthur; and Schutz, Hans U., 4,215,042, Cl. 260-151.000.
Drabek, Jozef, 4,215,122, Cl. 424-251.000.

Ciccarello, James L.: *See—*
Burhans, Walter R., Jr.; Ciccarello, James L.; and Stumpf, Charles H., 4,214,721, Cl. 244-135.00B.

Cifrulak, S. David: *See—*
Sinha, Rabindra K.; Polinsky, Charles K.; Cifrulak, S. David; and Wagner, Norman J., 4,215,096, Cl. 423-241.000.

Cilag-Chemie A.G.: *See—*
Richter, Carl; and Feth, Georg, 4,215,220, Cl. 548-341.000.

Clairol Inc.: *See—*
Walter, Henry J.; and Mack, William, 4,214,365, Cl. 30-224.000.

Clark, George H.; and Clark, Mary A., to Rescorp. Response evaluation module for teaching driver training. 4,214,381, Cl. 35-11.00R.

Clark, Kenneth L.; Leach, George S.; and Howard, Robert W., to EMM Semi. Process of forming a semiconductor memory cell with continuous polysilicon run circuit elements. 4,214,917, Cl. 148-1.500.

Clark, Mary A.: *See—*
Clark, George H.; and Clark, Mary A., 4,214,381, Cl. 35-11.00R.

Clarke-Gravely Corporation: *See—*
Nise, Wilfred C.; and Nelson, Bertel S., 4,214,337, Cl. 15-49.00R.

Clarkson, Frank R.: *See—*
Wills, Jack D.; and Clarkson, Frank R., 4,214,683, Cl. 224-42.200.

Claus, Robert T.: *See—*
Borgerding, James F.; and Claus, Robert T., 4,215,004, Cl. 252-156.000.

Clemens, Ogden A., to Dravo Corporation. Two stage wastewater flotation. 4,214,987, Cl. 210-44.000.

Clerc, Adrien, to Commissariat a l'Energie Atomique. Method of assembly of two metallic parts. 4,214,358, Cl. 29-520.000.

Cluett, Peabody & Co., Inc.: *See—*
Crawford, Douglas J., 4,214,741, Cl. 271-18.300.

Coburn, Robert E., to Molins Machine Company, Inc. Slitter scorer apparatus. 4,214,495, Cl. 83-425.400.

Cockayne, David J., to Modular Automation Limited. Dispensing devices. 4,214,844, Cl. 406-123.000.

Cocron, Istvan: *See—*
Stemme, Otto; Lermann, Peter; Wagensonner, Eduard; and Cocron, Istvan, 4,214,824, Cl. 354-23.00D.

Cogar, George R.: *See—*
Bernham, Robert R.; and Christy, Harold, 4,214,655, Cl. 198-374.000.

Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., to General Electric Company. Electrolysis of alkali metal halides in a three-compartment cell with a pressurized buffer compartment. 4,214,958, Cl. 204-98.000.

Colangelo, Fernando M. Battery operated light. 4,215,389, Cl. 362-199.000.

Coldren, Daniel R.; and Marley, James E., to AMP Incorporated. Method of making insulated electrical terminations. 4,214,361, Cl. 29-863.000.

Cole, Martin T. Intrusion or movement detector. 4,215,341, Cl. 340-552.000.

Colery, Jean-Claude: *See—*
Brichard, Jean; and Colery, Jean-Claude, 4,215,097, Cl. 423-279.000.

Colgate-Palmolive Company: *See—*
Dillarstone, Alan; Lowe, Norman C.; and Cropper, Edwin, 4,214,915, Cl. 134-19.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,215,105, Cl. 424-57.000.

Collier, Samuel J.: *See—*
Raseley, LeRoy J.; Collier, Samuel J.; and McCarty, Henry G., 4,214,883, Cl. 55-426.000.

Collins Industries, Inc.: *See—*
Downing, Harold A., 4,214,849, Cl. 414-545.000.

Comar reg. Trust: *See—*
Miotti, Giosue, 4,214,374, Cl. 33-300.000.

Commissariat a l'Energie Atomique: *See—*
Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert, 4,215,278, Cl. 307-116.000.
Clerc, Adrien, 4,214,358, Cl. 29-520.000.

Commonwealth Hosiery Mills, Inc.: *See—*
Freeze, Baxter P., 4,214,331, Cl. 8-150.000.

Communications Satellite Corporation: *See—*
Onufry, Michael, Jr., 4,215,252, Cl. 179-170.200.

Compagnie Centrale SICLI: *See—*
Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert, 4,215,278, Cl. 307-116.000.

Compagnie Francaise des Petroles: *See—*
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Compagnie Generale des Etablissements Michelin: *See—*
Chapuis, Maurice; and Machat, Jean-Yves, 4,214,711, Cl. 241-30.000.

Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS): *See—*
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Giraud, Georges J. L., 4,215,421, Cl. 364-900.000.

Compagnie Maritime d'Expertises: *See—*
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Conceptual Engineering: *See—*
Brastow, Carl H., 4,215,262, Cl. 219-95.000.

Conow, Hans: *See—*
Kleimenhagen, Gunter; Rosenkranz, Otto; Albrecht, Peter; Conow, Hans; Kother, Holger; Schmidt, Dieter; and Vogel, Klaus, 4,214,860, Cl. 425-149.000.

Conrad, Rene A., to Dynaloc Corporation. Positive drive system. 4,214,488, Cl. 474-148.000.

Consaga, John P., to United States of America, Navy. Dimethyl hydantoin bonding agents in solid propellants. 4,214,928, Cl. 149-19.900.

Consortium fur Elektrochemische Industrie GmbH: *See—*
Kaufmann, Rudolf; Braunling; Haberle, Norman; and Muller, Reinhard, 4,215,057, Cl. 260-347.500.

Container Corporation of America: *See—*
Barton, Paul R.; and Welborn, Johnnie M., 4,214,696, Cl. 229-40.000.

Contino, Peter; and Stiglich, Nicholas M. Cooker for individual portions of particulate foodstuff. 4,214,514, Cl. 99-330.000.

Control Data Corporation: *See—*
Johnson, Allan L., Jr., 4,215,430, Cl. 375-111.000.

Controle Bailey: *See—*
Lejon, Jean, 4,215,340, Cl. 340-507.000.

Conwed Corporation: *See—*
Planes, Felipe; Eckerline, Charles A.; and Erickson, Gordon A., 4,214,646, Cl. 181-287.000.

Conybear, James G.: *See—*
Thekdi, Arvind C.; Hemsath, Klaus H.; Conybear, James G.; Vereecke, Frank J.; and Verhoff, Steven H., 4,214,869, Cl. 432-31.000.

Cook, Albert N., to Singer Company, The. Variable presser bar pressure control arrangement. 4,214,540, Cl. 112-235.000.

Cooke, Ermalinda O., administratrix: *See—*
Otto, Julian A., deceased; and Cooke, Ermalinda O., administratrix, 4,215,140, Cl. 424-301.000.

Coombes, Graham E.; and Rao, Hiranya S., to Systems Control, Inc. Energy cogeneration system. 4,214,451, Cl. 60-648.000.

Cooper, Daniel: *See—*
Patnoi, Charles M.; Cooper, Daniel; and Zellers, Robert D., 4,214,590, Cl. 128-710.000.

Cooper, Keith A., to International Paper Company. One-piece reinforced container. 4,214,695, Cl. 229-36.000.

Cooper, Robert W.: *See—*
Carr, Herbert F.; and Cooper, Robert W., 4,214,772, Cl. 280-415.00A.

Cooperation Pharmaceutique Francaise: *See—*
Durlarch, Jean P., 4,215,136, Cl. 424-274.000.

Copelan, William L. Rope binder. 4,214,350, Cl. 24-129.00R.

Corbero, Paul A., to Honeywell Inc. Timer circuit with multiple time delay outputs. 4,215,272, Cl. 250-293.000.

Cordaro, Giovanni; Dall'Olio, Cristiano; Di Pino, Duccio; and Guarene, Eugenio, to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and system for synchronizing data reception and retransmission aboard communication satellite. 4,215,348, Cl. 370-97.000.

Coreplugs Limited: *See—*
Oulsnam, Bryon T., 4,214,532, Cl. 102-30.000.

Cornell Research Foundation, Inc.: *See—*
Miyata, Teruo; Stenzel, Kurt H.; and Rubin, Albert L., 4,215,200, Cl. 435-273.000.

Cornils, Boy; Konkol, Werner; Diekhaus, Gerhard; and Wiebus, Ernst, to Ruhrchemie Aktiengesellschaft. Process for the production of diamines. 4,215,073, Cl. 260-563.00D.

Corning Glass Works: *See—*
Grey, David S.; and Wey, Robert A., 4,215,263, Cl. 219-121.00L.
Shay, George C.; and Simon, Raphael A., 4,214,886, Cl. 65-121.000.

Corse, Louis G., to Machines Chambon S.A. System for compensating for errors in registration between colors printed in multi-color printing machine. 4,214,524, Cl. 101-181.000.

Corwin, William C., to Beckman Instruments, Inc. Inking system with saturation control means for multi-pen recorders. 4,215,352, Cl. 346-140.00R.

Cottrell, Ian W.: *See—*
Racciato, Joseph S.; and Cottrell, Ian W., 4,214,912, Cl. 106-208.000.

Covell, Calvin J. Vehicle top ski rack. 4,214,687, Cl. 224-323.000.

Crane, Michael L.: *See—*
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Crawford, Douglas J., to Cluett, Peabody & Co., Inc. Needle pickup device. 4,214,741, Cl. 271-18.300.

Creusot-Loire: *See—*
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Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., to Amax Inc. Production of nonferrous metals with low selenium contents. 4,214,900, Cl. 75-109.000.

Cropper, Edwin: *See—*
Dillarstone, Alan; Lowe, Norman C.; and Cropper, Edwin, 4,214,915, Cl. 134-19.000.

Crossman, Richard L.; and French, Robert J., to Goodyear Aerospace Corporation. Brake adjuster having multi-sided internal broach. 4,214,650, Cl. 188-196.00R.

Crouzet, Jean: *See—*
Rios, Gilbert M.; Gibert, Henri; Crouzet, Jean; and Vincent, Jean-Claude, 4,215,151, Cl. 426-467.000.

Crow, Floyd, to Simple Pleasures, Inc. Smoking system. 4,214,658, Cl. 206-244.000.

CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Cordaro, Giovanni; Dall'Olio, Cristiano; Di Pino, Duccio; and Guarene, Eugenio, 4,215,348, Cl. 370-97.000.

Cubieta, John J.: *See—*
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Cullen, Terry B.: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.

Cummings, Thomas L., to Olin Corporation. Method for adjusting anodes. 4,214,959, Cl. 204-99.000.

Cunningham, Joseph A., to Bendix Corporation, The. Friction disc for an aircraft brake. 4,214,651, Cl. 188-251.00R.

Custer, Byron K., Jr.; and Custer, Ruth M. Suspended protective sheets. 4,214,328, Cl. 5-494.000.

Custer, Ruth M.: *See—*
Custer, Byron K., Jr.; and Custer, Ruth M., 4,214,328, Cl. 5-494.000.

Czerepinski, Ralph G.: *See—*
Garrett, Walter L.; and Czerepinski, Ralph G., 4,214,531, Cl. 101-451.000.

Dacor Corporation: *See—*
Pedersen, Vernon G., 4,214,580, Cl. 128-204.260.

Dahms, Francis A., to Emhart Industries, Inc. Apparatus for straight line shearing. 4,214,494, Cl. 83-150.000.

Dahms, Francis A., to Emhart Industries, Inc. Apparatus for straight line shearing. 4,214,497, Cl. 83-640.000.

Daig Corporation: *See—*
Little, Richard L., 4,214,594, Cl. 128-786.000.
Little, Richard L., 4,214,804, Cl. 339-183.000.

Dailey, Gregory M. Fly tying device. 4,214,739, Cl. 269-75.000.

Daimler-Benz Aktiengesellschaft: *See—*
Buchner, Helmut; and Saufferer, Helmut, 4,214,699, Cl. 237-12.30C.

Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, to International Business Machines Corporation. Method for fabricating tantalum semiconductor contacts. 4,215,156, Cl. 427-84.000.

Dalaunay, Just M.: *See—*
Bobard, Charles E.; Dalaunay, Just M.; and Darcy, Raymond M., 4,214,427, Cl. 56-330.000.

Dall'Olio, Cristiano: *See*—
Cordaro, Giovanni; Dall'Olio, Cristiano; Di Pino, Duccio; and Guarene, Eugenio, 4,215,348, Cl. 370-97.000.

Danel, Francois, to Societe Anonyme dete: Alsthom-Atlantique. Device for injecting a gas into a liquid. 4,215,082, Cl. 261-124.000.

Daniel, Daniel S.: *See*—
Battaglia, Charles J.; Chang, Jack C.; and Daniel, Daniel S., 4,214,968, Cl. 204-195.00M.

Daniljuk, Valery V.: *See*—
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.

Danzik, Mitchell, to Chevron Research Company. Polymerization of 2-pyrrolidone with CO_2/SO_2. 4,215,211, Cl. 528-313.000.

Darcy, Raymond M.: *See*—
Bobard, Charles E.; Dalaunay, Just M.; and Darcy, Raymond M., 4,214,427, Cl. 56-330.000.

Dashew, Stanley A.; and Sutton, Charles D., to Omnithruster Inc. Boat thruster. 4,214,544, Cl. 114-151.000.

Data Card Corporation: *See*—
Schmidt, Robert H., 4,215,300, Cl. 318-603.000.

D'Atre, John D.; and Williamson, Dennis F., to General Electric Company. Motor/brake transitioning for an inverter driven a-c induction motor. 4,215,304, Cl. 318-758.000.

D'Atre, John D.; and Plunkett, Allan B., to General Electric Company. Excitation commanding for current fed motor drives. 4,215,305, Cl. 318-803.000.

Dauvergne, Jean L. R., to Societe Anonyme Francaise du Ferodo. Power-assisted steering device. 4,214,642, Cl. 180-132.000.

David, Stephen T.: *See*—
Ullman, Michael K.; David, Stephen T.; and Gallian, Claude E., 4,215,104, Cl. 424-15.000.

Davidson, Richard A., to Feature Film Services. Subscriber-limited reception television broadcast security encoder-decoder system. 4,215,366, Cl. 358-124.000.

Davies, John W., III, to Gilson Brothers Company. Fuel tank including air entrapment chambers. 4,214,767, Cl. 280-5.00A.

Davis, Chester A.: *See*—
Kaplan, Julius F.; Edelberg, Norman L.; and Davis, Chester A., 4,214,596, Cl. 132-7.000.

Davis, Hyman R.; Nasr, Wagih I.; Roethlin, Siegfried M.; and Sherwood, Harold D., to Lummus Company, The. Solvent recovery process for processing of hydrocarbons. 4,214,975, Cl. 208-33.000.

Davis, James W.: *See*—
Mabrouk, Saied A.; Morgan, Edward T.; and Davis, James W., 4,214,523, Cl. 101-148.000.

Davis, Wayne E., to Johns-Manville Corporation. Grounding arrangement for microelectronic sprinkler control. 4,215,382, Cl. 361-166.000.

Dayco Corporation: *See*—
Elson, Arthur M., 4,215,384, Cl. 361-215.000.
Philleo, Robert C., 4,214,458, Cl. 64-11.00R.

Deaton, Thomas M.; and Kohn, Gary A., to Otis Engineering Corporation. Subsurface safety valve. 4,214,606, Cl. 137-495.000.

Debs, Victor, to Levolor Lorentzen, Inc. Vertical blind. 4,214,622, Cl. 160-168.00A.

De Cat, Arthur H.: *See*—
De Winter, Walter F.; Timmerman, Daniel M.; De Cat, Arthur H.; and Kockelbergh, Godfried A., 4,215,196, Cl. 430-627.000.

decofa Kaffee-Bearbeitungs-GmbH: *See*—
Kurzhals, Hans-Albert; and Sylla, Klaus F., 4,215,150, Cl. 426-430.000.

Deem, Mary L.: *See*—
Stueben, Kenneth C.; and Deem, Mary L., 4,215,076, Cl. 568-461.000.

Deep Oil Technology, Inc.: *See*—
Franks, Neal S., 4,214,842, Cl. 405-191.000.

Deflecto Corporation: *See*—
Meyer, Stephen T., 4,214,380, Cl. 34-235.000.

Deguchi, Katsuhiko; Mino, Junryo; and Tsujii, Kaoru, to Kao Soap Co., Ltd. Durable anti-fogging composition. 4,214,908, Cl. 106-13.000.

De Hair, Johannes T. W.; and Boogerd, Gert M., to U.S. Philips Corporation. Luminescent material, luminescent screen provided with such a material and low-pressure mercury vapor. 4,215,289, Cl. 313-486.000.

De Jong, Feike; Reinhoudt, David N.; and Torny-Schutte, Gerridina J., to Shell Development Company. Dissolving barium sulfate scale with aqueous solutions of bicyclic macrocyclic polyethers and organic acid salts. 4,215,000, Cl. 252-8.55B.

Del Bianco, Matthew A., to Du Pont de Nemours, E. I., and Company. Lamination process. 4,214,936, Cl. 156-302.000.

Deliyannides, John S.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.

Delplast Limited: *See*—
Williams, William; and Crane, Michael L., 4,214,334, Cl. 12-142.0RS.

Delves, Elsworth R., to Purpose Engineers Limited. Punching device. 4,214,357, Cl. 29-233.000.

DEMAG Aktiengesellschaft: *See*—
Franke, Rudiger, 4,214,386, Cl. 37-190.000.

de Mendez, Michel O., to Souriau & Cie. Connecting module for single-strand optical conductors and a connector including at least one such module. 4,214,812, Cl. 350-96.210.

Denis, Jean-Marie D.: *See*—
Ranganathan, Ramaswami; Denis, Jean-Marie D.; and Pruden, Barry B., 4,214,977, Cl. 208-108.000.

Denko, Masatoshi. Disk address controller. 4,215,400, Cl. 364-200.000.

Dennison Manufacturing Company: *See*—
Geurtsen, Friedrich H. H.; and Kebbel, Waldeman, 4,214,937, Cl. 156-361.000.

de Putter, Warren J., to Wavin B.V. Tube of non woven material for reversed osmosis. 4,214,612, Cl. 138-144.000.

DeSautel, Edwin R. Flying disc. 4,214,720, Cl. 244-12.200.

Deubel, Reinhold: *See*—
Uhrig, Heinz; List, Karl-Hermann; and Deubel, Reinhold, 4,214,872, Cl. 8-589.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Electronic musical instrument with automatic loudness compensation. 4,214,503, Cl. 84-1.270.

Deutsche Automobilgesellschaft mbH, Firma: *See*—
Gutmann, Gunter; and Benczur-Urmossy, Gabor, 4,215,184, Cl. 429-101.000.

Deutsche Texaco Aktiengesellschaft: *See*—
Carter, Walter H.; Christopher, Charles A.; and Grodde, Karl-Heinz, 4,214,475, Cl. 73-59.000.

Dever, James L.: *See*—
Marciniak, Harry W.; Carlson, Richard D.; and Dever, James L., 4,215,034, Cl. 260-45.80A.

de Vries, Donald S., Jr.: *See*—
Hock, Jules M.; and de Vries, Donald S., Jr., 4,214,507, Cl. 92-254.000.

Dewar, John H.: *See*—
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,214,801, Cl. 339-59.00R.

Dewey, Alfred H., Jr. Apparatus for harvesting beans or similar crops. 4,214,423, Cl. 56-130.000.

De Winter, Walter F.; Timmerman, Daniel M.; De Cat, Arthur H.; and Kockelbergh, Godfried A., to AGFA-GEVAERT N.V. Photographic elements in which gelatin silver halide layers contain polymers with semicarbazone or alkoxy carbonyl hydrazone groups. 4,215,196, Cl. 430-627.000.

Diamond International Corporation: *See*—
Struble, Glenn E., 4,214,694, Cl. 229-31.0FS.

Diamond Shamrock Corporation: *See*—
Magee, Thomas A., 4,215,075, Cl. 260-566.0AC.

Diamond Shamrock Technologies, S.A.: *See*—
Spaziante, Placido M.; and Nidola, Antonio, 4,214,970, Cl. 204-265.000.

Diamond, Steven E.; and Mares, Frank, to Allied Chemical Corporation. Direct reaction of anilines with olefins. 4,215,218, Cl. 546-162.000.

Dickey, Herbert C., to Ealing Corporation, The. Adhesive layer pocketed scroll for reading machine. 4,214,388, Cl. 40-159.000.

Diehl, Robert J., to W-K-M Wellhead Systems, Inc. Holddown mechanism for a tubing hanger in a wellhead. 4,214,778, Cl. 285-39.000.

Diekhaus, Gerhard: *See*—
Cornils, Boy; Konkol, Werner; Diekhaus, Gerhard; and Wiebus, Ernst, 4,215,073, Cl. 260-563.00D.

Dight, Lawrence B.: *See*—
Kennedy, James V.; and Dight, Lawrence B., 4,214,978, Cl. 208-120.000.

Digital Communications, Inc.: *See*—
Kirk, Donald, Jr., 4,215,370, Cl. 358-146.000.

Digital Equipment Corporation: *See*—
Wang, Cheng H., 4,214,836, Cl. 400-124.000.

Dillarstone, Alan; Lowe, Norman C.; and Cropper, Edwin, to Colgate-Palmolive Company. Method and composition for cleaning ovens. 4,214,915, Cl. 134-19.000.

DiNinno, Frank P.: *See*—
Christensen, Burton G.; and DiNinno, Frank P., 4,215,124, Cl. 424-263.000.

Dinkel, Ernst J., to Eldon Industries, Inc. Circuits primarily intended for use in desoldering tools. 4,215,268, Cl. 219-507.000.

Di Pino, Duccio: *See*—
Cordaro, Giovanni; Dall'Olio, Cristiano; Di Pino, Duccio; and Guarene, Eugenio, 4,215,348, Cl. 370-97.000.

Di Rosa, Gaetano, to F.A.T.A.-Fabbrica Apparecchi di Sollevamento e Trasporto ed Affini S.p.A. Machine for the automatic manufacture of mixtures of different kinds of caoutchouc intended to form part of a filler mixture. 4,214,640, Cl. 177-70.000.

DiSanzo, Carmine P., to FMC Corporation. Nematicidal phosphorodithioate. 4,215,115, Cl. 424-216.000.

Dixon, Jack B., to Purdue Research Foundation. Flame ionization detector. 4,215,090, Cl. 422-54.000.

Dobson, Richard A.; and O'Connor, John R., to Sterling Drug Inc. Method of alleviating diseases by cell-mediated immune modulation. 4,215,137, Cl. 424-274.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Srock, Rainer, 4,214,788, Cl. 296-39.00R.

Dodds, Gary M.: *See*—
Dominy, David A.; and Dodds, Gary M., 4,214,768, Cl. 280-809.000.

Doi, Toshitada; and Ito, Takashi, to Sony Corporation. Digital signal transmission method. 4,215,335, Cl. 371-69.000.

Dominy, David A.; and Dodds, Gary M., to Tracker Designs, Ltd. Shield for skateboard truck axle housing. 4,214,768, Cl. 280-809.000.

Donaldson Company, Inc.: *See*—
Brenholt, David L., 4,214,882, Cl. 55-302.000.
Christophersen, Steve; and Neaman, Raymond G., 4,215,079, Cl. 261-36.00R.

Donermeyer, Donald D.; and Martins, Joseph G., to Monsanto Company. Cavity filling with a hot melt adhesive composition. 4,215,159, Cl. 427-142.000.

Dorawala, Tansukhlal G.; and Reinhard, Russell R., to Texaco Inc. Steam dealkylation catalyst and a method for its activation. 4,215,018, Cl. 252-466.00J.

Dorsemaine, Maurice J.: *See*—
Ribier, Jean G.; Dorsemaine, Maurice J.; and Sauvage, Bernard J., 4,215,080, Cl. 261-111.000.

Dostourian, Harry, to United States of America, Army. Keeper for load carrying equipment. 4,214,686, Cl. 224-252.000.

Douty, Donald L.; and Elgin, Robert J., to United States Steel Corporation. Seal for railroad car hopper doors. 4,214,759, Cl. 277-12.000.

Dow Chemical Company, The: *See*—
Arrington, Jack P.; and Wade, Luke L., 4,215,129, Cl. 424-272.000.
Garrett, Walter L.; and Czerepinski, Ralph G., 4,214,531, Cl. 101-451.000.
Heikel, Henrik R.; and Leddy, James J., 4,214,971, Cl. 204-290.00F.
Park, Chung P., 4,215,202, Cl. 521-81.000.
Rogers, Richard B.; Carson, Chrislyn M.; and Ehr, Robert J., 4,215,127, Cl. 424-269.000.
Saunders, Frank L.; and Meyer, Victor E., 4,215,029, Cl. 260-33.8UA.

Downing, Harold A., to Collins Industries, Inc. Retractable rail for a vehicle lift. 4,214,849, Cl. 414-545.000.

Drabek, Jozef, to Ciba-Geigy Corporation. 4-Alkyl- and 4-allyl-mercapto-, -sulfinyl- and -sulfonyl-methyl-2-amino-6-N,N-dimethylcarbamoyloxy-pyrimidines, processes for producing them, compositions containing these pyrimidines, and the use thereof for controlling insect pests. 4,215,122, Cl. 424-251.000.

Drake, Charles A.; and Murtha, Timothy P., to Phillips Petroleum Company. Ruthenium-cobalt-gold catalyst for hydrogenation of unsaturated dinitriles. 4,215,019, Cl. 252-466.00B.

Dravo Corporation: *See*—
Clemens, Ogden A., 4,214,987, Cl. 210-44.000.

Dresser Industries, Inc.: *See*—
Gorgens, Joseph E.; Kipp, Frederick M.; and Bissell, Robert D., 4,214,486, Cl. 73-738.000.
Upton, Thomas E., 4,214,629, Cl. 166-129.000.
Winsor, Jack O.; and Thompson, Neville, 4,214,445, Cl. 60-486.000.

Drumm, Arthur E., to Marysville Rotary Broom Service, Inc. Rotary broom core assemblage. 4,214,339, Cl. 15-179.000.

Druskin, Barry S.; Stumpp, Robert A.; and Muccio, Nora M. Three way garden tool. 4,214,538, Cl. 111-95.000.

Dub, Vladimir S.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Dudek, Dennis A., to Anderson Company of Indiana, The. Arm adaptor for hook-type blade. 4,214,343, Cl. 15-250.320.

Duncan, Carolyn L.: *See*—
Duncan, William D.; and Duncan, Carolyn L., 4,214,345, Cl. 17-11.000.

Duncan Creations, Inc.: *See*—
Duncan, William D.; and Duncan, Carolyn L., 4,214,345, Cl. 17-11.000.

Duncan, William D.; and Duncan, Carolyn L., to Duncan Creations, Inc. Machine for severing poultry into predetermined portions. 4,214,345, Cl. 17-11.000.

Du Pont de Nemours, E. I., and Company: *See*—
Bockrath, Richard E., 4,215,227, Cl. 568-706.000.
Cherkofsky, Saul C.; and Sharpe, Thomas R., 4,215,135, Cl. 424-273.00B.
Del Bianco, Matthew A., 4,214,936, Cl. 156-302.000.
Forsythe, Jesse G., Jr.; Johnson, Donald R.; and St. Onge, Linda M., 4,214,993, Cl. 210-282.000.
Garth, Bruce H.; and Schmidt, Francis H., 4,214,876, Cl. 44-66.000.
Glaeser, Hans H., 4,214,913, Cl. 106-300.000.
Grantham, Gary D., 4,215,145, Cl. 424-324.000.
Hargreaves, Chester A., II; Harris, Alexander T.; and Schulze, Robert A., 4,215,078, Cl. 260-655.000.
Harris, Alexander T.; and Putman, Charles R., 4,215,095, Cl. 423-240.000.
Levitt, George, 4,214,890, Cl. 71-90.000.
Manger, Charles W.; Fickes, Michael G.; and Long, John W., 4,215,193, Cl. 430-291.000.
Middleton, William J., 4,215,044, Cl. 260-239.30D.
Strolle, Clifford H., 4,215,023, Cl. 260-22.0CB.
Wolf, Anthony D., 4,214,891, Cl. 71-92.000.
Wysong, Robert D., 4,215,169, Cl. 428-220.000.

Durakis, Manuel A.; and Reiser, John R., to General Cable Corporation. Method of making flame retardant EPR unipass telephone drop wire. 4,215,086, Cl. 264-135.000.

Durand, Pierre; Charlon, Pierre; and Jouffroy, Guy, to Societe Chimique des Charbonnages-CdF Chimie. Process for the polymerization and copolymerization of ethylene, using a gas injection device. 4,215,207, Cl. 526-64.000.

Durant, Graham J.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pyridyl ureas, thioureas and guanidines. 4,215,125, Cl. 424-263.000.

Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., to Smith Kline & French Laboratories Limited. Alkoxy pyridine compounds. 4,215,126, Cl. 424-263.000.

Durkee, John E., to Emerson Electric Co. Electronic chime. 4,215,339, Cl. 340-384.00E.

Durlarch, Jean P., to Cooperation Pharmaceutique Francaise. Insoluble metal salts of N-acetyl-tryptophane and use thereof. 4,215,136, Cl. 424-274.000.

Dynaloc Corporation: *See*—
Conrad, Rene A., 4,214,488, Cl. 474-148.000.

Dynamidon-Koppers Industriekeramik GmbH: *See*—
Baumgart, Wolfgang, 4,214,910, Cl. 106-58.000.

E-Systems, Inc.: *See*—
Gordy, Robert S.; and Sanders, David E., 4,215,239, Cl. 375-114.000.

Ealing Corporation, The: *See*—
Dickey, Herbert C., 4,214,388, Cl. 40-159.000.

Early, Judson H.: *See*—
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,214,933, Cl. 156-238.000.

Eastman Kodak Company: *See*—
Battaglia, Charles J.; Chang, Jack C.; and Daniel, Daniel S., 4,214,968, Cl. 204-195.00M.
Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., 4,215,041, Cl. 260-141.000.
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,215,195, Cl. 430-496.000.
Reesen, Jorgen, 4,214,831, Cl. 355-3.00R.

Ebauches S.A.: *See*—
Addor, Francis, 4,215,314, Cl. 328-55.000.

Eberle, Gunter F., to Vecta Contract, Inc. Furniture base. 4,214,725, Cl. 248-188.700.

Eckerline, Charles A.: *See*—
Planes, Felipe; Eckerline, Charles A.; and Erickson, Gordon A., 4,214,646, Cl. 181-287.000.

Ecolaire Incorporated: *See*—
Raseley, LeRoy J.; Collier, Samuel J.; and McCarty, Henry G., 4,214,883, Cl. 55-426.000.

Edblad, Warren A.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.

Edelberg, Norman L.: *See*—
Kaplan, Julius F.; Edelberg, Norman L.; and Davis, Chester A., 4,214,596, Cl. 132-7.000.

Edmundson, Gordon A.: *See*—
Schopp, Fredrick R.; and Edmundson, Gordon A., 4,214,663, Cl. 209-552.000.

Edwards, Charles E. H.: *See*—
Richter, Arnold A.; and Edwards, Charles E. H., 4,214,534, Cl. 102-215.000.

Edwards, David, Jr.; and Schneider, William, to United States of America, Energy. Gaseous trace impurity analyzer and method. 4,214,473, Cl. 73-23.000.

Edwin, Allan I.; and Katz, Harold W., to Minnesota Mining and Manufacturing Company. Adaptive path following motion control system for welding head assembly. 4,215,299, Cl. 318-574.000.

Ehr, Robert J.: *See*—
Rogers, Richard B.; Carson, Chrislyn M.; and Ehr, Robert J., 4,215,127, Cl. 424-269.000.

Eichweber, Kurt, to Precitronic Gesellschaft fur Feinmechanik und Electronic mbH. Variable optical transmitter. 4,215,270, Cl. 250-201.000.

Eidenschink, Rudolf: *See*—
Pohl, Ludwig; Eidenschink, Rudolf; Krause, Joachim; and Weber, Georg, 4,214,819, Cl. 350-334.000.

Eissel, Horst E., to Stommel & Voos Stahlstempelfabrik. Punch for punching markings into rolled material. 4,214,520, Cl. 101-4.000.

Ejiri, Masakazu; and Ueda, Hirotada, to Hitachi, Ltd. Digital pattern display system. 4,215,343, Cl. 340-711.000.

Eldon Industries, Inc.: *See*—
Dinkel, Ernst J., 4,215,268, Cl. 219-507.000.

Electric Power Research Institute, Inc.: *See*—
Kimblin, Clive W.; Heberlein, Joachim V. R.; Slade, Paul G.; Voshall, Roy E.; and Holmes, Francis A., 4,215,255, Cl. 200-144.00B.

Elgin, Robert J.: *See*—
Douty, Donald L.; and Elgin, Robert J., 4,214,759, Cl. 277-12.000.

Elhaus, Friedrich W. Circular saw. 4,214,493, Cl. 83-100.000.

Ellis, Frederick R. Brush rake. 4,214,429, Cl. 56-377.000.

Ellis, Glynn A. Cutter tool with a plurality of hard cutting teeth. 4,214,499, Cl. 83-855.000.

Elphingstone, Eugene A.; Misak, Marvin D.; and Briscoe, James E., to Halliburton Company. Methods of treating subterranean well formations. 4,215,001, Cl. 252-8.55C.

Elson, Arthur M., to Dayco Corporation. Hose construction with electrical conductor for dissipating static electricity and method of making same. 4,215,384, Cl. 361-215.000.

Emerson Electric Co.: *See*—
Durkee, John E., 4,215,339, Cl. 340-384.00E.
Henderson, David L., 4,214,921, Cl. 148-6.350.
Lewis, John G., 4,215,285, Cl. 310-90.000.

Emhart Industries, Inc.: *See*—
Dahms, Francis A., 4,214,494, Cl. 83-150.000.
Dahms, Francis A., 4,214,497, Cl. 83-640.000.

EMM Semi: *See—*
Clark, Kenneth L.; Leach, George S.; and Howard, Robert W., 4,214,917, Cl. 148-1.500.
Enders, George E., to NRM Corporation. Tire building machine. 4,214,939, Cl. 156-398.000.
Endo, Toshihiko: *See—*
Arita, Koji; Chiji, Masahiro; Asami, Takayoshi; Karaki, Yasuhumi; and Endo, Toshihiko, 4,214,925, Cl. 148-127.000.
Energy Mines and Resources Canada: *See—*
Ranganathan, Ramaswami; Denis, Jean-Marie D.; and Pruden, Barry B., 4,214,977, Cl. 208-108.000.
Engel, John F., to FMC Corporation. Arylthiovinylcyclopropanecarboxylate intermediates. 4,215,069, Cl. 260-465.00D.
Engelhard Minerals & Chemicals Corporation: *See—*
Kennedy, James V.; and Dight, Lawrence B., 4,214,978, Cl. 208-120.000.
English Clays Lovering Pochin & Company, Limited: *See—*
Broad, Bernard H., 4,214,991, Cl. 210-232.000.
Watson, James H. P.; and Jones, James P. E., 4,214,986, Cl. 210-42.00S.
Enikolopov, Nikolai S.: *See—*
Ivanchev, Sergei S.; Enikolopov, Nikolai S.; Polozov, Boris V.; Syrov, Anatoly A.; Primachenko, Oleg N.; and Polyakov, Zoryslav N., 4,214,914, Cl. 106-308.00Q.
Environmental Research Institute of Michigan: *See—*
Holsztynski, Wlodzimierz; and Wilson, Stephen S., 4,215,401, Cl. 364-200.000.
Eppenger, Frank L.: *See—*
Pinkney, Harry D., Jr., 4,215,241, Cl. 179-1.0VC.
Erickson, Gordon A.: *See—*
Planes, Felipe; Eckerline, Charles A.; and Erickson, Gordon A., 4,214,646, Cl. 181-287.000.
Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig-Ake A., to Astra Lakemedel Aktiebolag. Method for combating virus infections. 4,215,113, Cl. 424-212.000.
ESB Inc.: *See—*
Bergum, Bernard C.; Bredland, Alf M.; and Paulson, John W., 4,215,189, Cl. 429-217.000.
Escher Wyss Limited: *See—*
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Etudes Petrolieres Marines: *See—*
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.
Eurographics Holding, N. V.: *See—*
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Evans, Donald J., to Molins Machine Company, Inc. Snubbing apparatus. 4,214,744, Cl. 271-202.000.
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James, Varnell L.; and Evelyn, George B., 4,214,610, Cl. 137-597.000.
Exxon Research & Engineering Co.: *See—*
Amick, James A.; Milewski, John V.; and Wright, Franklin J., 4,214,920, Cl. 148-1.500.
Buckley, Donald J.; Thaler, Warren A.; and Kennedy, Joseph P., 4,215,022, Cl. 260-5.000.
Kmak, Walter S., 4,214,976, Cl. 208-48.00R.
Langer, Arthur W., Jr., 4,215,014, Cl. 252-429.00B.
Van Auken, Richard L., 4,214,932, Cl. 156-187.000.
Eytcheson, Charles T., to General Motors Corporation. Power semiconductor device assembly having a lead frame with interlock members. 4,215,360, Cl. 357-70.000.
F.A.T.A.-Fabbrica Apparecchi di Sollevamento e Trasporto ed Affini S.p.A.: *See—*
Di Rosa, Gaetano, 4,214,640, Cl. 177-70.000.
F. D. Rich Housing Corp.: *See—*
Rich, Frank D., Jr., 4,214,408, Cl. 52-79.100.
Fabry, Gyorgy; and Takacs, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. Packing of equipment for the purpose of contacting mainly gaseous and liquid mediums. 4,215,083, Cl. 261-155.000.
Fagelman, Jacob. Dental clamp. 4,214,870, Cl. 433-40.000.
Fansteel Inc.: *See—*
Kraemer, Rolf H., 4,214,846, Cl. 407-114.000.
Kraemer, Rolf H., 4,214,847, Cl. 407-114.000.
Fantl, Jiri: *See—*
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, Jan; and Kasparek, Zdenek, 4,214,352, Cl. 28-254.000.
Fanwall Corporation, The: *See—*
Pickett, William H., 4,214,411, Cl. 52-144.000.
Farrand, John E.: *See—*
Prager, Jay M.; Sadlow, Joseph F.; Farrand, John E.; Boissevain, Thomas A.; and Gonzales, Roman Y., 4,215,386, Cl. 361-394.000.
Faulconer, Harry A. Methods of joining conductors. 4,214,805, Cl. 339-198.00G.
Fava, Giulio, to RIV - SKF Officine di Villar Perosa S.p.A. Axial-type sealing device arranged to provide the seal between a stationary and a rotatable element. 4,214,764, Cl. 277-935.00D.
Feature Film Services: *See—*
Davidson, Richard A., 4,215,366, Cl. 358-124.000.
Federal Screw Works: *See—*
Ostrowski, Carl L., 4,215,240, Cl. 179-1.0SM.
Fedorchak, Mary A.: *See—*
Gingerich, Richard G. W.; Vanderpool, Clarence D.; Fedorchak, Mary A.; Ritsko, Joseph E.; and Cheresnowsky, Michael J., 4,214,895, Cl. 75-0.5AA.
Feecon Corporation: *See—*
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Fekete, Simon O.: *See—*
Michal, Eugene J.; Fekete, Simon O.; and Roorda, H. Jan, 4,214,901, Cl. 75-119.000.
Felsher, Hal C.; Pollak, Fred H.; and Bradley, Arthur. Thin film photovoltaic converter and method of preparing same. 4,214,916, Cl. 136-89.0SJ.
Fendler, George W.: *See—*
Albus, Francis E.; and Fendler, George W., 4,214,375, Cl. 34-10.000.
Ferag AG: *See—*
Meier, Jacques, 4,214,743, Cl. 271-182.000.
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Fernandez, Marlin D.: *See—*
Haber, Terry M.; and Fernandez, Marlin D., 4,214,753, Cl. 273-59.00R.
Ferrando, William A.; and Sutula, Raymond A. Lightweight battery electrode. 4,215,190, Cl. 429-222.000.
Ferree, Kenneth B. Harness device. 4,214,420, Cl. 54-35.000.
Ferres, Harry, to Beecham Group Limited. Penicillin esters and their preparation. 4,215,120, Cl. 424-250.000.
Feth, Georg: *See—*
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Fey, Maurice G.: *See—*
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Fieldcrest Mills, Inc.: *See—*
Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., 4,214,541, Cl. 112-262.300.
Figg, Anthony V. J., to Norprint Limited. Sensing and locking devices. 4,214,938, Cl. 156-361.000.
Filss, Peter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Device for cleaning hot gases. 4,214,881, Cl. 55-228.000.
Filtrol Corporation: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,215,016, Cl. 252-455.00Z.
Findeis, Gunter; Zahn, Wolfgang; and Weber, Klaus, to AGFA-Gevaert, A.G. Photographic copying machine. 4,214,834, Cl. 355-46.000.
Fine, Jonathan E.; and Sewell, Clinton J., to United States of America, Army. Annular alternator for artillery. 4,214,533, Cl. 102-209.000.
Finley, Joseph H.; and Blumbergs, John H., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,215,003, Cl. 252-99.000.
Firmin, Herman P. Fishing lures. 4,214,396, Cl. 43-42.240.
Fischer, Artur. Structural element of an assembly kit. 4,214,404, Cl. 46-26.000.
Fischer, Artur. Arrangement for anchoring a mounting element in a hole of a supporting structure. 4,214,416, Cl. 52-704.000.
Fischer, Karin: *See—*
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Schmoock, Roy F., 4,214,477, Cl. 73-861.120.
Fischer, Ulf; Schneider, Fernand; and Zurflueh, Rene, to Hoffmann-La Roche Inc. Carbamic acid derivatives. 4,215,139, Cl. 424-300.000.
Fitzgerald, Harry H.; and Fitzgerald, Robert G. Apparatus and method for ignition identification of internal combustion engines. 4,214,389, Cl. 40-316.000.
Fitzgerald, Robert G.: *See—*
Fitzgerald, Harry H.; and Fitzgerald, Robert G., 4,214,389, Cl. 40-316.000.
Flaherty, Thomas W., to Allis-Chalmers Corporation. Trap-port for rotary kilns. 4,214,707, Cl. 239-553.500.
Flamig, Hans: *See—*
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Fleischer, Henry. Coupling device. 4,214,728, Cl. 251-149.200.
Fleming, Joseph W.: *See—*
Boyd, Robert L.; and Fleming, Joseph W., 4,215,383, Cl. 361-210.000.
Flory, Robert E.; and Nelson, Mark R., to RCA Corporation. Memory addressing system for automatic setup TV camera system. 4,215,368, Cl. 358-139.000.
Flowers, Ralph G., to General Electric Company. Insulating coating for transformer wires. 4,215,174, Cl. 428-375.000.
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DiSanzo, Carmine P., 4,215,115, Cl. 424-216.000.
Engel, John F., 4,215,069, Cl. 260-465.00D.
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Foldenauer Equipment Co., Inc.: *See—*
Petsche, Lee E., 4,214,518, Cl. 99-535.000.
Fontainas, Luc M.: *See—*
Verhulst, Dirk E. V.; Maes, Robert H.; and Fontainas, Luc M., 4,214,897, Cl. 75-11.000.
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Brisson, Maurice J., 4,214,616, Cl. 144-2.00Z.
Ford, Cynthia A. Dynamic shoulder, forearm, wrist and hand support. 4,214,579, Cl. 128-94.000.
Ford Motor Company: *See—*
Barton, David W., 4,214,447, Cl. 60-525.000.
Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,214,801, Cl. 339-59.00R.
Chattha, Mohinder S., 4,215,204, Cl. 525-161.000.
Maxwell, Mary E.; and Froats, Ronald F., 4,214,472, Cl. 73-23.000.
Forget, Lawrence E.; Gdula, Robert A.; and Hollis, Joseph C., to International Business Machines Corporation. Selective reactive ion etching of polysilicon against SiO_2 utilizing SF_6-Cl_2-inert gas etchant. 4,214,946, Cl. 156-643.000.
Forminfan, S.A.: *See—*
Camacho, Carlos J., 4,214,325, Cl. 5-99.00B.
Forsythe, Jesse G., Jr.; Johnson, Donald R.; and St. Onge, Linda M., to Du Pont de Nemours, E. I., and Company. Apparatus for separating fluids. 4,214,993, Cl. 210-282.000.
Foundation for the Medical Research on the Traffic Accident and Disaster: *See—*
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Foye, John J.; and Harris, Jerry F., to Kaiser Aluminum & Chemical Corporation. Method of and mold for DC casting. 4,214,624, Cl. 164-89.000.
Frame, Charles W.: *See—*
Rickrode, Jack A.; and Frame, Charles W., 4,214,363, Cl. 29-802.000.
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Frank, Arlen W., to United States of America, Agriculture. Tris(N-carbalkoxylaminomethyl)phosphine oxides and sulfides. 4,214,873, Cl. 8-116.00P.
Franke, Rudiger, to DEMAG Aktiengesellschaft. Bucket wheel excavator with vibrating buckets. 4,214,386, Cl. 37-190.000.
Franks, Neal E., to Akzona Incorporated. Regenerated cellulose containing cross linked sodium lignate or sodium lignosulfonate. 4,215,212, Cl. 536-57.000.
Franks, Neal S., to Deep Oil Technology, Inc. Remotely controlled maneuverable tool means and method for positioning the end of a pipe string in offshore well operations. 4,214,842, Cl. 405-191.000.
Franzen, Jochen, to Varian Mat GmbH. Method and apparatus for the comparative determination of an unknown mass. 4,215,411, Cl. 364-527.000.
Freeze, Baxter P., to Commonwealth Hosiery Mills, Inc. Method for processing socks. 4,214,331, Cl. 8-150.000.
French, Robert J.: *See—*
Crossman, Richard L.; and French, Robert J., 4,214,650, Cl. 188-196.00R.
Frey, Raymond A. High efficiency switching circuit. 4,215,309, Cl. 324-158.00D.
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Friedl, V. L.; and Mascetti, B. Barbecue oven. 4,214,516, Cl. 99-421.00P.
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Froats, Ronald F.: *See—*
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Fuchs, Rainer; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating insects and acarids with 4,4,5,5-tetrachloro-2,2-dimethyl-spiropentane-1-carboxylic acid 3-phenoxy-benzyl esters. 4,215,141, Cl. 424-304.000.
Fuchsman, Charles H.: *See—*
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Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sawaguchi, Hiroshi, 4,215,030, Cl. 260-40.00R.
Fujimori, Fumio; Yokoi, Masatada; Ishikawa, Masakazu; Uemura, Hiroshi; and Shirai, Akira, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Antirattle spring for a disc brake of vehicles. 4,214,649, Cl. 188-73.500.
Fujioka, Yasuo; and Nakano, Kenichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust manifold for an internal combustion engine. 4,214,444, Cl. 60-322.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Maeno, Shizuo; and Kitaura, Yoshihiko, 4,215,043, Cl. 260-239.30B.
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Fukuda, Takeo; Hanawa, Kazuhiko; and Urui, Kiyoshi, to Tokyo Shibaura Electric Co., Ltd. Switching apparatus selectively utilizing a regenerative repeater. 4,215,251, Cl. 179-170.00R.
Fukumoto, Masaru: *See—*
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Funazaki, Mitsunori: *See—*
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Funk, Andrew B.; and Williams, Max B., to W. R. Grace & Co. Process for preparing ammonium salts of alkanoic acids. 4,215,225, Cl. 562-606.000.
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Hikida, Chuichi; Kishino, Takao; Mizohata, Tadashi; and Yamaura, Tatsuo, 4,215,290, Cl. 313-496.000.
Gaffar, Abdul; and Niles, Hollandra P., to Colgate-Palmolive Company. Anticalculus oral composition. 4,215,105, Cl. 424-57.000.
Gagliardo, John P., to Feecon Corporation. Fire fighting nozzle. 4,214,630, Cl. 169-18.000.
Gaidis, James M.: *See—*
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Galloway, James H.; and Berman, Alby M., to Oxy Metal Industries Corp. Control logic for an inverter ripple controlled power system. 4,215,394, Cl. 363-137.000.
Galowitz, Dennis A. Ball holder. 4,214,684, Cl. 224-45.00L.
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Games, John E.; and Bitterli, William W., to United Technologies Corporation. Temperature control of unoccupied living spaces. 4,215,408, Cl. 364-505.000.
Ganellin, Charon R.: *See—*
Durant, Graham J.; and Ganellin, Charon R., 4,215,125, Cl. 424-263.000.
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,215,126, Cl. 424-263.000.
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Hamilton, Brian K.; Garner, Eugene F.; and Jackson, Charles, 4,214,438, Cl. 60-205.000.
Garrett, Walter L.; and Czerepinski, Ralph G., to Dow Chemical Company, The. Method of treating image-bearing lithographic plates. 4,214,531, Cl. 101-451.000.
Garron, Stephen A.; Sedlatschek, Robert; and Sudano, John J., to Singer Company, The. Electronically controlled top feed arrangement for a sewing machine. 4,214,543, Cl. 112-320.000.
Garth, Bruce H.; and Schmidt, Francis H., to Du Pont de Nemours, E. I., and Company. Corrosion inhibitor compositions. 4,214,876, Cl. 44-66.000.
Gaset, Antoine: *See—*
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Gassowski, Jerzy R., to International Telephone and Telegraph Corporation. Advance and transfer mechanism for inked ribbon or the like. 4,214,838, Cl. 400-220.100.
Gat, Arnon; Gerzberg, Levy; and Gibbons, James F., to Stanford University. Method of forming polycrystalline semiconductor interconnections, resistors and contacts by applying radiation beam. 4,214,918, Cl. 148-1.500.

Gdula, Robert A.: *See*—
Forget, Lawrence E.; Gdula, Robert A.; and Hollis, Joseph C., 4,214,946, Cl. 156-643.000.
Gebhardt, Dale H.; and LaLonde, Carl H., to Van Huffel Tube Corporation. Space frame constuction. 4,214,409, Cl. 52-127.000.
Gee, Arthur; Largo, Edward J.; and Plesinger, Boris M., to Honeywell Information Systems Inc. Air distribution system. 4,214,706, Cl. 239-553.300.
Geiger, William N. Collapsible tripod with swivel lock. 4,214,724, Cl. 248-167.000.
Gelling, Helmut, to Precisa AG Rechenmaschinenfabrik, Firma. Rolling parallel printer. 4,214,521, Cl. 101-96.000.
General Battery Corporation: *See*—
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Boldebuck, Edith M.; and Banucci, Eugene G., 4,215,157, Cl. 427-116.000.
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Campbell, Thomas C., 4,214,435, Cl. 60-39.050.
Casper, Russell L., 4,214,738, Cl. 267-141.100.
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,214,958, Cl. 204-98.000.
D'Atre, John D.; and Williamson, Dennis F., 4,215,304, Cl. 318-758.000.
D'Atre, John D.; and Plunkett, Allan B., 4,215,305, Cl. 318-803.000.
Flowers, Ralph G., 4,215,174, Cl. 428-375.000.
Lawrance, Richard J., 4,214,969, Cl. 204-255.000.
MacLeod, Edward N., 4,215,183, Cl. 429-30.000.
Monzel, Fred J.; and Bobo, Melvin, 4,214,796, Cl. 308-26.000.
Otto, Charles W., 4,215,287, Cl. 310-217.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,851, Cl. 415-115.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,852, Cl. 415-115.000.
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George, Douglas: *See*—
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Gerhard, Thomas, to Waggonfabrik Uerdingen A.G. Switch for a suspended railway vehicle. 4,214,535, Cl. 104-91.000.
Gerritsen, Jan W. Peristaltic type pump. 4,214,855, Cl. 417-477.000.
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Geurtsen, Friedrich H. H.; and Kebbel, Waldeman, to Dennison Manufacturing Company. Application of indicia to articles. 4,214,937, Cl. 156-361.000.
Gfeller, Fritz; and Wild, Daniel, to International Business Machines Corporation. Holographic optical satellite communication system. 4,214,807, Cl. 350-3.730.
Ghafghaichi, Majid: *See*—
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Gianakakos, Spiros; and Boardman, Franklin, to Johnson & Johnson. Orthopedic bandage having improved conformability. 4,214,578, Cl. 128-90.000.
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Giddings, John C., to University of Utah. Steric field-flow fractionation. 4,214,981, Cl. 209-155.000.
Gilbreath, Rodney E.: *See*—
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Gildemeister Corpoplast: *See*—
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Gillespie, Richard R. Speed adjust. 4,214,437, Cl. 60-39.28R.
Gilson Brothers Company: *See*—
Davies, John W., III, 4,214,767, Cl. 280-5.00A.
Gingerich, Richard G. W.; Vanderpool, Clarence D.; Fedorchak, Mary A.; Ritsko, Joseph E.; and Cheresnowsky, Michael J., to GTE Sylvania Incorporated. Method for producing cobalt metal powder. 4,214,895, Cl. 75-0.5AA.
Gingerich, Richard G. W.: *See*—
Ritsko, Joseph E.; Gingerich, Richard G. W.; and Acla, Howard L., 4,214,894, Cl. 75-0.5AA.
Giovanni, Greco; and Tomassini, Maurizio. Process for making semiconductor devices passivated by an integrated heat sink. 4,214,953, Cl. 204-15.000.
Gipson, Robert M., to Texaco Development Corporation. Boride catalyst for epoxidizing olefinic compounds. 4,215,059, Cl. 260-348.290.
Gipson, Robert M., to Texaco Development Corporation. Boride catalyst for epoxidizing olefinic compounds. 4,215,060, Cl. 260-348.290.
Gipson, Robert M., to Texaco Development Corporation. Boride catalyst for epoxidizing olefinic compounds. 4,215,061, Cl. 260-348.290.
Giras, Theodore C.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.
Giraud, Georges J. L., to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Data-processing system which protects the secrecy of confidential data. 4,215,421, Cl. 364-900.000.
Girling Limited: *See*—
Taft, Philip A., 4,214,775, Cl. 280-708.000.
Giuffre, Luigi: *See*—
Spaziante, Placido M.; Giuffre, Luigi; Castoldi, Aldo; and Sioli, Giancarlo, 4,215,009, Cl. 252-184.000.
GKN Transmissions Ltd.: *See*—
Slack, Howard, 4,214,653, Cl. 192-48.700.
Glaeser, Hans H., to Du Pont de Nemours, E. I., and Company. Process for producing rutile TiO_2. 4,214,913, Cl. 106-300.000.
Glanzner, Gary C.: *See*—
Signorelli, John A.; and Glanzner, Gary C., 4,214,530, Cl. 101-415.100.
Glaser, Heinz: *See*—
Jochum, Friedrich; and Glaser, Heinz, 4,214,546, Cl. 114-270.000.
Glassman, Geraldine. Hair waving method and device. 4,214,597, Cl. 132-9.000.
Glessner, James S. Loom. 4,214,613, Cl. 139-33.000.
Gluskin, Lev Y.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.
Gnida, Bernd; Simon, Gerhard; Buder, Eckart; and Schwartz, Hans-Jurgen, to Varta Batterie Aktiengesellschaft. Gas-tight galvanic cell. 4,215,187, Cl. 429-161.000.
Gobin, Donald L., to Roper Corporation. Catcher securement for rear bagger. 4,214,424, Cl. 56-202.000.
Godfrey, Dwaine A. Seal for adjacent plates. 4,214,760, Cl. 277-34.300.
Goldenberg, David A.: *See*—
Goldenberg, Max; and Goldenberg, David A., 4,215,373, Cl. 358-237.000.
Goldenberg, Max; and Goldenberg, David A. Television set projector. 4,215,373, Cl. 358-237.000.
Goldstein, Gideon; and Heavner, George, to Ortho Pharmaceutical Corporation. Peptides having ubiquitin-like activity. 4,215,111, Cl. 424-177.000.
Goldstein, Gideon; and Heavner, George, to Ortho Pharmaceutical Corporation. Tripeptides and methods. 4,215,112, Cl. 424-177.000.
Gomez, I. Luis; and Tokas, Edward F., to Monsanto Company. Molding compositions and process for preparing same. 4,215,024, Cl. 260-23.00S.
Gomez, I. Luis, to Monsanto Company. Process for preparing extruded pelleted products from molding compositions. 4,215,085, Cl. 264-15.000.
Gomez, Manuel D. Portable roll-up bug netting employing integral storage envelope. 4,214,318, Cl. 2-4.000.
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., to Westinghouse Electric Corp. Digital computer monitored and/or operated system or process which is structured for operation with an improved automatic programming process and system. 4,215,406, Cl. 364-468.000.
Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., to Westinghouse Electric Corp. Combined file and directory system for a process control digital computer system. 4,215,407, Cl. 364-468.000.
Gonder, Warren W. Collection of solar energy. 4,214,572, Cl. 126-425.000.
Gonzales, Roman Y.: *See*—
Prager, Jay M.; Sadlow, Joseph F.; Farrand, John E.; Boissevain, Thomas A.; and Gonzales, Roman Y., 4,215,386, Cl. 361-394.000.
Gonzalez Espinosa de Los Monteros, Emilio. Building structure. 4,214,413, Cl. 52-236.100.
Gonzalez R., Ricardo. Replaceable heel construction for shoes. 4,214,384, Cl. 36-42.000.
Goodall, Roger M.: *See*—
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Goodyear Aerospace Corporation: *See*—
Crossman, Richard L.; and French, Robert J., 4,214,650, Cl. 188-196.00R.
Gordon, Maurice R. Sterility testing unit. 4,215,198, Cl. 435-31.000.
Gordy, Robert S.; and Sanders, David E., to E-Systems, Inc. Apparatus for the acquisition of a carrier frequency and symbol timing lock. 4,215,239, Cl. 375-114.000.
Gorgens, Joseph E.; Kipp, Frederick M.; and Bissell, Robert D., to Dresser Industries, Inc. Sealed casing for pressure gauge. 4,214,486, Cl. 73-738.000.
Gorodissky, Leonid G.; Romanov, Nikolai T., deceased; and by Romanova, Anastasia I., administrator. Face sealer device for roller lock gates. 4,214,758, Cl. 277-12.000.
Gorynin, Igor V.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.
Goto, Enami, to Miyaji, Kunihiko. Internal combustion engines. 4,214,567, Cl. 123-169.00C.
Goto, Yukio: *See*—
Kobayashi, Shigeo; Yoshihara, Nori; Nanbu, Kiyoji; and Goto, Yukio, 4,215,032, Cl. 260-40.00R.
Gould Inc.: *See*—
Kozacka, Frederick J., 4,215,331, Cl. 335-252.000.
Moore, Chad Z., 4,215,355, Cl. 346-155.000.
Grace, George A. Rotatable pipe coupling structure. 4,214,780, Cl. 285-134.000.
Graham, Elwood M., to M. H. Graham Corporation. Apparatus for cutting food. 4,214,714, Cl. 241-93.000.
Graham, Elwood M., to M. H. Graham Corporation. Rotary food cutting apparatus. 4,214,715, Cl. 241-93.000.
Grantham, Gary D., to Du Pont de Nemours, E. I., and Company. Miticidal, fungicidal, and ovicidal sulfenamides. 4,215,145, Cl. 424-324.000.
Gras, Rainer; and Schnurbusch, Horst, to Chemische Werke Huls Aktiengesellschaft. Method for coating of glass surfaces. 4,215,165, Cl. 428-35.000.
Grassle, Alfred: *See*—
Knapp, Heinrich; Wilfert, Thomas; Grassle, Alfred; and Fussner, Paul, 4,214,565, Cl. 123-179.00L.
Great Plains Manufacturing Incorporated: *See*—
Applequist, Roy E., 4,214,637, Cl. 172-484.000.
Greco, Nicholas P., to Koppers Company, Inc. Process for alkylating phenolic compounds to produce ortho- and para-monoalkylated phenols and 2,4- and 2,6-dialkylated phenols. 4,215,229, Cl. 568-804.000.
Greer, William B.: *See*—
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,214,933, Cl. 156-238.000.
Greve, Hans J. J.: *See*—
Borresen, Peter A.; and Greve, Hans J. J., 4,214,797, Cl. 312-257.00R.
Grey, David S.; and Wey, Robert A., to Corning Glass Works. Drawing optical waveguides by heating with laser radiation. 4,215,263, Cl. 219-121.00L.
Griffin, Groves L., Jr. Tool mounting assembly. 4,214,688, Cl. 224-197.000.
Griffith, Rex R. Three-point hitch adapter. 4,214,636, Cl. 172-450.000.
Grodde, Karl-Heinz: *See*—
Carter, Walter H.; Christopher, Charles A.; and Grodde, Karl-Heinz, 4,214,475, Cl. 73-59.000.
Gross, Glenn M., to Norlin Industries, Inc. Reverberation system. 4,215,242, Cl. 179-1.00J.
Grumman Aerospace Corporation: *See*—
Burhans, Walter R., Jr.; Ciccarello, James L.; and Stumpf, Charles H., 4,214,721, Cl. 244-135.00B.
GTE Laboratories Incorporated: *See*—
McKinzie, Howard; and Trickett, Elizabeth A., 4,215,155, Cl. 427-74.000.
GTE Products Corporation: *See*—
Borlaug, David J., 4,215,363, Cl. 358-21.00R.
Cheresnowsky, Michael J., 4,214,896, Cl. 75-0.5AA.
Ritsko, Joseph E.; Gingerich, Richard G. W.; and Acla, Howard L., 4,214,894, Cl. 75-0.5AA.
GTE Sylvania Incorporated: *See*—
Gingerich, Richard G. W.; Vanderpool, Clarence D.; Fedorchak, Mary A.; Ritsko, Joseph E.; and Cheresnowsky, Michael J., 4,214,895, Cl. 75-0.5AA.
Guarene, Eugenio: *See*—
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Gulf Research & Development Company: *See*—
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,215,226, Cl. 568-705.000.
Wu, Ching-Yong; and Swift, Harold E., 4,215,068, Cl. 260-464.000.
Gulf & Western Manufacturing Company: *See*—
Carrieri, Louis F., 4,214,496, Cl. 83-617.000.
Gulick, Joseph F.: *See*—
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Gurkov, Zinovy L.: *See*—
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A., 4,214,856, Cl. 425-60.000.
Gutleber, Frank S., to United States of America, Army. Self-adaptive mobile subscriber access system employing time division multiple accessing. 4,215,244, Cl. 370-116.000.
Gutmann, Gunter; and Benczur-Urmossy, Gabor, to Deutsche Automobilgesellschaft mbH, Firma. Nickel-oxide/hydrogen battery cells. 4,215,184, Cl. 429-101.000.
H. A. Schlatter AG: *See*—
Zollinger, Hans-Rudolf, 4,215,260, Cl. 219-53.000.
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Haber, Terry M.; and Fernandez, Marlin D., to Fernandez, Joseph L. Transparent article. 4,214,753, Cl. 273-59.00R.
Haberle, Norman: *See*—
Kaufmann, Rudolf; Braunling; Haberle, Norman; and Muller, Reinhard, 4,215,057, Cl. 260-347.500.
Haeck, Jacques R. G.: *See*—
Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., 4,215,041, Cl. 260-141.000.
Haendle, Joerg; and Sklebitz, Hartmut, to Siemens Aktiengesellschaft. X-ray diagnostics installation comprising an electronic transmission channel for the X-ray image. 4,215,365, Cl. 358-111.000.
Hager, Douglas F., to Procter & Gamble Company, The. Density separation process. 4,215,040, Cl. 260-123.500.
Haggar Company: *See*—
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,214,933, Cl. 156-238.000.
Hagiwara, Zenzi; Matsui, Sigeo; Sakaguchi, Susumu; and Yamanaka, Yoshio, to Shin-Etsu Chemical Co. Ltd.; and Osaka Oxygen Industries Ltd. Rare earth-containing alloys and method for purification of hydrogen gas therewith. 4,215,008, Cl. 252-184.000.
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Hall, Jim; and Spector, George. Filter unit for a baseboard hot water heating system. 4,214,603, Cl. 137-199.000.
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Hamilton, Brian K.; Garner, Eugene F.; and Jackson, Charles, to Allied Chemical Corporation. Pyrotechnic composition and method of inflating an inflatable device. 4,214,438, Cl. 60-205.000.
Hammann, Ingeborg: *See*—
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Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Homeyer, Bernhard, 4,215,132, Cl. 424-273.00P.
Hamon-Sobelco, S.A.: *See*—
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Hampson, Edward A. Kaleidoscopic mobile. 4,214,808, Cl. 350-4.100.
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Hanesworth, Richard F.; Kim, Young D.; and Tolhurst, Gary A., to Ashland Oil, Inc., Furan binder composition. 4,215,206, Cl. 525-441.000.
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Rule, William T., 4,214,983, Cl. 209-166.000.
Hannum, Evelyn J. Earring with unitary fastener. 4,214,456, Cl. 63-12.000.
Hansmeyer, Kenneth. Heating system. 4,214,570, Cl. 126-121.000.
Harada, Shigehisa: *See*—
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Hardgrave, William D., to Otis Engineering Corporation. Actuator for wireline blowout preventer. 4,214,605, Cl. 137-495.000.
Hardwicke, Robert L.; and Ansteth, John H. Wheel adapter. 4,214,792, Cl. 301-36.00R.
Hargreaves, Chester A., II; Harris, Alexander T.; and Schulze, Robert A., to Du Pont de Nemours, E. I., and Company. Process for manufacturing chloroprene and 2,3-dichlorobutadiene-1,3. 4,215,078, Cl. 260-655.000.
Harri, Eugen; and Ruegger, Artur, to Sandoz Ltd. Antibiotic production. 4,215,199, Cl. 435-71.000.
Harris, Alexander T.; and Putman, Charles R., to Du Pont de Nemours, E. I., and Company. Process for the incineration of chlorinated organic materials. 4,215,095, Cl. 423-240.000.
Harris, Alexander T.: *See*—
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Harris, Jerry F.: *See*—
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Hartman, Emil T., to Hartman, Ethel; and Helin, Charles, Estate of, Detroit Bank and Trust Company, executor, part interest to each. Permanent magnet propulsion system. 4,215,330, Cl. 335-306.000.
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Harvey, Francis J., II: *See*—
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Hatanaka, Toru; and Iizuka, Yoshitoku, to Honda Giken Kogyo Kabushiki Kaisha. Orientation of torch openings for prechamber engine. 4,214,559, Cl. 123-293.000.
Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, to Fujitsu Limited; and Nippon Telegraph and Telephone Public Corporation. Magnetic recording medium and process for producing the same. 4,215,158, Cl. 427-130.000.
Hattori, Tadashi. Sprinkler head with heat sensitive cover release and valve release mechanism. 4,214,631, Cl. 169-57.000.
Hauser, Hans, to J. B. Foote Foundry Co., The. Drive for self-propelled lawn mowers. 4,214,641, Cl. 180-19.00R.
Hawrylo, Frank Z., to RCA Corporation. Apparatus for the deposition of a material from a liquid phase. 4,214,550, Cl. 118-712.000.
Hayashi, Henry T. Clamp-connector for joining three tubular members at corners. 4,214,841, Cl. 403-188.000.
Hayashi, Hiroaki; Fukuda, Kiyoshi; Kubo, Hiroshi; Yoshikawa, Noriyasu; and Takada, Hiroshi, to Tokyo Electric Power Company, The; and Sumitomo Electric Industries, Ltd. Natural circulation type evaporative cooling power cable line. 4,215,234, Cl. 174-15.00C.
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Hayashi, Masaki; Shimoji, Katsuichi; and Arai, Yoshinobu, to Ono Pharmaceutical Co. Ltd. Prostaglandin analogues. 4,215,142, Cl. 424-305.000.
Heath, Forrest D.; and Hoctor, Rodney K., to Olman Heath Company. Cup-shaped coffee filter dispenser. 4,214,673, Cl. 221-259.000.
Heavner, George: *See*—
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Goldstein, Gideon; and Heavner, George, 4,215,112, Cl. 424-177.000.
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Heidan, Klaus: *See*—
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Heidelberger Druckmaschinen Aktiengesellschaft: *See*—
Jeschke, Willi, 4,214,526, Cl. 101-183.000.
Heikel, Henrik R.; and Leddy, James J., to Dow Chemical Company, The. Electrode coating process. 4,214,971, Cl. 204-290.00F.
Heine, Friedrich W. Fireplace stove. 4,214,569, Cl. 126-77.000.
Heinzl, Joachim, to Siemens Aktiengesellschaft. Method of and apparatus for printed character transmission and reception. 4,215,238, Cl. 178-23.00R.
Heisinger, Robert F., to Bell Telephone Laboratories, Incorporated. Protector module for telephone circuits. 4,215,381, Cl. 361-124.000.
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Henderson, David L., to Emerson Electric Co. Method of manufacturing a corrosion resistant rotor assembly. 4,214,921, Cl. 148-6.350.
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Henley, Ernest J. Apparatus for body massage using a fluidized bed apparatus. 4,214,576, Cl. 128-24.100.
Henmi, Zen-ichi; Kotaki, Akira; and Kitano, Takafumi, to Mitsui Toatsu Chemicals, Incorporated. Anti-ulcer pharmaceutical composition containing inositol hexasulfate aluminum or sodium aluminum salt as active ingredient. 4,215,143, Cl. 424-315.000.
Henry, Raymond W.; Burkett, Bobby G.; and Bunyard, Michael L., to Texas Instruments Incorporated. Intelligent programmable process control system. 4,215,396, Cl. 364-101.000.
Heppolette, Robert L.; Khan, Hamid I.; and McEwan, Ian H., to Canadian Industries Limited. Aqueous thermosettable coating compositions comprising aqueous copolymer latex, amine neutralized copolymer and melamine-formaldehyde resin. 4,215,027, Cl. 260-29.4UA.
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Woeckener, Willi; Pawelczyk, Werner; and Marquardt, Klaus-Dieter, 4,214,857, Cl. 425-141.000.
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Herr, John A.; and Jaffe, Wolfgang, to Singer Company, The. Position sensing device for electronic sewing machine. 4,214,539, Cl. 112-158.00E.
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Hetherington, Michael W., to Appliance Design Probe Inc. Telescoping hair curler. 4,215,264, Cl. 219-225.000.
Hetland, Philip R. Rider propelled boat. 4,214,547, Cl. 440-13.000.
Hewlett-Packard Company: *See*—
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Misumi, Akira; Suzuki, Yukio; and Sunahara, Kazuo, 4,215,180, Cl. 428-553.000.
Sakaguchi, Minoru; Oishi, Kazuaki; Nakano, Seizo; and Kishi, Tuneo, 4,215,256, Cl. 200-148.00D.
Hock, Jules M.; and de Vries, Donald S., Jr. One-piece plastic piston. 4,214,507, Cl. 92-254.000.
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Uhrig, Heinz; List, Karl-Hermann; and Deubel, Reinhold, 4,214,872, Cl. 8-589.000.
Hoefke, Wolfgang: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; Traunecker, Werner; and Hoefke, Wolfgang, 4,215,119, Cl. 424-248.500.
Hoffman, Richard A.: *See*—
Choyke, Wolfgang J.; and Hoffman, Richard A., 4,214,818, Cl. 350-310.000.
Hoffman, Thomas M. Method and apparatus for cutting clips off of the ends of sausages and the like. 4,214,492, Cl. 83-24.000.
Hoffmann-La Roche Inc.: *See*—
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,215,215, Cl. 542-427.000.
Fischer, Ulf; Schneider, Fernand; and Zurflueh, Rene, 4,215,139, Cl. 424-300.000.
Hollis, Joseph C.: *See*—
Forget, Lawrence E.; Gdula, Robert A.; and Hollis, Joseph C., 4,214,946, Cl. 156-643.000.
Hollister, Kenneth R.: *See*—
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,215,195, Cl. 430-496.000.
Hollyday, Robert D.; and McKinnon, Wayne E., to AMP Incorporated. Latching-ejector device. 4,214,800, Cl. 339-45.00M.
Hollyday, Robert D., to AMP Incorporated. Filtered adapter. 4,215,326, Cl. 333-182.000.
Holmes, Francis A.: *See*—
Kimblin, Clive W.; Heberlein, Joachim V. R.; Slade, Paul G.; Voshall, Roy E.; and Holmes, Francis A., 4,215,255, Cl. 200-144.00B.
Holpuch, Robert J.; Mathias, Robert G.; and Young, Alan C., to Marmon Company. Special effects circuit for an electronic organ. 4,214,502, Cl. 84-1.240.
Holsztynski, Wlodzimierz; and Wilson, Stephen S., to Environmental Research Institute of Michigan. Cellular digital array processor. 4,215,401, Cl. 364-200.000.
Hom, Gim P., to Texas Instruments Incorporated. Automatic end-of-scan control system for a programmable process controller with expandable memory. 4,215,397, Cl. 364-101.000.

Homeyer, Bernhard: *See*—
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Homeyer, Bernhard, 4,215,132, Cl. 424-273.00P.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hatanaka, Toru; and Iizuka, Yoshitoku, 4,214,559, Cl. 123-293.000.
Matsuda, Minoru, 4,214,644, Cl. 180-226.000.
Honeywell Inc.: *See*—
Corbero, Paul A., 4,215,272, Cl. 250-293.000.
Saathoff, Deidrich J.; and Venkatasetty, Hanumanthiyna V., 4,215,188, Cl. 429-194.000.
Spethmann, Donald H., 4,214,626, Cl. 165-29.000.
Honeywell Information Systems Inc.: *See*—
Gee, Arthur; Largo, Edward J.; and Plesinger, Boris M., 4,214,706, Cl. 239-553.300.
Hoogovens IJmuiden, B.V.: *See*—
Beentjes, Nicolaas H. M., 4,214,735, Cl. 266-99.000.
Hooker Chemicals & Plastics Corp.: *See*—
Marciniak, Harry W.; Carlson, Richard D.; and Dever, James L., 4,215,034, Cl. 260-45.80A.
Hope, Henry F.; and Hope, Stephen F. Dryer rack using staggered rollers. 4,214,379, Cl. 34-159.000.
Hope, Stephen F.: *See*—
Hope, Henry F.; and Hope, Stephen F., 4,214,379, Cl. 34-159.000.
Hopen, Leonard F., to RCA Corporation. Method for spot-knocking the electron-gun mount assembly of a CRT. 4,214,798, Cl. 316-26.000.
Hopper, Thomas P., to Sunworks, Inc. Solar energy collector. 4,214,575, Cl. 126-450.000.
Horn and Gladden Lint Cleaner Co., Inc.: *See*—
Schwartz, Robert C.; and Sparks, John E., 4,214,348, Cl. 19-203.000.
Horowitz, Peter, to Intex Inc. Merchandise tagging technique. 4,215,342, Cl. 340-572.000.
Horr, Arthur N.; and Landsness, Clifford A., to B. F. Goodrich Company, The. Tire drum support. 4,214,941, Cl. 156-414.000.
Horsfield, Sydney G.: *See*—
Palmer, David A.; Kuhlmann, George E.; Horsfield, Sydney G.; and Schroeder, Hobe, 4,215,055, Cl. 260-346.700.
Schroeder, Hobe; Kuhlmann, George E.; Horsfield, Sydney G.; and Palmer, David A., 4,215,054, Cl. 260-346.700.
Horwell, David C.; and Timms, Graham H., to Lilly Industries Limited. Process for preparing cis-bicyclooctylamines. 4,215,074, Cl. 260-563.00P.
Hosaka, Akio, to Nissan Motor Company, Limited. Exhaust gas temperature detection by injection of time-varying current. 4,214,563, Cl. 123-437.000.
Hosaka, Akio: *See*—
Nishioka, Tetsuji; Asano, Masaharu; Anzai, Makoto; and Hosaka, Akio, 4,214,558, Cl. 123-489.000.
Houdek, Merle E.: *See*—
Mitchell, Glen R.; and Houdek, Merle E., 4,215,402, Cl. 364-200.000.
Hovey, Richard J.; Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., to American Optical Corporation. Photochromic compounds. 4,215,010, Cl. 252-300.000.
Howard, Robert W.: *See*—
Clark, Kenneth L.; Leach, George S.; and Howard, Robert W., 4,214,917, Cl. 148-1.500.
Howarth, Thomas T., to Beecham Group Limited. Clavulanic acid derivatives their preparation and use. 4,215,128, Cl. 424-272.000.
Howden, Ashley G.: *See*—
Jones, Lawrence T.; Sims, Anson; and Howden, Ashley G., 4,214,674, Cl. 222-79.000.
Hoy, Mansell I. Orthosis for exercising joint. 4,214,577, Cl. 128-25.00R.
Hoyler, Gerhard: *See*—
Behn, Reinhard; Hoyler, Gerhard; and Voelkl, Walter, 4,215,385, Cl. 361-273.000.
Huang, Jen-Yen, to National Semiconductor Corporation. Resistor termination. 4,215,333, Cl. 338-322.000.
Hubbard, Dolph E., to Pacer Technology and Resources. Bonded joints and method and material for forming same. 4,215,173, Cl. 428-331.000.
Hudd, Anthony W., to IMI Refiners Limited. Continuous casting of metals. 4,214,625, Cl. 164-420.000.
Huelsman, Kenneth A., to Hughes Aircraft Company. Pseudogaussian video output processing for digital display. 4,215,414, Cl. 364-515.000.
Hughes Aircraft Company: *See*—
Abrams, Richard L.; and Henderson, David M., 4,215,324, Cl. 332-7.510.
Chang, Yu-Wen; and Paul, Jeffrey A., 4,215,313, Cl. 455-326.000.
Huelsman, Kenneth A., 4,215,414, Cl. 364-515.000.
Wittmann, Alois; and McGrath, Ronald J., 4,214,406, Cl. 52-1.000.
Hughes, William B.: *See*—
Reusser, Robert E.; and Hughes, William B., 4,215,017, Cl. 252-458.000.
Hugo Kern und Liebers & Co.: *See*—
Lassche, Jakob, 4,214,466, Cl. 72-142.000.
Huie, Nicholas C.: *See*—
Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; Huie, Nicholas C.; and Schroeder, Hobe, 4,215,053, Cl. 260-346.700.
Schroeder, Hobe; Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; and Huie, Nicholas C., 4,215,052, Cl. 260-346.700.
Hunt, Letcher B., Jr. Carton for beverage cans. 4,214,660, Cl. 206-427.000.
Hunter, James B.; and McGuire, George, to Matthey Bishop, Inc. Method and apparatus for catalytic heat exchange. 4,214,867, Cl. 432-29.000.
Huppertz, Josef: *See*—
Krings, Peter; Huppertz, Josef; Latka, Herbert; Sperling, Gerhard; Schwuger, Milan J.; and Smolka, Heinz, 4,215,007, Cl. 252-174.250.
Hurst, Michael J., to Hi-Draw Machinery Ltd. Method and apparatus for cooling drawn wire. 4,214,470, Cl. 72-286.000.
Husken, Dieter; Steudle, Ernst; and Zimmerman, Ulrich, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Apparatus for measuring the pressure in a very small volume. 4,214,487, Cl. 73-753.000.
Iijima, Yukihiko, to Nippon Electric Company, Ltd. Digital transmission system for television video signals. 4,215,369, Cl. 358-146.000.
Iinuma, Kazumoto: *See*—
Usubuchi, Touru; and Iinuma, Kazumoto, 4,215,375, Cl. 358-261.000.
Iizuka, Yoshitoku: *See*—
Hatanaka, Toru; and Iizuka, Yoshitoku, 4,214,559, Cl. 123-293.000.
Ikeda, Yasunori: *See*—
Sakamoto, Tamaki; and Ikeda, Yasunori, 4,214,589, Cl. 128-680.000.
Imbruce, Richard; and Leatherman, Nelson E., to Mallinckrodt, Inc. Esophageal pressure monitoring device. 4,214,593, Cl. 128-748.000.
IMI Refiners Limited: *See*—
Hudd, Anthony W., 4,214,625, Cl. 164-420.000.
Imperial Chemical Industries Limited: *See*—
Joy, David R., 4,214,998, Cl. 252-8.800.
Pinto, Alwyn; and Ward, Stanley A., 4,215,099, Cl. 423-360.000.
Imura, Toshinori: *See*—
Tominaga, Shinji; Imura, Toshinori; Yamada, Seiji; and Kogure, Yasuzi, 4,214,827, Cl. 354-127.000.
Inao, Jun-ichi; Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, to Sumitomo Aluminum Smelting Company, Ltd. Method for the removal of organic substances from alkali metal aluminate solution. 4,215,094, Cl. 423-123.000.
Independent Broadcasting Authority: *See*—
Schaffer, Jeffrey; and Moore, John E., 4,215,367, Cl. 358-139.000.
Indian Head Inc.: *See*—
Neff, Steve W.; and Pate, Harold T., 4,214,668, Cl. 220-3.300.
Industrie Pirelli, S.p.A.: *See*—
Mezzanotte, Mario, 4,214,620, Cl. 152-354.00R.
Inoko, Michio; Kawatsuji, Shinichi; Matsui, Toshiie; and Yoshida, Shuu, to Asahi Kasei Kogyo Kabushiki Kaisha. Apparatus for producing a photo-polymer plate having relief image areas thereon. 4,214,942, Cl. 156-500.000.
Inoue, Fumio; and Suzuki, Nobuyuki, to Hitachi, Ltd. Deflection circuit for a picture tube. 4,215,295, Cl. 315-408.000.
Inoue, Kazuhiro; and Matsui, Fumio, to Nippon Oil and Fats Co., Ltd. Granular propellant. 4,214,927, Cl. 149-2.000.
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, to Kao Soap Co., Ltd. Process for producing a glycolipid ester. 4,215,213, Cl. 536-115.000.
Institut Merieux: *See*—
Jacquet, Pierre; and Roumiantzeff, Micha, 4,214,592, Cl. 128-743.000.
Institute of Gas Technology: *See*—
Ang, Peter G. P.; and Sammells, Anthony F., 4,215,182, Cl. 429-15.000.
Interlego, A.G.: *See*—
Knudsen, Jens N., 4,214,403, Cl. 46-25.000.
Interliz Anstalt: *See*—
Kunkel, Wolfgang, 4,214,627, Cl. 165-179.000.
International Business Machines Corporation: *See*—
Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, 4,215,156, Cl. 427-84.000.
Forget, Lawrence E.; Gdula, Robert A.; and Hollis, Joseph C., 4,214,946, Cl. 156-643.000.
Gfeller, Fritz; and Wild, Daniel, 4,214,807, Cl. 350-3.730.
McCray, William R.; and Rutkowski, Edward V., Jr., 4,215,422, Cl. 364-900.000.
Mitchell, Glen R.; and Houdek, Merle E., 4,215,402, Cl. 364-200.000.
International Flavors & Fragrances Inc.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.
International Harvester Company: *See*—
Bettin, Leonard A., 4,214,446, Cl. 60-420.000.
International Medical Corporation: *See*—
Patnoi, Charles M.; Cooper, Daniel; and Zellers, Robert D., 4,214,590, Cl. 128-710.000.
International Paper Company: *See*—
Cooper, Keith A., 4,214,695, Cl. 229-36.000.
International Telephone and Telegraph Corporation: *See*—
Gassowski, Jerzy R., 4,214,838, Cl. 400-220.100.
Reh, Oswald R., 4,214,809, Cl. 350-96.200.
Shannon, Larry S., Jr., 4,215,248, Cl. 179-99.00A.
Interox: *See*—
Brichard, Jean; and Colery, Jean-Claude, 4,215,097, Cl. 423-279.000.
Intex Inc.: *See*—
Horowitz, Peter, 4,215,342, Cl. 340-572.000.

Inui, Kenichi; Kobayashi, Hisao; and Aoike, Nanjou, to Toshiba Electric Equipment Corporation. Apparatus for operating a gaseous discharge lamp. 4,215,292, Cl. 315-98.000.

Ireland, Robert W.: *See—*
Bowerman, Harold H., Jr.; and Ireland, Robert W., 4,214,619, Cl. 152-347.000.

Ishida, Kazuyoshi: *See—*
Kai, Fumindo; Kumazawa, Eitaro; Ishioka, Yozo; and Ishida, Kazuyoshi, 4,215,153, Cl. 426-643.000.

Ishiguro, Michihiro: *See—*
Ohnishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,215,230, Cl. 568-341.000.

Ishihara, Takao: *See—*
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.

Ishii, Hideo: *See—*
Takenaka, Susumu; Ishii, Hideo; and Katooka, Masao, 4,214,356, Cl. 29-160.600.

Ishii, Shigeru: *See—*
Ozawa, Kiyomi; Ishii, Shigeru; Hayashi, Mamoru; Hirose, Masayoshi; and Nonaka, Ryoichi, 4,215,138, Cl. 424-282.000.

Ishikawa, Masakazu: *See—*
Fujimori, Fumio; Yokoi, Masatada; Ishikawa, Masakazu; Uemura, Hiroshi; and Shirai, Akira, 4,214,649, Cl. 188-73.500.
Kobayashi, Toyoaki; and Ishikawa, Masakazu, 4,214,648, Cl. 188-73.300.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Sato, Shojiro, 4,214,850, Cl. 415-49.000.

Ishikura, Shinichi: *See—*
Mizuguchi, Ryuzo; Takahashi, Atushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,215,028, Cl. 260-29.6TA.

Ishioka, Yozo: *See—*
Kai, Fumindo; Kumazawa, Eitaro; Ishioka, Yozo; and Ishida, Kazuyoshi, 4,215,153, Cl. 426-643.000.

Ito, Eiji; and Okaguchi, Shigeki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Drive unit for a distributor and a fuel pump. 4,214,568, Cl. 123-198.00R.

Ito, Takashi: *See—*
Doi, Toshitadá; and Ito, Takashi, 4,215,335, Cl. 371-69.000.

Ito, Thomas I.: *See—*
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,215,072, Cl. 260-551.00P.

ITOH Iron & Steel Works Co. Ltd.: *See—*
Tabuchi, Seigo, 4,214,868, Cl. 432-124.000.

Itoh, Kunio: *See—*
Yonemura, Utami; Chiba, Kiyoshi; Itoh, Kunio; Mitani, Yuji; and Sobajima, Shigenobu, 4,215,168, Cl. 428-215.000.

ITT Industries, Inc.: *See—*
Belart, Juan, 4,214,448, Cl. 60-547.00R.
Kohler, Alfred; and Prohaska, Hans, 4,214,344, Cl. 15-250.320.

ITW Fastex Italia S.p.A.: *See—*
Aimar, Michele, 4,214,505, Cl. 85-55.000.

Ivanchev, Sergei S.; Enikolopov, Nikolai S.; Polozov, Boris V.; Syrov, Anatoly A.; Primachenko, Oleg N.; and Polyakov, Zorislav N. Method for producing mineral fillers containing graft hydroperoxide groups for use with polymers. 4,214,914, Cl. 106-308.00Q.

Ivanov, Ivan V.: *See—*
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.

Iwanami, Eiichi, to Kabushiki Kaisha Daini Seikosha. High frequency oscillating circuit using AT cut quartz crystal vibrator. 4,215,322, Cl. 331-116.0FE.

Iwanami, Yoshiyuki; Fukumoto, Masaru; and Funazaki, Mitsunori, to Japan Steel Works, Ltd., The. Process for preventing the rephosphorization of electric steel. 4,214,898, Cl. 75-12.000.

Iwatsu Electric Co., Ltd.: *See—*
Kato, Takefumi; and Takita, Hajime, 4,215,288, Cl. 313-394.000.

Izumi, Masato: *See—*
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.

J. B. Foote Foundry Co., The: *See—*
Hauser, Hans, 4,214,641, Cl. 180-19.00R.

J. H. Beales Steel Fabricators, Ltd.: *See—*
Beales, John H., 4,214,840, Cl. 403-31.000.

J. M. Voith GmbH: *See—*
Pfalzer, Lothar, 4,214,982, Cl. 209-164.000.
Schiel, Christian; and Flamig, Hans, 4,214,949, Cl. 162-352.000.

J. W. Speaker Corporation: *See—*
Brandt, Ivan L., 4,215,390, Cl. 362-311.000.

Jackson, Charles: *See—*
Hamilton, Brian K.; Garner, Eugene F.; and Jackson, Charles, 4,214,438, Cl. 60-205.000.

Jackson, Gary L.; and Rao, Prabhakar B., to Koehring Company. Soil stabilizer and tooth holder therefor. 4,214,633, Cl. 172-123.000.

Jacobs Manufacturing Company, The: *See—*
Quenneville, Raymond N., 4,214,652, Cl. 192-58.00R.

Jacobson, Loren A.: *See—*
Kitchen, Donald R.; and Jacobson, Loren A., 4,214,904, Cl. 75-165.000.

Jacquemet, Georges. Electromagnetic percussion appliance. 4,215,297, Cl. 318-130.000.

Jacquet, Pierre; and Roumiantzeff, Micha, to Institut Merieux. Patch for skin tests. 4,214,592, Cl. 128-743.000.

Jadouin, Michel A. Pulverizer. 4,214,716, Cl. 241-186.00R.

Jaeger, Ben E. Battery plate separator and battery containing the same. 4,215,186, Cl. 429-139.000.

Jaenson, Howard W., to Witteman Steel Mills. Method for continuous casting of metal. 4,214,623, Cl. 164-83.000.

Jaeschke, Harold R.; and Boyle, Daniel J., to Champion International Corporation. Emergency medication package. 4,214,659, Cl. 206-365.000.

Jaffe, Wolfgang: *See—*
Herr, John A.; and Jaffe, Wolfgang, 4,214,539, Cl. 112-158.00E.

Jahnke, Merlin R.: *See—*
Nelson, Alfred D.; and Jahnke, Merlin R., 4,215,258, Cl. 219-10.55D.

James, Varnell L.; and Evelyn, George B., to Boeing Company, The. Flow control system for concentric annular fluid streams. 4,214,610, Cl. 137-597.000.

Janeway, William F. Remote control of electrical power distribution system and method. 4,215,276, Cl. 307-40.000.

Japan Steel Works, Ltd., The: *See—*
Iwanami, Yoshiyuki; Fukumoto, Masaru; and Funazaki, Mitsunori, 4,214,898, Cl. 75-12.000.

Jarrell, Edward C.; Marlow, Donald R.; Tetens, Howard B.; and Gulick, Joseph F., to United States of America, Navy. Target seeker simulator. 4,215,347, Cl. 343-117.00R.

Jatymowicz, Hanna: *See—*
Siejko, Janina; and Jatymowicz, Hanna, 4,214,911, Cl. 106-87.000.

Jeschke, Willi, to Heidelberger Druckmaschinen Aktiengesellschaft. Drive for sheet-fed rotary printing presses with at least two tandem-mounted printing units. 4,214,526, Cl. 101-183.000.

Jewett, Charles S.: *See—*
Wade, James; and Jewett, Charles S., 4,214,457, Cl. 64-4.000.

Jochum, Friedrich; and Glaser, Heinz, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Convertible amphibious vehicle. 4,214,546, Cl. 114-270.000.

Joh, Yasushi, to Nippon Zeon Co. Ltd. Hollow-fiber permeability apparatus. 4,214,990, Cl. 210-194.000.

John Fluke Mfg. Co., Inc.: *See—*
Lambert, Dennis L.; and Lantz, Paul R., 4,215,315, Cl. 328-140.000.

Johns-Manville Corporation: *See—*
Davis, Wayne E., 4,215,382, Cl. 361-166.000.

Johnson, Allan L., Jr., to Control Data Corporation. Fast synchronization circuit for phase locked looped decoder. 4,215,430, Cl. 375-111.000.

Johnson, Donald R.: *See—*
Forsythe, Jesse G., Jr.; Johnson, Donald R.; and St. Onge, Linda M., 4,214,993, Cl. 210-282.000.

Johnson & Johnson: *See—*
Gianakakos, Spiros; and Boardman, Franklin, 4,214,578, Cl. 128-90.000.
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., 4,215,064, Cl. 260-403.000.

Jonas, Walter K., to Minnesota Mining and Manufacturing Company. Sheet dispensing device for use with copying machines, and a container for the stack of sheets. 4,214,662, Cl. 206-555.000.

Jones, F. David: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.
Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., 4,215,407, Cl. 364-468.000.

Jones, James P. E.: *See—*
Watson, James H. P.; and Jones, James P. E., 4,214,986, Cl. 210-42.00S.

Jones, Lawrence T.; Sims, Anson; and Howden, Ashley G., to California R & D Center. Hydro pistol with pressurized water container and with variable water ejection capability. 4,214,674, Cl. 222-79.000.

Josefsson, Hans E., to Tour & Andersson Aktiebolag. Arrangement for control of the temperature of heat radiators in a co-tube system. 4,214,698, Cl. 236-42.000.

Joseph, A. David, to Sealed Power Corporation. Pipe joint and method of assembly. 4,214,781, Cl. 285-222.000.

Jouffroy, Guy: *See—*
Durand, Pierre; Charlon, Pierre; and Jouffroy, Guy, 4,215,207, Cl, 526-64.000.

Jourdan-Laforte, Eric, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Brevets Georges Claude. Process of epoxidation of oils. 4,215,058, Cl. 260-348.270.

Joy, David R., to Imperial Chemical Industries Limited. Quaternary ammonium compounds useful as fabric softening agents. 4,214,998, Cl. 252-8.800.

Joy Insignia, Inc.: *See—*
Blumhof, Roy, 4,214,463, Cl. 70-456.00R.

K-2 Corporation: *See—*
Pletz, Murray J., 4,214,685, Cl. 224-211.000.

Kabelwerke, Brugg A.G.: *See—*
Benoit, Pierre A.; and Widmer, Gilbert, 4,214,811, Cl. 350-96.210.

Kabushiki Kaisha Daini Seikosha: *See—*
Iwanami, Eiichi, 4,215,322, Cl. 331-116.0FE.

Kabushiki Kaisha Meiki Seisakusho: *See—*
Omori, Kazumitsu, 4,214,858, Cl. 425-145.000.

Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,214,529, Cl. 101-291.000.

Kaebitzsch, Johannes W., to McGraw-Edison Company. Food warmer with a heating element assembly mount. 4,215,267, Cl. 219-439.000.

Kahl, William G., Jr.: *See—*
Mudge, Philip H.; Settanni, Richard; and Kahl, William G., Jr., 4,215,271, Cl. 250-216.000.

Kahng, Dawon, to Bell Telephone Laboratories, Incorporated. MOS Devices having buried terminal zones under local oxide regions. 4,214,359, Cl. 29-571.000.

Kai, Fumindo; Kumazawa, Eitaro; Ishioka, Yozo; and Ishida, Kazuyoshi, to Snow Brand Milk Products Co., Ltd. Method for the production of fish meat powder retaining functional characteristics of fresh fish meat. 4,215,153, Cl. 426-643.000.

Kaieda, Shozo; Mutoh, Masayuk; and Kamimura, Kuniaki, to Minolta Camera Kabushiki Kaisha. Ink jet recording apparatus with trial run at side. 4,215,353, Cl. 346-140.00R.

Kaiser Aluminum & Chemical Corporation: *See—*
Foye, John J.; and Harris, Jerry F., 4,214,624, Cl. 164-89.000.
Sankaran, Subbiah, 4,214,467, Cl. 72-183.000.

Kaji, Hisatsugu: *See—*
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.

Kakuminato, Tetsuo, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Piston braking device for hydraulic or pneumatic cylinders. 4,214,795, Cl. 303-89.000.

Kalbfuss, Richard: *See—*
Romeyke, Norbert; and Kalbfuss, Richard, 4,214,436, Cl. 60-39.09R.

Kalck, Philippe; Poilblanc, Rene; and Gaset, Antoine, to Produits Chimiques Ugine Kuhlmann. Binuclear rhodium complex as a hydroformylation and hydrogenation catalyst. 4,215,066, Cl. 260-429.00R.

Kalina, Robert F., to Western Electric Company, Inc. Method of assembling heated terminals and rolled film capacitors within plastic boxes. 4,214,353, Cl. 29-25.420.

Kalinichenko, Anatoly Y. Apparatus for numerical control of thyristor inverter. 4,215,393, Cl. 363-124.000.

Kalir, Rami: *See—*
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, 4,215,219, Cl. 546-179.000.

Kamber, Peter W.: *See—*
Bernier, Joseph L.; and Kamber, Peter W., 4,215,412, Cl. 364-551.000.

Kamensky, Veniamin V.: *See—*
Sudnishnikov, Boris V.; Tkach, Khaim B.; Kostylev, Alexandr D.; Kamensky, Veniamin V.; Tupitsyn, Konstantin K.; and Terin, Vladimir M., 4,214,638, Cl. 173-1.000.

Kameya, Kazuo, to Toko Inc. Power conversion device. 4,215,391, Cl. 363-25.000.

Kamimura, Kuniaki: *See—*
Kaieda, Shozo; Mutoh, Masayuk; and Kamimura, Kuniaki, 4,215,353, Cl. 346-140.00R.

Kamiya, Takashi; Maeno, Shizuo; and Kitaura, Yoshihiko, to Fujisawa Pharmaceutical Co., Ltd. Bicyclomycin derivatives. 4,215,043, Cl. 260-239.30B.

Kamota, Hiroyoshi, to Kormori Printing Machinery Co., Ltd. Mounting arrangement for a plate cylinder and form rollers. 4,214,527, Cl. 101-247.000.

Kampe, Wolfgang: *See—*
Ross, Carl H.; Friebe, Walter-Gunar; Kampe, Wolfgang; Bartsch, Wolfgang; and Roesch, Egon, 4,215,134, Cl. 424-273.00B.

Kamphorst, Hendrik A. Liquid seal system, e.g. for a flare stack. 4,214,880, Cl. 55-204.000.

Kamyr Valves, Inc.: *See—*
Kindersley, Peter G., 4,214,732, Cl. 251-315.000.

Kanemasa, Akira; and Sakaguchi, Hisashi, to Nippon Electric Company, Ltd. Recursive digital filter comprising a circuit responsive to first sum and feedback sign bits and second sum sign and integer bits for detecting overflow in the second sum. 4,215,415, Cl. 364-724.000.

Kaneno, Masayuki: *See—*
Oda, Isao; Kaneno, Masayuki; and Yamamoto, Noboru, 4,214,666, Cl. 220-2.10R.

Kanke, Tsutomu: *See—*
Ogawa, Shinsaku; and Kanke, Tsutomu, 4,214,957, Cl. 204-98.000.

Kao Soap Co., Ltd.: *See—*
Deguchi, Katsuhiko; Mino, Junryo; and Tsujii, Kaoru, 4,214,908, Cl. 106-13.000.
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,215,213, Cl. 536-115.000.

Kaplan, Julius F.; Edelberg, Norman L.; and Davis, Chester A., to Helene Curtis Industries, Inc. Permanent wave system using ammonium bisulfite prewrap. 4,214,596, Cl. 132-7.000.

Kara, Jan: *See—*
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, Jan; and Kasparek, Zdenek, 4,214,352, Cl. 28-254.000.

Karaki, Yasuhumi: *See—*
Arita, Koji; Chiji, Masahiro; Asami, Takayoshi; Karaki, Yasuhumi; and Endo, Toshihiko, 4,214,925, Cl. 148-127.000.

Karrip, Alexander A.; Knoblauch, Jack R.; Pergler, Charles C.; and Korell, Donald D., to Steelcase, Inc. Chair control. 4,214,726, Cl. 248-575.000.

Kasahara, Noboru: *See—*
Sato, Mitsuhiro; and Kasahara, Noboru, 4,214,952, Cl. 204-14.00R.

Kasparek, Zdenek: *See—*
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, Jan; and Kasparek, Zdenek, 4,214,352, Cl. 28-254.000.

Kasprzak, Lucian A.: *See—*
Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, 4,215,156, Cl. 427-84.000.

Kassakian, John G., to Massachusetts Institute of Technology. Parity simulator. 4,215,420, Cl. 364-802.000.

Kastilahn, William W., to Alco Standard Corporation. Heating assembly with vibration dampening shipping supports for graphite heating elements. 4,215,233, Cl. 13-25.000.

Kastner, Hermann L.: *See—*
Rall, Gerhard; and Kastner, Hermann L., 4,214,766, Cl. 279-46.00R.

Kato, Hisakatsu: *See—*
Inao, Jun-ichi; Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,215,094, Cl. 423-123.000.

Kato, Mari, to Mitsubishi Denki Kabushiki Kaisha. Junction field effect transistor. 4,215,356, Cl. 357-22.000.

Kato, Shinichi: *See—*
Otani, Syuichi; and Kato, Shinichi, 4,214,802, Cl. 339-60.00M.

Kato, Shinichiro, to Sony Corporation. Tape cassette. 4,214,719, Cl. 242-198.000.

Kato, Takefumi; and Takita, Hajime, to Iwatsu Electric Co., Ltd. Storage target for scan converter tubes. 4,215,288, Cl. 313-394.000.

Katoh, Kazunobu: *See—*
Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sawaguchi, Hiroshi, 4,215,030, Cl. 260-40.00R.

Katooka, Masao: *See—*
Takenaka, Susumu; Ishii, Hideo; and Katooka, Masao, 4,214,356, Cl. 29-160.600.

Katsuto, Nagano; Syozo, Sasa; Takeshi, Nakada; and Yukio, Asakawa, to TDK Electronics Co., Ltd. Method of doping IIb or VIb group elements into a boron phosphide semiconductor. 4,214,926, Cl. 148-175.000.

Katz, Harold W.: *See—*
Edwin, Allan I.; and Katz, Harold W., 4,215,299, Cl. 318-574.000.

Katz, Sol; Bertsch, Josef; and Yurgevich, Howard J., to Strick Corporation. Trailer container rear header. 4,214,789, Cl. 296-183.000.

Kaufman, Jacquelyn: *See—*
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,215,072, Cl. 260-551.00P.

Kaufman, Lance R. Lead frame terminal. 4,215,235, Cl. 174-52.0PE.

Kaufmann, Rudolf; Braunling; Haberle, Norman; and Muller, Reinhard, to Consortium fur Elektrochemische Industrie GmbH. Process for the production of substituted furans. 4,215,057, Cl. 260-347.500.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph, 4,214,503, Cl. 84-1.270.

Kawakita, Katsuhiko: *See—*
Murabayashi, Hideki; Kawakita, Katsuhiko; Nakamura, Kisaku; and Kobatake, Sadao, 4,214,903, Cl. 75-134.00D.

Kawanabe, Yoshihiro, to Pioneer Electronic Corporation. Push-pull amplifier. 4,215,318, Cl. 330-268.000.

Kawatsuji, Shinichi: *See—*
Inoko, Michio; Kawatsuji, Shinichi; Matsui, Toshiie; and Yoshida, Shuu, 4,214,942, Cl. 156-500.000.

Kazimirovskaya, Valentina B.: *See—*
Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M., 4,215,106, Cl. 424-81.000.

Kebbel, Waldeman: *See—*
Geurtsen, Friedrich H. H.; and Kebbel, Waldeman, 4,214,937, Cl. 156-361.000.

Kelly, Robert C., to Upjohn Company, The. Enlarged-hetero-ring prostacyclin analogs with 5-halo feature. 4,215,214, Cl. 542-426.000.

Kelly, Thomas E., Sr. Protective apparel. 4,214,317, Cl. 2-2.000.

Kempen, Simone J.: *See—*
Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., 4,215,041, Cl. 260-141.000.

Kemper, James M.; and Mercer, William I., to Monogram Industries, Inc. Human waste storage and disposal systems for railroads or the like. 4,214,324, Cl. 4-300.000.

Kendall Company, The: *See—*
Patel, Harish A., 4,214,582, Cl. 128-156.000.

Kennametal Inc.: *See—*
McKenry, Robert J., 4,214,617, Cl. 144-2.00N.

Kennedy, James V.; and Dight, Lawrence B., to Engelhard Minerals & Chemicals Corporation. Catalytic cracking. 4,214,978, Cl. 208-120.000.

Kennedy, Joseph P.: *See—*
Buckley, Donald J.; Thaler, Warren A.; and Kennedy, Joseph P., 4,215,022, Cl. 260-5.000.

Kent, Leslie W. Fishing worm lure. 4,214,397, Cl. 43-42.280.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Filss, Peter, 4,214,881, Cl. 55-228.000.
Husken, Dieter; Steudle, Ernst; and Zimmerman, Ulrich, 4,214,487, Cl. 73-753.000.

Kersten, Franz: *See—*
Petersen, Otto; and Kersten, Franz, 4,215,091, Cl. 422-75.000.

Kessels, Gerard. Process for the preparation of D(-)αphenylglycine. 4,215,223, Cl. 562-401.000.

Khan, Hamid I.: *See—*
Heppolette, Robert L.; Khan, Hamid I.; and McEwan, Ian H., 4,215,027, Cl. 260-29.4UA.

Kho, Khe-Bing J.; and Stewart, Patrick H., to C L Industries, Inc. Catalyst for increasing the tensile strength and core hardness of a sand mold or core. 4,215,012, Cl. 252-429.00R.

Kim, Young D.: *See—*
Hanesworth, Richard F.; Kim, Young D.; and Tolhurst, Gary A., 4,215,206, Cl. 525-441.000.

Kimblin, Clive W.; Heberlein, Joachim V. R.; Slade, Paul G.; Voshall, Roy E.; and Holmes, Francis A., to Electric Power Research Institute, Inc. Vacuum arc switching device with internal shielding. 4,215,255, Cl. 200-144.00B.

Kimura, Yoshiharu: *See—*
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,215,213, Cl. 536-115.000.

Kin, Nelson I., to National Machinery Company, The. Apparatus for trimming boltheads or the like. 4,214,333, Cl. 10-20.000.

Kindersley, Peter G., to Kamyr Valves, Inc. Side-split ball valve construction. 4,214,732, Cl. 251-315.000.

Kinta, Manzo: *See—*
Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,215,213, Cl. 536-115.000.

Kipp, Frederick M.: *See—*
Gorgens, Joseph E.; Kipp, Frederick M.; and Bissell, Robert D., 4,214,486, Cl. 73-738.000.

Kirk, Donald, Jr., to Digital Communications, Inc. Satellite video multiplexing communications system. 4,215,370, Cl. 358-146.000.

Kishi, Tuneo: *See—*
Sakaguchi, Minoru; Oishi, Kazuaki; Nakano, Seizo; and Kishi, Tuneo, 4,215,256, Cl. 200-148.00D.

Kishino, Takao: *See—*
Hikida, Chuichi; Kishino, Takao; Mizohata, Tadashi; and Yamaura, Tatsuo, 4,215,290, Cl. 313-496.000.

Kissel, Charles L.; and Caserio, Frederick F., Jr., to Magna Corporation. Acrolein composition and method of enhancing effective life thereof in an aqueous medium. 4,215,147, Cl. 424-333.000.

Kissel, Charles L.; and Caserio, Frederick F., Jr., to Magna Corporation. Acrolein buffering composition and method of enhancing effective life of acrolein in an aqueous medium. 4,215,148, Cl. 424-333.000.

Kitano, Motoi; Sumita, Isao; and Sakamoto, Yukio, to Matsushita Electric Industrial Co., Ltd. Reverse osmosis membrane. 4,214,994, Cl. 210-490.000.

Kitano, Takafumi: *See—*
Henmi, Zen-ichi; Kotaki, Akira; and Kitano, Takafumi, 4,215,143, Cl. 424-315.000.

Kitaura, Yoshihiko: *See—*
Kamiya, Takashi; Maeno, Shizuo; and Kitaura, Yoshihiko, 4,215,043, Cl. 260-239.30B.

Kitchen, Donald R.; and Jacobson, Loren A., to United States of America, Air Force. Gold-tin-silicon alloy for brazing silicon to metal. 4,214,904, Cl. 75-165.000.

Kittel, Ludwig; and Schwarz, Dieter, to Te Ka de Felten & Guilleaume Fernmeldeanlagen GmbH. Adaptive delta-modulation system. 4,215,311, Cl. 375-5.000.

Klatt, Frederick. Telemetry and power transmission for enclosed fluid systems. 4,215,426, Cl. 367-83.000.

Kleimenhagen, Gunter; Rosenkranz, Otto; Albrecht, Peter; Conow, Hans; Kother, Holger; Schmidt, Dieter; and Vogel, Klaus, to Gildemeister Corpoplast. Apparatus for blow molding hollow articles, in particular bottles. 4,214,860, Cl. 425-149.000.

Klein, Hans: *See—*
Kriegel, Ernst; Radke, Dietrich; Klein, Hans; and Arbeletche, Carlos, 4,215,101, Cl. 423-659.000.

Kleinewefers GmbH: *See—*
Meisen, Klaus, 4,214,462, Cl. 68-205.00R.
Schiffer, Gunter; Meisen, Klaus; Sunnen, Rudolf; and Heidan, Klaus, 4,214,461, Cl. 68-158.000.

Kluge, Ronald P., to Kluge, Ronald P.; and Spirk, Herman F. Disassemblable boat carrier and launcher. 4,214,774, Cl. 280-652.000.

Kluiters, Gerard. Panel assembly. 4,214,390, Cl. 40-447.000.

Kmak, Walter S., to Exxon Research & Engineering Co. Method for removing coronene from heat exchangers. 4,214,976, Cl. 208-48.00R.

KMS Fusion, Inc.: *See—*
Segall, Stephen B., 4,215,274, Cl. 250-361.00R.

Knapp, Furn F., Jr., to United States of America, Energy. ^{123m}Te-Labeled biochemicals and method of preparation. 4,215,045, Cl. 260-397.200.

Knapp, Heinrich; Wilfert, Thomas; Grassle, Alfred; and Fussner, Paul, to Robert Bosch GmbH. Fuel injection apparatus. 4,214,565, Cl. 123-179.00L.

Knoblauch, Jack R.: *See—*
Karrip, Alexander A.; Knoblauch, Jack R.; Pergler, Charles C.; and Korell, Donald D., 4,214,726, Cl. 248-575.000.

Knox, Harry D.; and Summar, James P. Device for immobilizing animals. 4,214,556, Cl. 119-103.000.

Knudsen, Jens N., to Interlego, A.G. Hinge element. 4,214,403, Cl. 46-25.000.

Kobatake, Sadao: *See—*
Murabayashi, Hideki; Kawakita, Katsuhiko; Nakamura, Kisaku, and Kobatake, Sadao, 4,214,903, Cl. 75-134.00D.

Kobayashi, Hisao: *See—*
Inui, Kenichi; Kobayashi, Hisao; and Aoike, Nanjou, 4,215,292, Cl. 315-98.000.

Kobayashi, Kazuo: *See—*
Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, 4,215,158, Cl. 427-130.000.

Kobayashi, Shigeo; Yoshihara, Nori; Nanbu, Kiyoji; and Goto, Yukio, to Toyo Boseki Kabushiki Kaisha. Polyester composition, 4,215,032, Cl. 260-40.00R.

Kobayashi, Teruo: *See—*
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, 4,214,893, Cl. 75-0.5AA.

Kobayashi, Tomio; and Miyairi, Hidesuke, to Sony Corporation. Method of electrolytically etching ferrite. 4,214,960, Cl. 204-129.650.

Kobayashi, Toyoaki; and Ishikawa, Masakazu, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle disc brake. 4,214,648, Cl. 188-73.300.

Kobe Steel, Limited: *See—*
Arita, Koji; Chiji, Masahiro; Asami, Takayoshi; Karaki, Yasuhumi; and Endo, Toshihiko, 4,214,925, Cl. 148-127.000.

Kobinger, Walter: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,215,133, Cl. 424-273.00R.

Kobler, Ulrich, to Siemens Aktiengesellschaft. Polarized electromagnetic miniature relay. 4,215,329, Cl. 335-78.000.

Koch, Norman G.: *See—*
United States of America, National Aeronautics and Space Administration; Stokes, Roy C.; and Koch, Norman G., 4,215,273, Cl. 250-347.000.

Kockelbergh, Godfried A.: *See—*
De Winter, Walter F.; Timmerman, Daniel M.; De Cat, Arthur H.; and Kockelbergh, Godfried A., 4,215,196, Cl. 430-627.000.

Koehring Company: *See—*
Jackson, Gary L.; and Rao, Prabhakar B., 4,214,633, Cl. 172-123.000.

Kogure, Yasuzi: *See—*
Tominaga, Shinji; Imura, Toshinori; Yamada, Seiji; and Kogure, Yasuzi, 4,214,827, Cl. 354-127.000.

Kohler, Alfred; and Prohaska, Hans, to ITT Industries, Inc. Windshield wiper. 4,214,344, Cl. 15-250.320.

Kohn, Gary A.: *See—*
Deaton, Thomas M.; and Kohn, Gary A., 4,214,606, Cl. 137-495.000.

Kohyama, Susumu; and Kubota, Nobuhisa, to Tokyo Shibaura Electric Co., Ltd. Charge transfer device stored with fixed information. 4,215,357, Cl. 357-24.000.

Kokusan Denki Co., Ltd.: *See—*
Nanjo, Hirotoshi; and Murakami, Katsuo, 4,214,566, Cl. 123-594.000.

Kolesnikov, Vladimir M.: *See—*
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.

Kollonitsch, Janos; and Marburg, Stephen, to Merck & Co., Inc. Fluorination process. 4,215,221, Cl. 548-344.000.

Kolossow, Klaus-Dieter, to Hermann Berstorff Maschinenbau GmbH. Screw extruder for the continuous extrusion of thermoplastic materials. 4,214,862, Cl. 425-204.000.

Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A. Apparatus for lining ladles. 4,214,856, Cl. 425-60.000.

Kondo, Hiroyuki, to Aisin Seiki Kabushiki Kaisha. Brake pressure control apparatus for split braking system. 4,214,794, Cl. 303-6.00C.

Konig, Hans-bodo: *See—*
Preiss, Michael; Konig, Hans-bodo; Metzger, Karl G.; and Feyen, Peter, 4,215,118, Cl. 424-248.400.

Konig, Wolfgang, to Hoechst Aktiengesellschaft. Partially protected human insulin-A-chain and process for its manufacture. 4,215,037, Cl. 260-112.50R.

Konishiroku Photo Industry Co., Ltd.: *See—*
Shimokura, Toshiko, 4,214,815, Cl. 350-215.000.
Uchida, Yasuo; Shiozawa, Kazuo; and Suzuki, Kiziro, 4,214,826, Cl. 354-31.000.

Konkol, Werner: *See—*
Cornils, Boy; Konkol, Werner; Diekhaus, Gerhard; and Wiebus, Ernst, 4,215,073, Cl. 260-563.00D.

Kono, Masao; Tani, Tatsuo; Ogawa, Toshiyuki; and Ariyama, Kenzo, to Ricoh Company, Ltd. Electrostatic copying machine comprising improved document scanning means. 4,214,832, Cl. 355-8.000.

Kono, Tateomi, to Minolta Camera Kabushiki Kaisha. Operation timing control system for mechanical apparatus operable under program control. 4,214,833, Cl. 355-14.00C.

Kononchuk, Galina M.: *See—*
Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M., 4,215,106, Cl. 424-81.000.

Koppe, Herbert: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,215,133, Cl. 424-273.00R.

Koppers Company, Inc.: *See—*
Greco, Nicholas P., 4,215,229, Cl. 568-804.000.
Morgret, Gordon L., 4,214,745, Cl. 271-272.000.

Korell, Donald D.: *See—*
Karrip, Alexander A.; Knoblauch, Jack R.; Pergler, Charles C.; and Korell, Donald D., 4,214,726, Cl. 248-575.000.

Kormori Printing Machinery Co., Ltd.: *See—*
Kamota, Hiroyoshi, 4,214,527, Cl. 101-247.000.

Kornylak Corporation: *See—*
Tabler, Charles P., 4,214,864, Cl. 425-329.000.

Koshevoi, Vladimir G.: *See—*
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.

Koster, Claus; Siegert, Joachim; and Nothdurft, Heinz, to Robert Bosch GmbH. Testing device for injection pumps. 4,214,476, Cl. 73-119.00A.

Kostylev, Alexandr D.: *See—*
Sudnishnikov, Boris V.; Tkach, Khaim B.; Kostylev, Alexandr D.; Kamensky, Veniamin V.; Tupitsyn, Konstantin K.; and Terin, Vladimir M., 4,214,638, Cl. 173-1.000.

Kotaki, Akira: *See—*
Henmi, Zen-ichi; Kotaki, Akira; and Kitano, Takafumi, 4,215,143, Cl. 424-315.000.

Kother, Holger: *See—*
Kleimenhagen, Gunter; Rosenkranz, Otto; Albrecht, Peter; Conow, Hans; Kother, Holger; Schmidt, Dieter; and Vogel, Klaus, 4,214,860, Cl. 425-149.000.

Kouda, Masanori: *See—*
Yamanaka, Shogo; and Kouda, Masanori, 4,214,643, Cl. 180-148.000.

Kozacka, Frederick J., to Gould Inc. Pressure contact between ferrules and fusible element of electric fuses. 4,215,331, Cl. 335-252.000.

Kozlov, Valentin I.: *See—*
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Kozlowicz, Stanley R. Molded plastic bee feeder. 4,214,329, Cl. 6-5.000.

Kraemer, Rolf H., to Fansteel Inc. Heavy duty insert. 4,214,846, Cl. 407-114.000.

Kraemer, Rolf H., to Fansteel Inc. Insert for railroad tools. 4,214,847, Cl. 407-114.000.

Kraft, Russell H. Fast release connector. 4,214,806, Cl. 339-242.000.

Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; and Haller, Ingo, to Bayer Aktiengesellschaft. Antimicrobial agents. 4,215,131, Cl. 424-273.00R.

Kraska, Allen R., to Pfizer Inc. Antiviral amine derivatives of glycerol and propanediols. 4,215,146, Cl. 424-330.000.

Kratzer, Reinhold H.: *See—*
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,215,072, Cl. 260-551.00P.

Kraus, Werner. Long-term endoprosthesis. 4,214,322, Cl. 3-1.910.

Krause, Joachim: *See—*
Pohl, Ludwig; Eidenschink, Rudolf; Krause, Joachim; and Weber, Georg, 4,214,819, Cl. 350-334.000.

Kriegel, Ernst; Radke, Dietrich; Klein, Hans; and Arbeletche, Carlos, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method and apparatus for performing chemical and/or physical treatments. 4,215,101, Cl. 423-659.000.

Krings, Peter; Huppertz, Josef; Latka, Herbert; Sperling, Gerhard; Schwuger, Milan J.; and Smolka, Heinz, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Process for the manufacture of low-phosphorus or phosphorus-free detergents containing aluminosilicates. 4,215,007, Cl. 252-174.250.

Krob, Erwin, to TMC Corporation. Ski brake. 4,214,777, Cl. 280-605.000.

Krogstad, Ivar; Sandoy, Harry S.; and Haavie, Thor O., to A/S Pusnes Mekaniske Verksted. Anchor stowing arrangement. 4,214,545, Cl. 114-294.000.

Kromrey, Robert V., to Atlantic Research Corporation. Coated coal piles. 4,214,875, Cl. 44-6.000.

Kubiatowicz, James F. Disposable structure for use in microwave cooking. 4,214,515, Cl. 99-400.000.

Kubo, Hiroshi: *See—*
Hayashi, Hiroaki; Fukuda, Kiyoshi; Kubo, Hiroshi; Yoshikawa, Noriyasu; and Takada, Hiroshi, 4,215,234, Cl. 174-15.00C.

Kubota Ltd.: *See—*
Oota, Kazunari; and Yamazaki, Kazuhiro, 4,214,731, Cl. 251-306.000.

Kubota, Nobuhisa: *See—*
Kohyama, Susumu; and Kubota, Nobuhisa, 4,215,357, Cl. 357-24.000.

Kuhlmann, George E.: *See—*
Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; Huie, Nicholas C.; and Schroeder, Hobe, 4,215,053, Cl. 260-346.700.
Palmer, David A.; Kuhlmann, George E.; Horsfield, Sydney G.; and Schroeder, Hobe, 4,215,055, Cl. 260-346.700.
Schroeder, Hobe; Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; and Huie, Nicholas C., 4,215,052, Cl. 260-346.700.
Schroeder, Hobe; Kuhlmann, George E.; Horsfield, Sydney G.; and Palmer, David A., 4,215,054, Cl. 260-346.700.

Kuhn, Hans H.: *See—*
Marco, Francis W.; and Kuhn, Hans H., 4,215,171, Cl. 428-245.000.

Kuhn, Loughrey R. Fiber optic modem/data set. 4,215,269, Cl. 455-612.000.

Kuhs, Franklin A.: *See—*
McKibbin, Dean K.; Hills, Richard E.; Blackman, Joel; and Kuhs, Franklin A., 4,214,671, Cl. 220-219.000.

Kulesza, Ralph J.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Target game apparatus. 4,214,749, Cl. 273-1.00R.

Kumazawa, Eitaro: *See—*
Kai, Fumindo; Kumazawa, Eitaro; Ishioka, Yozo; and Ishida, Kazuyoshi, 4,215,153, Cl. 426-643.000.

Kummer, Werner: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,215,133, Cl. 424-273.00R.

Kunkel, Wolfgang, to Interliz Anstalt. Fire tube for a heating boiler. 4,214,627, Cl. 165-179.000.

Kunnen, Jan; and van der Schee, Abraham C., to Akzo N.V. Process of coating metal surfaces. 4,215,162, Cl. 427-435.000.

Kuo, Han C., to Olin Corporation. Plated metallic cathode with porous copper subplating. 4,214,954, Cl. 204-32.00R.

Kuraray Co., Ltd.: *See—*
Matsumoto, Mitsuo; and Tamura, Masuhiko, 4,215,077, Cl. 568-454.000.
Mawatari, Shizuo; and Nishida, Takashi, 4,214,909, Cl. 106-16.000.
Ohnishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,215,230, Cl. 568-341.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.

Kurzhals, Hans-Albert; and Sylla, Klaus F., to decofa Kaffee-Bearbeitungs-GmbH. Process for the removal of undesirable constituents from raw coffee beans. 4,215,150, Cl. 426-430.000.

Kusaka, Satoshi; and Shino, Kuninori, to Sony Corporation. Tone arm assembly. 4,214,757, Cl. 274-23.00R.

Kusters, John A., to Hewlett-Packard Company. Self calibrating crystal controlled frequency counter method and apparatus. 4,215,308, Cl. 324-78.00D.

Kusunose, Tomoya: *See—*
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, 4,214,893, Cl. 75-0.5AA.

Kwok, John C., to Bexford Limited. Light-sensitive vesicular recording materials and process of using. 4,215,191, Cl. 430-152.000.

Kyle, Allan H. Industrial sweeper. 4,214,338, Cl. 15-83.000.

Laban, Ernst A. Denture construction. 4,214,366, Cl. 433-189.000.

Labbe, Francis A. M.; Rakowicz, Jan A.; and Ahern, Ronald A., to Molins Limited. Cigarette making machines. 4,214,595, Cl. 131-108.000.

Lacchia, Adrien, to Air Industrie. Electrostatic paint spray apparatus having rotary spray head with an air seal. 4,214,708, Cl. 239-703.000.

LaConti, Anthony B.: *See—*
Coker, Thomas G.; LaConti, Anthony B.; Balko, Edward N.; and McGray, George B., 4,214,958, Cl. 204-98.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Brevets Georges Claude: *See—*
Jourdan-Laforte, Eric, 4,215,058, Cl. 260-348.270.

LaLonde, Carl H.: *See—*
Gebhardt, Dale H.; and LaLonde, Carl H., 4,214,409, Cl. 52-127.000.

Lambert, Dennis L.; and Lantz, Paul R., to John Fluke Mfg. Co., Inc. Low frequency signal period or ratio (period)-to-voltage converter. 4,215,315, Cl. 328-140.000.

Lambert, Donald L., to Rockwell International Corporation. Digital conferencing apparatus. 4,215,247, Cl. 179-18.0BC.

Lancre, Jean C.: *See—*
Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert; 4,215,278, Cl. 307-116.000.

Landis, Delmer H., Jr.: *See—*
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,851, Cl. 415-115.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,852, Cl. 415-115.000.

Landsness, Clifford A.: *See—*
Horr, Arthur N.; and Landsness, Clifford A., 4,214,941, Cl. 156-414.000.

Landucci, Dennis P., to Minnesota Mining and Manufacturing Company. Fluoroaliphatic radical and carbodiimide containing compositions for fabric treatment. 4,215,205, Cl. 525-331.000.

Langer, Arthur W., Jr., to Exxon Research & Engineering Co. $T_nMR'_2$-cocatalysts. 4,215,014, Cl. 252-429.00B.

Langer, Manfred; and Siebels, Johann, to Volkswagenwerk Aktiengesellschaft. Method of producing an article which comprises a first zone of a nonoxide ceramic material and a second zone of a softer material. 4,214,906, Cl. 75-208.00R.

Lantz, Paul R.: *See—*
Lambert, Dennis L.; and Lantz, Paul R., 4,215,315, Cl. 328-140.000.

Lantzsch, Reinhard, to Bayer Aktiengesellschaft. Preparation of halogenovinyl-γ-butyrolactones. 4,215,050, Cl. 260-343.600.

Largo, Edward J.: *See—*
Gee, Arthur; Largo, Edward J.; and Plesinger, Boris M., 4,214,706, Cl. 239-553.300.

Larsson, Stig-Goran, to Xerox Corporation. Suppression of cross-coupling in multi-orifice pressure pulse drop-ejector systems. 4,215,354, Cl. 346-140.00R.

Lass, John L., to Square D Company. Screw mounting mechanism for electrical outlet box. 4,214,667, Cl. 220-3.200.

Lassche, Jakob, to Hugo Kern und Liebers & Co. Apparatus for the winding of helical springs. 4,214,466, Cl. 72-142.000.

Lataire, Philippe W. R. M. G.; Magetto, Gaston; and Van Eck, Jean-Louis. Apparatus for controlling the operation of power transistors in a switching mode. 4,215,279, Cl. 307-254.000.

Latham, Eldon A.: *See*—
Sorensen, Norman E.; and Latham, Eldon A., 4,214,703, Cl. 239-127.300.

Latham, Raymond E. Bore seal. 4,214,763, Cl. 277-167.500.

Latka, Herbert: *See*—
Krings, Peter; Huppertz, Josef; Latka, Herbert; Sperling, Gerhard; Schwuger, Milan J.; and Smolka, Heinz, 4,215,007, Cl. 252-174.250.

Lauterbach, Heinz, to Robert Bosch GmbH. System and method for eliminating errors in airflow measurement apparatus. 4,214,478, Cl. 73-204.000.

Lauwick, Bernard: *See*—
Barbier, Daniel; Lancre, Jean C.; Lauwick, Bernard; and Poujois, Robert, 4,215,278, Cl. 307-116.000.

Lawrance, Richard J., to General Electric Company. Low cost bipolar current collector-separator for electrochemical cells. 4,214,969, Cl. 204-255.000.

Leach, George S.: *See*—
Clark, Kenneth L.; Leach, George S.; and Howard, Robert W., 4,214,917, Cl. 148-1.500.

Leatherman, Nelson E.: *See*—
Imbruce, Richard; and Leatherman, Nelson E., 4,214,593, Cl. 128-748.000.

Le Breton, Edward T.: *See*—
Takacs, Robert J.; Brunkhurst, Winfield S.; and Le Breton, Edward T., 4,214,611, Cl. 138-30.000.

Leddy, James J.: *See*—
Heikel, Henrik R.; and Leddy, James J., 4,214,971, Cl. 204-290.00F.

Lee, Bobby L. Artificial flowers and method for their manufacture, unistem. 4,215,163, Cl. 428-24.000.

Lee, Lawrence L. Dental floss applicator. 4,214,598, Cl. 132-92.00R.

Lee, Sin H. Cytochemical agents and methods for the detection of steroid hormone receptors in human tissues. 4,215,102, Cl. 424-3.000.

Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., to Compagnie Francaise des Petroles; Societe Nationale Elf Aquitaine (Production); Ateliers et Chantiers de Bretagne—A.C.B.; Etudes Petrolieres Marines; Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines (DORIS); and Compagnie Maritime d'Expertises. Butt-welding apparatus for assembling and laying pipe strings in deep water. 4,214,692, Cl. 228-44.10R.

Lehmann, Rolf, to Escher Wyss Limited. Controlled deflection roll. 4,214,354, Cl. 29-116.0AD.

Leibowitz, Marshall; Willis, Alan; and George, Douglas, to Timex Corporation. Electrochromic display having enhanced night viewability. 4,214,820, Cl. 350-357.000.

Leitner, Kajetan. Torque transmission clutch. 4,214,459, Cl. 64-29.000.

Lejon, Jean, to Controle Bailey. Process for the automatic signalling of faults of a static automatic module and a module for realizing the process. 4,215,340, Cl. 340-507.000.

Lemelson, Jerome H. Cartridge magnetic recorder. 4,215,379, Cl. 360-85.000.

Lemke, Harold C., to American Can Company. Adhesive bonding of assembly parts. 4,214,944, Cl. 156-518.000.

Le Page, Jean-Francois; Martino, Germain; and Miquel, Jean, to Societe Francaise des Produits pour Catalyse. Catalytic hydroreforming process. 4,214,980, Cl. 208-139.000.

Lermann, Peter: *See*—
Stemme, Otto; Lermann, Peter; Wagensonner, Eduard; and Cocron, Istvan, 4,214,824, Cl. 354-23.00D.

Leskinen, Mikko: *See*—
Suovaniemi, Osmo; and Leskinen, Mikko, 4,215,092, Cl. 422-100.000.

Lever Brothers Company: *See*—
Morris, Ronald M.; and Pratley, Stuart K., 4,214,997, Cl. 252-8.800.

Levine, Abraham I. Applicating device. 4,214,681, Cl. 222-214.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal pyrimidine and triazine sulfonamides. 4,214,890, Cl. 71-90.000.

Levolor Lorentzen, Inc.: *See*—
Debs, Victor, 4,214,622, Cl. 160-168.00A.

Lewers, William R.: *See*—
Bulso, Joseph D., Jr.; and Lewers, William R., 4,214,471, Cl. 72-349.000.

Lewis, John: *See*—
Youngberg, Fred A.; and Zierhut, Clarence D., 4,214,340, Cl. 15-184.000.

Lewis, John G., to Emerson Electric Co. Splash shield for electric motor. 4,215,285, Cl. 310-90.000.

Lewis, Joseph J.; and Webb, Robert L., to SK&F Lab Co. Process for preparing 4-substituted imidazole compounds. 4,215,217, Cl. 544-139.000.

Liberman, Arthur L.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.

Lieder, Gaylerd M., to Bemis Company, Inc. Bag top forming and retaining apparatus. 4,214,417, Cl. 53-371.000.

Lillie, Christian: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,215,133, Cl. 424-273.00R.

Lilly Industries Limited: *See*—
Horwell, David C.; and Timms, Graham H., 4,215,074, Cl. 260-563.00P.

Lindblad, Sture V., to Stiga AB. Noise damping arrangement in rotating cutting devices. 4,214,426, Cl. 56-295.000.

Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., to Johnson & Johnson; and Mona Industries, Inc. Phosphobetaines. 4,215,064, Cl. 260-403.000.

Linear International: *See*—
Brimer, Claude M., 4,215,303, Cl. 318-752.000.

Linton Medical Services Limited: *See*—
Millington, Arthur R., 4,215,103, Cl. 424-4.000.

Lipp, Eberhard: *See*—
Lucke, Roland; and Lipp, Eberhard, 4,214,376, Cl. 34-10.000.

List, Karl-Hermann: *See*—
Uhrig, Heinz; List, Karl-Hermann; and Deubel, Reinhold, 4,214,872, Cl. 8-589.000.

Little, Richard L., to Daig Corporation. Temporary pacemaker lead apparatus. 4,214,594, Cl. 128-786.000.

Little, Richard L., to Daig Corporation. Press fit electrical connection apparatus. 4,214,804, Cl. 339-183.000.

Lochridge, Joe C.: *See*—
Boehme, Herman F.; Srivastav, Avadhesh N. L.; and Lochridge, Joe C., 4,214,387, Cl. 37-195.000.

Lockheed Electronics Co., Inc.: *See*—
Bigley William J.; and Rizzo, Vincent J., 4,215,298, Cl. 318-327.000.

Login, Robert B., to BASF Wyandotte Corp. Aqueous dispersion of a branched polyester. 4,215,026, Cl. 260-292.00E.

Long, Charles H., to Stout Industries, Inc. Counterbalance display sign. 4,214,393, Cl. 40-613.000.

Long, John W.: *See*—
Manger, Charles W.; Fickes, Michael G.; and Long, John W., 4,215,193, Cl. 430-291.000.

Loontjens, Jacobus A., to Stamicarbon, B.V. Process for the polymerization of 1-alkenes. 4,215,013, Cl. 252-429.00B.

L'Oreal: *See*—
Bauer, Daniel; and Braque, Gerard, 4,214,677, Cl. 222-145.000.

Losell, Ingvar E., to Gambro AB. Coupling device. 4,214,779, Cl. 285-93.000.

Lotti, Victor J.; and Stone, Clement A., to Merck & Co., Inc. Method of treating hypertension. 4,215,110, Cl. 424-177.000.

Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., to Block Drug Company Inc. Propoxylate toxicants. 4,215,116, Cl. 424-217.000.

Lowe, David J., to National Research Development Corporation. Chart recorders. 4,215,351, Cl. 346-136.000.

Lowe, Edward J.; Wilson, Arthur; and Minshall, Michael W., to Albright & Wilson Limited. Purification of wet process phosphoric acid. 4,215,098, Cl. 423-305.000.

Lowe, Norman C.: *See*—
Dillarstone, Alan; Lowe, Norman C.; and Cropper, Edwin, 4,214,915, Cl. 134-19.000.

Lowe, Robert E.: *See*—
Seibold, Robert W.; Parechanian, Haig S.; Weatherill, William T.; and Lowe, Robert E., 4,215,161, Cl. 427-228.000.

Lozier, Paul W.: *See*—
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,851, Cl. 415-115.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., 4,214,852, Cl. 415-115.000.

Lucas Industries Limited: *See*—
Mowbray, Dorian F., 4,214,562, Cl. 123-568.000.
Skinner, Robert T. J., 4,214,564, Cl. 123-502.000.

Lucas, Malcolm B.; and Van Coney, H. Robert, to Procter & Gamble Company, The. Method of making a perforated tubular member. 4,214,945, Cl. 156-634.000.

Luccarelli, Domenick, Jr.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.

Lucke, Roland; and Lipp, Eberhard, to Gerbruder Lodige Maschinenbau-Gesellschaft mbH. Process and apparatus for the continuous drying and/or granulating of loose material. 4,214,376, Cl. 34-10.000.

Lummus Company, The: *See*—
Davis, Hyman R.; Nasr, Wagih I.; Roethlin, Siegfried M.; and Sherwood, Harold D., 4,214,975, Cl. 208-33.000.

Lutts, William M. Automatic rail greasing apparatus. 4,214,647, Cl. 184-3.00A.

Luxtron Corporation: *See*—
Wickersheim, Kenneth A., 4,215,275, Cl. 250-459.000.

Lynch, Donald M.: *See*—
Lover, Myron J.; Singer, Arnold J.; and Lynch, Donald M., 4,215,116, Cl. 424-217.000.

Lyzlov, Vladimir M.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.

M. H. Graham Corporation: *See*—
Graham, Elwood M., 4,214,714, Cl. 241-93.000.
Graham, Elwood M., 4,214,715, Cl. 241-93.000.

Mabrouk, Saied A.; Morgan, Edward T.; and Davis, James W. Ink and moisture control with master condition compensation. 4,214,523, Cl. 101-148.000.

Macdonald, Timothy: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.

MacDoran, Peter F.: *See*—
United States of America, National Aeronautics and Space Administration; and MacDoran, Peter F., 4,215,345, Cl. 343-112.00R.

Mace, Richard W., to Ramseyer, John W., a part interest. Electrical testing apparatus. 4,215,306, Cl. 320-2.000.

MacElvain, Robert C. Magnetic separation. 4,214,984, Cl. 209-214.000.

Mach, Helmut, to U.S. Philips Corporation. Circuit arrangement for the digital correction of time base errors of a television signal using variable addressing of a memory. 4,215,376, Cl. 360-36.000.

Machat, Jean-Yves: *See*—
Chapuis, Maurice; and Machat, Jean-Yves, 4,214,711, Cl. 241-30.000.

Machines Chambon S.A.: *See*—
Corse, Louis G., 4,214,524, Cl. 101-181.000.

Mack, Heinz; and Singer, Gunter, to Mack, Heinz. Dental articulator. 4,214,367, Cl. 433-60.000.

Mack, William: *See*—
Walter, Henry J.; and Mack, William, 4,214,365, Cl. 30-224.000.

MacLeod, Edward N., to General Electric Company. Wet proofed conductive current collector for the electrochemical cells. 4,215,183, Cl. 429-30.000.

Maeno, Shizuo: *See*—
Kamiya, Takashi; Maeno, Shizuo; and Kitaura, Yoshihiko, 4,215,043, Cl. 260-239.30B.

Maes, Robert H.: *See*—
Verhulst, Dirk E. V.; Maes, Robert H.; and Fontainas, Luc M., 4,214,897, Cl. 75-11.000.

Maffet, Vere, to UOP Inc. Mechanical dewatering process. 4,214,377, Cl. 34-12.000.

Magee, Thomas A., to Diamond Shamrock Corporation. Ketoxime carbamates. 4,215,075, Cl. 260-566.0AC.

Magetto, Gaston: *See*—
Lataire, Philippe W. R. M. G.; Magetto, Gaston; and Van Eck, Jean-Louis, 4,215,279, Cl. 307-254.000.

Magloire, Charles J.: *See*—
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Magna Corporation: *See*—
Kissel, Charles L.; and Caserio, Frederick F., Jr., 4,215,147, Cl. 424-333.000.
Kissel, Charles L.; and Caserio, Frederick F., Jr., 4,215,148, Cl. 424-333.000.

Mahaffey, Jack L., II: *See*—
Pavicic, Mark J.; and Mahaffey, Jack L., II, 4,215,399, Cl. 364-101.000.

Mahig, Joseph. Phase responsive frequency detector. 4,215,280, Cl. 307-295.000.

Mahl, Gunard O. B., to CHA Industries. Evacuation apparatus with cryogenic pump and trap assembly. 4,214,853, Cl. 417-154.000.

Mahoney, Gerard E., to Bell Telephone Laboratories, Incorporated. Process useful in the fabrication of articles with metallized surfaces. 4,214,966, Cl. 204-192.00E.

Maier, Lawrence C., to Simmonds Precision Products, Inc. Capacitive type fuel probe compensation circuit. 4,214,479, Cl. 73-304.00C.

Mailliet, Pierre; and Ulveling, Leon, to Paul Wurth, S.A. Apparatus for opening and closing a fluid conduit. 4,214,608, Cl. 137-546.000.

Majerski, Stanislaw. Method for binary multiplication of a number by a sum of two numbers and a digital system for implementation thereof. 4,215,419, Cl. 364-760.000.

Majlinger, Thomas J., to Standard Brands Incorporated. Process for improving the palatability of pet food. 4,215,149, Cl. 426-292.000.

Makino, Koichi: *See*—
Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, 4,215,158, Cl. 427-130.000.

Makino, Shozaburo; and Otobe, Seiji, to Nippon Seren Co. Ltd. False reeling preventing apparatus for traverse thread reeling machines. 4,214,717, Cl. 242-36.000.

Maliczyszyn, Walter: *See*—
Mazzarella, Emil D.; Wood, Leonard J., Jr.; and Maliczyszyn, Walter, 4,214,948, Cl. 162-158.000.

Malley, Arthur, to Research Corporation. Modified grass pollen antigens. 4,215,036, Cl. 260-112.00R.

Mallinckrodt, Inc.: *See*—
Imbruce, Richard; and Leatherman, Nelson E., 4,214,593, Cl. 128-748.000.

Manger, Charles W.; Fickes, Michael G.; and Long, John W., to Du Pont de Nemours, E. I., and Company. Dry toner process with improved toning uniformity for color developing an imaged tacky and nontacky surface. 4,215,193, Cl. 430-291.000.

Mannesmann Aktiengesellschaft: *See*—
Vorbach, Emil, 4,214,468, Cl. 72-189.000.

Manning, James F., to Champion International Corporation. Liquid gable top carton with integral carrying handle. 4,214,697, Cl. 229-52.00B.

Marano, Ross T.: *See*—
Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., 4,215,407, Cl. 364-468.000.

Marburg, Stephen: *See*—
Kollonitsch, Janos; and Marburg, Stephen, 4,215,221, Cl. 548-344.000.

Marciniak, Harry W.; Carlson, Richard D.; and Dever, James L., to Hooker Chemicals & Plastics Corp. Flame retardant polymeric compositions containing halogenated Diels-Alder adducts with furan. 4,215,034, Cl. 260-45.80A.

Marco, Francis W.; and Kuhn, Hans H., to Milliken Research Corporation. Elastomer modified textile material and method of producing same. 4,215,171, Cl. 428-245.000.

Mares, Frank: *See*—
Diamond, Steven E.; and Mares, Frank, 4,215,218, Cl. 546-162.000.

Maringer, Robert E., to Battelle Development Corporation, The. Method and apparatus for producing flake particles. 4,215,084, Cl. 264-8.000.

Markov, Sergei I.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Marley, James E.: *See*—
Coldren, Daniel R.; and Marley, James E., 4,214,361, Cl. 29-863.000.

Marlow, Donald R.: *See*—
Jarrell, Edward C.; Marlow, Donald R.; Tetens, Howard B.; and Gulick, Joseph F., 4,215,347, Cl. 343-117.00R.

Marmon Company: *See*—
Holpuch, Robert J.; Mathias, Robert G.; and Young, Alan C., 4,214,502, Cl. 84-1.240.

Marquardt, Klaus-Dieter: *See*—
Woeckener, Willi; Pawelczyk, Werner; and Marquardt, Klaus-Dieter, 4,214,857, Cl. 425-141.000.

Marquette Electronics, Inc.: *See*—
Reiser, Gerald J., 4,215,236, Cl. 174-59.000.

Martelli, Guglielmo. Device for feeding sheets to boxing machines. 4,214,742, Cl. 271-69.000.

Martin, Chloeta F.: *See*—
Martin, Theodore O., Jr., 4,215,178, Cl. 428-421.000.

Martin, Eugene C.; and Adicoff, Arnold, to United States of America, Navy. Room temperature cured elastomer. 4,215,046, Cl. 260-326.260.

Martin, Jean-Marie M. Machine for drying and butt-jointing wood veneer by continuous contact engagement. 4,214,378, Cl. 34-148.000.

Martin, Theodore O.; Jr., to Martin, Chloeta F., a part interest. Non-stick rubber liner. 4,215,178, Cl. 428-421.000.

Martin, Walter L., Jr., to PPG Industries, Inc. Air fin coolers for glass fiber forming apparatus. 4,214,884, Cl. 65-12.000.

Martinmaas, Werner W. Quickly adjustable ratchet wrench. 4,214,491, Cl. 81-134.000.

Martino, Germain: *See*—
Le Page, Jean-Francois; Martino, Germain; and Miquel, Jean. 4,214,980, Cl. 208-139.000.

Martins, Joseph G.: *See*—
Donermeyer, Donald D.; and Martins, Joseph G., 4,215,159, Cl. 427-142.000.

Marvin Glass & Associates: *See*—
Kulesza, Ralph J.; and Breslow, Jeffrey D., 4,214,749, Cl. 273-1.00R.

Marysville Rotary Broom Service, Inc.: *See*—
Drumm, Arthur E., 4,214,339, Cl. 15-179.000.

Mascetti, B.: *See*—
Friedl, V. L.; and Mascetti, B., 4,214,516, Cl. 99-421.00P.

Maschinenfabrik Buckau R. Wolf Aktiengesellschaft: *See*—
Jochum, Friedrich; and Glaser, Heinz, 4,214,546, Cl. 114-270.000.

Maschinenfabrik Rau GmbH: *See*—
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Mason, Lonnie L., to Mullican, Vernon T. Coupling device. 4,214,771, Cl. 280-402.000.

Mason, Martin K., to Hewlett-Packard Company. Digital servo positioning circuit. 4,215,301, Cl. 318-603.000.

Massachusetts Institute of Technology: *See*—
Kassakian, John G., 4,215,420, Cl. 364-802.000.

Massey, Alan W., to Post Office. Carriers for mounting lightning protectors. 4,215,380, Cl. 361-119.000.

Massey-Ferguson Services N.V.: *See*—
Bailey, Alfred J.; and Sargent, Ronald S., 4,214,537, Cl. 111-85.000.
Schmitt, Helwig, 4,214,425, Cl. 56-228.000.

Masterwork, Inc.: *See*—
Shepherd, Stephan C., 4,215,194, Cl. 430-323.000.

Mathias, Robert G.: *See*—
Holpuch, Robert J.; Mathias, Robert G.; and Young, Alan C., 4,214,502, Cl. 84-1.240.

Mathison, Donald W., to Product Design and Engineering, Inc. Device and method for forming an annular raised rib on a tubular member. 4,215,087, Cl. 264-320.000.

Matsuda, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Motorized two-wheel vehicle having a V-type engine with angularly offset cylinder heads. 4,214,644, Cl. 180-226.000.

Matsuda, Wakatake: *See*—
Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, 4,215,158, Cl. 427-130.000.

Matsui, Fumio: *See*—
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Matsui, Sigeo: *See*—
Hagiwara, Zenzi; Matsui, Sigeo; Sakaguchi, Susumu; and Yamanaka, Yoshio, 4,215,008, Cl. 252-184.000.

Matsui, Toshiie: *See*—
Inoko, Michio; Kawatsuji, Shinichi; Matsui, Toshiie; and Yoshida, Shuu, 4,214,942, Cl. 156-500.000.

Matsumoto, Hiromitsu; and Yamashita, Ryuichi, to Yamaha Hatsukoki Kabushiki Kaisha. Induction system for an internal combustion engine. 4,214,561, Cl. 123-432.000.
Matsumoto, Mitsuo; and Tamura, Masuhiko, to Kuraray Co., Ltd. Hydroformylation of olefins. 4,215,077, Cl. 568-454.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kitano, Motoi; Sumita, Isao; and Sakamoto, Yukio, 4,214,994, Cl. 210-490.000.
Matsutani, Shin. Training bar. 4,214,382, Cl. 35-29.00R.
Matthey Bishop, Inc.: *See*—
Hunter, James B.; and McGuire, George, 4,214,867, Cl. 432-29.000.
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Combating arthropods with N,N-dimethyl-O-(3-substituted-pyrazol-5-yl)-carbamic acid esters. 4,215,132, Cl. 424-273.00P.
Mawatari, Shizuo; and Nishida, Takashi, to Kuraray Co., Ltd. Aquatic antifouling method. 4,214,909, Cl. 106-16.000.
Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Ruhenstroth-Bauer, Gerhard; and Scherer, Reiner, 4,215,109, Cl. 424-177.000.
Maxwell, Mary E.; and Froats, Ronald F., to Ford Motor Company. Exhaust gas oxygen sensor and electrical connector arrangement. 4,214,472, Cl. 73-23.000.
Maxwell, Ronald K., to Racal-Vadic Inc. Automatic modem identification system. 4,215,243, Cl. 179-2.0DP.
Mayhew, Donald J.: *See*—
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Mayhew, Raymond L.: *See*—
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., 4,215,064, Cl. 260-403.000.
Mazzarella, Emil D.; Wood, Leonard J., Jr.; and Maliczyszyn, Walter, to National Starch and Chemical Corporation. Method of sizing paper. 4,214,948, Cl. 162-158.000.
MCC Associates: *See*—
Chiang, David, 4,215,302, Cl. 318-696.000.
McCall, Francis L., to Specified Ceiling Systems. Drop ceiling air diffuser with horizontal discharge pattern. 4,214,512, Cl. 98-40.00D.
McCall, Samuel L., Jr., to Bell Telephone Laboratories, Incorporated. Instability and regenerative pulsation in optical cavities. 4,215,323, Cl. 332-7.510.
McCarthy, Alfred F., to Aavid Engineering, Inc. Winged self-fastened heat sinks for semiconductor devices. 4,215,361, Cl. 357-81.000.
McCarty, Henry G.: *See*—
Raseley, LeRoy J.; Collier, Samuel J.; and McCarty, Henry G., 4,214,883, Cl. 55-426.000.
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., to Ramsey Corporation. Rolled metal piston ring. 4,214,762, Cl. 277-138.000.
McCray, William R.; and Rutkowski, Edward V., Jr., to International Business Machines Corporation. Selectively modifiable phrase storage for a typewriter. 4,215,422, Cl. 364-900.000.
McCrea, Frank E.: *See*—
United States of America, National Aeronautics and Space Administration; and McCrea, Frank E., 4,215,327, Cl. 333-252.000.
McDonald, George K., to McDonald, George K. Brush stick. 4,214,346, Cl. 19-60.000.
McDonald, Walter; and Seitel, Norbert F., to Norwalt Design, Inc. Cap orienting and feeding apparatus. 4,214,656, Cl. 198-380.000.
McDonnell Douglas Corporation: *See*—
Seibold, Robert W.; Parechanian, Haig S.; Weatherill, William T.; and Lowe, Robert E., 4,215,161, Cl. 427-228.000.
McEwan, Ian H.: *See*—
Heppolette, Robert L.; Khan, Hamid I.; and McEwan, Ian H., 4,215,027, Cl. 260-29.4UA.
McGinnis, James P.: *See*—
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McGrath, Ronald J.: *See*—
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McGray, George B.: *See*—
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McGuire, George: *See*—
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McKee, William H.; and Plummer, Glenn W., to TRW Inc. Connector cable clamp construction. 4,214,803, Cl. 339-103.00R.
McKenry, Robert J., to Kennametal Inc. Stump cutter. 4,214,617, Cl. 144-2.00N.
McKesson Company: *See*—
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McKibbin, Dean K.; Hills, Richard E.; Blackman, Joel; and Kuhs, Franklin A., to Pittsburgh-Des Moines Steel Company. Floating roof drainage system. 4,214,671, Cl. 220-219.000.
McKinnon, Wayne E.: *See*—
Hollyday, Robert D.; and McKinnon, Wayne E., 4,214,800, Cl. 339-45.00M.
McKinzie, Howard; and Trickett, Elizabeth A., to GTE Laboratories Incorporated. Method of preparing modified titanium dioxide photoactive electrodes. 4,215,155, Cl. 427-74.000.
McMillen, Kenneth R., to Hesston Corporation. Forage harvester with adjustable crop guidance apparatus. 4,214,422, Cl. 56-119.000.
McNaney, Joseph T. Prismatic light beam expander or compressor means. 4,214,813, Cl. 350-152.000.
McNaney, Joseph T. Prismatic light beam expansion or compression system. 4,214,817, Cl. 350-286.000.
McNeil-Akron, Inc.: *See*—
Smith, Thomas W., 4,215,336, Cl. 340-177.0CA.
McNeil, William J.; and Severson, Richard F., to Oregon Aqua-Foods, Inc. Fish egg supporting system. 4,214,551, Cl. 119-3.000.
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Mead Johnson & Company: *See*—
Ullman, Michael K.; David, Stephen T.; and Gallian, Claude E., 4,215,104, Cl. 424-15.000.
Meier, Eric A.: *See*—
Ray-Chaudhuri, Dilip K.; and Meier, Eric A., 4,215,209, Cl. 526-292.000.
Meier, Jacques, to Ferag AG. Apparatus for dividing a continuous stream of flat products, especially printed products, into individual sections. 4,214,743, Cl. 271-182.000.
Meisen, Klaus, to Kleinewefers GmbH. Device for pre-treating and post-treating a textile web. 4,214,462, Cl. 68-205.00R.
Meisen, Klaus: *See*—
Schiffer, Gunter; Meisen, Klaus; Sunnen, Rudolf; and Heidan, Klaus, 4,214,461, Cl. 68-158.000.
Melamed, Sidney; Novak, Ronald W.; and Neyhart, Clarence J., to Rohm and Haas Company. Coating concrete with latex polymers. 4,215,179, Cl. 428-451.000.
Memering, Leroy J.; and Pyle, Lorrin W., to National Distillers and Chemical Corporation. Thermally stable sulfur dioxide-ethylene-vinyl ester terpolymers and process for preparing same. 4,215,035, Cl. 260-45.75W.
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; Traunecker, Werner; and Hoefke, Wolfgang, to Boehringer Ingelheim GmbH. Aminoalkyl-substituted benzimidazolidin-2-ones. 4,215,119, Cl. 424-248.500.
Mercer, William I.: *See*—
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Merck & Co., Inc.: *See*—
Bolhofer, William A., 4,215,121, Cl. 424-250.000.
Buynak, Eugene B.; and Hilleman, Maurice R., 4,215,107, Cl. 424-89.000.
Christensen, Burton G.; and DiNinno, Frank P., 4,215,124, Cl. 424-263.000.
Kollonitsch, Janos; and Marburg, Stephen, 4,215,221, Cl. 548-344.000.
Lotti, Victor J.; and Stone, Clement A., 4,215,110, Cl. 424-177.000.
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Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Pohl, Ludwig; Eidenschink, Rudolf; Krause, Joachim; and Weber, Georg, 4,214,819, Cl. 350-334.000.
Mericle, Robert W. Anastomotic coupling device. 4,214,586, Cl. 128-334.00R.
Merz, Kenneth M.: *See*—
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Metallurgie Hoboken Overpelt: *See*—
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Metzeler Kautshuk AG: *See*—
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Metzger, Karl G.: *See*—
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Meyer, Stephen T., to Deflecto Corporation. Dryer exhaust vent. 4,214,380, Cl. 34-235.000.
Meyer, Thomas N.: *See*—
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Meyer, Victor E.: *See*—
Saunders, Frank L.; and Meyer, Victor E., 4,215,029, Cl. 260-33.8UA.
Mezzanotte, Mario, to Industrie Pirelli, S.p.A. Radial tires having a sidewall stiffening circumferential structure. 4,214,620, Cl. 152-354.00R.
Michal, Eugene J.; Fekete, Simon O.; and Roorda, H. Jan, to Amax Inc. Hydrometallurgical refining of nickeliferous sulfides. 4,214,901, Cl. 75-119.000.
Middleton, William J., to Du Pont de Nemours, E. I., and Company. Synthesis of α-fluorocarbonyl compounds. 4,215,044, Cl. 260-239.30D.
Midland-Ross Corporation: *See*—
Aaron, Charles, 4,214,525, Cl. 101-181.000.
Munch, Emil L., 4,214,349, Cl. 24-16.0PB.
Thekdi, Arvind C.; Hemsath, Klaus H.; and Vereecke, Frank J., 4,214,866, Cl. 432-12.000.
Thekdi, Arvind C.; Hemsath, Klaus H.; Conybear, James G.; Vereecke, Frank J.; and Verhoff, Steven H., 4,214,869, Cl. 432-31.000.
Mielke, Klaus H.; and Mielke, Ulf H. Ink jet printing apparatus with two different jet spacings. 4,215,350, Cl. 346-75.000.
Mielke, Ulf H.: *See*—
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Miles Laboratories, Inc.: *See*—
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Milewski, John V.: *See*—
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Miller, Granville G.: *See*—
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Miller, Michael E.: *See*—
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Milliken Research Corporation: *See*—
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Millington, Arthur R., to Linton Medical Services Limited. Method for producing a preparation for diagnostic radiology and apparatus therefor. 4,215,103, Cl. 424-4.000.
Mills, Melvin E., Jr.: *See*—
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Minnesota Mining and Manufacturing Company: *See*—
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Jonas, Walter K., 4,214,662, Cl. 206-555.000.
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Mino, Junryo: *See*—
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Minolta Camera Kabushiki Kaisha: *See*—
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Kono, Tateomi, 4,214,833, Cl. 355-14.00C.
Ogino, Shuji; Ogura, Toshinobu; Okano, Yukio; and Nakamura, Akiyoshi, 4,214,814, Cl. 350-188.000.
Tominaga, Shinji; Imura, Toshinori; Yamada, Seiji; and Kogure, Yasuzi, 4,214,827, Cl. 354-127.000.
Yamaguchi, Tamikazu, 4,214,816, Cl. 350-218.000.
Minshall, Michael W.: *See*—
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Miotti, Giosue, to Comar reg. Trust. Method of and apparatus for measuring the deviation of the center axis of bore holes and trenches relative to the design vertical center axis thereof. 4,214,374, Cl. 33-300.000.
Miquel, Jean: *See*—
Le Page, Jean-Francois; Martino, Germain; and Miquel, Jean, 4,214,980, Cl. 208-139.000.
Mirow, George, to White Consolidated Industries, Inc. Plate cylinder side register adjustment. 4,214,528, Cl. 101-248.000.
Misak, Marvin D.: *See*—
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Misiorny, Alfons: *See*—
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Misumi, Akira; Suzuki, Yukio; and Sunahara, Kazuo, to Hitachi, Ltd. Oxide-coated cathodes for electron tubes. 4,215,180, Cl. 428-553.000.
Mita Industrial Company, Ltd.: *See*—
Nakazawa, Toru; Nagahashi, Keiichi; and Aizawa, Tatsuo, 4,214,907, Cl. 430-82.000.
Mitamura, Ichiro; and Yasumura, Masayuki, to Sony Corporation. Television deflection circuit. 4,215,296, Cl. 315-408.000.
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Mitchell, Glen R.; and Houdek, Merle E., to International Business Machines Corporation. Hash index table hash generator apparatus. 4,215,402, Cl. 364-200.000.
Mitscher, Lester A., to University of Kansas Endowment Association. Anthracycline synthesis. 4,215,062, Cl. 260-365.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Kato, Mari, 4,215,356, Cl. 357-22.000.
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,215,358, Cl. 357-56.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
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Mitsubishi Petrochemical Company Limited: *See*—
Okayama, Kiyoaki; and Yamamoto, Yojiro, 4,215,210, Cl. 528-93.000.
Mitsueda, Tommy. Mobile home earthquake support. 4,214,410, Cl. 52-143.000.
Mitsui Engineering and Shipbuilding Co., Ltd.: *See*—
Sasano, Kenji; and Shiramasa, Ichiro, 4,214,992, Cl. 210-274.000.
Mitsui, Shigeru: *See*—
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Miyata, Katsuhiko: *See*—
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Miyata, Teruo; Stenzel, Kurt H.; and Rubin, Albert L.; to Cornell Research Foundation, Inc. Chemically and enzymatically modified collagen hemostatic agent. 4,215,200, Cl. 435-273.000.
Miyazaki, Kenichi: *See*—
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Mizokami, Kazunori, to Olympus Optical Co., Ltd. Shutter control means with auto strobo for electrical shutter camera. 4,214,825, Cl. 354-33.000.
Mizuguchi, Ryuzo; Takahashi, Atushi; Ishikura, Shinichi; and Uenaka, Akimitsu, to Nippon Paint Co., Ltd. Thermosetting resin, and its production and use. 4,215,028, Cl. 260-29.6TA.
Mizuno, Shoji, to Nippon Electric Company, Ltd. Encoding device comprising predictors for thinned and unthinned patterns. 4,215,374, Cl. 358-260.000.
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Molins Limited: *See*—
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Gomez, I. Luis, 4,215,085, Cl. 264-15.000.
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Monzel, Fred J.; and Bobo, Melvin, to General Electric Company. Bearing assembly with multiple squeeze film damper apparatus. 4,214,796, Cl. 308-26.000.
Moodie, Donald E., to Polaroid Corporation. Multipurpose film cassette having one-piece rotating process mode switch. 4,214,822, Cl. 352-78.00R.
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., to International Flavors & Fragrances Inc. 2-and 3-Cyclotetradecen-1-one to augment or enhance the aroma of solid or liquid detergents. 4,215,006, Cl. 252-174.110.
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Morris, Robert L.: *See*—
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Morris, Ronald M.; and Pratley, Stuart K., to Lever Brothers Company. Soil-release compositions. 4,214,997, Cl. 252-8.800.
Morrison, D. Jon. Air foil apparatus. 4,214,786, Cl. 296-1.00S.
Moser, Rabin, to Xerox Corporation. Roll fuser apparatus and release agent metering system therefor. 4,214,549, Cl. 118-60.000.
Moteren-Und Turbinen-Union Munchen GmbH: *See*—
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Motoyama, Koichiro: *See*—
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Mouritsen, Thorvald E.; and Simpkin, William E., to United States of America, Navy. Infrared suppressor device. 4,214,441, Cl. 60-262.000.

Mowbray, Dorian F., to Lucas Industries Limited. Valve control arrangements. 4,214,562, Cl. 123-568.000.

Muccio, Nora M.: *See—*
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Mudge, Philip H.; Settanni, Richard; and Kahl, William G., Jr., to Arrowhead Enterprises, Inc. Adjustable mirror mount for photoelectric intrusion detector. 4,215,271, Cl. 250-216.000.

Mueller, Gary E. Break-away vent for grain storage bins. 4,214,511, Cl. 98-37.000.

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Camp, Albert T.; Mueller, Kurt F.; and Nauflett, George W., 4,214,929, Cl. 149-109.400.

Muller, Martin: *See—*
Bartel, Siegfried; Biedermann, Ernst; Rapp, Heinz; and Muller, Martin, 4,214,689, Cl. 226-21.000.

Muller, Reinhard: *See—*
Kaufmann, Rudolf; Braunling; Haberle, Norman; and Muller, Reinhard, 4,215.057, Cl. 260-347.500.

Muller, Rolf: *See—*
Papst, Georg; Schlicker, Volker; and Muller, Rolf, 4,214,690, Cl. 226-49.000.

Mullican, Vernon T.: *See—*
Mason, Lonnie L., 4,214,771, Cl. 280-402.000.

Munch, Emil L., to Midland-Ross Corporation. Tie wrap. 4,214,349, Cl. 24-16.0PB.

Munk, Edmund; and Henke, Hermann, to Werzalit-Pressholzwerk J.F. Werz Jr. KG. Method of and an apparatus for making preforms from a pourable substance. 4,214,861, Cl. 425-199.000.

Murabayashi, Hideki; Kawakita, Katsuhiko; Nakamura, Kisaku; and Kobatake, Sadao, to Tokyo Shibaura Electric Co., Ltd. Bismuth-tin-indium alloy. 4,214,903, Cl. 75-134.00D.

Murakami, Katsuo: *See—*
Nanjo, Hirotoshi; and Murakami, Katsuo, 4,214,566, Cl. 123-594.000.

Muramatsu, John J., to TRW Inc. Integrated multiplier-accumulator circuit with preloadable accumulator register. 4,215,416, Cl. 364-736.000.

Muramatsu, John J., to TRW Inc. Integrated digital multiplier circuit using current mode logic. 4,215,418, Cl. 364-757.000.

Murtha, Timothy P.: *See—*
Drake, Charles A.; and Murtha, Timothy P., 4,215,019, Cl. 252-466.00B.

Mutoh, Masayuk: *See—*
Kaieda, Shozo; Mutoh, Masayuk; and Kamimura, Kuniaki, 4,215,353, Cl. 346-140.00R.

Myers, Stewart W.; and Spencer, Homer K., to Sandoz, Inc. Benzoxazine herbicides. 4,214,889, Cl. 71-88.000.

Nady, John. Wireless transmission system. 4,215,431, Cl. 455-43.000.

Naffziger, John D. Ditch water cleaning apparatus. 4,214,988, Cl. 210-159.000.

Nagahashi, Keiichi: *See—*
Nakazawa, Toru; Nagahashi, Keiichi; and Aizawa, Tatsuo, 4,214,907, Cl. 430-82.000.

Nagai, Kazuyoshi. Process for fusion-bonding of resins. 4,214,935, Cl. 156-272.000.

Nagai, Masashi, to Rimrock Corporation. Reciprocator. 4,214,704, Cl. 239-187.000.

Nagashima, Kiyoshi; and Yamada, Tsugutoshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for recovering heat from exhaust gases of marine prime movers. 4,214,450, Cl. 60-648.000.

Naginskaya, Rakhil E.: *See—*
Sokolov, Igor D.; Ostanina, Vera A.; Safrygin, Jury S.; Rutkovskaya, Tatyana I.; Antonova, Nina V.; and Naginskaya, Rakhil E., 4,215,100, Cl. 423-552.000.

Naim, Houssam M.: *See—*
Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; Huie, Nicholas C.; and Schroeder, Hobe, 4,215,053, Cl. 260-346.700.
Schroeder, Hobe; Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; and Huie, Nicholas C., 4,215,052, Cl. 260-346.700.

Nakagaki, Shintaro: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Miyoshi, Tadayoshi; Motoyama, Koichiro; Miyazaki, Kenichi; and Yokokawa, Sumio, 4,215,364, Cl. 358-47.000.

Nakagawa, Takehiko: *See—*
Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, 4,215,158, Cl. 427-130.000.

Nakahara, James H.: *See—*
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,215,072, Cl. 260-551.00P.

Nakamura, Akiyoshi: *See—*
Ogino, Shuji; Ogura, Toshinobu; Okano, Yukio; and Nakamura, Akiyoshi, 4,214,814, Cl. 350-188.000.

Nakamura, Kazuhiko, to Olympus Optical Co., Ltd. Blood serum applicator for use in cataphoretic apparatus. 4,214,973, Cl. 204-299.00R.

Nakamura, Kisaku: *See—*
Murabayashi, Hideki; Kawakita, Katsuhiko; Nakamura, Kisaku; and Kobatake, Sadao, 4,214,903, Cl. 75-134.00D.

Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Chiyoda Chemical Engineering & Construction Co. Method of thermally cracking heavy petroleum oil. 4,214,979, Cl. 208-128.000.

Nakano, Kenichi: *See—*
Fujioka, Yasuo; and Nakano, Kenichi, 4,214,444, Cl. 60-322.000.

Nakano, Seizo: *See—*
Sakaguchi, Minoru; Oishi, Kazuaki; Nakano, Seizo; and Kishi, Tuneo, 4,215,256, Cl. 200-148.00D.

Nakazawa, Toru; Nagahashi, Keiichi; and Aizawa, Tatsuo, to Mita Industrial Company, Ltd. Photosensitive material for electrophotography having a polyvinyl carbazole derivative, phthalocyanine, and an electron-acceptor. 4,214,907, Cl. 430-82.000.

Nalco Chemical Company: *See—*
Payne, Charles C., 4,215,031, Cl. 260-40.00R.

Nanbu, Kiyoji: *See—*
Kobayashi, Shigeo; Yoshihara, Nori; Nanbu, Kiyoji; and Goto, Yukio, 4,215,032, Cl. 260-40.00R.

Nanjo, Hirotoshi; and Murakami, Katsuo, to Kokusan Denki Co., Ltd. Ignition system for an internal combustion engine. 4,214,566, Cl. 123-594.000.

Narco Scientific Industries, Inc.: *See—*
Smith, Frank P., 2nd., 4,215,346, Cl. 343-113.00R.

Narfgren, Rune, to AB Svenska Flaktfabriken. Connecting valve. 4,214,729, Cl. 251-149.200.

Nasr, Wagih I.: *See—*
Davis, Hyman R.; Nasr, Wagih I.; Roethlin, Siegfried M.; and Sherwood, Harold D., 4,214,975, Cl. 208-33.000.

Nasterlack, Joachim: *See—*
Bleidt, Rolf; Nasterlack, Joachim; Neubeck, Kurt; and Gareus, Achim, 4,214,474, Cl. 73-30.000.

National Blank Book Company, Inc.: *See—*
Sheehan, Robert F.; and Cassidy, Raymond T., 4,214,839, Cl. 402-31.000.

National Distillers and Chemical Corporation: *See—*
Memering, Leroy J.; and Pyle, Lorrin W., 4,215,035, Cl. 260-45.75W.

National Machinery Company, The: *See—*
Kin, Nelson I., 4,214,333, Cl. 10-20.000.

National Research Development Corporation: *See—*
Lowe, David J., 4,215,351, Cl. 346-136.000.

National Semiconductor Corporation: *See—*
Huang, Jen-Yen, 4,215,333, Cl. 338-322.000.

National Starch and Chemical Corporation: *See—*
Mazzarella, Emil D.; Wood, Leonard J., Jr.; and Maliczyszyn, Walter, 4,214,948, Cl. 162-158.000.
Ray-Chaudhuri, Dilip K.; and Meier, Eric A., 4,215,209, Cl. 526-292.000.

Nauflett, George W.: *See—*
Camp, Albert T.; Mueller, Kurt F.; and Nauflett, George W., 4,214,929, Cl. 149-109.400.

NCR Corporation: *See—*
Rhoads, Paul M., 4,215,392, Cl. 363-49.000.

Neaman, Raymond G.: *See—*
Christophersen, Steve; and Neaman, Raymond G., 4,215,079, Cl. 261-36.00R.

Nees, John: *See—*
Windisch, Lawrence; Nees, John; and Channing, Harry, 4,215,307, Cl. 320-2.000.

Neff, Steve W.; and Pate, Harold T., to Indian Head Inc. Electrical box and mounting bracket assembly. 4,214,668, Cl. 220-3.300.

Negishi, Kiyoshi; and Miyata, Katsuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Multi-layer flexible printed circuit board assembly. 4,215,387, Cl. 361-398.000.

Nelson, Alfred D.; and Jahnke, Merlin R., to Minnesota Mining and Manufacturing Company. Microwave oven window construction. 4,215,258, Cl. 219-10.55D.

Nelson, Bertel S.: *See—*
Nise, Wilfred C.; and Nelson, Bertel S., 4,214,337, Cl. 15-49.00R.

Nelson, Mark R.: *See—*
Flory, Robert E.; and Nelson, Mark R., 4,215,368, Cl. 358-139.000.

Netzow, Paul R.: *See—*
Weslow, Jerome H.; and Rodrian, James A., 4,215,410, Cl. 364-516.000.

Neubeck, Kurt: *See—*
Bleidt, Rolf; Nasterlack, Joachim; Neubeck, Kurt; and Gareus, Achim, 4,214,474, Cl. 73-30.000.

Neville, William A.: *See—*
Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., 4,214,996, Cl. 252-1.000.

Newman, Timothy L. Truck mounted railroad crane boom section. 4,214,665, Cl. 52-726.000.

Neyhart, Clarence J.: *See—*
Melamed, Sidney; Novak, Ronald W.; and Neyhart, Clarence J., 4,215,179, Cl. 428-451.000.

NGK Insulators, Ltd.: *See—*
Oda, Isao; Kaneno, Masayuki; and Yamamoto, Noboru, 4,214,666, Cl. 220-2.10R.
Sato, Mitsuhiro; and Kasahara, Noboru, 4,214,952, Cl. 204-14.00R.

Nidola, Antonio: *See—*
Spaziante, Placido M.; and Nidola, Antonio, 4,214,970, Cl. 204-265.000.

Niedermeyer, William P. Solar energy collector. 4,214,573, Cl. 126-438.000.

Nikly, Jean M. Cylinder head improvement, particularly for a diesel engine. 4,214,560, Cl. 123-41.770.

Nikolaev, Vladimir A.: *See—*
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Niles, Hollandra P.: *See—*
Gaffar, Abdul; and Niles, Hollandra P., 4,215,105, Cl. 424-57.000.

Niles Parts Co., Ltd.: *See—*
Ohki, Nobuyoshi, 4,215,254, Cl. 200-83.00C.

Nippon Columbia Kabushikikaisha: *See—*
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, 4,214,893, Cl. 75-0.5AA.

Nippon Electric Company, Ltd.: *See—*
Iijima, Yukihiko, 4,215,369, Cl. 358-146.000.
Kanemasa, Akira; and Sakaguchi, Hisashi, 4,215,415, Cl. 364-724.000.
Mizuno, Shoji, 4,215,374, Cl. 358-260.000.
Nishitani, Takao, 4,215,417, Cl. 364-736.000.
Usubuchi, Touru; and Iinuma, Kazumoto, 4,215,375, Cl. 358-261.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Adachi, Takeshi; and Okamoto, Eisaku, 4,214,500, Cl. 84-1.010.

Nippon Kayaku Kabushiki Kaisha: *See—*
Takahashi, Takeyoshi; Eto, Hirozumi; and Yoshioka, Osamu, 4,215,049, Cl. 260-343.30R.

Nippon Oil and Fats Co., Ltd.: *See—*
Inoue, Kazuhiro; and Matsui, Fumio, 4,214,927, Cl. 149-2.000.

Nippon Paint Co., Ltd.: *See—*
Mizuguchi, Ryuzo; Takahashi, Atushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,215,028, Cl. 260-29.6TA.

Nippon Seren Co. Ltd.: *See—*
Makino, Shozaburo; and Otobe, Seiji, 4,214,717, Cl. 242-36.000.

Nippon Telegraph and Telephone Public Corporation: *See—*
Hattori, Seizi; Nakagawa, Takehiko; Kobayashi, Kazuo; Makino, Koichi; and Matsuda, Wakatake, 4,215,158, Cl. 427-130.000.

Nippon Zeon Co. Ltd.: *See—*
Joh, Yasushi, 4,214,990, Cl. 210-194.000.

Nise, Wilfred C.; and Nelson, Bertel S., to Clarke-Gravely Corporation. Floor polisher. 4,214,337, Cl. 15-49.00R.

Nishi, Hideo. Method for producing miniature lamps. 4,214,885, Cl. 65-42.000.

Nishida, Takashi: *See—*
Mawatari, Shizuo; and Nishida, Takashi, 4,214,909, Cl. 106-16.000.
Ohnishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,215,230, Cl. 568-341.000.

Nishioka, Tetsuji; Asano, Masaharu; Anzai, Makoto; and Hosaka, Akio, to Nissan Motor Company, Limited. Fuel control method and system with a circuit for operating valve in effective working range. 4,214,558, Cl. 123-489.000.

Nishitani, Takao, to Nippon Electric Company, Ltd. Two-term vector multiplier. 4,215,417, Cl. 364-736.000.

Nishizawa, Yoichi: *See—*
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, 4,214,893, Cl. 75-0.5AA.

Nissan Chemical Industries, Ltd.: *See—*
Ozawa, Kiyomi; Ishii, Shigeru; Hayashi, Mamoru; Hirose, Masayoshi; and Nonaka, Ryoichi, 4,215,138, Cl. 424-282.000.

Nissan Motor Company, Limited: *See—*
Hosaka, Akio, 4,214,563, Cl. 123-437.000.
Nishioka, Tetsuji; Asano, Masaharu; Anzai, Makoto; and Hosaka, Akio, 4,214,558, Cl. 123-489.000.
Otani, Syuichi; and Kato, Shinichi, 4,214,802, Cl. 339-60.00M.

Nixon, John S., to Pilkington Brothers Limited. Rotary pan pelletizers. 4,214,863, Cl. 425-222.000.

Nonaka, Ryoichi: *See—*
Ozawa, Kiyomi; Ishii, Shigeru; Hayashi, Mamoru; Hirose, Masayoshi; and Nonaka, Ryoichi, 4,215,138, Cl. 424-282.000.

Noring, Josef: *See—*
Rudolph, Siegfried; and Noring, Josef, 4,214,989, Cl. 210-159.000.

Norlin Industries, Inc.: *See—*
Gross, Glenn M., 4,215,242, Cl. 179-1.00J.

Norprint Limited: *See—*
Figg, Anthony V. J., 4,214,938, Cl. 156-361.000.

Norris, Elwood G. Multi-speed tape cassette system. 4,215,377, Cl. 360-73.000.

Northern Telecom Limited: *See—*
St. Louis, Jacques R.; Thumm, Manfred; and Gale, Geoffrey N., 4,214,364, Cl. 29-827.000.

Northrop Corporation: *See—*
Bouchard, John R., 4,214,482, Cl. 73-504.000.

Norton Company: *See—*
Pemrick, Raymond E., 4,214,877, Cl. 51-295.000.

Norwalt Design, Inc.: *See—*
McDonald, Walter; and Seitel, Norbert F., 4,214,656, Cl. 198-380.000.

Nothdurft, Heinz: *See—*
Koster, Claus; Siegert, Joachim; and Nothdurft, Heinz, 4,214,476, Cl. 73-119.00A.

Novacek, Miroslav: *See—*
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, Jan; and Kasparek, Zdenek, 4,214,352, Cl. 28-254.000.

Novak, Ronald W.: *See—*
Melamed, Sidney; Novak, Ronald W.; and Neyhart, Clarence J., 4,215,179, Cl. 428-451.000.

NRM Corporation: *See—*
Enders, George E., 4,214,939, Cl. 156-398.000.

Nurse, William W. Pick up container for three point tractor hitch. 4,214,776, Cl. 280-760.000.

Nuwayser, Elie S., to Abcor, Inc. Glove for use with organic solvents. 4,214,321, Cl. 2-167.000.

O'Connor, John R.: *See—*
Dobson, Richard A.; and O'Connor, John R., 4,215,137, Cl. 424-274.000.

Oda, Isao; Kaneno, Masayuki; and Yamamoto, Noboru, to NGK Insulators, Ltd. Tubular discharge envelope composed of a polycrystalline transparent alumina and a high-pressure vapor discharge lamp using the same. 4,214,666, Cl. 220-2.10R.

Odermann, Charles R., to Singer Company, The. Low bobbin thread detection system including photodetector holder shielded with plastic lens. 4,214,542, Cl. 112-278.000.

Off, Joseph W. A.; Early, Judson H.; and Greer, William B., to Haggar Company. Apparatus for and method of depositing adhesive strips. 4,214,933, Cl. 156-238.000.

Ogawa & Co., Ltd.: *See—*
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,214,892, Cl. 71-93.000.

Ogawa, Hiroshi: *See—*
Takigawa, Hiroyoshi; Ogawa, Hiroshi; Ohkuni, Shinichiro; and Yahagi, Mitsuhisa, 4,214,618, Cl. 152-209.00D.

Ogawa, Iwakichi, to Takara Co., Ltd. Toy assembly with reconfigurable parts and removable appendages. 4,214,402, Cl. 46-17.000.

Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, to Bridgestone Tire Company Limited; and Ube Industries, Ltd. Coating rubber composition for tire cords. 4,215,021, Cl. 260-5.000.

Ogawa, Shinsaku; and Kanke, Tsutomu, to Asahi Kasei Kogyo Kabushiki Kaisha. System for electrolysis of sodium chloride by ion-exchange membrane process. 4,214,957, Cl. 204-98.000.

Ogawa, Toshiyuki: *See—*
Kono, Masao; Tani, Tatsuo; Ogawa, Toshiyuki; and Ariyama, Kenzo, 4,214,832, Cl. 355-8.000.

Ogino, Shuji; Ogura, Toshinobu; Okano, Yukio; and Nakamura, Akiyoshi, to Minolta Camera Kabushiki Kaisha. Variable soft focus lens system. 4,214,814, Cl. 350-188.000.

Ogura, Toshinobu: *See—*
Ogino, Shuji; Ogura, Toshinobu; Okano, Yukio; and Nakamura, Akiyoshi, 4,214,814, Cl. 350-188.000.

O'Hanlon, Edward J. Solar heat collector. 4,214,574, Cl. 126-446.000.

Ohashi, Saichiro, to Fuji Photo Film Co., Ltd. Photographic camera with built-in optical converter. 4,214,829, Cl. 354-197.000.

Ohki, Nobuyoshi, to Niles Parts Co., Ltd. Pressure switch with resiliently mounted contact. 4,215,254, Cl. 200-83.00C.

Ohkuni, Shinichiro: *See—*
Takigawa, Hiroyoshi; Ogawa, Hiroshi; Ohkuni, Shinichiro; and Yahagi, Mitsuhisa, 4,214,618, Cl. 152-209.00D.

Ohmura, Yoshimoto, to Sony Corporation. Record player. 4,214,756, Cl. 274-23.00R.

Ohnishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, to Kuraray Co., Ltd. Production of ionones and irones by thermal rearrangement of propargylic alcohols. 4,215,230, Cl. 568-341.000.

Oishi, Kazuaki: *See—*
Sakaguchi, Minoru; Oishi, Kazuaki; Nakano, Seizo; and Kishi, Tuneo, 4,215,256, Cl. 200-148.00D.

Okaguchi, Shigeki: *See—*
Ito, Eiji; and Okaguchi, Shigeki, 4,214,568, Cl. 123-198.00R.

Okamoto, Eisaku: *See—*
Adachi, Takeshi; and Okamoto, Eisaku, 4,214,500, Cl. 84-1.010.

Okano, Yukio: *See—*
Ogino, Shuji; Ogura, Toshinobu; Okano, Yukio; and Nakamura, Akiyoshi, 4,214,814, Cl. 350-188.000.

Okayama, Kiyoaki; and Yamamoto, Yojiro, to Mitsubishi Petrochemical Company Limited. Novel α-glycol resin composition and process for its preparation. 4,215,210, Cl. 528-93.000.

Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sawaguchi, Hiroshi, to Fuji Photo Film Co., Ltd. Photographic polyester film support. 4,215,030, Cl. 260-40.00R.

Olander, Karl E., to Alfa-Laval AB. Valve coupling for vacuum line. 4,214,552, Cl. 119-14.010.

Olander, Karl E., to Alfa-Laval AB. Pneumatic time delay device. 4,214,553, Cl. 119-14.080.

Olcott, Tyler K., to W. R. Grace & Co. Apparatus for making blow molded generally tire shaped articles. 4,214,865, Cl. 425-532.000.

O'Lenick, Anthony J., Jr.: *See—*
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., 4,215,064, Cl. 260-403.000.

Olin Corporation: *See—*
Cummings, Thomas L., 4,214,959, Cl. 204-99.000.
Kuo, Han C., 4,214,954, Cl. 204-32.00R.

Olman Heath Company: *See—*
Heath, Forrest D.; and Hoctor, Rodney K., 4,214,673, Cl. 221-259.000.

Olympus Optical Co., Ltd.: *See—*
Mizokami, Kazunori, 4,214,825, Cl. 354-33.000.
Nakamura, Kazuhiko, 4,214,973, Cl. 204-299.00R.
Sato, Masanobu; and Furuta, Kenzi, 4,215,378, Cl. 360-74.100.

Omni Spectra, Inc.: *See—*
Traynor, Robert J., 4,215,317, Cl. 330-256.000.

Omnithruster Inc.: *See—*
Dashew, Stanley A.; and Sutton, Charles D., 4,214,544, Cl. 114-151.000.

Omori, Kazumitsu, to Kabushiki Kaisha Meiki Seisakusho. Injection apparatus. 4,214,858, Cl. 425-145.000.

Omron Tateisi Electronics Co.: *See—*
Sakamoto, Tamaki; and Ikeda, Yasunori, 4,214,589, Cl. 128-680.000.

Ono, Kenji: *See—*
Sato, Kensuke; and Ono, Kenji, 4,214,591, Cl. 128-731.000.

Ono Pharmaceutical Co. Ltd.: *See—*
Hayashi, Masaki; Shimoji, Katsuichi; and Arai, Yoshinobu, 4,215,142, Cl. 424-305.000.

Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research & Development Company. Selective hydrogenation of nitroaromatic acetylenes over an unsupported RuS_2 catalyst. 4,215,226, Cl. 568-705.000.

Onufry, Michael, Jr., to Communications Satellite Corporation. Video teleconference audio echo control unit. 4,215,252, Cl. 179-170.200.

Oota, Kazunari; and Yamazaki, Kazuhiro, to Kubota Ltd. Butterfly valve. 4,214,731, Cl. 251-306.000.

Oregon Aqua-Foods, Inc.: *See—*
McNeil, William J.; and Severson, Richard F., 4,214,551, Cl. 119-3.000.

Ornee, Michael W., to General Motors Corporation. Variable reluctance electromagnetic pickup. 4,215,286, Cl. 310-155.000.

Oronzio deNora Impianti Elettrochimici S.p.A.: *See—*
Spaziante, Placido M.; Giuffre, Luigi; Castoldi, Aldo; and Sioli, Giancarlo, 4,215,009, Cl. 252-184.000.

O'Rourke, Joseph D., to General Foods Corporation. Starch for instant pudding. 4,215,152, Cl. 426-579.000.

Ortho Pharmaceutical Corporation: *See—*
Chen, Robert H. K.; and Hajos, Zoltan G., 4,215,048, Cl. 260-340.600.
Goldstein, Gideon; and Heavner, George, 4,215,111, Cl. 424-177.000.
Goldstein, Gideon; and Heavner, George, 4,215,112, Cl. 424-177.000.

Osaka Oxygen Industries Ltd.: *See—*
Hagiwara, Zenzi; Matsui, Sigeo; Sakaguchi, Susumu; and Yamanaka, Yoshio, 4,215,008, Cl. 252-184.000.

Oscar Lucks Company: *See—*
Schopp, Fredrick R.; and Edmundson, Gordon A., 4,214,663, Cl. 209-552.000.

Ostanina, Vera A.: *See—*
Sokolov, Igor D.; Ostanina, Vera A.; Safrygin, Jury S.; Rutkovskaya, Tatyana I.; Antonova, Nina V.; and Naginskaya, Rakhil E., 4,215,100, Cl. 423-552.000.

Ostrowski, Carl L., to Federal Screw Works. Portable voice system for the verbally handicapped. 4,215,240, Cl. 179-1.0SM.

Otani, Syuichi; and Kato, Shinichi, to Nissan Motor Company, Limited. Waterproof electric connector. 4,214,802, Cl. 339-60.00M.

Otis Engineering Corporation: *See—*
Deaton, Thomas M.; and Kohn, Gary A., 4,214,606, Cl. 137-495.000.
Hardgrave, William D., 4,214,605, Cl. 137-495.000.

Otobe, Seiji: *See—*
Makino, Shozaburo; and Otobe, Seiji, 4,214,717, Cl. 242-36.000.

Ott, William F.: *See—*
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., 4,214,762, Cl. 277-138.000.

Otto, Charles W., to General Electric Company. Prime mover rotor shaft having raised ridges. 4,215,287, Cl. 310-217.000.

Otto Engineering, Inc.: *See—*
Repplinger, Thomas J., 4,215,257, Cl. 200-153.00T.

Otto, Julian A., deceased; and Cooke, Ermalinda O., administratrix, to Allied Chemical Corporation. Cyanomethyl alkyl trithiocarbonates as insecticidal agents. 4,215,140, Cl. 424-301.000.

Oulsnam, Bryon T., to Coreplugs Limited. Stemming. 4,214,532, Cl. 102-30.000.

Owens-Corning Fiberglas Corporation: *See—*
Charter, Kenneth F., 4,214,407, Cl. 52-63.000.
Wojciechowski, Stanley P., 4,214,931, Cl. 156-169.000.

Owens-Illinois, Inc.: *See—*
Uhlig, Albert R.; and Stoll, Andrew J., III, 4,215,089, Cl. 264-516.000.

Oxford Hill Ltd.: *See—*
Thiele, Geraldine H., 4,215,144, Cl. 424-318.000.

Oxy Metal Industries Corp.: *See—*
Galloway, James H.; and Berman, Alby M., 4,215,394, Cl. 363-137.000.

Ozaki, Kiyoji: *See—*
Nakanishi, Hajime; Ozaki, Kiyoji; Shinozuka, Toshio; Izumi, Masato; Aiba, Takaaki; Kaji, Hisatsugu; Sumida, Yutaka; and Ishihara, Takao, 4,214,979, Cl. 208-128.000.

Ozawa, Kiyomi; Ishii, Shigeru; Hayashi, Mamoru; Hirose, Masayoshi; and Nonaka, Ryoichi, to Nissan Chemical Industries, Ltd. Insecticidal compounds of phenylcyclopropane carboxylic acid esters. 4,215,138, Cl. 424-282.000.

Ozodyne, Inc.: *See—*
van Gelder, Arthur, 4,214,887, Cl. 71-9.000.

Pacer Technology and Resources: *See—*
Hubbard, Dolph E., 4,215,173, Cl. 428-331.000.

Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., to United States of America, Air Force. Diphospha-s-triazines. 4,215,072, Cl. 260-551.00P.

Packer, Marvin; and Black, Otis D., to RCA Corporation. Water soluble adhesive coating for mounting components to printed wiring boards. 4,215,025, Cl. 260-29.20R.

Paglia, Richard: *See—*
Reynard, John M.; Carignan, Thomas N.; Paglia, Richard; and Rich, Joseph F., 4,215,249, Cl. 179-111.00R.

Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; Huie, Nicholas C.; and Schroeder, Hobe, to Standard Oil Company (Indiana). Production of ortho-phthalic acid and its conversion and recovery of phthalic anhydride. 4,215,053, Cl. 260-346.700.

Palmer, David A.; Kuhlmann, George E.; Horsfield, Sydney G.; and Schroeder, Hobe, to Standard Oil Company (Indiana). Production of liquid ortho-phthalic acid and its conversion to high purity phthalic anhdyride. 4,215,055, Cl. 260-346.700.

Palmer, David A.: *See—*
Schroeder, Hobe; and Palmer, David A., 4,215,051, Cl. 260-346.700.
Schroeder, Hobe; Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; and Huie, Nicholas C., 4,215,052, Cl. 260-346.700.
Schroeder, Hobe; Kuhlmann, George E.; Horsfield, Sydney G.; and Palmer, David A., 4,215,054, Cl. 260-346.700.
Schroeder, Hobe; and Palmer, David A., 4,215,056, Cl. 260-346.700.

Papst, Georg; Schlicker, Volker; and Muller, Rolf, to Papst Motoren KG. Axial locating of horizontally extending tape drive shaft in cassette machine. 4,214,690, Cl. 226-49.000.

Papst Motoren KG: *See—*
Papst, Georg; Schlicker, Volker; and Muller, Rolf, 4,214,690, Cl. 226-49.000.

Parechanian, Haig S.: *See—*
Seibold, Robert W.; Parechanian, Haig S.; Weatherill, William T.; and Lowe, Robert E., 4,215,161, Cl. 427-228.000.

Park, Chung P., to Dow Chemical Company, The. Soft ethylenic polymer blend foams. 4,215,202, Cl. 521-81.000.

Parshin, Anatoly M.: *See—*
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zyezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Pascher, Helmut: *See—*
Vogelsberg, Dieter; and Pascher, Helmut, 4,214,430, Cl. 57-6.000.

Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, to Yeda Research and Development Co. Ltd. Reagents from phenolic and 8-hydroxyquinolinic aldehyde oximes. 4,215,219, Cl. 546-179.000.

Pate, Harold T.: *See—*
Neff, Steve W.; and Pate, Harold T., 4,214,668, Cl. 220-3.300.

Patel, Gordhanbhai N.: *See—*
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,215,208, Cl. 526-285.000.

Patel, Harish A., to Kendall Company, The. Surgical dressing. 4,214,582, Cl. 128-156.000.

Patmore, Thomas R.; and Boyle, Daniel J., to Champion International Corporation. Insect capturing device. 4,214,400, Cl. 43-121.000.

Patnoi, Charles M.; Cooper, Daniel; and Zellers, Robert D., to International Medical Corporation. Method and apparatus for processing and displaying data in compressed form. 4,214,590, Cl. 128-710.000.

Patrinos, Peter. Condiment dispenser with hole-clearing means. 4,214,678, Cl. 222-149.000.

Paul, Jeffrey A.: *See—*
Chang, Yu-Wen; and Paul, Jeffrey A., 4,215,313, Cl. 455-326.000.

Paul Wurth, S.A.: *See—*
Mailliet, Pierre; and Ulveling, Leon, 4,214,608, Cl. 137-546.000.

Paulson, John W.: *See—*
Bergum, Bernard C.; Bredland, Alf M.; and Paulson, John W., 4,215,189, Cl. 429-217.000.

Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, Jan; and Kasparek, Zdenek. Nozzle for texturing thread. 4,214,352, Cl. 28-254.000.

Pavicic, Mark J.; and Mahaffey, Jack L., II, to Texas Instruments Incorporated. Special function control system for a dual microprocessor programmable process control system. 4,215,399, Cl. 364-101.000.

Pawelczyk, Werner: *See—*
Woeckener, Willi; Pawelczyk, Werner; and Marquardt, Klaus-Dieter, 4,214,857, Cl. 425-141.000.

Payne, Charles C., to Nalco Chemical Company. Thickening additives for unsaturated polyester resins. 4,215,031, Cl. 260-40.00R.

Pearson, Glenn A. Novel resinous coating compositions. 4,215,172, Cl. 428-264.000.

Pebler, Alfred R.; and Ruka, Roswell J., to Westinghouse Electric Corp. Technique for reducing solid electrolyte cell drift. 4,214,967, Cl. 204-195.00S.

Pedersen, Vernon G., to Dacor Corporation. Breathing apparatus. 4,214,580, Cl. 128-204.260.

Pemrick, Raymond E., to Norton Company. Fine grit abrasive. 4,214,877, Cl. 51-295.000.

Peniche, Hector. Can stopper. 4,214,672, Cl. 220-234.000.

Pennwalt Corporation: *See—*
Piucci, Joseph A., 4,214,924, Cl. 148-18.000.

Pergler, Charles C.: *See—*
Karrip, Alexander A.; Knoblauch, Jack R.; Pergler, Charles C.; and Korell, Donald D., 4,214,726, Cl. 248-575.000.

Perkin-Elmer Corporation, The: *See—*
Buckley, William D., 4,215,192, Cl. 430-270.000.

Perkins Engines Limited: *See—*
Herenius, Frederik J., 4,214,443, Cl. 60-321.000.

Petersen, Otto; and Kersten, Franz, to Bayer Aktiengesellschaft. Method of determining the mass of liquids. 4,215,091, Cl. 422-75.000.

Peterson, John B., to W. R. Grace & Co. Dipstick for liquid nitrogen. 4,214,368, Cl. 33-126.70R.

Peterson, Lloyd D. Trash picking device. 4,214,336, Cl. 15-3.000.

Petrellis, Nicolas C.: *See—*
Brannen, Cecil G.; and Petrellis, Nicolas C., 4,215,067, Cl. 260-429.900.

Petrov, Boris N.: *See—*
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.

Petsche, Lee E., to Foldenauer Equipment Co., Inc. Meat tumbler. 4,214,518, Cl. 99-535.000.

Pfalzer, Lothar, to J. M. Voith GmbH. Process and device for removing printer's ink from a fiber suspension. 4,214,982, Cl. 209-164.000.

Pfister, Theodor: *See—*
Blank, Heinz U.; and Pfister, Theodor, 4,215,071, Cl. 260-543.00R.

Pfizer Inc.: *See—*
Kraska, Allen R., 4,215,146, Cl. 424-330.000.

Pham, Ngu T., to Thomson-CSF. Descriptive resume random access static memory element. 4,215,424, Cl. 365-174.000.

Philip Morris Incorporated: *See—*
Washington, James M., 4,214,508, Cl. 93-1.00C.

Philleo, Robert C., to Dayco Corporation. Flexible coupling and method of making same. 4,214,458, Cl. 64-11.00R.

Phillips, Calvert F., Jr., to United States of America, Air Force. Multiple channel electronic countermeasures radar receiver. 4,215,344, Cl. 343-18.00E.

Phillips Petroleum Company: *See—*
Drake, Charles A.; and Murtha, Timothy P., 4,215,019, Cl. 252-466.00B.
Reusser, Robert E.; and Hughes, William B., 4,215,017, Cl. 252-458.000.

Phlipot, Georges A.; Haeck, Jacques R. G.; and Kempen, Simone J., to Eastman Kodak Company. Diazo substituted amino-benzene salts and lithographic plate comprising same. 4,215,041, Cl. 260-141.000.

Pichler, Ludwig: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,215,133, Cl. 424-273.00R.

Pickett, William H., to Fanwall Corporation, The. Panel and joint system and transparent acoustic barriers employing same. 4,214,411, Cl. 52-144.000.

Pignal, Edmond: *See—*
Le Garfe, Roger J.; Pignal, Edmond; and Magloire, Charles J., 4,214,692, Cl. 228-44.10R.

Pilkington Brothers Limited: *See—*
Nixon, John S., 4,214,863, Cl. 425-222.000.

Pincon, Andrew J. Activated oxygen product and water treatment using same. 4,214,962, Cl. 204-157.10R.

Pinkney, Harry D., Jr., to Eppenger, Frank L. Sound operated control device. 4,215,241, Cl. 179-1.0VC.

Pinsley, Edward A.; and Schmidtke, Richard A., to United Technologies Corporation. Method for obtaining high beam quality in a gas dynamic laser. 4,215,321, Cl. 331-94.50G.

Pinto, Alwyn; and Ward, Stanley A., to Imperial Chemical Industries Limited. Ammonia synthesis process. 4,215,099, Cl. 423-360.000.

Pioneer Electronic Corporation: *See—*
Kawanabe, Yoshihiro, 4,215,318, Cl. 330-268.000.
Yamaguchi, Tadahiro; and Aizawa, Koki, 4,215;316, Cl. 329-50.000.

Pippert, Aaron J., to Utex Industries, Inc. Packing construction. 4,214,761, Cl. 277-123.000.

Pittsburgh-Des Moines Steel Company: *See—*
McKibbin, Dean K.; Hills, Richard E.; Blackman, Joel; and Kuhs, Franklin A., 4,214,671, Cl. 220-219.000.

Piucci, Joseph A., to Pennwalt Corporation. Method of improving surface characteristic of heat-treated metal. 4,214,924, Cl. 148-18.000.

Piusz, Peter G.: *See—*
Hovey, Richard J.; Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., 4,215,010, Cl. 252-300.000.

Planes, Felipe; Eckerline, Charles A.; and Erickson, Gordon A., to Conwed Corporation. Space divider and acoustic panel. 4,214,646, Cl. 181-287.000.

Platonova, Ada T.: *See—*
Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M., 4,215,106, Cl. 424-81:000.

Plempel, Manfred: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; and Haller, Ingo, 4,215,131, Cl. 424-273.00R.

Plesinger, Boris M.: *See—*
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Plessey Handel und Investments AG: *See—*
Stewart, William J., 4,214,810, Cl. 350-96.210.

Pletz, Murray J., to K-2 Corporation. Backpack load carrying system for hikers. 4,214,685, Cl. 224-211.000.

Plourde, Richard G., to Avid Corporation. Method of and means for loudspeaker sound wave distribution. 4,214,645, Cl. 181-148.000.

Plummer, Glenn W.: *See—*
McKee, William H.; and Plummer, Glenn W., 4,214,803, Cl. 339-103.00R.

Plunkett, Allan B.: *See—*
D'Atre, John D.; and Plunkett, Allan B., 4,215,305, Cl. 318-803.000.

Pohl, Ludwig; Eidenschink, Rudolf; Krause, Joachim; and Weber, Georg, to Merck Patent Gesellschaft mit beschrankter Haftung. Electro-optical modulator. 4,214,819, Cl. 350-334.000.

Poilblanc, Rene: *See—*
Kalck, Philippe; Poilblanc, Rene; and Gaset, Antoine, 4,215,066, Cl. 260-429.00R.

Polaroid Corporation: *See—*
Moodie, Donald E., 4,214,822, Cl. 352-78.00R.
Reynard, John M.; Carignan, Thomas N.; Paglia, Richard; and Rich, Joseph F., 4,215,249, Cl. 179-111.00R.

Polen, Karl L., to Alliance Machine Company, The. Crane safety reeving. 4,214,664, Cl. 212-142.100.

Polinsky, Charles K.: *See—*
Sinha, Rabindra K.; Polinsky, Charles K.; Cifrulak, S. David; and Wagner, Norman J., 4,215,096, Cl. 423-241.000.

Pollak, Fred H.: *See—*
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Pollard, Maurice G.; and Goodall, Roger M., to British Railways Board. Active suspensions for vehicles. 4,215,403, Cl. 364-424.000.

Polozov, Boris V.: *See—*
Ivanchev, Sergei S.; Enikolopov, Nikolai S.; Polozov, Boris V.; Syrov, Anatoly A.; Primachenko, Oleg N.; and Polyakov, Zorislav N., 4,214,914, Cl. 106-308.00Q.

Polyakov, Zorislav N.: *See—*
Ivanchev, Sergei S.; Enikolopov, Nikolai S.; Polozov, Boris V.; Syrov, Anatoly A.; Primachenko, Oleg N.; and Polyakov, Zorislav N., 4,214,914, Cl. 106-308.00Q.

Polychrome Corporation: *See—*
Rowe, William, 4,214,965, Cl. 204-159.150.

Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., to Eastman Kodak Company. Polymers of amide compounds useful in photographic materials. 4,215,195, Cl. 430-496.000.

Post Office: *See—*
Massey, Alan W., 4,215,380, Cl. 361-119.000.

Potanin, Veniamin G.: *See—*
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.

Poujois, Robert: *See—*
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Pozhivanov, Alexandr M.: *See—*
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A., 4,214,856, Cl. 425-60.000.

PPG Industries, Inc.: *See—*
Bowser, George H., 4,215,164, Cl. 428-34.000.
Martin, Walter L., Jr., 4,214,884, Cl. 65-12.000.

Pradillon, Michel, to Etablissements Carpano & Pons. Liquid distributor, notably for sprinkling purposes. 4,214,602, Cl. 137-119.000.

Prager, Jay M.; Sadlow, Joseph F.; Farrand, John E.; Boissevain, Thomas A.; and Gonzales, Roman Y., to Modicon Division, Gould Inc. Modular panel construction for programmable controller. 4,215,386, Cl. 361-394.000.

Prasse, Herbert F.: *See—*
McCormick, Harold E.; Prasse, Herbert F.; Ott, William F.; and Mayhew, Donald J., 4,214,762, Cl. 277-138.000.

Prather, Jimmy F. Method and apparatus of feeding cotton to a gin. 4,214,347, Cl. 19-64.500.

Pratley, Stuart K.: *See—*
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Precisa AG Rechenmaschinenfabrik, Firma: *See—*
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Precision Industries, Inc.: *See—*
Verwey, William G. A.; and Stanton, Stephen, 4,214,848, Cl. 414-77.000.

Precitronic Gesellschaft fur Feinmechanik und Electronic mbH: *See—*
Eichweber, Kurt, 4,215,270, Cl. 250-201.000.

Preiss, Michael; Konig, Hans-bodo; Metzger, Karl G.; and Feyen, Peter, to Bayer Aktiengesellschaft. 2-Hetero-acetamido-penicillanates and cephalosporinates. 4,215,118, Cl. 424-248.400.

Preziosi, Anthony F.: *See—*
Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., 4,215,208, Cl. 526-285.000.

Price, Robert J., to Caterpillar Tractor Co. Method for treating metal. 4,214,923, Cl. 148-12.00R.

Primachenko, Oleg N.: *See—*
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Pritchard, Eric K. Animation stand control system. 4,214,823, Cl. 352-87.000.

Pro-Patterns Inc.: *See—*
Zebelean, John, 4,214,754, Cl. 273-167.00H.
Procter & Gamble Company, The: *See—*
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Lucas, Malcolm B.; and Van Coney, H. Robert, 4,214,945, Cl. 156-634.000.
Product Design and Engineering, Inc.: *See—*
Mathison, Donald W., 4,215,087, Cl. 264-320.000.
Production Engineering Research Association of Great Britain: *See—*
Beard, James H., 4,214,362, Cl. 29-726.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Kalck, Philippe; Poilblanc, Rene; and Gaset, Antoine, 4,215,066, Cl. 260-429.00R.
Strassel, Albert, 4,215,177, Cl. 428-413.000.
Prohaska, Hans: *See—*
Kohler, Alfred; and Prohaska, Hans, 4,214,344, Cl. 15-250.320.
Pruden, Barry B.: *See—*
Ranganathan, Ramaswami; Denis, Jean-Marie D.; and Pruden, Barry B., 4,214,977, Cl. 208-108.000.
Pryor, Harry H.; and Chumley, Calvin L., to UMC Industries, Inc. Coin transfer means for vendors. 4,214,654, Cl. 194-1.00E.
Purdue Research Foundation: *See—*
Dixon, Jack B., 4,215,090, Cl. 422-54.000.
Purpose Engineers Limited: *See—*
Delves, Elsworth R., 4,214,357, Cl. 29-233.000.
Putman, Charles R.: *See—*
Harris, Alexander T.; and Putman, Charles R., 4,215,095, Cl. 423-240.000.
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Pyle, Walter R., to Chevron Research Company. Valve means for preventing fuel spillage from the discharge spout of a fuel dispensing nozzle. 4,214,614, Cl. 141-1.000.
Quaker Oats Company, The: *See—*
Teter, Edward C., 4,214,401, Cl. 46-14.000.
Quenneville, Raymond N., to Jacobs Manufacturing Company, The. Variable power transmission and absorption device. 4,214,652, Cl. 192-58.00R.
R. E. Phelon Company, Inc.: *See—*
Zentmeyer, Richard B., Jr., 4,215,284, Cl. 310-70.00A.
R.G.B. Laboratories, Inc.: *See—*
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Racal-Vadic Inc.: *See—*
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Racciato, Joseph S.; and Cottrell, Ian W., to Merck & Co., Inc. Deacetylated borate-biosynthetic gum compositions. 4,214,912, Cl. 106-208.000.
Radilov, Stanislav V.: *See—*
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Radziłowski, Ronald H., to Union Carbide Corporation. Method for the addition of a reactive metal to a molten metal bath. 4,214,899, Cl. 75-58.000.
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Ramsey Corporation: *See—*
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Ramseyer, John W.: *See—*
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Ranganathan, Ramaswami; Denis, Jean-Marie D.; and Pruden, Barry B., to Energy Mines and Resources Canada. Hydrocracking of heavy oils using iron coal catalyst. 4,214,977, Cl. 208-108.000.
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Raseley, LeRoy J.; Collier, Samuel J.; and McCarty, Henry G., to Ecolaire Incorporated. Liquid-gas separator. 4,214,883, Cl. 55-426.000.
Rath, Ewald. Hygienic and cosmetic sponge or the like. 4,214,341, Cl. 15-210.00R.
Rau, Willy; and Taus, Christian, to Maschinenfabrik Rau GmbH. Arrangement for coupling a cultivating attachment to a cultivating machine. 4,214,634, Cl. 172-179.000.
Ravizza, Raymond F., to Ampex Corporation. Track selection method and apparatus. 4,215,362, Cl. 358-8.000.
Ray-Chaudhuri, Dilip K.; and Meier, Eric A., to National Starch and Chemical Corporation. Anaerobic curing composition and process for preparing same. 4,215,209, Cl. 526-292.000.
Raymond, Robert F., to UOP Inc. Co-production of ethylene and benzene. 4,215,231, Cl. 585-251.000.
RCA Corporation: *See—*
Botez, Dan, 4,215,319, Cl. 331-94.50H.
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Hawrylo, Frank Z., 4,214,550, Cl. 118-712.000.
Hopen, Leonard F., 4,214,798, Cl. 316-26.000.
Packer, Marvin; and Black, Otis D., 4,215,025, Cl. 260-29.20R.
Stanley, Thomas O., 4,215,293, Cl. 315-366.000.
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Rebajes, Francis. Mobile geometrical form. 4,214,747, Cl. 272-8.00R.
Redding, Thomas P.; Herbert, Glenn M.; and Caldwell, Alistair J., to Xerox Corporation. Sorting apparatus. 4,214,746, Cl. 271-294.000.
Redicon Corporation: *See—*
Bulso, Joseph D., Jr.; and Lewers, William R., 4,214,471, Cl. 72-349.000.
Reesen, Jorgen, to Eastman Kodak Company. Apparatus for producing duplex copies. 4,214,831, Cl. 355-3.00R.
Rege, Satish L.; and Woo, Beng-Yu, to Burroughs Corporation. Fast access charge coupled device memory organizations for a semiconductor chip. 4,215,423, Cl. 365-77.000.
Reh, Oswald R., to International Telephone and Telegraph Corporation. Fiber optic penetrator. 4,214,809, Cl. 350-96.200.
Reichl, Richard: *See—*
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; Traunecker, Werner; and Hoefke, Wolfgang, 4,215,119, Cl. 424-248.500.
Reimann, Roman M. Novelty button. 4,215,388, Cl. 362-104.000.
Reiner, Robert, to Siemens Aktiengesellschaft. Remote control system for an electrical apparatus. 4,215,349, Cl. 340-695.000.
Reingold, Lucien, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Combustion chambers operating on a supersonic stream chiefly for jet engines. 4,214,442, Cl. 60-270.00R.
Reinhard, Russell R.: *See—*
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Reinhoudt, David N.: *See—*
De Jong, Feike; Reinhoudt, David N.; and Torny-Schutte, Gerridina J., 4,215,000, Cl. 252-8.55B.
Reiser, Gerald J., to Marquette Electronics, Inc. Junction box for electrocardiographic leads. 4,215,236, Cl. 174-59.000.
Reiser, John R.: *See—*
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Repplinger, Thomas J., to Otto Engineering, Inc. Precision toggle switch. 4,215,257, Cl. 200-153.00T.
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Clark, George H.; and Clark, Mary A., 4,214,381, Cl. 35-11.00R.
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Malley, Arthur, 4,215,036, Cl. 260-112.00R.
Rittenburg, James H.; and Bayer, Robert C., 4,215,108, Cl. 424-92.000.
Resener, Baird E., to Western Electric Company, Inc. Microphone support with simultaneous adjustment of plural degrees of freedom. 4,215,250, Cl. 179-149.000.
Reusser, Robert E.; and Hughes, William B., to Phillips Petroleum Company. Catalyst for disproportionation/double-bond isomerization of olefins. 4,215,017, Cl. 252-458.000.
Reutlinger, Wolf-Dieter. Method and device for applying a detectable reference mark on a body to be balanced. 4,214,481, Cl. 73-462.000.
Rex, Leslie A. Compound drum. 4,214,504, Cl. 84-411.00R.
Reynard, John M.; Carignan, Thomas N.; Paglia, Richard; and Rich, Joseph F., to Polaroid Corporation. Method and device for controlling wrinkles in a vibratile diaphragm. 4,215,249, Cl. 179-111.00R.
Reynolds, Carl D.: *See—*
Ardary, Zane L.; and Reynolds, Carl D., 4,215,088, Cl. 264-332.000.
Reynolds, Thomas L.: *See—*
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Rhoads, Paul M., to NCR Corporation. Inverter power supply. 4,215,392, Cl. 363-49.000.
Rhode Island Hospital: *See—*
Abts, Leigh R., 4,214,484, Cl. 73-632.000.
Riach, George. Rodent-repelling device. 4,215,429, Cl. 367-139.000.
Ribier, Jean G.; Dorsemaine, Maurice J.; and Sauvage, Bernard J., to Hamon-Sobelco, S.A. Liquid collecting device and use thereof in liquid-gas contacting apparatus. 4,215,080, Cl. 261-111.000.

Rich, Frank D., Jr., to F. D. Rich Housing Corp. Monolithic room enclosing module and method of forming the same. 4,214,408, Cl. 52-79.100.
Rich, Joseph F.: *See—*
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Sjoerdsma, Albert, 4,215,130, Cl. 424-273.00R.
Richter, Arnold A.; and Edwards, Charles E. H., to United States of America, Army. Command fuzing system. 4,214,534, Cl. 102-215.000.
Richter, Carl; and Feth, Georg, to Cilag-Chemie A.G. 1-(2-Oxysubstituted-3-anilinopropyl)-imidazoles. 4,215,220, Cl. 548-341.000.
Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Fabry, Gyorgy; and Takacs, Istvan, 4,215,083, Cl. 261-155.000.
Rickrode, Jack A.; and Frame, Charles W., to Chambersburg Engineering Company. Method and apparatus for pressing wheels and other members onto or off of an axle. 4,214,363, Cl. 29-802.000.
Ricoh Company, Ltd.: *See—*
Kono, Masao; Tani, Tatsuo; Ogawa, Toshiyuki; and Ariyama, Kenzo, 4,214,832, Cl. 355-8.000.
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Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Homeyer, Bernhard, 4,215,132, Cl. 424-273.00P.
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Riollet, Gilbert; and Franconville, Gerard, to Alsthom-Atlantique. Exhaust device for a condensable-fluid axial-flow turbine. 4,214,452, Cl. 60-697.000.
Rios, Gilbert M.; Gibert, Henri; Crouzet, Jean; and Vincent, Jean-Claude, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for roasting an agro-food product in a fluidized bed of inert particles. 4,215,151, Cl. 426-467.000.
Riskey, William E.: *See—*
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Ritchie, Timothy J.; and White, Ralph E., to Caterpillar Tractor Co. Conveyor installation and method for handling workpieces. 4,214,922, Cl. 148-9.500.
Ritsko, Joseph E.; Gingerich, Richard G. W.; and Acla, Howard L., to GTE Products Corporation. Method for producing cobalt metal powder. 4,214,894, Cl. 75-0.5AA.
Ritsko, Joseph E.: *See—*
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Rittenburg, James H.; and Bayer, Robert C., to Research Corporation. Lobster gaffkemia vaccine. 4,215,108, Cl. 424-92.000.
RIV - SKF Officine di Villar Perosa S.p.A.: *See—*
Fava, Giulio, 4,214,764, Cl. 277-935.00D.
Rivier, Catherine L.: *See—*
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Rivier, Jean E. F.; Rivier, Catherine L.; and Vale, Wylie W., Jr., to Salk Institute for Biological Studies, The. Peptides which inhibit gonadal function. 4,215,038, Cl. 260-112.5LH.
Rizzo, Vincent J.: *See—*
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Robbins, Robert E.: *See—*
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Knapp, Heinrich; Wilfert, Thomas; Grassle, Alfred; and Fussner, Paul, 4,214,565, Cl. 123-179.00L.
Koster, Claus; Siegert, Joachim; and Nothdurft, Heinz, 4,214,476, Cl. 73-119.00A.
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Rockwell International Corporation: *See—*
Baggett, Richard S.; and Bumpas, Carl E., 4,215,371, Cl. 358-172.000.
Lambert, Donald L., 4,215,247, Cl. 179-18.0BC.
Rode, John E., to Temper Corporation. Tolerance compensating deforming press. 4,214,465, Cl. 72-36.000.
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Roeder, George K. Hydraulically actuated pump assembly having mechanically actuated valve means. 4,214,854, Cl. 417-402.000.
Roesch, Egon: *See—*
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Davis, Hyman R.; Nasr, Wagih I.; Roethlin, Siegfried M.; and Sherwood, Harold D., 4,214,975, Cl. 208-33.000.
Rofini, Raymond L.: *See—*
Van Marter, Charles W.; Rofini, Raymond L.; and Smith, Laurence D., 4,215,428, Cl. 367-137.000.
Rogalski, Carl E. Ash remover. 4,214,784, Cl. 294-55.000.
Rogers, Richard B.; Carson, Chrislyn M.; and Ehr, Robert J., to Dow Chemical Company, The. Substituted 1-phenoxy-1-triazolyl-2-butanone compounds and their use as fungicides. 4,215,127, Cl. 424-269.000.
Rohde, Heinz K., to Brown & Root, Inc. Subsea grout distributor. 4,214,843, Cl. 405-225.000.
Rohm, Gunter H. Lockable drill chuck. 4,214,765, Cl. 279-1.00K.
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Romanov, Nikolai T., deceased: *See—*
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Romanova, Anastasia I., administrator: *See—*
Gorodissky, Leonid G.; Romanov, Nikolai T., deceased; and Romanova, Anastasia I., administrator, 4,214,758, Cl. 277-12.000.
Romeyke, Norbert; and Kalbfuss, Richard, to BBC Brown, Boveri & Co., Ltd. Thrust compensation and cooling system for gas turbines. 4,214,436, Cl. 60-39.09R.
Roorda, H. Jan: *See—*
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Roos, Cees J., to Baird Corporation. Spectrometer sequential readout system. 4,214,835, Cl. 356-306.000.
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Rosenberg, Arnold M.; and Gaidis, James M., to W. R. Grace & Co. Method of forming waterproofing material. 4,215,160, Cl. 427-177.000.
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Ross, Carl H.; Friebe, Walter-Gunar; Kampe, Wolfgang; Bartsch, Wolfgang; and Roesch, Egon, to Boehringer Mannheim GmbH. 4-Hydroxy-2-benzimidazoline-thione compounds and pharmaceutical compositions containing them. 4,215,134, Cl. 424-273.00B.
Rost, Harry, to Metzeler Kautshuk AG. Wrapping-over device for a tire assembly drum. 4,214,940, Cl. 156-402.000.
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Rowe, William, to Polychrome Corporation. Polymers and process for their preparation. 4,214,965, Cl. 204-159.150.
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Rucker, Gerhard, to Moteren-Und Turbinen-Union Munchen GmbH. Composite gas turbine engine for V/STOL aircraft. 4,214,440, Cl. 60-226.00B.
Rudd, Wallace C.; and Udall, Humfrey N., to Thermatool Corporation. Surface hardening of metals using electric currents. 4,215,259, Cl. 219-10.430.
Rudolph, Siegfried; and Noring, Josef, to Schreiber-Klaranlagen, Dr.-Ing. Aug, Schreiber GmbH & Co. KG. Apparatus for cleaning a screen disposed in a water channel. 4,214,989, Cl. 210-159.000.
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Cornils, Boy; Konkol, Werner; Diekhaus, Gerhard; and Wiebus, Ernst, 4,215,073, Cl. 260-563.00D.
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Rumsey, Rollin D. Straight through flow diaphragm valve structures. 4,214,604, Cl. 137-375.000.
Rusbach, Maurice, to Sarmac S.A. Aiming instrument. 4,214,372, Cl. 33-252.000.
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Sabourin, Edward T.: *See—*
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Sach, George S.: *See—*
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St. Louis, Jacques R.; Thumm, Manfred; and Gale, Geoffrey N., to Northern Telecom Limited. Hermetic and non-hermetic packaging of devices. 4,214,364, Cl. 29-827.000.
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Sakaguchi, Hisashi: *See—*
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Sakaguchi, Minoru; Oishi, Kazuaki; Nakano, Seizo; and Kishi, Tuneo, to Hitachi, Ltd. Gas-insulated switchgear apparatus. 4,215,256, Cl. 200-148.00D.
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Hagiwara, Zenzi; Matsui, Sigeo; Sakaguchi, Susumu; and Yamanaka, Yoshio, 4,215,008, Cl. 252-184.000.
Sakakibara, Shumpei, to Ajinomoto Company Incorporated. 7-(Arginylamino)-4-methylcoumarins. 4,215,047, Cl. 260-326.340.
Sakamoto, Tamaki; and Ikeda, Yasunori, to Omron Tateisi Electronics Co. Method and apparatus for blood pressure measurement including a true Korotkov sound detector. 4,214,589, Cl. 128-680.000.
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Sakura, Chester Y., Jr. Anastomosis device and method. 4,214,587, Cl. 128-334.00R.
Salk Institute for Biological Studies, The: *See—*
Rivier, Jean E. F.; Rivier, Catherine L.; and Vale, Wylie W., Jr., 4,215,038, Cl. 260-112.5LH.
Sam Stein Associates, Inc.: *See—*
Booth, Raymond E.; and Miller, Michael E., 4,214,548, Cl. 118-18.000.
Sama, Nicholas. Simultaneous actuation safety valve. 4,214,601, Cl. 137-102.000.
Sammells, Anthony F.: *See—*
Ang, Peter G. P.; and Sammells, Anthony F., 4,215,182, Cl. 429-15.000.
Sanders, David E.: *See—*
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Sandoy, Harry S.: *See—*
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Sandoz, Inc.: *See—*
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Waggener, William N.; and Schroeder, Gene F., 4,215,427, Cl. 367-83.000.
Sankaran, Subbiah, to Kaiser Aluminum & Chemical Corporation. Metal coil handling system. 4,214,467, Cl. 72-183.000.
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Sansone, Francis N., to United States of America, Navy. Minimal distortion video bandpass filter. 4,215,325, Cl. 333-20.000.
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Scotese, Anthony C.; Morris, Robert L.; and Santilli, Arthur A., 4,215,216, Cl. 544-117.000.
Sarantakis, Dimitrios, to American Home Products Corporation. Somatostatin analogues. 4,215,039, Cl. 260-112.50S.
Sargent, Ronald S.: *See—*
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Sarmac S.A.: *See—*
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Sasano, Kenji; and Shiramasa, Ichiro, to Mitsui Engineering and Shipbuilding Co., Ltd. Water collecting and distributing apparatus disposed in a lower portion of high speed filter basin. 4,214,992, Cl. 210-274.000.
Sato, Kensuke; and Ono, Kenji, to Foundation for the Medical Research on the Traffic Accident and Disaster. Brain wave analyzing system and method. 4,214,591, Cl. 128-731.000.
Sato, Masanobu; and Furuta, Kenzi, to Olympus Optical Co., Ltd. Automatic stop device for a tape recorder. 4,215,378, Cl. 360-74.100.
Sato, Mitsuhiro; and Kasahara, Noboru, to NGK Insulators, Ltd. Electrochemical treatment process. 4,214,952, Cl. 204-14.00R.
Sato, Shojiro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Variable-capacity radial turbine. 4,214,850, Cl. 415-49.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Constant pressure printing mechanism for hand labeler. 4,214,529, Cl. 101-291.000.
Satou, Masami: *See—*
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Sauter, W. Roger: *See—*
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Sawby, Ken. Cattle vise. 4,214,555, Cl. 119-103.000.
Sawyer, Albert J., to Bell Telephone Laboratories, Incorporated. Dial pulse signaling arrangement. 4,215,246, Cl. 179-18.00B.
Saylor, Laurence M. Ozone generator. 4,214,995, Cl. 250-539.000.
Schaffer, Jeffrey; and Moore, John E., to Independent Broadcasting Authority. Television systems. 4,215,367, Cl. 358-139.000.
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Scheidt, Gerald A., to Western Electric Company, Inc. Apparatus for forming S-Z twisted strand units. 4,214,432, Cl. 57-293.000.
Scherer, Reiner: *See—*
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Scherer, Richard M., to Chambers Corporation. Removable oven panel and door sealing gasket. 4,214,571, Cl. 126-190.000.
Schermer, Gijsbertus J. H.; and Breuning, Paul, to U.S. Philips Corporation. Semiconductor device. 4,215,359, Cl. 357-70.000.
Schiel, Christian; and Flamig, Hans, to J. M. Voith GmbH. Supporting device for a strainer belt. 4,214,949, Cl. 162-352.000.
Schiffer, Gunter; Meisen, Klaus; Sunnen, Rudolf; and Heidan, Klaus, to Kleinewefers GmbH. Device for wet treating, especially dyeing and impregnating, textile webs in a continuous manner. 4,214,461, Cl. 68-158.000.
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Burrous, Allen J., 4,214,930, Cl. 156-1.000.
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Schmit, Justin M. Liquid pouch in a carton with a pouring spout. 4,214,675, Cl. 222-83.000.
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Schmitt, Helwig, to Massey-Ferguson Services N.V. Crop harvesters. 4,214,425, Cl. 56-228.000.
Schmitt, Joseph L., Jr.; and Ando, Hiei, to American Cyanamid Company. Oxidation catalyst and use in the production of anthraquinone. 4,215,063, Cl. 260-369.000.
Schmitz-Werke GmbH & Co.: *See—*
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Schmoock, Roy F., to Fischer & Porter Co. Flangeless electromagnetic flowmeter. 4,214,477, Cl. 73-861.120.
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Schopp, Fredrick R.; and Edmundson, Gordon A., to Oscar Lucks Company. Transfer apparatus for selectively transferring objects from a delivery conveyor to selected sections of a receiving conveyor. 4,214,663, Cl. 209-552.000.
Schreiber-Klaranlagen, Dr.-Ing. Aug, Schreiber GmbH & Co. KG: *See—*
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Schroder, Rolf, to AGFA-Gevaert, A.G. Conducting battery compartment closure that also locks film door. 4,214,830, Cl. 354-202.000.

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Schroeder, Hobe; Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; and Huie, Nicholas C., to Standard Oil Company (Indiana). Production of liquid ortho-phthalic acid and its conversion to high purity phthalic anhydride. 4,215,052, Cl. 260-346.700.
Schroeder, Hobe; Kuhlmann, George E.; Horsfield, Sydney G.; and Palmer, David A., to Standard Oil Company (Indiana). Production of liquid ortho-phthalic acid and its conversion to high purity phthalic anhydride. 4,215,054, Cl. 260-346.700.
Schroeder, Hobe; and Palmer, David A., to Standard Oil Company (Indiana). Formation, purification and recovery of phthalic anhydride. 4,215,056, Cl. 260-346.700.
Schroeder, Hobe: *See—*
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Schultz, Robert J.; and Starks, Fred W., to Starks Associates, Inc. N-(Phosphonoacetyl)-L-aspartic acid compounds and methods for their preparation. 4,215,070, Cl. 260-502.500.
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Schwartz, Robert C.; and Sparks, John E., to Horn and Gladden Lint Cleaner Co., Inc. Trash by-pass for burr and stick machine. 4,214,348, Cl. 19-203.000.
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Schwerer, Frederick C., III, to United States Steel Corporation. Magnetic testing method and apparatus having provision for eliminating inaccuracies caused by gaps between probe and test piece. 4,215,310, Cl. 324-225.000.
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Scotese, Anthony C.; and Santilli, Arthur A., to American Home Products Corporation. Antisecretory 4-oxy-3-carboxy or cyano-1,2-dihydro-2-oxo-1,8-naphthyridine derivatives. 4,215,123, Cl. 424-256.000.
Scotese, Anthony C.; Morris, Robert L.; and Santilli, Arthur A., to American Home Products Corporation. 7,8-Dihydro-2,5,8-trisubstituted-7-oxo-pyrido[2,3-d]pyrimidine-6-carboxylic acid derivatives. 4,215,216, Cl. 544-117.000.
Scull, Jon V.; and Shaffer, Patrick D., to Binks Manufacturing Company. Electrostatic spray coating apparatus. 4,214,709, Cl. 239-707.000.
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Segall, Stephen B., to KMS Fusion, Inc. X-ray detector with picosecond time resolution. 4,215,274, Cl. 250-361.00R.
Seibold, Robert W.; Parechanian, Haig S.; Weatherill, William T.; and Lowe, Robert E., to McDonnell Douglas Corporation. Fiber-resin-carbon composites and method of fabrication. 4,215,161, Cl. 427-228.000.
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Selig, Guenther. Module for presenting alpha numeric information. 4,215,338, Cl. 340-373.000.
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Shah, Ashok C.; and Strzelinski, Edward P., to Upjohn Company, The. Stable pharmaceutical formulations. 4,215,117, Cl. 424-248.400.
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Shames, Sidney J.; and Shames, Harold. Self-cleaning aerator. 4,214,702, Cl. 239-110.000.
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Sheehan, Robert F.; and Cassidy, Raymond T., to National Blank Book Company, Inc. Loose leaf binder. 4,214,839, Cl. 402-31.000.
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De Jong, Feike; Reinhoudt, David N.; and Torny-Schutte, Gerridina J., 4,215,000, Cl. 252-8.55B.
Shepherd, Stephan C., to Masterwork, Inc. Method for forming three-dimensional objects from sheet metal. 4,215,194, Cl. 430-323.000.
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Shima, Masahiro, to Shima Idea Center Co., Ltd. Flat knitting machine. 4,214,460, Cl. 66-75.200.
Shimizu, Takeshi. Octopus catching game kit. 4,214,750, Cl. 273-1.00M.
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Shimokura, Toshiko, to Konishiroku Photo Industry Co., Ltd. Semi-wide angle objective lens. 4,214,815, Cl. 350-215.000.
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Shiozawa, Kazuo: *See—*
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Kobler, Ulrich, 4,215,329, Cl. 335-78.000.
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Stark, Reinhard; and Steinmuller, Gunter, 4,215,413, Cl. 364-570.000.
Vogelsberg, Dieter; and Pascher, Helmut, 4,214,430, Cl. 57-6.000.
Signorelli, John A.; and Glanzner, Gary C. Metal printing plate. 4,214,530, Cl. 101-415.100.
Silkey, Bruce A. Wire reel support brackets. 4,214,718, Cl. 242-129.600.
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Herr, John A.; and Jaffe, Wolfgang, 4,214,539, Cl. 112-158.00E.
Odermann, Charles R., 4,214,542, Cl. 112-278.000.
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Sinha, Rabindra K.; Polinsky, Charles K.; Cifrulak, S. David; and Wagner, Norman J., to Calgon Corporation. Removal of acidic contaminants from gas streams by caustic impregnated activated carbon. 4,215,096, Cl. 423-241.000.
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Sjoerdsma, Albert, to Richardson-Merrell Inc. Antihypertensive compositions of N-(2,6-dichlorophenyl)-4,5-dihydro-1H-imidazol-2-amine and N-(2-chloroethyl)-N-(1-methyl-2-phenoxyethyl)-benzenemethanamine. 4,215,130, Cl. 424-273.00R.
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Sliney, Harold E., to United States of America, National Aeronautics and Space Administration. Method of making bearing material. 4,214,905, Cl. 75-200.000.
Smirnov, Boris A.; Mochalov, Vyacheslav N.; Busygin, Valery P.; Utyamyshev, Rustam I.; and Semenov, Alexei I. Device for administering medicinal preparations. 4,214,584, Cl. 128-218.00M.
Smith, Frank P., 2nd., to Narco Scientific Industries, Inc. Navigation unit having time shared operation. 4,215,346, Cl. 343-113.00R.
Smith, Gilbert L.; Trick, Gilbert; and Swanson, David L. Baking oven. 4,215,266, Cl. 219-413.000.
Smith, James L., Jr. Feeding apparatus for nursing animals. 4,214,554, Cl. 119-71.000.
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Smith, Lawrence A., Jr., to Chemical Research and Licensing Company. Catalyst system for separating isobutene from C_4 streams. 4,215,011, Cl. 252-426.000.
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Smith, Phyllis. Blanket support and footrest. 4,214,327, Cl. 5-444.000.
Smith, Stuart B. Method of constructing a thermal insulation packet. 4,214,418, Cl. 53-452.000.
Smith, Thomas W., to McNeil-Akron, Inc. Apparatus and method for stabilization of a thermistor temperature sensor. 4,215,336, Cl. 340-177.0CA.
Smith, William D. Method of making wireline apparatus for use in earth boreholes. 4,214,693, Cl. 228-148.000.
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Societe Anonyme Francaise du Ferodo: *See—*
Dauvergne, Jean L. R., 4,214,642, Cl. 180-132.000.
Societe Anonyme: La Telemecanique Electrique: *See—*
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Societe Chimique des Charbonnages-CdF Chimie: *See—*
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Sokolov, Igor D.; Ostanina, Vera A.; Safrygin, Jury S.; Rutkovskaya, Tatyana I.; Antonova, Nina V.; and Naginskaya, Rakhil E. Method of producing potassium sulfate. 4,215,100, Cl. 423-552.000.
Solodar, A. John, to Monsanto Company. Acid separation. 4,215,065, Cl. 260-415.000.
Sony Corporation: *See—*
Doi, Toshitada; and Ito, Takashi, 4,215,335, Cl. 371-69.000.
Kato, Shinichiro, 4,214,719, Cl. 242-198.000.
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Ohmura, Yoshimoto, 4,214,756, Cl. 274-23.00R.
Suzuki, Sadao, 4,215,372, Cl. 358-188.000.
Sorensen, Jens O. Thermal energy conversion system utilizing expandites. 4,214,449, Cl. 60-641.000.
Sorensen, Norman E.; and Latham, Eldon A., to United States of America, National Aeronautics and Space Administration. Aircraft engine nozzle. 4,214,703, Cl. 239-127.300.
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Spaziante, Placido M.; and Nidola, Antonio, to Diamond Shamrock Technologies, S.A. Novel electrocatalytic electrodes. 4,214,970, Cl. 204-265.000.
Spaziante, Placido M.; Giuffre, Luigi; Castoldi, Aldo; and Sioli, Giancarlo, to Oronzio deNora Impianti Elettrochimici S.p.A. Purification method. 4,215,009, Cl. 252-184.000.
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Srock, Rainer, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Lining part for the passenger compartment of an automobile. 4,214,788, Cl. 296-39.00R.
Stafford, Robert T. Fence system. 4,214,734, Cl. 256-24.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, to Boehringer Ingelheim GmbH. 2-[N-(2'-Chloro-4'-methyl-thienyl-3')-N-(cyclopropylmethyl)-amino]-2-imidazoline and salts thereof. 4,215,133, Cl. 424-273.00R.
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Standard Oil Company (Indiana): *See—*
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Palmer, David A.; Kuhlmann, George E.; Naim, Houssam M.; Huie, Nicholas C.; and Schroeder, Hobe, 4,215,053, Cl. 260-346.700.
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Stemme, Otto; Lermann, Peter; Wagensonner, Eduard; and Cocron, Istvan, to AGFA-Gevaert, A.G. Photographic-camera focussing system with comparator receiving required-and actual-setting data. 4,214,824, Cl. 354-23.00D.
Stendel, Wilhelm: *See—*
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Stephens, Joseph R.; and Witzke, Walter R., to United States of America, National Aeronautics and Space Administration. High toughness-high strength iron alloy. 4,214,902, Cl. 75-124.000.
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Stern, Nathan, to Bobst-Champlain, Inc. Paster roller for high speed web handling equipment. 4,214,943, Cl. 156-504.000.
Steudle, Ernst: *See—*
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Stewart, William J., to Plessey Handel und Investments AG. Method of connecting optical fibres. 4,214,810, Cl. 350-96.210.
Stiga AB: *See—*
Lindblad, Sture V., 4,214,426, Cl. 56-295.000.
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Stoll, Andrew J., III: *See—*
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Stollenwerk, Hubert C.; and Stollenwerk, Hubert F. Horizontal fruit press and process for pressing fruit. 4,214,519, Cl. 100-37.000.
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Stork, Gilbert: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; Macdonald, Timothy; and Liberman, Arthur L., 4,215,006, Cl. 252-174.110.
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Long, Charles H., 4,214,393, Cl. 40-613.000.
Strassel, Albert, to Produits Chimiques Ugine Kuhlmann. Process for treating polyvinyl fluoride and laminates prepared therefrom. 4,215,177, Cl. 428-413.000.
Strick Corporation: *See—*
Katz, Sol; Bertsch, Josef; and Yurgevich, Howard J., 4,214,789, Cl. 296-183.000.
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Strolle, Clifford H., to Du Pont de Nemours, E. I., and Company. Urethane enamel coating composition. 4,215,023, Cl. 260-22.0CB.
Strowe, Robert J., to McKesson Company. Flow control system for anesthesia apparatus. 4,215,409, Cl. 364-510.000.
Struble, Glenn E., to Diamond International Corporation. Box cover, blank therefor. 4,214,694, Cl. 229-31.0FS.
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Strzelinski, Edward P.: *See—*
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Stueben, Kenneth C.; and Deem, Mary L., to Union Carbide Corporation. Surfactant-promoted aldol reactions. 4,215,076, Cl. 568-461.000.
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Sunworks, Inc.: *See—*
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Suovaniemi, Osmo; and Leskinen, Mikko, to Suovaniemi, Osmo A. Apparatus for liquid portioning and liquid transferring. 4,215,092, Cl. 422-100.000.
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Systems Control, Inc.: *See—*
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Szmuszkovicz, Jacob, to Upjohn Company, The. Analgesic N-[2-(furylmethylamino and 2-thienylmethylamino)cycloaliphatic]benzamides. 4,215,114, Cl. 424-275.000.
Tabler, Charles P., to Kornylak Corporation. Continuous molding apparatus with cover belt. 4,214,864, Cl. 425-329.000.
Tabuchi, Seigo, to ITOH Iron & Steel Works Co. Ltd. Method of and an apparatus for soaking steel pieces. 4,214,868, Cl. 432-124.000.
Taft, Philip A., to Girling Limited. Suspension assemblies for vehicles. 4,214,775, Cl. 280-708.000.
Taggart, John E., to Tektronix, Inc. Automatic intensity control circuit for an oscilloscope. 4,215,294, Cl. 315-383.000.
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Takacs, Robert J.; Brunkhurst, Winfield S.; and Le Breton, Edward T., to Structural Fibers, Inc. Tie-down for accumulator bags. 4,214,611, Cl. 138-30.000.
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Takahashi, Takeyoshi; Eto, Hirozumi; and Yoshioka, Osamu, to Nippon Kayaku Kabushiki Kaisha. Antitumorigenic lactone derivative. 4,215,049, Cl. 260-343.30R.
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Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,215,358, Cl. 357-56.000.
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Takenaka, Susumu; Ishii, Hideo; and Katooka, Masao, to Sansha Electric Manufacturing Co., Ltd. Artificial porcelain tooth manufacturing. 4,214,356, Cl. 29-160.600.
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Tamura, Raymond M. Pollution reducing aircraft propulsion. 4,214,722, Cl. 244-208.000.
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Taylor, James C. Water recovery system. 4,214,454, Cl. 62-173.000.
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Termes, Richard A. Total environment photographic mount and photograph. 4,214,821, Cl. 352-70.000.
Tetens, Howard B.: *See—*
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Gipson, Robert M., 4,215,060, Cl. 260-348.290.
Gipson, Robert M., 4,215,061, Cl. 260-348.290.
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Henry, Raymond W.; Burkett, Bobby G.; and Bunyard, Michael L., 4,215,396, Cl. 364-101.000.
Hom, Gim P., 4,215,397, Cl. 364-101.000.
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Thekdi, Arvind C.; Hemsath, Klaus H.; and Vereecke, Frank J., to Midland-Ross Corporation. Burner for high temperature combustion air. 4,214,866, Cl. 432-12.000.
Thekdi, Arvind C.; Hemsath, Klaus H.; Conybear, James G.; Vereecke, Frank J.; and Verhoff, Steven H., to Midland-Ross Corporation. Furnace with radiant burndown tube. 4,214,869, Cl. 432-31.000.
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Wharton, Gerald R., 4,215,332, Cl. 337-394.000.
Thermatool Corporation: *See—*
Rudd, Wallace C.; and Udall, Humfrey N., 4,215,259, Cl. 219-10.430.
Thiele, Geraldine H., to Oxford Hill Ltd. Method of treating and controlling gingivitis. 4,215,144, Cl. 424-318.000.
Thomas, Morton I., to Temco Products, Inc. Raised toilet seat apparatus. 4,214,323, Cl. 4-237.000.
Thomas, Thomas A., Jr. Non-leaking pump spray valve. 4,214,682, Cl. 222-321.000.
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Thomson-CSF: *See—*
Pham, Ngu T., 4,215,424, Cl. 365-174.000.
Thorsen, Walter J., to United States of America, Agriculture. Method for treatment of fibers with ozone-steam mixtures. 4,214,330, Cl. 8-149.200.
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Tilman, Ted N. High direct and alternating current switch. 4,215,253, Cl. 200-82.00R.
Timex Corporation: *See—*
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Tokyo Electric Power Company, The: *See—*
Hayashi, Hiroaki; Fukuda, Kiyoshi; Kubo, Hiroshi; Yoshikawa, Noriyasu; and Takada, Hiroshi, 4,215,234, Cl. 174-15.00C.
Tokyo Shibaura Electric Co., Ltd.: *See—*
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Kohyama, Susumu; and Kubota, Nobuhisa, 4,215,357, Cl. 357-24.000.
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Tominaga, Shinji; Imura, Toshinori; Yamada, Seiji; and Kogure, Yasuzi, to Minolta Camera Kabushiki Kaisha. Automatic focus control camera. 4,214,827, Cl. 354-127.000.
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'Totes', Incorporated: *See—*
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Tour & Andersson Aktiebolag: *See—*
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Muramatsu, John J., 4,215,416, Cl. 364-736.000.
Muramatsu, John J., 4,215,418, Cl. 364-757.000.
Wahlers, Richard L.; and Merz, Kenneth M., 4,215,020, Cl. 252-519.000.
Tsuganezawa, Kunihiro; Kobayashi, Teruo; Harada, Shigehisa; Nishizawa, Yoichi; and Kusunose, Tomoya, to Nippon Columbia Kabushikikaisha. Method of making a magnetic powder. 4,214,893, Cl. 75-0.5AA.
Tsujii, Kaoru: *See—*
Deguchi, Katsuhiko; Mino, Junryo; and Tsujii, Kaoru, 4,214,908, Cl. 106-13.000.
Tu, Hosheng, to UOP Inc. High octane FCC catalyst. 4,215,015, Cl. 252-453.000.
Tucker, Harold A, to B. F. Goodrich Company, The. Non-woven fibers coated with a polymer of ethylenically unsaturated blocked aromatic diisocyanates. 4,215,175, Cl. 428-375.000.
Tuites, Richard C.: *See—*
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,215,195, Cl. 430-496.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., to General Electric Company. Structural cooling air manifold for a gas turbine engine. 4,214,851, Cl. 415-115.000.
Tuley, Eugene N.; Landis, Delmer H., Jr.; and Lozier, Paul W., to General Electric Company. Variable turbine vane assembly. 4,214,852, Cl. 415-115.000.
Tuller, Harold W.; and Schulze, Stephen R., to Allied Chemical Corporation. Polyamide laminates. 4,215,176, Cl. 428-412.000.
Tuma, Wade B.; and Strohl, Niles E., to Atari, Inc. Method of making a radio frequency oscillator-modulator with ground metallization. 4,214,360, Cl. 29-829.000.
Tupitsyn, Konstantin K.: *See—*
Sudnishnikov, Boris V.; Tkach, Khaim B.; Kostylev, Alexandr D.; Kamensky, Veniamin V.; Tupitsyn, Konstantin K.; and Terin, Vladimir M., 4,214,638, Cl. 173-1.000.
Turetsky, Mark A.; and Robbins, Robert E. Point of purchase display. 4,214,661, Cl. 206-466.000.
Turpin, Ronald F.: *See—*
Allen, Fred E.; Thuener, Bruce W.; and Turpin, Ronald F., 4,214,419, Cl. 53-543.000.
Tyler, Timothy N.: *See—*
Carlin, Joseph T.; Ware, James W.; Mills, Melvin E., Jr.; and Tyler, Timothy N., 4,214,999, Cl. 252-8.55D.
Tylko, Jozef K., to Rugby Portland Cement Company Limited, The. Production of hydraulic cements and cement-forming materials. 4,215,232, Cl. 13-2.00P.
Ube Industries, Ltd.: *See—*
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,215,021, Cl. 260-5.000.
Uchida, Yasuo; Shiozawa, Kazuo; and Suzuki, Kiziro, to Konishiroku Photo Industry Co., Ltd. Method and device for controlling the exposure of a camera when photographing an object of which luminance is different on each surface section thereof. 4,214,826, Cl. 354-31.000.
Udall, Humfrey N.: *See—*
Rudd, Wallace C.; and Udall, Humfrey N., 4,215,259, Cl. 219-10.430.
Ueda, Hirotada: *See—*
Ejiri, Masakazu; and Ueda, Hirotada, 4,215,343, Cl. 340-711.000.
Uemura, Hiroshi: *See—*
Fujimori, Fumio; Yokoi, Masatada; Ishikawa, Masakazu; Uemura, Hiroshi; and Shirai, Akira, 4,214,649, Cl. 188-73.500.
Uenaka, Akimitsu: *See—*
Mizuguchi, Ryuzo; Takahashi, Atushi; Ishikura, Shinichi; and Uenaka, Akimitsu, 4,215,028, Cl. 260-29.6TA.
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, to Ogawa & Co., Ltd. Sublimable herbicidal compositions containing triisopropyl-or tritertiary-butyl-s-trioxane carriers. 4,214,892, Cl. 71-93.000.
Ughi, Edoardo. Method for making soles. 4,214,335, Cl. 12-146.0BR.
Ugrjumova, Galina S.: *See—*
Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M., 4,215,106, Cl. 424-81.000.
Uhlig, Albert R.; and Stoll, Andrew J., III, to Owens-Illinois, Inc. Method for blow molding hollow article with integrally bonded attachment. 4,215,089, Cl. 264-516.000.
Uhrig, Heinz; List, Karl-Hermann; and Deubel, Reinhold, to Hoechst Aktiengesellschaft. Dispersing agents for finely dividing and stabilizing dyestuffs, pigments and optical brighteners as well as the dispersions thereby obtained. 4,214,872, Cl. 8-589.000.
Ullman, Michael K.; David, Stephen T.; and Gallian, Claude E., to Mead Johnson & Company. Multi-fractionable tablet structure. 4,215,104, Cl. 424-15.000.
Ulveling, Leon: *See—*
Mailliet, Pierre; and Ulveling, Leon, 4,214,608, Cl. 137-546.000.
UMC Industries, Inc.: *See—*
Pryor, Harry H.; and Chumley, Calvin L., 4,214,654, Cl. 194-1.00E.
Unimation Inc.: *See—*
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Union Carbide Corporation: *See—*
Borden, George W.; Smith, Oliver W.; and Trecker, David J., 4,215,167, Cl. 428-203.000.
Radzilowski, Ronald H., 4,214,899, Cl. 75-58.000.
Stueben, Kenneth C.; and Deem, Mary L., 4,215,076, Cl. 568-461.000.
Union Oil Company of California: *See—*
Young, Donald C., 4,214,888, Cl. 71-28.000.
United States Borax & Chemical Corporation: *See—*
Wilson, Martin, 4,214,710, Cl. 241-24.000.
United States Gypsum Company: *See—*
Wendt, Alan C., 4,214,414, Cl. 52-288.000.
United States of America
Agriculture: *See—*
Frank, Arlen W., 4,214,873, Cl. 8-116.00P.
Thorsen, Walter J., 4,214,330, Cl. 8-149.200.
Air Force: *See—*
Betts, Robert K., 4,215,181, Cl. 428-591.000.
Kitchen, Donald R.; and Jacobson, Loren A., 4,214,904, Cl. 75-165.000.
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,215,072, Cl. 260-551.00P.
Phillips, Calvert F., Jr., 4,215,344, Cl. 343-18.00E.
Army: *See—*
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Fine, Jonathan E.; and Sewell, Clinton J., 4,214,533, Cl. 102-209.000.
Gutleber, Frank S., 4,215,244, Cl. 370-116.000.
Richter, Arnold A.; and Edwards, Charles E. H., 4,214,534, Cl. 102-215.000.
Energy: *See—*
Ardary, Zane L.; and Reynolds, Carl D., 4,215,088, Cl. 264-332.000.
Edwards, David, Jr.; and Schneider, William, 4,214,473, Cl. 73-23.000.
Knapp, Furn F., Jr., 4,215,045, Cl. 260-397.200.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
MacDoran, Peter F. Interferometric locating system. 4,215,345, Cl. 343-112.00R.
McCrea, Frank E. Support assembly for cryogenically coolable low-noise choked waveguide. 4,215,327, Cl. 333-252.000.
Stokes, Roy C.; and Koch, Norman G. Multispectral scanner optical system. 4,215,273, Cl. 250-347.000.
National Aeronautics and Space Administration: *See—*
Sliney, Harold E., 4,214,905, Cl. 75-200.000.
Sorensen, Norman E.; and Latham, Eldon A., 4,214,703, Cl. 239-127.300.
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Navy: *See—*
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Browning, Joe L.; and Adams, Crestus L., 4,214,439, Cl. 60-216.000.
Camp, Albert T.; Mueller, Kurt F.; and Nauflett, George W., 4,214,929, Cl. 149-109.400.
Consaga, John P., 4,214,928, Cl. 149-19.900.
Friedman, Moshe, 4,215,291, Cl. 315-5.410.
Jarrell, Edward C.; Marlow, Donald R.; Tetens, Howard B.; and Gulick, Joseph F., 4,215,347, Cl. 343-117.00R.
Martin, Eugene C.; and Adicoff, Arnold, 4,215,046, Cl. 260-326.260.
Mouritsen, Thorvald E.; and Simpkin, William E., 4,214,441, Cl. 60-262.000.
Sansone, Francis N., 4,215,325, Cl. 333-20.000.
Van Marter, Charles W.; Rofini, Raymond L.; and Smith, Laurence D., 4,215,428, Cl. 367-137.000.
U.S. Philips Corporation: *See—*
De Hair, Johannes T. W.; and Boogerd, Gert M., 4,215,289, Cl. 313-486.000.
Mach, Helmut, 4,215,376, Cl. 360-36.000.
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United States Steel Corporation: *See—*
Douty, Donald L.; and Elgin, Robert J., 4,214,759, Cl. 277-12.000.
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Wiesboeck, Robert A., 4,214,609, Cl. 137-573.000.
United Technologies Corporation: *See—*
Games, John E.; and Bitterli, William W., 4,215,408, Cl. 364-505.000.
Pinsley, Edward A.; and Schmidtke, Richard A., 4,215,321, Cl. 331-94.50G.
United Utensils Company, Inc.: *See—*
Berger, Sidney; and Cubieta, John J., 4,214,670, Cl. 220-70.000.
University of Kansas Endowment Association: *See—*
Mitscher, Lester A., 4,215,062, Cl. 260-365.000.
University of Utah: *See—*
Giddings, John C., 4,214,981, Cl. 209-155.000.
UOP Inc.: *See—*
Maffet, Vere, 4,214,377, Cl. 34-12.000.
Raymond, Robert F., 4,215,231, Cl. 585-251.000.
Tu, Hosheng, 4,215,015, Cl. 252-453.000.
Upjohn Company, The: *See—*
Axen, Udo F., 4,215,222, Cl. 560-53.000.
Kelly, Robert C., 4,215,214, Cl. 542-426.000.
Shah, Ashok C.; and Strzelinski, Edward P., 4,215,117, Cl. 424-248.400.
Szmuszkovicz, Jacob, 4,215,114, Cl. 424-275.000.
Upmeier, Hartmut; Schmidt, Horst; and Brauner, Hans-Joachim, to Windmoller & Holscher. Process for coating woven tubing of fibrillated tape with synthetic thermoplastics. 4,214,934, Cl. 156-244.110.
Upton, Thomas E., to Dresser Industries, Inc. Well packer bypass valve seal assembly. 4,214,629, Cl. 166-129.000.
Urui, Kiyoshi: *See—*
Fukuda, Takeo; Hanawa, Kazuhiko; and Urui, Kiyoshi, 4,215,251, Cl. 179-170.00R.
Usubuchi, Touru; and Iinuma, Kazumoto, to Nippon Electric Company, Ltd. Digital facsimile transmission system for screened pictures. 4,215,375, Cl. 358-261.000.
Utex Industries, Inc.: *See—*
Pippert, Aaron J., 4,214,761, Cl. 277-123.000.
Utyamyshev, Rustam I.: *See—*
Smirnov, Boris A.; Mochalov, Vyacheslav N.; Busygin, Valery P.; Utyamyshev, Rustam I.; and Semenov, Alexei I., 4,214,584, Cl. 128-218.00M.
Vale, Wylie W., Jr.: *See—*
Rivier, Jean E. F.; Rivier, Catherine L.; and Vale, Wylie W., Jr., 4,215,038, Cl. 260-112.5LH.
Valeev, Dzhavit K.: *See—*
Chabanov, Alim I.; Daniljuk, Valery V.; Valeev, Dzhavit K.; Bauer, Alfrid G.; Petrov, Boris N.; Tropin, Sergei N.; Chuguev, Dmitry I.; Ivanov, Ivan V.; Braun, Georgy A.; and Alexandrov, Valery M., 4,214,464, Cl. 72-8.000.
Valtsov, Vladimir V.: *See—*
Kolpakov, Serafim V.; Gurkov, Zinovy L.; Bondarenko, Oleg L.; Valtsov, Vladimir V.; Pozhivanov, Alexandr M.; Gugnin, Eduard D.; Radilov, Stanislav V.; and Bogdanov, Alexandr A., 4,214,856, Cl. 425-60.000.
Van Huffel Tube Corporation: *See—*
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Van Auken, Richard L., to Exxon Research & Engineering Co. Method for making composite tubular elements. 4,214,932, Cl. 156-187.000.
Van Coney, H. Robert: *See—*
Lucas, Malcolm B.; and Van Coney, H. Robert, 4,214,945, Cl. 156-634.000.
Vanderkelen, James B.; and Riskey, William E., to Snow Machines, Inc. Method and apparatus for making snow for ski slopes and the like. 4,214,700, Cl. 239-2.00S.
van der Lely, Cornelis. Implement. 4,214,635, Cl. 172-271.000.
Van der Meulen, Leonard. Method and apparatus for manufacturing bags of a continuous web of a thermoplastic synthetic sheet material. 4,214,509, Cl. 93-35.00R.
Vander Mey, John E., to Allied Chemical Corporation. Organic stripping compositions and method for using same. 4,215,005, Cl. 252-153.000.
Vanderpool, Clarence D.: *See—*
Gingerich, Richard G. W.; Vanderpool, Clarence D.; Fedorchak, Mary A.; Ritsko, Joseph E.; and Cheresnowsky, Michael J., 4,214,895, Cl. 75-0.5AA.
van der Schee, Abraham C.: *See—*
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Van Eck, Jean-Louis: *See—*
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van Gelder, Arthur, to Ozodyne, Inc. Sewage and waste water treatment. 4,214,887, Cl. 71-9.000.
van Hoorn, Jacques J. B. Micro-mill-mixer. 4,214,712, Cl. 241-46.00B.
Van Marter, Charles W.; Rofini, Raymond L.; and Smith, Laurence D., to United States of America, Navy. Time ratio controlled inverter. 4,215,428, Cl. 367-137.000.
van Namen, Frederik T., to Centronics Data Computer Corp. Pin-feed assembly. 4,214,691, Cl. 226-74.000.
Varian Mat GmbH: *See—*
Franzen, Jochen, 4,215,411, Cl. 364-527.000.
Varta Batterie Aktiengesellschaft: *See—*
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Vecta Contract, Inc.: *See—*
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Venero, Aurelio O.: *See—*
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Thekdi, Arvind C.; Hemsath, Klaus H.; Conybear, James G.; Vereecke, Frank J.; and Verhoff, Steven H., 4,214,869, Cl. 432-31.000.
Verhoff, Steven H.: *See—*
Thekdi, Arvind C.; Hemsath, Klaus H.; Conybear, James G.; Vereecke, Frank J.; and Verhoff, Steven H., 4,214,869, Cl. 432-31.000.

Verhulst, Dirk E. V.; Maes, Robert H.; and Fontainas, Luc M., to Metallurgie Hoboken Overpelt. Process for the extraction of non-ferrous metals from slags and other metallurgical by-products. 4,214,897, Cl. 75-11.000.
Verwey, William G. A.; and Stanton, Stephen, to Precision Industries, Inc. Palletizer. 4,214,848, Cl. 414-77.000.
Vessey, William R. Grade checker. 4,214,373, Cl. 33-277.000.
Victor Company of Japan, Ltd.: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Miyoshi, Tadayoshi; Motoyama, Koichiro; Miyazaki, Kenichi; and Yokokawa, Sumio, 4,215,364, Cl. 358-47.000.
Vilaprinyo Oliva, D. Entique, to Eurographics Holding, N. V. Metallization process. 4,215,170, Cl. 428-328.000.
Vincent, Jean-Claude: *See—*
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Virsen, Gary R. Display structure. 4,214,392, Cl. 40-605.000.
Vishkarev, Oleg M.: *See—*
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Vogelsberg, Dieter; and Pascher, Helmut, to Siemens Aktiengesellschaft. Method and apparatus for the layerwise SZ-stranding of elements to be stranded about a flexible core strand. 4,214,430, Cl. 57-6.000.
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von Kemenczky, Miklos. Musical composer instrument and electronic player (electronic composer). 4,214,501, Cl. 84-1 030.
Voorhees, James M., Jr. Support for tubing or cables in buildings. 4,214,723, Cl. 248-68.00R.
Vorbach, Emil, to Mannesmann Aktiengesellschaft. Hot rolling pilger mill. 4,214,468, Cl. 72-189.000.
Voronkov, Mikhail G.; Platonova, Ada T.; Annenkova, Vladislava Z.; Kononchuk, Galina M.; Kazimirovskaya, Valentina B.; Ugrjumova, Galina S.; and Annenkova, Valentina M. Local hemostatic. 4,215,106, Cl. 424-81.000.
Voshall, Roy E.: *See—*
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Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
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Waddell, Jerry D.; Scheeter, John J.; and Stoller, David A., to ACF Industries, Incorporated. Hopper outlet having vertically movable door bearing. 4,214,536, Cl. 105-282.00P.
Wade, James; and Jewett, Charles S., to Avco Corporation. Flexible coupling apparatus. 4,214,457, Cl. 64-4.000.
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Waggener, William N., to Sangamo Weston, Inc. Apparatus and method for filtering signals in a logging-while-drilling system. 4,215,425, Cl. 367-83.000.
Waggener, William N.; and Schroeder, Gene F., to Sangamo Weston, Inc. Carrier tracking apparatus and method for a logging-while-drilling system. 4,215,427, Cl. 367-83.000.
Waggonfabrik Uerdingen A.G.: *See—*
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Wagner, Norman J.: *See—*
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Wahlers, Richard L.; and Merz, Kenneth M., to TRW Inc. Electrical resistor material, resistor made therefrom and method of making the same. 4,215,020, Cl. 252-519.000.
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Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., 4,215,407, Cl. 364-468.000.
Wallace, Franklin D.; and Carr, John C., to Standard Oil Company (Indiana). Removal of dissolved disodium terephthalate from aqueous solution also containing sodium hydroxide. 4,215,224, Cl. 562-485.000.
Walter, Henry J.; and Mack, William, to Clairol Inc. Blade assembly. 4,214,365, Cl. 30-224.000.
Wang, Cheng H., to Digital Equipment Corporation. Impact print head. 4,214,836, Cl. 400-124.000.
Ward, Bruce K. Vent and baffle unit. 4,214,510, Cl. 98-37.000.
Ward, Stanley A.: *See—*
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Wasik, Ronald J.; and Wasik, Janice E. Pasta measurer. 4,214,369, Cl. 33-137.00R.
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo, and Mitsui, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Mesa type semiconductor device. 4,215,358, Cl. 357-56.000.
Watson, James H. P.; and Jones, James P. E., to English Clays Lovering Pochin & Company, Limited. Magnetic separator for separating magnetizable particles from a fluid, method and apparatus. 4,214,986, Cl. 210-42.00S.
Watts, Grady; and Robinson, Michael, to Chemdet Sonic Systems, Inc. Apparatus for cleaning tanks. 4,214,705, Cl. 239-227.000.
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Weiner, Robert I.; and Sauter, W. Roger, to Weiner, Robert I. Sequencing light controller. 4,215,277, Cl. 307-41.000.
Weiss, Viktor. Filtering apparatus and methods of exchanging particulate filter materials. 4,214,878, Cl. 55-96.000.
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Wendt, Alan C., to United States Gypsum Company. Remountable unitary wall base trim. 4,214,414, Cl. 52-288.000.
Wenk, Raymond C. Snap-on clamp. 4,214,351, Cl. 24-255.0SL.
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Weslow, Jerome H.; and Rodrian, James A., to Weslow, Jerome H.; Weslow, Harold J.; Weslow, Thomas A.; Netzow, Paul R.; and Weslow, Roland. Solar tracker. 4,215,410, Cl. 364-516.000.
Weslow, Roland: *See—*
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Wessels, Bernhard; and Fugger, Adolf, to Schmitz-Werke GmbH & Co. Awning mechanism. 4,214,621, Cl. 160-66.000.
Western Electric Company, Inc.: *See—*
Kalina, Robert F., 4,214,353, Cl. 29-25.420.
Resener, Baird E., 4,215,250, Cl. 179-149.000.
Scheidt, Gerald A., 4,214,432, Cl. 57-293.000.
Westinghouse Electric Corp.: *See—*
Choyke, Wolfgang J.; and Hoffman, Richard A., 4,214,818, Cl. 350-310.000.
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.
Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., 4,215,407, Cl. 364-468.000.
Pebler, Alfred R.; and Ruka, Roswell J., 4,214,967, Cl. 204-195.00S.

Wolf, Charles B.; Meyer, Thomas N.; Fey, Maurice G.; and Harvey, Francis J., II, 4,214,736, Cl. 266-200.000.

Wetherton, William M., to Carman Industries, Inc. Drawdown hopper isolation system having isolators with fabric lays. 4,214,680, Cl. 222-161.000.

Wey, Robert A.: *See*—
Grey, David S.; and Wey, Robert A., 4,215,263, Cl. 219-121.00L.

Whang, Chi-Man. Measured quantity dispenser. 4,214,679, Cl. 222-158.000.

Wharton, Gerald R., to Therm-O-Disc, Incorporated. Probe thermostat with swivel. 4,215,332, Cl. 337-394.000.

Wheaton Industries: *See*—
Allen, Fred E.; Thuener, Bruce W.; and Turpin, Ronald F., 4,214,419, Cl. 53-543.000.

Whetstone, James A.; and Tillett, George W., to Tillett, George W. Degassing apparatus. 4,214,879, Cl. 55-191.000.

White Consolidated Industries, Inc.: *See*—
Mirow, George, 4,214,528, Cl. 101-248.000.

White, Fred K., to American Hospital Supply Corporation. Combination and method for mixing the contents of a blood collection tube and thereafter removing the mixing element. 4,214,874, Cl. 23-230.00B.

White, Philip D. Method and apparatus for producing ceramic ware. 4,215,265, Cl. 219-390.000.

White, Ralph E.: *See*—
Ritchie, Timothy J.; and White, Ralph E., 4,214,922, Cl. 148-9.500.

Wickersheim, Kenneth A., to Luxtron Corporation. Optical temperature measurement technique utilizing phosphors. 4,215,275, Cl. 250-459.000.

Widmer, Gilbert: *See*—
Benoit, Pierre A.; and Widmer, Gilbert, 4,214,811, Cl. 350-96.210.

Wiebus, Ernst: *See*—
Cornils, Boy; Konkol, Werner; Diekhaus, Gerhard; and Wiebus, Ernst, 4,215,073, Cl. 260-563.00D.

Wiesboeck, Robert A., to United States Steel Corporation. Apparatus for dividing gravity flow liquid stream. 4,214,609, Cl. 137-573.000.

Wiewiorowski, Edward I.: *See*—
Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., 4,214,900, Cl. 75-109.000.

Wild, Daniel: *See*—
Gfeller, Fritz; and Wild, Daniel, 4,214,807, Cl. 350-3.730.

Wilfert, Thomas: *See*—
Knapp, Heinrich; Wilfert, Thomas; Grassle, Alfred; and Fussner, Paul, 4,214,565, Cl. 123-179.00L.

Wilhelm Hainbuch GmbH & Co.: *See*—
Rall, Gerhard; and Kastner, Hermann L., 4,214,766, Cl. 279-46.00R.

Williams, Leonard E., Jr.; and Taylor, William M., to Cameron Iron Works, Inc. Valve. 4,214,600, Cl. 137-72.000.

Williams, Max B.: *See*—
Funk, Andrew B.; and Williams, Max B., 4,215,225, Cl. 562-606.000.

Williams, Richard, to RCA Corporation. Liquid junction schottky barrier solar cell. 4,215,185, Cl. 429-111.000.

Williams, William; and Crane, Michael L., to Delplast Limited. Manufacture of footwear. 4,214,334, Cl. 12-142.0RS.

Williamson, Dennis F.: *See*—
D'Atre, John D.; and Williamson, Dennis F., 4,215,304, Cl. 318-758.000.

Willis, Alan: *See*—
Leibowitz, Marshall; Willis, Alan; and George, Douglas, 4,214,820, Cl. 350-357.000.

Wills, Jack D.; and Clarkson, Frank R., to Tale-Lite Systems, Inc. Illuminated wheel cover. 4,214,683, Cl. 224-42.200.

Wilson, Arthur: *See*—
Lowe, Edward J.; Wilson, Arthur; and Minshall, Michael W., 4,215,098, Cl. 423-305.000.

Wilson, Martin, to United States Borax & Chemical Corporation. Froth flotation of zinc sulfide. 4,214,710, Cl. 241-24.000.

Wilson, Stephen S.: *See*—
Holsztynski, Wlodzimierz; and Wilson, Stephen S., 4,215,401, Cl. 364-200.000.

Wimpfheimer, Hans: *See*—
Dalal, Hormazdyar M.; Ghafghaichi, Majid; Kasprzak, Lucian A.; and Wimpfheimer, Hans, 4,215,156, Cl. 427-84.000.

Windisch, Lawrence; Nees, John; and Channing, Harry, to General Battery Corporation. Temperature controlled, auto timed, variable amperage cascading-water furmation method for use with high antimony and maintenance free lead-acid batteries. 4,215,307, Cl. 320-2.000.

Windmoller & Holscher: *See*—
Upmeier, Hartmut; Schmidt, Horst; and Brauner, Hans-Joachim, 4,214,934, Cl. 156-244.110.

Winsor, Jack O.; and Thompson, Neville, to Dresser Industries, Inc. Hydraulic circuitry for raise drill apparatus. 4,214,445, Cl. 60-486.000.

Winston, Billy G. Toothbrush holder and sterilizer. 4,214,657, Cl. 206-209.100.

Witteman Steel Mills: *See*—
Jaenson, Howard W., 4,214,623, Cl. 164-83.000.

Wittmann, Alois; and McGrath, Ronald J., to Hughes Aircraft Company. Dimensionally stable support structure. 4,214,406, Cl. 52-1.000.

Wittmann, Heinz, to TMC Corporation. Heel holder for release ski binding. 4,214,773, Cl. 280-631.000.

Witzke, Walter R.: *See*—
Stephens, Joseph R.; and Witzke, Walter R., 4,214,902, Cl. 75-124.000.

Woeckener, Willi; Pawelczyk, Werner; and Marquardt, Klaus-Dieter, to Hermann Berstorff Maschinenbau GmbH. Multi-roll calender. 4,214,857, Cl. 425-141.000.

Wojciechowski, Stanley P., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming and processing roving. 4,214,931, Cl. 156-169.000.

Wolf, Anthony D., to Du Pont de Nemours, E. I., and Company. Triazolone herbicides. 4,214,891, Cl. 71-92.000.

Wolf, Charles B.; Meyer, Thomas N.; Fey, Maurice G.; and Harvey, Francis J., II, to Westinghouse Electric Corp. Arc heater melting system. 4,214,736, Cl. 266-200.000.

Woo, Beng-Yu: *See*—
Rege, Satish L.; and Woo, Beng-Yu, 4,215,423, Cl. 365-77.000.

Wood, Leonard J., Jr.: *See*—
Mazzarella, Emil D.; Wood, Leonard J., Jr.; and Maliczyszyn, Walter, 4,214,948, Cl. 162-158.000.

Wood, William G.: *See*—
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; Jones, F. David; Edblad, Warren A.; and Wallace, Frank E., 4,215,406, Cl. 364-468.000.
Gomola, John W.; Wood, William G.; Jones, F. David; Wallace, Frank E.; and Marano, Ross T., 4,215,407, Cl. 364-468.000.

Wortham, Carl A.: *See*—
Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., 4,214,541, Cl. 112-262.300.

Wright, Franklin J.: *See*—
Amick, James A.; Milewski, John V.; and Wright, Franklin J., 4,214,920, Cl. 148-1.500.

Wright, George H. Lawn debris pulverizer. 4,214,713, Cl. 241-57.000.

Wu, Ching-Yong; and Swift, Harold E., to Gulf Research & Development Company. Preparation of 1,3-dicyanocyclopentane. 4,215,068, Cl. 260-464.000.

Wurfel, Helmut. Process for hydrogenation of coal. 4,214,974, Cl. 208-10.000.

Wyden, Stephen. Hood with a cooling device and a precipitator. 4,214,455, Cl. 62-467.00R.

Wysocki, Peggie A. Board game apparatus. 4,214,755, Cl. 273-243.000.

Wysong, Robert D., to Du Pont de Nemours, E. I., and Company. Melt-extrudable cold water soluble films. 4,215,169, Cl. 428-220.000.

Xerox Corporation: *See*—
Acquaviva, Thomas, 4,214,740, Cl. 271-3.000.
Larsson, Stig-Goran, 4,215,354, Cl. 346-140.00R.
Moser, Rabin, 4,214,549, Cl. 118-60.000.
Redding, Thomas P.; Herbert, Glenn M.; and Caldwell, Alistair J., 4,214,746, Cl. 271-294.000.

Yahagi, Mitsuhisa: *See*—
Takigawa, Hiroyoshi; Ogawa, Hiroshi; Ohkuni, Shinichiro; and Yahagi, Mitsuhisa, 4,214,618, Cl. 152-209.00D.

Yamada, Koichi: *See*—
Inao, Jun-ichi; Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,215,094, Cl. 423-123.000.

Yamada, Seiji: *See*—
Tominaga, Shinji; Imura, Toshinori; Yamada, Seiji; and Kogure, Yasuzi, 4,214,827, Cl. 354-127.000.

Yamada, Tsugutoshi: *See*—
Nagashima, Kiyoshi; and Yamada, Tsugutoshi, 4,214,450, Cl. 60-648.000.

Yamaguchi, Tadahiro; and Aizawa, Koki, to Pioneer Electronic Corporation. AM stereo signal demodulation circuit. 4,215,316, Cl. 329-50.000.

Yamaguchi, Tamikazu, to Minolta Camera Kabushiki Kaisha. High speed telephoto lens system. 4,214,816, Cl. 350-218.000.

Yamaha Hatsukoki Kabushiki Kaisha: *See*—
Matsumoto, Hiromitsu; and Yamashita, Ryuichi, 4,214,561, Cl. 123-432.000.

Yamamoto, Noboru: *See*—
Oda, Isao; Kaneno, Masayuki; and Yamamoto, Noboru, 4,214,666, Cl. 220-2.10R.

Yamamoto, Shinji: *See*—
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,215,021, Cl. 260-5.000.

Yamamoto, Yojiro: *See*—
Okayama, Kiyoaki; and Yamamoto, Yojiro, 4,215,210, Cl. 528-93.000.

Yamanaka, Shogo; and Kouda, Masanori, to Atsugi Motor Parts Co. Automotive vehicle power steering system. 4,214,643, Cl. 180-148.000.

Yamanaka, Yoshio: *See*—
Hagiwara, Zenzi; Matsui, Sigeo; Sakaguchi, Susumu; and Yamanaka, Yoshio, 4,215,008, Cl. 252-184.000.

Yamashita, Ryuichi: *See*—
Matsumoto, Hiromitsu; and Yamashita, Ryuichi, 4,214,561, Cl. 123-432.000.

Yamaura, Tatsuo: *See*—
Hikida, Chuichi; Kishino, Takao; Mizohata, Tadashi; and Yamaura, Tatsuo, 4,215,290, Cl. 313-496.000.

Yamazaki, Kazuhiro: *See*—
Oota, Kazunari; and Yamazaki, Kazuhiro, 4,214,731, Cl. 251-306.000.

Yasuda, Hiroki, to Fuji Jukogyo Kabushiki Kaisha. Catalytic converter. 4,215,093, Cl. 422-179.000.

Yasumura, Masayuki: *See*—
Mitamura, Ichiro; and Yasumura, Masayuki, 4,215,296, Cl. 315-408.000.

Yeda Research and Development Co. Ltd.: *See*—
Patchornik, Avraham; Warshawsky, Abraham; Fridkin, Matityahu; and Kalir, Rami, 4,215,219, Cl. 546-179.000.

Yee, Kwok C.; Preziosi, Anthony F.; Patel, Gordhanbhai N.; Chance, Ronald R.; Miller, Granville G.; and Baughman, Ray H., to Allied Chemical Corporation. Thermochromic polyacetylenes containing urethane groups. 4,215,208, Cl. 526-285.000.

Yokoi, Masatada: *See*—
Fujimori, Fumio; Yokoi, Masatada; Ishikawa, Masakazu; Uemura, Hiroshi; and Shirai, Akira, 4,214,649, Cl. 188-73.500.

Yokokawa, Sumio: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Miyoshi, Tadayoshi; Motoyama, Koichiro; Miyazaki, Kenichi; and Yokokawa, Sumio, 4,215,364, Cl. 358-47.000.

Yonemura, Utami; Chiba, Kiyoshi; Itoh, Kunio; Mitani, Yuji; and Sobajima, Shigenobu, to Teijin Limited. Laminated multilayer sheet structure and its utilization. 4,215,168, Cl. 428-215.000.

Yoshida, Shuu: *See*—
Inoko, Michio; Kawatsuji, Shinichi; Matsui, Toshiie; and Yoshida, Shuu, 4,214,942, Cl. 156-500.000.

Yoshihara, Nori: *See*—
Kobayashi, Shigeo; Yoshihara, Nori; Nanbu, Kiyoji; and Goto, Yukio, 4,215,032, Cl. 260-40.00R.

Yoshikawa, Noriyasu: *See*—
Hayashi, Hiroaki; Fukuda, Kiyoshi; Kubo, Hiroshi; Yoshikawa, Noriyasu; and Takada, Hiroshi, 4,215,234, Cl. 174-15.00C.

Yoshioka, Osamu: *See*—
Takahashi, Takeyoshi; Eto, Hirozumi; and Yoshioka, Osamu, 4,215,049, Cl. 260-343.30R.

Young, Alan C.: *See*—
Holpuch, Robert J.; Mathias, Robert G.; and Young, Alan C., 4,214,502, Cl. 84-1.240.

Young, Donald C., to Union Oil Company of California. Foliar fertilization method and composition. 4,214,888, Cl. 71-28.000.

Young, Niels O., to Arthur D. Little, Inc. Apparatus for measuring angular speed. 4,214,483, Cl. 73-518.000.

Young, William C., to Burroughs Corporation. Technique of growing thin silicon oxide films utilizing argon in the contact gas. 4,214,919, Cl. 148-1.500.

Youngberg, Fred A.; and Zierhut, Clarence D., to Lewis, John, a part interest. Retractable brush with rotatable actuating mechanism. 4,214,340, Cl. 15-184.000.

Yu, Peter H.: *See*—
Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., 4,214,900, Cl. 75-109.000.

Yukio, Asakawa: *See*—
Katsuto, Nagano; Syozo, Sasa; Takeshi, Nakada; and Yukio, Asakawa, 4,214,926, Cl. 148-175.000.

Yurgevich, Howard J.: *See*—
Katz, Sol; Bertsch, Josef; and Yurgevich, Howard J., 4,214,789, Cl 296-183.000.

Zahn, Wolfgang: *See*—
Findeis, Gunter; Zahn, Wolfgang; and Weber, Klaus, 4,214,834, Cl. 355-46.000.

Zebelean, John, to Pro-Patterns Inc. Metal golf driver and method of making same. 4,214,754, Cl. 273-167.00H.

Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., to Fieldcrest Mills, Inc. Method for manufacturing pillowcases. 4,214,541, Cl. 112-262.300.

Zelahy, John W., to General Electric Company. Method for repairing a turbomachinery blade tip. 4,214,355, Cl. 29-156.80B.

Zellers, Robert D.: *See*—
Patnoi, Charles M.; Cooper, Daniel; and Zellers, Robert D., 4,214,590, Cl. 128-710.000.

Zentmeyer, Richard B., Jr., to R. E. Phelon Company, Inc. Pole-shoe magnet group for magnetomotive device. 4,215,284, Cl. 310-70.00A.

Zhdanov, Gennady P.: *See*—
Bukhtiyarov, Ivan D.; Potanin, Veniamin G.; Alt, Viktor V.; Rakhmanin, Evgeny A.; Lyzlov, Vladimir M.; An, Viktor B.; Anikin, Valery P.; Koshevoi, Vladimir G.; Timonin, Nikolai G.; Zhdanov, Gennady P.; Gibert, Alfred I.; and Kolesnikov, Vladimir M., 4,215,404, Cl. 364-431.000.

Zierhut, Clarence D.: *See*—
Youngberg, Fred A.; and Zierhut, Clarence D., 4,214,340, Cl. 15-184.000.

Zimmerman, Ulrich: *See*—
Husken, Dieter; Steudle, Ernst; and Zimmerman, Ulrich, 4,214,487, Cl. 73-753.000.

Zollinger, Hans-Rudolf, to H. A. Schlatter AG. Apparatus for welding two profile or section rods by means of resistance welding, especially for welding two rails. 4,215,260, Cl. 219-53.000.

Zorev, Nikolai N.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

Zukas, Peter W.; and Zukas, William. Wood cutting apparatus. 4,214,498, Cl. 83-796.000.

Zukas, William: *See*—
Zukas, Peter W.; and Zukas, William, 4,214,498, Cl. 83-796.000.

Zurflueh, Rene: *See*—
Fischer, Ulf; Schneider, Fernand; and Zurflueh, Rene, 4,215,139, Cl. 424-300.000.

Zvezdin, Jury I.: *See*—
Balandin, Jury F.; Badanin, Vladimir I.; Gorynin, Igor V.; Gluskin, Lev Y.; Zvezdin, Jury I.; Nikolaev, Vladimir A.; Parshin, Anatoly M.; Zorev, Nikolai N.; Astafiev, Anatoly A.; Dub, Vladimir S.; Vishkarev, Oleg M.; Markov, Sergei I.; Sobolev, Jury V.; and Kozlov, Valentin I., 4,214,950, Cl. 176-87.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF JULY, 1980

NOTE —Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Associated Mills, Inc.: *See*—
Peterson, Samuel F.; and Rundzaitis, Alfons, Re. 30,350, Cl. 239-394.000.

Batelle Development Corporation: *See*—
Voinov, Michel, Re. 30,353, Cl. 429-104.000.

Coffman, Moody L. Traffic flow control system. Re. 30,355, Cl. 340-40.000.

Du Pont de Nemours, E. I., and Company: *See*—
Hoehn, Harvey H., and Richter, John W., Re. 30,351, Cl. 55-16.000.
Kwolek, Stephanie L., Re. 30,352, Cl. 260-30.80R.

Fraze, Ermal C.: *See*—
Silver, Francis M., Re. 30,349, Cl. 220-271.000.

Gordon, Paul, to Strategic Medical Research Corp. Novel ethereally monosubstituted monosaccharides. Re. 30,354, Cl. 536-4.000.

Hascoe, Norman, to Semi-Alloys, Inc. Solder preform. Re. 30,348, Cl. 228-56.000.

Hoehn, Harvey H.; and Richter, John W., to Du Pont de Nemours, E. I., and Company. Aromatic polyimide, polyester and polyamide separation membranes. Re. 30,351, Cl. 55-16.000.

Kwolek, Stephanie L., to Du Pont de Nemours, E. I., and Company. Optically anisotropic aromatic polyamide dopes. Re. 30,352, Cl. 260-30.80R.

Peterson, Samuel F.; and Rundzaitis, Alfons, to Associated Mills, Inc. Selectable multiple-nozzle showerhead. Re. 30,350, Cl. 239-394.000.

Richter, John W.: *See*—
Hoehn, Harvey H.; and Richter, John W., Re. 30,351, Cl. 55-16.000.

Rundzaitis, Alfons: *See*—
Peterson, Samuel F.; and Rundzaitis, Alfons, Re. 30,350, Cl. 239-394.000.

Semi-Alloys, Inc.: *See*—
Hascoe, Norman, Re. 30,348, Cl. 228-56.000.

Silver, Francis M., to Fraze, Ermal C. Easy-opening container wall with coreline vent. Re. 30,349, Cl. 220-271.000.

Strategic Medical Research Corp.: *See*—
Gordon, Paul, Re. 30,354, Cl. 536-4.000.

Voinov, Michel, to Batelle Development Corporation. Electric accumulator with a solid electrolyte. Re. 30,353, Cl. 429-104.000.

LIST OF PLANT PATENTEES

Duffett, William E.: *See*—
Meek, Jack M.; and Duffett, William E., 4,584, Cl. 74.000.
Meek, Jack M.; and Duffett, William E., 4,585, Cl. 77.000.
Meek, Jack M.; and Duffett, William E., 4,586, Cl. 78.000.

Meek, Jack M.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,584, 7-29-80, Cl. 74.000.

Meek, Jack M.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,585, 7-29-80, Cl. 77.000.

Meek, Jack M.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,586, 7-29-80, Cl. 78.000.

Saville, F. Harmon. Rose plant. 4,582, 7-29-80, Cl. 7.000.

Weeks, O. L. Rose plant. 4,583, 7-29-80, Cl. 12.000.

Williams, Ernest D. Miniature rose plant. 4,579, 7-29-80, Cl. 7.000.

Williams, Ernest D. Miniature rose plant. 4,580, 7-29-80, Cl. 7.000.

Williams, Ernest D. Miniature rose plant. 4,581, 7-29-80, Cl. 7.000.

Yoder Brothers, Inc.: *See*—
Meek, Jack M.; and Duffett, William E., 4,584, Cl. 74.000.
Meek, Jack M.; and Duffett, William E., 4,585, Cl. 77.000.
Meek, Jack M.; and Duffett, William E., 4,586, Cl. 78.000.

LIST OF DESIGN PATENTEES

A.T.N. S.p.A.: *See*—
Cura', Mario, 256,112, Cl. D12-70.000.

Adamson, Gerald J. Receptacle container. 256,089, 7-29-80, Cl. D7-194.000.

Adamson, Lee E.; and Hauger, Robert B., to Beatrice Foods Co. Soft serve machine. 256,124, 7-29-80, Cl. D15-82.000.

Alessi, Joseph. Mute for brass instruments. 256,131, 7-29-80, Cl. D17-13.000.

Alger, Andrew L.: *See*—
Polhemus, Marlan H.; and Alger, Andrew L., 256,117, Cl. D14-2.000.

Amberg, Christopher P., to Owens-Illinois, Inc. Packaging container for food or the like. 256,097, 7-29-80, Cl. D9-219.000.

Arko, Robert E.; Bellino, Joseph A.; and Hein, Richard A., to Teletype Corporation. Combined punch and reader for perforated tape. 256,120, 7-29-80, Cl. D14-49.000.

Associated Engineering Limited: *See*—
Hunt, Norman, 256,116, Cl. D13-37.000.

Ayer, Larry C.: *See*—
Hemperly, Lyle D., Jr.; Ayer, Larry C.; and Trout, David H., 256,126, Cl. D15-146.000.

Baril, Conrad J. Mileage reminder. 256,100, 7-29-80, Cl. D10-46.000.

Basic Energy Conservation Services, Inc.: *See*—
Garritson, John F., 256,156, Cl. D23-151.000.

Bateman, Robert F.: *See*—
Croyle, Jack V.; and Bateman, Robert F., 256,078, Cl. D7-16.000.

Beatrice Foods Co.: *See*—
Adamson, Lee E.; and Hauger, Robert B., 256,124, Cl. D15-82.000.

Beihoffer, Randall A.: *See*—
Hinklin, Darrell W.; and Beihoffer, Randall A., 256,090, Cl. D8-08.000.

Bell, Evan W.: *See*—
Dunbar, Donald; Bell, Evan W.; and Dziewulski, Ted, 256,110, Cl. D11-153.000.

Bell, George G., Jr. Utility load body. 256,114, 7-29-80, Cl. D12-102.000.

Bell & Howell Company: *See*—
Overman, John W., 256,127, Cl. D16-02.000.

Beller, Frank W., to Recreation Systems Co. Recreation swing. 256,149, 7-29-80, Cl. D21-246.000.

Bellino, Joseph A.: *See*—
Arko, Robert E.; Bellino, Joseph A.; and Hein, Richard A., 256,120, Cl. D14-49.000.

Bielke, Warren: *See*—
Haerr, Raymond H.; and Bielke, Warren, 256,162, Cl. D24-52.000.

Birnkrant, Melvyn, to Colorforms. Collapsible toy building. 256,143, 7-29-80, Cl. D21-114.000.

Borisoff, Paul H. Flash attachment bracket for a camera. 256,128, 7-29-80, Cl. D16-47.000.

Bounds, William E. Sugar dispenser. 256,080, 7-29-80, Cl. D7-52.000.

Brockman, Raymond G.; and Nadeau, William C., to Nadeau, William C. Cup with tongue depressor. 256,077, 7-29-80, Cl. D7-6.000.

Buttura, John, Sr. Combined slant marker and base. 256,174, 7-29-80, Cl. D99-17.000.

Buttura, John, Sr. Combined slant marker and base. 256,175, 7-29-80, Cl. D99-17.000.

C. Joseph Lamy GmbH: *See*—
Muller, Gerd A., 256,136, Cl. D19-51.000.

Caroee, Claus J.; Frederiksen, Ole; and Christensen, Boerge J. R. Serving tray. 256,073, 7-29-80, Cl. D6-113.000.

Cartier, Inc.: *See*—
Durante, Alfred J., 256,105, Cl. D11-4.000.

CBS Inc.: *See*—
Wilson, Gregg, 256,132, Cl. D17-21.000.

Chevassus, Alain, to Lefebure Isolants Reunis. Cosmetic box. 256,172, 7-29-80, Cl. D28-83.000.

Christensen, Boerge J. R.: *See*—
Caroee, Claus J.; Frederiksen, Ole; and Christensen, Boerge J. R., 256,073, Cl. D6-113.000.

Colato, Albert E.; and Pomroy, James F... to Plastics, Inc. Rack for roasting food items. 256,082, 7-29-80, Cl. D7-85.000.

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Collie, Stafford D., to Phillips Petroleum Company. Combined flower pot and saucer or the like. 256,109, 7-29-80, Cl. D11-152.000.

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Culbertson, Richard, to General Electric Company. Combined radio and walkie talkie or similar article. 256,122, 7-29-80, Cl. D14-68.000.

Cura', Mario, to A.T.N. S.p.A. Combined boat steering wheel and support column. 256,112, 7-29-80, Cl. D12-70.000.

Cusenza, John. Hair treatment iron. 256,169, 7-29-80, Cl. D28-35.000.

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228 4,214,881
302 4,214,882
426 4,214,883

CLASS 56
119 4,214,422
130 4,214,423
202 4,214,424
228 4,214,425
295 4,214,426
330 4,214,427
341 4,214,428
377 4,214,429

CLASS 57
6 4,214,430
22 4,214,431
293 4,214,432

CLASS 60
39.05 4,214,435
39.09 R 4,214,436
39.28 R 4,214,437
205 4,214,438
216 4,214,439
226 B 4,214,440
262 4,214,441
270 R 4,214,442
321 4,214,443
322 4,214,444
420 4,214,446
486 4,214,445
525 4,214,447
547 R 4,214,448
641 4,214,449
648 4,214,450
4,214,451
697 4,214,452

CLASS 62
118 4,214,453
173 4,214,454
467 R 4,214,455

CLASS 63
12 4,214,456

CLASS 64
4 4,214,457
11 R 4,214,458
29 4,214,459

CLASS 65
12 4,214,884
42 4,214,885
121 4,214,886

CLASS 66
75.2 4,214,460

CLASS 68
158 4,214,461
205 R 4,214,462

CLASS 70
456 R 4,214,463

CLASS 71
9 4,214,887
28 4,214,888
88 4,214,889
90 4,214,890
92 4,214,891
93 4,214,892

CLASS 72
8 4,214,464
36 4,214,465
142 4,214,466
183 4,214,467
189 4,214,468
258 4,214,469
286 4,214,470
349 4,214,471

CLASS 73
23 4,214,472
4,214,473
30 4,214,474
59 4,214,475
119 A 4,214,476
204 4,214,478
304 C 4,214,479
421.5 A 4,214,480
462 4,214,481
504 4,214,482
518 4,214,483
632 4,214,484
655 4,214,485
738 4,214,486
753 4,214,487
861.12 4,214,477

CLASS 74
761 4,214,489

CLASS 75
0.5 AA 4,214,893
4,214,894
4,214,895
4,214,896
11 4,214,897
12 4,214,898
58 4,214,899
109 4,214,900
119 4,214,901
124 4,214,902
134 D 4,214,903
165 4,214,904
200 4,214,905
208 R 4,214,906

CLASS 81
9.22 4,214,490
134 4,214,491

CLASS 83
24 4,214,492
100 4,214,493
150 4,214,494
425.4 4,214,495
617 4,214,496
640 4,214,497
796 4,214,498
855 4,214,499

CLASS 84
1.01 4,214,500
1.03 4,214,501
1.24 4,214,502
1.27 4,214,503
411 R 4,214,504

CLASS 85
55 4,214,505

CLASS 91
527 4,214,506

CLASS 92
254 4,214,507

CLASS 93
1 C 4,214,508
35 R 4,214,509

CLASS 98
37 4,214,510
4,214,511
40 D 4,214,512
42 R 4,214,513

CLASS 99
330 4,214,514
400 4,214,515
421 P 4,214,516
428 4,214,517
535 4,214,518

CLASS 100
37 4,214,519

CLASS 101
4 4,214,520
96 4,214,521
128.4 4,214,522
148 4,214,523
181 4,214,524
4,214,525
183 4,214,526
247 4,214,527
248 4,214,528
291 4,214,529
415.1 4,214,530
451 4,214,531

CLASS 102
30 4,214,532
209 4,214,533
215 4,214,534

CLASS 104
91 4,214,535

CLASS 105
282 P 4,214,536

CLASS 106
13 4,214,908
16 4,214,909
58 4,214,910
87 4,214,911
208 4,214,912
300 4,214,913
308 Q 4,214,914

CLASS 111
85 4,214,537
95 4,214,538

CLASS 112
158 E 4,214,539
235 4,214,540
262.3 4,214,541
278 4,214,542
320 4,214,543

CLASS 114
151 4,214,544
270 4,214,546
294 4,214,545

CLASS 118
18 4,214,548
60 4,214,549
712 4,214,550

CLASS 119
3 4,214,551
14.01 4,214,552
14.08 4,214,553
71 4,214,554
103 4,214,555
4,214,556

CLASS 123
18 R 4,214,557
41.77 4,214,560
169 C 4,214,567
179 L 4,214,565
198 R 4,214,568
293 4,214,559
432 4,214,561
437 4,214,563
489 4,214,558
502 4,214,564
568 4,214,562
594 4,214,566

CLASS 126
77 4,214,569
121 4,214,570
190 4,214,571
425 4,214,572
438 4,214,573
446 4,214,574
450 4,214,575

CLASS 128
24.1 4,214,576
25 R 4,214,577
90 4,214,578
94 4,214,579
155 4,214,581
156 4,214,582
204.26 4,214,580
214 F 4,214,583
218 M 4,214,584
303 R 4,214,585
334 R 4,214,586
4,214,587
402 4,214,588
680 4,214,589
710 4,214,590
731 4,214,591
743 4,214,592
748 4,214,593
786 4,214,594

CLASS 131
108 4,214,595

CLASS 132
7 4,214,596
9 4,214,597
92 R 4,214,598

CLASS 134
19 4,214,915

CLASS 136
89 SJ 4,214,916

CLASS 137
15 4,214,599
72 4,214,600
102 4,214,601
119 4,214,602
199 4,214,603
375 4,214,604
495 4,214,605
4,214,606
499 4,214,607
546 4,214,608
573 4,214,609
597 4,214,610

CLASS 138
30 4,214,611
144 4,214,612

CLASS 139
33 4,214,613

CLASS 141
1 4,214,614
363 4,214,615

CLASS 144
2 N 4,214,617
2 Z 4,214,616

CLASS 148
1.5 4,214,917
4,214,918
4,214,919
4,214,920
6.35 4,214,921
9.5 4,214,922
12 R 4,214,923
18 4,214,924
127 4,214,925
175 4,214,926

CLASS 149
2 4,214,927
19.9 4,214,928
109.4 4,214,929

CLASS 152
209 D 4,214,618
347 4,214,619
354 R 4,214,620

CLASS 156
1 4,214,930
169 4,214,931
187 4,214,932
238 4,214,933
244.11 4,214,934
272 4,214,935
302 4,214,936
361 4,214,937
4,214,938
398 4,214,939
402 4,214,940
414 4,214,941
500 4,214,942
504 4,214,943
518 4,214,944
634 4,214,945
643 4,214,946

CLASS 160
66 4,214,621
168 A 4,214,622

CLASS 162
18 4,214,947
158 4,214,948
352 4,214,949

CLASS 164
83 4,214,623
89 4,214,624
420 4,214,625

CLASS 165
29 4,214,626
179 4,214,627

CLASS 166
75 R 4,214,628
129 4,214,629

CLASS 169

18	4,214,630
57	4,214,631

CLASS 172

42	4,214,632
123	4,214,633
179	4,214,634
271	4,214,635
450	4,214,636
484	4,214,637

CLASS 173

1	4,214,638
43	4,214,639

CLASS 174

15 C	4,215,234
52 PE	4,215,235
59	4,215,236
99 B	4,215,237

CLASS 176

87	4,214,950

CLASS 177

70	4,214,640

CLASS 178

23 R	4,215,238

CLASS 179

1 J	4,215,242
1 SM	4,215,240
1 VC	4,215,241
2 DP	4,215,243
18 B	4,215,246
18 BC	4,215,247
99 A	4,215,248
111 R	4,215,249
149	4,215,250
170 R	4,215,251
170.2	4,215,252

CLASS 180

19 R	4,214,641
132	4,214,642
148	4,214,643
226	4,214,644

CLASS 181

148	4,214,645
287	4,214,646

CLASS 184

3 A	4,214,647

CLASS 188

73.3	4,214,648
73.5	4,214,649
196 R	4,214,650
251 R	4,214,651

CLASS 192

48.7	4,214,653
58 R	4,214,652

CLASS 194

1 E	4,214,654

CLASS 198

374	4,214,655
380	4,214,656

CLASS 200

82 R	4,215,253
83 C	4,215,254
144 B	4,215,255
148 D	4,215,256
153 T	4,215,257

CLASS 204

1 T	4,214,951
14 R	4,214,952
15	4,214,953
32 R	4,214,954
67	4,214,955
	4,214,956
98	4,214,957
	4,214,958
99	4,214,959
105 R	4,214,964
129.65	4,214,960
140	4,214,961
157.1 R	4,214,962
158 R	4,214,963
159.15	4,214,965
192 E	4,214,966
195 M	4,214,968
195 S	4,214,967
255	4,214,969
265	4,214,970
290 F	4,214,971
298	4,214,972
299 R	4,214,973

CLASS 206

209.1	4,214,657
244	4,214,658
365	4,214,659
427	4,214,660
466	4,214,661
555	4,214,662

CLASS 208

10	4,214,974
33	4,214,975
48 R	4,214,976
108	4,214,977
120	4,214,978
128	4,214,979
139	4,214,980

CLASS 209

155	4,214,981
164	4,214,982
166	4,214,983
214	4,214,984
552	4,214,663

CLASS 210

11	4,214,985
42 S	4,214,986
44	4,214,987
159	4,214,988
	4,214,989
194	4,214,990
232	4,214,991
274	4,214,992
282	4,214,993
490	4,214,994

CLASS 212

142.1	4,214,664

CLASS 219

10.43	4,215,259
10.55 D	4,215,258
53	4,215,260
69 V	4,215,261
95	4,215,262
121 L	4,215,263
225	4,215,264
390	4,215,265
413	4,215,266
439	4,215,267
507	4,215,268

CLASS 220

2.1 R	4,214,666
3.2	4,214,667
3.3	4,214,668
6	4,214,669
70	4,214,670
219	4,214,671
234	4,214,672
271	Re.30,349

CLASS 221

259	4,214,673

CLASS 222

79	4,214,674
83	4,214,675
83.5	4,214,676
145	4,214,677
149	4,214,678
158	4,214,679
161	4,214,680
214	4,214,681
321	4,214,682

CLASS 224

42.2	4,214,683
45 L	4,214,684
197	4,214,688
211	4,214,685
252	4,214,686
323	4,214,687

CLASS 226

21	4,214,689
49	4,214,690
74	4,214,691

CLASS 228

44.1 R	4,214,692
56	Re.30,348
148	4,214,693

CLASS 229

31 FS	4,214,694
36	4,214,695
40	4,214,696
52 B	4,214,697

CLASS 236

42	4,214,698

CLASS 237

12.3 C	4,214,699

CLASS 239

2 S	4,214,700
63	4,214,701
110	4,214,702
127.3	4,214,703
187	4,214,704
227	4,214,705
394	Re.30,350
553.3	4,214,706
553.5	4,214,707
703	4,214,708
707	4,214,709

CLASS 241

24	4,214,710
30	4,214,711
46 B	4,214,712
57	4,214,713
93	4,214,714
	4,214,715
186 R	4,214,716

CLASS 242

36	4,214,717
129.6	4,214,718
198	4,214,719

CLASS 244

12.2	4,214,720
135 B	4,214,721
208	4,214,722

CLASS 248

68 R	4,214,723
167	4,214,724
188.7	4,214,725
575	4,214,726

CLASS 250

201	4,215,270
216	4,215,271
293	4,215,272
347	4,215,273
361 R	4,215,274
459	4,215,275
539	4,214,995

CLASS 251

63.4	4,214,727
149.2	4,214,728
	4,214,729
171	4,214,730
306	4,214,731
315	4,214,732

CLASS 252

1	4,214,996
8.55 B	4,215,000
8.55 C	4,215,001
8.55 D	4,214,999
8.8	4,214,997
	4,214,998
32.5	4,215,002
99	4,215,003
153	4,215,005
156	4,215,004
174.11	4,215,006
174.25	4,215,007
184	4,215,008
	4,215,009
300	4,215,010
426	4,215,011
429 B	4,215,013
	4,215,014
429 R	4,215,012
453	4,215,015
455 Z	4,215,016
458	4,215,017
466 B	4,215,019
466 J	4,215,018
519	4,215,020

CLASS 256

24	4,214,734

CLASS 260

5	4,215,021
	4,215,022
22 CB	4,215,023
23 S	4,215,024
29.2 R	4,215,025
29.4 UA	4,215,027
29.6 TA	4,215,028
30.8 R	Re.30,352
33.8 UA	4,215,029
40 R	4,215,030
	4,215,031
	4,215,032
42.15	4,215,033
45.75 W	4,215,035
45.8 A	4,215,034
112 R	4,215,036
112.5 LH	4,215,038
112.5 R	4,215,037
112.5 S	4,215,039
123.5	4,215,040
141	4,215,041
151	4,215,042
239.3 B	4,215,043
239.3 D	4,215,044
292 E	4,215,026
326.26	4,215,046
326.34	4,215,047
340.6	4,215,048
343.3 R	4,215,049
343.6	4,215,050
346.7	4,215,051
	4,215,052
	4,215,053
	4,215,054
	4,215,055
	4,215,056
347.5	4,215,057
348.27	4,215,058
348.29	4,215,059
	4,215,060
	4,215,061
365	4,215,062
369	4,215,063
397.2	4,215,045
403	4,215,064
415	4,215,065
429 R	4,215,066
429.9	4,215,067
464	4,215,068
465 D	4,215,069
502.5	4,215,070
543 R	4,215,071
551 P	4,215,072
563 D	4,215,073
563 P	4,215,074
566 AC	4,215,075
655	4,215,078

CLASS 261

36 R	4,215,079
111	4,215,080
122	4,215,081
124	4,215,082
155	4,215,083

CLASS 264

8	4,215,084
15	4,215,085
135	4,215,086
320	4,215,087
332	4,215,088
516	4,215,089

CLASS 266

99	4,214,735
200	4,214,736

CLASS 267

8 A	4,214,737
141.1	4,214,738

CLASS 269

75	4,214,739

CLASS 271

3	4,214,740
18.3	4,214,741
69	4,214,742
182	4,214,743
202	4,214,744
272	4,214,745
294	4,214,746

CLASS 272

8 R	4,214,747
67	4,214,748

CLASS 273

1 M	4,214,750
1 R	4,214,749
26 B	4,214,751
30	4,214,752
59 R	4,214,753
167 H	4,214,754
243	4,214,755

CLASS 274

23 R	4,214,756
	4,214,757

CLASS 277

12	4,214,758
	4,214,759
34.3	4,214,760
123	4,214,761
138	4,214,762
167.5	4,214,763
935 D	4,214,764

CLASS 279

1 K	4,214,765
46 R	4,214,766

CLASS 280

5 A	4,214,767
402	4,214,771
415 A	4,214,772
605	4,214,777
631	4,214,773
652	4,214,774
708	4,214,775
760	4,214,776
809	4,214,768
817	4,214,769
819	4,214,770

CLASS 285

39	4,214,778
93	4,214,779
134	4,214,780
222	4,214,781

CLASS 292

87	4,214,782
150	4,214,783

CLASS 294

55	4,214,784
64 R	4,214,785

CLASS 296

1 S	4,214,786
	4,214,787
39 R	4,214,788
183	4,214,789

CLASS 297

326	4,214,790

CLASS 299

4	4,214,791

CLASS 301

36 R	4,214,792
111	4,214,793

CLASS 303

6 C	4,214,794
89	4,214,795

CLASS 307

40	4,215,276
41	4,215,277
116	4,215,278
254	4,215,279
295	4,215,280
304	4,215,281
364	4,215,282

CLASS 308

26	4,214,796

CLASS 310

14	4,215,283
70 A	4,215,284
90	4,215,285
155	4,215,286
217	4,215,287

CLASS 312

257 R	4,214,797

CLASS 313

394	4,215,288
486	4,215,289
496	4,215,290

CLASS 315

5.41	4,215,291
98	4,215,292
366	4,215,293
383	4,215,294
408	4,215,295
	4,215,296

CLASS 316

26	4,214,798

CLASS 318

130	4,215,297
327	4,215,298
574	4,215,299
603	4,215,300
	4,215,301
696	4,215,302
752	4,215,303
758	4,215,304
803	4,215,305

CLASS 320

2	4,215,306
	4,215,307

CLASS 324

78 D	4,215,308
158 D	4,215,309
225	4,215,310

CLASS 328

55	4,215,314
140	4,215,315

CLASS 329

50	4,215,316

CLASS 330

256	4,215,317
268	4,215,318

CLASS 331

94.5 G	4,215,320
	4,215,321
94.5 H	4,215,319
116 FE	4,215,322

CLASS 332

7.51	4,215,323
	4,215,324

CLASS 333

20	4,215,325
182	4,215,326
252	4,215,327

CLASS 335

6	4,215,328
78	4,215,329
252	4,215,331
306	4,215,330

CLASS 337

394	4,215,332

CLASS 338

322	4,215,333

CLASS 339

20	4,214,799
45 M	4,214,800
59 R	4,214,801
60 M	4,214,802
103 R	4,214,803
183	4,214,804
198 G	4,214,805
242	4,214,806
274	4,214,733

CLASS 340

27 AT	4,215,334
40	Re.30,355
177 CA	4,215,336
347 P	4,215,337
373	4,215,338
384 E	4,215,339
507	4,215,340
552	4,215,341
572	4,215,342
695	4,215,349
711	4,215,343

CLASS 343

18 E	4,215,344
112 R	4,215,345
113 R	4,215,346
117 R	4,215,347

CLASS 346

75	4,215,350
136	4,215,351
140 R	4,215,352
	4,215,353
	4,215,354
155	4,215,355

CLASS 350

3.73	4,214,807
4.1	4,214,808
96.20	4,214,809
96.21	4,214,810
	4,214,811
	4,214,812
152	4,214,813
188	4,214,814
215	4,214,815
218	4,214,816
286	4,214,817
310	4,214,818
334	4,214,819
357	4,214,820

CLASS 352

70	4,214,821
78 R	4,214,822
87	4,214,823

CLASS 354

23 D	4,214,824
31	4,214,826
33	4,214,825
127	4,214,827
197	4,214,829
202	4,214,830
275	4,214,828

CLASS 355

3 R	4,214,831
8	4,214,832
14 C	4,214,833
46	4,214,834

CLASS 356

306	4,214,835

CLASS 357

22	4,215,356
24	4,215,357
56	4,215,358
70	4,215,359
	4,215,360
81	4,215,361

CLASS 358

8	4,215,362
21 R	4,215,363
47	4,215,364
111	4,215,365
124	4,215,366
139	4,215,367
	4,215,368
146	4,215,369
	4,215,370
172	4,215,371
188	4,215,372
237	4,215,373
260	4,215,374
261	4,215,375

CLASS 360

36	4,215,376
73	4,215,377
74.1	4,215,378
85	4,215,379

CLASS 361

119	4,215,380
124	4,215,381
166	4,215,382
210	4,215,383
215	4,215,384
273	4,215,385
394	4,215,386
398	4,215,387

CLASS 362

104	4,215,388
199	4,215,389
311	4,215,390

CLASS 363

25	4,215,391
49	4,215,392
124	4,215,393
137	4,215,394

CLASS 364

101	4,215,395
	4,215,396
	4,215,397
	4,215,398
	4,215,399
200	4,215,400
	4,215,401
	4,215,402
424	4,215,403
431	4,215,404
436	4,215,405
468	4,215,406
	4,215,407
505	4,215,408
510	4,215,409
515	4,215,414
516	4,215,410
527	4,215,411
551	4,215,412
570	4,215,413
724	4,215,415
736	4,215,416
	4,215,417
757	4,215,418
760	4,215,419
802	4,215,420
900	4,215,421
	4,215,422

CLASS 365

77	4,215,423
174	4,215,424

CLASS 367

83	4,215,425
	4,215,426
	4,215,427
137	4,215,428
139	4,215,429

CLASS 368

28	4,214,433
71	4,214,434

CLASS 370

84	4,215,245
97	4,215,348
116	4,215,244

CLASS 371

69	4,215,335

CLASS 375

5	4,215,311
111	4,215,430
114	4,215,239

CLASS 400

124	4,214,836
144.3	4,214,837
220.1	4,214,838

CLASS 402

31	4,214,839

CLASS 403

	4,214,840
188	4,214,841

CLASS 405

191	4,214,842
225	4,214,843

CLASS 406

123	4,214,844

CLASS 407

114	4,214,845
	4,214,846
	4,214,847

CLASS 414

77	4,214,848
545	4,214,849

CLASS 415

49	4,214,850
115	4,214,851
	4,214,852

CLASS 417

154	4,214,853
402	4,214,854
477	4,214,855

CLASS 422

54	4,215,090
75	4,215,091
100	4,215,092
179	4,215,093

CLASS 423

123	4,215,094
240	4,215,095
241	4,215,096
279	4,215,097
305	4,215,098
360	4,215,099
552	4,215,100
659	4,215,101

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3	4,215,102
4	4,215,103
15	4,215,104
57	4,215,105
81	4,215,106
89	4,215,107
92	4,215,108
177	4,215,109
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	4,215,112
212	4,215,113
216	4,215,115
217	4,215,116
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248.5	4,215,119
250	4,215,120
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251	4,215,122
256	4,215,123
263	4,215,124
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269	4,215,127
272	4,215,128
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273 B	4,215,134
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273 P	4,215,132
273 R	4,215,130
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274	4,215,136
	4,215,137
275	4,215,114
282	4,215,138
300	4,215,139
301	4,215,140
304	4,215,141
305	4,215,142
315	4,215,143
318	4,215,144
324	4,215,145
330	4,215,146
333	4,215,147
	4,215,148

CLASS 425

60	4,214,856
141	4,214,857
145	4,214,858
147	4,214,859
149	4,214,860
199	4,214,861
204	4,214,862
222	4,214,863
329	4,214,864
532	4,214,865

CLASS 426

292	4,215,149
430	4,215,150
467	4,215,151
579	4,215,152
643	4,215,153

CLASS 427

50	4,215,154
74	4,215,155
84	4,215,156
116	4,215,157
130	4,215,158
142	4,215,159
177	4,215,160
228	4,215,161
435	4,215,162

CLASS 428

24	4,215,163
34	4,215,164
35	4,215,165
159	4,215,166
203	4,215,167
215	4,215,168
220	4,215,169
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264	4,215,172
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331	4,215,173
375	4,215,174
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412	4,215,176
413	4,215,177
421	4,215,178
451	4,215,179
553	4,215,180
591	4,215,181

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15	4,215,182
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104	Re.30,353
111	4,215,185
139	4,215,186
161	4,215,187
194	4,215,188
217	4,215,189
222	4,215,190

CLASS 430

82	4,214,907
152	4,215,191
270	4,215,192
291	4,215,193
323	4,215,194
496	4,215,195
627	4,215,196

CLASS 432

12	4,214,866
29	4,214,867
31	4,214,869
124	4,214,868

CLASS 433

40	4,214,870
60	4,214,367
189	4,214,366
216	4,214,871

CLASS 435

18	4,215,197
31	4,215,198
71	4,215,199
273	4,215,200
290	4,215,201

CLASS 440

13	4,214,547

CLASS 455

43	4,215,431
284	4,215,312
326	4,215,313
612	4,215,269

CLASS 474

148	4,214,488

CLASS 521

81	4,215,202
189	4,215,203

CLASS 525

161	4,215,204
331	4,215,205
441	4,215,206

CLASS 526

64	4,215,207
285	4,215,208
292	4,215,209

CLASS 528

93	4,215,210
313	4,215,211

CLASS 536

4	Re.30,354
57	4,215,212
115	4,215,213

CLASS 542

426	4,215,214
427	4,215,215

CLASS 544

117	4,215,216
139	4,215,217

CLASS 546

162	4,215,218
179	4,215,219

CLASS 548

341	4,215,220
344	4,215,221

CLASS 560

53	4,215,222

CLASS 562

401	4,215,223
485	4,215,224
606	4,215,225

CLASS 568

341	4,215,230
454	4,215,077
461	4,215,076
705	4,215,226
706	4,215,227
712	4,215,228
804	4,215,229

CLASS 585

251	4,215,231

CLASSIFICATION OF DESIGNS

D2—	286	256,064		102	256,083		78	256,102		53	256,121		17	256,140			256,158
	291	256,065		107	256,084		91	256,103		68	256,122		66	256,141	D24—	9	256,159
	322	256,066		131	256,085		114	256,104		73	256,123		91	256,142		10	256,160
		256,067		151	256,086	D11—	4	256,105	D15—	82	256,124		114	256,143		49	256,161
	431	256,068		153	256,087		56	256,106		120	256,125		150	256,144		52	256,162
D6—	11	256,069		194	256,088		148	256,107		146	256,126		166	256,145	D25—	26	256,163
	49	256,070			256,089		152	256,108	D16—	02	256,127		187	256,146		57	256,164
	66	256,071	D8—	08	256,090			256,109		47	256,128		214	256,147		74	256,165
	86	256,072		51	256,091		153	256,110		60	256,129		220	256,148		87	256,166
	113	256,073		382	256,092	D12—	9	256,111	D17—	7	256,130		246	256,149	D26—	42	256,167
	130	256,074		401	256,093		70	256,112		13	256,131		250	256,150	D27—	51	256,168
	186	256,075	D9—	115	256,094			256,113		21	256,132				D28—	35	256,169
D7—	198	256,076		147	256,095		102	256,114	D18—	7	256,133	D22—	28	256,151			256,170
	6	256,077		219	256,096		114	256,115		24	256,134	D23—	11	256,152			
	16	256,078			256,097	D13—	37	256,116	D19—	43	256,135		48	256,153		58	256,171
	47	256,079	D10—	2	256,098	D14—	2	256,117		51	256,136		85	256,154		83	256,172
	52	256,080		46	256,099		33	256,118		75	256,137		97	256,155	D30—	99	256,173
	71	256,081			256,100		40	256,119	D20—	10	256,138		151	256,156	D99—	17	256,174
	85	256,082		73	256,101		49	256,120	D21—	1	256,139		163	256,157			256,175

CLASSIFICATION OF PLANTS

P.—	7	4,579		4,581							
		4,580		4,582	12	4,583	74	4,584	77	4,585	78	4,586

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
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California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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56 : 4,214,615

DESIGN PATENTS

4 : 256,115
6 : 256,076
256,079
256,080
256,085
256,091
256,092
256,113
256,128
256,163
256,169
8 : 256,081
256,084
256,133
9 : 256,126
256,127
256,138
01 : 256,068
256,159
06 : 256,100
256,107
256,131
256,132
256,160
256,173
09 : 256,104
256,167
10 : 256,072
12 : 256,154
13 : 256,164
17 : 256,070
256,075
256,093
256,103
256,106
256,110
256,117
256,120
256,124
256,137
256,149
18 : 256,098
256,151
24 : 256,108
25 : 256,095
256,109
256,139
256,166
27 : 256,066
256,067
256,082
256,090
256,153
256,156
256,157
256,158
28 : 256,114
29 : 256,118
34 : 256,096
36 : 256,064
256,065
256,074
256,086
256,105
256,122
256,123
256,141
256,143
256,150
256,171
37 : 256,119
256,135
39 : 256,071
256,077
256,097
256,162
40 : 256,140
42 : 256,083
256,111
44 : 256,078
47 : 256,161
48 : 256,069
256,165
50 : 256,174
256,175
55 : 256,125

PLANT PATENTS

6 : 4,585
4,586
06 : 4,583
4,584
25 : 4,582
48 : 4,579
4,580
4,581

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